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Project Title/Work Order WHC-SD-WM-DP-097, Rev. 0, - "Tank Characterization 40-Day Crust Burn Report for Double Shell Tank 241-AW-101"		EDT NO.: EDT-610404		
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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT

610404

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2	1	Cog. Eng. R. A. Esch	<i>R. A. Esch</i>	3/6/95	716-30						
2	1	Cog. Mgr. J. G. Kristofzski	<i>J. G. Kristofzski</i>	3/7/95	716-06						
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Document Title: Tank Characterization 40-Day Crust Burn for Double Shell Tank 241-AW-101

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**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara M. Broz

March 8, 1995

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ANALYTICAL SERVICES

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TANK CHARACTERIZATION
40-DAY CRUST BURN REPORT
FOR DOUBLE SHELL TANK

Tank:

241-AW-101

Date Printed:

MARCH 2, 1995

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WHC-SD-WM-DP-097, REV. 0

NARRATIVE

WHC-SD-WM-DP-097, REV. 0

40 DAY CRUST BURN SAFETY ISSUE RESULTS FOR TANK 241-AW-101
AUGERS 95-AUG-001, 95-AUG-004, 95-AUG-005

Summary

Three auger samples from tank AW-101 were received by the 222-S laboratories. They were analyzed to support the crust burn safety issue. No sample results exceeded the notification criteria.

Sample Receipt and Extrusion

Riser 13A

One 10 inch auger (95-AUG-001) was used to sample the tank AW-101 contents at riser 13A. The sample was taken on 1/25/95, and received at the 222-S laboratory on 1/27/95. Extrusion took place on 2/7/95. The total amount of solid material recovered was about 78 grams. There was less than 5 mL of drainable liquid which was not recovered. Based on the texture and type of material sampled, the recovery is estimated to be 85%. Most of the solid was a damp, dark brown, sludge material that was located on all nine flutes, with the heaviest accumulation on flutes 7, 8 and 9. The sample found on flutes 1 through 3 (top of the auger) consisted of this sludge with crystalline, crust material dispersed throughout (approximately 26 grams of material). This material was sampled separately, designated as a facie (crust), and assigned sample number S95T000107. The sludge material from flute 4 was subsampled (approximately 3 grams collected), designated as the Upper Half, and assigned sample number S95T000102. The sludge material from flute 9 was subsampled (approximately 2 grams collected), designated as the Lower Half, and assigned sample number S95T000103. The remaining material from flutes 4 through 9 (approximately 49 grams recovered) was collected and saved for further analysis. The initial results for the crust burn safety issue (DSC and TGA) for Riser 13A appear on page 1 of Table 1 and in Table 2. The final report will contain all other analyses.

Riser 12A

One 10 inch auger (95-AUG-004) was used to sample the tank AW-101 contents at riser 12A. The sample was taken on 1/26/95, and received at the 222-S laboratory on 1/27/95. Extrusion took place on 2/7/95. The total amount of solid material recovered was about 12 grams. There was less than 5 mL of drainable liquid collected. Based on the texture and type of material sampled, the recovery is estimated to be 60%. The solid was a damp, dark brown, sludge material that was located on flutes 4 through 9 only, with the heaviest accumulation on flutes 8 and 9. There was no crust material observed. The sludge material from flutes 5 and 6 was subsampled (approximately 0.5 grams collected), designated as the Upper Half, and assigned sample number S95T000110. The sludge material from flute 9 was subsampled (approximately 2 grams collected), designated as the Lower Half, and assigned sample number S95T000111. The remaining material from flutes 4 through 9 (approximately 10 grams recovered) was collected and archived. The initial results for the crust burn safety issue (DSC and TGA) for Riser 12A appear on page 2 of Table 1 and in Table 2. The final report will contain all other analyses.

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Riser 24B

One 10 inch auger (95-AUG-005) was used to sample the tank AW-101 contents at riser 24B. The sample was taken on 1/27/95, and received at the 222-S laboratory on 1/27/95. Extrusion took place on 2/8/95. The total amount of solid material recovered was about 18 grams. There was less than 5 mL of drainable liquid which was not recovered. Based on the texture and type of material sampled, the recovery is estimated to be 60%. The solid was a damp, dark brown, sludge material that was located on flutes 6 through 10 only, with the heaviest accumulation on flutes 9 and 10. There was no crust material observed. The sludge material from flute 6 was subsampled (approximately 1 gram collected), designated as the Upper Half, and assigned sample number S95T000113. The sludge material from flute 10 was subsampled (approximately 3 grams collected), designated as the Lower Half, and assigned sample number S95T000114. The remaining material from flutes 6 through 10 (approximately 15 grams recovered) was collected and archived. The initial results for the crust burn safety issue (DSC and TGA) for Riser 24B appear on page 3 of Table 1 and in Table 2.

Analytical Results

There are two result tables attached. The first, Table 1, is the summary table from the Laboratory Information Management System (LIMS). Table 2 provides additional calculated results for net exothermic energy and the total energy, requested by the Flammable Gas Safety Program cognizant scientist. The data used for these calculations was obtained from the summary report and additional information that is reported in the comment section for each sample in the LIMS.

