

Thermo Retec
W.O. No. R0-10-136-7535

Bechtel Hanford Inc.
SDG H1100

Case Narrative

Page 1 of 2

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1100 was composed of two other solid samples designated under SAF No. B00-051 with a Project Designation of: 221-U Process Cell Concrete Core Samples.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on December 5 and 6, 2000.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Isotopic Thorium Analyses

There was contamination in the method blank from Th-230 (1.13 pCi/g). The activity was slightly above the RDL (1 pCi/g) for Th-230. No other problems were encountered during the course of the analyses.

2.4 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.5 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

RECEIVED
JAN 22 2001

EDMC

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

12/16/00
Date

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

SAMPLE SUMMARY

SDG 7535
 Contact Melissa C. Mannion

Client Hanford
 Contract TRC-SBB-207925
 Case no SDG H1100

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10BK2	221 U	SOLID		R010136-01	800-051	B00-051-34	10/16/00 13:12
B10BK3	221 U	SOLID		R010136-02	800-051	B00-051-34	10/16/00 13:55
Method Blank		SOLID		R010136-04	800-051		
Lab Control Sample		SOLID		R010136-03	800-051		
Duplicate (R010136-01)	221 U	SOLID		R010136-05	800-051		10/16/00 13:12

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CS
 Version 3.06
 Report date 12/06/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

SDG 7535
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract TRC-SBB-207925
 Case no SDG H1100

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
7535	B00-051-34	B10BK2	SOLID	100.0			10/20/00 4	R010136-01		7535-001
		B10BK3	SOLID	100.0			10/20/00 4	R010136-02		7535-002
		Method Blank	SOLID					R010136-04		7535-004
		Lab Control Sample	SOLID					R010136-03		7535-003
		Duplicate (R010136-01)	SOLID	100.0			10/20/00 4	R010136-05		7535-005

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 12/06/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

SDG 7535
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract TRC-SBB-207925
 Case no SDG H1100

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED			QUALI- FIERS	
			BATCH	2σ %	CLIENT	MORE	RE		BLANK
Alpha Spectroscopy									
AM	SOLID	Americium 241 in Soil	6962-012	5.0	2		1	1	1/1
NP	SOLID	Neptunium in Soil	6962-012	5.0	2		1	1	1/1
PU	SOLID	Plutonium, Isotopic in Solids	6962-012	5.0	2		1	1	1/1
TH	SOLID	Thorium, Isotopic in Soil	6962-012	5.0	2		1	1	1/1
U	SOLID	Uranium, Isotopic in Soil	6962-012	5.0	2		1	1	1/1
Beta Counting									
SR	SOLID	Total Strontium in Soil	6962-012	10.0	2		1	1	1/1
Gas Proportional Counting									
93A	SOLID	Gross Alpha in Soil	6962-012	20.0	2		1	1	1/1
93B	SOLID	Gross Beta in Soil	6962-012	15.0	2		1	1	1/1
Gamma Spectroscopy									
GAM	SOLID	Gamma Scan	6962-012	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 12/06/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

SDG 7535
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1100

WORK SUMMARY

CLIENT SAMPLE ID	LOCATION	MATRIX	LAB SAMPLE ID	COLLECTED	PLANCHET	TEST	SUF-	ANALYZED	REVIEWED	BY	METHOD
CUSTODY	SAF No		RECEIVED				FIX				
B10BK2			R010136-01	10/16/00	7535-001	93A/93		11/01/00	12/05/00	MCM	Gross Alpha in Soil
221 U		SOLID		10/16/00	7535-001	93B/93		11/01/00	12/05/00	MCM	Gross Beta in Soil
B00-051-34	800-051			10/20/00	7535-001	AM		11/08/00	12/05/00	MCM	Americium 241 in Soil
					7535-001	GAM		11/10/00	12/05/00	MCM	Gamma Scan
					7535-001	NP		11/04/00	12/05/00	MCM	Neptunium in Soil
					7535-001	PU		11/02/00	12/05/00	MCM	Plutonium, Isotopic in Solids
					7535-001	SR		10/30/00	12/05/00	MCM	Total Strontium in Soil
					7535-001	TH		11/20/00	12/05/00	MCM	Thorium, Isotopic in Soil
					7535-001	U		11/20/00	12/06/00	MCM	Uranium, Isotopic in Soil
B10BK3			R010136-02	10/16/00	7535-002	93A/93		11/01/00	12/05/00	MCM	Gross Alpha in Soil
221 U		SOLID		10/16/00	7535-002	93B/93		11/01/00	12/05/00	MCM	Gross Beta in Soil
B00-051-34	800-051			10/20/00	7535-002	AM		11/02/00	12/05/00	MCM	Americium 241 in Soil
					7535-002	GAM		11/07/00	12/05/00	MCM	Gamma Scan
					7535-002	NP		11/04/00	12/05/00	MCM	Neptunium in Soil
					7535-002	PU		11/03/00	12/05/00	MCM	Plutonium, Isotopic in Solids
					7535-002	SR		10/30/00	12/05/00	MCM	Total Strontium in Soil
					7535-002	TH		11/20/00	12/05/00	MCM	Thorium, Isotopic in Soil
					7535-002	U		11/02/00	12/05/00	MCM	Uranium, Isotopic in Soil
Method Blank			R010136-04		7535-004	93A/93		11/01/00	12/05/00	MCM	Gross Alpha in Soil
		SOLID			7535-004	93B/93		11/01/00	12/05/00	MCM	Gross Beta in Soil
	800-051				7535-004	AM		11/03/00	12/05/00	MCM	Americium 241 in Soil
					7535-004	GAM		11/07/00	12/05/00	MCM	Gamma Scan
					7535-004	NP		11/04/00	12/05/00	MCM	Neptunium in Soil
					7535-004	PU		11/03/00	12/05/00	MCM	Plutonium, Isotopic in Solids
					7535-004	SR		10/30/00	12/05/00	MCM	Total Strontium in Soil
					7535-004	TH		11/20/00	12/05/00	MCM	Thorium, Isotopic in Soil
					7535-004	U		11/02/00	12/05/00	MCM	Uranium, Isotopic in Soil
Lab Control Sample			R010136-03		7535-003	93A/93		11/01/00	12/05/00	MCM	Gross Alpha in Soil
		SOLID			7535-003	93B/93		11/01/00	12/05/00	MCM	Gross Beta in Soil
	800-051				7535-003	AM		11/08/00	12/05/00	MCM	Americium 241 in Soil
					7535-003	GAM		11/07/00	12/05/00	MCM	Gamma Scan
					7535-003	NP		11/04/00	12/05/00	MCM	Neptunium in Soil
					7535-003	PU		11/03/00	12/05/00	MCM	Plutonium, Isotopic in Solids
					7535-003	SR		10/30/00	12/05/00	MCM	Total Strontium in Soil
					7535-003	TH		11/20/00	12/05/00	MCM	Thorium, Isotopic in Soil
					7535-003	U		11/02/00	12/05/00	MCM	Uranium, Isotopic in Soil

