RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-002
RFW# : 9904L720
SDG/SAF# : H0387/B99-002

W.O.# : 10985-001-001-9999-00
Date Received: 04-20-99

AUG 1999 RECEIVED EDMC

METALS CASE NARRATIVE

1. This narrative covers the analyses of 6 soil samples.

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

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

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

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} with the exception of Chromium. Refer to the Inorganics Method Blank Data Summary.

   a.) The MB result for Chromium was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and sample B0V6N9 read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample result was reported herein "uncorrected" for the levels found in the MB.

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

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

10. 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 14 pages.

11. The duplicate analysis 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.

for Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-4-95
Date

mld/m04-720

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9904L720

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050A __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	__6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	__6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	__6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__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	✓6010B	__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	__7470A [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	__6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	__6010B	__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:**_____

L-WI-033/M-03/98

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

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INORGANICS DATA SUMMARY REPORT 05/03/99

CLIENT: TNU-HANFORD B99-002 RECRA LOT #: 9904L720

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0V6N7	Chromium, Total	13.2	MG/KG	0.06	1.0
		Mercury, Total	0.17	MG/KG	0.02	1.0
		Lead, Total	11.7	MG/KG	0.18	1.0
-002	B0V6N8	Chromium, Total	12.8	MG/KG	0.05	1.0
		Mercury, Total	0.21	MG/KG	0.02	1.0
		Lead, Total	11.2	MG/KG	0.16	1.0
-003	B0V6N9	Chromium, Total	0.42	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.2	MG/KG	0.16	1.0
-004	B0V6P0	Chromium, Total	9.0	MG/KG	0.06	1.0
		Mercury, Total	0.39	MG/KG	0.02	1.0
		Lead, Total	6.5	MG/KG	0.17	1.0
-005	B0V6P1	Chromium, Total	10.1	MG/KG	0.05	1.0
		Mercury, Total	0.20	MG/KG	0.02	1.0
		Lead, Total	11.1	MG/KG	0.16	1.0
-006	B0V6P2	Chromium, Total	10.1	MG/KG	0.05	1.0
		Mercury, Total	0.22	MG/KG	0.02	1.0
		Lead, Total	12.0	MG/KG	0.15	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/03/99

CLIENT: TNU-HANFORD B99-002 RECRA LOT #: 9904L720

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0241-MB1	Chromium, Total	0.24	MG/KG	0.06	1.0
		Lead, Total	0.41	MG/KG	0.18	1.0
BLANK1	99C0119-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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INORGANICS ACCURACY REPORT 05/03/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9904L720

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0V6N7	Chromium, Total	31.9	13.2	19.1	97.9	1.0
		Mercury, Total	0.35	0.17	0.17	107.8	1.0
		Lead, Total	53.4	11.7	47.8	87.2	1.0

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INORGANICS PRECISION REPORT 05/03/99

CLIENT: TNU-HANFORD B99-002 RECRA LOT #: 9904L720

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0V6N7	Chromium, Total	13.2	13.0	1.5	1.0
		Mercury, Total	0.17	0.19	12.1	1.0
		Lead, Total	11.7	8.4	32.8	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 05/03/99

CLIENT: TNU-HANFORD B99-002 RECRA LOT #: 9904L720

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0241-LC1	Chromium, LCS	47.7	50.0	MG/KG	95.4
		Lead, LCS	235	250	MG/KG	94.0
LCS1	99C0119-LC1	Mercury, LCS	0.96	1.0	MG/KG	95.7

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-002

DATE RECEIVED: 04/20/99 RFW LOT # :9904L720

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V6N7						
CHROMIUM, TOTAL	001	S	99L0241	04/15/99	04/26/99	04/30/99
CHROMIUM, TOTAL	001 REP	S	99L0241	04/15/99	04/26/99	04/30/99
CHROMIUM, TOTAL	001 MS	S	99L0241	04/15/99	04/26/99	04/30/99
MERCURY, TOTAL	001	S	99C0119	04/15/99	04/30/99	05/03/99
MERCURY, TOTAL	001 REP	S	99C0119	04/15/99	04/30/99	05/03/99
MERCURY, TOTAL	001 MS	S	99C0119	04/15/99	04/30/99	05/03/99
LEAD, TOTAL	001	S	99L0241	04/15/99	04/26/99	04/30/99
LEAD, TOTAL	001 REP	S	99L0241	04/15/99	04/26/99	04/30/99
LEAD, TOTAL	001 MS	S	99L0241	04/15/99	04/26/99	04/30/99
B0V6N8						
CHROMIUM, TOTAL	002	S	99L0241	04/15/99	04/26/99	04/30/99
MERCURY, TOTAL	002	S	99C0119	04/15/99	04/30/99	05/03/99
LEAD, TOTAL	002	S	99L0241	04/15/99	04/26/99	04/30/99
B0V6N9						
CHROMIUM, TOTAL	003	S	99L0241	04/15/99	04/26/99	04/30/99
MERCURY, TOTAL	003	S	99C0119	04/15/99	04/30/99	05/03/99
LEAD, TOTAL	003	S	99L0241	04/15/99	04/26/99	04/30/99
B0V6P0						
CHROMIUM, TOTAL	004	S	99L0241	04/15/99	04/26/99	04/30/99
MERCURY, TOTAL	004	S	99C0119	04/15/99	04/30/99	05/03/99
LEAD, TOTAL	004	S	99L0241	04/15/99	04/26/99	04/30/99
B0V6P1						
CHROMIUM, TOTAL	005	S	99L0241	04/15/99	04/26/99	04/30/99
MERCURY, TOTAL	005	S	99C0119	04/15/99	04/30/99	05/03/99
LEAD, TOTAL	005	S	99L0241	04/15/99	04/26/99	04/30/99
B0V6P2						
CHROMIUM, TOTAL	006	S	99L0241	04/15/99	04/26/99	04/30/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-002

DATE RECEIVED: 04/20/99 RFW LOT # :9904L720

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	006	S	99C0119	04/15/99	04/30/99	05/03/99
LEAD, TOTAL	006	S	99L0241	04/15/99	04/26/99	04/30/99

LAB QC:

CHROMIUM LABORATORY	LC1 BS	S	99L0241	N/A	04/26/99	04/30/99
CHROMIUM, TOTAL	MB1	S	99L0241	N/A	04/26/99	04/30/99
MERCURY LABORATORY	LC1 BS	S	99C0119	N/A	04/30/99	05/03/99
MERCURY, TOTAL	MB1	S	99C0119	N/A	04/30/99	05/03/99
LEAD LABORATORY	LC1 BS	S	99L0241	N/A	04/26/99	04/30/99
LEAD, TOTAL	MB1	S	99L0241	N/A	04/26/99	04/30/99

RECRA LabNet Use Only
9904L720

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU-Hanford B99-002
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 15 day
Date Rec'd: 4/20/99 Date Due: 5/5/99
Account #:

Refrigerator #		3	3
#/Type Container	Liquid	1qt	1qt
	Solid		
Volume	Liquid	250	125
	Solid		
Preservatives		–	–

ANALYSES REQUESTED →

	ORGANIC							INORG	
	VOA	BNA	Pest/PCB	Herb				Metal	CN
RECRA LabNet Use Only								Met①	ICP6

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	Met①	ICP6
001	B0V6N7			S	4/15/99	0915	✓	✓
2	N8					0915		
3	N9					0805		
4	P0					1000		
5	P1					1030		
6	P2					1100		

Special Instructions:
Saf# B99-002

COMPOSITE WASTE

DATE/REVISIONS:
1. Met ① = Cr, Pb, Hg
2. Run matrix QC
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape 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'd Y or N
Cooler Temp 2.6 C

Relinquished by	Received by	Date	Time
Fedex	Fedex	4/20/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*423579524813

012

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-002-80	Page 1 of 1

Collector: Fahlberg/Kerkow	Company Contact: R Coffman	Telephone No.: 373-6425	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 15 Days		
Project Designation: 100 BC Areas - Full Protocol	Sampling Location: 100BC 116-B-9 Shallow		SAF No.: B99-002
Ice Chest No.: ERC 96-016	Field Logbook No.: EL 1327-2		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA RE 4-15-99	Offsite Property No.: A990113		Bill of Lading/Air Bill No.: 4235 7952 4813 2.6
			COA: R116B92600

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	Cool 4C	None	None					
	Type of Container	aG	aG	aG	aG	aG					
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1					
	Volume	60mL	60mL	125mL	250mL	1000mL					
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.					

