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FINAL REPORT FOR TANK 241BY103 AUGER SAMPLES
95-AUG-012 & 95-AUG-013

COMPLETE

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN No 625724

Proj.
ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. Steve E. Kelly, Characterization Plans, Coordinaiton and Reports, R2- 12, 376-1566		3a. USQ Required? ☐ Yes ☒ No	4. Date 10/03/95
11a. Modification Work ☐ Yes (fill out Blk. 11b) ☒ No (NA Blks. 11b, 11c, 11d)	11b. Work Package No. N/A	11c. Modification Work Complete N/A Cog. Engineer Signature & Date	11d. Restored to Original Condition (Temp. or Standby ECN only) N/A Cog. Engineer Signature & Date	
	5. Project Title/No./Work Order No. Tank 241-BY-103	6. Bldg./Sys./Fac. No. N/A	7. Approval Designator Q	
12. Description of Change This ECN is being generated in order to update/add additional information to the existing document.	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-DP-104, Rev. 0		9. Related ECN No(s). N/A	10. Related PD No. N/A
	13a. Justification (mark one) Criteria Change ☐ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const ☐ Const. Error/Omission ☐ Design Error/Omission ☒			
13b. Justification Details This ECN will assist in the completion of the documentation process for this document.				
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RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-DP-104, REV 1

Document Title: Final Report for Tank 241-BY-103, Auger Samples 95-AUG-012 and 95-AUG-013

Release Date: 10/10/95

**This document was reviewed following the
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10/10/95

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PART I

WHC-SD-WM-DP-104, REV. 1

ANALYTICAL SERVICES

**FINAL REPORT FOR TANK 241-BY-103, AUGER SAMPLES,
95-AUG-012 AND 95-AUG-013**

DATE PRINTED:

SEPTEMBER 29, 1995

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NARRATIVE

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**FINAL REPORT FOR TANK 241-BY-103,
AUGER SAMPLES 95-AUG-012 AND 95-AUG-013**

ANALYTICAL SUMMARY

Two auger samples from tank 241-BY-103 (BY-103) were received by the 222-S Laboratories and underwent safety screening analysis, consisting of differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), and total alpha activity. The TGA analysis is performed to verify a moisture content of tank waste of greater than 17 percent. Thermogravimetric analysis results for both samples were less than the limit of 17 percent moisture, and notification was made on April 20, 1995. Although the sample results were below this limit, no secondary analyses were required or performed.

SCOPE

This document serves as the final report deliverable for the tank BY-103 auger samples collected on March 8, 1995 and March 10, 1995 (95-AUG-012 and 95-AUG-013). Since no additional analyses have been performed, this report is identical to the 45-day report, except for the addition of the chain-of-custody records, hot-cell work plans, subsampling worksheets, and sample extrusion photos. Each sample was received, extruded, and analyzed by the 222-S Laboratories in accordance with the Tank Characterization Plan (TCP) referenced below. Included in this report are the primary safety screening results obtained from the analyses and copies of all DSC, TGA raw data scans and total alpha results as requested per the TCP.

SAMPLE RECEIPT, EXTRUSION, AND SUBSAMPLING

Auger 95-AUG-012

Auger sample 95-AUG-012 was collected from riser 10B of tank BY-103 using a 10 inch auger bit. It was received into the 222-S Laboratories on March 10, 1995 at 1600 hours and extruded on March 23, 1995. There was no drainable liquid, but 35.85 grams of solids were collected. The solids were brownish-grey in color, looked dry and crumbly, and fell off the auger onto the sample tray after the sleeve was removed. Due to the small amount of sample obtained, all material was subsampled into one jar (#6570) and was not divided into half-segments as directed in the TCP. All analysis and sample archiving requirements per the TCP were performed on this sample.

Auger 95-AUG-013

Auger sample 95-AUG-013 was collected from riser 12A of tank BY-103 using a 10 inch auger bit. It was received into the 222-S Laboratories on March 10, 1995 at 1600 hours and extruded on March 24, 1995. There was no drainable liquid, but 38.09 grams of solids were collected. The solids were yellow-brown in color, looked dry and crumbly, and fell off the auger onto the sample tray after the sleeve was removed. As with the sample material from auger

95-AUG-012, the material from 95-AUG-013 was subsampled into one jar (#6578) from which all analyses and sample archives were performed.

SAMPLE IDENTIFICATION INFORMATION

Table 1: Sample Identification

LABCORE Sample ID	Customer Sample ID	Hot Cell Vial #	Analyses
S95T000320	95-AUG-012, Riser 10B, Auger sample	NA	Extrusion
S95T000507	95-AUG-012, Riser 10B, Subsample	6668	DSC/TGA
S95T000508	95-AUG-012, Riser 10B, Fusion Digest	6668	Total Alpha
S95T000509	95-AUG-012, Riser 10B, Archive Sample	6756	Archive
S95T000321	95-AUG-013, Riser 12A, Auger sample	NA	Extrusion
S95T000511	95-AUG-013, Riser 12A, Subsample	6810	DSC/TGA
S95T000512	95-AUG-013, Riser 12A, Fusion Digest	6810	Total Alpha
S95T000513	95-AUG-013, Riser 12A, Archive Sample	6877	Archive

NA = Not Applicable

ANALYTICAL RESULTS

Analytical results are presented in Tables 2, 3, 4, and 5 (pages 6 and 7) with the applicable notification limits shaded.

DSC (Energetics Content)

DSC analyses were performed under a nitrogen atmosphere using procedure LA-514-113, Rev. B-1. Using the average percent water by TGA for each sample, dry weight basis results were calculated from the wet weight basis results. Both the wet and dry results are given in Tables 2 and 3. For both sample S95T000507 and sample S95T000511, exotherms ranging from 5.9 to 137.6 J/g (dry weight basis) were detected beginning at approximately 400 °C; however, the magnitude of these exotherms did not approach the notification limit of 481 J/g. Due to the inhomogeneity of the samples, neither sample met the TCP specified precision criterion of 10% relative percent difference (RPD), therefore an additional analysis (triplicate) was performed for each of the two samples. Sample standard deviation values were 27.0 and 4.0 for samples S95T000507 and S95T000511, respectively. The LMCS control standards exhibited a recovery of 104.7 percent for the sample and duplicate and 99.12 for the triplicate, which are within the program's specified accuracy control limits of 90 to 110 percent recovery.

TGA (Moisture Content)

Weight percent water was performed under a nitrogen atmosphere using procedure LA-560-112, Rev. A-2. Results for samples S95T000507 and S95T000511 and their duplicates ranged in value from 11.63 to 33.59 percent water by weight. The marked difference in the results is most likely attributable to the inhomogeneity of the sample material. The results for both samples were less than the notification limit of 17 weight percent water, although the results of the duplicate samples were greater than this limit (notification is made if the sample is analyzed at less than 17 percent water). The RPD values between the samples and their duplicates did not meet the TCP specified precision requirement of 10%, therefore an additional analysis (triplicate) was performed for each of the two samples. Sample standard deviation values were 10.2 and 3.9 for samples S95T000507 and S95T000511, respectively. The Laboratory Measurement Control System (LMCS) control standard exhibited a recovery of 99.98 percent, which was within the program's specified accuracy control limits of 90 to 110 percent.

Total Alpha Activity

Although not required by the TCP for saltcake samples, analyses for total alpha activity were performed on samples S95T000508 and S95T000512. Samples were prepared by fusion digestion using procedure LA-549-141, Rev. C-2, and analyses were performed using procedure LA-508-101, Rev. D-2. A sample duplicate and spike were performed on both samples. Neither sample met the TCP specified precision criterion of 10% RPD. Likewise, lower than normal spike recoveries caused both samples to exceed the accuracy control limits of 90 to 110 percent recovery, with values of 67.0% and 76.0%. This poor spike recovery was most likely due to solids observed in the sample mount. An additional run was performed for both samples from which similar results were found. The results of the rerun are given in Tables 2 and 3. Sample and duplicate alpha activities ranged from less than $3.17\text{E-}03$ to $2.68\text{E-}02$ $\mu\text{Ci/g}$, which were more than 1500 fold lower than the notification limit of 41 $\mu\text{Ci/g}$.

Project Coordinator for Rev. 0 was R. D. Schreiber. Project Coordinator for Rev. 1 was S. E. Kelly.

REFERENCE Schreiber, R. D., 1995, WHC-SD-WM-TP-231, Revision 1, "Tank 241-BY-103 Tank Characterization Plan, dated February 27, 1995.

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SAMPLE DATA SUMMARY

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Final Results for Augers 95-AUG-012 and 95-AUG-013
BY-103

RISER: 10B, 12A
SEGMENT #: 95-AUG-012

SEGMENT PORTION: W Whole Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T000508	F		Alpha of Digested Solid	uCi/g	-1.0e+00	1.0e+00	90.54	<3.22e-03	2.68e-02	2.02e-02	2.35e-02	28.1	67.00	7.42e-03	27.5

=> Limit violated
=> Selected Limit

TANK: BY-103

SEGMENT #: 95-AUG-012

RISER: 10B, 12A

SEGMENT PORTION: Whole Segment

DATE: Oct. 9, 1995
Steve E. Kelly

SAMPLE #	ANALYTE	UNIT	ACTION LIMITS		STANDARD %	RESULT	DUPLICATE	TRIPLICATE	AVERAGE	STDS
			LOWER	UPPER						
S95T000507	DSC Exotherm using Mettler	Joules/g	None	None	104.7	75.4	91.4	77.1	81.3	8.8
S95T000507	DSC Exotherm Dry Calculated	Joules/g Dry	-1.00	1.00	N/A	87.7	137.6	94.9	106.7	27.0
S95T000507	% Water by TGA using Mettler	Percent	17.00	105.00	99.98	14.06	33.59	18.76	22.1	10.2
	=> Limit Violated									
	=> Selected Limit									
STDS	=> Sample Standard Deviation									

Final Results for Augers 95-AUG-012 and 95-AUG-013
BY-103

RISER: 10B, 12A
SEGMENT #: 95-AUG-013

SEGMENT PORTION: W Whole Segment

Sample#	R A#	Analyte	Unit	Action Limits Lower	Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S95T000512	F	Alpha of Digested Solid	uc/g	-1.0e+00	1.0e+00	90.54	<3.22e-03	< 4.01e-3	<3.17e-3	n/a	n/a	76.00	7.36e-03		500.0

=> Limit violated
=> Selected Limit

TANK: BY-103

SEGMENT #: 95-AUG-013

RISER: 10B, 12A

SEGMENT PORTION: Whole Segment

DATE: Oct. 9, 1995

Steve E. Kelly

SAMPLE #	ANALYTE	UNIT	ACTION LIMITS		STANDARD %	RESULT	DUPLICATE	TRIPLICATE	AVERAGE	STDS
			LOWER	UPPER						
S95T000511	DSC Exotherm using Mettler	Joules/g	None	None	104.7	5.2	9.6	11.3	8.7	3.1
S95T000511	DSC Exotherm Dry Calculated	Joules/g Dry	-1.00	101.00	N/A	5.9	11.9	13.4	10.4	4.0
S95T000511	% Water by TGA using Mettler	Percent	17.00	105.00	99.98	11.63	19.49	15.72	15.6	3.9
=> Limit Violated										
=> Selected Limit										
STDS => Sample Standard Deviation										
NOTE: A second DSC standard was run with the triplicate giving 99.12 % recovery.										

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CHAIN OF CUSTODY FORMS

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CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

(1) Shipment Number _____ (2) Sample Number 95-AUG-012 (3) Supervisor PRAZNIK
 (4) Tank BY103 (5) Riser 10B (6) Cask Serial Number C1022

Radiation Survey Date: _____		(7) FIELD	(31) LABORATORY	(8) Shipment Description	
Over Top Dose Rate	<u>< 0.5 mR/hr</u>		<u>LO.5 mR/hr</u>	A. Work Package Number	<u>ES-95-00079-0</u>
Side Dose Rate	<u>< 0.5 mR/hr</u>		<u>LO.5 mR/hr</u>	B. Cask Seal Number	<u>31098 @ C1022-1021</u>
Bottom Dose Rate	<u>< 0.5 mR/hr</u>		<u>LO.5 mR/hr</u>	C. Date and Time Sample	<u>1045 hrs / 3-8-95</u>
Smearable Contamination	<u>< 20 dpm/100cm²</u> (Alpha)		<u>< 50 dpm/100cm²</u> (Alpha)	Removed from Tank	<u>8:20</u>
	<u>< 1K dpm/100cm²</u> (Beta-Gamma)		<u>< 1K dpm/100cm²</u> (Beta-Gamma)	D. Expected Liquid Content	<u>90%</u>
RCT* <u>Raney</u>	(Signature)	RCT* <u>C. Ben</u>	(Signature)	E. Expected Solid Content	<u>22 mR/hr</u>
				F. Dose Rate Through Drill String	<u>8"</u>
				G. Expected Sample Length	

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

COPY

(10) Field Comments	(32) Laboratory Comments
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(11) Point of Origin <u>BY103 R/10B</u>	(12) Destination <u>2225 LAB</u>	(13) Sender Name (Sign and PRINT) <u>PRAZNIK, R.S. H. Blup</u>	(14) Date/Time <u>3-10-95/1430</u>	(15) Sender Comments <u>EVERYTHING INTACT</u>
(17) Relinquished By (Sign and PRINT) <u>DAVahan DAVAHAN</u>	(18) Received By (Sign and PRINT) <u>Suzanne Gentile S GENTILE</u>	(19) Date/Time <u>3-10-95/1600</u>	(20) Receiver Comments	
(21) Relinquished By (Sign and PRINT) <u>Suzanne Gentile S Gentile</u>	(22) Received By (Sign and PRINT) <u>CA Clark CA Clark</u>	(23) Date/Time <u>3-10-95/1735</u>	(24) Receiver Comments <u>Everything intact</u>	
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments	
(16) Seal Intact Upon Release? ☐ Yes ☐ No	(29) Seal Intact Upon Receipt? ☒ Yes ☐ No	(30) Seal Data Consistent with this Record?		
		Shipment No. ☐ Yes ☐ No	Cask Seal No. ☒ Yes ☐ No	Sample No. ☒ Yes ☐ No

CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

Pravnik

(1) Shipment Number 64103 (2) Sample Number 95-AUG-013 (3) Supervisor Pravnik
 (4) Tank 12A (5) Riser 12A (6) Cask Serial Number C1046

Radiation Survey Data:		(7) FIELD		(31) LABORATORY		(8) Shipment Description	
Over Top Dose Rate	<u>50.5 mR/hr</u>	(Alpha)	<u>40.5 mR/hr</u>	A. Work Package Number	<u>ES-95-00079-D</u>	Removed from Tank	<u>3-10-95 / 1250 hr</u>
Side Dose Rate	<u>50.5 mR/hr</u>	(Beta-Gamma)	<u>40.5 mR/hr</u>	B. Cask Seal Number	<u>210980-C-1046-1046</u>	Expected Liquid Content	<u>20%</u>
Bottom Dose Rate	<u>50.5 mR/hr</u>	(Alpha)	<u>40.5 mR/hr</u>	C. Date and Time Sample	<u>3-10-95</u>	Expected Solid Content	<u>80%</u>
Smearable Contamination	<u>51K dpm/100cm²</u>	(Beta-Gamma)	<u>40.5 mR/hr</u>	D. Expected Liquid Content	<u>20%</u>	Dose Rate Through Drill String	<u>15 mR/hr</u>
	<u>51K dpm/100cm²</u>	(Beta-Gamma)	<u>40.5 mR/hr</u>	E. Expected Solid Content	<u>80%</u>	Expected Sample Length	<u>8"</u>
	<u>51K dpm/100cm²</u>	(Beta-Gamma)	<u>40.5 mR/hr</u>	F. Dose Rate Through Drill String	<u>15 mR/hr</u>		
	<u>51K dpm/100cm²</u>	(Beta-Gamma)	<u>40.5 mR/hr</u>	G. Expected Sample Length	<u>8"</u>		

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

COPY

(10) Field Comments		(32) Laboratory Comments	
(11) Point of Origin <u>64103 R/12A</u>	(12) Destination <u>222 SCRS</u>	(13) Sender Name (Sign and PRINT) <u>Pravnik, D. J.</u>	(14) Date/Time <u>3-10-95 / 1430 hr</u>
(17) Relinquished By (Sign and PRINT) <u>DD Luch</u>	(18) Received By (Sign and PRINT) <u>Suzanne Lanthier</u>	(15) Sender Comments <u>Exempted/Intact</u>	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT) <u>SGentle</u>	(22) Received By (Sign and PRINT) <u>CA Clark</u>	(19) Date/Time <u>3-10-95</u>	(24) Receiver Comments <u>Every thing intact</u>
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(23) Date/Time <u>3-10-95</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	Cask Seal No.	Sample No.
		☒ Yes ☐ No	☒ Yes ☐ No

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PHOTOGRAPHS

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By 103 95-Aug 013 Riser 12A

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HOT CELL LOGBOOK

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NOTEBOOK/LOGBOOK UNCLASSIFIED COVERSHEET			
SECTION I <div style="text-align: center; font-size: 1.2em; font-weight: bold;">CONTROLLED COPY</div> <div style="text-align: center; margin-top: 10px;">MAR 15 1995</div> <div style="text-align: center; margin-top: 20px;">RETURN TO UNCLASSIFIED DOCUMENT CONTROL</div>		<div style="border-bottom: 1px solid black; margin-bottom: 5px;">Notebook No. <u>Whc-N-1137</u></div> <div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; margin-bottom: 5px;"> Date of Issue <u>3-15-95</u> Copy <u>1</u> </div> <div style="border-bottom: 1px solid black; margin-bottom: 5px;">Title <u>241-BY-103</u></div> <div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div>	
Author <u>RK Fuller</u>		If continued from another notebook give the notebook number	
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Responsible Custodian	Payroll No.	MSIN	Date Assigned
<u>RK Fuller</u>		<u>TL-31</u>	<u>MAR 14 1995</u>
SECTION II		Complete this section prior to returning notebook to Unclassified Document Control, A4-18	
Abstract:		(Give brief description of notebook contents)	
Period Covered:		(Inclusive dates - Month/Day/Year)	
Certification Statement:		This notebook does ☐ does not ☐ contain any Quality Assurance Record Material (as described in Section 9.0 of WHC-CM-3-5) and has been verified to be a complete and legible record.	
_____ Custodian's Signature and Date			
Retention Schedule:	Specialist Concurrence Name	Custodian's Manager's Name	

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number WHC-N-1137 Copy 1 were intentionally
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CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

(1) Shipment Number 87103 (2) Sample Number 95-HV6-012 (3) Supervisor Pravnik
 (4) Tank 10B (5) Riser 10B (6) Cask Serial Number C1022

Radiation Survey Data:		(7) FIELD		(31) LABORATORY		(8) Shipment Description	
Over Top Dose Rate	<u>20.5 mR/hr</u>			<u>20.5 mR/hr</u>		A. Work Package Number	<u>ES-95-000-79-0</u>
Side Dose Rate	<u>20.5 mR/hr</u>			<u>20.5 mR/hr</u>		B. Cask Seal Number	<u>31098</u>
Bottom Dose Rate	<u>20.5 mR/hr</u>			<u>20.5 mR/hr</u>		C. Date and Time Sample	<u>3/10/95</u>
Smearable Contamination	<u>220 dpm/100cm²</u>			<u>220 dpm/100cm²</u>		Removed from Tank	<u>1045 hrs / 3-8-95</u>
	<u>21K dpm/100cm²</u>			<u>21K dpm/100cm²</u>		D. Expected Liquid Content	<u>8.20%</u>
	<u>21K dpm/100cm²</u>			<u>21K dpm/100cm²</u>		E. Expected Solid Content	<u>90%</u>
RCT*	<u>Rumey</u>			<u>Rumey</u>		F. Dose Rate Through Drill String	<u>22 mR/hr</u>
						G. Expected Sample Length	<u>8"</u>

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

COPY

(10) Field Comments

(32) Laboratory Comments

3/23/95

(11) Point of Origin		(12) Destination		(13) Sender Name (Sign and PRINT)		(14) Date/Time		(15) Sender Comments			
<u>87103 2/10/95</u>	<u>222.5 LAB</u>	<u>Pravnik, R. S. Helms</u>		<u>3-10-95/1430</u>		<u>EVERYTHING IN TACT</u>					
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)		(19) Date/Time		(20) Receiver Comments					
<u>DAVID W. DAVIDSON</u>		<u>Suzanne Gentile S GENTILE</u>		<u>3-10-95/1600</u>							
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)		(23) Date/Time		(24) Receiver Comments					
<u>Suzanne Gentile S GENTILE</u>		<u>DA Clark</u>		<u>3-10-95/1735</u>		<u>EVERYTHING IN TACT</u>					
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)		(27) Date/Time		(28) Receiver Comments					
(16) Seal Intact Upon Release?				(29) Seal Intact Upon Receipt?				(30) Seal Data Consistent with this Record?			
☐ Yes ☐ No				☒ Yes ☐ No				☒ Yes ☐ No			
Shipment No.				Cask Seal No.				Sample No.			
☒ Yes ☐ No				☒ Yes ☐ No				☒ Yes ☐ No			

BY 103 95-AUG-012 Riser 10B

3/23/95

Labcore worklist #719 Labcore number 595T000320

Video # 2 BY 3arm

50 gm = 19.99 gms 500 gm = 499.98 gms

Temp inside Wet Cell = 79.7 °F Humidity = 25%

* No liner liquid

(Dose Rate thru drill string = 22mB/hr)

Solids Description:

The total amount of solid material recovered was 35.85 grams. There was no drainable liquid. Solids were very dry and crumbly. Color of solids were brownish-gray. Sample material fell off the auger onto the sample tray after the sleeve was removed. No liquid was present. All the sample material appeared similar in color and texture. Subsampled material into one jar. See subsample information.

BY 103 95-AUG-012 Solids:

- jar # 6570 (125 mL - jar size)
- 35.85 grams recovered.

jar # 6570

Final wt: 164.37 grams

Initial wt: 128.52 grams

net wt: 35.85 grams

Auger % Recovery =

$$\frac{\text{Est ml recovered}}{(\text{Exp length} - 1') \times 20 \text{ ml/ft}}$$

$$= \frac{35 \text{ ml}}{7 \times 20} \times 100 =$$

Keith Felt
3/23/95

3/23/95

BY 103

95-AUG-012 Rider 10B

Sample recovery:

Estimated sample volume = 35 ml's. This estimate is based on the grams of material collected and the material not recovered off the auger and sample tray. Based on the 8" expected sample length, the percent recovery = 35%.

Heith Fuller
3/23/95

BY 103 95-AUG-012 Riser 10B

BY 103 95-AUG-012 Riser 10B

CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

(1) Shipment Number _____ (2) Sample Number 95-AUG-013 (3) Supervisor PRAZNIK
 (4) Tank BY103 (5) Riser 12A (6) Cask Serial Number C1046

Radiation Survey Data:		(7) FIELD	(31) LABORATORY	(8) Shipment Description
Over Top Dose Rate	<u>< 0.5 mR/hr</u>		<u>40.5 mR/hr</u>	A. Work Package Number <u>ES-95-00079-D</u>
Side Dose Rate	<u>< 0.5 mR/hr</u>		<u>40.5 mR/hr</u>	B. Cask Seal Number <u>2-10-95-2-C1046-102204</u>
Bottom Dose Rate	<u>< 0.5 mR/hr</u>		<u>40.5 mR/hr</u>	C. Date and Time Sample <u>3-10-95 / 1250 hr</u>
Smearable Contamination	<u>< 20 dpm/100cm²</u>		<u>< 20 dpm/100cm²</u>	Removed from Tank <u>20%</u>
	(Alpha)		(Alpha)	D. Expected Liquid Content <u>80%</u>
	<u>< 1K dpm/100cm²</u>		<u>< 1K dpm/100cm²</u>	E. Expected Solid Content <u>15 mR/hr</u>
	(Beta-Gamma)		(Beta-Gamma)	F. Dose Rate Through Drill String <u>8"</u>
RCT*	<u>PRAZNIK</u>	RCT*	<u>C. Belu</u>	G. Expected Sample Length
	(Signature)		(Signature)	

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

COPY

(10) Field Comments

(32) Laboratory Comments

(11) Point of Origin <u>BY103 R12A</u>	(12) Destination <u>222 SLABS</u>	(13) Sender Name (Sign and PRINT) <u>PRAZNIK, D.S.</u>	(14) Date/Time <u>3-10-95 / 1430 hr</u>	(15) Sender Comments <u>Everything intact</u>
(17) Relinquished By (Sign and PRINT) <u>DAKRAH</u>	(18) Received By (Sign and PRINT) <u>Suzanne Gentile</u>	(19) Date/Time <u>3-10-95</u>	(20) Receiver Comments	
(21) Relinquished By (Sign and PRINT) <u>SGentile</u>	(22) Received By (Sign and PRINT) <u>CA Clark</u>	(23) Date/Time <u>3-10-95 1735</u>	(24) Receiver Comments <u>Everything intact</u>	
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments	
(16) Seal Intact Upon Release? ☐ Yes ☐ No	(29) Seal Intact Upon Receipt? ☒ Yes ☐ No	(30) Seal Data Consistent with this Record?		
Shipment No. ☒ Yes ☐ No		Cask Seal No. ☒ Yes ☐ No		Sample No. ☒ Yes ☐ No

BY-103 95AUG013 Riser 12-A

By-103 95AUG013 Riser 12A (3-24-95)

LABCORE WORKLIST #720 LABCORE #S95T000321

VIDEO #2 BY-FARM

20 gm = 19.99 grams 500 gm = 499.98 grams

Temp inside Hotcell 80.2°F Humidity 20%

NO LINER LIQUID Dose RATE Thru Drill STRING (15 mR/hr)

Solids Description:

Dry - CRUMBLY, Light yellow-brown. Some small chunks. sample fell off the auger. Very little sample remained on the auger after the sleeve was removed. All sample appeared the same in color and texture.

BY 103 95-AUG-013 SOLIDS

placed all solids in the same jar. No crust, or segment type material observed.

JAR # 6578

JAR SIZE 125 ml

FINAL WT. 166.24 grams

INITIAL WT. 128.15 grams

NET WT. 38.09 grams

Sample Recovery

Estimated sample volume = 35 mls. This estimate is based on the grams of material collected and the material that was not recovered off the auger and sample tray. Based on the expected 8 inch sample length, the percent recovery is approximately 25%.

TNO

3-24-95

23

By 103 95-AUG-013 Riser 12-A

BY 103

95-AUG-013

RISER 12A

3/24/95

BY 103 95-AUG-013 riser 12A
(photography)

WHC-SD-WM-DF-104, REV. 1

March 30, 95

HOMOGENIZATION & SUBSAMPLING
 BY 103 95 AUG 012 SEG^M
 R-1013

- Transferred 4.11 gram into Vial #6668. From JAR#6570. Vial #6668 to be submitted to the laboratory for the following analysis: DSC/TGA/Fusion/AT
- Transferred 28.17 gram into Vial #6756, This was the entire sample that was left over. Vial #6756 is now a Archive.

Note: JAR#6570 is empty and has been Destroyed.

March 30, 95

HOMOGENIZATION & SUBSAMPLING
 BY 103 95AV6013 SEG #1 R-12A

- Transferred 4.50 grams into Jar# 6810 from Jar# 6578.
 Jar# 6810 to be submitted to Lab for analysis: DS/TGA/Fusion/AT.
- Transferred the entire sample into Jar# 6877 (40ml)
 for Archiving.

Note: Jar# 6578 (125 ml) has been Destroyed.

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 3/30/95

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WHC-SD-WM-DP-104, REV. 1

SAMPLE HANDLING

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LABCORE Data Entry Template for Worklist# 719

Analyst: RK7 Instrument: BA000 Book # _____

Method: LO-160-103 Rev/Mod A-7

WHC-SD-WM-DP-104, REV. 1

Worklist Comment: BY-103 95-AUG-012 Extrusion

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>19.99</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>499.98</u>	<u>N/A</u>	
95000025	BY-103	3 SAMPLE	S95T000320	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		mL
95000025	BY-103	4 SAMPLE	S95T000320	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
95000025	BY-103	5 SAMPLE	S95T000320	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/mL
95000025	BY-103	6 SAMPLE	S95T000320	0	EXTRUD01	SOLID	<u>N/A</u>	<u>Complete</u>		
95000025	BY-103	7 SAMPLE	S95T000320	0	LLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
95000025	BY-103	8 SAMPLE	S95T000320	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>WHC-10-1137</u>		
95000025	BY-103	9 SAMPLE	S95T000320	0	SLDVOL01	SOLID	<u>N/A</u>	<u>35</u>		mL
95000025	BY-103	10 SAMPLE	S95T000320	0	SLDWT-01	SOLID	<u>N/A</u>	<u>35</u>		g
95000025	BY-103	11 SAMPLE	S95T000320	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		mL

Final page for worklist # 719

Keith Fuller 3/23/95
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.

LABCORE Data Entry Template for Worklist# 720

Analyst: RKF Instrument: BA000 Book # _____

Method: LO-160-103 Rev/Mod A7 WHC-SD-WM-DP- 104, REV. 1

Worklist Comment: BY-103 95-AUG-013 Extrusion

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>203</u>	<u>19.77</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500g</u>	<u>499.78</u>	<u>N/A</u>	
95000025	BY-103	3 SAMPLE	S95T000321	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		mL
95000025	BY-103	4 SAMPLE	S95T000321	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
95000025	BY-103	5 SAMPLE	S95T000321	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/mL
95000025	BY-103	6 SAMPLE	S95T000321	0	EXTRUD01	SOLID	<u>N/A</u>	<u>Complete</u>		
95000025	BY-103	7 SAMPLE	S95T000321	0	LLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
95000025	BY-103	8 SAMPLE	S95T000321	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>WHC-N-1137</u>		
95000025	BY-103	9 SAMPLE	S95T000321	0	SLDVOL01	SOLID	<u>N/A</u>	<u>35</u>		mL
95000025	BY-103	10 SAMPLE	S95T000321	0	SLDWT-01	SOLID	<u>N/A</u>	<u>38</u>		g
95000025	BY-103	11 SAMPLE	S95T000321	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		mL

Final page for worklist # 720

Keith Fuller 3/24/95
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.

LABCORE Data Entry Template for Worklist# 1070

Analyst: SC Instrument: BA000 Book # N/A

Method: LO-160-103 Rev/Mod A-7

Worklist Comment: BY-103 and U-204 Archive Samples WHC-SD-WM-DP- 104, REV. 1

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	INSTCHK01				EXTRUD01	SOLID	<u>20</u>	<u>9.99</u>	<u>N/A</u>	
		2	INSTCHK02				EXTRUD01	SOLID	<u>500</u>	<u>499.98</u>	<u>N/A</u>	
95000025	BY-103	3	SAMPLE	S95T000509	0	X	ARCHIVE <u>6796</u>	SOLID	<u>N/A</u>	<u>38.17</u>		g
95000025	BY-103	4	SAMPLE	S95T000513	0	X	ARCHIVE <u>6877</u>	SOLID	<u>N/A</u>	<u>31.29</u>		g
95000058	U-204	5	SAMPLE	S95T000727	0	X	ARCHIVE <u>6883</u>	SOLID	<u>N/A</u>	<u>59.00</u>		g
95000058	U-204	?	6	SAMPLE	S95T000729	0	X	ARCHIVE <u>6924</u>	SOLID	<u>N/A</u>	<u>59.02</u>	g
95000058	U-204		7	SAMPLE	S95T000730	0	X	ARCHIVE <u>6884</u>	LIQUID	<u>N/A</u>	<u>41.22</u>	g
95000058	U-204	?	8	SAMPLE	S95T000731	0	X	ARCHIVE <u>6923</u>	LIQUID	<u>N/A</u>	<u>43.50</u>	g

Final page for worklist # 1070

SCA 4-27-95
Analyst Signature Date

SCA 4-27-95
Analyst Signature Date

Data Entry Comments:

Reviewed by
RK Fuller
5/1/95

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.

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WHC-SD-WM-DP-104, REV. 1

SAMPLE PREPARATIONS

LABCORE Data Entry Template for Worklist# 996

Analyst:

[Signature]

Instrument: FUS01

AL110166

Book #

Method: LA-549-141 Rev/Mod

C-2

WHC-SD-WM-DP-

104, REV. *1*

Worklist Comment: BY-103 FUSION DIGEST - 507--->508, 511--->512

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	<i>250ml</i>	<i>250ml</i>	N/A	g/L
95000025	BY-103	2 SAMPLE	S95T000508	0	F	FUSION01	SOLID	<i>N/A</i>	<i>2.0004</i>	g/L
95000025	BY-103	3 DUP	S95T000508	0	F	FUSION01	SOLID	<i>2.0004</i>	<i>1.9800</i>	N/A g/L
95000025	BY-103	4 SAMPLE	S95T000512	0	F	FUSION01	SOLID	<i>N/A</i>	<i>2.0164</i>	g/L
95000025	BY-103	5 DUP	S95T000512	0	F	FUSION01	SOLID	<i>2.0164</i>	<i>2.0340</i>	N/A g/L

Final page for worklist # 996

[Signature] *4-12-95*
Analyst Signature Date

20ml HCl
508
SAMPLE $\frac{-5001g}{.250l} = 2.0004g/l$

[Signature] *4-13-95*
Analyst Signature Date

20ml HCl
512
SAMPLE $\frac{-5041g}{.250l} = 2.0164g/l$

20ml HCl
508
DUP $\frac{-4950g}{.250l} = 1.9800g/l$

20ml HCl
512
DUP $\frac{-5085g}{.250l} = 2.0340g/l$

Data Entry Comments:

Sample and dupes were clean. <1% solids.

JDE VAUOEZ was HPT. 15 mRad/Hr

Bertand Giff II 4-13-95

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-104, REV. 1

RADIOCHEMICAL ANALYSES

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LABCORE Data Entry Template for Worklist# 1116

Analyst: JmV Instrument: AB00 #10 Book # 107852
Method: LA-508-101 Rev/Mod D-2 WB 27806 WHC-SD-WM-DP-104, REV. 1

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				QALPHA01 ALPHA01	SOLID			N/A	uCi/g
		1	STD				QALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		2	BLNK-PREP				QALPHA01 ALPHA01	SOLID			N/A	uCi/g
		2	BLNK-PREP				QALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		3	BLNK/BKG	<u>33</u>			QALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000025	BY-103	4	SAMPLE	S95T000508	0	F	QALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000025	BY-103	4	SAMPLE	S95T000508	0	F	QALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000025	BY-103	5	DUP	S95T000508	0	F	QALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000025	BY-103	5	DUP	S95T000508	0	F	QALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000025	BY-103	6	SPK	S95T000508	0	F	QALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000025	BY-103	7	SAMPLE	S95T000512	0	F	QALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000025	BY-103	7	SAMPLE	S95T000512	0	F	QALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000025	BY-103	8	DUP	S95T000512	0	F	QALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000025	BY-103	8	DUP	S95T000512	0	F	QALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000025	BY-103	9	SPK	S95T000512	0	F	QALPHA01 ALPHA01	SOLID			N/A	uCi/g

Final page for worklist # 1116

Joe M. Smith 4-14-95

Sharon Holden 4-17-95

Data Entry Comments:

SPK Recoveries out of control limits.
Worklist will be re-run 4-18-95

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# 1116

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
Analyst Signature		Date		Analyst Signature			Date			

WHC-SD-WM-DP-104, REV. 1

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.

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

LA-548-101 (A-3) LIQUIDS

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	16	16
STANDARD	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	4556	4702
1116	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	10.000	10.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	151.767	156.633
Sample #	Sample Concentration in $\mu\text{Ci/L}$	3.25E-02	BOOK#
WRKLST 1116	Replicate Concentration in $\mu\text{Ci/L}$	3.35E-02	107B52
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/L}$	3.3013E-02	
Analyst			
JMV	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Date	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
04/14/95	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Time	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
01:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL	in $\mu\text{Ci/mL}$	(Average) =	3.30E-05	DETECTION LEVEL
				7.71E-08 $\mu\text{Ci/mL}$
RELATIVE COUNTING ERROR		=	2.9%	

Data Entry by: *Sharon L. Heston* Date: 04/17/95
 Approved by: *[Signature]* Date: 4/17/95
 Form 508101_C Rev. 1.3 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-104, REV. 1

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

LA-548-101 (A-3)

SOLIDS

		BLANK	REPLICATE
Type	DETECTOR NUMBER	16	16
BLANK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	1	1
1116	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0004	2.0004
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.135	0.135
Sample #	Sample Concentration in $\mu\text{Ci/g}$	< 1.44E-03	BOOK#
S95T508	Replicate Concentration in $\mu\text{Ci/g}$	< 1.44E-03	
Instrument Code			
WB27806	Maximum Concentration in $\mu\text{Ci/g}$	< 1.4419E-03	
Analyst			
JMV	Rs (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
04/14/95			
Time	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
01:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 1.44E-03	DETECTION LEVEL
LESS Than Value was Determined from Lc.		3.85E-03 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR =	196.0%	

Data Entry by: <i>Sharon A. Halpern</i>	Date: 04/17/95
Approved by: <i>[Signature]</i>	Date: 4/17/95
Form 508101_C Rev. 1.3	Page 1 of 1

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

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	67	72
1116	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0004	2.0004
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.133	2.300
Sample #	Sample Concentration in $\mu\text{Ci/g}$	2.28E-02	BOOK#
S95T508	Replicate Concentration in $\mu\text{Ci/g}$	2.46E-02	
Instrument Code	Average Concentration in $\mu\text{Ci/g}$	2.3724E-02	
WB27806			
Analyst			
JMV	Rs (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
04/14/95			
Time	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
01:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	2.37E-02	DETECTION LEVEL
			3.85E-03 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR	=	25.6%	

Data Entry by: <i>Sharon H. H. H.</i>	Date: 04/17/95
Approved by: <i>[Signature]</i>	Date: 4/17/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DF-104, REV. 1

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

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
DUPLICATE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	74	85
1116	COUNT TIME in MINUTES (CT)	30	30
AT or TS ?	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	1.98	1.98
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.367	2.733
Sample #	Sample Concentration in $\mu\text{Ci/g}$	2.56E-02	BOOK#
S95T508	Replicate Concentration in $\mu\text{Ci/g}$	2.96E-02	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	2.7573E-02	
Analyst			
JMV	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
04/14/95			
Time	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
01:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Average)	=	2.76E-02	DETECTION LEVEL
					3.89E-03 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR			=	24.2%	

Data Entry by: <i>Sharon L. Haffner</i>	Date: 04/17/95
Approved by: <i>[Signature]</i>	Date: 4/17/95

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

LA-548-101 (A-3)

SOLIDS

Type	DETECTOR NUMBER	SPIKE	REPLICATE
SPIKE	DISH SIZE 1, 2, or 5 (MS)	16	16
Work List	TOTAL COUNTS (TC)	2	2
1116	COUNT TIME in MINUTES (CT)	47567	16758
AT or TB ?	BACKGROUND in cpm (BKG)	30	30
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.1	0.1
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	0.100	0.100
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	1	1
Matrix	SPIKE VOLUME in mL (SVol)	2.004	2.004
SOLID	SPIKE DILUTION FACTOR (SDF)	0.100	0.100
Sample #	SPIKE VALUE in $\mu\text{Ci/L}$ (SVal)	1	1
S95T508	INSTRUMENT EFFICIENCY FACTOR (EFF)	36.372	36.372
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	0.2104	0.2104
WB27806	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ from FORM C	1.69E+01	5.97E+00
Analyst	BOOK#	2.3724E-02	
JMV	Rs (Sample Count Rate) = (TC / CT) - BKG	94B43	
Date	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
04/14/95	PERCENT SPIKE RECOVERY = $((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/SVol)/(DF/SS/Dg/L))) / SVal * 100$		
Time			
01:00 PM			

RESULT AVG. PERCENT SPIKE RECOVERY = 63.0%

Data Entry by: *Sharon L. Haddock* Date: 17-Apr-95
 Approved by: *[Signature]* Date: 4/17/95
 Form 508101_X Rev. 1.3

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

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	13	15
1116	COUNT TIME in MINUTES (CT)	30	30
AT or 157	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0164	2.0164
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	0.333	0.400
Sample #	Sample Concentration in $\mu\text{Ci/g}$	3.54E-03	BOOK#
S95T512	Replicate Concentration in $\mu\text{Ci/g}$	4.25E-03	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	3.8931E-03	
Analyst			
JMV	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
04/14/95			
Time	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
01:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	3.89E-03	DETECTION LEVEL
			3.82E-03 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR	=	78.4%	

Data Entry by: <i>Sharon H. Hylton</i>	Date: 04/17/95
Approved by: <i>[Signature]</i>	Date: 4/17/95
Form 508101_C Rev. 1.3	Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DF-104, REV. 1

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

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
DUPLICATE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	9	25
1116	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.034	2.034
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.200	0.733
Sample #	Sample Concentration in $\mu\text{Ci/g}$	2.11E-03	BOOK#
S95T512	Replicate Concentration in $\mu\text{Ci/g}$	7.72E-03	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	4.9120E-03	
Analyst			
JMV	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	$\text{ALPHA TOTAL } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
04/14/95			
Time	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
01:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	4.91E-03	DETECTION LEVEL
			3.79E-03 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR	=	113.2%	

Data Entry by: <i>Sharon L. Hoffman</i>	Date: 04/17/95
Approved by: <i>[Signature]</i>	Date: 4/17/95
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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DF-104, REV. 1

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

LA-548-101 (A-3)

SOLIDS

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	16	16
SPIKE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	42771	45201
1116	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.100	0.100
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0164	2.0164
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Sample #	SPIKE VALUE in $\mu\text{Ci/L}$ (SVal)	36.372	36.372
S95T512	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2104	0.2104
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	1.51E+01	1.60E+01
WB27806	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ from FORM C	3.8931E-03	
Analyst	BOOK#	94B43	
JMV	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
04/14/95	PERCENT SPIKE RECOVERY = $((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/SVol)/(DF/SS/Dg/L)) / SVal) * 100$		
Time			
01:00 PM			

RESULT AVG. PERCENT SPIKE RECOVERY = 86.3%

Data Entry by: <i>S. Lyons</i>	Date: 17-Apr-95
Approved by: <i>[Signature]</i>	Date: 4/17/95

Form 508101_X Rev. 1.3

LABCORE Data Entry Template for Worklist# 1148

Analyst: AKL Instrument: AB00 #16 Book # 107652

Method: LA-508-101 Rev/Mod D-2 WB27806
WHC-SD-WM-DP-104, REV. 1

Worklist Comment: Do a boil down on .100 mL sample. Use .100 mL A-SPK. SLF Rerun #1 SLF 4-18-95

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			QALPHA01 ALPHA01	SOLID			N/A	uCi/g
		1 STD			QALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		2 BLNK-PREP			QALPHA01 ALPHA01	SOLID			N/A	uCi/g
		2 BLNK-PREP			QALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		3 BLNK/BKG	.27		QALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000025	BY-103	4 SAMPLE	S95T000508	0 F	QALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000025	BY-103	4 SAMPLE	S95T000508	0 F	QALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000025	BY-103	5 DUP	S95T000508	0 F	QALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000025	BY-103	5 DUP	S95T000508	0 F	QALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000025	BY-103	6 SPK	S95T000508	0 F	QALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000025	BY-103	7 SAMPLE	S95T000512	0 F	QALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000025	BY-103	7 SAMPLE	S95T000512	0 F	QALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000025	BY-103	8 DUP	S95T000512	0 F	QALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000025	BY-103	8 DUP	S95T000512	0 F	QALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000025	BY-103	9 SPK	S95T000512	0 F	QALPHA01 ALPHA01	SOLID			N/A	uCi/g

Final page for worklist # 1148

Ce Lewis 4/18/95

Sharon Holden 4-19-95

Data Entry Comments:

SPK recovery is below control limits - this is consistent
with the first run and indicates a sample matrix problem.
No rerun requested. AKL 4/19/95

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# 1148

GROUP	PROJECT	S TYPE	SAMPLE#	R A -----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
Analyst Signature		Date		Analyst Signature		Date			

WHC-SD-WM-DP- 104, REV. 1

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.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-104, REV. 1

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

LA-548-101 (A-3) LIQUIDS

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	16	16
STANDARD	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	3749	3798
1148	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.5	0.5
AT	SAMPLE SIZE in mL (SS)	10.000	10.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	124.467	126.100
Sample #	Sample Concentration in $\mu\text{Ci/L}$	2.66E-02	BOOK#
WRKLST 1148	Replicate Concentration in $\mu\text{Ci/L}$	2.70E-02	107B52
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/L}$	2.6822E-02	
Analyst			
AKL	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Date	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
04/18/95	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Time	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
02:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL	in $\mu\text{Ci/mL}$	(Average) =	2.68E-05	DETECTION LEVEL
				1.48E-07 $\mu\text{Ci/mL}$
RELATIVE COUNTING ERROR		=	3.2%	

Data Entry by: <i>Sharon A. Hagen</i>	Date: 04/19/95
Approved by: <i>[Signature]</i>	Date: 4/19/95

Form 508101_C Rev. 1.3

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

LA-548-101 (A-3)

SOLIDS

		BLANK	REPLICATE
Type	DETECTOR NUMBER	16	16
BLANK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	1	3
1148	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.5	0.5
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0004	2.0004
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.301	0.301
Sample #	Sample Concentration in $\mu\text{Ci/g}$	< 3.22E-03	BOOK#
S95T508	Replicate Concentration in $\mu\text{Ci/g}$	< 3.22E-03	
Instrument Code			
WB27806	Maximum Concentration in $\mu\text{Ci/g}$	< 3.2241E-03	
Analyst			
AKL	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
04/18/95			
Time	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
02:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Maximum) =	< 3.22E-03	DETECTION LEVEL
LESS Than Value was Determined from Lc.				7.42E-03
RELATIVE COUNTING ERROR		=	69.3%	$\mu\text{Ci/g}$

Data Entry by: <i>Sharon L. G. L. L.</i>	Date: 04/19/95
Approved by: <i>[Signature]</i>	Date: 4/19/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-104, REV. 1

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

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	87	93
1148	COUNT TIME in MINUTES (CT)	30	30
AT or TS ?	BACKGROUND in cpm (BKG)	0.5	0.5
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0004	2.0004
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.400	2.600
Sample #	Sample Concentration in $\mu\text{Ci/g}$	2.57E-02	BOOK#
S95T508	Replicate Concentration in $\mu\text{Ci/g}$	2.78E-02	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	2.6756E-02	
Analyst			
AKL	Rs (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
04/18/95			
Time	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
02:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Average)	=	2.68E-02	DETECTION LEVEL
					7.42E-03 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR			=	27.5%	

Data Entry by: <i>Sharon Hatcher</i>	Date: 04/19/95
Approved by: <i>[Signature]</i>	Date: 4/19/95

Form 508101_C Rev. 1.3

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-104, REV. 1

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

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
DUPLICATE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	81	61
1148	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.5	0.5
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	1.98	1.98
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.200	1.533
Sample #	Sample Concentration in $\mu\text{Ci/g}$	2.38E-02	BOOK#
S95T508	Replicate Concentration in $\mu\text{Ci/g}$	1.66E-02	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	2.0184E-02	
Analyst			
AKL	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
04/18/95			
Time	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
02:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Average)	=	2.02E-02	DETECTION LEVEL
RELATIVE COUNTING ERROR			=	37.1%	7.49E-03 $\mu\text{Ci/g}$

Data Entry by: <i>Shuan L. H. H.</i>	Date: 04/19/95
Approved by: <i>St. J. H.</i>	Date: 4/19/95

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-104, REV. 1

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

LA-548-101 (A-3)

SOLIDS

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	16	16
SPIKE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	26827	41603
1148	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.5	0.5
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.100	0.100
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0004	2.0004
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Sample #	SPIKE VALUE in $\mu\text{Ci/L}$ (SVal)	36.372	36.372
S95T508	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2104	0.2104
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	9.57E+00	1.48E+01
WB27806	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ from FORM C	2.6756E-02	
Analyst	BOOK#	94B43	
AKL	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	$SAMPLE + SPIKE \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
04/18/95	PERCENT SPIKE RECOVERY = $((S+S \mu\text{Ci/g} - SAMPLE \mu\text{Ci/g}) * ((SDF/SVol)/(DF/SS/Dg/L)))/(SVal) * 100$		
Time			
02:00 PM			

RESULT AVG. PERCENT SPIKE RECOVERY = 67.0%

Data Entry by: <i>Sharon L. Goffin</i>	Date: 19-Apr-95
Approved by: <i>[Signature]</i>	Date: 4/19/95

Form 508101_X Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DEP. 104, REV. 1

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

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	17	13
1148	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.5	0.5
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0164	2.0164
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.378	0.301
Sample #	Sample Concentration in $\mu\text{Ci/g}$	< 4.01E-03	BOOK#
S95T512	Replicate Concentration in $\mu\text{Ci/g}$	< 3.20E-03	
Instrument Code			
WB27806	Maximum Concentration in $\mu\text{Ci/g}$	< 4.0112E-03	
Analyst			
AKL	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
04/18/95			
Time	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
02:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Maximum) =	< 4.01E-03	DETECTION LEVEL
LESS THAN Value was Determined from Rmax.				7.36E-03
RELATIVE COUNTING ERROR		=	500.0%	$\mu\text{Ci/g}$

Data Entry by: *Sharon H. Pate* Date: 04/19/95
 Approved by: *[Signature]* Date: 4/19/95
 Form 508101_C Rev. 1.3

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

LA-548-101 (A-3)

SOLIDS

Type	DETECTOR NUMBER	SAMPLE	REPLICATE
DUPLICATE	DISH SIZE 1, 2, or 5 (MS)	16	16
Work List	TOTAL COUNTS (TC)	2	2
1148	COUNT TIME in MINUTES (CT)	14	5
AT or TB ?	BACKGROUND in cpm (BKG)	30	30
AT	SAMPLE SIZE in mL (SS)	0.5	0.5
Test Code	DILUTION FACTOR (DF)	0.100	0.100
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	2.034	2.034
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.2104	0.2104
Sample #	Sample Concentration in $\mu\text{Ci/g}$	0.301	0.301
S95T512	Replicate Concentration in $\mu\text{Ci/g}$	< 3.17E-03	BOOK#
Instrument Code			
WB27806	Maximum Concentration in $\mu\text{Ci/g}$	< 3.1708E-03	
Analyst			
AKL	Rs (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
04/18/95			
Time	Relative Counting Error = [[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)]] * 1.96 * 100		
02:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Maximum) =	< 3.17E-03	DETECTION LEVEL
LESS Than Value was Determined from Lc.				
RELATIVE COUNTING ERROR	=	500.0%		7.30E-03 $\mu\text{Ci/g}$

Data Entry by: <i>Sharon Lytle</i>	Date: 04/19/95
Approved by: <i>[Signature]</i>	Date: 4/19/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-104, REV. 1

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

LA-548-101 (A-3)

SOLIDS

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	16	16
SPIKE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	40604	36890
1148	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.5	0.5
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.100	0.100
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0164	2.0164
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Sample #	SPIKE VALUE in $\mu\text{Ci/L}$ (SVal)	36.372	36.372
S95T512	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2104	0.2104
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	1.44E+01	1.31E+01
WB27806	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ from FORM C	<4.0112E-3	
Analyst	BOOK#	94843	
AKL	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
04/18/95	PERCENT SPIKE RECOVERY = $((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/SVol)/(DF/SS/Dg/L)))/SVal * 100$		
Time			
02:00 PM			

RESULT AVG. PERCENT SPIKE RECOVERY = 76.0%

Data Entry by: *Sharon L. Galt* Date: 19-Apr-95
 Approved by: *[Signature]* Date: 4/19/95
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Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

PART II

WHC-SD-WM-DP-104, REV. 1

WHC-SD-WM-DP-104, REV. 0

ANALYTICAL SERVICES

45-DAY SAFETY SCREEN RESULTS FOR TANK 241-BY-103, AUGER SAMPLES,
95-AUG-012 AND 95-AUG-013

DATE PRINTED:

APRIL 20, 1995

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This Document consists of pages 1 through 28.

WHC-SD-WM-DP-104, REV. 1

NARRATIVE

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45-DAY SAFETY SCREEN RESULTS FOR TANK 241-BY-103,
AUGER SAMPLES 95-AUG-012 AND 95-AUG-013ANALYTICAL SUMMARY

Two auger samples from tank 241-BY-103 (BY-103) were received by the 222-S Laboratories and underwent safety screening analysis, consisting of differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), and total alpha activity. Analytical results for the TGA analyses for both samples were less than the safety screening notification limit. Since notification is made if the sample is analyzed at less than 17 percent water, notification was made on April 20, 1995. Although the sample results were below this limit, no secondary analyses were required or performed.

SCOPE

This document serves as the 45-day report deliverable for the tank BY-103 auger samples collected on March 8, 1995 and March 10, 1995 (95-AUG-012 and 95-AUG-013). Each sample was received, extruded, and analyzed by the 222-S Laboratories in accordance with the below referenced TCP. Included in this report are the primary safety screening results obtained from the analyses and copies of all DSC and TGA raw data scans as requested per the TCP. Photographs of the auger samples were taken during extrusion and, although not included in this report, are available.

SAMPLE RECEIPT, EXTRUSION, AND SUBSAMPLINGAuger 95-AUG-012

Auger sample 95-AUG-012 was collected from riser 10B of tank BY-103 using a 10 inch auger bit. It was received into the 222-S Laboratories on March 10, 1995 at 1600 hours and extruded on March 23, 1995. There was no drainable liquid, but 35.85 grams of solids were collected. The solids were brownish-grey in color, looked dry and crumbly, and fell off the auger onto the sample tray after the sleeve was removed. Due to the small amount of sample obtained, all material was subsampled into one jar (#6570) and was not divided into half-segments as directed in the TCP. All analysis and sample archiving requirements per the TCP were performed on this sample.

Auger 95-AUG-013

Auger sample 95-AUG-013 was collected from riser 12A of tank BY-103 using a 10 inch auger bit. It was received into the 222-S Laboratories on March 10, 1995 at 1600 hours and extruded on March 24, 1995. There was no drainable liquid, but 38.09 grams of solids were collected. The solids were yellow-brown in color, looked dry and crumbly, and fell off the auger onto the sample tray after the sleeve was removed. As with the sample material from auger 95-AUG-012, the material from 95-AUG-013 was subsampled into one jar (#6578) from which all analyses and sample archives were performed.

SAMPLE IDENTIFICATION INFORMATION

Table 1: Sample Identification

LABCORE Sample ID	Customer Sample ID	Hot Cell Vial #	Analyses
S95T000320	95-AUG-012, Riser 10B, Auger sample	NA	Extrusion
S95T000507	95-AUG-012, Riser 10B, Subsample	6668	DSC/TGA
S95T000508	95-AUG-012, Riser 10B, Fusion Digest	6668	Total Alpha
S95T000509	95-AUG-012, Riser 10B, Archive Sample	6756	Archive
S95T000321	95-AUG-013, Riser 12A, Auger sample	NA	Extrusion
S95T000511	95-AUG-013, Riser 12A, Subsample	6810	DSC/TGA
S95T000512	95-AUG-013, Riser 12A, Fusion Digest	6810	Total Alpha
S95T000513	95-AUG-013, Riser 12A, Archive Sample	6877	Archive

NA = Not Applicable

ANALYTICAL RESULTS

Analytical results are presented in Tables 2 and 3, with the applicable notification limits shaded.

DSC (Energetics Content)

DSC analyses were performed under a nitrogen atmosphere using procedure LA-514-113, Rev. B-1. Using the average percent water by TGA for each sample, dry weight basis results were calculated from the wet weight basis results. Both the wet and dry results are given in Tables 2 and 3. For both sample S95T000507 and sample S95T000511, exotherms ranging from 5.9 to 137.6 J/g (dry weight basis) were detected beginning at approximately 400 °C; however, the magnitude of these exotherms did not approach the notification limit of 481 J/g. Due to the inhomogeneity of the samples, neither sample met the TCP specified precision criterion of 10% relative percent difference (RPD). Sample precision values were 19.2 and 59.5 RPD for samples S95T000507 and S95T000511, respectively. The LMCS control standard exhibited a recovery of 104.7 percent, which was within the program's specified accuracy control limits of 90 to 110 percent recovery. Since the sample precision values did not meet the specified precision identified in the TCP, an additional analysis was performed for each of the two samples. The results for these additional analyses were 77.1 and 11.3 J/g (calculated to be 94.9 and 13.4 J/g on a dry weight basis) for samples S95T000507 and S95T000511, respectively. These results do not appear in Tables 2 and 3 but are included in the raw data.

TGA (Moisture Content)

Weight percent water was performed under a nitrogen atmosphere using procedure LA-560-112, Rev. A-2. Results for samples S95T000507 and S95T000511 and their duplicates ranged in value from 11.63 to 33.59 percent water by weight. The marked difference in the results is most likely attributable to the inhomogeneity of the sample material. The results for both samples were less than the notification limit of 17 weight percent water, although the results of the duplicates samples were greater than this limit (notification is made if the sample is analyzed at less than 17 percent water). The RPD values between the samples and their duplicates were 82.0 and 50.5 for samples S95T000507 and S95T000511, respectively, and did not meet the TCP specified precision requirement of 10%. The Laboratory Measurement Control System (LMCS) control standard exhibited a recovery of 99.98 percent, which was within the program's specified accuracy control limits of 90 to 110 percent. Since the sample precision values did not meet the specified precision identified in the TCP, an additional analysis was performed for each of the two samples. The results for these additional analyses were 18.76 and 15.72 percent water by weight for samples S95T000507 and S95T000511, respectively. These results do not appear in Tables 2 and 3 but are included in the raw data.

Total Alpha Activity

Although not required by the TCP for saltcake samples, analyses for total alpha activity were performed on samples S95T000508 and S95T000512. Samples were prepared by fusion using procedure LA-549-141, Rev. C-2, and analyses were performed using procedure LA-508-101, Rev. D-2. A sample duplicate and spike were performed on both samples. Neither sample met the TCP specified precision criterion of 10% RPD. Likewise, lower than normal spike recoveries caused both samples to exceed the accuracy control limits of 90 to 110 percent recovery, with values of 67.0% and 76.0%. This poor spike recovery was most likely due to solids observed in the sample mount. An additional run was performed for both samples from which similar results were found. The results of the rerun are given in Tables 2 and 3. Sample and duplicate alpha activities ranged from less than $3.17\text{E-}03$ to $2.68\text{E-}02$ $\mu\text{Ci/g}$, which were more than 1500 fold lower than the notification limit of 41 $\mu\text{Ci/g}$.

REFERENCE Schreiber, R. D., 1995, WHC-SD-WM-TP-231, Revision 1, "Tank 241-BY-103 Tank Characterization Plan, dated February 27, 1995.

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WHC-SD-WM-DP-104, REV. 1

SAMPLE DATA SUMMARY

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Safety Screen Results for Augers AUG-95-012, AUG-95-013
BY-103

CORE NUMBER: n/a
SEGMENT #: 95-AUG-012

Table 2

SEGMENT PORTION: W Whole Segment

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
				Lower	Upper										
S951000507		% Water by TGA using Mettler	%	47.000	105.000	99.98	n/a	14.06	33.59	23.83	82.0	n/a	0.000		n/a
S951000507		DSC Exotherm Dry Calculated	Joules/g Dry	-1.000	481.000	n/a	n/a	87.7	137.6	n/a	n/a	n/a	1.000e-00		n/a
S951000507		DSC Exotherm using Mettler	Joules/g	None	None	104.7	n/a	75.4	91.4	83.40	19.2	n/a	0.000		n/a
S951000508	F	Alpha of Digested Solid	uCi/g	-1.000	41.000	90.54	<3.22e-03	2.68e-2	2.02e-2	2.35e-02	28.1	67.00	0.007		27.5

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-104, REV. 1

Safety Screen Results for Augers AUG-95-012, AUG-95-013
BY-103

CORE NUMBER: n/a
SEGMENT #: 95-AUG-013

Table 3

SEGMENT PORTION: W Whole Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T000511			% Water by TGA using Mettler	%	17.000	105.000	99.98	n/a	11.63	19.49	15.56	50.5	n/a	0.000	n/a
S95T000511			DSC Exotherm Dry Calculated	Joules/g Dry	-1.000	481.000	n/a	n/a	5.9	n/a	n/a	n/a	n/a	1.000e-00	n/a
S95T000511			DSC Exotherm using Mettler	Joules/g	None	None	104.7	n/a	5.2	9.6	7.400	59.5	n/a	0.000	n/a
S95T000512	F		Alpha of Digested Solid	uCi/g	-1.000	41.000	90.54	<3.22e-03	< 4.01e-3	<3.17e-3	n/a	n/a	76.00	0.007	500.0

=> Limit violated

=> Selected Limit

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WHC-SD-WM-DP-104, REV. 1

WHC-SD-WM-DP-104, REV. 1

UNDIGESTED SAMPLE RESULTS -DIRECT

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LABCORE Data Entry Template for Worklist# 938

Analyst: KRM Instrument: DSC01 Book # 12N14A

Method: LA-514-113 Rev/Mod B-1 WHC-SD-WM-DP-104, REV. 1

Worklist Comment: Please run BY-103 DSC under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	SOLID	<u>28.45</u>	<u>29.8</u>	N/A	Joules/g
95000025	BY-103	2 SAMPLE	S95T000507	0	DSC-01	SOLID	<u>N/A</u>	<u>75.4</u>		Joules/g
95000025	BY-103	3 DUP	S95T000507	0	DSC-01	SOLID	<u>75.4</u>	<u>91.4</u>	N/A	Joules/g
95000025	BY-103	4 DUP2	S95T000507	0	DSC-01	SOLID	<u>75.4</u>	<u>77.1</u>	N/A	Joules/g
95000025	BY-103	5 SAMPLE	S95T000511	0	DSC-01	SOLID	<u>N/A</u>	<u>5.2</u>		Joules/g
95000025	BY-103	6 DUP	S95T000511	0	DSC-01	SOLID	<u>5.2</u>	<u>9.6</u>	N/A	Joules/g
		7 STD			DSC-01	SOLID	<u>28.45</u>	<u>28.2</u>	N/A	Joules/g
95000025	BY-103	8 DUP2	S95T000511	0	DSC-01	SOLID	<u>5.2</u>	<u>11.3</u>	N/A	Joules/g

Final page for worklist # 938

Juan Lopez for Ken Montzick 4/19/95
Analyst Signature Date

Alicia M. Fulton 4-19-95
Analyst Signature Date

see attached for original signature
Data entry by Doreen M. McInnes
4-19-95

Verified 4/19/95
J.M. Lopez

S95T000507 has two endotherms 736.89 J/g at 125.4°C, 120.99 J/g at 302.7°C; duplicate has 609.79 J/g at 125°C, 181.09 J/g at 300°C; dup2 has 508.89 J/g at 113°C, 258.59 J/g at 274°C.
S95T000511 has two endotherms 282.19 J/g at 113.5°C, 199.49 J/g at 303°C; duplicate has 570.99 J/g at 108.2°C, 232.59 J/g at 298.4°C; dup 2 has 564.19 J/g at 108°C, 189.99 J/g at 296°C. J.M. Lopez 4/19/95

Data Entry Comments:

Brown
Samples are a light brown, grainy substance.
LFD
4-19-95

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# 938

Analyst: KRM Instrument: DSC01 Book # 12N14A
Method: LA-514-113 Rev/Mod B-1 WHC-SD-WM-DP- 124 REV. 1
Worklist Comment: Please run BY-103 DSC under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	SOLID			N/A	Joules/g
95000025	BY-103	2 SAMPLE	S95T000507	0	DSC-01	SOLID	N/A			Joules/g
95000025	BY-103	3 DUP	S95T000507	0	DSC-01	SOLID			N/A	Joules/g
95000025	BY-103	4 SAMPLE	S95T000511	0	DSC-01	SOLID	N/A			Joules/g
95000025	BY-103	5 DUP	S95T000511	0	DSC-01	SOLID			N/A	Joules/g

Final page for worklist # 938

Analyst Signature Date 4-18-95

Analyst Signature Date

Data Entry Comments:

S95T000507 light brown, grainy
S95T000511 like a very light brown, brown sugar

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# 1182

Analyst: JMF Instrument: DSC01 _____ Book # N/A
Method: LA-514-113 Rev/Mod B-1 WHC-SD-WM-DP- 104, REV. 1
Worklist Comment: Dry dsc BY-103. JMF

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
95000025	BY-103	1 SAMPLE	S95T000507	0	DSC-02	SOLID	<u>N/A</u>	<u>87.7</u>		Joules/g Dry
95000025	BY-103	2 DUP	S95T000507	0	DSC-02	SOLID	<u>87.7</u>	<u>137.6</u>	<u>N/A</u>	Joules/g Dry
95000025	BY-103	3 DUP2	S95T000507	0	DSC-02	SOLID	<u>87.7</u>	<u>94.9</u>	<u>N/A</u>	Joules/g Dry
95000025	BY-103	4 SAMPLE	S95T000511	0	DSC-02	SOLID	<u>N/A</u>	<u>5.9</u>		Joules/g Dry
95000025	BY-103	5 DUP	S95T000511	0	DSC-02	SOLID	<u>5.9</u>	<u>11.9</u>	<u>N/A</u>	Joules/g Dry
95000025	BY-103	6 DUP2	S95T000511	0	DSC-02	SOLID	<u>5.9</u>	<u>13.4</u>	<u>N/A</u>	Joules/g Dry

Final page for worklist # 1182

JMF 4/19/95
Analyst Signature Date

Analyst Signature Date

I entered these thru parameter data entry, this is just a paper copy of what I entered.

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.

DSC STD 12N14-A
6.525 mg
Rate: 10.0 °C/min
File: 00182.001
Ident: 0.0
DSC METTLER 18-Apr-95
222-S Laboratory

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 61 TO 75.

exo

Integration
Delta H 194 mJ
29.8 J/g
Peak 158.5°C
-13.6 mW

5. mW

WHC-SD-WM-OP- 104, REV. 1

120. 140. 160. 180. °C

[Signature]
4-18-95

S95T000507 N2
15.382 mg

Rate: 10.0 °C/min

File: 00183.001
Ident: 0.0

DSC METTLER
222-S Laboratory

18-Apr-95

exo

Integration
Delta H 11334 mJ
736.8 J/g
Peak 125.4°C
-39.1 mW

Integration
Delta H 1860 mJ
120.9 J/g
Peak 302.7°C
-6.8 mW

Integration
Delta H 1159 mJ
75.4 J/g
Peak 433.9°C
9.0 mW

S95T000507 (DUP) N2
20.542 mg
Rate: 10.0 °C/min
File: 00185.001
Ident: 0.0
DSC METTLER
222-S Laboratory
18-Apr-95

WHC-SD-WM-DP-104, REV. 1

S95T000507 (DUP2) N2

15.879 mg

Rate: 10.0 °C/min

File: 00193.001

DSC METTLER

19-Apr-95

Ident: 0.0 222-S Laboratory

ENDO

WHC-SD-WM-DP-104, REV. 1

S95T000511 N2

29.901 mg

Rate: 10.0 °C/min

File: 00187.001

Ident: 0.0

DSC METTLER
222-S Laboratory

18-Apr-95

WHC-SD-WM-DP-104, REV. 1

S95T000511 (DUP) N2

10.803 mg

File: 00189.001 DSC METTLER 19-Apr-95
 Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

DSC STD 12N14-A
 6.340 mg
 Rate: 10.0 °C/min
 File: 00206.001
 Ident: 0.0
 DSC METTLER
 222-S Laboratory
 19-Apr-95

EXO >

10. mW

Integration
 Delta H 178 mJ
 28.2 J/g
 Peak 158.6°C
 -12.0 mW

120.

140.

160.

180. °C

Lucie M. Dutton 4-19-95

S95T000511 (DUP2) N2
 8.654 mg
 Rate: 10.0 °C/min
 File: 00208.001 DSC METTLER 19-Apr-95
 Ident: 0.0 222-S Laboratory

LABCORE Data Entry Template for Worklist# 945

Analyst: KRM Instrument: TGA01 Book # 42N8A

Method: LA-560-112 Rev/Mod A-2

Worklist Comment: Please run BY-103 TGA under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	<u>59.19</u>	<u>59.18</u>	<u>N/A</u>	%
95000025	BY-103	2 SAMPLE	S95T000507	0	TGA-01	SOLID	<u>N/A</u>	<u>14.06</u>		%
95000025	BY-103	3 DUP	S95T000507	0	TGA-01	SOLID	<u>17.06</u>	<u>33.57%</u>	<u>N/A</u>	%
95000025	BY-103	4 DUP2	S95T000507	0	TGA-01	SOLID	<u>14.06</u>	<u>18.76</u>	<u>N/A</u>	%
95000025	BY-103	5 SAMPLE	S95T000511	0	TGA-01	SOLID	<u>N/A</u>	<u>11.63</u>		%
95000025	BY-103	6 DUP	S95T000511	0	TGA-01	SOLID	<u>11.63</u>	<u>19.49</u>	<u>N/A</u>	%
95000025	BY-103	7 DUP2	S95T000511	0	TGA-01	SOLID	<u>11.63</u>	<u>15.72</u>	<u>N/A</u>	%

Final page for worklist # 945 4-19-95 LAD

See attached sheet for original signature
Analyst Signature John Fuge for Ken Mordick Date 4/19/95

See attached sheet for original signature
Analyst Signature Leslie Day for Susan Fulton Date 4/19/95

Data entry by Panda K McFarland
4-19-95

Verified 4/19/95 J. M. Fuge

Data Entry Comments:

S95T000507 has a second wt loss step, 4.03% at 423°C, dup has 7.06% at 300°C, dup2 has 7.31% at 290°C. S95T000511 has a second weight loss step of 3.19% at 249°C, dup has 3.89% at 253°C, dup2 has 4.07% at 230°C. JMF 4/19/95

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# 945

Analyst: KRM Instrument: TGA01 Book # 42N8A
Method: LA-560-112 Rev/Mod A-2 WHC-SD-WM-DP- 104, REV. 1

Worklist Comment: Please run BY-103 TGA under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID			N/A	%
95000025	BY-103	2 SAMPLE	S95T000507	0	TGA-01	SOLID	N/A			%
95000025	BY-103	3 DUP	S95T000507	0	TGA-01	SOLID			N/A	%
95000025	BY-103	4 SAMPLE	S95T000511	0	TGA-01	SOLID	N/A			%
95000025	BY-103	5 DUP	S95T000511	0	TGA-01	SOLID			N/A	%

Final page for worklist # 945

4-18-95
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

S95T000507 light Brown - grainy

S95T000511 very light brown, ~~some~~ similar to brown sugar

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 78 TO 84

TGA STD 42N8-A

16.056 mg

Rate: 10.0 °C/min

File: 00176.001

Ident: 0.0

TG METTLER

17-Apr-95

222-S Laboratory

WHC-SD-WM-DP-104, REV. 1

Step Analysis

Height -9.50 mg

-59.18 %

Resid. 6.55 mg

40.82 %

Dpeak 86.3 °C

[Signature] 4-18-95

S95T000507 N2

11.576 mg

Rate: 10.0 °C/min

File: 00184.001

TG

18-Apr-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height -1.63 mg

-14.06 %

ResidC. 9.95 mg

85.94 %

Step Analysis

Height -0.47 mg

-4.03 %

ResidC. 9.48 mg

81.89 %

Dpeak 423.0 °C

1. mg

100.

200.

300.

400.

°C

WHC-SD-WM-DP-104, REV. 1

S95T000507 (DUP) N2
11.445 mg
Rate: 10.0 °C/min
File: 00186.001 TG METTLER 18-Apr-95
Ident: 0.0 222-S Laboratory

Step Analysis
Height -3.84 mg
-33.59 %
Resid. 7.60 mg
66.41 %

Step Analysis
Height -0.80 mg
-7.00 %
Resid. 6.80 mg
59.43 %

2. mg

WHC-SD-WM-DP-104, REV. 1

100. 200. 300. 400. °C

S95T000507 (DUP2) N2

12.078 mg

Rate: 10.0 °C/min

File: 00194.001

TG

METTLER

18-Apr-95

Ident: 0.0

222-S Laboratory

WHC-SD-WM-DP-104, REV. 1

S95T000511 N2

15.498 mg

Rate: 10.0 °C/min

File: 00188.001

TG

METTLER

18-Apr-95

Ident: 0.0

222-S Laboratory

Step Analysis
Height -1.80 mg
-11.63 %
ResiC. 13.69 mg
88.37 %
Dpeak 87.0 °C

Step Analysis
Height -0.50 mg
-3.19 %
ResiC. 13.14 mg
84.79 %
Dpeak 249.0 °C

WHC-SD-WM-DP-104, REV. 1

28

1. mg

100.

200.

300.

400.

°C

S95T000511 (DUP) N2

14.414 mg

Rate: 10.0 °C/min

File: 00190.001

TG METTLER

18-Apr-95

Ident: 0.0

222-S Laboratory