



EBERLINE
SERVICES

0060025

June 10, 2003

Mr. Steve Trent
Fluor Hanford, Inc.
825 Jadwin Avenue
Richland, WA 99352

Reference: P.O. #630
Eberline Services R3-04-170-7498, SDG H2184



Dear Mr. Trent:

Enclosed is the data report for one water sample designated under SAF No. F03-007 received at Eberline Services on April 25, 2003. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

RECEIVED
AUG 11 2003
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Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2184 consisted of one water sample designated under SAF No. F03-007 with a Project Designation of: 200-PW-2/200-PW-4 OU- QC Sampling.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

The LCS and method blank were not scaled to the nominal aliquot of 0.01 L. No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

The LCS and method blank were not scaled to the nominal aliquot of 0.03 L. The matrix spike percent recovery (80%) was below the 3σ limits (86-114%), but within the laboratory protocol limits (80 to 120%). No other problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

No problems were encountered during the course of the reanalyses.

2.6 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.7 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"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 obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion

**Melissa C. Mannion
Program Manager**

6/10/13

Date

EBRLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2184

SDG 7498
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H2184

S U M M A R Y D A T A S E C T I O N

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 06/10/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2184

SDG 7498
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2184

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRINE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2184

SDG 7498
Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford
Contract No. 630
Case no SDG H2184

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2184

LAB SAMPLE SUMMARY

SDG 7498
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG H2184

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R304170-01	B16WB8	200-PW-4	WATER		F03-007	F03-007-006	04/23/03 08:30
R304170-02	Lab Control Sample		WATER		F03-007		
R304170-03	Method Blank		WATER		F03-007		
R304170-04	Duplicate (R304170-01)	200-PW-4	WATER		F03-007		04/23/03 08:30
R304170-05	Spike (R304170-01)	200-PW-4	WATER		F03-007		04/23/03 08:30

Lab id EBRLNE
 Protocol Hanford
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 Form DVD-LS
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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2184

SDG 7498
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG H2184

QC SUMMARY

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7498	F03-007-006	B16W88	WATER		4.70 L		04/25/03 2	R304170-01		7498-001
		Method Blank	WATER					R304170-03		7498-003
		Lab Control Sample	WATER					R304170-02		7498-002
		Duplicate (R304170-01)	WATER		4.70 L		04/25/03 2	R304170-04		7498-004
		Spike (R304170-01)	WATER		4.70 L		04/25/03 2	R304170-05		7498-005

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2184

SDG 7498
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2184

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALIFIERS	
			BATCH	2σ %	CLIENT	MORE	RE BLANK	LCS		DUP/ORIG MS/ORIG
Alpha Spectroscopy										
NP	WATER	Neptunium in Water	7060-126	5.0	1		1	1	1/1	
TH	WATER	Thorium, Isotopic in Water	7060-126	5.0	1		1	1	1/1	
Beta Counting										
SR	WATER	Total Strontium in Water	7060-126	10.0	1		1	1	1/1	
TC	WATER	Technetium 99 in Water	7060-126	10.0	1		1	1	1/1	
Liquid Scintillation Counting										
C	WATER	Carbon 14 in Water	7060-126	10.0	1		1	1	1/1	1/1 X
H	WATER	Tritium in Water	7060-126	10.0	1		1	1	1/1	1/1 X
NI_L	WATER	Nickel-63 in Liquid	7060-126	10.0	1		1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

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 Form DVD-PBS
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2184

LAB WORK SUMMARY

SDG 7498
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2184

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R304170-01 04/23/03 04/25/03	B16WB8 200-PW-4 F03-007-006	F03-007	WATER	7498-001	C		06/04/03	06/10/03	MCM	Carbon 14 in Water
				7498-001	H		06/03/03	06/10/03	MCM	Tritium in Water
				7498-001	NI_L		05/29/03	06/10/03	MCM	Nickel-63 in Liquid
				7498-001	NP		06/04/03	06/10/03	MCM	Neptunium in Water
				7498-001	SR		05/28/03	06/10/03	MCM	Total Strontium in Water
				7498-001	TC		06/06/03	06/10/03	MCM	Technetium 99 in Water
				7498-001	TH		05/31/03	06/10/03	MCM	Thorium, Isotopic in Water
R304170-02	Lab Control Sample	F03-007	WATER	7498-002	C		06/05/03	06/10/03	MCM	Carbon 14 in Water
				7498-002	H		06/03/03	06/10/03	MCM	Tritium in Water
				7498-002	NI_L		05/29/03	06/10/03	MCM	Nickel-63 in Liquid
				7498-002	NP		06/04/03	06/10/03	MCM	Neptunium in Water
				7498-002	SR		05/28/03	06/10/03	MCM	Total Strontium in Water
				7498-002	TC		06/06/03	06/10/03	MCM	Technetium 99 in Water
				7498-002	TH		05/31/03	06/10/03	MCM	Thorium, Isotopic in Water
R304170-03	Method Blank	F03-007	WATER	7498-003	C		06/05/03	06/10/03	MCM	Carbon 14 in Water
				7498-003	H		06/03/03	06/10/03	MCM	Tritium in Water
				7498-003	NI_L		05/29/03	06/10/03	MCM	Nickel-63 in Liquid
				7498-003	NP		06/04/03	06/10/03	MCM	Neptunium in Water
				7498-003	SR		05/28/03	06/10/03	MCM	Total Strontium in Water
				7498-003	TC		06/08/03	06/10/03	MCM	Technetium 99 in Water
				7498-003	TH		05/31/03	06/10/03	MCM	Thorium, Isotopic in Water
R304170-04	Duplicate (R304170-01) 200-PW-4	F03-007	WATER	7498-004	C		06/05/03	06/10/03	MCM	Carbon 14 in Water
				7498-004	H		06/03/03	06/10/03	MCM	Tritium in Water
				7498-004	NI_L		05/29/03	06/10/03	MCM	Nickel-63 in Liquid
				7498-004	NP		06/04/03	06/10/03	MCM	Neptunium in Water
				7498-004	SR		05/28/03	06/10/03	MCM	Total Strontium in Water
				7498-004	TC		06/06/03	06/10/03	MCM	Technetium 99 in Water
				7498-004	TH		06/02/03	06/10/03	MCM	Thorium, Isotopic in Water
R304170-05	Spike (R304170-01) 200-PW-4	F03-007	WATER	7498-005	C		06/05/03	06/10/03	MCM	Carbon 14 in Water
				7498-005	H		06/03/03	06/10/03	MCM	Tritium in Water

