



961349010002

0045380

W0091-ITC-105



CERTIFICATE OF ANALYSIS

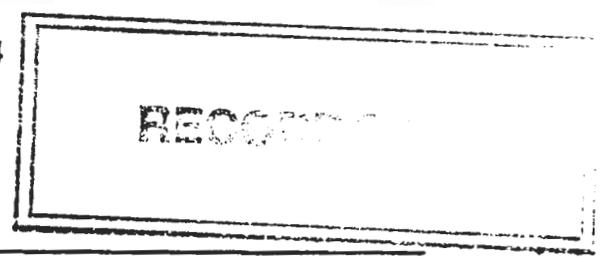
Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

August 3, 1994

Attention: J. A. Lerch



Project number	:	519.54
Date Received by Lab	:	June 20 and 23, 1994
Number of Samples	:	Twenty (20)
Sample Type	:	Water
SDG Number	:	W0091
Data Deliverable	:	Standalone



I. Introduction

On June 15, 1994 two (2) water samples were received by the Quanterra Environmental Services Richland Laboratory (QTESRL) and transferred to the Quanterra Environmental Services Knoxville Laboratory (QTESKN) for chemical analysis. On June 17, 1994, ten (10) water samples were received by QTESRL, transferred to QTESKN and subsequently transferred to the Quanterra Environmental Services St. Louis Laboratory (QTESSL) for chemical analyses. On June 20 and 23, 1994, a total of eight (8) water samples were received by QTESRL and transferred to QTESSL for chemical analyses. Upon receipt, the samples were given the following laboratory ID numbers to correspond with their specific client IDs:

<u>Quanterra ID</u>	<u>WHC ID</u>	<u>Richland ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
5384-001	BOC2H1	40640801	Water	06/20/94
5384-002	BOC2H2	40640802	Water	06/20/94
5384-003	BOC2C7	40638401	Water	06/17/94
5384-004	BOC2C8	40638402	Water	06/17/94
5384-005	BOC2H7	40638403	Water	06/17/94
5384-006	BOC2H8	40638404	Water	06/17/94
5384-007	BOC2H9	40638405	Water	06/17/94
5384-008	BOC2J0	40638406	Water	06/17/94
5384-009	BOC2D9	40638407	Water	06/17/94
5384-010	BOC2F0	40638408	Water	06/17/94

Westinghouse Hanford Company
 August 3, 1994
 Project Number: 519.54
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<u>Quanterra ID</u>	<u>WHC ID</u>	<u>Richland ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
5384-011	BOC2F9	40638409	Water	06/17/94
5384-012	BOC2G0	40638410	Water	06/17/94
5414-005	BOC2C5	40651401	Water	06/23/94
5414-006	BOC2C6	40651402	Water	06/23/94
5414-007	BOC2C9	40651403	Water	06/23/94
5414-008	BOC2D0	40651404	Water	06/23/94
5414-009	BOC2D5	40651405	Water	06/23/94
5414-010	BOC2D6	40651406	Water	06/23/94
AB0738	BOC2D7	40630901	Water	06/15/94
AB0739	BOC2D8	40630902	Water	06/15/94

II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results, and the appropriate detection limits.

Analyses requested: TAL Metals by method CLP90.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Sample Duplicate analyses were performed per the protocol for each analyte in this SDG.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
 QCLCS- Quality Control Laboratory Control Sample, Blank Spike

Westinghouse Hanford Company
August 3, 1994
Project Number: 519.54
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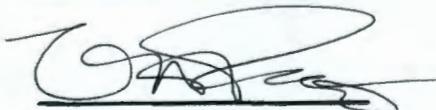
V. Comments

Samples BOC2D7 (AB0738) and BOC2D8 (AB0739) were analyzed at QTESKN laboratory. All QC was acceptable. A duplicate/spike pair was prepared using both samples. Spike recovery (accuracy) results were within acceptance limits for all parameters. Duplicate RPD (precision) results were within acceptance limits for all parameters. The reprep for selenium was performed on a 50 ml basis due to limited sample volume.

There were no comments or nonconformances associated with the samples analyzed in our St. Louis laboratory.

I certify that this data package 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:



for Wade H. Price
Project Manager
z:\annals\han0091a.nar

OFFICE OF SAMPLE MANAGEMENT
RECORD OF DISPOSITION

ROD-94-0170
Record of Disposition No.

DATE: 07/12/94 LABORATORY: Quanterra

PROJECT TITLE/NO.: 100-KR-4/94-220 NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:
BOC2H6, BOC2H7

DESCRIPTION OF EVENT:

- 1) No sample container was received for BOC2H7.
- 2) Only one sample container was received for sample BOC2H6, not the four containers indicated on the Chain of Custody. The single sample container for sample BOC2H6 indicated the analyses (metals, filtered) identified for sample BOC2H7 on the Chain of Custody.
- 3) Sample containers were received for BOC2H5, but sample BOC2H5 was not indicated on the Chain of Custody. The four sample containers for sample BOC2H5 indicated all of the analyses identified for sample BOC2H6 on the Chain of Custody.
- 4) Items 1-3 refer to samples and Chain of Custody received at Quanterra on 7/11/94.
- 5) Previously, sample BOC2H7 and its associated Chain of Custody were received at Quanterra on 6/17/94.

DISPOSITION OF SAMPLES:

Items 1-4: With concurrence from A. D. Krug, project engineer, cancel analyses for samples BOC2H5, BOC2H6, and BOC2H7 which were received at lab on 7/11/94.

Item 5: Continue analyses on sample BOC2H7 which was received at lab on 6/17/94. Report results as BOC2H7.

APPROVAL SIGNATURES:

R. C. Smith/ 	7/19/94
OSM Project Coordinator (Print/Sign Name)	Date
A. D. Krug/ 	7/19/94
Technical Representative (Print/Sign Name)	Date
N/A	
Quality Assurance (Print/Sign Name)	Date 0004

ORIGINAL → RICH AND XC: VAN SUZI WADE
JIM TAMI WOOD

9613490.0006

DON'T SAY IT --- Write It!

DATE: October 27, 1994

TO: W0091-ITC-105

FROM: Pat Reich

H4-14

Telephone: 372-2785

cc:

SUBJECT: VALIDATION FOR 100-KR-4, ROUND 6, 2ND QUARTER

The Validation Report for this data packages is filed in SDG # BOC2J1-TMA-787:

Pat Reich

Analytical Data Package Prepared For

Westinghouse Hanford

Chemical Analysis By

Quanterra Environmental Services
St. Louis Laboratory



Sample Delivery Group Number: W0091

WHC IDENTIFICATION NUMBER

QUANTERRA ID NUMBER

BOC2H1	5384-001
BOC2H2	5384-002
BOC2C7	5384-003
BOC2C8	5384-004
BOC2H7	5384-005
BOC2H8	5384-006
BOC2H9	5384-007
BOC2J0	5384-008
BOC2D9	5384-009
BOC2F0	5384-010
BOC2F9	5384-011
BOC2G0	5384-012
BOC2C5	5414-005
BOC2C6	5414-006
BOC2C9	5414-007
BOC2D0	5414-008
BOC2D5	5414-009
BOC2D6	5414-010
BOC2D7	AB0738
BOC2D8	AB0739

10000

RECORD COPY

ITAS - St. Louis June 23, 1994 10:31 am
 Account: 10722 Project: 519.54 ITAS - Richland GAS No. 599 Rev. 0
 Master Sample Login: 2384

Project Manager: M. Price

Draft: Final:

Entered and Reviewed by: *[Signature]*

PM Review: *[Signature]*

Sample Header Template:

Sample No.	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
#	Comments	Analysis	Class	Preservative	Anal. Due Date	Hold Date Site	(Container Numbers:X Filled)	
Data:	Container Type							
5384-001	BOC2H1	Water	17-JUN-94 11:00	20-JUN-94 11:15	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 4064801							
1	AN - Amber Glass-1L	AS/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		HG/CLP90/Q4	C	COLD	23-JUL-94	15-JUL-94 S7F		(83173:100)
1		ICAP/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		METAL/CLP90/Q4	P	COLD	N/A	N/A S7F		(83173:100)
1		PB/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		SE/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		TL/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
5384-001DUP	BOC2H1	Water	17-JUN-94 11:00	20-JUN-94 11:15	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 4064801							
1	AN - Amber Glass-1L	AS/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		HG/CLP90/Q4	C	COLD	23-JUL-94	15-JUL-94 S7F		(83173:100)
1		ICAP/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		METAL/CLP90/Q4	P	COLD	N/A	N/A S7F		(83173:100)
1		PB/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		SE/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		TL/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
5384-001MS	BOC2H1	Water	17-JUN-94 11:00	20-JUN-94 11:15	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 4064801							
1	AN - Amber Glass-1L	AS/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		HG/CLP90/Q4	C	COLD	23-JUL-94	15-JUL-94 S7F		(83173:100)
1		ICAP/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		METAL/CLP90/Q4	P	COLD	N/A	N/A S7F		(83173:100)
1		PB/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		SE/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
1		TL/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83173:100)
5384-002	BOC2H2	Water	17-JUN-94 11:00	20-JUN-94 11:15	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 4064802							
1	AN - Amber Glass-1L	AS/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83174:100)
1		HG/CLP90/Q4	C	COLD	23-JUL-94	15-JUL-94 S7F		(83174:100)
1		ICAP/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83174:100)
1		METAL/CLP90/Q4	P	COLD	N/A	N/A S7F		(83174:100)
1		PB/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83174:100)
1		SE/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83174:100)
1		TL/CLP90/Q4	C	COLD	23-JUL-94	14-DEC-94 S7F		(83174:100)

3*=Sample has not been rad screened.

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: _____ PM Review: _____

Sample Header Template:

Sample No. #	Comments Container Type	Client ID	C-Matrix Analysis	Date: Collected Class Preservative	Received Anal. Due Date	Due Hold Date Site	Shipper	Rad Category (Container Numbers:% Filled)	Rad Sample No.
5384-003		BOC2C7	Water	15-JUN-94 12:20	17-JUN-94 12:10	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40638401								
1	AM - Amber Glass-1L		AS/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83178:100)
1			HG/CLP90/Q4	C COLD	18-JUL-94	13-JUL-94	S7F		(83178:100)
1			ICAP/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83178:100)
1			METAL/CLP90/Q4	P COLD	N/A	N/A	S7F		(83178:100)
1			PB/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83178:100)
1			SE/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83178:100)
1			TL/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83178:100)
5384-004		BOC2C8	Water	15-JUN-94 12:20	17-JUN-94 12:10	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40638402								
1	AM - Amber Glass-1L		AS/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83180:100)
1			HG/CLP90/Q4	C COLD	18-JUL-94	13-JUL-94	S7F		(83180:100)
1			ICAP/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83180:100)
1			METAL/CLP90/Q4	P COLD	N/A	N/A	S7F		(83180:100)
1			PB/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83180:100)
1			SE/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83180:100)
1			TL/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83180:100)
5384-005		BOC2H7	Water	15-JUN-94 12:20	17-JUN-94 12:10	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40638403								
1	AM - Amber Glass-1L		AS/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83181:100)
1			HG/CLP90/Q4	C COLD	18-JUL-94	13-JUL-94	S7F		(83181:100)
1			ICAP/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83181:100)
1			METAL/CLP90/Q4	P COLD	N/A	N/A	S7F		(83181:100)
1			PB/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83181:100)
1			SE/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83181:100)
1			TL/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83181:100)
5384-006		BOC2H8	Water	15-JUN-94 12:20	17-JUN-94 12:10	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40638404								
1	AM - Amber Glass-1L		AS/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83185:100)
1			HG/CLP90/Q4	C COLD	18-JUL-94	13-JUL-94	S7F		(83185:100)
1			ICAP/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83185:100)
1			METAL/CLP90/Q4	P COLD	N/A	N/A	S7F		(83185:100)
1			PB/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83185:100)
1			SE/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83185:100)
1			TL/CLP90/Q4	C COLD	18-JUL-94	12-DEC-94	S7F		(83185:100)

3*=Sample has not been rad screened.

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9613490.0009

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: _____ PM Review: _____

Sample Header Template: _____

Sample No.	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
#	Comments	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers: % Filled)
Data:	Container Type							

5384-007	BOC2H9	Water	16-JUN-94 10:15	17-JUN-94 12:10	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40638405							

1	AM - Amber Glass-1L	AS/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83195:100)
1		HG/CLP90/Q4	C	COLD	18-JUL-94	14-JUL-94	S7F	(83195:100)
1		ICAP/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83195:100)
1		METAL/CLP90/Q4	P	COLD	N/A	N/A	S7F	(83195:100)
1		PB/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83195:100)
1		SE/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83195:100)
1		TL/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83195:100)

5384-008	BOC2JO	Water	16-JUN-94 10:15	17-JUN-94 12:10	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40638406							

1	AM - Amber Glass-1L	AS/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83196:100)
1		HG/CLP90/Q4	C	COLD	18-JUL-94	14-JUL-94	S7F	(83196:100)
1		ICAP/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83196:100)
1		METAL/CLP90/Q4	P	COLD	N/A	N/A	S7F	(83196:100)
1		PB/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83196:100)
1		SE/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83196:100)
1		TL/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83196:100)

5384-009	BOC2D9	Water	16-JUN-94 10:15	17-JUN-94 12:10	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40638407							

1	AM - Amber Glass-1L	AS/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83198:100)
1		HG/CLP90/Q4	C	COLD	18-JUL-94	14-JUL-94	S7F	(83198:100)
1		ICAP/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83198:100)
1		METAL/CLP90/Q4	P	COLD	N/A	N/A	S7F	(83198:100)
1		PB/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83198:100)
1		SE/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83198:100)
1		TL/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83198:100)

5384-010	BOC2FO	Water	16-JUN-94 10:15	17-JUN-94 12:10	25-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40638408							

1	AM - Amber Glass-1L	AS/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83199:100)
1		HG/CLP90/Q4	C	COLD	18-JUL-94	14-JUL-94	S7F	(83199:100)
1		ICAP/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83199:100)
1		METAL/CLP90/Q4	P	COLD	N/A	N/A	S7F	(83199:100)
1		PB/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83199:100)
1		SE/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83199:100)
1		TL/CLP90/Q4	C	COLD	18-JUL-94	13-DEC-94	S7F	(83199:100)

3*=Sample has not been rad screened.

00010

9613490.0010

ITAS - St. Louis June 23, 1994 10:21 am
 Account: 10722 Project: 519.54 ITAS - Richland QAS No. 599 Rev. 0
 Master Sample Login: 5384

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: _____ PM Review: _____

Sample Header Template: _____

Sample No. Comments # Container Type	Client ID	C-Matrix Analysis	Date: Collected Class Preservative	Received Anal. Due Date	Due Hold Date Site	Shipper	Rad Category	Rad Sample No. (Container Numbers:X Filled)
5384-011 I.T. RICHLAND I.D. # IS 40638409	BOC2F9	Water	16-JUN-94 12:00	17-JUN-94 12:10	25-JUL-94	FED-EX	1	Screening not Required
1 AN - Amber Glass-1L		AS/CLP90/Q4	C COLD	18-JUL-94	13-DEC-94	S7F		(83200:100)
1		HG/CLP90/Q4	C COLD	18-JUL-94	14-JUL-94	S7F		(83200:100)
1		ICAP/CLP90/Q4	C COLD	18-JUL-94	13-DEC-94	S7F		(83200:100)
1		METAL/CLP90/Q4	P COLD	N/A	N/A	S7F		(83200:100)
1		PB/CLP90/Q4	C COLD	18-JUL-94	13-DEC-94	S7F		(83200:100)
1		SE/CLP90/Q4	C COLD	18-JUL-94	13-DEC-94	S7F		(83200:100)
1		TL/CLP90/Q4	C COLD	18-JUL-94	13-DEC-94	S7F		(83200:100)
5384-012 I.T. RICHLAND I.D. # IS 40638410	BOC2G0	Water	16-JUN-94 12:20	17-JUN-94 12:10	25-JUL-94	FED-EX	1	Screening not Required
1 AN - Amber Glass-1L		AS/CLP90/Q4	C COLD	18-JUL-94	13-DEC-94	S7F		(83201:100)
1		HG/CLP90/Q4	C COLD	18-JUL-94	14-JUL-94	S7F		(83201:100)
1		ICAP/CLP90/Q4	C COLD	18-JUL-94	13-DEC-94	S7F		(83201:100)
1		METAL/CLP90/Q4	P COLD	N/A	N/A	S7F		(83201:100)
1		PB/CLP90/Q4	C COLD	18-JUL-94	13-DEC-94	S7F		(83201:100)
1		SE/CLP90/Q4	C COLD	18-JUL-94	13-DEC-94	S7F		(83201:100)
1		TL/CLP90/Q4	C COLD	18-JUL-94	13-DEC-94	S7F		(83201:100)

9613490.0011

3*=Sample has not been rad screened.

00011



INTERNATIONAL
TECHNOLOGY
CORPORATION

COC NO.



0001787*

**ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD***

Lab # *678*
RL # *915*

Reference Document No. *Temp 6* 453699
Page 1 of 2

Project Name/No. 1 *94-220*
Sample Team Members 2
Profit Center No. 3 *4632*
Project Manager 4 *VanPetty*
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7 *6/17/94*
Lab Destination 8 *Middlebrook*
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13 *Fed Ex 262 9856 835*

Bill to: 5 *ITAS Rickland*
Report to: 10 *ITAS Rickland*

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
40638401A	BOC2C7/H ₂ O	6-15-94 1220 <i>See WKC COC</i>	<i>WKC COC</i>	<i>1L</i>	<i>4°C</i>	<i>See WKC COC</i>	<i>Rec'd at 6°C KAC 6/17/94</i>	<i>10050 PH-1</i>
40638402A	BOC2C8/H ₂ O	6-15-94 1220		<i>1L</i>			FOR LAB USE ONLY	<i>10050 PH-1</i>
40638403A	BOC2N7/H ₂ O	6-15-94 1220		<i>"</i>		<i>10070 PH-1</i>		
40638404A	BOC2N8/H ₂ O	6-15-94 1220		<i>"</i>		<i>10070 PH-1</i>		
40638405A	BOC2N9/H ₂ O	6-16-94 1015				FOR LAB USE ONLY		<i>10070 PH-1</i>
40638406A	BOC2J0/H ₂ O	6-16-94 1015						<i>10070 PH-1</i>
40638407A	BOC2D9/H ₂ O	6-16-94 1015						<i>10070 PH-1</i>
40638408A	BOC2F0/H ₂ O	6-16-94 1015						<i>10070 PH-1</i>

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 W0091*

1. Relinquished by ²⁸ (Signature/Affiliation) <i>[Signature] ITAS</i>	Date: <i>6/17/94</i> Time: <i>1600</i>	1. Received by ²⁸ (Signature/Affiliation) <i>[Signature] ITAS-KN</i>	Date: <i>06-18-94</i> Time: <i>09:55</i>
2. Relinquished by (Signature/Affiliation) <i>[Signature] ITAS-KN</i>	Date: <i>6/21/94</i> Time: <i>12:45</i>	2. Received by (Signature/Affiliation) <i>[Signature]</i>	Date: <i>06-22-94</i> Time: <i>0900</i>
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: ²⁹ *00012* 179 6717 657 |

613490-0112
 Yellow: Field copy
 See back of form for special instructions

Temp 5° Cur ≈ 521



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 453509
Page 1 of 1

Project Name/No. ¹ 94-220
Sample Team Members ²
Profit Center No. ³ 4632
Project Manager ⁴ Van Pethey
Purchase Order No. ⁶
Required Report Date ¹¹

Samples Shipment Date ⁷ 6/20/94
Lab Destination ⁸ St. Louis
Lab Contact ⁹
Project Contact/Phone ¹²
Carrier/Waybill No. ¹³

Bill to: ⁵ ITAS Richmond
Report to: ¹⁰ ITAS Richmond

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 % Fill Receipt ²¹	Disposal Record No. ²²
40640801A	BOCZH/H ₂ O	See WTK	COCKSAR		4°C	See WTK COCKSAR	100	
40640802A	BOCZH/H ₂ O				1		100	
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 W0091

1. Relinquished by ²⁸ (Signature/Affiliation) <i>[Signature]</i> ITAS	Date: 6/20/94 Time: 1600	1. Received by ²⁸ (Signature/Affiliation) <i>[Signature]</i>	Date: 6-21-94 Time: 0900
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: ²⁹

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

ITAS KNOXVILLE- SAMPLE DELIVERY GROUP ASSIGNMENT FORM- WESTINGHOUSE HANFORD (SAF1 94-220) WATERS SDG NO. W0091

	A	B	C	D	E	F	G
	DATE REC'D	WORK ORDER #	CLIENT ID	QC?	METALS CLP	METALS DISS.	
1							
2							
3	1	06/16/94	664	BOC2D7	YES	X	
4	2			BOC2D8	YES		X
5	3	06/18/94	678	BOC2C7		X	
6	4			BOC2H7		X	
7	5			BOC2H9		X	
8	6			BOC2D9		X	
9	7			BOC2F9		X	
10	8			BOC2C8			X
11	9			BOC2H8			X
12	10			BOC2J0			X
13	11			BOC2F0			X
14	12			BOC2G0			X
15	13						
16	14						
17	15						
18	16						
19	17						
20	18						
21	19						
22	20						

9613490.0015

00015

MS: BOC2D7; BOC2D8 MSD: _____ DUP: BOC2D7; BOC2D8 FINAL? _____

WO#678

WO#678

Date Turnaround
 Priority
 Normal

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	
	Collector K. TRAPP, G. HAMILTON	Company Contact P. H. BUTCHER

Project Designation 100-KR-4	Sampling Location 100 K	Telephone No. (509) 376-4388
--	-----------------------------------	--

Ice Chest No. GWS104	Field Logbook No. EFL-1049	SAF No.
--------------------------------	--------------------------------------	---------

Shipped To IT	Offsite Property No. 1094-0-0574-42	Method of Shipment Hand Delivered
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Possible Sample Hazards/Remarks None	Preservative	Volume	Bill of Lading/Air Bill No. NCWE
--	--------------	--------	--

Preservative	HNO3	HNO3	NONE	NONE	HNO3
Type of Container	G	P	Gs	Gs	G
No. of Container(s)	1	4	2	1	1
Volume	1L	1L	1L	40ml	1L

Special Handling and/or Storage Maintain between 2 and 6 degrees C.	METALS-TAL (UNFIL-TERED)	GROSS ALPHA/BETA U-234/ 235/238 406 Sr-90	C-14, TRITIUM	ACTIVI-TAL	METALS-TAL (FIL-TERED)
---	-----------------------------	---	---------------	------------	---------------------------

SAMPLE ANALYSIS
466384

Sample No.	Matrix*	Date Sampled	Time Sampled															
BOC27	O1A	6/15/94	1220	X	+	+	+											
BOC28	O2A	↓	↓															

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix*
Relinquished By K. Trapp / G. Hamilton	Date/Time 6/17/94	Received By AJ Simpson	Date/Time 6/15/94 1455
Relinquished By AJ Simpson	Date/Time 6-17-94	Received By Robert [Signature]	Date/Time 6-17-94
Relinquished By Robert [Signature]	Date/Time 6-17-94	Received By Kenn [Signature]	Date/Time 6-17-94
Relinquished By	Date/Time	Received By	Date/Time

Standalone Data Deliverable

12:10

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

LABORATORY SECTION	Received By	Title	Date/Time
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FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time
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9613490.0016

#678

WB #675

Page 1 of 1

Date Turnaround

Priority
 Normal

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector K. TRAPP, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
---	---	--

Project Designation 100-KR-4	Sampling Location 100 K	SAF No.
--	-----------------------------------	---------

Ice Chest No. C105109	Field Logbook No. EPL-1049	Method of Shipment Hand Delivered
---------------------------------	--------------------------------------	---

Shipped To IT	Offsite Property No. W94-0-0594-42	Bill of Lading/Air Bill No. NONE
-------------------------	--	--

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3													
--	--------------	------	------	------	------	------	--	--	--	--	--	--	--	--	--	--	--	--	--

Type of Container	G	P	Gs	Gs	G														
-------------------	---	---	----	----	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--

No. of Container(s)	1	4	2	1	1														
---------------------	---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40ml	1L													
---	--------	----	----	----	------	----	--	--	--	--	--	--	--	--	--	--	--	--	--

SAMPLE ANALYSIS

406384

METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/235/238 Sr-90	C-14, TRITIUM	ACTIVITY SCANTAL	METALS-TAL (FILTERED)
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Sample No.	Matrix*	Date Sampled	Time Sampled	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/235/238 Sr-90	C-14, TRITIUM	ACTIVITY SCANTAL	METALS-TAL (FILTERED)											
BOC2H7 03A	W	6/15/94	1220	+	+	+	+												
BOC2H8 04A	W	↓	↓					+											

CHAIN OF POSSESSION

Sign/Print Names

SPECIAL INSTRUCTIONS

Standalone Data Deliverable

Matrix*

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

Relinquished By K. Trapp / G. Hamilton	Date/Time 6/15/94	Received By A. Simpson	Date/Time 6-17-94
Relinquished By A. Simpson	Date/Time 6-17-94	Received By Phonk. [Signature]	Date/Time 6-17-94
Relinquished By Phonk. [Signature]	Date/Time 6-17-94	Received By [Signature]	Date/Time 6-17-94
Relinquished By [Signature]	Date/Time 6-17-94	Received By [Signature]	Date/Time 6-17-94

12:10

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

DISTRIBUTION: Original - Sample Yellow - Sampler

00017

9613490.0017

WO#678

WO#678

Date Turnaround
 Priority
 Normal

Westinghouse Hanford Company CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: **K. Trapp, G. Hamilton** Company Contact: **P. H. Butcher** Telephone No.: **(509) 376-4388**

Project Designation: **100-KR-4** Sampling Location: **100 K** SAF No.: **94-220**

Ice Chest No.: **ER-19** Field Logbook No.: **FEL-1049** Method of Shipment: **Hand Delivered**

Shipped To: **IT** Offsite Property No.: Bill of Lading/Air Bill No.:

Possible Sample Hazards/Remarks	Preservative	HNO3	HNO3	NONE	NONE	HNO3															
		Type of Container	G	P	Gs	Gs	G														
None	No. of Container(s)	1	4	2	1	1															
Special Handling and/or Storage: Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40ml	1L															

SAMPLE ANALYSIS	Sample No.	Matrix*	Date Sampled	Time Sampled	METALS-TOTAL	GROSS ALPHA/BETA	C-14, TRITIUM	ACTIVITY SCANTAL	METALS-TOTAL													
					(UNFILTERED)	U-234/235/238			(FILTERED)													
406384						40638504	Sr-90															

Sample No.	Matrix*	Date Sampled	Time Sampled																			
BOC2D7	07A	W	6/16/94	1015	+	+	+	+														
BOC2FO	08A	W	↓	↓																		

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix*
Relinquished By: K. Trapp Date/Time: 1900	Received By: P. H. Butcher Date/Time: 6-16-94	Standalone Data Deliverable	<ul style="list-style-type: none"> S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By: G. Hamilton Date/Time: 6-17-94	Received By: K. Trapp Date/Time: 6-17-94 12:10		
Relinquished By: Date/Time: 	Received By: Date/Time: 		
Relinquished By: Date/Time: 	Received By: Date/Time: 		

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

9613490.0019

WO#678

WO#678

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

Collector K. Trapp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. 94-220
Ice Chest No. ER-19	Field Logbook No. EFL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No.	Bill of Lading/Air Bill No.

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3												
	Type of Container	G	P	Gs	Gs	G												
	No. of Container(s)	1	4	2	1	1												
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40ml	1L												

SAMPLE ANALYSIS				METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/235/238 Sr-90	C-14, TRITIUM	ACTIVI-METALS-SCANTAL	METALS-TAL (FILTERED)										
406384																		
Sample No.	Matrix*	Date Sampled	Time Sampled															
BOC2 F9	OA	6/16/94	1220															
BOC2 G0	OA	↓	↓															

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS Standalone Data Deliverable	Matrix*
Relinquished By <i>W.H.C.</i> K. Trapp / G. Hamilton	Date/Time 6/16/94 1500	Received By <i>[Signature]</i> [Signature]	Date/Time 6-16-94 1500
Relinquished By <i>[Signature]</i> [Signature]	Date/Time 6-17-94 1210	Received By <i>[Signature]</i> [Signature]	Date/Time ITAS 6-17-94 12:10
Relinquished By	Date/Time	Received By	Date/Time

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

9613490.0020



WD #675

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-17-94 Client Name WHC

Project/Client # _____ Batch or Case # _____

Cooler ID (if noted on the outside of cooler) BWS 104

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: 19

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 40C

11. The following paperwork should be accounted for (N/A if not applicable):
Chain of Custody #(s) N/A
Request for analysis #(s) N/A
Airbill # N/A Carrier _____

12. Have any anomalies been identified above? Yes No

13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Karen A. Johnson Date/Time 6-17-94 12:10
KAREN A. JOHNSON



SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-17-94 12:10 Client Name WHC

Project/Client # SAF-94-220 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER-19

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: 28

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 40C

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 # 1777 Carrier _____

12. Have any anomalies been identified above? Yes No

13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Karen St. Andrew Date/Time 6-17-94 12:10

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: ^{Chem} 406384 ^{Rad} 406385 DATE INITIATED: 6-17-94

INITIATED BY: Karin Arlt

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6-17-94 12:10

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
BOC2C7		
BOC2C8		
BOC2H7		
BOC2H8		

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: NO SAF NO.# OR COC.
used SAF # 94-220.

