S0029

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FLUOR

June 25, 2001

FH-0103426

Ms. J. H. Kessner, Program Manager
Analytical Services
Bechtel Hanford
3190 George Washington Way H9-03
Richland, Washington 99352

Dear Ms. Kessner:

FINAL RESULTS FOR THE 233S PROCESS VESSEL LIQUID AND PIPE SLUDGE SAMPLES – SDG S0029 AND S0030

Reference: (1) Letter, A. S. Chaloupka, BHI, to E. F. Mares, FDH, "Letter of Instruction for the 233S Plutonium Concentration Facility Sample Analysis," 084911, dated December 20, 2000.

(2) HNF-SD-CD-QAPP, Rev. 5, 222-S Laboratory Quality Assurance Plan, dated April 2, 2001.

This letter and attachments present the final results for the process vessel liquid sample B11Y74 and the pipe sludge sample B11Y22 received at the 222-S Laboratory from the 233S Plutonium Concentration Facility Process areas on May 2, 2001. The samples were analyzed for those analytes indicated on the attached copy of the chain of custody form in accordance with the *Letter of Instruction for the Plutonium Concentration Facility Sample Analysis* referenced above.

If you have any questions regarding this report, please feel free to call me on 373-4314.

Sincerely,

Ruth A Bushaw

Ruth A Bushaw, Project Coordinator
Analytical Services
222-S Laboratory

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Attachments (5)

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ATTACHMENT 1

Final Results for the 233S Process Vessel Liquid And Pipe Sludge Samples-SDG S0029 and S0030

Consisting of 5 pages,
including cover page

FINAL RESULTS FOR THE 233S PROCESS VESSEL LIQUID AND PIPE SLUDGE SAMPLES – SDG S0029 AND S0030

One liquid sample (B11Y74, SDG S0029) and one solid sample (B11Y22, SDG S0030) from the 233S Plutonium Concentration Facility were received at the 222-S Laboratory on May 2, 2001. The samples were analyzed for those analytes indicated on the attached copies of the chain of custody (COC) forms in accordance with the *Letter of Instruction for the 233S Plutonium Concentration Facility* (LOI), referenced in the cover letter.

A Data Summary Report is included as Attachment 2. The correlation between customer sample identification numbers and laboratory identification numbers are presented in the sample breakdown diagrams included as Attachment 3. Copies of the chain of custody and Request for Sample Analysis forms are included as Attachment 4. Correspondences concerning analysis variances that were accepted by the 233-S Project personnel are included in Attachment 5.

Analysis for metals using the SW-846 toxicity characteristic leaching procedure (TCLP) was requested for both the liquid sample B11Y74 and the solid sample B11Y22. The analysis of the liquid sample was performed on an acid digestion of the original sample. For the solid sample, a TCLP extraction was performed, followed by an acid digestion of the extract. It was noted by the analysts that during the filtration of the TCLP extract, approximately half of the extracted solution was lost due to a faulty filter apparatus. Due to a delay for decontamination of the fume hood, the remainder of the extract solution sat unfiltered for an additional 3-day period. The chemist indicated that this delay in filtration would not adversely affect the analysis. Chromium concentrations reported for both samples (78.30 µg/mL for B11Y74 and 235 µg/mL for B11Y22) were well above the TCLP regulatory level of 5 µg/mL.

On May 24, 2001, a request was received by electronic mail (included in Attachment 5) to report neptunium-237 (^{237}Np) by inductively coupled plasma/mass spectrometry (ICP/MS). The analysis results are included in the Data Summary Report.

Sample Appearance and Handling

SDG S0029 – liquid sample B11Y74: The sample consisted of approximately 150 mL of opaque light gray liquid. There were no settled solids or floating organic layer visible.

SDG S0030 – solid sample B11Y22: The sample was a gray to gray/green solid. The texture of the sample resembled a clumpy moist salt.

Analytical Results

Holding Times

The 8-day delay between the sampling date and the date that sample B11Y22 was received at the 222-S Laboratory, and the 222-S Laboratory requirement to perform a total alpha analysis prior to other analyses on samples with a "high alpha" designation caused the Laboratory to miss the SW-846 holding times for TCLP extraction (28 days), Hg (28 days), pH (24 hours), and nitrate (48 hours). The 222-S Laboratory requirement to perform a total alpha analysis prior to other analyses on samples with a "high alpha" designation caused the Laboratory to miss the SW-846 holding times for Hg (28 days), pH (24 hours), and nitrate (48 hours) for sample B11Y74. The customer was informed that these holding times would be missed and acknowledges that the missed holding times should not be an issue for the project (electronic communication included in Attachment 5).

Quality Control Results

Laboratory Control Standards

All laboratory control standard (LCS) recoveries were acceptable in accordance with the 222-S Laboratory Quality Assurance Plan (QAPP-016).

Matrix Spikes/Matrix Spike Duplicates/Sample Duplicates

Per the LOI, no matrix spikes, matrix spike duplicate or duplicate samples were required.