WORK SUMMARY

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SUMMARY DATA SECTION

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2184

WORK SUMMARY, cont.

SDG 7498
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG H2184

COUNTS OF TESTS BY SAMPLE TYPE											
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
C	F03-007	Carbon 14 in Water	C14_CHEM_LSC	1			1	1	1	1	5
H	F03-007	Tritium in Water	906.0_H3_LSC	1			1	1	1	1	5
NI_L	F03-007	Nickel-63 in Liquid	NI63_LSC	1			1	1	1		4
NP	F03-007	Neptunium in Water	NP237_LLE_PLATE_AEA	1			1	1	1		4
SR	F03-007	Total Strontium in Water	SRTOT_SEP_PRECIP_GPC	1			1	1	1		4
TC	F03-007	Technetium 99 in Water	TC99_TR_SEP_LSC	1			1	1	1		4
TH	F03-007	Thorium, Isotopic in Water	THISO_IE_PLATE_AEA	1			1	1	1		4
TOTALS				7			7	7	7	2	30

Lab id EBRLNE
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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2184

7498-003

Method Blank

METHOD BLANK

SDG <u>7498</u>	Client/Case no <u>Hanford</u>	SDG <u>H2184</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R304170-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7498-003</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>F03-007</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Tritium	10028-17-8	6.22	13	21	400	U	H
Carbon 14	14762-75-5	-0.577	0.73	1.2	200	U	C
Nickel 63	13981-37-8	-0.824	2.1	3.5	15	U	NI_L
Total Strontium	SR-RAD	0.312	0.50	0.96	2.0	U	SR
Technetium 99	14133-76-7	0.107	1.9	3.7	15	U	TC
Thorium 228	14274-82-9	0.005	0.051	0.094		U	TH
Thorium 230	14269-63-7	0.123	0.092	0.19	1.0	U	TH
Thorium 232	TH-232	0.005	0.010	0.039	1.0	U	TH
Neptunium 237	13994-20-2	0.047	0.094	0.14	1.0	U	NP

200-PW-2/200-PW-4 OU - QC Sampling

QC-BLANK #44566

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>06/10/03</u>

METHOD BLANKS

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2184

7498-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7498</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> SDG <u>H2184</u> Contract <u>No. 630</u>
Lab sample id <u>R304170-02</u> Dept sample id <u>7498-002</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix <u>WATER</u> SAF No <u>F03-007</u>

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	271	19	21	400		H	279	11	97	81-119	80-120
Carbon 14	245	2.7	1.2	200		C	255	10	96	84-116	80-120
Nickel 63	434	9.2	4.4	15		NI_L	457	18	95	84-116	80-120
Total Strontium	73.4	3.9	1.2	2.0		SR	73.7	2.9	100	82-118	80-120
Technetium 99	1240	30	5.3	15		TC	1200	48	103	83-117	80-120
Thorium 230	37.7	1.6	0.19	1.0		TH	37.3	1.5	101	88-112	80-120
Neptunium 237	33.2	4.0	0.15	1.0		NP	36.3	1.5	91	81-119	80-120

200-PW-2/200-PW-4 OU - QC Sampling

QC-LCS #44565

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>06/10/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2184