TGA (Moisture)

The weight percent water by thermogravimetric analysis (TGA) was performed on a Mettler Model 20 thermogravimetric analyzer, using procedure LA-560-112 with an air purge. All samples results met the accuracy and precision criteria of 20%. The results were all within the range of 31.81% water to 42.46% water. There were no notification (action) limits for these analyses.

DSC

Differential thermal calorimetry (DSC) was performed using procedure LA-514-113, and a Mettler Model 20 differential scanning calorimeter under an air purge. There were no results which exceeded the notification limit of 586 Joules/g. One sample (S95T000107) exceeded the precision limit of 20%. This sample was from the portion of Riser 13A that consisted of crust material mixed with sludge. The initial sample result was 86.4 Joules/g and the duplicate was 0 Joules/g. A third sample was run giving a result of 111.3 Joules/g, which was reported as the duplicate in the summary report. The duplicate had a second endotherm at 300°C that did not appear in the other two analyses. No further reruns were requested due to the small exotherm, the dose rate and the heterogeneous nature of this sample. All samples met the accuracy criterion of 20%.

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Sample S95T000102, collected from Riser 13A just below the crust layer, produced three exotherms. The first was 14.7 Joules/g, the second 30.5 Joules/g, and the third 77.7 Joules/g. The sum of the three is reported in Table 1.

The dry weight calculations for the exothermic energy were calculated using the sum of all measured exotherms. The sample result for dry weight was calculated using the percent water result reported as sample, and the duplicate used the percent water result reported as duplicate. Due to the heterogeneous nature of these samples, this method of calculation may introduce an additional precision error. This is exemplified in sample S95T000102 by the increase in the relative percent deviation (RPD) between the sample and duplicate from 11.5% for exothermic energy based on wet weight to 23.3% based on dry weight. Since the duplicate result for sample number S95T000107 was 0 Joules/g, the result of 111.3 Joules/g, measured on the third sample portion, was used for the dry weight calculation for the duplicate.

Reference

WHC-SD-WM-TP-229, REV. 0, "Tank 241-AW-101 Tank Characterization Plan", dated November 22, 1994, Westinghouse Hanford Company, Richland, WA 99352

WHC-SD-WM-DP-097, REV. 0

SAMPLE DATA SUMMARY

Table 1: 40 DAY CRUST BURN SAFETY ISSUE RESULTS
AW-101

CORE NUMBER: n/a
SEGMENT #: 95-AUG-001

SEGMENT PORTION: Facie

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S95T000107			% Water by TGA using Mettler	%	n/a	n/a	98.67	n/a	41.33	41.01	41.17	0.78	n/a	0.000		n/a
S95T000107			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	586.000	n/a	n/a	147	189	168.0	25.0	n/a	0.000		n/a
S95T000107			DSC Exotherm using Mettler	Joules/g	n/a	n/a	105.4	n/a	86.4	111.3	98.85	25.2	n/a	0.000		n/a

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S95T000102			% Water by TGA using Mettler	%	n/a	n/a	98.67	n/a	38.82	37.24	38.03	4.15	n/a	0.000		n/a
S95T000102			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	586.000	n/a	n/a	201	159	180.0	23.3	n/a	0.000		n/a
S95T000102			DSC Exotherm using Mettler	Joules/g	n/a	n/a	105.4	n/a	122.9	99.6	111.2	20.9	n/a	0.000		n/a

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S95T000103			% Water by TGA using Mettler	%	n/a	n/a	98.56	n/a	39.94	40.62	40.28	1.69	n/a	0.000		n/a
S95T000103			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	586.000	n/a	n/a	190	217	203.5	13.3	n/a	0.000		n/a
S95T000103			DSC Exotherm using Mettler	Joules/g	n/a	n/a	103.0	n/a	114	128.9	121.5	12.3	n/a	0.000		n/a

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-097, REV. 0

Table 1: 40 DAY CRUST BURN SAFETY ISSUE RESULTS
AW-101

CORE NUMBER: n/a
SEGMENT #: 95-AUG-004

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S95T000110			% Water by TGA using Mettler	%	n/a	n/a	98.56	n/a	41.90	42.13	42.02	0.55	n/a	0.000		n/a
S95T000110			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	586.000	n/a	n/a	175	193	184.0	9.78	n/a	0.000		n/a
S95T000110			DSC Exotherm using Mettler	Joules/g	n/a	n/a	103.0	n/a	101.5	111.6	106.5	9.48	n/a	0.000		n/a

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S95T000111			% Water by TGA using Mettler	%	n/a	n/a	97.91	n/a	39.21	38.75	38.98	1.18	n/a	0.000		n/a
S95T000111			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	586.000	n/a	n/a	119	114	116.5	4.29	n/a	0.000		n/a
S95T000111			DSC Exotherm using Mettler	Joules/g	n/a	n/a	104.4	n/a	72.4	69.8	71.10	3.66	n/a	0.000		n/a