Sample No.	Matrix *	Sample Date	Sample Time										
B0V6N7	Soil	4·15·99	0915			X	X				tio to	Bor	688
B0V6N8	Soil	4·15·99	0915			X	X					Bor	688
B0V6N9	Soil	4·15·99	0805			X	X						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 4.15.99 1630	Received By: Ref. 1·B	Date/Time: 4.15.99 1635
Relinquished By: REF 1B 4/1999 1030	Date/Time	Received By: SJGALE 4/1999 1030	Date/Time
Relinquished By: SJGALE 4/1999 1030	Date/Time	Received By: FED EX	Date/Time
Relinquished By: Jed ep	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238)

NOTE COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: Fader	Title: Login Unit Leader	Date/Time: 4/20/99 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

113

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-002-81

Collector: Fahlberg/Kerkow	Company Contact: R Coffman	Telephone No.: 373-6425	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 15 Days		
Project Designation: 100 BC Areas - Full Protocol	Sampling Location: 100BC 116-B-9 Shallow		SAF No.: B99-002
Ice Chest No.: ERC96-016	Field Logbook No.: EL 1327-2		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA RL 4-15-99	Offsite Property No.: A990113		Bill of Lading/Air Bill No.: 4235795248 13
			COA: R116B92600

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	None	None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	60mL	125mL	250mL	1000mL						
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions						

Sample No.	Matrix *	Sample Date	Sample Time										
B0V6P0	Soil	4.15.99	1000			X	X					Hetc) Be	V696
B0V6P1	Soil	4.15.99	1030			X	X					Be	V6B4
B0V6P2	Soil	4.15.99	1100			X	X					Be	V6B9

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Fahlberg / R Fahlberg 4.15.99	Date/Time: 1635	Received By: Ref. 1-B	Date/Time: 1635 4.15.99
Relinquished By: REF 1-B 4/1999	Date/Time: 1030	Received By: SJGALE 4/1999	Date/Time: 1030
Relinquished By: SJGALE 4/1999	Date/Time: 1030	Received By: FED EX	Date/Time:
Relinquished By: Jeeley	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238)

NOTE: COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

LABORATORY SECTION	Received By: Fodder	Title: Login Unit Leader	Date/Time: 4/20/99 0930	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

RECRA
LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

JUN 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-002
RFW# : 9904L720
SDG# : H0387
SAF# : B99-002

W.O. # : 10985-001-001-9999-00
Date Received: 04-20-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 6 soil samples.

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

3. Sample holding times as required by the method and/or contract were met.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blank for Chromium VI was within method criteria.

6. The Laboratory Control Sample (LCS) for Insoluble Chromium VI was within the laboratory control limits (LCL), however LCS for Soluble Chromium VI was above the LCL of 79.8-118.6%; the Chromium VI results are below the reporting limit and would not be considered biased high.

7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

9. Results for solid samples are reported on a dry weight basis.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-20-99
Date

njp\i04-720

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 12 pages.

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

WET CHEMISTRY
METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	ASTM	SW846	OTHER
%Ash	__ D2216-80		
%Moisture	__ D2216-80		__ ILMO4.0 (e)
%Solids			✓ ILMO4.0 (e)
%Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Corrosivity __by coupon __by pH		__ 1110 (mod)__ 9045	
Cyanide, Total		__ 9010	__ ILMO4.0 (e)
Cyanide, Reactive		__ Sec 7.3	
Density			__ b
Halides, Extractable Organic			__ EPA 600/4/84-008 (mod)
Halides, Total			__ EPA 600/4/84-008 (mod)
EP-Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Carbon, Total Organic (by LOI)			__ c
Oil and Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87 (mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1 (mod)
pH, Soil		__ 9045B	
Sulfide, Reactive		__ Sec 7.3	
Specific Gravity	__ D1429-76C		
Sulfur, Total		__ 9056	
TCLP		__ 1311	
TCLV		__ 1311	
Synthetic Precipitation Leach		__ 1312	
Chlorine, Total		__ 9056	
Paint Filter		__ 9095	

Other: Chromium VI Method: JW3060A/7196A

RWW 21-21-034/B-08/95

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/23/99

CLIENT: TNU-HANFORD B99-002 RECRA LOT #: 9904L720

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0V6N7	% Solids	96.9	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-002	B0V6N8	% Solids	96.5	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
-003	B0V6N9	% Solids	100	%	0.01	1.0
		Chromium VI	0.40 u	MG/KG	0.40	1.0
-004	B0V6P0	% Solids	97.6	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-005	B0V6P1	% Solids	96.7	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-006	B0V6P2	% Solids	96.7	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/23/99

CLIENT: TNU-HANFORD B99-002 RECRA LOT #: 9904L720

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LVI035-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 04/23/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9904L720

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-006	B0V6P2	Soluble Chromium VI	3.0	0.40u	4.1	81.8	1.0
		Insoluble Chromium VI	1290	0.40u	1160	110.6	100
BLANK10	99LVI035-MB1	Soluble Chromium VI	1.1	0.40u	0.80	135.0	1.0
		Insoluble Chromium VI	1280	0.40u	1160	110.1	100

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/23/99

CLIENT: TNU-HANFORD B99-002 RECRA LOT #: 9904L720

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-006REP	B0V6P2	% Solids	96.7	96.4	0.32	1.0
		Chromium VI	0.41u	0.41u	NC	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-002

DATE RECEIVED: 04/20/99 RFW LOT # :9904L720

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V6N7						
% SOLIDS	001	S	99L%S055	04/15/99	04/21/99	04/22/99
CHROMIUM VI	001	S	99LVI035	04/15/99	04/22/99	04/22/99
B0V6N8						
% SOLIDS	002	S	99L%S055	04/15/99	04/21/99	04/22/99
CHROMIUM VI	002	S	99LVI035	04/15/99	04/22/99	04/22/99
B0V6N9						
% SOLIDS	003	S	99L%S055	04/15/99	04/21/99	04/22/99
CHROMIUM VI	003	S	99LVI035	04/15/99	04/22/99	04/22/99
B0V6P0						
% SOLIDS	004	S	99L%S055	04/15/99	04/21/99	04/22/99
CHROMIUM VI	004	S	99LVI035	04/15/99	04/22/99	04/22/99
B0V6P1						
% SOLIDS	005	S	99L%S055	04/15/99	04/21/99	04/22/99
CHROMIUM VI	005	S	99LVI035	04/15/99	04/22/99	04/22/99
B0V6P2						
% SOLIDS	006	S	99L%S055	04/15/99	04/21/99	04/22/99
% SOLIDS	006 REP	S	99L%S055	04/15/99	04/21/99	04/22/99
CHROMIUM VI	006	S	99LVI035	04/15/99	04/22/99	04/22/99
CHROMIUM VI	006 REP	S	99LVI035	04/15/99	04/22/99	04/22/99
CHROMIUM VI	006 MS	S	99LVI035	04/15/99	04/22/99	04/22/99
CHROMIUM VI	006 MSD	S	99LVI035	04/15/99	04/22/99	04/22/99

LAB QC:

CHROMIUM VI	MB1	S	99LVI035	N/A	04/22/99	04/22/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-002

DATE RECEIVED: 04/20/99 RFW LOT # :9904L720

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	MB1 BS	S	99LVI035	N/A	04/22/99	04/22/99
CHROMIUM VI	MB1 BSD	S	99LVI035	N/A	04/22/99	04/22/99

RECRA LabNet Use Only

9904L720

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU-Hanford B99-002

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 15 day

Date Rec'd: 4/20/99 Date Due: 5/5/99

Account #:

Refrigerator #											3		3					010
#/Type Container	Liquid										1g		1g					
	Solid																	
Volume	Liquid										250		125					
	Solid																	
Preservatives											–		–					
ANALYSES REQUESTED →		ORGANIC									INORG							
		VOA	BNA	Pest/PCB	Herb						Metal	CN						
		RECRA LabNet Use Only																
											Met① ✓		1026 ✓					

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	B0V6N7			S	4/15/99	0915
2	N8					0915
3	N9					0805
4	P0					1000
5	P1					1030
6	P2					1100

Special Instructions:

Saf# B99-002

COMPOSITE WASTE

DATE/REVISIONS:

1. Met ① = Cr, Pb, Hg
2. Run matrix QC
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # *

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

COC Tape 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. 2.6 C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

*4235-79524813

Relinquished by	Received by	Date	Time
Jeel	Jeel	4/20/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-002-80	Page 1 of 1

Collector: Fahlberg/Kerkow	Company Contact: R Coffman	Telephone No.: 373-6425	Project Coordinator: TRENT, SJ	Price Code	Data Turnaround: 15 Days
Project Designation: 100 BC Areas - Full Protocol	Sampling Location: 100BC 116-B-9 Shallow		SAF No.: B99-002		
Ice Chest No.: ERC96-016	Field Logbook No.: EL 1327-2		Method of Shipment: FED EX		
Shipped To: ~~EHA~~/RECRA RS 4.15.99	Offsite Property No.: A990113		Bill of Lading/Air Bill No.: 4235 7952 4813		
			COA: R116B92600		

2.6

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	Cool 4C	None	None					
	Type of Container	aG	aG	aG	aG	aG					
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1					
	Volume	60mL	60mL	125mL	250mL	1000mL					
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions					

Sample No.	Matrix *	Sample Date	Sample Time										
B0V6N7	Soil	4.15.99	0915			X	X				tie	Box	688
B0V6N8	Soil	4.15.99	0915			X	X					Box	688
B0V6N9	Soil	4.15.99	0805			X	X						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R.Coffman / R.Fahlberg	Date/Time: 1635 4.15.99	Received By: Ref. 1.B	Date/Time: 4.15.99 1635
Relinquished By: REF 1B	Date/Time: 4/1999 1030	Received By: S.J.Gale	Date/Time: 4/1999 1030
Relinquished By: S.J.Gale	Date/Time: 4/1999 1030	Received By: FED EX	Date/Time:
Relinquished By: Fed ex	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Uranium-238}

NOTE COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: Trader	Title: Logon Unit Leader	Date/Time: 4/20/99 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-002-81

Collector: Fahlberg Nerkow	Company Contact: R Coffman	Telephone No.: 373-6425	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 15 Days		
Project Designation: 100 BC Areas - Full Protocol	Sampling Location: 100BC 116-B-9 Shallow		SAF No.: B99-002
Ice Chest No.: ERC96-016	Field Logbook No.: EL 1327-2		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA Rec 4.15-99	Offsite Property No.: A990113		Bill of Lading/Air Bill No.: 4235795248 13
			COA: R116B92600

012

POSSIBLE SAMPLE HAZARDS/REMARKS"

Special Handling and/or Storage

Preservation	None	None	Cool 4C	None	None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	60mL	125mL	250mL	1000mL						
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time										
B0V6P0	Soil	4.15.99	1000			X	X					Bo V696	
B0V6P1	Soil	4.15.99	1030			X	X					Bo V6B4	
B0V6P2	Soil	4.15.99	1100			X	X					Bo V6B9	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Fahlberg	Date/Time: 1635 4.15.99	Received By: Ref. 1-B	Date/Time: 1635 4.15.99
Relinquished By: REF 1-B	Date/Time: 4/1999 1030	Received By: SJGALE	Date/Time: 4/1999 1030
Relinquished By: SJGALE	Date/Time: 4/1999 1030	Received By: FED EX	Date/Time:
Relinquished By: Jeley	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238)

NOTE: COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

LABORATORY SECTION	Received By: Jeder	Title: Login Unit Leader	Date/Time: 4/20/99 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

H0387 - 1MA/K2-KA

Thermo Nutech
W.O. No. N9-04-105-7115

Bechtel Hanford Inc.
SDG H0387

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0387 is comprised of six solid (soil) samples designated under SAF No. B99-002 with a Project Designation of: 100 BC Areas-Full Protocol.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. All results were faxed to Bechtel Hanford on May 5, 1999 with the exception of Americium-241, which was transmitted to BHI via fax on May 18, 1999.

2.0 ANALYSIS NOTES

2.1 Nickel-63 Analyses
No problems were encountered during the processing of the samples.

2.2 Total Strontium Analyses
No problems were encountered during the processing of the samples.

2.3 Isotopic Plutonium Analyses
No problems were encountered during the processing of the samples.

2.4 Gamma Scan Analyses
No problems were encountered during the processing of the samples.

2.5 Isotopic Uranium Analyses
No problems were encountered during the processing of the samples.

2.6 Americium-241 Analyses
No problems were encountered during the processing of the samples.

JUN 1999
RECEIVED
Data
Log In

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

SAMPLE SUMMARY

SDG 7115
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0V6N7	100BC 116-B-9 Shallow	SOLID		N904105-01	B99-002	B99-002-80	04/15/99 09:15
B0V6N8	100BC 116-B-9 Shallow	SOLID		N904105-02	B99-002	B99-002-80	04/15/99 09:15
B0V6N9	100BC 116-B-9 Shallow	SOLID		N904105-03	B99-002	B99-002-80	04/15/99 08:05
B0V6P0	100BC 116-B-9 Shallow	SOLID		N904105-04	B99-002	B99-002-80	04/15/99 10:00
B0V6P1	100BC 116-B-9 Shallow	SOLID		N904105-05	B99-002	B99-002-80	04/15/99 10:30
B0V6P2	100BC 116-B-9 Shallow	SOLID		N904105-06	B99-002	B99-002-80	04/15/99 11:00
Method Blank		SOLID		N904105-08	B99-002		
Lab Control Sample		SOLID		N904105-07	B99-002		
Duplicate (N904105-01)	100BC 116-B-9 Shallow	SOLID		N904105-09	B99-002		04/15/99 09:15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

QC SUMMARY

SDG 7115
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

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
7115	B99-002-80	B0V6N7	SOLID	96.4			04/20/99	5	N904105-01	7115-001
		B0V6N8	SOLID	96.2			04/20/99	5	N904105-02	7115-002
		B0V6N9	SOLID	100.0			04/20/99	5	N904105-03	7115-003
		B0V6P0	SOLID	98.2			04/20/99	5	N904105-04	7115-004
		B0V6P1	SOLID	97.0			04/20/99	5	N904105-05	7115-005
		B0V6P2	SOLID	97.0			04/20/99	5	N904105-06	7115-006
		Method Blank	SOLID						N904105-08	7115-008
		Lab Control Sample	SOLID						N904105-07	7115-007
		Duplicate (N904105-01)	SOLID				04/20/99	5	N904105-09	7115-009

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

SDG 7115
Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6880-048	5.0	6			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6880-048	5.0	6			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6880-048	5.0	6			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6880-048	10.0	6			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6880-048	15.0	6			1	1	1/1		
Liquid Scintillation Counting												
NI_L	SOLID	Nickel 63 in Soil	6880-048	10.0	6			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 05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