7498-004

B16WB8

DUPLICATE

SDG <u>7498</u>		Client/Case no <u>Hanford</u>	SDG <u>H2184</u>
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
DUPLICATE	ORIGINAL		
Lab sample id <u>R304170-04</u>	Lab sample id <u>R304170-01</u>	Client sample id <u>B16WB8</u>	
Dept sample id <u>7498-004</u>	Dept sample id <u>7498-001</u>	Location/Matrix <u>200-PW-4</u>	<u>WATER</u>
	Received <u>04/25/03</u>	Collected/Volume <u>04/23/03 08:30</u>	<u>4.70 L</u>
		Custody/SAF No <u>F03-007-006</u>	<u>F03-007</u>

ANALYTE	DUPLICATE		MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/L	QUALI- FIERS	RPD %	3σ TOT LIMIT
	pCi/L	2σ ERR (COUNT)					pCi/L	2σ ERR (COUNT)				
Tritium	53.9	130	210	400	U	H	-31.4	130	220	U	-	
Carbon 14	10.9	25	42	200	U	C	2.07	25	41	U	-	
Nickel 63	0.970	2.1	3.5	15	U	NI_L	-0.242	2.2	3.6	U	-	
Total Strontium	-0.243	0.50	1.1	2.0	U	SR	0.042	0.56	1.1	U	-	
Technetium 99	2.91	3.5	5.1	15	U	TC	4.40	4.1	5.6	U	-	
Thorium 228	-0.037	0.074	0.28		U	TH	0.074	0.15	0.28	U	-	
Thorium 230	0.184	0.22	0.28	1.0	U	TH	0	0.074	0.28	U	-	
Thorium 232	0	0.074	0.28	1.0	U	TH	0	0.074	0.28	U	-	
Neptunium 237	-0.084	0.17	0.65	1.0	U	NP	0	0.14	0.21	U	-	

200-PW-2/200-PW-4 OU - QC Sampling

QC-DUP#1 44567

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2184

7498-005

B16WB8

MATRIX SPIKE

SDG <u>7498</u>	Client/Case no <u>Hanford</u>	<u>SDG H2184</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
MATRIX SPIKE	ORIGINAL	
Lab sample id <u>R304170-05</u>	Lab sample id <u>R304170-01</u>	Client sample id <u>B16WB8</u>
Dept sample id <u>7498-005</u>	Dept sample id <u>7498-001</u>	Location/Matrix <u>200-PW-4</u> <u>WATER</u>
	Received <u>04/25/03</u>	Collected/Volume <u>04/23/03 08:30</u> <u>4.70 L</u>
		Custody/SAF No <u>F03-007-006</u> <u>F03-007</u>

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC 3σ % (TOTAL)	LMTS (LIMITS)	PROTOCOL LIMITS
Tritium	28800	510	220	400	X H	29000	1200	-31.4	130	99	84-116	60-140
Carbon 14	51100	520	120	200	X C	63800	2600	2.07	25	<u>80</u>	86-114	60-140

200-PW-2/200-PW-4 OU - QC Sampling

QC-MS#1 44568

MATRIX SPIKES

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-MS</u>
Version <u>3.06</u>
Report date <u>06/10/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2184

7498-001

B16WB8

DATA SHEET

SDG <u>7498</u>	Client/Case no <u>Hanford</u>	SDG <u>H2184</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R304170-01</u>	Client sample id <u>B16WB8</u>	
Dept sample id <u>7498-001</u>	Location/Matrix <u>200-PW-4</u>	<u>WATER</u>
Received <u>04/25/03</u>	Collected/Volume <u>04/23/03 08:30</u>	<u>4.70 L</u>
	Custody/SAF No <u>F03-007-006</u>	<u>F03-007</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Tritium	10028-17-8	-31.4	130	220	400	U	H
Carbon 14	14762-75-5	2.07	25	41	200	U	C
Nickel 63	13981-37-8	-0.242	2.2	3.6	15	U	NI_L
Total Strontium	SR-RAD	0.042	0.56	1.1	2.0	U	SR
Technetium 99	14133-76-7	4.40	4.1	5.6	15	U	TC
Thorium 228	14274-82-9	0.074	0.15	0.28		U	TH
Thorium 230	14269-63-7	0	0.074	0.28	1.0	U	TH
Thorium 232	TH-232	0	0.074	0.28	1.0	U	TH
Neptunium 237	13994-20-2	0	0.14	0.21	1.0	U	NP

200-PW-2/200-PW-4 OU - QC Sampling

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>06/10/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2184

Test NP Matrix WATER
 SDG 7498
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

NEPTUNIUM IN WATER
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2184

RESULTS

LAB	RAW	SUF-		Neptunium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	237

Preparation batch 7060-126

R304170-01	7498-001	B16WB8		U
R304170-02	7498-002	LCS (QC ID=44565)		ok
R304170-03	7498-003	BLK (QC ID=44566)		U
R304170-04	7498-004	Duplicate (R304170-01)		- U

Nominal values and limits from method RDLs (pCi/L) 1.0
 200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-		MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS		ANAL-	
SAMPLE ID	TEST FIX	CLIENT	SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7060-126 2σ prep error 5.0 % Reference Lab Notebook 7060 pg. 126

