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January 19, 1995

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Westinghouse
Hanford Company

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ANALYTICAL SERVICES

Project:

DATA PACKAGE FOR
SY-103 AUGER SAMPLES
RISERS 7A, 14b, & 22A

Tank:

241-SY-103

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NARRATIVE

From: Program Support WHC-SD-WM-DP-073 9456936
Phone: 373-1629 REV 0
Date: October 10, 1994
Subject: 136-DAY DELIVERABLE FOR TANK 241-SY-103, AUGER SAMPLES; RISERS 7A,
14B, AND 22A

To: G. D. Johnson S7-15
J. L. Deichman H4-19
R. D. Schreiber R2-12

cc: K. E. Bell T6-06
D. R. Bratzel R2-18
JGK-File/LB

References: (1) Letter from K. L. Kocher, WHC, to G. D. Johnson; et. al,
WHC, "40 Day Deliverable for Tank 241-SY-103", dated July
14, 1994.

(2) WHC-SD-WM-TP-197, Rev. 0, "Tank 241-SY-103 Tank
Characterization Plan", Westinghouse Hanford Company,
Richland, WA 99352, dated May 5, 1994.

Preliminary differential scanning calorimetry (DSC) and thermal gravimetric analysis (TGA) data were reported in reference (1). This report is the final report for the SY-103 auger sample characterization effort; some of the data reported earlier may have changed. A copy of the hot cell work plan, chain of custody forms, extruded segment description sheets, and photographs of the extruded augers were also included in Reference (1). The final DSC, TGA, total organic carbon (TOC), and total inorganic carbon (TIC) data, and the DSC and TGA scans and analytical cards, are reported here.

SY-103 Analytical Summary

Auger samples from double shell tank 241-SY-103 were extruded, broken down, and analyzed for DSC, TGA, TIC, and TOC as prescribed in Reference (2) except where noted below.

All analytical data are reported in tables 1, 2, and 3. No action limits were exceeded for any samples from any of the three risers, and no exotherms were observed in any of the DSC scans. Percent moisture results as determined by TGA varied from 8.02% from riser 7B to 33.21% from riser 14A. The TIC results were slightly more consistent from riser to riser, ranging from 7.00E 03 ug C/g from riser 22A to 2.00E 04 ug C/g from riser 14A. Finally, the TOC results were more consistent yet, ranging from 6.39E 03 ug C/g from riser 22A to 1.23E 04 ug C/g from riser 14A.

Standard recoveries were very good; the lowest was 90% and the highest was 105.1%. Analytical precision, as measured by the relative percent difference (RPD) of duplicate analysis, was generally good, although the Tank Characterization Plan (TCP) acceptance criteria was exceeded in several instances. Spike recoveries for TIC and TOC analyses were poor. Both of these problems were attributed to poor sample homogeneity that was noted by the chemists.

Sample Receipt and Extrusion

SY-103 Riser 7B

One 10 inch auger sample was removed from riser 7B of tank SY-103 on 6/8/94 at 1300 hours. The sample was shipped to the 222-S Laboratory on 6/9/94 at 1245 hours. The time of sample receipt was not noted on the chain of custody form. Loading and extrusion of the sample in the hot cell took place on 6/9/94. No problems were noted in extruding the auger sample.

This auger contained hard, dry, brittle crust material on flutes 1-4 and 6 ranging in color from white to light gray. It was noted that this material was different in texture than material from the remaining two augers described below. A 10 inch auger has 8 flutes. The flutes are numbered such that flute 1 begins at the auger shaft and flute 8 ends at the tip of the auger bit. No solid or liquid sample was found in the liner or auger sleeve. Some sample material did fall onto the sample tray while the auger was being placed on its stand. A total of 10.69g of sample was collected. Two subsamples were removed for DSC/TGA analysis: subsample A from the material on the extrusion tray and subsample B from the auger. This is a correction to Reference (1). The remaining material was collected in a jar (composite sample) and used for TIC/TOC analysis.

SY-103 Riser 14A

One 10 inch auger sample was removed from riser 14A of tank SY-103 on 6/6/94 at 1400 hours. The sample was shipped to the 222-S Laboratory on 6/7/94 at 0945 hours and received on 6/7/94 at 1035 hours. Loading and extrusion of the sample in the hot cell took place on 6/7/94. No problems were noted in extruding the auger.

About 95% of the white to light brown crust material of this auger was present on flute 2. Smaller amounts of material were also present on flutes 1 and 3. A total of 9.05g of material was collected. No sample was present in the liner or auger sleeve, although some sample material fell off the auger onto the sample tray when the auger assembly was slipped into position. Two subsamples were removed for DSC/TGA analysis: subsample A from the white caulk-like material on flute 2, and subsample B from the material on the sample tray. Remaining material was collected in a jar (composite sample) and used for TIC/TOC analysis.

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SY-103 Riser 22A

One 10 inch auger sample was removed from riser 22A of tank SY-103 on 6/2/94 at 1530 hours. The sample was shipped to the 222-S Laboratory on 6/3/94 at 1000 hours and received on 6/3/94 at 1015 hours. Loading and extrusion of the sample in the hot cell took place on 6/7/94. There was some difficulty in removing the auger from the sleeve due to a kinked bounding spring.

Extrusion yielded a total of 20.51g of sample. No solid material was observed in the liner or auger sleeve, although 4 to 5 mL of liquid was present in the liner and was not recovered. White, crusty material was removed from flutes 1-3; white and dark brown material from flute 4; and dark brown material from flutes 5-8. White material was subsampled for DSC/TGA analyses from flutes 2 (subsample A) and 3 (subsample B); dark material was subsampled from flutes 6 (subsample C) and 7 (subsample D). Remaining white crust material was collected from flutes 1-3 (composite 1) and remaining dark brown material was collected from flutes 4-8 (composite 2). These two subsamples were used for TIC/TOC analyses.

Analytical ResultsTGA (Moisture Content)

Weight percent water by TGA was performed using procedure LA-560-112, Rev. A-1. Standard recoveries were very good ranging from 95.9% to 102.2%. The duplicate precision acceptance criteria of 20% was achieved with the exception of subsample B from riser 7B, which shows a RPD of 39.3%. This sample was re-run once. The project coordinator, quality control representative, and chemist agreed that further re-runs would likely not improve the precision of the results due to sample heterogeneity and the small sample size required.

As shown in tables 1, 2, and 3, the TGA results varied by a factor of about four, ranging from a low value of 8.02% for the riser 7B sample that fell onto the sample tray, to a high value of 33.21% for subsample A from riser 14A. Subsample B from riser 7B was slightly more moist with an average moisture of 14.89%. Low moisture in the riser 7B samples was not surprising given the dry, brittle nature of the sample as described above. The remaining samples contained moisture in the 24-35% range.

DSC (Energetics Content)

Analyses for DSC were performed using procedure LA-514-113, Rev B-0 and were run under nitrogen gas. The results are presented in tables 1, 2, and 3. Standard recoveries were very good ranging from 100.2% to 105.1%. No

analytical problems were noted and in no case were any exotherms observed in any of the samples.

TIC/TOC (Carbon Content)

Analyses for TIC and TOC were both performed according to procedure LA-342-100, Rev. A-0. Standard recoveries were good. Results of the TIC/TOC measurement are reported in ug of carbon (C) per gram of sample. This appears to be an exception to the TCP, which lists the analyte as CO₃ and requests units of ug/g.

Initial TIC and TOC analyses of samples from risers 7B and 14A yielded spike recoveries and RPD values in excess of the TCP acceptance criteria. The chemist noted that the sample was visually heterogeneous and therefore used a larger aliquot for analysis than normal. For that reason the method upper detection limit was exceeded and the samples from risers 7B and 14A were re-run using a smaller sample size and without a spike. The RPD for the riser 14A sample that was re-run was acceptable while the riser 7B re-run sample had an improved RPD value, albeit greater than 20%. The sample was not re-run again.

Similar problems were encountered for the two TIC/TOC samples from riser 22A. Table 3 shows that some of the RPD and spike recovery results are beyond the TCP acceptance criteria. Again, this has been attributed to visually heterogeneous samples and sample carbon content above the upper method detection limit. The sample was not re-run since a smaller sample size would be less representative and would not be expected to improve precision or spike recovery results.

Kevin Bell, Project Coordinator
Program Support

kb

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SAMPLE DATA SUMMARY

Table 1

136 Day Deliverable Summary Table For Tank 241-SY-103 Auger Sample - Riser 7B.

Riser 7B, Subsample A: Flutes 1, 2, 3, 4, and 6

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
DSC (cal/g)	R5398	>586 J/g (dry)	103.0	NA	NO EXO	NO EXO	NA	NA	NA	NA
TGA (% water)	R5398	NA	95.9	NA	8.02	8.56	8.29	6.51	NA	NA

Riser 7B, Subsample B: Flutes 1, 2, 3, 4, and 6

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
DSC (cal/g)	R5399	>586 J/g (dry)	102.3	NA	NO EXO	NO EXO	NA	NA	NA	NA
TGA (% water)	R5399	NA	98.5	NA	11.96	17.82	14.89	39.3	NA	NA

Riser 7B, Composite: Flutes 1, 2, 3, 4, and 6

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
TIC (ug C/g)	R5430	NA	94.6	4.30 ug C	2.25 E+04	3.13 E+04	2.69 E+04	32.7	NA	4.00 E+02
TOC (ug C/g)	R5430	>3.00 E+04 (ug C/g)	90.0	17.60 ug C	1.00 E+04	7.70 E+03	8.85 E+03	26.0	NA	4.00 E+02

ICP Acceptance Criteria Exceeded

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Table 2

136 Day Deliverable Summary Table For Tank 241-SY-103 Auger Sample - Riser 14A.

Riser 14A, Subsample A: Flute 2

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
DSC (cal/g)	R5376	>586 J/g (dry)	100.8	NA	NO EXO	NO EXO	NA	NA	NA	NA
TGA (% water)	R5376	NA	98.1	NA	33.21	33.52	33.36	0.93	NA	NA

Riser 14A, Subsample B: Flute 2

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
DSC (cal/g)	R5377	>586 J/g (dry)	100.2	NA	NO EXO	NO EXO	NA	NA	NA	NA
TGA (% water)	R5377	NA	98.4	NA	30.85	31.95	31.40	3.50	NA	NA

Riser 14A, Composite: Flute 2

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
TIC (ug C/g)	R5429	NA	94.6	4.30 ug C	1.76 E+04	2.00 E+04	1.88 E+04	12.8	NA	4.00 E+02
TOC (ug C/g)	R5429	>3.00 E+04 (ug C/g)	90.0	17.60 ug C	1.23 E+04	1.07 E+04	1.15 E+04	13.9	NA	4.00 E+02

Table 3

136 Day Deliverable Summary Table For Tank 241-SY-103 Auger Sample - Riser 22A.

Riser 22A, Subsample A: Flute 2

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
DSC (cal/g)	R5372	>586 J/g (dry)	105.1	NA	NO EXO	NO EXO	NA	NA	NA	NA
TGA (% water)	R5372	NA	102.2	NA	11.37	11.98	11.67	5.23	NA	NA

Riser 22A, Subsample B: Flute 3

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
DSC (cal/g)	R5373	>586 J/g (dry)	105.1	NA	NO EXO	NA	NA	NA	NA	NA
DSC (cal/g)	R5373	>586 J/g (dry)	105.1	NA	NA	NO EXO	NA	NA	NA	NA
TGA (% water)	R5373	NA	98.1	NA	24.04	23.61	23.82	1.80	NA	NA

Riser 22A, Subsample C: Flute 6

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
DSC (cal/g)	R5374	>586 J/g (dry)	105.1	NA	NO EXO	NO EXO	NA	NA	NA	NA
TGA (% water)	R5374	NA	98.1	NA	26.84	23.93	25.38	1.80	NA	NA

Riser 22A, Subsample D: Flute 7

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
DSC (cal/g)	R5375	>586 J/g (dry)	100.8	NA	NO EXO	NO EXO	NA	NA	NA	NA
TGA (% water)	R5375	NA	98.1	NA	26.29	24.77	25.53	5.95	NA	NA

Riser 22A, Composite 1: Flutes 1-3

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
TIC (ug C/g)	R5425	NA	100.0	3.40 ug C	8.19 E+03	7.00 E+03	7.60 E+03	15.7	~183.0	4.00 E+02
TOC (ug C/g)	R5425	>3.00 E+04 (ug C/g)	95.0	27.1 ug C	1.03 E+04	6.39 E+03	8.34 E+03	~46.9	91.0	4.00 E+02

Riser 22A, Composite 2: Flutes 4-8

Analysis (units)	Lab ID #	Notification Limits	Std Recovery (%)	Prep Blank	Sample	Duplicate	Mean	RPD (%)	Spike Rec. (%)	Det. Limit
TIC (ug C/g)	R5426	NA	100.0	3.40 ug C	1.11 E+04	1.52 E+04	1.32 E+04	~31.2	~230.0	4.00 E+02
TOC (ug C/g)	R5426	>3.00 E+04 (ug C/g)	95.0	27.1 ug C	9.46 E+03	7.47 E+03	8.47 E+03	~26.0	~60.7	4.00 E+02

~ TCP Laboratory Acceptance Criteria Exceeded

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DSC/TGA ANALYSES-DIRECT

REV 0

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Batch 3644

Serial No. <i>R 5371.-5511</i>	Sample Point <i>SY-103</i>	Date <i>6-8-94</i>	Time Issued <i>11:17</i>	Priority <i>1R</i>
Determination <i>DSC</i>	Method Standard <i>LA-514-113</i>	Result Units <i>% RECOVERY</i>	Charge Code <i>N4C7D</i>	Reruns <i>0</i>
Sample Size <i>? 6.559 mg</i>			Customer ID <i>STD</i>	
Remarks, Calculations, Results <i>Run all SY-103 DSC with a 1/2 purge</i> <i>Value 28.45 g/g</i> <i>Result 29.9 g/g</i> <i>TORC . 105.1 g</i>				
Analyst - 1 <i>[Signature]</i>		Analyst - 4 <i>[Signature]</i>		Analyst - 5 <i>[Signature]</i>
Hrs		Hrs		Hrs
Date <i>6-12-94</i>		Time Completed <i>6:30</i>		Lab Unit Mgr <i>[Signature]</i>

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Serial No. - <i>R 5372.-5711</i>	Sample Point <i>SY-103</i>	Date <i>6-8-94</i>	Time Issued <i>11:21</i>	Priority <i>1R</i>
Determination <i>DSC</i>	Method Standard <i>LA-514-113</i>	Result Units <i>EXOTHERMS</i>	Charge Code <i>N4C7D</i>	Reruns <i>0</i>
Sample Size <i>? 22.448 mg</i>			Customer ID <i>R22AF2</i>	
Remarks, Calculations, Results <i>No exo therms</i>				
Analyst - 1 <i>[Signature]</i>		Analyst - 4 <i>[Signature]</i>		Analyst - 5 <i>[Signature]</i>
Hrs		Hrs		Hrs
Date <i>6-12-94</i>		Time Completed <i>0730</i>		Lab Unit Mgr <i>[Signature]</i>

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Serial No.	Sample Point	Date	Time Issued	Priority
R 5372.-5811	SY-103	6- 8-94	11:21	18
Determination	Method: Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	N4C7D	0
Sample Size	Customer ID			
? 17.843 mg	R22AF2			
Remarks, Calculations, Results				
DUPLICATE SAMPLE				
No Exotherms				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
6-12-94	6770	J. M. Luyke	Chen	

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Serial No.	Sample Point	Date	Time Issued	Priority
R 5373.-5711	SY-103	6- 8-94	11:23	18
Determination	Method: Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	N4C7D	0
Sample Size	Customer ID			
? 13.83 ~ mg	R22AF3			
Remarks, Calculations, Results				
No exotherms				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
6-12-94	6730	J. M. Luyke	Chen	

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Serial No. 2.8839.-9230	Sample Point SHIFT STD'S	Date 6-1-94	Time Issued 8:16	Priority 26
Determination DEC	Method Standard LA-514-113	Result Units EXOTHERMS	Charge Code STD	Reruns 0
Sample Size ? 6.69 ml			Customer ID	
Remarks, Calculations, Results: R230 INDIUM STD# 12N14A RESULT 28.7 g/g STD VAL 28.45 g/g %REC 100.8%
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6-21-94		Time Completed 0730	Lab Unit Mgr J.M. Luge

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Serial No. R 5373.-5811	Sample Point SY-103	Date 6-8-94	Time Issued 11:23	Priority 18
Determination LSC	Method Standard LA-514-113	Result Units EXOTHERMS	Charge Code N4C7D	Reruns 0
Sample Size ? 15.865 mg 7/12/95			Customer ID R22AF3	
Remarks, Calculations, Results: DUPLICATE SAMPLE No exotherms
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6-13-94		Time Completed 0730	Lab Unit Mgr J.M. Luge

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Serial No.	Sample Point	Date	Time Issued	Priority
R 5374.-5711	SY-103	6-8-94	11:23	18
Determination	Method: Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	N4C7D	0
Sample Size	Customer ID			
? 22.573 mg	R22AF6			
Remarks, Calculations, Results				
No exotherms

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
6-13-94	0700	J. M. Furr

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Serial No.	Sample Point	Date	Time Issued	Priority
R 5374.-5811	SY-103	6-8-94	11:23	18
Determination	Method: Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	N4C7D	0
Sample Size	Customer ID			
21.927 mg	R22AF6			
Remarks, Calculations, Results				
DUPLICATE SAMPLE				
No exotherms

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date	Time Completed	Lab Unit Mgr		
6-13-94	670	J. M. Furr

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Serial No.	Sample Point	Date	Time Issued	Priority
S 8829.-9230	SHIFT STD'S	6- 1-94	8:16	26
Determination	Method Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	STD	0
Sample Size	Customer ID			
? ^{ows} 17.094 6.465 mg 7 m ¹ 1/12/95	D-SHIFT			
Remarks, Calculations, Results				
R230 INDIUM				
STD# 2408A RESULT 29.9 g				
STD VAL 28.45 g %REC 105.1%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr		
6-13-94	6730	J. M. Lutz Teste Dion		

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Serial No.	Sample Point	Date	Time Issued	Priority
R 5375.-5711	SY-103	6- 8-94	11:24	12
Determination	Method Standard	Result Units	Charge Code	Reruns
DSC	LA-514-113	EXOTHERMS	N4C7D	0
Sample Size	Customer ID			
? 23.001 mg	R22A37			
Remarks, Calculations, Results				
No Exotherms

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr		
6-21-94	0730	J. M. Lutz		

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Serial No	Sample Point	Date	Time Issued	Priority			
R 5375.-5811	SY-103	6- 8-94	11:24	18			
Determination	Method Standard	Result Units	Charge Code	Reruns			
DSC	LA-514-113	EXOTHERMS	N4C7D	0			
Sample Size	Customer ID						
? 23.015 mg 7.11/12/95	R22AF7						
Remarks, Calculations, Results							
DUPLICATE SAMPLE							
No Exotherms							
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5			
Hrs	Hrs	Hrs	Hrs	Hrs			
Date	Time Completed	Lab Unit Mgr					
6-21-94	0730	J. M. Luy	PWS				

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Serial No-	Sample Point	Date	Time Issued	Priority			
R 5376.-5711	SY-103	6- 8-94	11:25	18			
Determination	Method Standard	Result Units	Charge Code	Reruns			
DSC	LA-514-113	EXOTHERMS	N4C7D	0			
Sample Size	Customer ID						
? 23.249 mg	R14AF2A						
Remarks, Calculations, Results							
No Exotherms							
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5			
Hrs	Hrs	Hrs	Hrs	Hrs			
Date	Time Completed	Lab Unit Mgr					
6-21-94	0730	J. M. Luy	PWS				

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Serial No.	Sample Point	Date	Time Issued	Priority
R 5376.-5811	SY-103	6- 8-94	11:25	18
Determination	Method/Standard	Result Units	Charge Code	Repeats
DSC	LA-514-113	EXOTHERMS	N4C7D	0
Sample Size	Customer ID			
? 23.183 mg JMF 1/12/95	R14AF2A			
Remarks, Calculations, Results:				
DUPLICATE SAMPLE				
No Exo Thems				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date				
6-21-94	Time Completed	Lab Unit Mgr		
	0730	J.M. Luyt R.H. S...		

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R5371-112

6.559 mg

Rate: 10.0 °C/min

File: 00087.001 DSC METTLER 11-Jun-94

Ident: 0.0 222-S Laboratory

exo v

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Integration

Endo H 139 mJ

29.9 J/g

Peak 159.1 °C

-14.5 mW

20. mW

WHC-SD-WM-DP-073
REV 0

Robert W. Schneider
For David W Smith
10-7-94

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 19 TO 31.

H5372-112
22.418 mg

Rate: 10.0 °C/min

File: 00088.001 DSC METTLER 11-Jun-94
Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

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File: 00089.001 DSC METTLER 12-Jun-94
Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

H5372 DUP-112
17.883 mg

WHC-SD-WM-DP-073
REV 0

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EXO

20. MW

°C

R5373-N2
13.882 mg

Rate: 10.0 °C/min

File: 00090.001 DSC NETTLER 12-Jun-94
Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

dsc std-M2

6.465 mg

File: 00008.001 DSC NETTLER 13-Jun-94
Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

exo v

Integration
Delta H 193 mJ
Peak 180.4 °C
-13.8 mW

WHC-SD-WM-DP-073
REV 0

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20. MW

°C

180.

160.

140.

120.

23

85373-112
15.865 mg

Rate: 10.0 °C/min

File: 00009.001 DSC METTLER 13-Jun-94
Ident: 0.0 222-S Laboratory

exo

20. MW

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WHC-SD-WM-DP-073
REV 0

R5374-N2
22.573 mg

Rate: 10.0 °C/min

File: 00010.001 DSC METTLER 13-Jun-91
Ident: 0.0 222-S Laboratory

exo

20. mV

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WHC-SD-WM-DP-073
REV 0

R5374 DUP-N2
21.923 mg

File: 00011.001 DSC METTLER 13-Jun-94
Ident: 0.0 222-S laboratory

Rate: 10.0 °C/min

WHC-SD-WM-DP-073
REV 0

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100. 200. 300. 400. °C

DSC STD-N2

5.690 mg

File: 00041.001 DSC METTLER 20-Jun-94
Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

20. mW

Integration

Delta H 192 mJ

28.7 J/g

Peak 158.1 °C

-13.3 mW

BEST AVAILABLE COPY

400.

420.

440.