=> Limit violated

=> Selected Limit

WHC-SD-WM-DP-097, REV. 0

Table 1: 40 DAY CRUST BURN SAFETY ISSUE RESULTS
AW-101

CORE NUMBER: n/a
SEGMENT #: 95-AUG-005

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S95T000113			% Water by TGA using Mettler	%	n/a	n/a	97.91	n/a	31.81	35.80	33.80	11.8	n/a	0.000		n/a
S95T000113			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	586.000	n/a	n/a	248	270	259.0	8.49	n/a	0.000		n/a
S95T000113			DSC Exotherm using Mettler	Joules/g	n/a	n/a	104.4	n/a	168.9	173.1	171.0	2.46	n/a	0.000		n/a

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S95T000114			% Water by TGA using Mettler	%	n/a	n/a	99.43	n/a	42.46	38.13	40.30	10.7	n/a	0.000		n/a
S95T000114			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	586.000	n/a	n/a	177	162	169.5	8.85	n/a	0.000		n/a
S95T000114			DSC Exotherm using Mettler	Joules/g	n/a	n/a	102.6	n/a	101.8	100.1	100.9	1.68	n/a	0.000		n/a

=> Limit violated

=> Selected Limit

WHC-SD-WM-DP-097, REV. 0

Table 2: Additional Calculated Results for Tank 241-AW-101
Crust Burn Flammable Gas Safety Issue

95-AUG-001 Riser 13A

Sample #	Segment Portion	Net Exothermic Energy (Joules/g Dry)	Net Exothermic Energy (Joules/g)	Net Endothermic Energy (Joules/g)	Total Energy (Joules/g)
	Notification Limit	586.0			
S95T000107	Facie (Crust)	147.0	86.40	1285	-1198
S95T000102	Upper half sludge	201.0	122.9	1129	-1006
S95T000103	Lower half sludge	190.0	114.0	842.1	-728.1

95-AUG-004 Riser 12A

Sample #	Segment Portion	Net Exothermic Energy (Joules/g Dry)	Net Exothermic Energy (Joules/g)	Net Endothermic Energy (Joules/g)	Total Energy (Joules/g)
	Notification Limit	586.0			
S95T000110	Upper half sludge	175.0	101.5	1095	-993.4
S95T000111	Lower half sludge	119.0	72.40	999.2	-926.8

95-AUG-005 Riser 24B

Sample #	Segment Portion	Net Exothermic Energy (Joules/g Dry)	Net Exothermic Energy (Joules/g)	Net Endothermic Energy (Joules/g)	Total Energy (Joules/g)
	Notification Limit	586.0			
S95T000113	Upper half sludge	248.0	168.9	976.6	-807.7
S95T000114	Lower half sludge	177.0	101.8	974.8	-873.0

WMC-SD-MM-DP-097, REV. 0

WHC-SD-WM-DP-097, REV. 0

UNDIGESTED SAMPLE ANALYSES- DIRECT

LABCORE Data Entry Template for Worklist# 583

Analyst: BDV Instrument: DSC01 Method: LA-514-113 n/a
 2/27/95 BDV

Worklist Comment: Calculated AW-101 dry DSC. bdv

Seg Type	Sample#	Rep Al	Test	Matrix	DSC	TGA	DSC dry	Unit
					Actual 2/27/95 BDV	Found 2/27/95 BDV	DL 2/22/95 BDV	
1 SAMPLE	S95T000107	0	DSC-02	SOLID	86.4	41.33	147	Joule*
2 DUP	S95T000107	0	DSC-02	SOLID	111.3	41.01	189	Joule*
3 SAMPLE	S95T000102	0	DSC-02	SOLID	122.9	38.82	201	Joule*
4 DUP	S95T000102	0	DSC-02	SOLID	99.6	37.24	159	Joule*
5 SAMPLE	S95T000103	0	DSC-02	SOLID	114.0	39.94	190	Joule*
6 DUP	S95T000103	0	DSC-02	SOLID	128.9	40.62	217	Joule*
7 SAMPLE	S95T000110	0	DSC-02	SOLID	101.5	41.90	175	Joule*
8 DUP	S95T000110	0	DSC-02	SOLID	111.6	42.13	193	Joule*
9 SAMPLE	S95T000111	0	DSC-02	SOLID	72.4	39.21	119	Joule*
10 DUP	S95T000111	0	DSC-02	SOLID	69.8	38.75	114	Joule*
11 SAMPLE	S95T000113	0	DSC-02	SOLID	168.9	31.81	248	Joule*
12 DUP	S95T000113	0	DSC-02	SOLID	173.1	35.80	270	Joule*
13 SAMPLE	S95T000114	0	DSC-02	SOLID	101.8	42.46	177	Joule*
14 DUP	S95T000114	0	DSC-02	SOLID	100.1	38.13 41.77	162	Joule*

Final page for worklist # 583

Blandina Valenzuela
Analyst Signature

2-27-95
Date

Entered + Verified by
Blandina Valenzuela

2-27-95

WHC-SD-WM-DP-097, REV. 0

Data Entry Comments:

* units = Joules/g

Units shown for QC (SPK) may not reflect the actual units.