R304170-01	B16WB8			0.21	0.300			50		136			42	06/04/03	06/04	SS-039
R304170-02	LCS (QC ID=44565)			0.15	0.300			66		136				06/04/03	06/04	SS-040
R304170-03	BLK (QC ID=44566)			0.14	0.300			69		136				06/04/03	06/04	SS-041
R304170-04	Duplicate (R304170-01)			0.65	0.300			38		136			42	06/04/03	06/04	SS-042
	(QC ID=44567)															

Nominal values and limits from method 1.0 0.300 20-105 100 180

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
CP-040	Environmental Water Dissolution, rev 5	
CP-930	Neptunium from Solids and Water by Extraction Chromatography, rev 0	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA	<u>0.29</u> ± <u>0.49</u>
FOR 4 SAMPLES	YIELD	<u>56</u> ± <u>29</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Version <u>Ver 1.0</u>
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2184

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN WATER
ALPHA SPECTROSCOPY

Test TH Matrix WATER
SDG 7498
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2184

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Thorium 230

Preparation batch 7060-126

R304170-01	7498-001	B16WB8	U
R304170-02	7498-002	LCS (QC ID=44565)	ok
R304170-03	7498-003	BLK (QC ID=44566)	U
R304170-04	7498-004	Duplicate (R304170-01)	- U

Nominal values and limits from method RDLs (pCi/L) 1.0
200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7060-126 2σ prep error 5.0 % Reference Lab Notebook 7060 pg. 126

R304170-01	B16WB8	0.28	0.300	86	153	38	05/30/03	05/31	SS-050
R304170-02	LCS (QC ID=44565)	0.19	0.300	86	1019	05/30/03	05/31	SS-039	
R304170-03	BLK (QC ID=44566)	0.19	0.300	86	1019	05/30/03	05/31	SS-040	
R304170-04	Duplicate (R304170-01) (QC ID=44567)	0.28	0.300	72	153	40	05/30/03	06/02	SS-044

Nominal values and limits from method 1.0 0.300 20-110 150 100 180

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 5
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA <u>0.24</u> ± <u>0.10</u>
FOR 4 SAMPLES	YIELD <u>82</u> ± <u>14</u>

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2184

LAB METHOD SUMMARY
TOTAL STRONTIUM IN WATER
BETA COUNTING

Test SR Matrix WATER
SDG 7498
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2184

RESULTS

LAB	RAW	SUF-		Total	
SAMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID	Strontium
Preparation batch 7060-126					
R304170-01		7498-001		B16WB8	U
R304170-02		7498-002		LCS (QC ID=44565)	ok
R304170-03		7498-003		BLK (QC ID=44566)	U
R304170-04		7498-004		Duplicate (R304170-01)	- U

Nominal values and limits from method RDLs (pCi/L) 2.0
200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7060-126 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 126																	
R304170-01			B16WB8		1.1	0.300			79	100		35	05/28/03	05/28			GRB-229
R304170-02			LCS (QC ID=44565)		1.2	0.300			79	<u>56</u>			05/28/03	05/28			GRB-217
R304170-03			BLK (QC ID=44566)		0.96	0.300			85	100			05/28/03	05/28			GRB-230
R304170-04			Duplicate (R304170-01)		1.1	0.300			83	100		35	05/28/03	05/28			GRB-220
			(QC ID=44567)														

Nominal values and limits from method 2.0 0.300 100 180

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-380 Strontium in Water Samples, rev 0

AVERAGES ± 2 SD MDA 1.1 ± 0.20
FOR 4 SAMPLES YIELD 82 ± 6

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Protocol Hanford
Version Ver 1.0
Form DVD-LMS
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2184

LAB METHOD SUMMARY

TECHNETIUM 99 IN WATER

BETA COUNTING

Test IC Matrix WATER
 SDG 7498
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2184

RESULTS

LAB	RAW	SUF-	Technetium	
SAMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID
Preparation batch 7060-126				
R304170-01		7498-001	B16WB8	U
R304170-02		7498-002	LCS (QC ID=44565)	ok
R304170-03		7498-003	BLK (QC ID=44566)	U
R304170-04		7498-004	Duplicate (R304170-01)	- U

Nominal values and limits from method RDLs (pCi/L) 15
 200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7060-126 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 126																	
R304170-01			B16WB8		5.6	0.100			91		50		44	06/03/03	06/06		GRB-217
R304170-02			LCS (QC ID=44565)		5.3	0.100			96		50			06/03/03	06/06		GRB-218
R304170-03			BLK (QC ID=44566)		3.7	0.100			96		100			06/03/03	06/08		GRB-204
R304170-04			Duplicate (R304170-01)		5.1	0.100			97		50		44	06/03/03	06/06		GRB-220
			(QC ID=44567)														

Nominal values and limits from method 15 0.100 20-105 50 180

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
CP-021		Preparation of Tc-99m Tracer, rev 2
CP-002		Q.C. Preparation, rev 4
CP-003		Addition of Carriers and Tracers, rev 5
CP-430		Technetium-99 Purification (Water) by Extraction Chromatography, rev 0
CP-008		Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	<u>4.9</u>	±	<u>1.7</u>
FOR 4 SAMPLES	YIELD	<u>95</u>	±	<u>5</u>