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 12/06/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

SDG 7535
 Contact Melissa C. Mannion

Client Hanford
 Contract TRC-SBB-207925
 Case no SDG_H1100

WORK SUMMARY, cont.

CLIENT SAMPLE ID	LAB SAMPLE ID	MATRIX	COLLECTED	PLANCHET	TEST	SUF-	ANALYZED	REVIEWED	BY	METHOD
LOCATION	RECEIVED					FIX				
CUSTODY	SAF No									
Duplicate (R010136-01)	R010136-05		7535-005	93A/93		11/01/00	12/05/00	MCM		Gross Alpha in Soil
221 U	SOLID	10/16/00	7535-005	93B/93		11/01/00	12/05/00	MCM		Gross Beta in Soil
	B00-051	10/20/00	7535-005	AM		11/03/00	12/05/00	MCM		Americium 241 in Soil
			7535-005	GAM		11/07/00	12/05/00	MCM		Gamma Scan
			7535-005	NP		11/04/00	12/05/00	MCM		Neptunium in Soil
			7535-005	PU		11/03/00	12/05/00	MCM		Plutonium, Isotopic in Solids
			7535-005	SR		10/30/00	12/05/00	MCM		Total Strontium in Soil
			7535-005	TH		11/30/00	12/05/00	MCM		Thorium, Isotopic in Soil
			7535-005	U		11/02/00	12/05/00	MCM		Uranium, Isotopic in Soil

COUNTS OF TESTS BY SAMPLE TYPE											
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B00-051	Gross Alpha in Soil	900.0_ALPHABETA_GPC	2			1	1	1		5
93B/93	B00-051	Gross Beta in Soil	900.0_ALPHABETA_GPC	2			1	1	1		5
AM	B00-051	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	2			1	1	1		5
GAM	B00-051	Gamma Scan	GAMMA_GS	2			1	1	1		5
NP	B00-051	Neptunium in Soil	NP237_LLE_PLATE_AEA	2			1	1	1		5
PU	B00-051	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1		5
SR	B00-051	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1		5
TH	B00-051	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	2			1	1	1		5
U	B00-051	Uranium, Isotopic in Soil	UIISO_PLATE_AEA	2			1	1	1		5
TOTALS				18			9	9	9		45

Lab id TMAC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CWS
 Version 3.06
 Report date 12/06/00

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1100

R010136-04

Method Blank

METHOD BLANK

SDG <u>7535</u>	Client/Case no <u>Hanford</u>	SDG <u>H1100</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010136-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7535-004</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B00-051</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.216	1.6	3.2	10	U	93A
Gross Beta	12587-47-2	-0.584	4.1	7.0	15	U	93B
Total Strontium	SR-RAD	-0.071	0.11	0.20	1.0	U	SR
Thorium 228	14274-82-9	0.054	0.32	0.66		U	TH
Thorium 230	14269-63-7	<u>1.13</u>	0.54	0.41	1.0		TH
Thorium 232	TH-232	0.054	0.11	0.41	1.0	U	TH
Uranium 233	U-233/234	0.011	0.066	0.12	1.0	U	U
Uranium 235	15117-96-1	-0.013	0.027	0.10	1.0	U	U
Uranium 238	U-238	0.011	0.044	0.084	1.0	U	U
Neptunium 237	13994-20-2	-0.040	0.081	0.41	1.0	U	NP
Plutonium 238	13981-16-3	0.010	0.040	0.077	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.013	0.037	1.0	U	PU
Americium 241	14596-10-2	0.013	0.019	0.031	1.0	U	AM
Potassium 40	13966-00-2	U		0.29		U	GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	U		0.019	0.10	U	GAM
Radium 226	13982-63-3	U		0.037	0.10	U	GAM
Radium 228	15262-20-1	U		0.087	0.20	U	GAM
Europium 152	14683-23-9	U		0.051	0.10	U	GAM
Europium 154	15585-10-1	U		0.046	0.10	U	GAM
Europium 155	14391-16-3	U		0.045	0.10	U	GAM
Thorium 228	14274-82-9	U		0.039		U	GAM
Thorium 232	TH-232	U		0.087		U	GAM
Uranium 235	15117-96-1	U		0.069		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Americium 241	14596-10-2	U		0.064		U	GAM

221-U Process Cell Concrete Core Smp

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/06/00</u>

T M A / R I C H M O N D
S A M P L E D E L I V E R Y G R O U P H 1 1 0 0

R010136-04

Method Blank

B L A N K , c o n t .