Page: 1

LABCORE Data Entry Template for Worklist# 538

Analyst: DWS Instrument: DSC01 Method: LA-514-113 B-1

Worklist Comment: Please run AW-101 DSC UNDER AIR. bdv WHC-SD-WM-DP-097, REV. 0

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	<u>12N14A</u>			DSC-01	SOLID	<u>28.45</u>	<u>30.0</u>	<u>N/A</u>	Joule*
2	SAMPLE	S95T000107	0		DSC-01	SOLID	<u>N/A</u>	<u>86.4</u>		Joule*
3	DUP	S95T000107	0		DSC-01	SOLID	<u>86.4</u>	<u>0</u>	<u>N/A</u>	Joule*
4	STD				DSC-01	SOLID	<u>28.45</u>	<u>29.7</u>	<u>N/A</u>	Joule*
5	DUP2	S95T000107	0		DSC-01	SOLID	<u>86.4</u>	<u>111.3</u>	<u>N/A</u>	Joule*
6	SAMPLE	S95T000102	0		DSC-01	SOLID	<u>N/A</u>	<u>14.7</u>		Joule*
7	DUP	S95T000102	0		DSC-01	SOLID	<u>14.7</u>	<u>13.1</u>	<u>N/A</u>	Joule*

Final page for worklist # 538

See attached page for signatures
Analyst Signature

2-13-95
Date

Data entered + verified by
Blandina Valenzuela

2-21-95

* units = Joules/g

Data Entry Comments: S95T000107 produced an endotherm at 132°C with a delta H of 1284.6 J/g. S95T000102 produced an endotherm at 130°C with a delta H 1129.2 J/g; the sample also had 2 other exotherms one at

315.7°C with a delta H of 30.5 J/g and the other at 431.6°C with a delta H of 77.7 J/g.

Units shown for QC (SPK) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 538

Analyst: DWS Instrument: DSC01 Method: LA-514-113 - B - (

Worklist Comment: Please run AW-101 DSC UNDER AIR. bdv WHC-SD-WM-DP-097, REV.0

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	12N14A			DSC-01	SOLID	28.45	30.0	N/A	Joule
2	SAMPLE	S95T000107	0		DSC-01	SOLID	N/A	86.4		Joule
3	DUP	S95T000107	0		DSC-01	SOLID	86.4		N/A	Joule
4	SAMPLE	S95T000102	0		DSC-01	SOLID	N/A			Joule
5	DUP	S95T000102	0		DSC-01	SOLID			N/A	Joule

Final page for worklist # 538

DWS
Analyst Signature

2-12-95
Date

Data Entry Comments:

DSC STD 12N14A
6.465 mg

Rate: 10.0 °C/min

DSC METTLER
222-S Laboratory

12-Feb-95

File: 00035.001

Ident: 0.0

exo >

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 14 TO 20

120. 140. 160. 180. °C

David W. Smith 2-12-95

DSC STD 12N14A
6.465 mg

Rate: 10.0 °C/min

File: 00057.001 DSC METTLER 13-Feb-95
Ident: 0.0 222-S Laboratory

exo >

5. mW

Integration
Delta H 192 mJ
29.7 J/g
Peak 158.7 °C
-12.4 mW

WHC-SD-WM-DP-097, REV. 0

180. °C

160.

140.

120.

David A. Schmitt
2-13-95
2-13-95

S95T000107 AIR
17.406 mg

File: 00037.001 DSC METTLER 12-Feb-95
Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

S95T000107 (DUP) AIR

23.346 mg

Rate: 10.0 °C/min

File: 00039.001

DSC METTLER

12-Feb-95

Ident: 0.0 222-S Laboratory

exo >

20. mW

WHC-SD-WM-DP-097, REV. 0

°C

400.

300.

200.

100.

S95T000107 (DUP2) AIR
19.481 mg
Rate: 10.0 °C/min
File: 00058.001 DSC METTLER 13-Feb-95
Ident: 0.0 222-S Laboratory

S95T000102 AIR

21.990 mg

Rate: 10.0 °C/min

File: 00041.001

Ident: 0.0

DSC METTLER

12-Feb-95

222-S Laboratory

WHC-SD-WM-DP-097, REV. 0

S95T000102 (DUP) AIR

18.288 mg

Rate: 10.0 °C/min

File: 00043.001

DSC METTLER

12-Feb-95

Ident: 0.0

222-S Laboratory

WHC-SD-WM-DP-097, REV. 0

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LABCORE Data Entry Template for Worklist# 539

Analyst: Int Instrument: DSC01 Method: LA-514-113 / B 1

Worklist Comment: Please run AW-101 UNDER AIR. bdv WHC-SD-WM-DP-097, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	STD	12N14A			DSC-01	SOLID	28.45	29.3	N/A	Joule*
2	SAMPLE	S95T000103	0		DSC-01	SOLID	N/A	114.0		Joule*
3	DUP	S95T000103	0		DSC-01	SOLID	114.0	128.9	N/A	Joule*
4	SAMPLE	S95T000110	0		DSC-01	SOLID	N/A	101.5		Joule*
5	DUP	S95T000110	0		DSC-01	SOLID	101.5	111.6	N/A	Joule*

Final page for worklist # 539

Analyst Signature

Date

2-12-95

2-17-95

2-21-95

units =
* Joules/g

Data Entry Comments:

S95T000110 produced one endotherm at 135°C with a delta H of 1094.9 J/g. S95T000103 produced one endotherm at 131.6°C with a delta H of 101.5 J/g. 842.1 J/g.