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2184

Test C Matrix WATER
SDG 7498
Contact Melissa C. Mannion

LAB METHOD SUMMARY
CARBON 14 IN WATER
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2184

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14
Preparation batch 7060-126				
R304170-01	7498-001	B16WB8		U
R304170-02	7498-002	LCS (QC ID=44565)		ok
R304170-03	7498-003	BLK (QC ID=44566)		U
R304170-04	7498-004	Duplicate (R304170-01)		- U
R304170-05	7498-005	Spike (R304170-01)		<u>LOW</u> X

Nominal values and limits from method RDLs (pCi/L) 200
200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7060-126 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 126															
R304170-01		B16WB8	41	0.0300			100	100				42	06/04/03	06/04	LSC-004
R304170-02		LCS (QC ID=44565)	1.2	1.00			100	100					06/04/03	06/05	LSC-004
R304170-03		BLK (QC ID=44566)	1.2	1.00			100	100					06/04/03	06/05	LSC-004
R304170-04		Duplicate (R304170-01) (QC ID=44567)	42	0.0300			100	100				43	06/04/03	06/05	LSC-004
R304170-05		Spike (R304170-01) (QC ID=44568)	120	<u>0.0200</u>			100	<u>26</u>				43	06/04/03	06/05	LSC-004

Nominal values and limits from method 200 0.0300 50 180

PROCEDURES REFERENCE C14_CHEM_LSC
CP-241 Carbon-14 in Aqueous Samples, rev 4

AVERAGES ± 2 SD MDA 41 ± 97
FOR 5 SAMPLES YIELD 100 ± 0

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2184

LAB METHOD SUMMARY

TRITIUM IN WATER

LIQUID SCINTILLATION COUNTING

Test H Matrix WATER
 SDG 7498
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2184

RESULTS

LAB	RAW	SUF-			
SAMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID	Tritium
Preparation batch 7060-126					
R304170-01			7498-001	B16WBB	U
R304170-02			7498-002	LCS (QC ID=44565)	ok
R304170-03			7498-003	BLK (QC ID=44566)	U
R304170-04			7498-004	Duplicate (R304170-01)	- U
R304170-05			7498-005	Spike (R304170-01)	ok X

Nominal values and limits from method RDLs (pCi/L) 400
 200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST	FIX	CLIENT SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED	DETECTOR
Preparation batch 7060-126 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 126															
R304170-01			B16WBB	220		0.0100		100				120	41	06/02/03	06/03 LSC-006
R304170-02			LCS (QC ID=44565)	21		1.00		10				120		06/02/03	06/03 LSC-006
R304170-03			BLK (QC ID=44566)	21		1.00		10				120		06/02/03	06/03 LSC-006
R304170-04			Duplicate (R304170-01)	210		0.0100		100				120	41	06/02/03	06/03 LSC-006
			(QC ID=44567)												
R304170-05			Spike (R304170-01)	220		0.0300		33				120	41	06/02/03	06/03 LSC-006
			(QC ID=44568)												

Nominal values and limits from method 400 0.0100 25 180

PROCEDURES REFERENCE 906.0_H3_LSC
 CP-210 Tritium in Water Samples by Distillation, rev 6

AVERAGES ± 2 SD MDA 140 ± 210
 FOR 5 SAMPLES YIELD 51 ± 92

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SAMPLE DELIVERY GROUP H2184

LAB METHOD SUMMARY

NICKEL-63 IN LIQUID

LIQUID SCINTILLATION COUNTING

Test NI_L Matrix WATER
 SDG 7498
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2184

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 7060-126

R304170-01	7498-001	B16WB8	U
R304170-02	7498-002	LCS (QC ID=44565)	ok
R304170-03	7498-003	BLK (QC ID=44566)	U
R304170-04	7498-004	Duplicate (R304170-01)	- U

Nominal values and limits from method RDLs (pCi/L) 15
 200-PW-2/200-PW-4 OU - QC Sampling

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/L	L	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7060-126 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 126

R304170-01	B16WB8	3.6	0.300	98	100	36	05/29/03	05/29	LSC-004
R304170-02	LCS (QC ID=44565)	4.4	0.300	98	64	05/29/03	05/29	LSC-004	
R304170-03	BLK (QC ID=44566)	3.5	0.300	96	100	05/29/03	05/29	LSC-004	
R304170-04	Duplicate (R304170-01) (QC ID=44567)	3.5	0.300	97	100	36	05/29/03	05/29	LSC-004

Nominal values and limits from method 15 0.300 50 180

PROCEDURES	REFERENCE	NI63_LSC
	CP-040	Environmental Water Dissolution, rev 5
	CP-431	Nickel-63 Purification, rev 5

AVERAGES ± 2 SD	MDA	<u>3.8</u>	±	<u>0.87</u>
FOR 4 SAMPLES	YIELD	<u>97</u>	±	<u>2</u>

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REPORT GUIDE

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SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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SAMPLE DELIVERY GROUP H2184

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PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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REPORT GUIDE

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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REPORT GUIDE

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

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SDG 7498

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D A T A S H E E T

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 06/10/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2184

SDG 7498
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG H2184

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:
 1. A fixed percentage specified in the protocol.