WORK SUMMARY

SDG 7115
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0V6N7			N904105-01	7115-001	AM		05/06/99	05/17/99	TAH	Americium 241 in Soil
100BC 116-B-9 Shallow		SOLID	04/15/99	7115-001	GAM		04/27/99	05/05/99	TAH	Gamma Scan
B99-002-80	B99-002		04/20/99	7115-001	NI_L		05/02/99	05/05/99	TAH	Nickel 63 in Soil
				7115-001	PU		04/30/99	05/05/99	TAH	Plutonium, Isotopic in Solids
				7115-001	SR		04/29/99	05/05/99	TAH	Total Strontium in Soil
				7115-001	U		04/28/99	05/05/99	TAH	Uranium, Isotopic in Soil
B0V6N8			N904105-02	7115-002	AM		05/06/99	05/17/99	TAH	Americium 241 in Soil
100BC 116-B-9 Shallow		SOLID	04/15/99	7115-002	GAM		04/27/99	05/05/99	TAH	Gamma Scan
B99-002-80	B99-002		04/20/99	7115-002	NI_L		05/02/99	05/05/99	TAH	Nickel 63 in Soil
				7115-002	PU		04/30/99	05/05/99	TAH	Plutonium, Isotopic in Solids
				7115-002	SR		04/29/99	05/05/99	TAH	Total Strontium in Soil
				7115-002	U		04/28/99	05/05/99	TAH	Uranium, Isotopic in Soil
B0V6N9			N904105-03	7115-003	AM		05/06/99	05/17/99	TAH	Americium 241 in Soil
100BC 116-B-9 Shallow		SOLID	04/15/99	7115-003	GAM		04/27/99	05/05/99	TAH	Gamma Scan
B99-002-80	B99-002		04/20/99	7115-003	NI_L		05/02/99	05/05/99	TAH	Nickel 63 in Soil
				7115-003	PU		05/03/99	05/05/99	TAH	Plutonium, Isotopic in Solids
				7115-003	SR		04/29/99	05/05/99	TAH	Total Strontium in Soil
				7115-003	U		04/28/99	05/05/99	TAH	Uranium, Isotopic in Soil
B0V6P0			N904105-04	7115-004	AM		05/06/99	05/17/99	TAH	Americium 241 in Soil
100BC 116-B-9 Shallow		SOLID	04/15/99	7115-004	GAM		04/27/99	05/05/99	TAH	Gamma Scan
B99-002-80	B99-002		04/20/99	7115-004	NI_L		05/02/99	05/05/99	TAH	Nickel 63 in Soil
				7115-004	PU		05/04/99	05/05/99	TAH	Plutonium, Isotopic in Solids
				7115-004	SR		04/29/99	05/05/99	TAH	Total Strontium in Soil
				7115-004	U		04/28/99	05/05/99	TAH	Uranium, Isotopic in Soil
B0V6P1			N904105-05	7115-005	AM		05/10/99	05/17/99	TAH	Americium 241 in Soil
100BC 116-B-9 Shallow		SOLID	04/15/99	7115-005	GAM		04/27/99	05/05/99	TAH	Gamma Scan
B99-002-80	B99-002		04/20/99	7115-005	NI_L		05/02/99	05/05/99	TAH	Nickel 63 in Soil
				7115-005	PU		05/04/99	05/05/99	TAH	Plutonium, Isotopic in Solids
				7115-005	SR		04/29/99	05/05/99	TAH	Total Strontium in Soil
				7115-005	U		04/28/99	05/05/99	TAH	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

SDG 7115
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0V6P2			N904105-06	7115-006	AM		05/06/99	05/17/99	TAH	Americium 241 in Soil
100BC 116-B-9 Shallow		SOLID	04/15/99	7115-006	GAM		04/28/99	05/05/99	TAH	Gamma Scan
B99-002-80	B99-002		04/20/99	7115-006	NI_L		05/02/99	05/05/99	TAH	Nickel 63 in Soil
				7115-006	PU		04/30/99	05/05/99	TAH	Plutonium, Isotopic in Solids
				7115-006	SR		04/29/99	05/05/99	TAH	Total Strontium in Soil
				7115-006	U		04/28/99	05/05/99	TAH	Uranium, Isotopic in Soil
Method Blank			N904105-08	7115-008	AM		05/06/99	05/17/99	TAH	Americium 241 in Soil
		SOLID		7115-008	GAM		04/28/99	05/05/99	TAH	Gamma Scan
	B99-002			7115-008	NI_L		05/02/99	05/05/99	TAH	Nickel 63 in Soil
				7115-008	PU		04/30/99	05/05/99	TAH	Plutonium, Isotopic in Solids
				7115-008	SR		04/29/99	05/05/99	TAH	Total Strontium in Soil
				7115-008	U		04/28/99	05/05/99	TAH	Uranium, Isotopic in Soil
Lab Control Sample			N904105-07	7115-007	AM		05/08/99	05/17/99	TAH	Americium 241 in Soil
		SOLID		7115-007	GAM		04/28/99	05/05/99	TAH	Gamma Scan
	B99-002			7115-007	NI_L		05/02/99	05/05/99	TAH	Nickel 63 in Soil
				7115-007	PU		04/30/99	05/05/99	TAH	Plutonium, Isotopic in Solids
				7115-007	SR		04/29/99	05/05/99	TAH	Total Strontium in Soil
				7115-007	U		04/28/99	05/05/99	TAH	Uranium, Isotopic in Soil
Duplicate (N904105-01)			N904105-09	7115-009	AM		05/06/99	05/17/99	TAH	Americium 241 in Soil
100BC 116-B-9 Shallow		SOLID	04/15/99	7115-009	GAM		04/28/99	05/05/99	TAH	Gamma Scan
	B99-002		04/20/99	7115-009	NI_L		05/02/99	05/05/99	TAH	Nickel 63 in Soil
				7115-009	PU		04/30/99	05/05/99	TAH	Plutonium, Isotopic in Solids
				7115-009	SR		04/29/99	05/05/99	TAH	Total Strontium in Soil
				7115-009	U		04/28/99	05/05/99	TAH	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

SDG 7115
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-002	Americium 241 in Soil	AM/CMPLATE	6			1	1	1	9
GAM	B99-002	Gamma Scan	GAMMAHI	6			1	1	1	9
NI_L	B99-002	Nickel 63 in Soil	NI63LSC	6			1	1	1	9
PU	B99-002	Plutonium, Isotopic in Solids	PUPLATE	6			1	1	1	9
SR	B99-002	Total Strontium in Soil		6			1	1	1	9
U	B99-002	Uranium, Isotopic in Soil	UPLATE	6			1	1	1	9
TOTALS				36			6	6	6	54

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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Version 3.06
Report date 05/17/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0387

N904105-08

Method Blank

METHOD BLANK

SDG	7115	Client/Case no	Hanford SDG-H0387
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904105-08	Client sample id	Method Blank
Dept sample id	7115-008	Material/Matrix	SOLID
		SAF No	B99-002

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.015	0.015	0.058	0.30	U	U
Uranium 235	15117-96-1	0.009	0.018	0.071	0.30	U	U
Uranium 238	U-238	0	0.015	0.058	0.30	U	U
Plutonium 238	13981-16-3	-0.003	0.015	0.031	0.050	U	PU
Plutonium 239/240	PU-239/240	-0.005	0.009	0.022	0.050	U	PU
Nickel 63	13981-37-8	0.170	1.4	2.4	20	U	NI_L
Americium 241	14596-10-2	0.002	0.012	0.024	0.050	U	AM
Total Strontium	SR-RAD	-0.098	0.14	0.20	1.0	U	SR
Potassium 40	13966-00-2	U		0.060		U	GAM
Cobalt 60	10198-40-0	U		0.005	0.050	U	GAM
Cesium 137	10045-97-3	U		0.005	0.050	U	GAM
Europium 152	14683-23-9	U		0.010	0.10	U	GAM
Europium 154	15585-10-1	U		0.020	0.10	U	GAM
Europium 155	14391-16-3	U		0.010	0.10	U	GAM
Americium 241	14596-10-2	U		0.010		U	GAM
Uranium 238	U-238	U		0.60		U	GAM
Uranium 235	15117-96-1	U		0.020		U	GAM

100 BC Areas-Full Protocol

QC-BLANK 30585

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

N904105-07

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7115

Contact L.A. Johnson

Client/Case no Hanford SDG-H0387

Case no TRB-SBB-207925

Lab sample id N904105-07

Dept sample id 7115-007

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-002

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
Uranium 233/234	4.74	0.52	0.24	0.30		U	4.95	0.20	96	82-118	80-120
Uranium 235	3.76	0.45	0.063	0.30		U	4.04	0.16	93	81-119	80-120
Uranium 238	5.12	0.55	0.23	0.30		U	5.10	0.20	100	81-119	80-120
Plutonium 238	5.43	0.37	0.032	0.050		PU	5.66	0.23	96	86-114	80-120
Plutonium 239/240	5.67	0.38	0.019	0.050		PU	5.95	0.24	95	87-113	80-120
Nickel 63	172	3.8	2.3	20		NI_L	168	6.7	102	83-117	
Americium 241	4.32	0.40	0.029	0.050		AM					80-120
Total Strontium	14.1	0.46	0.16	1.0		SR	12.6	0.50	112	81-119	
Cesium 137	0.420	0.023	0.010	0.050		GAM	0.381	0.015	110	73-127	80-120