R

22
27
56/6/94

R5375-02
23.001 mg

Rate: 10.0 °C/min

File: 00042.001 DSC METTLER 20-JUN-94
Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

BEST AVAILABLE COPY

R5375 DUP-112

23.015 mg

Rate: 10.0 °C/min

File: 00043.001 DSC METTLER 20-Jun-94

Ident: 0.0 222-S Laboratory

OXO

20. MW

WHC-SD-WM-DP-073
REV 0

BEST AVAILABLE COPY

52

300.

400.

500.

600.

700.

K

R5376-112
23.249 mg

Rate: 10.0 °C/min

File: 00044.001 DSC METTLER 20-Jun-94
Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

R5376 DUD-N2
23.183 mg

Rate: 10.0 °C/min

File: 000-5.001 DSC METTLER 20-Jun-94
Ident: 0.0 222-S Laboratory

exo

WHC-SD-WM-DP-073
REV 0

BEST AVAILABLE COPY

300. 400. 500. 600. 700. K

#3645

0A
.5

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SO-WM-OP-073

REV 0

ANALYTICAL BATCH

Lab Segment Serial No. R 5377	Customer ID: R14AF2B
Analysis: DSC	Sample Prep: DIRECT

Instrument: WC16134, WC16129	Procedure/ Rev: LA-514-113 B-0
Technologist: KL VOGEL <i>KL Vogel</i>	Date: 06/25/94
Starting Time: 0730	Temperature 25
Ending Time: 1530	Chemist: J. FRYE

Comments: _____

#	Description	Lab ID	#	Description	Lab ID
1	LMCS STD	R 5378-5511	11		
2	SAMPLE	R 5377-5711	12		
3	SAMPLE DUPLICATE	R 5377-5811	13		
4			14		
5			15		
6			16		
7			17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	12N14A 6.690 mg			

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Batch 3645

Serial No	Sample Point	Date	Time Issued	Priority			
R 5378.-5511	SY-103	6- 8-94	11:28	18			
Determination	Method Standard	Result Units	Charge Code	Reruns			
DSC	LA-514-113	% RECOVERY	N4C7D	0			
Sample Size	Customer ID						
76.690 mg	STD						
Remarks, Calculations, Results							
<p>Indium #12N14A</p> <p>Value: 28.45 g/g</p> <p>Result: 28.5 g/g</p> <p>% Rec.: 100.2 g/g</p> <p>6-25-94</p> <p>BEST AVAILABLE COPY</p>							
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5			
Hrs	Hrs	Hrs	Hrs	Hrs			
		Rakete		R. Jones			
Date	Time Completed	Lab Unit Mgr					
6/25/94	1530	J. M. Jurek	R. Jones				

Serial No	Sample Point	Date	Time Issued	Priority			
R 5377.-5711	SY-103	6- 8-94	11:26	18			
Determination	Method Standard	Result Units	Charge Code	Reruns			
DSC	LA-514-113	EXOTHERMS	N4C7D	0			
Sample Size	Customer ID						
72.447 mg	R14AF2B						
Remarks, Calculations, Results							
No exotherms							
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5			
Hrs	Hrs	Hrs	Hrs	Hrs			
		Rakete					
Date	Time Completed	Lab Unit Mgr					
6/25/94	1530	J. M. Jurek	R. Jones				

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Serial No.	Sample Point	Date	Time Issued	Priority				
R 5377.-5811	SY-103	6- 8-94	11:26	18				
Determination	Method/Standard	Result Units	Charge Code	Reruns				
DSC	LA-514-113	EXOTHERMS	N4C7D	0				
Sample Size	Customer ID							
? 15.778 mg	R14AF2B							
Remarks, Calculations, Results								
DUPLICATE SAMPLE								
No Exotherms								
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5				
<i>Alvord</i>								
Hrs	Hrs	Hrs	Hrs	Hrs				
		<i>Rakita</i>						
Date	Time Completed	Lab Unit Mgr						
6/25/94	1530	<i>J. M. Lutz</i>	<i>R. Jones</i>					

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DSC STD 12/11/47 901F 1/12/94 File: 00056.001 DSC METTLER 24-Jun-94
6.690 mg Rate: 10.0 °C/min Ident: 0.0 222-S Laboratory

exo >

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20. mW

Integration
Delta H 190 mJ
28.5 J/g
Peak 156.9 °C
-13.9 mW

Robert W. Schneider
For kit vogel

10-7-94

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 35 TO 37.

WHC-SD-WM-DP-073
REV 0

120. 140. 160. 180. °C

R5377-5711

12.447 mg

Rate: 10.0 °C/min

File: 00058.001 DSC METTLER 24-Jun-94

Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

exo >

20. mW

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100. 200. 300. 400. °C

R5377-5811

15.778 mg

Rate: 10.0 °C/min

File: 00060.001

Ident: 0.0

DSC METTLER

24-Jun-94

222-S Laboratory

WHC-SD-WM-DP-073
REV 0

exo >

20. mW

BEST AVAILABLE COPY

100. 200. 300. 400. °C

WESTINGHOUSE HANFORD COMPANY

WHC-SO-WM-DP-073

222-S LABORATORY

REV 0

ANALYTICAL BATCH

Lab Segment Serial No. R 5398	Customer ID: R7B-A
Analysis: DSC	Sample Prep: DIRECT

Instrument: WC16134, WC16129	Procedure/ Rev: LA-514-113 B-1 B-1 ^{RWS} 10-7-94
Technologist: KL VOGEL	Date: 07/14/94
Starting Time: 0015	Temperature 23
Ending Time: 0730	Chemist: J. FRYE

Comments: _____

	Description	Lab ID		Description	Lab ID
1	STD	R 5397-5511	11		
2	SAMPLE	R 5398-5711	12		
3	SAMPLE DUP	R 5398-5811	13		
4			14		
5			15		
6			16		
7			17		
8			18		
9			19		
10			20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	12N14A 6.680 mg			

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

BATCH # 4020

Serial No R 5397.-5511	Sample Point SY-103	Date RERUN 6-10-94	Time Issued 8:58	Priority 18
Determination DSC	Method/Standard LA-514-113	Result Units % RECOVERY	Charge Code N4C7D	Reruns 1
Sample Size ? 6.680 mg			Customer ID STD	
Remarks, Calculations, Results: 12N14A Value: 28.45 g/g Result: 29.3 g/g % Rec: 103.0% BEST AVAILABLE COPY				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
		<i>[Signature]</i>		<i>[Signature]</i>
Date 7/14/94	Time Completed 0730	Lab Unit Mgr <i>[Signature]</i>		

Serial No R 5398.-5711	Sample Point SY-103	Date RERUN 6-10-94	Time Issued 9: 1	Priority 18
Determination DSC	Method/Standard LA-514-113	Result Units EXOTHERMS	Charge Code N4C7D	Reruns 1
Sample Size ? 12.817mg			Customer ID R7B-A	
Remarks, Calculations, Results: No exotherms				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
		<i>[Signature]</i>		
Date 7/14/94	Time Completed 0730	Lab Unit Mgr <i>[Signature]</i>		

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Serial No. R 5398.-5811	Sample Point SY-103	Date 6-10-94	Time Issued 9: 1	Priority 18
Determination DSC	Method/Standard LA-514-113	Result Units EXOTHERMS	Charge Code N4C7D	Reruns 1
Sample Size ? 13.602mg			Customer ID R7B-A	
Remarks, Calculations, Results: DUPLICATE SAMPLE No exotherms RUSH				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7/14/94	Time Completed 0730	Lab Unit Mgr <i>[Signature]</i>		

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DSC STD 12N14A JMF 1/12/95-
6.680 mg Rate: 10.0 °C/min

File: 00142.001 DSC METTLER 13-Jul-94
Ident: 0.0 222-S Laboratory

exo >

BEST AVAILABLE COPY

5. MW

WHC-SD-WM-DP-073
REV 0

Robert W. Schneider
For Kit Vogel
10-7-94

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 41 TO 43.

120. 140. 160. 180. °C

R5398-5811
13.602 mg

Rate: 10.0 °C/min

File: 00145.001 DSC METTLER 13-Jul-94
Ident: 0.0 222-S Laboratory

exo >

10. mW

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WHC-SD-WM-DP-073
REV 0

100. 200. 300. 400. °C

R5398-5711

12.817 mg

Rate: 10.0 °C/min

File: 00143.001

DSC METTLER 13-Jul-94

Ident: 0.0 222-S Laboratory

exo >

10. mW

WHC-SO-WM-DP-073
REV 0

BEST AVAILABLE COPY

100. 200. 300. 400. °C

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

WHC-SD-WM-DP-073

REV 0

Lab Segment Serial No.

R 5398 - R 5399

Customer ID:

R7B-A, R7B-B

Analysis:

DSC

Sample Prep:

DIRECT

Instrument: WC16134, WC16129

Procedure/ Rev: LA-514-113 B-0

Technologist: KL VOGEL

Date: 06/14/94

Starting Time: 0000

Temperature 25

Ending Time: 0730

Chemist: J. FRYE

Comments:

	Description	Lab ID
1	LMCS STD	R 5397-5511
2	SAMPLE	R 5398-5711
3	SAMPLE DUPLICATE	R 5398-5811
4	SAMPLE	R 5399-5711
5	SAMPLE DUPLICATE	R 5399-5811
6		
7		
8		
9		
10		

	Description	Lab ID
11		
12	OUT FOR RERUN OUT FOR RERUN	
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	12N14A 6.465 mg			

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Batch 3663

Serial No R 5397.-5511	Sample Point SY-103	Date 6-10-94	Time Issued 8:58	Priority 18
Determination DSC	Method: Standard LA-514-113	Result Units % RECOVERY	Charge Code N4C7D	Reruns 0
Sample Size ? 6.465 mg			Customer ID STD	
Remarks, Calculations, Results Value: 28.452/g Result: 29.12/g % Recovery: 102.3%				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6/14/94	Time Completed	Lab Unit Mgr <i>[Signature]</i>	<i>[Signature]</i>	

Serial No R 5398.-5711	Sample Point SY-103	Date 6-10-94	Time Issued 9:1	Priority 18
Determination DSC	Method: Standard LA-514-113	Result Units EXOTHERMS	Charge Code N4C7D	Reruns 0
Sample Size ? 16.315 mg			Customer ID R7B-A	
Remarks, Calculations, Results No exo Thms BEST AVAILABLE COPY <i>Ne</i>				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6/14/94	Time Completed	Lab Unit Mgr <i>[Signature]</i>	<i>[Signature]</i>	

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Serial No. R 5398.-5811	Sample Point SY-103	Date 6-10-94	Time Issued 9: 1	Priority 18
Determination DSC	Method Standard LA-514-113	Result Units EXOTHERMS	Charge Code N4C7D	Reruns 0
Sample Size ? 14.804 mg			Customer ID R7B-A	
Remarks, Calculations, Results DUPLICATE SAMPLE <i>No exotherms</i> <i>N₂</i>				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6/14/94	Time Completed	Lab Unit Mgr <i>[Signature]</i>		<i>[Signature]</i>

Serial No. R 5399.-5711	Sample Point SY-103	Date 6-10-94	Time Issued 9: 4	Priority 18
Determination DSC	Method Standard LA-514-113	Result Units EXOTHERMS	Charge Code N4C7D	Reruns 0
Sample Size ? 15.975 mg			Customer ID R7B-B	
Remarks, Calculations, Results <i>No exotherms</i> BEST AVAILABLE COPY <i>N₂</i>				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6/14/94	Time Completed	Lab Unit Mgr <i>[Signature]</i>		<i>[Signature]</i>

DIFFERENTIAL SCANNING CALORIMETRY ANALYSIS - DIRECT

Serial No. - R 5399.-5811	Sample Point SY-103	Date 6-10-94	Time Issued 9: 4	Priority 18
Determination DSC	Method-Standard LA-514-113	Result Units EXOTHERMS	Charge Code N4C7D	Reruns 0
Sample Size ? 17.870 mg			Customer ID R7B-B	
Remarks, Calculations, Results DUPLICATE SAMPLE No exotherms Nc				
Analyst - 1 <i>[Signature]</i> Hrs	Analyst - 2 Hrs	Analyst - 3 <i>[Signature]</i> Hrs	Analyst - 4 Hrs	Analyst - 5 Hrs
Date 6/14/94	Time Completed 0720	Lab Unit Mgr <i>[Signature]</i>		

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dsc std--N2

6.465 mg

Rate: 10.0 °C/min

File: 00008.001

DSC METTLER

13-Jun-94

Ident: 0.0

222-S Laboratory

exo

BEST AVAILABLE COPY

20. mW

Integration
Delta H 188 mJ
29.1 J/g
Peak 159.4 °C
-13.7 mW

Robert W. Schneider
For Kit+Vogel
10-7-94

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED, THE CALIBRATION/ANALYSIS ON PAGES 48 TO 52.

120.

140.

160.

180.

°C

WHC-SD-WM-DP-073
REV 0

R5398-5711

16.315 mg

File: 00014.001 DSC METTLER 13-JUN-94

Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

exo >

20. mW

BEST AVAILABLE COPY

WHC-SD-WM-DP-073
REV 0

R5398-5811

14.804 mg

Rate: 10.0 °C/min

File: 00016.001

DSC METTLER

13-Jun-94

Ident: 0.0 222-S Laboratory

WHC-SO-WM-DP-073
REV 0

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R5399-5711

15.975 mg

File: 00017.001 DSC METTLER 13-Jun-94

Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

EXOV

20. MW

WHC-SD-WM-DP-073
REV 0

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100. 200. 300. 400. °C

R5399-5811

17.870 mg

Rate: 10.0 °C/min

File: 00018.001

DSC METTLER 13-Jun-94

Ident: 0.0 222-S Laboratory

exo

20. mW

WHC-SO-WM-OP-073
REV 0

BEST AVAILABLE COPY

°C

400.

300.

200.

100.

WESTINGHOUSE HANFORD COMPANY

WHC-SO-WM-OP-073

222-S LABORATORY

REV 0

ANALYTICAL BATCH

Lab Segment Serial No.

R5372

Customer ID:

R28AF2

Analysis:

TGA

Sample Prep:

Direct

Instrument: WC 16124 / WC 16129

Procedure/ Rev: 6A-560-112

A1

Technologist: DW Smith - d. W. Smith

Date: ^{Rev 5 10-6-94} 6-30-94

Starting Time: 1130

Temperature

Ending Time: 1530

Chemist: J FRYE

Comments:

	Description	Lab ID
1	LMCS	R5371-5512
2	Sample	R5372-5712
3	Sample Dup	R5372-5812
4		
5		
6		
7		
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	24WBA 14.786 mL			

THERMAL GRAVIMETRIC ANALYSIS - DIRECT

RERUN

Batch 3763

Serial No R 5371.-5512	Sample Point SY-103	Date 6- 8-94	Time Issued 11:17	Priority 18
Determination TGA	Method: Standard LA-560-112	Result Units % RECOVERY	Charge Code N4C7D	Reruns 1
Sample Size ? 14.786 mg			Customer ID STD	
Remarks, Calculations, Results Value 58.25% Result 60.54% % Rec: 102.2% <i>[Signature]</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6-30-94	Time Completed 1530	Lab Unit Mgr <i>[Signature]</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

RERUN

Serial No R 5372.-5812	Sample Point SY-103	Date 6- 8-94	Time Issued 11:21	Priority 18
Determination TGA	Method: Standard LA-560-112	Result Units % H2O	Charge Code N4C7D	Reruns 1
Sample Size ? 21.860 mg			Customer ID R22AF2	
Remarks, Calculations, Results DUPLICATE SAMPLE 11.37% H ₂ O further wt loss 4.49% <i>[Signature]</i>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6-30-94	Time Completed 1530	Lab Unit Mgr <i>[Signature]</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

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THERMAL GRAVIMETRIC ANALYSIS - DIRECT

Serial No					Sample Point		Date		Time Issued		Priority			
R 5372 -5712					SY-103		6-8-94		11-21		1P			
Determination			Method: Standard			Result Units			Charge Code			Reruns		
TGA			LA-560-112			% H ₂ O			N4C7D			1		
Sample Size									Customer ID					
? 18.435 mg									R22AF2					
Remarks, Calculations, Results														
<p>11.98% H₂O, sample continues to lose weight after the water is lost with another step at 200-300°C losing 9.99% more wt.</p> <p><i>[Signature]</i></p>														
Analyst - 1			Analyst - 2			Analyst - 3			Analyst - 4			Analyst - 5		
Mrs			Mrs			Mrs			Mrs			Mrs		
Date			Time Completed			Lab Unit Mgr								
6-30-94			1530			J. M. Faye			<i>[Signature]</i>					

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

R5731-TGA SDT

14.786 mg

Rate: 10.0 °C/min

File: 00075.001

TG METTLER

29-Jun-94

222-S Laboratory

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT

COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 56 TO 58

mg

Step Analysis

Height -8.95 mg

-60.54 %

ResidC. 5.83 mg

39.46 %

Dpeak 85.0°C

WHC-SO-WM-DP-073
REV 0

R. Schneider
For Dave W Smith
10-7-94

R5372-DUP AIR

21.860 mg

Rate: 10.0 °C/min

File: 00077.001 TG METTLER 29-Jun-94

Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

R5372-AIR

18.435 mg

Rate: 10.0 °C/min

File: 00076.001

TG

METTLER

29-Jun-94

Ident: 0.0

222-S Laboratory

Step Analysis

Height -2.21 mg

-11.98 %

Resid. 16.23 mg

88.02 %

Step Analysis

Height -1.84 mg

-9.99 %

Resid. 14.38 mg

78.03 %

Dpeak 253.0 °C

WHC-SO-WM-DP-073

REV 0

WESTINGHOUSE HANFORD COMPANY

WHC-SO-WM-DP-073

222-S LABORATORY

REV 0

ANALYTICAL BATCH

Lab Segment Serial No.

R 5372 - R 5376

Customer ID:

R22AF2.R22AF3.R22AF6.R22AF7.R14AF2A

Analysis:

Sample Prep:

TGA

DIRECT

Instrument: WC16124, WC16129

Procedure/ Rev: LA-560-112 A-1

Technologist: KL VOGEL

Date: 06/17/94

Starting Time: 0000

Temperature 25

Ending Time: 0800

Chemist: J. FRYE

Comments:

	Description	Lab ID
1	LMCS STD	R 5371-5512
2	SAMPLE	R 5372-5712
3	SAMPLE DUP	R 5372-5812
4	SAMPLE	R 5373-5712
5	SAMPLE DUP	R 5373-5812
6	SAMPLE	R 5374-5712
7	SAMPLE DUP	R 5374-5812
8	SAMPLE	R 5375-5712
9	SAMPLE DUP	R 5375-5812
10	SAMPLE	R 5376-5712

	Description	Lab ID
11	SAMPLE DUP	R 5376-5812
	OUT FOR RERUN *	
	OUT FOR RERUN *	
	OUT FOR RERUN *	
	OUT FOR RERUN *	
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	24N8A .010 ML			

Batch 3646

6/20/94

Need to Re-run TGA on R5372 & its
dup. The sample & dup did not
agree well. Rest of Batch is OK.

John M. Lutz

Note the scale on the print out was
accidentally changed to 'K from °C
the results are still ok.

J. M. Lutz

THERMAL GRAVIMETRIC ANALYSIS - DIRECT

Batch 3646

Serial No	Sample Point	Date	Time Issued	Priority			
R 5371.-5512	SY-103	6- 8-94	11:17	18			
Determination	Method: Standard	Result Units	Charge Code	Reruns			
TGA	LA-560-112	% RECOVERY	N4C7D	0			
Sample Size	Customer ID						
? 14.334 mg	STD						
Remarks, Calculations, Results							
24N8A							
98.1% Rec							
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5			
<i>[Signature]</i>							
	Mrs	Mrs	Mrs	Mrs			
		<i>[Signature]</i>		<i>[Signature]</i>			
Date	Time Completed	Lab Unit Mgr					
6/10/94	0800	<i>[Signature]</i>	<i>[Signature]</i>				

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority			
R 5372.-5712	SY-103	6- 8-94	11:21	18			
Determination	Method: Standard	Result Units	Charge Code	Reruns			
TGA	LA-560-112	% H ₂ O	N4C7D	0			
Sample Size	Customer ID						
? 15.967 mg	R22AF2						
Remarks, Calculations, Results							
9.12% H ₂ O							
OUT FOR RERUN							
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5			
<i>[Signature]</i>							
	Mrs	Mrs	Mrs	Mrs			
		<i>[Signature]</i>					
Date	Time Completed	Lab Unit Mgr					
6/17/94	0800	<i>[Signature]</i>	<i>[Signature]</i>				

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

WHC-SD-WM-DP-073
REV 0
THERMAL GRAVIMETRIC ANALYSIS - DIRECT

Serial No	Sample Point	Date	Time Issued	Priority
R 5372.-5812	SY-103	6- 8-94	11:21	18
Determination	Method-Standard	Result Units	Charge Code	Retuns
TGA	LA-560-112	% H ₂ O	N4C7D	0
Sample Size	Customer ID			
? 12.921 mg R22AF2				
Remarks, Calculations, Results DUPLICATE SAMPLE 17.48% H ₂ O OUT FOR RERUN:				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>[Signature]</i>				
Hrs	Hrs	Hrs	Hrs	Hrs
		<i>[Signature]</i>		
Date	Time Completed	Lab Unit Mgr		
6/17/94	0800	<i>[Signature]</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

Serial No.	Sample Point	Date	Time Issued	Priority
R 5373.-5712	SY-103	6- 8-94	11:23	18
Determination	Method-Standard	Result Units	Charge Code	Retuns
TGA	LA-560-112	% H ₂ O	N4C7D	0
Sample Size	Customer ID			
? 11.754 mg R22AF3				
Remarks, Calculations, Results OUT FOR RERUN <i>[Signature]</i> 6-20-94 24.04% H ₂ O				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>[Signature]</i>				
Hrs	Hrs	Hrs	Hrs	Hrs
		<i>[Signature]</i>		
Date	Time Completed	Lab Unit Mgr		
6/17/94	0800	<i>[Signature]</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

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WHC-SO-WM-DP-073
REV 0
THERMAL GRAVIMETRIC ANALYSIS - DIRECT

Serial No	Sample Point	Date	Time Issued	Priority
R 5373.-5812	SY-103	6- 8-94	11:23	18
Determination	Method Standard	Result Units	Charge Code	Reruns
TGA	LA-560-112	% H2O	N4C7D	0
Sample Size	Customer ID			
? 11.567 mg R22AF3				
Remarks, Calculations, Results				
DUPLICATE SAMPLE OUT FOR RERUN 4-20-94				
23.61% H ₂ O				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>[Signature]</i>				
Hrs	Hrs	Hrs	Hrs	Hrs
		<i>[Signature]</i>		
Date	Time Completed	Lab Unit Mgr		
6/17/94	0800	<i>[Signature]</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
R 5374.-5712	SY-103	6- 8-94	11:23	18
Determination	Method Standard	Result Units	Charge Code	Reruns
TGA	LA-560-112	% H2O	N4C7D	0
Sample Size	Customer ID			
? 15.243 mg R22AF6				
Remarks, Calculations, Results				
26.84% H ₂ O				
OUT FOR RERUN 4-20-94				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>[Signature]</i>				
Hrs	Hrs	Hrs	Hrs	Hrs
		<i>[Signature]</i>		
Date	Time Completed	Lab Unit Mgr		
6/17/94	0800	<i>[Signature]</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