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SAMPLE DELIVERY GROUP H2184

SDG 7498
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. 630
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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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EBERLINE SERVICES / RICHMOND

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 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.
3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

Lab id EBRLNE
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Contact Melissa C. Mannion

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GUIDE, cont.

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRINE

Protocol Hanford

Version Ver 1.0

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REPORT GUIDE

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2184

SDG 7498
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES

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SUMMARY DATA SECTION

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GUIDE, cont.

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METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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GUIDE, cont.

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id EBRINE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 06/10/03

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-007-006		Page 1 of 1	
Collector Johansen/Pfister/Hughes		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 7N		Data Turnaround 45 Days
Project Designation 200-PW-2/200-PW-4 OU - QC Sampling		Sampling Location 200-PW-4 SDG H2184 (7498)			SAF No. F03-007		Air Quality <input type="checkbox"/>			
Ice Chest No.		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express				
Shipped To EBERLINE SERVICES (Formerly TMA)		Offsite Property No. A030244			Bill of Lading/Air Bill No. 7902 6975 2686					
POSSIBLE SAMPLE HAZARDS/REMARKS										
Special Handling and/or Storage										
Preservation		H2SO4 to pH < 2 Cool 4C	HCL to pH < 2 Cool 4C	HNO3 to pH < 2	HNO3 to pH < 2	HNO3 to pH < 2	HNO3 to pH < 2	HNO3 to pH < 2	HCl to pH < 2	None
Type of Container		P	P	P	P	P	P	P	P	P
No. of Container(s)		1	1	2	2	1	1	1	1	1
Volume		1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	500mL	250mL
SAMPLE ANALYSIS		NO2/NO3- 353.2 Ammonia - 350.3	Oil & Grease - 413.1	Isotopic Thorium (Thorium-232)	Isotopic Uranium (Uranium-238)	Strontium-89,90 - Total Sr	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3; Carbon-14
Sample No.	Matrix *	Sample Date	Sample Time							
B16WB8	WATER	4-23-03	0830		X	X	X	X	X	X
CHAIN OF POSSESSION										
Sign/Print Names										
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		SPECIAL INSTRUCTIONS		
M. J. Bowers		4-23-03 1100		REF 3A 3728		4-23-03 1100		Personnel not available to relinquish samples from the 3728 Ref #3A on 4/24/03		
Ref 3A 3728		4-24-03/1000		Doug Bowers		4-24-03/1000				
Doug Bowers		4-24-03/1030		F. J. Ex						
F. J. Ex				L. J. A		4-25-03 1000				
LABORATORY SECTION		Received By		Title		Date/Time				
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time				



ANALYTICAL SERVICES GROUP

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 - 4-25-03
 CoC No. F03-007-006
 Container I.D. No. ERC-01-063 Requested TAT (Days) 45 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [] No [] N/A []
2. Custody seals on shipping container dated & signed? Yes [] No [] N/A []
3. Custody seals on sample containers intact? Yes [] No [] N/A []
4. Custody seals on sample containers dated & signed? Yes [] No [] N/A []
5. Packing material is: Wet [] Dry []
6. Number of samples in shipping container: _____
7. Number of containers per sample: 6 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [] No []
9. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []
10. Samples are: In good condition [] Leaking [] Broken Container [] Missing []
11. Samples are: Preserved [] Not preserved [] Preservative H₂O₂, HCL
12. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [] No [] Date _____
 14. Received by [Signature] Date: 4-25-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. _____ Calibration date _____
 Alpha Meter Ser. No. _____ Calibration date _____
 Beta/Gamma Meter Ser. No. _____ Calibration date _____

SAMPLE DISPOSITION RECORD

ORIGINAL
Reyes

SDR No.: F03-017
Revision No.: 0
Date Initiated: 04/29/2003

Sample Event Information

SAF: F03-007
OU: 200-PW-2/200-PW-4
Project: CPP 200 Area
Sampling Event: 200-PW-2/200-PW-4 OU - QC Sampling

Laboratory: Eberline Services (Lionville)

Sampling Information

Number of Samples: 1
ID Numbers: B16WB8
Matrix: WATER
Collection Date: 04/23/2003

Issue Background

Class Project Data Use General Laboratory Direction Validation Direction General Sample Management Direction

Type: Cancellation of Analyses

Description:

Cancellation of Method 350.3 Analysis for Nitrogen in Ammonia

Disposition

Description:

The sample analysis request for the listed sample erroneously requested analysis by EPA Method 350.3 for nitrogen in ammonia. A similar analysis, EPA Method 300.7 had already been requested at the WSCF laboratory.

Justification:

Analysis of the sample by EPA Method 350.3 for nitrogen in ammonia is not necessary because a related sample has already been analyzed using EPA Method 300.7 for nitrogen in ammonium.