Preparation Blanks

Low levels of beta, barium and nitrate contamination were found in the acid digest, TCLP extraction and water digestion preparation blanks associated with the analysis of the solid sample B11Y22. The beta contamination was only 1.24% of the concentration reported for the sample and the nitrate contamination, corrected for the sample dilution and digestion factors, was only 0.2% of the result reported for the sample. Therefore, for these two analytes, the contamination was considered insignificant in accordance with QAPP-016, and no reanalysis was requested.

For the barium analysis for TCLP, the blank contamination was approximately 5.7% of the sample result. However, the blank contamination level was much less than 5% of the TCLP regulatory level of 100 µg/mL and, in accordance with QAPP-016, no reanalysis was required.

Practical Quantitation Limits (PQL)

All PQLs were met, except as discussed below. For those analytes reported as non-detected, the customer requested practical quantitation limits (PQL) or detection limits (DL) were not met for the following analytes.

For gamma energy analysis (GEA), the following analytes reported for sample B11Y22 were over the required PQL: cobalt-60, cesium-137, europium-152, europium-154, europium-155,

radium-226, and radium-228. This was due to the small sample size, driven by the amounts of americium and plutonium in the samples.

PQLs for alpha energy analysis (AEA) were not met for curium-243/44 for either sample because of the dilution required to reduce the activity of americium-241 in the samples.

For ICP/MS, PQLs were not met for uranium-234 on either sample because of the dilution required to reduce the concentration of uranium-238 and the dissolved solids in the samples.

For ion chromatography, the PQLs were not met for fluoride, chloride, nitrite, phosphate and oxalate in the solid sample B11Y22 and for chloride, nitrite, phosphate and oxalate for the liquid sample B11Y74. Fluoride was detected in the liquid and nitrate was detected in both samples. The high reported detection limits were the result of dilutions required for sample analysis due to the high nitrate concentration. A reanalysis was not performed because the laboratory used the least dilution, or the largest sample size possible.

For the TCLP analysis of the solid sample B11Y22, the PQL for selenium was not met because of the dilution required to reduce the high concentration of sodium and uranium in the sample. No reanalysis was requested because the sample was already analyzed with the least amount of dilution possible. Missing this detection limit should not be an issue for this sample, since the concentration reported for chromium in this sample (235 μg/mL) is well above the regulatory level of 5μg/mL.

Analytical Procedures

Table 1 presents the 222-S Laboratory analytical procedures used to generate the reported results.

Table 1. Analytical Procedures

Analysis	Preparation Procedure	Analysis Procedure
Inorganic Analyses		
pH	Direct for Liquid	LA-212-106 Rev. C-6
pH	Direct for Solid	LA-212-105 Rev. C-5
H^+	Direct	LA-211-102 Rev. D-3
Hg	Direct	LA-325-106 Rev. A-4
IC	Direct for Liquid Water Digest for Solid	LA-533-107 Rev. B-0
ICP (TCLP metals)	Acid Digest for Liquid TCLP Ext/Acid Dig for Solid	LA-505-161 Rev. D-0
ICP/MS (actinides)	Acid Digest for Liquid & Solid	LA-506-101 Rev A-4
Total Uranium	Direct	LA-925-009 Rev. D-2

Table 1. Analytical Procedures

Analysis	Preparation Procedure	Analysis Procedure
Radionuclide Analyses		
AT/TB	Direct for Liquid Acid Digest for Solid	LA-508-101 Rev. G-2
^{241}Am $^{243/244}Cm$	Direct for Liquid Acid Digest for Solid	LA-953-104 Rev B-4
^{238}Pu & $^{239/240}Pu$	Direct for Liquid Acid Digest for Solid	LA-953-104 Rev B-4
^{237}Np	Direct for Liquid Acid Digest for Solid	LA-933-141 Rev H-5
GEA	Direct for Liquid Acid Digest for Solid	LA-548-121 Rev F-2

Acid digest procedure – liquid: LA-505-158 Rev. F-1; solid LA-505-163 Rev. C-0
Water digest procedure – solid: LA-504-101 Rev. G-3
TCLP extraction procedure – LA-544-134 Rev C-1

Abbreviations

Hg – mercury
H^+ - hydrogen ion concentration
IC – ion chromatography
ICP – inductively coupled plasma
TCLP – toxicity characteristic leaching procedure
ICP/MS – ICP/mass spectrometry
AT/TB – total alpha/total beta
Np – neptunium
GEA – gamma energy analysis
Am – americium
Pu - plutonium