SUPERVISOR REVIEW: Kami Heidelberg
PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

BEST AVAILABLE COPY

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: Chem 406384 Rad 406385 DATE INITIATED: 6-17-94

INITIATED BY: Tamm Achtenberg

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6-17-94 12:10

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
<u>BOC2F9</u>		
<u>BOC2G0</u>		

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: COC NOT MARKED with analysis Requested.
Logged samples for matching analysis with rest of
SAR 94-20 received. Containers show analysis.

SUPERVISOR REVIEW: Tami Heidelberg

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

BEST AVAILABLE COPY

W0 *678

SAMPLE STATUS REPORT FOR N 628. RAD SCREEN 199-K-34 TIME: 6/17/94 8: 9
DISPATCHED: 6/13/94 13:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/17/94 7:47

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pci/G	N	Y	J12UP

END OF REPORT

BOC2F9
BOC2G0
BOC0R0
hcs
6/17/94

W0#678

AMPLE STATUS REPORT FOR N 623. RAD SCREEN 199-K-30 TIME: 6/17/94 8: 9
SPATCHED: 6/13/94 13:31 SAMPLE HAS NOT BEEN SLURPED
CEIVED: 6/15/94 7:58

P.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
**	*****	*****	***	***	*****
71	TOT-ACT	203.75 pCi/G (<1% POTENTIAL ALPHA)			J12UP

END OF REPORT

BOC2H9
BOC2JO
BOC2DS
BOC2FO
BOC0Q8

hes

6/17/94

WO #678

SAMPLE STATUS REPORT FOR N 617. RAD SCREEN 199-K-19 TIME: 6/17/94 8: 9
DISPATCHED: 6/13/94 13:30 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/17/94 7:47

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
***	*****	*****	***	***	*****
271	TOT-ACT	< 5.00000E 01 pci/g	N	Y	J12UP

END OF REPORT

BOCOH7
BOCOH8
hcs
6/17/94

BOCAC7
BOCAC8
hcs

9613490,0028

Saturday Delivery

WO #678

Contractor WHC	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) W94-0-0594-4
--------------------------	--------------------------------------	--

PART I - TO BE COMPLETED BY ORIGINATOR

Department ER Eng Support	Section Field & Analytical Supp	Under ER Field Sampling
-------------------------------------	---	-----------------------------------

The following items are to be shipped from Contractor Vendor

Routing Contractor Vendor

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

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: BOC2H9, BOC2J0, BOC209, BOC2F0, BOC2F9, BOC2G0 Cooler ID: ER-19 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: BOC2H7, BOC2H8, BOC2C7, BOC2C8 Cooler ID: GWS-104 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

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

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the **100K Area**

JUN 17 1994

PROPERTY RECORD

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 <i>J. Brown</i>	RM Survey No 178730	Date 6-16-94
Location of Property (Area & Bldg.) 100-KR-4	Contact P. H. Butcher	Phone (509) 376-4
Date Ready for Shipment 6/17/94	Cost Code to be Charged PC4CA/8B410	Approximate Date This Property will be Returned
Originated By P.H. Butcher	Date 6/17/94	Authorized By <i>P.H. Butcher</i>
Signature and Name of Property Control	Custodian Date 6/17/94	Property Management Approval <i>[Signature]</i>

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient <i>[Signature]</i>	Return Order No 6-17-94 10:10	Date Issued	Purchase Order No.	Date Issued
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DISTRIBUTION

By Originator White, Green, Yellow, Pink - Property Management Goldenrod - Retain	Shipping Operation - Sign all Copies and Forward to: White - Property Management Green - Property Control Custodian (Issuing Office) Yellow - Retain Pink - Originator
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00028

00028

TENNELEC #2

SCREENING CALCULATION SPREADSHEET

Cust Code	Received Date	Screening Prep		Count Date	Mnts Cntd	BACKGROUND														
		Date				Alpha	Beta	Mnts												
WHC	6-20-94	6-20		6-20	10	5	209	240												

Customer ID	pH <2 Rcvd/Relq	Residue Wght mG	Vol. Anal mG mL	Sample Size Gm L	SMPL CNT DATA			Net Sample Counts/Minute	DPM / Aliquot		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1 Yes/No	Aliquot to Cat 1 Gm or L		
					Hldr Num	Total Alpha	Counts Beta		Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta		Alpha	Beta	Alpha
B0C2H1		1.2	10	1.0	42	7	29	0.68	2.03	2.32E+00	3.82E+00	1.0E-04	1.7E-04	9.3E-08	9.1E-08	1.0E+02	1.7E+02	Yes	9.8E+01	5.8E+02
B0C2Q3		13.7	0	0.1	43	15117	17637	*****	*****	6.05E+03	2.77E+03	1.7E+00	7.8E-01	1.8E-04	3.7E-05	1.4E+07	6.2E+08	No	7.3E-04	1.6E-02
TOTAL uCi												1.7E+00	7.8E-01							

cat. I.

cat. III

Jan 20 June 94

9613490-0029

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						Page <u>1</u> of <u>1</u>	
Collector K. Trapp, G. Hamilton		Company Contact P. H. Butcher			Telephone No. (509) 376-4388				
Project Designation 100-KR-4		Sampling Location 100 K			SAF No. 94-220				
Ice Chest No. GWS 143		Field Logbook No. FEL-1049			Method of Shipment Hand Delivered				
Shipped To IT		Offsite Property No. W4-0-0594-38			Bill of Lading/Air Bill No. NA				
Possible Sample Hazards/Remarks None		Preservative	HNO3	HNO3	NONE	NONE	HNO3		
		Type of Container	G	P	Gs	Gs	G		
		No. of Container(s)	1	4	2	1	1		
Special Handling end/or Storage Maintain between 2 and 6 degrees C.		Volume	1L	1L	1L	40ml	1L		
SAMPLE ANALYSIS 406408		METALS-TAL (UNFIL-TERED)	GROSS ALPHA/BETA, U-234/ 235/238 40640901 Sr-90	C-14, TRITIUM	ACTIVI-TY	METALS-TAL (FIL-TERED)			
Sample No.	Matrix*	Date Sampled	Time Sampled						
BOC2 H1	OIA	6/17/94	1100	+	+	+	+		
BOC2 H2	O2A	↓	↓				+		
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS		Matrix*	
Relinquished By		Date/Time	Received By	Date/Time	Standalone Data Deliverable		<ul style="list-style-type: none"> S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other 		
K. Trapp / G. Hamilton		6/17/94 1305	W. H. Butcher	6/17/94					
Shirley L. Swann		6/20/94	W. H. C.	6/20/94 0915					
W. H. C.		6/20/94 1115	ITAS	6/20/94 1115					
LABORATORY SECTION		Received By	Title		Date/Time				
FINAL SAMPLE DISPOSITION		Disposal Method	Disposed By		Date/Time				

96124907 0030

9613490.0031

Contractor WHC	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) W94-0-0594-43
--------------------------	--------------------------------------	---

PART I - TO BE COMPLETED BY ORIGINATOR

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

The following items are to be shipped from Contractor Vendor

Routing Contractor Vendor

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

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: BOC2H1 BOC2H2 Cooler ID: 6WS143 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: Cooler ID: Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

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

Necessity for the Off-Site Use of this Property
Sampling supports RI/FS work in the 100 area.

RECEIVED
JUN 20 1994

Bill of lading # NA

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

RM Clearance for Public Release <i>[Signature]</i>	RM Survey No 178739	Date 6-20-94
Location of Property (Area & Bldg.) 100 ICE 4	Contact P. H. Butcher	Phone (509) 376-4368
Date Ready for Shipment 6/20/94	Cost Code to be Charged 88410	Approximate Date This Property will be Returned NA
Originated By AS SIMPSON	Date	Authorized By <i>[Signature]</i>
Signature and Name of Property Control	Custodian Date	Property Management Approval <i>[Signature]</i>
		Date 6/20/94

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient <i>[Signature]</i> ITAS	Return Order No	Date Issued	Purchase Order No.	Date Issued
Date 6/20/94	1115			

DISTRIBUTION

By Originator White, Green, Yellow, Pink - Property Management Goldenrod - Retain	Shipping Operation - Sign all Copies and Forward to White - Property Management Yellow - Retain	Green - Property Control Custodian (Issuing Office) Pink - Originator
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SAMPLE STATUS REPORT FOR N 634. RAD SCREEN 69978-61 TIME: 6/20/94 8: 9
 DISPATCHED: 6/13/94 13:31 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 6/20/94 7:59

EXT.	DETER.	RESULTS OR STATUS	OUT OF GOOD RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pci/G	N	Y	J12UP

END OF REPORT

BOCZHI
 BOCZHZ

AJS
 6/20/94

9613490.0033



Regional Office
2300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6/20/99 11:15 Client Name WAC

Project/Client # 44-226 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) GWS143

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 3°C

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

Chain of Custody #'(s) N/A

Request for analysis #(s) N/A

Airbill # N/A Carrier N/A

12. Have any anomalies been identified above? Yes No

13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Tom Gilmore Date/Time 6/20/99 1115

00033

ITAS - St. Louis June 27, 1994 05:55 pm
 Account: 10722 Project: 519.54 ITAS - Richland QAS No. 599 Rev. 0
 Master Sample Login: 5414

Project Manager: W. Price

Draft: Final Entered and Reviewed by: *Sue Mason* PH Review: *[Signature]*

Sample Header Template:

Sample No.	Client ID	C-Matrix	Date Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
#	Comments	Analysis	Class	Preservative	Anal. Due Date	Hold Date Site	(Container Numbers: % Filled)	
5414-001	BOC2G1	Water	21-JUN-94 13:20	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
I.T. RICHLAND I.D. # IS 40651601								
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94	\$168	(83531:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A	\$168	(83531:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
5414-001DUP	BOC2G1	Water	21-JUN-94 13:20	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
I.T. RICHLAND I.D. # IS 40651601								
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94	\$168	(83531:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A	\$168	(83531:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
5414-001MS	BOC2G1	Water	21-JUN-94 13:20	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
I.T. RICHLAND I.D. # IS 40651601								
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94	\$168	(83531:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A	\$168	(83531:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83531:100)
5414-002	BOC2G2	Water	21-JUN-94 13:20	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
I.T. RICHLAND I.D. # IS 40651602								
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83532:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94	\$168	(83532:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83532:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A	\$168	(83532:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83532:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83532:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94	\$168	(83532:100)

3*=Sample has not been rad screened.

00034

9613490.0034

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: _____ PM Review: _____

Sample Header Template: _____

Sample No.	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
#	Comments	Analysis	Class	Preservative	Anal. Due Date	Hold Date Site	(Container Numbers:% Filled)	
Data:	Container Type							
5414-003	BOC2G3 I.T. RICHLAND I.D. # IS 40651603	Water	21-JUN-94 13:20	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83533:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94 \$168		(83533:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83533:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A \$168		(83533:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83533:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83533:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83533:100)
5414-004	BOC2G4 I.T. RICHLAND I.D. # IS 40651604	Water	21-JUN-94 13:20	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83534:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94 \$168		(83534:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83534:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A \$168		(83534:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83534:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83534:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83534:100)
5414-005	BOC2C5 I.T. RICHLAND I.D. # IS 40651601	Water	21-JUN-94 16:07	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83535:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94 \$168		(83535:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83535:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A \$168		(83535:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83535:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83535:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83535:100)
5414-006	BOC2C6 I.T. RICHLAND I.D. # IS 40651402	Water	21-JUN-94 16:07	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83536:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94 \$168		(83536:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83536:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A \$168		(83536:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83536:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83536:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 \$168		(83536:100)

3*=Sample has not been rad screened.

9613490.0035

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: _____ PM Review: _____

Sample Header Template: _____

Sample No.	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
#	Comments	Analysis	Class	Preservative	Anal. Due Date	Hold Date Site	(Container Numbers: % Filled)	
Data:	Container Type							
5414-007	BOC2C9	Water	21-JUN-94 14:37	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40651403							
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83537:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94 S168		(83537:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83537:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A S168		(83537:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83537:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83537:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83537:100)
5414-008	BOC2D0	Water	21-JUN-94 14:37	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40651404							
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83538:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94 S168		(83538:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83538:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A S168		(83538:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83538:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83538:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83538:100)
5414-009	BOC2D5	Water	21-JUN-94 10:27	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40651405							
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83539:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94 S168		(83539:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83539:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A S168		(83539:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83539:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83539:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83539:100)
5414-010	BOC2D6	Water	21-JUN-94 10:27	23-JUN-94 12:00	28-JUL-94	FED-EX	1	Screening not Required
	I.T. RICHLAND I.D. # IS 40651406							
1	PN - Plastic-1L	AS/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83540:100)
1		HG/CLP90/Q4	C	HNO3	21-JUL-94	19-JUL-94 S168		(83540:100)
1		ICAP/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83540:100)
1		METAL/CLP90/Q4	P	HNO3	N/A	N/A S168		(83540:100)
1		PB/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83540:100)
1		SE/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83540:100)
1		TL/CLP90/Q4	C	HNO3	21-JUL-94	18-DEC-94 S168		(83540:100)

3*=Sample has not been rad screened.

9613490-0036



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

5414

Reference Document No. 453513
Page 1 of ___

Project Name/No. ¹ 94-220
 Sample Team Members ²
 Profit Center No. ³ 4632
 Project Manager ⁴ Van Pethey
 Purchase Order No. ⁶
 Required Report Date ¹¹

Samples Shipment Date ⁷ 6/23/94
 Lab Destination ⁸ St. Louis
 Lab Contact ⁹
 Project Contact/Phone ¹²
 Carrier/Waybill No. ¹³

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

ONE CONTAINER PER LINE

Sample Number ¹⁴	Sample Description/Type ¹⁵	Date/Time Collected ¹⁶	Container Type ¹⁷	Sample Volume ¹⁸	Pre-servative ¹⁹	Requested Testing Program ²⁰	Condition on Receipt ²¹	Disposal Record No. ²²
40651401A	B0CZC5 / H ₂ O	6-21-94 1607 See WHC	WHC	1L	4°C	See WHC COC/SAR	metal 100 pH-1	4
40651402A	B0CZC6	62194 1607	"	"	"	"	metal 100 pH-1	4
40651403A	B0CZC9	62194 1437	"	"	"	"	metal 100 pH-1	4
40651404A	B0CZD0	62194 1137	"	"	"	"	metal 100 pH-1	4
40651405A	B0CZD5	62194 1027	Amber Glass	"	"	"	metal 100 pH-1	0
40651406A	B0CZD6	62194 1027	Amber Glass	"	"	"	metal 100 pH-1	0
		Ⓢ 6/23/94						

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 W0091

1. Relinquished by ²⁸
 (Signature/Affiliation) *John [Signature] ITAS* Date: 6/23/94 Time: 1600

2. Relinquished by
 (Signature/Affiliation) Date: Time:

3. Relinquished by
 (Signature/Affiliation) Date: Time:

1. Received by ²⁸
 (Signature/Affiliation) *Bob Cawort* Date: 062494 Time: 1000

2. Received by
 (Signature/Affiliation) Date: Time:

3. Received by
 (Signature/Affiliation) Date: Time:

Comments: ²⁹

VINE: 10 accompany samples
 Yellow: Field copy
 See back of form for spec. actions.



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

CVR 462 Temp 4

Reference Document No. 45351A
Page 1 of ___

Project Name/No. 1 94-220 Samples Shipment Date 7 6-23-94
 Sample Team Members 2 _____ Lab Destination 8 St. Louis
 Profit Center No. 3 4632 Lab Contact 9 _____
 Project Manager 4 VAN PETTY Project Contact/Phone 12 _____
 Purchase Order No. 6 _____ Carrier/Waybill No. 13 _____
 Required Report Date 11 _____

Bill to: 5 ITAS. Rickland
 Report to: 10 ITAS Rickland

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
40651601A	BOC2G1/H ₂ O	6-21-94 SEE 1370	WHC COC/SAR	1L	H ₂ O ₂	SEE WHC/COC/SAR	10070 4 pH-1	10070 4 pH-1
40651602A	BOC2G2/H ₂ O	6-21-94	"	"	H ₂ O ₂		10070 4 pH-1	10070 4 pH-1
40651603A	BOC2G3/H ₂ O	6-21-94	"	"	"		10070 4 pH-1	10070 4 pH-1
40651604A	BOC2G4/H ₂ O						10070 4 pH-1	10070 4 pH-1
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 GC Level: 27
 I. II. III. Project Specific (specify): SDG W0104

1. Relinquished by 28 (Signature/Affiliation) <u>ITAS Karen Schindler</u>	Date: <u>6-23-94</u> Time: <u>16:00</u>	1. Received by 28 (Signature/Affiliation) <u>Phil Connor</u>	Date: <u>06-24-94</u> Time: <u>10:00</u>
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

10070 4 pH-1
 10070 4 pH-1
 10070 4 pH-1
 10070 4 pH-1
 FOR LAB USE ONLY
 FOR LAB USE ONLY
 See back of form for special instructions



INTERNATIONAL TECHNOLOGY CORPORATION

C.U.R. and C.O.C.

519.54

COPIED TO: W. H. H.

DATE: 06 24 94

TIME: 1:50

BY: B. C. H.

Work Order No.: _____

Condition Upon Receipt Variance Report
ITAS - St. Louis Laboratory

Client: _____

Date: 06 24 94 1000

Project No: _____

Initiated by: B. C. H.

Analysis Requested: Refer to RFA/COC

RFA/COC Numbers: 453514

Client Sample Numbers Affected: Entire Login

Condition/Variance (Check all that apply): Circle Number to Denote that Item was Evaluated. "NA" = "Not Applicable".

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

Notes:

Corrective Action:

- Client's Name: _____ Informed verbally on: _____ By: _____
- Client's Name: _____ Informed in writing on: _____ By: _____
- Sample(s) processed "as is". Comments: _____
- Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designate) _____ Date: _____

Project Management Review: _____ Date: _____



INTERNATIONAL TECHNOLOGY CORPORATION

C.U.R. and C.O.C.

519.54

COPIED TO: W. L. King
DATE: 06 24 94
TIME: 12:50
BY: Bob Cowart

Work Order No.: _____

Condition Upon Receipt Variance Report
ITAS - St. Louis Laboratory

Client: _____
Project No: _____
Analysis Requested: Refer to RFA/COC
Client Sample Numbers Affected: Entire Login

Date: 06 24 94 1000
Initiated by: Bob Cowart
RFA/COC Numbers: 453 513

Condition/Variance (Check all that apply): Circle Number to Denote that Item was Evaluated. "NA" = "Not Applicable".

<u>1</u> <input type="checkbox"/> NA Not enough sample received for proper analysis. Received approximately: _____	<u>8</u> <input type="checkbox"/> Custody tape disturbed/broken/missing.
<u>2</u> <input type="checkbox"/> Sample received broken/leaking.	9. NA Sample splits performed by lab.
3. <input checked="" type="checkbox"/> Sample received without proper preservative.	10. <u>NA</u> Volatile sample received with approximately _____ mm headspace.
<input type="checkbox"/> Cooler temperature not within 4°C ± 2°C Record temperature: <u>4°C + 0°C</u>	<u>11</u> <input type="checkbox"/> Sample ID on container does not match sample ID on paperwork. Explain: _____
<input type="checkbox"/> pH <u>Doc 209 had pH 4 one sample</u>	
<input type="checkbox"/> other: _____	
<u>4</u> <input type="checkbox"/> Sample received in improper container.	<u>12</u> <input type="checkbox"/> All coolers on airbill not received with shipment.
<u>5</u> <input type="checkbox"/> Sample received without proper paperwork. Explain: _____	<u>13</u> <input type="checkbox"/> Other (explain below): <u>Shipping containers not rad surveyed.</u>
<u>6</u> <input type="checkbox"/> Paperwork received without sample.	
<u>7</u> <input type="checkbox"/> No sample ID on sample container.	

Notes:

Corrective Action:

- Client's Name: _____ Informed verbally on: _____ By: _____
- Client's Name: _____ Informed in writing on: _____ By: _____
- Sample(s) processed "as is". Comments: _____
- Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designate) _____ Date: _____

Project Management Review: _____ Date: _____

9613490.0041

2223 JB

005

SAMPLE STATUS REPORT FOR N 629. RAD SCREEN 199-K-35 TIME: 6/23/94 3:30
DISPATCHED: 6/13/94 13:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/23/94 2:19

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pci/G	N	Y	J12UP

END OF REPORT

BOC2G1
BOC2G2
AJS
6/23/94

00043

9613490.0042

SAMPLE STATUS REPORT FOR N 630. RAD SCREEN 199-K-36 TIME: 6/23/94 3:31
DISPATCHED: 6/13/94 13:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/23/94 2:19

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	J12UP

END OF REPORT

BO C263
BO C264
AJS 6/23/94

00044

9613490.0043

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: 406514, 406515 DATE INITIATED: 6/23/94

INITIATED BY: T Gilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/23/94 1200

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
B0CZG3		Metals
B0CZG4		
B0CZC5		
B0CZC6		

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 submitted in poly bottles, COC shows glass.

SUPERVISOR REVIEW: Jami Hindenberg

PROJECT MANAGER REVIEW: Suzanne Jones

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

BEST AVAILABLE COPY

9613490.0044

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: 4065H, 4065IS DATE INITIATED: 6/23/94

INITIATED BY: TG:ilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/23/94 1200

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
B0C2C9		metals
B0C2D0		
B0C2G1		
B0C2G2		

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 submitted in poly bottles, COC shows glass

SUPERVISOR REVIEW: Janie Niedelberg

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

0078

BEST AVAILABLE COPY

9613490.0045



INTERNATIONAL
TECHNOLOGY
CORPORATION

Regional Office
1300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 01/23/94 1200 Client Name WITC

Project/Client # 94-220 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) 9219

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: 22

8. Samples have: 1 tape 0 hazard labels

1 custody seals 0 appropriate sample labels

9. Samples are: 1 in good condition 0 leaking

0 broken 0 have air bubbles

0 other

10. Coolant present? Yes No

Sample temperature 4°

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 [Signature] Date/Time 01/23/94 1200

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

00047

9613490.0046



INTERNATIONAL
TECHNOLOGY
CORPORATION

Regional Office
1300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 1/23/94 1200 Client Name LTC

Project/Client # 94-220 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) CR26

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: 28

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 30

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

Chain of Custody #'(s) N/A

Request for analysis #'(s) N/A

Airbill # N/A Carrier _____

12. Have any anomalies been identified above? Yes No

13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature L. Kimity Date/Time 1/23/94 1200

9613490.0047

Contractor WHC	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) W94-0-0554-48
--------------------------	--------------------------------------	---

PART I - TO BE COMPLETED BY ORIGINATOR

Department ER Eng Support	Section Field & Analytical Supp	Unit ER Field Sampling
The following items are to be shipped from		<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> Vendor
Routing		<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> Vendor
Shipped to IT Analytical Services 2800 George Washington Way Richland, WA 99352		Off-site Custodian Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: B0C2D5, B0C2D6, B0C2G1, B0C2G2, B0C2C5, B0C2C6 Cooler ID: ER19 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: B0C2C5, B0C2C6, B0C2C3, B0C2C4, B0C2C7, B0C2D0 Cooler ID: ER-26 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

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

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the **100 AREA**

RECEIVED

JUN 23 1994

PROPERTY RECORDS

Bill of lading # **None**

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

RM Clearance for Public Release	RM Survey No	Date
Location of Property (Area & Bldg) 100-KR-4	Contact P. H. Butcher	Phone (509) 376-4388
Date Ready for Shipment 6/23/94	Cost Code to be Charged PC4CA SB410	Approximate Date This Property will be Returned NA
Originated By PH Butcher	Date 6/23/94	Authorized By
Signature and Name of Property Control	Custodian Date	Property Management Approval
		Date 6/23/94

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient 	Return Order No	Date Issued	Purchase Order No.	Date Issued
Date 6/23/94	1200			

DISTRIBUTION

By Originator White, Green, Yellow, Pink - Property Management Goldenrod - Retain	Shipping Operation - Sign all Copies and Forward to: White - Property Management Green - Property Control Custodian (issuing Office) Yellow - Retain Pink - Originator
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Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					Page <u>1</u> of <u>1</u>	
Collector <u>John / G. Hamilton</u>		Company Contact <u>P. H. Butcher</u>		Telephone No. (509) 376-4388				
Project Designation <u>100-KR-4</u>		Sampling Location <u>100 K</u>		SAF No. <u>94-220</u>				
Ice Chest No. <u>EC-26</u>		Field Logbook No.		Method of Shipment <u>Hand Delivered</u>				
Shipped To <u>IT</u>		Offsite Property No. <u>W294-0-0554-48</u>		Bill of Lading/Air Bill No. <u>NONE</u>				
Possible Sample Hazards/Remarks <u>None</u>		Preservative		HNO3		NONE		
		Type of Container		G		G		
		No. of Container(s)		1		1		
Special Handling and/or Storage <u>Maintain between 2 and 6 degrees C.</u>		Volume		1L		40ml		
SAMPLE ANALYSIS		METALS-TAL (UNFILTERED)		GROSS ALPHA/BETA, U-234/235/238		C-14, TRITIUM		
<u>406514</u>				<u>40651501</u>		ACTIVITY SCANTAL (FILTERED)		
Sample No.		Matrix*	Date Sampled	Time Sampled	METALS-TAL	GROSS ALPHA/BETA	C-14, TRITIUM	
<u>BOC2C5</u>		<u>O1A</u>	<u>6/21/94</u>	<u>1607</u>	<u>X</u>	<u>X</u>	<u>X</u>	
<u>BOC2G6</u>		<u>O2A</u>	<u>6/21/94</u>	<u>1607</u>			<u>X</u>	
CHAIN OF POSSESSION		Sign/Print Names			SPECIAL INSTRUCTIONS			
Relinquished By <u>[Signature]</u>		Date/Time <u>6/22/94 0815</u>	Received By <u>[Signature]</u>		Standalone Data Deliverable			
Relinquished By <u>[Signature]</u>		Date/Time <u>6/23/94 1200</u>	Received By <u>[Signature]</u>					
Relinquished By		Date/Time	Received By					
Relinquished By		Date/Time	Received By					
LABORATORY SECTION		Received By			Title			
FINAL SAMPLE DISPOSITION		Disposal Method			Disposed By			

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

96T3490.0049

SAMPLE STATUS REPORT FOR N 616. RAD SCREEN 199-K-18 TIME: 6/23/94 3:30
DISPATCHED: 6/13/94 13:30 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/23/94 2:18

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	<5.00000E 01 pCi/ML			J12UP

END OF REPORT

BO C Z C 5
BO C Z L 6 AJS
 6/23/94
BO C 6 Q 4

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						Page <u>1</u> of <u>1</u>	
Collector <i>K. Trapp - G. Hamilton Dist John / L. Rogers</i>		Company Contact P. H. Butcher			Telephone No. (509) 376-4388				
Project Designation 100-KR-4		Sampling Location 100 K			SAF No. 94-220				
Ice Chest No. ER-26		Field Logbook No.			Method of Shipment Hand Delivered				
Shipped To IT		Offsite Property No. W34-0-0594-48			BIR of Lading/Air Bill No. NONE				
Possible Sample Hazards/Remarks None		Preservative	HNO3	HNO3	NONE	NONE	HNO3		
		Type of Container	G	P	Gs	Gs	G		
		No. of Container(s)	1	4	2	1	1		
Special Handling and/or Storage Maintain between 2 and 6 degrees C.		Volume	1L	1L	1L	40ml	1L		
SAMPLE ANALYSIS 406514		METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/ 235/238 40651502 Sr-90	C-14, TRITIUM	ACTIVI- TY SCAN	METALS-TAL (FILTERED)			
Sample No.	Matrix*	Date Sampled	Time Sampled						
BOC267 03A	W	6/21/94	1437	X	X	X	X		
BOC266 04A	W	6/21/94	1437				X		
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS			Matrix* S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By <i>John Rogers</i>	Date/Time <i>6/22/94 0815</i>	Received By <i>W.H.C. Simpson</i>	Date/Time <i>6/24/94 0815</i>	Standalone Data Deliverable					
Relinquished By <i>Simpson</i>	Date/Time <i>6/23/94 1200</i>	Received By <i>W.H.C. Simpson</i>	Date/Time <i>6/23/94 1200</i>						
Relinquished By	Date/Time	Received By	Date/Time						
Relinquished By	Date/Time	Received By	Date/Time						
LABORATORY SECTION	Received By	Title				Date/Time			
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time			

9613490.0050

9613490.0051

SAMPLE STATUS REPORT FOR N 618. RAD SCREEN 199-K-20 TIME: 6/23/94 3:30
DISPATCHED: 6/13/94 13:30 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/23/94 2:19

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	<5.00000E 01 pci/ML			J12UP

END OF REPORT

BOCZC9 ASS
BOCZDO 6/23/94

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Date Turnaround

Priority
 Normal

Collector <i>DAS 6/21/94</i> <i>K. Tress, C. Hamilton</i> <i>Dist. John L. Rogers</i>	Company Contact <i>P. H. Butcher</i>	Telephone No. <i>(509) 376-4388</i>
Project Designation <i>100-KR-4</i>	Sampling Location <i>100 K</i>	SAF No. <i>94-220</i>
Ice Chest No. <i>ET-19</i>	Field Logbook No.	Method of Shipment <i>Hand Delivered</i>

Shipped To <i>IT</i>	Offsite Property No. <i>W94-0-0594-48</i>	Bill of Lading/Air Bill No. <i>NONE</i>
-------------------------	--	--

Possible Sample Hazards/Remarks <i>None</i>	Preservative	HNO3	HNO3	NONE	NONE	HNO3												
	Type of Container	G	P	Gs	Gs	G												
	No. of Container(s)	1	4	2	1	1												

Special Handling and/or Storage <i>Maintain between 2 and 6 degrees C.</i>	Volume	1L	1L	1L	40ml	1L												
---	--------	----	----	----	------	----	--	--	--	--	--	--	--	--	--	--	--	--

SAMPLE ANALYSIS <i>406514</i>	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA J-234/ 235/238 <i>40651503</i> Sr-90	C-14, TRITIUM	ACTIVI-METALS-SCANTAL (FILTERED)														
--------------------------------------	----------------------------	---	---------------	-------------------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample No.	Matrix*	Date Sampled	Time Sampled															
<i>BOC205</i>	<i>05A</i>	<i>W</i>	<i>6/21/94</i>	<i>1027</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>										
<i>BOC206</i>	<i>06A</i>	<i>W</i>	<i>1/21/94</i>	<i>1027</i>														

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS <i>Standalone Data Deliverable</i>	Matrix*
Relinquished By <i>John L. Rogers</i>	Date/Time <i>6/21/94 11:15</i>	Received By <i>P. H. Butcher</i>	Date/Time <i>6/22/94 0815</i>
Relinquished By <i>P. H. Butcher</i>	Date/Time <i>6/23/94 1155</i>	Received By <i>DAS</i>	Date/Time <i>6/23/94 1200</i>
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

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

9613490.0053

MPLE STATUS REPORT FOR N 621. RAD SCREEN 199-K-23 TIME: 6/23/94 3:30
SPATCHED: 6/13/94 13:30 SAMPLE HAS NOT BEEN SLURPED
CEIVED: 6/23/94 2:19

T.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
**	*****	*****	***	***	*****
71	TOT-ACT	<5.00000E 01 pci/ML			J12UP

END OF REPORT

BOCZDS AJS
BOCZDB 6/23/94

9613490.0054

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: Chem Rad
406309, 406310 DATE INITIATED: 6/15/94

INITIATED BY: T Gilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/15/94 1130

	CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
01	BOC2D7	SAF 94-220	Metals, Rad
02	BOC2D8		metals

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: No SAF# on COC.

