1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1697 was composed of two other solid samples designated under SAF No. B99-024 with a Project Designation of: 233-S Plutonium Concentration Facility Process Areas - Other. The data is in picoCurie per gram (pCi/g).

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on March 22, 2002.

2.0 SAMPLE PREPERATION NOTES

Samples B14178 (rashing rings) and B141J4 (coil) were gamma counted (gamma spectroscopy) upon arrival to the lab.

Sample	Nuclide	Result
B14178	Cs-137	1,018 ± 36 pCi/sample
	Am-241	10,280 ± 70 pCi/sample
B141J4	Cs-137	25.7 ± 9.2 pCi/sample
	Am-241	110,200 ± 200 pCi/sample

The samples were leached in an 0.1N nitric acid for 6 hours. The samples and the leachates were then gamma counted.

Sample Results after Leaching

Sample	Nuclide	Result
B14178	Cs-137	22.6 ± 7.6 pCi/sample
	Am-241	6,289 ± 51 pCi/sample
B141J4	Cs-137	6.81 ± 3.0 pCi/sample
	Am-241	7,407 ± 19 pCi/sample

Leachate Results

Sample	Nuclide	Result
B14178	Cs-137	4,935 ± 125 pCi/sample
	Am-241	144,700 ± 800 pCi/sample
B141J4	Cs-137	191 ± 22.5 pCi/sample
	Am-241	1,741,000 ± 4,000 pCi/sample

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Sample B14178 was leached a second time in 2 N nitric acid for 4 hours. The sample and the 2nd leachate were then gamma counted.

Sample Results after 2nd Leaching

Sample	Nuclide	Result
B14178	Cs-137	< 13.8 pCi/sample
	Am-241	2,117 ± 35 pCi/sample

2nd Leachate Results[a]

Sample	Nuclide	Result
B14178	Cs-137	69.0 ± 12.0 pCi/sample
	Am-241	44,560 ± 180 pCi/sample

a. Must add results of first leaching to the above data to get total activity leached from sample B14178.

The two leachates for sample B14178 were combined. The final leachate volume for sample B14178 was 500 mL and B141J4 was 500 mL. The leachates were then gamma counted and the original sample weights applied to the data results (pCi/gram). The gamma spectroscopy results reported in the data report are the results based on a leachate volume of 500 mL counted in a marinelli beaker.

3.0 ANALYSIS NOTES

3.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

3.2 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

3.3 Neptiunium-237 Analyses

No problems were encountered during the course of the analyses.

3.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

3.5 Transplutonic Analyses (Amercium-241 and Curium-244)

No problems were encountered during the course of the analyses.

3.6 Gamma Spectroscopy 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

3/26/02

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

SDG 7225
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1697

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B14178	233-S	SOLID		R202076-01	B99-024	B99-024-41	01/25/02 15:00
B141J4	233-S	SOLID		R202076-02	B99-024	B99-024-45	02/11/02 08:15
Method Blank		SOLID		R202076-04	B99-024		
Lab Control Sample		SOLID		R202076-03	B99-024		
Duplicate (R202076-01)	233-S	SOLID		R202076-05	B99-024		01/25/02 15:00

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

SDG 7225
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1697

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7225	B99-024-41	B14178	SOLID	100.0	539.0 g		02/15/02	21	R202076-01	7225-001
	B99-024-45	B141J4	SOLID	100.0	1365 g		02/15/02	4	R202076-02	7225-002
		Method Blank	SOLID						R202076-04	7225-004
		Lab Control Sample	SOLID						R202076-03	7225-003
		Duplicate (R202076-01)	SOLID	100.0	539.0 g		02/15/02	21	R202076-05	7225-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

SDG 7225
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1697

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
NP	SOLID	Neptunium in Soil	7024-075	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7024-075	5.0	2			1	1	1/1		
TP	SOLID	Americium 241/Curium in Solids	7024-075	5.0	2			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7024-075	5.0	2			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7024-075	20.0	2			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7024-075	15.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7024-075	15.0	2			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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

SDG 7225
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1697

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B14178			R202076-01	7225-001	93A/93		03/14/02	03/22/02	MCM	Gross Alpha in Soil
233-S		SOLID	01/25/02	7225-001	93B/93		03/13/02	03/22/02	MCM	Gross Beta in Soil
B99-024-41	B99-024		02/15/02	7225-001	GAM		03/08/02	03/22/02	MCM	Gamma Scan
				7225-001	NP		03/20/02	03/22/02	MCM	Neptunium in Soil
				7225-001	PU		03/19/02	03/22/02	MCM	Plutonium, Isotopic in Solids
				7225-001	TP		03/19/02	03/22/02	MCM	Americium 241/Curium in Solids
				7225-001	U		03/19/02	03/22/02	MCM	Uranium, Isotopic in Soil
B141J4			R202076-02	7225-002	93A/93		03/14/02	03/22/02	MCM	Gross Alpha in Soil
233-S		SOLID	02/11/02	7225-002	93B/93		03/13/02	03/22/02	MCM	Gross Beta in Soil
B99-024-45	B99-024		02/15/02	7225-002	GAM		03/07/02	03/22/02	MCM	Gamma Scan
				7225-002	NP		03/20/02	03/22/02	MCM	Neptunium in Soil
				7225-002	PU		03/19/02	03/22/02	MCM	Plutonium, Isotopic in Solids
				7225-002	TP		03/19/02	03/22/02	MCM	Americium 241/Curium in Solids
				7225-002	U		03/18/02	03/22/02	MCM	Uranium, Isotopic in Soil
Method Blank			R202076-04	7225-004	93A/93		03/13/02	03/22/02	MCM	Gross Alpha in Soil
		SOLID		7225-004	93B/93		03/13/02	03/22/02	MCM	Gross Beta in Soil
	B99-024			7225-004	GAM		03/07/02	03/22/02	MCM	Gamma Scan
				7225-004	NP		03/20/02	03/22/02	MCM	Neptunium in Soil
				7225-004	PU		03/19/02	03/22/02	MCM	Plutonium, Isotopic in Solids
				7225-004	TP		03/19/02	03/22/02	MCM	Americium 241/Curium in Solids
				7225-004	U		03/18/02	03/22/02	MCM	Uranium, Isotopic in Soil
Lab Control Sample			R202076-03	7225-003	93A/93		03/14/02	03/22/02	MCM	Gross Alpha in Soil
		SOLID		7225-003	93B/93		03/13/02	03/22/02	MCM	Gross Beta in Soil
	B99-024			7225-003	GAM		03/07/02	03/22/02	MCM	Gamma Scan
				7225-003	NP		03/20/02	03/22/02	MCM	Neptunium in Soil
				7225-003	PU		03/20/02	03/22/02	MCM	Plutonium, Isotopic in Solids
				7225-003	TP		03/19/02	03/22/02	MCM	Americium 241/Curium in Solids
				7225-003	U		03/19/02	03/22/02	MCM	Uranium, Isotopic in Soil
Duplicate (R202076-01)			R202076-05	7225-005	93A/93		03/14/02	03/22/02	MCM	Gross Alpha in Soil
233-S		SOLID	01/25/02	7225-005	93B/93		03/13/02	03/22/02	MCM	Gross Beta in Soil
	B99-024		02/15/02	7225-005	GAM		03/07/02	03/22/02	MCM	Gamma Scan
				7225-005	NP		03/20/02	03/22/02	MCM	Neptunium in Soil
				7225-005	PU		03/19/02	03/22/02	MCM	Plutonium, Isotopic in Solids
				7225-005	TP		03/19/02	03/22/02	MCM	Americium 241/Curium in Solids
				7225-005	U		03/18/02	03/22/02	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

