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Project Title/Work Order WHC-SD-WM-DP-098, Rev. 0 45-DAY SAFETY SCREEN RESULTS FOR TANK 241-AP-107, GRAB SAMPLES		EDT NO.: EDT-610406
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Document Number: WHC-SD-WM-DP-098, REV.0

Document Title: 45-Day Safety Screening Report for Grab Samples from Tank 241-AP-107

Release Date: March 8, 1995

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

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WHC Information Release Administration Specialist:

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March 8, 1995

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2. Title

**45-Day Safety Screening Report for Grab Samples
from Tank 241-AP-107**

3. Number

WHC-SD-WM-DP-098

4. Rev No.

0

5. Key Words

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6. Author

Name: **George L. Miller**Signature Organization/Charge Code **8E480/MDR21**

7. Abstract

N/A

8.

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P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-098, REV. 0

ANALYTICAL SERVICES

Project:

45-DAY SAFETY SCREENING
REPORT FOR GRAB SAMPLES

Tank:

241-AP-107

Date Printed:

MARCH 6, 1995

MASTER

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WHC-SD-WM-DP-098, REV. 0

NARRATIVE

WHC-SD-WM-DP-098, REV. 0

45-DAY SAFETY SCREENING REPORT FOR GRAB SAMPLES FROM TANK AP-107

Summary

Three samples; 107-AP-1C, 107-AP-2C and 107-AP-3C; were received at 222-S Laboratory for analysis of DSC, TGA and visual appearance. Four additional samples; 107-AP-1D, 107-AP-2D, 107-AP-3D and 107-AP-6; were received for visual appearance only. No results exceeded the safety screen notification criteria.

Sample Receipt and Identification

Original Sample Number	Laboratory Sample Number	Sample Collection Date	Date Sample was Received
107-AP-1C	S95V000011	1/31/95	2/1/95
107-AP-2C	S95V000012	1/31/95	2/1/95
107-AP-3C	S95V000013	2/1/95	2/2/95
107-AP-1D	S95V000017	1/31/95	2/1/95
107-AP-2D	S95V000018	1/31/95	2/2/95
107-AP-3D	S95V000019	2/1/95	2/2/95
107-AP-6	S95V000022	2/2/95	2/3/95

Analytical Results

Visual Appearance

Appearance of samples was performed using procedure LA-519-151, revision E-2. No organic layer was observed in any of the samples, therefore the notification limit of "no observable organic layer" was not exceeded. The TCP did not specify any quality control criteria.

Laboratory Sample Number	Visual Appearance Results	Sample Volume ml.	Dose Rate mR/hr
S95V000011	Clear yellow liquid, no solids, no phases	25	175
S95V000012	Clear yellow liquid, no solids, no phases	60	500
S95V000013	Clear yellow liquid, no solids, no phases	60	300
S95V000017	Clear aqueous liquid, no solids, no phases	100	250
S95V000018	Clear aqueous liquid, no solids, no phases	100	350
S95V000019	Clear aqueous liquid, no solids, no phases	100	300
S95V000022	Clear aqueous liquid, no solids, no phases	100	300

DSC

Differential thermal analyses were performed under a nitrogen atmosphere using procedure LA-514-113, revision B-1. Analyses were performed in duplicate on samples S95V000011, S95V000012 and S95V000013. No exotherms were observed in any of the samples or duplicates, therefore the notification limit was not exceeded.

Percent recovery of the standards ranged from 96.3 to 100.9, meeting the TCP specified accuracy control limit of 90 to 110 percent recovery. Exothermic precision between all samples and their duplicates was 0 RPD, meeting the TCP specified precision control limit of ± 10 RPD.

TGA (% Moisture)

The weight percent water by Thermogravimetric Analysis (TGA) was performed under a nitrogen purge, using procedure LA-560-112, revision A-2. Analyses were performed in on samples S95V000011, S95V000012 and S95V000013. The percent water for all samples and duplicates exceeded 92 percent, therefore the notification limit was not exceeded.