SDG <u>7535</u>	Client/Case no <u>Hanford</u>	<u>SDG H1100</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010136-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7535-004</u>	Material/Matrix _____	<u>SOLID</u>
	SAF No <u>B00-051</u>	

QC-BLANK 36361

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/06/00</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

R010136-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7535</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> SDG <u>H1100</u> Case no <u>TRC-SBB-207925</u>
Lab sample id <u>R010136-03</u> Dept sample id <u>7535-003</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix <u>SOLID</u> SAF No <u>B00-051</u>

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	246	16	4.0	10		93A	215	8.6	114	63-137	80-120
Gross Beta	243	11	5.5	15		93B	243	9.7	100	76-124	80-120
Total Strontium	12.7	0.63	0.24	1.0		SR	12.1	0.48	105	81-119	80-120
Thorium 230	24.6	2.9	0.42	1.0	B	TH	22.4	0.90	110	78-122	80-120
Uranium 233	9.47	1.1	0.53	1.0		U	9.66	0.39	98	80-120	80-120
Uranium 235	8.13	0.98	0.14	1.0		U	7.84	0.31	104	79-121	80-120
Uranium 238	10.4	1.2	0.51	1.0		U	10.5	0.42	99	80-120	80-120
Neptunium 237	12.2	1.6	0.41	1.0		NP	11.9	0.48	102	78-122	80-120
Plutonium 238	12.4	0.84	0.035	1.0		PU	12.4	0.50	100	86-114	80-120
Plutonium 239/240	13.5	0.91	0.039	1.0		PU	13.2	0.53	102	86-114	80-120
Americium 241	11.6	2.0	0.31	1.0		AM	11.5	0.46	101	72-128	80-120
Cobalt 60	0.434	0.029	0.016	0.050		GAM	0.449	0.018	97	75-125	80-120
Cesium 137	0.545	0.027	0.016	0.10		GAM	0.523	0.021	104	75-125	80-120

221-U Process Cell Concrete Core Smp

QC-LCS 36360

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LCS
 Version 3.06
 Report date 12/06/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

R010136-05

B108K2

DUPLICATE

SDG <u>7535</u>		Client/Case no <u>Hanford</u> SDG <u>H1100</u>
Contact <u>Melissa C. Mannion</u>		Case no <u>TRC-SBB-207925</u>
DUPLICATE	ORIGINAL	
Lab sample id <u>R010136-05</u>	Lab sample id <u>R010136-01</u>	Client sample id <u>B108K2</u>
Dept sample id <u>7535-005</u>	Dept sample id <u>7535-001</u>	Location/Matrix <u>221 U</u> <u>SOLID</u>
	Received <u>10/20/00</u>	Collected <u>10/16/00 13:12</u>
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>B00-051-34</u> <u>B00-051</u>

ANALYTE	DUPLICATE		MDA		RDL		QUALI- FIERS	TEST	ORIGINAL		MDA	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
	pCi/g	2σ ERR (COUNT)	pCi/g		pCi/g				pCi/g	2σ ERR (COUNT)					
Gross Alpha	-2.61	2.7	3.6		10		U	93A	-0.172	2.8	3.2	U	-		
Gross Beta	578	16	7.0		15			93B	552	16	5.5		5	32	
Total Strontium	260	4.9	0.40		1.0			SR	264	5.1	0.40		2	22	
Thorium 228	0.206	0.33	0.55				U	TH	0.041	0.16	0.31	U	-		
Thorium 230	0.934	0.49	0.31		1.0		JB	TH	0.978	0.49	0.31	JB	5	109	
Thorium 232	0.041	0.081	0.31		1.0		U	TH	0	0.082	0.31	U	-		
Uranium 233	0.938	0.20	0.12		1.0		J	U	0.952	0.11	0.030	J	1	38	
Uranium 235	0.091	0.068	0.087		1.0		J	U	0.050	0.031	0.030	J	58	159	
Uranium 238	0.872	0.20	0.072		1.0		J	U	0.920	0.11	0.024	J	5	40	
Neptunium 237	0.040	0.081	0.12		1.0		U	NP	-0.041	0.082	0.31	U	-		
Plutonium 238	-0.004	0.014	0.039		1.0		U	PU	0.020	0.015	0.019	J	200	257	
Plutonium 239/240	0.235	0.058	0.027		1.0		J	PU	0.194	0.045	0.019	J	19	52	
Americium 241	0.062	0.033	0.031		1.0		J	AM	0.046	0.041	0.069	U	30	147	
Potassium 40	U		0.58				U	GAM	U		0.54	U	-		
Cobalt 60	U		0.019		0.050		U	GAM	U		0.021	U	-		
Cesium 137	102	0.30	0.10		0.10			GAM	102	0.40	<u>0.11</u>		0	32	
Radium 226	U		<u>0.11</u>		0.10		U	GAM	U		<u>0.12</u>	U	-		
Radium 228	U		0.17		0.20		U	GAM	U		0.099	U	-		
Europium 152	U		<u>0.27</u>		0.10		U	GAM	U		<u>0.29</u>	U	-		
Europium 154	U		0.067		0.10		U	GAM	U		0.058	U	-		
Europium 155	U		<u>0.18</u>		0.10		U	GAM	U		<u>0.19</u>	U	-		
Thorium 228	U		0.11				U	GAM	U		0.12	U	-		
Thorium 232	U		0.17				U	GAM	U		0.099	U	-		
Uranium 235	U		0.28				U	GAM	U		0.30	U	-		
Uranium 238	2.83	2.4	2.8					GAM	U		3.5	U	21	204	
Americium 241	U		0.12				U	GAM	U		0.12	U	-		

221-U Process Cell Concrete Core Smp

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>12/06/00</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

R010136-05

B108K2

DUPLICATE, cont.