SUPERVISOR REVIEW: Jami Heidelberg

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

BEST AVAILABLE COPY



wo #664

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6/15/94 1130 Client Name WAC

Project/Client # 94-220 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) ER-25

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: 14
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 2°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 @ 6/15/94
13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Tom Gilmore  Date/Time 6/15/94 1130

00600

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST *WO #664*

Page 1 of 1

Data Turnaround

Priority
 Normal

Collector K. Trapp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No.
Ice Chest No.	Field Logbook No. EFL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No.	Bill of Lading/Air Bill No.

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3												
	Type of Container	G	P	Gs	Gs	G												
	No. of Container(s)	1	4	2	1	1												
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40mL	1L												

SAMPLE ANALYSIS 406309	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/235/238 Sr-90	C-14, TRITIUM	ACTIVITY SCAN	METALS-TAL (FILTERED)													

Sample No.	Matrix*	Date Sampled	Time Sampled															
80C207	01A	W	6/14/94	1030	X	X	X	X										
80C208	02A	W	↓	↓														X

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix*	
Relinquished By <i>K. Trapp</i>	Date/Time <i>6/14/94</i>	Received By <i>P. Simpson</i>	Date/Time <i>6/14/94</i>	Standalone Data Deliverable SDG W0091				S	= Soil
Relinquished By <i>P. Simpson</i>	Date/Time <i>6/15/94</i>	Received By <i>ITAS</i>	Date/Time <i>6/15/94</i>					SE	= Sediment
Relinquished By	Date/Time	Received By	Date/Time					SO	= Solid
Relinquished By	Date/Time	Received By	Date/Time					SL	= Sludge
				W	= Water	0	= Oil		
				A	= Air	DS	= Drum Solids		
				DL	= Drum Liquids	T	= Tissue		
				WI	= Wipe	L	= Liquid		
				V	= Vegetation	X	= Other		

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

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

00060 D

9613490-0056

9613490.0057

Contractor <p style="text-align: center;">WHC</p>	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) <p style="font-size: 1.2em;">W94-0-0594-39</p>
--	--------------------------------------	---

PART I - TO BE COMPLETED BY ORIGINATOR

Department ER Eng Support	Section Field & Analytical Supp	Unit ER Field Sampling
The following items are to be shipped from		
<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> Vendor		
Routing		
<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> Vendor		
Shipped to		Off-site Custodian
It Analytical Services 2800 George Washington Way Richland, WA 99352		Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample #: BO 9H63 Cooler ID: ER-25 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1	Sample #: BO C2D7 BOC 2D8 BOC 0Q5 Cooler ID: ER-25 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

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

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the **100 areas.**

JUN 15 1994

Bill of lading # NA

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

RM Clearance for Public Release NS	RM Survey No 178704	Date 6-15-94
Location of Property (Area & Bldg.) 100 IC	Contact P. H. Butcher	Phone (509) 376-4388
Date Ready for Shipment 6/15/94	Cost Code to be Charged 88410 / R31AA	Approximate Date This Property will be Returned NA
Originated By A. J. SIMPSON	Date	Authorized By <i>[Signature]</i>
Signature and Name of Property Control	Custodian Date	Date 6/15/94

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient <i>[Signature]</i> ITAS	Return Order No	Date Issued	Purchase Order No.	Date Issued
Date 6/15/94	1130			

DISTRIBUTION

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



INTERNATIONAL
TECHNOLOGY
CORPORATION

COC NO.



0001772

**ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD***

Wo# 664
Rc# 901

Reference Document No. 453693
Page 1 of 1

Project Name/No. 1 94-220
Sample Team Members 2 _____
Profit Center No. 3 4632
Project Manager 4 VonPetry
Purchase Order No. 6 _____
Required Report Date 11 _____

Samples Shipment Date 7 6/15/94
Lab Destination 8 Middlebrook
Lab Contact 9 _____
Project Contact/Phone 12 _____
Carrier/Waybill No. 13 _____

Bill to: 5 ITAS Rickland
Report to: 10 ITAS Rickland

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
40630901A	BOCZD7/H2O	See WHC COC			9°C	See WHC COC	6°C BPS 6/16/94 L2	
40630902A	BOCZD8/H2O				1		FOR LAB USE ONLY	
6/15/94								
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 W0091

1. Relinquished by 28
(Signature/Affiliation)

[Signature] ITAS

Date: 6/15/94
Time: 1600

1. Received by 28
(Signature/Affiliation)

[Signature] ITASKN

Date: 6/16/94
Time: 9:45

2. Relinquished by
(Signature/Affiliation)

Date: _____
Time: _____

2. Received by
(Signature/Affiliation)

Date: _____
Time: _____

3. Relinquished by
(Signature/Affiliation)

Date: _____
Time: _____

3. Received by
(Signature/Affiliation)

Date: _____
Time: _____

Comments: 29

Writes: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

613490-0058

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

W# 664

P.K. JRM
15 June 94

Customer Code	Received Date	Screening Prep Date	Count Date	Mnts Cntd	BACKGROUND		
WHC	6-15-94	6-15	6-15	10	Alpha	Beta	Mnts
					20	190	240

Customer ID	pH <2 Rcvd/Relq	Residue Wght mG	Vol. Anal. mG mL	Sample Size Gm L	SMPL CNT DATA			Net Sample Counts/Minute		DPM / Aliquot		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1 Yes/No	Aliquot to Cat 1 Gm or L	
					Hldr Num.	Total Alpha	Counts Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta		Alpha	Beta
BOC2D7		2.4	10	1.0	19	7	35	0.82	2.71	2.4E+00	5.4E+00	1.1E-04	2.4E-04	1.0E-07	1.1E-07	1.1E+02	2.4E+02	Yes	9.3E+01	4.1E+02
94268-01.F10		87.0	87	400.0	20	5	36	0.42	2.81	4.0E+00	6.6E+00	8.2E-03	1.4E-02	9.1E-06	5.9E-06	2.0E+01	3.4E+01	Yes	4.9E+02	2.9E+03
BOBDee		96.1	96	100.0	21	2	13	0.12	0.51	1.2E+00	1.2E+00	5.6E-04	5.4E-04	1.1E-06	5.4E-07	5.6E+00	5.4E+00	Yes	7.8E+03	1.8E+04
TOTAL uCi																				

9613490.0059

00060 G

96T3490.0060

W0 #664

SAMPLE STATUS REPORT FOR N 622. RAD SCREEN 199-K-27 TIME: 6/15/94
DISPATCHED: 6/13/94 13:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/15/94 7:57

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHANGE CO
4271	TOT-ACT	165.73 pCi/G (<1% POTENTIAL ALPHA)	***	***	J12

END OF REPORT

BOC2D7

BOC2D8

BOC0Q5

AJS
6/15/94

00060H

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround

Priority
 Normal

Collector K. Trepp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. 94-220
Ice Chest No. ER-19	Field Logbook No. EEL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No.	Bill of Lading/Air Bill No.

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3											
	Type of Container	G	P	Gs	Gs	G											
	No. of Container(s)	1	4	2	1	1											
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40mL	1L											

SAMPLE ANALYSIS 406384	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA U-234/ 235/238 40038504 Sr-90	C-14, TRITIUM	ACTIVI-METALS-SCANTAL (FILTERED)													
--------------------------------------	----------------------------	--	---------------	-------------------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample No.	Matrix*	Date Sampled	Time Sampled														
BOC204 07A	W	6/16/94	1015	+	+	+	+										
BOC2 FO 08A	W	↓	↓														

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS Standalone Data Deliverable	Matrix*
Relinquished By <i>K. Trepp</i>	Date/Time 1900	Received By <i>Robert [Signature]</i>	<ul style="list-style-type: none"> S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By <i>Robert [Signature]</i>	Date/Time 6-17-94	Received By <i>[Signature]</i>	
Relinquished By	Date/Time	Received By	
Relinquished By	Date/Time	Received By	

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

1900761990.0061

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2C5

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5414-005
 Level (low/med): LOW__ _____ Date Received: 06/23/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	2.8	B		F
7440-39-3	Barium	35.7	B	N	P
7440-41-7	Beryllium	0.56	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	72900			P
7440-47-3	Chromium	47.7			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	558		N	P
7439-92-1	Lead	0.79	B		F
7439-95-4	Magnesium	11300			P
7439-96-5	Manganese	12.6	B		P
7439-97-6	Mercury	0.17	B		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	4450	B		P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	4680	B		P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	14.1	B		P
7440-66-6	Zinc	4.0	U	N	P

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

Comments:

9613490.0063

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2C6

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5414-006
 Level (low/med): LOW__ _____ Date Received: 06/23/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	2.5	B		F
7440-39-3	Barium	35.9	B	N	P
7440-41-7	Beryllium	0.85	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	73400			P
7440-47-3	Chromium	37.9			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	16.7	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	11300			P
7439-96-5	Manganese	9.8	B		P
7439-97-6	Mercury	0.18	B		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	4600	B		P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	4830	B		P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	4.0	U	N	P

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

9613490.0064

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2C7

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5384-003
 Level (low/med): LOW__ _____ Date Received: 06/17/94
 % 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	135	B		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	22.3	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	50100	-		P
7440-47-3	Chromium	136	-		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	8.8	B	N	P
7439-89-6	Iron	313	-	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	7530	-		P
7439-96-5	Manganese	10.8	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	3760	B		P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	5.4	B	N	P
7440-23-5	Sodium	5970	-		P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	71.5	-	N	P

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

Comments:

9613490.0065

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2C8

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER Lab Sample ID: 5384-004
 Level (low/med): LOW__ Date Received: 06/17/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	21.1	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	49300			P
7440-47-3	Chromium	114			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	13.5	B	N	P
7439-89-6	Iron	29.4	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	7400			P
7439-96-5	Manganese	3.5	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	4830	B		P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	5820			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	5.2	B	N	P

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

Comments:

9613490.0066

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2C9

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5414-007
 Level (low/med): LOW _____ Date Received: 06/23/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	3.5	B		F
7440-39-3	Barium	21.4	B	N	P
7440-41-7	Beryllium	0.71	B		P
7440-43-9	Cadmium	2.9	B		P
7440-70-2	Calcium	47300			P
7440-47-3	Chromium	168			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	74.0	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	8950			P
7439-96-5	Manganese	3.1	B		P
7439-97-6	Mercury	0.16	B		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	4140	B		P
7782-49-2	Selenium	1.8	U	N	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	5280			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.6	B		P
7440-66-6	Zinc	4.1	B	N	P

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

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2DO

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____

Matrix (soil/water): WATER _____ Lab Sample ID: 5414-008

Level (low/med): LOW _____ Date Received: 06/23/94

% 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	3.1	B		F
7440-39-3	Barium	22.1	B	N	P
7440-41-7	Beryllium	0.85	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	47900			P
7440-47-3	Chromium	170			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	20.2	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	9000			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.16	B		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	4040	B		P
7782-49-2	Selenium	1.8	U	N	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	5120			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	13.1	B		P
7440-66-6	Zinc	7.0	B	N	P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN

ILM03.0

0011

9613490.0068

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2D5

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO _____ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5414-009
 Level (low/med): LOW _____ Date Received: 06/23/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	5.3	B		F
7440-39-3	Barium	43.5	B	N	P
7440-41-7	Beryllium	0.56	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	78400			P
7440-47-3	Chromium	25.7			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	108		N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	19400			P
7439-96-5	Manganese	6.9	B		P
7439-97-6	Mercury	0.17	B		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	12000			P
7782-49-2	Selenium	1.8	U	N	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	26500			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	20.2	B		P
7440-66-6	Zinc	4.0	U	N	P

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

Comments:

9613490.0069

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2D6

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5414-010
 Level (low/med): LOW__ Date Received: 06/23/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	5.4	B		F
7440-39-3	Barium	44.2	B	N	P
7440-41-7	Beryllium	0.56	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	79700			P
7440-47-3	Chromium	20.7			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	32.1	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	19600			P
7439-96-5	Manganese	6.4	B		P
7439-97-6	Mercury	0.18	B		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	12500			P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	27900			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	22.6	B		P
7440-66-6	Zinc	4.0	U	N	P

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

Comments:

9613490.0070

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2D9

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____

Matrix (soil/water): WATER _____ Lab Sample ID: 5384-009 _____

Level (low/med): LOW__ Date Received: 06/17/94 _____

% 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	3.4	B		F
7440-39-3	Barium	28.6	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	53700			P
7440-47-3	Chromium	4.2	U		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	14.4	B	N	P
7439-89-6	Iron	34.5	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	12200			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	7070			P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	10100			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	15.4	B		P
7440-66-6	Zinc	10.6	B	N	P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN

ILM03.0

0014

9613490.0071

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2FO

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5384-010
 Level (low/med): LOW__ _____ Date Received: 06/17/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	2.7	B		F
7440-39-3	Barium	29.6	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	55800			P
7440-47-3	Chromium	4.2	U		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	11.3	B	N	P
7439-89-6	Iron	21.0	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	12600			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	6010			P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	10600			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	15.3	B		P
7440-66-6	Zinc	4.0	U	N	P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
 Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____
 Comments:

9613490.0072

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2F9

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5384-011
 Level (low/med): LOW__ Date Received: 06/17/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	35.1	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	58500			P
7440-47-3	Chromium	45.0			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	14.8	B	N	P
7439-89-6	Iron	55.4	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	11400			P
7439-96-5	Manganese	3.7	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	4850	B		P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	18100			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	8.8	B	N	P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
 Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____
 Comments:

FORM I - IN

ILM03.0

0016

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2GO

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5384-012
 Level (low/med): LOW__ _____ Date Received: 06/17/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	34.2	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	58500			P
7440-47-3	Chromium	39.3			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	12.0	B	N	P
7439-89-6	Iron	27.3	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	11300			P
7439-96-5	Manganese	3.5	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	3170	U		P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	17900			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	4.0	U	N	P

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

Comments:

9613490.0074

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2H1

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5384-001
 Level (low/med): LOW _____ Date Received: 06/20/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	4.4	B		F
7440-39-3	Barium	29.7	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	39800			P
7440-47-3	Chromium	39.6			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	8.8	B	N	P
7439-89-6	Iron	28.9	B	N	P
7439-92-1	Lead	3.0	B		F
7439-95-4	Magnesium	11500			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	5300			P
7782-49-2	Selenium	9.0	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	16700			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	16.9	B		P
7440-66-6	Zinc	106		N	P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
 Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____
 Comments:

9613490.0075

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2H2

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____

Matrix (soil/water): WATER

Lab Sample ID: 5384-002

Level (low/med): LOW__

Date Received: 06/20/94

% 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	3.6	B		F
7440-39-3	Barium	29.7	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	39900			P
7440-47-3	Chromium	38.8			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	7.0	B	N	P
7439-89-6	Iron	18.4	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	11600			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	5610			P
7782-49-2	Selenium	9.0	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	16800			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	18.4	B		P
7440-66-6	Zinc	4.1	B	N	P

Color Before: COLORLESS

Clarity Before: CLEAR_

Texture: _____

Color After: COLORLESS

Clarity After: CLEAR_

Artifacts: _____

Comments:

FORM I - IN

ILM03.0

0019

9613490.0076

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2H7

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____

Matrix (soil/water): WATER _____ Lab Sample ID: 5384-005

Level (low/med): LOW__ Date Received: 06/17/94

% 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	136	B		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	22.1	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	50000			P
7440-47-3	Chromium	134			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	12.7	B	N	P
7439-89-6	Iron	313		N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	7560			P
7439-96-5	Manganese	11.3	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	3170	U		P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	6000			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	70.9		N	P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

9613490.0077

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2H8

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5384-006
 Level (low/med): LOW__ _____ Date Received: 06/17/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	21.4	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	49400			P
7440-47-3	Chromium	115			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	16.1	B	N	P
7439-89-6	Iron	24.5	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	7460			P
7439-96-5	Manganese	3.1	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	3240	B		P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	5930			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	4.6	B	N	P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN

ILM03.0

0021

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2H9

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____

Lab Code: ITMO _____ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____

Matrix (soil/water): WATER _____ Lab Sample ID: 5384-007

Level (low/med): LOW _____ Date Received: 06/17/94

% 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	51.2	U		P
7440-36-0	Antimony	37.6	B		P
7440-38-2	Arsenic	3.2	B		F
7440-39-3	Barium	30.8	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	55900			P
7440-47-3	Chromium	5.1	B		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	12.8	B	N	P
7439-89-6	Iron	41.8	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	12700			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	6590			P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	10700			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	14.2	B		P
7440-66-6	Zinc	13.5	B	N	P

Color Before: COLORLESS _____ Clarity Before: CLEAR _____ Texture: _____

Color After: COLORLESS _____ Clarity After: CLEAR _____ Artifacts: _____

Comments:

9613490.0079

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2JO

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.54_____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091_____

Matrix (soil/water): WATER Lab Sample ID: 5384-008

Level (low/med): LOW__ Date Received: 06/17/94

% 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	56.0	B		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	2.8	B		F
7440-39-3	Barium	29.6	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	55300			P
7440-47-3	Chromium	4.2	U		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	9.0	B	N	P
7439-89-6	Iron	42.4	B	N	P
7439-92-1	Lead	1.1	B		F
7439-95-4	Magnesium	12600			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	8100			P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	10500			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	6.2	B	N	P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:



RECORD COPY

Analytical Data Package Prepared For

Westinghouse Hanford

Radiochemical Analysis By

IT Analytical Services
Richland Laboratory



Sample Delivery Group Number: W0091

CLIENT IDENTIFICATION NUMBER

ITAS RICHLAND ID NUMBER

B0C2D7	40631001
B0C2C7	40638501
B0C2H7	40638502
B0C2H9	40638503
B0C2D9	40638504
B0C2F9	40638505
B0C2H1	40640901
B0C2C5	40651501
B0C2C9	40651502
B0C2D5	40651503

Regional Office

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

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CERTIFICATE OF ANALYSIS

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

August 5, 1994

Attention: J.A.Lerch

SAF Number	:	94-220
Date SDG Closed	:	June 23, 1994
Number of Samples	:	Ten (10)
Sample Type	:	Water
SDG Number	:	W0091
Data Deliverable	:	Stand Alone

I. Introduction

On June 15, 17, 20, and 23, 1994, ten water samples were received by the Quanterra Environmental Services Richland Laboratory (QESRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the WHC specific IDs:

<u>QESRL ID</u>	<u>WHC ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
406310-01A	B0C2D7	Water	6/15/94
406385-01A	B0C2C7	Water	6/17/94
406385-02A	B0C2H7	Water	6/17/94
406385-03A	B0C2H9	Water	6/17/94
406385-04A	B0C2D9	Water	6/17/94
406385-05A	B0C2F9	Water	6/17/94
406409-01A	B0C2H1	Water	6/20/94
406515-01A	B0C2C5	Water	6/23/94
406515-02A	B0C2C9	Water	6/23/94
406515-03A	B0C2D5	Water	6/23/94

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Westinghouse Hanford Company
August 5, 1994
Page 2

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

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222

Gross Beta by method ITAS-RD-3222

Strontium-90 by method ITAS-RD-3204

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247

Tritium by method ITAS-RD-3205

III. Quality Control

The analytical results for each analysis performed under SDG W0091 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

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

IV. Comments

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

Westinghouse Hanford Company
August 5, 1994
Page 3

Alpha Spectroscopy

Uranium-234, 235, 238 by method ITAS-RD-3234

The LCS U-235 recovery is biased 59% high. The LCS is accepted based on acceptable U-234 and U-238 recoveries. The bias observed in the U-235 recovery is due to the low abundance of U-235 in the spike (the expected result is less than the RDL) which makes quantitation less precise. The batch blank, sample and sample duplicate (duplicate of sample B0C2H7) results are within contractual limits.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2D7) results are within contractual limits.

Gross Beta by method ITAS-RD-3222

The MDA achieved for sample B0C2H9 (4.46 pCi/L) is over the RDL of 4 pCi/L. The result for the sample (4.40 pCi/L) is also over the RDL but is slightly lower than the achieved MDA. The sample was analyzed in duplicate and the result for the duplicate of the sample (5.23 pCi/L and within the 3 sigma control limit) is also over the RDL but the achieved MDA (4.35 pCi/L) for the duplicate is less than its result. The result for sample B0C2H9 is accepted due to the acceptability of the duplicate of the sample. The MDAs for the batch were slightly elevated due to precipitate weights for the samples that were at the higher end of the acceptable range. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2H9) results are within contractual limits except as noted.

Strontium-90 by method ITAS-RD-3204

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2D7) results are within contractual requirements.

Westinghouse Hanford Company
August 5, 1994
Page 4

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247

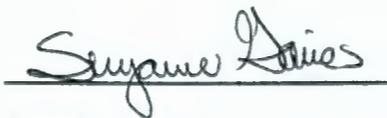
Sample B0C2C7 and the duplicate of B0C2C7 were not within the 3 sigma control limits, therefore, the sample and duplicate were reanalyzed. The reanalysis results are within contractual requirements and are reported. The original and reanalysis LCS and batch blank results are within contractual requirements.

Tritium by method ITAS-RD-3205

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2D7) results are within contractual requirements.

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

Reviewed and approved:



Suzanne Gaines
Project Manager

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40631001 MATRIX: WATER
 CLIENT ID: B0C2D7 DATE RECEIVED: 6/15/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	1.92E+00	7.07E-01	7.55E-01	3.22E-01	pCi/L	64.60%	RD3234
U-235	-1.55E-02	1.79E-02	1.80E-02	3.22E-01	pCi/L	64.60%	RD3234
U-238DA	1.64E+00	6.59E-01	6.96E-01	4.15E-01	pCi/L	64.60%	RD3234
ALPHA	2.59E+00	1.42E+00	1.46E+00	1.51E+00	pCi/L	100.00%	RD3214
BETA	3.58E+01	4.55E+00	5.21E+00	4.36E+00	pCi/L	100.00%	RD3214
STRONTIUM	9.40E-02	2.41E-01	2.42E-01	8.04E-01	pCi/L	88.20%	RD3204
C-14	2.67E+02	3.91E+00	1.43E+01	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	4.48E+05	1.83E+03	3.28E+04	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
LAB SAMPLE ID: 40638501 MATRIX: WATER
CLIENT ID: B0C2C7 DATE RECEIVED: 6/17/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	7.00E-01	4.26E-01	4.36E-01	4.50E-01	pCi/L	70.70%	RD3234
U-235	4.01E-02	1.19E-01	1.19E-01	3.15E-01	pCi/L	70.70%	RD3234
U-238DA	3.44E-01	2.89E-01	2.93E-01	2.69E-01	pCi/L	70.70%	RD3234
ALPHA	2.30E+00	1.34E+00	1.37E+00	1.30E+00	pCi/L	100.00%	RD3214
BETA	2.59E+01	4.00E+00	4.40E+00	4.42E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.02E+01	7.55E-01	2.71E+00	8.23E-01	pCi/L	95.00%	RD3204
C-14	1.02E+01	1.65E+00	3.38E+00	3.51E+00	pCi/L	100.00%	RD3263
TRITIUM	5.31E+03	2.21E+02	5.35E+02	2.35E+02	pCi/L	97.30%	RD3205

Number of Results:

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
LAB SAMPLE ID: 40638502 MATRIX: WATER
CLIENT ID: B0C2H7 DATE RECEIVED: 6/17/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	6.83E-01	4.60E-01	4.70E-01	5.27E-01	pCi/L	60.30%	RD3234
U-235	6.36E-02	1.39E-01	1.39E-01	2.78E-01	pCi/L	60.30%	RD3234
U-238DA	1.69E-01	2.41E-01	2.42E-01	4.27E-01	pCi/L	60.30%	RD3234
ALPHA	1.04E+00	1.01E+00	1.02E+00	1.61E+00	pCi/L	100.00%	RD3214
BETA	2.74E+01	4.05E+00	4.49E+00	4.28E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.13E+01	7.87E-01	2.98E+00	7.74E-01	pCi/L	94.40%	RD3204
C-14	8.94E+00	1.68E+00	3.50E+00	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	5.50E+03	2.25E+02	5.49E+02	2.35E+02	pCi/L	97.30%	RD3205

Number of Results:

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
LAB SAMPLE ID: 40638503 MATRIX: WATER
CLIENT ID: B0C2H9 DATE RECEIVED: 6/17/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	2.36E+00	7.45E-01	8.09E-01	3.45E-01	pCi/L	71.60%	RD3234
U-235	-4.65E-03	9.31E-03	9.33E-03	2.34E-01	pCi/L	71.60%	RD3234
U-238DA	1.21E+00	5.33E-01	5.57E-01	2.90E-01	pCi/L	71.60%	RD3234
ALPHA	3.52E+00	1.74E+00	1.80E+00	1.90E+00	pCi/L	100.00%	RD3214
BETA	4.40E+00	2.46E+00	2.48E+00	4.46E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.07E-01	2.14E-01	2.15E-01	7.12E-01	pCi/L	95.70%	RD3204
C-14	1.06E+04	2.65E+01	4.87E+02	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	5.87E+05	2.09E+03	4.29E+04	2.35E+02	pCi/L	97.30%	RD3205

Number of Results:

0011

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40638505 MATRIX: WATER
 CLIENT ID: B0C2F9 DATE RECEIVED: 6/17/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	2.88E+00	8.47E-01	9.33E-01	3.49E-01	pCi/L	67.50%	RD3234
U-235	4.69E-02	1.25E-01	1.25E-01	3.08E-01	pCi/L	67.50%	RD3234
U-238DA	1.71E+00	6.54E-01	6.94E-01	3.08E-01	pCi/L	67.50%	RD3234
ALPHA	3.44E+00	1.71E+00	1.76E+00	1.67E+00	pCi/L	100.00%	RD3214
BETA	8.80E+01	6.76E+00	9.17E+00	4.32E+00	pCi/L	100.00%	RD3214
STRONTIUM	3.74E+01	1.45E+00	9.36E+00	8.25E-01	pCi/L	85.80%	RD3204
C-14	6.13E+03	1.73E+01	2.83E+02	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	3.05E+03	1.80E+02	3.78E+02	2.35E+02	pCi/L	97.30%	RD3205

