RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

0051962

AUG 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

NOV 1999
RECEIVED
EDMC

Client : TNU-HANFORD B99-076
RFW# : 9907L501
SDG/SAF# : H0475/B99-076

W.O.# : 10985-001-001-9999-00
Date Received: 07-23-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 3 solid 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 (80-120% for Mercury).

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

10. The matrix spike (MS) recovery for Mercury was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report. When the MS is outside the control limits, a serial dilution is performed.

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.

11. The Mercury duplicate analysis 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.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

8-4-99
Date

mld/m07-501

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9907L501

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.

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INORGANICS DATA SUMMARY REPORT 08/04/99

CLIENT: TNU-HANFORD B99-076 RECRA LOT #: 9907L501

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W0Y1	Mercury, Total	0.33	MG/KG	0.02	1.0
		Lead, Total	29.0	MG/KG	3.4	1.0
-002	B0W0Y2	Mercury, Total	0.28	MG/KG	0.02	1.0
		Lead, Total	60.3	MG/KG	3.6	1.0
-003	B0W0Y3	Mercury, Total	1.1	MG/KG	0.02	1.0
		Lead, Total	45.4	MG/KG	3.4	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/04/99

CLIENT: TNU-HANFORD B99-076 RECRA LOT #: 9907L501

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99C0220-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
BLANK1	99L0503-MB1	Lead, Total	3.1 u	MG/KG	3.1	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 08/04/99

CLIENT: TNU-HANFORD B99-076 RECRA LOT #: 9907L501

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W0Y1	Mercury, Total	0.70	0.33	0.20	181.9	1.0
		Lead, Total	82.2	29.0	61.3	86.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 08/04/99

CLIENT: TNU-HANFORD B99-076 RECRA LOT #: 9907L501

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W0Y1	Mercury, Total	0.33	3.1	161.3	5.0
		Lead, Total	29.0	33.4	14.1	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/04/99

CLIENT: TNU-HANFORD B99-076 RECRA LOT #: 9907L501

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99C0220-LC1	Mercury, LCS	1.0	1.0	MG/KG	103.5
LCS1	99L0503-LC1	Lead, LCS	244	250	MG/KG	97.4

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-076

DATE RECEIVED: 07/23/99 RFW LOT # :9907L501

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W0Y1						
MERCURY, TOTAL	001	SO	99C0220	07/20/99	07/28/99	08/02/99
MERCURY, TOTAL	001 REP	SO	99C0220	07/20/99	07/28/99	08/02/99
MERCURY, TOTAL	001 MS	SO	99C0220	07/20/99	07/28/99	08/02/99
LEAD, TOTAL	001	SO	99L0503	07/20/99	07/27/99	07/28/99
LEAD, TOTAL	001 REP	SO	99L0503	07/20/99	07/27/99	07/28/99
LEAD, TOTAL	001 MS	SO	99L0503	07/20/99	07/27/99	07/28/99
B0W0Y2						
MERCURY, TOTAL	002	SO	99C0220	07/20/99	07/28/99	08/02/99
LEAD, TOTAL	002	SO	99L0503	07/20/99	07/27/99	07/28/99
B0W0Y3						
MERCURY, TOTAL	003	SO	99C0220	07/20/99	07/28/99	08/02/99
LEAD, TOTAL	003	SO	99L0503	07/20/99	07/27/99	07/28/99

LAB QC:

MERCURY LABORATORY	LC1 BS	S	99C0220	N/A	07/28/99	08/02/99
MERCURY, TOTAL	MB1	S	99C0220	N/A	07/28/99	08/02/99
LEAD LABORATORY	LC1 BS	S	99L0503	N/A	07/27/99	07/28/99
LEAD, TOTAL	MB1	S	99L0503	N/A	07/27/99	07/28/99

RECRA LabNet Use Only

9907LS01

ALL (8) metals, Schnell

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client TNU-HANFORD B99-076
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 7/23/99 Date Due 8/8/99
Account # TNUHANFORD 7/23/99

Refrigerator #				5					5						
#/Type Container	Liquid														
	Solid			1AG					1AG						
Volume	Liquid														
	Solid			60ml					60ml						
Preservatives				—					—						
ANALYSES REQUESTED →			ORGANIC						INORG						
			VOA	BNA	Pest/PCB	Herb			Metal	CN					
RECRA LabNet Use Only															
					ORCB				MPBSD HMGS						

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	ORCB	MPBSD	HMGS
001	BØW0Y1			SO	7/20/99	0855	✓	✓	
002	BØW0Y2			|	|	0905	✓	✓	
003	BØW0Y3			|	|	0920	✓	✓	
004	BØW0X9				7/19/99	1015	✓	✓	
005	BØW0Y0 BCM 7/28/99				7/19/99	1015	✓	✓	

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Saf # B99-076

COMPOSITE WASTE

DATE/REVISIONS:
1. Run Matrix QC
7/28/99 2. 001-003 taken off hold mo
3. 004+005 cancelled per SDR
4. 99PM204
5.
6. * 4476545824 @ 5.8°c

RECRA LabNet Use Only

Samples were:
1) Shipped X 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

Discrepancies Between Samples Lables and COC Record? Y or (N)
NOTES:

Relinquished by	Received by	Date	Time
FedEx	[signature]	7/23/99	0930

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

011

Page 1 of 1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-076-01	Page 1 of 1

Collector Fahlberg/Porter	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ
Project Designation 105-DR FSB - Concrete	Sampling Location 105-DR		SAF No. B99-076
Ice Chest No. SML 534	Field Logbook No. EL 1281		Method of Shipment Fed Ex
Shipped To ~~TMA~~/RECRA RS 7.20.99	Offsite Property No.		Bill of Lading/Air Bill No.

Price Code 9K

Data Turnaround 15 Days

COA R105D42870

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	None	None
	Type of Container	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1
	Volume	60mL	60mL	120mL
SAMPLE ANALYSIS		PCBs - 8080	ICP Metals - 6010A (Add-on) {Lead}; Mercury - 7471 - (CV)	See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B0W0Y1	Other Solid	7.20.99	0855	X	X						tie to	B0W0Y6
B0W0Y2	Other Solid	7.20.99	0905	X	X							B0W0Y7
B0W0Y3	Other Solid	7.20.99	0920	X	X							B0W0Y8

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: R. Fahlberg / R. Fahlberg 7.20.99 Date/Time 1500	Received By: Raf 1-C 7.20.99 Date/Time 1500	
Relinquished By: Raf 2-C 7.22.99 0800 Date/Time 0800	Received By: R. Fahlberg / R. Fahlberg 7-22-99 Date/Time 0800	
Relinquished By: R. Fahlberg / R. Fahlberg 7.22.99 Date/Time 1330	Received By: Fed Ex Date/Time	
Relinquished By: Date/Time	Received By: Date/Time	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr; Technetium-99; Nickel-63; Carbon-14; Tritium - H3

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By:	Title	Date/Time 7/23/99 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