SDG 7225
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1697

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B99-024	Gross Alpha in Soil	900.0_ALPHABETA_GPC	2			1	1	1		5
93B/93	B99-024	Gross Beta in Soil	900.0_ALPHABETA_GPC	2			1	1	1		5
GAM	B99-024	Gamma Scan	GAMMA_GS	2			1	1	1		5
NP	B99-024	Neptunium in Soil	NP237_LLE_PLATE_AEA	2			1	1	1		5
PU	B99-024	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1		5
TP	B99-024	Americium 241/Curium in Solids	AMCMISO_IE_PLATE_AEA	2			1	1	1		5
U	B99-024	Uranium, Isotopic in Soil	UISO_PLATE_AEA	2			1	1	1		5
TOTALS				14			7	7	7		35

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

R202076-04 Method Blank

METHOD BLANK

SDG	7225	Client/Case no	Hanford	SDG H1697	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R202076-04	Client sample id	Method Blank		
Dept sample id	7225-004	Material/Matrix		SOLID	
		SAF No	B99-024		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	2.44	5.0	8.1	10	U	93A
Gross Beta	12587-47-2	-3.18	11	20	15	U	93B
Uranium 233/234	U-233/234	0	9.3	36	1.0	U	U
Uranium 235	15117-96-1	0	11	43	1.0	U	U
Uranium 238	U-238	4.67	9.3	36	1.0	U	U
Neptunium 237	13994-20-2	2.48	5.0	9.2	1.0	U	NP
Plutonium 238	13981-16-3	-14.5	87	190	1.0	U	PU
Plutonium 239/240	PU-239/240	-14.5	58	140	1.0	U	PU
Curium 244	13981-15-2	-4.56	9.1	35	1.0	U	TP
Americium 241	14596-10-2	9.12	18	35	1.0	U	TP
Potassium 40	13966-00-2	U		0.16		U	GAM
Cobalt 60	10198-40-0	U		0.010	0.050	U	GAM
Cesium 137	10045-97-3	U		0.010	0.10	U	GAM
Radium 226	13982-63-3	U		0.020	0.10	U	GAM
Radium 228	15262-20-1	U		0.043	0.20	U	GAM
Europium 152	14683-23-9	U		0.029	0.10	U	GAM
Europium 154	15585-10-1	U		0.035	0.10	U	GAM
Europium 155	14391-16-3	U		0.026	0.10	U	GAM
Thorium 228	14274-82-9	U		0.015		U	GAM
Thorium 232	TH-232	U		0.043		U	GAM
Uranium 235	15117-96-1	U		0.040		U	GAM
Uranium 238	U-238	U		1.3		U	GAM
Americium 241	14596-10-2	U		0.039		U	GAM

233-S Pu Concentration Facility Pro.

QC-BLANK 41318

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

R202076-03 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7225
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1697
Case no No. 630

Lab sample id R202076-03
Dept sample id 7225-003

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-024

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	758	52	12	10		93A	788	32	96	69-131	70-130
Gross Beta	855	40	22	15		93B	872	35	98	76-124	70-130
Uranium 233/234	3580	320	160	1.0		U	3540	140	101	83-117	80-120
Uranium 235	3040	300	33	1.0		U	2880	120	106	81-119	80-120
Uranium 238	4200	360	150	1.0		U	3850	150	109	83-117	80-120
Neptunium 237	3840	200	16	1.0		NP	3990	160	96	88-112	80-120
Plutonium 238	4760	590	59	1.0		PU	4950	200	96	80-120	80-120
Plutonium 239/240	5060	620	59	1.0		PU	5310	210	95	80-120	80-120
Curium 244	3650	340	32	1.0		TP	3920	160	93	84-116	80-120
Americium 241	3440	330	32	1.0		TP	3850	150	89	84-116	80-120
Cobalt 60	0.399	0.053	0.040	0.050		GAM	0.408	0.016	98	70-130	80-120
Cesium 137	0.477	0.043	0.030	0.10		GAM	0.486	0.019	98	74-126	80-120

233-S Pu Concentration Facility Pro.

