

WEST VALLEY DEMONSTRATION PROJECT
VITRIFICATION FEED DATA PACKAGE

BATCH #76

PART B

JANUARY 2, 2002

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Vitrification Feed Data Package
(Supporting Data)

Part B

Batch #76

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SEE NOTE ON REVERSE

NOTE: Part A of this Feed Data Package contains those sections identified as "HLW" and are to be considered as a complete set.

Vitrification Feed Data Package
(High-Level Waste Sections Only)

Part A

Batch #76

Table of Contents

	# of Pages
Signature Cards	39 Pages
Completion Review Sign-off Sheet	1 Page
Acceptance of Feed for Transfer to MFHT	1 Page
Waste + Glass Former Analyses	11 Pages
Waste + Glass Former SPECIES_RANGE & PCT_CHECK	3 Pages
CFMT to MFHT Transfer	3 Pages

Summary

Batch 76 Summary

Evolution	Date (in 2002)
SBSR → CFMT, 1st	Jan 2
SBSR → CFMT, 2nd	Jan 2
5 Hydrogard samples 76WH1-5	Jan 2
Concentration # 1	Jan 2 - Jan 4
8D-4 Flush # 1	Jan 11 ⁹ ^{MP} 3-18-03
Concentration # 2	Jan 12 ¹⁰ - 14 ^{MP} 3-18-03
8D-4 to CFMT Transfer # 2	Jan 14
Concentration # 3	Jan 14 - 16
8D-4 to CFMT Transfer # 3	Jan 18 ¹⁸ ^{MP} 3-18-03
Concn after 8D-4 to CFMT # 3	Jan 19 - Jan 20
8D-4 to CFMT Transfer # 4	Jan 20
Concn after 8D-4 to CFMT # 4	Jan 20 - 23
SMS transfer line flushes to CFMT	Jan 24
9 samples 76WH6 - 76WH14	Jan 25
4 samples 76WH15 - 76WH18	Feb 14
65D-09 to CFMT transfer	Feb 19
65-D-09 to CFMT transfer	Feb 25
Added Sodium Metasilicate 24.9 Kg	Mar. 4.
Transferred 4300 L from SD-15A2 to CFMT	MAR. 4
SBS to CFMT transfer	Mar. 4
20 Samples 76WI1 - 76WI20 <small>8D4 to CFMT MP 3-18-03</small>	Mar. 4
SMS FLUSH TRANSFER 8D4 to CFMT <small>TRANSFER # 1</small>	March 19 ¹⁹ ^{MP} 3-18-03
SMS FLUSH TRANSFER # 2 From 8D4 to CFMT <small>6 samples 76WH19 - 76WH24</small>	March 20
North Sump pit flush transfer to CFMT	March 24
6 samples after North Sump transfer 76WH25 - 76WH30	March 24

Continues - next page

Transferred 18,289 litres from ISA 2 (LWTS flush) to CFMT 3/27/02

Samples 76WH31-76WH36 (6 samples) Taken on Sunday 3/31/02

Transferred 2,900 litres from Pit flush #2 to CFMT 4/8/02

Samples 76WH37-76WH42 (6 samples) taken 4/9/02

Transferred 15,300 litres from A2 (2nd transfer) to CFMT and six samples 76WH43-76WH48 were taken. Boiled down started 4/12/02

Completed pit flush pass #2, transfer N-sump to CFMT 4/15/02

76WH49-76WH54 were taken. No Boildown was done 4/17/02

GAMMAJET FLUSH WAS DONE & A BOILDOWN SHEET WAS GIVEN. 5/2/02

Denim Water Flush of SBS to CFMT 5/3/02

WH55-60 samples for analysis of Gamma-Jet Flush 5/3/02

Denim Water Flush of SBS to CFMT 5/4/02

Sodium metasilicate addition 5/6/02

WI 21-40 samples taken (Waste Initial) 5/6/02

Waste Initial results ^{here} obtained & glass former addition calculation done. 5/9/02

Boiled down sheet given to Voss. Glass former sheet given to Voss 5/9/02

Replace The glass former addition sheet, Split The GF to two Tanks, Give the two GF add sheets to VOSS 5/10/02

Glass former added to premix tank D03. Samples taken for analysis ICP, NO₃, Density and Total Solids (76GF7-12) 5/15/02

Glass formers Preheats in Tank D02 complete. Sample taken for ICP, NO₃, Density & Total Solids (76GF1-6) 5/17/02

Sample 76GF1-12 results received, checked mass balance, Samstad. Transferred D02 glass former to CFMT, Boiled down sheet given 5/20/02

Double checked glass former mass balance, Samstad - CFMT Boiled down continues 5/21/02

Boiled down complete, D03-Tank glass formers Transferred to CFMT. 5/22/02

Samples 76WGF1 to 76WGF20 taken & sent to lab 5/22/02

Boiled down sheet (chem. 104.11" x 80") given 5/22/02

CFMT Boiled down completed 5/24/02

76WGF 1 - 76WGF 20 results received, evaluated "Species range" and "pct Check" performed. ^{Ad 3-15-03} Sugar recipe given to Voss 5/25/02 Saturday

Problem with 'pct check' program. Sugar to be added only after 'pct check' program is fixed. 5/25/02 Saturday

PCT.CHECK program was missing a table within the program itself. Alice Probot fixed it.

Completed Species - Range and PCT.CHECK. 5-28-02

Transferred sugar shim to CFMT - 5-28-02

Samples 76SF1 - 8 taken 5-28-02

Class yield was calculated & given to Voss 5/29/02 ^{ASP 3-18-03}

^{ASP 3-18-03} IFO Final (2nd) transfer from CFMT → MFHT was done 5/30/02

Transfer 200 L of water to CFMT

Transfer from CFMT → MFHT 5/31/02


Completion Review Sign-off Sheet

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Feed Data Package Completion Review Sign-Off Sheet
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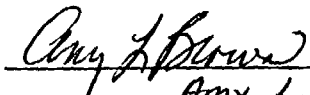
SLURRY BATCH IDENTIFICATION NUMBER 76

This sheet is to be included in the front of the FDP Binder and shall be signed after all FDP actions have been completed.

1. Satisfactory SAE FDP completion review.

(SAE)  Date 6-17-02 [FDP Complete]
R.A. Palmer

2. Satisfactory QA FDP completion review.

(QA)  Date 6/18/02 [FDP Complete]
Amy L. Brown

Slurry Traveler

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Slurry Traveler
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Slurry Batch Identification Number 76

FC1>

STEP #	FOOTNOTE #	TASK DESCRIPTION	DOCUMENTATION SUPPORTING SIGNATURE	SIGNATURE/DATE/TIME
01	1,2	Transfer SBS content to CFMT.	63-34, Appendix C	SAE <i>R. Kaplan</i> 5-6-02 0800
02	1,2	Transfer LWTS content to CFMT.	63-34, Appendix C	SAE <i>R. Kaplan</i> 5-6-02 0800
03	1	Transfer sodium meta silicate to CFMT	63-34, Appendix C or E	SAE <i>R. Kaplan</i> 5-6-02 1200
04	1,2	Transfer North Sump to CFMT	63-34, Appendix C	SAE <i>R. Kaplan</i> 5-6-02 0800
05	1,2	Transfer 8D-2/8D-4 waste to CFMT. (WQR 1.1)	63-34, Appendix C	SAE <i>N/A R. Kaplan</i> 5-6-02
06	1	CFMT sampling level, density, volume and analytical requirements are properly recorded for "WI" (WQR 1.1)		SAE <i>R. Kaplan</i> 5-6-02 1500
07		Sample transfer complete per SOP 63-22. (WQR 1.1)		VOSS <i>NA</i> 5-7-02 1720
08		Using analytical results, determine required cold chemical additions.	Form WV-2756	SAE <i>V.K. Sharma</i> 5-9-02 1600

- 1 Steps 01 through 05 can be done in any order but must be done prior to step 06.
- 2 Steps 01, 02, 04, and 05 are documented by signature after final transfer to the CFMT for the batch.

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Slurry Batch Identification Number 76

FC1>

STEP #	FOOTNOTE #	TASK DESCRIPTION	DOCUMENTATION SUPPORTING SIGNATURE	SIGNATURE/DATE/TIME
09		Cold chemical feed batch sampling, level, density, volume and analytical requirements are properly recorded "GF" (WQR 1.1)		SAE <i>Raplan</i> 5-17-02 1500
10		Sample transfer complete per SOP 65-18. (WQR 1.1)		VOSS <i>[Signature]</i> 5-17-02 1600
11		Execute codes SAMPSTAT COLDCHEM and MASSBAL. Verify current composition of cold chemical feed batch. NOTE: The initial composition may have been changed if the initial verification of composition was unacceptable. (WQR 1.1)	Programs' outputs, form WV-2756, and/or surveillance results.	SAE <i>Raplan</i> 5-20-02 2345

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Slurry Batch Identification Number 76

FC1>

STEP #	FOOTNOTE #	TASK DESCRIPTION	DOCUMENTATION SUPPORTING SIGNATURE	SIGNATURE/DATE/TIME
12	1	Verify CFMT concentration complete.	63-34, Appendix D	SAE <i>R. Blum</i> 5-20-02 2300
13		Transfer cold chemical feed batch to CFMT.	63-34, Appendix C	SAE <i>Uhl</i> : 5-22-02 1400
14		CFMT sampling level, density, volume and analytical requirements are properly recorded for "WGF" (WQR 1.1)		SAE <i>Uhl</i> : 5-22-02 1700
15		Sample transfer complete per SOP 63-22.		VOSS <i>R. Bluff</i> 5-22-02 1745
16		Verify additional CFMT concentration complete. If no concentration is done, N/A this step.	63-34, Appendix D	SAE <i>Uhl</i> : 5-24-02 1200
17		CFMT sampling level, density, volume and analytical requirements are properly recorded for "WGF". If sample not required, N/A this step. (WQR 1.1)		SAE N/A <i>R. Blum</i> 5-25-02 0900

1 Step 11 is documented by signature after final concentration for the batch before transfer of cold chemicals to the CFMT.

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Slurry Batch Identification Number 76

FC1>

STEP #	FOOTNOTE #	TASK DESCRIPTION	DOCUMENTATION SUPPORTING SIGNATURE	SIGNATURE/DATE/TIME
18		Sample transfer complete per SOP 63-22. If sample not required, N/A this step. (WQR 1.1)		VOSS <u>N/A R. A. Plummer</u> 5-25-02 0900
19		Using analytical results, execute codes SPECIES RANGE and PCT_CHECK and compare results with required model domain.	SPECIES_RANGE and PCT_CHECK output	PASS <u>R. A. Plummer 5-28-02</u> SAE 1115 FAIL <u>N/A</u> SAE
20		Using analytical results, execute code PCTCHECK and compare results with required leach rate. (WQR 1.1)	PCT_CHECK output	PASS <u>R. A. Plummer 5-28-02</u> SAE 1115 FAIL <u>N/A</u> SAE

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Slurry Batch Identification Number

76

FC1>

STEP #	FOOTNOTE #	TASK DESCRIPTION	DOCUMENTATION SUPPORTING SIGNATURE	SIGNATURE/DATE/TIME
21		Verify sugar solution makeup and addition to CFMT.	63-34, Appendix C	SAE <i>Guy Lin</i> 1245 5/28/02
22		Verify Appendix F completed (all waste qualification prerequisites for transferring slurry from CFMT to MFHT have been completed)	63-34, Appendix F	SAE <i>R. A. Palmer</i> 5-28-02 1540
23		If directed, perform a partial transfer of slurry feed batch to MFHT. If full transfer N/A this step.	63-34, Appendix C	SAE <i>H. S. Dwyer</i> 5/29/02 8:30
24	1	CFMT sampling level, density, volume and analytical requirements are properly recorded for "SF"		SAE <i>Guy Lin</i> 5-28-02 1545
25		Sample transfer complete per SOP 63-22.		VOSS <i>[Signature]</i> 5-29-02 0859
26		Complete transfer of slurry feed batch to MFHT.	63-34, Appendix C	SAE <i>R. A. Palmer</i> 6-3-02 1500

1 This step can be completed any time after Traveler step #20 (sugar addition to CFMT) but must be completed prior to Traveler step #25 (complete transfer of slurry to MFHT).

SBS to CFMT Transfer

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Section 1

Slurry Batch # 76

55"

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	SBS	CFMT
Tank Number	63-V-031	63-V-001
Date	5-3-02	5-3-02
Time	1930	1930
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	4.6 6.1 N/A N/A	42.5 42.6 42.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.01 N/A N/A	1.40 1.363 1.330
Temp. (°C)	30°	N/A
Average Volume (L)	5816.1 L	7583.2 L

AVG. 42.4"

AVG. 1.368

* Instantaneous Readings

1.36

Section 2

Volume to be transferred 5000 L (maximum)

SAE Signature [Signature] Date 5-3-02

Shift Engineer Signature [Signature] Date 5-3-02
Per Telcom 5-3-02 @ 1940

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	SBS	CFMT
Tank Number	63-V-031	63-V-001
Date	5-4-02	5-4-02
Time	2000 0003	2000 0003
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	9.0 N/A N/A	79.7 79.9 79.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.00 N/A N/A	1.251 1.201 1.170
Temp. (°C)	28°	N/A
Average Volume (L)	1659 L	14,437.9 L

AVG. 79.6"

AVG. 1.207

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 5-5-02

★ Two transfers were done at this time. Initially, the SBS was brought to 8", then re-filled to 28"; the emptied to 9". The initial limit of 5000 L was based on one transfer. At no time was there a danger of over-filling the CFMT.

[Signature]
5-28-02

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Section 1

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE	
Tank Name	SBS	CFMT	
Tank Number	63-V-031	63-V-001	
Date	3-4-02	3-4-02	
Time	1734	1734	
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>N/A</u> <u>9.5</u> <u>N/A</u>	<u>97.6</u> <u>98.0</u> <u>96.9</u>	Ave 97.5
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>N/A</u> <u>1.01</u> <u>N/A</u>	<u>1.160</u> <u>1.116</u> <u>1.077</u>	1.117
Temp. (°C)	<u>29</u>	<u>33.5</u>	
Average Volume (L)	<u>1716.5</u>	<u>17736.3</u>	

* Instantaneous Readings

Section 2

Volume to be transferred 2500

SAE Signature [Signature] For H. Dingra per Telecon Date 3-4-02

Shift Engineer Signature [Signature] Date 3-4-02

112.5
@
1.117

Section 3

	Send Tank AFTER	Receipt Tank AFTER	
Tank Name	SBS	CFMT	
Tank Number	63 V 031	63 V 001	
Date	3-4-02	3-4-02	
Time	18:48	18:48	
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	108.8 <u>109.1</u> <u>116 in.</u> JD 3.4.02	<u>108.8</u> <u>109.1</u> <u>108.0</u>	108.6
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	— — <u>1.00 spgr</u>	<u>1.150</u> <u>1.103</u> <u>1.068</u>	1.107
Temp. (°C)	<u>29°C</u>	<u>35.2°C</u>	
Average Volume (L)	<u>N/A</u>	<u>19,786.7</u>	

Total Flush Water (L) 0

VOSS Signature [Signature] Date 3-4-02

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Section 1

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	SBS	CFMT
Tank Number	63-V-031	63-U-001
Date	3-4-02	3-4-02
Time	15:58	15:52
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A 31.3 N/A	84.6 87.8 83.9
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A 1.00 N/A	1.174 1.132 1.072
Temp. (°C)	28	26.9
Average Volume (L)	4097	15322.4

* Instantaneous Readings

Ave
84.4
Ave
1.133

Section 2

Volume to be transferred 2438

SAE Signature [Signature] for H. Dinger per TELECON Date 3-4-02

Shift Engineer Signature [Signature] Date 3-4-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	SBS	CFMT
Tank Number	63-V-031	63-U-001
Date	3-4-02	3-4-02
Time	17:20	17:20
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A 9.5 N/A	99.6 98.0 96.9
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A 1.01 N/A	1.160 1.116 1.077
Temp. (°C)	29	33.5
Average Volume (L)	1712.5	17736.3

97.5
1.117

Total Flush Water (L) 0

VOSS Signature [Signature] Date 3-4-02

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Second Transfer

Section 1

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE			
Tank Name	SBS	CFRT			
Tank Number	63-V-031	63-V-001			
Date	1-2-02	1-2-02			
Time	1400	1340			
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>60</u> 124 1-2-02	<u>27.5</u> <u>27.8</u> <u>27.1</u>	Avg 27.5		
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.00</u> 1.04 1-2-02	<u>1.139</u> <u>1.118</u> <u>1.105</u>	1.122		
Temp. (°C)	35C	63C			
Average Volume (L)	5766.8 L	4837.7 L			

* Instantaneous Readings

Section 2

Volume to be transferred ~3500 L

SAE Signature RAPalm Date 1-2-02

Shift Engineer Signature [Signature] Date 1-2-02 1,23

Section 3

	Send Tank AFTER	Receipt Tank AFTER			
Tank Name	SBS	CFRT			
Tank Number	63-V-031	63-V-001			
Date	1-2-02	1-2-02			
Time	15:17	15:17			
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>12</u> 124	<u>49.8</u> <u>50.0</u> <u>49.4</u>	Avg 49.8		
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.00</u> 1.04 1-2-02	<u>1.105</u> <u>1.082</u> <u>1.072</u>	1.086		
Temp. (°C)	35°C	51.9°C			
Average Volume (L)	2004.4 L	8946.8 L			

Total Flush Water (L) ~340 L (let Dilution)

VOSS Signature [Signature] Date 1-2-01

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First Transfer

Section 1

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	SBS	CFMT
Tank Number	63-V-031	63-V-001
Date	1-2-02	1-2-02
Time	1040	1010
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>62</u> MP 1-2-02	<u>6.1</u> <u>6.2</u> <u>5.8</u>
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.02</u> MP 1-2-02	<u>1.220</u> <u>1.032</u> <u>1.184</u>
Temp. (°C)	40C	29C
Average Volume (L)	5865.4 L	1098.4 L

Avg
6.0
1.146

* Instantaneous Readings

Section 2

Volume to be transferred ~ 3630 L

SAE Signature *[Signature]*

Date 1-2-02

Shift Engineer Signature *[Signature]*

Date 1-2-02 1.1 @ 27"

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	SBS	CFMT
Tank Number	63-V-031	63-V-001
Date	1-2-02	1-2-02
Time	11:33 ^{Sp} 1250	1340
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>14</u> MP 1-2-02	<u>27.5</u> <u>27.8</u> <u>27.1</u>
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.02</u> MP 1-2-02	<u>1.139</u> <u>1.118</u> <u>1.108</u>
Temp. (°C)	37°C	63C
Average Volume (L)	2234.6 L	4837.7 L

Avg
27.5
1.122

Total Flush Water (L) ~ 108 L (Jet Dilution)

VOSS Signature *[Signature]*

Date 1-2-02

8D-4 and Other Flushes to CFMT Transfer

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Section 1

Pit Flush #3 Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	North Sump (Pit Flush)	CFM T
Tank Number		63-V-001
Date		4-16-02
Time		0540
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	26.947 27.101 26.753
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A	1.580 1.535 1.501 DIXX-1.539
Temp. (°C)	4-15-02	25
Average Volume (L)		4745

26.93
30.7
1.496
3-18-03

* Instantaneous Readings

Section 2

Volume to be transferred 2000 L (maximum) 682 l
SAE Signature [Signature] Date 4-15-02
Shift Engineer Signature [Signature] Date 4-15-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	North Sump (Pit Flush)	CFM T
Tank Number		63-V-001
Date		4-16-02
Time		0555
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	30.9 30.9 30.7
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A	1.533 1.489 1.456
Temp. (°C)	4-15-02	32
Average Volume (L)		5427

30.7
1.496

Total Flush Water (L) N/A
VOSS Signature [Signature] Date 4-17-02

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Section 1

Slurry Batch # 76
A2 TRANSFER #2
LWTS FLUSH

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	WTF	CFMT
Tank Number	5D-15A2	63-V-001
Date	4-12-02	4-12-02
Time	2355	1710
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	NA	25.9 26.0 25.6
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A	1.569 1.522 1.490
Temp. (°C)		29°
Average Volume (L)	N/A	4524.4

25.8 AVE.
1.527 AVE.

* Instantaneous Readings

Section 2

Volume to be transferred 16,000 liters Max (DO NOT exceed 12.5" level)
 SAE Signature [Signature] Date 4-12-02
 Shift Engineer Signature [Signature] Date 4-13-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	WTF	CFMT
Tank Number	5D-15A2	63-V-001
Date	4-13-02	4-13-02
Time	NA	0355
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A 0 N/A	108.9 109.3 108.3
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A 1 N/A	1.200 1.153 1.118
Temp. (°C)	21	25°C
Average Volume (L)	8	19818.5

108.8
1.157

Total Flush Water (L) 1500 l
 VOSS Signature [Signature] Date 4-13-02

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Section 1

Slurry Batch # 76
Pit flush # 2

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	NORTH Sump (PIT Flush)	CFMT
Tank Number	N/A	63-V-001
Date	N/A	4-8-02
Time	N/A	1732
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>N/A</u> <u>N/A</u> <u>N/A</u>	<u>29.2</u> <u>29.2</u> <u>28.8</u> 29.1
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>N/A</u> <u>N/A</u> <u>N/A</u>	<u>1.537</u> <u>1.492</u> <u>1.458</u> 1.495
Temp. (°C)	N/A	28.3 °C
Average Volume (L)	N/A	5132.5 L

* Instantaneous Readings

Section 2

Volume to be transferred ~ 14,000 L (maximum)

SAE Signature R. Palmer Date 4-8-02

Shift Engineer Signature RAV Date 4-8-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	North Sump (Pit Flush)	CFMT
Tank Number		63-V-001
Date		4-9-02
Time		4-9-02 08:55
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	<u>45</u> <u>45</u> <u>44.6</u> 44.9 Avg
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A	<u>1.382</u> <u>1.338</u> <u>1.303</u> 1.341 Avg
Temp. (°C)		26.8 °C
Average Volume (L)		8043.9

Total Flush Water (L) 0

VOSS Signature RAV Date 4-9-02

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Section 1

Slurry Batch # 76

LWTS FLUSH TRANSFER #1

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	WTF	CFMT
Tank Number	5D-15A2	63-V-001
Date	N/A	3/26/02
Time		1442
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	26.4 26.5 26.1
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.476 1.431 1.397
Temp. (°C)		27.7
Average Volume (L)		4616.5

Ave:
26.3
1.434

* Instantaneous Readings

Section 2

Volume to be transferred Transfer 4000 gallons from 5D-15A2 TO CFMT.
 (DO NOT EXCEED 112.5" level of CFMT.)

SAE Signature [Signature] Date 3/26/02
 Shift Engineer Signature [Signature] Date 3-27-02

1,101 @ /109

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	WTF	CFMT
Tank Number	5D-15A2	63-V-001
Date	N/A	3/27/02
Time		2253
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	100.6 101.0 100.0
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.209 1.162 1.166
Temp. (°C)		25°C
Average Volume (L)		18289.4

Ave
100.5
1.166

3,612.31 Gallons

Total Flush Water (L) 1135.5

VOSS Signature [Signature] Date 3-27-02

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Section 1

Slurry Batch # 76

	Send Tank BEFORE			Receipt Tank BEFORE		
Tank Name	North Sump (Pit Flush)			CFMT		
Tank Number	N/A			63-V-081		
Date	N/A			3/23/02		
Time	N/A			0830		
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	N/A	N/A	25.9	25.9	25.7
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A	N/A	N/A	1.485	1.441	1.444
Temp. (°C)	N/A			Asm 6/24/02 31.6 27.7		
Average Volume (L)	N/A			4506.0		

Asm 3-18-03
44.6 3/24/02
25.7
1.444

* Instantaneous Readings

Section 2

Volume to be transferred 213,000 L

SAE Signature H.S. Dlugosz Date 3/23/02

Shift Engineer Signature [Signature] Date 3-25-02

Section 3

	Send Tank AFTER			Receipt Tank AFTER		
Tank Name	North Sump			CFMT		
Tank Number	N/A			63-V-001		
Date	N/A			3/24/02 3/24/02		
Time	N/A			Asm 3/24/02 0853		
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	N/A	N/A	44.6	44.8	44.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A	N/A	N/A	1.308	1.261	1.228
Temp. (°C)	N/A			31.6		
Average Volume (L)	N/A			7988.6		

Asm 3-18-03
44.6
1.265

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 3-25-02

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Section 1

Slurry Batch # 76
SMS FLUSH TRANSFER # 2
W.O. "SMS-61950"

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	Tank Farm	CFMT
Tank Number	8D-4	63-V-001
Date	3/20/02	3/20/02
Time		1002
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)		41.2 41.2 40.7
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A W.O. 3/20/02	1.326 1.280 1.245
Temp. (°C)		27.8
Average Volume (L)		7325.3

Ave.
41.0
1.284

* Instantaneous Readings

Section 2

Volume to be transferred As per W.O. "SMS-61950" MAXIMUM 1500 gallons
DO NOT EXCEED 112.5" LEVEL IN CFMT.

SAE Signature [Signature] Date 3/20/02
Shift Engineer Signature [Signature] Date 3-20-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	TANK FARM	CFMT
Tank Number	8D-4	63-V-001
Date	3/20/02	3/20/02
Time	N/A	
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)		58.2 58.4 57.8
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.253 1.207 1.174
Temp. (°C)		27.5
Average Volume (L)		10,476.2

AVG
58.1"
AVG.
1.211 SPGR

Total Flush Water (L) N/A 3-20-02 90 TOTAL

VOSS Signature [Signature] Date 3-20-02

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Section 1

Slurry Batch # 76

SMS FLUSH TRANSFER #1
W.O. 'SMS-61950'

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	Park Farm	CFMT
Tank Number	8D-4	63-V-001
Date	3/19/02	3/19/02
Time	N/A	2006
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	/	28.3 28.4 27.9
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.429 1.385 1.350
Temp. (°C)		27.4
Average Volume (L)		4966.6

Avg 28.2

Avg 1.388

* Instantaneous Readings

Section 2

Volume to be transferred As per W.O. 'SMS-61950' - Maximum 1500 gallons
DO NOT EXCEED 112.5" LEVEL IN CFMT
 SAE Signature [Signature] V.K. Sharma Date 3/19/02
 Shift Engineer Signature [Signature] Date 3-19-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	Park Farm	CFMT
Tank Number	8D-4	63-V-001
Date	3/19/02	3-19-02
Time	N/A	2153
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	/	41.0 41.1 40.6
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.328 1.284 1.249
Temp. (°C)		23.3
Average Volume (L)		7304.8

40.9

1.287

Total Flush Water (L) 6

VOSS Signature [Signature]

Date 3-19-02

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Section 1

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	DeLeon Tank	CFMT
Tank Number	65-D-09	63-V-001
Date	2-25-02	2-25-02
Time	1640	1640
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A N/A N/A	61.5 61.7 61.1
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A N/A N/A	1.194 1.099 1.145
Temp. (°C)	N/A	26.7
Average Volume (L)	100	11084.3

average
61.4
average
1.146

* Instantaneous Readings

Section 2

Volume to be transferred 100 L

SAE Signature [Signature] for Roy Palmer per telcom ¹⁶⁰⁰ Date 2-25-02

Shift Engineer Signature [Signature] Date 2-25-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	DeLeon Tank	CFMT
Tank Number	65-D-09	63-V-001
Date	2-25-02	2-25-02
Time	1655	1655
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	0 N/A N/A	61.8 61.9 61.3
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A N/A N/A	1.194 1.099 1.145
Temp. (°C)	N/A	26.7°
Average Volume (L)	0	11139.6

AVER.
61.7
AVER.
1.146

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 2-25-02

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Section 1

Transfer from LWTS

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name		CFMT
Tank Number	5D-15A2	63-V-001
Date		3-4-02
Time		10:30
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	NA	59.3 59.4 58.7
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	3/4/2	1.199 1.153 1.118
Temp. (°C)	115	26.5
Average Volume (L)		10660.5L

AVERAGE
59.1
AVERAGE
1.156

* Instantaneous Readings

Section 2

Volume to be transferred 4,300 liters (1136 gallons)

SAE Signature H.S. Dringer Date 3/4/02
Shift Engineer Signature ELB Date 3-4-02

82.5 inches @ 1.17

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name		CFMT
Tank Number	5D-15A2	63-V-001
Date		3-4-02
Time		1425
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	NA	84.7 84.9 84.0
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.150	1.171 1.129 1.092
Temp. (°C)	3/4/2	26.7
Average Volume (L)		15342.8

Ave 84.5
Ave 1.132

Total Flush Water (L) 757
VOSS Signature [Signature] Date 3-4-02

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Section 1

Slurry Batch # 76

CFMT Demister flushing

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	DECOR TANK	CFMT
Tank Number	65-D-09	63-V-001
Date	2/19/02	2/19/02
Time	15:55	15:50
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	1.37 N/A N/A	63.8 64.0 63.5
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A N/A N/A	1.189 1.095 1.141
Temp. (°C)	68F	26.3°C
Average Volume (L)	100L	11526.5

63.8
AVG.
1.142
AVG.

* Instantaneous Readings

Section 2

Volume to be transferred 100L

SAE Signature [Signature] V.K. HASAMA Date 2-20-02

Shift Engineer Signature [Signature] Date 2-19-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	Decor Tank	CFMT
Tank Number	65-D-09	63-V-001
Date	2/19/02	2/19/02
Time	17:15	17:15
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	1.32 N/A N/A	64.1 64.2 63.7
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A N/A N/A	1.189 1.095 1.141
Temp. (°C)	68F	26.3°C
Average Volume (L)	0	11563.4

64.0
w
1.142

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 2-19-02

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Section 1

Slurry Batch # 76
After Pit (North Sump) flushing

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	N/A	N/A
Tank Number		
Date		
Time		
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	/	/
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		
Temp. (°C)		
Average Volume (L)		

* Instantaneous Readings

Section 2

Volume to be transferred N/A

SAE Signature [Signature] V.K. Sharma Date 2/14/02

Shift Engineer Signature [Signature] Date 2-14-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	/	CFMT
Tank Number		63-V-001
Date		2-14-02
Time		1400
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	/	63.0 63.9 63.3
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.188 1.141 1.138
Temp. (°C)		N/A
Average Volume (L)		11452.8

63.4 level
1.155
Avg Dens.