SDG <u>7535</u>		Client/Case no <u>Hanford</u>	SDG <u>H1100</u>
Contact <u>Melissa C. Mannion</u>		Case no <u>TRC-SBB-207925</u>	
DUPLICATE	ORIGINAL		
Lab sample id <u>R010136-05</u>	Lab sample id <u>R010136-01</u>	Client sample id <u>B108K2</u>	
Dept sample id <u>7535-005</u>	Dept sample id <u>7535-001</u>	Location/Matrix <u>221 U</u>	<u>SOLID</u>
	Received <u>10/20/00</u>	Collected <u>10/16/00 13:12</u>	
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>B00-051-34</u>	<u>B00-051</u>

QC-DUP#1 36362

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>12/06/00</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1100

R010136-01

B10BK2

DATA SHEET

SDG <u>7535</u>	Client/Case no <u>Hanford</u>	SDG <u>H1100</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010136-01</u>	Client sample id <u>B10BK2</u>	
Dept sample id <u>7535-001</u>	Location/Matrix <u>221 U</u>	<u>SOLID</u>
Received <u>10/20/00</u>	Collected <u>10/16/00 13:12</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B00-051-34</u>	<u>B00-051</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.172	2.8	3.2	10	U	93A
Gross Beta	12587-47-2	552	16	5.5	15		93B
Total Strontium	SR-RAD	264	5.1	0.40	1.0		SR
Thorium 228	14274-82-9	0.041	0.16	0.31		U	TH
Thorium 230	14269-63-7	0.978	0.49	0.31	1.0	JB	TH
Thorium 232	TH-232	0	0.082	0.31	1.0	U	TH
Uranium 233	U-233/234	0.952	0.11	0.030	1.0	J	U
Uranium 235	15117-96-1	0.050	0.031	0.030	1.0	J	U
Uranium 238	U-238	0.920	0.11	0.024	1.0	J	U
Neptunium 237	13994-20-2	-0.041	0.082	0.31	1.0	U	NP
Plutonium 238	13981-16-3	0.020	0.015	0.019	1.0	J	PU
Plutonium 239/240	PU-239/240	0.194	0.045	0.019	1.0	J	PU
Americium 241	14596-10-2	0.046	0.041	0.069	1.0	U	AM
Potassium 40	13966-00-2	U		0.54		U	GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	102	0.40	<u>0.11</u>	0.10		GAM
Radium 226	13982-63-3	U		<u>0.12</u>	0.10	U	GAM
Radium 228	15262-20-1	U		0.099	0.20	U	GAM
Europium 152	14683-23-9	U		<u>0.29</u>	0.10	U	GAM
Europium 154	15585-10-1	U		0.058	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.19</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		0.12		U	GAM
Thorium 232	TH-232	U		0.099		U	GAM
Uranium 235	15117-96-1	U		0.30		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Americium 241	14596-10-2	U		0.12		U	GAM

221-U Process Cell Concrete Core Smp

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/06/00</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1100

R010136-02

B10BK3

DATA SHEET

SDG <u>7535</u>	Client/Case no <u>Hanford</u>	SDG <u>H1100</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R010136-02</u>	Client sample id <u>B10BK3</u>	
Dept sample id <u>7535-002</u>	Location/Matrix <u>221 U</u>	<u>SOLID</u>
Received <u>10/20/00</u>	Collected <u>10/16/00 13:55</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B00-051-34</u>	<u>B00-051</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-3.32	1.7	2.9	10	U	93A
Gross Beta	12587-47-2	340	13	6.1	15		93B
Total Strontium	SR-RAD	149	5.0	0.68	1.0		SR
Thorium 228	14274-82-9	-0.033	0.067	0.25		U	TH
Thorium 230	14269-63-7	1.06	0.47	0.41	1.0	B	TH
Thorium 232	TH-232	0.033	0.066	0.25	1.0	U	TH
Uranium 233	U-233/234	0.177	0.12	0.11	1.0	J	U
Uranium 235	15117-96-1	0.107	0.072	0.14	1.0	U	U
Uranium 238	U-238	0.236	0.12	0.11	1.0	J	U
Neptunium 237	13994-20-2	0	0.088	0.34	1.0	U	NP
Plutonium 238	13981-16-3	-0.003	0.020	0.045	1.0	U	PU
Plutonium 239/240	PU-239/240	0.083	0.034	0.025	1.0	J	PU
Americium 241	14596-10-2	0.058	0.028	0.021	1.0	J	AM
Potassium 40	13966-00-2	U		0.53		U	GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	126	0.40	0.11	0.10		GAM
Radium 226	13982-63-3	U		0.12	0.10	U	GAM
Radium 228	15262-20-1	U		0.098	0.20	U	GAM
Europium 152	14683-23-9	U		0.30	0.10	U	GAM
Europium 154	15585-10-1	U		0.061	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	U		0.12		U	GAM
Thorium 232	TH-232	U		0.098		U	GAM
Uranium 235	15117-96-1	U		0.29		U	GAM
Uranium 238	U-238	U		2.6		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

221-U Process Cell Concrete Core Smp

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/06/00</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

METHOD SUMMARY
AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7535
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1100