100 BC Areas-Full Protocol

QC-LCS 30584

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

N904105-09

B0V6N7

DUPLICATE

SDG 7115

Contact L.A. Johnson

Client/Case no Hanford SDG-H0387

Case no TRB-SBB-207925

DUPLICATE		ORIGINAL	
Lab sample id	N904105-09	Lab sample id	N904105-01
Dept sample id	7115-009	Dept sample id	7115-001
		Received	04/20/99
		% solids	96.4

Client sample id B0V6N7

Location/Matrix 100BC 116-B-9 Shallow SOLID

Collected 04/15/99 09:15

Custody/SAF No B99-002-80 B99-002

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
Uranium 233/234	0.378	0.15	0.11	0.30		U	0.377	0.12	0.068		0	77
Uranium 235	0.018	0.035	0.13	0.30	U	U	0.060	0.052	0.066	U	-	
Uranium 238	0.334	0.15	0.11	0.30		U	0.420	0.12	0.054		23	77
Plutonium 238	0.024	0.016	0.031	0.050	U	PU	0	0.014	0.034	U	-	
Plutonium 239/240	0.008	0.008	0.031	0.050	U	PU	0.004	0.007	0.027	U	-	
Nickel 63	-0.456	1.6	2.7	20	U	NI_L	-0.526	1.5	2.5	U	-	
Americium 241	-0.004	0.026	0.052	0.050	U	AM	0.022	0.026	0.042	U	-	
Total Strontium	-0.026	0.096	0.17	1.0	U	SR	-0.015	0.12	0.16	U	-	
Potassium 40	11.0	0.75	0.40			GAM	11.9	0.29	0.12		8	34
Cobalt 60	U		0.040	0.050	U	GAM	U		0.011	U	-	
Cesium 137	U		0.040	0.050	U	GAM	U		0.012	U	-	
Europium 152	U		0.080	0.10	U	GAM	U		0.029	U	-	
Europium 154	U		0.10	0.10	U	GAM	U		0.041	U	-	
Europium 155	U		0.070	0.10	U	GAM	U		0.044	U	-	
Radium 226	0.490	0.072	0.060	0.10		GAM	0.416	0.026	0.024		16	41
Radium 228	0.660	0.20	0.20	0.20		GAM	0.629	0.050	0.048		5	58
Thorium 228	0.600	0.039	0.040			GAM	0.588	0.017	0.015		2	34
Thorium 232	0.660	0.20	0.20			GAM	0.629	0.050	0.048		5	58
Americium 241	U		0.040		U	GAM	U		0.039	U	-	
Uranium 238	U		5.0		U	GAM	U		1.5	U	-	
Uranium 235	U		0.10		U	GAM	U		0.046	U	-	

100 BC Areas-Full Protocol

QC-DUP#1 30586

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-DUP

Version 3.06

Report date 05/17/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0387

N904105-01 B0V6N7

DATA SHEET

SDG	7115	Client/Case no	Hanford SDG-H0387
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904105-01	Client sample id	B0V6N7
Dept sample id	7115-001	Location/Matrix	100BC 116-B-9 Shallow SOLID
Received	04/20/99	Collected	04/15/99 09:15
% solids	96.4	Custody/SAF No	B99-002-80 B99-002

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.377	0.12	0.068	0.30		U
Uranium 235	15117-96-1	0.060	0.052	0.066	0.30	U	U
Uranium 238	U-238	0.420	0.12	0.054	0.30		U
Plutonium 238	13981-16-3	0	0.014	0.034	0.050	U	PU
Plutonium 239/240	PU-239/240	0.004	0.007	0.027	0.050	U	PU
Nickel 63	13981-37-8	-0.526	1.5	2.5	20	U	NI_L
Americium 241	14596-10-2	0.022	0.026	0.042	0.050	U	AM
Total Strontium	SR-RAD	-0.015	0.12	0.16	1.0	U	SR
Potassium 40	13966-00-2	11.9	0.29	0.12			GAM
Cobalt 60	10198-40-0	U		0.011	0.050	U	GAM
Cesium 137	10045-97-3	U		0.012	0.050	U	GAM
Europium 152	14683-23-9	U		0.029	0.10	U	GAM
Europium 154	15585-10-1	U		0.041	0.10	U	GAM
Europium 155	14391-16-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	0.416	0.026	0.024	0.10		GAM
Radium 228	15262-20-1	0.629	0.050	0.048	0.20		GAM
Thorium 228	14274-82-9	0.588	0.017	0.015			GAM
Thorium 232	TH-232	0.629	0.050	0.048			GAM
Americium 241	14596-10-2	U		0.039		U	GAM
Uranium 238	U-238	U		1.5		U	GAM
Uranium 235	15117-96-1	U		0.046		U	GAM

100 BC Areas-Full Protocol

Lab id	TMANC
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SAMPLE DELIVERY GROUP H0387

N904105-02 B0V6N8

DATA SHEET

SDG	7115	Client/Case no	Hanford SDG-H0387
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904105-02	Client sample id	B0V6N8
Dept sample id	7115-002	Location/Matrix	100BC 116-B-9 Shallow SOLID
Received	04/20/99	Collected	04/15/99 09:15
% solids	96.2	Custody/SAF No	B99-002-80 B99-002

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.367	0.10	0.055	0.30		U
Uranium 235	15117-96-1	0.026	0.035	0.067	0.30	U	U
Uranium 238	U-238	0.461	0.12	0.055	0.30		U
Plutonium 238	13981-16-3	-0.010	0.014	0.038	0.050	U	PU
Plutonium 239/240	PU-239/240	0	0.014	0.032	0.050	U	PU
Nickel 63	13981-37-8	1.32	1.7	2.8	20	U	NI_L
Americium 241	14596-10-2	0.013	0.026	0.047	0.050	U	AM
Total Strontium	SR-RAD	-0.011	0.12	0.17	1.0	U	SR
Potassium 40	13966-00-2	11.7	0.48	0.24			GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	U		0.020	0.050	U	GAM
Europium 152	14683-23-9	U		0.053	0.10	U	GAM
Europium 154	15585-10-1	U		0.071	0.10	U	GAM
Europium 155	14391-16-3	U		0.061	0.10	U	GAM
Radium 226	13982-63-3	0.436	0.041	0.041	0.10		GAM
Radium 228	15262-20-1	0.655	0.091	0.096	0.20		GAM
Thorium 228	14274-82-9	0.592	0.026	0.026			GAM
Thorium 232	TH-232	0.655	0.091	0.096			GAM
Americium 241	14596-10-2	U		0.081		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.090		U	GAM

100 BC Areas-Full Protocol

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SAMPLE DELIVERY GROUP H0387

N904105-03 B0V6N9

DATA SHEET

SDG	7115	Client/Case no	Hanford SDG-H0387
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904105-03	Client sample id	B0V6N9
Dept sample id	7115-003	Location/Matrix	100BC 116-B-9 Shallow SOLID
Received	04/20/99	Collected	04/15/99 08:05
% solids	100.0	Custody/SAF No	B99-002-80 B99-002