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ATTACHMENT 2

Data Summary Report
233S SDG10

Consisting of 5 pages,
including cover page

Attachment 2. Data Summary Report
233S SDG10

CUSTOMER SDG #: S0029
CUSTOMER SAMPLE ID: B11Y74

SAMPLE PORTION: Acid Digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000188		B	Uranium-234 by ICP/MS AcidD158	ug/mL	n/a	<0.0240	<1.20e-01	n/a	n/a	n/a	n/a	1.20e-01	n/a
S01M000188		B	Uranium-235 by ICP/MS AcidD158	ug/mL	101.8	<0.0240	4.210	n/a	n/a	n/a	122.2	1.20e-01	n/a
S01M000188		B	Uranium-238 by ICP/MS AcidD158	ug/mL	107.0	<0.0240	8.64e+02	n/a	n/a	n/a	111.0	1.20e-01	n/a
S01M000188		B	Neptunium-237 by ICP/MS	ug/mL	n/a	<0.100	25.88	n/a	n/a	n/a	115.2	5.00e-01	n/a
S01M000188		B	Plutonium-239 by ICP/MS	ug/mL	n/a	<0.100	1.75e+02	n/a	n/a	n/a	89.55	5.00e-01	n/a
S01M000188		B	Plutonium-240 by ICP/MS	ug/mL	n/a	<0.100	15.53	n/a	n/a	n/a	n/a	5.00e-01	n/a
S01M000188		B	Pu/Am-241 by ICP/MS	ug/mL	n/a	<0.100	3.447	n/a	n/a	n/a	102.9	5.00e-01	n/a
S01M000188		B	Silver -ICP-Acid Digest-Liquid	ug/mL	88.50	<0.0100	<5.00e-02	n/a	n/a	n/a	n/a	5.00e-02	n/a
S01M000188		B	Arsenic -ICP-Acid Digest-Liq	ug/mL	91.80	<0.100	<5.00e-01	n/a	n/a	n/a	n/a	5.00e-01	n/a
S01M000188		B	Barium -ICP-Acid Digest-Liquid	ug/mL	93.60	<0.0500	<2.50e-01	n/a	n/a	n/a	n/a	2.50e-01	n/a
S01M000188		B	Cadmium -ICP-Acid Digest-Liq	ug/mL	91.30	<0.00500	4.87e-02	n/a	n/a	n/a	n/a	2.50e-02	n/a
S01M000188		B	Chromium -ICP-Acid Digest-Liq	ug/mL	91.50	<0.0100	78.30	n/a	n/a	n/a	n/a	5.00e-02	n/a
S01M000188		B	Lead -ICP-Acid Digest-Liquid	ug/mL	88.30	<0.100	<5.00e-01	n/a	n/a	n/a	n/a	5.00e-01	n/a
S01M000188		B	Selenium -ICP-Acid Digest-Liq	ug/mL	92.60	<0.100	<5.00e-01	n/a	n/a	n/a	n/a	5.00e-01	n/a

Parent: Parent

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000187			Hydrogen Ion Analysis	moles/Liter	101.8	n/a	2.54e-01	n/a	n/a	n/a	n/a	7.67e-02	n/a
S01M000187			Mercury by CVAA (PE) with FIAS	ug/mL	104.0	<6.0e-5	3.59e-02	n/a	n/a	n/a	n/a	1.20e-03	n/a
S01M000187			pH Direct	pH	n/a	n/a	1.420	n/a	n/a	n/a	n/a	1.00e-02	n/a
S01M000187			Uranium by Phosphorescence	ug/mL	104.0	<4.14e-4	8.38e+02	n/a	n/a	n/a	n/a	8.78e-01	n/a
S01M000187			Strontium-89/90 High Level	uCi/mL	99.17	<5.22E-4	<3.71e-04	n/a	n/a	n/a	n/a	7.61e-04	5.00E+02
S01M000187			Pu-239/240 by TRU-SPEC Resin	uCi/mL	108.5	<8.48E-1	16.90	n/a	n/a	n/a	n/a	1.600	2.03E+00
S01M000187			Pu-238 by TRU-SPEC Resin IonEx	uCi/mL	n/a	<8.48E-1	2.220	n/a	n/a	n/a	n/a	1.600	4.48E+00
S01M000187			Np237 by TTA Extraction	uCi/mL	93.51	<1.17E-3	1.83e-02	n/a	n/a	n/a	n/a	2.53e-03	1.45E+01
S01M000187			Fluoride IC SW846	ug/mL	93.83	<0.0120	15.88	n/a	n/a	n/a	n/a	13.33	n/a
S01M000187			Chloride SW-846	ug/mL	100.5	<0.0170	< 18.89	n/a	n/a	n/a	n/a	18.89	n/a
S01M000187			Nitrite IC SW846	ug/mL	101.3	<0.108	<1.20e+02	n/a	n/a	n/a	n/a	120.0	n/a
S01M000187			Nitrate by IC SW846	ug/mL	94.50	<0.139	1.82e+04	n/a	n/a	n/a	n/a	154.4	n/a
S01M000187			Phosphate by IC SW846	ug/mL	97.09	<0.120	<1.33e+02	n/a	n/a	n/a	n/a	133.3	n/a
S01M000187			Oxalate by IC SW846	ug/mL	100.0	<0.105	<1.17e+02	n/a	n/a	n/a	n/a	116.7	n/a
S01M000187			Cobalt-60 by GEA	uCi/mL	99.66	<2.86e-4	<2.70e-04	n/a	n/a	n/a	n/a	2.70e-04	n/a
S01M000187			Cesium-137 by GEA	uCi/mL	97.42	<3.11e-4	<3.31e-04	n/a	n/a	n/a	n/a	3.31e-04	n/a
S01M000187			Europium-152 by GEA	uCi/mL	n/a	<5.75e-4	<6.48e-04	n/a	n/a	n/a	n/a	6.48e-04	n/a
S01M000187			Europium-154 by GEA	uCi/mL	n/a	<8.48e-4	<9.03e-04	n/a	n/a	n/a	n/a	9.03e-04	n/a
S01M000187			Europium-155 by GEA	uCi/mL	n/a	<4.33e-4	<9.10e-04	n/a	n/a	n/a	n/a	9.10e-04	n/a
S01M000187			Radium-226 by GEA	uCi/mL	n/a	<5.50e-3	<5.71e-03	n/a	n/a	n/a	n/a	5.71e-03	n/a
S01M000187			Americium-241 by GEA	uCi/mL	n/a	<3.90e-4	11.80	n/a	n/a	n/a	n/a	n/a	0.120
S01M000187			Volume % Settled Solids	%	n/a	n/a	0.00e+00	n/a	n/a	n/a	n/a	1.00e-01	n/a
S01M000187			Color of Sample		n/a	n/a	see come	n/a	n/a	n/a	n/a	n/a	n/a
S01M000187			Am-241 by TRU-SPEC Resin IonEx	uCi/mL	102.0	<1.62E+0	11.40	n/a	n/a	n/a	n/a	2.210	2.11E+00
S01M000187			Cm-243/244 by TRU SPEC Resin	uCi/mL	n/a	<1.62E+0	< 2.210	n/a	n/a	n/a	n/a	2.210	1.00E+02
S01M000187			Alpha in Liquid Samples	uCi/mL	93.56	<6.29E-3	24.60	n/a	n/a	n/a	n/a	6.18e-03	9.50E-01

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000187			Beta in Liquid Samples	uCi/mL	106.4	<1.23E-2	1.930	n/a	n/a	n/a	n/a	2.56e-02	2.76E+00

Attachment 2. Data Summary Report
233S SDG10

CUSTOMER SDG #: S0030
CUSTOMER SAMPLE ID: B11Y22

SAMPLE PORTION: Acid Digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000184		A	Pu-239/240 by TRU-SPEC Resin	uCi/g	107.8	<1.61E+1	2.18e+02	n/a	n/a	n/a	n/a	27.70	2.34E+00
S01M000184		A	Pu-238 by TRU-SPEC Resin IonEx	uCi/g	n/a	<1.61E+1	94.80	n/a	n/a	n/a	n/a	27.70	3.22E+00
S01M000184		A	Np237 by TTA Extraction	uCi/g	87.45	<3.42E-1	7.48e-01	n/a	n/a	n/a	n/a	7.18e-01	6.01E+01
S01M000184		A	Uranium-234 by ICP/MS AcidD159	ug/g	n/a	<0.0480	< 8.578	n/a	n/a	n/a	n/a	8.576	n/a
S01M000184		A	Uranium-235 by ICP/MS AcidD159	ug/g	101.5	<0.0480	3.36e+02	n/a	n/a	n/a	120.1	8.576	n/a
S01M000184		A	Uranium-238 by ICP/MS AcidD159	ug/g	107.0	<0.0480	7.51e+04	n/a	n/a	n/a	103.0	8.576	n/a
S01M000184		A	Neptunium-237 by ICP/MS	ug/g	n/a	<0.200	1.60e+03	n/a	n/a	n/a	113.2	35.74	n/a
S01M000184		A	Plutonium-239 by ICP/MS	ug/g	n/a	<0.200	1.96e+03	n/a	n/a	n/a	88.56	35.74	n/a
S01M000184		A	Plutonium-240 by ICP/MS	ug/g	n/a	<0.200	3.29e+02	n/a	n/a	n/a	n/a	35.74	n/a
S01M000184		A	Pu/Am-241 by ICP/MS	ug/g	n/a	<0.200	83.70	n/a	n/a	n/a	102.9	35.74	n/a
S01M000184		A	Cobalt-60 by GEA	uCi/g	101.0	<4.83e0	< 4.926	n/a	n/a	n/a	n/a	4.926	n/a
S01M000184		A	Cesium-137 by GEA	uCi/g	98.44	<5.71e0	< 5.591	n/a	n/a	n/a	n/a	5.591	n/a
S01M000184		A	Europium-152 by GEA	uCi/g	n/a	<1.02e1	< 10.21	n/a	n/a	n/a	n/a	10.21	n/a
S01M000184		A	Europium-154 by GEA	uCi/g	n/a	<1.49e1	< 16.20	n/a	n/a	n/a	n/a	16.20	n/a
S01M000184		A	Europium-155 by GEA	uCi/g	n/a	<7.67e0	< 7.461	n/a	n/a	n/a	n/a	7.461	n/a
S01M000184		A	Radium-226 by GEA	uCi/g	n/a	<9.94e1	<1.00e+02	n/a	n/a	n/a	n/a	100.2	n/a
S01M000184		A	Americium-241 by GEA	uCi/g	n/a	<6.80e0	2.59e+02	n/a	n/a	n/a	n/a	n/a	4.39
S01M000184		A	Am-241 by TRU-SPEC Resin IonEx	uCi/g	105.1	<2.97E+1	2.52e+02	n/a	n/a	n/a	n/a	43.00	1.99E+00
S01M000184		A	Cm-243/244 by TRU-SPEC Resin	uCi/g	n/a	<2.97E+1	< 43.00	n/a	n/a	n/a	n/a	43.00	1.00E+02
S01M000184		A	Alpha of Digested Solid	uCi/g	92.94	<7.52E-2	5.09e+02	n/a	n/a	n/a	n/a	1.30e-01	8.35E-01
S01M000184		A	Beta of Solid Sample	uCi/g	105.5	6.71E-1	54.20	n/a	n/a	n/a	n/a	3.62e-01	2.02E+00

Parent: Parent

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000180			Volume % Settled Solids	%	n/a	n/a	1.00e+02	n/a	n/a	n/a	n/a	1.00e-01	n/a
S01M000180			Color of Sample		n/a	n/a	gray	n/a	n/a	n/a	n/a	n/a	n/a

Subsample Sludge: Subsample Sludge

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000181			pH on Solid Samples	pH	n/a	n/a	1.380	n/a	n/a	n/a	n/a	1.00e-02	n/a

TCLP Acid Digest: TCLP Acid Digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000186		B	Silver -ICP-Acid Digest-Liquid	ug/mL	99.00	<0.0100	<1.50e-01	n/a	n/a	n/a	n/a	1.50e-01	n/a
S01M000186		B	Arsenic -ICP-Acid Digest-Liq	ug/mL	100.0	<0.100	< 1.500	n/a	n/a	n/a	n/a	1.500	n/a
S01M000186		B	Barium -ICP-Acid Digest-Liquid	ug/mL	99.70	0.0699	1.230	n/a	n/a	n/a	n/a	7.50e-01	n/a
S01M000186		B	Cadmium -ICP-Acid Digest-Liq	ug/mL	99.90	<0.00500	8.17e-02	n/a	n/a	n/a	n/a	7.50e-02	n/a
S01M000186		B	Chromium -ICP-Acid Digest-Liq	ug/mL	98.30	<0.0100	2.35e+02	n/a	n/a	n/a	n/a	1.50e-01	n/a
S01M000186		B	Lead -ICP-Acid Digest-Liquid	ug/mL	97.50	<0.100	< 1.500	n/a	n/a	n/a	n/a	1.500	n/a
S01M000186		B	Selenium -ICP-Acid Digest-Liq	ug/mL	99.10	<0.100	< 1.500	n/a	n/a	n/a	n/a	1.500	n/a

TCLP Extract: TCLP Extract

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000185		T	Mercury by CVAA (PE) with FIAS	ug/mL	100.2	<6.0e-5	<1.20e-03	n/a	n/a	n/a	n/a	1.20e-03	n/a

Water Digest: Water Digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000183		W	Fluoride IC SW846	ug/g	92.33	<0.0120	<1.16e+02	n/a	n/a	n/a	n/a	116.3	n/a
S01M000183		W	Chloride SW-846	ug/g	101.3	<0.0170	1.21e+03	n/a	n/a	n/a	n/a	164.8	n/a
S01M000183		W	Nitrite IC SW846	ug/g	100.4	<0.108	<1.05e+03	n/a	n/a	n/a	n/a	1.05e+03	n/a
S01M000183		W	Nitrate by IC SW846	ug/g	93.33	6.32	1.58e+05	n/a	n/a	n/a	n/a	1.35e+03	n/a
S01M000183		W	Phosphate by IC SW846	ug/g	96.73	<0.120	<1.16e+03	n/a	n/a	n/a	n/a	1.16e+03	n/a
S01M000183		W	Oxalate by IC SW846	ug/g	99.81	<0.105	<1.02e+03	n/a	n/a	n/a	n/a	1.02e+03	n/a

FH-0103426

ATTACHMENT 3

233S Pu Concentration Facility Samples
SDG S0029
L-12 Vessel Liquid
B11Y74

Consisting of 3 pages,
including cover page

233-S Pu Concentration Facility Samples

SDG S0029
L-12 Vessel Liquid
B11Y74

S01M000187

Appearance
Total Alpha/Beta
^{90}Sr
^{237}Np
$^{241}Am/^{243/244}Cm$
$^{238}Pu/^{239/240}Pu$
GEA: ^{137}Cs, ^{60}Co, ^{152}Eu, ^{154}Eu, ^{155}Eu, ^{226}Ra, ^{241}Am
Total Uranium
pH
IC: Cl, F, NO_2, NO_3, PO_4, oxalate
Hg
H^+ (titration for molarity)

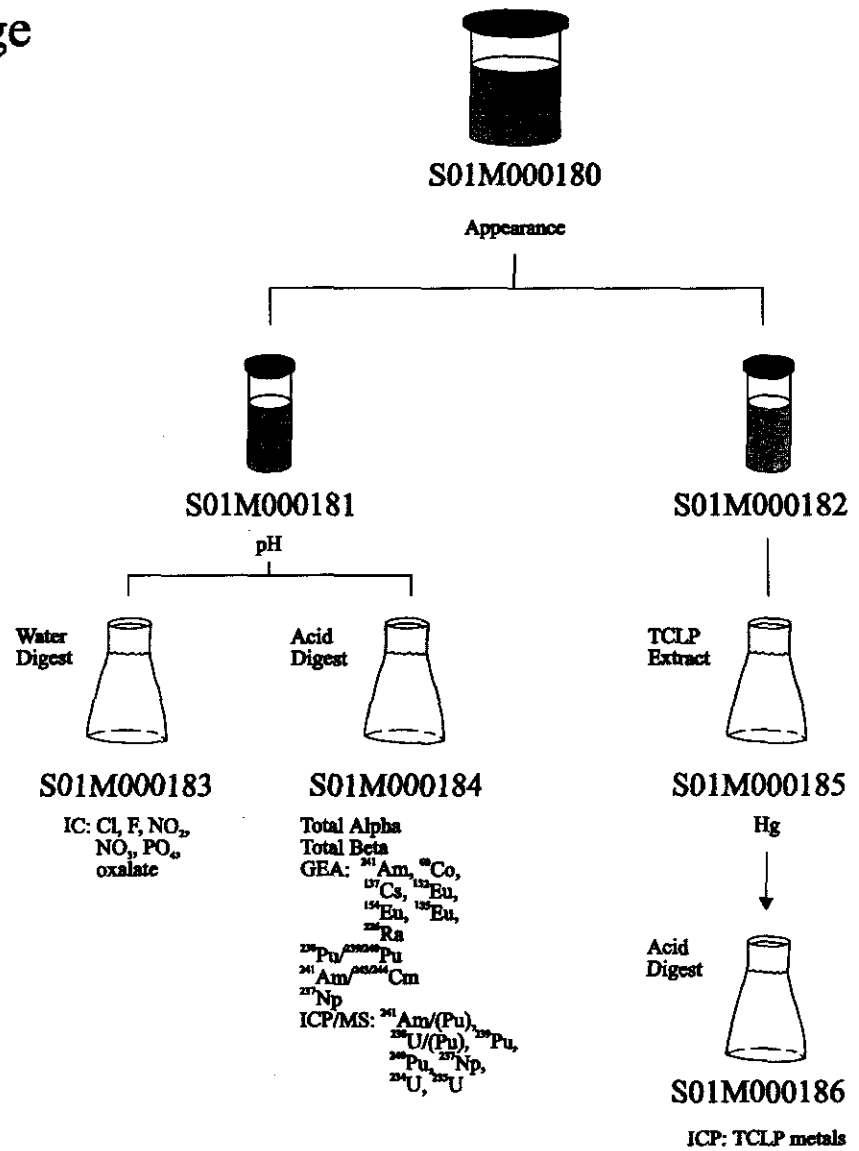
Acid Digest

S01M000188

ICP: TCLP metals
ICP/MS: ^{241}Am/(Pu), ^{238}U/(Pu), ^{239}Pu, ^{240}Pu, ^{237}Np, ^{234}U, ^{235}U

233-S Pu Concentration Facility Samples

SDG S0030
L-4 Sludge
B11Y22



FH-0103426

ATTACHMENT 4

Request for Sample Analysis (RSA)

Consisting of 4 pages,
including cover page

REQUEST FOR SAMPLE ANALYSIS (RSA)

Group ID No. (For lab use only): 200040

1. Sample Origin	2. Date Sampled	4. Requestor's Name	6. CACN/COA	7. Cost Center
233-S Facility (BHI)	4-24-01 5-1-01	SJ TRENT	115588/ES20	

Customer/Project Code	3. Submitted By	5. Requestor's Phone/MSIN/FAX
	RT Fahlberg	372-9651/H9-03/372-9487

8. Customer ID No.	9. Laboratory Sample No.	10. Volume of Sample	11. Matrix of Sample	12. Requested Analyses	13. Expected Range
B11Y74		150mL	liquid	see chain of custody	<0.1g Pu
B11Y22		60mL	solid	see chain of custody	0.5g Pu

14. Does sample have a MSDS?

○ Yes HEHF assigned MSDS No. _____

⊘ No Description of process that produced waste/sample:

Process vessel liquid and pipe sludge samples

Will radiochemistry results be used for unconditional release? ○ Yes ⊘ No

15. Is this sample RCRA listed? ○ Yes ⊘ No

Applicable Listed Waste Codes:

○ Yes ○ No P Codes: (list) _____

○ Yes ○ No U Codes: (list) _____

○ Yes ○ No K Codes: (list) _____

○ Yes ○ No F Codes: (list) _____

Applicable Characteristic Codes:

○ Yes ○ No D001: (how determined) _____ Ignitable

○ Yes ○ No D002: (how determined) _____ Corrosive

○ Yes ○ No D003: (how determined) _____ Reactive

○ Yes ○ No Toxic: (list codes) _____

PCB: Does this waste/sample contain PCBs?

☐ Yes Over 500 ppm

☐ Yes Over 50 ppm

☐ Yes PCBs are suspected

☑ No PCBs are suspected

If YES, what is the source of the PCBs?

☐ Transformer, capacitor, or ballast

☐ Other, specify _____

☐ Unknown

16. Sample Disposition

☑ Return to Customer

☐ Samples found to contain PCBs will be returned to the customer

☐ Dispose of per facility procedures with applied charges for analyses and disposal

Sample(s) Dose Rate at Contact: 13

HPT Signature: K Mitchell

17. QC Required ☐ Per 222-S Laboratory Quality Assurance Plan (HNF-SD-CP-QAPP-016)

☑ Other (list reference document or attach) LOI for the 233-S Plutonium concentration Facility Sample

18. Special Instructions (Special Storage Requirements, Reporting format, holding times, etc.)

19. Requested Turnaround Time Analysis

☐ 2 Weeks ☐ 4 Weeks

☐ Other 45 days interim

20. Sample Received By: RDMyers 5/2/01 1165

Date Time

21. Chain of Custody 60 days Final

○ No ⊘ Yes

Number: B99-024-38 B99-025-08

0000016

A-6002-365 (01/99

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-025-08	Page 1 of 1

Collector C Carriaga / R. Fehlhaber	**Company Contact** Dave Encke **Telephone No.** 373-3461	**Project Coordinator** TRENT, SJ	**Price Code** 9L **Data Turnaround** 60 Days
Project Designation 233-S Plutonium Concentration Facility Process Areas - Oth	**Sampling Location**	**SAF No.** B99-025	**Air Quality** ☐
Ice Chest No. EL 97-079	**Field Logbook No.** EL 1517-2 **COA** R233SP280C	**Method of Shipment** Hand Carry	
Shipped To 222-S Lab Operations	**Offsite Property No.** NA	**Bill of Lading/Air Bill No.** NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

4.5 mREM/HR CONTACT
0.8 mREM/HR @ 30 cm

Special Handling and/or Storage

Titration for ~~Molarity~~ Molarity
MM 5-2-01

Sample No.	Matrix *	Sample Date	Sample Time	Preservation: Cool 4C	None	None	None						
				Type of Container: aG	aG	aG	aG						
				No. of Container(s): 0	0	0	1						
				Volume: ~~250~~ mL ~~05-02-01~~ 250	~~250~~ mL ~~05-02-01~~ 250	~~250~~ mL ~~05-02-01~~ 250	~~250~~ mL ~~05-02-01~~ 250						
SAMPLE ANALYSIS				See item (1) in Special Instructions.	Actinides ICPMS	See item (2) in Special Instructions.	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470						
B11Y74	OTHER LIQUID	5-1-01	1000	x	x	x	x						

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
R Fehlhaber / R Fehlhaber	5-2-01 1105	RDMeyers RDMeyers	5/2/01 1105
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** If limited sample volume is available, contact Sample Management for analyses priority.
PERFORM ALL ANALYSIS FROM 60 ML POLYBOTTLE

MM 5-2-01

(1) IC Anions - 9056 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, ~~Sulfate~~}; IC Anions - 9056 Add On {Oxalate}; pH (Soil) - 9045; ~~Total Cyanide - 9010, Sulfides - 9030~~ MM 5-2-01
(2) Gross Alpha; Gross Beta; Gamma Spectroscopy {Americium-241, Cesium-137, Cobalt-60, Europium-152, *Europium*-154, *Europium*-155, Radium-226}; Americium-241/Curium-244; Neptunium-237; Isotopic Plutonium; Strontium-90; Total Uranium

ANALYSIS COA: R233SP2AWO

Matrix *

S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

0010017

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-024-38	Page 1 of 1
Collector: C. Carrasco / R. Fabbing	Company Contact: Steve Trent	Telephone No.: 372-9651	Project Coordinator: TRENT, SJ	Price Code: 9L; Air Quality ☐
Project Designation: 233-S Plutonium Concentration Facility Process Areas - Oth	Sampling Location: 233-S		SAF No.: B99-024	Data Turnaround: 60 Days
Ice Chest No.: ERC 97-079	Field Logbook No.: EL 1517-2	COA: R233SP280C	Method of Shipment: HAND CARRY	
Shipped To: 222-S Lab Operations	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

4.5 mREM/hr ON CONTACT
0.8 mREM/hr @ 30 CM

Special Handling and/or Storage

Preservation	Cool 4C	None	None	None	None	None	None	None	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	0	0	0	0	0	0	0	0	1	
Volume	60mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Americium-241/Curium-244	See item (3) in Special Instructions.	Gross Alpha; Gross Beta	Isotopic Plutonium	Neptunium-237	pH (Soil) - 9045	Metals by ICP (TCLP) - 1311/6010A; Mercury (TCLP) - 1311/7470	
Sample No. / Matrix * / Sample Date / Sample Time										
B11Y22 / OTHER SOLID / 4-24-01 / 0930	X	X	X	X	X	X	X	X	X	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By / Date/Time	Received By / Date/Time
R. Fabbing R. Fabbing 5-2-01 1105	[illegible] 5/2/01 1105
Relinquished By / Date/Time	Received By / Date/Time
Relinquished By / Date/Time	Received By / Date/Time
Relinquished By / Date/Time	Received By / Date/Time
Relinquished By / Date/Time	Received By / Date/Time
Relinquished By / Date/Time	Received By / Date/Time

SPECIAL INSTRUCTIONS

** The ERC acknowledges that some hold times may not be achievable due to delays in delivery of the samples to the laboratories or short analytical holding times (holding times less than 7 days).

(1) IC Anions - 9056 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, ~~Sulfate~~}; IC Anions - 9056 Add On {Oxalate}
(2) Actinides ICPMS {Americium-241, Plutonium-238, Plutonium-239/240, Uranium-234, Uranium-235}
(3) Gamma Spectroscopy {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-226}

mm 5-2-01

Analysis COA: R233SP280C

Matrix *

S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

0000018

BHI-EE-011 (10/99)

FH-0103426

ATTACHMENT 5

CCMail
Addition of Np-237 Analysis by ICP-MS

Consisting of 4 pages,
Including cover page

Esch, Ruth A

From: Trent, Stephen J

Sent: Thursday, May 24, 2001 11:36 AM

To: Powell, Katherine L

Cc: Esch, Ruth A; McKinney, Steve G; Ayres, Doris

Subject: Addition of Np-237 analysis by ICP-MS

Kathy:

Please have the laboratory analyse the following 233-S project samples for Np-237 using the ICP-MS method -

B0TW31-A (SDG9)
B0TW32 (SDG9)
B118R2-A (SDG8)
B118R3 (SDG8)

If any of these sample require re-extraction for the analysis, please call. Also, it was brought to my attention by the 233-S project that sample B0TW32 was erroneously tagged as "PCB Suspect" by BHI Sample Management (that would be me). Apparently the sample material originated from within a closed system at the facility and was never exposed to any of the PCB-contaminated materials or processes. Please inform the laboratory that any waste generated by this additional analysis can be handled as "no PCBs suspected".

Please have the laboratory report these data in the simple summary format we usually receive for interim data reports.

Finally, for the new samples recently delivered to the lab, B11Y74 and B11Y22 (SDG10 and SDG11??) please add the Np-237 by ICP-MS to the analytical request list.

Regards,

Steve Trent
BHI Sample Management

Esch, Ruth A

From: Trent, Stephen J
Sent: Monday, May 07, 2001 4:20 PM
To: Esch, Ruth A
Cc: Powell, Katherine L; Prilucik, John R; Clark, Glen A; Fuller, Richard K (Keith)
Subject: RE: Holding Times for 233S Samples B11Y22 and B11Y74

Ruth:

Thanks for the heads up on the holding time exceedances. Given the nature of these samples the intended data use, the holding time exceedances should not be an issue for the 233-S project. Please note that in general, BHI expects 222-S to give their best effort in meeting holding times whenever possible.

Regards,

Steve Trent
BHI Sample Management

-----Original Message-----
From: Esch, Ruth A
Sent: Monday, May 07, 2001 9:17 AM
To: Trent, Stephen J
Cc: Powell, Katherine L; Prilucik, John R; Clark, Glen A; Fuller, Richard K (Keith)
Subject: Holding Times for 233S Samples B11Y22 and B11Y74
Importance: High

Steve,

Sample B11Y22 was sampled on 4/24/01 and received at the 222-S Laboratory on 5/2/01. The chain of custody (COC) requests analyses for radionuclides and inorganic analytes. Several of these requested analyses have relatively short holding times.

Analysis	Holding Time
pH	ASAP
nitrate	48 hours
TCLP Hg	28 days to extraction

The delay in delivery consumed 8 days of these holding times.

The COC indicates that "The ERC acknowledges the fact that some holding times may not be achievable due to delays in delivery of the samples to the laboratories or short analytical holing times (holding times less than 7 days)." Due to the 8 day delay in delivery of the sample, the SW-846 holding times for pH and nitrate have already been missed. In addition, the radiological control requirements to place the parent sample in the glovebox for subsampling and to determine the total alpha activity prior to performing any other analyses may cause the 222-S Laboratory to miss the SW-846 holding time for TCLP Hg.

Sample B11Y74 was sampled on 5/1/01 and received at the 222-S Laboratory on 5/2/01. The chain of custody (COC) requests analyses for radionuclides and inorganic analytes. Several of these requested analyses have relatively short holding times.

Analysis	Holding Time
pH	ASAP

nitrate 48 hours
TCLP Hg 28 days to extraction

The delay in delivery was only 1 day. However, the radiological control requirement to determine the total alpha activity prior to performing any other analyses will cause the 222-S Laboratory to miss the SW-846 holding times for the pH and nitrate and possibly for TCLP Hg.

Ruth Esch
222-S Project Coordinator

CORRESPONDENCE DISTRIBUTION COVERSHEET

Author	Addressee	Correspondence No.
R. A. Bushaw, FH 372-2553	J. H. Kessner, BHI	FH-0103426 June 25, 2001

Subject: FINAL RESULTS FOR THE 233S PROCESS VESSEL LIQUID AND PIPE SLUDGE SAMPLES-SDG S0029 AND S0030

DISTRIBUTION

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		D. J. Hart	T6-14	
JR Prilucik	6/25/01	J. R. Prilucik	T6-12	
		K. L. Powell	T6-04	X
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