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THERMAL GRAVIMETRIC ANALYSIS - DIRECT

Serial No	Sample Point	Date	Time Issued	Priority
R 5374.-5812	SY-103	6- 8-94	11:23	18
Determination	Method-Standard	Result Units	Charge Code	Reruns
TGA	LA-560-112	% H ₂ O	N4C7D	0
Sample Size	Customer ID			
? 12.209mg	R22AF6			
Remarks, Calculations, Results				
DUPLICATE SAMPLE				
23.93% H ₂ O				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>[Signature]</i>				
Hrs	Hrs	Hrs	Hrs	Hrs
		<i>Reck</i>		
Date	Time Completed	Lab Unit Mgr		
6/12/94	0800	<i>J. M. L...</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
R 5375.-5712	SY-103	6- 8-94	11:24	18
Determination	Method-Standard	Result Units	Charge Code	Reruns
TGA	LA-560-112	% H ₂ O	N4C7D	0
Sample Size	Customer ID			
? 7.930mg	R22AF7			
Remarks, Calculations, Results				
24.29% H ₂ O				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>[Signature]</i>				
Hrs	Hrs	Hrs	Hrs	Hrs
		<i>Reck</i>		
Date	Time Completed	Lab Unit Mgr		
6/12/94	0800	<i>J. M. L...</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

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THERMAL GRAVIMETRIC ANALYSIS - DIRECT

Serial No	Sample Point	Date	Time Issued	Priority
R 5375.-5812	SY-103	6- 8-94	11:24	18
Determination	Method Standard	Result Units	Charge Code	Reruns
TGA	LA-560-112	% H ₂ O	N4C7D	0
Sample Size	Customer ID			
? 8.621 mg	R22AF7			
Remarks, Calculations, Results				
DUPLICATE SAMPLE				
24.77% H ₂ O				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>[Signature]</i>				
	Hrs	Hrs	Hrs	Hrs
		<i>Recheck</i>		
Date	Time Completed	Lab Unit Mgr		
6/17/94	0800	<i>J. M. Leger</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
R 5376.-5712	SY-103	6- 8-94	11:25	18
Determination	Method Standard	Result Units	Charge Code	Reruns
TGA	LA-560-112	% H ₂ O	N4C7D	0
Sample Size	Customer ID			
? 8.621 mg <i>7.401 mg</i>	R14AF2A			
Remarks, Calculations, Results				
33.21% H ₂ O				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
<i>[Signature]</i>				
	Hrs	Hrs	Hrs	Hrs
		<i>Recheck</i>		
Date	Time Completed	Lab Unit Mgr		
6/17/94	0800	<i>J. M. Leger</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

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WHC-SD-WM-DP-073

REV 0

THERMAL GRAVIMETRIC ANALYSIS - DIRECT

Serial No	Sample Point	Date	Time Issued	Priority			
R 5376.-5812	SY-103	6- 8-94	11-25	18			
Determination	Method/Standard	Result Units	Charge Code	Retuns			
TGA	LA-560-112	% H ₂ O	N4C7D	0			
Sample Size	Customer ID						
21.92mg	R14AECA						
Remarks Calculations, Results							
DUPLICATE SAMPLE							
33.52 % H ₂ O							
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5			
<i>[Signature]</i>							
Hrs	Hrs	Hrs	Hrs	Hrs			
		<i>Rakto</i>					
Date	Time Completed	Lab Unit Mgr					
6/17/94	0800	<i>J.M. Faye</i>	<i>[Signature]</i>				

54-6800-061 (R-10-83)

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TGA STD

14.334 mg

Rate: 10.0 °C/min

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 67 TO 77.

File: 00029.001 TG METTLER 16-Jun-94

222-S Laboratory

Ident: 0.0

WHC-SD-WM-DP-073
REV 0

Step Analysis

Height -8.33 mg

-58.10 %

Resic. 6.01 mg

41.90 %

Dpeak 85.0 °C

Rabert W. Schneider
For Kit Vogel
10-7-94

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R5372-5712
15.967 mg

Rate: 10.0 °C/min
File: 00030.001 TG METTLER 16-Jun-94
Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

Step Analysis
Height -1.46 mg
-9.12 %
ResidC. 14.51 mg
90.88 %
Dpeak 101.0°C

R5372-5812

12.921 mg

Rate: 10.0 °C/min

File: 00031.001

TG METTLER

16-Jun-94

Ident: 0.0 222-S Laboratory

Step Analysis

Height -2.26 mg

-17.48 %

ResidC. 10.66 mg

82.52 %

Dpeak 65.0 °C

WHC-SD-WM-DP-073
REV 0

R5373-5712

11.754 mg

Rate: 10.0 °C/min

File: 00032.001

TG METTLER

16-Jun-94

Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

Step Analysis
Height -2.83 mg
-24.04 %
Resid. 8.93 mg
75.96 %
Dpeak 79.0 °C

R5373-5812

11.567 mg

Rate: 10.0 °C/min

File: 00033.001 TG METTLER 16-Jun-94
Ident: 0.0 222-S Laboratory

WHC-SO-WM-DP-073
REV 0

Step Analysis

Height -2.73 mg

-23.61 %

Resid. 8.84 mg

76.39 %

Dpeak 77.0 °C

15.243 mg

Rate: 10.0 °C/min

Ident: 0.0 222-S Laboratory

46-111-97

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Step Analysis
Height -4.09 mg
-26.84 %
Resid. 11.15 mg
73.16 %
Dpeak 57.0°C

R5374-5812

12.209 mg

Rate: 10.0 °C/min

File: 00035.001

TG NETTLER

16-Jun-94

Ident: 0.0 222-S Laboratory

R5374

WHC-SO-WM-DP-073

REV 0

Step Analysis
Height -2.92 mg
-23.93 %
Resid. 9.28 mg
75.97 %
Dpeak 113.0 °C

R5375-5712

7.930 mg

Rate: 10.0 °C/min

File: 00036.001 TG METTLER 16-Jun-94

Ident: 0.0 222-S Laboratory

Step Analysis
Height -2.08 mg
-26.29 %
ResidC. 5.85 mg
73.71 %
Dpeak 67.0 °C

WHC-SD-WM-DP-073
REV 0

R5375-5812

8.621 mg

Rate: 10.0 °C/min

File: 00037.001

TG METTLER

16-Jun-94

Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

Step Analysis
Height -2.13 mg
-24.77 %
Resid. 6.49 mg
75.23 %
Dpeak 61.0 °C

File: 00038.001 7G METTLER 17-JUN-94
Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

R5376-5712
7.901 mg

WHC-SD-WM-DP-073
REV 0

Step Analysis
Height -2.62 mg
-33.21 %
Resic. 5.28 mg
66.79 %
Dpeak 79.0 °C

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R5376-5812

11.921 mg

Rate: 10.0 °C/min

File: 00039.001

TG METTLER

17-JUN-94

Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

Step Analysis
Height -4.00 mg
-33.52 %
Resid. 7.92 mg
66.48 %
Dpeak 97.0 °C

BEST AVAILABLE COPY

WHC-SD-WM-DP-073
REV 0

Lab Segment Serial No.

Customer ID:

Analysis:

Sample Prep:

Instrument: WC 16124
WC 16129

Procedure/ Rev: LA-560-112 / A-1

Technologist: R.D. Meyers

Date: 6/13/44

Starting Time: 10:00

Temperature *NA*

Ending Time: 15 30

Chemist: ~~Hert~~ J. Fre

RWS 10-7-94

Comments:

	Description	Lab ID
1	LMCS	R5378.5512
2	Sample	R5377.5712
3	Dup	R5377.5612
4		
5		
6		
7		
8		
9		
10		

[illegible]

THERMAL GRAVIMETRIC ANALYSIS - DIRECT

Batch 3647

Serial No	Sample Point	Date	Time Issued	Priority
R 5378.-5512	SY-103	6- 8-94	11:28	18
Determination	Method: Standard	Result Units	Charge Code	Reruns
TGA	LA-560-112	% RECOVERY	N4C7D	0
Sample Size	Customer ID			
2.010 ml	STD			
Remarks, Calculations, Results				
STD # 24118-A RESULT 58.31 STD VALUE 5.925' % REC 98.41				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
R. Conley				
Mrs	Mrs	Mrs	Mrs	Mrs
Date	Time Completed	Lab Unit Mgr		
6/13/94	1530	J. M. Frye		
RWS 10-7-94				

54-6800-061 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
R 5377.-5712	SY-103	6- 8-94	11:26	18
Determination	Method: Standard	Result Units	Charge Code	Reruns
TGA	LA-560-112	% H2O	N4C7D	0
Sample Size	Customer ID			
3.13 gm 6/13/94	R14AF2B			
Remarks, Calculations, Results				
30.85 % H ₂ O				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
R. Conley				
Mrs	Mrs	Mrs	Mrs	Mrs
Date	Time Completed	Lab Unit Mgr		
6/13/94	1530	J. M. Frye		

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

WHC-SD-WM-DP-073

REV 0

THERMAL GRAVIMETRIC ANALYSIS - DIRECT

Serial No	Sample Point	Date	Time Issued	Priority			
R 5377.-5812	SY-103	6-8-94	11-26	18			
Determination	Method Standard	Result Units	Charge Code	Reruns			
TGA	LA-560-112	% H ₂ O	N4C7D	0			
Sample Size	Customer ID						
210.645 mg	R14AF2B						
Remarks Calculations, Results							
DUPLICATE SAMPLE 34.7% H ₂ O J.M. Faye 6/29/94 31.95% H ₂ O							
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5			
<i>[Signature]</i>							
Mrs	Mrs	Mrs	Mrs	Mrs			
Date	Time Completed	Lab Unit Mgr					
6/13/94	1530	J.M. Faye	<i>[Signature]</i>				
10-7-94 RWS		54-6800-061 (R-10-83)					

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File: 00005.001 TG METTLER 13-Jun-94
Rate: 10.0 °C/min Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

BEST AVAILABLE COPY

Step Analysis
Height -1.02 mg
-30.85 %
Resic. 2.29 mg
69.15 %

P-5377
3.313 mg

R-5377DUP
10.695 mg

Rate: 10.0 °C/min

File: 00007.001 TG METTLER 13-Jun-94
Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

Step Analysis
Height -3.42 mg
-31.95 %
Resid. 7.28 mg
68.05 %
Dpeak 89.0 °C

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WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

WHC-SD-WM-DP-073

REV 0

Lab Segment Serial No.

R 5398

Customer ID:

R7B-A

Analysis:

TGA

Sample Prep:

DIRECT

Instrument: WC16124, WC16129

Procedure/ Rev: LA-560-112 A-1

Technologist: KL VOGEL

Date: 07/14/94

Starting Time: 0015

Temperature 23

Ending Time: 0730

Chemist: J. FRYE

Comments:

	Description	Lab ID
1	STD	R 5397-5512
2	SAMPLE	R 5398-5712
3	SAMPLE DUP	R 5398-5812
4		
5		
6		
7		
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	24N8A .010 ML			

THERMAL GRAVIMETRIC ANALYSIS - DIRECT

RERUN *BATCH # 4019*

Serial No R 5597.-5512	Sample Point SY-103	Time Issued 6-10-94	Priority 8:58	18
Determination TGA	Method Standard LA-560-112	Result Units % RECOVERY	Charge Code N4C7D	Reruns 2
Sample Size 0.010 ml	RUSH			Customer ID STD
Remarks, Calculations, Results: 24N8A Value: 59.25% Result: 56.83% % Rec: 95.9% <div style="text-align: right;">WRT 5184</div>				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7/14/94	Time Completed 0730	Lab Unit Mgr <i>[Signature]</i>	R. G. Jones	

54-5800-061 (R-10-83)

RERUN

Serial No R 5598.-5512	Sample Point SY-103	Time Issued 6-10-94	Priority 9: 1	18
Determination TGA	Method Standard LA-560-112	Result Units % H2O	Charge Code N4C7D	Reruns 1
Sample Size 14.680 mg <i>J.M.F.</i>	RUSH			Customer ID R7B-A
Remarks, Calculations, Results: DUPLICATE SAMPLE 8.56% H ₂ O, 4.09% further weight loss 200-300°C				
Analyst - 1 <i>[Signature]</i>	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7/14/94	Time Completed 0730	Lab Unit Mgr <i>[Signature]</i>	R. G. Jones	

54-5800-061 (R-10-83)

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WHC-SD-WM-DP-073

REV 0

THERMAL GRAVIMETRIC ANALYSIS - DIRECT

Serial No					Sample Point		Time Issued		Priority	
R 6398.-5712					SY-103		8-10-94		9: 1	18
Determination		Method/Standard		Result Units		Charge Code		Reruns		
TGA		LA-560-112		% H ₂ O		N407D		2		
Sample Size					Customer ID					
?					K7B-A					
Remarks, Calculations, Results										
<p style="text-align: center;">RERUN</p> <p>8.02% H₂O , 5.12% second weight loss step from 200 to 300 °C</p> <p style="text-align: center;">RUSH</p>										
Analyst - 1		Analyst - 2		Analyst - 3		Analyst - 4		Analyst - 5		
<i>[Signature]</i>										
Mrs		Mrs		Mrs		Mrs		Mrs		
Date		Time Completed		Lab Unit Mgr						
7/14/94		0730		<i>[Signature]</i> J. M. Lutz <i>[Signature]</i> R. Jones						

54-6800-061 (R-10-83)

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SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 87 TO 89.

TGA STD

13.477 mg

24108A

File: 00135.001

TG METTLER

13-Jul-94

Rate: 10.0 °C/min

Ident: 0.0

222-S Laboratory

WHC-SD-WM-DP-073
REV 0

Step Analysis
Height -7.66 mg
-56.83 %
Resid. 5.82 mg
43.17 %
Dpeak 77.0 °C

Rabert W. Schneider
For Kit Vogel
10-7-94

R5398-5812

14.680 mg

Rate: 10.0 °C/min

File: 00146.001

TG METTLER

13-Jul-94

Ident: 0.0 222-S Laboratory

Step Analysis
Height -1.26 mg
-8.56 %
Resid. 13.42 mg
91.43 %
Dpeak 93.0 °C

Step Analysis
Height -0.60 mg
-4.09 %
Resid. 12.74 mg
86.80 %

1. mg

°C

400.

300.

200.

100.

R5398-5712

18.633 mg

Rate: 10.0 °C/min

File: 00144.001

TG

METTLER

13-Jul-94

Ident: 0.0

222-S Laboratory

WHC-SO-WM-OP-073
REV 0

3813

WESTINGHOUSE HANFORD COMPANY WHC-SO-WM-DP-073

222-S LABORATORY

REV 0

ANALYTICAL BATCH

Lab Segment Serial No. R 5398 - R 5399	Customer ID: R7B-A, R7B-B
Analysis: TGA	Sample Prep: DIRECT

Instrument: WC16124, WC16129	Procedure/ Rev: LA-560-112 A-1
Technologist: KL VOGEL	Date: 06/25/94
Starting Time: 0730	Temperature: 25
Ending Time: 1330	Chemist: J. FRYE

Comments: *R5398 was rerun to redo integration on a file that was lost due to a computer problem. R5399 + Dup were rerun because they did not agree well with each other. They still don't. The sample is not homogeneous. Jane Faye 6/27/94*

	Description	Lab ID
1	LMCS STD	R 5397-5512
2	SAMPLE	R 5398-5712
3	SAMPLE	R 5399-5712
4	SAMPLE DUPLICATE	R 5399-5812
5		
6		
7		
8		
9		
10		

	Description	Lab ID
11		
12	OUT FOR RERUN	
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	24N8A .010 ML			

THERMAL GRAVIMETRIC ANALYSIS - DIRECT

RERUN *Batch 3813*

Serial No. R 5397.-5512	Sample Point SY-103	Date 6-10-94	Time Issued 8:58	Priority 18
Determination TGA	Method/Standard LA-560-112	Result Units % RECOVERY	Charge Code N4C7D	Reruns 1
Sample Size ? .010 ml			Customer ID STD	
Remarks, Calculations, Results <i>Std #24N8A</i> <i>Value 59.25%</i> <i>Result 58.37%</i> <i>% Rec 98.5%</i>				
Analyst - 1 <i>[Signature]</i> Mrs	Analyst - 2 Mrs	Analyst - 3 Mrs	Analyst - 4 Mrs	Analyst - 5 <i>[Signature]</i> Mrs
Date 6/25/94	Time Completed 1530	Lab Unit Mgr <i>[Signature]</i>		

54-6800-061 (R-10-83)

RERUN

Serial No. R 5398.-5712	Sample Point SY-103	Date 6-10-94	Time Issued 9: 1	Priority 18
Determination TGA	Method/Standard LA-560-112	Result Units % H2O	Charge Code N4C7D	Reruns 1
Sample Size ? 17.447 mg			Customer ID R7B-A	
Remarks, Calculations, Results <i>10.71% H₂O with 9.69% further wt. loss</i>				
Analyst - 1 <i>[Signature]</i> Mrs	Analyst - 2 Mrs	Analyst - 3 Mrs	Analyst - 4 Mrs	Analyst - 5 Mrs
Date 6/25/94	Time Completed 1530	Lab Unit Mgr <i>[Signature]</i>		

54-6800-061 (R-10-83)

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THERMAL GRAVIMETRIC ANALYSIS - DIRECT

RERUN

Serial No R 5399.-5712	Sample Point SY-103	Date 6-10-94	Time Issued 9: 4	Priority 18
Determination TGA	Method/Standard LA-560-112	Result Units % H ₂ O	Charge Code N4C7D	Reruns 1
Sample Size 17.964 mg			Customer ID R7E-B	
Remarks, Calculations, Results 11.96% H ₂ O with 6.49% further wt loss				
Analyst - 1 <i>[Signature]</i> Hrs	Analyst - 2 Hrs	Analyst - 3 Hrs	Analyst - 4 Hrs	Analyst - 5 Hrs
Date 6/25/94	Time Completed 1530	Lab Unit Mgr <i>[Signature]</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

RERUN

Serial No R 5399.-5812	Sample Point SY-103	Date 6-10-94	Time Issued 9: 4	Priority 18
Determination TGA	Method/Standard LA-560-112	Result Units % H ₂ O	Charge Code N4C7D	Reruns 1
Sample Size 15.955 mg			Customer ID R7E-B	
Remarks, Calculations, Results DUPLICATE SAMPLE 17.82% H ₂ O with 9.66% further wt loss				
Analyst - 1 <i>[Signature]</i> Hrs	Analyst - 2 Hrs	Analyst - 3 Hrs	Analyst - 4 Hrs	Analyst - 5 Hrs
Date 6/25/94	Time Completed 1530	Lab Unit Mgr <i>[Signature]</i>	<i>[Signature]</i>	

54-6800-061 (R-10-83)

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SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 93 TO 96

TGA STD 24W8A
14.269 mg

Rate: 10.0 °C/min

File: 00057.001
Ident: 0.0

TG METTLER
222-S Laboratory

24-Jun-94

WHC-SD-WM-DP-073
REV 0

Step Analysis
Height -8.33 mg
-58.37 %
ResidC. 5.94 mg
41.63 %
Dpeak 83.0 °C

Robert W. Schneider
For Kit Vogel
10-7-94

R5398-5712

17.447 mg

Rate: 10.0 °C/min

File: 00061.001

TG

METTLER 24-Jun-94

Ident: 0.0

222-S Laboratory

Step Analysis

Height -1.87 mg

-10.71 %

Resid. 15.58 mg

89.29 %

Step Analysis

Height -1.69 mg

-9.69 %

Resid. 13.89 mg

79.60 %

Dpeak 265.0 °C

2. mg

°C

400.

300.

200.

100.

R5399-5712

17.964 mg

Rate: 10.0 °C/min

File: 00062.001 TG METTLER 24-Jun-94
Ident: 0.0 222-S Laboratory

Step Analysis
Height -2.15 mg
-11.96 %
Resid. 15.81 mg
88.04 %

Step Analysis
Height -1.17 mg
-6.49 %
Resid. 14.65 mg
81.55 %
Dpeak 243.0 °C

WHC-SD-WM-DP-073
REV 0

R5399-5812

15.955 mg

Rate: 10.0 °C/min

File: 00063.001 TG METTLER 24-Jun-94
Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-073
REV 0

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

WHC-SD-WM-DP-013, REV. 0Lab Segment Serial No:
R 5428, R 5429, R 5430Customer ID:
BLANK, R14AC1, R7BC1Analysis:
TIC/TOCSample Prep:
DIRECT

Instrument: WC 38153, AL 11208

Procedure/ Rev: LA 342-100 A-0

Technologist: KR MONTEITH

Date: 08/02/94

Starting Time: 16:00

Temperature 25

Ending Time: 23:30

Chemist: RW SCHRODER

Comments:

	Description	Lab ID
1	LMCS	R 5427-5518
2	BLANK	R 5428-5618
3	SAMPLE	R 5429-5718
4	SAMPLE DUP	R 5429-5818
5	SAMPLE	R 5430-5718
6	SAMPLE DUP	R 5430-5818
7		
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS TIC	15N12B / 1 ML			
LMCS TOC	10N12C / .300 ML			

ANALYTICAL BATCH SUMMARY SHEET							
METHOD: LA-342-100		ANALYTE: TIC/TOC		ANALYSIS START DATE 8/02/94			
PREPARED BY: Rob Schroeder		SUMMARY DATE: 8/04/94					
PROJECT SY-103		UNITS: ug C/ g		SAMPLE PREP: Direct Analysis			
SPL ID	SERIAL NO	RESULT #1	RESULT #2	RPD%	% REC	DET LIM	DIG WT
TIC STD	R5427-5518	4.73E-2M			94.6		
TOC STD	R5427-5518	2.70E-0g/L			90.0		
TIC BLK	R5428-5618	4.30ug C				5.0E-0	
TOC BLK	R5428-5618	17.6ug C				1.25E+2	
TICSPL1	R5429-5718	1.76E+4	2.00E+4	12.8		4.00E+2	
TOCSPL1	R5429-5718	1.23E+4	1.07E+4	13.9		4.00E+2	
TICSPL2	R5430-5718	2.25E+4	3.13E+4	32.7		4.00E+2	
TOCSPL2	R5430-5718	1.00E+4	7.70E+3	26.0		4.00E+2	

Rob Schroeder
8-4-94

NO SPECIAL PROBLEMS / METHOD VARIATIONS IN THIS BATCH

NARRATIVE -- LIST SPECIFIC PROBLEMS / VARIATIONS FOR THIS BATCH
 Samples are re-analyzed using smaller sample sizes, allowing for the analysis to be within the working range of the detector. Due to the non-homogeneous samples, the spike analysis has been omitted. *Robert W. Schroeder*
 8-4-94

87 11/21/94

ANALYTICAL BATCH SUMMARY SHEET							
METHOD: LA-342-100		ANALYTE: TIC/TOC		ANALYSIS START DATE 7/15/94			
PREPARED BY: Rob Schroeder		SUMMARY DATE: 7/19/94					
PROJECT SY-103		UNITS: ug C/ g		SAMPLE PREP: Direct Analysis			
SPL ID	SERIAL NO	RESULT #1	RESULT #2	RPD%	% REC	DET LIM	DIG WT
TIC STD	R5427-5518	5.18E-2M			103.6		
TOC STD	R5427-5518	2.82E-0g/L			94.0		
TIC BLK	R5428-5618	7.6ug C				5.0E-0	
TOC BLK	R5428-5618	28.7ug C				1.25E+2	
TICSPL1	R5429-5718	1.68E+4	2.22E+4	27.7	148.0	4.00E+2	
TOCSPL1	R5429-5718	9.63E+3	9.00E+3	6.76	101.6	4.00E+2	
TICSPL2	R5430-5718	1.32E+4	2.78E+4	71.2	456.0	4.00E+2	
TOCSPL2	R5430-5718	4.00E+3	4.84E+3	19.0	135.4	4.00E+2	

RW Schroeder
7-20-94

NO SPECIAL PROBLEMS / METHOD VARIATIONS IN THIS BATCH

NARRATIVE -- LIST SPECIFIC PROBLEMS / VARIATIONS FOR THIS BATCH

Poor spike recoveries and high relative percent differences are due to non-homogeneous sample and sample carbon contents beyond the method upper detection limit. A smaller sample size would be less representative for a sample that is visually non-homogeneous; and a larger sample size would exhaust the detector beyond the already surpassed method upper detection limit.

