

0059354

SAF-B02-063 100 K Area - Quick Turn FINAL DATA PACKAGE

FAX RESULTS TO:

Mike Stankovich

N/A
INITIAL/DATE

VERIFICATION OF CLIENT RECEIPT:

Phone or CC:Mail to Mike Stankovich

N/A
INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Mike Stankovich H9-02

MS 3/13/03
INITIAL/DATE

Mark Buckmaster X3-16

MB 3/13/03
INITIAL/DATE

Jeanette Duncan

JD 3/13/03
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)

SDG W03985

SAF-B02-062

X Rad only Chem only Rad & Chem

X Complete Partial

Waste Site: 116-KW-3

RECEIVED
MAY 19 2003

EDMC

Analytical Data Package Prepared For

Bechtel Hanford

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.

Assigned Laboratory Code: STLRL

Data Package Contains 22 Pages

Report No.: 21974

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W03985	B02-063	J00HH5	J3B190142-1	FHVC81AA	9FHVC810	3051314
		J00HH6	J3B190142-2	FHVDV1AA	9FHVDV10	3051314

revd
3/11/03
JK

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

March 7, 2003

Attention: Joan Kessner

SAF Number	:	B02-063
Date SDG Closed	:	February 18, 2003
Number of Samples	:	Two (2)
Sample Type	:	Soil
SDG Number	:	W03985
Data Deliverable	:	21-Day / Summary

I. Introduction

On February 18, 2003, two soil samples were received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

<u>STLR ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
FHVC8	J00HH5	SOIL	2/18/03
FHVDV	J00HH6	SOIL	2/18/03

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were: **Gamma Spectroscopy**
Gamma Spec by method RICH-RC-5017

III. Quality Control

The analytical results for each analysis performed under SDG W03985 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Gamma Spectroscopy

Gamma Spec by method RICH-RC-5017:

The MDA is greater than the CRDL for Co-60, Eu-152, Eu-154 and Eu-155 due to matrix effects. High activity of other nuclides above the energy of interest are prohibitive to the achievement of the MDA due to Compton scattering. Except as noted, the LCS, batch blank, sample duplicate (J00HH5), and sample results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature:

Reviewed and approved:


Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x,y,z,\dots)$. The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/\sqrt{n}), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) <i>u_c - Combined Uncertainty.</i>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u_c the combined uncertainty</i> . The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor CRDL (RL)	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations. Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgrndCnt}/\text{BkgrndCntMin})/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$. For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \text{Sqrt}((\text{BkgrndCnt}/\text{BkgrndCntMin})/\text{SCntMin}) + 2.71/\text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S-D)/[\text{sqrt}(\text{TPUs}^2 + \text{TPUd}^2)]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

Date: 10-Mar-03

STL Richland STLRL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 21974

SDG No: W03985

Batch	Client Id Work Order	Parameter	Result ± Uncertainty (2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
3051314 GAMMA_GS									
J00HH5									
	FHVC81AA	CO-60	4.77E-02 ± 2.7E-02	U	pCi/g		4.79E-02	5.00E-02	
		CS-137	2.02E-01 ± 3.9E-02		pCi/g		3.85E-02	1.00E-01	
		EU-152	6.61E-01 ± 1.3E-01	U	pCi/g		1.31E-01	1.00E-01	
		EU-154	5.15E-02 ± 7.9E-02	U	pCi/g		1.37E-01	1.00E-01	
		EU-155	9.89E-03 ± 4.9E-02	U	pCi/g		8.27E-02	1.00E-01	
J00HH5 DUP									
	FHVC81AC	CO-60	6.94E-02 ± 4.2E-02	U	pCi/g		5.24E-02	5.00E-02	
		CS-137	2.39E-01 ± 4.9E-02		pCi/g		3.73E-02	1.00E-01	
		EU-152	6.70E-01 ± 1.3E-01		pCi/g		9.15E-02	1.00E-01	
		EU-154	5.60E-02 ± 7.3E-02	U	pCi/g		1.30E-01	1.00E-01	
		EU-155	3.05E-02 ± 4.1E-02	U	pCi/g		6.80E-02	1.00E-01	
J00HH6									
	FHVDV1AA	CO-60	1.69E+00 ± 2.3E-01		pCi/g		5.32E-02	5.00E-02	
		CS-137	1.47E+01 ± 1.8E+00		pCi/g		7.71E-02	1.00E-01	
		EU-152	2.68E+01 ± 3.5E+00		pCi/g		1.87E-01	1.00E-01	
		EU-154	3.47E+00 ± 4.9E-01		pCi/g		1.70E-01	1.00E-01	
		EU-155	1.75E-01 ± 1.1E-01	U	pCi/g		1.93E-01	1.00E-01	