0012

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-076-01	Page 1 of 1

Collector: Fahlberg/Porter	Company Contact: J Adler — Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 9K — Data Turnaround: 15 Days
Project Designation: 105-DR FSB - Concrete	Sampling Location: 105-DR	SAF No.: B99-076	
Ice Chest No.: ERC 99-005	Field Logbook No.: EL 1281 X3PJJ	Method of Shipment: Fed Ex	
Shipped To: TMA/~~RECRA~~ RE 7-20-99	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA: R105D4 2870	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	None	None
	Type of Container	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1
	Volume	60mL	60mL	120mL
SAMPLE ANALYSIS		PCBs - 8080	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W0Y1	Other Solid	7-20-99	0855			X					tie to	B0W0Y6	
B0W0Y2	Other Solid	7-20-99	0905			X						B0W0Y7	
B0W0Y3	Other Solid	7-20-99	0920			X						B0W0Y8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg 7-20-99	Date/Time: 1500	Received By: Ref I-C 7-20-99	Date/Time: 1500
Relinquished By: R. Fahlberg / R. Fahlberg 7-22-99	Date/Time: 0800	Received By: Fed Ex	Date/Time:
Relinquished By: Ref I-C 7-22-99	Date/Time: 0800	Received By: R. Fahlberg / R. Fahlberg 7-22-99	Date/Time: 0800
Relinquished By: R. Fahlberg / R. Fahlberg 7-22-99	Date/Time: 1530	Received By: Fed Ex	Date/Time:

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr; Technetium-99; Nickel-63; Carbon-14; Tritium - H3

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: B Mullen	Title	5.8°C	Date/Time: 7/23/99 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By		Date/Time

01

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

AUG 1999
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Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-016
RFW#: 9907L501
SDG/SAF#: H0475/B99-016

W.O.#: 10985-001-001-9999-00
Date Received: 07-23-99

PCB

The set of samples consisted of three (3) solid samples collected on 07-20-99.

The samples and their associated QC samples were extracted on 07-27-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 07-29,30-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature has been recorded on the chain-of-custody.

2. All required holding times for extraction and analysis have been met.

3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.

4. The method blank was below the reporting limits for all target compounds.

5. All obtainable surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

8. All samples required instrument dilutions due to high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

9. All initial calibrations associated with this data set were within acceptance criteria.

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 11 pages.

10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria. The CCV run after the samples was increased for Aroclor 1260 on the RTX-5 column only. All results were reported from the RTX-35 column. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

08-12-99
Date

pefr:\group\data\pest\07L-501.pcb

Recra LabNet Philadelphia

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99GC130

Initiator: B Pastor RFW Batch: 99074501 Parameter: OPCB
Date: 8/5/99 Samples: All Matrix: Soil
Client: TNU Hanford Method: SW846/MCAWW/CLP/ Prep Batch: 99LE0873

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

The final CCV was increased 22% on the confirmation column only. The CCV before the samples was acceptable. The samples contained AR1254. All results were reported from the primary & within criteria column.

2. Known or Probable Causes(s) Sample matrix - this is the second time the samples were analyzed with similar results.

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: Cheryl G. Johnson 8/9/99

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
✓ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [illegible] 8/10/99 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: M. Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Carey/Schrenkel/Johnson	__	__ GC/LC: Schnell
__	X Section Mgr: Wesson/Daniels	__	__ MS: LeMin/Taylor
__	X QA (file): Racioppi	__	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-03/99

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99 DMG

Initiator: Orlette Johnson RFW Batch: 9907L501 Parameter: PCB/metals
Date: 7/28/99 Samples: Matrix: Solid
Client: Northrop Method: SW846/MCAWW/CLP/ Prep Batch:
B99-076

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
✓ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: Orlette J. Johnson 7/28/99

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
✓ Cancel -004 and -005 per client request

5. Final Action...signature/date: Bruce G. Kelly 7/28/99 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
✓ Hard Copy COC Revised
✓ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Carey/Schrenkel/Johnson	__	__ GC/LC: Schnell
__	X Section Mgr: Wesson/Daniels	__	__ MS: LeMin/Taylor
3	X QA (file): Racioppi	1	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 08/05/99 12:06

RFW Batch Number: **9907L501** Client: **TNU-HANFORD B99-076** Work Order: 10985001001 Page: 1

	Cust ID:	B0W0Y1	B0W0Y1	B0W0Y1	B0W0Y2	B0W0Y3	PBLKPG
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	99LE0873-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOIL
	D.F.:	2.00	2.00	2.00	10.0	10.0	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		68 %	72 %	82 %	D %	D %	78 %
Decachlorobiphenyl		47 %	48 %	55 %	D %	D %	72 %
Aroclor-1016		84 U	250 U	250 U	410 U	410 U	33 U
Aroclor-1221		170 U	510 U	510 U	820 U	820 U	67 U
Aroclor-1232		84 U	250 U	250 U	410 U	410 U	33 U
Aroclor-1242		84 U	250 U	250 U	410 U	410 U	33 U
Aroclor-1248		84 U	250 U	250 U	410 U	410 U	33 U
Aroclor-1254		250	90 %	87 %	1100	740	33 U
Aroclor-1260		84 U	250 U	250 U	410 U	410 U	33 U

	Cust ID:	PBLKPG BS
Sample Information	RFW#:	99LE0873-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate: Tetrachloro-m-xylene		85 %
Decachlorobiphenyl		78 %
Aroclor-1016		33 U
Aroclor-1221		67 U
Aroclor-1232		33 U
Aroclor-1242		33 U
Aroclor-1248		33 U
Aroclor-1254		88 %
Aroclor-1260		33 U

gw 08-10-99

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-076

DATE RECEIVED: 07/23/99 RFW LOT # :9907L501

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W0Y1	001	SO	99LE0873	07/20/99	07/27/99	07/30/99
B0W0Y1	001 MS	SO	99LE0873	07/20/99	07/27/99	07/30/99
B0W0Y1	001 MSD	SO	99LE0873	07/20/99	07/27/99	07/30/99
B0W0Y2	002	SO	99LE0873	07/20/99	07/27/99	07/30/99
B0W0Y3	003	SO	99LE0873	07/20/99	07/27/99	07/30/99

LAB QC:

PBLKPG	MB1	S	99LE0873	N/A	07/27/99	07/29/99
PBLKPG	MB1 BS	S	99LE0873	N/A	07/27/99	07/29/99

RECRA LabNet Use Only
9907LS01

ALL (8) metals, Schnell

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client TNU-HANFORD B99-076
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 7/23/99 Date Due 8/8/99
Account # TNUHANFORD 7/23/99

Refrigerator #				5					5							
#/Type Container	Liquid															
	Solid			1A6					1A6							
Volume	Liquid															
	Solid			60ml					60ml							
Preservatives				—					—							
ANALYSES REQUESTED →			ORGANIC						INORG							
			VOA	BNA	Pest/PCB	Herb			Metal	CN						
									RECRA LabNet Use Only							
					ORCB				MPBTD Hwgrs							

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	ORCB	MPBTD Hwgrs
001	BØW0Y1			SO	7/20/99	0855	✓	✓
002	BØW0Y2			|	|	0905	✓	✓
003	BØW0Y3			|	|	0920	✓	✓
004	BØW0X9			|	7/19/99	1015	✓	✓
005	BØW0Y0 BCM 7/28/99			|	7/19/99	1015	✓	✓

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Soy # B99-076

COMPOSITE WASTE

DATE/REVISIONS:
1. Run Matrix QC
7/28/99 2. 001-003 taken off hold mo
3. 004+005 cancelled per SDR
4. 99PM204
5.
6. * 4476545824 @ 5.8°c

RECRA LabNet Use Only

Samples were:
1) Shipped X 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

Discrepancies Between Samples Lables and COC Record? Y or N
NOTES:

Relinquished by	Received by	Date	Time
FedEx	[signature]	7/23/99	0930

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

Page 1 of 1

009

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-076-01	Page 1 of 1

Collector Fahlberg/Porter	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ
Price Code 9K	Data Turnaround 15 Days		
Project Designation 105-DR FSB - Concrete	Sampling Location 105-DR		SAF No. B99-076
Ice Chest No. SML 534	Field Logbook No. EL 1281		Method of Shipment Fed Ex
Shipped To ~~FMA~~/RECRA RS 7.20.99	Offsite Property No.		Bill of Lading/Air Bill No.
			COA R105 D4 2870

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None	None								
	Type of Container	aG	aG	aG								
Special Handling and/or Storage	No. of Container(s)	1	1	1								
	Volume	60mL	60mL	120mL								
SAMPLE ANALYSIS		PCBs - 8080	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions								
Sample No.	Matrix *	Sample Date	Sample Time									
B0W0Y1	Other Solid	7.20-99	0855	X	X						tiato	B0W0Y6
B0W0Y2	Other Solid	7.20.99	0905	X	X							B0W0Y7
B0W0Y3	Other Solid	7.20.99	0920	X	X							B0W0Y8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By R. Fahlberg / R. Fahlberg 7-20-99	Date/Time 1500	Received By Ref 1-C	Date/Time 1500 7.20.99
Relinquished By Ref 2-C 7.22.99 0800	Date/Time 0800	Received By R. Fahlberg / R. Fahlberg 7-22-99	Date/Time 0800
Relinquished By R. Fahlberg / R. Fahlberg 7.22.99	Date/Time 1330	Received By Fed Ex	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr; Technetium-99; Nickel-63; Carbon-14; Tritium - H3

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By B Miller	Title	Date/Time 7/23/99 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-076-01	Page 1 of 1

Collector Fahlberg/Porter	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ
Project Designation 105-DR FSB - Concrete	Sampling Location 105-DR		SAF No. B99-076
Ice Chest No. ERC 99.005	Field Logbook No. EL 1281 X3P11		Method of Shipment Fed Ex
Shipped To TMA/~~RECRA~~ RS 7.20.99	Offsite Property No.		Bill of Lading/Air Bill No.
			COA R105D4 2870

Price Code 9K

Data Turnaround 15 Days

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	None	None
	Type of Container	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1
	Volume	60mL	60mL	120mL
SAMPLE ANALYSIS		PCBs - 8080	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W0Y1	Other Solid	7.20.99	0855			X					tie to	B0W0Y6	
B0W0Y2	Other Solid	7.20.99	0905			X						B0W0Y7	
B0W0Y3	Other Solid	7.20.99	0920			X						B0W0Y8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 1500	Received By	Date/Time 1500
R. Fahlberg / R. Fahlberg	7.20.99	Ref 1-C	7.20.99
Relinquished By	Date/Time 0800	Received By	Date/Time
R. Fahlberg / R. Fahlberg	7.22.99	Fed Ex	
Relinquished By	Date/Time	Received By	Date/Time 0800
Ref 1-C	7.22.99 0800	R. Fahlberg / R. Fahlberg	7.22.99
Relinquished By	Date/Time 1530	Received By	Date/Time
R. Fahlberg / R. Fahlberg	7.22.99	Fed Ex	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr; Technetium-99; Nickel-63; Carbon-14; Tritium - H3

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
	B Miller	6.8°C	7/23/99 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

H0475 - TMN/RCW

Thermo Nutech
W.O. No. N9-07-145-7166

Bechtel Hanford Inc.
SDG H0475

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0475 is composed of two solid samples designated under SAF No. B99-076 with a Project Designation of : 105-DR FSB-Concrete.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. The results were transmitted to BHI via facsimile on August 19, 1999.

2.0 ANALYSIS NOTES

2.1 Gamma Scan Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

The RPD in the duplicate result and the original was 28%, greater than the 3 sigma total limit of 22%. The blank sample indicated slight cross contamination from the high activity of the samples.

2.3 Americium-241 Analyses

No problems were encountered during the course of the analyses although all client samples, the duplicate and the LCS sample were recounted.

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses although all client samples and the duplicate were recounted.

2.5 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses, although sample BOWOX9 was recounted.

2.7 Carbon-14 Analyses

The RPD in the duplicate result and the original was 23%, slightly greater than the 3 sigma total limit of 22%.

2.8 Tritium Analyses

No problems were encountered during the course of the analyses.

2.9 Technetium-99 Analyses

SEP 1999
RECEIVED
Data
Log In

The RPD in the duplicate result and the original was 59%, slightly greater than the 3sigma total limit of 58%.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

SAMPLE SUMMARY

SDG 7166
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0475

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0W0X9	105-DR	SOLID		N907145-01	B99-076	B99-076-01	07/19/99 10:15
B0W0Y0	105-DR	SOLID		N907145-02	B99-076	B99-076-01	07/19/99 10:45
Method Blank		SOLID		N907145-04	B99-076		
Method Blank		SOLID		N907145-07	B99-076		
Lab Control Sample		SOLID		N907145-03	B99-076		
Lab Control Sample		SOLID		N907145-06	B99-076		
Duplicate (N907145-01)	105-DR	SOLID		N907145-05	B99-076		07/19/99 10:15
Duplicate (N907145-01)	105-DR	SOLID		N907145-08	B99-076		07/19/99 10:15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

QC SUMMARY

SDG 7166
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0475

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
7166	B99-076-01	B0W0X9	SOLID	100.0			07/23/99	4	N907145-01	7166-001
		B0W0Y0	SOLID	100.0			07/23/99	4	N907145-02	7166-002
		Method Blank	SOLID						N907145-04	7166-004
		Method Blank	SOLID						N907145-07	7166-007
		Lab Control Sample	SOLID						N907145-03	7166-003
		Lab Control Sample	SOLID						N907145-06	7166-006
		Duplicate (N907145-01)	SOLID				07/23/99	4	N907145-05	7166-005
		Duplicate (N907145-01)	SOLID				07/23/99	4	N907145-08	7166-008

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

SDG 7166
Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0475

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	6893-036	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6893-036	5.0	2			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6893-036	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6893-036	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6893-036	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6893-036	15.0	2			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	6893-036	10.0	2			1	1	1/1		
H	SOLID	Tritium in Soil	6893-036	10.0	2			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6893-036	10.0	2			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