Approval Signatures

SJ Trent

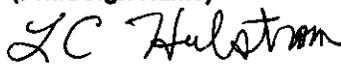


4/29/03

Project Coordinator (Print/Sign Name)

Date

LC Hulstrom



5/1/03

Task Manager (Print/Sign Name)

Date



23 May 2003

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Ave.
Richland, WA 99352



**Subject: Contract No. 630
Analytical Data Package**

Dear Mr. Trent:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0304L275
SDG #	H2184
SAF #	F03-007
Date Received	4-25-03
# Samples	1
Matrix	Water
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO/KRO	
GC Alcohol	
Metals	
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

r:\group\pm\orlette\tnu-hanford\data\fc_ltrs.doc

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-007 H2184

DATE RECEIVED: 04/25/03

LVL LOT # :0304L275

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB8						
NITRATE NITRITE	001	W	03LN3026	04/23/03	05/19/03	05/19/03
NITRATE NITRITE	001 REP	W	03LN3026	04/23/03	05/19/03	05/19/03
NITRATE NITRITE	001 MS	W	03LN3026	04/23/03	05/19/03	05/19/03
AMMONIA	001	W	03LAM012	04/23/03	04/29/03	04/29/03
AMMONIA	001 REP	W	03LAM012	04/23/03	04/29/03	04/29/03
AMMONIA	001 MS	W	03LAM012	04/23/03	04/29/03	04/29/03
OIL & GREASE BY GRAV	001	W	03LOG017	04/23/03	05/01/03	05/02/03
OIL AND GREASE BY GR	001 MS	W	03LOG017	04/23/03	05/01/03	05/02/03

LAB QC:

NITRATE NITRITE	MB1	W	03LN3026	N/A	05/19/03	05/19/03
NITRATE NITRITE	MB1 BS	W	03LN3026	N/A	05/19/03	05/19/03
AMMONIA	MB1	W	03LAM012	N/A	04/29/03	04/29/03
AMMONIA	MB1 BS	W	03LAM012	N/A	04/29/03	04/29/03
AMMONIA	MB1 BSD	W	03LAM012	N/A	04/29/03	04/29/03
OIL & GREASE BY GRAV	MB1	W	03LOG017	N/A	05/01/03	05/02/03
OIL AND GREASE BY GR	MB1 BS	W	03LOG017	N/A	05/01/03	05/02/03
OIL AND GREASE BY GR	MB1 BSD	W	03LOG017	N/A	05/01/03	05/02/03





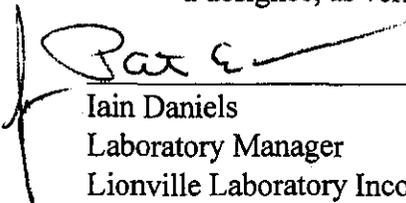
Analytical Report

Client: TNU-HANFORD F03-007 H2184
LVL#: 0304L275

W.O.#: 11343-606-001-9999-00
Date Received: 04-25-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 water sample.
2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits with the exception of 03LOG017-MB1 for Oil and Grease that was below the 80-120% acceptance limits, however a second LCS analyzed with batch 03LOG017 yielded a recovery of 99.4%. The duplicate LCS for Ammonia was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries for Nitrate Nitrite, Ammonia and Oil and Grease were within the 75-125% control limits.
8. The replicate analyses for Nitrate Nitrite and Ammonia were within the 20% RPD control limit.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

05-21-03
Date

njp\04-275
The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	<u>EPA /600</u>	<u>SW846</u>	<u>OTHER</u>
Acidity	305.1		
___ Alkalinity ___ Bicarbonate ___ Carbonate	310.1		
BOD	405.1		___ 5210B (b)
Ion Chromatography:			
___ Bromide ___ Chloride ___ Fluoride	300.0	___ 9056	
___ Nitrate ___ Nitrite ___ Phosphate	300.0	___ 9056	
___ Sulfate ___ Formate ___ Acetate ___ Oxalate	300.0	___ 9056	
Chloride	325.2	___ 9251	
Chlorine, Residual	330.5 (mod)		
Cyanide, Amenable to Chlorination	335.2	___ 9010B	
Cyanide, Total	335.2	___ 9010B	___ 9014 ___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable			___ 412 (a) ___ 4500CN-1 (b)
COD	410.4(mod)		___ 5220C (b)
Color	110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	340.2		___ 4500-FC
Hardness, Calcium	215.2		
Hardness, Total	130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	425.1		
√ Nitrate-Nitrite ___ Nitrate ___ Nitrite	√ 353.2		
Ammonia	√ 350.3		
Total ___ Kjeldahl ___ Organic Nitrogen	351.3		
Total ___ Organic ___ Inorganic Carbon	415.1	___ 9060	
Oil & Grease	√ 413.1	___ 9070	
___ pH ___ pH; paper	150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	418.1		
Phenol	420.1	___ 420.2 ___ 9065 ___ 9066	
___ Ortho ___ Total Phosphate	365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	160.5		
Sulfide	376.1		___ 9030B/9034 (acid soluble)
Reactive ___ Cyanide ___ Sulfide		___ Section 7.3 (___ 9014 ___ 9030B)	
Silica	370.1		
Sulfite	377.1		
Sulfate	375.4	___ 9038	
Specific Conductance	120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach		___ 1312	
Total ___ Dissolved ___ Suspended ___ Solids	160 ___ .1 ___ .2 ___ .3		
Total Organic Halides	450.1	___ 9020B	
Turbidity	180.1		
Volatile Solids:			
___ Total ___ Dissolved ___ Suspended	160.4		
Other:		Method:	