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 2-14-02

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Section 1

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE		
Tank Name	North Sump	Clmt		
Tank Number	N/A	163-V-001		
Date	2.13.02	2.13.02		
Time	01:20	01:25		
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	13.5 — —	54.8	54.9	54.4
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A — —	1.208	1.162	1.160
Temp. (°C)	N/A	26.3 C		
Average Volume (L)	N/A	9850		

Ave
54.7

* Instantaneous Readings

Section 2

Volume to be transferred ENTIRE CONTENTS OF NORTH SUMP

SAE Signature N/A Date _____

Shift Engineer Signature [Signature] Date 2-13-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER		
Tank Name	North Sump	Clmt		
Tank Number	N/A	163-V-001		
Date	2.13.02	2.13.02		
Time	01:44	0:144		
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	11.8 N/A N/A	63.7	63.9	63.4
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A N/A N/A	1.184	1.139	1.137
Temp. (°C)	N/A	28.5		
Average Volume (L)	N/A	11508.1		

Ave
63.7

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 12.13.02

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Section 1

Slurry Batch # 76

Before & After line flush - SD4

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	<i>N/A</i>	CFMT
Tank Number		63-V-001
Date		1/24/02
Time		2150
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)		38.3 38.4 37.9
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.251 1.222 1.221
Temp. (°C)		27.3
Average Volume (L)		6809.3

AVG. 38.2"
AVG. 1.232

* Instantaneous Readings

#3,694 Dec 1/24/02

Section 2

Volume to be transferred ~1325 L

SAE Signature *[Signature]* V.K. [Signature]

Date 1/24/02

Shift Engineer Signature *[Signature]*

Date 1-24-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	<i>N/A</i>	CFMT
Tank Number		63-V-001
Date		1-25-02
Time		0140
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)		42.6 42.7 42.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.231 1.202 1.201
Temp. (°C)		27.0
Average Volume (L)		7601.7

AVG. 42.5
AVG. 1.211

Total Flush Water (L) N/A

VOSS Signature *[Signature]*

Date 1-25-02

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Section 1

4th 8D-4 to CFMT Transfer

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	8-D-4	CFMT
Tank Number	8D-4	63-V-001
Date	1/20/02	1/20/02
Time	2000	2011
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	602 N/A AD 1-21-02	41 44.1 40.6
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.01 _____	1.189 1.146 1.160
Temp. (°C)	17	26
Average Volume (L)	15560.1	7306.8

* Instantaneous Readings

AVG.
48.9
1.165

Section 2

Volume to be transferred 9462.5 L
 Alice Drobet 1-21-02
 SAE Signature Alice Drobet Date 1-20-02
 Shift Engineer Signature [Signature] Date 1-20-02
 Projected Den 1.07

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	8D-4	CFMT
Tank Number	8-D-4	63-V-001
Date	_____	1-20-02
Time	_____	23:00
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	_____ AD 1-21-02	87.9 88.1 87.4 AVG 87.8
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	_____	1.133 1.103 1.106 Avg 1.112
Temp. (°C)	_____	26
Average Volume (L)	_____	15875.2

Total Flush Water (L) 0

VOSS Signature [Signature] Date 1-20-02

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Section 1

3rd 8D-4 to CFMT Transfer

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	Tank Farm	CFMT
Tank Number	8D-4	63-V-001
Date	1-19-02	1-18-02
Time	0323	1410
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	/	26.6 26.8 26.3 Avg 26.5
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		N/A AD 1-18-02 1.327 1.298 1.298 Avg 1.308
Temp. (°C)		27.3
Average Volume (L)		4616.5 4653.4

* Instantaneous Readings

AD 1-18-02

Section 2

Volume to be transferred 15846.9L (fill to 112.5" in CFMT)

SAE Signature Alvin Drobnik Date 1-18-02

Shift Engineer Signature [Signature] Date 1-18-02 112.5
 ① 1.07

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	Tank Farm	CFMT
Tank Number	8D-4	63-V-001
Date	1-19-02	1-19-02
Time	0323	0323
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	/	103.4 103.8 102.8 Avg 103.3
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		N/A AD 1-18-02 1.816 1.810 1.810 Avg 1.817 1.087 1.084
Temp. (°C)		19.0
Average Volume (L)		18805.1

Total Flush Water (L) 0

VOSS Signature [Signature] Date 1-19-02

2nd
8D-4
FLUSH

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Section 1

slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE		
Tank Name	Tank Farm	CFMT		
Tank Number	8D-4	63-V-001		
Date	1-14-02	1-14-02		
Time		1506		
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)		26.7 26.9 26.4		
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.248 1.219 1.219		
Temp. (°C)	1-14-02	71°C		
Average Volume (L)		4671.8 L		

* Instantaneous Readings

Avg
266
1.229

Section 2

Volume to be transferred ~ 15,000 L

SAE Signature [Signature] Date 1-14-02

Shift Engineer Signature [Signature] Date 1-14-02 103" @ 1.05

Section 3

	Send Tank AFTER	Receipt Tank AFTER		
Tank Name	Tank Farm	CFMT		
Tank Number	8D-4	63-V-001		
Date	1-14-02	1-14-02		
Time		2340		
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)		75.3 75.5 74.9		
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.147 1.118 1.115		
Temp. (°C)	1-14-01	19°C		
Average Volume (L)		13645.6 L		

Avg
75.3
1.126

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 1-15-02

First
8-D4
FLUSH

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Section 1

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	Tank Farm	CFMT
Tank Number	8D-4	63-V-001
Date	1-9-02	1-9-02
Time	1520	1520
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	_____	29.3 29.4 28.9 Avg 29.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A AD 1-9-02	1.165 1.135 1.134 Avg 1.145
Temp. (°C)		26.9
Average Volume (L)		5150.9

* Instantaneous Readings

Section 2

Volume to be transferred approx. 15349L (fill CFMT to 112.5")

SAE Signature [Signature] Date 1-9-02

Shift Engineer Signature [Signature] Date 1-14-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	Tank Farm	CFMT
Tank Number	8D-4	63-V-001
Date		1-14-02 1-11-02
Time		1100
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	N/A
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A	N/A 1-14-02
Temp. (°C)	1-14-02	N/A 1-14-02
Average Volume (L)		18,768.2

Avg
103.1
1.082

Total Flush Water (L) N/A N/A 1-14-02

VOSS Signature [Signature] Date 1-14-02

Sodium Metasilicate Addition

APPENDIX E
Sodium Metasilicate Preparation and Transfer to CFMT
(Page 1 of 1)

Slurry Batch # 76

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Sodium metasilicate	25 ± 2 kg	25.15	C2133	90971/1.1	DS
Demineralize water	60 ± 6 L	60L	N/A	N/A	JK

Transfer complete

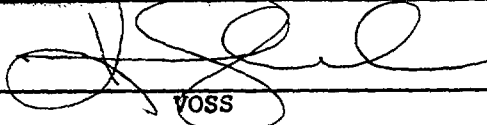

VOSS

5.6.02 / 1040
Date/Time

APPENDIX E
Sodium Metasilicate Preparation and Transfer to CFMT
(Page 1 of 1)

Slurry Batch # 76

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Sodium metasilicate	25 ± 2 kg	24.9 kg	C2/33	9097/1.1	J-SH
Demineralize water	60 ± 6 L	60 L	n/a	n/a	J-SH

Transfer complete  VOSS 3-4-02 / 1020
Date/Time

CFMT Concentration

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

After glassformer addition completion and sampling

Section 1

Initial CFMT Level
(LIXX 0153 with
agitator off)

104.4 Density 1.42

Target Post Boildown Level
(LIXX 0153 with
agitator off)

80" Density N/A

SAE Signature

[Signature]

Date

5/22/02

Section 2

Final Post Boildown Level
(LIXX 0153 with
agitator off)

82.6 Density 1.484

VOSS Signature

[Signature]

Date

5-24-02

Comments: _____

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

Section 1

Initial CFMT Level 74.6 Density 1.392
(LIXX 0153 with
agitator off)

Target Post Boildown Level 50~ Density N/A
(LIXX 0153 with
agitator off)

[Signature] 5-20-02
SAE Signature Date

Section 2

Final Post Boildown Level 49.9 Density 1.550
(LIXX 0153 with
agitator off)

[Signature] 5-22-02
VOSS Signature Date

Comments: _____

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

After WI Samples

Section 1

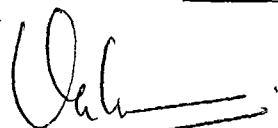
Initial CFMT Level
(LIXX 0153 with
agitator off)

80.7" Density 1.21

Target Post Boildown Level
(LIXX 0153 with
agitator off)

27" Density N/A

SAE Signature


V.K. SHARMA

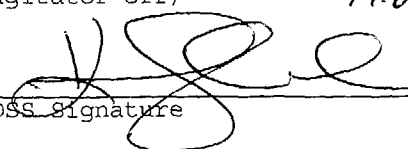
5/9/02
Date

Section 2

Final Post Boildown Level
(LIXX 0153 with
agitator off)

26.1 Density 1.575
44.0°C

VOSS Signature



5-14-02
Date

Comments: _____

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

*After 1st
GAMMAJET FLUSH*

Section 1

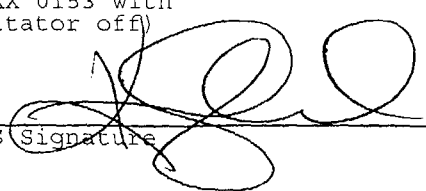
Initial CFMT Level 60.3" Density 1.393
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A
(LIXX 0153 with
agitator off)

H.S. Dhuja 5/2/02
SAE Signature Date

Section 2

Final Post Boildown Level 42.3" Density 1.01
(LIXX 0153 with
agitator off)

 5-3-02
VOSS Signature Date

Comments: _____

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

A2 Transfer #2
(LWTS FLUSH)

Section 1

Initial CFMT Level 108.8 Density 1.157
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A
(LIXX 0153 with
agitator off)

Signature for Vinod Sharma per 4-13-02
SAE Signature telecon Date

Signature

Section 2

Final Post Boildown Level 270 Density 1.529
(LIXX 0153 with
agitator off)

Signature 4-15-02
VOSS Signature Date

Comments: _____

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76
Post pit flush # 2

Section 1

Initial CFMT Level 44.9" Density 1.341
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density NA
(LIXX 0153 with
agitator off)

[Signature] : 4/9/02
SAE Signature Date

Section 2

Final Post Boildown Level 26.9 Density 1.494
(LIXX 0153 with
agitator off)

[Signature] 4-10-02
VOSS Signature Date

Comments: _____

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

Section 1

Initial CFMT Level 101.1 Density 1.164
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A
(LIXX 0153 with
agitator off)

[Signature] 3/26/02
SAE Signature Date

Section 2

Final Post Boildown Level 27.5 Density 1.490
(LIXX 0153 with
agitator off)

[Signature] 3-31-02
VOSS Signature Date

Comments: _____

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

Section 1

Initial CFMT Level 44.6 Density 1.265
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27.4 Density N/A ^{N/A} 3-18-03
(LIXX 0153 with
agitator off)

H.S. Dwyer 3/23/02
SAE Signature Date

Section 2

Final Post Boildown Level 26.5 Density 1.421
(LIXX 0153 with
agitator off)

[Signature] 3-25-02
VOSS Signature Date

Comments: _____

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

Section 1

Initial CFMT Level 108.6 Density 1.107
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A
(LIXX 0153 with
agitator off)

H.S. Drupe 3/4/02
SAE Signature Date

Section 2

Final Post Boildown Level 26.6 Density 1.398
(LIXX 0153 with
agitator off)

[Signature] 3-7-02
VOSS Signature Date

Comments: _____

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

after 4th 8D-4 to CFMT Xfer

Slurry Batch # 76

Section 1

Initial CFMT Level 87.8" Density 1.112
(LIXX 0153 with
agitator off)

Target Post Boildown Level 40" Density N/A AD 1-20-02
(LIXX 0153 with
agitator off)

Alice Drobot 1-20-02
SAE Signature Date

Section 2

Final Post Boildown Level 39.7 Density 1.173
(LIXX 0153 with
agitator off)

MA 1-23-02
VOSS Signature Date

Comments: _____

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

after 3rd 8D-4 to CFMT Transfer

Slurry Batch # 76

Section 1

Initial CFMT Level 103.3 Density 1.07
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A AD 1-18-02
(LIXX 0153 with
agitator off)

Alice Drobot
SAE Signature

1-19-02
1-18-02 AD 1-21-02
Date

Section 2

Final Post Boildown Level 41.7 Density 1.088
(LIXX 0153 with
agitator off)

[Signature]
VOSS Signature

1-20-02
Date

Comments: BEZL SECURED EARLY TO RECEIVE WTR
FLUSH TRANSFER

A Iter
2nd 8D-4 FLUSH

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

Section 1

Initial CFMT Level 75.3 Density 1.126
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A
(LIXX 0153 with
agitator off)

[Signature] 1-14-01
SAE Signature Date

Section 2

Final Post Boildown Level 27.6 Density 1.251
(LIXX 0153 with
agitator off)

[Signature] 1-16-02
VOSS Signature Date

Comments: _____

After
First 8D-4 FLUSH 2nd Concentration

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

Section 1

Initial CFMT Level 103.7 Density 1.079
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density
(LIXX 0153 with
agitator off)

[Signature] V.K. [Signature] 1/10/02
SAE Signature Date

Section 2

Final Post Boildown Level 27.4 Density 1.195
(LIXX 0153 with
agitator off)

[Signature] 1-14-02
VOSS Signature Date

Comments: _____

First Concentration
(Alter first two
SBS Transfers
and samples 76WH1-5)

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 76

Section 1

Initial CFMT Level 49.8" Density 1.086
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A
(LIXX 0153 with
agitator off)

A. A. Palmer 1-2-02
SAE Signature Date

Section 2

Final Post Boildown Level 26.8 Density 1.13
(LIXX 0153 with
agitator off)

[Signature] 1-4-02
VOSS Signature Date

Comments: _____

Waste Initial Analyses

APPENDIX C
Transfer Data Sheet
(Page 1 of 1)

SOP 63-34
Rev. 5
Page 41 of 47

Section 1

WI Samples
21-40
3-18-03

Slurry Batch # 76

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	CFMT	
Tank Number	63-V-001	
Date	5-6-02	
Time	1430	
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	80.8 81.1 80.3	N/A
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.254 1.203 1.172	1.47 5-6-02
Temp. (°C)	27.6 °C	
Average Volume (L)	14,640.6 L	

* Instantaneous Readings

Section 2

Volume to be transferred _____

SAE Signature _____ Date _____

Shift Engineer Signature _____ Date _____

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	N/A	
Tank Number		
Date		
Time		
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	5-6-02	
Temp. (°C)		
Average Volume (L)		

Total Flush Water (L) _____

VOSS Signature _____ Date _____

WEST VALLEY DEMONSTRATION PROJECT
ANALYTICAL REQUEST

5/6/02 Page 1 of 1

VAST Sample ID: 02-0701

Login Date: 5-6-02

To be Completed by the Customer

Customer Department: HLW Completion Project

Sample Point: CEMT

Sample Type (check one):
 liquid solid powder/dust
 smear coupon other: _____

Customer's Sample ID No.: 76WI21 -76WI29, 76WI38 - 76WI40

Collection Date/Time: 5-6-02 / 1918

Collection Location: MNOA

Sample Collector: Chad Erlandson

Report Recipients: SAE, MS-48, FAX 4169

Is this sample suspected to contain radioactive material? no yes

If yes, is the gross activity suspected to be > 5E-03 µCi/mL or > 5E-03 µCi/g?
 no yes

If dose rate is >10mR/hr w/c or >100 mR/hr w/o, contact lab management prior to delivery of sample

Survey Results (To be completed by Radiation Section as applicable):
 _____ cpm α direct * _____ cpm β direct *
 _____ mR/hr w/c _____ mR/hr w/o

RP Tech: _____ Date: _____

* on contact with sample material

Sample Charge Number: WH1210005

Hazards (acid, base, solvent, Cr, Ba, etc.):
 no yes - list: Acid

Sample Disposal Instructions (check appropriate):
 return to customer
 upon completion of analyses
 with customer approval
 other: _____

Requested Due Date: 5/9/02
 (Date Only)

Is the sampling designated HLW? yes no n/a

If yes or no, is the activity identified on the WVDP HLW Items and Activities List? yes no

If yes, Is the HLW Screening Form Attached? yes no

Comments:

Samples 38 - 40 are spare

Supervisor / Manager Signature: [Signature]

To be filled in after sample delivery to the laboratory:

Delivered by: RB Date: 5/6/02 Time: 1740 Received by: MSK/cw Date: 5/6/02 Time: 1740

ANALYSES TO BE COMPLETED

List below the analyses to be performed, the desired units, and any applicable notes (to duplicate the analysis, etc.). Completed analyses will be reported to the Report Recipient on a separate form.

Analysis	Units	Note	Analysis	Units	Note	Analysis	Units	Note
ICP-WZ	µg/g							

VAST

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

FAXed to Recipients

Copied for File

package page 1 of 15

Login Date: 06-May-02

VAST Sample ID: 02-0701

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	5/6/2002 1500

Department	HLWO (VIT)
Customer's ID:	76WI21-76WI29

Analysis	Result ***	Uncertainty	Lab Use Only
Al	4.76E+3	ug/g	Rep1 (76WI 21): U1
Al	4.67E+3	ug/g	Rep2 (76WI 22): U1
Al	4.72E+3	ug/g	Rep3 (76WI 23): U1
Al	4.69E+3	ug/g	Rep4 (76WI 24): U1
Al	4.66E+3	ug/g	Rep5 (76WI 25): U1
Al	4.56E+3	ug/g	Rep6 (76WI 26): U1
Al	4.69E+3	ug/g	Rep7 (76WI 27): U1
U A2 <i>WP 3-18-03</i>	4.64E+3	ug/g	Rep8 (76WI 28): U1
Al	4.46E+3	ug/g	Rep9 (76WI 29): U1
B	5.52E+3	ug/g	Rep1 (76WI 21): U1
B	5.35E+3	ug/g	Rep2 (76WI 22): U1
B	5.43E+3	ug/g	Rep3 (76WI 23): U1
B	5.42E+3	ug/g	Rep4 (76WI 24): U1
B	5.34E+3	ug/g	Rep5 (76WI 25): U1
B	5.23E+3	ug/g	Rep6 (76WI 26): U1
B	5.41E+3	ug/g	Rep7 (76WI 27): U1
B	5.36E+3	ug/g	Rep8 (76WI 28): U1
B	5.11E+3	ug/g	Rep9 (76WI 29): U1
Ca	2.20E+3	ug/g	Rep1 (76WI 21): U1
Ca	2.15E+3	ug/g	Rep2 (76WI 22): U1

Approved By

Janice McElroy
Name

5-8-02 1610
Date & Time




Login Date: 06-May-02

VAST Sample ID: 02-0701

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	5/6/2002 1500

Department	HLWO (VIT)
Customer's ID:	76WI21-76WI29

Analysis	Result ***	Uncertainty	Lab Use Only
Ca	2.18E+3	ug/g	Rep3 (76WI 23): U1
Ca	2.15E+3	ug/g	Rep4 (76WI 24): U1
Ca	2.15E+3	ug/g	Rep5 (76WI 25): U1
Ca	2.09E+3	ug/g	Rep6 (76WI 26): U1
Ca	2.15E+3	ug/g	Rep7 (76WI 27): U1
Ca	2.15E+3	ug/g	Rep8 (76WI 28): U1
Ca	2.05E+3	ug/g	Rep9 (76WI 29): U1
Fe	4.73E+3	ug/g	Rep1 (76WI 21): U1
Fe	4.63E+3	ug/g	Rep2 (76WI 22): U1
Fe	4.71E+3	ug/g	Rep3 (76WI 23): U1
Fe	4.62E+3	ug/g	Rep4 (76WI 24): U1
Fe	4.64E+3	ug/g	Rep5 (76WI 25): U1
Fe	4.49E+3	ug/g	Rep6 (76WI 26): U1
Fe	4.66E+3	ug/g	Rep7 (76WI 27): U1
Fe	4.62E+3	ug/g	Rep8 (76WI 28): U1
Fe	4.45E+3	ug/g	Rep9 (76WI 29): U1
K	5.74E+3	ug/g	Rep1 (76WI 21): U1
K	5.25E+3	ug/g	Rep2 (76WI 22): U1
K	5.57E+3	ug/g	Rep3 (76WI 23): U1
K	5.61E+3	ug/g	Rep4 (76WI 24): U1
K	5.50E+3	ug/g	Rep5 (76WI 25): U1
K	4.79E+3	ug/g	Rep6 (76WI 26): U1
K	5.28E+3	ug/g	Rep7 (76WI 27): U1
K	5.36E+3	ug/g	Rep8 (76WI 28): U1
K	5.22E+3	ug/g	Rep9 (76WI 29): U1
Li	1.17E+3	ug/g	Rep1 (76WI 21): U1
Li	1.16E+3	ug/g	Rep2 (76WI 22): U1

Approved By

 Name _____ Date & Time 5-8-02 1610



Login Date: 06-May-02

VAST Sample ID: 02-0701

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	5/6/2002 1500

Department	HLWO (VIT)
Customer's ID:	76WI21-76WI29

Analysis	Result ***	Uncertainty	Lab Use Only
Li	1.16E+3	ug/g	Rep3 (76WI 23): U1
Li	1.16E+3	ug/g	Rep4 (76WI 24): U1
Li	1.15E+3	ug/g	Rep5 (76WI 25): U1
Li	1.12E+3	ug/g	Rep6 (76WI 26): U1
Li	1.15E+3	ug/g	Rep7 (76WI 27): U1
Li	1.16E+3	ug/g	Rep8 (76WI 28): U1
Li	1.12E+3	ug/g	Rep9 (76WI 29): U1
Mg	6.39E+2	ug/g	Rep1 (76WI 21): U1
Mg	6.18E+2	ug/g	Rep2 (76WI 22): U1
Mg	6.37E+2	ug/g	Rep3 (76WI 23): U1
Mg	6.19E+2	ug/g	Rep4 (76WI 24): U1
Mg	6.28E+2	ug/g	Rep5 (76WI 25): U1
Mg	5.99E+2	ug/g	Rep6 (76WI 26): U1
Mg	6.23E+2	ug/g	Rep7 (76WI 27): U1
Mg	6.25E+2	ug/g	Rep8 (76WI 28): U1
Mg	5.85E+2	ug/g	Rep9 (76WI 29): U1
Mn	2.99E+2	ug/g	Rep1 (76WI 21): U1
Mn	2.90E+2	ug/g	Rep2 (76WI 22): U1
Mn	2.96E+2	ug/g	Rep3 (76WI 23): U1
Mn	2.90E+2	ug/g	Rep4 (76WI 24): U1
Mn	2.95E+2	ug/g	Rep5 (76WI 25): U1
Mn	2.81E+2	ug/g	Rep6 (76WI 26): U1
Mn	2.91E+2	ug/g	Rep7 (76WI 27): U1
Mn	2.93E+2	ug/g	Rep8 (76WI 28): U1
Mn	2.73E+2	ug/g	Rep9 (76WI 29): U1
Na	2.63E+4	ug/g	Rep1 (76WI 21): U1
Na	2.58E+4	ug/g	Rep2 (76WI 22): U1

Approved By

[Signature]
Name

5-8-02 1610
Date & Time



Login Date: 06-May-02

VAST Sample ID: 02-0701

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	5/6/2002 1500

Department	HLWO (VIT)
Customer's ID:	76WI21-76WI29

Analysis	Result ***	Uncertainty	Lab Use Only
Th	1.18E+3	ug/g	Rep3 (76WI 23): U1
Th	1.13E+3	ug/g	Rep4 (76WI 24): U1
Th	1.21E+3	ug/g	Rep5 (76WI 25): U1
Th	1.20E+3	ug/g	Rep6 (76WI 26): U1
Th	1.24E+3	ug/g	Rep7 (76WI 27): U1
Th	1.21E+3	ug/g	Rep8 (76WI 28): U1
Th	1.23E+3	ug/g	Rep9 (76WI 29): U1
Ti	1.60E+2	ug/g	Rep1 (76WI 21): U1
Ti	2.22E+2	ug/g	Rep2 (76WI 22): U1
Ti	1.68E+2	ug/g	Rep3 (76WI 23): U1
Ti	1.71E+2	ug/g	Rep4 (76WI 24): U1
Ti	1.83E+2	ug/g	Rep5 (76WI 25): U1
Ti	1.65E+2	ug/g	Rep6 (76WI 26): U1
Ti	1.72E+2	ug/g	Rep7 (76WI 27): U1
Ti <i>MP 3-18.03</i>	1.76E+2	ug/g	Rep8 (76WI 28): U1
Ti	1.79E+2	ug/g	Rep9 (76WI 29): U1
U	5.90E+3	ug/g	Rep1 (76WI 21): U1
U	5.78E+3	ug/g	Rep2 (76WI 22): U1
U	5.15E+3	ug/g	Rep3 (76WI 23): U1
U	5.96E+3	ug/g	Rep4 (76WI 24): U1
U	5.37E+3	ug/g	Rep5 (76WI 25): U1
U	5.88E+3	ug/g	Rep6 (76WI 26): U1
U	5.96E+3	ug/g	Rep7 (76WI 27): U1
U	5.74E+3	ug/g	Rep8 (76WI 28): U1
U	5.99E+3	ug/g	Rep9 (76WI 29): U1
Zr	4.22E+2	ug/g	Rep1 (76WI 21): U1
Zr	4.10E+2	ug/g	Rep2 (76WI 22): U1

Approved By

[Signature]
Name

5-8-02 1610
Date & Time



Login Date: 06-May-02

VAST Sample ID: 02-0701

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	5/6/2002 1500

Department	HLWO (VIT)
Customer's ID:	76WI21-76WI29

Analysis	Result ***	Uncertainty	Lab Use Only
Zr	4.09E+2	ug/g	Rep3 (76WI 23): U1
Zr	4.04E+2	ug/g	Rep4 (76WI 24): U1
Zr	4.03E+2	ug/g	Rep5 (76WI 25): U1
Zr	3.91E+2	ug/g	Rep6 (76WI 26): U1
Zr	4.10E+2	ug/g	Rep7 (76WI 27): U1
Zr	4.03E+2	ug/g	Rep8 (76WI 28): U1
Zr	3.85E+2	ug/g	Rep9 (76WI 29): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The Instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected
U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Donna McElroy
Name

5-8-02 1610
Date & Time



VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

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Copied for File

package page 1 of 3

Login Date: 06-May-02

VAST Sample ID: 02-0702

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	5/6/2002 1500

Department	HLWO (VIT)
Customer's ID:	B76WI30-B76WI33

Analysis	Result ***	Uncertainty	Lab Use Only
Density	1.19 (30.0 °C)	g/mL	Rep1 (B76WI 30-33): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The Instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By



Name

5-8-02

2230

Date & Time

Report Date: 08-May-02



VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

N/A

FAXed to Recipients

Copied for File

package page 1 of 8

Login Date: 06-May-02

VAST Sample ID: 02-0704

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	5/6/2002 1500

Department	HLWO (VIT)
Customer's ID:	76WI35-76WI37

Analysis	Result ***	Uncertainty	Lab Use Only
NO2	<4.29E+4	ug/g	Rep1 (B76WI #35): no flags
NO2	<4.17E+4	ug/g	Rep2 (B76WI #36): no flags
NO2	<4.19E+4	ug/g	Rep3 (B76WI #37): no flags
NO3	1.66E+5	ug/g	Rep1 (B76WI #35): U1
NO3	1.59E+5	ug/g	Rep2 (B76WI #36): U1
NO3	1.58E+5	ug/g	Rep3 (B76WI #37): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Lawrence A. Guest

Name

5/9/02

0835

Date & Time

Report Date: 07-May-02



VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX ⁴ 2169 ^{5/7/02}

Copied for Recipients

FAXed to Recipients

Copied for File

package page 1 of 4

Login Date: 06-May-02

VAST Sample ID: 02-0703

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	5/6/2002 1500

Department	HLWO (MIT)
Customer's ID:	76W134

Analysis	Result ***	Uncertainty	Lab Use Only
pH	<1.0 (25 °C)	SU	Rep1 (B76WI #34): no flags
Tot Solids	18.49	%	Rep1 (B76WI #34): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected
U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Janice McElroy
Name

5/7/02 2315
Date & Time

Report Date: 07-May-02



Waste Initial SAMPSTAT/CHEMADD

VITRIFICATION LAB SAMPLE STATISTICS

SAMPLE IDS: hsd76wi

SAMPLE FILE: HSD76

THU MAY 9, 2002

07:59:55

DENSITY (g/ml): N/A

*** LAB SAMPLE DATA ***

Element	Sample Data (ug/g)					*-Denotes Outlier
Al	4760.00 4560.00	4670.00 4690.00	4720.00 4640.00	4690.00 4460.00	4660.00	
B	5520.00 5230.00	5350.00 5410.00	5430.00 5360.00	5420.00 5110.00	5340.00	
Ca	2200.00 2090.00	2150.00 2150.00	2180.00 2150.00	2150.00 2050.00	2150.00	
Fe	4730.00 4490.00	4630.00 4660.00	4710.00 4620.00	4620.00 4450.00	4640.00	
K	5740.00 4790.00	5250.00 5280.00	5570.00 5360.00	5610.00 5220.00	5500.00	
Li	1170.00 1120.00	1160.00 1150.00	1160.00 1160.00	1160.00 1120.00	1150.00	
Mg	639.00 599.00	618.00 623.00	637.00 625.00	619.00 585.00	628.00	
Mn	299.00 281.00	290.00 291.00	296.00 293.00	290.00 273.00	295.00	
Na	26300.00 25200.00	25800.00 27900.00	25600.00 25600.00	25700.00 24700.00	25900.00	
P	542.00 588.00	575.00 579.00	547.00 586.00	625.00 568.00	519.00	
Si	7110.00 7300.00	7470.00 7720.00	7710.00 7450.00	7580.00 7370.00	7670.00	
Th	1170.00 1200.00	1450.00 1240.00	1180.00 1210.00	1130.00 1230.00	1210.00	
Ti	160.00 165.00	222.00 172.00	168.00 176.00	171.00 179.00	183.00	
U	5900.00 5880.00	5780.00 5960.00	5150.00 5740.00	5960.00 5990.00	5370.00	
Zr	422.00 391.00	410.00 410.00	409.00 403.00	404.00 385.00	403.00	

Element
MP
3-13-03

VITRIFICATION LAB SAMPLE STATISTICS

SAMPLE IDS: hsd76wi

SAMPLE FILE: HSD76

THU MAY 9, 2002

07:59:55

DENSITY (g/ml): N/A

*** LAB SAMPLE STATISTICS ***

Elem	N	OL	Mean	Maximum	Minimum	Std Dev	Conf Limit	%Error
Al	09	00	4650.00	4760.00	4460.00	90.14	69.29	1.49
B	09	00	5352.22	5520.00	5110.00	120.39	92.54	1.73
Ca	09	00	2141.11	2200.00	2050.00	45.12	34.68	1.62
Fe	09	00	4616.67	4730.00	4450.00	92.20	70.87	1.54
K	09	00	5368.89	5740.00	4790.00	281.27	216.20	4.03
Li	09	00	1150.00	1170.00	1120.00	18.03	13.86	1.20
Mg	09	00	619.22	639.00	585.00	17.37	13.35	2.16
Mn	09	00	289.78	299.00	273.00	8.07	6.21	2.14
Na	09	00	25855.55	27900.00	24700.00	887.57	682.25	2.64
P	09	00	569.89	625.00	519.00	30.88	23.74	4.17
Si	09	00	7486.67	7720.00	7110.00	205.73	158.14	2.11
Th	09	00	1224.44	1450.00	1130.00	90.84	69.83	5.70
Ti	09	00	177.33	222.00	160.00	18.17	13.96	7.87
U	09	00	5747.78	5990.00	5150.00	293.80	225.84	3.93
Zr	09	00	404.11	422.00	385.00	10.91	8.39	2.08

N = Number of data samples.

OL = Number of outlier samples.

N - OL = Number of samples used for statistics.

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: hsd76wi
SAMPLE FILE: HSD76

THU MAY 9, 2002
07:59:55
DENSITY (g/ml): N/A

*** Oxide Data Generated From Mean Samples ***

ICP Desc:
Volume (l): 14640.60
Density (g/ml): 1.2100
Total Oxides (kg): 1900.454

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	4650.00	Al2O3	155.6219	8.1887
B	3.219334	5352.22	B2O3	305.2421	16.0615
Ca	1.399052	2141.11	CaO	53.0661	2.7923
Fe	1.429584	4616.67	Fe2O3	116.9183	6.1521
K	1.204537	5368.89	K2O	114.5642	6.0283
Li	2.152139	1150.00	Li2O	43.8442	2.3070
Mg	1.658054	619.22	MgO	18.1882	0.9570
Mn	1.291128	289.78	MnO	6.6279	0.3488
Na	1.347862	25855.55	Na2O	617.3672	32.4852
P	2.290963	569.89	P2O5	23.1288	1.2170
Si	2.138930	7486.67	SiO2	283.6804	14.9270
Th	1.137931	1224.44	ThO2	24.6831	1.2988
Ti	1.665027	177.33	TiO2	5.2307	0.2752
U	1.204267	5747.78	UO3	122.6216	6.4522
Zr	1.350669	404.11	ZrO2	9.6693	0.5088

*** Target Glass Composition and Needed Amounts ***

 ***** SINGLE ELEMENT OPTIMIZATION OF TOTAL WEIGHT *****

 ***** Total Oxides Weight in Tank: 1900.454 (kg) *****
 ***** Desired Total Oxides Weight: 10000.000 (kg) *****
 ***** Optimized Total Oxides Weight: 972.698 (kg) *****
 ***** Optimized Weight Determined by: Fe2O3 *****

Oxide Name	Target%	Target Amt. (kg)	Waste Amt. (kg)	Needed Amt. (kg)
Al2O3	6.000	600.000	155.622	444.378
B2O3	12.890	1289.000	305.242	983.758
BaO	0.000	0.000	0.000	0.000
CaO	0.480	48.000	53.066	-5.066
Ce2O3	0.000	0.000	0.000	0.000
Cr2O3	0.000	0.000	0.000	0.000
Cs2O	0.080	8.000	0.000	8.000
CuO	0.000	0.000	0.000	0.000
Fe2O3	12.020	1202.000	116.918	1085.082
K2O	5.000	500.000	114.564	385.436
La2O3	0.000	0.000	0.000	0.000
Li2O	3.710	371.000	43.844	327.156
MgO	0.890	89.000	18.188	70.812
MnO	0.820	82.000	6.628	75.372
MoO3	0.000	0.000	0.000	0.000
Na2O	8.000	800.000	617.367	182.633
Nd2O3	0.000	0.000	0.000	0.000
NiO	0.000	0.000	0.000	0.000
P2O5	1.200	120.000	23.129	96.871
ThO2	3.560	356.000	24.683	331.317
Pr6O11	0.000	0.000	0.000	0.000
SO3	0.000	0.000	0.000	0.000
SiO2	40.980	4098.000	283.680	3814.320
SrO	0.000	0.000	0.000	0.000
TiO2	0.800	80.000	5.231	74.769
UO3	0.630	63.000	122.622	-59.622
ZnO	0.000	0.000	0.000	0.000
ZrO2	1.320	132.000	9.669	122.331
TOTALS:	98.380	9838.000	1900.454	7937.546

Handwritten notes:
 MoO3
 Na2O
 3-15-02

*** Initial Slurry Composition from ICP Measurements ***

ICP Desc:
Volume (l): 14640.60
Density (g/ml): 1.2100
Total Oxides (kg): 1900.454

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	4650.00	Al2O3	155.6219	8.1887
B	3.219334	5352.22	B2O3	305.2421	16.0615
Ba	1.116464	0.00	BaO	0.0000	0.0000
Ca	1.399052	2141.11	CaO	53.0661	2.7923
Ce	1.171269	0.00	Ce2O3	0.0000	0.0000
Cr	1.461401	0.00	Cr2O3	0.0000	0.0000
Cs	1.060173	0.00	Cs2O	0.0000	0.0000
Cu	1.251692	0.00	CuO	0.0000	0.0000
Fe	1.429584	4616.67	Fe2O3	116.9183	6.1521
K	1.204537	5368.89	K2O	114.5642	6.0283
La	1.172721	0.00	La2O3	0.0000	0.0000
Li	2.152139	1150.00	Li2O	43.8442	2.3070
Mg	1.658054	619.22	MgO	18.1882	0.9570
Mn	1.291128	289.78	MnO	6.6279	0.3488
Mo	1.500125	0.00	MoO3	0.0000	0.0000
Na	1.347862	25855.55	Na2O	617.3672	32.4852
Nd	1.166400	0.00	Nd2O3	0.0000	0.0000
Ni	1.272470	0.00	NiO	0.0000	0.0000
P	2.290963	569.89	P2O5	23.1288	1.2170
Pr	1.170300	0.00	Pr6O11	0.0000	0.0000
S	2.496631	0.00	SO3	0.0000	0.0000
Si	2.138930	7486.67	SiO2	283.6804	14.9270
Sr	1.182538	0.00	SrO	0.0000	0.0000
Th	1.137931	1224.44	ThO2	24.6831	1.2988
Ti	1.665027	177.33	TiO2	5.2307	0.2752
U	1.204267	5747.78	UO3	122.6216	6.4522
Zn	1.244631	0.00	ZnO	0.0000	0.0000
Zr	1.350669	404.11	ZrO2	9.6693	0.5088

*** CHEMADD Raw Material/Oxide Factors List ***

No	Material Name	Primary Oxide	Batch Factor	Purity Factor	Contrib. Factor	Secondary Oxide	Batch Factor
01	Al(OH)3	Al2O3	0.6537	0.9847	1.0000	None	1.0000
05	B2O3oxide	B2O3	1.0000	1.0000	1.0000	None	1.0000
07	CaCO3	CaO	0.5603	0.9765	1.0000	None	1.0000
13	Fe(OH)3	Fe2O3	0.7474	0.1325	1.0000	None	1.0000
18	KOH	K2O	0.8394	0.4462	1.0000	None	1.0000
22	Li(OH)	Li2O	0.3556	0.9849	1.0000	None	1.0000
26	Mg(OH)2	MgO	0.6911	0.9640	1.0000	None	1.0000
28	ThO2	ThO2	0.9999	1.0000	1.0000	None	1.0000
29	MnO	MnO	0.8159	1.0000	1.0000	None	1.0000
32	NaOH	Na2O	0.7750	0.5070	1.0000	None	1.0000
33	NaH2PO4	P2O5	0.5927	1.0000	1.0000	Na2O	0.2588
40	SiO2	SiO2	1.0000	1.0000	1.0000	None	1.0000
42	ZrO(NO3)2.2H2O	ZrO2	0.4610	0.4261	1.0000	None	1.0000
44	TiOXIDESrc	TiO2	1.0000	1.0000	1.0000	None	1.0000
49	UO3	UO3	0.9990	1.0000	1.0000	None	1.0000

CHEMADD VITRIFICATION FEED ADDITIVES
 HARDIP BADGE#: 0000

RUN: HSD76

TANK: CFMT
 THU MAY 9, 2002

ADD: WI
 08:02:41

*** CHEMADD Single Element Solutions ***

Oxide Name	Needed Amount (kg)	Source Material	Oxide from Source (kg)	Oxide from Others (kg)	Required Source (kg)
Al ₂ O ₃	444.38	Al(OH) ₃	444.38	0.00	690.35
B ₂ O ₃	983.76	B ₂ O ₃ oxide	983.76	0.00	983.76
CaO	-5.07	CaCO ₃	0.00	0.00	0.00
Fe ₂ O ₃	1085.08	Fe(OH) ₃	1085.08	0.00	10957.05
K ₂ O	385.44	KOH	385.44	0.00	1029.09
Li ₂ O	327.16	Li(OH)	327.16	0.00	934.12
MgO	70.81	Mg(OH) ₂	70.81	0.00	106.29
ThO ₂	331.32	ThO ₂	331.32	0.00	331.35
MnO	75.37	MnO	75.37	0.00	92.38
Na ₂ O	182.63	NaOH	140.33	42.30	357.15
P ₂ O ₅	96.87	NaH ₂ PO ₄	96.87	0.00	163.44
SiO ₂	3814.32	SiO ₂	3814.32	0.00	3814.32
ZrO ₂	122.33	ZrO(NO ₃) ₂ ·2H ₂ O	122.33	0.00	622.76
TiO ₂	74.77	TiOXIDESrc	74.77	0.00	74.77
UO ₃	-59.62	UO ₃	0.00	0.00	0.00

MP
3.18.03

CHEMADD VITRIFICATION FEED ADDITIVES
HARDIP BADGE#: 0000

RUN: HSD76

TANK: CFMT
THU MAY 9, 2002

ADD: WI
08:02:41

*** CHEMADD Solutions - Required Additive Amounts ***

Material Name	Required Amt (Kg)
Al(OH)3	690.351
B2O3oxide	983.758
CaCO3	0.000
Fe(OH)3	10957.047
KOH	1029.090
Li(OH)	934.116
Mg(OH)2	106.289
ThO2	331.350
MnO	92.379
NaOH	357.153
NaH2PO4	163.441
SiO2	3814.320
ZrO(NO3)2.2H2O	622.764
TiOXIDESrc	74.769
UO3	0.000
-----	-----
Total Kg	20156.828

*** Required Glass Former Additions for Target Amounts ***

Amount (Kg)	Additive Description
690.351	ALUMINUM HYDROXIDE
983.758	BORON OXIDE
0.000	CALCIUM CARBONATE
10957.047	IRON HYDROXIDE(SLURRY)
1029.090	POTASSIUM HYDROXIDE
934.116	LITHIUM HYDROXIDE
106.289	MAGNESIUM HYDROXIDE
331.350	THORIUM OXIDE
92.379	MANGANESE DIOXIDE
357.153	SODIUM HYDROXIDE
163.441	SODIUM PHOSPHATE MONOBASIC
3814.320	SILICON DIOXIDE
622.764	ZIRCONYL NITRATE DIHYDRATE
74.769	TITANIUM DIOXIDE
0.000	URANIUM OXIDE

20156.828	

*** Glass Former Acid Addition Calculation ***

```

+-----+
| Mass of Cold Chemical Acid to be added to Glass:      12.241 kg |
+-----+
  
```

Input Data:

Input Parameter	Value	Units
CHEMADD Oxide Prediction for Batch	10000.000	kg
NO3 Analysis from A&PC	161000.000	ug/g
NO2 Analysis from A&PC	42166.000	ug/g
Zr Analysis from A&PC	404.111	ug/g
Slurry Density from A&PC	1.210	g/ml
Slurry Volume	14640.600	liters
CHEMADD Source Material Quantity	622.764	kg
Source Material Yield Factor	42.610	percent
Source Material Purity Factor	100.000	percent
Source Material Acid Yield Factor	0.000	percent
Cold Chemical Acid Yield Factor	68.000	percent
NO3 Fraction of Target Mass	0.400	ratio
Source Material:	ZrO(NO3)2.2H2O	

Calculations:

Calculated Item	Amount (Kg)
NO3 Target Mass	4000.000
CFMT NO3 from NO3	2852.135
CFMT NO3 from NO2	1006.794
CFMT NO3 from ZrO(NO3)2.2H2O	9.734
Total CFMT NO3 Contribution	3868.663
NO3 from ZrO(NO3)2.2H2O	123.146
NO3 from Solvent	0.000
Total Glass Former Contribution	123.146
Additional NO3 Needed	8.192
Mass of Cold Chemical Acid to Add	12.241

Glass Former Makeup

Cold Chemical Feed Batch Preparation

Slurry Batch # 76Tank # 65-0-03Description Pre-MixSAE R. PalmerDate 5-6-02

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Demn Water	700 ± 7 L	5-20-02 N 700L	NA	NA	J. Wood
Concentrated Nitric Acid	400 ± 4 L	400.19 L	NA	NA	J. Wood
Ferric Hydroxide (15 drums)	3402 ± 40 kg	3397 kg	C2150	100937/1.3	R. Palmer
Aluminum Hydroxide (2 drums)	250 ± 3 kg	250.1 Kgs	C2102	98682/1.1	J. Wood
Lithium Hydroxide Monohydrate (3 drums)	480 ± 5 kg	471.8 Kgs	C2108	58081/1.2	J. Wood
Silicon Dioxide (4 drums)	889 ± 10 kg	889.0 Kgs	C2107	97714/1.1	J. Wood
Potassium Hydroxide (2 drums)	480 ± 5 kg	455.0 Kgs	C2112	46509/1.1 58444/1.1	R. Keays
Nothing further					
5-6-02					

VOSS Signature RPMDate 5-7-02SAE Review J. WoodDate 5/10/02

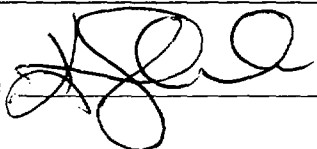
APPENDIX G
 Cold Chemical Feed Batch Preparation
 (Page 1 of 1)

Slurry Batch # 76

Tank # 65-D-02 Description Final Glass Former (2nd Mix tank) SAE V. K. Sharma Date 5-13-02

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Demin Water	400 ± 4 liter	400L	N/A	Column N/A per Section 10.0 [1]	J. Kahan
Ferric Hydroxide	5478 ± 54.8 Kg	5483 Kg.	C2150		Chitry
Demin Water	20 liter per drum	369L	N/A		Chitry
Zirconyl Nitrate	311 ± 3.1 Kg	310.9 Kg	C2147		DS
Sodium Hydroxide	78 ± 0.8 liter	78.14L	N/A		J. Kahan
Sodium Phosphate Monobasic	81 ± 0.8 Kg	81 Kg	C2144		DS
Boron Oxide	439 ± 4.4 Kg	439.2 Kg	C2129		DS
Silicon Dioxide	667 ± 6.7 Kg	667 Kg	C2107		DS
Aluminum Hydroxide	345 ± 3.5 Kg	345 Kg	C2102		CDL
Magnesium Hydroxide	53 ± 0.5 Kg	59.4 Kg	C2119		CDL
Manganese Dioxide	46 ± 0.5 Kg	45.9 Kg.	C2137		CDL
Titanium Dioxide	37 ± 0.4 Kg	36.9 Kg	C2126		CDL
Silicon Dioxide	1240 ± 12.4 Kg	1240.4 Kg	C2107		CM
Lithium Hydroxide Monohydrate	463 ± 4.6 Kg	464.0 Kg	C2108		CM
Potassium Hydroxide	514 ± 5.1 Kg	514.2 kg	C2112		TJP/JK
Demin Water	20 liter per drum	38L	N/A		TJP/JK
Borax	134 ± 1.3 Kg	134.1 kg	C2143	TJP/JK	
P-1200 Antifoam	18 ± 0.2 Kg	18.05 kg	C493	TJP	

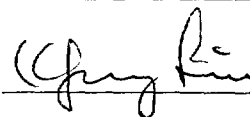
VOSS Signature



Date

5-28-02

SAE Review



Date

5/28/02

APPENDIX G
Cold Chemical Feed Batch Preparation
(Page 1 of 1)

Slurry Batch # 76

Tank # 65-D-03 Description Final Glass Former Adds to Premix SAE V. K. Sharma Date 5-13-02

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Ferric Hydroxide	2082 ± 20.8 Kg	2081.9 Kg	C2150	Column N/A per Section 10.0 [1]	J. Wredin
Demin Water	20 liter per drum	180L	N/A		J. Wredin
Zirconyl Nitrate	312 ± 3.1 Kg	312 Kg	C2147		J. Wredin
Sodium Hydroxide	78 ± 0.8 liter	78.04 LT	N/A		J. Wredin
Sodium Phosphate Monobasic	82 ± 0.8 Kg	82 ⁵⁻¹³⁻⁰² 82 ⁵	C2144		J. Wredin
Boron Oxide	439 ± 4.4 Kg	439.5	C2129		J. Wredin
Silicon Dioxide	667 ± 6.7 Kg	667 Kg	C2167		A. K. Kooze
Aluminum Hydroxide	95 ± 1.0 Kg	95.1 Kg	C2102		A. K. Kooze
Magnesium Hydroxide	53 ± 0.5 Kg	52.8 Kg	C2119		J. C. D.
Manganese Dioxide	46 ± 0.5 Kg	46.0 Kg	C2137		J. C. D.
Titanium Dioxide	37 ± 0.4 Kg	37.0	C2126		J. C. D.
Silicon Dioxide	352 ± 3.5 Kg	352.1 Kg	C2107		DS
Potassium Hydroxide	60 ± 0.6 Kg	60.1 Kg	C2112		DS
Demin Water	20 liter per drum	N/A	C2143 ^{C2150}		N/A
Borax	134 ± 1.3 kg	134.2 Kg	C2143		DS
P-1200	18 ± 0.2 Kg	18.0 Kg	N/A	DS	
<p><i>Nothing to be added</i> 6-18-04</p>					

VOSS Signature [Signature] Date 5-28-02

SAE Review [Signature] Date 5/28/02

Glass Former Analyses

APPENDIX C
Transfer Data Sheet
(Page 1 of 1)

SOP 63-34
Rev. 5
Page 40 of 46

Density & Level for glass Formers
Slurry Batch # 76 Samples

Section 1

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	MIX TANK	N/A OK 5/17/02
Tank Number	D-02	
Date	5/17/02	
Time	9:00	
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	51.9 51.8 51.8	
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.402 1.404 1.404	
Temp. (°C)	26	
Average Volume (L)	7,617	

* Instantaneous Readings

Ref 3-18-03
51.83
51.83 Ag
1.403 Ag

Section 2

Volume to be transferred _____
SAB Signature _____ Date _____
Shift Engineer Signature _____ Date _____

Section 3

N/A

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	N/A OK 5/17/02	
Tank Number		
Date		
Time		
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)		
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		
Temp. (°C)		
Average Volume (L)		

Total Flush Water (L) _____
VOSS Signature _____ Date _____

Density &
Level for
Glass Formers

APPENDIX C
Transfer Data Sheet
(Page 1 of 1)

SOP 63-34
Rev. 5
Page 41 of 47

Section 1

Slurry Batch # 76

GLASSFORMER ADDED TO PREMIX

58.73
1.322

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	M.Y. Tank	
Tank Number	D-03	
Date	3/15/02	
Time	(3:15PM) 15:15	
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	58.6 58.9 58.7	NA
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.322 1.322 1.324	NA
Temp. (°C)	26.6 (80°F)	5-14-02
Average Volume (L)	8740	

* Instantaneous Readings

Section 2

Volume to be transferred _____

SAE Signature _____ Date _____

Shift Engineer Signature _____ Date _____

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name		
Tank Number		
Date		
Time		5-14-02
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)		
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		
Temp. (°C)		
Average Volume (L)		

Total Flush Water (L) _____

VOSS Signature _____ Date _____

COMBINING GLASS FORMER BATCHES
GLASS FORMERS ARE IN D-02 AND D-03

BATCH #76

COMBINING
NW
3-18-02

	D-02	D-03	COMBINED
VOLUME	7617	8740	16357
DENSITY	1.403	1.322	1.36

	D-02 DATA			D-03 DATA			COMBINED DATA		
Al	10900	11000	10400	9800	9680	9770	10326	10312	10071
B	13200	13300	12800	12100	12700	12500	12626	12986	12642
Ca	178	162	165	156	162	151	167	162	158
Fe	34000	32200	34100	31400	31000	31300	32643	31570	32639
K	14800	13500	14300	13100	13300	13500	13914	13393	13882
Li	6900	7000	6610	6750	6730	7000	6821	6858	6811
Mg	3550	3550	3400	2960	2900	2930	3243	3212	3155
Mn	2560	2380	2550	2320	2290	2280	2435	2333	2409
Na	6900	6500	6750	5950	6180	6630	6405	6332	6686
P	1820	1650	1860	1640	1620	1730	1726	1634	1792
Si	90400	89400	86100	80900	80500	79900	85447	84759	82862
Ti	2040	2010	2000	1870	1820	1840	1951	1911	1916
Zr	4250	3960	4180	3880	3820	3870	4057	3886	4018



RB76GF

Data for Glass
Former analysis
Batch 76

N. A. P. L. M.
5-20-02

VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

FAXed to Recipients

Copied for File

package page ___ of ___

Login Date: 15-May-02

VAST Sample ID: 02-0768

Sample Point:	GLASSFORMERS
Sample Type:	ICP/NO3
Collected:	5/15/2002 1500

Department	HLWO (VIT)
Customer's ID:	76GF7-76GF9

Analysis	Result **	Uncertainty	Lab Use Only
NO3	3.71E+4	ug/g	Rep1 (B76GF#7): U1
NO3	3.75E+4	ug/g	Rep2 (B76GF#7 DUP): U1
NO3	3.73E+4	ug/g	Rep3 (B76GF#8): U1
NO3	3.74E+4	ug/g	Rep4 (B76GF#8 DUP): U1
NO3	3.68E+4	ug/g	Rep5 (B76GF#9): U1
NO3	3.73E+4	ug/g	Rep6 (B76GF#9 DUP): U1
Al	9.80E+3	ug/g	Rep1 (B76GF #7): U1
Al	9.68E+3	ug/g	Rep2 (B76GF #8): U1
Al	9.77E+3	ug/g	Rep3 (B76GF #9): U1
Al	*	ug/g	Rep4 (B76GF #7): U1
Al	*	ug/g	Rep5 (B76GF #8): U1
Al	*	ug/g	Rep6 (B76GF #9): U1
B	1.21E+4	ug/g	Rep1 (B76GF #7): U1
B	1.27E+4	ug/g	Rep2 (B76GF #8): U1
B	1.25E+4	ug/g	Rep3 (B76GF #9): U1
B	*	ug/g	Rep4 (B76GF #7): U1
B	*	ug/g	Rep5 (B76GF #8): U1
B	*	ug/g	Rep6 (B76GF #9): U1
Ca	<1.56E+2	ug/g	Rep1 (B76GF #7): no flags
Ca	<1.62E+2	ug/g	Rep2 (B76GF #8): no flags

Approved By

Lawrence O. Gaest
Name

5/20/02 2255
Date & Time

Report Date: 20-May-02



Login Date: 15-May-02

VAST Sample ID: 02-0768

Sample Point:	GLASSFORMERS
Sample Type:	ICP/NO3
Collected:	5/15/2002 1500

Department	HLWO (VIT)
Customer's ID:	76GF7-76GF9

Analysis	Result ***	Uncertainty	Lab Use Only
Ca	<1.51E+2	ug/g	Rep3 (B76GF #9): no flags
Ca	*	ug/g	Rep4 (B76GF #7): U1
Ca	*	ug/g	Rep5 (B76GF #8): U1
Ca	*	ug/g	Rep6 (B76GF #9): U1
Fe	3.14E+4	ug/g	Rep1 (B76GF #7): U1
Fe	3.10E+4	ug/g	Rep2 (B76GF #8): U1
Fe	3.13E+4	ug/g	Rep3 (B76GF #9): U1
Fe	*	ug/g	Rep4 (B76GF #7): U1
Fe	*	ug/g	Rep5 (B76GF #8): U1
Fe	*	ug/g	Rep6 (B76GF #9): U1
K	Not Measured	ug/g	Rep1 (B76GF #7): U1
K	Not Measured	ug/g	Rep2 (B76GF #8): U1
K	Not Measured	ug/g	Rep3 (B76GF #9): U1
K	1.31E+4	ug/g	Rep4 (B76GF #7): U1
K	1.33E+4	ug/g	Rep5 (B76GF #8): U1
K	1.35E+4	ug/g	Rep6 (B76GF #9): U1
Li	6.75E+3	ug/g	Rep1 (B76GF #7): U1
Li	6.73E+3	ug/g	Rep2 (B76GF #8): U1
Li	7.00E+3	ug/g	Rep3 (B76GF #9): U1
Li	*	ug/g	Rep4 (B76GF #7): U1
Li	*	ug/g	Rep5 (B76GF #8): U1
Li	*	ug/g	Rep6 (B76GF #9): U1
Mg	2.96E+3	ug/g	Rep1 (B76GF #7): U1
Mg	2.90E+3	ug/g	Rep2 (B76GF #8): U1
Mg	2.93E+3	ug/g	Rep3 (B76GF #9): U1
Mg	*	ug/g	Rep4 (B76GF #7): U1
Mg	*	ug/g	Rep5 (B76GF #8): U1

Approved By

Lawrence A. Just
Name

5/20/02 2:55
Date & Time

Report Date: 20-May-02



Login Date: 15-May-02

VAST Sample ID: 02-0768

Sample Point:	GLASSFORMERS
Sample Type:	ICP/NO3
Collected:	5/15/2002 1500

Department	HLWO (VIT)
Customer's ID:	76GF7-76GF9

Analysis	Result ***	Uncertainty	Lab Use Only
Mg	*	ug/g	Rep6 (B76GF #2): U1
Mn	2.32E+3	ug/g	Rep1 (B76GF #7): U1
Mn	2.29E+3	ug/g	Rep2 (B76GF #8): U1
Mn	2.28E+3	ug/g	Rep3 (B76GF #9): U1
Mn	*	ug/g	Rep4 (B76GF #7): U1
Mn	*	ug/g	Rep5 (B76GF #8): U1
Mn	*	ug/g	Rep6 (B76GF #9): U1
Na	5.95E+3	ug/g	Rep1 (B76GF #7): U1
Na	6.18E+3	ug/g	Rep2 (B76GF #8): U1
Na	6.63E+3	ug/g	Rep3 (B76GF #9): U1
Na	*	ug/g	Rep4 (B76GF #7): U1
Na	*	ug/g	Rep5 (B76GF #8): U1
Na	*	ug/g	Rep6 (B76GF #9): U1
P	1.64E+3	ug/g	Rep1 (B76GF #7): U1
P	1.62E+3	ug/g	Rep2 (B76GF #8): U1
P	1.73E+3	ug/g	Rep3 (B76GF #9): U1
P	*	ug/g	Rep4 (B76GF #7): U1
P	*	ug/g	Rep5 (B76GF #8): U1
P	*	ug/g	Rep6 (B76GF #9): U1
Si	8.09E+4	ug/g	Rep1 (B76GF #7): U1
Si	8.05E+4	ug/g	Rep2 (B76GF #8): U1
Si	7.99E+4	ug/g	Rep3 (B76GF #9): U1
Si	*	ug/g	Rep4 (B76GF #7): U1
Si	*	ug/g	Rep5 (B76GF #8): U1
Si	*	ug/g	Rep6 (B76GF #9): U1
Ti	1.87E+3	ug/g	Rep1 (B76GF #7): U1
Ti	1.82E+3	ug/g	Rep2 (B76GF #8): U1

Approved By
Lawrence A. Grest
 Name
 5/20/02 22:55
 Date & Time



Login Date: 15-May-02

VAST Sample ID: 02-0768

Sample Point:	GLASSFORMERS
Sample Type:	ICP/NO3
Collected:	5/15/2002 1500

Department	HLWO (VIT)
Customer's ID:	76GF7-76GF9

Analysis	Result ***	Uncertainty	Lab Use Only
Ti	1.84E+3	ug/g	Rep3 (B76GF #9): U1
Ti	*	ug/g	Rep4 (B76GF #7): U1
Ti	*	ug/g	Rep5 (B76GF #6): U1
Ti	*	ug/g	Rep6 (B76GF #9): U1
Zr	3.88E+3	ug/g	Rep1 (B76GF #7): U1
Zr	3.82E+3	ug/g	Rep2 (B76GF #8): U1
Zr	3.87E+3	ug/g	Rep3 (B76GF #9): U1
Zr	*	ug/g	Rep4 (B76GF #7): U1
Zr	*	ug/g	Rep5 (B76GF #8): U1
Zr	*	ug/g	Rep6 (B76GF #9): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

** not measured*

Approved By	
<i>Lawrence A. Guest</i>	<i>5/20/02 2255</i>
Name	Date & Time



WEST VALLEY DEMONSTRATION PROJECT
ANALYTICAL REQUEST

VAST Sample ID: 02-0768

Locin Date: 5/15/02

To be Completed by the Customer

<p>Customer Department: <u>HLW Completion</u></p> <p>Sample Point: <u>D-03</u></p> <p>Sample Type (check one): <input checked="" type="checkbox"/> liquid <input type="checkbox"/> solid (powder/dust) <input type="checkbox"/> smear <input type="checkbox"/> coupon <input type="checkbox"/> other: _____</p> <p>Customer's Sample ID No.: <u>76GF7 - 76GF9</u></p> <p>Collection Date/Time: <u>5/15/02 1500</u></p> <p>Collection Location: <u>Cold Chem</u></p> <p>Sample Collector: <u>Larry Keays</u></p> <p>Report Recipients: <u>fax to 4169; SAE (MS-46)</u></p> <p>Is this sample suspected to contain radioactive material? <input checked="" type="checkbox"/> no <input type="checkbox"/> yes</p> <p>If yes, is the gross activity suspected to be > 5E-03 µCi/mL or > 5E-03 µCi/g? <input checked="" type="checkbox"/> no <input type="checkbox"/> yes</p> <p>If dose rate is >10mR/hr w/o or >100 mR/hr w/o, contact lab management prior to delivery of sample</p> <p>Survey Results (To be completed by Radiation Protection as applicable): N/A cpm α direct * _____ cpm β direct * _____ mR/hr w/c _____ mR/hr w/o</p> <p>RP Tech: <u>N/A</u> Date: _____</p> <p>* on contact with sample material</p>	<p>Sample Charge Number: <u>WH1210006</u></p> <p>Hazards (acid, base, solvent, Cr, Ba, etc.): <input type="checkbox"/> no <input checked="" type="checkbox"/> yes - list: <u>Acid</u></p> <p>Sample Disposal Instructions (check appropriate): <input type="checkbox"/> return to customer <input type="checkbox"/> upon completion of analyses <input checked="" type="checkbox"/> with customer approval <input type="checkbox"/> other: _____</p> <p>Requested Due Date: <u>05/16/02</u> (Date Only)</p> <p>Is the sampling designated HLW? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> n/a</p> <p>If yes or no, is the activity identified on the WVDP HLW Items and Activities List? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no</p> <p>If yes, is the HLW Screening Form Attached? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no</p> <p>Comments: <u>Notify SAE when complete. Include copy of this form with results.</u></p> <p>Supervisor / Manager Signature: <u>[Signature]</u></p>
--	--

To be filled in after sample delivery to the laboratory:
Delivered by: JK Date: 5-15-02 Time: 1552 Received by: JON Date: 5/15/02 Time: 1700

ANALYSES TO BE COMPLETED

List below the analyses to be performed, the desired units, and any applicable notes (to duplicate the analysis, etc.). Completed analyses will be reported to the Report Recipient on a separate form.

Analysis	Units	Note	Analysis	Units	Note	Analysis	Units	Note
ICP-GF	µg/g	60mL bottle						
NO3 (with dups)	µg/g	60mL bottle						

VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients *N/A*

FAXed to Recipients

Copied for File

package page 1 of 6

Login Date: 15-May-02

VAST Sample ID: 02-0769

Sample Point:	GLASSFORMERS
Sample Type:	LIQUID
Collected:	5/15/2002 1500

Department	HLWO (VIT)
Customer's ID:	76GF10-76GF12

Analysis	Result ***	Uncertainty	Lab Use Only
Density	1.32 (20.0 °C)	g/mL	Rep1 (B76GF #10): U1
Density	1.31 (20.0 °C)	g/mL	Rep2 (B76GF #11): U1
Density	1.29 (20.0 °C)	g/mL	Rep3 (B76GF #12): U1
pH	9.8 (20 °C)	su 0.1	Rep1 (REP 10): no flags
pH	9.9 (20 °C)	su 0.1	Rep2 (REP 11): no flags
pH	9.8 (20 °C)	su 0.1	Rep3 (REP 12): no flags
Tot Solids	42.21	%	Rep1 (B76GF#10): U1
Tot Solids	42.03	%	Rep2 (B76GF#11): U1
Tot Solids	42.24	%	Rep3 (B76GF#12): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Lawrence A. Stewart
Name

5/20/02 2120
Date & Time

Report Date: 20-May-02



VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

N/A

FAXed to Recipients

Copied for File

package page 1 of 5

Login Date: 17-May-02

VAST Sample ID: 02-0791

Sample Point:	GLASSFORMERS
Sample Type:	LIQUID
Collected:	5/17/2002 1430

Department	HLWO (VIT)
Customer's ID:	76GF4-76GF6

Analysis	Result ***	Uncertainty	Lab Use Only
Density	1.40 (20.0 °C)	g/mL	Rep1 (B76GF #4): U1
Density	1.39 (20.0 °C)	g/mL	Rep2 (B76GF #5): U1
Density	1.40 (20.0 °C)	g/mL	Rep3 (B76GF #6): U1
pH	>12.4 (20 °C)	su 0.1	Rep1 (REP 4): no flags
pH	>12.4 (20 °C)	su 0.1	Rep2 (REP 5): no flags
pH	>12.4 (20 °C)	su 0.1	Rep3 (REP 6): no flags
Tot Solids	46.14	%	Rep1 (B76GF#4): U1
Tot Solids	46.70	%	Rep2 (B76GF#5): U1
Tot Solids	45.92	%	Rep3 (B76GF#6): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Lawrence A. Gault

Name

5/20/02 2:15

Date & Time

Report Date: 20-May-02



P. 4/4
5/17/02
5/17/02

WEST VALLEY DEMONSTRATION PROJECT
ANALYTICAL REQUEST

VAST Sample ID: 02-0791

Login Date: 5/17/02

To be Completed by the Customer

Customer Department: HLW Completion

Sample Point: D-02

Sample Type (check one):
 liquid solid powder/dust
 smear coupon other: _____

Customer's Sample ID No.: 76GF4 - 76GF5

Collection Date/Time: 5/17/02 1430

Collection Location: Cold Chem

Sample Collector: ASM

Report Recipients: fax to 4189; SAE (MS-48)

Is this sample suspected to contain radioactive material? no yes

If yes, is the gross activity suspected to be > 5E-03 µCi/mL or > 5E-03 µCi/g?
 no yes

If dose rate is >10mR/hr w/o or >100 mR/hr w/o, contact lab management prior to delivery of sample

Survey Results (To be completed by Radiation Protection as applicable):
 N/A cpm α direct _____ cpm β direct _____
 _____ mR/hr w/c _____ mR/hr w/o _____

RP Tech: N/A Date: _____

* on contact with sample material

Sample Charge Number: WH1210006

Hazards (acid, base, solvent, Cr, Ba, etc.):
 ___ no yes - list Acid

Sample Disposal Instructions (check appropriate):
 return to customer
 upon completion of analyses
 with customer approval
 other: _____

Requested Due Date: 05/16/02
 (Date Only)

Is the sampling designated HLW? ___ yes no ___ n/a

If yes or no, is the activity identified on the WVDP HLW Items and Activities List? yes ___ no

If yes, Is the HLW Screening Form Attached? ___ yes no

Comments:
Notify SAE when complete Include copy of this form with results.

Supervisor / Manager Signature: [Signature]

To be filled in after sample delivery to the laboratory:

Delivered by: ASM Date: 5/17/02 Time: 1500 Received by: JH for CW Date: 5/17/02 Time: 1655

ANALYSES TO BE COMPLETED

List below the analyses to be performed, the desired units, and any applicable notes (to duplicate the analysis, etc.). Completed analyses will be reported to the Report Recipient on a separate form.

Analysis	Units	Note	Analysis	Units	Note	Analysis	Units	Note
Density	g/mL	250mL bottle ✓						
Total Solids	%	250mL bottle ✓						
pH	S.U.	✓						

VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

FAXed to Recipients

Copied for File

package page ___ of ___

Login Date: 17-May-02

VAST Sample ID: 02-0792

Sample Point:	GLASSFORMERS
Sample Type:	ICP/NO3
Collected:	5/17/2002 1430

Department	HLWO (VIT)
Customer's ID:	B76GF1-B76GF3

Analysis	Result ***	Uncertainty	Lab Use Only
NO3	6.11E+3	ug/g	Rep1 (B76GF#1): U1
NO3	6.27E+3	ug/g	Rep2 (B76GF#1 DUP): U1
NO3	6.10E+3	ug/g	Rep3 (B76GF#2): U1
NO3	6.15E+3	ug/g	Rep4 (B76GF#2 DUP): U1
NO3	6.28E+3	ug/g	Rep5 (B76GF#3): U1
NO3	6.15E+3	ug/g	Rep6 (B76GF#3 DUP): U1
Al	1.09E+4	ug/g	Rep1 (B76GF #1): U1
Al	1.10E+4	ug/g	Rep2 (B76GF #2): U1
Al	1.04E+4	ug/g	Rep3 (B76GF #3): U1
B	1.32E+4	ug/g	Rep1 (B76GF #1): U1
B	1.33E+4	ug/g	Rep2 (B76GF #2): U1
B	1.28E+4	ug/g	Rep3 (B76GF #3): U1
Ca	<1.78E+2	ug/g	Rep1 (B76GF #1): no flags
Ca	<1.62E+2	ug/g	Rep2 (B76GF #2): no flags
Ca	<1.65E+2	ug/g	Rep3 (B76GF #3): no flags
Fe	3.40E+4	ug/g	Rep1 (B76GF #1): U1
Fe	3.22E+4	ug/g	Rep2 (B76GF #2): U1
Fe	3.41E+4	ug/g	Rep3 (B76GF #3): U1
K	Not Measured	ug/g	Rep1 (B76GF #1): U1
K	Not Measured	ug/g	Rep2 (B76GF #2): U1

Approved By Lawrence A. Quest 5/20/02 2300
 Name Date & Time



Login Date: 17-May-02

VAST Sample ID: 02-0792

Sample Point:	GLASSFORMERS
Sample Type:	ICP/NO3
Collected:	5/17/2002 1430

Department	HLWO (VIT)
Customer's ID:	B76GF1-B76GF3

Analysis	Result ***	Uncertainty	Lab Use Only
K	Not Measured	ug/g	Rep3 (B76GF #3): U1
K	1.48E+4	ug/g	Rep4 (B76GF #1): U1
K	1.35E+4	ug/g	Rep5 (B76GF #2): U1
K	1.43E+4	ug/g	Rep6 (B76GF #3): U1
Li	6.90E+3	ug/g	Rep1 (B76GF #1): U1
Li	7.00E+3	ug/g	Rep2 (B76GF #2): U1
Li	6.61E+3	ug/g	Rep3 (B76GF #3): U1
Mg	3.55E+3	ug/g	Rep1 (B76GF #1): U1
Mg	3.55E+3	ug/g	Rep2 (B76GF #2): U1
Mg	3.40E+3	ug/g	Rep3 (B76GF #3): U1
Mn	2.56E+3	ug/g	Rep1 (B76GF #1): U1
Mn	2.38E+3	ug/g	Rep2 (B76GF #2): U1
Mn	2.55E+3	ug/g	Rep3 (B76GF #3): U1
Na	6.90E+3	ug/g	Rep1 (B76GF #1): U1
Na	6.50E+3	ug/g	Rep2 (B76GF #2): U1
Na	6.75E+3	ug/g	Rep3 (B76GF #3): U1
P	1.82E+3	ug/g	Rep1 (B76GF #1): U1
P	1.65E+3	ug/g	Rep2 (B76GF #2): U1
P	1.86E+3	ug/g	Rep3 (B76GF #3): U1
Si	9.04E+4	ug/g	Rep1 (B76GF #1): U1
Si	8.94E+4	ug/g	Rep2 (B76GF #2): U1
Si	8.61E+4	ug/g	Rep3 (B76GF #3): U1
Ti	2.04E+3	ug/g	Rep1 (B76GF #1): U1
Ti	2.01E+3	ug/g	Rep2 (B76GF #2): U1
Ti	2.00E+3	ug/g	Rep3 (B76GF #3): U1
Zr	4.25E+3	ug/g	Rep1 (B76GF #1): U1
Zr	3.96E+3	ug/g	Rep2 (B76GF #2): U1

Approved By Lawrence A. Sweet 5/20/02 1300
 Name Date & Time

Report Date: 20-May-02



Login Date: 17-May-02

VAST Sample ID: 02-0792

Sample Point:	GLASSFORMERS
Sample Type:	ICP/NO3
Collected:	5/17/2002 1430

Department	HLWO (VIT)
Customer's ID:	B76GF1-B76GF3

Analysis	Result ***	Uncertainty	Lab Use Only
Zr	4.18E+3	ug/g	Rep3 (B76GF #3): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

Lab Use Only Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected
U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Lawrence A. Must

Name

5/20/02

23:00

Date & Time

Report Date: 20-May-02



WEST VALLEY DEMONSTRATION PROJECT
ANALYTICAL REQUEST

VAST Sample ID: 02-0792

Login Date: 5/17/02

To be Completed by the Customer

Customer Department: HLW Completion

Sample Point: D-02

Sample Type (check one):
 liquid solid powder/dust
 smear coupon other: _____

Customer's Sample ID No.: 76GF1 - 76GF3

Collection Date/Time: 5/17/02 1430

Collection Location: Cold Chem

Sample Collector: ASMOG

Report Recipients: fax to 4169; SAE (MS-46)

Is this sample suspected to contain radioactive material? no yes

If yes, is the gross activity suspected to be > 5E-03 µCi/mL or > 5E-03 µCi/g?
 no yes

If dose rate is >10mR/hr w/c or >100 mR/hr w/o, contact lab management prior to delivery of sample

Survey Results (To be completed by Radiation Protection as applicable):
 N/A cpm α direct * _____ cpm β direct * _____
 _____ mR/hr w/c _____ mR/hr w/o

RP Tech: N/A Date: _____

* on contact with sample material

Sample Charge Number: WH1210006

Hazards (acid, base, solvent, Cr, Ba, etc.):
 no yes - list: Acid

Sample Disposal Instructions (check appropriate):
 return to customer upon completion of analyses
 with customer approval
 other: _____
5-17-02

Requested Due Date: 05/16/02 (Date Only)

Is the sampling designated HLW? yes no n/a

If yes or no, is the activity identified on the WVDP HLW Items and Activities List? yes no

If yes, Is the HLW Screening Form Attached? yes no

Comments:
Notifv SAE when complete. Include copy of this form with results.

Supervisor / Manager Signature: [Signature]

To be filled in after sample delivery to the laboratory:
 Delivered by: ASMOG Date: 5/17/02 Time: 1500 Received by: [Signature] Date: 5/17/02 Time: 1655

ANALYSES TO BE COMPLETED

List below the analyses to be performed, the desired units, and any applicable notes (to duplicate the analysis, etc.). Completed analyses will be reported to the Report Recipient on a separate form.

Analysis	Units	Note	Analysis	Units	Note	Analysis	Units	Note
ICP-GF	µg/g	60mL bottle						
NO3 (with dup)	µg/g	60mL bottle						

Glass Former SAMPSTAT, COLDCHEM, & MASSBAL

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: BATCH 76 GLASS FORMERS
SAMPLE FILE: RB76GF

MON MAY 20, 2002
23:17:15
DENSITY (g/ml): N/A

*** LAB SAMPLE DATA ***

Element Ref
3-18-03

Element	Sample Data (ug/g)			*-Denotes Outlier
Al	10326.00	10312.00	10071.00	
B	12626.00	12986.00	12642.00	
Ca	167.00	162.00	158.00	
Fe	32643.00	31570.00	32639.00	
K	13914.00	13393.00	13882.00	
Li	6821.00	6858.00	6811.00	
Mg	3243.00	3212.00	3155.00	
Mn	2435.00	2333.00	2409.00	
Na	6405.00	6332.00	6686.00	
P	1726.00	1634.00	1792.00	
Si	85447.00	84759.00	82862.00	
Ti	1951.00	1911.00	1916.00	
Zr	4057.00	3886.00	4018.00	

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: BATCH 76 GLASS FORMERS
SAMPLE FILE: RB76GF

MON MAY 20, 2002
23:17:15
DENSITY (g/ml): N/A

*** LAB SAMPLE STATISTICS ***

Elem	N	OL	Mean	Maximum	Minimum	Std Dev	Conf Limit	%Error
Al	03	00	10236.33	10326.00	10071.00	143.35	356.11	3.48
B	03	00	12751.33	12986.00	12626.00	203.38	505.24	3.96
Ca	03	00	162.33	167.00	158.00	4.51	11.20	6.90
Fe	03	00	32284.00	32643.00	31570.00	618.35	1536.06	4.76
K	03	00	13729.67	13914.00	13393.00	292.00	725.37	5.28
Li	03	00	6830.00	6858.00	6811.00	24.76	61.50	0.90
Mg	03	00	3203.33	3243.00	3155.00	44.64	110.88	3.46
Mn	03	00	2392.33	2435.00	2333.00	53.00	131.67	5.50
Na	03	00	6474.33	6686.00	6332.00	186.91	464.30	7.17
P	03	00	1717.33	1792.00	1634.00	79.36	197.13	11.48
Si	03	00	84356.00	85447.00	82862.00	1338.79	3325.74	3.94
Ti	03	00	1926.00	1951.00	1911.00	21.79	54.14	2.81
Zr	03	00	3987.00	4057.00	3886.00	89.62	222.62	5.58

N = Number of data samples.

OL = Number of outlier samples.

N - OL = Number of samples used for statistics.

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: BATCH 76 GLASS FORMERS
SAMPLE FILE: RB76GF

MON MAY 20, 2002
23:17:15
DENSITY (g/ml): N/A

*** Oxide Data Generated From Mean Samples ***

ICP Desc:
Volume (l): 16357.00
Density (g/ml): 1.3600
Total Oxides (kg): 7743.452

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	10236.33	Al2O3	430.1902	5.5555
B	3.219334	12751.33	B2O3	913.1964	11.7931
Ca	1.399052	162.33	CaO	5.0522	0.0652
Fe	1.429584	32284.00	Fe2O3	1026.6906	13.2588
K	1.204537	13729.67	K2O	367.8940	4.7510
Li	2.152139	6830.00	Li2O	326.9893	4.2228
Mg	1.658054	3203.33	MgO	118.1526	1.5258
Mn	1.291128	2392.33	MnO	68.7122	0.8874
Na	1.347862	6474.33	Na2O	194.1257	2.5070
P	2.290963	1717.33	P2O5	87.5216	1.1303
Si	2.138930	84356.00	SiO2	4013.7944	51.8347
Ti	1.665027	1926.00	TiO2	71.3379	0.9213
Zr	1.350669	3987.00	ZrO2	119.7947	1.5470

*** Cold Chemical Check Data ***

MMT File: RB76_MMT_GF_ICP.DAT
 Recipe File: HSD76_CFMT_WI.RCP

Oxide Name	Mix Tank Wt(kg)	Needed Wt(kg)	Excess(kg) or deficit(-)	% Difference
Al2O3	430.190	444.378	-14.188	-3.193
B2O3	913.196	983.758	-70.562	-7.173
BaO	0.000	0.000	0.000	0.000
CaO	5.052	-5.066	10.118	-199.726
Ce2O3	0.000	0.000	0.000	0.000
Cr2O3	0.000	0.000	0.000	0.000
Cs2O	0.000	8.000	-8.000	-100.000
CuO	0.000	0.000	0.000	0.000
Fe2O3	1026.691	1085.082	-58.391	-5.381
K2O	367.894	385.436	-17.542	-4.551
La2O3	0.000	0.000	0.000	0.000
Li2O	326.989	327.156	-0.166	-0.051
MgO	118.153	70.812	47.341	66.854
MnO	68.712	75.372	-6.660	-8.836
MoO3	0.000	0.000	0.000	0.000
Na2O	194.126	182.633	11.493	6.293
Nd2O3	0.000	0.000	0.000	0.000
NiO	0.000	0.000	0.000	0.000
P2O5	87.522	96.871	-9.350	-9.652
Pr6O11	0.000	0.000	0.000	0.000
SO3	0.000	0.000	0.000	0.000
SiO2	4013.794	3814.320	199.475	5.230
SrO	0.000	0.000	0.000	0.000
ThO2	0.000	331.317	-331.317	-100.000
TiO2	71.338	74.769	-3.431	-4.589
UO3	0.000	-59.622	59.622	-100.000
ZnO	0.000	0.000	0.000	0.000
ZrO2	119.795	122.331	-2.536	-2.073
Totals:	7743.452	7937.546	-194.094	-2.445

*NiO
 P2O5
 3-18-03*

*Too much Mg, but
 should still pass
 PC T CHECK*

*Rapha
 5-20-02*

*** Mix Tank Composition from ICP Measurements ***

Data File: RB76_MMT_GF_ICP.DAT

ICP Desc:

Volume (l): 16357.00

Density (g/ml): 1.3600

Total Oxides (kg): 7743.452

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	10236.33	Al2O3	430.1902	5.5555
B	3.219334	12751.33	B2O3	913.1964	11.7931
Ba	1.116464	0.00	BaO	0.0000	0.0000
Ca	1.399052	162.33	CaO	5.0522	0.0652
Ce	1.171269	0.00	Ce2O3	0.0000	0.0000
Cr	1.461401	0.00	Cr2O3	0.0000	0.0000
Cs	1.060173	0.00	Cs2O	0.0000	0.0000
Cu	1.251692	0.00	CuO	0.0000	0.0000
Fe	1.429584	32284.00	Fe2O3	1026.6906	13.2588
K	1.204537	13729.67	K2O	367.8940	4.7510
La	1.172721	0.00	La2O3	0.0000	0.0000
Li	2.152139	6830.00	Li2O	326.9893	4.2228
Mg	1.658054	3203.33	MgO	118.1526	1.5258
Mn	1.291128	2392.33	MnO	68.7122	0.8874
Mo	1.500125	0.00	MoO3	0.0000	0.0000
Na	1.347862	6474.33	Na2O	194.1257	2.5070
Nd	1.166400	0.00	Nd2O3	0.0000	0.0000
Ni	1.272470	0.00	NiO	0.0000	0.0000
P	2.290963	1717.33	P2O5	87.5216	1.1303
Pr	1.170300	0.00	Pr6O11	0.0000	0.0000
S	2.496631	0.00	SO3	0.0000	0.0000
Si	2.138930	84356.00	SiO2	4013.7944	51.8347
Sr	1.182538	0.00	SrO	0.0000	0.0000
Th	1.137931	0.00	ThO2	0.0000	0.0000
Ti	1.665027	1926.00	TiO2	71.3379	0.9213
U	1.204267	0.00	UO3	0.0000	0.0000
Zn	1.244631	0.00	ZnO	0.0000	0.0000
Zr	1.350669	3987.00	ZrO2	119.7947	1.5470

*** Recipe Requirements Data ***

Data File: HSD76_CFMT_WI.RCP
Number of Oxides: 34

Oxide	Recipe Wt(kg)	Current Wt(kg)	Needed Wt(kg)
Al2O3	600.000	155.622	444.378
B2O3	1289.000	305.242	983.758
BaO	0.000	0.000	0.000
CaO	48.000	53.066	-5.066
Ce2O3	0.000	0.000	0.000
Cr2O3	0.000	0.000	0.000
Cs2O	8.000	0.000	8.000
CuO	0.000	0.000	0.000
Fe2O3	1202.000	116.918	1085.082
K2O	500.000	114.564	385.436
La2O3	0.000	0.000	0.000
Li2O	371.000	43.844	327.156
MgO	89.000	18.188	70.812
MnO	82.000	6.628	75.372
MoO3	0.000	0.000	0.000
Na2O	800.000	617.367	182.633
Nd2O3	0.000	0.000	0.000
NiO	0.000	0.000	0.000
P2O5	120.000	23.129	96.871
Pr6O11	0.000	0.000	0.000
SO3	0.000	0.000	0.000
SiO2	4098.000	283.680	3814.320
SrO	0.000	0.000	0.000
ThO2	356.000	24.683	331.317
TiO2	80.000	5.231	74.769
UO3	63.000	122.622	-59.622
ZnO	0.000	0.000	0.000
ZrO2	132.000	9.669	122.331
Totals:	9838.000	1900.454	7937.546

*** Oxide Mass Balance Data ***

MMT File: RB76_MMT_GF_ICP.DAT
CFMUT File: HSD76_CFMT_WI_ICP.DAT
Target File: FEED.DAT

Element Name	MMT Wt(kg)	CFMUT Wt(kg)	Target Wt(kg)	MMT Excess(kg) or Deficit(-)	% Difference
03	430.190	155.622	600.000	-14.188	-2.365
3	913.196	305.242	1289.000	-70.562	-5.474
	0.000	0.000	0.000	0.000	0.000
	5.052	53.066	48.000	10.118	21.080
03	0.000	0.000	0.000	0.000	0.000
03	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	8.000	-8.000	-100.000
	0.000	0.000	0.000	0.000	0.000
03	1026.691	116.918	1202.000	-58.391	-4.858
	367.894	114.564	500.000	-17.542	-3.508
03	0.000	0.000	0.000	0.000	0.000
0	326.989	43.844	371.000	-0.166	-0.045
	118.153	18.188	89.000	47.341	53.192
	68.712	6.628	82.000	-6.660	-8.122
03	0.000	0.000	0.000	0.000	0.000
20	194.126	617.367	800.000	11.493	1.437
203	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000
05	87.522	23.129	120.000	-9.350	-7.791
6011	0.000	0.000	0.000	0.000	0.000
3	0.000	0.000	0.000	0.000	0.000
02	4013.794	283.680	4098.000	199.475	4.868
0	0.000	0.000	0.000	0.000	0.000
02	0.000	24.683	356.000	-331.317	-93.067
02	71.338	5.231	80.000	-3.431	-4.289
3	0.000	122.622	63.000	59.622	94.637
0	0.000	0.000	0.000	0.000	0.000
02	119.795	9.669	132.000	-2.536	-1.921
Totals:	7743.452	1900.454	10000.000	-356.094	-3.561

N₂O
P₂O₅
MMT
3-18-03

*Too much Mg, but
should still pass
PCTCHECK
R.A. Plummer
5-20-02*

*** Main Mix Tank (MMT) Composition from ICP Measurements ***

Data File: RB76_MMT_GF_ICP.DAT

ICP Desc:

Volume (l): 16357.00

Density (g/ml): 1.3600

Total Oxides (kg): 7743.452

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	10236.33	Al2O3	430.1902	5.5555
B	3.219334	12751.33	B2O3	913.1964	11.7931
Ba	1.116464	0.00	BaO	0.0000	0.0000
Ca	1.399052	162.33	CaO	5.0522	0.0652
Ce	1.171269	0.00	Ce2O3	0.0000	0.0000
Cr	1.461401	0.00	Cr2O3	0.0000	0.0000
Cs	1.060173	0.00	Cs2O	0.0000	0.0000
Cu	1.251692	0.00	CuO	0.0000	0.0000
Fe	1.429584	32284.00	Fe2O3	1026.6906	13.2588
K	1.204537	13729.67	K2O	367.8940	4.7510
La	1.172721	0.00	La2O3	0.0000	0.0000
Li	2.152139	6830.00	Li2O	326.9893	4.2228
Mg	1.658054	3203.33	MgO	118.1526	1.5258
Mn	1.291128	2392.33	MnO	68.7122	0.8874
Mo	1.500125	0.00	MoO3	0.0000	0.0000
Na	1.347862	6474.33	Na2O	194.1257	2.5070
Nd	1.166400	0.00	Nd2O3	0.0000	0.0000
Ni	1.272470	0.00	NiO	0.0000	0.0000
P	2.290963	1717.33	P2O5	87.5216	1.1303
Pr	1.170300	0.00	Pr6O11	0.0000	0.0000
S	2.496631	0.00	SO3	0.0000	0.0000
Si	2.138930	84356.00	SiO2	4013.7944	51.8347
Sr	1.182538	0.00	SrO	0.0000	0.0000
Th	1.137931	0.00	ThO2	0.0000	0.0000
Ti	1.665027	1926.00	TiO2	71.3379	0.9213
U	1.204267	0.00	UO3	0.0000	0.0000
Zn	1.244631	0.00	ZnO	0.0000	0.0000
Zr	1.350669	3987.00	ZrO2	119.7947	1.5470

*** Concentrator Feed Makeup Tank (CFMUT) Composition from ICP Measurements ***

Data File: HSD76_CFMT_WI_ICP.DAT
 ICP Desc:
 Volume (l): 14640.60
 Density (g/ml): 1.2100
 Total Oxides (kg): 1900.454

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	4650.00	Al2O3	155.6219	8.1887
B	3.219334	5352.22	B2O3	305.2421	16.0615
Ba	1.116464	0.00	BaO	0.0000	0.0000
Ca	1.399052	2141.11	CaO	53.0661	2.7923
Ce	1.171269	0.00	Ce2O3	0.0000	0.0000
Cr	1.461401	0.00	Cr2O3	0.0000	0.0000
Cs	1.060173	0.00	Cs2O	0.0000	0.0000
Cu	1.251692	0.00	CuO	0.0000	0.0000
Fe	1.429584	4616.67	Fe2O3	116.9183	6.1521
K	1.204537	5368.89	K2O	114.5642	6.0283
La	1.172721	0.00	La2O3	0.0000	0.0000
Li	2.152139	1150.00	Li2O	43.8442	2.3070
Mg	1.658054	619.22	MgO	18.1882	0.9570
Mn	1.291128	289.78	MnO	6.6279	0.3488
Mo	1.500125	0.00	MoO3	0.0000	0.0000
Na	1.347862	25855.55	Na2O	617.3672	32.4852
Nd	1.166400	0.00	Nd2O3	0.0000	0.0000
Ni	1.272470	0.00	NiO	0.0000	0.0000
P	2.290963	569.89	P2O5	23.1288	1.2170
Pr	1.170300	0.00	Pr6O11	0.0000	0.0000
S	2.496631	0.00	SO3	0.0000	0.0000
Si	2.138930	7486.67	SiO2	283.6804	14.9270
Sr	1.182538	0.00	SrO	0.0000	0.0000
Th	1.137931	1224.44	ThO2	24.6831	1.2988
Ti	1.665027	177.33	TiO2	5.2307	0.2752
U	1.204267	5747.78	UO3	122.6216	6.4522
Zn	1.244631	0.00	ZnO	0.0000	0.0000
Zr	1.350669	404.11	ZrO2	9.6693	0.5088

*** Target Glass Composition ***

Data File: FEED.DAT
Number of Oxides: 28
Desired Total Oxides (kg): 10000.000

Oxide Name	Target Wt %	Target Wt (kg)
Al2O3	6.000	600.000
B2O3	12.890	1289.000
BaO	0.000	0.000
CaO	0.480	48.000
Ce2O3	0.000	0.000
Cr2O3	0.000	0.000
Cs2O	0.080	8.000
CuO	0.000	0.000
Fe2O3	12.020	1202.000
K2O	5.000	500.000
La2O3	0.000	0.000
Li2O	3.710	371.000
MgO	0.890	89.000
MnO	0.820	82.000
MoO3	0.000	0.000
Na2O	8.000	800.000
Nd2O3	0.000	0.000
NiO	0.000	0.000
P2O5	1.200	120.000
Pr6O11	0.000	0.000
SO3	0.000	0.000
SiO2	40.980	4098.000
SrO	0.000	0.000
ThO2	3.560	356.000
TiO2	0.800	80.000
UO3	0.630	63.000
ZnO	0.000	0.000
ZrO2	1.320	132.000

Glass Former to CFMT Transfer

APPENDIX C
Transfer Data Sheet
(Page 1 of 1)

SOP 63-34
Rev. 5
Page 40 of 46

Section 1

Slurry Batch # 76
65D03 glassformer addition to CFMT

	Send Tank BEFORE			Receipt Tank BEFORE		
Tank Name	Mix Tank			CFMT		
Tank Number	65-D-03			63-V-001		
Date	3/15/02			5-22-02		
Time	15:15			0905		
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>58.6</u>	<u>58.9</u>	<u>58.7</u>	<u>48.3</u>	<u>48.3</u>	<u>47.8</u>
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.322</u>	<u>1.322</u>	<u>1.324</u>	<u>1.643</u>	<u>1.602</u>	<u>1.579</u>
Temp. (°C)	80°F / 26.6°C			40.5°C		
Average Volume (L)	8,740			8633.5		

Avg. 48.1
Avg. 1.608

* Instantaneous Readings

Section 2

Volume to be transferred whole tank + flush water as needed. 9,000 liters approx.

SAE Signature [Signature] V. K. SHARMA Date 5/21/02

Shift Engineer Signature [Signature] Date 5-22-02

Section 3

	Send Tank AFTER			Receipt Tank AFTER		
Tank Name	Mix Tank			CFMT		
Tank Number	65-D-03			63-V-001		
Date				5-22-02		
Time	N/A			1320		
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>5/21/02</u>			<u>104.4</u>	<u>104.7</u>	<u>104.0</u>
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)				<u>1.464</u>	<u>1.413</u>	<u>1.388</u>
Temp. (°C)				26°C		
Average Volume (L)						

Avg. 104.4
Avg. 1.424

Total Flush Water (L) 6176

VOSS Signature [Signature] Date 5-22-02

APPENDIX C
Transfer Data Sheet
(Page 1 of 1)

SOP 63-34
Rev. 5
Page 41 of 47

Section 1

Slurry Batch # 76

65D02 - flap former addition to CFMT

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	M.2 Tank	CFMT
Tank Number	65-D-02	63-V-001
Date	5-21-02	5-21-02
Time	0151	0152
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	28.0 28.5 27.9 52.6	28.0 27.9 27.6
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.392 1.392 1.394	1.589 1.539 1.508
Temp. (°C)	25°C	29.0°C
Average Volume (L)	7747.2	4892.9 L

* Instantaneous Readings

Section 2

Volume to be transferred ~8000 L (whole tank, use as much flush water as necessary)

SAE Signature [Signature] Date 5-20-02

Shift Engineer Signature [Signature] Date 5-21-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	M.2 Tank	CFMT
Tank Number	65-D-02	63-V-001
Date		5-21-02
Time		0300
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	74.6 74.8 74.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		1.437 1.387 1.352
Temp. (°C)	AM	25
Average Volume (L)	5-20-02	13516.6

Total Flush Water (L) 282 (L)

VOSS Signature [Signature] Date 5-21-02

Sugar Addition & Transfer to CFMT

APPENDIX C
Transfer Data Sheet
(Page 1 of 1)

SOP 63-34
Rev. 5
Page 41 of 47

Section 1

Slurry Batch # 76

Sugar Addition

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	SHIM MIX TANK	CFMT
Tank Number	65-D-04	63-V-001
Date	5-28-02	5-28-02
Time	1120	1131
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>35.79</u> <u>35.79</u> <u>35.79</u> AVE = 35.79	<u>82.0</u> <u>82.2</u> <u>81.5</u>
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.336</u> <u>1.336</u> <u>1.336</u> AVE = 1.336	<u>1.590</u> <u>1.415</u> <u>1.536</u>
Temp. (°C)	21	28.5
Average Volume (L)	1230.5	14861.8

Ave.
= 81.9
Ave.
= 1.513

* Instantaneous Readings

Section 2

Volume to be transferred Transfer entire content of Tank 65-D-04

SAE Signature [Signature] Date 5/28/02

Shift Engineer Signature [Signature] Date 5-28-02

1.500 @ " 88.6" CFMT

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	SHIM MIX TANK	CFMT
Tank Number	65-D-04	63-V-001
Date		5-28-02
Time	NA	1205
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>1.52</u>	<u>90.2</u> <u>90.4</u> <u>89.7</u>
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.528/02</u>	<u>1.566</u> <u>1.382</u> <u>1.516</u>
Temp. (°C)		28.2
Average Volume (L)		16372.7

Ave = 90.1
Ave = 1.488

Total Flush Water (L) 150

VOSS Signature [Signature] Date 5-28-02

SUGAR CALCULATION

BATCH NUMBER 76

WGF DATA

NO3 120333 ppm
TOC 355 ppm
Zr 3771 ppm
CFMT VOL. 19007.7 LITERS
CFMT DEN' 1.42 g/mL

MEASURABLE NITRATE CALCULATION

NO3 FROM ZIRCONYL NITRATE

3250.19 kg NO3

138.46 kg NO3

TOTAL NITRATE 3388.64 kg NO3

MEASURED TOC 9.59 kg TOC

ASSUME IFO=3 AND TS=0.55

TOC TO BE ADDED 498.71 kg TOC

SUGAR TO BE ADDED 1183.81 kg SUGAR

ASSUMING A 70% SOLUTION IN WATER, ALSO ADD

507.35 L WATER

D. P. Rubin

5-25-02

Cold Chemical Feed Batch Preparation

Slurry Batch # 76Tank # D-04Description Sugar ShimSAE R. A. PalmerDate 5-25-02

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Demin Water	507 ± 5 L	507 L.	N/A	N/A	J. West
Sugar (Sucrose)	1184 kg ± 12	1184.1 kg	62140	58279/1.3	J. West
Nothing further					
R. A. Palmer					
5-25-02					

VOSS Signature [Signature]Date 5/25/02SAE Review [Signature]Date 5/28/02

Sugared Feed Analyses

VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

FAXed to Recipients

Copied for File

package page 1 of 10

Login Date: 28-May-02

VAST Sample ID: 02-0870

Sample Point:	CFMT
Sample Type:	SF (ACT #25C)
Collected:	5/28/2002 1315

Department	HLWO (VIT)
Customer's ID:	76SF1-76SF3, 76SF8

Analysis	Result ***	Uncertainty	Lab Use Only
TOC	2.4E+4	ug/g	Rep1 (B76SF#1): U1
TOC	2.3E+4	ug/g	Rep2 (B76SF#1DUP): U1
TOC	2.1E+4	ug/g	Rep3 (B76SF#2): U1
TOC	2.1E+4	ug/g	Rep4 (B76SF#2DUP): U1
TOC	2.1E+4	ug/g	Rep5 (B76SF#3): U1
TOC	2.1E+4	ug/g	Rep6 (B76SF#3DUP): U1
NO3	1.47E+5	ug/g	Rep1 (B76SF#1): U1
NO3	1.35E+5	ug/g	Rep2 (B76SF#1DUP): U1
NO3	1.29E+5	ug/g	Rep3 (B76SF#2): U1
NO3	1.27E+5	ug/g	Rep4 (B76SF#2DUP): U1
NO3	1.28E+5	ug/g	Rep5 (B76SF#3): U1
NO3	1.26E+5	ug/g	Rep6 (B76SF#3DUP): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected
U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By


Name

05-29-02 1645
Date & Time

Report Date: 29-May-02



VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

na

FAXed to Recipients

Copied for File

package page 1 of 5

Login Date: 28-May-02

VAST Sample ID: 02-0872

Sample Point:	CFMT
Sample Type:	SF (ACT #25C)
Collected:	5/28/2002 1315

Department	HLWO (VIT)
Customer's ID:	76SF5- 76SF7

Analysis	Result ***	Uncertainty	Lab Use Only
pH	6.5 (28 °C)	SU 0.1	Rep1 (B78SF #05): no flags
pH	6.6 (28 °C)	SU 0.1	Rep2 (B76SF #06): no flags
pH	6.5 (28 °C)	SU 0.1	Rep3 (B76SF #07): no flags
Tot Solids	61.54	%	Rep1 (B76 SF #5): U1
Tot Solids	66.02	%	Rep2 (B76 SF #6): U1
Tot Solids	62.18	%	Rep3 (B76 SF #7): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Jacqueline D. Hill
Name

5/30/02 1432
Date & Time

Report Date: 30-May-02



02-0870 WEST VALLEY DEMONSTRATION PROJECT
ANALYTICAL REQUEST

Page 1 of 1
5/28/02 05:29:02

VAST Sample ID: 02-0872

Login Date: 5/28/02

To be Completed by the Customer

Customer Department: HLW Completion

Sample Point: CEMT

Sample Type (check one):
 liquid solid powder/dust
 smear coupon other: _____

Customer's Sample ID No.: 76SP1 - 76SP3, 76SP7 - 76SP8

Collection Date/Time: 5/28/02 1315

Collection Location: MNOA

Sample Collector: [Signature]

Report Recipients: fax to 4159; SAE (MS-44)

Is this sample suspected to contain radioactive material? no yes

If yes, is the gross activity suspected to be > 5E-03 µCi/ml or > 5E-03 µCi/g?
 no yes

If dose rate is >10mR/hr w/c or >100 mR/hr w/o, contact lab management prior to delivery of sample

Survey Results (To be completed by Radiation Protection as applicable):
 (_____ cpm α direct * _____ cpm β direct *
 _____ mR/hr w/c _____ mR/hr w/o

RP Tech: _____ Date: _____

* on contact with sample material

Sample Charge Number: WH1210006

Hazards (acid, base, solvent, Cr, Ba, etc.):
 no yes - list: Acid

Sample Disposal Instructions (check appropriate):
 return to customer
 upon completion of analyses
 with customer approval
 other: _____

Requested Due Date: 05/28/02 (Date Only)

Is the sampling designated HLW? yes no n/a

If yes or no, is the activity identified on the WVDP HLW Items and Activities List? yes no

If yes, Is the HLW Screening Form Attached? yes no

Comments:
Notify SAE when complete. Include copy of this form with results. Samples 7-8 are spares.

Supervisor / Manager Signature: [Signature]

To be filled in after sample delivery to the laboratory:
 Delivered by: SGN Date: 5/29/02 Time: 1430 Received by: [Signature] Date: 5/29/02 Time: 1558

ANALYSES TO BE COMPLETED
 List below the analyses to be performed, the desired units, and any applicable notes (to duplicate the analysis, etc.). Completed analyses will be reported to the Report Recipient on a separate form.

Analysis	Units	Note	Analysis	Units	Note	Analysis	Units	Note
TOC (with dups)	µg/g	✓						
NO3 (with dups)	µg/g	✓						

Waste + Glass Formers SAMPSTAT

VITRIFICATION LAB SAMPLE STATISTICS
 SAMPLE IDS: vks76wi
 SAMPLE FILE: VKS76

SAT MAY 25, 2002
 08:27:47
 DENSITY (g/ml): N/A

*** LAB SAMPLE DATA ***

Element	Element	Sample Data (ug/g)				*-Denotes Outlier
Al	12200.00 12300.00	12200.00 12300.00	13400.00 12100.00	11900.00 12200.00	12500.00	
B	14800.00 15500.00	14900.00 15300.00	16900.00 15100.00	15100.00 15300.00	15900.00	
Ca	1330.00 1340.00	1320.00 1340.00	1490.00 1320.00	1310.00 1350.00	1400.00	
Fe	30000.00 30100.00	30400.00 30600.00	33400.00 29800.00	30300.00 30800.00	31600.00	
K	15500.00 16100.00	15200.00 16200.00	17300.00 15800.00	15400.00 16100.00	16800.00	
Li	8690.00 6820.00	8630.00 6750.00	7470.00 6660.00	6590.00 6780.00	6970.00	
Mg	3210.00 3300.00	3230.00 3300.00	3600.00 3240.00	3230.00 3340.00	3410.00	
Mn	2340.00 2160.00	2510.00 2320.00	2470.00 2310.00	2280.00 2340.00	2470.00	
Na	21500.00 22000.00	21300.00 21600.00	23700.00 21200.00	20900.00 21900.00	22400.00	
P	1960.00 1890.00	1840.00 1970.00	2240.00 1950.00	2000.00 2040.00	1920.00	
Si	75300.00 78500.00	77600.00 77500.00	84700.00 77400.00	75900.00 77800.00	80000.00	
Th	653.00 588.00	672.00 712.00	644.00 752.00	676.00 687.00	749.00	
Ti	1770.00 1780.00	1710.00 1800.00	1790.00 1780.00	1750.00 1760.00	1780.00	
U	3500.00 3430.00	3520.00 3560.00	4430.00 3610.00	3540.00 3590.00	3730.00	
Zr	3670.00 3750.00	3730.00 3740.00	4110.00 3690.00	3670.00 3730.00	3850.00	

Element MP 3-18-03

VITRIFICATION LAB SAMPLE STATISTICS

SAMPLE IDS: vks76wi

SAMPLE FILE: VKS76

SAT MAY 25, 2002

08:27:47

DENSITY (g/ml): N/A

*** LAB SAMPLE STATISTICS ***

Elem	N	OL	Mean	Maximum	Minimum	Std Dev	Conf Limit	%Error
Al	09	00	12344.44	13400.00	11900.00	427.53	328.62	2.66
B	09	00	15422.22	16900.00	14800.00	643.77	494.85	3.21
Ca	09	00	1355.56	1490.00	1310.00	56.81	43.67	3.22
Fe	09	00	30777.78	33400.00	29800.00	1116.67	858.35	2.79
K	09	00	16044.44	17300.00	15200.00	676.59	520.08	3.24
Li	09	00	7262.22	8690.00	6590.00	832.39	639.83	8.81
Mg	09	00	3317.78	3600.00	3210.00	123.67	95.06	2.87
Mn	09	00	2355.56	2510.00	2160.00	110.58	85.00	3.61
Na	09	00	21833.33	23700.00	20900.00	833.67	640.81	2.94
P	09	00	1978.89	2240.00	1840.00	114.18	87.76	4.43
Si	09	00	78300.00	84700.00	75300.00	2757.72	2119.77	2.71
Th	09	00	681.44	752.00	588.00	51.92	39.91	5.86
Ti	09	00	1768.89	1800.00	1710.00	26.67	20.50	1.16
U	09	00	3656.67	4430.00	3430.00	301.58	231.81	6.34
Zr	09	00	3771.11	4110.00	3670.00	138.24	106.26	2.82

N = Number of data samples.

OL = Number of outlier samples.

N - OL = Number of samples used for statistics.

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: vks76wi
SAMPLE FILE: VKS76

SAT MAY 25, 2002
08:27:47
DENSITY (g/ml): N/A

*** Oxide Data Generated From Mean Samples ***

ICP Desc:
Volume (l): 19007.70
Density (g/ml): 1.4210
Total Oxides (kg): 10183.338

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	12344.44	Al2O3	629.8959	6.1856
B	3.219334	15422.22	B2O3	1341.0242	13.1688
Ca	1.399052	1355.56	CaO	51.2242	0.5030
Fe	1.429584	30777.78	Fe2O3	1188.4216	11.6703
K	1.204537	16044.44	K2O	521.9976	5.1260
Li	2.152139	7262.22	Li2O	422.1468	4.1455
Mg	1.658054	3317.78	MgO	148.5832	1.4591
Mn	1.291128	2355.56	MnO	82.1460	0.8067
Na	1.347862	21833.33	Na2O	794.8572	7.8055
P	2.290963	1978.89	P2O5	122.4512	1.2025
Si	2.138930	78300.00	SiO2	4523.5771	44.4214
Th	1.137931	681.44	ThO2	20.9445	0.2057
Ti	1.665027	1768.89	TiO2	79.5510	0.7812
U	1.204267	3656.67	UO3	118.9411	1.1680
Zr	1.350669	3771.11	ZrO2	137.5757	1.3510

MFHT Oxide Loading and IFO

APPENDIX H
 GLASS YIELD CALCULATION
 (Page 1 of 1)

After Transfer of diluted heel,

SLURRY BATCH # 76

INITIAL MFHT OXIDE INVENTORY:

$V_{MFHT, i} = \underline{16352.6} \text{ L}$
 $(GLASS\ YIELD)_{MFHT, i} = \underline{0.5903} \text{ KG/L (FROM PRIOR BATCH CALCULATION)}$
 $OXIDE_{MFHT, i} = V_{MFHT, i} (GLASS\ YIELD)_{MFHT, i}$
 $OXIDE_{MFHT, i} = \underline{9653} \text{ KG}$

OXIDES ADDED, FROM CFMT:

$OXIDE_{CFMT, i} = \underline{632} \text{ KG}$
 (remaining after first two transfers)
 (FROM SAMPSTAT OUTPUT, *TOTAL OXIDES IN TANK,* + 0.4582 * Li₂O PRIOR TO TRANSFER)
 $V_{CFMT, i} = \underline{4045.3} \text{ L}$ (after demin water addition for dilution)
 $(GLASS\ YIELD)_{CFMT} = \frac{OXIDE_{CFMT, i}}{V_{CFMT, i}}$
 $(GLASS\ YIELD)_{CFMT} = \underline{0.1562} \text{ KG/L}^1$
 $V_{CFMT, f} = \underline{1181.7} \text{ L}$
 $OXIDE\ TRANSFERRED = (GLASS\ YIELD)_{CFMT} (V_{CFMT, i} - V_{CFMT, f})$
 $OXIDE\ TRANSFERRED = \underline{447} \text{ KG}$

FINAL MFHT GLASS YIELD:

$V_{MFHT, f} = \underline{19,218.8} \text{ L}$
 $OXIDE_{MFHT, f} = OXIDE_{MFHT, i} + OXIDE\ TRANSFERRED$
 $(GLASS\ YIELD)_{MFHT, f} = \frac{OXIDE_{MFHT, f}}{V_{MFHT, f}}$
 $(GLASS\ YIELD)_{MFHT, f} = \underline{0.526} \text{ KG/L}$

R A Palmer

6-3-02

SAE

DATE

1 For second transfer to MFHT, recompute to include oxides transferred in first transfer and using current volume.

APPENDIX H
 GLASS YIELD CALCULATION
 (Page 1 of 1)

SLURRY BATCH # 76

AFTER 2ND CFMT → MFHT
 TRANSFER

INITIAL MFHT OXIDE INVENTORY:

$V_{MFHT, i} = \underline{8842.6} \text{ L}$
 $(\text{GLASS YIELD})_{MFHT, i} = \underline{0.5498} \text{ KG/L (FROM PRIOR BATCH CALCULATION)}$

$\text{OXIDE}_{MFHT, i} = V_{MFHT, i} (\text{GLASS YIELD})_{MFHT, i}$

$\text{OXIDE}_{MFHT, i} = \underline{4861.7} \text{ KG}$

OXIDES ADDED, FROM CFMT:

$\text{OXIDE}_{CFMT, i} = \underline{N/A} \text{ KG}$

(FROM SAMPSTAT OUTPUT,
 "TOTAL OXIDES IN TANK," +
 0.4582 * Li₂O PRIOR TO
 TRANSFER)

$V_{CFMT, i} = \underline{10623.6} \text{ L}$

$(\text{GLASS YIELD})_{CFMT} = \frac{\text{OXIDE}_{CFMT, i}}{V_{CFMT, i}}$

$(\text{GLASS YIELD})_{CFMT} = \underline{0.6338} \text{ KG/L}^1$

$V_{CFMT, f} = \underline{1071.3} \text{ L}$

$\text{OXIDE TRANSFERRED} = (\text{GLASS YIELD})_{CFMT} (V_{CFMT, i} - V_{CFMT, f})$

$\text{OXIDE TRANSFERRED} = \underline{6054.2} \text{ KG}$

FINAL MFHT GLASS YIELD:

$V_{MFHT, f} = \underline{18493.2} \text{ L}$

$\text{OXIDE}_{MFHT, f} = \text{OXIDE}_{MFHT, i} + \text{OXIDE TRANSFERRED}$

$(\text{GLASS YIELD})_{MFHT, f} = \frac{\text{OXIDE}_{MFHT, f}}{V_{MFHT, f}}$

$(\text{GLASS YIELD})_{MFHT, f} = \underline{0.5903} \text{ KG/L}$

H. S. Dorigo
 SAE

5/31/02

DATE

1 For second transfer to MFHT, recompute to include oxides transferred in first transfer and using current volume.

APPENDIX H
 GLASS YIELD CALCULATION
 (Page 1 of 1)

SLURRY BATCH # 76

AFTER 1st CFMT → MFHT
 TRANSFER

INITIAL MFHT OXIDE INVENTORY:

$V_{MFHT, i} =$ 7681.6 L
 (GLASS YIELD)_{MFHT, i} = 0.468 KG/L (FROM PRIOR BATCH CALCULATION)

$$OXIDE_{MFHT, i} = V_{MFHT, i} (GLASS YIELD)_{MFHT, i}$$

OXIDE_{MFHT, i} = 3595 KG

OXIDES ADDED, FROM CFMT:

OXIDE_{CFMT, i} = 10376.8 KG

(FROM SAMPSTAT OUTPUT,
 "TOTAL OXIDES IN TANK," +
 0.4582 * Li₂O PRIOR TO
 TRANSFER)

$V_{CFMT, i} =$ 16372.7 L

$$(GLASS YIELD)_{CFMT} = \frac{OXIDE_{CFMT, i}}{V_{CFMT, i}}$$

(GLASS YIELD)_{CFMT} = 0.6338 KG/L¹

$V_{CFMT, f} =$ 10549.9 L

$$OXIDE \text{ TRANSFERRED} = (GLASS YIELD)_{CFMT} (V_{CFMT, i} - V_{CFMT, f})$$

OXIDE TRANSFERRED = 3690.5 KG

FINAL MFHT GLASS YIELD:

$V_{MFHT, f} =$ 13250.7 L

$$OXIDE_{MFHT, f} = OXIDE_{MFHT, i} + OXIDE \text{ TRANSFERRED}$$

$$(GLASS YIELD)_{MFHT, f} = \frac{OXIDE_{MFHT, f}}{V_{MFHT, f}}$$

(GLASS YIELD)_{MFHT, f} = 0.5498 KG/L

H. S. D...
 SAE

5/29/02
 DATE

1 For second transfer to MFHT, recompute to include oxides transferred in first transfer and using current volume.

WEST VALLEY DEMONSTRATION PROJECT
VITRIFICATION FEED DATA PACKAGE

BATCH #77

PART B

JUNE 5, 2002

Table of Contents

Vitrification Feed Data Package
(Supporting Data)

Part B

Batch #77

Table of Contents

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Summary	2 Pages
Completion Review Sign-off Sheet	1 Page
Slurry Traveler	5 Pages
SBS to CFMT Transfer	1 Page
Sodium Metasilicate Addition	1 Page
8D-4 and Other Flushes to CFMT Transfer	10 Pages
CFMT Concentration	8 Pages
Waste Initial Analyses	12 Pages
Waste Initial SAMPSTAT/CHEMADD	13 Pages
Glass Former Makeup	3 Pages
Glass Former Analyses	6 Pages
Glass Former SAMPSTAT, COLDCHEM, & MASSBAL	13 Pages
Glass Former to CFMT Transfer	1 Page
Sugar Addition & Transfer to CFMT	3 Pages
Sugared Feed Analyses	2 Pages
Waste + Glass Formers SAMPSTAT	4 Pages
MFHT Oxide Loading and IFO	4 Pages
Copies of Referenced Documents	4 Pages

SEE NOTE ON REVERSE

NOTE: Part A of this Feed Data Package contains those sections identified as "HLW" and are to be considered as a complete set.

Vitrification Feed Data Package
(High-Level Waste Sections Only)

Part A

Batch #77

Table of Contents

	# of Pages
Signature Cards	39 Pages
Completion Review Sign-off Sheet	1 Page
Acceptance of Feed for Transfer to MFHT	1 Page
Waste + Glass Former Analyses.	10 Pages
Waste + Glass Former Species_Range & PCT_CHECK	3 Pages
CFMT to MFHT Transfer	1 Page

Summary

Batch #77 Summary p. 1 of 2

Transfer 5D-15A2 TO CFMT	6-5-02
Transfer from SBS to 80-4	6-5-02
Completed 1st CFMT flush	6-16-02
Boil down CFMT to 27" level	6-16-02
Gave ¹¹³⁻²⁸⁻⁰³ AR 77WH1-6 to VOSS for after CFMT flush	6-17-02
Gave Transfer Sheet for MFHT → CFMT transfer and after transfer boil down sheet to VOSS	6-17-02
Transfer 130 liter from Decom tank 65-0-08 to CFMT	6-17-02
Took 6 Samples after CFMT flush	6-19-02
SBS → CFMT Transfer	6/24/02
Received CFMT Boil down sheet	6/26/02
Gave AR 77WH7-11 to VOSS for after MFHT → CFMT transfer	6/26/02
MFHT transferred to CFMT, received transfer sheet	6/27/02
Took 5 samples 77WH7-77WH11 after MFHT → CFMT transfer	6/27/02
¹¹³⁻²⁸⁻⁰³ CFMT boiled down to "60", received CFMT boil down sheet	7/3/02
Gave North Sump → CFMT transfer sheet,	6/26/02 7/3/02
MFHT → CFMT transfer sheet, and CFMT boil down sheet to VOSS	7/3/02
Received MFHT → CFMT transfer sheet	7/9/02
Boil down complete	7-10-02
2 nd MFHT → CFMT transfer	7-10-02
Boil down complete	7-12-02

Batch #77 Summary (cont)

p 2 of 2

3 rd MFHT → CFMT Transfer	7-12-02
Boildown complete	7-16-02
1 st 80-4 → CFMT Transfer	7-16-02
Metasilicate addition	7-17-02
Boil down complete	7-17-02
2 nd 80-4 → CFMT Transfer	7-18-02
WI Samples	7-18-02
Boildown complete	7-22-02
WI SAMPSTAT/CHEMADD	7-22-02
GF recipe to Ops	7-22-02
GF Samples	7-24-02
GF Analysis complete	7-25-02
GF → CFMT	7-25-02
WGF Samples	7-25-02
WGF - Species Range & PCT CHECK	7-30-02
Ref Sugar ^{Sugar} Addition	7-30-02
3-28-03 SF Samples	7-30-02
CFMT → MFHT Transfer	7-31-02
MFHT dilution MS3-28-03	8-13-02
Final Glass Pour Pour	8-14-02
[End of Vit.]	

Completion Review Sign-off Sheet

APPENDIX B
Feed Data Package Completion Review Sign-Off Sheet
(Page 1 of 1)

SLURRY BATCH IDENTIFICATION NUMBER 77

This sheet is to be included in the front of the FDP Binder and shall be signed after all FDP actions have been completed.

1. Satisfactory SAE FDP completion review.

(SAE) R. A. Palmer Date 10-2-02 [FDP Complete]
R. A. Palmer

2. Satisfactory QA FDP completion review.

(QA) Amy L. Brown Date 10/04/02 [FDP Complete]
Amy L. Brown

Slurry Traveler

Slurry Batch Identification Number

77
577/B
3-28-03




FC1>

STEP #	FOOTNOTE #	TASK DESCRIPTION	DOCUMENTATION SUPPORTING SIGNATURE	SIGNATURE/DATE/TIME
01	1,2	Transfer SBS content to CFMT.	63-34, Appendix C	SAE <i>N/A</i> <i>R. K. [Signature]</i> 7-18-02 1815
02	1,2	Transfer LWTs content to CFMT.	63-34, Appendix C	SAE <i>R. K. [Signature]</i> 7-18-02 1815
03	1	Transfer sodium meta silicate to CFMT	63-34, Appendix C or E	SAE <i>R. K. [Signature]</i> 7-18-02 1815
04	1,2	Transfer North Sump to CFMT	63-34, Appendix C	SAE <i>N/A</i> <i>R. K. [Signature]</i> 7-18-02 1815
05	1,2	Transfer 8D-2/8D-4 waste to CFMT. (WQR 1.1)	63-34, Appendix C	SAE <i>R. K. [Signature]</i> 7-18-02 1815
06	1	CFMT sampling level, density, volume and analytical requirements are properly recorded for "WI" (WQR 1.1)		SAE <i>R. K. [Signature]</i> 7-18-02 1815
07		Sample transfer complete per SOP 63-22. (WQR 1.1)		VOSS <i>W. A. [Signature]</i> 7-18-02 2059
08		Using analytical results, determine required cold chemical additions.	Form WV-2756	SAE <i>H. S. [Signature]</i> 7/22/02 1310

- 1 Steps 01 through 05 can be done in any order but must be done prior to step 06.
- 2 Steps 01, 02, 04, and 05 are documented by signature after final transfer to the CFMT for the batch.

Slurry Batch Identification Number 77

FC1>

STEP #	FOOTNOTE #	TASK DESCRIPTION	DOCUMENTATION SUPPORTING SIGNATURE	SIGNATURE/DATE/TIME
09		Cold chemical feed batch sampling, level, density, volume and analytical requirements are properly recorded "GF" (WQR 1.1)		SAE  7-24-02 0930
10		Sample transfer complete per SOP 65-18. (WQR 1.1)		VOSS  7-25-02 1115
11		Execute codes SAMPSTAT COLDCHEM and MASSBAL. Verify current composition of cold chemical feed batch. NOTE: The initial composition may have been changed if the initial verification of composition was unacceptable. (WQR 1.1)	Programs' outputs, form WV-2756, and/or surveillance results.	SAE  7-25-02 1200

APPENDIX A
Slurry Traveler
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Slurry Batch Identification Number 77



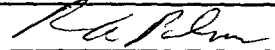
FC1>

STEP #	FOOTNOTE #	TASK DESCRIPTION	DOCUMENTATION SUPPORTING SIGNATURE	SIGNATURE/DATE/TIME
12	1	Verify CFMT concentration complete.	63-34, Appendix D	SAE <i>R. Kaplan</i> 7-23-02 0800
13		Transfer cold chemical feed batch to CFMT.	63-34, Appendix C	SAE <i>R. Kaplan</i> 7-25-02 1500
14		CFMT sampling level, density, volume and analytical requirements are properly recorded for "WGF" (WQR 1.1)		SAE <i>R. Kaplan</i> 7-25-02 1500
15		Sample transfer complete per SOP 63-22.		VOSS <i>[Signature]</i> 7-28-02 1300
16		Verify additional CFMT concentration complete. If no concentration is done, N/A this step.	63-34, Appendix D	SAE <i>N/A R. Kaplan</i> 7-26-02 1200
17		CFMT sampling level, density, volume and analytical requirements are properly recorded for "WGF". If sample not required, N/A this step. (WQR 1.1)		SAE <i>N/A R. Kaplan</i> 7-26-02 1200

1 Step 11 is documented by signature after final concentration for the batch before transfer of cold chemicals to the CFMT.

Slurry Batch Identification Number 77

FC1>

STEP #	FOOTNOTE #	TASK DESCRIPTION	DOCUMENTATION SUPPORTING SIGNATURE	SIGNATURE/DATE/TIME
18		Sample transfer complete per SOP 63-22. If sample not required, N/A this step. (WQR 1.1)		VOSS  7-25-02
19		Using analytical results, execute codes SPECIES RANGE and PCT_CHECK and compare results with required model domain.	SPECIES_RANGE and PCT_CHECK output	PASS  7-30-02 SAE 0730 FAIL <u>NA</u> SAE
20		Using analytical results, execute code PCTCHECK and compare results with required leach rate. (WQR 1.1)	PCT_CHECK output	PASS  7-30-02 SAE 0730 FAIL <u>NA</u> SAE

Slurry Batch Identification Number 77

FC1>

STEP #	FOOTNOTE #	TASK DESCRIPTION	DOCUMENTATION SUPPORTING SIGNATURE	SIGNATURE/DATE/TIME
21		Verify sugar solution makeup and addition to CFMT.	63-34, Appendix C	SAE <i>[Signature]</i> 7-30-02 0730
22		Verify Appendix F completed (all waste qualification prerequisites for transferring slurry from CFMT to MFHT have been completed)	63-34, Appendix F	SAE <i>[Signature]</i> 7-31-02 1000
23		If directed, perform a partial transfer of slurry feed batch to MFHT. If full transfer N/A this step.	63-34, Appendix C	SAE N/A
24	1	CFMT sampling level, density, volume and analytical requirements are properly recorded for "SF"		SAE <i>[Signature]</i> 7-30-02 1200
25		Sample transfer complete per SOP 63-22.		VOSS <i>[Signature]</i> 7/30/02 R.G. MYERS 2200
26		Complete transfer of slurry feed batch to MFHT.	63-34, Appendix C	SAE <i>[Signature]</i> 7-31-02 1000

1 This step can be completed any time after Traveler step #20 (sugar addition to CFMT) but must be completed prior to Traveler step #25 (complete transfer of slurry to MFHT).

SBS to CFMT Transfer

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Transfer Data Sheet
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Section 1

Slurry Batch # 77

	Sand Tank BEFORE	Receipt Tank BEFORE
Tank Name	<u>SBS</u>	<u>CFMT</u>
Tank Number	<u>63-U-031</u>	<u>63-U-001</u>
Date	<u>6-24-02</u>	<u>6-24-02</u>
Time	<u>10:05</u>	<u>10:10</u>
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A <u>30</u>	N/A <u>65.1 65.3 64.8</u> 65.1
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A <u>1.01</u>	N/A <u>1.102 1.084 1.081</u> 1.088
Temp. (°C)	<u>30</u>	<u>27.4</u>
Average Volume (L)	<u>4066.5</u>	<u>11764.1</u>

* Instantaneous Readings

Section 2

Volume to be transferred 2407.5 L

SAE Signature H.S. Duvigne Date 6/24/02

Shift Engineer Signature [Signature] Date 6-24-02

Section 3

	Sand Tank AFTER	Receipt Tank AFTER
Tank Name	<u>SBS</u>	<u>CFMT</u>
Tank Number	<u>63-U-03</u>	<u>63-U-001</u>
Date	<u>6/24/02</u>	<u>6/24/02</u>
Time	<u>1055</u>	<u>1105</u>
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A <u>10.8</u>	N/A <u>78.4 78.9 78.2</u> 78.5
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A <u>1.04</u>	N/A <u>1.088 1.071 1.067</u> 1.075
Temp. (°C)	<u>32</u>	<u>34.9</u>
Average Volume (L)	<u>1866.2</u>	<u>14235.2</u>

Total Flush Water (L) N/A


VOSS Signature [Signature] Date 6-24-02

Sodium Metasilicate Addition

APPENDIX E
Sodium Metasilicate Preparation and Transfer to CFMT
(Page 1 of 1)

Slurry Batch # 77

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Sodium metasilicate	25 ± 3 kg	25 kg	C2133	90971/1.1	JK
Demineralize water	60 ± 6 L	60 L	N/A	N/A	JK

Transfer complete  VOSS 7-17-02 / 1821 Date/Time

8D-4 and Other Flushes to CFMT Transfer

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Transfer Data Sheet
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Section 1

Second
(Final)
Tank Farm Flush

Slurry Batch # 77

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	Tank Farm	CFMT
Tank Number	8D-4	63-V-001
Date	7-18-02	7-18-02
Time	1504	1508
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	58	55.6 55.8 55.4 Ave = 55.6
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1	1.325 1.328 1.323 Ave = 1.326
Temp. (°C)		27.9
Average Volume (L)	14993	10015.5

* Instantaneous Readings

Section 2

Volume to be transferred 10,000 liter (not to exceed 112" in CFMT)

SAE Signature [Signature] Date 7/18/02
Shift Engineer Signature [Signature] Date 7-18-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	Tank Farm	CFMT
Tank Number	8D-4	63-V-001
Date	7-18-02	7-18-02
Time	1758	1758
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	26	102.2 102.6 101.6 102.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.0	1.183 1.185 1.180 1.18
Temp. (°C)	N/A	26.1
Average Volume (L)	N/A	18,602.4 L

Total Flush Water (L) 140 GALLONS

VOSS Signature [Signature] Date 7-18-02

Use this level/density for WI Samples Ref 7-18-02

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Section 1

Slurry Batch # 77

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	Tank Farm	CFMT
Tank Number	8D-4	63-V-001
Date	7-16-02	7-16-02
Time	1320	0750
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>76</u> N/A	<u>35.4</u> <u>35.4</u> <u>35.0</u> Avg 35.3
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.0</u> N/A	<u>1.452</u> <u>1.460</u> <u>1.452</u> 1.456
Temp. (°C)	N/A	40C
Average Volume (L)	19646 L	6274.9 L

* Instantaneous Readings

Section 2

Volume to be transferred ^{MM 7-16-02} ~~13,000 L~~ ^{14,000 L} ~~13,000 L~~ (not to exceed 112" in CFMT)

SAE Signature *Ra Palm* Date 7-16-02
 Shift Engineer Signature *Ra Palm* Date 7-16-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	Tank Farm	CFMT
Tank Number	8D-4	63-V-001
Date	7-16-02	7-16-02
Time	2305	2305
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>29</u> N/A	<u>99.1</u> <u>99.5</u> <u>98.8</u> 99.1
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.0</u> N/A	<u>1.188</u> <u>1.192</u> <u>1.186</u> 1.189
Temp. (°C)	N/A	21.0
Average Volume (L)	7496.5	18,031.1

Total Flush Water (L) 140

VOSS Signature *Ra Palm* Date 7-16-02

12150
 3,210
 11756.2
 3106.24
 104

Section 1

Slurry Batch # 77
3rd MHFT TRANSFER

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	MHFT	CFMT
Tank Number	63-V-011	63-V-001
Date	7/11/02	7/11/02
Time	1300	1300
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	46 46 47 46.2	35.9 35.9 35.6 35.8
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.02 0.90 1.00 0.98	1.454 1.457 1.458 1.456
Temp. (°C)	29°C	37
Average Volume (L)	9151.0	6367.1

* Instantaneous Readings

Section 2

Volume to be transferred ENTIRE CONTENTS OF MHFT NOT TO EXCEED
CFMT LEVEL

SAE Signature H.S. Dhuys Date 7/11/02 OF

Shift Engineer Signature [Signature] Date 7-12-02 112"

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	MHFT	CFMT
Tank Number	63-V-011	63-V-001
Date	7-12-02	7-12-02
Time	1512	1519
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	1 0.2 0 -0.3	81.7 81.9 81.3 81.6
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.02 0.90 1.00 0.97	1.205 1.209 1.205 1.206
Temp. (°C)	27	37
Average Volume (L)	770.2	14806.5

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 7-12-02

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Transfer Data Sheet
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Section 1

Slurry Batch # 77

2nd flush of MFHT

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	MFHT	CFMT
Tank Number	63-V-011	63-V-001
Date	7-10-02	7-10-02
Time	2230	2230
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	44 43 44	44.6 44.7 44.4
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.04 1.06 1.02	1.393 1.369 1.371
Temp. (°C)	29°C	43.6°C
Average Volume (L)	8661.2	8007.0

* Instantaneous Readings

Section 2

Volume to be transferred All of MFHT, not to exceed 112" in CFMT

SAE Signature [Signature] Date 7-10-02

Shift Engineer Signature [Signature] Date 7-10-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	MFHT	CFMT
Tank Number	63-V-011	63-V-001
Date	7-10-02	7-10-02
Time	2250	2250
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	1 -2 0	90.6 90.9 90.3
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.03 1.01 .99	1.210 1.188 1.185
Temp. (°C)	28°C	38.7°C
Average Volume (L)	770.2 L	16501.7 L

90.6
1.19

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 7-10-02

APPENDIX C
Transfer Data Sheet
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Section 1

Slurry Batch # 77

3rd flush of MFHT

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	MFHT	CFMT
Tank Number	63-V-011	63-V-001
Date	7/8/02	7/8/02
Time	1745	15:51
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>33</u> <u>33</u> <u>34</u> AVE 33.4	<u>58.2</u> <u>58.4</u> <u>57.9</u> 58.2 AVE.
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.05</u> <u>1.06</u> <u>1.02</u> AVE 1.04	<u>1.299</u> <u>1.283</u> <u>1.281</u> 1.288 AVE.
Temp. (°C)	27°C	28°C
Average Volume (L)	10529.0	10494.6 L

* Instantaneous Readings

Section 2

Volume to be transferred Entire contents of MFHT; not to exceed CFMT level of 112"

SAE Signature [Signature] Date 7-8-02

Shift Engineer Signature [Signature] Date 7-8-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	MFHT	CFMT
Tank Number	63-V-011	63-V-001
Date	7-8-02	7-8-02
Time	1850	1850
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>1</u> <u>2</u> <u>0</u> -0.4	<u>94.3</u> <u>94.6</u> <u>94.0</u> 94.3
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.04</u> <u>1.06</u> <u>1.02</u>	<u>1.202</u> <u>1.185</u> <u>1.181</u> 1.190
Temp. (°C)	27°C	33°C
Average Volume (L)	770.2 L	17146.7

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 7-8-02

Section 1

Slurry Batch # 77

MFHT HEEL TRANSFER

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	MFHT	CFMT
Tank Number	63-V-011	63-V-001
Date	6-17-02	6-26-02
Time	1430	1430
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>29</u> <u>29</u> <u>30</u> Ave=29.3	<u>63.2</u> <u>63.4</u> <u>62.9</u> 63.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.39</u> <u>1.39</u> <u>1.35</u> Ave=1.38	<u>1.105</u> <u>1.089</u> <u>1.086</u>
Temp. (°C)	28.0	28.0°C
Average Volume (L)	6085.3	11416.0

* Instantaneous Readings

Section 2

Volume to be transferred entire contents of MFHT

SAE Signature [Signature] Date 6/17/02

Shift Engineer Signature [Signature] Date 6-26-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	MFHT	CFMT
Tank Number	63-V-011	63-V-001
Date	6-27-02	6-27-02
Time	0045	0050
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	<u>1</u> <u>2</u> <u>0</u>	<u>97.3</u> <u>97.6</u> <u>96.9</u> 97.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	<u>1.38</u> <u>1.38</u> <u>1.34</u>	<u>1.191</u> <u>1.174</u> <u>1.171</u> 1.179
Temp. (°C)	27.7°C	35.0°C
Average Volume (L)	0.0	17681.0 l.

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 6-27-02

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After Flush CFMT Level & Density
For Samples analysis purpose

Slurry Batch # 77

Section 1

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	CFMT	N/A <i>ES 6/17/02</i>
Tank Number	63-V-001	
Date	6-19-02	
Time	1625	
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	63.9" 64.2" 63.6"	
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.161 1.086 1.081	
Temp. (°C)	27°C	
Average Volume (L)	11,545 L	

AVG. 63.9"
AVG. 1.089

* Instantaneous Readings

Section 2

Volume to be transferred N/A

SAE Signature N/A Date N/A

Shift Engineer Signature [Signature] Date 6-19-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	N/A <i>ES 6/17/02</i>	N/A <i>ES 6/17/02</i>
Tank Number		
Date		
Time		
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)		
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		
Temp. (°C)		
Average Volume (L)		

Total Flush Water (L) N/A

VOSS Signature [Signature] Date 6-19-02

APPENDIX C
 Transfer Data Sheet
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Section 1

Slurry Batch # 77

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	65-D-08 Decon Tank	CFMT
Tank Number	65-D-08	63-V-001
Date	6-17-02	6-17-02
Time	1500	1500
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	53.95	26.6 26.8 26.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A	1.204 1.189 1.188
Temp. (°C)	74°F	27.5°C
Average Volume (L)	949.5 L	4653.4 L

* Instantaneous Readings

Section 2

Volume to be transferred 150 L

SAE Signature [Signature] Date 6-17-02

Shift Engineer Signature [Signature] Date 6-17-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	Decon tank	CFMT
Tank Number	65-D-08	63-V-001
Date	6-17-02	6-17-02
Time	1510	1510
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	45.6	27.4 27.7 27.1
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A	1.199 1.184 1.183
Temp. (°C)	74°F	27.3°C
Average Volume (L)	819.0	4819.2 L

Total Flush Water (L) 75 L

VOSS Signature [Signature] Date 6-17-02

APPENDIX C
Transfer Data Sheet
(Page 1 of 1)

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Section 1

Slurry Batch # 77

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	LWTS	CFMT
Tank Number	50-15-A2	63-V-001
Date	6-5-02	6-5-02
Time	0900	0900
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	32.3 N/A N/A	8.4 8.7 8.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.23 N/A N/A	1.035 0.860 1.002
Temp. (°C)	N/A	27.5
Average Volume (L)	5213 L	1445.6

8.4 Ave
0.965 Ave

* Instantaneous Readings

Section 2

Volume to be transferred ~ 2900 L

SAE Signature [Signature] Date 6-5-02

Shift Engineer Signature [Signature] Date 6-5-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	LWTS	CFMT
Tank Number	A2	63-V-001
Date	6-5-02	6-5-02
Time		12:37
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	18 N/A N/A	30.1 30.4 29.9
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.21 N/A N/A	1.179 1.162 1.166
Temp. (°C)	N/A	25.1
Average Volume (L)	2283	5316.7

30.1
1.166

Total Flush Water (L) 454.2

VOSS Signature [Signature] Date 6-5-02

LWTS transfer:

Sodium metal concentration from earlier samples (VAST ID: 02-0838)
114,000 $\mu\text{g/mL}$

Planning to make a batch yielding 7500kg of glass, which will be 8 wt% sodium oxide (600kg). We would like to have LWTS provide 75% of that amount, or 450kg of oxide. The portion of oxide that is metal would be 334kg.

To provide 334kg of sodium metal from the LWTS liquid with the above concentration, please transfer 2928L.

Thanks.

Ron Palmer



6.5.02

CFMT Concentration

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

After Second (Final)
Tank Farm Flush

Slurry Batch # 77

Section 1

Initial CFMT Level
(LIXX 0153 with
agitator off)

102.2 Density 1.183

Target Post Boildown Level
(LIXX 0153 with
agitator off)

27" Density N/A

SAE Signature

[Signature]

Date

7/18/02

Section 2

Final Post Boildown Level
(LIXX 0153 with
agitator off)

26.8" Density 1.613

VOSS Signature

[Signature]

Date

7/22/02

Comments:

N/A

After First
8D-4 Transfer

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 77

Section 1

Initial CFMT Level 99.1 Density 1.189
(LIXX 0153 with
agitator off)

Target Post Boildown Level 28" Density N/A
(LIXX 0153 with
agitator off)

R A Palmer 7-16-02
SAE Signature Date

Section 2

Final Post Boildown Level 55.6 Density 1.326
(LIXX 0153 with
agitator off)

MPH 7-17-02
VOSS Signature Date

Comments: N/A

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Slurry Batch # 77

Section 1

After 3rd MFHT washdown
transfer to
CFMT

Initial CFMT Level 81.6 Density 1.206
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A
(LIXX 0153 with
agitator off)

H.S. [Signature] 7/11/02
SAE Signature Date

Section 2

Final Post Boildown Level 35.3 Density 1.456
(LIXX 0153 with
agitator off)

[Signature] 7-10-02
VOSS Signature Date

Comments: N/A

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

*After 2nd CFMT
FLUSH*

Slurry Batch # 77

Section 1

Initial CFMT Level 90.8" Density 1.19
(LIXX 0153 with
agitator off) 28"

Target Post Boildown Level 58"⁷⁻¹¹⁻⁰² Density N/A
(LIXX 0153 with
agitator off)

[Signature] FOR R. PALMER PER TELECON 7-10-02
SAE Signature *[Signature]* Date

Section 2

Final Post Boildown Level 37.4 Density 1.393
(LIXX 0153 with
agitator off)

[Signature] 7/12/02
MOSS Signature Date

Comments: *[Signature]*

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

After MFHT flush #1
AND MFHT TO CFMT Slurry Batch # 77
TRANSFER

Section 1

Initial CFMT Level 94.3 Density 1.190
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A
(LIXX 0153 with
agitator off)

Cheng Lin 7/3/02
SAE Signature Date

Section 2

Final Post Boildown Level 47.3" Density 1.177
(LIXX 0153 with
agitator off)

Miller 7-10-02
VOSS Signature Date

Comments: N/A

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

After MFHT TO CFMT transfer

Slurry Batch # 77

Section 1

Initial CFMT Level 91.5 Density 1.18
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A
(LIXX 0153 with
agitator off)

[Signature] 6/17/02
SAE Signature Date

Section 2

Final Post Boildown Level 100.1 Density 1.238
(LIXX 0153 with
agitator off)

[Signature] 7-3-02
VOSS Signature Date

Comments: N/A

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

Builddown after
SBS → CFMT TRANSFER

Slurry Batch # 77

Section 1

Initial CFMT Level 78.5 Density 1.075
(LIXX 0153 with
agitator off)

Target Post Boildown Level 60" Density N/A
(LIXX 0153 with
agitator off)

H.S. Dlugosz 6/24/02
SAE Signature Date

Section 2

Final Post Boildown Level 65.8 Density 1.051
(LIXX 0153 with
agitator off)

NAU 6-25-02
VOSS Signature Date

Comments: N/A

APPENDIX D
Concentrating the CFMT
(Page 1 of 1)

^{1st}
After Gamma-Jet cleaning

Slurry Batch # 77

Section 1

Initial CFMT Level 63.6 Density 1.159
(LIXX 0153 with
agitator off)

Target Post Boildown Level 27" Density N/A
(LIXX 0153 with
agitator off)

(Craig Rein) 6/14/02
SAE Signature Date

Section 2

Final Post Boildown Level 27" Density 1.144
(LIXX 0153 with
agitator off)

(Huff) 6/16/02
VOSS Signature Date

Comments: N/A

Waste Initial Analyses

VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

FAXed to Recipients

Copied for File

package page 1 of 15

Login Date: 18-Jul-02

VAST Sample ID: 02-1129

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	7/18/2002 2000

Department	HLWO (VIT)
Customer's ID:	B77WI1-B77WI9, 21-23

Analysis	Result ***	Uncertainty	Lab Use Only
Al	4.23E+3	ug/g	Rep1 (B77WI#1): U1
Al	4.15E+3	ug/g	Rep2 (B77WI#2): U1
Al	4.16E+3	ug/g	Rep3 (B77WI#3): U1
Al	4.21E+3	ug/g	Rep4 (B77WI#4): U1
Al	4.14E+3	ug/g	Rep5 (B77WI#5): U1
Al	4.24E+3	ug/g	Rep6 (B77WI#6): U1
Al	4.31E+3	ug/g	Rep7 (B77WI#7): U1
Al	4.40E+3	ug/g	Rep8 (B77WI#8): U1
Al	4.26E+3	ug/g	Rep9 (B77WI#9): U1
B	6.05E+3	ug/g	Rep1 (B77WI#1): U1
B	5.84E+3	ug/g	Rep2 (B77WI#2): U1
B	5.84E+3	ug/g	Rep3 (B77WI#3): U1
B	5.99E+3	ug/g	Rep4 (B77WI#4): U1
B	5.82E+3	ug/g	Rep5 (B77WI#5): U1
B	6.13E+3	ug/g	Rep6 (B77WI#6): U1
B	6.11E+3	ug/g	Rep7 (B77WI#7): U1
B	6.10E+3	ug/g	Rep8 (B77WI#8): U1
B	6.14E+3	ug/g	Rep9 (B77WI#9): U1
Ca	4.26E+2	ug/g	Rep1 (B77WI#1): U1
Ca	4.22E+2	ug/g	Rep2 (B77WI#2): U1

Approved By

Jacqueline D. Hill
Name

7/21/02 1825
Date & Time

Report Date: 21-Jul-02



Login Date: 18-Jul-02

VAST Sample ID: 02-1129

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	7/18/2002 2000

Department	HLWO (VT)
Customer's ID:	B77WI1-B77WI9, 21-23

Analysis	Result ***	Uncertainty	Lab Use Only
Ca	4.29E+2	ug/g	Rep3 (B77WI#3): U1
Ca	4.25E+2	ug/g	Rep4 (B77WI#4): U1
Ca	4.15E+2	ug/g	Rep5 (B77WI#5): U1
Ca	4.30E+2	ug/g	Rep6 (B77WI#6): U1
Ca	4.41E+2	ug/g	Rep7 (B77WI#7): U1
Ca	4.53E+2	ug/g	Rep8 (B77WI#8): U1
Ca	4.46E+2	ug/g	Rep9 (B77WI#9): U1
Fe	1.06E+4	ug/g	Rep1 (B77WI#1): U1
Fe	1.03E+4	ug/g	Rep2 (B77WI#2): U1
Fe	1.04E+4	ug/g	Rep3 (B77WI#3): U1
Fe	1.03E+4	ug/g	Rep4 (B77WI#4): U1
Fe	1.01E+4	ug/g	Rep5 (B77WI#5): U1
Fe	1.07E+4	ug/g	Rep6 (B77WI#6): U1
Fe	1.08E+4	ug/g	Rep7 (B77WI#7): U1
Fe	1.07E+4	ug/g	Rep8 (B77WI#8): U1
Fe	1.07E+4	ug/g	Rep9 (B77WI#9): U1
K	5.89E+3	ug/g	Rep1 (B77WI#1): U1
K	5.68E+3	ug/g	Rep2 (B77WI#2): U1
K	5.64E+3	ug/g	Rep3 (B77WI#3): U1
K	5.77E+3	ug/g	Rep4 (B77WI#4): U1
K	5.75E+3	ug/g	Rep5 (B77WI#5): U1
K	5.84E+3	ug/g	Rep6 (B77WI#6): U1
K	5.98E+3	ug/g	Rep7 (B77WI#7): U1
K	6.05E+3	ug/g	Rep8 (B77WI#8): U1
K	5.74E+3	ug/g	Rep9 (B77WI#9): U1
Li	2.20E+3	ug/g	Rep1 (B77WI#1): U1
Li	2.19E+3	ug/g	Rep2 (B77WI#2): U1

Approved By
Jacqueline D. Hill
 Name
 7/21/02 1825
 Date & Time



Login Date: 18-Jul-02

VAST Sample ID: 02-1129

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	7/18/2002 2000

Department	HLWO (VIT)
Customer's ID:	B77WI1-B77WI9, 21-23

Analysis	Result ***	Uncertainty	Lab Use Only
Li	2.18E+3	ug/g	Rep3 (B77WI#3): U1
Li	2.24E+3	ug/g	Rep4 (B77WI#4): U1
Li	2.19E+3	ug/g	Rep5 (B77WI#5): U1
Li	2.31E+3	ug/g	Rep6 (B77WI#6): U1
Li	2.28E+3	ug/g	Rep7 (B77WI#7): U1
Li	2.28E+3	ug/g	Rep8 (B77WI#8): U1
Li	2.28E+3	ug/g	Rep9 (B77WI#9): U1
Mg	1.11E+3	ug/g	Rep1 (B77WI#1): U1
Mg	1.08E+3	ug/g	Rep2 (B77WI#2): U1
Mg	1.09E+3	ug/g	Rep3 (B77WI#3): U1
Mg	1.10E+3	ug/g	Rep4 (B77WI#4): U1
Mg	1.08E+3	ug/g	Rep5 (B77WI#5): U1
Mg	1.14E+3	ug/g	Rep6 (B77WI#6): U1
Mg	1.14E+3	ug/g	Rep7 (B77WI#7): U1
Mg	1.14E+3	ug/g	Rep8 (B77WI#8): U1
Mg	1.15E+3	ug/g	Rep9 (B77WI#9): U1
Mn	7.86E+2	ug/g	Rep1 (B77WI#1): U1
Mn	7.80E+2	ug/g	Rep2 (B77WI#2): U1
Mn	8.04E+2	ug/g	Rep3 (B77WI#3): U1
Mn	8.00E+2	ug/g	Rep4 (B77WI#4): U1
Mn	7.86E+2	ug/g	Rep5 (B77WI#5): U1
Mn	7.76E+2	ug/g	Rep6 (B77WI#6): U1
Mn	8.07E+2	ug/g	Rep7 (B77WI#7): U1
Mn	9.59E+2	ug/g	Rep8 (B77WI#8): U1
Mn	8.23E+2	ug/g	Rep9 (B77WI#9): U1
Na	2.07E+4	ug/g	Rep1 (B77WI#1): U1
Na	2.02E+4	ug/g	Rep2 (B77WI#2): U1

Approved By Jacqueline D. Hill Name 7/21/02 1825 Date & Time



Login Date: 18-Jul-02

VAST Sample ID: 02-1129

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	7/18/2002 2000

Department	HLWO (VIT)
Customer's ID:	B77WI1-B77WI9, 21-23

Analysis	Result ***	Uncertainty	Lab Use Only
Th	5.27E+2	ug/g	Rep3 (B77WI#3): U1
Th	4.27E+2	ug/g	Rep4 (B77WI#4): U1
Th	4.59E+2	ug/g	Rep5 (B77WI#5): U1
Th	4.56E+2	ug/g	Rep6 (B77WI#6): U1
Th	4.92E+2	ug/g	Rep7 (B77WI#7): U1
Th	4.68E+2	ug/g	Rep8 (B77WI#8): U1
Th	4.93E+2	ug/g	Rep9 (B77WI#9): U1
Ti	6.45E+2	ug/g	Rep1 (B77WI#1): U1
Ti	6.44E+2	ug/g	Rep2 (B77WI#2): U1
Ti	6.46E+2	ug/g	Rep3 (B77WI#3): U1
Ti	6.45E+2	ug/g	Rep4 (B77WI#4): U1
Ti	6.66E+2	ug/g	Rep5 (B77WI#5): U1
Ti	6.33E+2	ug/g	Rep6 (B77WI#6): U1
Ti	6.52E+2	ug/g	Rep7 (B77WI#7): U1
Ti	6.47E+2	ug/g	Rep8 (B77WI#8): U1
Ti	6.43E+2	ug/g	Rep9 (B77WI#9): U1
U	1.05E+3	ug/g	Rep1 (B77WI#1): U1
U	1.05E+3	ug/g	Rep2 (B77WI#2): U1
U	1.06E+3	ug/g	Rep3 (B77WI#3): U1
U	1.05E+3	ug/g	Rep4 (B77WI#4): U1
U	1.04E+3	ug/g	Rep5 (B77WI#5): U1
U	1.16E+3	ug/g	Rep6 (B77WI#6): U1
U	1.23E+3	ug/g	Rep7 (B77WI#7): U1
U	1.24E+3	ug/g	Rep8 (B77WI#8): U1
U	1.19E+3	ug/g	Rep9 (B77WI#9): U1
Zr	1.26E+3	ug/g	Rep1 (B77WI#1): U1
Zr	1.22E+3	ug/g	Rep2 (B77WI#2): U1

Approved By
Jacqueline D. Hill
 Name
 7/21/02 1825
 Date & Time



Login Date: 18-Jul-02

VAST Sample ID: 02-1129

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	7/18/2002 2000

Department	HLWO (VIT)
Customer's ID:	B77WI1-B77WI9, 21-23

Analysis	Result ***	Uncertainty	Lab Use Only
Zr	1.22E+3	ug/g	Rep3 (B77WI#3): U1
Zr	1.23E+3	ug/g	Rep4 (B77WI#4): U1
Zr	1.21E+3	ug/g	Rep5 (B77WI#5): U1
Zr	1.26E+3	ug/g	Rep6 (B77WI#6): U1
Zr	1.27E+3	ug/g	Rep7 (B77WI#7): U1
Zr	1.28E+3	ug/g	Rep8 (B77WI#8): U1
Zr	1.26E+3	ug/g	Rep9 (B77WI#9): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By	
<i>Jacqueline D. Hill</i> Name	7/21/02 1825 Date & Time

Report Date: 21-Jul-02



VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48); SAE FAX ⁴¹⁶⁹ 2109 JON _{7/21/02}

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FAXed to Recipients

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package page 1 of 4

Login Date: 18-Jul-02

VAST Sample ID: 02-1132

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	7/18/2002 2000

Department	HLWO (VIT)
Customer's ID:	B77W114

Analysis	Result ***	Uncertainty	Lab Use Only
pH	3.7 (32 °C)	su 0.1	Rep1 (B77W1 14): no flags
Tot Solids	26.43	%	Rep1 (977W1 14): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Jacqueline D. Hill
Name

7/21/02 1720
Date & Time

Report Date: 21-Jul-02



VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

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Handwritten initials

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package page 1 of 3

Login Date: 18-Jul-02

VAST Sample ID: 02-1131

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	7/18/2002 2000

Department	HLWO (VIT)
Customer's ID:	B77WI10-B77WI13

Analysis	Result ***	Uncertainty	Lab Use Only
Density	1.17 (30.9 °C)	g/mL	Rep1 (B77 WI #10-13): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Jacqueline D. Hill
Name

7/21/02 1850
Date & Time

Report Date: 21-Jul-02



VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

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package page 1 of 18

Login Date: 18-Jul-02

VAST Sample ID: 02-1133

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	7/18/2002 2007

Department	HLWO (VIT)
Customer's ID:	B77WI15-B77WI17

Analysis	Result ***	Uncertainty	Lab Use Only
NO2	1.32E+3	ug/g	Rep1 (B77 WI #15): U1
NO2	Not Measured	ug/g	Rep2 (B77 WI #15): U1
NO2	1.26E+3	ug/g	Rep3 (B77 WI #15 DUP): U1
NO2	Not Measured	ug/g	Rep4 (B77 WI #15 DUP): U1
NO2	1.76E+3	ug/g	Rep5 (B77 WI #16): U1
NO2	Not Measured	ug/g	Rep6 (B77 WI #16): U1
NO2	1.33E+3	ug/g	Rep7 (B77 WI #16 DUP): U1
NO2	Not Measured	ug/g	Rep8 (B77 WI #16 DUP): U1
NO2	1.63E+3	ug/g	Rep9 (B77 WI #17): U1
NO2	Not Measured	ug/g	Rep10 (B77 WI #17): U1
NO2	1.80E+3	ug/g	Rep11 (B77 WI #17 DUP): U1
NO2	Not Measured	ug/g	Rep12 (B77 WI #17 DUP): U1
NO3	Not Measured	ug/g	Rep1 (B77 WI #15): U1
NO3	7.57E+4	ug/g	Rep2 (B77 WI #15): U1
NO3	Not Measured	ug/g	Rep3 (B77 WI #15 DUP): U1
NO3	7.44E+4	ug/g	Rep4 (B77 WI #16 DUP): U1
NO3	Not Measured	ug/g	Rep5 (B77 WI #16): U1
NO3	7.51E+4	ug/g	Rep6 (B77 WI #16): U1
NO3	Not Measured	ug/g	Rep7 (B77 WI #16 DUP): U1
NO3	7.37E+4	ug/g	Rep8 (B77 WI #16 DUP): U1

Approved By

[Signature]
Name

7/22/02

0805

Date & Time

Report Date: 22-Jul-02



Login Date: 18-Jul-02

VAST Sample ID: 02-1133

Sample Point:	CFMT
Sample Type:	WI (ACT #11)
Collected:	7/18/2002 2007

Department	HLWO (VIT)
Customer's ID:	B77WI15-B77WI17

Analysis	Result ***	Uncertainty	Lab Use Only
NO3	Not Measured	ug/g	Rep9 (B77 WI #17): U1
NO3	7.55E+4	ug/g	Rep10 (B77 WI #17): U1
NO3	Not Measured	ug/g	Rep11 (B77 WI #17 DUP): U1
NO3	7.48E+4	ug/g	Rep12 (B77 WI #17 DUP): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

[Signature]
Name

7/22/02 0805
Date & Time

Report Date: 22-Jul-02



A&PC Contingent Data Form

SECTION ONE				
Sample Name <u>77WH 15-17</u>				
VAST Sample ID # <u>02-1133</u>		ACM <u>1501</u>		
SECTION TWO				
QC Parameter	Within Limits	Outside Limits	Analytes	Comments
QC Standard	✓			
Blank	✓			
Duplicate		✓	NO2	Duplicate & RPD #16 & 16 duplicate 27.8%. Upper limit 20%.
Spike	✓			
Other _____				
Completed by: <u>Jacqueline D. Hill</u>		Date: <u>7/22/02</u>		
SECTION THREE				
Contingent Data Level One <input checked="" type="checkbox"/>		Contingent Data Level Two _____		
<small>(approval must be by ACO, CT Manager or A&PC Manager only)</small>				
Contingent Data Approved <input checked="" type="checkbox"/>		Contingent Data Rejected _____		
Justification for approval or action taken if data rejected: _____				
<u>R. Palmer contacted and the data is acceptable . trpd VALUES FOR sample 15 & 17 within limits.</u>				
Approved By: <u>[Signature]</u>		Date: <u>7/22/02</u>		

cc: AQAC, Report Recipient

Additional pages may be attached.

Waste Initial SAMPSTAT/CHEMADD

VITRIFICATION LAB SAMPLE STATISTICS

MON JUL 22, 2002

SAMPLE IDS: hsd77wi

08:23:48

SAMPLE FILE: HSD77

DENSITY (g/ml): N/A

*** LAB SAMPLE DATA ***

Element	Sample Data (ug/g)				*-Denotes Outlier
Al	4230.00 4240.00	4150.00 4310.00	4160.00 4400.00	4210.00 4260.00	4140.00
B	6050.00 6130.00	5840.00 6110.00	5840.00 6100.00	5990.00 6140.00	5820.00
Ca	426.00 430.00	422.00 441.00	429.00 453.00	425.00 446.00	415.00
Fe	10600.00 10700.00	10300.00 10800.00	10400.00 10700.00	10300.00 10700.00	10100.00
K	5890.00 5840.00	5680.00 5980.00	5640.00 6050.00	5770.00 5740.00	5750.00
Li	2200.00 2310.00	2190.00 2280.00	2180.00 2280.00	2240.00 2280.00	2190.00
Mg	1110.00 1140.00	1080.00 1140.00	1090.00 1140.00	1100.00 1150.00	1080.00
Mn	786.00 776.00	780.00 807.00	804.00 959.00	800.00 823.00	786.00
Na	20700.00 21800.00	20200.00 21700.00	20400.00 21700.00	20800.00 21500.00	20400.00
P	660.00 731.00	688.00 714.00	716.00 674.00	695.00 731.00	686.00
Si	25900.00 25900.00	25500.00 26600.00	25800.00 28500.00	25900.00 26200.00	25600.00
Th	436.00 456.00	483.00 492.00	527.00 468.00	427.00 493.00	459.00
Ti	645.00 633.00	644.00 652.00	646.00 647.00	645.00 643.00	666.00
U	1050.00 1160.00	1050.00 1230.00	1060.00 1240.00	1050.00 1190.00	1040.00
Zr	1260.00 1260.00	1220.00 1270.00	1220.00 1280.00	1230.00 1260.00	1210.00

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: hsd77wi
SAMPLE FILE: HSD77

MON JUL 22, 2002
08:23:48
DENSITY (g/ml): N/A

*** LAB SAMPLE STATISTICS ***

Elem	N	OL	Mean	Maximum	Minimum	Std Dev	Conf Limit	%Error
Al	09	00	4233.33	4400.00	4140.00	83.67	64.31	1.52
B	09	00	6002.22	6140.00	5820.00	134.52	103.40	1.72
Ca	09	00	431.89	453.00	415.00	12.27	9.43	2.18
Fe	09	00	10511.11	10800.00	10100.00	242.10	186.09	1.77
K	09	00	5815.56	6050.00	5640.00	136.67	105.05	1.81
Li	09	00	2238.89	2310.00	2180.00	49.86	38.33	1.71
Mg	09	00	1114.44	1150.00	1080.00	28.33	21.78	1.95
Mn	09	00	813.44	959.00	776.00	56.59	43.50	5.35
Na	09	00	21022.22	21800.00	20200.00	647.65	497.82	2.37
P	09	00	699.44	731.00	660.00	25.03	19.24	2.75
Si	09	00	26211.11	28500.00	25500.00	917.12	704.96	2.69
Th	09	00	471.22	527.00	427.00	31.11	23.91	5.08
Ti	09	00	646.78	666.00	633.00	8.77	6.74	1.04
U	09	00	1118.89	1240.00	1040.00	84.92	65.27	5.83
Zr	09	00	1245.56	1280.00	1210.00	25.55	19.64	1.58

N = Number of data samples.

OL = Number of outlier samples.

N - OL = Number of samples used for statistics.

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: hsd77wi
SAMPLE FILE: HSD77

MON JUL 22, 2002
08:23:48
DENSITY (g/ml): N/A

*** Oxide Data Generated From Mean Samples ***

ICP Desc:
Volume (l): 18602.40
Density (g/ml): 1.1800
Total Oxides (kg): 3255.683

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	4233.33	Al2O3	175.5525	5.3922
B	3.219334	6002.22	B2O3	424.1594	13.0283
Ca	1.399052	431.89	CaO	13.2635	0.4074
Fe	1.429584	10511.11	Fe2O3	329.8445	10.1313
K	1.204537	5815.56	K2O	153.7667	4.7230
Li	2.152139	2238.89	Li2O	105.7679	3.2487
Mg	1.658054	1114.44	MgO	40.5609	1.2459
Mn	1.291128	813.44	MnO	23.0541	0.7081
Na	1.347862	21022.22	Na2O	621.9780	19.1044
P	2.290963	699.44	P2O5	35.1740	1.0804
Si	2.138930	26211.11	SiO2	1230.6456	37.7999
Th	1.137931	471.22	ThO2	11.7704	0.3615
Ti	1.665027	646.78	TiO2	23.6389	0.7261
U	1.204267	1118.89	UO3	29.5775	0.9085
Zr	1.350669	1245.56	ZrO2	36.9286	1.1343

*** Target Glass Composition and Needed Amounts ***

 ***** SINGLE ELEMENT OPTIMIZATION OF TOTAL WEIGHT *****

 ***** Total Oxides Weight in Tank: 3255.683 (kg) *****
 ***** Desired Total Oxides Weight: 8000.000 (kg) *****
 ***** Optimized Total Oxides Weight: 2744.131 (kg) *****
 ***** Optimized Weight Determined by: Fe2O3 *****

Oxide Name	Target%	Target Amt. (kg)	Waste Amt. (kg)	Needed Amt. (kg)
Al2O3	6.000	480.000	175.553	304.447
B2O3	12.890	1031.200	424.159	607.041
BaO	0.000	0.000	0.000	0.000
CaO	0.480	38.400	13.263	25.137
Ce2O3	0.000	0.000	0.000	0.000
Cr2O3	0.000	0.000	0.000	0.000
Cs2O	0.080	6.400	0.000	6.400
CuO	0.000	0.000	0.000	0.000
Fe2O3	12.020	961.600	329.845	631.755
K2O	5.000	400.000	153.767	246.233
La2O3	0.000	0.000	0.000	0.000
Li2O	3.710	296.800	105.768	191.032
MgO	0.890	71.200	40.561	30.639
MnO	0.820	65.600	23.054	42.546
MoO3	0.000	0.000	0.000	0.000
Na2O <i>Na2O</i>	8.000	640.000	621.978	18.022
Nd2O3 <i>Nd2O3 3-31-03</i>	0.000	0.000	0.000	0.000
NiO	0.000	0.000	0.000	0.000
P2O5	1.200	96.000	35.174	60.826
ThO2	3.560	284.800	11.770	273.030
Pr6O11	0.000	0.000	0.000	0.000
SO3	0.000	0.000	0.000	0.000
SiO2	40.980	3278.400	1230.646	2047.754
SrO	0.000	0.000	0.000	0.000
TiO2	0.800	64.000	23.639	40.361
UO3	0.630	50.400	29.577	20.823
ZnO	0.000	0.000	0.000	0.000
ZrO2	1.320	105.600	36.929	68.671
TOTALS:	98.380	7870.400	3255.683	4614.718

*** Initial Slurry Composition from ICP Measurements ***

ICP Desc:
 Volume (l): 18602.40
 Density (g/ml): 1.1800
 Total Oxides (kg): 3255.683

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	4233.33	Al2O3	175.5525	5.3922
B	3.219334	6002.22	B2O3	424.1594	13.0283
Ba	1.116464	0.00	BaO	0.0000	0.0000
Ca	1.399052	431.89	CaO	13.2635	0.4074
Ce	1.171269	0.00	Ce2O3	0.0000	0.0000
Cr	1.461401	0.00	Cr2O3	0.0000	0.0000
Cs	1.060173	0.00	Cs2O	0.0000	0.0000
Cu	1.251692	0.00	CuO	0.0000	0.0000
Fe	1.429584	10511.11	Fe2O3	329.8445	10.1313
K	1.204537	5815.56	K2O	153.7667	4.7230
La	1.172721	0.00	La2O3	0.0000	0.0000
Li	2.152139	2238.89	Li2O	105.7679	3.2487
Mg	1.658054	1114.44	MgO	40.5609	1.2459
Mn	1.291128	813.44	MnO	23.0541	0.7081
Mo	1.500125	0.00	MoO3	0.0000	0.0000
Na	1.347862	21022.22	Na2O	621.9780	19.1044
Nd	1.166400	0.00	Nd2O3	0.0000	0.0000
Ni	1.272470	0.00	NiO	0.0000	0.0000
P	2.290963	699.44	P2O5	35.1740	1.0804
Pr	1.170300	0.00	Pr6O11	0.0000	0.0000
S	2.496631	0.00	SO3	0.0000	0.0000
Si	2.138930	26211.11	SiO2	1230.6456	37.7999
Sr	1.182538	0.00	SrO	0.0000	0.0000
Th	1.137931	471.22	ThO2	11.7704	0.3615
Ti	1.665027	646.78	TiO2	23.6389	0.7261
U	1.204267	1118.89	UO3	29.5775	0.9085
Zn	1.244631	0.00	ZnO	0.0000	0.0000
Zr	1.350669	1245.56	ZrO2	36.9286	1.1343

*** CHEMADD Raw Material/Oxide Factors List ***

No	Material Name	Primary Oxide	Batch Factor	Purity Factor	Contrib. Factor	Secondary Oxide	Batch Factor
01	Al(OH) 3	Al2O3	0.6537	0.9847	1.0000	None	1.0000
05	B2O3oxide	B2O3	1.0000	1.0000	1.0000	None	1.0000
07	CaCO3	CaO	0.5603	0.9765	1.0000	None	1.0000
13	Fe(OH) 3	Fe2O3	0.7474	0.1325	1.0000	None	1.0000
18	KOH	K2O	0.8394	0.4462	1.0000	None	1.0000
22	Li(OH)	Li2O	0.3556	0.9849	1.0000	None	1.0000
26	Mg(OH) 2	MgO	0.6911	0.9640	1.0000	None	1.0000
28	ThO2	ThO2	0.9999	1.0000	1.0000	None	1.0000
29	MnO	MnO	0.8159	1.0000	1.0000	None	1.0000
32	NaOH	Na2O	0.7750	0.5070	1.0000	None	1.0000
33	NaH2PO4	P2O5	0.5927	1.0000	1.0000	Na2O	0.2588
40	SiO2	SiO2	1.0000	1.0000	1.0000	None	1.0000
42	ZrO(NO3) 2.2H2O	ZrO2	0.4610	0.4261	1.0000	None	1.0000
44	TiOXIDESrc	TiO2	1.0000	1.0000	1.0000	None	1.0000
49	UO3	UO3	0.9990	1.0000	1.0000	None	1.0000