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Americium 241
Preparation batch 6962-012					
B10BK2	R010136-01	7535-001			U
B10BK3	R010136-02	7535-002			0.058 J
BLK (QC ID=36361)	R010136-04	7535-004			U
LCS (QC ID=36360)	R010136-03	7535-003			ok
Duplicate (R010136-01)	R010136-05	7535-005			ok J
Nominal values and limits from method		RDls (pCi/g)		1.0	
221-U Process Cell Concrete Core Smp					

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-012 2σ prep error 5.0 % Reference Lab Notebook 6962 pg. 012																
B10BK2	R010136-01			0.069	0.500			81		540			23	10/31/00	11/08	SS-033
B10BK3	R010136-02			0.021	0.500			76		1137			17	10/31/00	11/02	SS-045
BLK (QC ID=36361)	R010136-04			0.031	0.500			89		815				10/31/00	11/03	SS-042
LCS (QC ID=36360)	R010136-03			0.31	0.500			86		1332				10/31/00	11/08	SS-051
Duplicate (R010136-01)	R010136-05			0.031	0.500			70		816			18	10/31/00	11/03	SS-044
(QC ID=36362)																
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	ANCMISO_IE_PLATE_AEA
CP-060	Soil Preparation, rev 2	
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3	
CP-940	Plutonium Separation and Purification, rev 2	
CP-960	Americium-Curium Purification, Large Aliquot, rev 4	
CP-008	Heavy Element Electroplating, rev 3	

AVERAGES ± 2 SD	MDA <u>0.092 ± 0.25</u>
FOR 5 SAMPLES	YIELD <u>80 ± 15</u>

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/06/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

METHOD SUMMARY
NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Test NP Matrix SOLID
 SDG 7535
 Contact Melissa C. Mannion

Client Hanford
 Contract TRC-SBB-207925
 Contract SDG H1100

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	PLANCHET	Neptunium 237
Preparation batch 6962-012				
B10BK2	R010136-01		7535-001	U
B10BK3	R010136-02		7535-002	U
BLK (QC ID=36361)	R010136-04		7535-004	U
LCS (QC ID=36360)	R010136-03		7535-003	ok
Duplicate (R010136-01)	R010136-05		7535-005	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
 221-U Process Cell Concrete Core Smp

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-012 2σ prep error 5.0 % Reference Lab Notebook 6962 pg. 012															
B10BK2	R010136-01		0.31	0.500			70	109			19	11/03/00	11/04	SS-019	
B10BK3	R010136-02		0.34	0.500			65	109			19	11/03/00	11/04	SS-021	
BLK (QC ID=36361)	R010136-04		0.41	0.500			64	109				11/03/00	11/04	SS-023	
LCS (QC ID=36360)	R010136-03		0.41	0.500			57	109				11/03/00	11/04	SS-022	
Duplicate (R010136-01)	R010136-05		0.12	0.500			72	109			19	11/03/00	11/04	SS-024	
(QC ID=36362)															

Nominal values and limits from method 1.0 0.500 20-105 100 180

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
CP-060	Soil Preparation, rev 2	
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3	
CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 1	

AVERAGES ± 2 SD	MDA	0.32 ± 0.24
FOR 5 SAMPLES	YIELD	66 ± 12

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 12/06/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

METHOD SUMMARY
PLUTONIUM, ISOTOPIIC IN SOLIDS
ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7535
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1100

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Plutonium 238	Plutonium 239/240
Preparation batch 6962-012					
B10BK2	R010136-01	7535-001		0.020 J	0.194 J
B10BK3	R010136-02	7535-002		U	0.083 J
BLK (QC ID=36361)	R010136-04	7535-004		U	U
LCS (QC ID=36360)	R010136-03	7535-003		ok	ok
Duplicate (R010136-01)	R010136-05	7535-005		ok U	ok J

Nominal values and limits from method RDLs (pCi/g) 1.0 1.0
221-U Process Cell Concrete Core Smp

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-012 2σ prep error 5.0 % Reference Lab Notebook 6962 pg. 012																
B10BK2	R010136-01			0.019	0.500			84		1137			17	10/30/00	11/02	SS-044
B10BK3	R010136-02			0.045	0.500			91		814			18	10/30/00	11/03	SS-036
BLK (QC ID=36361)	R010136-04			0.077	0.500			90		815				10/30/00	11/03	SS-041
LCS (QC ID=36360)	R010136-03			0.039	0.500			92		814				10/30/00	11/03	SS-038
Duplicate (R010136-01)	R010136-05			0.039	0.500			83		816			18	10/30/00	11/03	SS-043
																(QC ID=36362)

Nominal values and limits from method 1.0 0.500 20-105 100 100 180

PROCEDURES	REFERENCE	PUIISO_PLATE_AEA
CP-060		Soil Preparation, rev 2
CP-940		Plutonium Separation and Purification, rev 2
CP-008		Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD	MDA	0.044 ± 0.042
FOR 5 SAMPLES	YIELD	88 ± 8

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

METHOD SUMMARY
THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Test TH Matrix SOLID
SDG 7535
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1100

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6962-012							
B10BK2	R010136-01	7535-001			U	0.978 J	U
B10BK3	R010136-02	7535-002			U	1.06	U
BLK (QC ID=36361)	R010136-04	7535-004			U	<u>1.13</u>	U
LCS (QC ID=36360)	R010136-03	7535-003				ok	
Duplicate (R010136-01)	R010136-05	7535-005			- U	ok J	- U

Nominal values and limits from method RDLs (pCi/g) 1.0 1.0
221-U Process Cell Concrete Core Smp