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

- MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/20/03

CLIENT: TNUHANFORD F03-007 H2184
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L275

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LN3026-MB1	Nitrate Nitrite	0.020u	MG/L	0.020	1.0
BLANK10	03LAM012-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	03LOG017-MB1	Oil & Grease Gravimetri	1.0 u	MG/L	1.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/20/03

CLIENT: TRUHANFORD F03-007 H2184
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L275

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B16WB8	Nitrate Nitrite	0.49	0.02u	0.50	97.2	1.0
		Ammonia, as N	2.0	0.10u	2.0	97.5	1.0
		Oil & Grease Gravimetr	44.1	0.95u	50.3	87.7	1.0
BLANK10	03LN3026-MB1	Nitrate Nitrite	0.51	0.02u	0.50	102.4	1.0
BLANK10	03LAN012-MB1	Ammonia, as N	1.9	0.10u	2.0	94.5	1.0
		Ammonia, as N MSD	2.0	0.10u	2.0	97.5	1.0
BLANK10	03LOG017-MB1	Oil & Grease Gravimetr	37.7	1.0 u	47.9	78.7	1.0
		Oil & Grease - Grav M	50.0	1.0 u	50.3	99.4	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 05/20/03

CLIENT: TNUHANFORD F03-007 H2184
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L275

SAMPLE	SITE ID	ANALYTE	SPIKE#1		SPIKE#2	
			%RECOV	%RECOV	%RECOV	%DIFF
BLANK10	03LAM012-MB1	Ammonia, as N	94.5	97.5	3.1	

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/20/03

CLIENT: TNUHANFORD F03-007 H2184
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L275

SAMPLE	SITE ID	ANALYTE	INITIAL	REPLICATE RPD		DILUTION
			RESULT			FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----
-001REP	B16WB6	Nitrate Nitrite	0.02u	0.02u	NC	1.0
		Ammonia, as N	0.10u	0.10u	NC	1.0

0304L275

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-007-006	Page 1 of 1
Collector Johansen/Pfister/Hughes		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ	Price Code 7N Data Turnaround 45 Days
Project Designation 200-PW-2/200-PW-4 OU - QC Sampling		Sampling Location 200-PW-4		SAF No. F03-007		Air Quality <input type="checkbox"/>	
Ice Chest No.		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express	
Shipped To TMD4-23-03 BERLINE SERVICES (Formerly TMA) <i>Rocra</i>		Offsite Property No. A030216		Bill of Lading/Air Bill No. 7915 7957 9627			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	H2SO4 to pH < 2 Cool 4C	HCL to pH < 2 Cool 4C	HNO3 to pH < 2	HCl to pH < 2	None					
		Special Handling and/or Storage	P	nG	P	P	P	P	G/P	P	P
			1	2	1	2	2	1	1	1	1
			1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	500mL	250mL

Sample No.	Matrix *	Sample Date	Sample Time	H2SO4 to pH < 2 Cool 4C	HCL to pH < 2 Cool 4C	HNO3 to pH < 2	HCl to pH < 2	None			
B16WB8	WATER	4-23-03	0830	X	X	✓					

CHAIN OF POSSESSION <i>TMD4-23-03</i>				SPECIAL INSTRUCTIONS				Matrix * S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trails WV=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>Michael Bowers</i>	Date/Time 4-23-03 1100	Received By/Stored In <i>REF 3A</i>	Date/Time 3728 42303 1100	Personnel not available to relinquish samples from the 3728 Ref # 3A on 4/24/03				
Relinquished By/Removed From <i>Ref 3A</i>	Date/Time 3728 4-24-03/1000	Received By/Stored In <i>Doug Bowers</i>	Date/Time (EAC) 4-24-03/1000					
Relinquished By/Removed From <i>Doug Bowers</i>	Date/Time 4-24-03/1030	Received By/Stored In <i>Fog Ex</i>	Date/Time					
Relinquished By/Removed From <i>Fog Ex</i>	Date/Time 4/25/03 1000	Received By/Stored In <i>V. Verrano</i>	Date/Time 4/25/03 1000					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU HANFORD
Purchase Order/Project: 200-PW-2/200

DATE: 4/25/13

SAF# / SOW# / Release #: F03-007

Laboratory SDG #: 03042275

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
|--|-------------------------------------|-----------------------------|-------------------------------------|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Shipment meets LVL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler # / temp (°C) and Comments:

RC01060 2.3°

Laboratory Sample Custodian:



Laboratory Project Manager: