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CERTIFICATE OF ANALYSIS

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

RECEIVED
JAN 18 2000
EDMC

November 10, 1999

Attention: Joan Kessner



SAF Number	:	B99-024
Date SDG Closed	:	October 26, 1999
Number of Samples	:	Two (2)
Sample Type	:	Other (Solid)
SDG Number	:	W02925
Data Deliverable	:	Summary

I. Introduction

On October 12, 1999, two solid (matrix: other) samples were received at the Quanterra Richland Laboratory (QRL) 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>QESRL ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
9D3JNA10	B0W513	OTHER	10/12/99
9D3JNJ10	B0W514	OTHER	10/12/99

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:

Gas Proportional Counting

Gross Alpha by method RICH-RC-5014

Gross Beta by method RICH-RC-5014

Alpha Spectroscopy

Plutonium-238, -239/40 by method RICH-RC-5010

Americium-241 by method RICH-RC-5080

Curium-244 by method RICH-RC-5080

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Neptunium-237 by method RICH-RC-5009
Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017

III. Quality Control

The analytical results for each analysis performed under SDG W02925 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

Gas Proportional Counting

Gross Alpha by method RICH-RC-5014:

The LCS, batch blank, samples and sample duplicate (B0W513) results are within contractual requirements.

Gross Beta by method RICH-RC-5014:

The duplicate sample analyses (B0W514) results did not meet the RPD limit. The duplicate samples were reanalyzed. The reanalysis results were within limits and the data were accepted for reporting. Except as noted, the LCS, batch blank and sample results are within contractual requirements.

Alpha Spectroscopy

Plutonium-238, -239/40 by method RICH-RC-5010:

The MDA for sample B0W514 does not meet the CRDL due to sample matrix; a reduced aliquot was used for analysis based on high screen results. The detected activity significantly exceeds the achieved MDA, therefore the data is accepted for reporting. Except as noted, the LCS, batch blank, sample and sample duplicate (B0W513) results are within contractual requirements.

Americium-241 by method RICH-RC-5080:

The MDA for sample B0W514 does not meet the CRDL due to sample matrix; a reduced aliquot was used for analysis based on high screen results. The detected activity significantly exceeds the achieved MDA, therefore the data is accepted for reporting. Except as noted, the LCS, batch blank, sample and sample duplicate (B0W513) results are within contractual requirements.

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Curium-244 by method RICH-RC-5080:

The MDA for sample B0W514 does not meet the CRDL due to sample matrix; a reduced aliquot was used for analysis based on high screen results. The detected activities for the plutonium and americium isotopes justify the reduced aliquot analyzed, therefore the data is accepted for reporting. Except as noted, the LCS, batch blank, sample and sample duplicate (B0W513) results are within contractual requirements.

Neptunium-237 by method RICH-RC-5009:

The MDA for sample B0W514 does not meet the CRDL due to sample matrix; a reduced aliquot was used for analysis based on high screen results. The detected activities for the plutonium and americium isotopes justify the reduced aliquot analyzed, therefore the data is accepted for reporting. The radiochemical recovery for the LCS does not meet acceptance limits at 46%. Based on an acceptable matrix spike result at 68%, and with prior approval [J.Kessner 11/9/99], the data are accepted for reporting. Except as noted, the batch blank, samples, sample duplicate (B0W513) and sample matrix spike (B0W514) results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017:

The MDA for sample B0W514 does not meet the CRDL due to sample matrix; a reduced aliquot was used for analysis based on high screen results. The detected activity significantly exceeds the achieved MDAs for Cs137, Np237 and Am241. The MDA for sample B0W513 does not meet the CRDL due to insufficient sample volume received for analysis. The results are accepted for reporting with MDAs achieved for both samples. Except as noted, the LCS, batch blank, sample and sample duplicate (B0W513) 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:



Jackie Waddell
Project Manager

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W02925 / 9104
LAB SAMPLE ID: 9D3JNA10 **MATRIX:** OTHER
CLIENT ID: B0W513 **DATE RECEIVED:** 10/12/99 11:30:00 AM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	6.29E-02	J	3.8E-02	4.0E-02	1.55E-02	pCi/g	90.59%	RICHRC5080
CM-242	6.96E-03	U	1.5E-02	1.5E-02	3.05E-02	pCi/g	90.59%	RICHRC5080
CM-244	0.00E+00	U	0.0E+00	1.4E-02	1.56E-02	pCi/g	90.59%	RICHRC5080
NP-237	0.00E+00	U	0.0E+00	1.0E-02	1.12E-02	pCi/g	100.00%	RICHRC5009
PU-238	0.00E+00	U	0.0E+00	1.4E-02	1.59E-02	pCi/g	69.92%	RICHRC5010
PU239/40	5.83E-02		3.7E-02	3.8E-02	2.36E-02	pCi/g	69.92%	RICHRC5010
CO-60	1.86E-02	U	9.1E-02	9.1E-02	1.62E-01	pCi/g		RICHRC5017
CS-137	8.30E-02	U	8.0E-02	8.0E-02	1.44E-01	pCi/g		RICHRC5017
EU-152	3.27E-02	U	2.0E-01	2.0E-01	3.35E-01	pCi/g		RICHRC5017
EU-154	-2.42E-01	U	2.5E-01	2.5E-01	4.00E-01	pCi/g		RICHRC5017
EU-155	-2.37E-02	U	1.5E-01	1.5E-01	2.61E-01	pCi/g		RICHRC5017
RA-226	2.33E-02	U	2.5E-01	2.5E-01	3.14E-01	pCi/g		RICHRC5017
RA-228	4.86E-01	U	3.3E-01	3.3E-01	6.01E-01	pCi/g		RICHRC5017
ALPHA	4.67E-01	J	3.0E-01	3.1E-01	4.37E-01	pCi/g	100.00%	RICHRC5014
BETA	1.29E+01	J	2.3E+00	2.9E+00	3.23E+00	pCi/g	100.00%	RICHRC5014

Number of Results: 15

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W02925 / 9104
LAB SAMPLE ID: 9D3JNJ10 **MATRIX:** OTHER
CLIENT ID: B0W514 **DATE RECEIVED:** 10/12/99 11:30:00 AM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.63E+03		8.8E+01	2.9E+02	3.19E+00	pCi/g	88.48%	RICHRC5080
CM-242	0.00E+00	U	0.0E+00	3.8E+00	4.22E+00	pCi/g	88.48%	RICHRC5080
CM-244	0.00E+00	U	0.0E+00	2.9E+00	3.21E+00	pCi/g	88.48%	RICHRC5080
NP-237	-2.27E-01	U	3.2E-01	3.3E-01	6.49E+00	pCi/g	100.00%	RICHRC5009
PU-238	2.16E+02		3.7E+01	5.1E+01	4.21E+00	pCi/g	55.29%	RICHRC5010
PU239/40	3.83E+03		1.5E+02	6.4E+02	4.20E+00	pCi/g	55.29%	RICHRC5010
AM-241	2.12E+05		2.1E+04	2.1E+04	1.12E+02	pCi/g		RICHRC5017
CO-60	-4.41E-01	U	1.0E+00	1.0E+00	1.76E+00	pCi/g		RICHRC5017
CS-137	1.09E+01		2.3E+00	2.3E+00	1.64E+00	pCi/g		RICHRC5017
EU-152	4.97E+00	U	3.2E+00	3.2E+00	5.82E+00	pCi/g		RICHRC5017
EU-154	1.98E+00	U	3.0E+00	3.0E+00	5.98E+00	pCi/g		RICHRC5017
EU-155	2.60E+01	U	8.7E+00	8.7E+00	1.25E+01	pCi/g		RICHRC5017
NP-237	4.77E+01		6.6E+00	6.6E+00	3.29E+00	pCi/g		RICHRC5017
RA-226	5.36E-02	U	2.5E+00	2.5E+00	4.25E+00	pCi/g		RICHRC5017
RA-228	-2.49E+00	U	4.5E+00	4.5E+00	7.12E+00	pCi/g		RICHRC5017
ALPHA	6.04E+03		5.9E+01	1.3E+03	1.18E+00	pCi/g	100.00%	RICHRC5014

Number of Results: 16

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: 9D3JNJ20 MATRIX: OTHER
CLIENT ID: B0W514 DATE RECEIVED: 10/12/99 11:30:00 AM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
BETA	1.78E+02		1.0E+01	2.5E+01	6.96E+00	pCi/g	100.00%	RICHRC5014

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3JNA17R MATRIX: OTHER
CLIENT ID: B0W513 DUP DATE RECEIVED: 10/12/99 11:30:00 A
ORIG LAB SAMPLE ID: 9D3JNA10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
ALPHA	1.26E-01	U	2.1E-01	2.1E-01	4.37E-01	pCi/g	100.00%	RICHRC5014	4.67E-01	114.88%

Number of Results:

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3JNA18R MATRIX: OTHER
CLIENT ID: B0W513 DUP DATE RECEIVED: 10/12/99 11:30:00 A
ORIG LAB SAMPLE ID: 9D3JNA10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	7.76E-02	J	3.6E-02	3.8E-02	1.11E-02	pCi/g	92.78%	RICHRC5080	6.29E-02	20.99%
CM-242	0.00E+00	U	0.0E+00	1.3E-02	1.47E-02	pCi/g	92.78%	RICHRC5080	6.96E-03	200.00%
CM-244	-9.89E-04	U	1.1E-03	1.2E-03	2.05E-02	pCi/g	92.78%	RICHRC5080	0.00E+00	200.00%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3JNA19R MATRIX: OTHER
CLIENT ID: B0W513 DUP DATE RECEIVED: 10/12/99 11:30:00 A
ORIG LAB SAMPLE ID: 9D3JNA10

ANALYTE	DUP RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
PU-238	4.24E-03	U 8.5E-03	8.5E-03	1.15E-02	pCi/g	74.26%	RICHRC5010	0.00E+00	200.00%
PU239/40	8.89E-02	3.9E-02	4.1E-02	1.15E-02	pCi/g	74.26%	RICHRC5010	5.83E-02	41.65%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3JNA1AR MATRIX: OTHER
CLIENT ID: B0W513 DUP DATE RECEIVED: 10/12/99 11:30:00 A
ORIG LAB SAMPLE ID: 9D3JNA10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
NP-237	-3.32E-04	U	6.6E-04	6.7E-04	1.67E-02	pCi/g	100.00%	RICHRC5009	0.00E+00	200.00%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W02925 / 9104
LAB SAMPLE ID: D3JNA1CR **MATRIX:** OTHER
CLIENT ID: B0W513 DUP **DATE RECEIVED:** 10/12/99 11:30:00 A
ORIG LAB SAMPLE ID: 9D3JNA10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
CO-60	-8.26E-04	U	7.8E-02	7.8E-02	1.38E-01	pCi/g		RICHRC5017	1.86E-02	218.60%
CS-137	6.75E-02	U	8.0E-02	8.0E-02	1.42E-01	pCi/g		RICHRC5017	8.30E-02	20.65%
EU-152	-1.24E-01	U	1.9E-01	1.9E-01	3.10E-01	pCi/g		RICHRC5017	3.27E-02	342.72%
EU-154	-7.62E-02	U	2.2E-01	2.2E-01	3.79E-01	pCi/g		RICHRC5017	-2.42E-01	104.08%
EU-155	6.13E-02	U	1.3E-01	1.3E-01	2.22E-01	pCi/g		RICHRC5017	-2.37E-02	452.22%
RA-226	2.75E-04	U	2.6E-01	2.6E-01	3.28E-01	pCi/g		RICHRC5017	2.33E-02	195.34%
RA-228	2.88E-01	U	6.7E-01	6.7E-01	6.21E-01	pCi/g		RICHRC5017	4.86E-01	51.01%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3JNJ19R MATRIX: OTHER
CLIENT ID: B0W514 DUP DATE RECEIVED: 10/12/99 11:30:00 A
ORIG LAB SAMPLE ID: 9D3JNJ20

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
BETA	1.46E+02		9.5E+00	2.2E+01	6.88E+00	pCi/g	100.00%	RICHRC5014	1.78E+02	19.55%

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MER11B MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
ALPHA	1.23E-01	U	1.3E-01	1.3E-01	2.34E-01	pCi/g	100.00%	RICHRC5014

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MET11B MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
BETA	1.39E-02	U	1.2E-01	1.2E-01	2.68E-01	pCi/g	100.00%	RICHRC5014

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MEV11B MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.61E-02	J	1.6E-02	1.6E-02	1.09E-02	pCi/g	94.14%	RICHRC5080
CM-242	0.00E+00	U	0.0E+00	1.0E-02	1.16E-02	pCi/g	94.14%	RICHRC5080
CM-244	-9.69E-04	U	1.1E-03	1.1E-03	2.01E-02	pCi/g	94.14%	RICHRC5080

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MFL11B MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-4.79E-04	U	9.6E-04	9.6E-04	2.41E-02	pCi/g	53.21%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	1.5E-02	1.62E-02	pCi/g	53.21%	RICHRC5010

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MFM11B MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
NP-237	0.00E+00	U	0.0E+00	9.6E-03	1.06E-02	pCi/g	100.00%	RICHRC5009

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MFN11B MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
CO-60	3.18E-02	U	4.8E-02	4.8E-02	9.08E-02	pCi/g		RICHRC5017
CS-137	-9.53E-03	U	4.2E-02	4.2E-02	7.26E-02	pCi/g		RICHRC5017
EU-152	-2.37E-02	U	9.9E-02	9.9E-02	1.70E-01	pCi/g		RICHRC5017
EU-154	-1.02E-01	U	1.5E-01	1.5E-01	2.41E-01	pCi/g		RICHRC5017
EU-155	2.34E-02	U	7.6E-02	7.6E-02	1.31E-01	pCi/g		RICHRC5017
RA-226	-4.83E-02	U	1.2E-01	1.2E-01	1.71E-01	pCi/g		RICHRC5017
RA-228	4.85E-01	U	2.2E-01	2.2E-01	3.44E-01	pCi/g		RICHRC5017

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D41N111B MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
BETA	3.75E-01	U	4.9E-01	4.9E-01	1.03E+00	pCi/g	100.00%	RICHRC5014

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MER12S MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
ALPHA	8.54E+00	J	8.3E-01	2.0E+00	2.30E-01	pCi/g	100.00%	9.03E+00	94.56%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MET12S MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
BETA	7.17E+00	J	4.0E-01	1.0E+00	2.61E-01	pCi/g	100.00%	6.78E+00	105.66%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MEV12S MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	4.31E+00		2.8E-01	7.9E-01	1.22E-02	pCi/g	85.67%	4.57E+00	94.29%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MFL12S MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU239/40	3.45E+00		2.9E-01	6.8E-01	1.66E-02	pCi/g	55.35%	3.40E+00	101.39%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MFM12S MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
NP-237	4.14E-01	J	9.3E-02	1.3E-01	2.40E-02	pCi/g	100.00%	9.09E-01	45.61%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3MFN12S MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CO-60	3.30E+00		3.9E-01	3.9E-01	9.94E-02	pCi/g		3.07E+00	107.42%
CS-137	2.18E+00		2.7E-01	2.7E-01	1.04E-01	pCi/g		2.00E+00	109.29%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D41N112S MATRIX: OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
BETA	2.65E+01		1.6E+00	3.7E+00	1.04E+00	pCi/g	100.00%	2.71E+01	97.94%

Number of Results:

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02925 / 9104
LAB SAMPLE ID: D3JNJ18W MATRIX: OTHER

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
NP-237	1.67E+02	2.7E+01	4.7E+01	2.86E+00	pCi/g	-2.27E-01	2.45E+02	68.00%

Number of Results:

*Spike Result Corrected For Sample Result

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc
rptChemRadMatrixSpike; v3.41

0028

Data Review Checklist
RADIOCHEMISTRY

Lot Number: <u>J 93120159</u>					
Client ID: <u>PLW</u>					
Due Date: <u>11/2/99</u>					
QC Batch Number: <u>9287155</u>		SDG Number: <u>2925</u>			
Method Test Parameter: <u>SN-Am/cm</u>					
Matrix: <u>Other</u>					
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)	
A. Calibration					
1. Is the calibration documentation included where applicable?			✓	✓	
B. Sample Analysis					
1. Are the sample yields within acceptance criteria?	✓				
2. Were all sample holding times met?	✓				
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓				
C. QC Samples					
1. Is the blank yield within acceptance criteria?	✓				
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓				
3. Does the blank result meet the Contract criteria?	✓				
4. Is the blank result < the Contract Detection Limit?	✓				
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓		
6. Is the LCS result within acceptance criteria?	✓				
7. Is the LCS yield within acceptance criteria?	✓				
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓				
9. Do the MS/MSD results and yields meet acceptance criteria?			✓		
10. Do the duplicate sample results and yields meet acceptance criteria?	✓				
D. 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: D3JNA108 high > MDA > CRDL

First Level Review: Pam K... Date: 11-1-99

Second Level Review: Jaime Waddell Date: 11/9/99

Data Review Checklist
RADIOCHEMISTRY

Lot Number: <u>J9J28159</u>				
Client ID: <u>BHZ</u>				
Due Date: <u>11/2/99</u>				
QC Batch Number: <u>9281169</u>			SDG Number: <u>2925</u>	
Method Test Parameter: <u>SW-NP237</u>				
Matrix: <u>other SOLID</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			✓	
2. Were all sample holding times met?				
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?		✓		
C. QC Samples				
1. Is the blank yield within acceptance criteria?			✓	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?		✓		
7. Is the LCS yield within acceptance criteria?			✓	
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?				
9. Do the MS/MSD results and yields meet acceptance criteria?				
10. Do the duplicate sample results and yields meet acceptance criteria?				
D. 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: LCS fails 45.6% radiochemical yield

Results accepted w/ client approval
(by J. Kessner) 11/9/99

First Level Review: Pam Kessner
Second Level Review: John Waddell

Date: 11-9-99
Date: 11/9/99

**Data Review Checklist
RADIOCHEMISTRY**

Lot Number: <u>19J120159</u>				
Client ID: <u>201028/44PEW BHI</u>				
Due Date: <u>1/02/99</u>				
QC Batch Number: <u>9287108</u>		SDG Number: <u>2925</u>		
Method Test Parameter: <u>ISO</u>				
Matrix: <u>Other</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				↓
1. Are the sample yields within acceptance criteria?	✓			
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			
D. 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: D2JNJ 105 result > MDA SCRDC - very warm

First Level Review: Pam Kenitz
 Second Level Review: Jackie Waddell

Date: 10-27-99
 Date: 10/28/99

Data Review Checklist
RADIOCHEMISTRY

Lot Number: <u>J9J120159</u>				
Client ID: <u>B1+E</u>				
Due Date: <u>11/2/99</u>				
QC Batch Number: <u>9287120</u>			SDG Number: <u>2925</u>	
Method Test Parameter: <u>gammg</u>				
Matrix: <u>other</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			✓	
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?		NCR		
C. QC Samples				
1. Is the blank yield within acceptance criteria?			✓	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?			✓	
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			
D. 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: CRDL not met NCR JDD662

First Level Review: Pam Kenihan

Date: 10-27-99

Second Level Review: Jackie Waddell

Date: 11/4/99

LS-038, Rev.5, 4/99

Nonconformance Memo

NCM #: **J00662**
NCM Initiated By: Pam Kenitzer
Date Opened: 10/27/99
Date Closed: 11/11/99

Classification: **Anomaly**
Status: **CLOSED**
Production Area: Environmental - Prep
Tests: Gamma by GER
Lot #'s (Sample #'s): J9J120159 (1,2)
QC Batch: 9287170

Nonconformance: MDA not met
Subcategory: Insufficient Volume

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Pam Kenitzer	10/27/99	Not enough sample sent to reach RCDL. Data accepted.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Pam Kenitzer	10/27/99	None

Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes:</u>
Kevin Bull	N/A	Verified/completed	

Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Date Notified</u>	<u>Response Date</u>	<u>How Notified</u>
BECHTEL HANFORD, INC.	Doug Swenson	11/11/99	11/11/99	by narrative
	<u>Response</u>	<u>Response Details</u>		
	Process "as-is"			

Approval History

<u>Name</u>	<u>Date Approved:</u>	<u>Position</u>
Pam Kenitzer	10/27/99	Group Leader
Dale OConnell	10/29/99	Group Leader
Doug Swenson	11/11/99	Project Manager
Kevin Bull	11/11/99	Laboratory Manager

Data Review Checklist
RADIOCHEMISTRY

Lot Number:	J93120159			
Client ID:	PLW			
Due Date:	11/2/99			
QC Batch Number:	9287153	SDG Number: 2405		
Method Test Parameter:	S2 alpha			
Matrix:	Other			
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			✓	
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?			✓	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?			✓	
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			
D. 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: _____

First Level Review: Pam Kenitz Date: 10-18-99
 Second Level Review: Jackie Waddell Date: 10/23/99

**Data Review Checklist
RADIOCHEMISTRY**

Lot Number: <u>J9520159</u>				
Client ID: <u>DW1028199 F60 BHI</u>				
Due Date: <u>11/2/99</u>				
QC Batch Number: <u>9287154</u>			SDG Number: <u>2925</u>	
Method Test Parameter: <u>58-Beta</u>				
Matrix: <u>Other</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			✓	
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?			✓	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	<u>92.1%</u> ✓		✓	
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?				
10. Do the duplicate sample results and yields meet acceptance criteria?		✓		
D. 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: dups out - warm sample - re-extract

Report QC's: D3JNA only

First Level Review: Pam Kenney

Date: 10-18-99

Second Level Review: Jackie Waddell

Date: 10/28/99

**Data Review Checklist
RADIOCHEMISTRY**

Lot Number: <u>J95/20153</u>					
Client ID: <u>W10108/99/660 BHI</u>					
Due Date: <u>9/12/99</u>					
QC Batch Number: <u>9295267</u>		SDG Number: <u>2925</u>			
Method Test Parameter: <u>S8-Beta</u>					
Matrix: <u>W10108/99/Biologic Other</u>					
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)	
A. Calibration					
1. Is the calibration documentation included where applicable?			✓	✓	
B. Sample Analysis					
1. Are the sample yields within acceptance criteria?			✓	↓	
2. Were all sample holding times met?	✓				
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓				
C. QC Samples					
1. Is the blank yield within acceptance criteria?			✓		
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓				
3. Does the blank result meet the Contract criteria?	✓				
4. Is the blank result < the Contract Detection Limit?	✓				
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓		
6. Is the LCS result within acceptance criteria?	✓				
7. Is the LCS yield within acceptance criteria?			✓		
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓				
9. Do the MS/MSD results and yields meet acceptance criteria?			✓		
10. Do the duplicate sample results and yields meet acceptance criteria?	✓				
D. 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: dups re extracted URM J00670

Report D3JNJ's dup w/O C

First Level Review: Pam K. Keith
 Second Level Review: Jacki Waddell

Date: 10-26-99
 Date: 10/28/99



Nonconformance Memo

NCM #: J00670	Classification: Anomaly
NCM Initiated By: Pam Kenitzer	Status: CLOSED
Date Opened: 10/28/99	Production Area: Environmental - Prep
Date Closed: 11/11/99	Tests: Beta by GPC-Sr/Y
	Lot #'s (Sample #'s): J9J120159 (2)
	QC Batch: 9295267
Nonconformance: Dups not within acceptance limits	
Subcategory: Other (explanation required)	

Problem Description / Root Cause

Name	Date	Description
Pam Kenitzer	10/28/99	Dup was out. A very high sample. Rather than recount such a high sample it was reextracted with a smaller aliquot. Reextraction good. Data accepted.

Corrective Action

Name	Date	Corrective Action
Pam Kenitzer	10/28/99	reextraction/

Quality Assurance Verification

Verified By	Due Date	Status	Notes:
Kevin Bull	N/A	Verified/completed	

Client Notification Summary

Client	Project Manager	Date Notified	Response Date	How Notified
BECHTEL HANFORD, INC.	Doug Swenson	11/01/99	11/01/99	by narrative
	Response	Response Details		
	Process "as-is"			

Approval History

Name	Date Approved:	Position
Pam Kenitzer	10/28/99	Group Leader
Dale OConnell	10/29/99	Group Leader
Jackie Waddell	11/01/99	Project Manager
Doug Swenson	11/11/99	Project Manager
Kevin Bull	11/11/99	Laboratory Manager

0037

CHAIN OF CUSTODY

W-21038

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-024-07	Page 1 of 1
Collector Fahlberg		Company Contact Dave Encke		Telephone No. 373-3461		Project Coordinator Trent, SJ	Price Code IV/FE
Project Designation 233-S Plutonium Concentration Facility Process Areas - Ot		Sampling Location 233-S 200 west		SAF No. B99-024		Data Turnaround 21 Days	
Ice Chest No. CHI-009 & ERC99-003		Field Logbook No. FE 11337 EL 1435		Method of Shipment Gov vehicle			
Shipped To Quanterra Incorporated		Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A			
				COA R233SC 2F02			

POSSIBLE SAMPLE HAZARDS/REMARKS Possible contamination inside yellow bag- Special Handling and/or Storage	Preservation	None																	
	Type of Container	aG																	
	No. of Container(s)	1																	
	Volume	500mL																	

SDH SAMPLE ANALYSIS Due 11-3
 W02925 J9J120159
 See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time																
B0W513	D3JNA	8-23-99	1418	X															
B0W514	D3JNJ	8-23-99	1418	X															

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By	Date/Time	Received By	Date/Time	Received By	Date/Time	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) Gross Alpha/Beta, Isotopic P.U., Isotopic Am., Cm NP 237					
R. Fahlberg	10-4-99	R. Encke	10-4-99	R. Nielson	10-12-99						
R. Encke	10-12-99	R. Nielson	10-12-99	R. Nielson	10-12-99						
R. Nielson	10-12-99	R. Nielsen	10-12-99	R. Nielsen	10-12-99						

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

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel, and the public during transportation accidents. Packaging durability is related to potential hazards of material.
- Low-level radioactive material; very low radiation hazard to people.
- Quantity of material presents low radiation hazard if released from package during accident.
- Some radioactive materials cannot be detected by commonly available instruments.
- Packages do not have RADIOACTIVE I, II, or III labels. Some may have EMPTY labels or may have the word "Radioactive" in the package marking.
- If any radioactive contamination occurs, it will be extremely low level.

FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Radioactivity does not change flammability or other properties of materials.

PUBLIC SAFETY

- CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- Priorities for rescue, life-saving, first aid, and control of fire and other hazards are higher than the priority for measuring radiation levels.
- Radiation Authority must be notified of accident conditions, and is usually responsible for radiological decisions.
- Isolate spill or leak area immediately for at least 25 to 50 meters (80 to 160 feet) in all directions.
- Stay upwind.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters protective clothing will provide adequate protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not change effectiveness of fire control techniques.
 - Move containers from fire area if you can do it without risk.
 - Do not move damaged packages; move undamaged packages out of fire zone.
- Small Fires**
- Dry chemical, CO₂, water spray or regular foam.
- Large Fires**
- Water spray, fog (flooding amounts).

SPILL OR LEAK

- Do not touch damaged packages or spilled material.

Liquid Spills

- Cover with sand, earth or other noncombustible absorbent material.
- Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Apply artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons who contacted released material may be a minor contamination problem to contacted persons, equipment and facilities.
- Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

RADIOACTIVE MATERIAL, EXCEPTED PACKAGE--
LIMITED QUANTITY OF MATERIAL, 7, UN 2910

THIS PACKAGE CONFORMS TO THE CONDITIONS
AND LIMITATIONS SPECIFIED IN 49 CFR
173.421 FOR RADIOACTIVE MATERIAL,
EXCEPTED PACKAGE-LIMITED QUANTITY OF
MATERIAL, UN 2910

U.S. DEPARTMENT OF ENERGY, RICHLAND WA.
~~BY RUST FEDERAL SERVICES HANFORD~~
P.O. BOX 1970, 2355 STEVENS DRIVE
RICHLAND, WA 99352

WASTE MANAGEMENT, FEDERAL SERVICES,
NORTHWEST OPERATIONS

Trent, Stephen J

From: Encke, David B
Sent: Tuesday, September 28, 1999 4:28 PM
To: Trent, Stephen J
Cc: Weiss, Richard L
Subject: FW: Duct Coupon Sample #843

Steve,
Below are the NDA results of the 'hot' duct sample that we need analyzed. I suspect it may be able to go to an offsite lab. We also have the lagging sample that is associated with this sample point that needs to be analyzed. When you decide where the samples can go, let me know and I'll make arrangements with Jeff Gale to get them shipped. If you have any questions call me at 373-3461.
Thanks,
Dave

-----Original Message-----

From: Carter, George J Jr
Sent: Tuesday, September 28, 1999 2:17 PM
To: Encke, David B; Landsman, Steven D; Bidstrup, Robert H
Cc: Little, Nelson C
Subject: FW: Duct Coupon Sample #843

FYI

-----Original Message-----

From: Hurlbut, Samuel T
Sent: Tuesday, September 28, 1999 2:09 PM
To: Carter, George J Jr
Cc: Westsik, George A; Sorenson, Donald L
Subject: Duct Coupon Sample #843

George,

Don assayed the sample cut from the ductwork on 9/23/99. Analysis of the spectrum shows about 112 nCi/sample plutonium/amerium and about 0.1 nCi/sample neptunium-237. The spectrum also shows some Co-60 but we are not calibrated for it.

Sam Hurlbut

This message is not personal property and may be fully discoverable in litigation even if marked "personal" or "privileged and confidential," even if the message does not meet the definition of an official record.

this is what we have
for an Activity report
for BOW513, BOW514.
Questions go to Steve
Trent.

VOLUME TOTAL/PKG 40 gm

LABBING
BOWS14

HAVE (Ci)

Am-241 $5.6 \times 10^4 \rho_{Ci/gm} = 5.6 \times 10^{-8} Ci/gm = 2.24 \times 10^{-6} Ci$

Pu-239 $5.6 \times 10^4 \rho_{Ci/gm} = 5.6 \times 10^{-8} Ci/gm = 2.24 \times 10^{-6} Ci$

Np-237 $1.0 \times 10^2 \rho_{Ci/gm} = 1.0 \times 10^{-10} Ci/gm = 4.0 \times 10^{-9} Ci$

Co-60 $1.1 \times 10^4 \rho_{Ci/gm} = 1.1 \times 10^{-8} Ci/gm = 4.4 \times 10^{-7} Ci$

TOTAL/PKG $4.92 \times 10^{-6} Ci$

TBq/PKG $1.82 \times 10^{-7} TBq$

ALLOWE (Ci)

ISOTOPE	TYPE A
Am-241	$5.41 \times 10^{-3} Ci$
Pu-239	$5.41 \times 10^{-3} Ci$
Np-237	13.5 Ci
Co-60	10.8 Ci

LTD QTY
Az (10 ⁻³) SOLID
$5.41 \times 10^{-6} Ci$
$5.41 \times 10^{-6} Ci$
$1.35 \times 10^{-2} Ci$
$1.08 \times 10^{-2} Ci$

HAVE VS ALLOWED

$$\frac{2.24 \times 10^{-6} Ci}{5.41 \times 10^{-6} Ci} + \frac{2.24 \times 10^{-6} Ci}{5.41 \times 10^{-6} Ci} + \frac{4.0 \times 10^{-9} Ci}{1.35 \times 10^{-2} Ci} + \frac{4.4 \times 10^{-7} Ci}{1.08 \times 10^{-2} Ci}$$

$$4.14 \times 10^{-1} + 4.14 \times 10^{-1} + 2.96 \times 10^{-7} + 4.07 \times 10^{-5} = .82$$

.82 < 1 = LTD QTY

III

VOLUME TOTAL/PKG 20gm COUPON

BW513

HAVE (Ci)

$$\text{Am-241 } 5.6 \times 10^4 \text{ pCi} = 5.6 \times 10^{-8} \text{ Ci/gm} = 1.12 \times 10^{-6} \text{ Ci}$$

$$\text{Pu-239 } 5.6 \times 10^4 \text{ pCi} = 5.6 \times 10^{-8} \text{ Ci/gm} = 1.12 \times 10^{-6} \text{ Ci}$$

$$\text{Np-237 } 1.0 \times 10^2 \text{ pCi} = 1.0 \times 10^{-10} \text{ Ci/gm} = 2.0 \times 10^{-9} \text{ Ci}$$

$$\text{Co-60 } 1.1 \times 10^4 \text{ pCi} = 1.1 \times 10^{-8} \text{ Ci/gm} = 2.2 \times 10^{-7} \text{ Ci}$$

$$\text{TOTAL/PKG } 2.46 \times 10^{-6} \text{ Ci}$$

$$\text{TBg/PKG } 9.11 \times 10^{-8} \text{ TBg}$$

ALLOWE (Ci)

ISOTOPE	TYPE A	LTD QTY
Am-241	$5.41 \times 10^{-3} \text{ Ci}$	$5.41 \times 10^{-6} \text{ Ci}$
Pu-239	$5.41 \times 10^{-3} \text{ Ci}$	$5.41 \times 10^{-6} \text{ Ci}$
Np-237	13.5 Ci	$1.35 \times 10^{-2} \text{ Ci}$
Co-60	10.8 Ci	$1.08 \times 10^{-2} \text{ Ci}$

HAVE VS ALLOWED

$$\frac{1.12 \times 10^{-6} \text{ Ci}}{5.41 \times 10^{-6} \text{ Ci}} + \frac{1.12 \times 10^{-6} \text{ Ci}}{5.41 \times 10^{-6} \text{ Ci}} + \frac{2.0 \times 10^{-9} \text{ Ci}}{1.35 \times 10^{-2} \text{ Ci}} + \frac{2.2 \times 10^{-7} \text{ Ci}}{1.08 \times 10^{-2} \text{ Ci}}$$

$$2.07 \times 10^{-1} + 2.07 \times 10^{-1} + 1.48 \times 10^{-7} + 2.0 \times 10^{-5} = .41$$

$$.41 < 1 = \text{LTD QTY}$$

WAT III

0043

1. SHIP FROM U.S. DEPT. OF ENERGY C/O
 Company BECHTEL HANFORD INC.
 Address 3728 BLDG. 300 AREA
 City, State, Zip RICHLAND, WA. 99352
 Contact JEFF GALE
 Phone 509-372-9281

RADIOACTIVE SHIPMENT RECORD 106619³
Page 1 of 2

Ship Prepaid Collect 4.

Via Motor Air Psgr UPS
 Rail Air Cargo Site Carrier

SHIPMENT AUTHORIZATION NUMBER _____

2. SHIP TO
 Company QUANTERRA INC.
 Address 2800 GEORGE WASHINGTON WAY
 City, State, Zip RICHLAND WA 99352
 Attention KAREN ACHTENBURG
 Phone 509-375-3131

Markings Applied **6.**

Radioactive - LSA
 Radioactive - SCO
 Type A N/A
 Type B with trefoil

LSA Description **8.**

LSA-I
 LSA-II
 LSA-III
 SCO-I N/A
 SCO-II

Labels Applied **10.**

Empty
 Radioactive White - I
 Radioactive Yellow - II
 Radioactive Yellow - III
 Subsidiary Hazard N/A

For Normal Form only **7.**

Identify

Physical Form Liquid Gas
 Solid

Chemical Form Elemental
 Metal Nitrate
 Oxide Mixture
 Other

5. HM Proper Shipping Name: _____ Radioactive Material:

<input type="checkbox"/>	excepted package - empty packaging	7	UN2910
<input type="checkbox"/>	excepted package - instruments or articles	7	UN2910
<input checked="" type="checkbox"/>	excepted package - limited quantity of material	7	UN2910
<input type="checkbox"/>	excepted package - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
<input type="checkbox"/>	Special Form, n.o.s.	7	UN2974
<input type="checkbox"/>	Low Specific Activity, n.o.s.	7	UN2912
<input type="checkbox"/>	n.o.s.	7	UN2982
<input type="checkbox"/>	Fissile, n.o.s.	7	UN2918
<input type="checkbox"/>	Surface Contaminated Object	7	UN2913

EMERGENCY RESPONSE **9.**

Telephone 509-373-3800

Emergency Response Guide(s) 161

Highway Route Controlled Quantity
 Exclusive Use Shipment
 with instructions
 Placards Applied
 If Rail Specify: _____
 Fissile Excepted, Grams <15gms
 Excepted Package Statement

Warning -- Fissile Material Controlled Shipment. Do Not Load More Than 1/2 Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels. TBA

11.	No. Pkgs.	Model Package	COC/Spec	Serial No.	Seal No.	Isotopes	T.I.	Bq/Package	Gr. Wt. Kg.
	1	POLY COOLER	STRONGTIGHT	CHI-009	TAPE	Am-241, Pu-239, Co-60, Np-237	N/A	9.11x10 ⁻⁸	3 Kg
	1	POLY COOLER	STRONGTIGHT	ERC99-003	TAPE	Am-241, Pu-239, Co-60, Np-237	N/A	1.82x10 ⁻¹	4 Kg
	POLY CONTAINERS, DOUBLE BAGGED, PACKED WITH PACKING PEANUTS INSIDE POLYCOOLER. ERC99-003								
(Shipper may describe package in detail on one of the unused lines above)								TOTALS	N/A 2.7x10 ⁷ 7 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 Stuart Lake On behalf of DOE-RL Date 10-11-99 Organization ERC AFS Complete Cost Code (Inc. End Function) R233SC2F02

13. Surface Dose Rate of Package <0.005 or _____ mSv/hr
 <0.5 or _____ mrem/hr (N+B Y)

Dose Rate @ 1 Meter from Surface of Package <0.005 or _____ mSv/hr
 <0.5 or _____ mrem/hr (N+B Y)

Smears of Outer Container <0.41 Bq (22 dpm) β & γ /cm²
 <0.04 Bq (2.2 dpm) α /cm²
 <Tbl. 2-2 HSRM Onsite Limits

TRUCK LOAD OR EXCLUSIVE USE

Surface <2 mSv/hr (200 mrem/hr)
 @ 2 meters <0.1 mSv/hr (10 mrem/hr)
 @ Cab <0.02 mSv/hr (2 mrem/hr) or sleeper (Using N+B Y)

Signature - Radiation Monitoring [Signature] Bldg. 3728 Survey No. 14524 Date 10-12-99
FT 1/2 99-15 W 10-12-99

14. TRANSPORTER DRIVER SIGNATURE [Signature] RECEIVER SIGNATURE [Signature] Date 10-12-99

15. OFFSITE AUTHORIZATION

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

Authorized Signature [Signature] Printed Name RONALD L. CLAWSON Date 10-12-99

16. AUTHORIZATION FOR SHIPMENT

AIR TRANSPORT CERTIFICATION N/A

CARGO AIRCRAFT Cargo Aircraft Only Labels Applied

PASSENGER AIRCRAFT Ltd Qty Research/Medical Diagnosis Human Medical Research

Pkg. Dimensions (cm) _____

17. OFFSITE AUTHORIZATION

Tracking No. KMBH-3709 Date Shipped _____ Routing _____ ETA _____

Surveyed By _____ Date _____ Approved for Shipment Offsite _____ Date _____

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 10-12-99 1130 SG#: W02925
Work Order Number: J9J120159 SAF #: B99-024
Shipping Container ID: CHI-009 Chain of Custody # B99-024-07

- 1. Custody Seals on shipping container intact? Yes [] No []
- 2. Custody Seals dated and signed? Yes [] No []
- 3. Chain-of-Custody record present? Yes [] No []
- 4. Cooler temperature n/a
- 5. Vermiculite/packing materials is Wet [] Dry []
- 6. Number of samples in shipping container: 1
- 7. Sample holding times exceeded? Yes [] No []

8. Samples have: <input checked="" type="checkbox"/> tape <input type="checkbox"/> hazard labels <input checked="" type="checkbox"/> custody seals <input type="checkbox"/> appropriate sample labels
9. Samples are: <input checked="" type="checkbox"/> in good condition <input type="checkbox"/> leaking <input type="checkbox"/> broken <input type="checkbox"/> have air bubbles

- 10. Where any anomalies identified in sample receipt? Yes [] No []
- 11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: K. H. Anderson Date: 10-12-99
Telephoned To: _____ On _____ By _____

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 10-12-99 1130 SG#: W02925
Work Order Number: J9W120159 SAF #: B99-024
Shipping Container ID: ERC99-03 Chain of Custody #: B99-024-07

- 1. Custody Seals on shipping container intact? Yes [] No []
- 2. Custody Seals dated and signed? Yes [] No []
- 3. Chain-of-Custody record present? Yes [] No []
- 4. Cooler temperature 74
- 5. Vermiculite/packing materials is Wet [] Dry []
- 6. Number of samples in shipping container: 1
- 7. Sample holding times exceeded? Yes [] No []

8. Samples have: <input checked="" type="checkbox"/> tape <input type="checkbox"/> hazard labels <input checked="" type="checkbox"/> custody seals <input type="checkbox"/> appropriate sample labels
9. Samples are: <input checked="" type="checkbox"/> in good condition <input type="checkbox"/> leaking <input type="checkbox"/> broken <input type="checkbox"/> have air bubbles

- 10. Where any anomalies identified in sample receipt? Yes [] No []
- 11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: L. Stokunberg Date: 10-12-99
Telephoned To: _____ On _____ By _____

COC Signature Page

W02925

Lot or Batch #: 9287155 Initials/Date Procedure #

Released By	Initials/Date	Procedure #
Released By	<u>[Signature]</u> 10/13/99	<u>RICHRC0009</u>
Received	<u>DRC</u> 10-13-99	<u>RICHRC05016</u>
Released By	<u>DRC</u> 10-15-99	<u>n/a</u>
Received	<u>Chal</u> 10/15/99	<u>RICHRC05080</u>
Released By	<u>Chal</u> 10/25/99	<u>n/a</u>
Received	<u>RB</u> 10/25/99	<u>RC5039</u>
Released By	<u>RB</u> 10/26/99	<u>n/a</u>
Received	<u>CS</u> ^{10/27/99} 10/26/99	<u>RICHRC05081</u>
Released By	<u>CS</u> 10/29/99	<u>n/a</u>
Received	<u>PK</u> 10-29-99	<u>RICHRC0007</u>
Released By	<u>PK</u> 11-1-99	<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 10/14/99
Time: 9:25:30

<u>Prep</u>	<u>Sep1</u>	<u>Sep2</u>	
_____	_____	_____	Samples Covered
_____	_____	_____	Labware Labeled
_____	_____	_____	Verify Test/Container
_____	_____	_____	Samples Ordered Sequentially
_____	_____	_____	Logbooks Entered

 * QC BATCH: 9287155 *
 *

Prep Dt/Tm/Person: 10/14/99 0
 Sep1 Dt/Tm/Person: 0/00/00 000000
 Sep2 Dt/Tm/Person: 0/00/00 000000
 Cocktail Date/Time: 0/00/00

W02905

SN: Americium-241 and Curium-242,243,244 by Alpha Spec
 7L: PuAmCm PrpRC5016, SepRC5080(5003)/RC5010(5039)
 SI: CLIENT: HANFORD

<u>ANL</u> <u>DUE</u>	<u>LOT#,MSRUN#/ WORK ORDER</u>	<u>CLIENT</u> <u>MATRIX</u>	<u>INIT/ FINAL</u>	<u>DISH</u>	<u>GEOM</u>	<u>PPT1WT</u>	<u>pH</u>	<u>COUNT</u> <u>TIME</u>	<u>MID/AVE</u> <u>DATE/TIME</u>	<u>TRACER ID/ SPIKE ID</u>	<u>CRDL</u>	<u>UNITS</u>
11/02/99	J9J120159-001 D3JNA-1-06	BIOLOGIC									1.00E+00	pCi/g
11/02/99	J9J120159-001 D3JNA-1-08X	BIOLOGIC									1.00E+00	pCi/g
11/02/99	J9J120159-002 D3JNJ-1-06	BIOLOGIC									1.00E+00	pCi/g
0/00/00	J9J140000-155 D3MEV-1-01B	BIOLOGIC									1.00E+00	pCi/g
0/00/00	J9J140000-155 D3MEV-1-02C	BIOLOGIC									1.00E+00	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 5

0048

COC Signature Page

W02925

Lot or Batch #: 9287169 Initials/Date Procedure #

Released By	<u>FW 10/13/99</u>	<u>RICH RC0009</u>
Received	<u>DC 10-13-99</u>	<u>RLHRC5016</u>
Released By	<u>DC 10-13-99</u>	<u>n/a</u>
Received	<u>DM 10-27-99</u>	<u>RICHRC 5009 RO</u>
Released By	<u>DM 10-29-99</u>	<u>n/a</u>
Received	<u>AB 11-5-99</u>	<u>RL5003</u>
Released By	<u>AB 11-5-99</u>	<u>n/a</u>
Received	<u>CS 11/5/99</u>	<u>RICHRC00521</u>
Released By	<u>CS 11/9/99</u>	<u>n/a</u>
Received	<u>PK 11-8-99</u>	<u>RICHRC0005</u>
Released By		<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		

RC-151, Rev.1, 6/99

RQC053

Quanterra Incorporated
Information Sheet Rad Prep

Run Date: 10/27/99
Time: 15:33:20

Parent Batch:
Associated Batches:

:
:
:
:

* QC BATCH: 9287169 *
*

Page: 1

SW: Neptunium-237 by Alpha Sp
9H: Np PrpRC5016, SepRC5009(5)
SI: CLIENT: HANFORD

Analytical Due Date: 0/00/00

Project Manager: DES

Lot# Work Order	Analyst Client Matrix	Due Date Aliquot	Client Name Geometry	Count	Ave Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha Beta	PM Bin
J9J120159-001 X D3JNA-1-0A Comments: OTHER SOLID	OTHER SOLID	0/00/00	Bechtel Hanford, .0000	.000	8/23/99	14:18		1	pCi/g	**OTHER **OTHER INTERMEDIATELAB	DES
J9J120159-001 D3JNA-1-01 Comments: OTHER SOLID	OTHER SOLID	0/00/00	Bechtel Hanford, .0000	.000	8/23/99	14:18		1	pCi/g	**OTHER **OTHER INTERMEDIATELAB	DES
J9J120159-002 D3JNJ-1-01 Comments: OTHER SOLID	OTHER SOLID	0/00/00	Bechtel Hanford, .0000	.000	8/23/99	14:18		1	pCi/g	**OTHER **OTHER INTERMEDIATELAB	DES
J9J120159-002 S D3JNJ-1-08 Comments: OTHER SOLID	OTHER SOLID	0/00/00	Bechtel Hanford, .0000	.000	8/23/99	14:18			pCi/g	**OTHER **OTHER INTERMEDIATELAB	DES
J9J140000-169 B D3MFM-1-01 Comments:	BIOLOGICAL	0/00/00	Bechtel Hanford,		8/23/99	14:18		1	pCi/g	**NA **NA	DES
J9J140000-169 C D3MFM-1-02 Comments:	BIOLOGICAL	0/00/00	Bechtel Hanford,		8/23/99	14:18			pCi/g	**NA **NA	DES

Total Number of Samples In Batch: 00006

Batch Information:

Dry Wt: Decay Correct: Y Blank Sub: None Call In:

Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL
Neptunium 237 1

Tracer Yield

Type
RPD

QC Control Limits

** NYS = Not Yet Screened

** NA = Not Applicable

** Other = Other than Gross Alpha or Gross Beta

++ Indicates that Batch Information has changed for this sample. Print worksheet for details.

0050

COC Signature Page

W02925

Lot or Batch #	Initials/Date	Procedure #
9287168		
Released By	DW 10/13/99	RICH RC 50009
Received	10-13-99	RICH RC 5016
Released By	DW 10-15-99	n/a
Received	Jhal 10/15/99	RICH RC 5080
Released By	Jhal 10/25/99	n/a
Received	RB 10/25/99	RC 5039
Released By	RB 10/26/99	n/a
Received	CS 10/26/99	RECH RD 508 R1
Released By	CS 10/27/99	n/a
Received	PK 10-27-99	RICH RC 0002
Released By	PK 10-28-99	n/a
Received		
Released By		n/a
Received		

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 10/14/99
Time: 9:26:13

Prep	Sep1	Sep2
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Samples Covered
 Labware Labeled
 Verify Test/Container
 Samples Ordered Sequentially
 Logbooks Entered

 *
 * QC BATCH: 9287168 *
 *

Prep Dt/Tm/Person: 10/14/99 0
 Sep1 Dt/Tm/Person: 0/00/00 000000
 Sep2 Dt/Tm/Person: 0/00/00 000000
 Cocktail Date/Time: 0/00/00

W03925

SO: Plutonium-238,239/40 by Alpha Spec
 7L: PuAmCm PrpRC5016, SepRC5080(5003)/RC5010(5039)
 SI: CLIENT: HANFORD

ANL DUE	LOT#,MSRUN#/ WORK ORDER	CLIENT MATRIX	INIT/ FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
11/02/99	J9J120159-001 D3JNA-1-05	BIOLOGIC									1.0	pCi/g
11/02/99	J9J120159-001 D3JNA-1-09X	BIOLOGIC									1.0	pCi/g
11/02/99	J9J120159-002 D3JNJ-1-05	BIOLOGIC									1.0	pCi/g
0/00/00	J9J140000-168 D3MFL-1-01B	BIOLOGIC									1.0	pCi/g
0/00/00	J9J140000-168 D3MFL-1-02C	BIOLOGIC									1.0	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 5

0052

COC Signature Page

W02925
Lot or Batch #: 9287170 Initials/Date Procedure #

Released By	<u> RW 10/13/99</u>	<u> RICHRC0009 </u>
Received	<u> DUC 10-13-99</u>	<u> RICHRC 5016 / 5017 </u>
Released By	<u> DUC 10-15-99</u>	<u> n/a </u>
Received	<u> R 10/19/99</u>	<u> RICHRC0007 </u>
Released By	<u> nd 10/18/99</u>	<u> n/a </u>
Received	<u> PK 10-18-99</u>	<u> RICHRC0005 </u>
Released By	<u> PK 10-27-99</u>	<u> n/a </u>
Received	_____	_____
Released By	_____	<u> n/a </u>
Received	_____	_____
Released By	_____	<u> n/a </u>
Received	_____	_____
Released By	_____	<u> n/a </u>
Received	_____	_____

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 10/14/99
Time: 9:28:50

Prep	Sep1	Sep2
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Samples Covered
 Labware Labeled
 Verify Test/Container
 Samples Ordered Sequentially
 Logbooks Entered

 *
 * QC BATCH: 9287170 *
 *

 W02925

Prep Dt/Tm/Person: 10/14/99 0
 Sep1 Dt/Tm/Person: 0/00/00 000000
 Sep2 Dt/Tm/Person: 0/00/00 000000
 Cocktail Date/Time: 0/00/00