WORK SUMMARY

SDG 7166
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0475

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W0X9			N907145-01	7166-001	AM		08/06/99	08/19/99	NJV	Americium 241 in Soil
105-DR		SOLID	07/19/99	7166-001	C	A1	08/16/99	08/19/99	NJV	Carbon 14 in Soil
B99-076-01	B99-076		07/23/99	7166-001	GAM		08/06/99	08/19/99	NJV	Gamma Scan
				7166-001	H		08/05/99	08/19/99	NJV	Tritium in Soil
				7166-001	NI_L		08/02/99	08/19/99	NJV	Nickel 63 in Soil
				7166-001	PU		08/09/99	08/19/99	NJV	Plutonium, Isotopic in Solids
				7166-001	SR		08/03/99	08/19/99	NJV	Total Strontium in Soil
				7166-001	TC		08/13/99	08/19/99	NJV	Technetium 99 in Soil
				7166-001	U		08/04/99	08/19/99	NJV	Uranium, Isotopic in Soil
B0W0Y0			N907145-02	7166-002	AM		08/10/99	08/19/99	NJV	Americium 241 in Soil
105-DR		SOLID	07/19/99	7166-002	C	A1	08/16/99	08/19/99	NJV	Carbon 14 in Soil
B99-076-01	B99-076		07/23/99	7166-002	GAM		08/06/99	08/19/99	NJV	Gamma Scan
				7166-002	H		08/05/99	08/19/99	NJV	Tritium in Soil
				7166-002	NI_L		08/02/99	08/19/99	NJV	Nickel 63 in Soil
				7166-002	PU		08/11/99	08/19/99	NJV	Plutonium, Isotopic in Solids
				7166-002	SR		08/03/99	08/19/99	NJV	Total Strontium in Soil
				7166-002	TC		08/13/99	08/19/99	NJV	Technetium 99 in Soil
				7166-002	U		08/03/99	08/19/99	NJV	Uranium, Isotopic in Soil
Method Blank			N907145-04	7166-004	AM		08/07/99	08/19/99	NJV	Americium 241 in Soil
		SOLID		7166-004	GAM		08/06/99	08/19/99	NJV	Gamma Scan
	B99-076			7166-004	H		08/05/99	08/19/99	NJV	Tritium in Soil
				7166-004	NI_L		08/02/99	08/19/99	NJV	Nickel 63 in Soil
				7166-004	PU		08/04/99	08/19/99	NJV	Plutonium, Isotopic in Solids
				7166-004	SR		08/03/99	08/19/99	NJV	Total Strontium in Soil
				7166-004	TC		08/16/99	08/19/99	NJV	Technetium 99 in Soil
				7166-004	U		08/03/99	08/19/99	NJV	Uranium, Isotopic in Soil
Method Blank			N907145-07	7166-007	C		08/16/99	08/19/99	NJV	Carbon 14 in Soil
		SOLID								
	B99-076									

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

SDG 7166
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0475

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			N907145-03	7166-003	AM		08/12/99	08/19/99	NJV	Americium 241 in Soil
		SOLID		7166-003	GAM		08/06/99	08/19/99	NJV	Gamma Scan
	B99-076			7166-003	H		08/05/99	08/19/99	NJV	Tritium in Soil
				7166-003	NI_L		08/02/99	08/19/99	NJV	Nickel 63 in Soil
				7166-003	PU		08/04/99	08/19/99	NJV	Plutonium, Isotopic in Solids
				7166-003	SR		08/03/99	08/19/99	NJV	Total Strontium in Soil
				7166-003	TC		08/13/99	08/19/99	NJV	Technetium 99 in Soil
				7166-003	U		08/03/99	08/19/99	NJV	Uranium, Isotopic in Soil
Lab Control Sample			N907145-06	7166-006	C		08/16/99	08/19/99	NJV	Carbon 14 in Soil
		SOLID								
	B99-076									
Duplicate (N907145-01)			N907145-05	7166-005	AM		08/12/99	08/19/99	NJV	Americium 241 in Soil
105-DR		SOLID	07/19/99	7166-005	GAM		08/07/99	08/19/99	NJV	Gamma Scan
	B99-076		07/23/99	7166-005	H		08/05/99	08/19/99	NJV	Tritium in Soil
				7166-005	NI_L		08/02/99	08/19/99	NJV	Nickel 63 in Soil
				7166-005	PU		08/09/99	08/19/99	NJV	Plutonium, Isotopic in Solids
				7166-005	SR		08/03/99	08/19/99	NJV	Total Strontium in Soil
				7166-005	TC		08/16/99	08/19/99	NJV	Technetium 99 in Soil
				7166-005	U		08/03/99	08/19/99	NJV	Uranium, Isotopic in Soil
Duplicate (N907145-01)			N907145-08	7166-008	C		08/16/99	08/19/99	NJV	Carbon 14 in Soil
105-DR		SOLID	07/19/99							
	B99-076		07/23/99							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

SDG 7166
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0475

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-076	Americium 241 in Soil	AM/CMPLATE	2			1	1	1	5
C	B99-076	Carbon 14 in Soil	C14COXLSC	2			1	1	1	5
GAM	B99-076	Gamma Scan	GAMMAHI	2			1	1	1	5
H	B99-076	Tritium in Soil	EPA906.0	2			1	1	1	5
NI_L	B99-076	Nickel 63 in Soil	NI63LSC	2			1	1	1	5
PU	B99-076	Plutonium, Isotopic in Solids	PUPLATE	2			1	1	1	5
SR	B99-076	Total Strontium in Soil		2			1	1	1	5
TC	B99-076	Technetium 99 in Soil	TC99TRLSC	2			1	1	1	5
U	B99-076	Uranium, Isotopic in Soil	UPLATE	2			1	1	1	5
TOTALS				18			9	9	9	45

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

N907145-04 Method Blank

METHOD BLANK

SDG	7166	Client/Case no	Hanford SDG-H0475
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N907145-04	Client sample id	Method Blank
Dept sample id	7166-004	Material/Matrix	SOLID
		SAF No	B99-076

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.006	0.051	0.086	400	U	H
Technetium 99	14133-76-7	0.497	0.31	0.70	15	U	TC
Uranium 233/234	U-233/234	0.010	0.019	0.073	1.0	U	U
Uranium 235	15117-96-1	0	0.023	0.088	1.0	U	U
Uranium 238	U-238	0.010	0.019	0.073	1.0	U	U
Plutonium 238	13981-16-3	0	0.031	0.064	1.0	U	PU
Plutonium 239/240	PU-239/240	0.089	0.053	0.058	1.0	J	PU
Nickel 63	13981-37-8	-3.38	2.1	4.1	30	U	NI_L
Americium 241	14596-10-2	0.008	0.016	0.030	1.0	U	AM
Total Strontium	SR-RAD	0.248	0.14	0.18	1.0	J	SR
Potassium 40	13966-00-2	U		0.95		U	GAM
Cobalt 60	10198-40-0	U		0.061	0.050	U	GAM
Cesium 137	10045-97-3	U		0.059	0.10	U	GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Radium 226	13982-63-3	U		0.11	0.10	U	GAM
Radium 228	15262-20-1	U		0.38	0.20	U	GAM
Thorium 228	14274-82-9	U		0.081		U	GAM
Thorium 232	TH-232	U		0.38		U	GAM
Americium 241	14596-10-2	U		0.17		U	GAM
Uranium 238	U-238	U		6.6		U	GAM
Uranium 235	15117-96-1	U		0.18		U	GAM

105-DR FSB-Concrete

QC-BLANK 31424

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

N907145-07 Method Blank

METHOD BLANK

SDG	7166	Client/Case no	Hanford SDG-H0475
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N907145-07	Client sample id	Method Blank
Dept sample id	7166-007	Material/Matrix	SOLID
		SAF No	B99-076

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	1.95	2.7	4.5	50	U	C

105-DR FSB-Concrete

QC-BLANK 31578

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

N907145-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7166

Contact L.A. Johnson

Client/Case no Hanford SDG-H0475

Case no TRB-SBB-207925

Lab sample id N907145-03

Dept sample id 7166-003

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-076

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
Tritium	4.58	0.15	0.086	400	J	H	4.93	0.20	93	84-116	80-120
Technetium 99	67.0	2.1	0.66	15		TC	68.4	2.7	98	84-116	80-120
Uranium 233/234	3.76	0.45	0.23	1.0		U	4.64	0.19	81	83-117	80-120
Uranium 235	3.12	0.40	0.065	1.0		U	3.77	0.15	83	82-118	80-120
Uranium 238	4.17	0.48	0.22	1.0		U	5.04	0.20	83	83-117	80-120
Plutonium 238	9.73	0.89	0.054	1.0		PU	10.0	0.40	97	84-116	80-120
Plutonium 239/240	10.2	0.92	0.054	1.0	B	PU	10.6	0.42	96	84-116	80-120
Nickel 63	128	4.3	2.8	30		NI_L	134	5.4	96	84-116	
Americium 241	18.8	1.3	0.034	1.0		AM	19.2	0.77	98	86-114	80-120
Total Strontium	13.2	1.1	0.89	1.0		SR	11.4	0.46	116	77-123	
Cobalt 60	3.95	0.21	0.099	0.050		GAM	4.10	0.16	96	76-124	80-120
Cesium 137	3.70	0.17	0.12	0.10		GAM	3.72	0.15	99	76-124	80-120

105-DR FSB-Concrete

QC-LCS 31423

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

N907145-06 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7166 Client/Case no Hanford SDG-H0475
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N907145-06 Client sample id Lab Control Sample
Dept sample id 7166-006 Material/Matrix SOLID
SAF No B99-076

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
Carbon 14	10400	100	13	50		C	10800	430	96	84-116	

105-DR FSB-Concrete

QC-LCS 31577

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

N907145-05

B0W0X9

DUPLICATE

SDG	7166	Client/Case no	Hanford SDG-H0475
Contact	L.A. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N907145-05	Lab sample id	N907145-01
Dept sample id	7166-005	Dept sample id	7166-001
		Received	07/23/99
		% solids	100.0
		Client sample id	B0W0X9
		Location/Matrix	105-DR SOLID
		Collected	07/19/99 10:15
		Custody/SAF No	B99-076-01 B99-076

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 TOT	PROT LIMIT
Tritium	7.52	0.19	0.085	400	J	H	6.23	0.17	0.087	J	19	22	
Technetium 99	2.51	0.48	0.84	15	J	TC	1.37	0.51	0.88	J	59	58	
Uranium 233/234	3.33	0.41	0.093	1.0		U	3.10	0.33	0.080		7	27	
Uranium 235	0.282	0.11	0.070	1.0	J	U	0.321	0.091	0.048	J	13	72	
Uranium 238	2.90	0.38	0.083	1.0		U	3.19	0.34	0.075		10	27	
Plutonium 238	5.32	0.44	0.029	1.0		PU	5.77	0.50	0.031		8	21	
Plutonium 239/240	358	23	0.029	1.0	B	PU	358	24	0.050	B	0	18	
Nickel 63	5330	53	5.4	30		NI_L	5360	54	5.3		1	21	
Americium 241	49.8	4.0	0.050	1.0		AM	54.7	11	0.34		9	35	
Total Strontium	5970	150	8.8	1.0		SR	4500	9.0	0.27		28	22	
Potassium 40	U		7.2		U	GAM	U		7.3	U	-		
Cobalt 60	323	2.5	1.0	0.050		GAM	323	2.5	1.1		0	32	
Cesium 137	5070	7.0	2.5	0.10		GAM	5070	7.0	2.5		0	32	
Europium 152	801	7.0	7.7	0.10		GAM	806	6.4	7.1		1	32	
Europium 154	108	4.2	3.7	0.10		GAM	105	3.9	3.4		3	33	
Europium 155	5.03	2.2	3.5	0.10		GAM	4.38	2.9	4.0		14	120	
Radium 226	U		3.2	0.10	U	GAM	U		3.2	U	-		
Radium 228	U		7.3	0.20	U	GAM	U		7.2	U	-		
Thorium 228	U		2.4		U	GAM	U		2.8	U	-		
Thorium 232	U		7.3		U	GAM	U		7.2	U	-		
Americium 241	60.2	1.8	2.4			GAM	60.0	1.6	2.2		0	32	
Uranium 238	U		260		U	GAM	U		250	U	-		
Uranium 235	U		5.9		U	GAM	U		5.8	U	-		

105-DR FSB-Concrete

QC-DUP#1 31425

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

N907145-08

B0W0X9

DUPLICATE

SDG	7166			Client/Case no	Hanford SDG-H0475
Contact	L.A. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N907145-08	Lab sample id	N907145-01	Client sample id	B0W0X9
Dept sample id	7166-008	Dept sample id	7166-001	Location/Matrix	105-DR SOLID
		Received	07/23/99	Collected	07/19/99 10:15
		% solids	100.0	Custody/SAF No	B99-076-01 B99-076

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 TOT	PROT LIMIT
Carbon 14	678	9.8	4.5	50		C	540	8.6	4.4		23	22	

105-DR FSB-Concrete

QC-DUP#1 31579

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

N907145-01 B0W0X9

DATA SHEET

SDG	7166	Client/Case no	Hanford SDG-H0475
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N907145-01	Client sample id	B0W0X9
Dept sample id	7166-001	Location/Matrix	105-DR SOLID
Received	07/23/99	Collected	07/19/99 10:15
% solids	100.0	Custody/SAF No	B99-076-01 B99-076

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	6.23	0.17	0.087	400	J	H
Carbon 14	14762-75-5	540	8.6	4.4	50		C
Technetium 99	14133-76-7	1.37	0.51	0.88	15	J	TC
Uranium 233/234	U-233/234	3.10	0.33	0.080	1.0		U
Uranium 235	15117-96-1	0.321	0.091	0.048	1.0	J	U
Uranium 238	U-238	3.19	0.34	0.075	1.0		U
Plutonium 238	13981-16-3	5.77	0.50	0.031	1.0		PU
Plutonium 239/240	PU-239/240	358	24	0.050	1.0	B	PU
Nickel 63	13981-37-8	5360	54	5.3	30		NI_L
Americium 241	14596-10-2	54.7	11	0.34	1.0		AM
Total Strontium	SR-RAD	4500	9.0	0.27	1.0		SR
Potassium 40	13966-00-2	U		7.3		U	GAM
Cobalt 60	10198-40-0	323	2.5	1.1	0.050		GAM
Cesium 137	10045-97-3	5070	7.0	2.5	0.10		GAM
Europium 152	14683-23-9	806	6.4	7.1	0.10		GAM
Europium 154	15585-10-1	105	3.9	3.4	0.10		GAM
Europium 155	14391-16-3	4.38	2.9	4.0	0.10		GAM
Radium 226	13982-63-3	U		3.2	0.10	U	GAM
Radium 228	15262-20-1	U		7.2	0.20	U	GAM
Thorium 228	14274-82-9	U		2.8		U	GAM
Thorium 232	TH-232	U		7.2		U	GAM
Americium 241	14596-10-2	60.0	1.6	2.2			GAM
Uranium 238	U-238	U		250		U	GAM
Uranium 235	15117-96-1	U		5.8		U	GAM

105-DR FSB-Concrete

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

N907145-02 B0W0Y0

DATA SHEET

SDG	7166	Client/Case no	Hanford	SDG-H0475	
Contact	L.A. Johnson	Case no	TRB-SBB-207925		
Lab sample id	N907145-02	Client sample id	B0W0Y0		
Dept sample id	7166-002	Location/Matrix	105-DR	SOLID	
Received	07/23/99	Collected	07/19/99 10:45		
% solids	100.0	Custody/SAF No	B99-076-01	B99-076	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	8.09	0.19	0.085	400	J	H
Carbon 14	14762-75-5	961	12	5.0	50		C
Technetium 99	14133-76-7	0.438	0.35	0.66	15	U	TC
Uranium 233/234	U-233/234	1.37	0.22	0.054	1.0		U
Uranium 235	15117-96-1	0.059	0.051	0.065	1.0	U	U
Uranium 238	U-238	1.21	0.20	0.054	1.0		U
Plutonium 238	13981-16-3	6.63	0.52	0.063	1.0		PU
Plutonium 239/240	PU-239/240	240	15	0.027	1.0	B	PU
Nickel 63	13981-37-8	11900	120	8.1	30		NI_L
Americium 241	14596-10-2	72.0	14	0.30	1.0		AM
Total Strontium	SR-RAD	1980	4.7	0.17	1.0	B	SR
Potassium 40	13966-00-2	U		11		U	GAM
Cobalt 60	10198-40-0	596	3.3	1.8	0.050		GAM
Cesium 137	10045-97-3	5140	7.0	2.6	0.10		GAM
Europium 152	14683-23-9	2810	10	9.7	0.10		GAM
Europium 154	15585-10-1	518	7.1	6.2	0.10		GAM
Europium 155	14391-16-3	21.5	4.3	6.3	0.10		GAM
Radium 226	13982-63-3	U		4.7	0.10	U	GAM
Radium 228	15262-20-1	U		9.9	0.20	U	GAM
Thorium 228	14274-82-9	U		3.3		U	GAM
Thorium 232	TH-232	U		9.9		U	GAM
Americium 241	14596-10-2	119	5.5	7.5			GAM
Uranium 238	U-238	U		340		U	GAM
Uranium 235	15117-96-1	U		7.0		U	GAM

105-DR FSB-Concrete

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

Test AM Matrix SOLID
SDG 7166
Contact L.A. Johnson

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0475

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 6893-036					
B0W0X9	N907145-01			7166-001	54.7
B0W0Y0	N907145-02			7166-002	72.0
BLK (QC ID=31424)	N907145-04			7166-004	U
LCS (QC ID=31423)	N907145-03			7166-003	ok
Duplicate (N907145-01)	N907145-05			7166-005	ok
Nominal values and limits from method 105-DR FSB-Concrete				RDLs (pCi/g)	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-036	2σ prep error 5.0 %				Reference Lab Notebook 6893 pg.036											
B0W0X9	N907145-01			0.34	0.500			81		864			18	08/06/99	08/06	SS-038
B0W0Y0	N907145-02			0.30	0.500			89		699			22	08/06/99	08/10	SS-047
BLK (QC ID=31424)	N907145-04			0.030	0.500			82		766				08/06/99	08/07	SS-001
LCS (QC ID=31423)	N907145-03			0.034	0.500			86		884				08/06/99	08/12	SS-052
Duplicate (N907145-01) (QC ID=31425)	N907145-05			0.050	0.500			67		884			24	08/06/99	08/12	SS-053
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

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 FOR 5 SAMPLES
MDA 0.15 ± 0.31
YIELD 81 ± 17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

Test	PU
Matrix	SOLID
SDG	7166
Contact	L.A. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0475

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6893-036						
B0W0X9	N907145-01			7166-001	5.77	358
B0W0Y0	N907145-02			7166-002	6.63	240
BLK (QC ID=31424)	N907145-04			7166-004	U	0.089 J
LCS (QC ID=31423)	N907145-03			7166-003	ok	ok
Duplicate (N907145-01)	N907145-05			7166-005	ok	ok
Nominal values and limits from method 105-DR FSB-Concrete				RDLs (pCi/g)	1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-036 2σ prep error 5.0 % Reference Lab Notebook 6893 pg.036																
B0W0X9	N907145-01			0.050	0.500			77		1078			21	08/04/99	08/09	SS-052
B0W0Y0	N907145-02			0.063	0.500			98		668			23	08/04/99	08/11	SS-032
BLK (QC ID=31424)	N907145-04			0.064	0.500			74		620				08/04/99	08/04	SS-009
LCS (QC ID=31423)	N907145-03			0.054	0.500			75		520				08/04/99	08/04	SS-055
Duplicate (N907145-01) (QC ID=31425)	N907145-05			0.029	0.500			96		1084			21	08/04/99	08/09	SS-053
Nominal values and limits from method				1.0	0.500			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	0.052	± 0.028
FOR 5 SAMPLES	YIELD	84	± 24

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

Test U	Matrix SOLID
SDG 7166	
Contact L.A. Johnson	

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0475	

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 6893-036											
B0W0X9	N907145-01			7166-001	3.10	0.321 J	3.19	97	15	10	3
B0W0Y0	N907145-02			7166-002	1.37	U	1.21	113	26	5	4
BLK (QC ID=31424)	N907145-04			7166-004	U	U	U				
LCS (QC ID=31423)	N907145-03			7166-003	LOW	ok	ok				
Duplicate (N907145-01)	N907145-05			7166-005	ok	ok J	ok	115	21	10	4
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
105-DR FSB-Concrete								Averages 108		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 6893-036 2σ prep error 5.0 % Reference Lab Notebook 6893 pg.036																
B0W0X9	N907145-01			0.080	1.00			102		217			16	08/03/99	08/04	SS-031
B0W0Y0	N907145-02			0.065	1.00			102		160			15	08/03/99	08/03	SS-032
BLK (QC ID=31424)	N907145-04			0.088	1.00			75		160				08/03/99	08/03	SS-034
LCS (QC ID=31423)	N907145-03			0.23	1.00			104		160				08/03/99	08/03	SS-033
Duplicate (N907145-01) (QC ID=31425)	N907145-05			0.093	1.00			99		160			15	08/03/99	08/03	SS-035
Nominal values and limits from method				1.0	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	0.11	± 0.13
FOR 5 SAMPLES	YIELD	96	± 24

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

Test SR	Matrix SOLID
SDG 7166	
Contact L.A. Johnson	

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0475	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6893-036					
B0W0X9	N907145-01			7166-001	4500
B0W0Y0	N907145-02			7166-002	1980
BLK (QC ID=31424)	N907145-04			7166-004	0.248 J
LCS (QC ID=31423)	N907145-03			7166-003	ok
Duplicate (N907145-01)	N907145-05			7166-005	OUT
Nominal values and limits from method 105-DR FSB-Concrete				RDLs (pCi/g)	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-036 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.036																
B0W0X9	N907145-01			0.27	1.00			56		400			15	08/03/99	08/03	GRB-217
B0W0Y0	N907145-02			0.17	1.00			91		400			15	08/03/99	08/03	GRB-218
BLK (QC ID=31424)	N907145-04			0.18	1.00			82		400				08/03/99	08/03	GRB-220
LCS (QC ID=31423)	N907145-03			0.89	1.00			31		200				08/03/99	08/03	GRB-220
Duplicate (N907145-01) (QC ID=31425)	N907145-05			8.8	1.00			88		400			15	08/03/99	08/03	GRB-229
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	2.1	± 7.6
FOR 5 SAMPLES	YIELD	70	± 51

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

Test	TC
Matrix	SOLID
SDG	7166
Contact	L.A. Johnson

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0475

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6893-036						
B0W0X9	N907145-01			7166-001	1.37	J
B0W0Y0	N907145-02			7166-002	U	
BLK (QC ID=31424)	N907145-04			7166-004	U	
LCS (QC ID=31423)	N907145-03			7166-003	ok	
Duplicate (N907145-01)	N907145-05			7166-005	OUT	J
Nominal values and limits from method 105-DR FSB-Concrete				RDLs (pCi/g)	15	

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 6893-036	2σ prep error 10.0 %				Reference Lab Notebook 6893 pg.036											
B0W0X9	N907145-01			0.88	1.00			40		101			25	08/10/99	08/13	GRB-217
B0W0Y0	N907145-02			0.66	1.03			51		101			25	08/10/99	08/13	GRB-218
BLK (QC ID=31424)	N907145-04			0.70	1.02			48		101				08/10/99	08/16	GRB-218
LCS (QC ID=31423)	N907145-03			0.66	1.02			52		101				08/10/99	08/13	GRB-219
Duplicate (N907145-01) (QC ID=31425)	N907145-05			0.84	1.00			42		101			28	08/10/99	08/16	GRB-219
Nominal values and limits from method				15	1.02			20-105		50			180			

PROCEDURES	REFERENCE	TC99TRLSC
	EP-060	Soil Preparation, rev 0
	EP-020	Sample Leach For Technetium-99, rev 0
	EP-540	Technetium-99 Purification, rev 0

AVERAGES ± 2 SD	MDA	0.75	±	0.21
FOR 5 SAMPLES	YIELD	47	±	11

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

Test GAM Matrix SOLID
SDG 7166
Contact L.A. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0475

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6893-036						
B0W0X9	N907145-01			7166-001	323	5070
B0W0Y0	N907145-02			7166-002	596	5140
BLK (QC ID=31424)	N907145-04			7166-004	U	U
LCS (QC ID=31423)	N907145-03			7166-003	ok	ok
Duplicate (N907145-01)	N907145-05			7166-005	ok	ok
Nominal values and limits from method 105-DR FSB-Concrete				RDLs (pCi/g)	0.050	0.10

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 6893-036	2σ prep error 15.0 % Reference Lab Notebook 6893 pg.036															
B0W0X9	N907145-01			6.2	52.4					417			18	07/27/99	08/06	PD,01,00
B0W0Y0	N907145-02			9.5	51.9					409			18	07/27/99	08/06	PD,03,00
BLK (QC ID=31424)	N907145-04			0.11	52.2					777				07/27/99	08/06	PD,03,00
LCS (QC ID=31423)	N907145-03			0.099	52.2					778				07/27/99	08/06	PD,01,00
Duplicate (N907145-01) (QC ID=31425)	N907145-05			6.1	52.4					402			19	07/27/99	08/07	PD,01,00
Nominal values and limits from method				0.050	52.2					100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 4.4 ± 8.3
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

Test C	Matrix SOLID
SDG 7166	
Contact L.A. Johnson	

METHOD SUMMARY

CARBON 14 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0475	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14
Preparation batch 6893-036					
B0W0X9	N907145-01		A1	7166-001	540
B0W0Y0	N907145-02		A1	7166-002	961
BLK (QC ID=31578)	N907145-07			7166-007	U
LCS (QC ID=31577)	N907145-06			7166-006	ok
Duplicate (N907145-01)	N907145-08			7166-008	OUT
Nominal values and limits from method 105-DR FSB-Concrete				RDLs (pCi/g)	50

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 6893-036	2σ prep error 10.0 %				Reference Lab Notebook 6893 pg.036											
B0W0X9	N907145-01		A1	4.4	0.209			100		100			28	08/14/99	08/16	LSC-007
B0W0Y0	N907145-02		A1	5.0	0.210			100		100			28	08/15/99	08/16	LSC-007
BLK (QC ID=31578)	N907145-07			4.5	0.210			100		100				08/14/99	08/16	LSC-007
LCS (QC ID=31577)	N907145-06			13	0.210			100		12				08/14/99	08/16	LSC-007
Duplicate (N907145-01) (QC ID=31579)	N907145-08			4.5	0.217			100		100			28	08/14/99	08/16	LSC-007
Nominal values and limits from method				50	0.210					25			180			

PROCEDURES	REFERENCE	C14COXLSC
	EP-060	Soil Preparation, rev 0
	EP-251	Tritium / Carbon-14 Oxidation, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES			
MDA	6.3	±	7.5
YIELD	100	±	0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

Test H	Matrix SOLID
SDG 7166	
Contact L.A. Johnson	

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0475

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6893-036						
B0W0X9	N907145-01			7166-001	6.23	J
B0W0Y0	N907145-02			7166-002	8.09	J
BLK (QC ID=31424)	N907145-04			7166-004	U	
LCS (QC ID=31423)	N907145-03			7166-003	ok	J
Duplicate (N907145-01)	N907145-05			7166-005	ok	J

Nominal values and limits from method RDLs (pCi/g) 400

105-DR FSB-Concrete

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 6893-036	2σ prep error 10.0 %				Reference Lab Notebook 6893 pg.036											
B0W0X9	N907145-01			0.087	20.0			100		120			17	08/03/99	08/05	LSC-005
B0W0Y0	N907145-02			0.085	20.4			100		120			17	08/03/99	08/05	LSC-005
BLK (QC ID=31424)	N907145-04			0.086	20.2			100		120				08/03/99	08/05	LSC-005
LCS (QC ID=31423)	N907145-03			0.086	20.2			100		120				08/03/99	08/05	LSC-005
Duplicate (N907145-01) (QC ID=31425)	N907145-05			0.085	20.1			100		120			17	08/03/99	08/05	LSC-005
Nominal values and limits from method				400	20.2					25			180			

PROCEDURES	REFERENCE	EPA906.0
	EP-060	Soil Preparation, rev 0
	EP-211	Tritium in Solid Samples by Azeotropic Distillation, rev 0

AVERAGES ± 2 SD	MDA	0.086	± 0.002
FOR 5 SAMPLES	YIELD	100	± 0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0475

Test	NI L
Matrix	SOLID
SDG	7166
Contact	L.A. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0475

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63
Preparation batch 6893-036					
B0W0X9	N907145-01			7166-001	5360
B0W0Y0	N907145-02			7166-002	11900
BLK (QC ID=31424)	N907145-04			7166-004	U
LCS (QC ID=31423)	N907145-03			7166-003	ok
Duplicate (N907145-01)	N907145-05			7166-005	ok
Nominal values and limits from method 105-DR FSB-Concrete				RDLs (pCi/g)	30

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 6893-036	2σ prep error 10.0 %				Reference Lab Notebook 6893 pg.036											
B0W0X9	N907145-01			5.3	0.500			87		16			14	07/30/99	08/02	LSC-005
B0W0Y0	N907145-02			8.1	0.500			88		7			14	07/30/99	08/02	LSC-005
BLK (QC ID=31424)	N907145-04			4.1	0.500			45		100				07/30/99	08/02	LSC-005
LCS (QC ID=31423)	N907145-03			2.8	0.500			65		100				07/30/99	08/02	LSC-005
Duplicate (N907145-01) (QC ID=31425)	N907145-05			5.4	0.500			82		17			14	07/30/99	08/02	LSC-005
Nominal values and limits from method				30	0.500					10			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	5.1	±	3.9
YIELD	73	±	37

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/19/99

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-076-01	Page 1 of 2

Collector: F ahlberg/Porter	Company Contact: J Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 9K	Data Turnaround: 15 Days		
Project Designation: 105-DR FSB - Concrete	Sampling Location: 105-DR	SAF No.: B99-076	
Ice Chest No.: ERC 99-005	Field Logbook No.: EL 1281	Method of Shipment: Fed Ex	
Shipped To: TMA/~~RECRA~~ RS 7.19.99	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA R105D4 2870	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Cool 4C	None	None							
	Type of Container	aG	aG	aG							
	No. of Container(s)	1	1	1							
Special Handling and/or Storage	Volume	60mL	60mL	120mL							
SAMPLE ANALYSIS		PCBs - 8080	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.							