RW Schroeder 7-20-94

OUT FOR RERUN

THB
1/13/95

WHC-SD-WM-DP-013, REV. 0
TOTAL INORGANIC CARBON/TOTAL ORGANIC CARBON ANALYSIS

BEST AVAILABLE COPY

RERUN

Batch 4127

Serial No R 5427.-5512	Sample Point SY-103	Date 6-15-94	Time Issued 10:27	Priority 18
Determination TIC/TOC	Method Standard LA-342-100	Result Units % RECOVERY	Charge Code N407D	Reruns 1
Sample Size 1.000 mL TIC / 300 µl TOC			Customer ID STD	
Remarks Calculations Results TIC REAGENT BLANK 4.73 E-2 TOC REAGENT BLANK 94.6 TIC REAGENT BLANK 2.70 TOC REAGENT BLANK 90.0				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Mrs	Mrs	Mrs	Mrs	Mrs
Date 8-2-94	Time Completed	Lab Unit Mgr 8-4-94 RW Schroeder		

54-6800-061 (R-10-83)

RERUN

Serial No R 5423.-5516	Sample Point SY-103	Date 6-15-94	Time Issued 10:27	Priority 18
Determination TIC/TOC	Method Standard LA-342-100	Result Units µg C/mL	Charge Code N407D	Reruns 1
Sample Size ?			Customer ID BLANK	
Remarks Calculations Results TIC REAGENT BLANK 4.30 µg C TOC REAGENT BLANK 17.6 µg C				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Mrs	Mrs	Mrs	Mrs	Mrs
Date 8-2-94	Time Completed	Lab Unit Mgr 8-4-94 RW Schroeder		

54-6800-061 (R-10-83)

WHC-SD-WM-DP-013, REV. 0
TOTAL INORGANIC CARBON/TOTAL ORGANIC CARBON ANALYSIS

BEST AVAILABLE COPY

RERUN

Serial No R 5429.-5718	Sample Point SY-103	Date 6-15-94	Time Issued 10:28	Priority 18
Determination TIC/TOC	Method Standard LA-342-100	Result Units ug C/G	Charge Code N4C7D	Reruns 1
Sample Size ? <i>fac 11/29/94</i> <i>0.0012g .0094g</i>			Customer ID R14AC1	
Remarks, Calculations, Results TIC VALUE $165.7 / 0.0094g = 1.76 E+4 \text{ ug/g}$ TOC VALUE $115.8 \text{ ug} / 0.0094g = 1.23 E+4 \text{ ug/g}$				
Analyst - 1 <i>[Signature]</i>	Analyst - 2 <i>[Signature]</i>	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs <i>[Signature]</i>	Hrs	Hrs
Date 8-2-94	Time Completed	Lab Unit Mgr <i>[Signature]</i> 8-4-94	<i>[Signature]</i>	

54-6800-061 (R-10-83)

RERUN

Serial No R 5429.-5818	Sample Point SY-103	Date 6-15-94	Time Issued 10:28	Priority 18
Determination TIC/TOC	Method Standard LA-342-100	Result Units ug C/G	Charge Code N4C7D	Reruns 1
Sample Size ? <i>0.0094g</i>			Customer ID R14AC1	
Remarks, Calculations, Results TIC DUPLICATE VALUE $188.1 / 0.0094g = 2.00 E+4 \text{ ug/g}$ TOC DUPLICATE VALUE $100.9 / 0.0094g = 1.07 E+4 \text{ ug/g}$				
Analyst - 1 <i>[Signature]</i>	Analyst - 2 <i>[Signature]</i>	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs <i>[Signature]</i>	Hrs	Hrs
Date 8-2-94	Time Completed	Lab Unit Mgr <i>[Signature]</i> 8-4-94	<i>[Signature]</i>	

54-6800-061 (R-10-83)

WHC-SD-WM-DP-013, REV. 0

TOTAL INORGANIC CARBON/TOTAL ORGANIC CARBON ANALYSIS

REKUN

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Serial No R 5430.-5716	Sample Point SY-103	Date 6-15-94	Time Issued 10:30	Priority 18
Determination TIC/TOC	Method Standard LA-842-100	Result Units UG C/G	Charge Code N407D	Reruns 1
Sample Size ?	0.0133 g ^{THB} 1/13/95			Customer ID R7ED1
Remarks Calculations Results TIC VALUE $\times$ RWB 8-4-94 $2.99E+2 \text{ ug} / 0.0133 \text{ g} = 2.25 E+4 \text{ ug/g}$ TOC VALUE $133.5 \text{ ug} / 0.0133 \text{ g} = 1.00 E+4 \text{ ug/g}$				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Mrs	Mrs	Mrs	Mrs	Mrs
Date 8-2-94	Time Completed	Lab Unit Mgr 8-4-94 RW Schreder

54-6600-061 (R-10-83)

Serial No R 5430.-5616	Sample Point SY-103	Date 6-15-94	Time Issued 10:30	Priority 18
Determination TIC/TOC	Method Standard LA-842-100	Result Units UG C/G	Charge Code N407D	Reruns 1
Sample Size ?	0.0209 g ^{THB} 1/13/95			Customer ID R7ED1
Remarks Calculations Results TIC DUPLICATE VALUE $653.2 \text{ ug} / 0.0209 \text{ g} = 3.13 E+4 \text{ ug/g}$ TOC DUPLICATE VALUE $1.61 E+2 \text{ ug} / 0.0209 \text{ g} = 7.70 E+3 \text{ ug/g}$				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Mrs	Mrs	Mrs	Mrs	Mrs
Date 8-2-94	Time Completed	Lab Unit Mgr 8-4-94 RW Schreder

54-6600-061 (R-10-83)

WHC-SD-WM-DP-643, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 5427-5518

Date: 08/02/94

Time: 17:01:07

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = .39 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.90	0.00
2	1.01	43.70	97.94
3	1.51	231.80	81.15
4	2.01	389.60	40.50
5	2.51	479.50	18.75
6	3.01	529.10	9.37
7	3.51	551.80	4.11
8	4.00	561.20	1.67
9	4.50	565.40	0.74
10	5.00	567.20	0.32
11	5.50	568.40	0.21
12	6.00	569.10	0.12
13	6.50	569.60	0.09
14	7.00	569.90	0.05
15	7.50	570.30	0.07
16	8.00	570.50	0.04
17	8.50	570.80	0.05
18	9.00	571.10	0.05
19	9.50	571.30	0.04
20	10.00	571.50	0.03
21	10.50	571.70	0.03
22	11.00	571.90	0.03

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 103 TO 114.

BEST AVAILABLE COPY

USER INPUT BLANK VALUE

BLANK VALUE = 4.290262 micrograms carbon

BLANK FACTOR = 4.290262 / 11.00067 = +3.9E-01 ug/min Carbon

SAMPLE RESULTS:

(571.9 - 4.289857)(1)/(1000) = +5.676E-01 g/L Carbon
(571.9 - 4.289857)(1)/(1000)(12) = +4.730E-02 Molar Carbon

Sample Run. By:

KR MONTEITH

11-30-94

00000

WHC-SD-WM-DP-013, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 5427-5518

Date: 08/02/94

Time: 17:14:22

Sample Size = 300 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.6 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	1.10	63.64
4	2.00	10.90	89.91
5	2.50	121.70	91.04
6	3.00	384.20	68.32
7	3.50	598.40	35.80
8	4.01	709.50	15.66
9	4.50	767.90	7.61
10	5.00	793.00	3.17
11	5.50	803.90	1.36
12	6.00	809.60	0.70
13	6.50	813.60	0.49
14	7.00	816.30	0.33
15	7.50	818.50	0.27
16	8.00	820.40	0.23
17	8.50	822.10	0.21
18	9.00	823.50	0.17
19	9.50	824.80	0.16
20	10.00	826.00	0.15
21	10.50	827.00	0.12
22	11.00	828.00	0.12

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USER INPUT BLANK VALUE

BLANK VALUE = 17.60107 micrograms carbon

BLANK FACTOR = 17.60107 / 11.00067 = +1.6E+00 ug/min Carbon

SAMPLE RESULTS:

(828 - 17.59941)(1)/(300) = +2.701E+00 g/L Carbon
(828 - 17.59941)(1)/(300)(12) = +2.251E-01 Molar Carbo

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

WHC-SD-WM-DP-013, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK

Date: 08/02/94

Time: 16:22:36

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	1.60	0.00
2	1.01	2.20	27.27
3	1.50	2.60	15.38
4	2.00	2.80	7.14
5	2.50	3.10	9.68
6	3.00	3.30	6.06
7	3.50	3.40	2.94
8	4.00	3.50	2.86
9	4.50	3.50	0.00
10	5.00	3.60	2.78
11	5.50	3.60	0.00
12	6.00	3.70	2.70
13	6.50	3.80	2.63
14	7.00	3.80	0.00
15	7.50	3.90	2.56
16	8.00	4.00	2.50
17	8.50	4.00	0.00
18	9.00	4.00	0.00
19	9.50	4.10	2.44
20	10.00	4.20	2.38
21	10.50	4.20	0.00
22	11.00	4.30	2.33

BEST AVAILABLE COPY

BLANK VALUE = 4.3 micrograms carbon

BLANK FACTOR = 4.3 / 10.99963 =

+3.9E-01 ug/min Carbon

WHC-SD-WM-DP-013, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK

Date: 08/02/94

Time: 16:36:48

Sample Size = 1 ul
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.90	88.89
3	1.51	2.50	64.00
4	2.00	4.80	47.92
5	2.50	7.30	34.25
6	3.00	9.20	20.65
7	3.50	10.70	14.02
8	4.00	11.80	9.32
9	4.50	12.70	7.09
10	5.00	13.40	5.22
11	5.50	14.00	4.29
12	6.00	14.50	3.45
13	6.50	15.00	3.33
14	7.00	15.40	2.60
15	7.50	15.80	2.53
16	8.00	16.10	1.86
17	8.50	16.40	1.83
18	9.00	16.60	1.20
19	9.50	16.90	1.78
20	10.00	17.20	1.74
21	10.50	17.40	1.15
22	11.00	17.60	1.14

BEST AVAILABLE COPY

BLANK VALUE = 17.6 micrograms carbon

BLANK FACTOR = 17.6 / 11.00067 = +1.60E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

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Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-013, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 5429-5718

Date: 08/02/94

Time: 21:43:16

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .39 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	4.20	100.00
3	1.50	40.40	89.60
4	2.00	89.20	54.71
5	2.50	125.80	29.09
6	3.00	146.30	14.01
7	3.50	156.60	6.58
8	4.00	161.70	3.15
9	4.50	164.10	1.46
10	5.00	165.30	0.73
11	5.50	166.20	0.54
12	6.00	166.80	0.36
13	6.50	167.30	0.30
14	7.00	167.80	0.30
15	7.50	168.00	0.12
16	8.00	168.40	0.24
17	8.50	168.70	0.18
18	9.00	169.00	0.18
19	9.50	169.30	0.18
20	10.00	169.50	0.12
21	10.50	169.80	0.18
22	11.00	170.00	0.12

BEST AVAILABLE COPY

USER INPUT BLANK VALUE

BLANK VALUE = 4.290262 micrograms carbon

BLANK FACTOR = 4.290262 / 11.00067 = +3.9E-01 ug/min Carbon

SAMPLE RESULTS:

(170 - 4.289952)(1)/(1) = +1.657E+02 g/L Carbon
(170 - 4.289952)(1)/(1)(12) = +1.381E+01 Molar Carbon

Sample Run By:

107

KR MONTEITH

00000

WHC-SD-WM-DP-013, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 5429-5718

Date: 08/02/94

Time: 21:57:59

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.6 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.01	0.50	80.00
3	1.50	7.10	92.96
4	2.00	45.80	84.50
5	2.50	80.50	43.11
6	3.00	98.00	17.86
7	3.50	106.90	8.33
8	4.00	112.00	4.55
9	4.50	115.80	3.28
10	5.00	118.80	2.53
11	5.50	121.20	1.98
12	6.00	123.20	1.62
13	6.50	124.80	1.28
14	7.00	126.20	1.11
15	7.50	127.50	1.02
16	8.00	128.60	0.86
17	8.50	129.50	0.69
18	9.00	130.40	0.69
19	9.50	131.30	0.69
20	10.00	132.00	0.53
21	10.50	132.70	0.53
22	11.00	133.40	0.52

BEST AVAILABLE COPY

USER INPUT BLANK VALUE

BLANK VALUE = 17.60107 micrograms carbon

BLANK FACTOR = 17.60107 / 11.00067 = +1.6E+00 ug/min Carbon

SAMPLE RESULTS:

(133.4 - 17.59941)(1)/(1) = +1.158E+02 g/L Carbon
(133.4 - 17.59941)(1)/(1)(12) = +9.650E+00 Molar Carbo

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

WHC-SD-WM-DP-013, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 5429-5818

Date: 08/02/94

Time: 18:04:07

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .39 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.00	2.70	88.89
3	1.50	35.10	92.31
4	2.00	90.90	61.39
5	2.50	136.30	33.31
6	3.00	163.90	16.84
7	3.50	177.80	7.82
8	4.00	184.40	3.58
9	4.50	187.20	1.50
10	5.00	188.70	0.79
11	5.50	189.50	0.42
12	6.00	189.90	0.21
13	6.50	190.30	0.21
14	7.00	190.60	0.16
15	7.50	190.90	0.16
16	8.00	191.10	0.10
17	8.50	191.40	0.16
18	9.00	191.60	0.10
19	9.50	191.80	0.10
20	10.00	192.00	0.10
21	10.50	192.20	0.10
22	11.00	192.40	0.10

BEST AVAILABLE COPY

USER INPUT BLANK VALUE

BLANK VALUE = 4.290262 micrograms carbon

BLANK FACTOR = 4.290262 / 11.00067 = +3.9E-01 ug/min Carbon

SAMPLE RESULTS:

(192.4 - 4.289857)(1)/(1) =

+1.881E+02 g/L Carbon

(192.4 - 4.289857)(1)/(1)(12) =

+1.568E+01 Molar Carbon

109

Sample Run By:

KR MONTEITH

00000

WHC-SD-WM-DP-013, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 5429-5818

Date: 08/02/94

Time: 18:16:59

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.6 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	7.50	96.00
3	1.50	40.10	81.30
4	2.00	69.90	42.63
5	2.50	86.60	19.28
6	3.00	95.80	9.60
7	3.50	101.20	5.34
8	4.00	104.40	3.07
9	4.50	106.70	2.16
10	5.00	108.60	1.75
11	5.50	110.20	1.45
12	6.00	111.60	1.25
13	6.50	112.50	0.80
14	7.00	113.60	0.97
15	7.50	114.50	0.79
16	8.00	115.20	0.61
17	8.50	115.90	0.60
18	9.00	116.50	0.52
19	9.50	117.10	0.51
20	10.00	117.60	0.43
21	10.50	118.00	0.34
22	11.00	118.50	0.42

BEST AVAILABLE COPY

USER INPUT BLANK VALUE

BLANK VALUE = 17.60107 micrograms carbon

BLANK FACTOR = 17.60107 / 11.00067 = +1.6E+00 ug/min Carbon

SAMPLE RESULTS:

(118.5 - 17.59961)(1)/(1) = +1.009E+02 g/L Carbon
 (118.5 - 17.59961)(1)/(1)(12) = +8.408E+00 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

WHC-SD-WM-DP-013, REV. 0
TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R5430-5718

Date: 08/02/94

Time: 18:29:19

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .39 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.50	0.00
2	1.01	9.90	94.95
3	1.51	75.60	86.90
4	2.01	165.80	54.40
5	2.50	233.70	29.05
6	3.00	271.10	13.80
7	3.50	287.50	5.70
8	4.00	293.90	2.18
9	4.50	296.50	0.88
10	5.00	297.90	0.47
11	5.50	298.80	0.30
12	6.00	299.50	0.23
13	6.50	300.00	0.17
14	7.00	300.50	0.17
15	7.50	300.90	0.13
16	8.00	301.40	0.17
17	8.50	301.70	0.10
18	9.00	302.10	0.13
19	9.50	302.30	0.07
20	10.00	302.60	0.10
21	10.50	302.90	0.10
22	11.00	303.10	0.07

BEST AVAILABLE COPY

USER INPUT BLANK VALUE

BLANK VALUE = 4.290262 micrograms carbon

BLANK FACTOR = 4.290262 / 11.00067 = +3.9E-01 ug/min Carbon

SAMPLE RESULTS:

(303.1 - 4.289238)(1)/(1) = +2.988E+02 g/L Carbon
(303.1 - 4.289238)(1)/(1)(12) = +2.490E+01 Molar Carbo

Sample Run By:

111

KR MONTEITH

00000

WHC-SD-WM-DP-013, REV. 0
TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 5430-5718

Date: 08/02/94

Time: 18:41:45

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.6 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	0.70	100.00
3	1.51	14.00	95.00
4	2.00	59.40	76.43
5	2.50	95.50	37.80
6	3.00	116.50	18.03
7	3.50	126.30	7.76
8	4.00	132.30	4.54
9	4.50	135.80	2.58
10	5.00	138.50	1.95
11	5.50	140.70	1.56
12	6.00	142.50	1.26
13	6.50	143.90	0.97
14	7.00	145.10	0.83
15	7.50	146.10	0.68
16	8.00	147.00	0.61
17	8.50	147.90	0.61
18	9.00	148.60	0.47
19	9.50	149.30	0.47
20	10.00	149.90	0.40
21	10.50	150.60	0.46
22	11.00	151.10	0.33

BEST AVAILABLE COPY

USER INPUT BLANK VALUE

BLANK VALUE = 17.60107 micrograms carbon

BLANK FACTOR = 17.60107 / 11.00067 = +1.6E+00 ug/min Carbon

SAMPLE RESULTS:

(151.1 - 17.60274)(1)/(1) = +1.335E+02 g/L Carbon

(151.1 - 17.60274)(1)/(1)(12) = +1.112E+01 Molar Carbo

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

WHC-SD-WM-DP-013, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 5430-5818

Date: 08/02/94

Time: 19:00:20

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = .39

Blank Value = 1.6 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.00	11.10	99.10
3	1.50	118.30	90.62
4	2.00	302.50	60.89
5	2.50	455.80	33.63
6	3.00	553.40	17.64
7	3.50	609.10	9.14
8	4.00	633.90	3.91
9	4.50	643.50	1.49
10	5.00	647.60	0.63
11	5.50	649.90	0.35
12	6.00	651.10	0.18
13	6.50	652.20	0.17
14	7.00	652.90	0.11
15	7.50	653.60	0.11
16	8.00	654.40	0.12
17	8.50	655.10	0.11
18	9.00	655.60	0.08
19	9.50	656.10	0.08
20	10.00	656.60	0.08
21	10.50	657.10	0.08
22	11.00	657.50	0.06

BEST AVAILABLE COPY

USER INPUT BLANK VALUE

BLANK VALUE = ~~17.59805~~ micrograms carbon

BLANK FACTOR = ~~4.29417~~ / 11.00067 =

$3.9 E^{-1}$
~~1.6E+00~~ ug/min Carbon

SAMPLE RESULTS:

(657.5 - ~~17.59805~~) (1)/(1) =

(657.5 - ~~17.59805~~) (1)/(1)(12) =

$6.532 E^{+2}$
~~17.59805~~ g/L Carbon
+5.333E+01 Molar Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

113

KR MONTEITH

00000

WHC-SD-WM-DP-013, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R 5430-5818

Date: 08/02/94

Time: 19:12:35

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.6 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	0.50	100.00
3	1.51	2.30	78.26
4	2.00	27.90	91.76
5	2.50	79.60	64.95
6	3.00	117.20	32.08
7	3.50	138.10	15.13
8	4.00	149.80	7.81
9	4.50	156.70	4.40
10	5.00	161.00	2.67
11	5.50	164.20	1.95
12	6.00	166.50	1.38
13	6.50	168.60	1.25
14	7.00	170.30	1.00
15	7.50	171.70	0.82
16	8.00	172.90	0.69
17	8.50	174.10	0.69
18	9.00	175.10	0.57
19	9.50	175.90	0.45
20	10.00	176.80	0.51
21	10.50	177.60	0.45
22	11.00	178.20	0.34

BEST AVAILABLE COPY

USER INPUT BLANK VALUE

BLANK VALUE = 17.60107 micrograms carbon

BLANK FACTOR = 17.60107 / 11.00067 = +1.6E+00 ug/min Carbon

SAMPLE RESULTS:

(178.2 - 17.60098)(1)/(1) = +1.606E+02 g/L Carbon
 (178.2 - 17.60098)(1)/(1)(12) = +1.338E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!!>>>>

WHC-SD-WM-DP-073, REV. 0

**THE FOLLOWING ANALYSES ARE INCLUDED IN THE
DATA PACKAGE BUT THE RESULTS HAVE NOT BEEN
REPORTED IN THE FINAL SUMMARY REPORTS.**

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

WHC-SD-WM-DP-073, REV. 0

Lab Segment Serial No.