Units shown for QC (SPK) may not reflect the actual units.

Page: 1

DSC STD 12N14A

6.465 mg

Rate: 10.0 °C/min

File: 00046.001

DSC METTLER

13-Feb-95

Ident: 0.0 222-S Laboratory

exo

WHC-SD-WM-DP-097, REV. 0

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 22 TO 26.

Susan M. Fulton

2/22/95 PM

S95T000110 AIR
14.032 mg
Rate: 10.0 °C/min
File: 00051.001 DSC METTLER 13-Feb-95
Ident: 0.0 222-S Laboratory

exo >

WHC-SD-WM-DP-097, REV. 0

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S95T000110 (DUP) AIR

16.651 mg

Rate: 10.0 °C/min

File: 00053.001

DSC METTLER

13-Feb-95

Ident: 0.0

222-S Laboratory

exo >

20. mW

24

Integration
Delta H 99 mJ
5.9 J/g
Peak 231.1°C
-1.8 mW

Integration
Delta H 2146 mJ
128.9 J/g
Peak 321.7°C
6.4 mW

Integration
Delta H 16539 mJ
993.3 J/g
Peak 141.0°C
-44.6 mW

BEST AVAILABLE COPY

WHC-SD-WM-DP-097, REV. 0

100.

200.

300.

400.

°C

S95T000103 AIR

16.573 mg

Rate: 10.0 °C/min

File: 00047.001

DSC METTLER

13-Feb-95

Ident: 0.0 222-S Laboratory

S95T000103 (DUP) AIR
10.709 mg
Rate: 10.0 °C/min
File: 00049.001 DSC METTLER 13-Feb-95
Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-097, REV. 0

BEST AVAILABLE COPY

LABCORE Data Entry Template for Worklist# 540

Analyst: DWS Instrument: DSC01 Method: LA-514-113 B-1

Worklist Comment: Please run AW-101 UNDER AIR. bdv WHC-SD-WM-DP-097, REV. 0

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	12Ni4-A			DSC-01	SOLID	28.45	29.7	N/A	Joule*
2	SAMPLE	S95T000111	0		DSC-01	SOLID	N/A	72.4		Joule*
3	DUP	S95T000111	0		DSC-01	SOLID	72.4	69.8	N/A	Joule*
4	SAMPLE	S95T000113	0		DSC-01	SOLID	N/A	168.9		Joule*
5	STD	12Ni4-A			DSC-01	SOLID	28.45	28.6	N/A	Joule*
6	DUP	S95T000113	0		DSC-01	SOLID	168.9	173.1	N/A	Joule*

Final page for worklist # 540

See attached for signature
Analyst Signature

Date 2/21/95

Verified by Blandina Valenzuela

2-22-95
2-24-95

* units = Joules/g

Data Entry Comments: S95T000111 produced two endotherms one at 137.2°C with a delta H of 978.7 J/g, and the second at 233.0°C with a delta H of 20.5 J/g. S95T000113 produced an endotherm at 135.2°C with a delta H of 976.6 J/g

Units shown for QC (SPK) may not reflect the actual units.

Page: 1

LABCORE Data Entry Template for Worklist# 540

Analyst: DWS Instrument: DSC01 Method: LA-514-113 B-1

Worklist Comment: Please run AW-101 UNDER AIR. bdv WHC-SD-WM-DP-097, REV. 0

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	STD	12N14-A			DSC-01	SOLID			N/A	Joule
2	SAMPLE	S95T000111	0		DSC-01	SOLID	N/A			Joule
3	DUP	S95T000111	0		DSC-01	SOLID			N/A	Joule
4	SAMPLE	S95T000113	0		DSC-01	SOLID	N/A			Joule
5	DUP	S95T000113	0		DSC-01	SOLID			N/A	Joule

Final page for worklist # 540

Analyst Signature

2-18-95
Date

Data Entry Comments:

DSC STD 12N14-A

6.465 mg

Rate: 10.0 °C/min

File: 00076.001

DSC METTLER

18-Feb-95

Ident: 0.0

222-S Laboratory

exo

10. mW

Integration

Delta H 192 mJ

29.7 J/g

Peak 158.5°C

-14.0 mW

WHC-SD-WM-DP-097, REV.0

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 29 TO 34.

120.

140.

160.

180. °C

David W. Smith 2-17-95

S95T000111 AIR

16.623 mg

File: 00077.001

DSC METTLER

18-Feb-95

Rate: 10.0 °C/min

Ident: 0.0

222-S Laboratory

exo

WHC-SD-WM-DP-097, REV. 0

20. mW

30

°C

400.

300.

200.

100.