QC-LCS 41317

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

R202076-05 B14178

DUPLICATE

SDG	7225			Client/Case no	Hanford SDG H1697
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R202076-05	Lab sample id	R202076-01	Client sample id	B14178
Dept sample id	7225-005	Dept sample id	7225-001	Location/Matrix	233-S SOLID
		Received	02/15/02	Collected/Weight	01/25/02 15:00 539.0 g
% solids	100.0	% solids	100.0	Custody/SAF No	B99-024-41 B99-024

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	1490	34	2.9	10		93A	1540	35	2.9		3	43
Gross Beta	-125	6.8	5.6	15	U	93B	-148	6.4	5.1	U	-	
Uranium 233/234	-1.63	3.3	12	1.0	U	U	0.915	3.7	7.0	U	-	
Uranium 235	1.98	4.0	15	1.0	U	U	0	2.2	8.5	U	-	
Uranium 238	0	3.3	12	1.0	U	U	0.915	1.8	7.0	U	-	
Neptunium 237	0.236	0.94	2.3	1.0	U	NP	1.29	1.3	2.5	U	-	
Plutonium 238	67.2	27	25	1.0		PU	51.3	17	10		27	81
Plutonium 239/240	1140	160	20	1.0		PU	1140	120	10		0	28
Curium 244	2.47	4.9	9.4	1.0	U	TP	2.51	10	19	U	-	
Americium 241	312	45	9.4	1.0		TP	292	62	19		7	40
Potassium 40	U		0.31		U	GAM	U		0.22	U	-	
Cobalt 60	U		0.017	0.050	U	GAM	U		0.023	U	-	
Cesium 137	9.83	0.13	0.039	0.10		GAM	8.90	0.15	0.040		10	32
Radium 226	U		0.056	0.10	U	GAM	U		0.065	U	-	
Radium 228	U		0.070	0.20	U	GAM	U		0.077	U	-	
Europium 152	U		0.11	0.10	U	GAM	U		0.14	U	-	
Europium 154	U		0.17	0.10	U	GAM	U		0.16	U	-	
Europium 155	U		0.13	0.10	U	GAM	U		0.088	U	-	
Thorium 228	U		0.051		U	GAM	U		0.064	U	-	
Thorium 232	U		0.070		U	GAM	U		0.077	U	-	
Uranium 235	U		0.15		U	GAM	U		0.14	U	-	
Uranium 238	U		2.5		U	GAM	U		3.6	U	-	
Americium 241	321	1.8	1.5			GAM	322	0.60	0.28		0	32

233-S Pu Concentration Facility Pro.

QC-DUP#1 41319

Rashing Rings

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

R202076-01 B14178

DATA SHEET

SDG	7225	Client/Case no	Hanford	SDG H1697	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R202076-01	Client sample id	B14178		
Dept sample id	7225-001	Location/Matrix	233-S	SOLID	
Received	02/15/02	Collected/Weight	01/25/02 15:00	539.0 g	
% solids	100.0	Custody/SAF No	B99-024-41	B99-024	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1540	35	2.9	10		93A
Gross Beta	12587-47-2	-148	6.4	5.1	15	U	93B
Uranium 233/234	U-233/234	0.915	3.7	7.0	1.0	U	U
Uranium 235	15117-96-1	0	2.2	8.5	1.0	U	U
Uranium 238	U-238	0.915	1.8	7.0	1.0	U	U
Neptunium 237	13994-20-2	1.29	1.3	2.5	1.0	U	NP
Plutonium 238	13981-16-3	51.3	17	10	1.0		PU
Plutonium 239/240	PU-239/240	1140	120	10	1.0		PU
Curium 244	13981-15-2	2.51	10	19	1.0	U	TP
Americium 241	14596-10-2	292	62	19	1.0		TP
Potassium 40	13966-00-2	U		0.22		U	GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	8.90	0.15	0.040	0.10		GAM
Radium 226	13982-63-3	U		0.065	0.10	U	GAM
Radium 228	15262-20-1	U		0.077	0.20	U	GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.088	0.10	U	GAM
Thorium 228	14274-82-9	U		0.064		U	GAM
Thorium 232	TH-232	U		0.077		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Americium 241	14596-10-2	322	0.60	0.28			GAM

233-S Pu Concentration Facility Pro.

Rashing Rings

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

R202076-02 **B141J4**

DATA SHEET

SDG	7225	Client/Case no	Hanford	SDG H1697	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R202076-02	Client sample id	B141J4		
Dept sample id	7225-002	Location/Matrix	233-S	SOLID	
Received	02/15/02	Collected/Weight	02/11/02 08:15	1365 g	
% solids	100.0	Custody/SAF No	B99-024-45	B99-024	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3940	110	12	10		93A
Gross Beta	12587-47-2	-390	23	25	15	U	93B
Uranium 233/234	U-233/234	8.16	16	31	1.0	U	U
Uranium 235	15117-96-1	4.94	9.9	38	1.0	U	U
Uranium 238	U-238	0	8.2	31	1.0	U	U
Neptunium 237	13994-20-2	4.96	7.4	14	1.0	U	NP
Plutonium 238	13981-16-3	322	75	30	1.0		PU
Plutonium 239/240	PU-239/240	2140	230	30	1.0		PU
Curium 244	13981-15-2	-4.58	9.2	35	1.0	U	TP
Americium 241	14596-10-2	1300	180	35	1.0		TP
Potassium 40	13966-00-2	U		0.089		U	GAM
Cobalt 60	10198-40-0	U		0.009	0.050	U	GAM
Cesium 137	10045-97-3	0.120	0.016	0.012	0.10		GAM
Radium 226	13982-63-3	U		0.015	0.10	U	GAM
Radium 228	15262-20-1	U		0.028	0.20	U	GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.028	0.10	U	GAM
Europium 155	14391-16-3	U		0.085	0.10	U	GAM
Thorium 228	14274-82-9	U		0.011		U	GAM
Thorium 232	TH-232	U		0.028		U	GAM
Uranium 235	15117-96-1	U		0.045		U	GAM
Uranium 238	U-238	U		1.0		U	GAM
Americium 241	14596-10-2	1330	1.0	0.34			GAM

233-S Pu Concentration Facility Pro.