TA: Gamma by HPGE
 AW: Gamma PrpRC5017
 SI: CLIENT: HANFORD

ANL DUE	LOT#,MSRUN#/WORK ORDER	CLIENT MATRIX	INIT/FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/SPIKE ID	CRDL	UNITS
11/02/99	J9J120159-001 D3JNA-1-0CX	BIOLOGIC									0.05	pCi/g
11/02/99	J9J120159-001 D3JNA-1-04	BIOLOGIC									0.05	pCi/g
11/02/99	J9J120159-002 D3JNJ-1-04	BIOLOGIC									0.05	pCi/g
0/00/00	J9J140000-170 D3MFN-1-01B	BIOLOGIC									0.05	pCi/g
0/00/00	J9J140000-170 D3MFN-1-02C	BIOLOGIC									0.05	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 5

0054

COC Signature Page

W02925

Lot or Batch #: 9287153

Initials/Date

Procedure #

	Initials/Date	Procedure #
Released By	PK 10-13-99	Rich RC 5009
Received	Doc 10-13-99	RICH RC 5016 / 5014
Released By	Doc 10-15-99	n/a
Received	CS 10/17/99	RICH RC 5008
Released By	CS 10/18/99	n/a
Received	PK 10-18-99	RICH RC 5000
Released By	PK 10-18-99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 10/14/99
Time: 8:44:30

Prep	Sep1	Sep2
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Samples Covered
 Labware Labeled
 Verify Test/Container
 Samples Ordered Sequentially
 Logbooks Entered

 *
 * QC BATCH: 9287153 *
 *

Prep Dt/Tm/Person: 10/14/99 0
 Sep1 Dt/Tm/Person: 0/00/00 000000
 Sep2 Dt/Tm/Person: 0/00/00 000000
 Cocktail Date/Time: 0/00/00

W03905
 S7: Gross Alpha by GPC using Am-241 curve
 BA: Gross Alpha PrpRC5016/5014
 5I: CLIENT: HANFORD

ANL DUE	LOT#,MSRUN#/WORK ORDER	CLIENT MATRIX	INIT/FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/SPIKE ID	CRDL	UNITS
11/02/99	J9J120159-001 D3JNA-1-02	BIOLOGIC									10	pCi/g
11/02/99	J9J120159-001 D3JNA-1-07X	BIOLOGIC									10	pCi/g
11/02/99	J9J120159-002 D3JNJ-1-02	BIOLOGIC									10	pCi/g
0/00/00	J9J140000-153 D3MER-1-01B	BIOLOGIC									10	pCi/g
0/00/00	J9J140000-153 D3MER-1-02C	BIOLOGIC									10	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 5

0056

COC Signature Page

W02925

Lot or Batch #: 9287154

Initials/Date

Procedure #

	Initials/Date	Procedure #
Released By	<u>PK 10-13-99</u>	<u>Richrc0009</u>
Received	<u>PK 10-13-99</u>	<u>Richrc 5016 / 5014</u>
Released By	<u>PK 10-15-99</u>	<u>n/a</u>
Received	<u>CS 10/17/99</u>	<u>Richrc0003</u>
Released By	<u>CS 10/18/99</u>	<u>n/a</u>
Received	<u>PK 10-18-99</u>	<u>Richrc0000</u>
Released By	<u>PK 10-28-99</u>	<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 10/14/99
Time: 8:45:25

<u>Prep</u>	<u>Sep1</u>	<u>Sep2</u>	
_____	_____	_____	Samples Covered
_____	_____	_____	Labware Labeled
_____	_____	_____	Verify Test/Container
_____	_____	_____	Samples Ordered Sequentially
_____	_____	_____	Logbooks Entered

 *
 * QC BATCH: 9287154 *
 *

Prep Dt/Tm/Person: 10/14/99 0
 Sep1 Dt/Tm/Person: 0/00/00 000000
 Sep2 Dt/Tm/Person: 0/00/00 000000
 Cocktail Date/Time: 0/00/00

W02925

S8: Gross Beta by GPC using Sr/Y-90 curve
 BD: Gross Beta PrpRC5016/5014
 5I: CLIENT: HANFORD

<u>ANL</u> <u>DUE</u>	<u>LOT#,MSRUN#/ WORK ORDER</u>	<u>CLIENT</u> <u>MATRIX</u>	<u>INIT/ FINAL</u>	<u>DISH</u>	<u>GEOM</u>	<u>PPT1WT</u>	<u>pH</u>	<u>COUNT</u> <u>TIME</u>	<u>MID/AVE</u> <u>DATE/TIME</u>	<u>TRACER ID/ SPIKE ID</u>	<u>CRDL</u>	<u>UNITS</u>
11/02/99	J9J120159-001 D3JNA-1-03	BIOLOGIC									15	pCi/g
11/02/99	J9J120159-002 D3JNJ-1-03	BIOLOGIC									15	pCi/g
11/02/99	J9J120159-002 D3JNJ-1-07X	BIOLOGIC									15	pCi/g
0/00/00	J9J140000-154 D3MET-1-01B	BIOLOGIC									15	pCi/g
0/00/00	J9J140000-154 D3MET-1-02C	BIOLOGIC									15	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 5

0550

COC Signature Page

Lot or Batch #:	Initials/Date	Procedure #
9295267 J9J120159		
Released By	PK 10-18-99	RICHRC0002
Received	PK 10-18-99	RICHRC 5016 / 5014
Released By	JUL 10-22-99	n/a
Received	10/22/99	RICHRC0003
Released By	CS 10/23/99	n/a
Received	PK 10-26-99	RICHRC0002
Released By	PK 10-26-99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RQC058

Quanterra Incorporated
EXTRACTION BENCH WORKSHEET

Run Date: 10/22/99
Time: 14:00:44

LEV	LEV	LEV	LEV	
1	2	1	2	
-	-	-	-	Weights/Volumes
-	-	-	-	Spike & Surrogate Worksheet
-	-	-	-	Vial contains correct volume
-	-	-	-	Labels, greenbars, worksheets
-	-	-	-	computer batch: correct & all match
-	-	-	-	Anomalies to Extraction Method

- Expanded Deliverable
- COC Completed
- Bench Sheet Copied
- Package Submitted to Analytical Group
- Bench Sheet Copied per COC

Extractionist: _____

Concentrationist: _____

Reviewer/Date: _____ / 0/00/00

 * QC BATCH: 9295267 *
 *

PREP DATE: 10/22/99
 COMP DATE: 10/22/99

Gross Beta by GPC using Sr/Y-90 curve
 Gross Beta PrpRC5016/5014

EXTR	ANL	LOT#,MSRUN#/ EXP	DUE	WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	ADJ1	ADJ2	EXTRACTION	SOLVENTS VOL	EXCHANGE	VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	11/02/99	J9J120159-002 D3JNJ-1-09X				BD	S8	BIOLOGIC	NA	NA	NA			.0		.0	
COMMENTS:																	
0/00/00	11/02/99	J9J120159-002 D3JNJ-2-03				BD	S8	BIOLOGIC	NA	NA	NA			.0		.0	
COMMENTS:																	
0/00/00	0/00/00	J9J220000-267 D41N1-1-01B				BD	S8	BIOLOGIC	NA	NA	NA			.0		.0	
COMMENTS:																	
0/00/00	0/00/00	J9J220000-267 D41N1-1-02C				BD	S8	BIOLOGIC	NA	NA	NA			.0		.0	
COMMENTS:																	

R = RUSH C = CLP
 E = EPA 600 D = EXP.DEL)
 M = CLIENT REQ MS/MSD

NUMBER OF WORK ORDERS IN BATCH: 4

0933