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-012 2σ prep error 5.0 % Reference Lab Notebook 6962 pg. 012																
B10BK2	R010136-01			0.31	0.250			74		154			35	11/20/00	11/20	SS-035
B10BK3	R010136-02			0.41	0.250			97		154			35	11/20/00	11/20	SS-036
BLK (QC ID=36361)	R010136-04			0.41	0.250			58		154				11/20/00	11/20	SS-041
LCS (QC ID=36360)	R010136-03			0.42	0.250			56		154				11/20/00	11/20	SS-038
Duplicate (R010136-01)	R010136-05			0.31	0.250			72		166			45	11/20/00	11/30	SS-041
(QC ID=36362)																

Nominal values and limits from method 1.0 0.250 20-105 150 180

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3	
CP-905	Thorium in Dissolved Solid Sample, rev 0	
CP-008	Heavy Element Electroplating, rev 3	

AVERAGES ± 2 SD	MDA <u>0.37</u> ± <u>0.11</u>
FOR 5 SAMPLES	YIELD <u>71</u> ± <u>33</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

METHOD SUMMARY
URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7535
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1100

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Uranium		2: Uranium		3: Uranium		RESULT RATIOS (%)			
					233	235	235	238	1+3	2σ	2+3	2σ		
Preparation batch 6962-012														
B10BK2	R010136-01			7535-001	0.952 J	0.050 J	0.920 J				103	17	5	3
B10BK3	R010136-02			7535-002	0.177 J	U	0.236 J				75	64	45	38
BLK (QC ID=36361)	R010136-04			7535-004	U	U	U							
LCS (QC ID=36360)	R010136-03			7535-003	ok	ok	ok							
Duplicate (R010136-01)	R010136-05			7535-005	ok J	ok J	ok J				108	34	10	8
Nominal values and limits from method					RDLs (pCi/g)	1.0	1.0	1.0			100		4	
221-U Process Cell Concrete Core Smp											Averages	95		20

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-012 2σ prep error 5.0 % Reference Lab Notebook 6962 pg. 012																
B10BK2	R010136-01			0.030	0.500			98		253			35	10/27/00	11/20	SS-027
B10BK3	R010136-02			0.14	0.500			98		164			17	10/27/00	11/02	SS-045
BLK (QC ID=36361)	R010136-04			0.12	0.500			68		414				10/27/00	11/02	SS-021
LCS (QC ID=36360)	R010136-03			0.53	0.500			97		164				10/27/00	11/02	SS-046
Duplicate (R010136-01)	R010136-05			0.12	0.500			85		414			17	10/27/00	11/02	SS-022
(QC ID=36362)																
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES REFERENCE UISO_PLATE_AEA
CP-911 Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 2
CP-008 Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD MDA 0.19 ± 0.39
FOR 5 SAMPLES YIELD 89 ± 26

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/06/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

METHOD SUMMARY
TOTAL STRONTIUM IN SOIL
BETA COUNTING

Test SR Matrix SOLID
SDG 7535
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1100

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Strontium
Preparation batch 6962-012					
B10BK2	R010136-01	7535-001			264
B10BK3	R010136-02	7535-002			149
BLK (QC ID=36361)	R010136-04	7535-004			U
LCS (QC ID=36360)	R010136-03	7535-003			ok
Duplicate (R010136-01)	R010136-05	7535-005			ok

Nominal values and limits from method RDLs (pCi/g) 1.0
221-U Process Cell Concrete Core Smp

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF COUNT %	FWHM min keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-012 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 012															
B10BK2	R010136-01			0.40	1.00			84	<u>24</u>		14	10/30/00	10/30		GRB-222
B10BK3	R010136-02			0.68	1.00			79	<u>23</u>		14	10/30/00	10/30		GRB-218
BLK (QC ID=36361)	R010136-04			0.20	1.00			80	200			10/30/00	10/30		GRB-220
LCS (QC ID=36360)	R010136-03			0.24	1.00			77	200			10/30/00	10/30		GRB-219
Duplicate (R010136-01)	R010136-05			0.40	1.00			88	400		14	10/30/00	10/30		GRB-207
															(QC ID=36362)

Nominal values and limits from method 1.0 1.00 30-105 100 180

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-502 Strontium in Solids, rev 2
CP-519 Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 2

AVERAGES ± 2 SD MDA 0.38 ± 0.38
FOR 5 SAMPLES YIELD 82 ± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/06/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

METHOD SUMMARY
GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Test 93A Matrix SOLID
SDG 7535
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1100

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Alpha
Preparation batch 6962-012					
B10BK2	R010136-01	93		7535-001	U
B10BK3	R010136-02	93		7535-002	U
BLK (QC ID=36361)	R010136-04	93		7535-004	U
LCS (QC ID=36360)	R010136-03	93		7535-003	ok
Duplicate (R010136-01)	R010136-05	93		7535-005	- U

Nominal values and limits from method RDLs (pCi/g) 10
221-U Process Cell Concrete Core Smp

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-012 2σ prep error 20.0 % Reference Lab Notebook 6962 pg. 012																
B10BK2	R010136-01	93		3.2	0.100					<u>4</u>	100		16	11/01/00	11/01	GRB-113
B10BK3	R010136-02	93		2.9	0.100					<u>3</u>	100		16	11/01/00	11/01	GRB-114
BLK (QC ID=36361)	R010136-04	93		3.2	0.100					27	100			11/01/00	11/01	GRB-116
LCS (QC ID=36360)	R010136-03	93		4.0	0.100					29	100			11/01/00	11/01	GRB-115
Duplicate (R010136-01)	R010136-05	93		3.6	0.100					<u>4</u>	100		16	11/01/00	11/01	GRB-110
(QC ID=36362)																