Coil

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

Test NP Matrix SOLID
SDG 7225
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1697

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7024-075						
B14178	R202076-01			7225-001	1.29	U
B141J4	R202076-02			7225-002	4.96	U
BLK (QC ID=41318)	R202076-04			7225-004	2.48	U
LCS (QC ID=41317)	R202076-03			7225-003	ok	
Duplicate (R202076-01)	R202076-05			7225-005	-	U
Nominal values and limits from method 233-S Pu Concentration Facility Pro.				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-075	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 057											
B14178	R202076-01			2.5	0.0108			42		812			54	03/19/02	03/20	SS-043
B141J4	R202076-02			14	0.0027			41		812			37	03/19/02	03/20	SS-044
BLK (QC ID=41318)	R202076-04			9.2	0.0027			64		813				03/19/02	03/20	SS-048
LCS (QC ID=41317)	R202076-03			16	0.0027			30		812				03/19/02	03/20	SS-045
Duplicate (R202076-01) (QC ID=41319)	R202076-05			2.3	0.0108			61		813			54	03/19/02	03/20	SS-049
Nominal values and limits from method				1.0	0.0027			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	8.8	±	13
	YIELD	48	±	29

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

Test PU Matrix SOLID
SDG 7225
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1697

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 7024-075						
B14178	R202076-01			7225-001	51.3	1140
B141J4	R202076-02			7225-002	322	2140
BLK (QC ID=41318)	R202076-04			7225-004	U	U
LCS (QC ID=41317)	R202076-03			7225-003	ok	ok
Duplicate (R202076-01)	R202076-05			7225-005	ok	ok
Nominal values and limits from method 233-S Pu Concentration Facility Pro.				RDLs (pCi/g)	1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-075	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 057											
B14178	R202076-01			10	0.0108			62		140			53	03/19/02	03/19	SS-049
B141J4	R202076-02			30	0.0027			75		140			36	03/19/02	03/19	SS-050
BLK (QC ID=41318)	R202076-04			190	0.0027			29		136				03/19/02	03/19	SS-021
LCS (QC ID=41317)	R202076-03			59	0.0027			45		123				03/19/02	03/20	SS-043
Duplicate (R202076-01) (QC ID=41319)	R202076-05			25	0.0108			43		136			53	03/19/02	03/19	SS-022
Nominal values and limits from method				1.0	0.0027			20-105		100	100		180			

PROCEDURES	REFERENCE	
	PUISO_PLATE_AEA	
	CP-060	Soil Preparation, rev 3
	CP-940	Plutonium Separation and Purification, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 5 SAMPLES			
MDA	63	±	150
YIELD	51	±	36

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

Test TP	Matrix SOLID
SDG 7225	
Contact Melissa C. Mannion	

METHOD SUMMARY

AMERICIUM 241/CURIUM IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1697	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Curium 244		Americium 241	
Preparation batch 7024-075								
B14178	R202076-01			7225-001	2.51	U	292	
B141J4	R202076-02			7225-002	U		1300	
BLK (QC ID=41318)	R202076-04			7225-004	U		9.12	U
LCS (QC ID=41317)	R202076-03			7225-003	ok		ok	
Duplicate (R202076-01)	R202076-05			7225-005	-	U	ok	
Nominal values and limits from method 233-S Pu Concentration Facility Pro.				RDLs (pCi/g)	1.0		1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-075	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 057											
B14178	R202076-01			19	0.0108			42		104			53	03/19/02	03/19	SS-043
B141J4	R202076-02			35	0.0027			86		104			36	03/19/02	03/19	SS-044
BLK (QC ID=41318)	R202076-04			35	0.0027			89		105				03/19/02	03/19	SS-048
LCS (QC ID=41317)	R202076-03			32	0.0027			94		104				03/19/02	03/19	SS-045
Duplicate (R202076-01) (QC ID=41319)	R202076-05			9.4	0.0108			90		105			53	03/19/02	03/19	SS-049
Nominal values and limits from method				1.0	0.0027			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-002	Q.C. Preparation, rev 3
	CP-003	Tracing, rev 3
	CP-940	Plutonium Separation and Purification, rev 3
	CP-961	Am-Cu Purification, Large Aliquot by Oxalate Precipitation, rev 2
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 5 SAMPLES			
MDA	26	±	23
YIELD	80	±	43

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

Test U	Matrix SOLID
SDG 7225	
Contact Melissa C. Mannion	

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1697	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234		2: Uranium 235		3: Uranium 238		RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7024-075														
B14178	R202076-01			7225-001	U		U		U					
B141J4	R202076-02			7225-002	8.16	U	4.94	U	U					
BLK (QC ID=41318)	R202076-04			7225-004	U		U		4.67	U				
LCS (QC ID=41317)	R202076-03			7225-003	ok		ok		ok					
Duplicate (R202076-01)	R202076-05			7225-005	-	U	-	U	-	U				
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0		1.0		100		4	
233-S Pu Concentration Facility Pro.											Averages			

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-075	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 057											
B14178	R202076-01			8.5	0.0108			82		139			53	03/18/02	03/19	SS-044
B141J4	R202076-02			38	0.0027			87		120			35	03/18/02	03/18	SS-048
BLK (QC ID=41318)	R202076-04			43	0.0027			75		120				03/18/02	03/18	SS-050
LCS (QC ID=41317)	R202076-03			160	0.0027			83		139				03/18/02	03/19	SS-045
Duplicate (R202076-01) (QC ID=41319)	R202076-05			15	0.0108			77		120			52	03/18/02	03/18	SS-022
Nominal values and limits from method				1.0	0.0027			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-911	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	53	±	120	
YIELD	81	±	10	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

Test 93A Matrix SOLID
SDG 7225
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1697

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 7024-075					
B14178	R202076-01	93		7225-001	1540
B141J4	R202076-02	93		7225-002	3940
BLK (QC ID=41318)	R202076-04	93		7225-004	U
LCS (QC ID=41317)	R202076-03	93		7225-003	ok
Duplicate (R202076-01)	R202076-05	93		7225-005	ok

Nominal values and limits from method RDLs (pCi/g) 10
233-S Pu Concentration Facility Pro.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-075	2σ prep error 20.0 % Reference Lab Notebook 7024 pg. 057															
B14178	R202076-01	93		2.9	0.108			1		100			48	03/13/02	03/14	GRB-113
B141J4	R202076-02	93		12	0.0273			1		100			31	03/13/02	03/14	GRB-115
BLK (QC ID=41318)	R202076-04	93		8.1	0.0273			22		100				03/13/02	03/13	GRB-101
LCS (QC ID=41317)	R202076-03	93		12	0.0273			21		100				03/13/02	03/14	GRB-116
Duplicate (R202076-01) (QC ID=41319)	R202076-05	93		2.9	0.108			1		100			48	03/13/02	03/14	GRB-113
Nominal values and limits from method				10	0.0273			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD MDA 7.6 ± 9.1
FOR 5 SAMPLES RESIDUE 9 ± 22