S95T000111 (DUP) AIR
 20.022 mg
 Rate: 10.0 °C/min
 File: 00079.001 DSC METTLER 18-Feb-95
 Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-097, REV. 0

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S95T000113 AIR
17.158 mg

Rate: 10.0 °C/min
Ident: 0.0
File: 00081.001 DSC METTLER 18-Feb-95
222-S Laboratory

exo >

DSC STD 12N14-A
6.465 mg
Rate: 10.0 °C/min
File: 00083.001
Ident: 0.0
DSC METTLER 19-Feb-95
222-S Laboratory

David W. Smith 2-18-95

File: 00085.001 DSC METTLER 19-Feb-95
Ident: 0.0 222-S Laboratory

S95T000113 (DUP) AIR
24.605 mg Rate: 10.0 °C/min

WHC-SD-WM-DP-097, REV. 0

BEST AVAILABLE COPY

LABCORE Data Entry Template for Worklist# 541

Analyst: MF Instrument: DSC01 Method: LA-514-113/A-2 2/21/95
B-1 EDV

Worklist Comment: Please run AW-101 UNDER AIR. bdv

WHC-SD-WM-DP-097, REV. 0

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	12N14A			DSC-01	SOLID	28.45	29.2	N/A	Joule *
2	SAMPLE	S95T000114	0		DSC-01	SOLID	N/A	101.8		Joule *
3	DUP	S95T000114	0		DSC-01	SOLID	101.8	100.1	N/A	Joule *

Final page for worklist # 541

Lusie M. Fulton
Analyst Signature

2-13-95
Date

Dee Hammitt

2-20-95

2-21-95

Verified by Blandina D. Valenzuela

* units = Joules/g

Data Entry Comments: S95T000114 produced two endotherms one at 130.3°C with a delta H of 956.8 J/g and the second 18.0 J/g at 235.2°C.

DSC STD 12N14A

6.465 mg

Rate: 10.0 °C/min

File: 00061.001

DSC METTLER

13 14-Feb-95

Ident: 0.0

222-S Laboratory

2/22/95
BDV

<exo>

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5. mW

WHC-SD-WM-DP-097, REV. 0

Integration
Delta H 189 mJ
29.2 J/g
Peak 158.7 °C
-12.7 mW

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 36 TO 38

120.

140.

160.

180. °C

Susie M. Sutton

2/22/95
BDV

S95T000114 AIR
 11.416 mg
 Rate: 10.0 °C/min
 File: 00062.001
 Ident: 0.0
 DSC METTLER
 222-S Laboratory
 13
 14-Feb-95
 Bdv

WHC-SD-WM-DP-097, REV. 0

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S95T000114 (DUP) AIR
 19.038 mg
 Rate: 10.0 °C/min
 File: 00064.001 DSC METTLER 14-Feb-95
 Ident: 0.0 222-S Laboratory 13 ^{BN}

WHC-SD-WM-DP-097, REV. 0

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LABCORE Data Entry Template for Worklist# 547

Analyst: DWS Instrument: TGA01 Method: LA-560-112 A-2

Worklist Comment: Please run AW-101 TGA UNDER AIR. bdv WHC-SD-WM-DP-097, REV. 0

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	42N8-A			TGA-01	SOLID	59.19	57.75	N/A	%
2	SAMPLE	S95T000111	0		TGA-01	SOLID	N/A	39.21		%
3	DUP	S95T000111	0		TGA-01	SOLID	39.21	38.75	N/A	%
4	SAMPLE	S95T000113	0		TGA-01	SOLID	N/A	31.81		%
5	STD	42N8-A			TGA-01	SOLID	59.19	57.95	N/A	%
6	DUP	S95T000113	0		TGA-01	SOLID	31.81	35.80	N/A	%

Final page for worklist # 547

See attached for signatures
Analyst Signature

Date 2/21/95

Verified by Blandina Valenzuela

2-22-95

2-24-95

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 547

Analyst: AW5 Instrument: TGA01 Method: LA-560-112 ~~A-2~~

Worklist Comment: Please run AW-101 TGA UNDER AIR. bdv

A-2
2/21/95
BDV

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	42N8-17			TGA-01	SOLID			N/A	%
2	SAMPLE	S95T000111	0		TGA-01	SOLID	N/A			%
3	DUP	S95T000111	0		TGA-01	SOLID			N/A	%
4	SAMPLE	S95T000113	0		TGA-01	SOLID	N/A			%
5	DUP	S95T000113	0		TGA-01	SOLID			N/A	%

Final page for worklist # 547

Analyst Signature

2-18-95
Date

WHC-SD-WM-DP-097, REV. 0

Data Entry Comments:

File: 00075.001 TG METTLER 17-Feb-95
Ident: 0.0 222-S Laboratory

TGA STD 42N8-A
16.595 mg

Rate: 10.0 °C/min

David W. Smith 217-95

S95T000111 AIR
20.885 mg

Rate: 10.0 °C/min

File: 00078.001 TG
Ident: 0.0 222-S Laboratory

METTLER 17-Feb-95

Step Analysis

Height -8.19 mg

-39.21 %

ResidC. 12.70 mg

60.79 %

Dpeak 105.0 °C

WHC-SD-WM-DP-097, REV. 0

S95T000111 (DUP) AIR

25.585 mg

Rate: 10.0 °C/min

File: 00080.001

TG METTLER

17-Feb-95

Ident: 0.0 222-S Laboratory

5. mg

Step Analysis
Height -9.91 mg
-38.75 %
ResidC. 15.67 mg
61.25 %
Dpeak 111.0 °C

WHC-SD-WM-DP-097, REV. 0

S95T000113 AIR

22.734 mg

Rate: 10.0 °C/min

File: 00082.001

TG

METTLER

17-Feb-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height -7.23 mg

-31.81 %

ResiC. 15.50 mg

68.19 %

Dpeak 111.0 °C

WHC-SD-WM-DP-097, REV.0

TGA STD 42N8-A
15.459 mg

Rate: 10.0 °C/min

File: 00084.001 TG METTLER 18-Feb-95
Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-097, REV. 0

Step Analysis
Height -8.96 mg
-57.95 %
ResidC. 6.50 mg
42.05 %
Dpeak 79.0 °C

David W. Smith 2-18-95

S95T000113 (DUP) AIR
24.736 mg
Rate: 10.0 °C/min
File: 00086.001 TG METTLER 18-Feb-95
Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-097, REV. 0

Step Analysis
Height -8.86 mg
-35.80 %
ResiC. 15.88 mg
64.20 %
Dpeak 113.0°C

LABCORE Data Entry Template for Worklist# 545

Analyst: DWS Instrument: TGA01 Method: LA-560-112-~~A-2~~ ^{2/13/95} ~~A-2~~
 Worklist Comment: Please run AW-101 TGA UNDER AIR. bdv ^{BDV} WHC-SD-WM-DP-097, REV. 0

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	<u>412N017</u>			TGA-01	SOLID	^{2/13/95} <u>59.19</u> 58.40	<u>58.40</u>	N/A	%
2	SAMPLE	S95T000107	0		TGA-01	SOLID	N/A	<u>41.33</u>		%
3	DUP	S95T000107	0		TGA-01	SOLID	<u>41.33</u>	<u>41.01</u>	N/A	%
4	SAMPLE	S95T000102	0		TGA-01	SOLID	N/A	<u>38.82</u>		%
5	DUP	S95T000102	0		TGA-01	SOLID	<u>38.82</u>	<u>37.24</u>	N/A	%

Final page for worklist # 545

David W. Smith
 Analyst Signature

2-12-95
 Date
2-17-95
2-21-95

Blandina O Valenzuela

Data Entry Comments:

TGA STD 42N0A

18.771 mg

Rate: 10.0 °C/min

File: 00034.001

TG

METTLER

12-Feb-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height-10.96 mg

-58.40 %

ResiC. 7.81 mg

41.60 %

Dpeak 90.3 °C

WMC-SD-WM-DP-097, REV.0

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

50.

100.

150.

°C

David W. Smith
2-12-95

S95T000107 AIR
19.243 mg

File: 00036.001 TG METTLER 12-Feb-95
Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

WHC-SD-WM-DP-097, REV. 0

Step Analysis
Height -7.95 mg
-41.33 %
Resid. 11.29 mg
58.67 %
Dpeak 105.0 °C

S95T000107 (DUP) AIR

20.286 mg

Rate: 10.0 °C/min

File: 00038.001

TG

METTLER

12-Feb-95

Ident: 0.0

222-S Laboratory

S95T000102 AIR

20.611 mg

Rate: 10.0 °C/min

File: 00040.001 TG METTLER 12-Feb-95

Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-097, REV. 0

Step Analysis
Height -8.00 mg
-38.82 %
ResidC. 12.61 mg
61.18 %
Dpeak 117.0 °C

S95T000102 (DUP) AIR

20.088 mg

Rate: 10.0 °C/min

File: 00042.001

TG

METTLER

12-Feb-95

Ident: 0.0

222-S Laboratory

WHC-SD-WM-DP-097, REV. 0

Step Analysis
Height -7.48 mg
-37.24 %
ResidC. 12.61 mg
62.76 %

LABCORE Data Entry Template for Worklist# 546

Analyst: Suf Instrument: TGA01 Method: LA-560-112 ~~4A-0~~ A-2
 Worklist Comment: Please run AW-101 TGA UNDER AIR. bdv 2/13/95
BDV

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	42N8-A			TGA-01	SOLID	59.19	58.34	N/A	%
2	SAMPLE	S95T000103	0		TGA-01	SOLID	N/A	39.94		%
3	DUP	S95T000103	0		TGA-01	SOLID	39.94	40.62	N/A	%
4	SAMPLE	S95T000110	0		TGA-01	SOLID	N/A	41.90		%
5	DUP	S95T000110	0		TGA-01	SOLID	41.90 42.13	42.13	N/A	%

2/13/95
BDV

Final page for worklist # 546

Susie M. Fulton
 Analyst Signature
 Data entered
 Verified by Blandina D. Valenzuela

2-12-95
 Date
 2-21-95

WHC-SD-WM-DP-097, REV. 0

Data Entry Comments:

TGA STD 412N8-A

15.357 mg

Rate: 10.0 °C/min

File: 00044.001 TG METTLER 12-Feb-95

Ident: 0.0 222-S Laboratory

BEST AVAILABLE COPY

WHC-SD-WM-DP-097, REV. 0

Step Analysis
Height -8.96 mg
-58.34 %
Resid. 6.40 mg
41.66 %
Dpeak 80.0 °C

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 54 TO 58.