Number of Results:

0013

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40640901 MATRIX: WATER
 CLIENT ID: B0C2H1 DATE RECEIVED: 6/20/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	1.48E+00	5.68E-01	6.00E-01	3.73E-01	pCi/L	79.00%	RD3234
U-235	4.01E-02	1.06E-01	1.07E-01	2.63E-01	pCi/L	79.00%	RD3234
U-238DA	1.52E+00	5.68E-01	6.01E-01	2.41E-01	pCi/L	79.00%	RD3234
ALPHA	1.98E+00	1.33E+00	1.35E+00	1.59E+00	pCi/L	100.00%	RD3214
BETA	4.77E+00	2.51E+00	2.53E+00	4.51E+00	pCi/L	100.00%	RD3214
STRONTIUM	-7.06E-02	2.31E-01	2.31E-01	8.34E-01	pCi/L	93.10%	RD3204
C-14	-2.03E-01	1.54E+00	3.25E+00	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	6.87E+01	1.02E+02	1.92E+02	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
LAB SAMPLE ID: 40651501 MATRIX: WATER
CLIENT ID: B0C2C5 DATE RECEIVED: 6/23/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	9.97E-02	1.95E-01	1.95E-01	4.32E-01	pCi/L	75.20%	RD3234
U-235	-4.43E-03	8.86E-03	8.88E-03	2.23E-01	pCi/L	75.20%	RD3234
U-238DA	7.97E-02	1.58E-01	1.59E-01	3.43E-01	pCi/L	75.20%	RD3234
ALPHA	0.00E+00	4.47E-01	4.47E-01	1.47E+00	pCi/L	100.00%	RD3214
BETA	5.22E+00	2.48E+00	2.50E+00	4.30E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.45E-01	2.26E-01	2.29E-01	7.47E-01	pCi/L	100.00%	RD3204
C-14	1.36E+01	1.74E+00	3.64E+00	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	1.70E+04	3.67E+02	1.37E+03	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

TENNELEC #2

SCREENING CALCULATION SPREADSHEET

O.K. JRM
17 June 94

Cust Code	Received Date	Screening Prep Date	Count Date	Mnts Cntd	BACKGROUND		
WHC	6-17-94	6-17	6-17	10	Alpha	Beta	Mnts
					12	219	240

Customer ID	pH <2	Residue Wght mG	Vol. Anal. mG mL	Sample Size Gm L	SMPLR CNT DATA			Net Sample Counts/Minute		DPM / Aliquot		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1 Yes/No	Aliquot to Cat 1 Gm or L				
					Hldr Num.	Total Alpha	Counts Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta		Alpha	Beta			
05 BOC2F9		2.4	10	1.0	42	14	221	1.35	21.19	3.88E+00	4.36E+01	1.7E-04	2.0E-03	1.4E-07	3.3E-07	1.7E+02	2.0E+03	Yes	5.7E+01	5.1E+01			
03 BOC2H9		3.0	10	1.0	43	19	363	1.85	35.39	5.07E+00	7.32E+01	2.3E-04	3.3E-03	1.6E-07	4.4E-07	2.3E+02	3.3E+03	Yes	4.4E+01	3.0E+01			
01 BOC2C7		2.1	10	1.0	44	3	27	0.25	1.79	8.14E-01	3.59E+00	3.7E-05	1.6E-04	5.4E-08	3.6E-07	3.7E+01	1.6E+02	Yes	2.7E+02	6.2E+02			
TOTAL uCi												4.4E-04	5.4E-03										

JRM
6-17-94

406385

SOL
W0091

0061

9613490.0097

O.K. JRM
17 June 94

Customer Code	Received Date	Screening Prep Date	Count Date	Mnts. Cntd	BACKGROUND		
WHC	6-17-94	6-17	6-17	10	Alpha	Beta	Mnts
					11	220	240

Customer ID	pH <2 Rcvd/Relq	Residue Wght mG	Vol. Anal. mG mL	Sample Size Gm L	SMPL CNT DATA			Net Sample Counts/Minute		DPM / Aliquot		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1 Yes/No	Aliquot to Cat 1 Gm or L	
					Hldr Num.	Total Alpha	Counts Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta		Alpha	Beta
04 B0C2D9		2.4	10	1.0	40	18	330	1.75	32.08	6.02E+00	6.74E+01	2.7E-04	3.0E-03	1.8E-07	4.3E-07	2.7E+02	3.0E+03	Yes	3.7E+01	3.3E+01
02 B0C2H7		2.7	10	1.0	41	6	34	0.55	2.48	2.16E+00	4.94E+00	9.7E-05	2.2E-04	9.4E-08	1.0E-07	9.7E+01	2.2E+02	Yes	1.0E+02	4.5E+02
TOTAL uCi												3.7E-04	3.3E-03							

406385

JRM
W0091

0062

9613490.0098



INTERNATIONAL
TECHNOLOGY
CORPORATION

DUE DATE _____

REANALYSIS / RECOUNT
CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS C-14

NAME/DATE SPV / 7/27/94

CUSTOMER WAC

SAMPLE DELIVERY GROUP W0091

MATRIX H2O

BATCH NUMBER _____

ITAS ID	CUSTOMER ID	COMMENTS
1) 40638501		
2) F0638501		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK 1063852 B-JN

ITAS ID - SPIKE 1063852 S

IQFL037 - 20.161 I, 675p
CLIENT CODE WAC

ACTIONS (Initial & Date)

PREP LAB RECEIVED 7-29-94 pm

SAMPLE REMAINDER
RETURNED TO SCG (CHECK ONE)

NO SAMPLE REMAINING

SEPARATION LAB 7-29-94 pm

COUNTING/MEASUREMENT 7/29/94

DATA REVIEWED SPV - 8/1/94

ANALYTICAL PREP STORED SPV 9/1/94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT _____

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

9613490.0100

Kearney/Centaur Division
A.T. Kearney, Inc.
2952 George Washington Way
Richland, Washington 99352
509 375 5667
Facsimile 509 375 5151

Management
Consultants

October 3, 1994

ATKEARNEY

Ms. Joan H. Kessner
Bechtel Hanford Incorporated
Post Office Box 969 MSIN H4-23
Richland, Washington 99352

Reference: 100-KR-4 Groundwater Operable Unit, Round 6; Data Package No.
W0091-ITC-105; SDG. No. W0091

Dear Ms. Kessner:

Enclosed are five copies of the above-referenced data validation report:

- Sample Validation Report for the 100-KR-4 Groundwater Operable Unit, Round 6
- Sampling Authorization Number: 94-220
- Level of Validation Performed: 20 Percent
- Date Validation Started: September 8, 1994
- Date Validation Completed: September 30, 1994.

Please feel free to contact me at (415) 595-4300, if you have any questions.

Sincerely,


for John W. Goode, Ph.D.
Program Director

cc: C. Simiele, WHC
J. Duncan, CH2M Hill
B. Christian, ATK



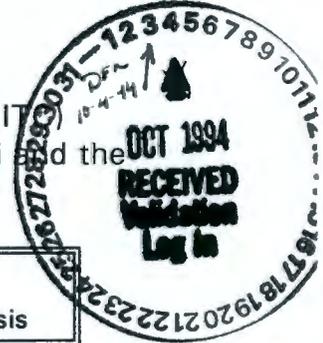
9613490.0101

Date: October 3, 1994
 To: Westinghouse Hanford Company (technical representative)
 From: A.T. Kearney, Inc.
 Subject: Inorganics - Data Package No. W0091-ITC-105 (SDG No. W0091)



INTRODUCTION

This memo presents the results of data validation on Data Package No. W0091-ITC-105 prepared by the International Technology Corporation (ITC) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.



Sample ID	Sample Date	Media	Validation Level	Analysis
BOC2C5	06/21/94	Water	D	See Note 1
BOC2C6	06/21/94	Water (Filtered)	D	See Note 2
BOC2C7	06/15/94	Water	D	See Note 1
BOC2C8	06/15/94	Water (Filtered)	D	See Note 2
BOC2C9	06/21/94	Water	D	See Note 1
BOC2D0	06/21/94	Water (Filtered)	D	See Note 2
BOC2D5	06/21/94	Water	D	See Note 1
BOC2D6	06/21/94	Water (Filtered)	D	See Note 2
BOC2D7	06/14/94	Water	D	See Note 1
BOC2D8	06/14/94	Water (Filtered)	D	See Note 2
BOC2D9	06/16/94	Water	D	See Note 1
BOC2F0	06/16/94	Water (Filtered)	D	See Note 2
BOC2F9	06/16/94	Water	D	See Note 1
BOC2G0	06/16/94	Water (Filtered)	D	See Note 2
BOC2H1	06/17/94	Water	D	See Note 1
BOC2H2	06/17/94	Water (Filtered)	D	See Note 2
BOC2H7	06/15/94	Water	D	See Note 1
BOC2H8	06/15/94	Water (Filtered)	D	See Note 2
BOC2H9	06/16/94	Water	D	See Note 1
BOC2J0	06/16/94	Water (Filtered)	D	See Note 2

000001

Note 1. Requested Method: CLP-ICP Metals/AA Metals and Hg (unfiltered)

Note 2. Requested Method: CLP-ICP Metals/AA Metals and Hg (filtered)

Data validation was conducted in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualifications

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

- **Holding Times**

Analytical holding times for ICP metals, GFAA metals and CVAA mercury analyses were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: samples must be analyzed within 28 days for mercury, and within six months for all other metals.

All holding time requirements for all analytes in the data package were met.

- **Blanks**

Calibration Blanks

A calibration blank must be analyzed immediately after every initial and continuing calibration verification. The blank must be analyzed at the beginning of the run and after the last analytical sample. In the case of positive blank results, samples with digestate concentrations (in ug/L) of less than five times (< 5x) the highest amount found in any of the associated blanks have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times (> 5x) the highest blank value do not require qualification.

In the case of negative blank results, if the absolute value of any calibration blank exceeds the Instrument Detection Limit (IDL), all non-detects are qualified

as estimates and flagged "UJ", and all positive results within two times the absolute value of the blank result are qualified as estimates and flagged "J".

Due to the presence of calibration blank contamination, sample numbers B0C2C5, B0C2C6, B0C2C9, B0C2D0, B0C2D5 and B0C2D6 were flagged "U" for beryllium.

Due to the presence of calibration blank contamination, sample numbers B0C2C6, B0C2C9, B0C2D0 and B0C2D6 were flagged "U" for iron.

Due to the presence of negative calibration blank contamination, sample numbers B0C2C7, B0C2C8, B0C2H2, B0C2H7, B0C2H8 and B0C2H9 were flagged "UJ" for lead.

Due to the presence of negative calibration blank contamination, sample numbers B0C2C5 and B0C2J0 were flagged "BJ" for lead.

Due to the presence of calibration blank contamination, sample numbers B0C2C5, B0C2C6, B0C2C9, B0C2D0, B0C2D5 and B0C2D6 were flagged "U" for mercury.

All other calibration blank results were acceptable.

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations (in ug/L) of less than five times (< 5x) the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times (> 5x) the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the Contract Required Detection Limit (CRDL), all non-detects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the IDL and less than or equal to the CRDL all non-detects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J".

Due to the presence of preparation blank contamination, sample numbers B0C2C5, B0C2C6, B0C2C9, B0C2D0, B0C2D5 and B0C2D6 were flagged "U" for beryllium.

Due to the presence of preparation blank contamination, sample numbers BOC2C7, BOC2C8, BOC2D9, BOC2F0, BOC2F9, BOC2G0, BOC2H1, BOC2H2, BOC2H7, BOC2H8, BOC2H9 and BOC2J0 were flagged "U" for copper.

Due to the presence of preparation blank contamination, sample numbers BOC2C6, BOC2C8, BOC2C9, BOC2D0, BOC2D6, BOC2D7, BOC2D8, BOC2D9, BOC2F0, BOC2F9, BOC2G0, BOC2H1, BOC2H2, BOC2H8, BOC2H9 and BOC2J0 were flagged "U" for iron.

Due to the presence of negative preparation blank contamination, sample numbers BOC2C5, BOC2C6, BOC2C9, BOC2D0, BOC2D5 and BOC2D6 were flagged "UJ" for silver.

Due to the presence of preparation blank contamination, sample numbers BOC2C8, BOC2D9, BOC2F9, BOC2H2, BOC2H8, BOC2H9 and BOC2J0 were flagged "U" for zinc.

- **Accuracy**

- Matrix Spike

- Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike recoveries must generally fall within the range of 75 to 125 percent. Samples with a spike recovery of less than 30% and a sample value below the IDL were rejected and flagged "UR". All other samples with a spike recovery outside the QC limits are qualified as estimates and flagged "J".

- The matrix spike recovery fell outside the QC limits and all associated results were flagged "UR" for selenium in samples numbers BOC2C5, BOC2C6, BOC2C7, BOC2C8, BOC2C9, BOC2D0, BOC2D5, BOC2D6, BOC2D9, BOC2F0, BOC2F9, BOC2G0, BOC2H1, BOC2H2, BOC2H7, BOC2H8, BOC2H9 and BOC2J0.

- All other matrix spike recovery results were acceptable.

- Laboratory Control Sample Recovery

- The LCS monitors the overall performance of the analysis, including the sample preparation. An LCS should be digested or distilled and analyzed with every group of samples which have been prepared together. The performance criteria for solid LCS samples are established through interlaboratory studies coordinated by a certifying agency (e.g., EPA or an independent commercial supplier).

One liquid LCS was digested and analyzed for each of the cases in this report that contained water samples. The results were compared against the control limit of 80-120% as required by the EPA CLP SOW 3/90 protocol and found to be acceptable.

All LCS results were found to be acceptable.

- **Precision**

Laboratory Duplicate Samples

The laboratory duplicate results measures the precision of the method by measuring a second aliquot of the sample that is treated the same way as the original. Samples whose precision fell outside the quality control requirements were flagged as estimates "J".

All laboratory duplicate recovery results were acceptable.

ICP Serial Dilution

The ICP serial dilution is used to determine whether significant physical or chemical interferences exist due to sample matrix. If sample concentration is ≥ 50 times the IDL for an analyte and the %D is outside the control limits the associated data must be qualified as estimated "J".

All ICP serial dilution results were acceptable.

Field Duplicate Samples

Two sets of field duplicate samples were submitted to IT as shown below.

Set 1:

<u>Sample No.</u>	<u>Duplicate Sample No.</u>	<u>Well Location</u>
BOC2C7	BOC2H7	1-K-19
BOC2C8	BOC2H8	1-K-19

Set 2:

<u>Sample No.</u>	<u>Duplicate Sample No.</u>	<u>Well Location</u>
BOC2D9	BOC2H9	1-K-30
BOC2F0	BOC2J0	1-K-30

The duplicate sample results were compared using the sample guidelines for determining the RPD between a sample and its duplicate. All results fell within the required control limit. All results for both well locations appear in the summary tables within this report.

- **Furnace AA Quality Control**

The post-digestion analytical spike is analyzed to determine the extent of interference in the digestate matrix. When the results of the analytical spike analyses exceeds the control window of 85 to 115 percent recovery and the absorbance of the sample is greater than fifty percent of the analytical spike absorbance, then the sample must be reanalyzed using the MSA. The duplicate injections and the analytical spike recoveries establish the precision and accuracy of the individual GFAA determinations.

Duplicate Injections

Each furnace analysis requires a minimum of two injections (burns), except for full MSA. For concentrations greater than CRDL, the duplicate injection readings must agree within 20% RSD or CV. If these requirements are not met, the analytical sample must be rerun once (i.e., two additional burns). If the readings are then still outside the QC limits, the result is qualified as an estimate and flagged "J".

All duplicate injection quality control requirements were met.

Analytical Spike Recoveries

For all samples whose analytical spike results are outside the 85 to 115 percent control limit, but whose absorbances are less than 50 percent of the analytical spike absorbance, the samples were flagged as estimates "J". In cases where the analytical spike recovery was < 10 percent, non-detect results were rejected and flagged "UR".

The analytical spike recovery fell outside the established QC limits and the associated results were flagged "UJ" for selenium in sample numbers BOC2C5, BOC2C6, BOC2C7, BOC2C8, BOC2D6, BOC2D7, BOC2D9, BOC2F0, BOC2F9, BOC2G0, BOC2H1, BOC2H2, BOC2H7, BOC2H8, BOC2H9 and BOC2J0.

All other analytical spike recovery results were acceptable.

- **Sample Result Verification and Detection Limits**

Sample results and reported detection limits were recalculated to ensure that the reported results were accurate. Raw data were examined for anomalies, transcription errors, and reduction errors.

The reviewer verified that the results and detection limits fell within the linear range of the instrument. All sample results and reported detection limits were acceptable.

- **Completeness**

Data Package No. W0091-ITC-105 was submitted for validation and verified for completeness. Selenium results for eighteen samples were rejected and considered incomplete, resulting in a 96 percent completeness.

MAJOR DEFICIENCIES

The matrix spike recovery associated with eighteen samples was below 30% for selenium. All sample results were rejected and flagged "UR".

MINOR DEFICIENCIES

Positive and negative blank contamination was noted in several samples. Associated sample results were flagged accordingly. Contamination, however, was not sufficiently high to affect the usability of the data. Minor analytical spike problems were noted for selenium in sixteen samples. All results were flagged accordingly. Data flagged "J" are usable for limited purposes only. Except as noted in the preceding sections, all other validated data are usable for all purposes.

REFERENCES

EPA, 1987, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, Environmental Protection Agency, Washington, D.C.

EPA, 1988c, *EPA Contract Laboratory Program Statement of Work for Inorganics Analyses, Multi-Media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1988d, *Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses*, U.S. Environmental Protection Agency, Washington, D.C.

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EPA, 1990, *EPA Contract Laboratory Program Statement of Work for Inorganic Analyses, Multi-media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.

WHC, 1992a, *Data Validation Procedures for Chemical Analyses*, WHC-SD-EN-SPP-002, Rev. 2, Westinghouse Hanford Company, October 1993.

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000009

Appendix 1

Glossary of Data Reporting Qualifiers

000009

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 same 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 the 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 is 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 applications (i.e., usable for decision-making purposes).
- N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

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Appendix 2

Summary of Data Qualification

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DATA QUALIFICATION SUMMARY

SDG: W0091	REVIEWER: RJS	DATE: 9/21/94	PAGE 1 OF 2
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Beryllium	U	BOC2C5, BOC2C6, BOC2C9, BOC2D0, BOC2D5, BOC2D6	Calibration Blank Contamination
Iron	U	BOC2C6, BOC2C9, BOC2D0, BOC2D6	Calibration Blank Contamination
Mercury	U	BOC2C5, BOC2C6, BOC2C9, BOC2D0, BOC2D5, BOC2D6	Calibration Blank Contamination
Beryllium	U	BOC2C5, BOC2C6, BOC2C9, BOC2D0, BOC2D5, BOC2D6	Preparation Blank Contamination
Copper	U	BOC2C7, BOC2C8, BOC2D9, BOC2F0, BOC2F9, BOC2G0, BOC2H1, BOC2H2, BOC2H7, BOC2H8, BOC2H9, BOC2J0	Preparation Blank Contamination
Iron	U	BOC2C6, BOC2C8, BOC2C9, BOC2D0, BOC2D6, BOC2D7, BOC2D8, BOC2D9, BOC2F0, BOC2F9, BOC2G0, BOC2H1, BOC2H2, BOC2H8, BOC2H9, BOC2J0	Preparation Blank Contamination
Zinc	U	BOC2C8, BOC2D9, BOC2F9, BOC2H2, BOC2H8, BOC2H9, BOC2J0	Preparation Blank Contamination
Lead	UJ	BOC2C7, BOC2C8, BOC2H2, BOC2H7, BOC2H8, BOC2H9	Negative Calibration Blank Contamination
Lead	BJ	BOC2C5, BOC2J0	Negative Calibration Blank Contamination
Silver	UJ	BOC2C5, BOC2C6, BOC2C9, BOC2D0, BOC2D5, BOC2D6	Negative Preparation Blank Contamination
Selenium	UR	BOC2C5, BOC2C6, BOC2C7, BOC2C8, BOC2C9, BOC2D0, BOC2D5, BOC2D6, BOC2D9, BOC2F0, BOC2F9, BOC2G0, BOC2H1, BOC2H2, BOC2H7, BOC2H8, BOC2H9, BOC2J0	Matrix Spike

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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000015

9613490.015

Project: WESTINGHOUSE-HANFORD																	
Laboratory: IT																	
Case		SDG: W0091															
Sample Number	B0C2C5	B0C2C6	B0C2C7	B0C2C8	B0C2C9	B0C2D0	B0C2D5	B0C2D6	B0C2D7	B0C2D8							
Location	1-K-18	1-K-18	1-K-19	1-K-19	1-K-20	1-K-20	1-K-23	1-K-23	1-K-27	1-K-27							
Remarks		FIL		FIL		FIL		FIL		FIL							
Sample Date	06/21/94	06/21/94	06/15/94	06/15/94	06/21/94	06/21/94	06/21/94	06/21/94	06/14/94	06/14/94							
Inorganic Analytes	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q				
Aluminum	200	51.2	U	51.2	U	135	B	51.2	U	51.2	U	51.2	U	84.9	B	40.0	U
Antimony	60	26.5	U	26.5	U	26.5	U	26.5	U	26.5	U	26.5	U	50.0	U	50.0	U
Arsenic	10	2.8	B	2.5	B	1.2	U	1.2	U	3.5	B	3.1	B	5.3	B	5.4	B
Barium	200	35.7	B	35.9	B	22.3	B	21.1	B	21.4	B	22.1	B	43.5	B	44.2	B
Beryllium	5	0.56	U	0.85	U	0.30	U	0.30	U	0.71	U	0.85	U	0.56	U	0.56	U
Cadmium	5	2.8	U	2.8	U	2.8	U	2.8	U	2.9	B	2.8	U	2.8	U	5.0	U
Calcium	5000	72900		73400		50100		49300		47300		47900		78400		79700	
Chromium	10	47.7		37.9		136		114		168		170		25.7		20.7	
Cobalt	50	4.2	U	4.2	U	4.2	U	4.2	U	4.2	U	4.2	U	4.2	U	10.0	U
Copper	25	4.9	U	4.9	U	8.8	U	13.5	U	4.9	U	4.9	U	4.9	U	10.0	U
Iron	100	558		16.7	U	313		29.4	U	74.0	U	20.2	U	108		32.1	U
Lead	3	0.79	BJ	0.60	U	0.60	UJ	0.60	UJ	0.60	U	0.60	U	0.60	U	0.60	U
Magnesium	5000	11300		11300		7530		7400		8950		9000		19400		19600	
Manganese	15	12.6	B	9.8	B	10.8	B	3.5	B	3.1	B	2.7	U	6.9	B	6.4	B
Mercury	0.2	0.17	U	0.18	U	0.10	U	0.10	U	0.16	U	0.16	U	0.17	U	0.18	U
Nickel	40	18.6	U	18.6	U	18.6	U	18.6	U	18.6	U	18.6	U	18.6	U	18.6	U
Potassium	5000	4450	B	4600	B	3760	B	4830	B	4140	B	4040	B	12000		12500	
Selenium	5	1.8	UR	1.8	UR	1.8	UR	1.8	UR	1.8	UR	1.8	UR	1.8	UR	1.8	UR
Silver	10	3.7	UJ	3.7	UJ	5.4	B	3.7	U	3.7	UJ	3.7	UJ	3.7	UJ	3.7	UJ
Sodium	5000	4680	B	4830	B	5970		5820		5280		5120		26500		27900	
Thallium	10	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
Vanadium	50	14.1	B	12.2	U	12.2	U	12.2	U	12.6	B	13.1	B	20.2	B	22.6	B
Zinc	20	4.0	U	4.0	U	71.5		5.2	U	4.1	B	7.0	B	4.0	U	4.0	U
Cyanide	10	NA		N/A		NA		N/A		NA		N/A		NA		N/A	

FIL = Filtered, NA = Not Analyzed, N/A = Not Applicable, DUP = Duplicate

000016

9613490.0116

Project: WESTINGHOUSE--HANFORD																					
Laboratory: IT																					
Case		SDG: W0091																			
Sample Number		B0C2D9		B0C2F0		B0C2F9		B0C2G0		B0C2H1		B0C2H2		B0C2H7		B0C2H8		B0C2H9		B0C2J0	
Location		1-K-30		1-K-30		1-K-34		1-K-34		6-78-62		6-78-62		1-K-19		1-K-19		1-K-30		1-K-30	
Remarks		FIL																			
Sample Date		06/16/94		06/16/94		06/16/94		06/16/94		06/17/94		06/17/94		06/15/94		06/15/94		06/16/94		06/16/94	
Inorganic Analytes	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	200	51.2	U	51.2	U	51.2	U	51.2	U	51.2	U	51.2	U	136	B	51.2	U	51.2	U	56	B
Antimony	60	26.5	U	26.5	U	26.5	U	26.5	U	26.5	U	26.5	U	26.5	U	26.5	U	37.6	B	26.5	U
Arsenic	10	3.4	B	2.7	B	1.2	U	1.2	U	4.4	B	3.6	B	1.2	U	1.2	U	3.2	B	2.8	B
Barium	200	28.6	B	29.6	B	35.1	B	34.2	B	29.7	B	29.7	B	22.1	B	21.4	B	30.8	B	29.6	B
Beryllium	5	0.30	U	0.30	U	0.30	U	0.30	U	0.30	U	0.30	U	0.30	U	0.30	U	0.30	U	0.30	U
Cadmium	5	2.8	U	2.8	U	2.8	U	2.8	U	2.8	U	2.8	U	2.8	U	2.8	U	2.8	U	2.8	U
Calcium	5000	53700		55800		58500		58500		39800		39900		50000		49400		55900		55300	
Chromium	10	4.2	U	4.2	U	45.0		39.3		39.6		38.8		134		115		5.1	B	4.2	U
Cobalt	50	4.2	U	4.2	U	4.2	U	4.2	U	4.2	U	4.2	U	4.2	U	4.2	U	4.2	U	4.2	U
Copper	25	14.4	U	11.3	U	14.8	U	12.0	U	8.8	U	7.0	U	12.7	U	16.1	U	12.8	U	9.0	U
Iron	100	34.5	U	21.0	U	55.4	U	27.3	U	28.9	U	18.4	U	313		24.5	U	41.8	U	42.4	U
Lead	3	0.60	U	0.60	U	0.60	U	0.60	U	3.0	B	0.60	UJ	0.60	UJ	0.60	UJ	0.60	UJ	1.1	BJ
Magnesium	5000	12200		12600		11400		11300		11500		11600		7560		7460		12700		12600	
Manganese	15	2.7	U	2.7	U	3.7	B	3.5	B	2.7	U	2.7	U	11.3	B	3.1	B	2.7	U	2.7	U
Mercury	0.2	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
Nickel	40	18.6	U	18.6	U	18.6	U	18.6	U	18.6	U	18.6	U	18.6	U	18.6	U	18.6	U	18.6	U
Potassium	5000	7070		6010		4850	B	3170	U	5300		5610		3170	U	3240	B	6590		8100	
Selenium	5	1.8	UR	1.8	UR	1.8	UR	1.8	UR	9.0	UR	9.0	UR	1.8	UR	1.8	UR	1.8	UR	1.8	UR
Silver	10	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
Sodium	5000	10100		10600		18100		17900		16700		16800		6000		5930		10700		10500	
Thallium	10	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
Vanadium	50	15.4	B	15.3	B	12.2	U	12.2	U	16.9	B	18.4	B	12.2	U	12.2	U	14.2	B	12.2	U
Zinc	20	10.6	U	4.0	U	8.8	U	4.0	U	106		4.1	U	70.9		4.6	U	13.5	U	6.2	U
Cyanide	10	NA		N/A		NA		N/A		NA		N/A		NA		N/A		NA		N/A	

FIL = Filtered, NA = Not Analyzed, N/A = Not Applicable, DUP = Duplicate

9613490.0117

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2C5

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
Matrix (soil/water): WATER _____ Lab Sample ID: 5414-005
Level (low/med): LOW _____ Date Received: 06/23/94
% 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	2.8	B		F
7440-39-3	Barium	35.7	B	N	P
7440-41-7	Beryllium	0.56	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	72900			P
7440-47-3	Chromium	47.7			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	558		N	P
7439-92-1	Lead	0.79	B		F
7439-95-4	Magnesium	11300			P
7439-96-5	Manganese	12.6	B		P
7439-97-6	Mercury	0.17	B		P
7440-02-0	Nickel	18.6	U		C
7440-09-7	Potassium	4450	B		P
7782-49-2	Selenium	1.8	B	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	4680	B		P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	14.1	B		P
7440-66-6	Zinc	4.0	U	N	P