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

Test 93B Matrix SOLID
SDG 7225
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1697

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 7024-075						
B14178	R202076-01	93		7225-001	U	
B141J4	R202076-02	93		7225-002	U	
BLK (QC ID=41318)	R202076-04	93		7225-004	U	
LCS (QC ID=41317)	R202076-03	93		7225-003	ok	
Duplicate (R202076-01)	R202076-05	93		7225-005	-	U

Nominal values and limits from method RDLs (pCi/g) 15
233-S Pu Concentration Facility Pro.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-075 2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 057																
B14178	R202076-01	93		5.1	0.108			1		100			47	03/13/02	03/13	GRB-109
B141J4	R202076-02	93		25	0.0273			1		100			30	03/13/02	03/13	GRB-110
BLK (QC ID=41318)	R202076-04	93		20	0.0273			22		100				03/13/02	03/13	GRB-101
LCS (QC ID=41317)	R202076-03	93		22	0.0273			21		100				03/13/02	03/13	GRB-111
Duplicate (R202076-01) (QC ID=41319)	R202076-05	93		5.6	0.108			1		100			47	03/13/02	03/13	GRB-102
Nominal values and limits from method				15	0.0273			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	16	±	19
	RESIDUE	9	±	22

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1697

Test GAM Matrix SOLID
SDG 7225
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1697

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137
Preparation batch 7024-075							
B14178	R202076-01			7225-001	U		8.90
B141J4	R202076-02			7225-002	U		0.120
BLK (QC ID=41318)	R202076-04			7225-004	U		U
LCS (QC ID=41317)	R202076-03			7225-003	ok		ok
Duplicate (R202076-01)	R202076-05			7225-005	-	U	ok
Nominal values and limits from method 233-S Pu Concentration Facility Pro.				RDLs (pCi/g)	0.050		0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-075 2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 057																
B14178	R202076-01			0.32	539					226			42	03/06/02	03/08	02,01,00
B141J4	R202076-02			0.063	1360					233			24	03/06/02	03/07	02,01,00
BLK (QC ID=41318)	R202076-04			0.096	539					641				03/06/02	03/07	01,03,00
LCS (QC ID=41317)	R202076-03			0.040	539					241				03/06/02	03/07	01,03,00
Duplicate (R202076-01) (QC ID=41319)	R202076-05			0.30	539					241			41	03/06/02	03/07	MB,05,00
Nominal values and limits from method				0.050	539					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 3
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.16 ± 0.27
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-024-45	Page 1 of 2

Collector: Rex Fuqua	Company Contact: Steve Trent; Telephone No.: 372-9651	Project Coordinator: TRENT, SJ	Price Code: 9L; Data Turnaround: 21 Days; Air Quality ☐
Project Designation: 233-S Plutonium Concentration Facility Process Areas - Other	Sampling Location: 233-S H1697 (7225)	SAF No.: B99-024	
Ice Chest No.: ERC-01-040	Field Logbook No.: EFL 1137-10; COA: R233SP2800	Method of Shipment: FED EX SDG H1697	
Shipped To: TMA/RECRA	Offsite Property No.: RSR #107028	Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive, 31,060 dpm/100cm² alpha Removable

Sample originally sent to RCF for on site analysis. Page 2 of 2 represents custody transfer to RCF. The sample was picked up from RCF and re-labeled for off-site analysis. A new COC was generated for appropriate off site custody transfer. Page 1 of 2 represents custody transfer to offsite laboratory for directed analysis.

SAMPLE ANALYSIS

Preservation	None	None	None	None	None	None	None				
Type of Container	G	G poly bag	~~None~~	~~None~~	~~None~~	~~None~~	~~None~~				
No. of Container(s)	0	1	0	0	0	0	0				
Volume	15g	~~125g~~ 1 L	5g 1 L	750g 1 L	5g 1 L	5g 1 L	5g 1 L				
	Mercury - 7471 - (CV)	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	Gross Alpha; Gross Beta	See item (1) in Special Instructions.	Americium-241; Isotopic Plutonium; Isotopic Uranium	Americium-241/Cesium-244	Neptunium-237				

NOTE: PLEASE CONTACT JO KESSNER (509-375-4688) FOR SPE ANALYSIS DIRECTION, AND REQUIREMENTS CONCERNING TRANSPORTATION OF SAMPLES ADDITIONAL LABORATORIES F CHEMICAL ANALYSIS.

Sample No.	Matrix *	Sample Date	Sample Time										
B141J4	OTHER SOLID	2-11-02	0815		X	X	X	X	X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Thorne ERC	0800 2-14-02	FEDEX	2-14-02
FED EXPRESS	9:20 2-15-02	SCA-2 E. MAESTAS	9:20 2-15-02
			2/20/02

SPECIAL INSTRUCTIONS

Contact Joan Kessner (BHI) 509-375-4688 upon completion of Rad analysis for further directions.

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample is in 3 layers of poly bag, only the outside layer is considered clean

All analysis from same container (poly bag)

Matrix *: S=Soil; SD=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

BHI-EE-011 (12/31/2001)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-024-41	Page 1 of 2
Collector: Leisha Wakole	Company Contact: Steve Hall	Telephone No.: 372-9651	Project Coordinator: TRENT SP[illegible]	Data Turnaround: 21 Days
Project Designation: 233-S Plutonium Concentration Facility/Process/Area/Other	Sampling Location: 233-S H1697 (72[illegible])		SAF No.: B99-024	Air Quality ☐
Ice Chest No.: ERC-01-0102	Field Logbook No.: EFL1[illegible]	COA: R233SP2800	Method of Shipment: Fed Ex SDG H1697	
Shipped To: TMA/RECRA	Offsite Property No.: A020175		Bill of Lading/Air Bill No.: 42357455-1048	

POSSIBLE SAMPLE HAZARDS/REMARKS: *Radioactive*

Special Handling and/or Storage

SAMPLE ANALYSIS	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	Gross Alpha; Gross Beta	See Item (1) in Special Instructions.	Americium-241; Isotopic Plutonium; Isotopic Uranium	Americium-241/Curium-244	Neptunium-237					
Preservation	None	None	None	None	None	None					
Type of Container	P	P	P	P	P	P					
No. of Container(s)	0	1	0	0	0	0					
Volume	500mL	500mL	500mL	500mL	500mL	500mL					

Sample No.	Matrix*	Sample Date	Sample Time										
B14178	OTHER SOLID	1-25-02	1500	X	X	X	X	X	X				

NOTE: PLEASE CONTACT JOAN KESSNER (509-375-4688) FOR SPECIFIC ANALYSIS INSTRUCTIONS AND/OR REQUIREMENTS CONCERNING TRANSPORTATION OF SAMPLES TO ADDITIONAL LABORATORIES FOR CHEMICAL ANALYSIS.

