

H0396-111A/RECPA

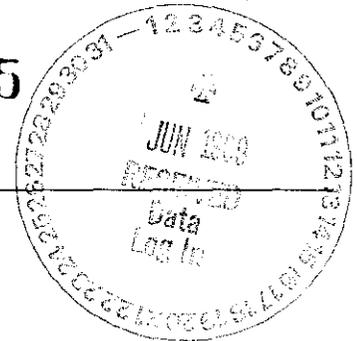


**RECRA
LabNet**

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

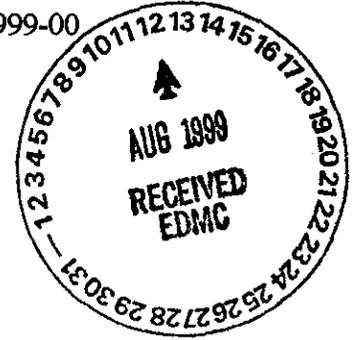
0051535



**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-002
RFW# : 9905L890
SDG/SAF# : H0396/B99-002

W.O.# : 10985-001-001-9999-00
Date Received: 05-06-99

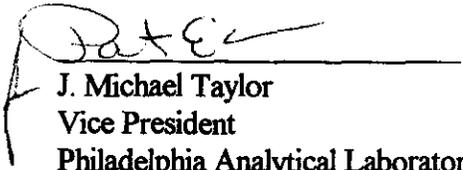


METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 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}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 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.
11. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision 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 13 pages.

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.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory
mla/m05-890

5-27-99
Date



METALS METHOD GLOSSARY

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

Recra Lot#: 9905L890

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	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Antimony	<u>6010B</u> <u>7041⁵</u>	<u>200.7</u> <u>204.2</u>			<u>99</u>
Arsenic	<u>6010B</u> <u>7060A⁵</u>	<u>200.7</u> <u>206.2</u>	<u>3113B</u>		<u>99</u>
Barium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Beryllium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Bismuth	<u>6010B¹</u>	<u>200.7¹</u>		<u>1620</u>	<u>99</u>
Boron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Cadmium	<u>6010B</u> <u>7131A⁵</u>	<u>200.7</u> <u>213.2</u>			<u>99</u>
Calcium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Chromium	<u>6010B</u> <u>7191⁵</u>	<u>200.7</u> <u>218.2</u>			<u>SS17</u>
Cobalt	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Copper	<u>6010B</u> <u>7211⁵</u>	<u>200.7</u> <u>220.2</u>			<u>99</u>
Iron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Lead	<u>6010B</u> <u>7421⁵</u>	<u>200.7</u> <u>239.2</u>	<u>3113B</u>		<u>99</u>
Lithium	<u>6010B</u> <u>7430⁴</u>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Magnesium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Manganese	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Mercury	<u>7470A³</u> <u>7471A³</u>	<u>245.1²</u> <u>245.5²</u>			<u>99</u>
Molybdenum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Nickel	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Potassium	<u>6010B</u> <u>7610⁴</u>	<u>200.7</u> <u>258.1⁴</u>			<u>99</u>
Rare Earths	<u>6010B¹</u>	<u>200.7¹</u>		<u>1620</u>	<u>99</u>
Selenium	<u>6010B</u> <u>7740⁵</u>	<u>200.7</u> <u>270.2</u>	<u>3113B</u>		<u>99</u>
Silicon	<u>6010B¹</u>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silica	<u>6010B</u>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silver	<u>6010B</u> <u>7761⁵</u>	<u>200.7</u> <u>272.2</u>			<u>99</u>
Sodium	<u>6010B</u> <u>7770⁴</u>	<u>200.7</u> <u>273.1⁴</u>			<u>99</u>
Strontium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Thallium	<u>6010B</u> <u>7841⁵</u>	<u>200.7</u> <u>279.2</u> <u>200.9</u>			<u>99</u>
Tin	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Titanium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Uranium	<u>6010B¹</u>	<u>200.7¹</u>		<u>1620</u>	<u>99</u>
Vanadium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zinc	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zirconium	<u>6010B¹</u>	<u>200.7¹</u>		<u>1620</u>	<u>99</u>

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

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

Recre LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 05/27/99

CLIENT: TNU-HANFORD B99-002

RECRE LOT #: 9905L890

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0VD46	Chromium, Total	7.8	MG/KG	0.33	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.9 u	MG/KG	3.9	1.0
-002	B0VD47	Chromium, Total	6.3	MG/KG	0.33	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.8 u	MG/KG	3.8	1.0
-003	B0VD48	Chromium, Total	6.7	MG/KG	0.33	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.8 u	MG/KG	3.8	1.0
-004	B0VD49	Chromium, Total	5.2	MG/KG	0.27	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.2 u	MG/KG	3.2	1.0

Recre LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/27/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L890

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0295-MB1	Chromium, Total	0.35 u	MG/KG	0.35	1.0
		Lead, Total	4.1 u	MG/KG	4.1	1.0
BLANK1	99C0139-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 05/27/99

CLIENT: TNU-HAMFORD B99-002

RECRA LOT #: 99051890

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B0VD46	Chromium, Total	26.5	7.8	19.9	94.0	1.0
		Mercury, Total	0.17	0.02u	0.16	109.0	1.0
		Lead, Total	48.2	3.9 u	49.8	96.8	1.0

Recre LabNet - Lionville

INORGANICS PRECISION REPORT 05/27/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L890

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE RPD		
-001REP	B0VD46	Chromium, Total	7.8	13.1	50.7	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Lead, Total	3.9 u	5.1	NC 200	1.0

19
5/27/99

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 05/27/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L890

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

SAMPLE	SITE ID	ANALYTE	SPIKED		UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	99L0295-LC1	Chromium, LCS	46.5	50.0	MG/KG	93.0
		Lead, LCS	230	250	MG/KG	92.2
LCS1	99C0139-LC1	Mercury, LCS	0.99	1.0	MG/KG	99.2

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

DATE RECEIVED: 05/06/99

RFW LOT # :9905L890

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

B0VD46

CHROMIUM, TOTAL	001	S	99L0295	04/29/99	05/13/99	05/15/99
CHROMIUM, TOTAL	001 REP	S	99L0295	04/29/99	05/13/99	05/15/99
CHROMIUM, TOTAL	001 MS	S	99L0295	04/29/99	05/13/99	05/15/99
MERCURY, TOTAL	001	S	99C0139	04/29/99	05/12/99	05/13/99
MERCURY, TOTAL	001 REP	S	99C0139	04/29/99	05/12/99	05/13/99
MERCURY, TOTAL	001 MS	S	99C0139	04/29/99	05/12/99	05/13/99
LEAD, TOTAL	001	S	99L0295	04/29/99	05/13/99	05/15/99
LEAD, TOTAL	001 REP	S	99L0295	04/29/99	05/13/99	05/15/99
LEAD, TOTAL	001 MS	S	99L0295	04/29/99	05/13/99	05/15/99

B0VD47

CHROMIUM, TOTAL	002	S	99L0295	04/29/99	05/13/99	05/15/99
MERCURY, TOTAL	002	S	99C0139	04/29/99	05/12/99	05/13/99
LEAD, TOTAL	002	S	99L0295	04/29/99	05/13/99	05/15/99

B0VD48

CHROMIUM, TOTAL	003	S	99L0295	04/29/99	05/13/99	05/15/99
MERCURY, TOTAL	003	S	99C0139	04/29/99	05/12/99	05/13/99
LEAD, TOTAL	003	S	99L0295	04/29/99	05/13/99	05/15/99

B0VD49

CHROMIUM, TOTAL	004	S	99L0295	04/29/99	05/13/99	05/15/99
MERCURY, TOTAL	004	S	99C0139	04/29/99	05/12/99	05/13/99
LEAD, TOTAL	004	S	99L0295	04/29/99	05/13/99	05/15/99

LAB QC:

CHROMIUM LABORATORY	LC1 BS	S	99L0295	N/A	05/13/99	05/15/99
CHROMIUM, TOTAL	MB1	S	99L0295	N/A	05/13/99	05/15/99
MERCURY LABORATORY	LC1 BS	S	99C0139	N/A	05/12/99	05/13/99
MERCURY, TOTAL	MB1	S	99C0139	N/A	05/12/99	05/13/99
LEAD LABORATORY	LC1 BS	S	99L0295	N/A	05/13/99	05/15/99

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

DATE RECEIVED: 05/06/99

RFW LOT # :9905L890

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	MB1	S	99L0295	N/A	05/13/99	05/15/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B99-002-91	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 100 B/C 116-B-4	SAF No. B99-002				
Ice Chest No. SML-443	Field Logbook No. EL 1327-3	Method of Shipment Fed Ex U ³				
Shipped To FMR/RECA RF 4-29-99	Offsite Property No. A990129	Bill of Lading/Air Bill No. 423579525522 423579525500 RUN 5/1/99				
			COA R116B42600			

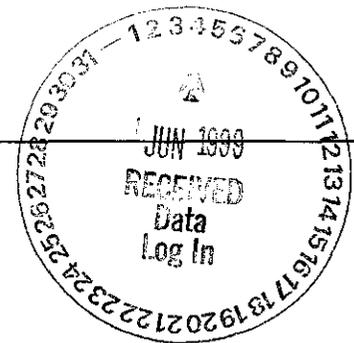
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage	Preservation	None	None	Cool 4C	None	None						
	Type of Container	P	aG	aG	aG	aG						
	No. of Container(s)	1	1	1	1	1						
	Volume	20mL	60mL	125mL	250mL	1000mL						
<p style="text-align: center;">890</p> <p style="text-align: center;">SAMPLE ANALYSIS</p>	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								
	B0VD46	Soil	4-29-99	0847		X	X					B0V106
	B0VD47	Soil	4-29-99	0913		X	X					B0V107
	B0VD48	Soil	4-29-99	0913		X	X					B0V107
B0VD49	Soil	4-29-99	1020		X	X					B0V108	

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By R. Coffman / R. Coffman	Date/Time 1515 4-29-99	Received By RECEIVED #1C	Date/Time 1515 4-29-99	(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) R. Coffman unavailable to relinquish samples.				Soil Water Vapor Other Solid Other Liquid
Relinquished By R. Nicks #1C	Date/Time 5/1/99 1030	Received By R. Nicks / R. Nicks	Date/Time 5/1/99 1030					
Relinquished By R. Nicks / R. Nicks	Date/Time 5/1/99 1030	Received By Fed Ex	Date/Time					
Relinquished By J. eddy	Date/Time	Received By	Date/Time					
LABORATORY SECTION	Received By	Title		Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method	J. eddy 5/6/99 0930		Disposed By				Date/Time



a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere



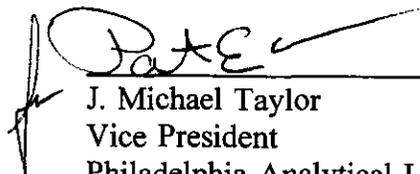
**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-002
RFW# : 9905L890
SDG# : H0396
SAF# : B99-002

W.O. # : 10985-001-001-9999-00
Date Received: 05-06-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 4 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 Samples (LCS) for Chromium VI were within the laboratory control limits.
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.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-27-99
Date

njp\05-890

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 10 pages.

WET CHEMISTRY

METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
%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: SW3000A/7196A

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.

RFW 21-21L-034/D-06/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 05/14/99

CLIENT: TNU-HANFORD B99-002
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9905L890

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	BOVD46	% Solids	96.6	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-002	BOVD47	% Solids	96.9	%	0.01	1.0
		Chromium VI	0.42	MG/KG	0.41	1.0
-003	BOVD48	% Solids	97.5	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-004	BOVD49	% Solids	98.3	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/14/99

CLIENT: TNU-HANFORD B99-002
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9905L890

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LV1038-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 05/14/99

CLIENT: TNU-MANFORD B99-002

RECRA LOT #: 9905L890

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-004	B0VD49	Soluble Chromium VI	3.8	0.0	4.1	93.1	1.0
		Insoluble Chromium VI	1220	0.0	1190	102.3	100
BLANK10	99LVI038-MB1	Soluble Chromium VI	3.7	0.40u	4.0	93.1	1.0
		Insoluble Chromium VI	1290	0.40u	1160	110.6	100

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 05/14/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L890

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE	RPD	
-004REP	BOVD49	% Solids	98.3	97.6	0.78	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: 05/06/99

RFW LOT # :9905L890

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

B0VD46

% SOLIDS	001	S	99L&S065	04/29/99	05/10/99	05/11/99
CHROMIUM VI	001	S	99LVI038	04/29/99	05/12/99	05/12/99

B0VD47

% SOLIDS	002	S	99L&S065	04/29/99	05/10/99	05/11/99
CHROMIUM VI	002	S	99LVI038	04/29/99	05/12/99	05/12/99

B0VD48

% SOLIDS	003	S	99L&S065	04/29/99	05/10/99	05/11/99
CHROMIUM VI	003	S	99LVI038	04/29/99	05/12/99	05/12/99

B0VD49

% SOLIDS	004	S	99L&S065	04/29/99	05/10/99	05/11/99
% SOLIDS	004 REP	S	99L&S065	04/29/99	05/10/99	05/11/99
CHROMIUM VI	004	S	99LVI038	04/29/99	05/12/99	05/12/99
CHROMIUM VI	004 REP	S	99LVI038	04/29/99	05/12/99	05/12/99
CHROMIUM VI	004 MS	S	99LVI038	04/29/99	05/12/99	05/12/99
CHROMIUM VI	004 MSD	S	99LVI038	04/29/99	05/12/99	05/12/99

LAB QC:

CHROMIUM VI	MB1	S	99LVI038	N/A	05/12/99	05/12/99
CHROMIUM VI	MB1 BS	S	99LVI038	N/A	05/12/99	05/12/99
CHROMIUM VI	MB1 BSD	S	99LVI038	N/A	05/12/99	05/12/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B99-002-91	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 100 B/C 116-B-4	SAF No. B99-002				
Ice Chest No. SML-443	Field Logbook No. EL 1327-3	Method of Shipment Fed Ex U.S.				
Shipped To FM/RECRA RF 4-29-99	Offsite Property No. A990129	Bill of Lading/Air Bill No. 423579525522 423579525500 RIN5449				
			COA R116B42600			

010

POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage	Preservation	None	None	Cool 4C	None	None						
	Type of Container	P	aG	aG	aG	aG						
	No. of Container(s)	1	1	1	1	1						
	Volume	20mL	60mL	125mL	250mL	1000mL						

890

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									
B0VD46	Soil	4-29-99	0847			X	X					B0V106
B0VD47	Soil	4-29-99	0913			X	X					B0V107
B0VD48	Soil	4-29-99	0913			X	X					B0V107
B0VD49	Soil	4-29-99	1020			X	X					B0V108

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By R Coffman / R Coffman	Date/Time 1515 4-29-99	Received By REFRIG. #1C	Date/Time 1515 4-29-99
Relinquished By REF. #1C	Date/Time 5/1/99 1030	Received By R. Nielsen / R. Nielsen	Date/Time 1030 5/1/99
Relinquished By R. Nielsen / R. Nielsen	Date/Time 5/1/99	Received By Fed Ex	Date/Time
Relinquished By Jedup	Date/Time	Received By	Date/Time
LABORATORY SECTION	Received By Jedup	Title 5/1/99 0930	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

(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)
 R. Coffman unavailable to relinquish samples.

Soil
Water
Vapor
Other Solid
Other Liquid

Thermo NUtch

2030 Wright Avenue
P.O. Box 4040
Richmond, CA 94804-0040
(510) 235-2633 • FAX (510) 235-0438

June 1, 1999

Ms. Joan Kessner
3190 George Washington Way
Richland, WA 99352
MSIN: H9-03

Reference: P.O. #TRB-SBB-207925
Thermo Nutech N9-05-022-7119, SDG H0396



Dear Ms. Kessner:

Enclosed is the data report for four solid samples designated under SAF No. B99-002 received at Thermo Nutech on May 6, 1999. The samples were analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

A handwritten signature in cursive script, appearing to read "T. Higgins".

Terrie A. Higgins
Program Manager

TAH/kcj

Enclosure: Data Package

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0396 is comprised of four 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 document. Any discrepancies are noted on the TNU Sample Receipt Checklist. All results were faxed to Bechtel Hanford on May 24, 1999 with the exception of Total Strontium, which was transmitted to BHI via fax on June 1, 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

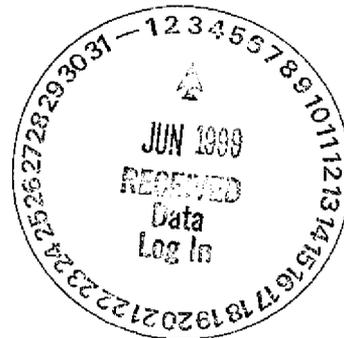
No problems were encountered during the processing of the samples.

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.



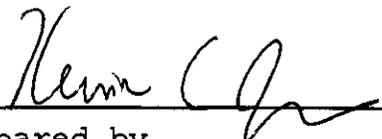
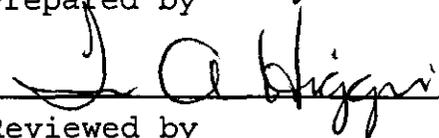
T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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

T A B L E O F C O N T E N T S				
About this section	.	.	.	1
Sample Summaries	.	.	.	3
Prep Batch Summary	.	.	.	5
Work Summary	.	.	.	6
Method Blanks	.	.	.	8
Lab Control Samples	.	.	.	9
Duplicates	.	.	.	10
Data Sheets	.	.	.	11
Method Summaries	.	.	.	15
Report Guides	.	.	.	22
End of Section	.	.	.	36


Prepared by

Reviewed by

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 06/01/99

SDG 7119
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 1

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0396

SAMPLE SUMMARY

SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0VD46	100 B/C 116-B-4	SOLID		N905022-01	B99-002	B99-002-91	04/29/99 08:47
B0VD47	100 B/C 116-B-4	SOLID		N905022-02	B99-002	B99-002-91	04/29/99 09:13
B0VD48	100 B/C 116-B-4	SOLID		N905022-03	B99-002	B99-002-91	04/29/99 09:13
B0VD49	100 B/C 116-B-4	SOLID		N905022-04	B99-002	B99-002-91	04/29/99 10:20
Method Blank		SOLID		N905022-06	B99-002		
Lab Control Sample		SOLID		N905022-05	B99-002		
Duplicate (N905022-01)	100 B/C 116-B-4	SOLID		N905022-07	B99-002		04/29/99 08:47

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 06/01/99

TMA/RICHMOND
 SAMPLE DELIVERY GROUP H0396

SDG 7119
 Contact L.A. Johnson

QC SUMMARY

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0396

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
7119	B99-002-91	B0VD46	SOLID	97.5			05/06/99	7	N905022-01	7119-001
		B0VD47	SOLID	97.5			05/06/99	7	N905022-02	7119-002
		B0VD48	SOLID	97.7			05/06/99	7	N905022-03	7119-003
		B0VD49	SOLID	97.9			05/06/99	7	N905022-04	7119-004
		Method Blank	SOLID						N905022-06	7119-006
		Lab Control Sample	SOLID						N905022-05	7119-005
		Duplicate (N905022-01)	SOLID				05/06/99	7	N905022-07	7119-007

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 06/01/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
 Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0396

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI-	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK		LCS
Alpha Spectroscopy										
AM	SOLID	Americium 241 in Soil	6880-061	5.0	4			1	1	1/1
PU	SOLID	Plutonium, Isotopic in Solids	6880-061	5.0	4			1	1	1/1
U	SOLID	Uranium, Isotopic in Soil	6880-061	5.0	4			1	1	1/1
Beta Counting										
SR	SOLID	Total Strontium in Soil	6880-061	10.0	4			1	1	1/1
Gamma Spectroscopy										
GAM	SOLID	Gamma Scan	6880-061	15.0	4			1	1	1/1
Liquid Scintillation Counting										
NI_L	SOLID	Nickel 63 in Soil	6880-061	10.0	4			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 06/01/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

WORK SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

CLIENT SAMPLE ID	LAB SAMPLE ID								
LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	SUP-	ANALYZED	REVIEWED	BY	METHOD
CUSTODY	SAF No	RECEIVED			FIX				
B0VD46		N905022-01	7119-001	AM		05/20/99			Americium 241 in Soil
100 B/C 116-B-4	SOLID	04/29/99	7119-001	GAM		05/12/99			Gamma Scan
B99-002-91	B99-002	05/06/99	7119-001	NI_L		05/16/99			Nickel 63 in Soil
			7119-001	PU		05/18/99			Plutonium, Isotopic in Solids
			7119-001	SR		05/24/99			Total Strontium in Soil
			7119-001	U		05/14/99			Uranium, Isotopic in Soil
B0VD47		N905022-02	7119-002	AM		05/20/99			Americium 241 in Soil
100 B/C 116-B-4	SOLID	04/29/99	7119-002	GAM		05/12/99			Gamma Scan
B99-002-91	B99-002	05/06/99	7119-002	NI_L		05/16/99			Nickel 63 in Soil
			7119-002	PU		05/18/99			Plutonium, Isotopic in Solids
			7119-002	SR		05/24/99			Total Strontium in Soil
			7119-002	U		05/14/99			Uranium, Isotopic in Soil
B0VD48		N905022-03	7119-003	AM		05/21/99			Americium 241 in Soil
100 B/C 116-B-4	SOLID	04/29/99	7119-003	GAM		05/13/99			Gamma Scan
B99-002-91	B99-002	05/06/99	7119-003	NI_L		05/16/99			Nickel 63 in Soil
			7119-003	PU		05/18/99			Plutonium, Isotopic in Solids
			7119-003	SR		05/24/99			Total Strontium in Soil
			7119-003	U		05/14/99			Uranium, Isotopic in Soil
B0VD49		N905022-04	7119-004	AM		05/20/99			Americium 241 in Soil
100 B/C 116-B-4	SOLID	04/29/99	7119-004	GAM		05/13/99			Gamma Scan
B99-002-91	B99-002	05/06/99	7119-004	NI_L		05/16/99			Nickel 63 in Soil
			7119-004	PU		05/18/99			Plutonium, Isotopic in Solids
			7119-004	SR		05/24/99			Total Strontium in Soil
			7119-004	U		05/14/99			Uranium, Isotopic in Soil
Method Blank		N905022-06	7119-006	AM		05/20/99			Americium 241 in Soil
	SOLID		7119-006	GAM		05/13/99			Gamma Scan
	B99-002		7119-006	NI_L		05/16/99			Nickel 63 in Soil
			7119-006	PU		05/18/99			Plutonium, Isotopic in Solids
			7119-006	SR		05/24/99			Total Strontium in Soil
			7119-006	U		05/14/99			Uranium, Isotopic in Soil

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0396

WORK SUMMARY, cont.

SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

CLIENT SAMPLE ID	LAB SAMPLE ID	MATRIX	COLLECTED	SUF-	ANALYZED	REVIEWED BY	METHOD
LOCATION	SAF No	RECEIVED	PLANCHET	TEST	FIX		
Lab Control Sample	N905022-05		7119-005	AM	05/20/99		Americium 241 in Soil
		SOLID	7119-005	GAM	05/13/99		Gamma Scan
	B99-002		7119-005	NI_L	05/16/99		Nickel 63 in Soil
			7119-005	PU	05/18/99		Plutonium, Isotopic in Solids
			7119-005	SR	05/28/99		Total Strontium in Soil
			7119-005	U	05/14/99		Uranium, Isotopic in Soil
Duplicate (N905022-01)	N905022-07		7119-007	AM	05/20/99		Americium 241 in Soil
100 B/C 116-B-4		SOLID	04/29/99	GAM	05/13/99		Gamma Scan
	B99-002		05/06/99	NI_L	05/16/99		Nickel 63 in Soil
			7119-007	PU	05/18/99		Plutonium, Isotopic in Solids
			7119-007	SR	05/24/99		Total Strontium in Soil
			7119-007	U	05/14/99		Uranium, Isotopic in Soil

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	4			1	1	1		7
GAM	B99-002	Gamma Scan	GAMMAHI	4			1	1	1		7
NI_L	B99-002	Nickel 63 in Soil	NI63LSC	4			1	1	1		7
PU	B99-002	Plutonium, Isotopic in Solids	PUPLATE	4			1	1	1		7
SR	B99-002	Total Strontium in Soil		4			1	1	1		7
U	B99-002	Uranium, Isotopic in Soil	UPLATE	4			1	1	1		7
TOTALS				24			6	6	6		42

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

N905022-06

Method Blank

METHOD BLANK

SDG <u>7119</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0396</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905022-06</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7119-006</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B99-002</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TRST
Uranium 233/234	U-233/234	0.009	0.019	0.070	0.30	U	U
Uranium 235	15117-96-1	0.011	0.023	0.090	0.30	U	U
Uranium 238	U-238	0.009	0.019	0.070	0.30	U	U
Plutonium 238	13981-16-3	0.008	0.016	0.030	0.050	U	PU
Plutonium 239/240	PU-239/240	0.005	0.011	0.020	0.050	U	PU
Nickel 63	13981-37-8	0.267	1.3	2.2	20	U	NI_L
Americium 241	14596-10-2	-0.003	0.009	0.020	0.050	U	AM
Total Strontium	SR-RAD	-0.017	0.15	0.20	1.0	U	SR
Potassium 40	13966-00-2	U		0.20		U	GAM
Cobalt 60	10198-40-0	U		0.009	0.050	U	GAM
Cesium 137	10045-97-3	U		0.010	0.050	U	GAM
Europium 152	14683-23-9	U		0.030	0.10	U	GAM
Europium 154	15585-10-1	U		0.030	0.10	U	GAM
Europium 155	14391-16-3	U		0.020	0.10	U	GAM
Americium 241	14596-10-2	U		0.030		U	GAM
Uranium 238	U-238	U		1.0		U	GAM
Uranium 235	15117-96-1	U		0.040		U	GAM

100 BC Areas-Full Protocol

QC-BLANK 30701

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>06/01/99</u>

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0396

N905022-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7119</u>	Client/Case no <u>Hanford</u> <u>SDG-H0396</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>
Lab sample id <u>N905022-05</u>	Client sample id <u>Lab Control Sample</u>
Dept sample id <u>7119-005</u>	Material/Matrix <u>SOLID</u>
	SAF No <u>B99-002</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
Uranium 233/234	5.10	0.61	0.30	0.30	U	4.75	0.19	107	78-122	80-120
Uranium 235	4.20	0.54	0.080	0.30	U	4.04	0.16	104	78-122	80-120
Uranium 238	5.30	0.62	0.30	0.30	U	5.10	0.20	104	79-121	80-120
Plutonium 238	5.34	0.46	0.024	0.050	PU	5.66	0.23	94	85-115	80-120
Plutonium 239/240	5.79	0.49	0.024	0.050	PU	5.95	0.24	97	84-116	80-120
Nickel 63	172	3.9	2.3	20	NI_L	168	6.7	102	83-117	
Americium 241	4.60	0.28	0.010	0.050	AM	5.27	0.21	87	88-112	80-120
Total Strontium	12.0	0.64	0.30	1.0	SR	12.6	0.50	95	83-117	
Cobalt 60	0.340	0.017	0.008	0.050	GAM	0.352	0.014	97	76-124	80-120
Cesium 137	0.380	0.015	0.010	0.050	GAM	0.347	0.014	110	74-126	80-120

100 BC Areas-Full Protocol

QC-LCS 30700

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>06/01/99</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0396

N905022-07

B0VD46

DUPLICATE

SDG <u>7119</u>		Client/Case no <u>Hanford</u> <u>SDG-H0396</u>	
Contact <u>L.A. Johnson</u>		Case no <u>TRB-SBB-207925</u>	
DUPLICATE		ORIGINAL	
Lab sample id <u>N905022-07</u>	Lab sample id <u>N905022-01</u>	Client sample id <u>B0VD46</u>	
Dept sample id <u>7119-007</u>	Dept sample id <u>7119-001</u>	Location/Matrix <u>100 B/C 116-B-4</u> <u>SOLID</u>	
	Received <u>05/06/99</u>	Collected <u>04/29/99 08:47</u>	
	% solids <u>97.5</u>	Custody/SAF No <u>B99-002-91</u> <u>B99-002</u>	

ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	PROT
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS		TEST	pCi/g	(COUNT)			
Uranium 233/234	0.480	0.16	0.10	0.30		U		0.417	0.14	0.072	14	72
Uranium 235	0.016	0.032	0.10	0.30	U	U	0.046	0.046	0.088	U	-	
Uranium 238	0.420	0.16	0.10	0.30		U	0.436	0.14	0.072		4	75
Plutonium 238	-0.005	0.020	0.047	0.050	U	PU	0	0.010	0.040	U	-	
Plutonium 239/240	0.005	0.020	0.047	0.050	U	PU	0.010	0.011	0.040	U	-	
Nickel 63	-0.858	1.3	2.3	20	U	NI_L	0.860	1.6	2.7	U	-	
Americium 241	0.009	0.018	0.030	0.050	U	AM	-0.006	0.012	0.032	U	-	
Total Strontium	0.019	0.13	0.20	1.0	U	SR	0.092	0.13	0.17	U	-	
Potassium 40	11.0	0.27	0.10			GAM	11.1	0.28	0.12		1	32
Cobalt 60	U		0.020	0.050	U	GAM	0.016	0.010	0.012	J	22	189
Cesium 137	0.230	0.014	0.010	0.050		GAM	0.217	0.016	0.015		6	35
Europium 152	0.066	0.020	0.030	0.10	J	GAM	0.043	0.016	0.025	J	42	78
Europium 154	U		0.040	0.10	U	GAM	U		0.042	U	-	
Europium 155	U		0.060	0.10	U	GAM	U		0.051	U	-	
Radium 226	0.390	0.022	0.020	0.10		GAM	0.362	0.024	0.022		7	34
Radium 228	0.540	0.051	0.050	0.20		GAM	0.583	0.051	0.049		8	37
Thorium 228	0.540	0.016	0.020			GAM	0.544	0.016	0.015		1	32
Thorium 232	0.540	0.051	0.050			GAM	0.583	0.051	0.049		8	37
Americium 241	U		0.040		U	GAM	U		0.038	U	-	
Uranium 238	U		1.0		U	GAM	U		1.5	U	-	
Uranium 235	0.042	0.035	0.050		U	GAM	U		0.068	U	-	

100 BC Areas-Full Protocol

QC-DUP#1 30702

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

N905022-01

BOVD46

DATA SHEET

SDG <u>7119</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0396</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBE-207925</u>	
Lab sample id <u>N905022-01</u>	Client sample id <u>BOVD46</u>	
Dept sample id <u>7119-001</u>	Location/Matrix <u>100 B/C 116-B-4</u>	<u>SOLID</u>
Received <u>05/06/99</u>	Collected <u>04/29/99 08:47</u>	
% solids <u>97.5</u>	Custody/SAF No <u>B99-002-91</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.417	0.14	0.072	0.30		U
Uranium 235	15117-96-1	0.046	0.046	0.088	0.30	U	U
Uranium 238	U-238	0.436	0.14	0.072	0.30		U
Plutonium 238	13981-16-3	0	0.010	0.040	0.050	U	PU
Plutonium 239/240	PU-239/240	0.010	0.011	0.040	0.050	U	PU
Nickel 63	13981-37-8	0.860	1.6	2.7	20	U	NI_L
Americium 241	14596-10-2	-0.006	0.012	0.032	0.050	U	AM
Total Strontium	SR-RAD	0.092	0.13	0.17	1.0	U	SR
Potassium 40	13966-00-2	11.1	0.28	0.12			GAM
Cobalt 60	10198-40-0	0.016	0.010	0.012	0.050	J	GAM
Cesium 137	10045-97-3	0.217	0.016	0.015	0.050		GAM
Europium 152	14683-23-9	0.043	0.016	0.025	0.10	J	GAM
Europium 154	15585-10-1	U		0.042	0.10	U	GAM
Europium 155	14391-16-3	U		0.051	0.10	U	GAM
Radium 226	13982-63-3	0.362	0.024	0.022	0.10		GAM
Radium 228	15262-20-1	0.583	0.051	0.049	0.20		GAM
Thorium 228	14274-82-9	0.544	0.016	0.015			GAM
Thorium 232	TH-232	0.583	0.051	0.049			GAM
Americium 241	14596-10-2	U		0.038		U	GAM
Uranium 238	U-238	U		1.5		U	GAM
Uranium 235	15117-96-1	U		0.068		U	GAM

100 BC Areas-Full Protocol

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>06/01/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

N905022-02

BOVD47

DATA SHEET

SDG <u>7119</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0396</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905022-02</u>	Client sample id <u>BOVD47</u>	
Dept sample id <u>7119-002</u>	Location/Matrix <u>100 B/C 116-B-4</u>	<u>SOLID</u>
Received <u>05/06/99</u>	Collected <u>04/29/99 09:13</u>	
% solids <u>97.5</u>	Custody/SAF No <u>B99-002-91</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.387	0.13	0.078	0.30		U
Uranium 235	15117-96-1	0.049	0.050	0.094	0.30	U	U
Uranium 238	U-238	0.489	0.15	0.078	0.30		U
Plutonium 238	13981-16-3	0.010	0.021	0.040	0.050	U	PU
Plutonium 239/240	PU-239/240	0.005	0.021	0.049	0.050	U	PU
Nickel 63	13981-37-8	0.240	1.9	3.1	20	U	NI_L
Americium 241	14596-10-2	-0.004	0.014	0.034	0.050	U	AM
Total Strontium	SR-RAD	0.060	0.12	0.16	1.0	U	SR
Potassium 40	13966-00-2	9.02	0.41	0.21			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	U		0.017	0.050	U	GAM
Europium 152	14683-23-9	U		0.043	0.10	U	GAM
Europium 154	15585-10-1	U		0.057	0.10	U	GAM
Europium 155	14391-16-3	U		0.043	0.10	U	GAM
Radium 226	13982-63-3	0.352	0.033	0.033	0.10		GAM
Radium 228	15262-20-1	0.567	0.079	0.076	0.20		GAM
Thorium 228	14274-82-9	0.449	0.022	0.021			GAM
Thorium 232	TH-232	0.567	0.079	0.076			GAM
Americium 241	14596-10-2	U		0.044		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Uranium 235	15117-96-1	U		0.071		U	GAM

100 BC Areas-Full Protocol

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>06/01/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

N905022-03

BOVD48

DATA SHEET

SDG <u>7119</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0396</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905022-03</u>	Client sample id <u>BOVD48</u>	
Dept sample id <u>7119-003</u>	Location/Matrix <u>100 B/C 116-B-4</u>	<u>SOLID</u>
Received <u>05/06/99</u>	Collected <u>04/29/99 09:13</u>	
% solids <u>97.7</u>	Custody/SAF No <u>B99-002-91</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.505	0.15	0.077	0.30		U
Uranium 235	15117-96-1	0.037	0.049	0.094	0.30	U	U
Uranium 238	U-238	0.465	0.15	0.077	0.30		U
Plutonium 238	13981-16-3	-0.014	0.014	<u>0.067</u>	0.050	U	PU
Plutonium 239/240	PU-239/240	0.007	0.028	<u>0.054</u>	0.050	U	PU
Nickel 63	13981-37-8	-0.023	1.6	2.8	20	U	NI_L
Americium 241	14596-10-2	0.070	0.037	0.034	0.050		AM
Total Strontium	SR-RAD	-0.065	0.11	0.16	1.0	U	SR
Potassium 40	13966-00-2	9.97	0.42	0.17			GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	U		0.019	0.050	U	GAM
Europium 152	14683-23-9	U		0.041	0.10	U	GAM
Europium 154	15585-10-1	U		0.071	0.10	U	GAM
Europium 155	14391-16-3	U		0.039	0.10	U	GAM
Radium 226	13982-63-3	0.367	0.042	0.038	0.10		GAM
Radium 228	15262-20-1	0.547	0.085	0.082	0.20		GAM
Thorium 228	14274-82-9	0.499	0.022	0.021			GAM
Thorium 232	TH-232	0.547	0.085	0.082			GAM
Americium 241	14596-10-2	U		0.024		U	GAM
Uranium 238	U-238	U		2.6		U	GAM
Uranium 235	15117-96-1	U		0.068		U	GAM

100 BC Areas-Full Protocol

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>06/01/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

N905022-04

B0VD49

DATA SHEET

SDG <u>7119</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0396</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905022-04</u>	Client sample id <u>B0VD49</u>	
Dept sample id <u>7119-004</u>	Location/Matrix <u>100 B/C 116-B-4</u>	<u>SOLID</u>
Received <u>05/06/99</u>	Collected <u>04/29/99 10:20</u>	
% solids <u>97.9</u>	Custody/SAF No <u>B99-002-91</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.439	0.16	0.096	0.30		U
Uranium 235	15117-96-1	0.030	0.030	0.12	0.30	U	U
Uranium 238	U-238	0.552	0.18	0.096	0.30		U
Plutonium 238	13981-16-3	0.005	0.022	0.041	0.050	U	PU
Plutonium 239/240	PU-239/240	0.011	0.022	0.041	0.050	U	PU
Nickel 63	13981-37-8	0.690	1.8	3.0	20	U	NI_L
Americium 241	14596-10-2	-0.006	0.024	<u>0.065</u>	0.050	U	AM
Total Strontium	SR-RAD	-0.016	0.11	0.16	1.0	U	SR
Potassium 40	13966-00-2	9.09	0.42	0.21			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	0.120	0.016	0.016	0.050		GAM
Europium 152	14683-23-9	U		0.050	0.10	U	GAM
Europium 154	15585-10-1	U		0.060	0.10	U	GAM
Europium 155	14391-16-3	U		0.051	0.10	U	GAM
Radium 226	13982-63-3	0.356	0.039	0.039	0.10		GAM
Radium 228	15262-20-1	0.545	0.083	0.085	0.20		GAM
Thorium 228	14274-82-9	0.496	0.024	0.023			GAM
Thorium 232	TH-232	0.545	0.083	0.085			GAM
Americium 241	14596-10-2	U		0.072		U	GAM
Uranium 238	U-238	U		2.2		U	GAM
Uranium 235	15117-96-1	U		0.082		U	GAM

100 BC Areas-Full Protocol

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>06/01/99</u>

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0396

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Americium 241
Preparation batch 6880-061					
B0VD46	N905022-01	7119-001			U
B0VD47	N905022-02	7119-002			U
B0VD48	N905022-03	7119-003			0.070
B0VD49	N905022-04	7119-004			U
BLK (QC ID=30701)	N905022-06	7119-006			U
LCS (QC ID=30700)	N905022-05	7119-005			<u>LOW</u>
Duplicate (N905022-01)	N905022-07	7119-007			- 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 6880-061 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.61																
B0VD46	N905022-01			0.032	<u>0.500</u>			89		907			21	05/20/99	05/20	SS-005
B0VD47	N905022-02			0.034	<u>0.500</u>			73		907			21	05/20/99	05/20	SS-006
B0VD48	N905022-03			0.034	<u>0.500</u>			81		1001			22	05/20/99	05/21	SS-011
B0VD49	N905022-04			<u>0.065</u>	<u>0.500</u>			45		907			21	05/20/99	05/20	SS-008
BLK (QC ID=30701)	N905022-06			0.020	1.00			91		904				05/20/99	05/20	SS-035
LCS (QC ID=30700)	N905022-05			0.010	1.00			98		909				05/20/99	05/20	SS-012
Duplicate (N905022-01)	N905022-07			0.030	<u>0.500</u>			91		904			21	05/20/99	05/20	SS-036
(QC ID=30702)																
Nominal values and limits from method				0.050	1.00			20-105		700	100		180			

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0396

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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 \pm 2 SD	MDA	<u>0.032</u> \pm <u>0.034</u>
FOR 7 SAMPLES	YIELD	<u>81</u> \pm <u>36</u>

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0396

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUP- FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6880-061						
B0VD46	N905022-01			7119-001	U	U
B0VD47	N905022-02			7119-002	U	U
B0VD48	N905022-03			7119-003	U	U
B0VD49	N905022-04			7119-004	U	U
BLK (QC ID=30701)	N905022-06			7119-006	U	U
LCS (QC ID=30700)	N905022-05			7119-005	ok	ok
Duplicate (N905022-01)	N905022-07			7119-007	- 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	SUP- 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 6880-061 2σ prep error 5.0 † Reference Lab Notebook 6880 pg.61																
B0VD46	N905022-01			0.040	0.500			80		576			19	05/18/99	05/18	SS-001
B0VD47	N905022-02			0.049	0.500			78		576			19	05/18/99	05/18	SS-004
B0VD48	N905022-03			0.067	0.500			58		576			19	05/18/99	05/18	SS-005
B0VD49	N905022-04			0.041	0.500			76		576			19	05/18/99	05/18	SS-006
BLK (QC ID=30701)	N905022-06			0.030	1.00			76		576				05/18/99	05/18	SS-010
LCS (QC ID=30700)	N905022-05			0.024	1.00			82		576				05/18/99	05/18	SS-008
Duplicate (N905022-01) (QC ID=30702)	N905022-07			0.047	0.500			87		576			19	05/18/99	05/18	SS-011
Nominal values and limits from method				0.050	1.00			20-105		10	100		180			

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	0.043 ± 0.028
FOR 7 SAMPLES	YIELD	77 ± 18

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0396

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- PLANCHET	Uranium			RESULT RATIOS (%)				
				1: 233/234	2: 235	3: 238	1+3	2σ	2+3	2σ	
Preparation batch 6880-061											
B0VD46	N905022-01		7119-001	0.417	U	0.436	96	44	11	11	
B0VD47	N905022-02		7119-002	0.387	U	0.489	79	36	10	11	
B0VD48	N905022-03		7119-003	0.505	U	0.465	109	48	8	11	
B0VD49	N905022-04		7119-004	0.439	U	0.552	80	39	5	6	
BLK (QC ID=30701)	N905022-06		7119-006	U	U	U					
LCS (QC ID=30700)	N905022-05		7119-005	ok	ok	ok					
Duplicate (N905022-01)	N905022-07		7119-007	ok	- U	ok	114	58	4	8	
Nominal values and limits from method				RDLS (pCi/g)	0.30	0.30	0.30	100		4	
100 BC Areas-Full Protocol							Averages	95		8	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- pCi/g	MAX MDA	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL-		
														PREPARED	YZED DETECTOR	
Preparation batch 6880-061 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.61																
B0VD46	N905022-01		0.088	1.00				80	155				15	05/14/99	05/14	SS-005
B0VD47	N905022-02		0.094	1.00				74	155				15	05/14/99	05/14	SS-006
B0VD48	N905022-03		0.094	1.00				77	155				15	05/14/99	05/14	SS-007
B0VD49	N905022-04		0.12	1.00				61	155				15	05/14/99	05/14	SS-008
BLK (QC ID=30701)	N905022-06		0.090	1.00				80	155					05/14/99	05/14	SS-010
LCS (QC ID=30700)	N905022-05		0.30	1.00				95	155					05/14/99	05/14	SS-009
Duplicate (N905022-01)	N905022-07		0.10	1.00				60	155				15	05/14/99	05/14	SS-011
(QC ID=30702)																
Nominal values and limits from method			0.30	1.00				30-105	150	100			180			

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	0.13 ± 0.15
FOR 7 SAMPLES	YIELD	75 ± 24