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.201	0.079	0.059	0.30	J	U
Uranium 235	15117-96-1	0.019	0.019	0.072	0.30	U	U
Uranium 238	U-238	0.232	0.080	0.059	0.30	J	U
Plutonium 238	13981-16-3	0	0.010	0.023	0.050	U	PU
Plutonium 239/240	PU-239/240	0.003	0.007	0.016	0.050	U	PU
Nickel 63	13981-37-8	-0.020	1.5	2.5	20	U	NI_L
Americium 241	14596-10-2	0	0.022	0.049	0.050	U	AM
Total Strontium	SR-RAD	0.113	0.14	0.19	1.0	U	SR
Potassium 40	13966-00-2	5.35	0.35	0.18			GAM
Cobalt 60	10198-40-0	U		0.018	0.050	U	GAM
Cesium 137	10045-97-3	U		0.014	0.050	U	GAM
Europium 152	14683-23-9	U		0.042	0.10	U	GAM
Europium 154	15585-10-1	U		0.052	0.10	U	GAM
Europium 155	14391-16-3	U		0.041	0.10	U	GAM
Radium 226	13982-63-3	0.192	0.030	0.030	0.10		GAM
Radium 228	15262-20-1	0.240	0.074	0.075	0.20		GAM
Thorium 228	14274-82-9	0.179	0.019	0.018			GAM
Thorium 232	TH-232	0.240	0.074	0.075			GAM
Americium 241	14596-10-2	U		0.060		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Uranium 235	15117-96-1	U		0.065		U	GAM

100 BC Areas-Full Protocol

Lab id	TMANC
Protocol	Hanford
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SAMPLE DELIVERY GROUP H0387

N904105-04 B0V6P0

DATA SHEET

SDG	7115	Client/Case no	Hanford SDG-H0387
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904105-04	Client sample id	B0V6P0
Dept sample id	7115-004	Location/Matrix	100BC 116-B-9 Shallow SOLID
Received	04/20/99	Collected	04/15/99 10:00
% solids	98.2	Custody/SAF No	B99-002-80 B99-002

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.442	0.13	0.059	0.30		U
Uranium 235	15117-96-1	0.028	0.038	0.072	0.30	U	U
Uranium 238	U-238	0.411	0.11	0.059	0.30		U
Plutonium 238	13981-16-3	0.010	0.019	0.037	0.050	U	PU
Plutonium 239/240	PU-239/240	0	0.019	0.046	0.050	U	PU
Nickel 63	13981-37-8	0.169	1.6	2.6	20	U	NI_L
Americium 241	14596-10-2	0	0.038	0.069	0.050	U	AM
Total Strontium	SR-RAD	-0.061	0.11	0.16	1.0	U	SR
Potassium 40	13966-00-2	11.4	0.30	0.13			GAM
Cobalt 60	10198-40-0	U		0.012	0.050	U	GAM
Cesium 137	10045-97-3	U		0.013	0.050	U	GAM
Europium 152	14683-23-9	U		0.032	0.10	U	GAM
Europium 154	15585-10-1	U		0.043	0.10	U	GAM
Europium 155	14391-16-3	U		0.037	0.10	U	GAM
Radium 226	13982-63-3	0.463	0.026	0.023	0.10		GAM
Radium 228	15262-20-1	0.640	0.055	0.053	0.20		GAM
Thorium 228	14274-82-9	0.604	0.017	0.015			GAM
Thorium 232	TH-232	0.640	0.055	0.053			GAM
Americium 241	14596-10-2	U		0.041		U	GAM
Uranium 238	U-238	U		1.6		U	GAM
Uranium 235	15117-96-1	U		0.070		U	GAM

100 BC Areas-Full Protocol

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
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SAMPLE DELIVERY GROUP H0387

N904105-05 B0V6P1

DATA SHEET

SDG	7115	Client/Case no	Hanford SDG-H0387
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904105-05	Client sample id	B0V6P1
Dept sample id	7115-005	Location/Matrix	100BC 116-B-9 Shallow SOLID
Received	04/20/99	Collected	04/15/99 10:30
% solids	97.0	Custody/SAF No	B99-002-80 B99-002

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.434	0.12	0.063	0.30		U
Uranium 235	15117-96-1	0.040	0.040	0.076	0.30	U	U
Uranium 238	U-238	0.401	0.12	0.063	0.30		U
Plutonium 238	13981-16-3	0.005	0.031	0.056	0.050	U	PU
Plutonium 239/240	PU-239/240	0	0.020	0.056	0.050	U	PU
Nickel 63	13981-37-8	0.137	1.5	2.4	20	U	NI_L
Americium 241	14596-10-2	0	0.044	0.098	0.050	U	AM
Total Strontium	SR-RAD	-0.053	0.12	0.17	1.0	U	SR
Potassium 40	13966-00-2	11.6	0.41	0.21			GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.050	U	GAM
Europium 152	14683-23-9	U		0.041	0.10	U	GAM
Europium 154	15585-10-1	U		0.069	0.10	U	GAM
Europium 155	14391-16-3	U		0.045	0.10	U	GAM
Radium 226	13982-63-3	0.504	0.040	0.035	0.10		GAM
Radium 228	15262-20-1	0.661	0.10	0.096	0.20		GAM
Thorium 228	14274-82-9	0.613	0.021	0.019			GAM
Thorium 232	TH-232	0.661	0.10	0.096			GAM
Americium 241	14596-10-2	U		0.023		U	GAM
Uranium 238	U-238	U		2.5		U	GAM
Uranium 235	15117-96-1	U		0.061		U	GAM

100 BC Areas-Full Protocol

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/17/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0387

N904105-06 B0V6P2

DATA SHEET

SDG	7115	Client/Case no	Hanford SDG-H0387
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904105-06	Client sample id	B0V6P2
Dept sample id	7115-006	Location/Matrix	100BC 116-B-9 Shallow SOLID
Received	04/20/99	Collected	04/15/99 11:00
% solids	97.0	Custody/SAF No	B99-002-80 B99-002

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.330	0.11	0.065	0.30		U
Uranium 235	15117-96-1	0.020	0.041	0.078	0.30	U	U
Uranium 238	U-238	0.364	0.12	0.065	0.30		U
Plutonium 238	13981-16-3	0.020	0.032	0.061	0.050	U	PU
Plutonium 239/240	PU-239/240	0	0.016	0.038	0.050	U	PU
Nickel 63	13981-37-8	0.725	1.7	2.8	20	U	NI_L
Americium 241	14596-10-2	-0.004	0.023	0.048	0.050	U	AM
Total Strontium	SR-RAD	0.115	0.13	0.17	1.0	U	SR
Potassium 40	13966-00-2	10.8	0.49	0.25			GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	U		0.022	0.050	U	GAM
Europium 152	14683-23-9	U		0.050	0.10	U	GAM
Europium 154	15585-10-1	U		0.077	0.10	U	GAM
Europium 155	14391-16-3	U		0.049	0.10	U	GAM
Radium 226	13982-63-3	0.464	0.042	0.039	0.10		GAM
Radium 228	15262-20-1	0.652	0.098	0.099	0.20		GAM
Thorium 228	14274-82-9	0.609	0.026	0.024			GAM
Thorium 232	TH-232	0.652	0.098	0.099			GAM
Americium 241	14596-10-2	U		0.027		U	GAM
Uranium 238	U-238	U		3.0		U	GAM
Uranium 235	15117-96-1	U		0.074		U	GAM

100 BC Areas-Full Protocol

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

Test	AM
Matrix	SOLID
SDG	7115
Contact	L.A. Johnson

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0387

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 6880-048					
B0V6N7	N904105-01			7115-001	U
B0V6N8	N904105-02			7115-002	U
B0V6N9	N904105-03			7115-003	U
B0V6P0	N904105-04			7115-004	U
B0V6P1	N904105-05			7115-005	U
B0V6P2	N904105-06			7115-006	U
BLK (QC ID=30585)	N904105-08			7115-008	U
LCS (QC ID=30584)	N904105-07			7115-007	No data
Duplicate (N904105-01)	N904105-09			7115-009	- U

Nominal values and limits from method RDLs (pCi/g) 0.050

100 BC Areas-Full Protocol

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 6880-048	2σ prep error 5.0 %				Reference Lab Notebook 6880 pg.48											
B0V6N7	N904105-01			0.042	0.500			68		802			21	05/06/99	05/06	SS-035
B0V6N8	N904105-02			0.047	0.500			71		802			21	05/06/99	05/06	SS-036
B0V6N9	N904105-03			0.049	0.500			86		802			21	05/06/99	05/06	SS-038
B0V6P0	N904105-04			0.069	0.500			78		802			21	05/06/99	05/06	SS-039
B0V6P1	N904105-05			0.098	0.500			75		1054			25	05/06/99	05/10	SS-034
B0V6P2	N904105-06			0.048	0.500			73		802			21	05/06/99	05/06	SS-043
BLK (QC ID=30585)	N904105-08			0.024	1.00			72		802				05/06/99	05/06	SS-044
LCS (QC ID=30584)	N904105-07			0.029	1.00			88		436				05/06/99	05/08	SS-058
Duplicate (N904105-01) (QC ID=30586)	N904105-09			0.052	0.500			67		802			21	05/06/99	05/06	SS-045
Nominal values and limits from method				0.050	1.00			20-105		700	100		180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

Test	AM
Matrix	SOLID
SDG	7115
Contact	L.A. Johnson

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0387

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-960	Americium-Curium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.051	±	0.044
FOR 9 SAMPLES	YIELD	75	±	15

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/17/99

Test PU Matrix SOLID
SDG 7115
Contact L.A. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6880-048								
B0V6N7	N904105-01			7115-001	U		U	
B0V6N8	N904105-02			7115-002	U		U	
B0V6N9	N904105-03			7115-003	U		U	
B0V6P0	N904105-04			7115-004	U		U	
B0V6P1	N904105-05			7115-005	U		U	
B0V6P2	N904105-06			7115-006	U		U	
BLK (QC ID=30585)	N904105-08			7115-008	U		U	
LCS (QC ID=30584)	N904105-07			7115-007	ok		ok	
Duplicate (N904105-01)	N904105-09			7115-009	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.050	
100 BC Areas-Full Protocol								

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 6880-048 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.48																
B0V6N7	N904105-01			0.034	0.500			81		818			15	04/30/99	04/30	SS-013
B0V6N8	N904105-02			0.038	0.500			85		818			15	04/30/99	04/30	SS-005
B0V6N9	N904105-03			0.023	0.500			89		1557			18	04/30/99	05/03	SS-006
B0V6P0	N904105-04			0.046	0.500			86		586			19	04/30/99	05/04	SS-007
B0V6P1	N904105-05			0.056	0.500			70		639			19	04/30/99	05/04	SS-045
B0V6P2	N904105-06			0.061	0.500			67		894			15	04/30/99	04/30	SS-038
BLK (QC ID=30585)	N904105-08			0.031	1.00			88		894				04/30/99	04/30	SS-042
LCS (QC ID=30584)	N904105-07			0.032	1.00			86		894				04/30/99	04/30	SS-039
Duplicate (N904105-01) (QC ID=30586)	N904105-09			0.031	0.500			63		894			15	04/30/99	04/30	SS-045
Nominal values and limits from method				0.050	1.00			20-105		10	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

Test	PU
Matrix	SOLID
SDG	7115
Contact	L.A. Johnson

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0387

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.039	±	0.025
FOR 9 SAMPLES	YIELD	79	±	20

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/17/99

Test U Matrix SOLID
SDG 7115
Contact L.A. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

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 6880-048											
B0V6N7	N904105-01			7115-001	0.377	U	0.420	90	38	14	13
B0V6N8	N904105-02			7115-002	0.367	U	0.461	80	30	6	8
B0V6N9	N904105-03			7115-003	0.201 J	U	0.232 J	87	45	8	9
B0V6P0	N904105-04			7115-004	0.442	U	0.411	108	43	7	9
B0V6P1	N904105-05			7115-005	0.434	U	0.401	108	44	10	10
B0V6P2	N904105-06			7115-006	0.330	U	0.364	91	42	5	11
BLK (QC ID=30585)	N904105-08			7115-008	U	U	U				
LCS (QC ID=30584)	N904105-07			7115-007	ok	ok	ok				
Duplicate (N904105-01)	N904105-09			7115-009	ok	- U	ok	113	68	5	11
Nominal values and limits from method				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
100 BC Areas-Full Protocol								Averages 97		8	

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 6880-048	2σ prep error 5.0 %			Reference Lab Notebook 6880 pg.48												
B0V6N7	N904105-01			0.068	1.00			100		165			13	04/28/99	04/28	SS-005
B0V6N8	N904105-02			0.067	1.00			98		165			13	04/28/99	04/28	SS-006
B0V6N9	N904105-03			0.072	1.00			94		165			13	04/28/99	04/28	SS-007
B0V6P0	N904105-04			0.072	1.00			92		165			13	04/28/99	04/28	SS-008
B0V6P1	N904105-05			0.076	1.00			88		165			13	04/28/99	04/28	SS-009
B0V6P2	N904105-06			0.078	1.00			84		165			13	04/28/99	04/28	SS-010
BLK (QC ID=30585)	N904105-08			0.071	1.00			93		165				04/28/99	04/28	SS-013
LCS (QC ID=30584)	N904105-07			0.24	1.00			107		165				04/28/99	04/28	SS-011
Duplicate (N904105-01) (QC ID=30586)	N904105-09			0.13	1.00			49		165			13	04/28/99	04/28	SS-015
Nominal values and limits from method				0.30	1.00			30-105		150	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

Test	U
Matrix	SOLID
SDG	7115
Contact	L.A. Johnson

METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0387

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.097	±	0.11
FOR 9 SAMPLES	YIELD	89	±	33

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

Test SR Matrix SOLID	Client Hanford
SDG 7115	Contract TRB-SBB-207925
Contact L.A. Johnson	Case no SDG-H0387

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6880-048						
B0V6N7	N904105-01			7115-001	U	
B0V6N8	N904105-02			7115-002	U	
B0V6N9	N904105-03			7115-003	U	
B0V6P0	N904105-04			7115-004	U	
B0V6P1	N904105-05			7115-005	U	
B0V6P2	N904105-06			7115-006	U	
BLK (QC ID=30585)	N904105-08			7115-008	U	
LCS (QC ID=30584)	N904105-07			7115-007	ok	
Duplicate (N904105-01)	N904105-09			7115-009	-	U

Nominal values and limits from method RDLs (pCi/g) 1.0

100 BC Areas-Full Protocol

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 6880-048 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.48																
B0V6N7	N904105-01			0.16	1.00			91		400			14	04/29/99	04/29	GRB-217
B0V6N8	N904105-02			0.17	1.00			89		400			14	04/29/99	04/29	GRB-218
B0V6N9	N904105-03			0.19	1.00			80		400			14	04/29/99	04/29	GRB-219
B0V6P0	N904105-04			0.16	1.00			88		400			14	04/29/99	04/29	GRB-220
B0V6P1	N904105-05			0.17	1.00			89		400			14	04/29/99	04/29	GRB-229
B0V6P2	N904105-06			0.17	1.00			84		400			14	04/29/99	04/29	GRB-230
BLK (QC ID=30585)	N904105-08			0.20	1.00			76		400				04/29/99	04/29	GRB-232
LCS (QC ID=30584)	N904105-07			0.16	1.00			76		200				04/29/99	04/29	GRB-205
Duplicate (N904105-01) (QC ID=30586)	N904105-09			0.17	1.00			89		200			14	04/29/99	04/29	GRB-230
Nominal values and limits from method				1.0	1.00					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

Test	SR
Matrix	SOLID
SDG	7115
Contact	L.A. Johnson

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0387

PROCEDURES	RP-500	Strontium - Initial Separation, rev 0
	RP-519	Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD	MDA	0.17	±	0.028
FOR 9 SAMPLES	YIELD	85	±	12

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

Test GAM Matrix SOLID
SDG 7115
Contact L.A. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6880-048								
B0V6N7	N904105-01			7115-001	U		U	
B0V6N8	N904105-02			7115-002	U		U	
B0V6N9	N904105-03			7115-003	U		U	
B0V6P0	N904105-04			7115-004	U		U	
B0V6P1	N904105-05			7115-005	U		U	
B0V6P2	N904105-06			7115-006	U		U	
BLK (QC ID=30585)	N904105-08			7115-008	U		U	
LCS (QC ID=30584)	N904105-07			7115-007			ok	
Duplicate (N904105-01)	N904105-09			7115-009	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.050	
100 BC Areas-Full Protocol								

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 6880-048	2σ prep error 15.0 % Reference Lab Notebook 6880 pg.48															
B0V6N7	N904105-01			0.031	858					409			12	04/23/99	04/27	02,04,00
B0V6N8	N904105-02			0.057	822					409			12	04/23/99	04/27	02,03,00
B0V6N9	N904105-03			0.043	705					421			12	04/23/99	04/27	02,03,00
B0V6P0	N904105-04			0.035	753					420			12	04/23/99	04/27	02,04,00
B0V6P1	N904105-05			0.056	773					678			12	04/23/99	04/27	02,01,00
B0V6P2	N904105-06			0.066	889					389			13	04/23/99	04/28	02,01,00
BLK (QC ID=30585)	N904105-08			0.009	750					389				04/23/99	04/28	01,04,00
LCS (QC ID=30584)	N904105-07			0.010	750					389				04/23/99	04/28	01,03,00
Duplicate (N904105-01) (QC ID=30586)	N904105-09			0.10	858					156			13	04/23/99	04/28	02,01,00
Nominal values and limits from method				0.050	750					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

Test GAM	Matrix SOLID
SDG 7115	
Contact L.A. Johnson	

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0387	

PROCEDURES	REFERENCE	GAMMAHI
	EP-060	Soil Preparation, rev 0
	EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD	MDA	0.045 ± 0.057
FOR 9 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

Test NI L Matrix SOLID
SDG 7115
Contact L.A. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6880-048						
B0V6N7	N904105-01			7115-001	U	
B0V6N8	N904105-02			7115-002	U	
B0V6N9	N904105-03			7115-003	U	
B0V6P0	N904105-04			7115-004	U	
B0V6P1	N904105-05			7115-005	U	
B0V6P2	N904105-06			7115-006	U	
BLK (QC ID=30585)	N904105-08			7115-008	U	
LCS (QC ID=30584)	N904105-07			7115-007	ok	
Duplicate (N904105-01)	N904105-09			7115-009	-	U

Nominal values and limits from method RDLs (pCi/g) 20
100 BC Areas-Full Protocol

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 6880-048 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.48																
B0V6N7	N904105-01			2.5	0.500					100			17	04/30/99	05/02	LSC-004
B0V6N8	N904105-02			2.8	0.500					100			17	04/30/99	05/02	LSC-004
B0V6N9	N904105-03			2.5	0.500					100			17	04/30/99	05/02	LSC-004
B0V6P0	N904105-04			2.6	0.500					100			17	04/30/99	05/02	LSC-004
B0V6P1	N904105-05			2.4	0.500					100			17	04/30/99	05/02	LSC-004
B0V6P2	N904105-06			2.8	0.500					100			17	04/30/99	05/02	LSC-004
BLK (QC ID=30585)	N904105-08			2.4	0.500					100				04/30/99	05/02	LSC-004
LCS (QC ID=30584)	N904105-07			2.3	0.500					100				04/30/99	05/02	LSC-004
Duplicate (N904105-01) (QC ID=30586)	N904105-09			2.7	0.500					100			17	04/30/99	05/02	LSC-004
Nominal values and limits from method				20	0.500					10			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/17/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0387

Test NI L Matrix SOLID	
SDG 7115	
Contact L.A. Johnson	

METHOD SUMMARY, cont.

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0387	

PROCEDURES	REFERENCE	NI63LSC
	EP-060	Soil Preparation, rev 0
	EP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD	MDA 2.6	± 0.36
FOR 9 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/17/99

SDG 7115
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/17/99

SDG 7115
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/17/99

SDG 7115
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

WORK SUMMARY

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

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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Client Hanford
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Case no SDG-H0387

DATA SHEET

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

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

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

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

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

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DATA SHEET

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

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

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

The following values are underlined to indicate possible problems:

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

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Protocol Hanford
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Form DVD-RG
Version 3.06
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SDG 7115
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GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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SDG 7115
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

LAB CONTROL SAMPLE

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

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

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

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

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

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

  2. The error of ADDED.

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

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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Client Hanford
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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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DUPLICATE

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

* The RPD is underlined if it is greater than either limit.

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

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

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

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REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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MATRIX SPIKE

for the recovery.

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

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

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Protocol Hanford
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Form DVD-RG
Version 3.06
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Contact L.A. Johnson

Client Hanford
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Case no SDG-H0387

METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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METHOD SUMMARY

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

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

SDG 7115
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0387

METHOD SUMMARY

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

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/17/99

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-002-80	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code	Data Turnaround 15 Days
Project Designation 100 BC Areas - Full Protocol	Sampling Location 100BC 116-B-9 Shallow		SAF No. B99-002		
Ice Chest No. SML 395	Field Logbook No. EL 1327-2		Method of Shipment FED EX		
Shipped To TMA/~~RECRA~~ RS 4-15-99	Offsite Property No. A990114		Bill of Lading/Air Bill No. 4235795248 24		
			COA R116B92600		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	Cool 4C	None	None					
	Type of Container	aG	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1	1					
Special Handling and/or Storage	Volume	60mL	60mL	125mL	250mL	1000mL					
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.					

Sample No.	Matrix *	Sample Date	Sample Time										
✓ B0V6N7	Soil	4-15-99	0915	X	X			X			tieta	B0V688	
✓ B0V6N8	Soil	4-15-99	0915	X	X			X				B0V688	
✓ B0V6N9	Soil	4-15-99	0805	X	X			X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By R. Fahlberg / R. Fahlberg	Date/Time 1635 4-15-99	Received By Ref 1-B	Date/Time 1635 4-15-99
Relinquished By REF 1.B 4/19 99	Date/Time 1030	Received By SJGomez 4/19/99	Date/Time 1030
Relinquished By SJGomez 4/19/99	Date/Time 1030	Received By FED EX.	Date/Time 4-19-99
Relinquished By Fed Ex	Date/Time 4-20-99 10:3	Received By JR Cross	Date/Time 4-20-99 10:30

SPECIAL INSTRUCTIONS

(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238)

NOTE: COLLECTOR UNAVAILABLE TO SIGN COC.

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-002-81	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code	Data Turnaround 15 Days
Project Designation 100 BC Areas - Full Protocol	Sampling Location 100BC 116-B-9 Shallow		SAF No. B99-002		
Ice Chest No. SML 395	Field Logbook No. EL 1327-2		Method of Shipment FED EX		
Shipped To TMA/RCRA R.S 4-15-99	Offsite Property No. A990114		Bill of Lading/Air Bill No. 4235795248 24		
			COA R116B92600		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	Cool 4C	None	None					
	Type of Container	aG	aG	aG	aG	aG					
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1					
	Volume	60mL	60mL	125mL	250mL	1000mL					
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV)	See item (2) in Special Instructions.					

Sample No.	Matrix *	Sample Date	Sample Time									
✓ B0V6P0	Soil	4/15/99	1000	X	X			X				tie to B0V696
✓ B0V6P1	Soil	4/15/99	1030	X	X			X				B0V6B4
✓ B0V6P2	Soil	4/15/99	1100	X	X			X				B0V6B9

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By R. Fahlberg / R. Fahlberg	Date/Time 1635 4-15-99	Received By Ref. 1-B	Date/Time 1635 4-15-99
Relinquished By REF 1-B 4 19 99	Date/Time 1030	Received By S.J. GALE	Date/Time 4 19 99 1030
Relinquished By S.J. GALE	Date/Time 4 19 99 1030	Received By FED EX.	Date/Time 4-19-99
Relinquished By Fed Ex	Date/Time 4-20-99 10:30	Received By J. Rocco / J. Rocco	Date/Time 10:30 4-20-99

SPECIAL INSTRUCTIONS

(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Uranium-238}

NOTE: COLLECTOR UNAVAILABLE TO SIGN COC.

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 4-20-99 10:3

CoC No. B99-002-80 & 81

Container I.D. No. SML 395 Requested TAT (Days) 15 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: 6
7. Number of containers per sample: 3 (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 4-20-99
14. Received by JRCorso Date: 4-20-99 Time: 10:30

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____