RT 2-14-02

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: B.L. [illegible] FED EX	2-14-02 0800	Received By/Stored In: FEDEX	2-14-02 —
Relinquished By/Removed From: FED EXPRESS	2-15-02 10:00	Received By/Stored In: BCA-2 E. MAGSTAS	2-15-02 10:00
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

Contact Joan Kessner (BHI) 509-375-4688 upon completion of Rad analysis for further directions. Pull all analysis from the one 500 ml poly bottle.

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originally sent to RCF for on site analysis. Page 2 of 2 represents custody transfer to RCF. The sample was picked up from RCF and re-labeled for off-site analysis. A new COC was generated for appropriate off site custody transfer. Page 1 of 2 represents custody transfer to offsite laboratory for directed analysis.

RT 2-14-02

Matrix*: S=Soil; SD=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

BHI-EE-011 (10/99)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc. Date/Time received 2-15-02

CoC No. B99-024-41

Container I.D. No. BRC-01-062 Requested TAT (Days) 21 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. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 1
7. Number of containers per sample: 1 (1 one qt) (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Red labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: Received only one container B14178.
13. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 2-15-02
14. Received by E. Maestas Date: 2-15-02 Time: 10:00

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc. Date/Time received 2-15-02 10:00

CoC No. B99-024-45

Container I.D. No. ERC-01-040 Requested TAT (Days) 21 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. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 1
7. Number of containers per sample: (1 EACH) (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Red labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by E. D. MacPhee Date: 2-15-02 Time: 10:00

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

APR 2002

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-024 H1697

DATE RECEIVED: 03/27/02 LVL LOT # :0203L280

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B141J4						
SILVER, TOTAL	001	W	02L0158	02/11/02	03/28/02	03/28/02
ARSENIC, TOTAL	001	W	02L0158	02/11/02	03/28/02	03/28/02
BARIUM, TOTAL	001	W	02L0158	02/11/02	03/28/02	03/28/02
CADMIUM, TOTAL	001	W	02L0158	02/11/02	03/28/02	03/28/02
CHROMIUM, TOTAL	001	W	02L0158	02/11/02	03/28/02	03/28/02
MERCURY, TOTAL	001	W	02C0090	02/11/02	03/28/02	04/01/02
LEAD, TOTAL	001	W	02L0158	02/11/02	03/28/02	03/28/02
SELENIUM, TOTAL	001	W	02L0158	02/11/02	03/28/02	03/28/02
B14178						
SILVER, TOTAL	002	W	02L0158	01/25/02	03/28/02	03/28/02
SILVER, TOTAL	002 REP	W	02L0158	01/25/02	03/28/02	03/28/02
SILVER, TOTAL	002 MS	W	02L0158	01/25/02	03/28/02	03/28/02
ARSENIC, TOTAL	002	W	02L0158	01/25/02	03/28/02	03/28/02
ARSENIC, TOTAL	002 REP	W	02L0158	01/25/02	03/28/02	03/28/02
ARSENIC, TOTAL	002 MS	W	02L0158	01/25/02	03/28/02	03/28/02
BARIUM, TOTAL	002	W	02L0158	01/25/02	03/28/02	03/28/02
BARIUM, TOTAL	002 REP	W	02L0158	01/25/02	03/28/02	03/28/02
BARIUM, TOTAL	002 MS	W	02L0158	01/25/02	03/28/02	03/28/02
CADMIUM, TOTAL	002	W	02L0158	01/25/02	03/28/02	03/28/02
CADMIUM, TOTAL	002 REP	W	02L0158	01/25/02	03/28/02	03/28/02
CADMIUM, TOTAL	002 MS	W	02L0158	01/25/02	03/28/02	03/28/02
CHROMIUM, TOTAL	002	W	02L0158	01/25/02	03/28/02	03/28/02
CHROMIUM, TOTAL	002 REP	W	02L0158	01/25/02	03/28/02	03/28/02
CHROMIUM, TOTAL	002 MS	W	02L0158	01/25/02	03/28/02	03/28/02
MERCURY, TOTAL	002	W	02C0090	01/25/02	03/28/02	04/01/02
MERCURY, TOTAL	002 REP	W	02C0090	01/25/02	03/28/02	04/01/02
MERCURY, TOTAL	002 MS	W	02C0090	01/25/02	03/28/02	04/01/02
LEAD, TOTAL	002	W	02L0158	01/25/02	03/28/02	03/28/02
LEAD, TOTAL	002 REP	W	02L0158	01/25/02	03/28/02	03/28/02
LEAD, TOTAL	002 MS	W	02L0158	01/25/02	03/28/02	03/28/02
SELENIUM, TOTAL	002	W	02L0158	01/25/02	03/28/02	03/28/02
SELENIUM, TOTAL	002 REP	W	02L0158	01/25/02	03/28/02	03/28/02
SELENIUM, TOTAL	002 MS	W	02L0158	01/25/02	03/28/02	03/28/02

LAB QC:

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-024 H1697

DATE RECEIVED: 03/27/02 LVL LOT # :0203L280

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER LABORATORY	LC1 BS	W	02L0158	N/A	03/28/02	03/28/02
SILVER, TOTAL	MB1	W	02L0158	N/A	03/28/02	03/28/02
ARSENIC LABORATORY	LC1 BS	W	02L0158	N/A	03/28/02	03/28/02
ARSENIC, TOTAL	MB1	W	02L0158	N/A	03/28/02	03/28/02
BARIUM LABORATORY	LC1 BS	W	02L0158	N/A	03/28/02	03/28/02
BARIUM, TOTAL	MB1	W	02L0158	N/A	03/28/02	03/28/02
CADMIUM LABORATORY	LC1 BS	W	02L0158	N/A	03/28/02	03/28/02
CADMIUM, TOTAL	MB1	W	02L0158	N/A	03/28/02	03/28/02
CHROMIUM LABORATORY	LC1 BS	W	02L0158	N/A	03/28/02	03/28/02
CHROMIUM, TOTAL	MB1	W	02L0158	N/A	03/28/02	03/28/02
MERCURY LABORATORY	LC1 BS	W	02C0090	N/A	03/28/02	04/01/02
MERCURY, TOTAL	MB1	W	02C0090	N/A	03/28/02	04/01/02
LEAD LABORATORY	LC1 BS	W	02L0158	N/A	03/28/02	03/28/02
LEAD, TOTAL	MB1	W	02L0158	N/A	03/28/02	03/28/02
SELENIUM LABORATORY	LC1 BS	W	02L0158	N/A	03/28/02	03/28/02
SELENIUM, TOTAL	MB1	W	02L0158	N/A	03/28/02	03/28/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B99-024
LVL#: 0203L280
SDG/SAF#: H1697/B99-024

W.O.#: 11343-606-001-9999-00
Date Received: 03-27-02

METALS CASE NARRATIVE

1. This narrative covers the analyses of water samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

   The samples were prepped at ten fold dilutions for both Mercury and ICP metals due to limited sample volume.

3. All analyses were performed within the required holding times.

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy, with the exception of cooler temperature above 6 (15.2°C) and samples received out of hold for Mercury analysis.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exception of CCV3 for Mercury at 111.2%. There should be no impact to the sample data as the results were non-detect.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The samples were spiked at RCRA levels, and all matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at 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 15 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

11. The duplicate analyses for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

13. 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 data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

jjw/m03-280

04-08-02
Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 02032280

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A X3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	X6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	X6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	X6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	X6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	X7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	__6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	X6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

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
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/01/02

CLIENT: TNUHANFORD B99-024 H1697 LVL LOT #: 0203L280

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B141J4	Silver, Total	7.0	u	UG/L	7.0	1.0
		Arsenic, Total	203		UG/L	30.0	1.0
		Barium, Total	789		UG/L	2.0	1.0
		Cadmium, Total	260		UG/L	3.0	1.0
		Chromium, Total	15600		UG/L	8.0	1.0
		Mercury, Total	1.0	u	UG/L	1.0	10.0
		Lead, Total	6230		UG/L	22.0	1.0
		Selenium, Total	36.0	u	UG/L	36.0	1.0
-002	B14178	Silver, Total	8.2		UG/L	7.0	1.0
		Arsenic, Total	30.0	u	UG/L	30.0	1.0
		Barium, Total	28.1		UG/L	2.0	1.0
		Cadmium, Total	3.0	u	UG/L	3.0	1.0
		Chromium, Total	14300		UG/L	8.0	1.0
		Mercury, Total	1.0	u	UG/L	1.0	10.0
		Lead, Total	45.0		UG/L	22.0	1.0
		Selenium, Total	36.0	u	UG/L	36.0	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/01/02

CLIENT: TNUHANFORD B99-024 H1697 LVL LOT #: 0203L280

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	02L0158-MB1	Silver, Total	0.70 u	UG/L	0.70	1.0
		Arsenic, Total	3.0 u	UG/L	3.0	1.0
		Barium, Total	0.66	UG/L	0.20	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Chromium, Total	0.85	UG/L	0.80	1.0
		Lead, Total	2.2 u	UG/L	2.2	1.0
		Selenium, Total	3.6 u	UG/L	3.6	1.0
BLANK1	02C0090-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/01/02

CLIENT: TNUHANFORD B99-024 H1697 LVL LOT #: 0203L280

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B14178	Silver, Total	47400	8.2	50000	94.9	1.0
		Arsenic, Total	46500	30.0 u	50000	93.0	1.0
		Barium, Total	959000	28.1	000000	95.9	6.0
		Cadmium, Total	9820	3.0 u	10000	98.2	1.0
		Chromium, Total	63800	14300	50000	99.0	1.0
		Mercury, Total	211	1.0 u	200	105.4	50.0
		Lead, Total	48800	45.0	50000	97.4	1.0
		Selenium, Total	8990	36.0 u	10000	89.9	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/01/02

CLIENT: TNUHANFORD B99-024 H1697 LVL LOT #: 0203L280

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B14178	Silver, Total	8.2	7.0 u	~~NC~~ zero	1.0
		Arsenic, Total	30.0 u	30.0 u	NC MW 4/5/02	1.0
		Barium, Total	28.1	27.6	1.8	1.0
		Cadmium, Total	3.0 u	3.0 u	NC	1.0
		Chromium, Total	14300	14000	1.8	1.0
		Mercury, Total	1.0 u	1.0 u	NC	10.0
		Lead, Total	45.0	54.8	19.6	1.0
		Selenium, Total	36.0 u	36.0 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/01/02

CLIENT: TNUHANFORD B99-024 H1697 *LVL LOT #: 0203L280*

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	02L0158-LC1	Silver, LCS	479	500	UG/L	95.8
		Arsenic, LCS	9340	10000	UG/L	93.4
		Barium, LCS	4730	5000	UG/L	94.6
		Cadmium, LCS	240	250	UG/L	96.1
		Chromium, LCS	490	500	UG/L	98.1
		Lead, LCS	2390	2500	UG/L	95.6
		Selenium, LCS	9100	10000	UG/L	91.0
LCS1	02C0090-LC1	Mercury, LCS	5.5	5.0	UG/L	110.4

Lionville Laboratory Use Only

0203L280

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLF

Client: [illegible]

Est. Final Proj. Sampling Date: [illegible]

Project #: [illegible]

Project Contact/Phone #: [illegible]

Lionville Laboratory Project Manager: DJ

QC: SPEC Del: STD TAT: 3 day

Date Rec'd: 3-27-02 Date Due: 3-30-02

Refrigerator #									A,B							
#/Type Container	Liquid	[illegible]							4							
	Solid															
Volume	Liquid	[illegible]							40/25							
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN.						
		Lionville Laboratory Use Only														
									MRCRATO							