No. of Results: 15

STL Richland

RPD - Relative Percent Difference.

rptSTLRchSaSummary2 V3.98 A97

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

QC Results Summary

Date: 10-Mar-03

STL Richland STLRL

Ordered by Method, Batch No, QC Type,.

Report No. : 21974

SDG No.: W03985

Batch	Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
GAMMA_GS									
3051314 BLANK QC									
	FHXX41AA	CO-60	2.64E-04 +- 2.0E-02	U	pCi/g				3.49E-02
		CS-137	1.55E-02 +- 1.9E-02	U	pCi/g				3.45E-02
		EU-152	-5.55E-02 +- 5.2E-02	U	pCi/g				8.15E-02
		EU-154	-1.94E-02 +- 5.8E-02	U	pCi/g				9.79E-02
		EU-155	3.82E-02 +- 3.3E-02	U	pCi/g				5.59E-02
3051314 LCS									
	FHXX41AC	CS-137	8.32E-01 +- 1.4E-01		pCi/g		90.19%	-0.1	8.26E-02
		RA-226	1.63E+00 +- 2.9E-01		pCi/g		76.00%	-0.2	1.41E-01
No. of Results: 7									

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRichQcSummary V3.98 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I
SAMPLE RESULTS

Date: 10-Mar-03

Lab Name: STL Richland
Lot-Sample No.: J3B190142-1
Client Sample ID: J00HH5

SDG: W03985
Report No. : 21974
COC No. : B02-063-001

Collection Date: 2/14/2003 9:10:00 AM
Received Date: 2/18/2003 3:05:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Allquot Size	Primary Detector
Batch: 3051314	GAMMA_GS				Work Order: FHVC81AA		Report DB ID: 9FHVC810					
CO-60	4.77E-02	U	2.7E-02	2.7E-02	4.79E-02	pCi/g	5.00E-02	1. (3.5)	2/22/03 10:26 a	56.3	g	GER1\$1
CS-137	2.02E-01		3.9E-02	3.9E-02	3.85E-02	pCi/g	1.00E-01	(5.3) (10.3)	2/22/03 10:26 a	56.3	g	GER1\$1
EU-152	6.61E-01	U	1.3E-01	1.3E-01	1.31E-01	pCi/g	1.00E-01	(5.) (10.4)	2/22/03 10:26 a	56.3	g	GER1\$1
EU-154	5.15E-02	U	7.9E-02	7.9E-02	1.37E-01	pCi/g	1.00E-01	0.38 (1.3)	2/22/03 10:26 a	56.3	g	GER1\$1
EU-155	9.89E-03	U	4.9E-02	4.9E-02	8.27E-02	pCi/g	1.00E-01	0.12 0.4	2/22/03 10:26 a	56.3	g	GER1\$1

No. of Results: 5 Comments:

00

FORM I

Date: 10-Mar-03

SAMPLE RESULTS

Lab Name: STL Richland

SDG: W03985

Collection Date: 2/14/2003 9:00:00 AM

Lot-Sample No.: J3B190142-2

Report No. : 21974

Received Date: 2/18/2003 3:05:00 PM

Client Sample ID: J00HH6

COC No. : B02-063-001

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3051314	GAMMA_GS				Work Order: FHVDV1AA		Report DB ID: 9FHVDV10					
CO-60	1.69E+00		2.3E-01	2.3E-01	5.32E-02	pCi/g	5.00E-02	(31.7) (14.5)	2/22/03 10:27 a		55.6 g	GER4\$1
CS-137	1.47E+01		1.8E+00	1.8E+00	7.71E-02	pCi/g	1.00E-01	(190.5) (16.7)	2/22/03 10:27 a		55.6 g	GER4\$1
EU-152	2.68E+01		3.5E+00	3.5E+00	1.87E-01	pCi/g	1.00E-01	(143.3) (15.5)	2/22/03 10:27 a		55.6 g	GER4\$1
EU-154	3.47E+00		4.9E-01	4.9E-01	1.70E-01	pCi/g	1.00E-01	(20.4) (14.3)	2/22/03 10:27 a		55.6 g	GER4\$1
EU-155	1.75E-01	U	1.1E-01	1.1E-01	1.93E-01	pCi/g	1.00E-01	0.9 (3.1)	2/22/03 10:27 a		55.6 g	GER4\$1

No. of Results: 5

Comments:

60

FORM II

Date: 10-Mar-03

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: W03985

Collection Date: 2/14/2003 9:10:00 AM

Lot-Sample No.: J3B190142-1

Report No.: 21974

Received Date: 2/18/2003 3:05:00 PM

Client Sample ID: J00HH5 DUP

COC No.: B02-063-001

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/ToUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3051314	GAMMA_GS		Work Order: FHVC81AC		Report DB ID: FHVC81CR		Orig Sa DB ID: 9FHVC810					
CO-60	6.94E-02	U	4.2E-02	4.2E-02	5.24E-02	pCi/g		(1.3)	2/24/03 09:16 a		56.3	GER5\$1
	4.77E-02	U	RPD 37.0			5.00E-02		(3.3)			g	
CS-137	2.39E-01		4.9E-02	4.9E-02	3.73E-02	pCi/g		(6.4)	2/24/03 09:16 a		56.3	GER5\$1
	2.02E-01		RPD 16.6			1.00E-01		(9.7)			g	
EU-152	6.70E-01		1.3E-01	1.3E-01	9.15E-02	pCi/g		(7.3)	2/24/03 09:16 a		56.3	GER5\$1
	6.61E-01		RPD 1.2			1.00E-01		(10.2)			g	
EU-154	5.60E-02	U	7.3E-02	7.3E-02	1.30E-01	pCi/g		0.43	2/24/03 09:16 a		56.3	GER5\$1
	5.15E-02	U	RPD 8.5			1.00E-01		(1.5)			g	
EU-155	3.05E-02	U	4.1E-02	4.1E-02	6.80E-02	pCi/g		0.45	2/24/03 09:16 a		56.3	GER5\$1
	9.89E-03	U	RPD 102.2			1.00E-01		(1.5)			g	

No. of Results: 5 Comments:

10

STL Richland RPD - Relative Percent Difference.
 rptSTLRchDupV3. MDC|MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 98 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 10-Mar-03

Lab Name: **STL Richland**
Matrix: **SOIL**

SDG: **W03985**
Report No. : **21974**

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MD A,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/ToUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3051314		GAMMA_GS		Work Order: FHXX41AA		Report DB ID: FHXX41AX						
CO-60	2.64E-04	U	2.0E-02	2.0E-02	3.49E-02	pCi/g		0.01	2/22/03 10:28 a		52.0	GER5\$1
								5.00E-02			g	
CS-137	1.55E-02	U	1.9E-02	1.9E-02	3.45E-02	pCi/g		0.45	2/22/03 10:28 a		52.0	GER5\$1
								1.00E-01	(1.6)		g	
EU-152	-5.55E-02	U	5.2E-02	5.2E-02	8.15E-02	pCi/g		-0.68	2/22/03 10:28 a		52.0	GER5\$1
								1.00E-01	-(2.2)		g	
EU-154	-1.94E-02	U	5.8E-02	5.8E-02	9.79E-02	pCi/g		-0.2	2/22/03 10:28 a		52.0	GER5\$1
								1.00E-01	-0.67		g	
EU-155	3.82E-02	U	3.3E-02	3.3E-02	5.59E-02	pCi/g		0.68	2/22/03 10:28 a		52.0	GER5\$1
								1.00E-01	(2.3)		g	