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/01/99

METHOD SUMMARIES

Page 4

SUMMARY DATA SECTION

Page 18

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0396

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Test SR Matrix SOLID
SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Strontium
Preparation batch 6880-061					
B0VD46	N905022-01			7119-001	U
B0VD47	N905022-02			7119-002	U
B0VD48	N905022-03			7119-003	U
B0VD49	N905022-04			7119-004	U
BLK (QC ID=30701)	N905022-06			7119-006	U
LCS (QC ID=30700)	N905022-05			7119-005	ok
Duplicate (N905022-01)	N905022-07			7119-007	- 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 6880-061 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.61																
B0VD46	N905022-01			0.17	1.00			78		400			25	05/18/99	05/24	GRB-217
B0VD47	N905022-02			0.16	1.00			81		400			25	05/18/99	05/24	GRB-218
B0VD48	N905022-03			0.16	1.00			86		400			25	05/18/99	05/24	GRB-219
B0VD49	N905022-04			0.16	1.00			82		400			25	05/18/99	05/24	GRB-220
BLK (QC ID=30701)	N905022-06			0.20	1.00			70		400				05/18/99	05/24	GRB-231
LCS (QC ID=30700)	N905022-05			0.30	1.00			70		120				05/18/99	05/28	GRB-219
Duplicate (N905022-01) (QC ID=30702)	N905022-07			0.20	1.00			85		400			25	05/18/99	05/24	GRB-201

Nominal values and limits from method 1.0 1.00 100 180

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

AVERAGES ± 2 SD MDA 0.19 ± 0.10
FOR 7 SAMPLES YIELD 79 ± 13

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0396

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
 SDG 7119
 Contact L.A. Johnson

Client Hanford
 Contract TRE-SBB-207925
 Case no SDG-H0396

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6880-061					
B0VD46	N905022-01		7119-001	0.016 J	0.217
B0VD47	N905022-02		7119-002	U	U
B0VD48	N905022-03		7119-003	U	U
B0VD49	N905022-04		7119-004	U	0.120
BLK (QC ID=30701)	N905022-06		7119-006	U	U
LCS (QC ID=30700)	N905022-05		7119-005	ok	ok
Duplicate (N905022-01)	N905022-07		7119-007	ok U	ok
Nominal values and limits from method					
100 BC Areas-Full Protocol			RDLs (pCi/g)	0.050	0.050

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- pCi/g	MAX MDA	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6880-061 2σ prep error 15.0 % Reference Lab Notebook 6880 pg.61																
B0VD46	N905022-01		0.032	849						411			13	05/10/99	05/12	02,04,00
B0VD47	N905022-02		0.043	833						410			13	05/10/99	05/12	JR,03,00
B0VD48	N905022-03		0.056	907						418			14	05/10/99	05/13	02,01,00
B0VD49	N905022-04		0.043	853						418			14	05/10/99	05/13	02,03,00
BLK (QC ID=30701)	N905022-06		0.020	750						454				05/10/99	05/13	01,03,00
LCS (QC ID=30700)	N905022-05		0.010	750						418				05/10/99	05/13	01,04,00
Duplicate (N905022-01)	N905022-07		0.030	849						454			14	05/10/99	05/13	02,04,00
(QC ID=30702)																
Nominal values and limits from method																
			0.050	750				100			180					

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

AVERAGES ± 2 SD	MDA <u>0.033</u> ± <u>0.031</u>
FOR 7 SAMPLES	YIELD _____ ± _____

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0396

Client Hanford

Contract TRB-SBB-207925

Case no SDG-H0396

Test NI L Matrix SOLID
 SDG 7119
 Contact L.A. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Nickel 63
Preparation batch 6880-061				
B0VD46	N905022-01		7119-001	U
B0VD47	N905022-02		7119-002	U
B0VD48	N905022-03		7119-003	U
B0VD49	N905022-04		7119-004	U
BLK (QC ID=30701)	N905022-06		7119-006	U
LCS (QC ID=30700)	N905022-05		7119-005	ok
Duplicate (N905022-01)	N905022-07		7119-007	- 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 FIX	SUF- pCi/g	MDA g	ALIQ	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6880-061 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.61																
B0VD46	N905022-01		2.7	0.500				74	100				17	05/14/99	05/16	LSC-007
B0VD47	N905022-02		3.1	0.500				63	100				17	05/14/99	05/16	LSC-007
B0VD48	N905022-03		2.8	0.500				72	100				17	05/14/99	05/16	LSC-007
B0VD49	N905022-04		3.0	0.500				67	100				17	05/14/99	05/16	LSC-007
BLK (QC ID=30701)	N905022-06		2.2	0.500				88	100					05/14/99	05/16	LSC-007
LCS (QC ID=30700)	N905022-05		2.3	0.500				90	100					05/14/99	05/16	LSC-007
Duplicate (N905022-01)	N905022-07		2.3	0.500				87	100				17	05/14/99	05/16	LSC-007
	(QC ID=30702)															

Nominal values and limits from method 20 0.500 10 180

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

AVERAGES ± 2 SD MDA 2.6 ± 0.73
 FOR 7 SAMPLES YIELD 77 ± 22

METHOD SUMMARIES

Page 7

SUMMARY DATA SECTION

Page 21

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 06/01/99

SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

REPORT GUIDE

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 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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.

REPORT GUIDES

Page 3

SUMMARY DATA SECTION

Page 24

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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).

REPORT GUIDES

Page 4

SUMMARY DATA SECTION

Page 25

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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.

REPORT GUIDES

Page 5

SUMMARY DATA SECTION

Page 26

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

GUIDE, cont.

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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.

REPORT GUIDES

Page 7

SUMMARY DATA SECTION

Page 28

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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.

REPORT GUIDES

Page 9

SUMMARY DATA SECTION

Page 30

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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

REPORT GUIDES

Page 10

SUMMARY DATA SECTION

Page 31

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

MATRIX SPIKE

for the recovery.

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

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

REPORT GUIDES

Page 11

SUMMARY DATA SECTION

Page 32

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

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'

REPORT GUIDES

Page 12

SUMMARY DATA SECTION

Page 33

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

METHOD SUMMARY

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

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

MDAs are underlined if greater than the printed RDL.

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

REPORT GUIDES

Page 13

SUMMARY DATA SECTION

Page 34

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

METHOD SUMMARY

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

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

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

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

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

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

REPORT GUIDES

Page 14

SUMMARY DATA SECTION

Page 35

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0396

SDG 7119
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0396

GUIDE, cont.

METHOD SUMMARY

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

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/01/99