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

RJS
4/24/94

9613490.0118

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2C6

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO _____ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5414-006
 Level (low/med): LOW _____ Date Received: 06/23/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	2.5	B		F
7440-39-3	Barium	35.9	B	N	P
7440-41-7	Beryllium	0.85	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	73400			P
7440-47-3	Chromium	37.9			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	16.7	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	11300			P
7439-96-5	Manganese	9.8	B		P
7439-97-6	Mercury	0.18	B		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	4600	B		P
7782-49-2	Selenium	1.8	B	N	F
7440-22-4	Silver	3.7	B	N	P
7440-23-5	Sodium	4830	B		P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	4.0	U	N	P

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

R-15 at/at/94

9613490.0119

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2C7

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
Matrix (soil/water): WATER _____ Lab Sample ID: 5384-003
Level (low/med): LOW__ Date Received: 06/17/94
% 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	135	B		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		P
7440-39-3	Barium	22.3	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	50100	-		P
7440-47-3	Chromium	136	-		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	8.8	B	N	P
7439-89-6	Iron	313	-	N	P
7439-92-1	Lead	0.60	B		P
7439-95-4	Magnesium	7530	-		P
7439-96-5	Manganese	10.8	B		P
7439-97-6	Mercury	0.10	U		P
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	3760	B		P
7782-49-2	Selenium	1.8	B	N	P
7440-22-4	Silver	5.4	B	N	P
7440-23-5	Sodium	5970	-		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	71.5	-	N	P

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

Comments:

RJS
9/21/94

9613490.0121

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2C9

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
Lab Code: ITMO _____ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
Matrix (soil/water): WATER _____ Lab Sample ID: 5414-007
Level (low/med): LOW _____ Date Received: 06/23/94
% 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	3.5	B		F
7440-39-3	Barium	21.4	B	N	P
7440-41-7	Beryllium	0.71	B		P U
7440-43-9	Cadmium	2.9	B		P
7440-70-2	Calcium	47300			P
7440-47-3	Chromium	168			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	74.0	B	N	P U
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	8950			P
7439-96-5	Manganese	3.1	B		P
7439-97-6	Mercury	0.16	B		CV U
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	4140	B		P
7782-49-2	Selenium	1.8	B	N	F UR
7440-22-4	Silver	3.7	B	N	F UJ
7440-23-5	Sodium	5280			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.6	B		P
7440-66-6	Zinc	4.1	B	N	P

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

RJS
9/21/94

9613490.0122

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2DO

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5414-008
 Level (low/med): LOW__ Date Received: 06/23/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	3.1	B		F
7440-39-3	Barium	22.1	B	N	P
7440-41-7	Beryllium	0.85	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	47900			P
7440-47-3	Chromium	170			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	20.2	B	X	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	9000			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.16	B		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	4040	B		P
7782-49-2	Selenium	1.8	B	X	F
7440-22-4	Silver	3.7	B	X	P
7440-23-5	Sodium	5120			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	13.1	B		P
7440-66-6	Zinc	7.0	B	N	P

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

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2D5

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
Lab Code: ITMO _____ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
Matrix (soil/water): WATER _____ Lab Sample ID: 5414-009 _____
Level (low/med): LOW _____ Date Received: 06/23/94 _____
% 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	5.3	B		F
7440-39-3	Barium	43.5	B	N	P
7440-41-7	Beryllium	0.56	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	78400	-		P
7440-47-3	Chromium	25.7	-		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	108	-	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	19400	-		P
7439-96-5	Manganese	6.9	B		P
7439-97-6	Mercury	0.17	B		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	12000	-		P
7782-49-2	Selenium	1.8	B	N	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	26500	-		P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	20.2	B		P
7440-66-6	Zinc	4.0	U	N	P

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

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9/21/94

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2D6

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____

Matrix (soil/water): WATER _____ Lab Sample ID: 5414-010

Level (low/med): LOW__ Date Received: 06/23/94

% 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	5.4	B		F
7440-39-3	Barium	44.2	B	N	P
7440-41-7	Beryllium	0.56	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	79700			P
7440-47-3	Chromium	20.7			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.9	U	N	P
7439-89-6	Iron	32.1	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	19600			P
7439-96-5	Manganese	6.4	B		P
7439-97-6	Mercury	0.18	B		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	12500			P
7782-49-2	Selenium	1.8	B	WN	F
7440-22-4	Silver	3.7	B	N	P
7440-23-5	Sodium	27900			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	22.6	B		P
7440-66-6	Zinc	4.0	U	N	P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

RJS 9/2/94

9613490.0127

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2D9

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO _____ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5384-009
 Level (low/med): LOW _____ Date Received: 06/17/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	3.4	B		F
7440-39-3	Barium	28.6	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	53700			P
7440-47-3	Chromium	4.2	U		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	14.4	B	N	P
7439-89-6	Iron	34.5	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	12200			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	7070			P
7782-49-2	Selenium	1.8	B	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	10100			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	15.4	B		P
7440-66-6	Zinc	10.6	B	N	P

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Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
 Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____
 Comments:

RIS
9/21/92

9613490.0128

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2FO

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
Matrix (soil/water): WATER Lab Sample ID: 5384-010
Level (low/med): LOW__ Date Received: 06/17/94
% 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	2.7	B		F
7440-39-3	Barium	29.6	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	55800			P
7440-47-3	Chromium	4.2	U		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	11.3	B	N	P
7439-89-6	Iron	21.0	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	12600			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	6010			P
7782-49-2	Selenium	1.8	B	N	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	10600			P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	15.3	B		P
7440-66-6	Zinc	4.0	U	N	P

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Color Before: COLORLESS Clarity Before: CLEAR__ Texture: _____
Color After: COLORLESS Clarity After: CLEAR__ Artifacts: _____
Comments:

RJS 9/21/94

9613490.0129

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2F9

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5384-011
 Level (low/med): LOW__ _____ Date Received: 06/17/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	35.1	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	58500	-		P
7440-47-3	Chromium	45.0	-		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	14.8	B	N	P
7439-89-6	Iron	55.4	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	11400	-		P
7439-96-5	Manganese	3.7	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	4850	B		P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	18100	-		P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	8.8	B	N	P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
 Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____
 Comments: _____

R25 9/2/94

9613490.0130

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2GO

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5384-012
 Level (low/med): LOW__ Date Received: 06/17/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	34.2	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	58500	-		P
7440-47-3	Chromium	39.3			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	12.0	B	N	P
7439-89-6	Iron	27.3	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	11300			P
7439-96-5	Manganese	3.5	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	3170	U		P
7782-49-2	Selenium	1.8	U	N	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	17900			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	4.0	U	N	P

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

Comments:

9613490.0131

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2H1

Lab Name: ITAS_ST. LOUIS Contract: 519.54
Lab Code: ITMO Case No.: SAS No.: SDG No.: W0091
Matrix (soil/water): WATER Lab Sample ID: 5384-001
Level (low/med): LOW Date Received: 06/20/94
% 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	4.4	B		F
7440-39-3	Barium	29.7	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	39800			P
7440-47-3	Chromium	39.6			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	8.8	B	X	P
7439-89-6	Iron	28.9	B	X	P
7439-92-1	Lead	3.0	B		F
7439-95-4	Magnesium	11500			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	5300			P
7782-49-2	Selenium	9.0	B	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	16700			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	16.9	B		P
7440-66-6	Zinc	106		N	P

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

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2H2

Lab Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Matrix (soil/water): WATER _____ Lab Sample ID: 5384-002
 Level (low/med): LOW__ Date Received: 06/20/94
 % 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	3.6	B		F
7440-39-3	Barium	29.7	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	39900			P
7440-47-3	Chromium	38.8			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	7.0	B	N	P
7439-89-6	Iron	18.4	B	N	P
7439-92-1	Lead	0.60	U		F
7439-95-4	Magnesium	11600			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	5610			P
7782-49-2	Selenium	9.0	B	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	16800			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	18.4	B		P
7440-66-6	Zinc	4.1	B	N	P

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

Comments:

RAS 9/21/94

9613490.0133

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2H7

Lab Name: ITAS_ST._LOUIS Contract: 519.54

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0091

Matrix (soil/water): WATER Lab Sample ID: 5384-005

Level (low/med): LOW Date Received: 06/17/94

% 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	136	B		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	22.1	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	50000	-		P
7440-47-3	Chromium	134	-		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	12.7	B	N	P
7439-89-6	Iron	313	-	N	P
7439-92-1	Lead	0.60	B		F
7439-95-4	Magnesium	7560	-		P
7439-96-5	Manganese	11.3	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	3170	U		P
7782-49-2	Selenium	1.8	B	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	6000	-		P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	70.9	-	N	P

U
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Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

RJS 9/21/94

9613490.0134

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2H8

Lab Name: ITAS_ST._LOUIS

Contract: 519.54

Lab Code: ITMO Case No.:

SAS No.:

SDG No.: W0091

Matrix (soil/water): WATER

Lab Sample ID: 5384-006

Level (low/med): LOW

Date Received: 06/17/94

% 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	51.2	U		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	21.4	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	49400			P
7440-47-3	Chromium	115			P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	16.1	B	N	P
7439-89-6	Iron	24.5	B	N	P
7439-92-1	Lead	0.60	B		F
7439-95-4	Magnesium	7460			P
7439-96-5	Manganese	3.1	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	3240	B		P
7782-49-2	Selenium	1.8	U	WN	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	5930			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	4.6	B	N	P

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Color Before: COLORLESS

Clarity Before: CLEAR

Texture: _____

Color After: COLORLESS

Clarity After: CLEAR

Artifacts: _____

Comments:

RTS

9613490.0136

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOC2JO

Lab Name: ITAS_ST._LOUIS Contract: 519.54

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0091

Matrix (soil/water): WATER Lab Sample ID: 5384-008

Level (low/med): LOW Date Received: 06/17/94

% 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	56.0	B		P
7440-36-0	Antimony	26.5	U		P
7440-38-2	Arsenic	2.8	B		F
7440-39-3	Barium	29.6	B	N	P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	55300			P
7440-47-3	Chromium	4.2	U		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	9.0	B	N	P
7439-89-6	Iron	42.4	B	N	P
7439-92-1	Lead	1.1	B		F
7439-95-4	Magnesium	12600			P
7439-96-5	Manganese	2.7	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	18.6	U		P
7440-09-7	Potassium	8100			P
7782-49-2	Selenium	1.8	B	N	F
7440-22-4	Silver	3.7	U	N	P
7440-23-5	Sodium	10500			P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	12.2	U		P
7440-66-6	Zinc	6.2	B	N	P

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Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

RJS gley

9613405.0137

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000037

CERTIFICATE OF ANALYSIS

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

August 3, 1994

Attention: J. A. Lerch



Project number	:	519.54
Date Received by Lab	:	June 20 and 23, 1994
Number of Samples	:	Twenty (20)
Sample Type	:	Water
SDG Number	:	W0091
Data Deliverable	:	Standalone

RECORDED

I. Introduction

On June 15, 1994 two (2) water samples were received by the Quanterra Environmental Services Richland Laboratory (QTESRL) and transferred to the Quanterra Environmental Services Knoxville Laboratory (QTESKN) for chemical analysis. On June 17, 1994, ten (10) water samples were received by QTESRL, transferred to QTESKN and subsequently transferred to the Quanterra Environmental Services St. Louis Laboratory (QTESSL) for chemical analyses. On June 20 and 23, 1994, a total of eight (8) water samples were received by QTESRL and transferred to QTESSL for chemical analyses. Upon receipt, the samples were given the following laboratory ID numbers to correspond with their specific client IDs:

<u>Quanterra ID</u>	<u>WHC ID</u>	<u>Richland ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
5384-001	BOC2H1	40640801	Water	06/20/94
5384-002	BOC2H2	40640802	Water	06/20/94
5384-003	BOC2C7	40638401	Water	06/17/94
5384-004	BOC2C8	40638402	Water	06/17/94
5384-005	BOC2H7	40638403	Water	06/17/94
5384-006	BOC2H8	40638404	Water	06/17/94
5384-007	BOC2H9	40638405	Water	06/17/94
5384-008	BOC2J0	40638406	Water	06/17/94
5384-009	BOC2D9	40638407	Water	06/17/94
5384-010	BOC2F0	40638408	Water	06/17/94

000038

0001

Westinghouse Hanford Company
 August 3, 1994
 Project Number: 519.54
 Page 2

<u>Quanterra ID</u>	<u>WHC ID</u>	<u>Richland ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
5384-011	BOC2F9	40638409	Water	06/17/94
5384-012	BOC2G0	40638410	Water	06/17/94
5414-005	BOC2C5	40651401	Water	06/23/94
5414-006	BOC2C6	40651402	Water	06/23/94
5414-007	BOC2C9	40651403	Water	06/23/94
5414-008	BOC2D0	40651404	Water	06/23/94
5414-009	BOC2D5	40651405	Water	06/23/94
5414-010	BOC2D6	40651406	Water	06/23/94
AB0738	BOC2D7	40630901	Water	06/15/94
AB0739	BOC2D8	40630902	Water	06/15/94

II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results, and the appropriate detection limits.

Analyses requested: TAL Metals by method CLP90.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Sample Duplicate analyses were performed per the protocol for each analyte in this SDG.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank

QCLCS- Quality Control Laboratory Control Sample, Blank Spike

Westinghouse Hanford Company
August 3, 1994
Project Number: 519.54
Page 3

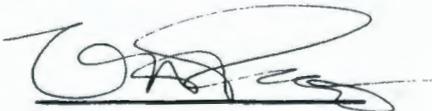
V. Comments

Samples BOC2D7 (AB0738) and BOC2D8 (AB0739) were analyzed at QTESKN laboratory. All QC was acceptable. A duplicate/spike pair was prepared using both samples. Spike recovery (accuracy) results were within acceptance limits for all parameters. Duplicate RPD (precision) results were within acceptance limits for all parameters. The reprep for selenium was performed on a 50 ml basis due to limited sample volume.

There were no comments or nonconformances associated with the samples analyzed in our St. Louis laboratory.

I certify that this data package 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:



for Wade H. Price
Project Manager
z:\annetars\han0091a.nar

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0003

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround

Priority
 Normal

Collector: <i>Das 6/21/94</i> <i>K. Tress, C. Hamilton</i> <i>DSI, John L. Rogers</i>	Company Contact <i>P. H. Butcher</i>	Telephone No. <i>(509) 376-4388</i>
Project Designation <i>100-KR-4</i>	Sampling Location <i>100 K</i>	SAF No. <i>94-220</i>
Ice Chest No. <i>ET-19</i>	Field Logbook No.	Method of Shipment <i>Hand Delivered</i>
Shipped To <i>IT</i>	Offsite Property No. <i>W94-C-0594-48</i>	Bill of Lading/Air Bill No. <i>NONE</i>

Possible Sample Hazards/Remarks <i>None</i>	Preservative	HNO3	HNO3	NONE	NONE	HNO3														
	Type of Container	G	P	Gs	Gs	G														
	No. of Container(s)	1	4	2	1	1														
	Special Handling and/or Storage <i>Maintain between 2 and 6 degrees C.</i>	Volume	1L	1L	1L	40ml	1L													

SAMPLE ANALYSIS <i>406514</i>	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/ 235/238 Sr-90	C-14, TRITIUM	ACTIVI-METALS-TAL (FILTERED)
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Sample No.	Matrix*	Date Sampled	Time Sampled																	
<i>BOC205</i>	<i>OSA</i>	<i>6/21/94</i>	<i>1027</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>													
<i>BOC206</i>	<i>OSA</i>	<i>1/21/94</i>	<i>1027</i>																	

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix*	
Relinquished By <i>John C. Rogers</i>	Date/Time <i>6/21/94 1745</i>	Received By <i>John Simpson</i>	Date/Time <i>6/22/94 0815</i>	Standalone Data Deliverable		<ul style="list-style-type: none"> S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other 	
Relinquished By <i>John Simpson</i>	Date/Time <i>6/23/94 1155</i>	Received By <i>John Simpson</i>	Date/Time <i>6/23/94 1200</i>				
Relinquished By	Date/Time	Received By	Date/Time				
Relinquished By	Date/Time	Received By	Date/Time				

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

0000044

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround
 Priority
 Normal

Collector K. Trapp Hamilton Dst John / C. Rogers	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. 94-220
Ice Chest No. ER-26	Field Logbook No.	Method of Shipment Hand Delivered

Shipped To IT	Offsite Property No. W34-0-0554-48	BIM of Lading/Air BIM No. NONE
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Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3												
	Type of Container	G	P	Gs	Gs	G												
	No. of Container(s)	1	4	2	1	1												
	Volume	1L	1L	1L	40mL	1L												

Special Handling and/or Storage
Maintain between 2 and 6 degrees C.

SAMPLE ANALYSIS 406514	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/ 235/238 40651502 Sr-90	C-14, TRITIUM	ACTIVI-METALS- SCANTAL	METALS-TAL (FILTERED)													

Sample No.	Matrix*	Date Sampled	Time Sampled															
BOC207	03A	W	6/21/94	1437	X	X	X	X										
BOC200	04A	W	6/21/94	1437					X									

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS Standalone Data Deliverable						Matrix*						
Relinquished By <i>James Rogers</i>	Date/Time 6/22/94 0815	Received By <i>C. Simpson</i>	Title WIK	Date/Time 6/22/94														
Relinquished By <i>C. Simpson</i>	Date/Time 6/23/94 1200	Received By <i>James Rogers</i>	Title IAS	Date/Time 6/23/94 1200														
Relinquished By	Date/Time	Received By	Title	Date/Time														

LABORATORY SECTION	Received By	Title	Date/Time
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FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time
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000042

9613190.0142

WO#678

WO#676

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Date Turnaround
 Priority
 Normal

Collector K. TRAPP, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No.
Ice Chest No. GWS104	Field Logbook No. EFL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No. 1124-C-0524-42	Bill of Lading/Air Bill No. NCLWF

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3												
	Type of Container	G	P	Gs	Gs	G												
	No. of Container(s)	1	4	2	1	1												

Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40ml	1L												
SAMPLE ANALYSIS 406384	METALS-TAL	GROSS ALPHA/BETA	C-14, TRITIUM	ACTIVI-METALS-TAL														
	(UNFILTERED)	U-234/235/238		(FILTERED)														

0000043

Sample No.	Matrix*	Date Sampled	Time Sampled															
BOC2-7 01A	W	6/15/94	1220	+	+	+	+											
BOC2-8 02A	W	↓	↓															

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix*
Relinquished By K. Trapp / G. Hamilton	Date/Time 6-15-94	Received By A. Simpson	Date/Time 6-15-94
Relinquished By A. Simpson	Date/Time 6-17-94	Received By K. Trapp / G. Hamilton	Date/Time 6-17-94
Relinquished By K. Trapp / G. Hamilton	Date/Time 6-17-94	Received By K. Trapp / G. Hamilton	Date/Time 6-17-94
Relinquished By	Date/Time	Received By	Date/Time

Standalone Data Deliverable

12:10

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

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

9613490.0143

#678

WO #675

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						
Collector K. Troop, G. Hamilton		Company Contact P. H. Butcher			Telephone No. (509) 376-4388			
Project Designation 100-KR-4		Sampling Location 100 K			SAF No.			
Ice Chest No. GW5109		Field Logbook No. EFL-1049			Method of Shipment Hand Delivered			
Shipped To IT		Offsite Property No. W94-0-0594-42			Bill of Lading/Air Bill No. NONE			
Possible Sample Hazards/Remarks None		Preservative		Type of Container		No. of Container(s)		
		HNO3 HNO3 NONE NONE HNO3		G P Gs Gs G		1 4 2 1 1		
Special Handling and/or Storage Maintain between 2 and 6 degrees C.		Volume		METALS-GROSS ALPHA/BETA (UNFILTERED)		C-14, TRITIUM ACTIVITY SCANTAL (FILTERED)		
		1L 1L 1L 40ml 1L		406384		40638502		
Sample No.		Matrix*		Date Sampled		Time Sampled		
BOC2H7 03A		W		6/15/94		1220		
BOC2H8 04A		W		↓		↓		
CHAIN OF POSSESSION		Sign/Print Names			SPECIAL INSTRUCTIONS			
Relinquished By <i>K. Troop / G. Hamilton</i>		Received By <i>P. H. Butcher</i>			Standalone Data Deliverable			
Date/Time 6/15/94 1415		Date/Time 6-17-94 1000						
Relinquished By <i>P. H. Butcher</i>		Received By <i>Robert J. ...</i>						
Date/Time 6-17-94 1000		Date/Time 6-17-94 1000						
Relinquished By <i>Robert J. ...</i>		Received By <i>...</i>			12:10			
Date/Time 6-17-94 1210		Date/Time 6-17-94 1210						
LABORATORY SECTION		Received By			Title			
FINAL SAMPLE DISPOSITION		Disposal Method			Disposed By			

000044

9613490.0144

WO# 678

WO# 678

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround
 Priority
 Normal

Collector K. Trapp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. 94-220
Ice Chest No. ER-19	Field Logbook No. EFL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No.	Bill of Lading/Air Bill No.

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3													
	Type of Container	G	P	Gs	Gs	G													
	No. of Container(s)	1	4	2	1	1													
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40ml	1L													

SAMPLE ANALYSIS		METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA U-234/ 235/238 40688503 Sr-90	C-14, TRITIUM	ACTIVI-METALS-SCANTAL	METALS-TAL (FILTERED)													
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Sample No.	Matrix*	Date Sampled	Time Sampled																
BOC2 H7	OSA	6/16/94	1015	X	X	X	X												
BOC2 J0	OGA	↓	↓																

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix*	
Relinquished By K. Trapp	Date/Time 6/16/94 1300	Received By K. Trapp	Date/Time 6-16-94 1500	Standalone Data Deliverable 6-17-94 12:10				<ul style="list-style-type: none"> S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other 	
Relinquished By K. Trapp	Date/Time 6-17-94 1210	Received By K. Trapp	Date/Time 6-17-94 1210						
Relinquished By	Date/Time	Received By	Date/Time						

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

9613490.0145

W0#678

W0#678

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					Page <u>1</u> of <u>1</u>	
Collector K. Trepp, G. Hamilton		Company Contact P. H. Butcher			Telephone No. ... (509) 376-4388			Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal
Project Designation 100-KR-4		Sampling Location 100 K			SAF No. 94-220			
Ice Chest No. ER-19		Field Logbook No. EFL-1049			Method of Shipment Hand Delivered			
Shipped To IT		Offsite Property No.			Bill of Lading/Air Bill No.			
Possible Sample Hazards/Remarks None		Preservative	HNO3	HNO3	NONE	NONE	HNO3	
		Type of Container	G	P	Gs	Gs	G	
		No. of Container(s)	1	4	2	1	1	
Special Handling and/or Storage Maintain between 2 and 6 degrees C.		Volume	1L	1L	1L	40mL	1L	
SAMPLE ANALYSIS 406384		METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/U-235/238 40638504 Sr-90	C-14, TRITIUM	ACTIVI-METALS-SCANTAL		(FILTERED)	
Sample No.	Matrix*	Date Sampled	Time Sampled					
B0C2D7 07A	W	6/16/94	1015	+	+	+	+	
B0C2F0 08A	W	↓	↓				+	
CHAIN OF POSSESSION		Sign/Print Names			SPECIAL INSTRUCTIONS			Matrix*
Relinquished By K. Trepp / G. Hamilton	Date/Time 1900 6/16/94	Received By P. H. Butcher	Date/Time 6-16-94 12:00	Standalone Data Deliverable			S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other	
Relinquished By P. H. Butcher	Date/Time 6-17-94 12:10	Received By K. Trepp / G. Hamilton	Date/Time 6-17-94 12:10					
Relinquished By	Date/Time	Received By	Date/Time					
Relinquished By	Date/Time	Received By	Date/Time					
LABORATORY SECTION	Received By	Title			Date/Time			
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By			Date/Time			

000046

9613490.0146

00010

WO#678

WO#678

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					Page <u>1</u> of <u>1</u>	
Collector K. Trapp, G. Hamilton		Company Contact P. H. Butcher			Telephone No. (509) 376-4388			Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal
Project Designation 100-KR-4		Sampling Location 100 K			SAF No. 94-220			
Ice Chest No. ER-19		Field Logbook No. EFL-1049			Method of Shipment Hand Delivered			
Shipped To IT		Offsite Property No.			Bill of Lading/Air Bill No.			
Possible Sample Hazards/Remarks None		Preservative	HNO3	HNO3	NONE	NONE	HNO3	
		Type of Container	G	P	Gs	Gs	G	
		No. of Container(s)	1	4	2	1	1	
Special Handling and/or Storage Maintain between 2 and 6 degrees C.		Volume	1L	1L	1L	40ml	1L	
SAMPLE ANALYSIS 406384		METALS-TAL (UNFIL-TERED)	GROSS ALPHA/BETA U-234/ 235/238 40638505 Sr-90	C-14, TRITIUM	ACTIVI-METALS-SCANTAL (FIL-TERED)			
Sample No.	Matrix*	Date Sampled	Time Sampled					
BOC2 F9	OA	6/16/94	1220					
BOC2 G0	OA	↓	↓					
CHAIN OF POSSESSION		Sign/Print Names			SPECIAL INSTRUCTIONS			Matrix*
Relinquished By K. Trapp / G. Hamilton	Date/Time 6/16/94 1500	Received By [Signature]	Date/Time 6-16-94	Standalone Data Deliverable			S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other	
Relinquished By [Signature]	Date/Time 6-17-94	Received By [Signature]	Date/Time ITAS 6-17-94 12:10					
Relinquished By	Date/Time	Received By	Date/Time					
Relinquished By	Date/Time	Received By	Date/Time					
LABORATORY SECTION	Received By	Title			Date/Time			
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By			Date/Time			

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Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E
PROJECT:	BHI/WHC		DATA PACKAGE: T00587		
VALIDATOR:	RSS	LAB:	IT	DATE: 9/20/94	
CASE:	100-KR-4		SDG: W0091		
ANALYSES PERFORMED					
<input checked="" type="checkbox"/> CLP/CP	<input checked="" type="checkbox"/> CLP/GFAA	<input checked="" type="checkbox"/> CLP/Hg	<input type="checkbox"/> CLP/Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> SW-846/CP	<input type="checkbox"/> SW-846/GFAA	<input type="checkbox"/> SW-846/Hg	<input type="checkbox"/> SW-846 Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX BOC2C5, BOC2C6, BOC2C7, BOC2C8					
BOC2C9, BOC2D0, BOC2D5, BOC2D6, BOC2D7					
BOC2D8, BOC2D9, BOC2FO, BOC2FA , BOC2F9,					
BOC2G0, BOC2H1, BOC2H2, BOC2H7, BOC2H8					
BOC2H9, BOC2JU (no water sample)					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? (Yes) No N/A

Is a case narrative present? (Yes) No N/A

Comments: _____

2. HOLDING TIMES

Are sample holding times acceptable? Yes No N/A

Comments: Hg analyzed < 28 days
metals < 6 months

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

- Were initial calibrations performed on all instruments? Yes No N/A
- Are initial calibrations acceptable? Yes No N/A
- Are ICP interference checks acceptable? Yes No N/A
- Were ICV and CCV checks performed on all instruments? Yes No N/A
- Are ICV and CCV checks acceptable? Yes No N/A

Comments: _____

4. BLANKS

- Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
- Are ICB and CCB results acceptable? Yes No N/A
- Were preparation blanks analyzed? Yes No N/A
- Are preparation blank results acceptable? Yes No N/A
- Were field/trip blanks analyzed? Yes No N/A
- Are field/trip blank results acceptable? Yes No N/A

Comments: cal contaminants Prep Contaminants

Be	Be Zn
Pb	Cu
Hg	Fe
Fe	Ag

5. ACCURACY

- Were spike samples analyzed? Yes No N/A
- Are spike sample recoveries acceptable? Yes No N/A
- Were laboratory control samples (LCS) analyzed? Yes No N/A
- Are LCS recoveries acceptable? Yes No N/A

Comments: Matrix Spike - Se 1.7% Recovery
(All associated samples rejected.)

