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Proj.
ECN

A-7900-013-2 (05/96) GEF095

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ECN-633322

16. Design Verification Required	17. Cost Impact	18. Schedule Impact (days)
	ENGINEERING	CONSTRUCTION
☐ Yes	Additional ☐ \$	Additional ☐ \$
☒ No	Savings ☐ \$	Savings ☐ \$
		Improvement ☐
		Delay ☐

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD		Seismic/Stress Analysis		Tank Calibration Manual	
Functional Design Criteria		Stress/Design Report		Health Physics Procedure	
Operating Specification		Interface Control Drawing		Spares Multiple Unit Listing	
Criticality Specification		Calibration Procedure		Test Procedures/Specification	
Conceptual Design Report		Installation Procedure		Component Index	
Equipment Spec.		Maintenance Procedure		ASME Coded Item	
Const. Spec.		Engineering Procedure		Human Factor Consideration	
Procurement Spec.		Operating Instruction		Computer Software	
Vendor Information		Operating Procedure		Electric Circuit Schedule	
OM Manual		Operational Safety Requirement		ICRS Procedure	
FSAR/SAR		IEFD Drawing		Process Control Manual/Plan	
Safety Equipment List		Cell Arrangement Drawing		Process Flow Chart	
Radiation Work Permit		Essential Material Specification		Purchase Requisition	
Environmental Impact Statement		Fac. Proc. Samp. Schedule		Tickler File	
Environmental Report		Inspection Plan			
Environmental Permit		Inventory Adjustment Request			

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number Revision

N/A

21. Approvals

[illegible]

222-S Analytical Services Final Results for Tank 241-U-101, Grab Samples 1U-96-1 through 1U-96-4

George L. Miller

Westinghouse Hanford Company, Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-87RL10930

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Abstract: N/A

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Release/Approval

Date

Approved for Public Release

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Page 1

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222-S Analytical Services Final Results for Tank 241-U-101, Grab Samples 1U-96-1 through 1U-96-4

CHANGE CONTROL RECORD

Authorized for Release

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(4) Description of Change - Replace, Add, and Delete Pages

(5) Cog. Engr.

(6) Cog. Mgr. Date

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(7) Initially released 07/12/96 on EDT-614799.

G.L. Miller

C. T. Narguis

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Hanford Company**

P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-190, REV. 1

ANALYTICAL SERVICES

**FINAL RESULTS FOR TANK
241-U-101, GRAB SAMPLES
1U-96-1 THROUGH 1U-96-4**

Project Coordinator: GEORGE L. MILLER

**Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management**

by

**Westinghouse Hanford Company
Box 1970
Richland, Washington**

WHC-SD-WM-DP-190, REV.1

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This document consists of two sections.

Part I consists of pages 1 through 80, and pages ii, 2 were intentionally left blank. Plus pages 33.1 and 33.2.

Part II consists of pages 2-1 through 2-94 and pages 2-2, 2-5, 2-13, 2-17, 2-24, and 2-31 were intentionally left blank.

NARRATIVE

WHC-SD-WM-DP-190, REV. 1

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222-S ANALYTICAL SERVICES

FINAL RESULTS FOR TANK 241-U-101,
GRAB SAMPLES 1U-96-1 THROUGH 1U-96-4

Summary

This document is the final, format IV, laboratory report for characterization of tank 241-U-101 (U-101) grab samples from risers 1 and 7. It transmits additional analytical data for specific gravity (Sp.G.), and all raw analytical data which were not provided in the 45-day report (Miller, 1996). The 45-day report is attached to this final report as Part II.

Secondary analyses were not performed on any of the U-101 samples. This is because none of the primary analyte limits, which trigger the performance of secondary analyses, were exceeded.

Grab samples were taken on May 29, 1996 and May 30, 1996 from risers 1 and 7, respectively, and were received at the 222-S Laboratory on the same days that they were collected. Analyses were performed in accordance with the Tank Sampling and Analysis Plan (TSAP) for this tank (Brown, 1996) and the Safety Screening Data Quality Objective (DQO) (Dukelow, et al. 1995). The samples were analyzed for differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), total alpha activity (AT), visual appearance, bulk density, and specific gravity.

Table 1, sample data summary table, includes sample analytical data accompanied by quality control data (for example, duplicate, spike, blank and standard results and detection limits and counting errors). Table 1 includes data for DSC, TGA, AT, bulk density, volume percent solids and Sp.G. analyses and begins on page 9.

Data regarding the visual appearance of samples, volume percent solids and density of the solids are provided in Table 1 of the 45-day report (attached as Part II). Table 1 of the 45-day report also associates the original customer sample number with corresponding laboratory sample numbers.

The TSAP specified notification limits for only DSC and total alpha. Notification limits were not exceeded for DSC or total alpha analyses for any of the samples, consequently immediate notifications were not necessary and were not made.

Analytical Results Summary

Specific Gravity (Sp.G.)

Specific gravity analyses were performed using procedure LA-510-112, Rev. C-3 on the liquid fractions of each sample. Average results for the four samples ranged from 1.150 to 1.168.

The percent recovery for the standard, 96.74%, was within the TSAP specified quality control limits of 90 to 110 percent.

Precision between each sample and its duplicate was acceptable, with relative percent differences ranging from 0.17 to 2.96%. The quality control limit for precision which was specified in the TSAP was ≤ 20 RPD.

Differential Scanning Calorimetry (DSC)

The DSC data indicated that none of the five liquid samples and none of the four solid samples exceeded the notification limit of 480 joules/g on a dry weight basis. Average DSC results for both liquid and solid fractions ranged from 0.0 to 9.7 Joules/g on a wet weight basis. Additional information regarding DSC analyses is available in the 45-day report.

Thermogravimetric Analysis (TGA)

Average TGA results for the liquid fractions of the samples ranged from 71.72 to 77.73 percent water. Average TGA results for the solid fractions of the samples ranged from 20.48 to 37.15 percent water. All sample results met the quality control criteria which were specified in table 4 of the TSAP. Additional information regarding TGA analyses is available in the 45-day report.

Density

Bulk density was determined on the original (as received) samples, which included both the liquid and solid fractions. Of the samples taken from both risers, only sample 1U-96-4 (S96T003308) had a sufficient amount of solids to be characterized for solids density, having a density of 1.60 g/ml. Densities of the supernate fractions ranged from 1.180 to 1.230 g/ml.

Total Alpha (AT)

Total alpha results for the four liquid samples ranged from 0.00150 to 0.00214 $\mu\text{Ci/ml}$, and none exceeded the TSAP specified notification limit of 41 $\mu\text{Ci/g}$. The liquid sample having the greatest activity was 4 orders of magnitude less than the notification limit. All sample results met the quality control criteria which were specified in table 4 of the TSAP.

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Total alpha results for the four solid samples ranged from <0.0659 to 0.102 $\mu\text{Ci/g}$, and none exceeded the recalculated TSAP notification limit for solids of 38.4 $\mu\text{Ci/g}$. Additional information regarding total alpha analyses is available in the 45-day report.

Procedures

Table 2 lists the analytical procedures used for performing the sample analyses. Abbreviations for analyses are defined at the foot of the table.

Table 2: Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
DSC	Supernate & Solids	N/A	LA-514-114 Rev. C-1 LA-514-113 Rev. C-1
TGA	Supernate & Solids	N/A	LA-514-114 Rev. C-1 LA-560-112 Rev. B-1
Sp.G.	Supernate	N/A	LA-510-112 Rev. C-3
V%SLD	Solids	N/A	LA-519-151 Rev. E-2
AT	Supernate & Solids	LA-549-141 Rev. F-0	LA-508-101 Rev. D-2

Abbreviations:

N/A = not applicable (these are direct samples)
DSC = differential scanning calorimetry
TGA = thermogravimetric analysis
Sp.G. = specific gravity
AT = total alpha
V%SLD = volume percent solids

WHC-SD-WM-DP-190, Rev. 1

References

Brown, T. M., 1996, *Tank 241-U-101 Grab Sampling and Analysis Plan*, WHC-SD-WM-TSAP-095, Rev. 0, Westinghouse Hanford Company, Richland, WA 99352.

Dukelow, G. T., J. W. Hunt, H. Babad, and J. E. Meacham, 1995, *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, WA 99352.

Miller, G. L., 1996, *45 Day Safety Screening Results for Tank 241-U-101, Grab Samples 1U-96-1 through 1U-96-4*, WHC-SD-WM-DP-190, Rev. 0, Westinghouse Hanford Company, Richland, WA 99352.

WMC-SD-WM-DP-190, REV. 1

SAMPLE DATA SUMMARY

WHC-SD-WM-DP-190, REV. 1

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Table 1. Sample Data Summary
U-101 GRAB

RISER: 7
SEGMENT #: 1U-96-1

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003468			DSC Exotherm using Mettler	Joules/g	113.5	n/a	19.40	0.00e+00	9.700	200	n/a	n/a	n/a
S96T003468			% Water by TGA using Mettler	%	99.21	n/a	33.94	29.93	31.93	12.6	n/a	n/a	n/a
S96T003601	F		Alpha of Digested Solid	uCi/g	90.62	<2.55e-02	8.27e-02	n/a	n/a	n/a	n/a	4.00e-02	6.00E+01

Supernate: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003272			Bulk Density of Sample	g/mL	n/a	n/a	1.180	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003272			Volume % Solids	%	n/a	n/a	< 2.000	n/a	n/a	n/a	n/a	n/a	n/a
S96T003328			DSC Exotherm on Perkin Elmer	Joules/g	98.45	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003328			Specific Gravity	Sp.G.	96.74	n/a	1.167	1.169	1.168	0.17	n/a	1.00e-03	n/a
S96T003328			% Water by TGA on Perkin Elmer	%	98.51	n/a	65.25	78.40	71.83	18.3	n/a	n/a	n/a
S96T003328			Alpha in Liquid Samples	uCi/mL	92.19	<3.41e-04	2.14e-03	2.43e-03	2.28e-03	12.7	93.87	4.55e-04	4.05E+01

Table 1. Sample Data Summary
U-101 GRAB

RISER: 7
SEGMENT #: 1U-96-2

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003469			DSC Exotherm using Mettler	Joules/g	113.5	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003469			% Water by TGA using Mettler	%	99.21	n/a	21.90	19.06	20.48	13.9	n/a	n/a	n/a
S96T003602	F		Alpha of Digested Solid	uCi/g	90.62	<2.55e-02	<6.59e-02	n/a	n/a	n/a	n/a	5.70e-02	2.55E+02

Supernate: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003306			Bulk Density of Sample	g/mL	n/a	n/a	1.180	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003306			Volume % Solids	%	n/a	n/a	< 2.000	n/a	n/a	n/a	n/a	n/a	n/a
S96T003329			DSC Exotherm using Mettler	Joules/g	109.7	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003329			Specific Gravity	Sp.G.	96.74	n/a	1.161	1.170	1.165	0.77	n/a	1.00e-03	n/a
S96T003329			% Water by TGA on Perkin Elmer	%	99.29	n/a	77.70	77.77	77.73	0.09	n/a	n/a	n/a
S96T003329			Alpha in Liquid Samples	uCi/mL	92.19	<3.41e-04	1.82e-03	1.50e-03	1.66e-03	19.3	n/a	4.55e-04	3.89E+01

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Table 1. Sample Data Summary
U-101 GRAB

RISER: 1
SEGMENT #: 1U-96-3

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003471		DSC Exotherm on Perkin Elmer	Joules/g	99.82	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003471		% Water by TGA using Mettler	%	98.72	n/a	36.68	37.61	37.14	2.50	n/a	n/a	n/a
S96T003603	F	Alpha of Digested Solid	uCi/g	90.62	<2.55e-02	1.02e-01	n/a	n/a	n/a	n/a	3.70e-02	4.57E+01

Supernate: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003307		Bulk Density of Sample	g/mL	n/a	n/a	1.180	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003307		Volume % Solids	%	n/a	n/a	11.00	n/a	n/a	n/a	n/a	n/a	n/a
S96T003330		DSC Exotherm using Mettler	Joules/g	108.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003330		Specific Gravity	Sp.G.	96.74	n/a	1.168	1.160	1.164	0.69	n/a	1.00e-03	n/a
S96T003330		% Water by TGA on Perkin Elmer	%	99.29	n/a	77.63	76.86	77.25	1.00	n/a	n/a	n/a
S96T003330		Alpha in Liquid Samples	uCi/mL	92.19	<3.41e-04	1.66e-03	1.44e-03	1.55e-03	14.2	n/a	4.55e-04	4.14E+01

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Table 1. Sample Data Summary
U-101 GRAB

RISER: 1
SEGMENT #: 1U-96-4

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003472			DSC Exotherm on Perkin Elmer	Joules/g	99.82	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003472			% Water by TGA using Mettler	%	98.72	n/a	27.70	31.36	29.53	12.4	n/a	n/a	n/a
S96T003604	F		Alpha of Digested Solid	uCi/g	90.62	<2.55e-02	6.14e-02	5.15e-02	5.65e-02	17.5	97.77	2.90e-02	4.98E+01

Supernate: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003308			Bulk Density of Sample	g/mL	n/a	n/a	1.230	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003308			Volume % Solids	%	n/a	n/a	29.00	n/a	n/a	n/a	n/a	n/a	n/a
S96T003331			DSC Exotherm using Mettler	Joules/g	111.8	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003331			Specific Gravity	Sp.G.	96.74	n/a	1.167	1.133	1.150	2.96	n/a	1.00e-03	n/a
S96T003331			% Water by TGA using Mettler	%	101.5	n/a	78.12	77.70	77.91	0.54	n/a	n/a	n/a
S96T003331			Alpha in Liquid Samples	uCi/mL	92.19	<3.41e-04	1.50e-03	1.50e-03	1.50e-03	0.00	n/a	4.55e-04	4.45E+01

Table 1. Sample Data Summary
U-101 GRAB

RISER: 7
SEGMENT #: 1U-96-FB

SEGMENT PORTION: Field Blank

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T003309		DSC Exotherm on Perkin Elmer	Joules/g	98.45	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003309		Specific Gravity	Sp.G.	96.74	n/a	9.74e-01	9.78e-01	9.76e-01	0.41	n/a	1.00e-03	n/a
S96T003309		% Water by TGA on Perkin Elmer	%	99.04	n/a	99.10	99.62	99.36	0.52	n/a	n/a	n/a
S96T003309		Alpha in Liquid Samples	uCi/mL	117.2	<5.70e-08	<4.30e-08	<6.61E-8	n/a	n/a	91.64	7.74e-08	5.00E+02

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WHC-SD-WM-DP-190, REV. 1

SAMPLE HANDLING

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LABCORE Data Entry Template for Worklist#

9577

Analyst: KDM Instrument: NONE Book #

Method: LA-519-151 Rev/Mod E-2

Worklist Comment: U-101 @BREAKDOWN. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
96000785	U-101 GRAB	1 SAMPLE	S96T003272	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	700	700	pm. 65/h mrads/hour
96000785	U-101 GRAB	1 SAMPLE	S96T003272	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	COMPLETE		
96000785	U-101 GRAB	1 SAMPLE	S96T003272	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125 ML		ml
96000785	U-101 GRAB	2 SAMPLE	S96T003306	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	500	500	pm 65/h mrads/hour
96000785	U-101 GRAB	2 SAMPLE	S96T003306	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	COMPLETE		
96000785	U-101 GRAB	2 SAMPLE	S96T003306	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125 ML		ml
96000787	U-101 GRAB	3 SAMPLE	S96T003307	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	300	300	pm 65/h mrads/hour
96000787	U-101 GRAB	3 SAMPLE	S96T003307	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	COMPLETE		
96000787	U-101 GRAB	3 SAMPLE	S96T003307	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125 ML		ml
96000787	U-101 GRAB	4 SAMPLE	S96T003308	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	375		mrads/hour
96000787	U-101 GRAB	4 SAMPLE	S96T003308	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	COMPLETE		
96000787	U-101 GRAB	4 SAMPLE	S96T003308	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125 ML		ml
96000785	U-101 GRAB	5 SAMPLE	S96T003309	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	<0.5		mrads/hour
96000785	U-101 GRAB	5 SAMPLE	S96T003309	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	COMPLETE		
96000785	U-101 GRAB	5 SAMPLE	S96T003309	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		ml

Final page for worklist #

9577

KDM 6/5/96

RJ 6-6-96

Data Entry Comments: Appearance 33049 Appearance plus 100%, color - colorless, organics - none visible, solids - <1%, clarity - clear, see other side for rest of Appearance.

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

3272

Aqueous phase - 100%
Solids - yes
Organics - none visible
color - yellow
clarity - clear

3306

Aqueous phase - 100%
Solids - yes
Organics - none visible
color - yellow
clarity - clear

3307

Aqueous phase - 100%
Solids - yes
Organics - none visible
color - yellow
clarity - clear

3308

Aqueous phase - 100%
Solids - yes
Organics - none visible
color - yellow
clarity - clear

SAMPLE PREPARATION

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LABCORE Data Entry Template for Worklist#

10449

Analyst: _____ Instrument: FUS01 41106 Book # _____Method: LA-549-141 Rev/Mod F-0

Worklist Comment: U-101 1U-96-1/2/3/4 FUSION01 SKB

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	<u>1</u>	<u>250</u>	N/A	g/L
96000785	U-101 GRAB	2 SAMPLE	S96T003601 0 F		FUSION01	SOLID	N/A	<u>1.9940</u>		g/L
		<u>.3735g</u> → <u>.2500</u>								
96000785	U-101 GRAB	3 SAMPLE	S96T003601 0 F		DOSE-02	SOLID	N/A	<u>80</u>		mrad/hour
96000785	U-101 GRAB	4 SAMPLE	S96T003602 0 F		FUSION01	SOLID	N/A	<u>1094</u>		g/L
		<u>.0261g</u> → <u>.2500</u>								
96000785	U-101 GRAB	5 SAMPLE	S96T003602 0 F		DOSE-02	SOLID	N/A	<u>10</u>		mrad/hour
96000787	U-101 GRAB	6 SAMPLE	S96T003603 0 F		FUSION01	SOLID	N/A	<u>1.6528</u>		g/L
		<u>.4132g</u> → <u>.2500</u>								
96000787	U-101 GRAB	7 SAMPLE	S96T003603 0 F		DOSE-02	SOLID	N/A	<u>175</u>		mrad/hour
								<u>2.0656</u> ^{from 7/1/96}		
96000787	U-101 GRAB	8 SAMPLE	S96T003604 0 F		FUSION01	SOLID	N/A	<u>2.0650</u>		g/L
		<u>.5164g</u> → <u>.2500</u>								
96000787	U-101 GRAB	9 SAMPLE	S96T003604 0 F		DOSE-02	SOLID	N/A	<u>75</u>		mrad/hour
96000787	U-101 GRAB	10 DUP	S96T003604 0 F		FUSION01	SOLID	<u>2.0650</u>	<u>2.0292</u>	N/A	g/L
		<u>.5073g</u> → <u>.2500</u>								
96000787	U-101 GRAB	11 DUP	S96T003604 0 F		DOSE-02	SOLID	<u>75</u>	<u>105</u>	N/A	mrad/hour

Final page for worklist # 10449

Chambers 7-2-96
Analyst Signature Date

Keith Fuller for Rick Jones 7/9/96
Analyst Signature Date

S96T003468 → 3601
3469 → 3602
3471 → 3603
3472 → 3604

Reviewed by RK Fuller
7/9/96

Data Entry Comments:

40ml con HNO₃ <10% acids

Correction to Fusion Factor for sample S96T003604 was made by George L. Miller at the direction of R. Keith Fuller

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

Author: Richard K (Keith) Fuller at WHC169

Date: 7/10/96 1:33 PM

Subject: U-101 Grab sample Fusions

----- Message Contents -----

George,

The correction to sample number S96T003604 (Worklist # 10449) is complete.

The result was changed from 2.0650 g/L to 2.0656 g/L.
Please verify that the change has been made and call me if
have further questions.

Keith Fuller

373-9670 Hot cells

376-0139 Sample Prep

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PHYSICAL ANALYSES

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Bulk Density Worksheet

U-101 Crab

P.C.: George L. Miller (373-4731)

Sample ID: 10-96-1
59GT003272

Date: 6/11/96

Date performed = 6/28/96

Jar#: N/A

Jar/Vial Size: 125 mL

Initial Weight: 230.1 g

Final Weight: 127.2 g

Net Weight: 102.9 g material removed

Program 5min. { Start Time: _____
End Time: _____
Centrifugation
Time (Min.): 5min.

No

Cone#: 13

Initial Weight: 13.8 g

Final Weight: 61.3 g

Net Weight: 47.5 g

Total Vol.: 40 mL

Vol. Solids: ~0.5 mL

Tare + Solid Wt: 0.4 g

Cone#: 1A

Initial Weight: 13.7 g ✓

Final Weight: 66.8 g

Net Weight: 53.1 g

Total Vol.: 45 mL

Vol. Solids: ~0.5 mL

Tare + Solid Wt: 0.4 g

Appearance/Narrative:

Bulk densities were measured with out the large
chunks.

Average of Both Bulk Density Analysis = 1.18 g/mL

Subsample: Grab Sludge Worksheet

Date: 6/11/96
Tank/
Project: U-101
P.C.: George L Miller
Phone#: 373-4739

Parent
Sample ID: S96T003272

Cone # 1A

Cone # 1B

Labcore Entry
Initials: AK Bulk Density

Solid

Large solid particles

Liquid

Jar#:

LABCORE#: S96T003468

20 mL Jar/Vial Size: 40 mL
Tare Weight: 88.3 g
Final Weight: 17.7 g
Net Weight: 0.4 g

Switched
to 20 mL
Vials
Instead of
60 mLs.

Tests:

DSC
TGA
DOSE-01

Jar#: NA

LABCORE#: S96T003474

Jar/Vial Size: 20 mL
Tare Weight: 17.9 g
Final Weight: 19.8 g
Net Weight: 1.9 g

Jar#:

LABCORE#: S96T003477

Jar/Vial Size: 125 mL
Tare Weight: 123.1 g
Final Weight: 222.9 g
Net Weight: 99.8 g

Tests:

ARCHIVO1

Appearance/Special Instructions:

Bulk Density Worksheet

U-101-Grab

P.C.: George L Miller (373-4739)

Sample ID: 1U-96-2
5967003306

Date: 6/11/96

Performed: 6/28/96

Bulk Density

Jar#: N/A

Jar/Vial Size: 125 mL

Initial Weight: 221.1 g

Final Weight: 127.1 g

Net Weight: 94.0 g Material Removed

Not as many
solids in this
sample compared
to #1. RK 6/28/96

Programmed
@ 3000 RPM

Start Time: _____

End Time: _____

Centrifugation

Time (Min.): 5

Cone#: 2A

Initial Weight: 13.8 g

Final Weight: 60.7 g

Net Weight: 46.9 g

Total Vol.: 40 mL

Vol. Solids: <0.5 mL

Tare + Solid Wt: 0.2 g

Total Weight

Appearance/Narrative:

Bulk Density performed without the large chunks.

Cone#: 2B

Initial Weight: 13.8 g

Final Weight: 60.1 g

Net Weight: 46.3 g

Total Vol.: 39 mL

Vol. Solids: <0.5 mL

Tare + Solid Wt: 1390.1 g

13.9 g

RK Fall
6/28/96

1.187 g/mL

Average of Both Bulk Density Analyses = 1.18 g/mL

23

1.172 g/mL

14.0 g

Subsample: Grab Sludge Worksheet

Date: 6/11/96
 Tank/ U-101
 Project: George L Miller
 P.C.: George L Miller
 Phone#: 373-4739

Parent
 Sample ID: 596T 003506

Labcore Entry
 Initials: AK Bulk Dens.

Solid Large solid particles Liquid

Jar#: NA

LABCORE#: 596T003469
 Jar/Vial Size: 20 mL
 Tare Weight: 8.9 g
 Final Weight: 17.5 g
 Net Weight: 0.1 g

Switched
 to 20 mL
 Vial
 GRT
 6/29/96

Tests:
DSC
TGA
DOSE-01

Jar#: NA

LABCORE#: 596T003475
 Jar/Vial Size: 20 mL
 Tare Weight: 17.6 g
 Final Weight: 18.1 g
 Net Weight: 0.5 g

Jar#: NA

LABCORE#: 596T003478
 Jar/Vial Size: 125 mL
 Tare Weight: 123.5 g
 Final Weight: 216.5 g
 Net Weight: 93.0 g

Tests:
ARCHIVO1

Appearance/Special Instructions:

6/12/96
 AK

Bulk Density Worksheet

U-101 - Gral

P.C.: George L Miller

Sample ID: 10-96-3
596T003307

Date: 6/11/96

Performed on 6/28/96
RKT

Bigger chunks; orange,
black, cream colors.
More solids. Solids look
like trail mix.

Bulk Density

Jar#: N/A
Jar/Vial Size: 125 mL
Initial Weight: 231.6 g
Final Weight: 129.7 g
Net Weight: 101.9 g

Programmed
Start Time: _____
End Time: _____
Centrifugation
Time (Min.): 5 min
3000 RPM
②

Cone#: 3A
Initial Weight: 13.64 g ^{RKT 6/28/96}
Final Weight: 60.8 g
Net Weight: 47.2 g
Total Vol.: 40 mL
Vol. Solids: ~1 mL
Tare + Solid Wt: — g

Collected ~ 0.7 g of
solids.

Cone#: 3B
Initial Weight: 14.1 g ^{RKT}
Final Weight: 64.3 g
Net Weight: 50.2 g
Total Vol.: 42.5 mL
Vol. Solids: ~1 mL
Tare + Solid Wt: — g

1.18 g/mL

Appearance/Narrative:

PERFORMED BULK DENSITIES WITHOUT LARGER CHUNKS.

Average of Both Bulk Density Analysis = 1.18 g/mL

Subsample: Grab Sludge Worksheet

Date: 6/11/96
 Tank/Project: U-101
 P.C.: George L Miller
 Phone#: 373-4139

Parent Sample ID: 596T003307

Labcore Entry Initials: AV Buck Dews

Solid

Large solid particles

Liquid

Jar#:

LABCORE#: 596T003471

Jar/Vial Size: 600 mL

Tare Weight: 28.3 g

Final Weight: 22.0 g

Net Weight: 4.5 g

Tests:

DSC
TGA
DOSE-01

*Switched to 20-mL vial
 RKT 6/20/96*

*Tare = 17.4 g
 Final = 18.1 g
 net = 0.7 g*

Jar#:

LABCORE#: 596T003476

Jar/Vial Size: 20 mL

Tare Weight: 17.5 g

Final Weight: 22.0 g

Net Weight: 4.5 g

Jar#:

LABCORE#: 596T003479

Jar/Vial Size: 125 mL

Tare Weight: 123.0 g

Final Weight: 218.1 g

Net Weight: 95.1 g

Tests:

ARCHIVOI

*LC
 6/20/96
 AV*

Appearance/Special Instructions:

Bulk Density Worksheet

U-101 - Gabb

P.C.: George C. Miller

Sample ID: 10-96-4 56T003508

Date: 6/11/96
 Prepared on 6/26/96

Bulk Density
 6/28/96

Start Time: _____
 End Time: _____
 Centrifugation Time (Min.): 5 min

Jar#: N/A
 Jar/Vial Size: 125 mL
 Initial Weight: 241.5 g
 Final Weight: 129.8 g
 Net Weight: 111.7 g ← Sample removed from jar

Cone#: 48
 Initial Weight: 14.2 g
 Final Weight: 69.2 g
 Net Weight: 55.0 g
 Total Vol.: 45 mL
 Vol. Solids: 8 mL
 Tare + Solid Wt: 26.9 g

Cone#: 49
 Initial Weight: 13.76 g
 Final Weight: 66.6 g
 Net Weight: 52.9 g
 Total Vol.: 42.5 mL
 Vol. Solids: 7.5 mL
 Tare + Solid Wt: 35.8 g

Appearance/Narrative:

Bulk density performed w/ float chunks.

Porter solids settled to the bottom.

Residue of Port Bulk Density Analysis = 1.23 g/cc

26.9 g
 - 14.2 g
 12.7 g total

1.223 g/mL

lots of solids
 No chunks - solids
 Air - yellow - dense
 Some dark material
 Lot more solids

Subsample: Grab Sludge Worksheet

Date: 6/11/96
 Tank/
 Project: U-101
 P.C.: George L Miller
 Phone#: 373-4739

Parent
 Sample ID: 596T 003308

Labcore Entry
 Initials: AF

Bulk Density

Solid

Large solid particles

Liquid

Jar#:

LABCORE#: 596T003472

Jar/Vial Size: 60 ml

Tare Weight: 87.6 g

Final Weight: 34.6 g

Net Weight: 17.2 g

Switched
 to 20 ml's

Tests:

DSC

TGA

DOSE-01

Jar#:

LABCORE#:

Jar/Vial Size: 20 ml

Tare Weight: 17.2 g

Final Weight: 19.8 g

Net Weight: 2.6 g

* 1/2 Gals &
 Clean out 4/10/96

Jar#:

LABCORE#: 596T003480

Jar/Vial Size: 125 ml

Tare Weight: 123.5 g

Final Weight: 206.5 g

Net Weight: 83.0 g

Tests:

ARCHIV 01

6/28/96
 AF

Appearance/Special Instructions:

INORGANIC ANALYSES

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LABCORE Completed Worklist Report for Worklist# 9683

Analyst: krm

Instrument: BA001

Book# 133/116 A

Method: LA-SID-112 Rev/Mod C-3

Worklist Comment: U-101 SPG. RCJ

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	SPG-01	LIQUID	1.39755	1.352	96.741 % Recovery	
2 SAMPLE	S96T003309 0	SPG-01	LIQUID	N/A	.974	1.00e-003	Sp. G.
3 DUP	S96T003309 0	SPG-01	LIQUID	.974	.978	0.410 RPD	
4 SAMPLE	S96T003328 0	SPG-01	LIQUID	N/A	1.167	1.00e-003	Sp. G.
5 DUP	S96T003328 0	SPG-01	LIQUID	1.167	1.169	0.171 RPD	
6 SAMPLE	S96T003329 0	SPG-01	LIQUID	N/A	1.161	1.00e-003	Sp. G.
7 DUP	S96T003329 0	SPG-01	LIQUID	1.161	1.170	0.772 RPD	
8 SAMPLE	S96T003330 0	SPG-01	LIQUID	N/A	1.168	1.00e-003	Sp. G.
9 DUP	S96T003330 0	SPG-01	LIQUID	1.168	1.160	0.687 RPD	
10 SAMPLE	S96T003331 0	SPG-01	LIQUID	N/A	1.167	1.00e-003	Sp. G.
11 DUP	S96T003331 0	SPG-01	LIQUID	1.167	1.133	2.957 RPD	

Final page for worklist# 9683

see attached
Analyst Signature _____ Date _____

see attached
Analyst Signature _____ Date _____

verified & uploaded

John McCluskey 07/29/96
Reviewer Signature _____ Date _____

worklist:pt Version 2.1 05/15/95
07/25/96 06:59

Page: 1

LABCORE Data Entry Template for Worklist#

9683

Analyst: KRM Instrument: BA001 Book # 133N16AMethod: LA-510-112 Rev/Mod C-3

Worklist Comment: U-101 SPG. RCJ

RUSH

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.398</u>	<u>1.352</u>	<u>N/A</u>	Sp.G.
96000785	U-101 GRAB	2 SAMPLE	S96T003309	0	SPG-01	LIQUID	<u>N/A</u>	<u>0.974</u>		Sp.G.
96000785	U-101 GRAB	3 DUP	S96T003309	0	SPG-01	LIQUID	<u>0.974</u>	<u>0.978</u>	<u>N/A</u>	Sp.G.
96000785	U-101 GRAB	4 SAMPLE	S96T003328	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.167</u>		Sp.G.
96000785	U-101 GRAB	5 DUP	S96T003328	0	SPG-01	LIQUID	<u>1.167</u>	<u>1.169</u>	<u>N/A</u>	Sp.G.
96000785	U-101 GRAB	6 SAMPLE	S96T003329	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.161</u>		Sp.G.
96000785	U-101 GRAB	7 DUP	S96T003329	0	SPG-01	LIQUID	<u>1.161</u>	<u>1.170</u>	<u>N/A</u>	Sp.G.
96000787	U-101 GRAB	8 SAMPLE	S96T003330	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.168</u>		Sp.G.
96000787	U-101 GRAB	9 DUP	S96T003330	0	SPG-01	LIQUID	<u>1.168</u>	<u>1.160</u>	<u>N/A</u>	Sp.G.
96000787	U-101 GRAB	10 SAMPLE	S96T003331	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.167</u>		Sp.G.
96000787	U-101 GRAB	11 DUP	S96T003331	0	SPG-01	LIQUID	<u>1.167</u>	<u>1.133</u>	<u>N/A</u>	Sp.G.

Final page for worklist #

9683

Analyst Signature

Date

7-26-96

Analyst Signature

Date

7/27/96

Data Entry Comments:

.10012 mL volume on all sample sizes

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

SPECIFIC GRAVITY: LA-510-112 (C-3)

WORKLIST
#

9683

ANALYST
SIGNATUREANALYSIS
DATE

7-28-96

ANALYSIS
TIMEINSTRUMENT
CODE☐ SAMPLE
☒ STANDARD☐ DUPLICATE

SAMPLE # =

STD # = 133N16 A

TARE WEIGHT (g) 1.3617
GROSS WEIGHT (g) 1.4971
VOL. of SOLUTION (mL) _____REPLICATE

_____☒ SAMPLE
☐ STANDARD☐ DUPLICATE

SAMPLE # = 596T003309

STD # =

TARE WEIGHT (g) 1.3782
GROSS WEIGHT (g) 1.4757
VOL. of SOLUTION (mL) _____REPLICATE

_____☒ SAMPLE
☐ STANDARD☒ DUPLICATE

SAMPLE # = 596T003309

STD # =

TARE WEIGHT (g) 1.3894
GROSS WEIGHT (g) 1.4873
VOL. of SOLUTION (mL) _____REPLICATE

_____☒ SAMPLE
☐ STANDARD☐ DUPLICATE

SAMPLE # = 596T003328

STD # =

TARE WEIGHT (g) 1.4103
GROSS WEIGHT (g) 1.5271
VOL. of SOLUTION (mL) _____REPLICATE

_____☐ SAMPLE
☐ STANDARD☒ DUPLICATE

SAMPLE # = 596T003328

STD # =

TARE WEIGHT (g) 1.3743
GROSS WEIGHT (g) 1.4913
VOL. of SOLUTION (mL) _____REPLICATE

_____☒ SAMPLE
☐ STANDARD☐ DUPLICATE

SAMPLE # = 596T003329

STD # =

TARE WEIGHT (g) 1.4381
GROSS WEIGHT (g) 1.5543
VOL. of SOLUTION (mL) _____REPLICATE

_____☐ SAMPLE
☐ STANDARD☒ DUPLICATE

SAMPLE # = 596T003329

STD # =

TARE WEIGHT (g) 1.3907
GROSS WEIGHT (g) 1.5078
VOL. of SOLUTION (mL) _____REPLICATE

_____☒ SAMPLE
☐ STANDARD☐ DUPLICATE

SAMPLE # = 596T003330

STD # =

TARE WEIGHT (g) 1.5396
GROSS WEIGHT (g) 1.6863
VOL. of SOLUTION (mL) _____REPLICATE

WORKLIST

#

9683

ANALYST
SIGNATURE*[Signature]*ANALYSIS
DATE

7-28-96

ANALYSIS
TIMEINSTRUMENT
CODE☐ SAMPLE
STANDARD☒ DUPLICATE

SAMPLE # = 5965003330

STD # =

REPLICATE

TARE WEIGHT (g) 1.3891
GROSS WEIGHT (g) 1.5032
VOL of SOLUTION (mL)
☒ SAMPLE
STANDARD☐ DUPLICATE

SAMPLE # = 5965003331

STD # =

REPLICATE

TARE WEIGHT (g) 1.3937
GROSS WEIGHT (g) 1.5105
VOL of SOLUTION (mL)
☐ SAMPLE
STANDARD☒ DUPLICATE

SAMPLE # = 5965003331

STD # =

REPLICATE

TARE WEIGHT (g) 1.3702
GROSS WEIGHT (g) 1.4836
VOL of SOLUTION (mL)
☐ SAMPLE
STANDARD☐ DUPLICATE

SAMPLE # =

STD # =

REPLICATE

TARE WEIGHT (g)
GROSS WEIGHT (g)
VOL of SOLUTION (mL)

37

☐ SAMPLE
STANDARD☐ DUPLICATE

SAMPLE # =

STD # =

REPLICATE

TARE WEIGHT (g)
GROSS WEIGHT (g)
VOL of SOLUTION (mL)
☐ SAMPLE
STANDARD☐ DUPLICATE

SAMPLE # =

STD # =

REPLICATE

TARE WEIGHT (g)
GROSS WEIGHT (g)
VOL of SOLUTION (mL)
☐ SAMPLE
STANDARD☐ DUPLICATE

SAMPLE # =

STD # =

REPLICATE

TARE WEIGHT (g)
GROSS WEIGHT (g)
VOL of SOLUTION (mL)
☐ SAMPLE
STANDARD☐ DUPLICATE

SAMPLE # =

STD # =

REPLICATE

TARE WEIGHT (g)
GROSS WEIGHT (g)
VOL of SOLUTION (mL)

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	1.4971	
Work List	Tare Weight (W1)	1.3617	
9683	Weight of Solution (W2-W1)	0.1354	0
Test Code	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	1.3524	NA
Matrix			
LIQUID			
Sample #			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) \cdot 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \cdot 1.000 \text{ g/mL}]$		
KR MONTEITH			
Date			
07/26/96	v RESULT v		
Time	Specific Gravity =	1.352	

Data Entry by:	<i>John M. Cleveland</i>	Date:	07/27/96
Approved by:	<i>John M. Cleveland</i>	Date:	07/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.4757	
Work List	Tare Weight (W1)	1.3782	
9683	Weight of Solution (W2-W1)	0.0975	0
Test Code	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	0.9738	NA
Matrix			
LIQUID			
Sample #			
S96T003309			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
KR MONTEITH			
Date			
07/26/96	v RESULT v		
Time	Specific Gravity =	0.974	

Data Entry by: <i>John Monteith</i>	Date: 07/27/96
Approved by: <i>John Monteith</i>	Date: 07/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

Drip

TYPE	SAMPLE	REPLICATE
SAMPLE Drip	Gross Weight (W2)	1.4873
Work List	Tare Weight (W1)	1.3894
9683	Weight of Solution (W2-W1)	0.0979
Test Code	Volume of Solution μ L	100.1200
SPG-01	Specific Gravity	0.9778
Matrix		NA
LIQUID		
Sample #		
S96T003309		
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution	
	Tare Weight (W1) = Wt. of vial + cap + cotton	
Analyst	Specific Gravity = $[(W2-W1) \cdot 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \cdot 1.000 \text{ g/mL}]$	
KR MONTEITH		
Date		
07/26/96	v RESULT v	
Time	Specific Gravity =	0.978

Data Entry by: <i>John Monteith</i>	Date: 07/27/96
Approved by: <i>John Monteith</i>	Date: 07/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.5271	
Work List	Tare Weight (W1)	1.4103	
9683	Weight of Solution (W2-W1)	0.1168	0
Test Code	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	1.1666	NA
Matrix			
LIQUID			
Sample #			
S96T003328			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) \times 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \times 1.000 \text{ g/mL}]$		
KR MONTEITH			
Date			
07/26/96	$\checkmark$ RESULT $\checkmark$		
Time	Specific Gravity =	1.167	

Data Entry by:	<i>John M. Clush</i>	Date:	07/27/96
Approved by:	<i>John M. Clush</i>	Date:	07/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

TYPE	SAMPLE	REPLICATE
SAMPLE <i>Dup</i>	Gross Weight (W2)	1.4913
Work Unit	Tare Weight (W1)	1.3743
9683	Weight of Solution (W2-W1)	0.117
Test Code	Volume of Solution μ L	100.1200
SPG-01	Specific Gravity	1.1686
Matrix		
LIQUID		
Sample #		
S96T003328		
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution	
	Tare Weight (W1) = Wt. of vial + cap + cotton	
Analyst	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$	
KR MONTEITH		
Date		
07/26/96	$\checkmark$ RESULT $\checkmark$	
Time	Specific Gravity =	1.169

Data Entry by:	<i>[Signature]</i>	Date:	07/27/96
Approved by:	<i>[Signature]</i>	Date:	07/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.5543	
Work List	Tare Weight (W1)	1.4381	
9683	Weight of Solution (W2-W1)	0.1162	0
Test Code	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	1.1606	NA
Matrix			
LIQUID			
Sample #			
S96T003329			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) \cdot 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \cdot 1.000 \text{ g/mL}]$		
KR MONTEITH			
Date			
07/26/96	ν RESULT ν		
Time	Specific Gravity =	1.161	

Data Entry by: <i>John M. Cleveland</i>	Date: 07/27/96
Approved by: <i>John M. Cleveland</i>	Date: 07/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

SAMPLE	Work List	Gross Weight (W2)	Tare Weight (W1)	Weight of Solution (W2-W1)	Volume of Solution μL	Specific Gravity
9683	Test Code	SPG-01	Matrix	LIQUID	Sample #	S96T003329
Instrument Code		Gross Weight (W2) = Wt. of vial + cap + cotton + solution				
Analyte		Tare Weight (W1) = Wt. of vial + cap + cotton				
KR MONTEITH		Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$				
Date		07/26/96				
Time		v RESULT v				
		Specific Gravity = 1.170				

Data Entry by:	Date:
Approved by:	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.4565	
Wt. of vial	Tare Weight (W1)	1.3396	
9683	Weight of Solution (W2-W1)	0.1169	0
Test Code	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	1.1676	NA
Matrix			
LIQUID			
Sample			
S96T003330			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
KR MONTEITH	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
07/26/96	ν RESULT ν		
Time	Specific Gravity =	1.168	

Data Entry by:	IC	Date:	07/27/96
Approved by:	<i>John M. Chisley</i>	Date:	07/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.5052	
Work List	Tare Weight (W1)	1.3891	
9683	Weight of Solution (W2-W1)	0.1161	0
Test Code	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	1.1596	NA
Matrix			
LIQUID			
Sample #			
S96T003330			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
KR MONTEITH	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
07/26/96	ν RESULT ν		
Time	Specific Gravity =	1.160	

Data Entry by:	<i>Theresa Lopez</i>	Date:	07/27/96
Approved by:	<i>John M. C. [Signature]</i>	Date:	07/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.5105	
Work List	Tare Weight (W1)	1.3937	
9683	Weight of Solution (W2-W1)	0.1168	0
Test Code	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	1.1666	NA
Matrix			
LIQUID			
Sample #			
S96T003331			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
KR MONTEITH	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
07/26/96	$\checkmark$ RESULT $\checkmark$		
Time	Specific Gravity =	1.167	

Data Entry by:	<i>John Bowl</i>	Date:	07/27/96
Approved by:	<i>John Mc Clellan</i>	Date:	07/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.4836	
	Tare Weight (W1)	1.3702	
9683	Weight of Solution (W2-W1)	0.1134	0
	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	1.1326	NA
LIQUID			
Sample			
S96T003331			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
KR MONTEITH			
Date			
07/26/96	v RESULT v		
Time	Specific Gravity =	1.133	

Data Entry by:

Date:

07/27/96

Approved by:

Date:

07/29/96

Form 510112L1 Rev. 1.1

Page 1 of 1

RADIOCHEMICAL ANALYSES

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06/26/96 08:50

A-0004-

LABCORE Data Entry Template for Worklist# 10280

Analyst: AKL Instrument: AB00 18 Book# 47656Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using ludlum. For spike use: 0.1ml.new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	LIQUID		
2 BLNK-PREP			@ALPHA01	LIQUID		
3 BLNK/BKG			@ALPHA01	LIQUID		
4 SAMPLE	S96T003309 0		@ALPHA01	LIQUID	96000785 U-101	GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
5 DUP	S96T003309 0		@ALPHA01	LIQUID		
6 SPK	S96T003309 0		@ALPHA01	LIQUID		

Final page for worklist # 10280

G. Lewis 6/28/96
 Analyst Signature Date

Shirley J. Ullrich 6-7-96
 Analyst Signature Date
C. J. Quinn 7/1/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code

LABCORE Completed RadChem Report for Worklist#: 10280

Analyst: aki Instrument: AB18 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum. For spike use: 0.1ml.new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		0ALPHA01 ALPHA01 LIQUID		1.28E-04	1.50E-4	117.188	% Recovery
1 STD	0		0ALPHA01 ALPHA01 LIQUID		1.00	4.34E+00	4.340	% Ct. Error
2 BLNK-PREP	0		0ALPHA01 ALPHA01 LIQUID		1	<5.70E-8		uCi/mL
2 BLNK-PREP	0		0ALPHA01 ALPHA01 LIQUID		1.00	2.77E+02	277.000	uCi/mL % Ct Error <i>Adm 7/10/96</i>
3 BLNK/BKG	0		0ALPHA01 ALPHA01 LIQUID		1.00E+00	1.83E+00	1.830	BLNK/BKG
4 SAMPLE	S96T003309	0	0ALPHA01 ALPHA01 LIQUID		N/A	4.30E-08	774.0E-010	uCi/mL
4 SAMPLE	S96T003309	0	0ALPHA01 ALPHA01 LIQUID		N/A	5.00E-02	0.0E+000	% Ct. Error
5 DUP	S96T003309	0	0ALPHA01 ALPHA01 LIQUID		<4.30E-8	<6.61E-8		<i>RPD in Ct/mL Adm 7/10/96</i>
5 DUP	S96T003309	0	0ALPHA01 ALPHA01 LIQUID		1.00	5.00E-02	500.000	% Ct. Error
6 SPK	S96T003309	0	0ALPHA01 ALPHA01 LIQUID		3.59E-02	3.29E-02	91.643	% Recovery

Final page for worklist# 10280

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

[Signature]
Reviewer Signature _____ Date 7/1/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WHC-SD-WM-DP-190, REV. I

WORKBOOK PAGE: STD1

AT : LA-508-101 (D-2)

LA-508-113 (A-2) STANDARD

		STANDARD	REPLICATE
STD	DETECTOR NUMBER	18	18
	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	2144	2048
10280	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
	DILUTION FACTOR (DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	47B56	47B56
	EFFICIENCY FACTOR (EFF)	0.2095	0.2095
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	71.367	68.167
	Standard Value in $\mu\text{Ci/mL}$	1.28E-04	
95006518	Concentration in $\mu\text{Ci/L}$ =	1.53E-01	
	Replicate Concentration in $\mu\text{Ci/L}$ =	1.47E-01	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.5001E-01	

N/A

Rs (Sample Count Rate) = $(TC / CT) - BKG$

ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$

WL10280

ALPHA TOTAL $\mu\text{Ci/mL}$ = $ALPHA \text{ TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$

WB27809

Relative Counting Error = $[(The \text{ Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLH2		
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	1.50E-04
AKL		
07/01/96	RELATIVE COUNTING ERROR =	4.3%
06/28/96		
01:20 PM		
U-101		

Analyst:	SLH2	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/11/96

STANDARD.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (D-2)

LIQUIDS

		BLNK-PREP	REPLICATE
	DETECTOR NUMBER	18	18
BLNK-PREP	DISH SIZE (1 , 2 , or 5) (MS)	2	2
	GROSS COUNTS (GC)	6	5
10280	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	10.000	10.000
	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2095	0.2095
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.265	0.222
96006518	Blank Concentration in $\mu\text{Ci/L}$	< 5.70E-05	
	Replicate Concentration in $\mu\text{Ci/L}$	< 4.78E-05	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 5.6978E-05	
N/A	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
	ALPHA TOTAL $\mu\text{Ci/L}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} * \text{DDF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$		
WL10280	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SLH2			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 5.70E-08	DETECTION LEVEL
AKL	LESS THAN Value was Determined from Rmax.		7.74E-08
07/01/96	RELATIVE COUNTING ERROR	277.2%	$\mu\text{Ci/mL}$
06/28/96			
01:20 PM			
U-101			

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
BLANK.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM4

AT : LA-508-101 (D-2) LIQUIDS

		SAMPLE	REPLICATE
	DETECTOR NUMBER	18	18
SAMPLE	DISH SIZE (1, 2, or 6) (MS)	2	2
	GROSS COUNTS (GC)	9	4
10280	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	10.000	10.000
	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2095	0.2095
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.200	0.179

96006518	Blank Concentration in $\mu\text{Ci/L}$	4.30E-05
	Replicate Concentration in $\mu\text{Ci/L}$	< 3.85E-05
0	Maximum Concentration in $\mu\text{Ci/L}$	< 4.3002E-05

N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$
S96T003309	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
WB27809	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLH2				
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum)	=	< 4.30E-08	DETECTION LEVEL
AKL	LESS THAN Value was Determined from Rs.			
07/01/96	RELATIVE COUNTING ERROR		500.0%	7.74E-08 $\mu\text{Ci/mL}$

06/28/96		7.74E-08
01:20 PM		$\mu\text{Ci/mL}$
U-101		

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
SAMPLE WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP5

AT : LA-508-101 (D-2)

LIQUIDS

		DUP	REPLICATE
	DETECTOR NUMBER	18	18
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	4	7
10280	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	10.000	10.000
	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2095	0.2095
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.179	0.307

96006518	Blank Concentration in $\mu\text{Ci/L}$	< 3.85E-05
	Replicate Concentration in $\mu\text{Ci/L}$	< 6.61E-05
0	Maximum Concentration in $\mu\text{Ci/L}$	< 6.6064E-05

N/A R_s (Sample Count Rate) = $(TC / CT) - BKG$
 ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
 S96T003309 ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
 Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
 WB27809 Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLH2		
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 6.61E-08
AKL	LESS THAN Value was Determined from Rmax.	DETECTION LEVEL
07/01/96	RELATIVE COUNTING ERROR	500.0%
06/28/96		7.74E-08 $\mu\text{Ci/mL}$
01:20 PM		
U-101		

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
SAMPLE:WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SPK6

AT : LA-508-101 (D-2) LA-508-113 (A-2) SPIKED SAMPLE

		SPIKE	REPLICATE
	DETECTOR NUMBER	18	18
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
	TOTAL COUNTS (TC)	46368	45497
10280	COUNT TIME IN MINUTES (CT)	30	30
	BACKGROUND In cpm (BKG)	0.1	0.1
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	10.000	10.000
	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
	SPIKE BOOK NUMBER (Spk BN)	123B43	123B43
96006518	SPIKE VALUE In $\mu\text{Ci/mL}$ (SVal)	3.5884E-02	3.5884E-02
	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2095	0.2095
0	SAMPLE + SPIKE $\mu\text{Ci/mL}$ (S+S)	3.32E-04	3.26E-04
	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE <	4.3002E-08	
N/A			
S96T003309	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
WB27809	SAMPLE + SPIKE $\mu\text{Ci/mL}$ = $R_s * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
SLH2	QC ACTUAL = SVal		
	QC FOUND = $((S+S \mu\text{Ci/mL} - \text{SAMPLE } \mu\text{Ci/mL}) * ((SDF/SVol)/(DF*DDF/SS))))$		
SLF	PERCENT SPIKE RECOVERY = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
AKL			
07/01/96	NOTE: Original Sample result was a LESS THAN value. Zero (0) was subtracted from the spiked value for QC found calculation.		
06/28/96	QC ACTUAL	=	3.59E-02
	QC FOUND	=	3.29E-02
01:20 PM	AVG. PERCENT SPIKE RECOVERY	=	91.7%
U-101			

Analyst:	SLH2	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
SPIKE.WB1 Rev. 1.0 508101ML		

LABCORE Data Entry Template for Worklist# 10281

Analyst: AKL Instrument: AB00 15 Book# 47B56

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using ludlum. For spike use: 0.1ml.new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	LIQUID		
2 BLNK			@ALPHA01	LIQUID		
3 BLNK/BKG			@ALPHA01	LIQUID		
4 SAMPLE	S96T003328 0		@ALPHA01	LIQUID	96000785	U-101 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
5 DUP	S96T003328 0		@ALPHA01	LIQUID		
6 SPK	S96T003328 0		@ALPHA01	LIQUID		
7 SAMPLE	S96T003329 0		@ALPHA01	LIQUID	96000785	U-101 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
8 DUP	S96T003329 0		@ALPHA01	LIQUID		
9 SAMPLE	S96T003330 0		@ALPHA01	LIQUID	96000787	U-101 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
10 DUP	S96T003330 0		@ALPHA01	LIQUID		
11 SAMPLE	S96T003331 0		@ALPHA01	LIQUID	96000787	U-101 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E					
12 DUP	S96T003331 0		@ALPHA01	LIQUID		

Final page for worklist # 10281

AKL 6/28/96
Analyst Signature Date

Sharon L. Allen 7-1-96
Analyst Signature Date
C.J. Oprien 7/1/96

Data Entry Comments:

LABCORE Completed RadChem Report for Worklist#: 10281

Analyst: akl Instrument: AB15 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum. For spike use: 0.1ml.new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	0ALPHA01 ALPHA01 LIQUID		1.28E-04	1.18E-4	92.188	% Recovery
1 STD		0	0ALPHA01 ALPHA01E LIQUID		1.00	4.61E+00	4.610	% Ct. Error
2 BLNK		0	0ALPHA01 ALPHA01 LIQUID		1	<3.41E-4		uCi/mL
2 BLNK		0	0ALPHA01 ALPHA01E LIQUID		1.00	1.84E+02	184.000	uCi/mL
3 BLNK/BKG		0	0ALPHA01 ALPHA01 LIQUID		1.00E+00	3.33E-00	3.330	BLNK/BKG
4 SAMPLE	S96T003328	0	0ALPHA01 ALPHA01 LIQUID		N/A	2.14E-03	455.0e-006	uCi/mL
4 SAMPLE	S96T003328	0	0ALPHA01 ALPHA01E LIQUID		N/A	4.05E+01	0.0e+000	% Ct. Error
5 DUP	S96T003328	0	0ALPHA01 ALPHA01 LIQUID		2.14E-3	2.43E-3	12.691	RPD
5 DUP	S96T003328	0	0ALPHA01 ALPHA01E LIQUID		1.00	3.34E+01	33.400	% Ct. Error
6 SPK	S96T003328	0	0ALPHA01 ALPHA01 LIQUID		3.59E-02	3.37E-02	93.872	% Recovery
7 SAMPLE	S96T003329	0	0ALPHA01 ALPHA01 LIQUID		N/A	1.82E-03	455.0e-006	uCi/mL
7 SAMPLE	S96T003329	0	0ALPHA01 ALPHA01E LIQUID		N/A	3.89E+01	0.0e+000	% Ct. Error
8 DUP	S96T003329	0	0ALPHA01 ALPHA01 LIQUID		1.82E-3	1.50E-3	19.277	RPD
8 DUP	S96T003329	0	0ALPHA01 ALPHA01E LIQUID		1.00	4.34E+01	43.400	% Ct. Error
9 SAMPLE	S96T003330	0	0ALPHA01 ALPHA01 LIQUID		N/A	1.66E-03	455.0e-006	uCi/mL
9 SAMPLE	S96T003330	0	0ALPHA01 ALPHA01E LIQUID		N/A	4.14E+01	0.0e+000	% Ct. Error
10 DUP	S96T003330	0	0ALPHA01 ALPHA01 LIQUID		1.66E-3	1.44E-3	14.194	RPD
10 DUP	S96T003330	0	0ALPHA01 ALPHA01E LIQUID		1.00	4.69E+01	46.900	% Ct. Error
11 SAMPLE	S96T003331	0	0ALPHA01 ALPHA01 LIQUID		N/A	1.50E-03	455.0e-006	uCi/mL
11 SAMPLE	S96T003331	0	0ALPHA01 ALPHA01E LIQUID		N/A	4.45E+01	0.0e+000	% Ct. Error
12 DUP	S96T003331	0	0ALPHA01 ALPHA01 LIQUID		1.50E-3	1.50E-3	0.000	RPD
12 DUP	S96T003331	0	0ALPHA01 ALPHA01E LIQUID		1.00	4.45E+01	44.500	% Ct. Error

Final page for worklist# 10281

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature Date 7/1/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WHC-SD-WM-DP-190, REV. I

WORKBOOK PAGE: STD1

AT : LA-508-101 (D-2) LA-508-113 (A-2) STANDARD

		STANDARD	REPLICATE
STD	DETECTOR NUMBER	15	15
	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	1941	1809
10281	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
	DILUTION FACTOR (DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	47B56	47B56
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	64.670	60.270
	Standard Value in $\mu\text{Ci/mL}$	1.28E-04	
9606520	Concentration in $\mu\text{Ci/L}$ =	1.22E-01	
	Replicate Concentration in $\mu\text{Ci/L}$ =	1.14E-01	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.1823E-01	
N/A	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
	ALPHA TOTAL $\mu\text{Ci/L}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$		
WL10281	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
WB26872	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
SLH2	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	1.18E-04	DETECTION LEVEL
AKL			
07/01/96	RELATIVE COUNTING ERROR =	4.6%	4.51E-07 $\mu\text{Ci/mL}$
06/28/96			
01:20 PM			
U-101 GRAB			

Analyst:

SLH2

Date: 01-Jul-96

Signature of Chemist:

SLF

Date: 7/1/96

STANDARD.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (D-2)

LIQUIDS

		BLNK	REPLICATE
BLNK	DETECTOR NUMBER	15	15
	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	3	3
10281	COUNT TIME IN MINUTES (CT)	30	30
	BACKGROUND In cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.179	0.179

96006520	Blank Concentration in $\mu\text{Ci/L}$	< 3.41E-01
	Replicate Concentration in $\mu\text{Ci/L}$	< 3.41E-01
0	Maximum Concentration in $\mu\text{Ci/L}$	< 3.4144E-01

N/A	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$
WL10281	ALPHA TOTAL $\mu\text{Ci/L}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} * \text{DDF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$
	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
WB26872	Relative Counting Error = $[(\text{The Square Root of } \text{TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$
SLH2	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 3.41E-04	DETECTION LEVEL
AKL	LESS THAN Value was Determined from Rmax.		
07/01/96	RELATIVE COUNTING ERROR	184.3%	4.55E-04 $\mu\text{Ci/mL}$

06/28/96
01:20 PM
U-101 GRAB

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
BLANK.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM4

AT : LA-508-101 (D-2)

LIQUIDS

		SAMPLE	REPLICATE
SAMPLE	DETECTOR NUMBER	15	15
	DISH SIZE (1 , 2 , or 5)	(MS)	2
	GROSS COUNTS	(GC)	26
10281	COUNT TIME IN MINUTES	(CT)	30
	BACKGROUND In cpm	(BKG)	0.03
AT	SAMPLE SIZE in mL	(SS)	0.100
	DILUTION FACTOR	(DF)	101
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1
	EFFICIENCY FACTOR	(EFF)	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.837	1.403
96006520	Blank Concentration in $\mu\text{Ci/L}$	1.60E+00	
	Replicate Concentration in $\mu\text{Ci/L}$	2.68E+00	
0	Average Concentration in $\mu\text{Ci/L}$	2.1410E+00	

N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$
S96T003328	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
	ALPHA TOTAL $\mu\text{Ci/mL}$ ■ ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
WB26872	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLH2			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average)	=	2.14E-03
AKL			
07/01/96	RELATIVE COUNTING ERROR	40.5%	DETECTION LEVEL
06/28/96			4.55E-04
01:20 PM			$\mu\text{Ci/mL}$
U-101 GRAB			

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
SAMPLE:WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP5

AT : LA-508-101 (D-2)

LIQUIDS

		DUP	REPLICATE
	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	37	41
10281	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	1.203	1.337
96006520	Blank Concentration in $\mu\text{Ci/L}$	2.30E+00	
	Replicate Concentration in $\mu\text{Ci/L}$	2.56E+00	
0	Average Concentration in $\mu\text{Ci/L}$	2.4277E+00	

N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$
S96T003328	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
WB26872	ALPHA TOTAL $\mu\text{Ci/mL}$ = $ALPHA\ TOTAL\ \mu\text{Ci/L} / 1000\text{mL/L}$
	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	2.43E-03	DETECTION LEVEL
AKL			
07/01/96	RELATIVE COUNTING ERROR	33.4%	4.55E-04 $\mu\text{Ci/mL}$
06/28/96			
01:20 PM			
U-101 GRAB			

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
SAMPLE WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SPK6

AT : LA-508-101 (D-2) LA-508-113 (A-2) SPIKED SAMPLE

		SPIKE	REPLICATE
	DETECTOR NUMBER	15	15
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
	TOTAL COUNTS (TC)	51842	55186
10281	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.100	0.100
	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
	SPIKE BOOK NUMBER (Spk BN)	123B43	123B43
96006520	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	3.5884E-02	3.5884E-02
	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.238	0.238
0	SAMPLE + SPIKE $\mu\text{Ci/mL}$ (S+S)	3.30E+00	3.52E+00
	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE	2.1410E-03	
N/A			
S96T003328	Rs (Sample Count Rate) = (TC / CT) - BKG		
WB26872	SAMPLE + SPIKE $\mu\text{Ci/mL}$ = Rs * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
	QC ACTUAL = SVal		
	QC FOUND = (((S+S $\mu\text{Ci/mL}$ - SAMPLE $\mu\text{Ci/mL}$) * ((SDF/SVol)/(DF*DDF/SS))))		
SLH2	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100		
SLF			
AKL			
07/01/96			
06/28/96	QC ACTUAL	=	3.59E-02
01:20 PM	QC FOUND	=	3.37E-02
	AVG. PERCENT SPIKE RECOVERY	=	94.0%
U-101 GRAB			

Analyst:	SLH2	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
SPIKE WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM7

AT : LA-508-101 (D-2)

LIQUIDS

		SAMPLE	REPLICATE
	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5)	(MS)	2
	GROSS COUNTS	(GC)	31
10281	COUNT TIME in MINUTES	(CT)	30
	BACKGROUND in cpm	(BKG)	0.03
AT	SAMPLE SIZE in mL	(SS)	0.100
	DILUTION FACTOR	(DF)	101
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1
	EFFICIENCY FACTOR	(EFF)	0.2380
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE		0.903
96006520	Blank Concentration in $\mu\text{Ci/L}$	1.92E+00	
	Replicate Concentration in $\mu\text{Ci/L}$	1.73E+00	
0	Average Concentration in $\mu\text{Ci/L}$	1.8224E+00	

N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$
S96T003329	$\text{ALPHA TOTAL } \mu\text{Ci/L} = R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
	$\text{ALPHA TOTAL } \mu\text{Ci/mL} = \text{ALPHA TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$
WB26872	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average)	=	1.82E-03	DETECTION LEVEL
AKL				
07/01/96	RELATIVE COUNTING ERROR		38.9%	4.55E-04 $\mu\text{Ci/mL}$
06/28/96				
01:20 PM				
U-101 GRAB				

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP8

AT : LA-508-101 (D-2)

LIQUIDS

		DUP	REPLICATE
DUP	DETECTOR NUMBER	15	15
	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	23	26
10281	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.737	0.837
96006520	Blank Concentration in $\mu\text{Ci/L}$	1.41E+00	
	Replicate Concentration in $\mu\text{Ci/L}$	1.60E+00	
0	Average Concentration in $\mu\text{Ci/L}$	1.5038E+00	
N/A	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
SP	ALPHA TOTAL $\mu\text{Ci/L}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} * \text{DDF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$		
S96T003329	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
WB26872	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
SLH2	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	1.50E-03	DETECTION LEVEL
Analyst AKL			4.55E-04 $\mu\text{Ci/mL}$
Date Completed 07/01/96	RELATIVE COUNTING ERROR	43.4%	
Analysis Date 06/28/96			
Analysis Time 01:20 PM			
Sample Point U-101 GRAB			

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM9

AT : LA-508-101 (D-2) LIQUIDS

		SAMPLE	REPLICATE
DETECTOR NUMBER		15	15
SAMPLE	DISH SIZE (1, 2, or 5)	(MS)	2
	GROSS COUNTS	(GC)	29
10281	COUNT TIME in MINUTES	(CT)	30
	BACKGROUND in cpm	(BKG)	0.03
AT	SAMPLE SIZE in mL	(SS)	0.100
	DILUTION FACTOR	(DF)	101
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1
	EFFICIENCY FACTOR	(EFF)	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.803
96006520	Blank Concentration in $\mu\text{Ci/L}$	1.79E+00	
	Replicate Concentration in $\mu\text{Ci/L}$	1.54E+00	
0	Average Concentration in $\mu\text{Ci/L}$	1.6631E+00	

N/A
 Rs (Sample Count Rate) = $(TC / CT) - BKG$
 ALPHA TOTAL $\mu\text{Ci/L}$ ■ $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
 S96T003330 ALPHA TOTAL $\mu\text{Ci/mL}$ ■ $ALPHA\ TOTAL\ \mu\text{Ci/L} / 1000\text{mL/L}$
 Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
 WB26872 Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average)	=	1.66E-03	DETECTION LEVEL
AKL				
07/01/96	RELATIVE COUNTING ERROR		41.4%	4.55E-04 $\mu\text{Ci/mL}$

Analysis Date
 06/28/96
 Analysis Time
 01:20 PM
 Sample Point
 U-101 GRAB

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP10

AT: LA-508-101 (D-2) LIQUIDS

		DUP	REPLICATE
	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	27	20
10281	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.870	0.637

96006620	Blank Concentration in $\mu\text{Ci/L}$	1.66E+00
0	Replicate Concentration in $\mu\text{Ci/L}$	1.22E+00
0	Average Concentration in $\mu\text{Ci/L}$	1.4401E+00

N/A	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$
S96T003330	ALPHA TOTAL $\mu\text{Ci/L}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} * \text{DDF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$
WB26872	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
	Relative Counting Error = $[(\text{The Square Root of } \text{TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$
	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	1.44E-03	DETECTION LEVEL
AKL			
07/01/96	RELATIVE COUNTING ERROR	46.9%	4.55E-04 $\mu\text{Ci/mL}$
06/28/96			
01:20 PM			
U-101 GRAB			

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
SAMPLE.WB1 Rev. 1.0	508101ML	

WHC-SD-WM-DP-190, REV. I

WORKBOOK PAGE: SAM11

AT : LA-508-101 (D-2)

LIQUIDS

		SAMPLE	REPLICATE
	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	27	22
10281	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND In cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.870	0.703
96006520	Blank Concentration in $\mu\text{Ci/L}$	1.66E+00	
	Replicate Concentration in $\mu\text{Ci/L}$	1.34E+00	
0	Average Concentration in $\mu\text{Ci/L}$	1.5038E+00	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
Sample	ALPHA TOTAL $\mu\text{Ci/L}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} * \text{DDF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$		
S96T003331	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Calc	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SLH2			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average)	=	1.50E-03
Analyst			DETECTION LEVEL
AKL			
Date Complete			4.55E-04
07/01/96	RELATIVE COUNTING ERROR	44.5%	$\mu\text{Ci/mL}$
Analysis Date			
06/28/96			
Analysis Time			
01:20 PM			
Sample Point			
U-101 GRAB			

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96

SAMPLE.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: DUP12

AT : LA-508-101 (D-2) LIQUIDS

		DUP	REPLICATE
	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	22	27
10281	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.703	0.870

96006520	Blank Concentration in $\mu\text{Ci/L}$	1.34E+00
	Replicate Concentration in $\mu\text{Ci/L}$	1.66E+00
0	Average Concentration in $\mu\text{Ci/L}$	1.5038E+00

Sample Prep	
N/A	$Rs \text{ (Sample Count Rate)} = (TC / CT) - BKG$
Sample	$ALPHA \text{ TOTAL } \mu\text{Ci/L} = Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
S96T003331	$ALPHA \text{ TOTAL } \mu\text{Ci/mL} = ALPHA \text{ TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$
Instrument Code	$Relative \text{ Counting Error} = [(The \text{ Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By			
SLH2			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average)	=	1.50E-03
Analyst			DETECTION LEVEL
AKL			
Date Complete			4.55E-04
07/01/96	RELATIVE COUNTING ERROR	44.5%	$\mu\text{Ci/mL}$
Analytic Date			
06/28/96			
Analytic Time			
01:20 PM			
Sample Point			
U-101 GRAB			

Analyst:	AKL	Date: 01-Jul-96
Signature of Chemist:	SLF	Date: 7/1/96
SAMPLE.WB1 Rev. 1.0	508101ML	

LABCORE Data Entry Template for Worklist# 10690

Analyst: SLH Instrument: AB00 15 Book# 41B56

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using ludlum. For spike use: 0.1ml.new

S Type	Sample#	R	A	Test	Matrix	Group#	Project
1 STD				@ALPHA01	SOLID		
2 BLNK-PREP				@ALPHA01	SOLID		
3 BLNK/BKG				@ALPHA01	SOLID		
4 SAMPLE	S96T003601	0	F	@ALPHA01	SOLID	96000785	U-101 GRAB
Analytes Requested: ALPHA01 , ALPHA01E							
5 SAMPLE	S96T003602	0	F	@ALPHA01	SOLID	96000785	U-101 GRAB
Analytes Requested: ALPHA01 , ALPHA01E							
6 SAMPLE	S96T003603	0	F	@ALPHA01	SOLID	96000787	U-101 GRAB
Analytes Requested: ALPHA01 , ALPHA01E							
7 SAMPLE	S96T003604	0	F	@ALPHA01	SOLID	96000787	U-101 GRAB
Analytes Requested: ALPHA01 , ALPHA01E							
8 DUP	S96T003604	0	F	@ALPHA01	SOLID		
9 SPK	S96T003604	0	F	@ALPHA01	SOLID		

Final page for worklist # 10690

Sandra H. Boyd Bryant
Analyst Signature Date 7-11-96

Joe E. Hogan 7-11-96
Analyst Signature Date
M. G. B. 7/11/96

Data Entry Comments:

LABCORE Completed RadChem Report for Worklist#: 10690

Analyst: slh Instrument: AB15 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum. For spike use: 0.1ml.new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		0ALPHA01 ALPHA01 SOLID		1.28E-04	1.16E-4	90.625	% Recovery
1 STD	0		0ALPHA01 ALPHA01E SOLID		1.00	4.65E+00	4.650	% Ct. Error
2 BLNK-PREP	0		0ALPHA01 ALPHA01 SOLID		1	<2.55E-2		uCi/g
2 BLNK-PREP	0		0ALPHA01 ALPHA01E SOLID		1.00	2.55E+02	255.000	uCi/g
3 BLNK/BKG	0		0ALPHA01 ALPHA01 SOLID		1.00E+00	1.90E+00	1.900	BLNK/BKG
4 SAMPLE	S96T003601	0 F	0ALPHA01 ALPHA01 SOLID		N/A	8.27E-02	404.0E-004	uCi/g
4 SAMPLE	S96T003601	0 F	0ALPHA01 ALPHA01E SOLID		N/A	6.00E+01	0.0E+000	% Ct. Error
5 SAMPLE	S96T003602	0 F	0ALPHA01 ALPHA01 SOLID		N/A	6.59E-02	573.0E-004	uCi/g
5 SAMPLE	S96T003602	0 F	0ALPHA01 ALPHA01E SOLID		N/A	2.55E+02	0.0E+000	% Ct. Error
6 SAMPLE	S96T003603	0 F	0ALPHA01 ALPHA01 SOLID		N/A	1.02E-01	366.0E-004	uCi/g
6 SAMPLE	S96T003603	0 F	0ALPHA01 ALPHA01E SOLID		N/A	4.57E+01	0.0E+000	% Ct. Error
7 SAMPLE	S96T003604	0 F	0ALPHA01 ALPHA01 SOLID		N/A	6.14E-02	293.0E-004	uCi/g
7 SAMPLE	S96T003604	0 F	0ALPHA01 ALPHA01E SOLID		N/A	4.98E+01	0.0E+000	% Ct. Error
8 DUP	S96T003604	0 F	0ALPHA01 ALPHA01 SOLID		6.14E-2	5.15E-2	17.538	RPD
8 DUP	S96T003604	0 F	0ALPHA01 ALPHA01E SOLID		1.00	5.53E+01	55.300	% Ct. Error
9 SPK	S96T003604	0 F	0ALPHA01 ALPHA01 SOLID		3.59E-02	3.51E-02	97.772	% Recovery

Final page for worklist# 10690

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature Date 7/11/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

AT : LA-508-101 (D-2) LA-508-113 (A-2) STANDARD

WORKBOOK PAGE: STD1		LA-508-113 (A-2) STANDARD		STANDARD	REPLICATE
AT : LA-508-101 (D-2)		DETECTOR NUMBER		15	15
STD	DISH SIZE (1, 2, or 5)	(MS)		2	2
	GROSS COUNTS	(GC)	1894	1781	
10690	COUNT TIME in MINUTES	(CT)	30	30	
	BACKGROUND in cpm	(BKG)	0.07	0.07	
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000	
	DILUTION FACTOR	(DF)	1	1	
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	47B56	47B56	
	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380	
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		63.063	59.297	
	Standard Value in $\mu\text{Ci/mL}$		1.28E-04		
96006966	Concentration in $\mu\text{Ci/L}$	=	1.19E-01		
	Replicate Concentration in $\mu\text{Ci/L}$	=	1.12E-01		
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$	=	1.1579E-01		
N/A	Rs (Sample Count Rate) $\square$ (TC / CT) - BKG				
	ALPHA TOTAL $\mu\text{Ci/L}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$				
WL10690	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L				
	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})]^2 * 1.9$				
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
SEH					
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$			=	1.16E-04
SLH					
07/11/96	RELATIVE COUNTING ERROR			=	4.7%
07/11/96					
08:00 AM					
U-101 GRAB					

Analyst:	SEH	Date: 11-Jul-96
Signature of Chemist:	SLF	Date: 7/11/96

STANDARD.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (D-2)

SOLIDS

		BLNK-PREP	REPLICATE
	DETECTOR NUMBER	15	15
BLNK-PREP	DISH SIZE (1 , 2 , or 6) (MS)	2	2
	GROSS COUNTS (GC)	4	4
10690	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.494	1.494
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	0.199	0.199
96006966	Blank Concentration in $\mu\text{Ci/g}$	< 2.55E-02	
	Replicate Concentration in $\mu\text{Ci/g}$	< 2.55E-02	
0	Maximum Concentration in $\mu\text{Ci/g}$	< 2.5484E-02	
N/A	Rs (Sample Count Rate) $\square$ (TC / CT) - BKG		
	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$		
WL10690	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SEH			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 2.55E-02	DETECTION LEVEL
SLH	LESS THAN Value was Determined from Rmax.		4.04E-02 $\mu\text{Ci/g}$
07/11/96	RELATIVE COUNTING ERROR	254.8%	
07/11/96			
08:00 AM			
U-101 GRAB			

Analyst:	SLH	Date: 11-Jul-96
Signature of Chemist:	SLF	Date: 7/11/96
BLANK.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM4

AT : LA-508-101 (D-2)

SOLIDS

		SAMPLE	REPLICATE
DETECTOR NUMBER		15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
GROSS COUNTS (GC)		16	27
10690	COUNT TIME in MINUTES (CT)	30	30
BACKGROUND in cpm (BKG)		0.07	0.07
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
DILUTION FACTOR (DF)		101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.494	1.494
EFFICIENCY FACTOR (EFF)		0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.463	0.830
Blank Concentration in $\mu\text{Ci/g}$ 5.93E-02			
Replicate Concentration in $\mu\text{Ci/g}$ 1.06E-01			
Average Concentration in $\mu\text{Ci/g}$ 8.2741E-02			
Rs (Sample Count Rate) = $(TC / CT) - BKG$			
ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$			
Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$			
Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)		=	8.27E-02
			DETECTION LEVEL
			4.04E-02 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR		60.0%	

Analyst	SLH	Date: 11-Jul-96
Signature of Chemist:	SLF	Date: 7/11/96
SAMPLE WB1 Rev. 1.0 508101ML		

WORKBOOK PAGE: SAM5

AT : LA-508-101 (D-2)

SOLIDS

		SAMPLE	REPLICATE
	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	13	4
10690	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	0.1044	0.1044
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.363	0.199
96006966	Blank Concentration in $\mu\text{Ci/g}$	6.59E-02	
	Replicate Concentration in $\mu\text{Ci/g}$	< 3.61E-02	
0	Maximum Concentration in $\mu\text{Ci/g}$	< 6.5868E-02	

FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG
S96T003602	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)
WB26872	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100
	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SEH		
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 6.59E-02
SLH	LESS THAN Value was Determined from Rs.	DETECTION LEVEL
07/11/96	RELATIVE COUNTING ERROR	254.8%
07/11/96		5.73E-02 $\mu\text{Ci/g}$
08:00 AM		
Sample Point		
U-101 GRAB		

Analyst:	SLH	Date: 11-Jul-96
Signature of Chemist:	SLF	Date: 7/11/96
SAMPLE.WB1 Rev. 1.	508101ML	

WHC-SD-WM-DP-190, REV. 1

WORKBOOK PAGE: SAM6

AT : LA-508-101 (D-2) SOLIDS

		SAMPLE	REPLICATE
	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	24	33
10690	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.6528	1.6528
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.730	1.030

96006966	Blank Concentration in $\mu\text{Ci/g}$	8.44E-02
	Replicate Concentration in $\mu\text{Ci/g}$	1.19E-01
0	Average Concentration in $\mu\text{Ci/g}$	1.0178E-01

FUSION01	Rs (Sample Count Rate) = $(TC / CT) - BKG$
S96T003603	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$
WB26872	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
SEH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	1.02E-01	DETECTION LEVEL
SLH			
07/11/96	RELATIVE COUNTING ERROR	45.7%	3.66E-02 $\mu\text{Ci/g}$
07/11/96			
08:00 AM			
U-101 GRAB			

Analyst:	SLH	Date: 11-Jul-96
Signature of Chemist:	SLF	Date: 7/11/96

SAMPLE WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: SAM7

AT : LA-508-101 (D-2)

SOLIDS

		SAMPLE	REPLICATE
	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	21	23
10690	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.065	2.065
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.630	0.697
96006966	Blank Concentration in $\mu\text{Ci/g}$	5.83E-02	
	Replicate Concentration in $\mu\text{Ci/g}$	6.45E-02	
0	Average Concentration in $\mu\text{Ci/g}$	6.1406E-02	
Simple Rep			
FUSION01	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
Sample 2	ALPHA TOTAL $\mu\text{Ci/g}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$		
S96T003604			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	6.14E-02	DETECTION LEVEL
Analyst			
SLH			
Date Complete			2.93E-02
07/11/96	RELATIVE COUNTING ERROR	49.8%	$\mu\text{Ci/g}$
Analysis Date			
07/11/96			
Analysis Time			
08:00 AM			
Sample Point			
U-101 GRAB			

Analyst:	SLH	Date: 11-Jul-96
Signature of Chemist:	SLF	Date: 7/11/96
SAMPLE:WB1 Rev. 1.0	508101ML	

WHC-SD-WM-DP-190, REV. I

WORKBOOK PAGE: DUP8

AT : LA-508-101 (D-2)

SOLIDS

		DUP	REPLICATE
DUP	DETECTOR NUMBER	15	15
	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	19	18
10690	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0292	2.0292
	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.563	0.530

96006966	Blank Concentration in $\mu\text{Ci/g}$	5.31E-02
	Replicate Concentration in $\mu\text{Ci/g}$	4.99E-02
0	Average Concentration in $\mu\text{Ci/g}$	5.1498E-02

Sample Prep	
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$
Sample	$\text{ALPHA TOTAL } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$
S96T003604	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
SLF	

Analyst	SLH	5.15E-02	DETECTION LEVEL
SLH			
Date Complete			2.98E-02
07/11/96	RELATIVE COUNTING ERROR	55.3%	$\mu\text{Ci/g}$

Analysis Date	
07/11/96	
Analysis Time	
08:00 AM	
Sample Point	
U-101 GRAB	

Analyst:	SLH	Date: 11-Jul-96
Signature of Chemist:	SLF	Date: 7/11/96
SAMPLE WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SPK9

AT : LA-508-101 (D-2) LA-508-113 (A-2) SPIKED SAMPLE

		SPIKE	REPLICATE
	DETECTOR NUMBER	15	15
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
	TOTAL COUNTS (TC)	56414	54972
10690	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	1.000	1.000
	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.065	2.065
	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
	SPIKE BOOK NUMBER (Spk BN)	123B43	123B43
96006966	SPIKE VALUE in µCi/mL (SVal)	3.5882E-02	3.5882E-02
	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.238	0.238
0	SAMPLE + SPIKE µCi/g (S+S)	1.74E+02	1.70E+02
	AVERAGE or MAXIMUM µCi/g in SAMPLE	6.1405E-02	
FUSION01			
S96T003604	Rs (Sample Count Rate) = (TC / CT) - BKG		
WB26872	SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)		
SEH	QC ACTUAL = SVal		
SLF	QC FOUND = ((S+S µCi/g - SAMPLE µCi/g) * ((SDF/(SVol*1000)))/(DF/SS/Dg/L)))		
SLH	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100		
07/11/96			
07/11/96	QC ACTUAL =	3.59E-02	
08:00 AM	QC FOUND =	3.51E-02	
U-101 GRAB	AVG. PERCENT SPIKE RECOVERY =	97.9%	

Analyst:	SEH	Date: 11-Jul-96
Signature of Chemist:	SLF	Date: 7/11/96
SPIKE.WB1 Rev. 1.0	508101ML

**Westinghouse
Hanford Company**

WHC-SD-WM-DP-190, REV. 1

P.O. Box 1970 Richland, WA 99352

PART II

WHC-SD-WM-DP-190, REV. 0

ANALYTICAL SERVICES

45-DAY SAFETY SCREENING RESULTS FOR TANK 241-U-101, GRAB SAMPLES 1U-96-1 THROUGH 1U-96-4

Project Coordinator: GEORGE L. MILLER

**Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management**

by

**Westinghouse Hanford Company
Box 1970
Richland, Washington**

2-1

WHC-SD-WM-DP-190, REV. /

WHC-SD-WM-DP-190, REV. 0

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WHC-SD-WM-DP-190, REV. 0

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This document consists of pages 2-1 through 2-94 and pages 2-2, 2-5, 2-13, 2-17, 2-24 and 2-31 were intentionally left blank.

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NARRATIVE

WHC-SD-WM-DP-190, REV. 1

WHC-SD-WM-DP-190, REV. 0

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222-S ANALYTICAL SERVICES

**45 DAY SAFETY SCREENING RESULTS FOR TANK 241-U-101
SAMPLES 1U-96-1 THROUGH 1U-96-4**

This document is the 45 Day Safety Screening Report for grab samples taken from tank 241-U-101 risers 1 and 7 between May 29, 1996 and May 30, 1996. Analyses were performed in accordance with the Tank Sampling and Analysis Plan (TSAP) for this tank (T. M. Brown, 1996) and the Safety Screening Data Quality Objective (DQO) (Dukelow, et al. 1995).

Notification limits were not exceeded for differential scanning calorimetry (DSC) or total alpha (AT) analyses for any of the samples, consequently immediate notifications were not necessary and were not made.

Appearance and Sample Handling

Table 1 identifies the samples that were taken, the tank risers from which they were taken, the date that the samples were collected, and the date that the samples were received at the lab. It also associates the original customer sample number with corresponding laboratory sample numbers and provides a description of sample appearance and an estimate of the bulk density of the solids.

Attachment 1, pages 11 and 12, provides a graphical cross-reference for relating the tank farm customer identification numbers with the 222-S Laboratory sample numbers. The subsamples generated in the laboratory for analysis are identified in the diagram with the associated analyses performed on the subsamples.

WHC-SD-WM-DP-190, REV. 0

Table 1: Sample and Appearance Information for Tank 241-U-101 Grab Samples

Customer Sample Number	Laboratory Sample Number	Sample Type	Date Sampled	Date Received	Riser Number	Sampling Elevation (m)*	Volume % Solids	Density of Solids (g/cm ³)**	Sample Description
1U-96-FB	S96T003309	Field Blank	5/30/96	5/30/96	7	216	Not Analyzed	Not Analyzed	Clear colorless liquid; no solids; no organic layer
1U-96-1	S96T003272	Supernate & sludge	5/30/96	5/30/96	7	0	<2	Insufficient Sample	Clear yellow colored liquid; large settled solid chunks (pea gravel size) with a small amount of fine precipitate; no organic layer
1U-96-2	S96T003306	Supernate & sludge	5/30/96	5/30/96	7	0	<2	Insufficient Sample	Clear yellow colored liquid; large settled solid chunks (pea gravel size) with a small amount of fine precipitate; no organic layer
1U-96-3	S96T003307	Supernate & sludge	5/29/96	5/29/96	1	0	11	Insufficient Sample	Clear yellow colored liquid; a few very large settled solid chunks (1/2" gravel size) with a small amount of fine precipitate; no organic layer
1U-96-4	S96T003308	Supernate & sludge	5/29/96	5/29/96	1	0	29	1.60	Clear yellow colored liquid; no large settled solid chunks but with a significant amount of sand sized solids; no organic layer

* Sample elevation is measured from tank bottom to mouth of the sample bottle

** Density of solids was determined after having removed large gravel-sized solid particles.

WHC-SD-WM-DP-190, REV. 1

WHC-SD-WM-DP-190, REV. 1
WHC-SD-WM-DP-190, REV. 0

Analytical Results Summary

The data summary table, Table 3, included in this report displays the safety screening analytical results and applicable action limits associated for each subsample.

Differential Scanning Calorimetry (DSC)

The DSC data indicated that none of the five liquid samples and none of the four solid samples exceeded the notification limit of 480 joules/g on a dry weight basis. As a consequence, no secondary analyses have been requested for analysis.

Percent recoveries for all standards were within the TSAP specified limits of 80 to 120 percent.

Except for one solid sample, all duplicate RPDs were within the limits specified in the TSAP (<30 for solids and <20 for liquids). For the solids from sample 1U-96-1 (S96T003468), the duplicate RPD was 200%. A rerun was not requested, however, because its calculated DSC (dry weight basis) of 29.4 Joules/gram was 16 times less than the notification limit.

The cognitive chemist noted that for the liquid fraction of samples 1U-96-2 (S96T003329), 1U-96-3 (S96T003330) and 1U-96-4 (S96T003331) sharp endotherm peaks were observed after the evaporation of water, indicating the possible melting or evaporation of a pure compound(s).

Thermogravimetric Analysis (TGA)

Average TGA results for the liquid fractions of the samples ranged from 71.72 to 77.73 percent water. For samples 1U-96-1 (S96T003328) and 1U-96-4 (S96T003331), percent moisture was calculated as the sum of two weight loss steps below 200 °C.

Average TGA results for the solid fractions of the samples ranged from 20.48 to 37.15 percent water. For samples 1U-96-1 (S96T003468) and 1U-96-2 (S96T003469), the thermograms have many small peaks which are due to laboratory vibrations seen at high scale expansion. Higher scale expansion was needed because only a small amount of sample was used (available) for these analyses.

Percent recoveries for all standards were within the TSAP specified limits of 80 to 120 percent.

All duplicate RPDs were within the limits specified in the TSAP (<30 for solids and <20 for liquids).

Density

Bulk density was determined on the original (as received) samples, which included both the liquid and solid fractions. These data are reported in the data summary tables (*Table 3*).

Density of the solids is presented in Table 1. Only sample 1U-96-4 (S96T003308) had a sufficient amount of solids to be characterized for density. This sample had a density of 1.60 g/ml.

Total Alpha (AT)

Results for total alpha (AT) indicate that none of the four liquid samples exceeded the TSAP specified notification limit of 41 $\mu\text{Ci/g}$. The liquid sample having the greatest activity was 4 orders of magnitude less than the notification limit.

The TSAP, page 12, required a recalculation of the total alpha activity notification limit for solids when the solid density exceeded 1.5 g/ml. Using the TSAP formula and the density for sample 1U-96-4 of 1.6 g/ml, the recalculated notification limit for solids was 38.4 $\mu\text{Ci/g}$. None of the four solid samples exceeded this limit. As a consequence, no secondary analyses have been requested for analysis.

Percent recoveries for all standards were within the TSAP specified limits of 70 to 130 percent.

The TSAP specified limit for duplicate RPDs was <20 percent. This limit was met for all samples. The TSAP required a duplicate analysis for each sample. Duplicate analyses were performed on all of the liquid samples, however only one duplicate was analyzed on the solid samples (1U-96-4 {S96T003604}) because there was an insufficient amount of sample to perform duplicate fusion preparations. Consequently a rerun cannot be performed on the other three solid samples.

The TSAP specified limit for spike recovery was 75 to 125 percent recovery. This limit was met for all samples.

Procedures

Table 2 lists the analytical procedures used for performing the sample analyses. Abbreviations for analyses are defined in the table notes.

WHC-SD-WM-DP-190, REV. 1
WHC-SD-WM-DP-190, REV. 0

Table 2: Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
DSC	Supernate & Solids	N/A	LA-514-114 Rev. C-1 LA-514-113 Rev. C-1
TGA	Supernate & Solids	N/A	LA-514-114 Rev. C-1 LA-560-112 Rev. B-1
Sp.G.	Supernate	N/A	LA-510-112 Rev. C-3
V%SLD	Solids	N/A	LA-519-151 Rev. E-2
AT	Supernate & Solids	LA-549-141 Rev. F-0	LA-943-127 Rev. B-1

Abbreviations:

N/A = not applicable (these are direct samples)
DSC = differential scanning calorimetry
TGA = thermogravimetric analysis
Sp.G. = specific gravity
AT = total alpha
V%SLD = volume percent solids

References

Brown, T. M., 1996, *Tank 241-U-101 Grab Sampling and Analysis Plan*, WHC-SD-WM-TSAP-095, Rev. 0, Westinghouse Hanford Company, Richland, WA 99352.

Dukelow, G. T., J. W. Hunt, H. Babad, and J. E. Meacham, 1995, *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, WA 99352.

WHC-SD-WM-DP-190, REV. (

WHC-SD-WM-DP-190, REV. 0

U-101 SAMPLE BREAKDOWN

WHC-SD-WM-DP-190, REV. |

WHC-SD-WM-DP-190, REV. 0

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TANK 241-U-101

SAMPLE - SUBSAMPLE RELATIONSHIPS

Customer Sample ID 1U-96-FB
Original Sample, Field Blank
LABCORE # S96T003309
Direct Liquid
Group #96000765

TGA-41
DSC-41
TGA-41
SPC-41
@ALPHA-41
@BRKDOWN1

Customer Sample ID 1U-96-1
Original Sample, Supernate
LABCORE # S96T003272
Group #96000765

@BRKDOWN1
@ALPHA-41
@YKLO-42

Customer Sample ID 1U-96-2
Original Sample, Supernate
LABCORE # S96T003306
Group #96000765

@BRKDOWN1
@ALPHA-41
@YKLO-42

TANK 241-U-101

SAMPLE - SUBSAMPLE RELATIONSHIPS

WMC-SD-WM-DP-190, REV. 1

WMC-SD-WM-DP-190, REV. 0

SAMPLE DATA SUMMARY

WHC-SD-WM-DP-190, REV. 1

WHC-SD-WM-DP-190, REV. 0

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INTERIM

Table 3: Data Summary Table
U-101 GRAB

RISER: 1
SEGMENT #: 1U-96-4

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T003472			DSC Exotherm on Perkin Elmer	Joules/g	None	None	99.82	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003472			% Water by TGA using Mettler	%	None	None	98.72	n/a	27.70	31.36	29.53	12.4	n/a	n/a	n/a
S96T003604	F		Alpha of Digested Solid	uCi/g	-1.0e+03	41.00	90.62	<2.55e-02	6.14e-02	5.15e-02	5.65e-02	17.5	97.77	2.90e-02	4.98e+01

Supernate: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T003308			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.230	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003308			Volume % Solids	%	None	None	n/a	n/a	29.00	n/a	n/a	n/a	n/a	n/a	n/a
S96T003331			DSC Exotherm using Mettler	Joules/g	-1.0e+03	480.0	111.8	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003331			% Water by TGA using Mettler	%	None	None	101.5	n/a	78.12	77.70	77.91	0.54	n/a	n/a	n/a
S96T003331			Alpha in Liquid Samples	uCi/mL	-1.0e+03	41.00	92.19	<3.41e-04	1.50e-03	1.50e-03	1.50e-03	0.00	n/a	4.55e-04	4.45E+01

=> Limit violated
=> Selected Limit

2-18

WHC-SD-WM-DP-190, REV. 0
WHC-SD-WM-DP-190, REV. 1

INTERIM

Table 3: Data Summary Table
U-101 GRAB

RISER: 7
SEGMENT #: 1U-96-2

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T003469			DSC Exotherm using Mettler	Joules/g	-1.0e+03	480.0	113.5	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003469			% Water by TGA using Mettler	%	None	None	99.21	n/a	21.90	19.06	20.48	13.9	n/a	n/a	n/a
S96T003602	F		Alpha of Digested Solid	uCi/g	-1.0e+03	41.00	90.62	<2.55e-02	<6.59e-02	n/a	n/a	n/a	n/a	5.70e-02	2.55E+02

Supernate: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T003306			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.180	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003306			Volume % Solids	%	None	None	n/a	n/a	2.000	n/a	n/a	n/a	n/a	n/a	n/a
S96T003329			DSC Exotherm using Mettler	Joules/g	-1.0e+03	480.0	109.7	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003329			% Water by TGA on Perkin Elmer	%	None	None	99.29	n/a	77.70	77.77	77.73	0.09	n/a	n/a	n/a
S96T003329			Alpha in Liquid Samples	uCi/mL	-1.0e+03	41.00	92.19	<3.41e-04	1.82e-03	1.50e-03	1.66e-03	19.3	n/a	4.55e-04	3.89E+01

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-190, REV. 0

WHC-SD-WM-DP-190, REV. 1

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INTERIM

Table 3: Data Summary Table
U-101 GRAB

RISER: 7
SEGMENT #: 1U-96-1

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
				Lower	Upper									
S96T003468		DSC Exotherm using Mettler	Joules/g	-1.0e+03	480.0	113.5	n/a	19.40	0.00e+00	9.700	200	n/a	n/a	n/a
S96T003468		% Water by TGA using Mettler	%	None	None	99.21	n/a	33.94	29.93	31.93	12.6	n/a	n/a	n/a
S96T003601	F	Alpha of Digested Solid	uCi/g	-1.0e+03	41.00	90.62	<2.55e-02	8.27e-02	n/a	n/a	n/a	n/a	4.00e-02	6.00e+01

Supernate: Supernate

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
				Lower	Upper									
S96T003272		Bulk Density of Sample	g/ml	None	None	n/a	n/a	1.180	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003272		Volume % Solids	%	None	None	n/a	n/a	< 2.000	n/a	n/a	n/a	n/a	n/a	n/a
S96T003328		DSC Exotherm on Perkin Elmer	Joules/g	None	None	98.45	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003328		% Water by TGA on Perkin Elmer	%	None	None	98.51	n/a	65.25	78.40	71.83	18.3	n/a	n/a	n/a
S96T003328		Alpha in Liquid Samples	uCi/ml	-1.0e+03	41.00	92.19	<3.41e-04	2.14e-03	2.43e-03	2.28e-03	12.7	93.87	4.55e-04	4.05E+01

=> Limit violated

=> Selected Limit

WHC-SD-WM-DP-190, REV. 0

WHC-SD-WM-DP-190, REV. 1

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INTERIM

Table 3: Data Summary Table
U-101 GRAB

RISER: 1
SEGMENT #: 1U-96-3

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T003471			DSC Exotherm on Perkin Elmer	Joules/g	None	None	99.82	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003471			% Water by TGA using Mettler	%	None	None	98.72	n/a	36.68	37.61	37.14	2.50	n/a	n/a	n/a
S96T003603	F		Alpha of Digested Solid	uCi/g	-1.0e+03	41.00	90.62	<2.55e-02	1.02e-01	n/a	n/a	n/a	n/a	3.70e-02	4.57e+01

Supernate: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T003307			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.180	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T003307			Volume % Solids	%	None	None	n/a	n/a	11.00	n/a	n/a	n/a	n/a	n/a	n/a
S96T003330			DSC Exotherm using Mettler	Joules/g	-1.0e+03	480.0	108.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003330			% Water by TGA on Perkin Elmer	%	None	None	99.29	n/a	77.63	76.86	77.25	1.00	n/a	n/a	n/a
S96T003330			Alpha in Liquid Samples	uCi/mL	-1.0e+03	41.00	92.19	<3.41e-04	1.66e-03	1.44e-03	1.55e-03	14.2	n/a	4.55e-04	4.14e+01

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WHC-SD-WM-DP-190, REV. 0
WHC-SD-WM-DP-190, REV. 1

INTERIM

Table 3: Data Summary Table
U-101 GRAB

RISER: 7
SEGMENT #: 1U-96-FB

SEGMENT PORTION: Field Blank

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T003309			OSC Exotherm on Perkin Elmer	Joules/g	None	None	98.45	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T003309			% Water by TGA on Perkin Elmer	%	None	None	99.04	n/a	99.10	99.62	99.36	0.52	n/a	n/a	n/a
S96T003309			Alpha in Liquid Samples	uCi/ml	-1.0e+03	43.00	117.2	<5.70e-08	<4.30e-08	<6.61E-8	n/a	n/a	91.64	7.74e-08	5.00E+02

=> Limit violated
=> Selected Limit

INTERIM

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WHC-SD-WM-DP-190, REV. 0

WHC-SD-WM-DP-190, REV. 1

WHC-SD-WM-DP-190, REV. 1

WHC-SD-WM-DP-190, REV. 0

CHAIN OF CUSTODY FORMS

WHC-SD-WM-DP-190, REV. I

WHC-SD-WM-DP-190, REV. 0

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CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

1 Shipment Number 2005-07-TE (2) Sample Number 1U-96-1 (3) Supervisor R.J. Praznik
 4 Tank U101 (5) Riser 7 (6) Cask/PIG Shipping Container Serial Number WT-SHP-6003A

Radiation Survey Data For Cask/PIG:		(7) FIELD	(31) LABORATORY	(8) Shipment Description
Over Top Dose Rate	<u>LO.5 mR/hr</u>	<u>LO.5 mR/hr</u>	<u>LO.5 mR/hr</u>	A. Work Package Number <u>WS-96-00123</u>
Side Dose Rate	<u>LO.5 mR/hr</u>	<u>LO.5 mR/hr</u>	<u>LO.5 mR/hr</u>	B. Cask/PIG Seal Number <u>1977</u>
Bottom Dose Rate	<u>LO.5 mR/hr</u>	<u>LO.5 mR/hr</u>	<u>LO.5 mR/hr</u>	C. Date and Time Sample
Smearable Contamination	<u>L20</u>	<u>L20 DPM</u>	<u>L20 DPM</u>	Removed from Tank <u>5:30-96/1240hrs</u>
	(Alpha)	(Alpha)	(Alpha)	D. Expected Liquid Content <u>95%</u>
	<u>LK</u>	<u><1000 DPM</u>	<u><1000 DPM</u>	E. Expected Solid Content <u>* 5%</u>
	(Beta-Gamma)	(Beta-Gamma)	(Beta-Gamma)	F. Dose Rate Through Drill String (Auger/On Contact (GRAB)) <u>80 mR/hr</u>
RCT* <u>R. J. Praznik</u>	(Signature)	RCT* <u>David Keane</u>	(Signature)	G. Expected Sample Length (Auger/Volume (GRAB)) <u>125m</u>

9 INFORMATION (Include statement of laboratory tests to be performed.)

(9) Field Comments <u>* some suspended solids</u>	(32) Laboratory Comments
--	--------------------------

(1) Point of Origin <u>U101 lots 7</u>	(12) Destination <u>222-S</u>	(3) Sender Name (Sign and PRINT) <u>James Sickels</u>	(14) Date/Time <u>5-30-96</u>	(16) Sender Comments
(7) Relinquished By (Sign and PRINT) <u>James Sickels</u>	(18) Received By (Sign and PRINT) <u>David Keane</u>	(10) Received By (Sign and PRINT) <u>David Keane</u>	(15) Date/Time <u>5-30-96</u>	(20) Receiver Comments
(11) Relinquished By (Sign and PRINT) <u>David Keane</u>	(22) Received By (Sign and PRINT) <u>David Keane</u>	(13) Received By (Sign and PRINT) <u>David Keane</u>	(17) Date/Time <u>5-30-96</u>	(24) Receiver Comments
(5) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(19) Received By (Sign and PRINT) <u>David Keane</u>	(21) Date/Time <u>5-30-96</u>	(28) Receiver Comments

(18) Seal Intact Upon Release? ☒ Yes ☐ No	(28) Seal Intact Upon Receipt? ☒ Yes ☐ No	(30) Seal Date Consistent with this Record? ☒ Yes ☐ No
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DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations, BC-6001-326 (01/98)

WHC-SD-MM-DP-190, REV. 0
WHC-SD-MM-DP-190, REV. 1

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

Shipment Number 200E-07-TF (2) Sample Number 1U-96-2 (3) Supervisor R.T. Peznil
 Tank U101 (5) Floor 7 (6) Cask/PIG Shipping Container Serial Number 6003 RAR 250.94

Radiation Survey Data For Cask/PIG:		(7) FIELD	(31) LABORATORY	(8) Shipment Description
Over Top Dose Rate	<u>40.5 mR/hr</u>	<u><0.5 mR/hr</u>		A. Work Package Number <u>W5-96-00123</u>
Side Dose Rate	<u>40.5 mR/hr</u>	<u><0.5 mR/hr</u>		B. Cask/PIG Seal Number <u>1978</u>
Bottom Dose Rate	<u>40.5 mR/hr</u>	<u><0.5 mR/hr</u>		C. Date and Time Sample Removed from Tank <u>5-30-96/1251 hr</u>
Smearable Contamination	<u>120</u> (Alpha) <u>4K</u> (Beta-Gamma)	<u><20 DPM</u> (Alpha) <u><1000 DPM</u> (Beta-Gamma)		D. Expected Liquid Content <u>95%</u>
				E. Expected Solid Content <u>5%</u>
				F. Dose Rate Through Drill String (Auger)/On Contact (GRAB) <u>80 mR/hr</u>
				G. Expected Sample Length (Auger)/Volume (GRAB) <u>125 ml</u>

RCT: Rubon Holland (Signature) RCT: Bob Meier (Signature)

INFORMATION (Include statement of laboratory tests to be performed.)

(9) Field Comments <u>* Some suspended solids.</u>	(32) Laboratory Comments
---	--------------------------

(1) Point of Origin <u>U101 man #7</u>	(12) Destination <u>222-S</u>	(13) Sender Name (Sign and PRINT) <u>James Sickle James Sickels</u>	(14) Date/Time <u>5-30-96 1350</u>	(15) Sender Comments
(7) Relinquished By (Sign and PRINT) <u>James Sickle</u>	(18) Received By (Sign and PRINT) <u>James Sickle</u>	(19) Date/Time <u>5-30-96 14125</u>	(20) Receiver Comments	
(11) Relinquished By (Sign and PRINT) <u>James Sickle</u>	(22) Received By (Sign and PRINT) <u>James Sickle</u>	(23) Date/Time <u>5-30-96 1500</u>	(24) Receiver Comments	
(31) Relinquished By (Sign and PRINT) <u>James Sickle</u>	(26) Received By (Sign and PRINT) <u>James Sickle</u>	(27) Date/Time <u>5-30-96</u>	(28) Receiver Comments	

(16) Seal Intact Upon Release? ☒ Yes ☐ No	(29) Seal Intact Upon Receipt? ☒ Yes ☐ No	Shipment No. ☒ Yes ☐ No	Seal No. ☒ Yes ☐ No	Sample No. ☐ Yes ☐ No
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CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

1) Shipment Number <u>800E-07-TF</u>		(2) Sample Number <u>11-96-3</u>		(3) Supervisor <u>R.J. Przenick</u>	
4) Tank <u>U101</u>		(5) Riser <u>1</u>		(6) Cask/PIG Shipping Container Serial Number <u>60035</u>	
7) FIELD			(31) LABORATORY		(8) Shipment Description
Over Top Dose Rate <u>20.5 mR/hr</u>			<u>< 0.5 mR/hr</u>		A. Work Package Number <u>WS-96-00123</u>
Side Dose Rate <u>20.5 mR/hr</u>			<u>< 0.5 mR/hr</u>		B. Cask/PIG Seal Number <u>1979 1606 5-29-96</u>
Bottom Dose Rate <u>20.5 mR/hr</u>			<u>< 0.5 mR/hr</u>		C. Date and Time Sample <u>5-29-96/12:05 hr</u>
Smearable Contamination <u>20</u>			<u>< 20 DPM</u>		Removed from Tank <u>5-29-96/12:05 hr</u>
(Alpha)			(Alpha)		D. Expected Liquid Content <u>90%</u>
<u>AK</u>			<u>< 1000 DPM</u>		E. Expected Solid Content <u>10%</u>
(Beta-Gamma)			(Beta-Gamma)		F. Dose Rate Through Drill String (Auger)/On Contact (GRAB) <u>200 mR/hr</u>
RCT* <u>Roberta Holland</u>			RCT <u>John E. Miller</u>		G. Expected Sample Length (Auger)/Volume (GRAB) <u>125 m</u>
(Signature)			(Signature)		

1) INFORMATION (include statement of laboratory tests to be performed.)

0) Field Comments <u>Some suspended solids</u>			(32) Laboratory Comments		
1) Point of Origin <u>U101 NW 1</u>	(12) Destination <u>222 S</u>	(13) Sender Name (Sign and PRINT) <u>Tom B. Hadenik</u>	(14) Date/Time <u>5-29-96</u>	(15) Sender Comments	
7) Relinquished By (Sign and PRINT) <u>James Sickels</u>		(18) Received By (Sign and PRINT) <u>James Sickels</u>	(19) Date/Time <u>5-29-96</u>	(20) Receiver Comments	
8) Relinquished By (Sign and PRINT) <u>James Sickels</u>		(22) Received By (Sign and PRINT) <u>James Sickels</u>	(23) Date/Time <u>5-29-96</u>	(24) Receiver Comments	
9) Relinquished By (Sign and PRINT) <u>James Sickels</u>		(26) Received By (Sign and PRINT) <u>James Sickels</u>	(27) Date/Time <u>5-29-96</u>	(28) Receiver Comments	
(16) Seal Intact Upon Release?		(29) Seal Intact Upon Receipt?		(30) Seal Date Consistent with this Record?	
☒ Yes ☐ No		☒ Yes ☐ No		☒ Yes ☐ No	
Shipment No.		Sample No.		Sample No.	
☒ Yes ☐ No		☒ Yes ☐ No		☒ Yes ☐ No	

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

Shipment Number 200E-07-TF (2) Sample Number 1U 85-96-4 (3) Supervisor R. J. PRAZNIK

(4) Tank U101 (5) Riser 1 (6) Cask/PIG Shipping Container Serial Number 6003 A

irradiation Survey Date For Cask/PIG: (7) FIELD (31) LABORATORY (8) Shipment Description

Over Top Dose Rate <u>20.5 mR/hr</u>	<u>< 0.5 mR/hr</u>	A. Work Package Number <u>WS-96-00123</u>
Side Dose Rate <u>20.5 mR/hr</u>	<u>< 0.5 mR/hr</u>	B. Cask/PIG Seal Number <u>7980-1607 3-29-96</u>
Bottom Dose Rate <u>20.5 mR/hr</u>	<u>< 0.5 mR/hr</u>	C. Date and Time Sample <u>5-29-96/1214hr</u>
Smearable Contamination <u>220</u> (Alpha)	<u>< 20 DPM</u> (Alpha)	D. Expected Liquid Content <u>90%</u>
<u>21K</u> (Beta-Gamma)	<u>< 1000 DPM</u> (Beta-Gamma)	E. Expected Solid Content <u>10%</u>
RCT* <u>Robert Holland</u> (Signature)	RCT* <u>John E. M... ..</u> (Signature)	F. Dose Rate Through Drill String (Auger/On Contact (GRAB)) <u>150 mR/hr</u>
		G. Expected Sample Length (Auger/Volume (GRAB)) <u>125m</u>

1 INFORMATION (Include statement of laboratory tests to be performed.)

01 Field Comments * some suspended solids.

02 Laboratory Comments

11 Point of Origin <u>U101 Riser 1</u>	112 Destination <u>222-S</u>	113 Sender Name (Sign and PRINT) <u>For B. Praznik James Sickels</u>	114 Date/Time <u>5-29-96 1255</u>	115 Sender Comments
17 Relinquished By (Sign and PRINT) <u>James Sickels</u>	118 Received By (Sign and PRINT) <u>MDUNN</u>	119 Date/Time <u>5-29-96 1330</u>	120 Receiver Comments	
17 Relinquished By (Sign and PRINT) <u>MDUNN</u>	122 Received By (Sign and PRINT) <u>EE DUBES</u>	123 Date/Time <u>5-29-96 KD</u>	124 Receiver Comments	
17 Relinquished By (Sign and PRINT)	126 Received By (Sign and PRINT)	127 Date/Time	128 Receiver Comments	

(19) Seal Intact Upon Release? ☒ Yes ☐ No	(29) Seal Intact Upon Receipt? ☐ Yes ☐ No	Shipment No. ☐ Yes ☐ No	Seal No. ☐ Yes ☐ No	Sample No. ☐ Yes ☐ No
---	--	--	--	--

1 DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldenrod - Tank Farm Operations.

BC-6001-326 (01/96)

WHC-SD-WM-DP-190 REV. 0
WHC-SD-WM-DP-190, REV. 1

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

1 Shipment Number 20E-07-TF (2) Sample Number 1U-96-FB (3) Supervisor RS PRAZNIK
 4 Tank U101 (5) Riser 7 (6) Cask/PIG Shipping Container Serial Number 6003D

Radation Survey Data For Cask/PIG:

(7) FIELD
 Over Top Dose Rate 20.5 MR/hr
 Side Dose Rate 20.5 MR/hr
 Bottom Dose Rate 20.5 MR/hr
 Smearable Contamination L20
 (Alpha)
41K
 (Beta-Gamma)
 RCT* Robert Holland
 (Signature)

(31) LABORATORY
 <0.5 mR/hr
 <0.5 mR/hr
 <0.5 mR/hr
 <20 DPM
 (Alpha)
 <1000 DPM
 (Beta-Gamma)
 RCT* Ed C. Mura
 (Signature)

(8) Shipment Description

A. Work Package Number WS-96-00123
 B. Cask/PIG Seal Number 1647
 C. Date and Time Sample
 Removed from Tank 5/30/96 1220hrs
 D. Expected Liquid Content 95% 100%
 E. Expected Solid Content *50% 5% 0%
 F. Dose Rate Through Drill String (Auger/On Contact (GRAB) 0 mR/hr
 G. Expected Sample Length (Auger/Volume (GRAB) 125ml

1 INFORMATION (Include statement of laboratory tests to be performed.)

01 Field Comments

* Some suspended solids noticed in urine, field blank
5/30/96

(32) Laboratory Comments

1) Point of Origin U101 4/7 (12) Destination 222-S (13) Sender Name (Sign and PRINT) For B. PRAZNIK James Sickel James Sickel's
 2) Relinquished By (Sign and PRINT) James Sickel James Sickel's (14) Date/Time 5-30-96 (15) Sender Comments
 3) Relinquished By (Sign and PRINT) DAVID J KEANE (16) Date/Time 5-30-96 (17) Receiver Comments
 4) Relinquished By (Sign and PRINT) DAVID J KEANE (18) Date/Time 5-30-96 (19) Receiver Comments
 5) Relinquished By (Sign and PRINT) DAVID J KEANE (20) Date/Time 5-30-96 (21) Receiver Comments
 6) Relinquished By (Sign and PRINT) DAVID J KEANE (22) Date/Time 5-30-96 (23) Receiver Comments
 7) Relinquished By (Sign and PRINT) DAVID J KEANE (24) Date/Time 5-30-96 (25) Receiver Comments
 8) Relinquished By (Sign and PRINT) DAVID J KEANE (26) Date/Time 5-30-96 (27) Receiver Comments
 9) Relinquished By (Sign and PRINT) DAVID J KEANE (28) Date/Time 5-30-96 (29) Receiver Comments

(16) Seal Intact Upon Release?

☒ Yes ☐ No

(29) Seal Intact Upon Receipt?

☐ Yes ☐ No

Shipment No.

☐ Yes ☐ No

(30) Seal Date Consistent with this Record?

Seal No.

☐ Yes ☐ No

Sample No.

☐ Yes ☐ No

WHC-SD-WM-DP-190 REV. 0
 WHC-SD-WM-DP-190, REV. 1

WHC-SD-WM-DP-190, REV. 1

WHC-SD-WM-DP-190, REV. 0

INORGANIC ANALYSES

WHC-SD-WM-DP-190, REV. 1

WHC-SD-WM-DP-190, REV. 0

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LABCORE Data Entry Template for Worklist#

9684

Analyst: JLF Instrument: DSC0 1 Book # 12014B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: U-101 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID	<u>28.45</u>	<u>31.8*</u>	<u>N/A</u>	Joules/g
96000787	U-101 GRAB	2 SAMPLE	S96T003331	0	DSC-01	LIQUID	<u>N/A</u>	<u>Ø</u>		Joules/g
96000787	U-101 GRAB	3 DUP	S96T003331	0	DSC-01	LIQUID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g

Final page for worklist #

9684

Jessie G. Inishy 6-15-96
Analyst Signature Date

R. D. H. H. 6-21-96
Analyst Signature Date

Verified/Validated by
Blancina
Valenzuela
6-24-96

Data Entry Comments: Both sample and duplicate displayed sharp
endotherms after the evaporation of water, which may be due
to the melting of a pure compound

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 233 TO 236

DSC STD 12N14B 7-12-96 *0000*

12.080 mg

Rate: 10.0 °C/min

File: 00001.001

DSC METTLER 14-Jun-98

Ident: 0.0

222-S Laboratory

Jesse E. J. [Signature]

S96T003331 SAM
12.009 mg
Rate: 10.0 °C/min
File: 00008.001 DSC METTLER 15-Jun-86
Ident: 0.0 222-S Laboratory

S96T003331 DUP

11.850 mg

Rate: 10.0 °C/min

File: 00010.001

DSC METTLER

15-Jun-96

Ident: 0.0

222-S Laboratory

exo

50. mW

Integration

Delta H17782 mJ

1500.6 J/g

Peak 107.3°C

-84.3 mW

100.

200.

300.

400.

°C

LABCORE Data Entry Template for Worklist#

9685

Analyst: RJM Instrument: DSC0 1 Book # 12N4B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: U-101 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	LIQUID	<u>28.45</u>	<u>31.2*</u>	<u>N/A</u>	Joules/g
96000785	U-101 GRAB	2	SAMPLE	S96T003329	0		DSC-01	LIQUID	<u>N/A</u>	<u>Ø</u>		Joules/g
96000785	U-101 GRAB	3	DUP	S96T003329	0		DSC-01	LIQUID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g
		4	STD				DSC-01	LIQUID	<u>28.45</u>	<u>30.8</u>	<u>N/A</u>	Joules/g
96000787	U-101 GRAB	5	SAMPLE	S96T003330	0		DSC-01	LIQUID	<u>N/A</u>	<u>Ø</u>		Joules/g
96000787	U-101 GRAB	6	DUP	S96T003330	0		DSC-01	LIQUID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g

Final page for worklist #

9685

See attached for signatures
Analyst Signature 6-28-96
Date

[Signature]
Analyst Signature 6/29/96
Date

Verified/Validated by
Blandina
Valenzuela 7-1-96

S96T003329 produced several sharp peaks ^{which} ~~with~~ indicates a melt or evaporation of a pure compound.

Data Entry Comments: S96T003330 produced sharp peaks which indicates a melt or evaporation of a pure compound.

LABCORE Data Entry Template for Worklist#

9685

Analyst: RLW Instrument: DSC0 Book # 12414B

Method: LA-514-113 Rev/Mod _____

Worklist Comment: U-101 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID			N/A	Joules/g
96000785	U-101 GRAB	2 SAMPLE	S96T003329	0	DSC-01	LIQUID	N/A			Joules/g
96000785	U-101 GRAB	3 DUP	S96T003329	0	DSC-01	LIQUID			N/A	Joules/g
96000787	U-101 GRAB	4 SAMPLE	S96T003330	0	DSC-01	LIQUID	N/A			Joules/g
96000787	U-101 GRAB	5 DUP	S96T003330	0	DSC-01	LIQUID			N/A	Joules/g

Final page for worklist #

9685

RLW 6/25/96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 238 TO 243

DSC STD 12N14B N2

12.080 mg

Rate: 10.0 °C/min

File: 00001.001

DSC METTLER 14-Jun-96

Ident: 0.0

222-S Laboratory

S96T003330 SAM

13.115 mg

Rate: 10.0 °C/min

File: 00012.001

DSC METTLER

15-Jun-96

Ident: 0.0

222-S Laboratory

exo

50. mW

Integration

Delta H17746 mJ

1353.1 J/g

Peak 107.3°C

-83.2 mW

100.

200.

300.

400.

°C

DSC STD 12N14B

6.532 mg

Rate: 10.0 °C/min

File: 00058.001

DSC METTLER 25-Jun-96

Ident: 0.0

222-S Laboratory

Integration

Delta H 201 mJ

30.8 J/g

Peak 158.0 °C

-13.8 mW

2-41

WHC:SD:MM:DP:190, REV /

S96T003329 DUP N2
 23.362 mg
 Rate: 10.0 °C/min
 File: 00060.001
 Ident: 0.0
 DSC METTLER 25-Jun-98
 222-S Laboratory

LABCORE Data Entry Template for Worklist#

9686

Analyst: DGD Instrument: DSC0 3 Book # 12N148

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: U-101 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	28.45	28.01	N/A	Joules/g
96000785	U-101 GRAB	2 SAMPLE	S96T003309	0	DSC-03	LIQUID	N/A	Ø		Joules/g
96000785	U-101 GRAB	3 DUP	S96T003309	0	DSC-03	LIQUID	Ø	Ø	N/A	Joules/g
96000785	U-101 GRAB	4 SAMPLE	S96T003328	0	DSC-03	LIQUID	N/A	Ø		Joules/g
96000785	U-101 GRAB	5 DUP	S96T003328	0	DSC-03	LIQUID	Ø	Ø	N/A	Joules/g

Final page for worklist #

9686

See attached for signatures
Analyst Signature Date 6-14-96

Analyst Signature Date 6-17-96

Validated by H. Anastos 6-19-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WHC-SD-WM-DP-190, REV. 1
LABCORE Data Entry Template for Worklist#

9686

Analyst: DCE Instrument: DSC0 _____ Book # 12N14B

Method: LA-514-113 Rev/Mod _____

Worklist Comment: U-101 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID	_____	_____	N/A	Joules/g
96000785	U-101 GRAB	2 SAMPLE	S96T003309	0	DSC-01	LIQUID	N/A	_____	_____	Joules/g
96000785	U-101 GRAB	3 DUP	S96T003309	0	DSC-01	LIQUID	_____	_____	N/A	Joules/g
96000785	U-101 GRAB	4 SAMPLE	S96T003328	0	DSC-01	LIQUID	N/A	_____	_____	Joules/g
96000785	U-101 GRAB	5 DUP	S96T003328	0	DSC-01	LIQUID	_____	_____	N/A	Joules/g

Final page for worklist # 9686

David J. Dunham 6-13-96
Analyst Signature Date

Analyst Signature Date

DSC-03 instrument
was used.

6-14-96

Blandina
Valenzuela

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

Curve 1: DSC

File Info: IND061201 Wed Jun 12 05:49:27 1996

Sample Weight: 10.650 mg

12N14-B INDIUM AT 10C\MIN

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 246 TO 250

N2, EXOTHERM DOWN

TEMP: 160.0 °C TIME: 0.0 min RATE: 10.0 °/min

DC DUNHAM
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jun 12 05:53:32 1996

Curve 1: DSC

File info: SAM061201 Wed Jun 12 11:02:04 1996

Sample Weight: 17.800 mg

896T003309 SAM

exotherm down, N2 purge gas

TEMP: 35.0 °C TIME: 0.0 min RATE: 10.0 °/min

Temperature (°C)

DC DUNHAM
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jun 12 13:25:37 1996

WHC-SD-WM-DP-190, REV. 1

Curve 1: DSC

File info: SAM061202 Wed Jun 12 14:21:25 1996

Sample Weight: 9.420 mg

S96T003309-SAM DWP

Dec
4-12-96

67-2

WHC-SD-WM-DP-190, REV. /

exotherm down, N2 purge gas

Temperature (°C)

TEMP: 25.0 °C
TIME: 500.0 s

TIME: 0.0 min RATE: 10.0 °/min

DC DUNHAM
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jun 12 15:15:24 1996

Curve 1: DSC

File info: SAM061302 Thu Jun 13 16:37:28 1996

Sample Weight: 11.640 mg

S96T003328 DUP

DC DUNHAM
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jun 13 17:10:40 1996

Curve 1: DSC

File info: 8AM081302 Thu Jun 13 16:37:28 1996

Sample Weight: 11.640 mg

896T003328 DUP

exotherm down, N2 purge gas

TECH: 88.8 g

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

DC DUNHAM

PERKIN-ELMER

7 Series Thermal Analysis System

Thu Jul 11 14:15:52 1996

WHC-SD-WM-DP-190, REV. 1

LABCORE Data Entry Template for Worklist#

10683

Analyst: ADD Instrument: DSC01 Book # 12N14B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: U-101 DSC-01 RUN UNDER NITROGEN \$SLP\$

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	SOLID	<u>28.45</u>	<u>32.3</u>	<u>N/A</u>	Joules/g
96000785	U-101 GRAB	2 SAMPLE	S96T003468	0	DSC-01	SOLID	<u>N/A</u>	<u>19.4</u>		Joules/g
96000785	U-101 GRAB	3 DUP	S96T003468	0	DSC-01	SOLID	<u>19.4</u>	<u>Ø</u>	<u>N/A</u>	Joules/g
96000785	U-101 GRAB	4 SAMPLE	S96T003469	0	DSC-01	SOLID	<u>N/A</u>	<u>Ø</u>		Joules/g
96000785	U-101 GRAB	5 DUP	S96T003469	0	DSC-01	SOLID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g

Final page for worklist #

10683

Cathy Furuta 7-10-96
Analyst Signature Date

Analyst Signature Date

Verified/Validated by
Blandina
Valenzuela 7-12-96

Data Entry Comments:

A triplicate was not run because result was
not close to the notification limit.

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Jul. 12. 1996 8:48AM WEC 222S LAB ROOM 2F BACKSIDE No. 2897 P. 8/25

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 252 TO 256

DSC STD 12N14-B N2

13.760 mg

Rate: 10.0 °C/min

File: 00001.001

DSC METTLER 09-Jul-96

Ident: 0.0

222-S Laboratory

exo >

20. mW

Integration

Delta H 445 mJ

32.3 J/g

Peak 159.1 °C

-22.8 mW

120.

140.

160.

180. °C

Anthony Perunich 7-10-96

S96T00346B SAM N2

6.322 mg

Rate: 10.0 °C/min

File: 00002.001

Ident: 0.0

DSC METTLER

09-Jul-96

222-S Laboratory

WHC-SD-WM-DP-190, REV. 1

2-53

S96T003468 DUP N2

9.013 mg

Rate: 10.0 °C/min

File: 00004.001

DSC METTLER 10-Jul-96

Ident: 0.0

222-S Laboratory

WHC-SD-WM-DP-190, REV. 1

2-55

S96T003469 SAM N2

1.058 mg

Rate: 10.0 °C/min

File: 00006.001 DSC METTLER 10-Jul-96

Ident: 0.0

222-S Laboratory

S96T003469 DUP N2

0.827 mg

Rate: 10.0 °C/min

File: 00008.001

DSC METTLER 10-Jul-96

Ident: 0.0

222-S Laboratory

> exo

Integration

Delta H 91 mJ

110.3 J/g

Peak 133.8°C

-0.5 mW

Integration

Delta H 204 mJ

247.1 J/g

Peak 225.6°C

-0.6 mW

Integration

Delta H 728 mJ

880.1 J/g

Peak 45.7°C

-6.1 mW

10. mW

100.

200.

300.

400.

°C

2-56

WHC-SD-WM-DF-190, REV. 1

LABCORE Data Entry Template for Worklist#

10684

Analyst: ADP Instrument: DSC01 ^{WLA 7-10-96} DSC03 Book # 12N14B

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: U-101 DSC-01 RUN UNDER NITROGEN \$SLPS

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	SOLID	<u>28.45</u>	<u>2840</u>	<u>N/A</u>	Joules/g
96000787	U-101 GRAB	2 SAMPLE	S96T003471	0	DSC-03	SOLID	<u>N/A</u>	<u>0</u>		Joules/g
96000787	U-101 GRAB	3 DUP	S96T003471	0	DSC-03	SOLID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g
96000787	U-101 GRAB	4 SAMPLE	S96T003472	0	DSC-03	SOLID	<u>N/A</u>	<u>0</u>		Joules/g
96000787	U-101 GRAB	5 DUP	S96T003472	0	DSC-03	SOLID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist #

10684

See Attached In Signatures
Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Verified/Validated by
Blandina
Valenzuela
7-12-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist#

10684

Analyst: ADD Instrument: DSC01 Book # 12N14B

Method: LA-514-113 Rev/Mod Q-1

Worklist Comment: U-101 DSC-01 RUN UNDER NITROGEN \$SLP\$

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	SOLID			N/A	Joules/g
96000787	U-101 GRAB	2 SAMPLE	S96T003471	0	DSC-01	SOLID	N/A			Joules/g
96000787	U-101 GRAB	3 DUP	S96T003471	0	DSC-01	SOLID			N/A	Joules/g
96000787	U-101 GRAB	4 SAMPLE	S96T003472	0	DSC-01	SOLID	N/A			Joules/g
96000787	U-101 GRAB	5 DUP	S96T003472	0	DSC-01	SOLID			N/A	Joules/g

Final page for worklist # 10684

Anthony P. Smith 7-10-96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

Jul. 12. 1996 8:52AM WEC 222S LAB ROOM 2F BACKSIDE No. 2097 P. 21/25

Curve 1: DSC
File info: IND070905 Tue Jul 9 20:27:03 1996
Sample Weight: 13.760 mg
12N14-B INDIUM AT 10C/MIN

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 259 TO 263

N2, EXOTHERM DOWN
TIME: 128.8 8

TIME: 0.0 min RATE: 10.0 °C/min

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Jul 9 21:02:24 1996

WHC-SD-WM-DP-190, REV. 1

Jul. 12, 1996 8:52AM

WHC 222S LAB ROOM 2F BACKSIDE

No. 2897 P. 23/25

Curve 1: DSC
File info: SAM070902 Wed Jul 10 00:53:37 1996
Sample Weight: 4.460 mg
S96T003471 DUP

N2 10C/min

TIME: 35.0 0
TEMP: 500.0 0

TIME: 0.0 min RATE: 10.0 C/min

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jul 10 01:08:38 1996

WHC-SD-WM-DP-190, REV. 1

Curve 1: DSC

File Info: SAM070901 Tue Jul 9 23:37:50 1996

Sample Weight: 9.670 mg

SS6T003471 SAM

WHC 2225 LAB ROOM 2F BACKSIDE

8:52AM

Jul 12 1996

10-2

N2 10C/min

Temp 25.0 °C

Time 0.0 s

Rate 0.0 min RATE: 10.0 °C/min

AD PURINTON

PERKIN-ELMER

7 Series Thermal Analysis System

Tue Jul 9 23:53:46 1996

WHC-SD-WM-DP-190, REV. 1

Curve 1: DSC
File Info: SAM070903 Wed Jul 10 02:07:24 1996
Sample Weight: 8.390 mg
S96T003472 SAM

N2 10C/min
TIME: 55.8 8
TIME: 0.0 min RATE: 10.0 C/min

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jul 10 02:17:55 1996

WHC-SD-WM-DP-190, REV. 1

No. 2897 P. 24/25

WHC 222S LAB ROOM 2F BACKSIDE

8:53AM

Jul 12, 1996

Curve 1: DSC
 File info: SAM070904 Wed Jul 10 03: 11: 46 1996
 Sample Weight: 17.540 mg
 S96T003472 DUP

N2 10C/min
 TIME 00:08:08
 TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Wed Jul 10 03: 17: 01 1996

LABCORE Data Entry Template for Worklist#

9687

Analyst: JLF Instrument: TGA0 1 Book # 8908-A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: U-101 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID	59.2	60.08*	N/A	%
96000787	U-101 GRAB	2 SAMPLE	S96T003331	0	TGA-01	LIQUID	N/A	78.12		%
96000787	U-101 GRAB	3 DUP	S96T003331	0	TGA-01	LIQUID	78.12	77.7	N/A	%

Final page for worklist # 9687

[Signature] 06-15-96
Analyst Signature Date

[Signature] 6-21-96
Analyst Signature Date

Verified/Validated by
Blandina
Valenzuela 6-24-96

Data Entry Comments:

Results are the sum of two weight loss steps.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 265 TO 267

57.128 mg

Rate: 10.0 °C/min

File: 00004.001

TG

METTLER

14-Jun-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-34.32 mg

-60.08 %

ResidC. 22.59 mg

39.53 %

Dpeak 132.5 °C

WMC-SD-WM-DP-190, REV. 1

John May 6-15-96
0300

S96T003331 SAM

12.200 mg

Rate: 10.0 °C/min

File: 00009.001 TG METTLER 15-Jun-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -8.91 mg

-73.02 %

ResidC. 3.29 mg

26.98 %

Step Analysis

Height -0.62 mg

-5.10 %

ResidC. 2.63 mg

21.56 %

Dpeak 125.0 °C

WHC-SD-WM-DP-190, REV. 1

2-66

S96T003331 DUP

12.608 mg

Rate: 10.0 °C/min

File: 00011.001

TG

METTLER

15-Jun-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -9.07 mg

-71.95 %

ResidC. 3.54 mg

28.05 %

Step Analysis

Height -0.72 mg

-5.75 %

ResidC. 2.73 mg

21.66 %

2-67

WHC-SD-WM-DP-190, REV. 1

LABCORE Data Entry Template for Worklist#

9688

Analyst: JLF Instrument: TGA0 3 Book # 82N8A

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: U-101 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	59.2	58.78	N/A	%
								6-20-96		
96000785	U-101 GRAB	2 SAMPLE	S96T003329	0	TGA-03	LIQUID	N/A	77.77	N/A	%
								6-20-96		
96000785	U-101 GRAB	3 DUP	S96T003329	0	TGA-03	LIQUID	77.77	77.77	N/A	%
								6-20-96		
96000787	U-101 GRAB	4 SAMPLE	S96T003330	0	TGA-03	LIQUID	N/A	77.63	N/A	%
								6-20-96		
96000787	U-101 GRAB	5 DUP	S96T003330	0	TGA-03	LIQUID	77.63	76.86	N/A	%
								6-20-96		

Final page for worklist #

9688

Analyst Signature

Date

Analyst Signature

Date

Verified/Validated by

Blundina
Valenzuela

6-24-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist#

9688

Analyst: JLF Instrument: TGA0 _____ Book # 8203-A

Method: LA-560-112 Rev/Mod _____

Worklist Comment: U-101 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID			N/A	%
96000785	U-101 GRAB	2 SAMPLE	S96T003329	0	TGA-01	LIQUID	N/A			%
96000785	U-101 GRAB	3 DUP	S96T003329	0	TGA-01	LIQUID			N/A	%
96000787	U-101 GRAB	4 SAMPLE	S96T003330	0	TGA-01	LIQUID	N/A			%
96000787	U-101 GRAB	5 DUP	S96T003330	0	TGA-01	LIQUID			N/A	%

Final page for worklist #

9688

Jerry P. Jansky 6-15-96
Analyst Signature Date

Analyst Signature Date

TGA-03 instrument
was used

6-20-96

Blandina

Valenzuela

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: TGA

File info: TST0614.01 Fri Jun 14 10:42:30 1996

Sample Weight: 27.518 mg

TGA STD 82N8-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 270 TO 274

WHC-SD-WM-DP-190, REV. 1

N2 10C/MIN

TEMP: 25.0 °C TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jun 20 11:01:15 1996

Curve 1: TGA

File info: SAM061501 Sat Jun 15 00:31:12 1996

Sample Weight: 11.622 mg

~~S96T004722-DUP~~ 8-15-91

S9603329 SAM

10C/MIN N2

TEMP: 35.0 °C
TEMP: 350.0 °C

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

JL FRISBY

PERKIN-ELMER

7 Series Thermal Analysis System

Sat Jun 15 00:33:35 1996

WHC-SD-WM-DP-190, REV. 1

Curve 1: TGA

File Info: SAM061502 Set Jun 15 01:41:56 1996

Sample Weight: 11.613 mg

S96T003329 DUP

WHC-SD-WM-DP-190, REV. 1

Curve 1: TGA

File info: SAM061503 Sat Jun 15 03:17:12 1996

Sample Weight: 12.029 mg

S96T003330 SAM

10C/MIN N2

TEMP: 35.0 °C TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

JL FRISBY
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 15 03:19:07 1996

Curve 1: TGA

File info: SAM061504 Sat Jun 15 04:25:55 1996

Sample Weight: 11.639 mg

S96T003330 DUP

WHC-SD-WM-DP-190, REV. 1

10C/MIN N2

Temperature (°C)

TEMP: 35.0 C
TEMP: 500.0 C

TIME: 0.0 min RATE: 10.0 C/min

JL FRISBY
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 15 17:39:21 1996

LABCORE Data Entry Template for Worklist#

9689

Analyst: DCD Instrument: TGA0 3 Book # 82N8A

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: U-101 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.2</u>	<u>58.63*</u>	<u>N/A</u>	%
96000785	U-101 GRAB	2 SAMPLE	S96T003309	0	TGA-03	LIQUID	<u>N/A</u>	<u>99.10</u>		%
96000785	U-101 GRAB	3 DUP	S96T003309	0	TGA-03	LIQUID	<u>99.10</u>	<u>99.62</u>	<u>N/A</u>	%
		4 STD			TGA-03	LIQUID	<u>59.2</u>	<u>58.32</u>	<u>N/A</u>	%
96000785	U-101 GRAB	5 SAMPLE	S96T003328	0	TGA-03	LIQUID	<u>N/A</u>	<u>65.25</u>		%
96000785	U-101 GRAB	6 DUP	S96T003328	0	TGA-03	LIQUID	<u>65.25</u>	<u>78.4</u>	<u>N/A</u>	%

Final page for worklist #

9689

See attached for signatures

Analyst Signature

Date

6-14-96

R. Jones 6-17-96

Analyst Signature

Date

Validated by J. H. Austin 6-19-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist#

9689

Analyst: Dcd Instrument: TGA0 _____ Book # 82N8A

Method: LA-560-112 Rev/Mod _____

Worklist Comment: U-101 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID	_____	_____	N/A	%
96000785	U-101 GRAB	2 SAMPLE	S96T003309	0	TGA-01	LIQUID	N/A	_____	_____	%
96000785	U-101 GRAB	3 DUP	S96T003309	0	TGA-01	LIQUID	_____	_____	N/A	%
96000785	U-101 GRAB	4 SAMPLE	S96T003328	0	TGA-01	LIQUID	N/A	_____	_____	%
96000785	U-101 GRAB	5 DUP	S96T003328	0	TGA-01	LIQUID	_____	_____	N/A	%

Final page for worklist #

9689

Daniel Dunham 6-13-96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

2-76

Curve 1: TGA

File info: TER061201 Wed Jun 12 06:09:13 1996

Sample Weight: 19.225 mg

TGA STD 82NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 277 TO 282

WHC-SD-WM-DP-190, REV. 1

N2 10C/MIN
TEMP: 30.0 C
TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

DC DUNHAM
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jun 12 06:13:27 1996

Curve 1: TGA

File info: SAM061203 Wed Jun 12 11:00:18 1996

Sample Weight: 9.423 mg

S96T003309 SAM

10C/MIN N2

TEMP: 35.0 °C
TIME: 600.0 s

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

DC DUNHAM
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jun 12 13:11:59 1996

WHC-SD-WM-DP-190, REV. 1

Curve 1: TGA

File info: SAM061205 Wed Jun 12 14:21:12 1996

Sample Weight: 9.340 mg

S96T003309 DUP

Q-2

WHC-SD-WM-DP-190, REV. 1

10C/MIN N2

TEMP: 88.8 °C
TIME: 000.8 s

TIMER: 0.0 min RATE: 10.0 C/min

Temperature (°C)

DC DUNHAM
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jun 12 15:09:18 1996

Curve 1: TGA

File info: TER061302 Thu Jun 13 06:35:53 1996

Sample Weight: 15.694 mg

TGA STD 82N8-A

WHC-SD-WM-DP-190, REV. 1

N2 10C/MIN

TEMP: 35.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 300.0 C

DC DUNHAM
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jun 13 15:25:56 1996

Curve 1: TGA

File info: SAM061303 Thu Jun 13 14:30:39 1996

Sample Weight: 14.015 mg

S96T003328 SAM

WHC-SD-WM-DP-190, REV. 1

10C/MIN N2

TEMP: 50.0 C TIME: 0.0 min RATE: 10.0 C/min

DC DUNHAM
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jun 13 15:46:01 1996

Curve 1: TGA

File info: SAM061304 Thu Jun 13 15:53:08 1996

Sample Weight: 12.356 mg

S96T003328 DUP

10C/MIN N2

TEMP: 35.0 C
TEMP: 500.0 C

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

DC DUNHAM
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jun 13 15:59:09 1996

WHC-SD-WM-DP-190, REV. 1

LABCORE Data Entry Template for Worklist#

10685

Analyst: ADP Instrument: TGA01 Book # 82N8-A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: U-101 TGA-01 RUN UNDER NITROGEN \$SLP\$

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	<u>59.2</u>	<u>58.73</u>	N/A	%
96000785	U-101 GRAB	2 SAMPLE	S96T003468	0	TGA-01	SOLID	<u>N/A</u>	<u>33.94</u>		%
96000785	U-101 GRAB	3 DUP	S96T003468	0	TGA-01	SOLID	<u>33.94</u>	<u>29.93</u>	N/A	%
96000785	U-101 GRAB	4 SAMPLE	S96T003469	0	TGA-01	SOLID	<u>N/A</u>	<u>21.90</u>		%
96000785	U-101 GRAB	5 DUP	S96T003469	0	TGA-01	SOLID	<u>21.90</u>	<u>19.06</u>	N/A	%

Final page for worklist #

10685

Althor Puentes 7-10-96
Analyst Signature Date

Analyst Signature Date

Verified/Validated by
Blandina
Valenzuela 7-12-96

S96T003468 didn't have much sample to work with so the sample sizes of the are very small. The scale for the thermograms is very small so the peaks seen on the thermograms are from the vibrations in the lab.

Data Entry Comments:

S96T003469 didn't have much sample to work with so the sample sizes are very small. The scale for the run is very small so the peaks seen on the thermograms are from the vibrations in the lab.

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 284 TO 288.

TGA STD 82N9-A N2

22.126 mg

Rate: 10.0 °C/min

File: 00019.001

TG

METTLER

10-Jul-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-12.93 mg

-58.44 %

Resid. 9.20 mg

41.56 %

Dpeak 90.8 °C

WHC-SD-WM-DP-190, REV. 1

VS-3

5. mg

SS-2

S96T003468 DUP N2

5.535 mg

Rate: 10.0 °C/min

File: 00007.001

Ident: 0.0

TG

METTLER

10-Jul-96

222-S Laboratory

WHC-SD-WM-DP-190, REV. /

LS-2

30-3

S96T003469 DUP N2

1.297 mg

Rate: 10.0 °C/min

File: 00010.001

TG

METTLER

10-Jul-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -0.25 mg

-19.06 %

ResiC. 1.05 mg

80.94 %

Step Analysis

Height -0.22 mg

-16.67 %

ResiC. 0.83 mg

64.28 %

0.2 mg

WHC-SD-WM-DP-190, REV /

LABCORE Data Entry Template for Worklist#

10686

Analyst: ADP Instrument: TGA01 Book # 12N14 BAR
B-1 82N9A

Method: LA-560-112 Rev/Mod

Worklist Comment: U-101 TGA-01 RUN UNDER NITROGEN SSLPS

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	59.2	58.44	N/A	%
96000787	U-101 GRAB	2 SAMPLE	S96T003471	0	TGA-01	SOLID	N/A	36.68		%
96000787	U-101 GRAB	3 DUP	S96T003471	0	TGA-01	SOLID	36.68	37.61	N/A	%
96000787	U-101 GRAB	4 SAMPLE	S96T003472	0	TGA-01	SOLID	N/A	27.70		%
96000787	U-101 GRAB	5 DUP	S96T003472	0	TGA-01	SOLID	27.70	31.36	N/A	%

Final page for worklist #

10686

Analyst Signature

Date

Analyst Signature

Date

Verified/Validated by
Blandina
Valenzuela
7-12-96

Data Entry Comments:

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2-90 TO 2-94

TGA STD 82N8-A N2

30.613 mg

Rate: 10.0 °C/min

File: 00003.001

TG

METTLER

10-Jul-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-17.98 mg

-58.73 %

ResidC. 12.63 mg

41.27 %

Dpeak 105.0 °C

2-90

10. mg

WHC-SD-WM-DP-190, REV. 1

Anthony Perreault 7-10-96

50.

100.

150.

200.

°C

16-2

S96T003471 SAM N2

4.811 mg

Rate: 10.0 °C/min

File: 00020.001

TG

METTLER

10-Jul-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -1.76 mg

-36.68 %

ResidC. 3.05 mg

63.32 %

Dpeak 49.0 °C

Step Analysis

Height -0.56 mg

-11.58 %

ResidC. 2.39 mg

49.61 %

Dpeak 293.0 °C

Step Analysis

Height -0.11 mg

-2.35 %

ResidC. 2.27 mg

47.26 %

WHC-SD-WM-DP-190, REV. 1

S96T003471 DUP N2

10.196 mg

Rate: 10.0 °C/min

File: 00021.001

TG

METTLER

11-Jul-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -3.84 mg

-37.61 %

ResidC. 6.36 mg

62.39 %

Dpeak 61.0 °C

Step Analysis

Height -1.10 mg

-10.80 %

ResidC. 5.16 mg

50.57 %

Dpeak 297.0 °C

Step Analysis

Height -0.24 mg

-2.34 %

ResidC. 4.92 mg

48.23 %

WHC-SD-WM-DP-190, REV. 1

CG-3

S96T003472 SAM N2

9.033 mg

Rate: 10.0 °C/min

File: 00022.001

TG

METTLER

11-Jul-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -2.50 mg

-27.70 %

Resid. 6.53 mg

72.30 %

Step Analysis

Height -1.76 mg

-19.49 %

Resid. 4.66 mg

51.62 %

Dpeak 301.0 °C

Step Analysis

Height -0.26 mg

-2.87 %

Resid. 4.40 mg

48.75 %

WHC-SD-WM-DP-190, REV. 1

2-94

S96T003472 DUP N2

8.783 mg

Rate: 10.0 °C/min

File: 00023.001

TG

METTLER

11-Jul-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -2.75 mg

-31.36 %

ResiC. 6.03 mg

68.64 %

Step Analysis

Height -1.59 mg

-18.13 %

ResiC. 4.35 mg

49.48 %

Dpeak 299.0 °C

Step Analysis

Height -0.21 mg

-2.37 %

ResiC. 4.14 mg

47.11 %

DISTRIBUTION SHEET

To Distribution	From Production Planning & Control	Page 1 of 1
		Date: 08/22/96
Project Title/Work Order WHC-SD-WM-DP-190, Rev. 1, "222-S Analytical Services Final Results for Tank 241-U-101, Grab Samples 1U-96-1 through 1U-96-4"		EDT NO.: N/A
		ECN NO.: ECN-633322

Name	MSIN	Text With all Attach	EDT/ECN ONLY	
<u>Pacific Northwest Laboratory</u>				
J. R. Gormsen	K7-28		X	
S. J. Harris	K7-22	X		
K. L. Silvers	P7-27		X	
<u>U.S. Department of Energy, RL</u>				
C. A. Babel	S7-54	X		
<u>Westinghouse Hanford Company</u>				
J. N. Appel	G3-21		X	
D. C. Hetzer	S6-31		X	
J. E. Hyatt	S3-31	X		
T. J. Kelley	S7-21		X	
N. W. Kirch	R2-11	X		
M. J. Kupfer	H5-49		X	
J. E. Meacham	S7-15	X		
G. L. Miller	T6-06	X		
K. L. Powell	T6-04		X	
J. B. Schaffer (SD COV SHT., DST. SHT, ROR)	R2-12		X*	
M. J. Sutey	T4-07		X	
T. T. Tran (LATA)	B1-44	X		X*
J. A. Voogd	H5-03		X	
L. R. Webb (SD COV SHT., DST. SHT, ROR)	T6-06		X *	
A. E. Young (Narrative & Sample Data Summary)	R2-12	X ✕		
Central Files	A3-88	2		
EDMC	H6-08	X		
LTIC	T6-03		X	

U. S. Department of Energy

Jim Poppiti
12800 Middlebrook Rd.
Trevion II, EM-36
Germantown, MD 20874

Defense Nuclear Federal Safety Board

Rich Tontodonato
625 Indiana Ave. N. W.
Washington D.C. 20004

* Needs only releasing paperwork, not a copy of the released document. *Dist Done Adv.*