No. of Results: 5 Comments:

11

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3B190142
 Client ID: BHI
 Due Date: 3-11-03
 QC Batch Number: 3051314
 Method Test Parameter: GAMMA
 Matrix: Soil
 SDG Number: W03985

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?			✓
C. QC & Samples			
1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓	✓	
5. Are the sample yields and MDAs within contract limits?	✓	✓	
D. Raw Data			
1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?			✓
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?			✓
E. Other			
1. Are all Nonconformances included and noted? <u>J07442</u>	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: _____

First Level Review: *[Signature]* Date: 3-6-03



STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 3057314

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?		✓	
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: Note NCM in summary

Second Level Review: 3m m d i n Date: 3/6/03

Clouseau Nonconformance Memo

SEVERN
TRENT
SERVICES

NCM #: J07442	Classification: Anomaly
NCM Initiated By: Dale OConnell	Status: PMREVIEW
Date Opened: 03/06/03	Production Area: QA
Date Closed: N/A	Tests: Gamma by GER
	Lot #'s (Sample #'s): J3B190142 (1,2)
	QC Batch: 3051314
Nonconformance: QC Result Out of Limits	
Subcategory: MDA exceeds RDL	

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Dale OConnell	03/06/03	Eu-152, 154, 155 and/or Co-60.. Cause: Possibly Matrix Effect. High activity of other nuclides above the energy of interest are prohibitive to the achievement of the MDA, due to Compton Scattering.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Dale OConnell	03/06/03	Eu-152 and Co-60 have keyline activity > MDA in all cases, Eu-152 has keyline activity > MDA in sample J3B190142-002. MDA achieved on the blank, report results.

Approval History

<u>Name</u>	<u>Date Approved:</u>	<u>Position</u>
Dale OConnell	03/06/03	Group Leader

CHAIN OF CUSTODY

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B02-063-001	Page 1 of 1		
Collector MT Stankovich		Company Contact Mike Stankovich		Telephone No. 531-7620		Project Coordinator KESSNER, JH	Price Code 8C	Data Turnaround 21 Days	
Project Designation 100 K Area - Full Protocol		Sampling Location 116-KW-3		SAF No. B02-063		Air Quality <input type="checkbox"/>			
Ice Chest No. WM-001		Field Logbook No. EL-1572		COA R16KW32600		Method of Shipment Hand Delivered/Gov't Vehicle			
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. NA		Bill of Lading/Air Bill No. NA					
POSSIBLE SAMPLE HAZARDS/REMARKS <i>Radioactive</i> Special Handling and/or Storage				Preservation	None				
				Type of Container	P				
				No. of Container(s)	1				
				Volume	1000mL				
SAMPLE ANALYSIS SDG NO3985 J3B190142 <i>Due 3-11</i>				See item (1) in Special Instructions.					
Sample No.	Matrix *	Sample Date	Sample Time						
J00HH5 FHVCB	SOIL	2-14-3	0910	<input checked="" type="checkbox"/>					
J00HH6 FHVDV	SOIL	2-14-3	0900	<input checked="" type="checkbox"/>					
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From <i>MT Stankovich</i>		Date/Time 2-14-3		Received By/Stored In <i>IA/3728</i>		Date/Time 2-14-3 1515		(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) Personnel not available to relinquish samples from the 3728 Ref # 1A on 2/18/03	S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WJ=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From REF 1A 3728		Date/Time 21803 1100		Received By/Stored In <i>SCALE</i>		Date/Time 21803 1100			
Relinquished By/Removed From <i>SCALE</i>		Date/Time 21803 1507		Received By/Stored In <i>STL</i>		Date/Time 2/18/03 1507			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
LABORATORY SECTION	Received By			Title			Date/Time		
FINAL SAMPLE DISPOSITION	Disposal Method			Disposed By			Date/Time		

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1954

R211016-03

J00861

DATA SHEET

SDG <u>7382</u>	Client/Case no <u>Hanford</u>	SDG <u>H1954</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R211016-03</u>	Client sample id <u>J00861</u>	
Dept sample id <u>7382-003</u>	Location/Matrix <u>116-KW-3</u>	<u>SOLID</u>
Received <u>11/07/02</u>	Collected/Weight <u>11/04/02 10:45</u>	<u>969.5 g</u>
% solids <u>97.0</u>	Custody/SAF No <u>B02-062-002</u>	<u>B02-062</u>

ANALYTE	CAS NO	RESULT pci/g	2σ ERR (COUNT)	MDA pci/g	RDL pci/g	QUALIFIERS	TEST
Carbon 14	14762-75-5	0.594	2.3	3.9	50	U	C
Nickel 63	13981-37-8	1490	15	2.9	30		NI_L
Total Strontium	SR-RAD	0.630	0.17	0.22	1.0	J	SR
Uranium 233/234	U-233/234	0.571	0.22	0.17	1.0	J	U
Uranium 235	15117-96-1	0.053	0.053	0.20	1.0	U	U
Uranium 238	U-238	0.637	0.22	0.17	1.0	J	U
Plutonium 238	13981-16-3	0.038	0.076	0.29	1.0	U	PU
Plutonium 239/240	PU-239/240	0.644	0.31	0.29	1.0	J	PU
Cobalt 60	10198-40-0	21.0	0.61	0.49	0.050		GAM
Cesium 137	10045-97-3	0.731	0.45	0.66	0.10		GAM
Europium 152	14683-23-9	408	2.7	2.2	0.10		GAM
Europium 154	15585-10-1	50.4	2.0	1.8	0.10		GAM
Europium 155	14391-16-3	U		2.3	0.10	U	GAM
Americium 241	14596-10-2	U		1.8		U	GAM

100 K Area - Quick Turn

DATA SHEETS

Page 3

SUMMARY DATA SECTION

Page 13

Lab id <u>EBERLINE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>11/22/02</u>

Sample Check-in List

Date/Time Received: 2/18/03 1507

Client: BH1 SDG #: W03985 NA [] SAF #: B02-063 NA []

Work Order Number: J3B190142 Chain of Custody # B02-063-001

Shipping Container ID: WM-001 Air Bill # N/A

1. Custody Seals on shipping container intact? NA [] Yes [] No []
2. Custody Seals dated and signed? NA [] Yes [] No []
3. Chain of Custody record present? Yes [] No []
4. Cooler temperature: _____ NA [] 5. Vermiculite/packing materials is NA [] Wet [] Dry []
6. Number of samples in shipping container: 2
7. Sample holding times exceeded? NA [] Yes [] No []
8. Samples have:
 - tape hazard labels
 - custody seals appropriate samples labels
9. Samples are:
 - in good condition _____ leaking
 - _____ broken _____ have air bubbles
 (Only for samples requiring head space)
10. Sample pH taken? NA [] pH<2 [] pH>2 []
11. Sample Location, Sample Collector Listed? * Yes [] No []
*For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [] No []
13. Description of anomalies (include sample numbers): _____

Sample Custodian: *PNICE* Date: 2/18/03

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[] No action necessary; process as is.