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

- Were laboratory duplicates analyzed? Yes No N/A
- Are laboratory duplicate samples RPD values acceptable? Yes No N/A
- Were ICP serial dilution samples analyzed? Yes No N/A
- Are ICP serial dilution %D values acceptable? Yes No N/A
- Are field duplicate RPD values acceptable? Yes No N/A
- Are field split RPD values acceptable? Yes No N/A

Comments: _____

7. FURNACE AA QUALITY CONTROL

- Were duplicate injections performed as required? Yes No N/A
- Are duplicate injection %RSD values acceptable? Yes No N/A
- Were analytical spikes performed as required? Yes No N/A
- Are analytical spike recoveries acceptable? Yes No N/A
- Was MSA performed as required? Yes No N/A
- Are MSA results acceptable? Yes No N/A

Comments: Se - 16 sample recoveries outside QC limits (85-115 %)

8. REPORTED RESULTS AND DETECTION LIMITS

- Are results reported for all requested analyses? Yes No N/A
- Are all results supported in the raw data? Yes No N/A
- Are results calculated properly? Yes No N/A
- Do results meet the CRDLs? Yes No N/A

Comments: _____

<u>Field Dups</u>	<u>Corresponding Sampler</u>
Boca H7	Boca C7
Boca H8	Boca C8
Boca H9	Boca D9
Boca J0	Boca F0

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary): _____

	<u>Dup</u>	<u>Sample</u>	Corresponding
	<u>BOC2H7</u>	<u>BOC2C7</u>	
Al	136	135	-
Ca	50000	50100	-
Cr	134	136	-
Fe	313	313	-
Mg	7560	7530	-
Mn	11.3	10.8	-
K	3170	3760	17% < 100%
Nav	Vav	Zav	

	<u>BOC2H8</u>	<u>BOC2C8</u>	
Ba	21.4 21.4	21.1	-
Ca	49400	49300	
Cr	115	114	
K	3240	4830	< 100% ✓

	<u>BOC2H9</u>	<u>BOC2D9</u>	RND
Ca	55906	53700	(4%) ✓

	<u>BOC2J0</u>	<u>BOC2F0</u>	
Cu	55300	55800	- ✓

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: W0091		REVIEWER: RJS			DATE: 9/21/94			PAGE 1 OF 1	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
Prep 1	Beryllium	.710			ug/L	3.53	7.1	BOC2C5	u
↓	↓	↓			↓	↓	↓	BOC2C6	u
↓	↓	↓			↓	↓	↓	BOC2C9	u
↓	↓	↓			↓	↓	↓	BOC2D0	u
↓	↓	↓			↓	↓	↓	BOC2D5	u
↓	↓	↓			↓	↓	↓	BOC2D6	u
Prep 1	Copper	5.14				25.7	51.4	BOC2C7	u
↓	↓	↓			↓	↓	↓	BOC2C8	u
↓	↓	↓			↓	↓	↓	BOC2D9	u
↓	↓	↓			↓	↓	↓	BOC2F0	u
↓	↓	↓			↓	↓	↓	BOC2F9	u
↓	↓	↓			↓	↓	↓	BOC2G0	u
↓	↓	↓			↓	↓	↓	BOC2H1	u
↓	↓	↓			↓	↓	↓	BOC2H2	u
↓	↓	↓			↓	↓	↓	BOC2H7	u
↓	↓	↓			↓	↓	↓	BOC2H8	u
↓	↓	↓			↓	↓	↓	BOC2H9	u

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BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: W0091		REVIEWER: RJS			DATE: 9/28/94			PAGE 2 OF	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
Prep 1	Copper	5.14			ug/l	25.7	51.4	BOC2J0	U
Prep 2	Iron	19.5				97.5	195	BOC2C6	U
								B0C2C9	U
								B0C2D0	U
								B0C2D6	U
Prep 3	Iron	32.14				160.7	321.4	B0C2D7	U
								B0C2D8	U
Prep 1	Iron	15.36				76.8	153.6	B0C2C7	U
								B0C2C8	U
								B0C2D9	U
								B0C2F0	U
								B0C2F9	U
								B0C2G0	U
								B0C2H1	U
								B0C2H2	U
								B0C2H8	U
								B0C2H9	U

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BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: W0091		REVIEWER: RJS		DATE: 9/21/94			PAGE 3 OF		
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
Prep 1	Iron	15.36			ug/L	76.8	153.6	Boc2J0	u
Prep 2	Silver	-3.87				-19.35	-38.7	Boc2C5, Boc2C6 Boc2C9, Boc2D0 Boc2D5, Boc2D6	UJ
Prep 1	Zinc	4.1				20.5	41	Boc2C8, Boc2D9 Boc2F9, Boc2H2 Boc2H8, Boc2H9	(u)
CCB 1,2	Beryllium	1.1				5.5	11	Boc2C5, Boc2D0 Boc2C6, Boc2D5 Boc2C9, Boc2D6	u
CCB 2	Iron	18				90	180	Boc2C6, Boc2D6 Boc2C9 Boc2D0	u
CCB 3	LEAD	-0.8				-4.0	-8.0	Boc2H2, Boc2C8 Boc2C7	UJ
CCB 4	LEAD	-0.7				-3.5	-7.0	Boc2H9 Boc2H8 Boc2H9	UJ
CCB 5	LEAD	-0.8				-4.0	-8.0	Boc2J0	BJ
CCB 7	LEAD	-1.8				-9	-18	Boc2C5	BJ
CCB 4	Mercury	.12				.6	1.2	Boc2C5 Boc2C6	u
CCB 5	Mercury	.138				6.9	13.8	Boc2C9, Boc2D6 Boc2D0 Boc2D5	u

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ACCURACY DATA SUMMARY

SDG: W0091	VALIDATOR: RJS	DATE: 9/21/94	PAGE 1 OF 2	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
BOC2H1S	Selenium	1.7	BOC2C5, BOC2C7 BOC2C6, BOC2C8	UR
			BOC2C9, BOC2D0 BOC2D5, BOC2D6	
			BOC2D9, BOC2F0 BOC2F9, BOC2G0	
			BOC2H1, BOC2H2 BOC2H7, BOC2H8	
			BOC2H9, BOC2J0	
BOC2C5 A	Selenium	81.2	BOC2C5	UJ
BOC2C6 A		76.9	BOC2C6	
BOC2C7 A		65.3	BOC2C7	
BOC2C8 A		60.3	BOC2C8	
BOC2D6 A		76.6	BOC2D6	
BOC2D9 A		43.9	BOC2D9	
BOC2F0 A		42.5	BOC2F0	
BOC2F9 A		64.1	BOC2F9	
BOC2G0 A		59.4	BOC2G0	
BOC2H1 A		66.4	BOC2H1	
BOC2H2 A		65.9	BOC2H2	
BOC2H7 A		60.3	BOC2H7	
BOC2H8 A		57.6	BOC2H8	

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U.S. EPA - CLP

3
BLANKS

Name: ITAS_ST._LOUIS _____

Contract: 519.54 _____

Code: ITMO Case No.: _____

SAS No.: _____

SDG No.: W0091 _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum	51.2	U	51.2	U	51.2	U	51.2	U	51.200	U	P
Antimony	26.5	U	26.5	U	26.5	U	26.5	U	26.500	U	P
Arsenic	1.2	U	-1.3	B	-1.3	B	1.2	U	1.200	U	F
Barium	2.2	U	2.2	U	2.2	U	2.2	U	2.200	U	P
Beryllium	0.3	U	0.3	U	0.3	U	0.3	U	0.300	U	P
Bismuth	2.8	U	2.8	U	2.8	U	2.8	U	2.800	U	P
Calcium	26.6	U	26.6	U	26.6	U	26.6	U	40.590	B	P
Chromium	4.2	U	4.2	U	4.2	U	4.2	U	4.200	U	P
Cobalt	4.2	U	4.2	U	4.2	U	4.2	U	4.200	U	P
Copper	4.9	U	4.9	U	4.9	U	4.9	U	5.140	B	P
Iron	14.5	U	14.5	U	14.5	U	14.5	U	15.360	B	P
Lead	0.6	U	0.6	U	0.6	U	0.8	B	0.600	U	F
Magnesium	56.3	U	56.3	U	56.3	U	56.3	U	59.280	B	P
Manganese	2.7	U	2.7	U	2.7	U	2.7	U	2.700	U	P
Mercury	0.1	U	0.1	U	0.1	U	0.1	U	0.100	U	CV
Nickel	18.6	U	18.6	U	18.6	U	18.6	U	18.600	U	P
Potassium	3170.0	U	3170.0	U	3170.0	U	3170.0	U	3170.000	U	P
Selenium	1.8	U	1.8	U	1.8	U	1.8	U	1.800	U	F
Silver	3.7	U	3.7	U	3.7	U	3.7	U	3.700	U	P
Sodium	62.7	U	62.7	U	62.7	U	62.7	U	62.700	U	P
Thallium	1.1	U	1.1	U	1.1	U	1.1	U	1.100	U	F
Zinc	12.2	U	12.2	U	12.2	U	12.2	U	12.200	U	P
Zinc	4.0	U	4.0	U	4.0	U	4.0	U	4.100	B	P

3065H1
H2
C7
C8
FORM III - IN

3065H7
H8
H9
J0
D9
F0
F9
G0

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ICP

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U.S. EPA - CLP

3
BLANKS

Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____
 Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W0091 _____
 Preparation Blank Matrix (soil/water): WATER
 Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	2	3	4	5	6			
Aluminum			51.2	U	51.2	U			51.200	U	P
Antimony			26.5	U	26.5	U			26.500	U	P
Arsenic			1.2	U	-1.2	B			1.200	U	F
Barium			2.2	U	2.2	U			2.200	U	P
Beryllium			0.3	U	0.3	U			0.710	B	P
Cadmium			2.8	U	2.8	U			2.800	U	P
Calcium			26.6	U	26.6	U			59.540	B	P
Chromium			4.2	U	4.2	U			4.200	U	P
Cobalt			4.2	U	4.2	U			4.200	U	P
Copper			4.9	U	4.9	U			4.900	U	P
Iron			14.5	U	14.5	U			19.500	B	P
Lead			-0.7	B	0.6	U	0.6	U	0.600	U	F
Magnesium			56.3	U	56.3	U			56.300	U	P
Manganese			2.7	U	2.7	U			2.700	U	P
Mercury			0.1	U					0.169	B	CV
Nickel			18.6	U	18.6	U			18.600	U	P
Potassium			3170.0	U	3170.0	U			3170.000	U	P
Selenium			1.8	U	1.8	U	1.8	U	1.800	U	F
Silver			3.7	U	3.7	U			-3.870	B	P
Sodium			62.7	U	62.7	U			93.230	B	P
Thallium	1.1	U	1.1	U	1.1	U	1.1	U	1.100	U	F
Titanium			12.2	U	12.2	U			12.200	U	P
Zinc			4.0	U	4.0	U			4.000	U	P

Pb
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 07
 FORM III - IN
 08

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U.S. EPA - CLP

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BLANKS

Name: ITAS_ST_LOUIS _____ Contract: 519.54 _____

Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W0091 _____

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum	51.2	U	51.2	U	51.2	U	51.2	U			P
Antimony	26.5	U	26.5	U	26.5	U	26.5	U			P
Arsenic	1.2	U	1.2	U	1.2	U	1.2	U			P
Barium	2.2	U	2.2	U	2.2	U	2.2	U			P
Beryllium	0.8	B	0.1	B	0.1	B	0.8	B			P
Bismuth	2.8	U	2.8	U	2.8	U	2.8	U			P
Calcium	26.6	U	69.5	B	59.9	B	78.3	B			P
Chromium	4.2	U	4.2	U	4.2	U	4.2	U			P
Cobalt	4.2	U	4.2	U	4.2	U	4.2	U			P
Copper	4.9	U	4.9	U	4.9	U	4.9	U			P
Iron	14.5	U	22.0	B	18.0	B	14.5	U			P
Lead	-1.1	B	0.6	U	1.8	B	0.6	U			P
Magnesium	56.3	U	56.3	U	56.3	U	56.3	U			P
Manganese	2.7	U	2.7	U	2.7	U	2.7	U			P
Mercury	0.1	U	0.1	B	0.1	B	0.1	B			CV
Nickel	18.6	U	18.6	U	18.6	U	18.6	U			P
Potassium	3170.0	U	3170.0	U	3170.0	U	3170.0	U			P
Selenium			1.8	U	1.8	U					P
Silver	3.7	U	3.7	U	3.7	U	3.7	U			P
Sodium	62.7	U	62.7	U	62.7	U	108.1	B			P
Sodium			1.1	U	1.1	U	1.1	U			P
Vanadium	12.2	U	12.2	U	12.2	U	12.2	U			P
Zinc	4.0	U	4.0	U	4.0	U	4.0	U			P

1
B02C5 B02C6
C9

FORM III - IN

FCI D0
D5
D6

ILM03.0

Page 2
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002
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004

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U.S. EPA - CLP

3
BLANKS

Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____

Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
	C		1	C	2	C	3	C			
Aluminum			52.9	B							B
Antimony			26.5	U							U
Arsenic			1.2	U							U
Barium			2.2	U							U
Beryllium			1.6	B							B
Bismuth			3.9	B							B
Calcium			136.0	B							B
Chromium			4.2	U							U
Cobalt			4.2	U							U
Copper			4.9	U							U
Cadmium			34.6	B							B
Lead			0.6	U	0.6	U					U
Magnesium			56.3	U							U
Manganese			2.8	B							B
Mercury			0.1	B	0.1	B	0.1	B			B
Nickel			18.6	U							U
Potassium			3170.0	U							U
Selenium	1.8	U	1.8	U	1.8	U	1.8	U			U
Silver			3.7	U							U
Sodium			98.4	B							B
Thallium	1.1	U	1.1	U	1.1	U	1.1	U			U
Zinc			12.2	U							U
			4.0	U							U

FORM III - IN

ILM03.0

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U.S. EPA - CLP

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BLANKS

Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____

Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
	1	C	1	C	2	C	3	C	C		
Aluminum											NR
Antimony											NR
Arsenic	1.2	U	1.2	U	1.2	U	1.2	U			F
Barium											NR
Beryllium											NR
Bismuth											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead											NR
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium			1.8	U	1.8	U					F
Silver											NR
Sodium											NR
Sodium			1.1	U	1.1	U					F
Tin											NR
Zinc											NR

U.S. EPA - CLP

3
BLANKS

Name: ITAS_ST._LOUIS _____ Contract: 519.54 _____

Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0091 _____

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	1	C	2	C	3	C	C		
Aluminum											NR
Antimony											NR
Arsenic			1.2	U	1.2	U					F
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead											NR
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Vanadium											NR
Zinc											NR

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U.S. EPA - CLP

3
BLANKS

Name: ITAS_KNOXVILLE

Contract: HANFORD/WE

Code: ITSTU

Case No.: WO664

SAS No.: _____

SDG No.: W0091

eparation Blank Matrix (soil/water): WATER

eparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank		
			1	C	2	C	3	C	C	M	
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	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	2.770	B	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.000	U	P
Bismuth	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	6.750	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	82.140	B	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Magnesium	50.0	U	50.0	U	50.0	U	50.0	U	50.000	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
Mercury	0.2	U	0.2	U				U	0.200	U	CV
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	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
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	5.000	U	P

CPBW0706A (2193)
APBW0719A (Sample) (353)
APBW0620A (AB) (250)

PBW0620A (AB) (250)

D7 D8

3
PFA
ILM02.1
8/1/94

FORM III - IN
000064

00100A

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U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOC2H1S

Name: ITAS_ST_LOUIS

Contract: 519.54

Code: ITMO Case No.:

SAS No.:

SDG No.: W0091

Matrix (soil/water): WATER

Level (low/med): LOW

Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2021.8200	51.2000 U	2000.00	101.1		P
Antimony	75-125	539.9600	26.5000 U	500.00	108.0		P
Arsenic	75-125	42.7800	4.4000 B	40.00	96.0		F
Barium	75-125	2015.9300	29.7000 B	2000.00	99.3		P
Beryllium	75-125	53.7500	0.3000 U	50.00	107.5		P
Bismuth	75-125	62.0600	2.8000 U	50.00	124.1		P
Cadmium							NR
Chromium	75-125	233.4500	39.6000	200.00	96.9		P
Cobalt	75-125	488.6500	4.2000 U	500.00	97.7		P
Copper	75-125	262.3900	8.7500 B	250.00	101.5		P
Iron	75-125	1033.4100	28.9300 B	1000.00	100.4		P
Lead	75-125	22.2000	2.9800 B	20.00	96.1		F
Magnesium							NR
Manganese	75-125	504.5800	2.7000 U	500.00	100.9		P
Mercury	75-125	1.1500	0.1000 U	1.00	115.0		CV
Nickel	75-125	497.0300	18.6000 U	500.00	99.4		P
Strontium							NR
Selenium	75-125	3.3400 B	9.0000 U	200.00	1.7	N	F
Silver	75-125	50.8400	3.7000 U	50.00	101.7		P
Sodium							NR
Thallium	75-125	51.0800	1.1000 U	50.00	102.2		F
Vanadium	75-125	513.4200	16.8900 B	500.00	99.3		P
Zinc	75-125	617.0800	106.2800	500.00	102.2		P

Comments:

9613490.0166

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Sample Name: ITAS_KNOXVILLE

Contract: HANFORD/WE

BOC2D7S

Sample Code: ITSTU Case No.: WO664

SAS No.:

SDG No.: W0091

Matrix: WATER

Level (low/med): LOW

Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2003.7400	84.9200 B	2000.00	95.9		P
Antimony	75-125	472.7800	50.0000 U	500.00	94.6		P
Arsenic	75-125	33.8600	2.0000 U	40.00	84.6		F
Barium	75-125	1951.6000	26.7500 B	2000.00	96.2		P
Beryllium	75-125	52.1800	1.0000 U	50.00	104.4		P
Cadmium	75-125	44.9800	5.0000 U	50.00	90.0		P
Calcium							NR
Chromium	75-125	199.9400	10.0000 U	200.00	100.0		P
Cobalt	75-125	474.6600	10.0000 U	500.00	94.9		P
Copper	75-125	233.9000	10.0000 U	250.00	93.6		P
Iron	75-125	1111.8100	118.6800 U	1000.00	99.3		P
Lead	75-125	18.3600	2.0000 U	20.00	91.8		F
Magnesium							NR
Manganese	75-125	483.7600	4.2100 B	500.00	95.9		P
Mercury	75-125	1.1620	0.2000 U	1.00	116.2		CV
Nickel	75-125	492.2800	20.0000 U	500.00	98.5		P
Potassium							NR
Selenium	75-125	8.7900	2.0000 U	10.00	87.9		F
Silver	75-125	46.3100	5.0000 U	50.00	92.6		P
Sodium							NR
Sulfur	75-125	44.0000	2.0000 U	50.00	88.0		F
Zinc	75-125	479.3700	10.0000 U	500.00	95.9		P
	75-125	494.4000	5.9800 B	500.00	97.7		P

Comments:

8/1/94

001037

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U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Name: ITAS_KNOXVILLE

Contract: HANFORD/WE

BOC2D8S

Code: ITSTU Case No.: WO664

SAS No.:

SDG No.: W0091

Matrix: WATER

Level (low/med): LOW

Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1939.2900	40.0000 U	2000.00	97.0		P
Antimony	75-125	494.4400	50.0000 U	500.00	98.9		P
Arsenic	75-125	34.6000	2.0000 U	40.00	86.5		F
Barium	75-125	1923.9500	28.3900 B	2000.00	94.8		P
Beryllium	75-125	51.8500	1.0000 U	50.00	103.7		P
Cadmium	75-125	43.6100	5.0000 U	50.00	87.2		P
Calcium							NR
Chromium	75-125	198.0900	10.0000 U	200.00	99.0		P
Cobalt	75-125	468.6800	10.0000 U	500.00	93.7		P
Copper	75-125	231.1300	10.0000 U	250.00	92.5		P
Iron	75-125	1020.9200	32.0300 B	1000.00	98.9		P
Lead	75-125	18.4700	2.0000 U	20.00	92.4		F
Magnesium							NR
Manganese	75-125	474.7300	2.0000 U	500.00	94.9		P
Mercury	75-125	1.2040	0.2000 U	1.00	120.4		CV
Nickel	75-125	477.3000	20.0000 U	500.00	95.5		P
Potassium							NR
Selenium	75-125	8.9200	2.0000 U	10.00	89.2		F
Silver	75-125	46.3900	5.0000 U	50.00	92.8		P
Sodium							NR
Thallium	75-125	44.7000	2.0000 U	50.00	89.4		F
Titanium	75-125	473.2600	10.0000 U	500.00	94.7		P
Zinc	75-125	488.2800	5.6900 B	500.00	96.5		P

Comments:
DISSOLVED.

Date: October 3, 1994
 To: Westinghouse Hanford Company (technical representative)
 From: A.T. Kearney, Inc.
 Subject: Radiochemistry - Data Package No. W0091-ITC-105 (SDG No. W0091)



INTRODUCTION

This memo presents the results of data validation on Data Package No. W0091-ITC-105 prepared by the International Technology Corporation (ITC) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analysis
BOC2C7	06/15/94	Water	D	See Note 1
BOC2D7	06/14/94	Water	D	See Note 1
BOC2H7	06/15/94	Water	D	See Note 1
BOC2H9	06/16/94	Water	D	See Note 1
BOC2D9	06/14/94	Water	D	See Note 1
BOC2F9	06/16/94	Water	D	See Note 1
BOC2H1	06/17/94	Water	D	See Note 1
BOC2C5	06/21/94	Water	D	See Note 1
BOC2C9	06/21/94	Water	D	See Note 1
BOC2D5	06/21/94	Water	D	See Note 1

Note 1. Requested Method: Gross Alpha/Beta, Sr-90, Tritium/C-14, Alpha Spectroscopy



Data validation was conducted in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Appendices 1 through 5 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualifications
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preparation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analyses is six months. All tritium samples must be analyzed within 7 days of distillation.

All holding times and sample preparation measures were acceptable.

- **Instrument Calibration and Performance**

Instrument calibration is performed to establish that the counters used to determine radionuclide activities are capable of producing acceptable and reliable analytical data. Each counting system must be factory calibrated at installation and after any maintenance or repair. Calibration consists of an instrument efficiency determination for each applicable radionuclide. Continuing calibration checks are performed to verify that instrument performance is stable and reproducible.

Due to continuing calibration counts outside QC limits, strontium-90 results in samples BOC2C7 and BOC2H1 were rejected and flagged "R/UR".

All other calibration results, including efficiency checks and background counts, were acceptable.

- **Blanks**

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above both the MDA and the statistical uncertainty associated with that MDA, the following qualifiers were applied: All positive sample results less than five times the highest blank concentration were qualified as estimated; sample results below the MDA were elevated to the MDA and qualified as undetected; sample results above the MDA and greater than five times the highest blank concentration were not qualified.

Due to carbon-14 blank contamination, sample BOC2C7 was qualified as estimated and flagged "J".

All other blank results were acceptable.

- **Accuracy**

Accuracy was evaluated by analyzing soil or distilled water samples spiked with known amounts of radionuclides. The sample activity as determined by analysis is compared to the known activity to assess accuracy. The acceptable laboratory control sample recovery range is 70 to 130 percent, while that for a matrix spike is 60 to 140 percent. Spike sample results outside the above ranges resulted in associated sample results being qualified as estimated, rejected, or not qualified, depending on the activity of the individual sample. A chemical tracer is used to determine the efficiency of the analytical method, with tracer yield limits of 30 to 105 percent for strontium-90 and 20 to 105 percent for alpha spectroscopy. Sample results above the MDA with chemical yields outside the above stated limits were qualified as estimated or rejected.

Due to the lack of a matrix spike analysis, all carbon-14 and tritium results in all samples were qualified as estimated and flagged "J/UJ".

Due to a LCS recovery of 153%, uranium-235 results in sample BOC2D9 were qualified as estimated and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Analytical precision is expressed by the RPD between the recoveries of duplicate matrix spike analyses performed on a sample. When the laboratory has not performed duplicate spike analyses, precision may also be assessed using unspiked duplicate sample analyses. If both sample and replicate activities are greater than five times the RDL and the RPD is less than 35 percent for soil samples and 20 percent for water samples, the results are acceptable. If either activities are $< 5 \times \text{RDL}$, a control limit of $\leq 2 \times \text{RDL}$ is used for soil samples and $\leq \text{RDL}$ for water samples. If either the original or replicate value is below the RDL, the applicable control limits are $\leq \text{RDL}$ for water samples and $\leq 2 \times \text{RDL}$ for soil samples. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Uranium-234 results in the following samples were qualified as estimated and flagged ""J" due to an RPD of 105.25%:

- BOC2D7, BOC2C7, BOC2H7, BOC2H9, BOC2D9, BOC2F9, BOC2H1, BOC2C9, BOC2D5

Uranium-238 results in the following samples were qualified as estimated and flagged "J" due to an RPD of 99.1%:

- BOC2D7, BOC2C7, BOC2H9, BOC2D9, BOC2F9, BOC2HI, BOC2C9, BOC2D5

All other precision results were acceptable.

Field Duplicate Samples

Two sets of field duplicates samples was submitted to IT as shown below.

<u>Sample No.</u>	<u>Duplicate Sample No.</u>	<u>Well Location</u>
BOC2D9	BOC2H9	1-K-30
BOC2C7	BOC2H7	1-K-19

The duplicate sample results were compared using the sample guidelines for determining the RPD between a sample and its duplicate. For samples BOC2D9/BOC2H9, one sample result had an RPD greater than 20%, uranium-234 (54%). The difference between the uranium-235 and uranium-238 results were greater than the CRDL. No qualifiers were assigned per WHC-SD-EN-SPP-001, Rev 2. All other results fell within the required control limits. All results for samples BOC2C7/BOC2H7 were within the required control limits. All results appear in the summary tables within this report.

• **Sample Result Verification and Detection Limits**

Sample results and reported detection limits were recalculated to ensure that the reported results were accurate. Raw data were examined for anomalies, transcription errors, and reduction errors. Minimum Detectable Activities (MDA) for each analyte were assessed to ensure that they met the contract required detection levels (CRDL).

The reported MDA for the following analytes were above the CRDL: Uranium-234 and 238 results in samples BOC2D7, BOD2C7, BOC2H7, BOC2H9, BOD2F9, BOD2H1, BOD2C5, BOC2C9, and BOC2D5

The reported MDA for the following analytes were above the CRDL: Uranium-235 results in samples BOC2D7, BOD2C7, BOC2H7, BOC2H9, BOD2F9, BOD2H1, BOD2C5, and BOC2C9

The reported MDA for the following analytes were above the CRDL: Strontium-90 results in samples BOC2D7, BOD2C7, BOC2H7, BOC2H9, BOD2F9, BOD2H1, BOD2C5, and BOC2C9 and BOC2D5.

The reported MDA for the following analytes were above the CRDL: Gross beta results in sample BOC2H9.

The reviewer verified that the results and detection limits fell within the linear range of the instrument. All other sample results and reported detection limits were acceptable.

- **Completeness**

Data Package No. W0091-ITC-105 (SDG No. W0091) was submitted for validation and verified for completeness. Based on the rejection of two analyte results, the completion percentage was 97.5%.

MAJOR DEFICIENCIES

Due to continuing calibration counts outside QC limits, strontium-90 results in samples BOC2C7 and BOC2H1 were rejected and flagged "R/UR". Rejected data is invalid and unusable for all purposes.

MINOR DEFICIENCIES.

Due to carbon-14 blank contamination, sample BOC2C7 was qualified as estimated and flagged "J". Due to the lack of a matrix spike analysis, all carbon-14 and tritium results in all samples were qualified as estimated and flagged "J". Due to a LCS recovery of 153%, uranium-235 results in sample BOC2D9 were qualified as estimated and flagged "J".

Uranium-234 results in the following samples were qualified as estimated and flagged ""J" due to an RPD of 105.25%:

- BOC2D7, BOC2C7, BOC2H7, BOC2H9, BOC2D9, BOC2F9, BOC2H1, BOC2C9, BOC2D5

Uranium-238 results in the following samples were qualified as estimated and flagged "J" due to an RPD of 99.1%:

- BOC2D7, BOC2C7, BOC2H9, BOC2D9, BOC2F9, BOC2HI, BOC2C9, BOC2D5

Data qualified as estimated is valid and usable for limited purposes only. All other data is valid and usable for all purposes.

REFERENCES

WHC, 1992a, *Data Validation Procedures for Chemical Analyses*,
WHC-SD-EN-SPP-002, Rev. 2, Westinghouse Hanford Company, October 1993.

WHC, 1992b, *Data Validation Procedures for Radiochemical Analyses*,
WHC-SD-EN-001, Rev. 2, Westinghouse Hanford Company, 1993.