Nominal values and limits from method 10 0.100 5-250 100 180

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
CP-060		Soil Preparation, rev 2
CP-070		Soil Dissolution, < 1.0g Aliquot, rev 3
CP-170		Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 2

AVERAGES ± 2 SD	MDA	<u>3.4</u>	±	<u>0.85</u>
FOR 5 SAMPLES	RESIDUE	<u>13</u>	±	<u>27</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

METHOD SUMMARY

GROSS BETA IN SOIL

GAS PROPORTIONAL COUNTING

Test 93B Matrix SOLID
SDG 7535

Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925

Contract SDG H1100

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Beta
Preparation batch 6962-012					
B10BK2	R010136-01	93		7535-001	552
B10BK3	R010136-02	93		7535-002	340
BLK (QC ID=36361)	R010136-04	93		7535-004	U
LCS (QC ID=36360)	R010136-03	93		7535-003	ok
Duplicate (R010136-01)	R010136-05	93		7535-005	ok

Nominal values and limits from method RDLs (pCi/g) 15
221-U Process Cell Concrete Core Smp

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	ANAL- YZED	DETECTOR
Preparation batch 6962-012 2σ prep error 15.0 % Reference Lab Notebook 6962 pg. 012															
B10BK2	R010136-01	93		5.5	0.100			<u>4</u>		100			16	11/01/00	11/01 GRB-113
B10BK3	R010136-02	93		6.1	0.100			<u>3</u>		100			16	11/01/00	11/01 GRB-114
BLK (QC ID=36361)	R010136-04	93		7.0	0.100			27		100				11/01/00	11/01 GRB-116
LCS (QC ID=36360)	R010136-03	93		5.5	0.100			29		100				11/01/00	11/01 GRB-115
Duplicate (R010136-01)	R010136-05	93		7.0	0.100			<u>4</u>		100			16	11/01/00	11/01 GRB-110
(QC ID=36362)															

Nominal values and limits from method 15 0.100 5-250 100 180

PROCEDURES REFERENCE	900.0_ALPHABETA_GPC
CP-060	Soil Preparation, rev 2
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3
CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 2

AVERAGES ± 2 SD	MDA <u>6.2</u> ± <u>1.5</u>
FOR 5 SAMPLES	RESIDUE <u>13</u> ± <u>27</u>

METHOD SUMMARIES

Page 8

SUMMARY DATA SECTION

Page 22

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/06/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1100

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7535
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1100

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6962-012						
B10BK2	R010136-01	7535-001			U	102
B10BK3	R010136-02	7535-002			U	126
BLK (QC ID=36361)	R010136-04	7535-004			U	U
LCS (QC ID=36360)	R010136-03	7535-003			ok	ok
Duplicate (R010136-01)	R010136-05	7535-005			- U	ok

Nominal values and limits from method RDLs (pCi/g) 0.050 0.10
221-U Process Cell Concrete Core Smp

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-012 2σ prep error 15.0 % Reference Lab Notebook 6962 pg. 012																
B10BK2	R010136-01			0.046	541					204			25	11/07/00	11/10	MB,07,00
B10BK3	R010136-02			0.041	535					219			22	11/07/00	11/07	MB,07,00
BLK (QC ID=36361)	R010136-04			0.044	530					238				11/07/00	11/07	01,03,00
LCS (QC ID=36360)	R010136-03			0.016	530					253				11/07/00	11/07	01,04,00
Duplicate (R010136-01)	R010136-05			0.040	541					233			22	11/07/00	11/07	MB,07,00
	(QC ID=36362)															

Nominal values and limits from method 0.050 530 100 180

PROCEDURES REFERENCE GAMMA_GS
CP-060 Soil Preparation, rev 2
CP-100 Ge(Li) Preparation for Commercial Samples, rev 2

AVERAGES ± 2 SD MDA 0.037 ± 0.024
FOR 5 SAMPLES YIELD _____ ± _____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/06/00

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B00-051-34	Page 1 of 2
Collector FAHLBER/BOWERS	Company Contact D Jacques	Telephone No. 373-5299	Project Coordinator TRENT, SJ		Price Code 9N	Data Turnaround 45 Days
Project Designation 221-U Process Cell Concrete Core Samples		Sampling Location 221 U	H1100(7535)		SAF No. B00-051	Air Quality <input type="checkbox"/>
Ice Chest No. Sml-466 (OFI)	Field Logbook No. EL 1517	COA B200CS6100	Method of Shipment Fed-EX			
Shipped To TMA/RECRA		Offsite Property No. A010020	Bill of Lading/Air Bill No. 42357953 98 71			

POSSIBLE SAMPLE HAZARDS/REMARKS Potential for Radioactivity	Preservation	None	None																
	Type of Container		P	P															
	No. of Container(s)		+	1															
Special Handling and/or Storage	Volume	425ml 1000ml	1000ml																

Samples stored in Ref.# 3C at the 3728 Shipping Facility on 10/18/00. Collector not available to relinquish samples on 10/19/00 for shipment.