James M. Fulton
2/13/95 BN

S95T000103 AIR

10.541 mg

Rate: 10.0 °C/min

File: 00048.001

TG METTLER

12-Feb-95

Ident: 0.0

222-S Laboratory

Step Analysis
Height -4.21 mg
-39.94 %
Resid. 6.33 mg
60.06 %
Dpeak 93.0 °C

WHC-SD-WM-DP-097, REV. 0

S95T000103 (DUP) AIR

22.196 mg

Rate: 10.0 °C/min

File: 00050.001

TG

METTLER

12-Feb-95

Ident: 0.0

222-S Laboratory

BEST AVAILABLE COPY

Step Analysis

Height -9.02 mg

-40.62 %

Resid. 13.18 mg

59.38 %

Dpeak 127.0 °C

WHC-SD-WM-DP-097, REV.0

95

5. mg

S95T000110 AIR

7.301 mg

Rate: 10.0 °C/min

File: 00052.001

TG

METTLER

12-Feb-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height -3.06 mg

-41.90 %

ResiC. 4.24 mg

58.10 %

Dpeak 75.0 °C

WHC-SD-WM-DP-097, REV.0

S95T000110 (DUP) AIR

19.890 mg

Rate: 10.0 °C/min

File: 00054.001

TG

METTLER

12-Feb-95

Ident: 0.0

222-S Laboratory

BEST AVAILABLE COPY

Step Analysis

Height -8.38 mg

-42.13 %

ResidC. 11.51 mg

57.87 %

Dpeak 97.0 °C

WHC-SD-WM-DP-097, REV.0

58

5. mg

100.

200.

300.

400.

°C

LABCORE Data Entry Template for Worklist# 548

Analyst: SME Instrument: TGA01 _____ Method: LA-560-112/A-2

Worklist Comment: Please run AW-101 TGA UNDER AIR. bdv WHC-SD-WM-DP-097, REV. 0

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	42N8-A			TGA-01	SOLID	59.19	58.85	N/A	%
2	SAMPLE	S95T000114	0		TGA-01	SOLID	N/A	42.46		%
3	DUP	S95T000114	0		TGA-01	SOLID	42.46	38.13	N/A	%
4	DUP2	S95T000114	0		TGA-01	SOLID	42.46	41.77	N/A	%

Final page for worklist # 548

See attached for signature
Analyst Signature

2-14-95
Date

[Signature]
Verified by Blandina D. Valenzuela

2-20-95

2-21-95

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 548

Analyst: SAF Instrument: TGA01 _____ Method: LA-560-112

Worklist Comment: Please run AW-101 TGA UNDER AIR. bdv WHC-SD-WM-DP-097, REV. 0

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD				TGA-01	SOLID	_____	_____	N/A	%
2	SAMPLE	S95T000114	0		TGA-01	SOLID	N/A	_____	_____	%
3	DUP	S95T000114	0		TGA-01	SOLID	_____	_____	N/A	%

Final page for worklist # 548

Susie M. Fulton
Analyst Signature

2-13-95
Date

Data Entry Comments:

TGA STD 42N8A
16.259 mg
Rate: 10.0 °C/min
File: 00060.001 TG METTLER 13-Feb-95
Ident: 0.0 222-S Laboratory
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 61 TO 64 .

Step Analysis
Height -9.57 mg
-58.85 %
Resid. 6.69 mg
41.15 %
Dpeak 85.0 °C

WHC-SD-WM-DP-097, REV. 0

5. mg

50. 100. 150. 200. °C

Suria M. Fulton
2/14/95 BN

S95T000114 AIR

10.971 mg

Rate: 10.0 °C/min

File: 00063.001

TG METTLER

13-Feb-95

Ident: 0.0 222-S Laboratory

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Step Analysis

Height -4.66 mg

-42.48 %

Resid. 6.31 mg

57.54 %

Dpeak 65.0 °C

WHC-SD-WM-DP-097, REV. 0

S95T000114 (DUP) AIR
8.154 mg

Rate: 10.0 °C/min

File: 00065.001 TG METTLER 13-Feb-95
Ident: 0.0 222-S Laboratory

Step Analysis
Height -3.11 mg
-38.13 %
Resid. 5.15 mg
63.20 %
Dpeak 91.0°C

WHC-SD-WM-DP-097, REV. 0

S95T000114 (DUP) AIR

12.110 mg

Rate: 10.0 °C/min

File: 00066.001

TG

METTLER

13-Feb-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height -5.06 mg

-41.77 %

ResidC. 7.27 mg

60.00 %

Dpeak 93.0 °C

WHC-SD-WM-DP-097, REV.0

64

2. mg

100.

200.

300.

400.

°C