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
Wi - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
001	[illegible]			W	[illegible]	0915									1 (>40ml)					
002	[illegible]			W	[illegible]	1500									2 (>40ml)					

Special Instructions: SAF # B99-024

Run Matrix QC

Samples are acid leachate

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ____ or
Hand Delivered ____
Airbill # ____

2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 15.2 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 8329 9002 4876

Relinquished by	Received by	Date	Time
FED EX	[illegible]	3-27-02	1952

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-024-45	Page 1 of 1

Collector: Rex Fugua	Company Contact: Steve Trent	Telephone No.: 372-9651	Project Coordinator: TRENT, SJ
Price Code: 9L	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 233-S Plutonium Concentration Facility Process Areas - Other	Sampling Location: 233-S H1697 (7225)	SAF No.: B99-024	
Ice Chest No.: ERC-01-040	Field Logbook No.: EFL 1137-10	COA: B233SF2000	Method of Shipment: FED EX SDG H1697
Shipped To: TMA/RECRA	Offsite Property No.: RSR #107028	Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive, 31,060 dpm/100cm² alpha Removable

Sample originally sent to RCF for on site analysis. Page 2 of 2 represents custody transfer to RCF. The sample was picked up from RCF and re-labeled for off-site analysis. A new COC was generated for appropriate off site custody transfer. Page 1 of 2 represents custody transfer to offsite laboratory for directed analysis.

RT 2-14-02

SAMPLE ANALYSIS

Preservation	None	None	None	None	None	None	None					
Type of Container	G	G poly bag	None	None	None	None	None		0820 2-11-02			
No. of Container(s)	0	1 0820 2-11-02	0	0	0	0	0					
Volume	15g	45g	5g	750g	5g	5g	5g		0820 2-11-02			
		1 L	1 L	1 L	1 L	1 L	1 L					
	Mercury - 7471 - (CV)	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	Gross Alpha; Gross Beta	See Item (1) in Special Instructions.	Americium-241; Isotopic Plutonium; Isotopic Uranium	Americium-241/Curium-244	Neptunium-237					
Sample No.	Matrix *	Sample Date	Sample Time									
B141J4	OTHER SOLID	2-11-02	0815		X	X	X	X	X	X		

NOTE: PLEASE CONTACT RKL KESSNER (509-375-4688) FOR SPECIAL ANALYSIS DIRECTION, AND REQUIREMENTS CONCERNING TRANSPORTATION OF SAMPLES TO ADDITIONAL LABORATORIES FOR CHEMICAL ANALYSIS.

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: R. Thorne ERC	Date/Time: 2-14-02 0800	Received By/Stored In: FEDEX	Date/Time: 2-14-02
Relinquished By/Removed From: FED EXPRESS	Date/Time: 2-15-02 9:20	Received By/Stored In: SCA-2 E. Maestas E. HAESTAS	Date/Time: 2-15-02 9:20
Relinquished By/Removed From: FED EX	Date/Time:	Received By/Stored In:	Date/Time: 3-27-02/0956 2/20/02
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

Contact Joan Kessner (BHI) 509-375-4688 upon completion of Rad analysis for further directions.

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample is in 3 layers of poly bag, only the outside layer is considered clean

All analysis from same container (poly bag)

Matrix *: S=Soil; SD=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

BHI-EE-011 (12/31/2001)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Collector: Erisa L. Yokoyama

Company Contact: Steve Thiel

Telephone No.: 372-9638

Project Coordinator: [illegible]

Data Turnaround: 21 Days

Project Designation: 233-S Plutonium Concentration Facility Decontamination and Closure

Sampling Location: 233-S H1697 (72[illegible])

SAF No.: [illegible]

Ice Chest No.: ERC-[illegible]

Field Logbook No.: ERLY[illegible]

COA: R2338P2800

Method of Shipment: Fed Ex

Shipped To: TMA/RECRA

Offsite Property No.: A02D175

Bill of Lading/Air Bill No.: 4235[illegible] 1048

POSSIBLE SAMPLE HAZARDS/REMARKS: Radioactive

Special Handling and/or Storage:

Preservation	None	None	None	None	None	None		
Type of Container	P	P	P	P	P	P		
No. of Container(s)	0	1	0	0	0	0		
Volume	500mL	500mL	500mL	500mL	500mL	500mL		
SAMPLE ANALYSIS	Metals by RCF (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	Gross Alpha; Gross Beta	Sr-90 (1) in Liquid Scintillation	Americium-241; Isotopic Plutonium; Isotopic Uranium	Americium-241/Curium-244	Neptunium-237		
Sample No.	Matrix	Sample Date	Sample Time					
B14178	OTHER SOLID	1-25-02	1500	X	X	X	X	X	X

NOTE: PLEASE CONTACT JOAN KESSNER (509-375-4688) FOR SPECIFIC ANALYSIS REQUIREMENTS CONCERNING TRANSPORTATION OF SAMPLES TO ADDITIONAL LABORATORIES FOR CHEMICAL ANALYSIS.

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible] FED EX	2-14-02	FED EX	2-14-02
FED EXPRESS	2-15-02	ECA-2 E. Maestas	2-15-02
FED EX		[illegible]	3-22-02 / 0952

SPECIAL INSTRUCTIONS: Contact Joan Kessner (BHI) 509-375-4688 upon completion of Rad analysis for further directions. Pull all analysis from the one 500 ml poly bottle.

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originally sent to RCF for on site analysis. Page 2 of 2 represents custody transfer to RCF. The sample was picked up from RCF and re-labeled for off-site analysis. A new COC was generated for appropriate off site custody transfer. Page 1 of 2 represents custody transfer to offsite laboratory for directed analysis.

RT 2-14-02

Matrix*: S=Soil; SD=Sediment; SO=Sludge; SL=Slurry; 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:

PULSE 04/10/00

ST 4/9/02

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TNU - Hanford

Purchase Order/Project:

DATE: 3-27-02

SAF# / SOW# / Release #: B99-024

Laboratory SDG #: 0203L280

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

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☐ Yes	☐ No	☐ N/A	☐ see Comment #
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)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☐ No	☑ N/A	☐ see Comment #
10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc faxed or emailed to client?	☐ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp and Comments:

15.2°C

Laboratory Sample Custodian:

Laboratory Project Manager:

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