R 5398 - R 5399

Customer ID:

R7B-A , R7B-B

Analysis:

TGA

Sample Prep:

DIRECT

Instrument: WC16124, WC16129

Procedure/ Rev: LA-560-112 A-1

Technologist: KR MONTEITH

Date: 06/12/94

OUT FOR RUN

Starting Time: 00:00

Temperature 25

Ending Time: 07:30

Chemist: J. FRYE

Comments:

	Description	Lab ID
1	LMCS STD	R 5397-5512
2	SAMPLE	R 5398-5712
3	SAMPLE DUP	R 5398-5812
4	SAMPLE	R 5399-5712
5	SAMPLE DUP	R 5399-5812
6		
7		
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	24N8A .010 ML			

13--JUN--94

File: 00083.001 TG METTLER 11-Jun-94
Ident: 0.0 222-S Laboratory

R 5398-5712

Rate: 10.0 °C/min

17.963 mg

Step Analysis
Height -3.52 mg
-19.58 %
Resid. 14.44 mg
80.42 %
Dpeak 113.0 °C

WHC-SD-WM-DP-013, REV. 0

File: 00084.001 TG METTLER 11-Jun-94
Ident: 0.0 222-S Laboratory

R 5398-5812

WHC-SD-WM-DP-013, REV. 0

Rate: 10.0 °C/min

24.159 mg

Step Analysis
Height -6.82 mg
-28.24 %
Resid. 17.34 mg
71.76 %
Dpeak 125.0 °C

5. mg

°C

400.

300.

200.

100.

R5399-5812

14.456 mg

Rate: 10.0 °C/min

File: 00015.001 TG METTLER 13-Jun-94

Ident: 0.0 222-S Laboratory

2.39

Step Analysis

Height -3.32 mg

-23.00 %

Resid. 11.13 mg

77.00 %

Step Analysis

Height -1.09 mg

-7.57 %

Resid. 10.04 mg

69.44 %

Dpeak 275.0 °C

WHC-SD-WM-DP-013, REV. 0

300.

400.

500.

600.

700.

K

95399-5812

14.456 mg

File: 00015.001

ETHEL GI

13-Jun-94

Rate: 10.0 °C/min

Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-093, REV. 0

```

Step Analysis
Height -4.45 mg
      -30.77 %
Resic. 10.01 mg
      69.23 %
Dpeak 123.0°C

```

File: 00085.001 TG METTLER 11-Jun-94
Ident: 0.0 222-S Laboratory

R 5399-5712

WHC-SD-WM-DP-013, REV. 0

WHC-SD-WM-DP-013, REV. 0

Batch 3664

BEST AVAILABLE COPY

Serial No R 5397.-5512	Sample Point SY-103	Date 6-10-94	Time Issued 8:58	Priority 18
Determination TGA	Method Standard LA-560-112	Result Units % RECOVERY	Charge Code N4C7D	Reruns 0
Sample Size ? 16.889 13.831			Customer ID STD	
Remarks, Calculations, Results 570-24N8A 97.9 % Recovery OUT FOR RERUN				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6-12-94	Time Completed	Lab Unit Mgr

54-6800-061 (R-10-83)

Serial No R 5398.-5712	Sample Point SY-103	Date 6-10-94	Time Issued 9: 1	Priority 18
Determination TGA	Method Standard LA-560-112	Result Units % H2O	Charge Code N4C7D	Reruns 0
Sample Size ? 17.963			Customer ID R7B-A	
Remarks, Calculations, Results 19.58% H ₂ O OUT FOR RERUN Value is high - needs to be re-integrated
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6-12-94	Time Completed	Lab Unit Mgr

54-6800-061 (R-10-83)

BEST AVAILABLE COPY

Serial No R 5398.-5812	Sample Point SY-103	Date 6-10-94	Time Issued 9: 1	Priority 18
Determination TGA	Method Standard LA-560-112	Result Units % H ₂ O	Charge Code N4C7D	Reruns 0
Sample Size ? 24.159			Customer ID R7B-A	
Remarks, Calculations, Results DUPLICATE SAMPLE OUT FOR RERUN 28.24% H ₂ O Value is high needs to be re-integrated. JMF				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6-12-94	Time Completed	Lab Unit Mgr

54-6800-061 (R-10-83)

Serial No R 5399.-5812	Sample Point SY-103	Date 6-10-94	Time Issued 9: 4	Priority 18
Determination TGA	Method Standard LA-560-112	Result Units % H ₂ O	Charge Code N4C7D	Reruns 0
Sample Size ? 14.456			Customer ID R7B-B	
Remarks, Calculations, Results DUPLICATE SAMPLE OUT FOR RERUN 30.77% H ₂ O JMF 6/20/94 23.00% H ₂ O, 7.57% further wt loss				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 6-12-94	Time Completed	Lab Unit Mgr

54-6800-061 (R-10-83)

WHC-SD-WM-DP-013, REV. 0

Serial No R 5399.-5712		Sample Point SY-103		Date 6-10-94	Time Issued 9: 4	Priority 18
Determination TGA	Method Standard LA-580-112	Result Units % H2O		Charge Code N4C7D	Reruns 0	
Sample Size ? 25.987				Customer ID R7E-B		
Remarks, Calculations, Results <p><i>Needs to be rerun</i></p> <p><i>33.33% H₂O This value is high, because of low it was integrated. Can not re integrate as file was lost.</i></p> <p>OUT FOR RERUN</p>						
Analyst - 1 <i>[Signature]</i>	Analyst - 2 <i>[Signature]</i>	Analyst - 3	Analyst - 4	Analyst - 5		
Hrs	Hrs	Hrs	Hrs	Hrs		
Date 6-12-94	Time Completed	Lab Unit Mgr <i>[Signature]</i>		<i>[Signature]</i>		

54-5800-061 (R-10-83)

BEST AVAILABLE COPY

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

WHC-SD-WM-DP- 013, REV. 0

ANALYTICAL BATCH

Lab Segment Serial No. R5398	Customer ID: R7B-A
Analysis: TGA	Sample Prep: DIRECT

Instrument: WC16130	Procedure/ Rev: LA 560-112/A-1
Technologist: R. WENDLAND	Date: 07/12/94
Starting Time: 0700	Temperature N/A
Ending Time: 1200	Chemist: J. FRYE

Comments: _____

OUT FOR RERUN

	Description	Lab ID
1	LMCS	S9109-9362
2	SAMPLE DUP	R5398-5812
3		
4		
5		
6		
7		
8		
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
LMCS	24N8-A			

WHC-SD-WM-DP-013, REV. 0

BEST AVAILABLE COPY

Serial No A 5895.-58912	Sample Point XY-1.3	Date 6-10-94	Time Issued 9: 1	Priority 18
Determination TGA	Method Standard LA-580-112	Result Units % H2O	Charge Code N407D	Reruns 0
Sample Size 16.441			Customer ID R7B-A	
Remarks, Calculations, Results DUPLICATE SAMPLE 3.10% H ₂ O, 6.17% further wt. loss Robby WENDLAND OUT FOR RERUN				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7-12-94	Time Completed	Lab Unit Mgr James M. Lutz		

54-6800-061 (R-10-83)

Serial No S 9109.-9892	Sample Point SHIFT STUDS	Date 7- 2-94	Time Issued 7:51	Priority 28
Determination TGA	Method Standard LA-580-112	Result Units EXOTHERMS	Charge Code ETI	Reruns 0
Sample Size 24N8-A			Customer ID D-SHIFT	
Remarks, Calculations, Results ETD 8842 TERLIG STR# 24N8-A RESULT 58.19 STD VAL 59.25 WREC 98.2% Robby WENDLAND				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7-12-94	Time Completed 1200	Lab Unit Mgr James M. Lutz		

54-6800-061 (R-10-83)

R5398-5812

16.441 mg

File: 00128.001

TG METTLER

12-Jul-94

Rate: 10.0 °C/min

Ident: 0.0

222-S Laboratory

R5398-5812

TG METTLER 12-JUL-94
222-S Laboratory

TGA STD

WHC-SD-WM-DP-013, REV. 0

Step Analysis	
Height	-6.60 mg
	-58.19 %
Resic.	4.74 mg
	41.81 %
Dpeak	75.0°C

WESTINGHOUSE HANFORD COMPANY

222-S LABORATORY

ANALYTICAL BATCH

WHC-SD-WM-DP-013, REV. 0

Lab Segment Serial No.

R-5429 R-5430

Customer ID:

R14AC1 R7BC1

Analysis:

TIC/TOC PERSULFATE OXIDATION

Sample Prep:

DIRECT

Instrument: AL 11208

Procedure/ Rev: LA-342-100 A-0

Technologist: E.H. COLVIN *E.H. Colvin*

Date: 07/15/94

Starting Time: 0600

Temperature 25 C

Ending Time: 1500

Chemist: R.W. SCHROEDER

Comments: **OUT FOR RERUN**

	Description	Lab ID
1	INITIAL LMCS CHECK STD	R-5427-5518
2	REAGENT BLANK	R-5428-5618
3	SAMPLE	R-5429-5718
4	SAMPLE DUPLICATE	R-5429-5818
5	SAMPLE + SPIKE	R-5429-5918
6	SAMPLE	R-5430-5718
7	SAMPLE DUPLICATE	R-5430-5818
8	SAMPLE + SPIKE	R-5430-5918
9		
10		

	Description	Lab ID
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Standard Type	Primary Book No. and Aliquot Vol.	Second Book No. and Aliquot Vol.	Third Book No. and Aliquot Vol.	Final Vol. of Standard
TOC	10N12-C .300ML			
TIC	15N12-B .200ML			

WHC-SD-WM-DP-1173, REV. 0

Batch 3700

Serial No R 5427.-5518	Sample Point SY-103	Date 6-15-94	Time Issued 10:27	Priority 18
Determination TIC/TOC	Method Standard LA-842-100	Result Units % RECOVERY	Charge Code N4C7D	Reruns 0
Sample Size TIC .200 ml TOC .300 ml			Customer ID STD	
Remarks. Calculations. Results R228 TIC STD VAL 5.0E-2M XREC 103.6 R228 TOC STD VAL 3.02/L XREC 94.0 OUT FOR RERUN E.H. Calman				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7-15-94	Time Completed 1500	Lab Unit Mgr 7-19-94 R. Schneider	7-15-94 K.M. Gail 7-1-94 K.M. Gail	

54-6800-061 (R-10-83)

Serial No R 5428.-5616	Sample Point SY-103	Date 6-15-94	Time Issued 10:27	Priority 18
Determination TIC/TOC	Method Standard LA-842-100	Result Units UG C/ML	Charge Code N4C7D	Reruns 0
Sample Size ?			Customer ID ELANK	
Remarks. Calculations. Results TIC REAGENT BLANK 7.6 ug C TOC REAGENT BLANK 28.7 ug C OUT FOR RERUN E.H. Calman				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7-15-94	Time Completed 1500	Lab Unit Mgr 7-19-94 R. Schneider	7-1-94 K.M. Gail	

54-6800-061 (R-10-83)

Serial No R 5429.-5718	Sample Point SY-103	Date 6-15-94	Time Issued 10:26	Priority 1E
Determination TIC/TOC	Method Standard LA-342-100	Result Units ug C/G	Charge Code N4C7D	Reruns 0
Sample Size 0.1402 GRAMS			Customer ID R14AC1	
Remarks, Calculations, Results TIC VALUE $2.35 E+3 / 0.1402g = 1.68 E+4 \text{ ug/g}$ TOC VALUE $1.35 E+3 / 0.1402g = 9.63 E+3 \text{ ug/g}$ E.H. Cohen OUT FOR RERUN				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7-15-94	Time Completed 1500	Lab Unit Mgr 7-19-94 R. Schneider Kim Gailor		

54-6800-061 (R-10-83)

Serial No R 5429.-5816	Sample Point SY-103	Date 6-15-94	Time Issued 10:26	Priority 1E
Determination TIC/TOC	Method Standard LA-342-100	Result Units ug C/G	Charge Code N4C7D	Reruns 0
Sample Size 0.1855 GRAMS			Customer ID R14AC1	
Remarks, Calculations, Results TIC DUPLICATE VALUE $4.11 E+3 / 0.1855g = 2.22 E+4 \text{ ug/g}$ TOC DUPLICATE VALUE $1.67 E+3 / 0.1855g = 9.00 E+3 \text{ ug/g}$ E.H. Cohen OUT FOR RERUN				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7-15-94	Time Completed 1500	Lab Unit Mgr 7-19-94 R. Schneider Kim Gailor		

54-6800-061 (R-10-83)

WHC-SD-WM-DP-013, REV. 0

Serial No R 5429.-5918	Sample Point SY-103	Date 6-15-84	Time Issued 10:28	Priority 18
Determination TIC/TOC	Method Standard LA-342-100	Result Units % RECOVERY	Charge Code N4C7D	Reruns 0
Sample Size ? .0920 GRAMS			Customer ID R14AC1	
Remarks Calculations Results				
<p>TIC SPIKE ID 15N12-B (2A30-2550(sscf)/600) * 100 = 148% SPIKE VOLUME 1 ML TIC rec</p> <p>TOC SPIKE ID 10N12C SPIKE VOLUME .300 ML (1800-1350(sscf)/900) * 100 = 101.6% TOC % rec</p> <p>Sample Size Correction Factor = P.H. Cohn .0920 OUT FOR RERUN! .1402</p>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7-15-94	Time Completed 1500	Lab Unit Mgr 7-19-94 R. Schneider	8-1-94 K.M. Gail	

54-6800-061 (R-10-83)

Serial No R 5430.-5718	Sample Point SY-103	Date 6-15-84	Time Issued 10:30	Priority 18
Determination TIC/TOC	Method Standard LA-342-100	Result Units UG C/G	Charge Code N4C7D	Reruns 0
Sample Size ? .1159 GRAMS			Customer ID R7BC1	
Remarks Calculations Results				
<p>TIC VALUE 1.53 E+3 / 0.1159g = 1.32 E+4 ug/g</p> <p>TOC VALUE 4.64 E+2 / 0.1159g = 4.00 E+3 ug/g</p> <p>P.H. Cohn OUT FOR RERUN!</p>				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7-15-94	Time Completed 1500	Lab Unit Mgr 7-19-94 R. Schneider	8-1-94 K.M. Gail	

54-6800-061 (R-10-83)

Serial No R 5450.-5816	Sample Point SY-103	Date 6-15-94	Time Issued 10:30	Priority 1E
Determination TIC/TOC	Method Standard LA-342-100	Result Units ug C/G	Charge Code N4C7D	Reruns 0
Sample Size ? .1690 GRAMS			Customer ID R7EC1	
Remarks, Calculations, Results TIC DUPLICATE VALUE $4.70E+3 / 0.1690g = 2.78E+4 \text{ ug/g}$ TOC DUPLICATE VALUE $8.18E+2 / 0.1690g = 4.84E+3 \text{ ug/g}$				
OUT FOR RERUN				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7-15-94	Time Completed 1500	Lab Unit Mgr 7-19-94 R. Schneider	8-1-94 K. M. G. G. G.	

54-6800-061 (R-10-83)

Serial No R 5450.-5816	Sample Point SY-103	Date 6-15-94	Time Issued 10:30	Priority 1E
Determination TIC/TOC	Method Standard LA-342-100	Result Units % RECOVERY	Charge Code N4C7D	Reruns 0
Sample Size ? .1202 GRAMS			Customer ID R7EC1	
Remarks, Calculations, Results TIC SPIKE ID 15N12-B (4320-1530 (SSCF)/600) * 100 = SPIKE VOLUME 1 mL TOC SPIKE ID 10N12-C SPIKE VOLUME .300 mL Sample size corr. factor = $(1700-464 (SSCF)/900) * 100 =$.1202 .1159 OUT FOR RERUN TIC 456% rec TIC 135.4% rec				
Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
Date 7-15-94	Time Completed 1500	Lab Unit Mgr 7-19-94 R. Schneider	8-1-94 K. M. G. G. G.	

54-6800-061 (R-10-83)

WHC-SD-WM-DP-043, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R-5427 STD

Date: 07/15/94

Time: 08:26:48

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = .6910433 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	15.10	0.00
2	1.01	63.50	76.22
3	1.50	101.80	37.62
4	2.00	118.60	14.17
5	2.50	125.40	5.42
6	3.00	127.90	1.95
7	3.50	128.70	0.62
8	4.00	129.10	0.31
9	4.50	129.40	0.23
10	5.00	129.70	0.23
11	5.50	129.90	0.15
12	6.00	130.10	0.15
13	6.50	130.30	0.15
14	7.00	130.50	0.15
15	7.50	130.70	0.15
16	8.00	130.90	0.15
17	8.50	131.00	0.08
18	9.00	131.20	0.15
19	9.50	131.40	0.15
20	10.00	131.50	0.08
21	10.50	131.70	0.15
22	11.00	131.80	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 7.601329 micrograms carbon

BLANK FACTOR = 7.601329 / 10.99979 = +6.9E-01 ug/min Carbon

SAMPLE RESULTS:

(131.8 - 7.60135)(1)/(200) = +6.210E-01 g/L Carbon
(131.8 - 7.60135)(1)/(200)(12) = +5.175E-02 Molar Carbon

Sample Run By:

E.H. Colvin 7-15-94
EH COLVIN 00000

WHC-SD-WM-DP-013, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R-5427 STD

Date: 07/15/94

Time: 08:40:31

Sample Size = 300 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.609142 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	4.30	0.00
2	1.01	58.60	92.66
3	1.51	200.60	70.79
4	2.00	440.60	54.47
5	2.50	669.00	34.14
6	3.00	788.70	15.18
7	3.50	841.30	6.25
8	4.00	859.60	2.13
9	4.50	865.50	0.68
10	5.00	868.00	0.29
11	5.50	869.40	0.16
12	6.00	870.30	0.10
13	6.50	871.10	0.09
14	7.00	871.60	0.06
15	7.50	872.20	0.07
16	8.00	872.70	0.06
17	8.50	873.10	0.05
18	9.00	873.50	0.05
19	9.50	873.90	0.05
20	10.00	874.30	0.05
21	10.50	874.60	0.03
22	11.00	874.90	0.03

USER INPUT BLANK VALUE

BLANK VALUE = 28.7 micrograms carbon

BLANK FACTOR = 28.7 / 10.99979 = +2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(874.9 - 28.69969)(1)/(300) = +2.821E+00 g/L Carbon
 (874.9 - 28.69969)(1)/(300)(12) = +2.351E-01 Molar Carbo
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

EH COLVIN

00000

WHC-SD-WM-DP-013, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0 <<< BLANK ANALYSIS >>>

Sample: R-5428 BLK

Date: 07/15/94

Time: 07:00:58

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = R-5428 BLK

Blank Value = N/A

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.70	42.86
3	1.51	1.10	36.36
4	2.00	1.40	21.43
5	2.50	1.70	17.65
6	3.00	2.10	19.05
7	3.50	2.50	16.00
8	4.00	2.80	10.71
9	4.50	3.20	12.50
10	5.00	3.60	11.11
11	5.50	3.90	7.69
12	6.00	4.30	9.30
13	6.50	4.60	6.52
14	7.00	4.90	6.12
15	7.50	5.30	7.55
16	8.00	5.70	7.02
17	8.50	6.00	5.00
18	9.00	6.30	4.76
19	9.50	6.60	4.55
20	10.00	7.00	5.71
21	10.50	7.30	4.11
22	11.00	7.60	3.95

BLANK VALUE = 7.6 micrograms carbon

BLANK FACTOR = 7.6 / 10.99786 =

+6.9E-01 ug/min Carbon

Sample Run By:

EH COLVIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: R-5428 BLK

Date: 07/15/94

Time: 07:14:22

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = R-5428 BLK

Blank Value = N/A

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	1.00	0.00
2	1.01	5.70	82.46
3	1.51	11.00	48.18
4	2.00	15.10	27.15
5	2.50	17.90	15.64
6	3.00	19.80	9.60
7	3.50	21.20	6.60
8	4.00	22.20	4.50
9	4.50	22.90	3.06
10	5.00	23.60	2.97
11	5.50	24.20	2.48
12	6.00	24.70	2.02
13	6.50	25.20	1.98
14	7.00	25.70	1.95
15	7.50	26.10	1.53
16	8.00	26.50	1.51
17	8.50	26.80	1.12
18	9.00	27.30	1.83
19	9.50	27.70	1.44
20	10.00	28.00	1.07
21	10.50	28.40	1.41
22	11.00	28.70	1.05

BLANK VALUE = 28.7 micrograms carbon

BLANK FACTOR = 28.7 / 10.99979 = +2.61E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

EH COLVIN

00000

WHC-SD-WM-DP-143, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R-5429

Date: 07/15/94

Time: 08:54:31

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .6910433 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.80	0.00
2	1.01	203.60	99.61
3	1.51	937.00	78.27
4	2.01	1683.90	44.36
5	2.51	2114.20	20.35
6	3.00	2240.30	5.63
7	3.50	2296.20	2.43
8	4.00	2316.50	0.88
9	4.50	2326.40	0.43
10	5.00	2332.60	0.27
11	5.50	2337.20	0.20
12	6.00	2341.20	0.17
13	6.50	2344.30	0.13
14	7.00	2346.60	0.10
15	7.50	2349.00	0.10
16	8.00	2350.80	0.08
17	8.50	2352.40	0.07
18	9.00	2353.80	0.06
19	9.50	2355.00	0.05
20	10.00	2356.20	0.05
21	10.50	2357.20	0.04
22	11.00	2358.20	0.04

USER INPUT BLANK VALUE

BLANK VALUE = 7.601329 micrograms carbon

BLANK FACTOR = 7.601329 / 10.99979 = +6.9E-01 ug/min Carbon

SAMPLE RESULTS:

(2358.2 - 7.600675)(1)/(1) = +2.3506E+03 g/L Carbon
(2358.2 - 7.600675)(1)/(1)(12) = +1.9588E+02 Molar Carbon

Sample Run By:

EH COLVIN

00000

WHC-SD-WM-DP-013, REV. 0

TOC-- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R-5429

Date: 07/15/94

Time: 09:08:06

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.609142 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	50.90	0.00
2	1.01	340.50	85.05
3	1.51	602.70	43.50
4	2.01	832.60	27.61
5	2.51	1042.30	20.12
6	3.01	1172.30	11.09
7	3.51	1250.40	6.25
8	4.01	1295.50	3.48
9	4.50	1320.40	1.89
10	5.00	1335.70	1.15
11	5.50	1346.00	0.77
12	6.00	1353.40	0.55
13	6.50	1359.20	0.43
14	7.00	1363.30	0.30
15	7.50	1366.90	0.26
16	8.00	1370.30	0.25
17	8.50	1372.90	0.19
18	9.00	1375.00	0.15
19	9.50	1377.20	0.16
20	10.00	1379.20	0.15
21	10.50	1381.20	0.14
22	11.00	1383.10	0.14

USER INPUT BLANK VALUE

BLANK VALUE = 28.7 micrograms carbon

BLANK FACTOR = 28.7 / 10.99979 = +2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(1383.1 - 28.70486)(1)/(1) = +1.3544E+03 g/L Carbon
 (1383.1 - 28.70486)(1)/(1)(12) = +1.1287E+02 Molar Carbo
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

EH COLVIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-013, REV. 0

Sample: R-5429 DUP

Date: 07/15/94

Time: 09:21:35

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .6910433 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	27.40	0.00
2	1.01	641.80	95.73
3	1.51	1388.50	53.78
4	2.00	2134.90	34.96
5	2.50	2881.40	25.91
6	3.00	3628.70	20.59
7	3.50	4045.80	10.31
8	4.00	4068.00	0.55
9	4.50	4079.10	0.27
10	5.00	4086.20	0.17
11	5.50	4091.80	0.14
12	6.00	4096.00	0.10
13	6.50	4099.70	0.09
14	7.00	4103.00	0.08
15	7.50	4105.90	0.07
16	8.00	4108.20	0.06
17	8.50	4110.40	0.05
18	9.00	4112.20	0.04
19	9.50	4113.90	0.04
20	10.00	4115.50	0.04
21	10.50	4116.90	0.03
22	11.00	4118.20	0.03

USER INPUT BLANK VALUE

BLANK VALUE = 7.601329 micrograms carbon

BLANK FACTOR = 7.601329 / 10.99979 = +6.9E-01 ug/min Carbon

SAMPLE RESULTS:

(4118.2 - 7.601898)(1)/(1) = +4.1106E+03 g/L Carbon
(4118.2 - 7.601898)(1)/(1)(12) = +3.4255E+02 Molar Carbon

Sample Run By:

EH COLVIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-013, REV. 0

Sample: R-5429 DUP

Date: 07/15/94

Time: 09:35:01

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.609142 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	66.30	0.00
2	1.01	444.10	85.07
3	1.50	794.20	44.08
4	2.00	1108.50	28.35
5	2.50	1330.60	16.69
6	3.00	1461.00	8.93
7	3.50	1541.20	5.20
8	4.00	1588.50	2.98
9	4.50	1617.10	1.77
10	5.00	1635.60	1.13
11	5.50	1649.00	0.81
12	6.00	1659.30	0.62
13	6.50	1667.20	0.47
14	7.00	1673.60	0.38
15	7.50	1679.20	0.33
16	8.00	1683.40	0.25
17	8.50	1687.40	0.24
18	9.00	1690.80	0.20
19	9.50	1694.00	0.19
20	10.00	1696.90	0.17
21	10.50	1699.40	0.15
22	11.00	1701.70	0.14

USER INPUT BLANK VALUE

BLANK VALUE = 28.7 micrograms carbon

BLANK FACTOR = 28.7 / 10.99979 = +2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(1701.7 - 28.69977)(1)/(1) = +1.6730E+03 g/L Carbon
 (1701.7 - 28.69977)(1)/(1)(12) = +1.3942E+02 Molar Carbo
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

EH COLVIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-013, REV. 0

Sample: R-5429 + SP

Date: 07/15/94

Time: 09:48:02

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .6910433 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	138.40	0.00
2	1.01	885.10	84.36
3	1.51	1631.20	45.74
4	2.01	2175.10	25.01
5	2.51	2301.90	5.51
6	3.00	2364.70	2.66
7	3.50	2387.40	0.95
8	4.00	2397.30	0.41
9	4.50	2403.30	0.25
10	5.00	2407.80	0.19
11	5.50	2411.50	0.15
12	6.00	2414.70	0.13
13	6.50	2417.60	0.12
14	7.00	2420.20	0.11
15	7.50	2422.60	0.10
16	8.00	2424.70	0.09
17	8.50	2426.70	0.08
18	9.00	2428.40	0.07
19	9.50	2430.00	0.07
20	10.00	2431.60	0.07
21	10.50	2433.00	0.06
22	11.00	2434.30	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 7.601329 micrograms carbon

BLANK FACTOR = 7.601329 / 10.99979 = +6.9E-01 ug/min Carbon

SAMPLE RESULTS:

(2434.3 - 7.602531)(1)/(1) = +2.4267E+03 g/L Carbon
(2434.3 - 7.602531)(1)/(1)(12) = +2.0222E+02 Molar Carbo

Sample Run By:

EH COLVIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-113, REV. 0

Sample: R-5429 + SP

Date: 07/15/94

Time: 10:01:51

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.609142 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	80.70	0.00
2	1.01	348.30	76.83
3	1.51	580.20	39.97
4	2.00	802.20	27.67
5	2.50	1038.70	22.77
6	3.00	1287.40	19.32
7	3.50	1507.50	14.60
8	4.00	1641.00	8.14
9	4.50	1718.50	4.51
10	5.00	1757.70	2.23
11	5.50	1775.60	1.01
12	6.00	1786.80	0.63
13	6.50	1794.20	0.41
14	7.00	1800.20	0.33
15	7.50	1805.10	0.27
16	8.00	1809.00	0.22
17	8.50	1812.70	0.20
18	9.00	1815.50	0.15
19	9.50	1818.20	0.15
20	10.00	1820.50	0.13
21	10.50	1822.80	0.13
22	11.00	1824.80	0.11

USER INPUT BLANK VALUE

BLANK VALUE = 28.7 micrograms carbon

BLANK FACTOR = 28.7 / 10.99979 =

+2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(1824.8 - 28.69754)(1)/(1) =

+1.7961E+03 g/L Carbon

(1824.8 - 28.69754)(1)/(1)(12) =

+1.4968E+02 Molar Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

EH COLVIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP- 013, REV. 0

Sample: R-5430

Date: 07/15/94

Time: 11:18:25

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .6910433 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	19.90	0.00
2	1.01	479.00	95.85
3	1.51	1060.00	54.81
4	2.00	1324.60	19.98
5	2.50	1422.90	6.91
6	3.00	1469.60	3.18
7	3.50	1484.90	1.03
8	4.00	1492.50	0.51
9	4.50	1498.00	0.37
10	5.00	1502.90	0.33
11	5.50	1507.20	0.29
12	6.00	1511.20	0.26
13	6.50	1514.40	0.21
14	7.00	1517.50	0.20
15	7.50	1520.30	0.18
16	8.00	1522.90	0.17
17	8.50	1526.30	0.22
18	9.00	1529.70	0.22
19	9.50	1532.20	0.16
20	10.00	1534.60	0.16
21	10.50	1536.40	0.12
22	11.00	1538.30	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 7.601329 micrograms carbon

BLANK FACTOR = 7.601329 / 10.99979 = +6.9E-01 ug/min Carbon

SAMPLE RESULTS:

(1538.3 - 7.6)(1)/(1) =

+1.5307E+03 g/L Carbon

(1538.3 - 7.6)(1)/(1)(12) =

+1.2756E+02 Molar Carbon

Sample Run By:

EH COLVIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-143, REV. 0

Sample: R-5430

Date: 07/15/94

Time: 11:32:11

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.609142 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	38.30	0.00
2	1.01	137.10	72.06
3	1.50	250.60	45.29
4	2.00	339.70	26.23
5	2.50	399.80	15.03
6	3.00	431.50	7.35
7	3.50	446.70	3.40
8	4.00	455.70	1.97
9	4.50	462.00	1.36
10	5.00	466.70	1.01
11	5.50	470.40	0.79
12	6.00	473.60	0.68
13	6.50	476.30	0.57
14	7.00	478.60	0.48
15	7.50	480.70	0.44
16	8.00	482.60	0.39
17	8.50	484.40	0.37
18	9.00	486.00	0.33
19	9.50	487.60	0.33
20	10.00	489.30	0.35
21	10.50	490.90	0.33
22	11.00	492.30	0.28

USER INPUT BLANK VALUE

BLANK VALUE = 28.7 micrograms carbon

BLANK FACTOR = 28.7 / 10.99979 = +2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(492.3 - 28.69754)(1)/(1) = +4.636E+02 g/L Carbon

(492.3 - 28.69754)(1)/(1)(12) = +3.863E+01 Molar Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

EH COLVIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP- 813, REV. 0

Sample: R-5430 DUP

Date: 07/15/94

Time: 11:45:56

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .6910433 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	19.10	0.00
2	1.01	597.90	96.81
3	1.51	1344.40	55.53
4	2.01	2091.20	35.71
5	2.51	2838.00	26.31
6	3.01	3585.40	20.85
7	3.51	4332.40	17.24
8	4.01	4640.60	6.64
9	4.50	4655.90	0.33
10	5.00	4665.00	0.20
11	5.50	4672.10	0.15
12	6.00	4678.30	0.13
13	6.50	4683.40	0.11
14	7.00	4687.80	0.09
15	7.50	4691.80	0.09
16	8.00	4695.40	0.08
17	8.50	4698.40	0.06
18	9.00	4701.20	0.06
19	9.50	4703.80	0.06
20	10.00	4706.00	0.05
21	10.50	4708.00	0.04
22	11.00	4709.90	0.04

USER INPUT BLANK VALUE

BLANK VALUE = 7.601329 micrograms carbon

BLANK FACTOR = 7.601329 / 10.99979 = +6.9E-01 ug/min Carbon

SAMPLE RESULTS:

(4709.9 - 7.601941)(1)/(1) = +4.7023E+03 g/L Carbon
(4709.9 - 7.601941)(1)/(1)(12) = +3.9186E+02 Molar Carbon

Sample Run By:

EH COLVIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-013, REV. 0

Sample: R-5430 DUP

Date: 07/15/94

Time: 11:59:24

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.609142 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	28.50	0.00
2	1.01	174.40	83.66
3	1.50	380.50	54.17
4	2.00	549.30	30.73
5	2.50	660.40	16.82
6	3.00	733.90	10.01
7	3.50	773.60	5.13
8	4.00	792.50	2.38
9	4.50	803.80	1.41
10	5.00	811.70	0.97
11	5.50	817.80	0.75
12	6.00	822.60	0.58
13	6.50	826.60	0.48
14	7.00	830.00	0.41
15	7.50	832.80	0.34
16	8.00	835.30	0.30
17	8.50	837.80	0.30
18	9.00	839.90	0.25
19	9.50	841.80	0.23
20	10.00	843.60	0.21
21	10.50	845.30	0.20
22	11.00	846.90	0.19

USER INPUT BLANK VALUE

BLANK VALUE = 28.7 micrograms carbon

BLANK FACTOR = 28.7 / 10.99979 = +2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(846.9 - 28.69754)(1)/(1) = +8.182E+02 g/L Carbon
 (846.9 - 28.69754)(1)/(1)(12) = +6.818E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

EH COLVIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-013, REV. 0

Sample: R-5430+SP

Date: 07/15/94

Time: 12:12:25

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .6910433 ug/minute C

Analyst : EH COLVIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	220.10	0.00
2	1.01	966.50	77.23
3	1.51	1713.30	43.59
4	2.00	2460.70	30.37
5	2.50	3207.30	23.28
6	3.00	3953.60	18.88
7	3.50	4251.20	7.00
8	4.00	4266.10	0.35
9	4.50	4275.20	0.21
10	5.00	4282.60	0.17
11	5.50	4289.00	0.15
12	6.00	4294.70	0.13
13	6.50	4299.70	0.12
14	7.00	4304.10	0.10
15	7.50	4308.00	0.09
16	8.00	4311.60	0.08
17	8.50	4314.90	0.08
18	9.00	4317.90	0.07
19	9.50	4320.70	0.06
20	10.00	4323.50	0.06
21	10.50	4325.90	0.06
22	11.00	4328.30	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 7.601329 micrograms carbon

BLANK FACTOR = 7.601329 / 10.99979 = +6.9E-01 ug/min Carbon

SAMPLE RESULTS:

(4328.3 - 7.601941)(1)/(1) = +4.3207E+03 g/L Carbon
 (4328.3 - 7.601941)(1)/(1)(12) = +3.6006E+02 Molar Carbo

Sample Run By:

EH COLVIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-043, REV. 0

Sample: R-5430+SP

Date: 07/15/94

Time: 12:25:57

Sample Size = 1 uL

Analyst : EH COLVIN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.609142 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	40.90	0.00
2	1.01	221.30	81.52
3	1.50	449.50	50.77
4	2.00	728.70	38.31
5	2.50	1042.40	30.09
6	3.00	1336.40	22.00
7	3.50	1501.60	11.00
8	4.00	1594.00	5.80
9	4.50	1647.00	3.22
10	5.00	1669.80	1.37
11	5.50	1682.30	0.74
12	6.00	1691.10	0.52
13	6.50	1697.80	0.39
14	7.00	1703.50	0.33
15	7.50	1708.40	0.29
16	8.00	1712.80	0.26
17	8.50	1717.00	0.24
18	9.00	1720.30	0.19
19	9.50	1723.60	0.19
20	10.00	1726.50	0.17
21	10.50	1729.30	0.16
22	11.00	1732.10	0.16

USER INPUT BLANK VALUE

BLANK VALUE = 28.7 micrograms carbon

BLANK FACTOR = 28.7 / 10.99979 = +2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(1732.1 - 28.69754)(1)/(1) = +1.7034E+03 g/L Carbon
 (1732.1 - 28.69754)(1)/(1)(12) = +1.4195E+02 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

E.H. Colvin
EH COLVIN

7-15-94

00000

DON'T SAY IT --- Write It!

DATE: December 12, 1994

TO: Lola Webb

FROM: K. Bell

Telephone: 3-1629

cc:

WHC-SD-WM-DP-073, REV. 0

SUBJECT: MISSING DATA FOR TIC/TOC ANALYSES

The 136-Day report for the fiscal year 1994 auger samples from tank 241-SY-103 has been issued. The raw data for total inorganic carbon (TIC) and total organic carbon (TOC) was not included in that report, but was to be included here. The Analytical Batch Summary Sheets and LCCS computer system printouts of the data are available and will be included, however the analytical cards and instrument printouts could not be located and are not available. Due to the limited use of this data as described in the respective tank characterization plan (WHC-SD-WM-TP-197), re-runs of the TIC/TOC analyses were not performed.

Kevin Bell, Project Coordinator

Kevin Bell

ANALYTICAL BATCH SUMMARY SHEET							
METHOD: LA-342-100		ANALYTE: TIC/TOC		ANALYSIS START DATE 7/15/94			
PREPARED BY: Rob Schroeder		SUMMARY DATE: 7/19/94					
PROJECT SY-103		UNITS: ug C/ g		SAMPLE PREP: Direct Analysis			
SPL ID	SERIAL NO	RESULT #1	RESULT #2	RPD%	% REC	DET LIM	DIG WT
TIC STD	R5423-5518	5.00E-2M			100.0		
TOC STD	R5423-5518	2.85E-0g/L			95.0		
TIC BLK	R5424-5618	3.40ug C				5.0E-0	
TOC BLK	R5424-5618	27.1ug C				1.25E+2	
TICSPL1	R5425-5718	8.19E+3	7.00E+3	15.7	183.0	4.00E+2	
TOCSPL1	R5425-5718	1.03E+4	6.39E+3	46.9	91.0	4.00E+2	
TICSPL2	R5426-5718	1.11E+4	1.52E+4	31.2	230.0	4.00E+2	
TOCSPL2	R5426-5718	9.46E+3	7.47E+3	23.5	60.7	4.00E+2	

R22A
Comp 1
R22A
Comp 2

NO SPECIAL PROBLEMS / METHOD VARIATIONS IN THIS BATCH

NARRATIVE -- LIST SPECIFIC PROBLEMS / VARIATIONS FOR THIS BATCH

Poor spike recoveries and high relative percent differences are due to non-homogeneous sample and sample carbon contents beyond the method upper detection limit. A smaller sample size would be less representative for a sample that is visually non-homogeneous; and a larger sample size would exhaust the detector beyond the already surpass method upper detection limit.

ANALYTICAL BATCH SUMMARY SHEET							
METHOD: LA-342-100		ANALYTE: TIC/TOC		ANALYSIS START DATE 7/15/94			
PREPARED BY: Rob Schroeder		SUMMARY DATE: 7/19/94					
PROJECT SY-103		UNITS: ug C/ g		SAMPLE PREP: Direct Analysis			
SPL ID	SERIAL NO	RESULT #1	RESULT #2	RPD%	% REC	DET LIM	DIG WT
TIC STD	R5427-5518	5.18E-2M			103.6		
TOC STD	R5427-5518	2.82E-0g/L			94.0		
TIC BLK	R5428-5618	7.6ug C				5.0E-0	
TOC BLK	R5428-5618	28.7ug C				1.25E+2	
TICSPL1	R5429-5718	1.68E+4	2.22E+4	27.7	148.0	4.00E+2	
TOCSPL1	R5429-5718	9.63E+3	9.00E+3	6.76	101.6	4.00E+2	
TICSPL2	R5430-5718	1.32E+4	2.78E+4	71.2	456.0	4.00E+2	
TOCSPL2	R5430-5718	4.00E+3	4.84E+3	19.0	135.4	4.00E+2	

R14A {
R7B {

NO SPECIAL PROBLEMS / METHOD VARIATIONS IN THIS BATCH

NARRATIVE -- LIST SPECIFIC PROBLEMS / VARIATIONS FOR THIS BATCH

Poor spike recoveries and high relative percent differences are due to non-homogenous sample and sample carbon contents beyond the method upper detection limit. A smaller sample size would be less representative for a sample that is visually non-homogenous; and a larger sample size would exhaust the detector beyond the already surpass method detection limit.

ANALYTICAL BATCH SUMMARY SHEET							
METHOD: LA-342-100		ANALYTE: TIC/TOC		ANALYSIS START DATE 8/02/94			
PREPARED BY: Rob Schroeder		SUMMARY DATE: 8/04/94					
PROJECT SY-103		UNITS: ug C/ g		SAMPLE PREP: Direct Analysis			
SPL ID	SERIAL NO	RESULT #1	RESULT #2	RPD%	% REC	DET LIM	DIG WT
TIC STD	R5427-5518	4.73E-2M			94.6		
TOC STD	R5427-5518	2.70E-0g/L			90.0		
TIC BLK	R5428-5618	4.30ug C				5.0E-0	
TOC BLK	R5428-5618	17.6ug C				1.25E+2	
TICSPL1	R5429-5718	1.76E+4	2.00E+4	12.8		4.00E+2	
TOCSPL1	R5429-5718	1.23E+4	1.07E+4	13.9		4.00E+2	
TICSPL2	R5430-5718	2.25E+4	3.13E+4	32.7		4.00E+2	
TOCSPL2	R5430-5718	1.00E+4	7.70E+3	26.0		4.00E+2

NO SPECIAL PROBLEMS / METHOD VARIATIONS IN THIS BATCH

NARRATIVE -- LIST SPECIFIC PROBLEMS / VARIATIONS FOR THIS BATCH
 Samples are re-analyzed using smaller sample sizes, allowing for the analysis to be within the working range of the detector. Due to the non-homogeneous samples, the spike analysis has been omitted.