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Appendix 1

Glossary of Data Reporting Qualifiers

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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 same 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 the data validation, the associated quantitation limit is an estimate.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a QC deficiency identified during the data validation, 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 is 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 applications (i.e., usable for decision-making purposes).
- N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: W0091	REVIEWER: RBC	DATE: 9/23/94	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Strontium-90	R	BOC2C7	Cont. Calibration Outside QC Limits
Strontium-90	UR	BOC2H1	Cont. Calibration Outside QC Limits
Carbon-14	J	BOC2C7	Blank Contamination
Carbon-14	J	BOC2C5, BOC2C7, BOC2C9, BOC2D5, BOC2D7, BOC2D9, BOC2F9, BOC2H7, BOC2H9	No Matrix Spike
Carbon-14	UJ	BOC2H1	No Matrix Spike
Tritium	J	BOC2C5, BOC2C7, BOC2C9, BOC2D7, BOC2D9, BOC2F9, BOC2H7, BOC2H9	No Matrix Spike
Tritium	UJ	BOC2D5, BOC2H1	No Matrix Spike
Uranium-235	J	BOC2D9	High LCS
Uranium-234	J	BOC2C7, BOC2C9, BOC2D5, BOC2D7, BOC2D9, BOC2F9, BOC2H1, BOC2H7, BOC2H9	High RPD
Uranium-238	J	BOC2C7, BOC2C9, BOC2D5, BOC2D7, BOC2D9, BOC2F9, BOC2H1, BOC2H9	High RPD

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

9613490.0180

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40631001 MATRIX: WATER
 CLIENT ID: B0C2D7 DATE RECEIVED: 6/15/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	1.92E+00 <i>J</i>	7.07E-01	7.55E-01	3.22E-01	pCi/L	64.60%	RD3234
U-235	-1.55E-02 <i>U</i>	1.79E-02	1.80E-02	3.22E-01	pCi/L	64.60%	RD3234
U-238DA	1.64E+00 <i>J</i>	6.59E-01	6.96E-01	4.15E-01	pCi/L	64.60%	RD3234
ALPHA	2.59E+00	1.42E+00	1.46E+00	1.51E+00	pCi/L	100.00%	RD3214
BETA	3.58E+01	4.55E+00	5.21E+00	4.36E+00	pCi/L	100.00%	RD3214
STRONTIUM	9.40E-02 <i>U</i>	2.41E-01	2.42E-01	8.04E-01	pCi/L	88.20%	RD3204
C-14	2.67E+02 <i>J</i>	3.91E+00	1.43E+01	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	4.48E+05 <i>J</i>	1.83E+03	3.28E+04	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

RBe
9-25-94

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000012

9613490.0181

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40638501 MATRIX: WATER
 CLIENT ID: B0C2C7 DATE RECEIVED: 6/17/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	7.00E-01 J	4.26E-01	4.36E-01	4.50E-01	pCi/L	70.70%	RD3234
U-235	4.01E-02 U	1.19E-01	1.19E-01	3.15E-01	pCi/L	70.70%	RD3234
U-238DA	3.44E-01 J	2.89E-01	2.93E-01	2.69E-01	pCi/L	70.70%	RD3234
ALPHA	2.30E+00	1.34E+00	1.37E+00	1.30E+00	pCi/L	100.00%	RD3214
BETA	2.59E+01	4.00E+00	4.40E+00	4.42E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.02E+01 R	7.55E-01	2.71E+00	8.23E-01	pCi/L	95.00%	RD3204
C-14	1.02E+01 J	1.65E+00	3.38E+00	3.51E+00	pCi/L	100.00%	RD3263
TRITIUM	5.31E+03 J	2.21E+02	5.35E+02	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

RBC
 9-25-94

000013

0009

9613490.0182

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40638502 MATRIX: WATER
 CLIENT ID: B0C2H7 DATE RECEIVED: 6/17/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	6.83E-01 J	4.60E-01	4.70E-01	5.27E-01	pCi/L	60.30%	RD3234
U-235	6.36E-02 U	1.39E-01	1.39E-01	2.78E-01	pCi/L	60.30%	RD3234
U-238DA	1.69E-01 U	2.41E-01	2.42E-01	4.27E-01	pCi/L	60.30%	RD3234
ALPHA	1.04E+00 U	1.01E+00	1.02E+00	1.61E+00	pCi/L	100.00%	RD3214
BETA	2.74E+01	4.05E+00	4.49E+00	4.28E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.13E+01	7.87E-01	2.98E+00	7.74E-01	pCi/L	94.40%	RD3204
C-14	8.94E+00 J	1.68E+00	3.50E+00	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	5.50E+03 J	2.25E+02	5.49E+02	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

RBC
9-25-94

000014

0010

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40638503 MATRIX: WATER
 CLIENT ID: B0C2H9 DATE RECEIVED: 6/17/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	2.36E+00 J	7.45E-01	8.09E-01	3.45E-01	pCi/L	71.60%	RD3234
U-235	-4.65E-03 U	9.31E-03	9.33E-03	2.34E-01	pCi/L	71.60%	RD3234
U-238DA	1.21E+00 J	5.33E-01	5.57E-01	2.90E-01	pCi/L	71.60%	RD3234
ALPHA	3.52E+00	1.74E+00	1.80E+00	1.90E+00	pCi/L	100.00%	RD3214
BETA	4.40E+00 U	2.46E+00	2.48E+00	4.46E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.07E-01 U	2.14E-01	2.15E-01	7.12E-01	pCi/L	95.70%	RD3204
C-14	1.06E+04 J	2.65E+01	4.87E+02	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	5.87E+05 J	2.09E+03	4.29E+04	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

RBC
9-25-94

0011

000015

9613490.0184

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40638504 MATRIX: WATER
 CLIENT ID: B0C2D9 DATE RECEIVED: 6/17/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	1.35E+00 J	5.94E-01	6.22E-01	4.06E-01	pCi/L	65.90%	RD3234
U-235	3.64E-01 J	3.10E-01	3.14E-01	3.15E-01	pCi/L	65.90%	RD3234
U-238DA	7.18E-01 J	4.39E-01	4.50E-01	4.06E-01	pCi/L	65.90%	RD3234
ALPHA	2.44E+00	1.42E+00	1.45E+00	1.52E+00	pCi/L	100.00%	RD3214
BETA	6.71E+00	2.70E+00	2.75E+00	4.55E+00	pCi/L	100.00%	RD3214
STRONTIUM	-2.22E-01 U	1.84E-01	1.93E-01	7.50E-01	pCi/L	97.90%	RD3204
C-14	9.48E+03 J	2.38E+01	4.36E+02	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	5.54E+05 J	2.03E+03	4.04E+04	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

RBC
9-25-94

0012

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SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40638505 MATRIX: WATER
 CLIENT ID: B0C2F9 DATE RECEIVED: 6/17/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	2.88E+00	J 8.47E-01	9.33E-01	3.49E-01	pCi/L	67.50%	RD3234
U-235	4.69E-02	U 1.25E-01	1.25E-01	3.08E-01	pCi/L	67.50%	RD3234
U-238DA	1.71E+00	J 6.54E-01	6.94E-01	3.08E-01	pCi/L	67.50%	RD3234
ALPHA	3.44E+00	1.71E+00	1.76E+00	1.67E+00	pCi/L	100.00%	RD3214
BETA	8.80E+01	6.76E+00	9.17E+00	4.32E+00	pCi/L	100.00%	RD3214
STRONTIUM	3.74E+01	1.45E+00	9.36E+00	8.25E-01	pCi/L	85.80%	RD3204
C-14	6.13E+03	J 1.73E+01	2.83E+02	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	3.05E+03	J 1.80E+02	3.78E+02	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

*RMC
9-25-94*

000017

0013

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40640901 MATRIX: WATER
 CLIENT ID: B0C2H1 DATE RECEIVED: 6/20/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	1.48E+00 J	5.68E-01	6.00E-01	3.73E-01	pCi/L	79.00%	RD3234
U-235	4.01E-02 U	1.06E-01	1.07E-01	2.63E-01	pCi/L	79.00%	RD3234
U-238DA	1.52E+00 J	5.68E-01	6.01E-01	2.41E-01	pCi/L	79.00%	RD3234
ALPHA	1.98E+00	1.33E+00	1.35E+00	1.59E+00	pCi/L	100.00%	RD3214
BETA	4.77E+00	2.51E+00	2.53E+00	4.51E+00	pCi/L	100.00%	RD3214
STRONTIUM	-7.06E-02 UR	2.31E-01	2.31E-01	8.34E-01	pCi/L	93.10%	RD3204
C-14	-2.03E-01 UT	1.54E+00	3.25E+00	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	6.87E+01 UJ	1.02E+02	1.92E+02	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

RBC
9-25-94

000018

0014

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40651501 MATRIX: WATER
 CLIENT ID: B0C2C5 DATE RECEIVED: 6/23/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	9.97E-02 U	1.95E-01	1.95E-01	4.32E-01	pCi/L	75.20%	RD3234
U-235	-4.43E-03 U	8.86E-03	8.88E-03	2.23E-01	pCi/L	75.20%	RD3234
U-238DA	7.97E-02 U	1.58E-01	1.59E-01	3.43E-01	pCi/L	75.20%	RD3234
ALPHA	0.00E+00 U	4.47E-01	4.47E-01	1.47E+00	pCi/L	100.00%	RD3214
BETA	5.22E+00	2.48E+00	2.50E+00	4.30E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.45E-01 U	2.26E-01	2.29E-01	7.47E-01	pCi/L	100.00%	RD3204
C-14	1.36E+01 J	1.74E+00	3.64E+00	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	1.70E+04 J	3.67E+02	1.37E+03	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

RBC
9-25-94

000019

0015

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40651502 MATRIX: WATER
 CLIENT ID: B0C2C9 DATE RECEIVED: 6/23/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	9.12E-01 J	4.99E-01	5.14E-01	4.41E-01	pCi/L	64.90%	RD3234
U-235	1.72E-01 U	2.24E-01	2.25E-01	3.43E-01	pCi/L	64.90%	RD3234
U-238DA	1.01E+00 J	5.14E-01	5.33E-01	3.43E-01	pCi/L	64.90%	RD3234
ALPHA	1.76E-01 U	6.59E-01	6.59E-01	1.64E+00	pCi/L	100.00%	RD3214
BETA	2.75E+01	4.10E+00	4.53E+00	4.46E+00	pCi/L	100.00%	RD3214
STRONTIUM	9.84E+00	7.25E-01	2.65E+00	7.05E-01	pCi/L	97.30%	RD3204
C-14	1.99E+01 J	1.83E+00	3.84E+00	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	5.16E+02 J	1.16E+02	2.15E+02	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

RBC
 9-25-94

000020

0016

9613490.0189

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: 40651503 MATRIX: WATER
 CLIENT ID: B0C2D5 DATE RECEIVED: 6/23/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
U-234	4.01E+00 J	8.74E-01	1.01E+00	2.81E-01	pCi/L	87.90%	RD3234
U-235	9.10E-02 U	1.34E-01	1.35E-01	1.91E-01	pCi/L	87.90%	RD3234
U-238DA	3.21E+00 J	7.82E-01	8.80E-01	2.36E-01	pCi/L	87.90%	RD3234
ALPHA	3.80E+00	2.08E+00	2.12E+00	2.34E+00	pCi/L	100.00%	RD3214
BETA	1.30E+01	3.18E+00	3.30E+00	4.39E+00	pCi/L	100.00%	RD3214
STRONTIUM	-1.12E-01 U	2.01E-01	2.03E-01	7.58E-01	pCi/L	96.10%	RD3204
C-14	4.17E+01 J	2.10E+00	4.60E+00	3.62E+00	pCi/L	100.00%	RD3263
TRITIUM	1.81E+02 UJ	1.05E+02	1.97E+02	2.35E+02	pCi/L	97.30%	RD3205

Number of Results: 8

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000022



INTERNATIONAL
TECHNOLOGY
CORPORATION

CERTIFICATE OF ANALYSIS

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

August 5, 1994

Attention: J.A.Lerch

SAF Number : 94-220
Date SDG Closed : June 23, 1994
Number of Samples : Ten (10)
Sample Type : Water
SDG Number : W0091
Data Deliverable : Stand Alone

I. Introduction

On June 15, 17, 20, and 23, 1994, ten water samples were received by the Quanterra Environmental Services Richland Laboratory (QESRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the WHC specific IDs:

<u>QESRL ID</u>	<u>WHC ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
406310-01A	B0C2D7	Water	6/15/94
406385-01A	B0C2C7	Water	6/17/94
406385-02A	B0C2H7	Water	6/17/94
406385-03A	B0C2H9	Water	6/17/94
406385-04A	B0C2D9	Water	6/17/94
406385-05A	B0C2F9	Water	6/17/94
406409-01A	B0C2H1	Water	6/20/94
406515-01A	B0C2C5	Water	6/23/94
406515-02A	B0C2C9	Water	6/23/94
406515-03A	B0C2D5	Water	6/23/94

Regional Office

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

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Westinghouse Hanford Company
August 5, 1994
Page 2

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

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222

Gross Beta by method ITAS-RD-3222

Strontium-90 by method ITAS-RD-3204

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247

Tritium by method ITAS-RD-3205

III. Quality Control

The analytical results for each analysis performed under SDG W0091 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

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

IV. Comments

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

Westinghouse Hanford Company
August 5, 1994
Page 3

Alpha Spectroscopy

Uranium-234, 235, 238 by method ITAS-RD-3234

The LCS U-235 recovery is biased 59% high. The LCS is accepted based on acceptable U-234 and U-238 recoveries. The bias observed in the U-235 recovery is due to the low abundance of U-235 in the spike (the expected result is less than the RDL) which makes quantitation less precise. The batch blank, sample and sample duplicate (duplicate of sample B0C2H7) results are within contractual limits.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2D7) results are within contractual limits.

Gross Beta by method ITAS-RD-3222

The MDA achieved for sample B0C2H9 (4.46 pCi/L) is over the RDL of 4 pCi/L. The result for the sample (4.40 pCi/L) is also over the RDL but is slightly lower than the achieved MDA. The sample was analyzed in duplicate and the result for the duplicate of the sample (5.23 pCi/L and within the 3 sigma control limit) is also over the RDL but the achieved MDA (4.35 pCi/L) for the duplicate is less than its result. The result for sample B0C2H9 is accepted due to the acceptability of the duplicate of the sample. The MDAs for the batch were slightly elevated due to precipitate weights for the samples that were at the higher end of the acceptable range. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2H9) results are within contractual limits except as noted.

Strontium-90 by method ITAS-RD-3204

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2D7) results are within contractual requirements.

Westinghouse Hanford Company
August 5, 1994
Page 4

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247

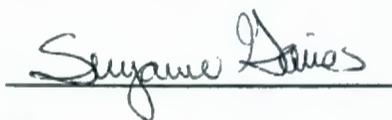
Sample B0C2C7 and the duplicate of B0C2C7 were not within the 3 sigma control limits, therefore, the sample and duplicate were reanalyzed. The reanalysis results are within contractual requirements and are reported. The original and reanalysis LCS and batch blank results are within contractual requirements.

Tritium by method ITAS-RD-3205

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0C2D7) results are within contractual requirements.

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

Reviewed and approved:



Suzanne Gaines
Project Manager

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Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround

- Priority
 Normal

Collector K. Trapp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No.
Ice Chest No.	Field Logbook No. EEL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No.	Bill of Lading/Air Bill No.

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3												
	Type of Container	G	P	Gs	Gs	G												
	No. of Container(s)	1	4	2	1	1												
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40mL	1L												

SAMPLE ANALYSIS 406309	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/ 235/238 Sr-90	C-14, TRITIUM	ACTIVI- TY SCANT	METALS-TAL (FILTERED)													
-------------------------------	----------------------------	---	------------------	---------------------	--------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample No.	Matrix*	Date Sampled	Time Sampled															
BOC217 01A	W	6/14/94	1030	X	X	X	X											
BOC217 02A	W	↓	↓															

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS Standalone Data Deliverable	Matrix*
Relinquished By <i>K. Trapp</i>	Date/Time 1450	Received By <i>P. Simpson</i>	Date/Time 6/14/94
Relinquished By <i>P. Simpson</i>	Date/Time 6/14/94 1125	Received By <i>ITAS</i>	Date/Time 6/15/94 1130
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SDG W0091

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

961491109C

9613490.0196

Contractor WHC	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) W94-0-0594-39
--------------------------	--------------------------------------	---

PART I - TO BE COMPLETED BY ORIGINATOR

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

The following items are to be shipped from Contractor Vendor

Routing Contractor Vendor

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

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: BO9H63 Cooler ID: ER-25 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: BOC2D7 BOC2D8 BOC0Q5 Cooler ID: E12-25 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

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

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the **100 areas.**

JUN 15 1994
PROPERTY RECORDS

Bill of lading # **NA**

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

RM Clearance for Public Release NS	RM Survey No 178704	Date 6-15-94
Location of Property (Area & Bldg.) 100 K	Contact P. H. Butcher	Phone (509) 376-4388
Date Ready for Shipment 6/15/94	Cost Code to be Charged 8B410 / R31AA	Approximate Date This Property will be Returned NA
Originated By A. J. SIMPSON	Date	Authorized By <i>[Signature]</i>
Signature and Name of Property Control	Custodian Date	Property Management Approval <i>[Signature]</i>
		Date 6/15/94

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient <i>[Signature]</i> ITAS	Return Order No 1130	Date Issued	Purchase Order No. 0043	Date Issued
Date 6/15/94				

DISTRIBUTION

By Originator White, Green, Yellow, Pink - Property Management Goldenrod - Retain	Shipping Operation - Sign all Copies and Forward to: White - Property Management Yellow - 000028 Green - Property Control Custodian (Issuing Office) Pink - Originator
---	---

STATUS REPORT FOR N 622. RAD SCREEN 199-K-27 TIME: 6/15/94
DISPATCHED: 6/13/94 13:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/15/94 7:57

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHEAT CO
271	TOT-ACT	165.73 pCi/G (<1% POTENTIAL ALPHA)	***	***	J12

END OF REPORT

BEST AVAILABLE COPY

BOC2D7

BOC2D8

BOC0Q5

AJS
6/15/94



SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6/15/94 1130 Client Name WAC

Project/Client # 94-220 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) ER-25

- 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: 14

8. Samples have: ✓ custody seals ✓ appropriate sample labels

9. Samples are: ✓ in good condition _____ leaking
_____ broken _____ have air bubbles
_____ other

10. Coolant present? Yes No
Sample temperature 2°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 @6/15/94
13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Tom Gilmore Date/Time 6/15/94 1130

9613490.0199

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: Chem Rad
406309, 406310 DATE INITIATED: 6/15/94

INITIATED BY: T Gilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/15/94 1130

	CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
01	Boc2D7	SAF 94-220	Metals, Rad
02	Boc2D8		metals

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: No SAF# on COC.

SUPERVISOR REVIEW: Jami Heidelberg

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

A.K. JRM
15 June 94

Customer Code	Received Date	Screening Prep Date	Count Date	Mnts. Cntd	BACKGROUND		
WHC	6-15-94	6-15	6-15	10	Alpha	Beta	Mnts
					20	190	240

Customer ID	pH <2 Rcvd/Relq	Residue Wght mG	Vol. Anal. mG mL	Sample Size Gm L	SMPL CNT DATA			Net Sample Counts/Minute		DPM / Aliquot		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1 Yes/No	Aliquot to Cat 1 Gm or L	
					Hldr Num.	Total Alpha	Counts Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta		Alpha	Beta
01 BOC2D7		2.4	10	1.0	19	7	35	0.62	2.71	2.4E+00	5.4E+00	1.1E-04	2.4E-04	1.0E-07	1.1E-07	1.1E+02	2.4E+02	Yes	9.8E+01	4.1E+02
94268-01.F10		87.0	87	400.0	20	5	36	0.42	2.81	4.0E+00	6.6E+00	8.2E-03	1.4E-02	9.1E-06	5.9E-06	2.0E+01	3.4E+01	Yes	4.9E+02	2.9E+03
BOBD66		96.1	96	100.0	21	2	13	0.12	0.51	1.2E+00	1.2E+00	5.6E-04	5.4E-04	1.1E-06	5.4E-07	5.6E+00	5.4E+00	Yes	1.8E+03	1.8E+04
TOTAL uCi												8.9E-03	1.4E-02							

4 06.310

SP6 W0091

000032

0047

9613490.0200

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround

Priority
 Normal

Collector K. Trapp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No.
Ice Chest No. 7WS104	Field Logbook No. EFL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No. 1174-0-0594-42	Bill of Lading/Air Bill No. NONE

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3											
	Type of Container	G	P	Gs	Gs	G											
	No. of Container(s)	1	4	2	1	1											
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40mL	1L											

SAMPLE ANALYSIS 466384	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA U-234/ 235/238 406 Sr-90	C-14, TRITIUM 38501	ACTIVI-METALS-SCANTAL (FILTERED)													
--------------------------------------	----------------------------	---	------------------------	-------------------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample No.	Matrix*	Date Sampled	Time Sampled														
BOC2 01A	W	6/15/94	1220	X	+	+	+										
BOC2 02A	W	↓	↓														

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix*
Relinquished By <i>K. Trapp / K. Trapp</i>	Date/Time 6/17/94	Received By <i>AG Simpson</i>	Date/Time 6/15/94 1455
Relinquished By <i>AG Simpson</i>	Date/Time 6-17-94 1000	Received By <i>Robert [unclear]</i>	Date/Time 6-17-94 1000
Relinquished By <i>Robert [unclear]</i>	Date/Time 6-17-94 1210	Received By <i>Karen [unclear]</i>	Date/Time 6-17-94 12:10
Relinquished By	Date/Time	Received By	Date/Time
LABORATORY SECTION		Received By	Title
FINAL SAMPLE DISPOSITION		Disposal Method	Disposed By

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

9613490.0201

Data Turnaround

Priority
 Normal

Collector K. Trapp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No.
Ice Chest No. 6-110509	Field Logbook No. EFL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No. W99-0-0594-42	Bill of Lading/Air Bill No. NONE

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3													
	Type of Container	G	P	Gs	Gs	G													
	No. of Container(s)	1	4	2	1	1													
	Volume	1L	1L	1L	40mL	1L													

Special Handling and/or Storage Maintain between 2 and 6 degrees C.	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/ 235/238 406 Sr-90	C-14, TRITIUM	ACTIVI-METALS-TAL SCANTAL															
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SAMPLE ANALYSIS		004900034																	
Sample No.	Matrix*	Date Sampled	Time Sampled																
BOC2 03A	W	6/15/94	1220	+	+	+	+												
BOC2 04A	W	↓	↓																

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS Standalone Data Deliverable	Matrix*
Relinquished By K. Trapp / G. Hamilton	Date/Time 6/15/94 14:15	Received By A. Simpson	Date/Time 6/17/94 10:00
Relinquished By A. Simpson	Date/Time 6-17-94 1000	Received By D. Reynolds	Date/Time 6-17-94 1000
Relinquished By D. Reynolds	Date/Time 6-17-94 12:10	Received By K. Trapp / G. Hamilton	Date/Time 6-17-94 12:10

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

9613490-0202

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround
 Priority
 Normal

Collector K. Trepp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. 94-220
Ice Chest No. ER-19	Field Logbook No. EFL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No.	Bill of Lading/Air Bill No.

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3												
		Type of Container	G	P	Gs	Gs	G											
	No. of Container(s)	1	4	2	1	1												
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40mL	1L												

SAMPLE ANALYSIS

METALS-TAL (UNFIL-TERED)
 GROSS ALPHA/BETA, U-234/235/238 Sr-90
 4068503
 C-14, TRITIUM
 ACTIVI-METALS-TAL (FIL-TERED)

406384

0050 000035

Sample No.	Matrix*	Date Sampled	Time Sampled															
BOC249 05A	W	6/16/94	10:15	X	X	X	X											
BOC260 06A	W	↓	↓															

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS Standalone Data Deliverable	Matrix*
Relinquished By <i>K. Trepp</i>	Date/Time 6/16/94 1300	Received By <i>K. Trepp</i>	Date/Time 6-16-94 1500
Relinquished By <i>K. Trepp</i>	Date/Time 6-17-94 1210	Received By <i>K. Trepp</i>	Date/Time JAS 6-17-94 12:10
Relinquished By	Date/Time	Received By	Date/Time

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

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

9613490.0207

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround

Priority
 Normal

Collector K. Trepp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. 94-320
Ice Chest No. ER-19	Field Logbook No. EFL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No.	Bill of Lading/Air Bill No.

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3													
	Type of Container	G	P	Gs	Gs	G													
	No. of Container(s)	1	4	2	1	1													
	Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40mL	1L												

SAMPLE ANALYSIS 406384	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/ 235/238 406385dt Sr-90	C-14, TRITIUM	ACTIVI- TY SCAN	METALS-TAL (FILTERED)														
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Sample No.	Matrix*	Date Sampled	Time Sampled																
BOC2074 07A	W	6/16/94	1015	+	+	+	+												
BOC2070 08A	W	↓	↓																

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS Standalone Data Deliverable	Matrix*
Relinquished By K. Trepp / K. Trepp WHC 6/16/94	Date/Time 1900	Received By Karen Douglas	Date/Time 6-16-94
Relinquished By Karen Douglas	Date/Time 6-17-94	Received By Karen Douglas	Date/Time 6-17-94 12:10
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

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

9613490.0201

Data Turnaround

Priority
 Normal

Collector K. Trapp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. 94-220
Ice Chest No. ER-19	Field Logbook No. EFL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No.	Bill of Lading/Air Bill No.

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3											
	Type of Container	G	P	Gs	Gs	G											
	No. of Container(s)	1	4	2	1	1											
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40mL	1L											

0052 SAMPLE ANALYSIS 406384	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/235/238 40638505 Sr-90	C-14, TRITIUM	ACTIVI-METALS-SCANTAL	METALS-TAL (FILTERED)												
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Sample No.	Matrix*	Date Sampled	Time Sampled															
BOC2 F9 09A	W	6/16/94	1220															
BOC2 G0 10A	W	↓	↓															

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix* S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By <i>K. Trapp</i>	Date/Time 6/10/94 1509	Received By <i>[Signature]</i>	Date/Time 6-16-94	Standalone Data Deliverable 6-17-94 12:10	
Relinquished By <i>[Signature]</i>	Date/Time 6-17-94	Received By <i>[Signature]</i>	Date/Time ITAS 6-17-94		
Relinquished By	Date/Time	Received By	Date/Time		
Relinquished By	Date/Time	Received By	Date/Time		

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

96134901-0205

9613490-0206
Saturday Delivery

Contractor WHC	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEME W94-0-0594-4
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PART I - TO BE COMPLETED BY ORIGINATOR

Department ER Eng Support	Section Field & Analytical Supp	Under ER Field Sampling
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The following items are to be shipped from Contractor Vendor

Routing Contractor Vendor

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

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: BOC2H9, BOC2J0, BOC2D9, BOC2FD BOC2F9, BOC2G0 Cooler ID: ER-19 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: BOC2H7, BOC2H8, BOC2C7, BOC2C8, Cooler ID: GWS-104 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

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

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the **100K Area**

JUN 17 1994

PROPERTY RECORD

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 J. Brown	RM Survey No 178730	Date 6-16-94
Location of Property (Area & Bldg.) 100-KR-4	Contact P. H. Butcher	Phone (509) 376-4
Date Ready for Shipment 6/17/94	Cost Code to be Charged PC4CA/8B410	Approximate Date This Property will be Returned
Originated By P.H. Butcher	Date 6/17/94	Authorized By P.H. Butcher
Signature and Name of Property Control	Custodian Date	Property Management Approval [Signature]
		Date 6/17/94

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient [Signature]	Return Order No. 6-17-94 10:10	Date Issued	Purchase Order No. 0053	Date Issued
Date				

DISTRIBUTION

By Originator White, Green, Yellow, Pink - Property Management Goldenrod - Retain	000038 Shipping Operation - Sign all Copies and Forward to: White - Property Management Green - Property Control Custodian (Issuing Office) Yellow - Retain Pink - Originator
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SAMPLE STATUS REPORT FOR N 628. RAD SCREEN 199-K-34 TIME: 6/17/94 8: 9
DISPATCHED: 6/13/94 13:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/17/94 7:47

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACI	< 5.00000E 01 pci/G	N	Y	J12UP

END OF REPORT

BOC2F?
BOC2G0
BOC0R0
hcs
6/17/94

9613490.0208

SAMPLE STATUS REPORT FOR N 623. RAD SCREEN 199-K-30 TIME: 6/17/94 8: 9
DISPATCHED: 6/13/94 13:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/15/94 7:58

EXT. DETER. RESULTS OR STATUS
**** *****
4271 TOT-ACT 203.75 pCi/G (<1% POTENTIAL ALPHA)

OUT OF GOOD CHARGE
RANGE? ANS? CODE
*** **

END OF REPORT

BOC2H9
BOC2JO
BOC2D9
BOC2FO
BOC0Q8
hes
6/17/94

SAMPLE STATUS REPORT FOR N 617. RAD SCREEN 199-K-19 TIME: 6/17/94 8:9
 DISPATCHED: 6/13/94 13:30 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 6/17/94 7:47

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pci/G	N	Y	J12UP

END OF REPORT

BOCOH7
 BOCOH8
 LCS
 6/17/94

BOCAC7
 BOCAC8
 LCS

9613490.0210



INTERNATIONAL
TECHNOLOGY
CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-17-94 Client Name UHC

Project/Client # _____ Batch or Case # _____

Cooler ID (if noted on the outside of cooler) BWS 104

1. Condition of shipping container? O.K.

2. Custody Seals on cooler intact? Yes No

3. Custody Seals dated and signed? Yes No

4. Chain of Custody record is taped on inside of cooler lid? Yes No

5. Vermiculite/packing material is: Wet Dry

6. Each sample is in a plastic bag? Yes No

7. Number of sample containers in cooler: 19

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 40C

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

Chain of Custody #'(s) 17/7

Request for analysis #'(s) 17/7

Airbill # 17/7 Carrier _____

12. Have any anomalies been identified above? Yes No

13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Karen A. Henderson Date/Time 6-17-94 12:10
KAREN ACHT HENDEN

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

0057

000042

9613490.0211



Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-17-94 12:10 Client Name WHC

Project/Client # SAF-94-220 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER-19

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: 28

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 40C

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

Chain of Custody #'(s) N/A

Request for analysis #(s) N/A

Airbill # N/A Carrier _____

12. Have any anomalies been identified above? Yes No

13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Karen Antferberg Date/Time 6-17-94 12:10

Karen Antferberg

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

0058

000043

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: ^{Chem} 406384 ^{Rad} 406385 DATE INITIATED: 6-17-94

INITIATED BY: Karin Acktonburg

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6-17-94 12:10

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
BOC2C7		
BOC2C8		
BOC2H7		
BOC2H8		

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: NO SAF NO. # ON COC.
USRD SAF # 94-220.