RT 10/19/00

SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.														
-----------------	--	--	--	---------------------------------------	---------------------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time																
B10BK2 ✓	OTHER SOLID	10/16/00	1312	X	X	B10BT5													
B10BK3 ✓	other solid	10/16/00	1355	X	X	B10BT6													

NOTE 1 EACH ONLY

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS								Matrix *
Relinquished By B. P. Bowers	Date/Time 10/18/00	Received By R. J. Thore	Date/Time 10/18/00	(1) ICP Metals - 6010A (Supertrace); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Bismuth, Phosphorus); Mercury - 7471 - (CV) (2) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Strontium-89,90 - Total Sr; Neptunium-237 Entire contents of sample collected in one container NOTE - TMA please perform Gross Alpha, Gross Beta, & Gamma spec. Send remaining samples to RECRA for ICP metal analysis.								S-Soil SE-Sediment SO-Solid S-Sludge W-Water O-Oil A-Air DS-Drum Solids DL-Drum Liquids T-Tissue WI-Wipe L-Liquid V-Vegetation X-Other
Relinquished By R. J. Thore	Date/Time 10/19/00	Received By Fed-EX	Date/Time 10-19-00									
Relinquished By Fed-EX	Date/Time 10-20-00	Received By E. Segura	Date/Time 10/20/00									
Relinquished By	Date/Time	Received By	Date/Time									

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

20FZ

RT 19/0

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B00-051-26	Page <u>1</u> of <u>1</u>
Collector Fahlberg	Company Contact D Jacques	Telephone No. 373-5299	Project Coordinator TRENT, SJ		Price Code 9N	Data Turnaround 24 Hours
Project Designation 221-U Process Cell Concrete Core Samples		Sampling Location 221 U H1100 (7535)	SAF No. B00-051		Air Quality <input type="checkbox"/>	
Ice Chest No. -NA	Field Logbook No. EL1517	COA B200CS6100	Method of Shipment Government Vehicle			
Shipped To Radiological Counting Facility		Offsite Property No. NA		Bill of Lading/Air Bill No. NA		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None								
	Type of Container	P								
	No. of Container(s)	1								
	Special Handling and/or Storage	Volume	12.5 ml IL RF 10-4-00							

SAMPLE ANALYSIS				Rad Source GEA	MSJ 10-17-00						
						REF					

Sample No.	Matrix *	Sample Date	Sample Time							
B108T5	OTHER SOLID	10/16/00	1312	X		8580				
B108T6	other solid	10/16/00	1355	X		8581			NOT RECEIVED	

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By	Date/Time 1530	Received By	Date/Time					S=Soil SE=Soil/element SO=Soil/d S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
R. Fahlberg	10/16/00	221U RMA	10/16/00 1530					
R. Fahlberg	10/17/00	[Signature]	10-17-00					
[Signature]	10-17-00	J. Duffey	10-17-00					
J. Duffey	10-18-00	S. GALE	10-18-00					
S. GALE	10/18/00 13:55	R. Thorey	10/18/00					
R. Thorey	10/18/00 1355	Received By	Date/Time 1355					
R. Thorey	10/18/00	Stored in	10/18/00					

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

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD INC. Date/Time received 10:20 - 10 9:45 AM

CoC No. B00-051-34

Container I.D. No. SML-466 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. Cooler Temperature: _____ Packing material is: Wet [] Dry []
6. Number of samples in shipping container: 2
7. Number of containers per sample: 1 EACH (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. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [] No [] Date _____
14. Received by E. Segura Date: 10/20/00 Time: 9:45 AM

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

SDR # B01-029
Revision #: 0
Date Initiated: 12/11/00

SAMPLE DISPOSITION RECORD

SAF: B00-051
OU: N/A
Project ID: 221-U CDI
Task ID: 2
Sampling Event: 221-U Process Cell Concrete Core Samples

Laboratory: TMA/RECRA

Task Manager: G.M. MacFarlan

Sampling Information:

Number of Samples: 9

ID Numbers: B10BK2, B10BK5, B10BK7, B10BK3, B10BK4, B10BK6, B10BK8, B10BK9, B10BL0

Matrix: OTHER SOLID

Collection Date: 10/16/00 – 10/19/00

Issue Background:

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

Type: Addition of Analyses

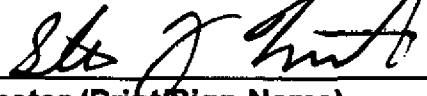
Description: Addition of total Phosphorous by EPA Method 365.1

Disposition:

Description: The SM&T project requested that the listed samples be analyzed for total phosphorous. The appropriate method for this analysis is EPA Method 365.1. This analysis was added to the requested analysis list for these samples.

Justification: Total phosphorous data are needed by the project for characterization of the sampled material.

Approval Signatures:

S. J. Trent  12/29/00
Project Coordinator (Print/Sign Name) Date

G.M. MacFarlan
Task Manager (Print/Sign Name) Date

SDR # B01-028
Revision #: 0
Date Initiated: 12/04/00

SAMPLE DISPOSITION RECORD

SAF: B00-051
OU: N/A
Project ID: 221-U CDI
Task ID: 2
Sampling Event: 221-U Process Cell Concrete Core Samples

Laboratory: TMA/RECRA

Task Manager: G.M. MacFarlan

Sampling Information:
Number of Samples: 9
ID Numbers: B10BK2, B10BK5, B10BK7, B10BK3, B10BK4, B10BK6, B10BK8, B10BK9, B10BL0
Matrix: OTHER SOLID
Collection Date: 10/16/00 – 10/19/00

Issue Background:

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

Type: Other


Description: Trans-ship Samples To Severn Trent Laboratory

Disposition:

Description: The listed samples were analyzed for radiochemical constituents at the TMA Laboratory. ERC Sample Management requested that the sample residual material be trans-shipped to the Severn Trent St. Louis Laboratory so that chemical analyses could be performed following completion of the radiochemical analyses.

Justification: Chemical analyses are required for the listed samples.

Approval Signatures:

S. J. Trent  12/21/00
Project Coordinator (Print/Sign Name) Date

G.M. MacFarlan
Task Manager (Print/Sign Name) Date