SAMPLE STATUS REPORT FOR R 5423. SY-103 STD TIME: 9/19/94 10:23
DISPATCHED: 6/15/94 10:16 SAMPLE HAS BEEN SLURPED
RECEIVED: 6/16/94 3:23

EXT.	DETER.	RESULTS OR STATUS	OUT OF GOOD RANGE?	CHARGE ANS?	CODE
****	*****	*****	***	***	*****
5518	TIC/TOC	TIC STD RECOVERY = 100.00 %			N4C7D
5518	TIC/TOC	TCC STD RECOVERY = 95.00 %			N4C7D

END OF REPORT

WHC-SD-WM-DP-043, REV. 0

SAMPLE STATUS REPORT FOR R 5424. SY-103 BLANK TIME: 9/19/94 10:22
DISPATCHED: 6/15/94 10:24 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/15/94 8:23

EXT.	DETER.	RESULTS OR STATUS	OUT OF GOOD CHARGE
			RANGE? ANS? CODE
*****	*****	*****	*** **
5618	TIC/TOC	TIC BLK = 3.4 ug C	N4C7D
5618	TIC/TOC	TOC BLK = 27.10 ug C	N4C7D

END OF REPORT

WHC-SD-WM-DP-013, REV. 0

AMPL STATUS REPORT FOR R 5425. SY-103 R22AC1 TIME: 9/19/94 10:22
 DISPATCHED: 6/15/94 10:25 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 6/16/94 8:23

EXT.	DETER.	RESULTS OR STATUS	OUT OF GOOD RANGE?	CHARGE ANS?	CODE
****	*****	*****	***	***	*****
718	TIC/TOC	TIC = 8.19000E+03 ug/G			N4C7D
718	TIC/TOC	TOC = 1.03000E+04 ug/G			N4C7D
818	TIC/TOC	TIC = 7.00000E+03 ug/G			N4C7D
818	TIC/TOC	TOC = 6.39000E+03 ug/G			N4C7D
918	TIC/TOC	TIC = 133.00 % SPK RECOVERY			N4C7D
918	TIC/TOC	TOC = 91.00 % SPK RECOVERY			N4C7D

END OF REPORT

WHC-SD-WM-DP-013, REV. 0

SAMPLE STATUS REPORT FOR R 5426. SY-103 R22AC2 TIME: 9/19/94 10:22
DISPATCHED: 6/15/94 10:26 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/16/94 8:23

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
*****	*****	*****	***	***	*****
5718	TIC/TOC	TIC = 1.11000E+04 ug/G			N4C7D
5718	TIC/TOC	TOC = 9.46000E+03 ug/G			N4C7D
5818	TIC/TOC	1.52000E 04 ug C/G TIC VALUE	N	Y	N4C7D
5318	TIC/TOC	TOC = 7.47000E+03 ug/G			N4C7D
5918	TIC/TOC	TIC = 230.00 % SPK RECOVERY			N4C7D
5918	TIC/TOC	TOC = 60.7 % SPK RECOVERY			N4C7D

END OF REPORT

WHC-SD-WM-DP-013, REV. 0

WHC-SD-WM-DP-073, REV. 0

PHOTOGRAPHS

WHC-SD-WM-DP-073, REV. 0

LOGBOOK

RECORD COPY NOT FOR CIRCULATION FEB 11 1994 RECEIVED WHC BCSR DOCUMENT CONTROL	NOTEBOOK NUMBER WHC-SD-WM-DP-013 , REV. 0			
	WHC-N-911 1			
	DATE OF ISSUE 2-11-94		SERIES AND COPY 1	
	TITLE (INDICATE SUBJECT CONTENT) 241-SY-103			
AUTHOR(S) - DEPARTMENT AND SECTION <div style="text-align: center; font-family: cursive;">R. K. Fuller</div>				
<div style="text-align: center; font-family: cursive;">222-S Laboratory - Hot Cell Operations</div>				
PERIOD COVERED (INCLUSIVE - MONTH, DAY, YEAR) FROM _____ TO _____				
IF CONTINUED FROM ANOTHER NOTEBOOK, GIVE NOTEBOOK NUMBER 				
IF CONTINUED IN ANOTHER NOTEBOOK, GIVE NOTEBOOK NUMBER 				
ROUTE TO	P.R. NO.	LOCATION	ROUTE DATE	SIGNATURE & DATE
R.K. Fuller	62528	76-31	FEB 11 1994	Keith Fuller 5/18/94

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5/18/94

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13	SY-103 - Riser 14A - Chain of Custody
14	SY-103 - Riser 14A - Extrusion Sheet
15	SY-103 - Riser 14A - Continued
16	SY-103 - Risers 22A/14A photography
17	SY-103 - Risers 22A/14A Photography
18	SY-103 - Risers 22A - photograph
19	SY-103 - Riser 14A - photograph
20	SY-103 Riser 7B - Chain of Custody
21	SY-103 Riser 7B - Extruded Seg. Desc. Sheet
22	SY-103 Riser 7B - Extrusion information
23	SY-103 Risers 22A, 14A, 7B lab samples RK76/13/94
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Page Number

WHC-SD-WM-DP-043, REV. 0

PAGES 2 THROUGH 4 WERE INTENTIONALLY LEFT BLANK

Tank 241-SY-103
Hot Cell Work Plan

5

I. Overview

WHC-SD-WM-DP-073, REV. 0

- A. Waste tank 241-SY-103 sampling will consist of 3 auger samples. The samples will be taken from risers 7B, 14A, and 22A.
- B. This hot cell work plan is based upon Tank 241-SY-103 Tank Characterization Plan (WHC-SD-WM-TP-197).
- C. Auger samples will be loaded into 1-E2 hot cell in accordance with procedure LO-160-101, Core Segment Receipt and Preparation. The auger sample will be prepared for the 222-S Laboratory in accordance with procedure LO-160-103, Core Segment Extrusion Process and Sample Preparation and this work plan.

II. General Comments

- A. The cognizant scientist may deviate from this hot cell work plan should unforeseen circumstances arise. All deviations shall 1) be recorded in the laboratory notebook WHC-N-911 and 2) relayed to the project coordinator.
- B. The auger cask and liner will be recieved in the vertical position and should not be tilted past the horizontal position. A pre-job meeting will be held to discuss sample handling and special equipment/tools used to process the auger sample.
- C. The SY-103 auger samples will not be homogenized. The primary purpose of this sampling event is the determination of the maximum net exothermic energy in crust samples.
- D. Per section 6.2 of the TCP, TOC/TIC analyses will be performed if sufficient sample is ~~available~~ after subsampling for DSC/TGA.
available RK76/94
- E. If the net exothermic energy of tank SY-103 is greater than 140 cal/g on a dry weight basis, analyses for radionuclides will be done. These analyses will be perform on a water and fusion digest.

Radiochemistry analyses to include:

GEA-(Cs-137, I-129, Am-241)
Sr-90
Pu-239/240
Np-237
Tc-99

*p/with Fuller
1.5.94*

- F. If DSC/TGA data shows the net exothermic energy in the tank to be less than 140 cal/g, but the "in tank" camera shows a dry crust ring in the tank, the radiochemistry analyses will still be performed.

WHC-SD-WM-DP-013, REV. 0

III. Sample Handling and Sample Breakdown

- NOTE: Hot Cell technicians will ensure that vials are tare weighed.
- NOTE: Hot Cell technicians will apply labels with next available jar number. Clear tape will be used to cover and protect the labels on jars. Use appropriate covering for jars to minimize decontamination when loaded out of hot cell.
- NOTE: Hot Cell technicians will log all appropriate information about jars/vials into logbook WHC-N-754. Record the date, jar number, jar size, tare weight, tank number, customer i.d.
- NOTE: Hot Cell technicians will log all appropriate information on archive samples in logbook WHC-N-755. Record the date, jar number, jar size, tare weight, tank number, customer i.d.

A. Pre-job Preparation

1. Check out video equipment and ensure battery is charged.
2. Obtain new Super-VHS tape and label SY-103.
3. Obtain polaroid and print film.
4. Prepare the following jars:

<u>Quantity</u>	<u>Jar Size</u>
3	125 mL
3	250 mL
4	40 mL
10	20 mL

5. Complete dry run of workplan through new hot cells under direction of hot cell chemist.

Keith Fuller
6/15/94

B. Sample Processing

WHC-SD-WM-DP- 013, REV. 0

1. Contact Norton G. McDuffie, Flammable Gas Safety Program, prior to loading auger sample into Hot Cells. (373-2653)
2. Load liner containing auger sample into hot cell.
3. Using the auger extraction tool, remove auger sample and sleeve from the liner.
4. Disconnect auger extraction tool from auger assembly. (Additional manipulator support or equipment/tools may be necessary to accomplish this task.)
5. Remove sleeve from the auger sample.

NOTE:

In addition to the 35 mm camera, the video camera will be used to photograph the auger sample. Use a new Super-VHS Tape for recording that has been labelled 241-SY-103.

6. Photograph sample on the auger according to LO-160-103.
7. Record film exposure numbers in the laboratory notebook.
8. Record visual characteristics of solids including color, consistency, homogeneity, and texture according to LO-160-103.
9. If drainable liquid is present, decant liquid into a separate jar and record jar number information in logbook.
10. If hard dry crust layer of material exist on the top section of the auger, subsample for DSC/TGA according to scientist instructions.
11. Record jar number information in logbook for each subsample.
12. Remove crust portion of sample according to directions provided by the lead scientist and place in appropriate container.
13. Record jar number information in logbook.
14. Subsample remaining solids for DSC/TGA. (Per section 4.1 of the TCP, obtain two subsamples for DSC/TGA. These samples will be analyzed in duplicate.)
15. Record jar number information in logbook for each subsample.
16. Remove remaining solids and place in jar.

Keith Fuller
6/15/94

IV. Chemist/Project Coordinator/Hot Cell Technicians

1. Project Coordinator and Hot Cell Chemist will complete RSA's for samples to be submitted to laboratory.
2. Project Coordinator will submit the RSA's to Lab Leader and receive a laboratory number for each sample.
3. Project Coordinator will return original RSA's to Hot Cell Chemist after laboratory numbers have been issued.
4. Hot Cell Technicians will submit samples to laboratory.
5. Project Coordinator will review cards and assign priority before release to laboratory.
6. Chemist will finalize Hot Cell notebook (WHC-N-911) and fax copies to Ruth Schreiber (TWRS).
7. Hot Cell Technicians will follow up on submitting camera film Hot Cell Chemist.
8. Hot Cell chemist will transfer film to PNL photography for development.

Cognizant Scientist

Keith Fuller

Date

6/2/94

Project Coordinator

Ant D. Koch

Date

6/3/94

Keith Fuller
6/5/94

CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

COPY

(1) Shipment Number 33783 (2) Sample Number 94-AUG-001 (3) Supervisor B-PRAZNIK
 (4) Tank 10354 (5) Riser 22A (6) Cask Serial Number C1046

Radiation Survey Data:		(7) FIELD		(31) LABORATORY		(8) Shipment Description	
Over Top Dose Rate	<u>< 5 mR/hr</u>		<u>LO.5 mR/hr</u>	A. Work Package Number	<u>2W-93-1125</u>	B. Cask Seal Number	<u>2297</u>
Side Dose Rate	<u>5 mR/hr</u>		<u>2.5 mR/hr</u>	C. Date and Time Sample	<u>6-29-94</u>	Removed from Tank	<u>1530</u>
Bottom Dose Rate	<u>< 5 mR/hr</u>		<u>LO.5 mR/hr</u>	D. Expected Liquid Content	<u>20%</u>	E. Expected Solid Content	<u>80%</u>
Smearable Contamination	<u>< 220 dpm/100cm²</u>	(Alpha)	<u>220 dpm/100cm²</u>	F. Dose Rate Through Drill String	<u>SLEEPING 1004 PM/HK</u>	G. Expected Sample Length	<u>8"</u>
	<u>< 220 dpm/100cm²</u>	(Beta-Gamma)	<u>2200 dpm/100cm²</u>				
	<u>8552</u>	(Signature)	<u>C. Beer</u>				
	<u>8552</u>	(Signature)	<u>C. Beer</u>				

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

(10) Field Comments		(32) Laboratory Comments	
<p>(11) Point of Origin <u>10354 R22A</u> (12) Destination <u>2225</u></p> <p>(17) Relinquished By (Sign and PRINT) <u>D.C. Hartley, D.C. Hartley</u></p> <p>(21) Relinquished By (Sign and PRINT) <u>D.C. Hartley, D.C. Hartley</u></p> <p>(25) Relinquished By (Sign and PRINT)</p>		<p>(13) Sender Name (Sign and PRINT) <u>D.C. Hartley, D.C. Hartley</u></p> <p>(18) Received By (Sign and PRINT) <u>D. Davis</u></p> <p>(22) Received By (Sign and PRINT)</p> <p>(26) Received By (Sign and PRINT)</p>	
<p>(14) Date/Time <u>6/3/94, 1000</u></p> <p>(19) Date/Time <u>6-3-94</u></p> <p>(23) Date/Time</p> <p>(27) Date/Time</p>		<p>(15) Sender Comments</p> <p>(20) Receiver Comments</p> <p>(24) Receiver Comments</p> <p>(28) Receiver Comments</p>	
<p>(16) Seal Intact Upon Release? ☒ Yes ☐ No</p> <p>(29) Seal Intact Upon Receipt? ☒ Yes ☐ No</p>		<p>(30) Seal Data Consistent with this Record? ☒ Yes ☐ No</p> <p>Shipment No. ☒ Yes ☐ No</p> <p>Capt. Seal No. ☒ Yes ☐ No</p> <p>Sample No. ☒ Yes ☐ No</p>	

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Core Sampling, SG-85 Goldenrod - Tank Farm Operations, T4-01 BC-6001-326 (03/94)

Leah Fuller
6/15/94

Keith Fuller
6/15/94

Tank 241-SY-103 Extruded Segment Description Sheet

Sample 94-AUG-001Riser 22A

Core _____

Segment _____

General Description of Sample: (1) Problems removing Auger because static bonding spring became kinked.

- #1 - Small amount of white material
- #2 - slightly more white material than #1
- #3 - White material (5-10 g estimate)
- #4 - Dark material mixed with white material
- #5 - Small amount of dark material ~ 1.0 gram
- #6 - Small amount of dark material ~ 2-3 gram (est)
- #7 - 2-3 grams dark material
- #8 - 2-3 grams dark material

Sketch:

Sampler Efficiency

Volume of Sampler NA%Volume of Air NA%Volume of Liquid NA%Volume of Solids NAComments: Auger Sample

Drainable Liquid Density

Total Weight NATotal Volume NADensity NATurbidity NAComments: Insufficientsample (4-5 ml)

Solids

Color White → dark brown

Consistency _____

Homogeneity unhomogeneousTexture Crusty / somewhat dryPenetrometer NA

Liner Liquid

Collection Jar NAGross Wt. NATare Wt. NANet Wt. NANo. Phases NA

Drainable Liquid

Collection Jar NAGross Wt. NAtare Wt. NANet Wt. NANo. Phases NACognizant Scientist: *Keith Fuller*

6/7/94

Keith Fuller

6/7/94

Reviewed By: *Keith Fuller*

1726/15/94

(1) Used exposures #3 and #4 for photography.

(2) No sample contained inside the sleeve.

WHC-SD-WM-DP-073, REV. 0

(3) Inverted liner:

(2) ~ 4-5 mL liner liquid collected

(6) Viewed inside of liner with flashlight. Liner contained no solid material. Slight discoloration on bottom of liner.

(4) Balance check:

20 gram weight = 20.06 grams
500 grams weight = 499.69 grams

20 mL

Vial # 6007

* Contains white crust / dry from flute #2. For DSC/TGA analysis.

DSC/TGA

* Customer I.D. R22AF2

20 mL

* Material dry and flaky.

* 1.17 grams weighed

* Subsampled off flute #2

20 mL

Vial # 6009

* Contains white crust / dry caulk material

* Customer I.D. R22AF3

DSC/TGA

* 1.03 grams weighed

20 mL

* Subsampled off flute #3

20 mL

Vial # 6010

* Contains dark material / sticky

* Customer I.D. R22AF6

DSC/TGA

* Subsampled off Flute #6

20 mL

* 0.99 grams

20 mL

Vial # 6011

* contains brown / dark material sticky

* Customer I.D. R22AF7

DSC/TGA

* Subsampled off Flute #7

20 mL

* 0.97 grams

Keith Fuller
6/7/94

6/7/94

SY-103 Riser 22A (continued)

WHC-SD-WM-DP-073, REV. 0

Jar # 6021 (125 mL)	137.65	gross wt
	129.65g	tare wt
	8.00g	net wt

* Contains dark material from SY-103 Riser 22A
Flutes # 4 - #8. (JAR # 6021 - 125 mL)

Jar # 6022 (125 mL)	138.48	g gross wt
	130.13	g tare wt
	8.35	g net wt

* Contains crust material from SY-103 Riser 22A
Flutes # 1 - #3. (JAR # 6022 - 125 mL)

Briefly:

- (1) Removed approximately 2.0 grams total off Auger from SY-103 riser 22A.
- (2) Subsampled white crust for DSC/TGA
20 mL Vial # 6007 } duplicate samples
20 mL Vial # 6009 }
- (3) Subsampled dark brown material for DSC/TGA
20 mL Vial # 6010 } duplicate samples
20 mL Vial # 6011 }
- (4) Inverted liner to recover contents and only 4-5 mL of liquid drained onto extrusion tray. Unable to recover liquid.
- (5) No solids present in the liner.
- (6) Sample ranged from a white crust material (similar to discolored white caulk) to a dark brown material on flutes #4 → #8. White material was removed from flutes #1 → #3.

Keith Fuller
6/7/94

6/7/94

Chain of Custody SY-103 Riser 14A

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CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

B. PRZNIL COPY

(1) Shipment Number 43663 (2) Sample Number 94-AUG-002 (3) Supervisor C # 1043

(4) Tank 103-ST (5) Riser 14A (6) Cask Serial Number

(7) FIELD		(31) LABORATORY		(8) Shipment Description	
Radiation Survey Data:				A. Work Package Number	2W-93-1125
Over Top Dose Rate	2.5 mR/hr	2.5 mR/hr		B. Cask Seal Number	3756
Side Dose Rate (mR/hr)	1.7 mR/hr	2.5 mR/hr		C. Date and Time Sample Removed from Tank	6-6-94 / 1400hrs
Bottom Dose Rate	2.5 mR/hr	2.5 mR/hr		D. Expected Liquid Content	20%
Smearable Contamination	2.5 mR/hr (Alpha)	2.5 mR/hr (Alpha)		E. Expected Solid Content	80%
	2.5 mR/hr (Beta-Gamma)	2.5 mR/hr (Beta-Gamma)		F. Dose Rate Through Drill String	60mR
				G. Expected Sample Length	8"

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

WHC-SD-WM-DP-073 REV 0

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(10) Field Comments		(32) Laboratory Comments	
(11) Point of Origin 103-ST-R14A	(12) Destination 222 S	(13) Sender Name (Sign and PRINT) B.S. PRZNIL	(14) Date/Time 6-7-94
(17) Relinquished By (Sign and PRINT) David P. Rabinovich	(18) Received By (Sign and PRINT) B.S. PRZNIL	(19) Date/Time 6-7-94	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments
(29) Seal Intact Upon Receipt?		(30) Seal Data Consistent with this Record?	
(16) Seal Intact Upon Release?	(17) Seal Intact Upon Receipt?	Cask Seal No. ☒ Yes ☐ No	Sample No. ☒ Yes ☐ No

14. 6-7-94

Auger Sample

With Fuller 6/15/94

Tank 241-SY-103 Extruded Segment Description Sheet

WHC-SD-WM-DP-073, REV. 0

Sample 94-AUG-002 Riser 14 A Core _____ Segment _____

General Description of Sample:

- (1) Removed Auger from liner. Auger sleeve was not kinked
- (2) Set Auger in Auger Stand.
- (3) Sample contained mostly on flute #2. Auger slipped into position on the Auger Stand and sample fell from Auger onto tray.
- (4) Estimate about 15 grams total material on Auger.

Photo

Sampler Efficiency

Volume of Sampler NA
 %Volume of Air _____
 %Volume of Liquid _____
 %Volume of Solids _____
 Comments: Auger Sample

Drainable Liquid Density

Total Weight NA
 Total Volume _____
 Density _____
 Turbidity _____
 Comments: _____

Solids

Color White dark brown
 Consistency _____
 Homogeneity inhomogeneous
 Texture Crusty 6/9/94 RKT
 Penetrometer NA

Liner Liquid

Collection Jar NA
 Gross Wt. _____
 Tare Wt. _____
 Net Wt. _____
 No. Phases _____

Drainable Liquid

Collection Jar NA
 Gross Wt. _____
 tare Wt. _____
 Net Wt. _____
 No. Phases _____

Cognizant Scientist:

Keith Fuller 6/7/94

Reviewed By:

Kurt Schick 6/15/94

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- 1) No problem removing sleeve from auger.
- 2) Sample material fell off Auger onto sample tray when Auger slipped into position on auger stand. Sample material remained directly below flute #2.
- 3) Crust material (light brown $\rightarrow$ white, caulk material.)
- 4) Approximately 95% of material contained on flute #2.
- 5) Approximately 1 ml liquid retained in liner.
- 6) Used exposures 5 & 6 for photography.

Subsample

20 ml Vial # 6028 - Customer R14AF2A

DSC/TGA

- * Subsample for DSC/TGA
- * Material subsampled off auger.
- * light in weight, somewhat fluffy.
- * Removed from flute #2.

0.78 grams

20 ml Vial # 6029 - Customer id. R14AF2B

DSC/TGA

- * Subsample for DSC/TGA
- * Material subsample off sample tray.
- * Material fell from flute #2.
- * Material - sticky, caulk like.

1.07 grams

20 ml Vial # 6030 - Additional sample

- * Contains material (remaining) after DSC/TGA subsample.
- * 7.20 grams collected

7) Collected approximately 10 grams total.

Keith Fuller
6/7/94

6/7/94

16

241-SY-103 Riser 22A and 14A

Leith
 6/7/94

241-SY-103 Riser 22A and 14A

6/7/94

17

WHC-SD-WM-DP-073, REV. 0

with Gull
6/7/94

SY-103 RISER 22.A

CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

COPY

(1) Shipment Number 35192 (2) Sample Number 94-ALG-003 (3) Supervisor B. Razausk
(4) Tank 103-SY (5) Riser 7B (6) Cask Serial Number C# 1054

Radiation Survey Data:		(7) FIELD	(31) LABORATORY	(8) Shipment Description
Over Top Dose Rate	<u>0.5 mR/hr</u>		<u>0.5 mR/hr</u>	A. Work Package Number <u>2W93-01125-W</u>
Side Dose Rate	<u>2 mR/hr</u>		<u>2 mR/hr</u>	B. Cask Seal Number <u>3764</u>
Bottom Dose Rate	<u>0.5 mR/hr</u>		<u>0.5 mR/hr</u>	C. Date and Time Sample Removed from Tank <u>6-8-94/1300</u>
Smearable Contamination	<u>LD</u>	(Alpha)	<u>LD</u>	D. Expected Liquid Content <u>20%</u>
	<u>LD</u>	(Beta-Gamma)	<u>LD</u>	E. Expected Solid Content <u>80%</u>
RCT* <u>Captain</u>	(Signature)	RCT* <u>SN</u>	(Signature)	F. Dose Rate Through Drill String <u>40 mR/hr</u>
				G. Expected Sample Length <u>8"</u>

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

(10) Field Comments

(32) Laboratory Comments

WHC-SD-WM-DP-073, REV. 0

(11) Point of Origin <u>103-SY-R7B</u>	(12) Destination <u>222S LAB</u>	(13) Sender Name (Sign and PRINT) <u>R.S. Razausk</u>	(14) Date/Time <u>6-9-94/1245</u>	(15) Sender Comments
(17) Relinquished By (Sign and PRINT) <u>David R. Wohlwend</u>	(18) Received By (Sign and PRINT) <u>R. Razausk</u>	(19) Date/Time <u>6-9-94/1330</u>	(20) Receiver Comments	
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments	
(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				(30) Seal Data Consistent with this Record? Cask Seal No. ☒ Yes ☐ No Sample No. ☒ Yes ☐ No
(29) Seal Intact Upon Receipt? ☒ Yes ☐ No				

Leith Fuller
6/15/94

6/9/94

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Tank 241-SY-103 **Extruded Segment Description Sheet**

20 grams = 20.00 gram
500 grams = 499.88 grams

Sample 94-AUG-003 Riser 713 Core _____ Segment _____

- General Description of Sample: (1) Removed Auger from liner (used 7/8" pin)
(2) Sleeve removed easily.
(3) Placed Auger on Auger stand
(4) Sample visible on flutes 1, 2, 3, 4, 6.
(5) Estimate approx. 10-15 grams of material.
(6) Noticed a small piece of tape or plastic on the Auger.
(very small)

WHC-SD-WM-DP-073, REV. 0

Sketch:

Sampler Efficiency
Volume of Sampler NA
%Volume of Air _____
%Volume of Liquid _____
%Volume of Solids _____
Comments: Auger Sample

Drainable Liquid Density
Total Weight NA
Total Volume _____
Density _____
Turbidity _____
Comments: None

Solids
Color White, Gray
Consistency Crumbly
Homogeneity inhomogeneous
Texture Hard, crusty
Penetrometer NA

Liner Liquid
Collection Jar NA
Gross Wt. _____
Tare Wt. _____
Net Wt. None
No. Phases NA

Drainable Liquid
Collection Jar NA
Gross Wt. _____
tare Wt. _____
Net Wt. _____
No. Phases _____

Cognizant Scientist: Leith Fuller 6/9/94
Reviewed By: Neil A. Gosh 6/15/94

22

Sy-103 Riser 7B (continued)

6/9/94

1. No problem removing sleeve from auger. Static bonding spring was visible before removing sleeve.
2. Sample appeared hard and crumbly. Some material fell from auger onto auger tray.
3. Sample color ranged from white to light gray.
4. Used exposures 7 and 8 for photography.
5. Subsampling information:
 - a) Will subsample material off auger for DSC/TGA
 - b) Will subsample material off sample tray for DSC/TGA
 - c) Remaining material will be archived in a 20 mL vial
6. Vial # 6031 (20 mL) - 1.10 grams sample weight.
 - For DSC/TGA analysis
 - Customer I.D. R7B-A - sampled off tray
7. Vial # 6032 (20 mL) - 1.21 grams sample weight.
 - For DSC/TGA analysis
 - Customer I.D. R7B-B - sampled off auger
8. Vial # 6033 (20 mL) - 8.38 grams.
 - Archive material - ~~R7B COMP~~ R7B C1 RK7 6/11/94
9. No liner liquid present
10. No solid sample held up in liner.
11. Collected approximately 11 grams material.