SUPERVISOR REVIEW: Kami Heidelberg
PROJECT MANAGER REVIEW:

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

9613490.0213

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: Chem 406384 Rad 406385 DATE INITIATED: 6-17-94

INITIATED BY: Karin Astenberg

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6-17-94 12:10

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
<u>BOC2F9</u>		
<u>BOC2G0</u>		

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: COC NOT MARKED with analysis Requested.
Logged samples for matching analysis with rest of
SAR 94-20 received. Containers show analysis.

SUPERVISOR REVIEW: Jami Heideberg

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

TENNELEC #2

SCREENING CALCULATION SPREADSHEET

O.K. GRN
17 June 94

Cust Code	Received Date	Screening Prep Date	Count Date	Mnts Cntd	BACKGROUND		
WHC	6-17-94	6-17	6-17	10	Alpha	Beta	Mnts
					12	219	240

Customer ID	pH	Residue Wght	Vol. Anal.	Sample Size	SMPL CNT DATA			Net Sample		DPM / Aliquot		uCi per Sample		2 Sigma Error		pCi/(Gm or L)		Category 1	Aliquot to Cat 1	
					Hidr Num.	Total Alpha	Counts Beta	Counts/Minute Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta		Yes/No	Alpha
05 BOC2F9	<2	2.4	10	1.0	42	14	221	1.35	21.19	3.88E+00	4.36E+01	1.7E-04	2.0E-03	1.4E-07	3.3E-07	1.7E+02	2.0E+03	Yes	5.7E+01	5.1E+01
03 BOC2H9		3.0	10	1.0	43	19	363	1.85	35.39	5.07E+00	7.32E+01	2.3E-04	3.3E-03	1.6E-07	4.4E-07	2.3E+02	3.3E+03	Yes	4.4E+01	3.0E+01
01 BOC2C7		2.1	10	1.0	44	3	27	0.25	1.79	8.14E-01	3.59E+00	3.7E-05	1.6E-04	5.4E-08	3.6E-07	3.7E+01	1.6E+02	Yes	2.7E+02	6.2E+02
TOTAL uCi												4.4E-04	5.4E-03							

GRN
6-17-94

406385

SOB
W0091

000046

0061

9613490.0214

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

O.K. GRN
17 June 94

Customer Code	Received Date	Screening Prep Date	Count Date	Mnts Cntd	BACKGROUND		
WHC	6-17-94	6-17	6-17	10	Alpha	Beta	Mnts
					11	220	240

Customer ID	pH <2 Rcvd/Relq	Residue Wght mG	Vol. Anal. mG mL	Sample Size Gm L	SMPL CNT DATA			Net Sample Counts/Minute		DPM / Aliquot		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1 Yes/No	Aliquot to Cat 1 Gm or L				
					Hldr Num.	Total Alpha	Counts Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta		Alpha	Beta			
04 BOC2D9		2.4	10	1.0	40	18	330	1.75	32.08	6.02E+00	6.74E+01	2.7E-04	3.0E-03	1.8E-07	4.3E-07	2.7E+02	3.0E+03	Yes	3.7E+01	3.3E+01			
02 BOC2H7		2.7	10	1.0	41	6	34	0.55	2.48	2.16E+00	4.94E+00	9.7E-05	2.2E-04	9.4E-08	1.0E-07	9.7E+01	2.2E+02	Yes	1.0E+02	4.5E+02			
TOTAL uCi												3.7E-04	3.3E-03										

406385

876
W0091

000047

0062

9613490.0215

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround

Priority
 Normal

Collector K. Trepp, G. Hamilton	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. 94-220
Ice Chest No. GWS 143	Field Logbook No. EFL-1049	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No. W44-0-0594-38	Bill of Lading/Air Bill No. NA

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3											
	Type of Container	G	P	Gs	Gs	G											
	No. of Container(s)	1	4	2	1	1											
	Volume	1L	1L	1L	40mL	1L											

Special Handling and/or Storage Maintain between 2 and 6 degrees C.	METALS-TAL (UNFIL-TERED)	GROSS ALPHA/BETA, U-234/ 235/238 Sr-90	C-14, TRITIUM	ACTIVI-TY SCANTAL	METALS-TAL (FIL-TERED)
SAMPLE ANALYSIS 406408		40640901			

Sample No.	Matrix *	Date Sampled	Time Sampled														
BOC2H1 OIA	W	6/17/94	1100	+	+	+	+										
BOC2H2 O2A	W	↓	↓														
000048																	
0063																	

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By K. Trepp / G. Hamilton	Date/Time 6/17/94 1305	Received By L. Swamy	Date/Time 6/17/94 1305
Relinquished By L. Swamy	Date/Time 6/20/94 0915	Received By W. H. C.	Date/Time 6/20/94 0915
Relinquished By W. H. C.	Date/Time 6/20/94 1115	Received By ITAS	Date/Time 6/20/94 1115
Relinquished By	Date/Time	Received By	Date/Time
Standalone Data Deliverable			<ul style="list-style-type: none"> S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other

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

9615490.0216

9613490.0217

Contractor WHC	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) W94-0-0594-43
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PART I - TO BE COMPLETED BY ORIGINATOR

Department ER Eng Support	Section Field & Analytical Supp	Unit ER Field Sampling
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The following items are to be shipped from	<input checked="" type="checkbox"/> Contractor	<input type="checkbox"/> Vendor	
--	--	---------------------------------	--

Routing	<input checked="" type="checkbox"/> Contractor	<input type="checkbox"/> Vendor	
---------	--	---------------------------------	--

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

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: B0C2H1 B0C2H2 Cooler ID: 6WS143 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: Cooler ID: Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

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

Necessity for the Off-Site Use of this Property
 Sampling supports RI/FS work in the **100 area.**

RECEIVED

JUN 20 1994

PROPERTY RECORDS

Bill of lading # NA

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

RM Clearance for Public Release <i>[Signature]</i>	RM Survey No 178739	Date 6-20-94
Location of Property (Area & Bldg.) 100 ICR 4	Contact P. H. Butcher	Phone (509) 376-4388
Date Ready for Shipment 6/20/94	Cost Code to be Charged 8B410	Approximate Date This Property will be Returned NA
Originated By AS SIMPSON	Date	Authorized By <i>[Signature]</i>
Signature and Name of Property Control	Custodian Date	Property Management Approval <i>[Signature]</i> Date 6/20/94

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient <i>[Signature]</i> ITAS	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date 6/20/94 1115				0064

DISTRIBUTION

By Originator White, Green, Yellow, Pink - Property Management Goldenrod - Retain	Shipping Operation - Sign all Copies and Forward to: White - Property Management Green - Property Control Custodian (Issuing Office) Yellow - Retain Pink - Originator
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000049

SAMPLE STATUS REPORT FOR N 634. RAD SCREEN 69978-61 TIME: 6/20/94 8: 9
 DISPATCHED: 6/13/94 13:31 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 6/20/94 7:59

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	J12UP

END OF REPORT

BOCZHI
 BOCZHZ

AJS
 6/20/94

9613490.0219



INTERNATIONAL
TECHNOLOGY
CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6/20/94 11:15 Client Name WAC

Project/Client # 94-226 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) GW5143

- 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: ✓ custody seals ✓ appropriate sample labels

- 9. Samples are: ✓ in good condition leaking
 broken have air bubbles
 other

10. Coolant present? Yes No
Sample temperature 3°C

11. The following paperwork should be accounted for (N/A if not applicable):
Chain of Custody #'(s) N/A
Request for analysis #'(s) N/A
Airbill # N/A Carrier N/A

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

Printed Name/Signature Tom Gilmore Date/Time 6/20/94 1115

Cust Code	Received Date	Screening Prep Date	Count Date	Mnts. Cntd	BACKGROUND		
WHC	6-20-94	6-20	6-20	10	Alpha	Beta	Mnts
					5	209	240

Customer ID	pH <2 Rcvd/Relq	Residue Wght mG	Vol. Anal. mG mL	Sample Size Grm L	SMPL CNT DATA			Net Sample Counts/Minute		DPM / Aliquot		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1 Yes/No	Aliquot to Cat 1 Gm or L	
					Hldr Num.	Total Alpha	Counts Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta		Alpha	Beta
BOC2H1		1.2	10	1.0	42	7	29	0.68	2.03	2.32E+00	3.82E+00	1.0E-04	1.7E-04	9.3E-08	9.1E-08	1.0E+02	1.7E+02	Yes	9.6E+01	5.8E+02
BOC2Q3		13.7	0	0.1	43	15117	17837	*****	*****	6.05E+03	2.77E+03	1.7E+00	7.8E-01	1.8E-04	3.7E-05	1.4E+07	6.2E+08	No	7.3E-04	1.8E-02
TOTAL uCi												1.7E+00	7.8E-01							

cat. I.

cat. III

Jan 20 June 94

9613490.0220

000052

0067

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Date Turnaround

Priority
 Normal

Collector V. Trepp, G. Hamilton DST. John / L. Rojas	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. 94-220
Ice Chest No. FC-26	Field Logbook No.	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No. W94-0-0554-48	Bill of Lading/Air Bill No. NONE

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3											
	Type of Container	G	P	Gs	Gs	G											
	No. of Container(s)	1	4	2	1	1											
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40mL	1L											

SAMPLE ANALYSIS

406514

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS-TAL (UNFIL-TERED)	GROSS ALPHA/BETA, U-234/ 235/238 40651501 Sr-90	C-14, TRITIUM	ACTIVI-TY SCANTAL	METALS-TAL (FIL-TERED)										
BOC265 01A	W	6/21/94	1607	X	X	X	X											
BOC266 02A	W	6/21/94	1607					X										

000538

9613490.0221

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS Standalone Data Deliverable	Matrix*
Relinquished By <i>[Signature]</i>	Date/Time 6-22-94	Received By <i>[Signature]</i> NAC	Date/Time 6/22/94 0815
Relinquished By <i>[Signature]</i>	Date/Time 6/23/94 1200	Received By <i>[Signature]</i> IAS	Date/Time 6/23/94 1200
Relinquished By	Date/Time	Received By	Date/Time

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

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

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround

Priority
 Normal

Collector K. Trapp D. Hamilton <i>Dst John/L. Rogers</i>	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. <i>94-220</i>
Ice Chest No. <i>ER-26</i>	Field Logbook No.	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No. <i>W34-0-0554-48</i>	Bill of Lading/Air Bill No. <i>None</i>

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3													
	Type of Container	G	P	Gs	Gs	G													
	No. of Container(s)	1	4	2	1	1													
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40mL	1L													

SAMPLE ANALYSIS <i>406514</i>	METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, J-234/ 235/238 <i>40651502</i> Sr-90	C-14, TRITIUM	ACTIVI-TY SCANTAL	METALS-TAL (FILTERED)														
--------------------------------------	----------------------------	--	------------------	-------------------	--------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample No.	Matrix*	Date Sampled	Time Sampled																
<i>000054</i> BOC2 <i>03A</i>	<i>W</i>	<i>6/21/94</i>	<i>1437</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>												
<i>000054</i> BOC2 <i>04A</i>	<i>W</i>	<i>6/21/94</i>	<i>1437</i>							<i>X</i>									
<i>0069</i>																			

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS Standalone Data Deliverable	Matrix*
Relinquished By <i>John Rogers</i>	Date/Time <i>6-22-94 0815</i>	Received By <i>WIK C/Simpson</i>	Date/Time <i>6/22/94 0815</i>
Relinquished By <i>Simpson</i>	Date/Time <i>6/23/94 1200</i>	Received By <i>WIK IAS</i>	Date/Time <i>6/23/94 1200</i>
Relinquished By	Date/Time	Received By	Date/Time

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

961490-0222

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround

Priority
 Normal

Collector <i>DAS 6/21/94</i> <i>K. Trepp, G. Hamilton D.S. John / L. Rogers</i>	Company Contact P. H. Butcher	Telephone No. (509) 376-4388
Project Designation 100-KR-4	Sampling Location 100 K	SAF No. <i>94-220</i>
Ice Chest No. <i>ER-19</i>	Field Logbook No.	Method of Shipment Hand Delivered
Shipped To IT	Offsite Property No. <i>W94-C-0594-98</i>	Bill of Lading/Air Bill No. <i>NOISE</i>

Possible Sample Hazards/Remarks None	Preservative	HNO3	HNO3	NONE	NONE	HNO3												
	Type of Container	G	P	Gs	Gs	G												
	No. of Container(s)	1	4	2	1	1												
Special Handling and/or Storage Maintain between 2 and 6 degrees C.	Volume	1L	1L	1L	40mL	1L												

SAMPLE ANALYSIS

406514

METALS-TAL (UNFILTERED)	GROSS ALPHA/BETA, U-234/235/238 <i>40651503</i>	C-14, TRITIUM	ACTIVITY SCANTAL
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Sample No.	Matrix*	Date Sampled	Time Sampled	METALS-TAL	GROSS ALPHA/BETA	C-14, TRITIUM	ACTIVITY SCANTAL											
<i>000055</i> BOC 055	<i>05A</i>	<i>W</i>	<i>6/21/94</i>	<i>1027</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>										
<i>000056</i> BOC 056	<i>06A</i>	<i>W</i>	<i>1/21/94</i>	<i>1027</i>					<i>X</i>									
<i>0070</i>																		

CHAIN OF POSSESSION

Sign/Print Names

SPECIAL INSTRUCTIONS

Standalone Data Deliverable

Matrix*

Relinquished By <i>John C. Trepp</i>	Date/Time <i>6/21/94 0815</i>	Received By <i>A. Simpson</i>	Date/Time <i>6/22/94 0815</i>
Relinquished By <i>A. Simpson</i>	Date/Time <i>6/22/94 1155</i>	Received By <i>ITAS</i>	Date/Time <i>6/23/94 1200</i>
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

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

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

96174901-0223

9613490.0224

Contractor WHC	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) W94-0-0554-48
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PART I - TO BE COMPLETED BY ORIGINATOR

Department ER Eng Support	Section Field & Analytical Supp	Unit ER Field Sampling
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The following items are to be shipped from Contractor Vendor

Routing Contractor Vendor

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

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: BOC2D5, BOC2D6, BOC2G1, BOC2G2, BOC2C5, BOC2C6 Cooler ID: ER19 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: BOC2C5, BOC2C6, BOC2G3, BOC2G4, BOC2C9, BOC2D0 Cooler ID: ER-26 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

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

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the **100 AREA**

RECEIVED

JUN 23 1994

PROPERTY RECORDS

Bill of lading # **None**

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

RM Clearance for Public Release	RM Survey No	Date
Location of Property (Area & Bldg.) 100-KR-4	Contact P. H. Butcher	Phone (509) 376-4388
Date Ready for Shipment 6/23/94	Cost Code to be Charged PC4CA SB410	Approximate Date This Property will be Returned NA
Originated By PH Butcher	Date 6/23/94	Authorized By <i>[Signature]</i>
Signature and Name of Property Control	Custodian Date 6/23/94	Property Management Approval <i>[Signature]</i>

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient <i>[Signature]</i> ITAS	Return Order No.	Date Issued	Purchase Order No. 0071	Date Issued
Date 6/23/94				

DISTRIBUTION

By Originator White, Green, Yellow, Pink - Property Management Goldenrod - Retain	Shipping Operation - Sign all Copies and Forward to: White - Property Management Yellow - 000056 Green - Property Control Custodian (Issuing Office) Pink - Originator
---	---

9615490.0225

SAMPLE STATUS REPORT FOR N 616. RAD SCREEN 199-K-18 TIME: 6/23/94 3:30
 DISPATCHED: 6/13/94 13:30 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 6/23/94 2:18

EXT.	DETER.	RESULTS OR STATUS
****	*****	*****
4271	TOT-ACT	<5.00000E 01 pCi/ML

OUT OF GOOD RANGE?	CHARGE ANS?	CODE
***	***	*****
		J12UP

END OF REPORT

BO C2C5
 BO C2L6 AJS
 6/23/94
 BO C6Q4

9615490.0226

SAMPLE STATUS REPORT FOR N 618. RAD SCREEN 199-K-20 TIME: 6/23/94 3:30
 DISPATCHED: 6/13/94 13:30 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 6/23/94 2:19

EXT. DETER. RESULTS OR STATUS
 **** *****
 4271 TOT-ACT <5.00000E 01 pCi/ML

OUT OF GOOD CHARGE
 RANGE? ANS? CODE
 *** ** J12UP

END OF REPORT

BOCZC9
 BOCZDO
 ASS
 6/23/94

SAMPLE STATUS REPORT FOR N 621. RAD SCREEN 199-K-23 TIME: 6/23/94 3:30
 DISPATCHED: 6/13/94 13:30 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 6/23/94 2:19

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	<5.00000E 01 pCi/ML			J12UP

END OF REPORT

BOCZDS
 BOCZD6
 AJS
 6/23/94



SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6/23/94 1200 Client Name WTC

Project/Client # 94-220 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER19

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: 22

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 4°

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 [Signature] Date/Time 6/23/94 1200

9613490.0229



INTERNATIONAL
TECHNOLOGY
CORPORATION

Regional Office
2300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 4/23/94 1200 Client Name LITE

Project/Client # 94-220 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) GR26

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: 28

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 30

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

Chain of Custody #(s) N/A

Request for analysis #(s) N/A

Airbill # N/A Carrier _____

12. Have any anomalies been identified above? Yes No

13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Estimotey Date/Time 4/23/94 1200

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

000061

0076

9613490.0230

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: 406514, 406515

DATE INITIATED: 6/23/94

INITIATED BY: T Gilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/23/94 1200

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
B0CZG3		Metals
B0CZG4		
B0CZC5		
B0CZL6		

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 submitted in poly bottles, COC shows glass.

SUPERVISOR REVIEW:

Tami H. Leiber

PROJECT MANAGER REVIEW:

Suz Davis

TELEPHONED TO:

ON

BY

TELEFAXED TO:

ON

BY

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

9613490.0231

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: 4065H, 4065I5 DATE INITIATED: 6/23/94

INITIATED BY: T Gilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/23/94 1200

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
B0CZC9		Metals
B0CZD0		↓
B0CZG1		↓
B0CZG2		↓

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 submitted in poly bottles, COC shows glass

SUPERVISOR REVIEW: [Signature]

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

Cat I
Map Lodge
6-23-94

Customer Code	Received Date	Screening Prep Date	Count Date	Mnts. Cntd	BACKGROUND		
WHC	6-23-94	6-23	6-23	10	Alpha	Beta	Mnts
					11	228	240

Customer ID	pH <2 Rcvd/Relq	Residue Wght mG	Vol. Anal. mG mL	Sample Size Gm L	SMPL CNT DATA			Net Sample Counts/Minute		DPM / Aliquot		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1 Yes/No	Aliquot to Cat 1 Gm or L	
					Hldr Num	Total Alpha	Counts Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta		Alpha	Beta
B0C2C5		4.9	10	1.0	22	7	49	0.65	3.95	2.61E+00	8.04E+00	1.2E-04	3.6E-04	1.1E-07	1.3E-07	1.2E+02	3.6E+02	Yes	8.5E+01	2.8E+02
B0C2G1		2.7	10	1.0	23	2	24	0.15	1.45	5.76E-01	3.00E+00	2.6E-05	1.4E-04	4.8E-08	7.7E-08	2.6E+01	1.4E+02	Yes	3.9E+02	7.4E+02
B0C2D5		7.2	10	1.0	24	6	28	0.55	1.65	2.35E+00	3.18E+00	1.1E-04	1.4E-04	1.0E-07	1.1E-07	1.1E+02	1.4E+02	Yes	9.4E+01	7.0E+02
B0C2C9		2.4	10	1.0	25	2	17	0.15	0.75	5.95E-01	1.50E+00	2.7E-05	6.8E-05	4.7E-08	1.4E-07	2.7E+01	6.6E+01	Yes	3.7E+02	1.5E+03
B0C2G3		3.8	10	1.0	26	4	29	0.35	1.95	1.39E+00	3.94E+00	6.3E-05	1.8E-04	7.5E-08	2.5E-07	6.3E+01	1.8E+02	Yes	1.6E+02	5.6E+02
B0BZM4		4.3	10	1.0	53	3	19	0.25	0.95	1.02E+00	1.67E+00	4.6E-05	8.4E-05	6.4E-08	1.1E-07	4.6E+01	8.4E+01	Yes	2.2E+02	1.2E+03
B0BZM6		0.0	10	1.0	54	1	8	0.05	-0.15	2.13E-01	-3.5E-01	9.8E-06	-1.6E-05	2.6E-08	-4.0E-08	9.6E+00	-1.6E+01	Yes	1.0E+03	-6.3E+03
B0C1N0		2.3	10	2.0	55	1	25	0.05	1.55	1.68E-01	3.28E+00	1.5E-05	3.0E-04	5.5E-08	3.0E-08	7.6E+00	1.5E+02	Yes	1.3E+03	6.8E+02
TOTAL uCi												4.1E-04	1.2E-03							

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SDG W0091

4-06-514 Chem

4-06-515 Rad.

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Appendix 5

Data Validation Supporting Documentation

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RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-KR-4		DATA PACKAGE: W0091-ITC-105		
VALIDATOR:	RBC	LAB:	ITC	DATE: 23 Sep 94	
CASE:	SDG: W0091				
ANALYSES PERFORMED					
<input checked="" type="checkbox"/> Gross Alpha/Beta	<input checked="" type="checkbox"/> Strontium-90	<input type="checkbox"/> Technetium-99	<input checked="" type="checkbox"/> Alpha Spectroscopy	<input type="checkbox"/> Gamma Spectroscopy	
<input type="checkbox"/> Total Uranium	<input type="checkbox"/> Radium-22	<input checked="" type="checkbox"/> Tritium	<input checked="" type="checkbox"/> C-14		
SAMPLES/MATRIX					
BOC2C BOC2C7, BOC2D7, BOC2H7, BOC2H9, BOC2D9					
BOC2F9, BOC2H1, BOC2C5, BOC2C9, BOC2D5					

1. Completeness N/A

Technical verification forms present? Yes No N/A

Comments: _____

2. Initial Calibration N/A

Instruments/detectors calibrated within one year of sample analysis? Yes No N/A

Initial calibration acceptable? Yes No N/A

Standards NIST traceable? Yes No N/A

Standards Expired? Yes No N/A

Comments: C14 + 3H all others met continuing calibration and LCS requirements per 3H + C14 met all requirements. All others (gross A/B, SR-90 + Aspec) were not initially calibrated w/in 1 year + were assessed against continuing calibration + LCS requirements per WHC guidelines

3. Continuing Calibration N/A

Calibration checked within one week of sample analysis? . . . Yes No N/A

Calibration check acceptable? Yes No N/A

Calibration check standards NIST traceable? Yes No N/A

Calibration check standards expired? Yes No N/A

Comments: SR-90 BOC2C7 + BOC2H7 - Cont cal.
checks outside Lab QC limits. FR - UR

4. Blanks N/A

Method blank analyzed? Yes No N/A

Method blank results acceptable? Yes No N/A

Analytes detected in method blank? Yes No N/A

Field blank(s) analyzed? Yes No N/A

Field blank results acceptable? Yes No N/A

Analytes detected in field blank(s)? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: BOC2C7 - C14 blank contamination 'J'

5. Matrix Spikes N/A

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

Comments: C14 + 3H J/UT No matrix spike

6. Laboratory Control Samples N/A

LCS analyzed? Yes No N/A

LCS recoveries acceptable? Yes No N/A

LCS traceable? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: U-235 - 153% recovery J-sample BOC2D9

7. Chemical Recovery N/A

Chemical carrier added? Yes No N/A

Chemical recovery acceptable? Yes No N/A

Chemical carrier traceable? Yes No N/A

Chemical carrier expired? Yes No N/A

Transcription/Calculation errors? Yes No N/A

Comments: ~~Aspec + SR 90 (RD)~~

8. Duplicates N/A

Duplicates Analyzed? Yes No N/A

RPD Values Acceptable? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: U234^u/J for RPD (105.25) BOC2D7, BOC2C7, BOC2H7
BOC2H9, BOC2D9, BOC2F9, BOC2H1, BOC2C9, BOC2D5
U-238^u/J for RPD (99.1) BOC2D7, BOC2C7, BOC2H9, BOC2D9
BOC2H9, BOC2H1, BOC2C9, BOC2D5

9. Field QC Samples N/A

Field duplicate sample(s) analyzed? Yes No N/A

Field duplicate RPD values acceptable? Yes No N/A

Field split sample(s) analyzed? Yes No N/A

Field split RPD values acceptable? Yes No N/A

Performance audit sample(s) analyzed? Yes No N/A

Performance audit sample results acceptable? Yes No N/A

Comments: U-234 RPD 63% U-238 RPD 51%
U-235 diff > CRDL - No qualifier assigned
per WHC guidelines

10. Holding Times

Are sample holding times acceptable? Yes No N/A

Comments: _____

11. Results and Detection Limits (Levels D & E) N/A

Results reported for all required sample analyses? Yes No N/A

Results supported in raw data? Yes No N/A

Results Acceptable? Yes No N/A

Transcription/Calculation errors? Yes No N/A

MDA's meet required detection limits? Yes No N/A

Transcription/calculation errors? Yes No N/A

Comments: MDA > CRDL Boc2D7 U234 U238 U233 gr B
Boc2C7 " " " "
Boc2H7 " " " "
Boc2H9 " " " "
Over -

Comments:	MDA > CRDL	BOC 2D9	U-234	U-235	U-238	gn B
		BOC 2F9	"	"	"	"
		BOC 2H1	"	"	"	"
		BOC 2C5	"	"	"	"
		BOC 2C9	"	"	"	"
		BOC 2D5	"	"	"	"

Dups	BOC 2H9	BOC 2D9 (Corresponding Sample)	
> SXCRDL U234 -	2.36	1.35 (54%)	CRDL = .
U235 -	.00465	.364 > 1CRDL	CRDL = .
U238 _{gn} -	1.21	.718 > 1XCRDL	CRDL = 2

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

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
LAB SAMPLE ID: F0638502 MATRIX: WATER
CLIENT ID: B0C2H7 DATE RECEIVED: 6/17/94
ORIG LAB SAMPLE ID: 40638502

ISOTOPE	DUP RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
U-234	2.12E-01	2.37E-01	2.39E-01	3.82E-01	pCi/L	79.30%	RD3234	6.83E-01	105.25%
U-235	3.15E-02	1.07E-01	1.07E-01	2.97E-01	pCi/L	79.30%	RD3234	6.36E-02	67.51%
U-238DA	5.01E-01	3.33E-01	3.39E-01	3.12E-01	pCi/L	79.30%	RD3234	1.69E-01	99.10%

Number of Results: 3

0020

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

BLANK RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0091
LAB SAMPLE ID: L063852B MATRIX: WATER

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
C-14	2.00E+01	1.79E+00	3.69E+00	3.51E+00	pCi/L	100.00%	RD3263

Number of Results: 1

0024

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9613490.0241

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

 LABORATORY CONTROL SAMPLE

LAB NAME: ITAS-RICHLAND SDG: W0091
 LAB SAMPLE ID: L063101S MATRIX: WATER

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	EXPECTED	RECOVERY
U-234	7.99E+00	1.26E+00	1.61E+00	2.92E-01	pCi/L	84.70%	8.68E+00	92.05%
U-235	6.31E-01	3.55E-01	3.64E-01	2.25E-01	pCi/L	84.70%	3.96E-01	159.34%
U-238DA	8.20E+00	1.27E+00	1.64E+00	2.45E-01	pCi/L	84.70%	9.09E+00	90.21%
ALPHA	1.91E+01	2.81E+00	4.26E+00	1.06E+00	pCi/L	100.00%	2.26E+01	84.51%
BETA	2.95E+01	4.00E+00	4.52E+00	3.96E+00	pCi/L	100.00%	2.26E+01	130.53%
STRONTIUM	1.39E+01	8.97E-01	3.56E+00	7.63E-01	pCi/L	86.70%	1.35E+01	102.96%
C-14	1.69E+03	8.41E+01	1.85E+02	3.62E+00	pCi/L	100.00%	1.81E+03	93.37%
TRITIUM	2.74E+03	1.77E+02	3.58E+02	2.35E+02	pCi/L	97.30%	2.71E+03	101.11%

Number of Results: 8

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