Sample No.	Matrix *	Sample Date	Sample Time										
✓ B0W0X9	Other Solid	7.19-99	1015			X*				tie to	B0W0Y4		
✓ B0W0Y0	Other Solid	7.19.99	1045			X*					B0W0Y5		
~~B0W0Y1~~ RS 7.19	~~Other Solid~~												
~~B0W0Y2~~ RS 7.19.99	~~Other Solid~~												
~~B0W0Y3~~ RS 7.19.99	Other Solid												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg 7.19.99	Date/Time: 1700	Received By: Ref 2-C	Date/Time: 1700 7.19.99
Relinquished By: Ref 2-C	Date/Time: 7-22-99 0800	Received By: R. Fahlberg / R. Fahlberg 7-22-99	Date/Time: 0800
Relinquished By: R. Fahlberg / R. Fahlberg 7.22.99	Date/Time: 1336	Received By: Fed Ex	Date/Time: 7/22/99
Relinquished By: Fed Ex	Date/Time: 10:00 7-23-99	Received By: TNV M. Goldenberg	Date/Time: 10:00 7-23-99

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} {Isotopic Plutonium} {Isotopic Uranium} {Americium-241} {Strontium-89,90 -- Total Sr} {Technetium-99} {Nickel-63} {Carbon-14} {Tritium - H3}

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RADIOACTIVE SHIPMENT RECORD

106602 3.

Page 1 of 2

1. SHIP FROM U.S. DEPT. OF ENERGY C/O

Company: Bechtel Hanford, Inc

Address: 3728 Building, 300-Area

City, State, Zip: Richland, WA 99352

Contact: David St. John

Phone: 509-372-9588

Ship: [X] Prepaid [ ] Collect 4.

Via: [ ] Motor [X] Air Psgr [ ] UPS [ ] Rail [ ] Air Cargo [ ] Site Carrier

SHIPMENT AUTHORIZATION NUMBER

2. SHIP TO

Company: Thermo Retech

Address: 2030 Wright Avenue

City, State, Zip: Richmond, CA 94804-0040

Attention: ~~Ortette~~ Johnson, Larry

Phone: 510-235-2633

Markings Applied 6.

- [ ] Radioactive - LSA
- [ ] Radioactive - SCO
- [ ] Type A
- [ ] Type B with trefoil

LSA Description 8.

- [ ] LSA-I
- [ ] LSA-II
- [ ] LSA-III
- [ ] SCO-I
- [ ] SCO-II

Labels Applied 10.

- [ ] Empty
- [ ] Radioactive White - I
- [ ] Radioactive Yellow - II
- [ ] Radioactive Yellow - III
- [ ] Subsidiary Hazard

For Normal Form only 7.

Identify

Physical Form: [ ] Liquid [ ] Gas [X] Solid Ground Concrete

Chemical Form: [X] Elemental [ ] Metal [ ] Nitrate [ ] Oxide [ ] Mixture [ ] Other

EMERGENCY RESPONSE 9.

Telephone: 1-888-766-0771

Emergency Response Guide(s): 161

- [ ] Highway Route Controlled Quantity
- [ ] Exclusive Use Shipment with instructions
- [ ] Placards Applied
- If Rail Specify:
- [ ] Fissile Excepted, Grams
- [X] Excepted Package Statement

5. HM Proper Shipping Name: _____ Radioactive Material,

[ ]	excepted package - empty packaging	7	UN2910
[ ]	excepted package - instruments or articles	7	UN2910
[X]	excepted package - limited quantity of material	7	UN2910
[ ]	excepted package - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
[ ]	Special Form, n.o.s.	7	UN2974
[ ]	Low Specific Activity, n.o.s.	7	UN2912
[ ]	n.o.s.	7	UN2982
[ ]	Fissile, n.o.s.	7	UN2918
[ ]	Surface Contaminated Object	7	UN2913

Warning -- Fissile Material Controlled Shipment. Do Not Load More Than N/A Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.

11.

No. Pkg.	Model Package	COC/Spec	Serial No.	Seal No.	Isotopes	TI	~~Bq~~ TBq/Package	Gr. Wt. Kg
1	poly cooler	Strongtight	ERC-99-005	Tape	Cs-137, Sr-90, Eu-152, Co-60	N/A	1.8×10^{-6}	4.5 kg
Sample containers wrapped in bubble wrap and double bagged packed in cushioning material. Total this shipment 5-120 ml jars, 900 gms total								
(Shipper may describe package in detail on one of the unused lines above)					TOTALS	N/A	1.8×10^{-6}	4.5 kg

12. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Certifier's Signature: David St. John — On behalf of DOE-RL — Date: 7/22/99 — Organization: ERC-AFS — Complete Cost Code (Inc. End Function): R105D4 2870

13. Surface Dose Rate of Package: [X] <0.005 or _____ mSv/hr; <0.5 or _____ mrem/hr (N+ß γ)

Dose Rate @ 1 Meter from Surface of Package: [X] <0.005 or _____ mSv/hr; <0.5 or _____ mrem/hr (N+ß γ)

Smears of Outer Container: [X] <0.41 Bq (22 dpm) ß γ /cm²; [X] <0.04 Bq (2.2 dpm) α /cm²; [X] <Tbl. 2-2 HSRCM Onsite Limits

TRUCK LOAD OR EXCLUSIVE USE: Surface [X] <2 mSv/hr (200 mrem/hr); @ 2 meters [X] <0.1 mSv/hr (10 mrem/hr); @ Cab or sleeper [X] <0.02 mSv/hr (2 mrem/hr) (Using N+ß γ)

Additional Data and Instructions (inc. Readings on Internal Packaging)

Signature - Radiation Monitoring: [signature] — Bldg. 3728 — Survey No. FF/2-99-1122 — Date 7-22-99

14. TRANSPORTER: Vehicle Number 63-25371 — DRIVER SIGNATURE [signature]

RECEIVER: RECEIVER SIGNATURE — Date

15. OFFSITE AUTHORIZATION

Shipment has been inspected and verified to be in compliance with DOT regulations

Authorized Signature [signature] — Printed Name Keith R. Smith — Date 7-22-99

16. AUTHORIZATION FOR SHIPMENT

AIR TRANSPORT CERTIFICATION: [ ] N/A

CARGO AIRCRAFT: [ ] Cargo Aircraft Only Labels Applied

PASSENGER AIRCRAFT: [X] Ltd Qty [ ] <3 T.I. [X] Research/Medical Diagnosis [ ] Human Medical Research

Pkg. Dimensions (cm)

17. OFFSITE AUTHORIZATION

Tracking No.	Date Shipped	Routing	ETA
RMBH-3619	7-22-99	FEDEX	7-23-99
Surveyed By	**Date**	**Approved for Shipment Offsite**	**Date**
[signature]	7/22/99	[signature]	7-22-99

54-6000-088 (06/97)

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 7-23-99 10:00

CoC No. B99-076-01 (2p)

Container I.D. No. _____ 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: ~~4~~ 2
7. Number of containers per sample: 1 (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: On COC B99-076-01 Samples ID BOW0X9 and BOW0Y0 60 mL Volume we have not received. We received Sample's ID BOW0Y3 - 120 mL, BOW0Y2 - 120 mL, BOW0Y1 - 120 mL that have not include in COC

13. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 7-23-99
14. Received by M. Goldenberg Date: 7-23-99 Time: 10:00

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____