Keith Fuller

WHC-SD-WM-DR-073, REV 0

SY 103 RISER 7B

6/13/94
21.48 2.0K

SY-103 RISER 7B 06-09-94

SY-103 RISER 7B 06-09-94

SY-103 RISER 7B 06-09-94

SY-103 RISER 7B 06-09-94

SY-103 RISER 7B 06-09-94

SY-103 RISER 7B 06-09-94

SY-103 RISER 7B 06-09-94

SY-103 RISER 7B 06-09-94

SY-103 RISER 7B 06-09-94

SY-103 RISER 7B 06-09-94

24 6/13/94

Sample Information

WHC-SD-WM-DP-113, REV. 0

SY-103

<u>Customer id</u>	<u>Vial #</u>	<u>Laboratory id</u>	<u>RSA #</u>
R22AF2	6007	R5372	1952
R22AF3	6009	R5373	1952
R22AF6	6010	R5374	1952
R22AF7	6011	R5375	1952
R14AF2A	6028	R5376	1952
R14AF2B	6029	R5377	1952
R7B-A	6031	R5398	1958
R7B-B	6032	R5399	1958

Keith Fuller
6/13/94

SY-103 RISER 7B

26 6/14/94

WHC-SD-WM-DP-013, REV. 0

^{RK7 6/14/94}
Vial / jar # 6022 - Customer id ~~R22 COMP~~ R22AC1
- will submit for TOC / TIC

Vial / jar # 6030 - Customer id R14AC1
- will submit for TOC / TIC

Vial / jar # 6033 - Customer id R7BC1
- will submit for TOC / TIC

Vial / jar # 6021 - Customer id R22AC2
- will submit for TOC / TIC

8/10/94

Information on samples above regarding Customer id:

example: R22AC1
Riser ———— ↑
Riser # ———— ↑
Riser # letter ———— ↑
Composite ———— ↑

Keith Fuller
8/10/94

WHC-SD-WM-DP-073, REV. 0

40 DAY DELIVERABLE REPORT

From: Kurt L. Kocher
Phone: 373-1242
Date: July 14, 1994
Subject: 40 Day Deliverable for Tank 241-SY-103

To: G. D. Johnson
N. G. McDuffie
R. D. Schreiber

This is the 40 day deliverable status report utilizing the LIMS system at the 222-S Laboratory for Tank 241-SY-103. There were no exotherms exhibited at all in these three auger samples. The TGA results varied from 8% to 33% water by weight. The auger sample retrieved from Riser 7B had the least amount of water by weight ranging from 8% to 17.8% then Riser 22A which ranged from 13.7% to 24%. Lastly Riser 14A water by weight ranged from 30.8% to 39.2%. The TIC/TOC analyses will be completed by the end of next week and if you would like preliminary results of this data please contact me, otherwise you will find this information in the 136 Day Deliverable.
Thank you for your time and if you have any questions please give me a call.

Sincerely,

Kurt L. Kocher
373-1242
222-S Laboratory

SY-103 Riser 7B

WHC-SD-WM-DP-113, REV. 0

Date: June 9, 1994
Sample number: 94-AUG-003
Cask serial #: C-1054

Notes:

- * Removed auger assembly with 5/8" pin (auger extraction tool).
- * Set auger assembly on auger stand
- * No problems removing sleeve from the auger.
- * Sample material visible on auger flutes 1, 2, 3, 4, and 6.
- * Performed photography.
- * No sample contained in the sleeve.
- * No solid sample held up in liner.

Sample information:

- * Crust material was a mixture of color ranging from white to light gray. Sample material was hard, dry and brittle. Textural qualities were much different than the previous two augers. Previous auger samples contained a small amount of liquid in the liner. Auger from riser 7B contained no trace of liner liquid.
- * Some of the larger chunks of sample material fell onto the tray when the auger was placed into position on the auger stand.
- * Total amount of sample removed from the auger was slightly less than 11 grams.

Subsample information:

- * Subsampled material remaining on the auger:
 - vial # 6031 1.10 grams (DSC/TGA) 20 mL vial
- * Subsampled material from sample tray:
 - vial # 6032 1.21 grams (DSC/TGA) 20 mL vial

Reserve sample information:

- * 20 ml vial (# 6033) was used to archive the remaining material. Total weight collected 8.38 grams.

Miscellaneous:

- * Static bonding spring was visible when auger assembly was removed from the liner.
- * A small piece of material (either plastic or tape) was observed on flute number 4. Material was colorless.

SY-103 Riser 22A

Date: June 7, 1994
Sample number: 94-AUG-001
Cask serial #: C-1046

WHC-SD-WM-DP-173, REV. 0

Notes:

- * Removed auger assembly with 5/8" pin (auger extraction tool).
- * Set auger assembly on auger stand
- * Slight problems removing the auger sleeve because the static bonding spring in the way.
- * Removed sleeve from auger.
- * Performed photography.
- * No sample contained in the sleeve
- * No solid sample held up in liner.

Sample information:

- * White crust material observed on flutes numbers 2 and 3. Material was somewhat sticky but easy to remove from the auger. Material was easy to removed because it would stick to the spatula.
- * A small amount of dark brown sample material was observed on each flute 4 thru 8. Material was unhomogenous.
- * Removed a total of approximately 20 grams off the auger:

Subsample information:

- * Subsampled white crust material in duplicate:
 - vial # 6007 1.17 grams (DSC/TGA) Flute #2
 - vial # 6009 1.03 grams (DSC/TGA) Flute #3
- * Subsampled dark brown material in duplicate:
 - vial # 6010 0.99 grams (DSC/TGA) Flute #6
 - vial # 6011 0.97 grams (DSC/TGA) Flute #7

Reserve sample information:

- * 125 ml jar (# 6021) was used to archive the remaining dark brown solids (Flutes 4 thru 8). Total weight collected 8.00 grams.
- * 125 ml jar (# 6022) was used to archive the remaining white crust material (Flutes 1 thru 3). Total weight collected 8.35 grams.

Miscellaneous:

No solids where present in the liner.

SY-103 Riser 14A

Date: June 7, 1994
Sample number: 94-AUG-002
Cask serial #: C-1043

WHC-SD-WM-DP-013, REV. 0

Notes:

- * Removed auger assembly with 5/8" pin (auger extraction tool).
- * Set auger assembly on auger stand
- * No problems removing sleeve from the auger.
- * Sample material fell off auger onto sample tray when auger assembly slipped into position.
- * Removed sleeve from auger.
- * Performed photography.
- * No sample contained in the sleeve.
- * No solid sample held up in liner.

Sample information:

- * Crust material ranging from light brown to white was observed on flute #2. Approximately 95 % of the material from the auger was from flute #2.
- * Total amount of sample removed from the auger was 10 grams.

Subsample information:

- * Subsampled white caulk material remaining on the auger:
-vial # 6028 0.78 grams (DSC/TGA) Flute #2
- * Subsampled material from sample tray:
-vial # 6029 1.07 grams (DSC/TGA) Flute #2

Reserve sample information:

- * 20 ml vial (# 6030) was used to archive the remaining material.
Total weight collected 7.20 grams.

Miscellaneous:

No solids where present in the liner.

WHC-SD-WM-DP-073, REV. 0

40 DAY SAMPLE STATUS REPORTS

SAMPLE STATUS REPORT FOR R 5398. SY-103 R7B-A TIME: 7/14/94 12:45
 DISPATCHED: 6/10/94 9: 3 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 6/10/94 14:12

WHC-SD-WM-DP-013, REV. 0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
5711	DSC	NO EXOTHERMS			N4C7D
5711	DSC	NO EXOTHERMS			N4C7D
5712	TGA	OUT FOR RERUN			N4C7D
5712	TGA	10.71% H2O WITH 9.69% FURTHER WT. LOSS			N4C7D
5712	TGA	8.02000E 00 % H2O	N	Y	N4C7D
5811	DSC	NO EXOTHERMS			N4C7D
5811	DSC	NO EXOTHERMS			N4C7D
5812	TGA	OUT FOR RERUN			N4C7D
5812	TGA	8.56000E 00 % H2O	N	Y	N4C7D

END OF REPORT

SAMPLE STATUS REPORT FOR R 5399. SY-103 R7B-B TIME: 7/11/94 10: 4
DISPATCHED: 6/10/94 9: 5 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/10/94 14:12

WHC-SD-WM-DP-013, REV. 0

EXT.	DETER.	RESULTS OR STATUS	OUT OF GOOD CHARGE RANGE? ANS? CODE
****	*****	*****	*** **
5711	DSC	NO EXOTHERMS	N4C7D
5712	TGA	OUT FOR RERUN	N4C7D
5712	TGA	11.96% H2O WITH 6.49% FURTHER WT. LOSS	N4C7D
5811	DSC	NO EXOTHERMS	N4C7D
5812	TGA	OUT FOR RERUN	N4C7D
5812	TGA	17.82% H2O WITH 9.66% FURTHER WT LOSS	N4C7D

END OF REPORT

SAMPLE STATUS REPORT FOR R 5372. SY-103 R22AF2 TIME: 7/11/94 10: 4
 DISPATCHED: 6/ 8/94 11:22 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 6/ 9/94 11: 1

WHC-SD-WM-DP-013, REV. 0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
5711	DSC	NO EXOTHERMS			N4C7D
5712	TGA	OUT FOR RERUN			N4C7D
5712	TGA	1.19800E 01 % H2O	N	Y	N4C7D
5811	DSC	NO EXOTHERMS			N4C7D
5812	TGA	OUT FOR RERUN			N4C7D
5812	TGA	1.13700E 01 % H2O	N	Y	N4C7D

END OF REPORT

SAMPLE STATUS REPORT FOR R 5373. SY-103 R22AF3 TIME: 7/11/94 10: 4
DISPATCHED: 6/ 8/94 11:23 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 9/94 11: 1

WHC-SD-WM-DP-013,REV.0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
5711	DSC	NO EXOTHERMS			N4C7D
5712	TGA	2.40400E 01 % H2O	N	Y	N4C7D
5811	DSC	NO EXOTHERMS			N4C7D
5812	TGA	2.36100E 01 % H2O	N	Y	N4C7D

END OF REPORT

SAMPLE STATUS REPORT FOR R 5374. SY-103 R22AF6 TIME: 7/11/94 10: 4
DISPATCHED: 6/ 8/94 11:24 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 9/94 11: 2

WHC-SD-WM-DP-013,REV.0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
5711	DSC	NO EXOTHERMS			N4C7D
5712	TGA	2.68400E 01 % H2O	N	Y	N4C7D
5811	DSC	NO EXOTHERMS			N4C7D
5812	TGA	2.39300E 01 % H2O	N	Y	N4C7D

END OF REPORT

SAMPLE STATUS REPORT FOR R 5375. SY-103 R22AF7 TIME: 7/11/94 10: 4
DISPATCHED: 6/ 8/94 11:24 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 9/94 11: 2

WHC-SD-WM-DP-013, REV. 0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
5711	DSC	NO EXOTHERMS			N4C7D
5712	TGA	2.62900E 01 % H2O	N	Y	N4C7D
5811	DSC	NO EXOTHERMS			N4C7D
5812	TGA	2.47700E 01 % H2O	N	Y	N4C7D

END OF REPORT

SAMPLE STATUS REPORT FOR R 5376. SY-103 R14AF2A TIME: 7/11/94 10: 5
DISPATCHED: 6/ 8/94 11:25 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 9/94 11: 2

WHC-SD-WM-DP-073, REV. 0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
5711	DSC	NO EXOTHERMS			N4C7D
5712	TGA	3.32100E 01 % H2O	N	Y	N4C7D
5811	DSC	NO EXOTHERMS			N4C7D
5812	TGA	3.35200E 01 % H2O	N	Y	N4C7D

END OF REPORT

SAMPLE STATUS REPORT FOR R 5377. SY-103 R14AF2B TIME: 7/12/94 12:50
DISPATCHED: 6/ 8/94 11:26 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 9/94 11: 2

WHC-SD-WM-DP-013, REV. 0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
5711	DSC	NO EXOTHERMS			N4C7D
5712	TGA	3.08500E 01 % H2O	N	Y	N4C7D
5811	DSC	NO EXOTHERMS			N4C7D
5812	TGA	3.91700E 01 % H2O	N	Y	N4C7D

END OF REPORT

WHC-SD-WM-DP-073, REV. 0

TANK CHARACTERIZATION PLAN QC REQUIREMENTS

Table 3. SY-103 Auger Sample Chemical, Physical, and Radiological Analytical Requirements

Project Name		SY-103 Auger		CHARGE CODES		# AUGERS		AUGER #		COMMENTS		REPORTING FORMATS						
Plan Number	WHC-SD-WM-TP-187, REV 0	ED4599 (PNL)		N4C7A (WHCI)		3		1, 2, and 3		Homogenization Test - Not Required Field Blank - Not Required Hot Cell Blank - Not Required		FORMAT I		Early Noddy				
Task	SY-103	N4C7A (WHCI)		N4C7B (WHCI)								FORMAT II		Process Control				
Program Contact	G. D. Johnson	N4C7B (WHCI)		N4C7C (WHCI)								FORMAT III		Safety Screen				
TWRS Contact	R. D. Schreiber	N4C7C (WHCI)		N4C7D (WHCI)								FORMAT IV		Waste Management				
Lab. Project Coordinator	K. L. Koehn (WHCI) S. G. McKinley (PNL)	N4C7D (WHCI)		N4C7E (WHCI)								FORMAT V		RCMA Compliance				
		N4C7E (WHCI)										FORMAT VI		Social				
ANALYSES												CRITERIA						REPORT FORMAT
METHOD	ANALYTE	WHC PROCEDURE	PNL PROCEDURE	UNITS	ACID.	FUS	H ₂ C	OTHER	DUP	SPK/MSD	BLANK	STD	DUP PRECN	SPK RECVRY	ACTION LIMIT	EXPECTED RANGE		
TIC/TOC	CO ₂ ¹	LA-342-100	PNL-ALC-381	μg/g				direct	ea smpl	ea smpl	ea PE	ea AB	≤ 20%	80-120%	none	15,000-20,000 μg/g	II	
TIC/TOC	TOC	LA-342-100	PNL-ALO-381	μg/g				direct	ea smpl	ea smpl	ea PB	ea AB	≤ 20%	80-120%	30,000 μg/g	5000-20,000 μg/g	II	
DSC ¹	energy	LA-514-113	PNL-ALO-508	J/g				direct	ea smpl	N/A	N/A	ea AB	≤ 20%	N/A	net 586 J/g (dry)	20 to 70 cal/g	II	
TGA ¹	% water	LA-560-112	PNL-ALO-508	%				direct	ea smpl	N/A	N/A	ea AB	≤ 20%	N/A	none	15 - 45%	II	
RSST ²	energy	see ¹	N/A	J/g				direct	N/A	N/A	N/A	N/A	N/A	N/A	net 586 J/g (dry)	> 140 cal/g	II	
GEA ³	Cs-137	LA-548-121	PNL-ALO-450	μCi/g		X	X		ea smpl	N/A	ea PB	ea AB	≤ 20%	N/A	none	300 - 500 μCi/g	II	
GEA ³	I-129	LA-376-103	PNL-ALO-454	μCi/g				direct	ea smpl	ea smpl ⁴	ea PE	ea AB	≤ 20%	N/A	none	< 1.0 μCi/g	II	
GEA ³	Am-241	LA-548-121	PNL-ALO-426	μCi/g	X	X	X		ea smpl	ea smpl ⁴	ea PE	ea AB	≤ 20%	N/A	none	0.1 - 0.3 μCi/g	II	
Sep. & α count ⁵	Si-90	LA-220-10 ⁶	PNL-ALO-431 PNL-ALC-433	μCi/g	X	X	X		ea smpl	ea smpl ⁴	ea PE	ea AB	≤ 20%	N/A	none	15 - 40 μCi/g	II	
Sep. & α count ⁵	Pu-239/240	LA-503-156	PNL-ALO-421 PNL-ALO-422	μCi/g	X	X	X		ea smpl	ea smpl ⁴	ea PE	ea AB	≤ 20%	N/A	none	0.005-0.02 μCi/g	II	
Sep. & α count ⁵	Np-237	LA-933-141	PNL-ALO-425	μCi/g	X	X	X		ea smpl	ea smpl ⁴	ea PE	ea AB	≤ 20%	80-120%	none	< 0.1 μCi/g	II	
Liquid Scintillation ⁷	Tc-99	LA-438-101	PNL-ALO-432	μCi/g	X	X	X		ea smpl	ea smpl ⁴	ea PE	ea AB	≤ 20%	N/A	none	0.2-0.5 μCi/g	II	

¹ ea - each, DUP - duplicate, spk/msd - spike or matrix spike duplicate.
² PB - preparation blank per batch, AB - analytical batch, NA - not applicable.
³ Two sets of analyses in duplicate will be done for DSC and TGA.
⁴ RSST will be performed at the discretion of 222-S Laboratory personnel.
⁵ RSST is used in place of a spike and results corrected for recovery.
⁶ Post-digestion spike.
⁷ These analyses are performed only if the DSC measurement indicates an energy content greater than 140 cal/g (dry weight basis) or a dry crust is present.
⁸ The RSST method, yet to be proceduralized, may be found in WHC-SD-WM-TP-104, Rev 0.
⁹ Tracer or carrier is used in place of a spike and results corrected for recovery.
¹⁰ Post-digestion spike.

WHC-SD-WM-DP-073, REV. 0

REQUEST FOR SPECIAL ANALYSIS (RSA's)

REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No.		
1. Sample Origin SY-103 <i>rser 22A</i>		2. Date Submitted 6/14/94		4. Requester Name Kurt Kacher		6. Charge Code/Work Package N4C7D	
		3. Submitted By Ron Hale		5. Requester Phone/MSIN 373-1242 76-06		7. Date Required 6/21/94	
8. Customer ID	Collected		9. Laboratory ID	12. Number of Samples 4	13. Volume of Samples 8 gms each <i>Approx.</i>	14. Protocols ☐ None ☐ RCRA ☐ NQA-1 ☒ Other ☐ CERCLA <i>SST see TCP</i>	
	Date	Time					
R22AC1	Vial #6022		R5425				
R22AC2	Vial #6021		R5426				
R14AC1	Vial #6030		R5429				
R7BC1	Vial #6033		R5430				
				15. Sample Type ☒ Solid ☐ Soil ☐ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____			
				16. Storage Requirements ☒ None WHG-SD-WM-DP-013, REV. 0 ☐ Specify _____			
				17. Process Knowledge/Known Listed Wastes ☐ Unknown ☐ Known (Please attach list) ☐ Previously submitted for this Project			
10. Determination		11. Expected Range		18. Survey _____ Dose Rate _____ HPT Signature _____			
TIC / CO₃ ug/g		KN 6/14/94					
TOC ug/g		KN 6/14/94					
TIC / TOC ug/g							
				19. Disposition of Waste ☒ Return to Client/Location Kurt Kacher ☐ Dispose per 222-S Procedures ☒ Other Contact Kurt Kacher 373-1242 for archive			
				20. Additional Information TIC / TOC direct method STD R5423, R5424 Blank R5424, R5428			
21. Chain of Custody ☐ No ☐ Yes Number: _____				22. Assigned Custodial Group (select one) ☐ PCL ☐ PSDU ☐ ENV ☐ Process			
				24. Laboratory Manager (if required) 206 Date: _____			
23. Sample Received By: _____ Date: _____ Time: _____				Date: _____			

REQUEST FOR SPECIAL ANALYSIS (RSA)					RSA No. 1958						
1. Sample Origin SY 103 Liner 7B		2. Date Submitted 6/10/94		4. Requester Name Kurt Kocher		6. Charge Code/Work Package N4C7D					
		3. Submitted By Ron. Hale		5. Requester Phone/MSIN 373-1242 T6-06		7. Date Required 6/20/94					
8. Customer ID		Collected		9. Laboratory ID		12. Number of Samples 2					
		Date	Time					13. Volume of Samples 1 g			
R7B-A		(Vial #6031)		R5398		14. Protocols ☐ None ☐ RCRA ☐ NQA-1 ☒ Other ☐ CERCLA SST/TCP					
R7B-B		(Vial #6032)						R5399			
						15. Sample Type ☒ Solid ☐ Soil ☐ Slurry ☐ Gas ☐ Water ☐ Waste ☐ Solution ☐ Sludge ☐ Oil ☐ Other (specify) _____					
10. Determination DSC/TGA		11. Expected Range		16. Storage Requirements ☐ None WHC-SD-WM-DP-073, REV. 0 ☐ Specify _____							
17. Process Knowledge/Known Listed Wastes ☐ Unknown ☒ Known (Please attach list) ☐ Previously submitted for this Project		18. Survey _____		Dose Rate _____		19. Disposition of Waste ☒ Return to Client/Location Sample Storage 222-S ☐ Dispose per 222-S Procedures ☐ Other _____					
20. Additional Information To be analyzed in duplicate. STD R5397		21. Chain of Custody ☐ No ☐ Yes Number: _____		22. Assigned Custodial Group (select one): ☐ PCL ☐ POSU ☐ ENV ☐ Process							
23. Sample Received By: _____ Date: _____ Time: _____		24. Laboratory Manager (if required): 207 Date: _____									

[illegible]