Standard recovery was 98.6 percent, meeting the TCP accuracy control limit of 90 to 110 percent recovery. Precision between the samples and their duplicates ranged between 0.4 RPD and 2.8 RPD, meeting the TCP specified precision control limit of ± 10 RPD.

Reference

WHC-SD-WM-TP-286, Rev. 1, "Tank 241-AP-107 Tank Characterization Plan", dated January 20, 1995, Westinghouse Hanford Company, Richland, WA 99352.

WHC-SD-WM-DP-098, REV. 0

SAMPLE DATA SUMMARY

45-Day Safety Screen Report
AP-107

RISER: 1
CUSTOMER SAMPLE NUMBER: 107-AP-1C

CUSTOMER SAMPLE NUMBER: 107-AP-1C

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95V000011			% Water by TGA using Mettler	%	17.000	n/a	98.55	n/a	94.31	94.67	94.49	0.38	n/a	0.000	n/a
S95V000011			DSC Exotherm using Mettler	Joules/g	n/a	431.000	96.31	n/a	0	0	0.000	n/a	n/a	0.000	n/a
S95V000011			Appearance of Sample		n/a	n/a	n/a	n/a	25ml	25ml	n/a	n/a	n/a	0.000	n/a

=> Limit violated
=> Selected Limit

5

WHC-SD-WM-DP-098, REV. 0

45-Day Safety Screen Report
AP-107

RISER: 1

CUSTOMER SAMPLE NUMBER: 107-AP-2C

CUSTOMER SAMPLE NUMBER: 107-AP-2C

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95V000012			% Water by TGA using Mettler	%	17.000	n/a	98.55	n/a	95.12	92.52	93.82	2.77	n/a	0.000	n/a
S95V000012			DSC Exotherm using Mettler	Joules/g	n/a	481.000	96.31	n/a	0	0	0.000	n/a	n/a	0.000	n/a
S95V000012			Appearance of Sample		n/a	n/a	n/a	n/a	60ml	60ml	n/a	n/a	n/a	0.000	n/a

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-098, REV. 0

45-Day Safety Screen Report
 AP-107

RISER: 1

CUSTOMER SAMPLE NUMBER: 107-AP-3C

CUSTOMER SAMPLE NUMBER: 107-AP-3C

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
				Lower	Upper									
S95V000013		% Water by TGA using Mettler	%	17.000	n/a	98.55	n/a	95.05	95.82	95.44	0.81	n/a	0.000	n/a
S95V000013		DSC Exotherm using Mettler	Joules/g	n/a	481.000	100.9	n/a	0	0	0.000	n/a	n/a	0.000	n/a
S95V000013		Appearance of Sample		n/a	n/a	n/a	n/a	60ml	60ml	n/a	n/a	n/a	0.000	n/a

=> Limit violated
 => Selected Limit

WHC-SD-MM-DP-098, REV.0

WHC-SD-WM-DP-098, REV. 0

UNDIGESTED SAMPLE ANALYSES- DIRECT

LABCORE Data Entry Template for Worklist# 533

HPT: Jim Evans

Analyst: lmh Instrument: NONE Method: Chemist Instruction Bert Griffin II

Worklist Comment: AP-107 - MAKE DUP FIRST, CHECK APPEARANCE ON SAMPLE AND DUP

Seg Type	Sample#	Rep Al	Test	Matrix	Actual	Found	DL	Unit
1 SAMPLE	S95V000011	0	MAKE-DUP	LIQUID	N/A	complete		mL
2 SAMPLE	S95V000012	0	MAKE-DUP	LIQUID	N/A	complete		mL
3 SAMPLE	S95V000013	0	MAKE-DUP	LIQUID	N/A	complete		mL
4 SAMPLE	S95V000011	0	APPEAR01	LIQUID	N/A	25mL		
5 DUP	S95V000011	0	APPEAR01	LIQUID	25mL	25mL	N/A	
6 SAMPLE	S95V000012	0	APPEAR01	LIQUID	N/A	60mL		
7 DUP	S95V000012	0	APPEAR01	LIQUID	60mL	60mL	N/A	
8 SAMPLE	S95V000013	0	APPEAR01	LIQUID	N/A	60mL		
9 DUP	S95V000013	0	APPEAR01	LIQUID	60mL	60mL	N/A	

Final page for worklist # 533

Analyst Signature

WHC-SD-WM-DP-098, REV. 0 Date 2-7-95

S95V000011 → clear yellow liquid, no solids, no phases, 175 mrad/hr
SAM & DUP AND 25mL volume.

S95V000012 → clear yellow liquid, no solids, no phases, 500 mrad/hr
SAM & DUP AND 60 mL ± 10mL volume.

S95V000013 → clear yellow liquid, no solids, no phases, 300 mrad/hr
AND 60 mL ± 10mL volume.

Data Entry Comments:

Bert Griffin II 2-13-95

LABCORE Data Entry Template for Worklist# 553

Analyst: lmh Instrument: NONE Method: LA-519-151

Worklist Comment: AP-107 - APPEARANCE OF EVAPORATOR SAMPLES

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	SAMPLE	S95V000017	0		APPEAR01	LIQUID	N/A	complete		
2	SAMPLE	S95V000018	0		APPEAR01	LIQUID	N/A	complete		
3	SAMPLE	S95V000019	0		APPEAR01	LIQUID	N/A	complete		
4	SAMPLE	S95V000022	0		APPEAR01	LIQUID	N/A	complete		

Final page for worklist # 553

Analyst Signature

Date

2-9-95

S95V000017

clear aqueous, no solids, no phases, 100ml
250 mr/hr

WHC-SD-WM-DP-098, REV. 0

S95V000018

clear aqueous, no solids, no phases, 100ml
350 mr/hr

S95V000019

clear aqueous, no solids, no phases, 100ml
300 mr/hr

S95V000022

clear aqueous, no solids, no phases
100 ml total volume.
300 mr/hr

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 508

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

Worklist Comment: Please run AP-107 DSC under N2. bdv

WHC-SD-WM-DP-098, REV. 0

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	12N14-A			DSC-01	LIQUID	28.45	27.4	N/A	Joule/g
2	SAMPLE	S95V000011	0		DSC-01	LIQUID	N/A	Ø		Joule/g
3	DUP	S95V000011	0		DSC-01	LIQUID	Ø	Ø	N/A	Joule/g
4	SAMPLE	S95V000012	0		DSC-01	LIQUID	N/A	Ø		Joule/g
5	DUP	S95V000012	0		DSC-01	LIQUID	Ø	Ø	N/A	Joule/g

Final page for worklist # 508

Analyst Signature

2-19-95
Date

Verified by Blandina Valenzuela

2-22-95
2-24-95

Data Entry Comments: S95V000011 produced an endotherm at 103.3°C with a delta H of 1521.6 J/g. S95V000012 produced an endotherm at 101.3°C with a delta H of 1527.1 J/g.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 12 TO 16.

DSC STD 12N14-A

6.670 mg

Rate: 10.0 °C/min

File: 00090.001

DSC METTLER 20-Feb-95

Ident: 0.0

222-S Laboratory

exo>

5. mW

Integration

Delta H 182 mJ

27.4 J/g

Peak 158.8°C

-13.0 mW

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WHC-SD-WM-DP-098, REV.0

120.

140.

160.

180. °C

David W Smith 2-19-95

S95V000011 N2

10.575 mg

File: 00092.001 DSC METTLER 20-Feb-95

Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

S95V000011 (DUP) N2

12.946 mg

Rate: 10.0 °C/min

File: 00093.001 DSC METTLER 20-Feb-95
Ident: 0.0 222-S Laboratory

exo >

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Integration
Delta H16792 mJ 1297.1 J/g
Peak 101.3°C
-82.7 mW

WHC-SD-WM-DP-098, REV. 0

S95V000012 N2

10.402 mg

Rate: 10.0 °C/min

File: 00095.001 DSC METTLER 20-Feb-95

Ident: 0.0 222-S Laboratory

exo

BEST AVAILABLE COPY

Integration
Delta H15885 mJ
1527.1 J/g
Peak 101.3°C
-83.1 mW

WHC-SD-WM-DP-098, REV. 0

50 mW

100.

200.

300.

400.

°C

S95V000012 (DUP) N2

10.622 mg

Rate: 10.0 °C/min

File: 00097.001 DSC METTLER 20-Feb-95

Ident: 0.0 222-S Laboratory

exo >

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Integration
Delta H15075 mJ
Peak 1419.2 J/g
101.3°C
-81.7 mW

WHC-SD-WM-DP-098, REV. 0

50. mW

100.

200.

300.

400.

°C

LABCORE Data Entry Template for Worklist# 509

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

Worklist Comment: Please run AP-107 DSC under N2. bdv **WHC-SD-WM-DP-098, REV. 0**

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	12W14-A			DSC-01	LIQUID	28.45	28.7	N/A	Joule/g
2	SAMPLE	S95V000013	0		DSC-01	LIQUID	N/A	Ø		Joule/g
3	DUP	S95V000013	0		DSC-01	LIQUID	Ø	Ø	N/A	Joule/g

Final page for worklist # 509

DWS
Analyst Signature

2-21-95
Date

2-22-95

2-24-95

Li Jon
Verified by Blandina Valenzuela

Data Entry Comments:

³⁶⁻⁹⁵
^{LAD}
S95V000013 produced an endotherm at 103.3°C
with a delta H of 1383.5 J/g

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 18 TO 20.

DSC STD 12N14A

6.676 mg

Rate: 10.0 °C/min

File: 00001.001

DSC METTLER

21-Feb-95

Ident: 0.0 222-S Laboratory

exov

10. mW

WHC-SD-WM-DP-098, REV. 0

Integration
Delta H 192 mJ
28.7 J/g
Peak 158.2°C
-13.7 mW

120.

140.

160.

180. °C

David W. Smith 2-21-95

S95V000013 N2

10.074 mg

Rate: 10.0 °C/min

File: 00003.001 DSC METTLER 22-Feb-95
Ident: 0.0 222-S Laboratory

exo

Integration
Delta H13938 mJ
1383.5 J/g
Peak 103.3°C
-85.6 mW

50. mW

WHC-SD-WM-DP-098, REV. 0

100.

200.

300.

400.

°C

S95V000013 (DUP) N2

10.656 mg

Rate: 10.0 °C/min

File: 00005.001 DSC METTLER 22-Feb-95

Ident: 0.0 222-S Laboratory

exo >

50. mW

Integration
Delta H13964 mJ
1310.4 J/g
Peak 103.3 °C
-83.2 mW

WHC-SD-WM-DP-098, REV. 0

100. 200. 300. 400. °C

LABCORE Data Entry Template for Worklist# 511

Analyst: DWS Instrument: TGA01 Method: LA-560-112 AS ²⁻²¹⁻⁹⁵
A-2

Worklist Comment: Please run AP-107 TGA under N2. bdv

Seg	Type	Sample#	Rep	Al	Test	Matrix	Actual	Found	DL	Unit
1	STD	42N8-A			TGA-01	LIQUID	59.19	58.33	N/A	%
2	SAMPLE	S95V000011	0		TGA-01	LIQUID	N/A	94.31		%
3	DUP	S95V000011	0		TGA-01	LIQUID	94.31	94.67	N/A	%
4	SAMPLE	S95V000012	0		TGA-01	LIQUID	N/A	95.12		%
5	DUP	S95V000012	0		TGA-01	LIQUID	95.12	92.52	N/A	%

Final page for worklist # 511

Parla Smith
Analyst Signature

2-21-95
Date

Re Jones
Verified by Blandina Valenzuela

2-22-95

2-24-95

Data Entry Comments:

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

TGA STD 42N8-A

13.557 mg

Rate: 10.0 °C/min

File: 00002.001 TG METTLER 21-Feb-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height -7.91 mg

-58.33 %

ResidC. 5.65 mg

41.67 %

Dpeak 81.7°C

WMC-SD-WM-DP-098, REV.0

David W Smith 2-21-95

S95V000011 N2

10.852 mg

Rate: 10.0 °C/min

File: 00004.001

TG METTLER

21-Feb-95

Ident: 0.0 222-S Laboratory

S95V000011 (DUP) N2

11.205 mg

Rate: 10.0 °C/min

File: 00006.001 TG METTLER 21-Feb-95

Ident: 0.0 222-S Laboratory

5. mg

Step Analysis
Height-10.61 mg
-94.67 %
Resid. 0.60 mg
5.33 %

WHC-SD-WM-DP-098, REV. 0

100. 200. 300. 400. °C

S95V000012 N2

10.209 mg

Rate: 10.0 °C/min

File: 00007.001

TG

METTLER

222-S

Laboratory

21-Feb-85

Ident: 0.0

Step Analysis
Height -9.71 mg
-95.12 %
Resid. 0.50 mg
4.88 %
Dpeak 85.0 °C

WHC-SD-WM-DP-098, REV. 0

S95V000012 (DUP) N2

9.730 mg

Rate: 10.0 °C/min

File: 00008.001 TG METTLER 21-Feb-95

Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-098, REV. 0

Step Analysis
Height -9.00 mg
-92.52 %
Resid. 0.73 mg
7.48 %
Dpeak 81.0 °C

LABCORE Data Entry Template for Worklist# 512

Analyst: PW7 Instrument: TGA01 Method: LA-560-112 A-2

Worklist Comment: Please run AP-107 TGA under N2. bdv

WHC-SD-WM-DP-098, REV. 0

Seg	Type	Sample#	Rep	AI	Test	Matrix	Actual	Found	DL	Unit
1	STD	4208-A			TGA-01	LIQUID	59.19	58.33	N/A	%
2	SAMPLE	S95V000013	0		TGA-01	LIQUID	N/A	95.05		%
3	DUP	S95V000013	0		TGA-01	LIQUID	95.05	95.82	N/A	%

Final page for worklist # 512

Analyst Signature

P. Jones

Verified by Blandina Valenzuela

2-21-95
Date

2-22-95

~~2-23~~ 2-24-95
BY 2-24-95

Data Entry Comments:

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 28 TO 30 .

TGA STD 42N8-A

13.557 mg

Rate: 10.0 °C/min

File: 00002.001

TG

METTLER

21-Feb-95

Ident: 0.0

222-S Laboratory

WHC-SD-WM-DP-098, REV. 0

Step Analysis

Height -7.91 mg

-58.33 %

ResidC. 5.65 mg

41.67 %

Dpeak 81.7 °C

Carol M. Smith 2-21-95

S95V000013 N2

9.172 mg

Rate: 10.0 °C/min

File: 00009.001

TG METTLER

21-Feb-95

Ident: 0.0 222-S Laboratory

WHC-SD-WM-DP-098, REV. 0

Step Analysis

Height -8.72 mg

-95.05 %

ResidC. 0.45 mg

4.95 %

Dpeak 81.0 °C

S95V000013 (DUP) N2

9.418 mg

Rate: 10.0 °C/min

File: 00010.001

Ident: 0.0

TG

METTLER

21-Feb-95

222-S Laboratory

Step Analysis

Height -9.02 mg

-95.82 %

ResidC. 0.39 mg

4.18 %

Dpeak 81.0 °C

WMC-SD-WM-DP-098, REV. 0

30

5. mg

100.

200.

300.

400.

°C