Project Manager _____ Date _____

Sample Preparation/Analysis

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

AX Gamma PrpRC5013/5017
TA Gamma by HPGE
5I CLIENT: HANFORD

PRIORITY

Balance Id: PB 3001-5

Pipet #: N/A

Report Due: 03/11/2003

W03985

Sep1 DT/Tm Tech:

Batch: 3051314 SOIL

pCi/g

PM, Quote: BG2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: MB

(4)

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 FHVC8-1-AA J3B190142-1-SAMP		56.3			525		1000	61	2/22/03 0306	2/22/03 MB
02/14/2003 09:10			AmtRec: LP	#Containers: 1				Scr Rst:	Alpha:	Beta:
2 FHVC8-1-AC-X J3B190142-1-DUP		56.3							2/22/03 0265	2/24/03 0156 S
02/14/2003 09:10			AmtRec: LP	#Containers: 1				Scr Rst:	Alpha:	Beta:
3 FHVDV-1-AA J3B190142-2-SAMP		55.6							64	0307
02/14/2003 09:00			AmtRec: LP	#Containers: 1				Scr Rst:	Alpha: 1.11E+02 pCi/g	Beta: 3.10E+01 pCi/g
4 FHXX4-1-AA-BX J3B200000-314-MBLK		52.0			Fine Ottawa Sand				65	0308
02/14/2003 09:10 2/21/03 MB 071103			AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:
5 FHXX4-1-AC-CM J3B200000-314-MLCS		26.61			CAL 3122				62	0305
02/14/2003 09:10 10/11/03 MB 071103			AmtRec:	#Containers: 1				Scr Rst:	Alpha:	Beta:

Comments:

All Clients for Batch:

127642, BECHTEL HANFORD, INC.

Bechtel Hanford, Inc.

BG2, 27038

FHVC81AA-SAMP Constituent List:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Cs-137DA	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt,

Richland Wa. r - Reference date, ec-Enrichment Cell, ct-Cocktailed Added

20

Sample Preparation/Analysis

AX Gamma PrpRC5013/5017
 TA Gamma by HPGE
 5I CLIENT: HANFORD

PRIORITY

Balance Id: _____

Pipet #: _____

Report Due: 03/11/2003

Sep1 DT/Tm Tech: _____

Batch: 3051314

pCi/g

Sep2 DT/Tm Tech: _____

SEQ Batch, Test: None

Prep Tech: _____

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	
Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
FHXX41AA-MBLK:											
Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Cs-137DA	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
FHXX41AC-MLCS:											
Cs-137	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	Cs-137DA	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35
K-40	RDL:--	pCi/g	LCL:70	UCL:130	RPD:35	Ra-226	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35
RA-228	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35	RA-228DA	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35
U-238	RDL:	pCi/g	LCL:70	UCL:130	RPD:35						
FHVC81AA-SAMP Calc Info:											
Uncert Level (#s): 2	Decay to SaDt: Y		Blk Subt.: N		Sci.Not.: Y		ODRs: B				
FHXX41AA-MBLK:											
Uncert Level (#s): 2	Decay to SaDt: Y		Blk Subt.: N		Sci.Not.: Y		ODRs: B				
FHXX41AC-MLCS:											
Uncert Level (#s): 2	Decay to SaDt: Y		Blk Subt.: N		Sci.Not.: Y		ODRs: B				

ICOC Fraction Transfer/Status Report

ByDate: 2/3/03, 3/6/03, Batch: '3051314', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
3051314				
AC	CalcC	BELSITOB	2/20/03 3:37:11 PM	
SC		WagarR	IsBatched	2/20/03 11:43:04 AM
SC		BELSITOB	InPrep	2/20/03 3:37:11 PM
SC		BELSITOB	InPrep	2/20/03 3:37:14 PM
SC		BELSITOB	Prep1C	2/21/03 8:51:41 AM
SC		BELSITOB	Prep1C	2/21/03 8:51:44 AM
SC		BlackCL	InCnt1	2/21/03 9:08:56 AM
SC		BlackCL	CalcC	2/26/03 12:15:20 PM
AC		BELSITOB	2/20/03 3:37:14 PM	
AC		BELSITOB	2/21/03 8:51:41 AM	
AC		BELSITOB	2/21/03 8:51:44 AM	
AC		BlackCL	2/21/03 9:08:56 AM	
AC		BlackCL	2/26/03 12:15:20 PM	

AC: Accepting Entry; SC: Status Change

Richland

Richland Wa.