CHEMADD VITRIFICATION FEED ADDITIVES
 HARDIP BADGE#: 0000

RUN: HSD77

TANK: CFMT ADD: WI
 MON JUL 22, 2002 10:18:54

*** CHEMADD Single Element Solutions ***

MP
3-31-03

Name	de oxide Needed Amount (kg)	Source Material	Oxide from Source (kg)	Oxide from Others (kg)	Required Source (kg)
Al2O3	304.45	Al(OH)3	304.45	0.00	472.97
B2O3	607.04	B2O3oxide	607.04	0.00	607.04
CaO	25.14	CaCO3	25.14	0.00	45.94
Fe2O3	631.76	Fe(OH)3	631.76	0.00	6379.40
K2O	246.23	KOH	246.23	0.00	657.43
Li2O	191.03	Li(OH)	191.03	0.00	545.45
MgO	30.64	Mg(OH)2	30.64	0.00	45.99
ThO2	273.03	ThO2	273.03	0.00	273.06
MnO	42.55	MnO	42.55	0.00	52.15
Na2O	18.02	NaOH	0.00	26.56	0.00
P2O5	60.83	NaH2PO4	60.83	0.00	102.63
SiO2	2047.75	SiO2	2047.75	0.00	2047.75
ZrO2	68.67	ZrO(NO3)2.2H2O	68.67	0.00	349.59
TiO2	40.36	TiOXIDESrc	40.36	0.00	40.36
UO3	20.82	UO3	20.82	0.00	20.84

*** CHEMADD Solutions - Required Additive Amounts ***

Material Name	Required Amt (Kg)
Al(OH)3	472.966
B2O3oxide	607.041
CaCO3	45.942
Fe(OH)3	6379.404
KOH	657.428
Li(OH)	545.447
Mg(OH)2	45.989
ThO2	273.057
MnO	52.146
NaOH	0.000
NaH2PO4	102.625
SiO2	2047.754
ZrO(NO3)2.2H2O	349.594
TiOXIDESrc	40.361
UO3	20.843
-----	-----
Total Kg	11640.598

*** Required Glass Former Additions for Target Amounts ***

<u>Amount (Kg)</u>	<u>Additive Description</u>
472.966	ALUMINUM HYDROXIDE
607.041	BORON OXIDE
45.942	CALCIUM CARBONATE
6379.404	IRON HYDROXIDE(SLURRY)
657.428	POTASSIUM HYDROXIDE
545.447	LITHIUM HYDROXIDE
45.989	MAGNESIUM HYDROXIDE
273.057	THORIUM OXIDE
52.146	MANGANESE DIOXIDE
0.000	SODIUM HYDROXIDE
102.625	SODIUM PHOSPHATE MONOBASIC
2047.754	SILICON DIOXIDE
349.594	ZIRCONYL NITRATE DIHYDRATE
40.361	TITANIUM DIOXIDE
20.843	URANIUM OXIDE

11640.598	

*** Glass Former Acid Addition Calculation ***

```

+-----+
| Mass of Cold Chemical Acid to be added to Glass:      1170.459 kg |
+-----+
  
```

Input Data:

Input Parameter	Value	Units
CHEMADD Oxide Prediction for Batch	8000.000	kg
NO3 Analysis from A&PC	74866.664	ug/g
NO2 Analysis from A&PC	1516.666	ug/g
Zr Analysis from A&PC	1245.556	ug/g
Slurry Density from A&PC	1.180	g/ml
Slurry Volume	18602.400	liters
CHEMADD Source Material Quantity	349.594	kg
Source Material Yield Factor	42.610	percent
Source Material Purity Factor	1000.000	percent
Source Material Acid Yield Factor	0.000	percent
Cold Chemical Acid Yield Factor	68.000	percent
NO3 Fraction of Target Mass	0.400	ratio
Source Material:	ZrO(NO3)2.2H2O	

Calculations:

Calculated Item	Amount (Kg)
NO3 Target Mass	3200.000
CFMT NO3 from NO3	1643.385
CFMT NO3 from NO2	44.872
CFMT NO3 from ZrO(NO3)2.2H2O	37.174
Total CFMT NO3 Contribution	1725.432
NO3 from ZrO(NO3)2.2H2O	691.290
NO3 from Solvent	0.000
Total Glass Former Contribution	691.290
Additional NO3 Needed	783.279
Mass of Cold Chemical Acid to Add	1170.459

ch 77

By: H. S. Dhingra

Date: 7/22/02

Borox and B₂O₃ Calculations

From Chemadd:

Na₂O needed → 18.02 kg

B₂O₃ needed → 607.04 kg

Na₂O produced from NaH₂PO₄ (per chemadd) → 0 kg

So Na₂O needed will be = 18.02 kg

Borax needed to produce 18.02 kg of Na₂O = $18.02 / 0.177 = 101.8$ kg

B₂O₃ produced from 101.8 kg of Borox = $101.8 * .4 = 40.72$ kg

B₂O₃ to be added = $607.04 - 40.72 = 588.32$ kg

Borax to be added = 101.8 kg

Glass Former Makeup

Cold Chemical Feed Batch Preparation

Slurry Batch # 77

Tank # 65-D-02

Description Final Glass Formers

SAE H. S. Dhingra

Date 7/22/02

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Demin Water	500 +/- 5 L	500 l	N/A	N/A	<i>[Signature]</i>
Nitric Acid	430 +/- 4 L	430.2 l	N/A	N/A	<i>[Signature]</i>
Ferric Hydroxide	2969 +/- 30 kg	2974.8	C2150	98429/1.3 98429/1.4 98429/1.6	<i>[Signature]</i>
Demin Water	250 +/- 2 L	N/A <i>7-24-02</i>	C2150	98638 <i>07-25-03</i>	<i>[Signature]</i>
Zirconyl Nitrate	350 +/- 4 kg	350.1 kg	C2147 C2147 C2147	98638/1.1 98638/1.1	<i>[Signature]</i>
Demin Water	20 +/- 0.2 L	20 l	N/A	N/A	<i>[Signature]</i>
Sodium Phosphate Monobase	103 +/- 1 kg	102.9 kg	C2144 C2144	98627 1.1 98627 1.1	<i>[Signature]</i>
Boron Oxide	588 +/- 6 kg	588.2 kg	C2129 C2129 C2129 C2129	58235 1.1 98616 1.1 98605 1.1	<i>[Signature]</i>
Aluminum Hydroxide	223 +/- 2 kg	224.1 kg	C2102 C2102 C2102 C2102	51052/1.1 98684/1.1 98682/1.1	<i>[Signature]</i>
Magnesium Hydroxide	46 +/- 0.5 kg	46 kg	C2119	47334/1.1	<i>[Signature]</i>
Manganese Dioxide	52 +/- 0.5 kg	52 kg	C2137	97637/1.1	<i>[Signature]</i>
Silicon Dioxide	1159 +/- 12 kg	1159.8 kg	C2107	97714/1.1 51030/1.2	<i>[Signature]</i>

VOSS Signature *[Signature]* Date 7-23-02 SAE Review *[Signature]* Date 7-24-02

Cold Chemical Feed Batch Preparation

SOP 63-34
Page 2 of 2

Slurry Batch # 77

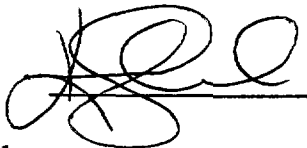
Tank # 65-D-02

Description Final Glass Former

SAE H.S. Dhingra

Date 7/22/02

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Titanium Dioxide	40 +/- 0.4 kg	44.5	C2126	45079/1.1 98737/1.1	J. Wieden
Lithium Hydroxide Monohydrate	65 +/- .7 kg	65	C2108	97615/1.1	J. Wieden
Borox	102 +/- 1 kg	102	C2143	48159/1.2	J. Wieden
Potassium Hydroxide	177 +/- 2 kg	177	C2112	46509/1.1 58444/1.1	J. Wieden
P-1200 Anti Foam	18 +/- 0.2 kg	18.2	~1A	PE 22010883 PE 22010883	J. Wieden
Nothing further to be added					
MP					
7-24-02					

VOSS Signature 

Date 7-23-02

SAE Review 

Date 7-24-02

Cold Chemical Feed Batch Preparation

Slurry Batch # 77

Tank # 65-0-02

Description Premix

SAE R. Palmer

Date 7-10-02

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Demin Water	700 ± 7 L	700 L	NA	NA	J. Woods
Concentrated Nitric Acid	400 ± 4 L	400.05 L	NA	NA	J. Woods
Ferric Hydroxide (20% drum flush) (15 drums)	3402 ± 40 kg	3406.6 kg	C2150	100937/1.2 98429/1.5	J. Woods
Aluminum Hydroxide (2 drums)	250 ± 3 kg	249.9 kg	C2102	98682/1.1	J. Woods
Lithium Hydroxide Monohydrate (3 drums)	480 ± 5 kg	480.0 kg	C2108	97615/1.1	J. Woods
Silicon Dioxide (4 drums)	889 ± 10 kg	889.1 kg	C2107	97714/1.2	J. Woods
Potassium Hydroxide (2 drums)	480 ± 5 kg	480.3 kg	C2112	46509/1.1	D. Schick
Nothing further					
7-10-02					

VOSS Signature [Signature]

Date 7-17-02

SAE Review [Signature]

Date 7-18-02

Glass Former Analyses

VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

FAXed to Recipients

Copied for File

package page 1 of 5

Login Date: 24-Jul-02

VAST Sample ID: 02-1151

Sample Point:	GLASSFORMERS
Sample Type:	Density/Total S
Collected:	7/24/2002 0900

Department	HLWO (VIT)
Customer's ID:	B77GF4-6

Analysis	Result ***	Uncertainty	Lab Use Only
Density	1.32 (19.6 °C)	g/mL	Rep1 (B77 GF #4): U1
Density	1.31 (19.6 °C)	g/mL	Rep2 (B77 GF #5): U1
Density	1.33 (19.6 °C)	g/mL	Rep3 (B77 GF #6): U1
Tot Solids	42.18	WT %	Rep1 (B77 GF #4): U1
Tot Solids	42.18	WT %	Rep2 (B77 GF #5): U1
Tot Solids	42.41	WT %	Rep3 (B77 GF #6): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

Lab Use Only Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By


Name

07-24-02 1615
Date & Time

Report Date: 24-Jul-02



APPENDIX C
Transfer Data Sheet
(Page 1 of 1)

SOP 63-34
Rev. 5
Page 40 of 46

Section 1

Level for
Glass Former
Samples

Slurry Batch # 77

	Send Tank BEFORE	Receipt Tank BEFORE
Tank Name	Mix Tank	
Tank Number	D-02	
Date	7-24-02	
Time	0920	
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings) <u>77.4</u>	<u>77.3</u> <u>77.4</u> <u>77.4</u>	<u>N/A</u>
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings) <u>1.205</u>	<u>1.208</u> <u>1.204</u> <u>1.204</u>	<u>N/A</u>
Temp. (°C)	<u>N/A</u>	<u>7-23-02</u>
Average Volume (L)	<u>11,798 L</u>	

* Instantaneous Readings

Section 2

Volume to be transferred _____

SAE Signature _____ Date _____

Shift Engineer Signature _____ Date _____

Section 3

	Send Tank AFTER	Receipt Tank AFTER
Tank Name	<u>N/A</u>	
Tank Number		
Date		
Time	<u>RUP</u>	
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)		<u>7-23-02</u>
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)		
Temp. (°C)		
Average Volume (L)		

Total Flush Water (L) _____

VOSS Signature _____ Date _____



Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(WV-48);SAE FAX 4169

Copied for Recipients

FAXed to Recipients

Copied for File

package page 1 of 15

Login Date: 24-Jul-02

VAST Sample ID: 02-1150

Sample Point:	GLASSFORMERS
Sample Type:	ICP/NO3
Collected:	7/24/2002 0900

Department	HLWO (VIT)
Customer's ID:	B77GF1-3

Analysis	Result ***	Uncertainty	Lab Use Only
NO3	5.90E+4	ug/g	Rep1 (B77GF #1): U1
NO3	5.84E+4	ug/g	Rep2 (B77GF #1 DUP): U1
NO3	5.99E+4	ug/g	Rep3 (B77GF #2): U1
NO3	5.85E+4	ug/g	Rep4 (B77GF #2 DUP): U1
NO3	6.74E+4	ug/g	Rep5 (B77GF #3): U1
NO3	5.88E+4	ug/g	Rep6 (B77GF #3 DUP): U1
Al	1.19E+4	ug/g	Rep1 (B77GF #1): U1
Al	1.18E+4	ug/g	Rep2 (B77GF #2): U1
Al	1.19E+4	ug/g	Rep3 (B77GF #3): U1
B	1.35E+4	ug/g	Rep1 (B77GF #1): U1
B	1.35E+4	ug/g	Rep2 (B77GF #2): U1
B	1.34E+4	ug/g	Rep3 (B77GF #3): U1
Ca	<1.82E+2	ug/g	Rep1 (B77GF #1): no flags
Ca	<1.79E+2	ug/g	Rep2 (B77GF #2): no flags
Ca	<1.61E+2	ug/g	Rep3 (B77GF #3): no flags
Fe	3.02E+4	ug/g	Rep1 (B77GF #1): U1
Fe	3.03E+4	ug/g	Rep2 (B77GF #2): U1
Fe	2.95E+4	ug/g	Rep3 (B77GF #3): U1
K	1.44E+4	ug/g	Rep1 (B77GF #1): U1
K	1.44E+4	ug/g	Rep2 (B77GF #2): U1

Approved By

 Jacqueline D. Hill
Name

 7/25/02 0930
Date & Time

Report Date: 25-Jul-02



Login Date: 24-Jul-02

VAST Sample ID: 02-1150

Sample Point:	GLASSFORMERS
Sample Type:	ICP/NO3
Collected:	7/24/2002 0900

Department	HLWO (VIT)
Customer's ID:	B77GF1-3

Analysis	Result ***	Uncertainty	Lab Use Only
K	1.40E+4	ug/g	Rep3 (B77GF #3): U1
Li	6.39E+3	ug/g	Rep1 (B77GF #1): U1
Li	6.38E+3	ug/g	Rep2 (B77GF #2): U1
Li	6.38E+3	ug/g	Rep3 (B77GF #3): U1
Mg	2.39E+3	ug/g	Rep1 (B77GF #1): U1
Mg	2.41E+3	ug/g	Rep2 (B77GF #2): U1
Mg	2.52E+3	ug/g	Rep3 (B77GF #3): U1
Mn	2.13E+3	ug/g	Rep1 (B77GF #1): U1
Mn	2.12E+3	ug/g	Rep2 (B77GF #2): U1
Mn	2.14E+3	ug/g	Rep3 (B77GF #3): U1
Na	<2.73E+3	ug/g	Rep1 (B77GF #1): no flags
Na	<2.68E+3	ug/g	Rep2 (B77GF #2): no flags
Na	<2.41E+3	ug/g	Rep3 (B77GF #3): no flags
P	1.85E+3	ug/g	Rep1 (B77GF #1): U1
P	1.93E+3	ug/g	Rep2 (B77GF #2): U1
P	1.91E+3	ug/g	Rep3 (B77GF #3): U1
Si	6.86E+4	ug/g	Rep1 (B77GF #1): U1
Si	6.89E+4	ug/g	Rep2 (B77GF #2): U1
Si	6.96E+4	ug/g	Rep3 (B77GF #3): U1
Ti	1.93E+3	ug/g	Rep1 (B77GF #1): U1
Ti	1.92E+3	ug/g	Rep2 (B77GF #2): U1
Ti	1.92E+3	ug/g	Rep3 (B77GF #3): U1
Zr	3.59E+3	ug/g	Rep1 (B77GF #1): U1
Zr	3.57E+3	ug/g	Rep2 (B77GF #2): U1
Zr	3.55E+3	ug/g	Rep3 (B77GF #3): U1

Approved By

Jacqueline D. Hill
Name

7/25/02 0930
Date & Time

Report Date: 25-Jul-02



Login Date: 24-Jul-02

VAST Sample ID: 02-1150

Sample Point:	GLASSFORMERS
Sample Type:	ICP/NO3
Collected:	7/24/2002 0900

Department	HLWO (VIT)
Customer's ID:	B77GF1-3

Analysis	Result ***	Uncertainty	Lab Use Only

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected
U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Jacqueline D. Hill
Name

7/25/02 0930
Date & Time

Report Date: 25-Jul-02



Glass Former SAMPSTAT, COLDCHEM, & MASSBAL

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: hsd77gfwi
SAMPLE FILE: HSD77GF

THU JUL 25, 2002
10:02:26
DENSITY (g/ml): N/A

*** LAB SAMPLE DATA ***

Element ^{NP} 3-31-03
Element

Sample Data (ug/g)

*--Denotes Outlier

Element	Sample Data (ug/g)	Sample Data (ug/g)	Sample Data (ug/g)
Al	11900.00	11800.00	11900.00
B	13500.00	13500.00	13400.00
Ca	182.00	179.00	161.00
Fe	30200.00	30300.00	29500.00
K	14400.00	14400.00	14000.00
Li	6390.00	6380.00	6380.00
Mg	2390.00	2410.00	2520.00
Mn	2130.00	2120.00	2140.00
Na	2730.00	2880.00	2410.00
P	1850.00	1930.00	1910.00
Si	68600.00	68900.00	69600.00
Ti	1930.00	1920.00	1920.00
Zr	3590.00	3570.00	3550.00

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: hsd77gfwi
SAMPLE FILE: HSD77GF

THU JUL 25, 2002
10:02:26
DENSITY (g/ml): N/A

*** LAB SAMPLE STATISTICS ***

Elem	N	OL	Mean	Maximum	Minimum	Std Dev	Conf Limit	%Error
Al	03	00	11866.67	11900.00	11800.00	57.74	143.42	1.21
B	03	00	13466.67	13500.00	13400.00	57.74	143.42	1.07
Ca	03	00	174.00	182.00	161.00	11.36	28.21	16.22
Fe	03	00	30000.00	30300.00	29500.00	435.89	1082.81	3.61
K	03	00	14266.67	14400.00	14000.00	230.94	573.69	4.02
Li	03	00	6383.33	6390.00	6380.00	5.77	14.34	0.22
Mg	03	00	2440.00	2520.00	2390.00	70.00	173.89	7.13
Mn	03	00	2130.00	2140.00	2120.00	10.00	24.84	1.17
Na	03	00	2673.33	2880.00	2410.00	240.07	596.37	22.31
P	03	00	1896.67	1930.00	1850.00	41.63	103.42	5.45
Si	03	00	69033.34	69600.00	68600.00	513.16	1274.76	1.85
Ti	03	00	1923.33	1930.00	1920.00	5.77	14.34	0.75
Zr	03	00	3570.00	3590.00	3550.00	20.00	49.68	1.39

N = Number of data samples.

OL = Number of outlier samples.

N - OL = Number of samples used for statistics.

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: hsd77gfwl
SAMPLE FILE: HSD77GF

THU JUL 25, 2002
10:02:26
DENSITY (g/ml): N/A

*** Oxide Data Generated From Mean Samples ***

ICP Desc:
Volume (l): 11798.00
Density (g/ml): 1.2050
Total Oxides (kg): 4410.718

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	11866.67	Al ₂ O ₃	318.7115	7.2258
B	3.219334	13466.67	B ₂ O ₃	616.3417	13.9737
Ca	1.399052	174.00	CaO	3.4608	0.0785
Fe	1.429584	30000.00	Fe ₂ O ₃	609.7143	13.8235
K	1.204537	14266.67	K ₂ O	244.3083	5.5390
Li	2.152139	6383.33	Li ₂ O	195.3050	4.4280
Mg	1.658054	2440.00	MgO	57.5154	1.3040
Mn	1.291128	2130.00	MnO	39.0971	0.8864
Na	1.347862	2673.33	Na ₂ O	51.2264	1.1614
P	2.290963	1896.67	P ₂ O ₅	61.7738	1.4005
Si	2.138930	69033.34	SiO ₂	2099.1858	47.5928
Ti	1.665027	1923.33	TiO ₂	45.5272	1.0322
Zr	1.350669	3570.00	ZrO ₂	68.5508	1.5542

```
#####
#####
#####
##          CCCC          CCCC          CCCC          HH          HH          EEEEEEE          CCCC          KK          KK          ##
##          CC          C          CC          C          CC          C          HH          HH          EE          CC          C          KK          KK          ##
##          CC          CC          CC          CC          HH          HH          EE          CC          KK          K          ##
##          CC          CC          CC          CCCC          HHHHHHH          EEEEE          CC          KK          ##
##          CC          C          CC          C          CC          C          HH          HH          EE          CC          C          KK          K          ##
##          CCCC          CCCC          CCCC          HH          HH          EEEEEEE          CCCC          KK          KK          ##
#####
#####
```

```
#####
#####          WVNS          VITRIFICATION          COLD          CHEMICAL          CHECK          #####
#####          (Version 2.2)          #####
#####
```

```
#####
#####          The Cold Chemical Check program allows verification of          #####
#####          the cold chemical makeup in a mixing tank. The oxide          #####
#####          content for a given batch is determined from elemental          #####
#####          analysis. The cold chemical check values are determined          #####
#####          by comparing the makeup in the mixing tank against the          #####
#####          amount of oxides required by CHEMADD calculations.          #####
#####
```

```
#####
#####          USER:          HARDIP          10:06:11          #####
#####          BADGE#:          0000          THU JUL 25, 2002          #####
#####          SYSTEM:          ALPHA1          #####
#####
```

H.S. Dhawan
7/25/02
1102

*** Cold Chemical Check Data ***

MMT File: HSD77_MMT_GF_ICP.DAT
Recipe File: HSD77_CFMT_WI.RCP

Oxide Name	Mix Tank Wt(kg)	Needed Wt(kg)	Excess(kg) or deficit(-)	% Difference
Al2O3	318.712	304.448	14.264	4.685
B2O3	616.342	607.041	9.301	1.532
BaO	0.000	0.000	0.000	0.000
CaO	3.461	25.137	-21.676	-86.232
Ce2O3	0.000	0.000	0.000	0.000
Cr2O3	0.000	0.000	0.000	0.000
Cs2O	0.000	6.400	-6.400	-100.000
CuO	0.000	0.000	0.000	0.000
Fe2O3	609.714	631.755	-22.041	-3.489
K2O	244.308	246.233	-1.925	-0.782
La2O3	0.000	0.000	0.000	0.000
Li2O	195.305	191.032	4.273	2.237
MgO	57.515	30.639	26.876	87.719
MnO	39.097	42.546	-3.449	-8.106
MoO3	0.000	0.000	0.000	0.000
Na2O	51.226	18.022	33.204	184.244
Nd2O3	0.000	0.000	0.000	0.000
NiO	0.000	0.000	0.000	0.000
P2O5	61.774	60.826	0.948	1.558
P2O5	0.000	0.000	0.000	0.000
P2O5	0.000	0.000	0.000	0.000
SO3	0.000	0.000	0.000	0.000
SiO2	2099.186	2047.754	51.431	2.512
SrO	0.000	0.000	0.000	0.000
ThO2	0.000	273.030	-273.030	-100.000
TiO2	45.527	40.361	5.166	12.800
UO3	0.000	20.823	-20.823	-100.000
ZnO	0.000	0.000	0.000	0.000
ZrO2	68.551	68.671	-0.121	-0.176
Totals:	4410.718	4614.718	-204.000	-4.421

P2O5 NA
6011 P2O5 3-31-03

*** Mix Tank Composition from ICP Measurements ***

Data File: HSD77_MMT_GF_ICP.DAT

ICP Desc:

Volume (l): 11798.00

Density (g/ml): 1.2050

Total Oxides (kg): 4410.718

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	11866.67	Al2O3	318.7115	7.2258
B	3.219334	13466.67	B2O3	616.3417	13.9737
Ba	1.116464	0.00	BaO	0.0000	0.0000
Ca	1.399052	174.00	CaO	3.4608	0.0785
Ce	1.171269	0.00	Ce2O3	0.0000	0.0000
Cr	1.461401	0.00	Cr2O3	0.0000	0.0000
Cs	1.060173	0.00	Cs2O	0.0000	0.0000
Cu	1.251692	0.00	CuO	0.0000	0.0000
Fe	1.429584	30000.00	Fe2O3	609.7143	13.8235
K	1.204537	14266.67	K2O	244.3083	5.5390
La	1.172721	0.00	La2O3	0.0000	0.0000
Li	2.152139	6383.33	Li2O	195.3050	4.4280
Mg	1.658054	2440.00	MgO	57.5154	1.3040
Mn	1.291128	2130.00	MnO	39.0971	0.8864
Mo	1.500125	0.00	MoO3	0.0000	0.0000
Na	1.347862	2673.33	Na2O	51.2264	1.1614
Nd	1.166400	0.00	Nd2O3	0.0000	0.0000
Ni	1.272470	0.00	NiO	0.0000	0.0000
P	2.290963	1896.67	P2O5	61.7738	1.4005
Pr	1.170300	0.00	Pr6O11	0.0000	0.0000
S	2.496631	0.00	SO3	0.0000	0.0000
Si	2.138930	69033.34	SiO2	2099.1858	47.5928
Sr	1.182538	0.00	SrO	0.0000	0.0000
Th	1.137931	0.00	ThO2	0.0000	0.0000
Ti	1.665027	1923.33	TiO2	45.5272	1.0322
U	1.204267	0.00	UO3	0.0000	0.0000
Zn	1.244631	0.00	ZnO	0.0000	0.0000
Zr	1.350669	3570.00	ZrO2	68.5508	1.5542

*** Recipe Requirements Data ***

Data File: HSD77_CFMT_WI.RCP
Number of Oxides: 34

Oxide	Recipe Wt(kg)	Current Wt(kg)	Needed Wt(kg)
Al2O3	480.000	175.553	304.448
B2O3	1031.200	424.159	607.041
BaO	0.000	0.000	0.000
CaO	38.400	13.263	25.137
Ce2O3	0.000	0.000	0.000
Cr2O3	0.000	0.000	0.000
Cs2O	6.400	0.000	6.400
CuO	0.000	0.000	0.000
Fe2O3	961.600	329.845	631.755
K2O	400.000	153.767	246.233
La2O3	0.000	0.000	0.000
Li2O	296.800	105.768	191.032
MgO	71.200	40.561	30.639
MnO	65.600	23.054	42.546
MoO3	0.000	0.000	0.000
Na2O	640.000	621.978	18.022
Nd2O3	0.000	0.000	0.000
NiO	0.000	0.000	0.000
P2O5	96.000	35.174	60.826
Pr6O11	0.000	0.000	0.000
SO3	0.000	0.000	0.000
SiO2	3278.400	1230.646	2047.754
SrO	0.000	0.000	0.000
ThO2	284.800	11.770	273.030
TiO2	64.000	23.639	40.361
UO3	50.400	29.577	20.823
ZnO	0.000	0.000	0.000
ZrO2	105.600	36.929	68.671
Totals:	7870.401	3255.683	4614.718

*** Oxide Mass Balance Data ***

MMT File: HSD77_MMT_GF_ICP.DAT
CFMUT File: HSD77_CFMT_WI_ICP.DAT
Target File: FEED.DAT

Oxide Name	MMT Wt(kg)	CFMUT Wt(kg)	Target Wt(kg)	MMT Excess(kg) or Deficit(-)	% Difference
Al2O3	318.712	175.553	480.000	14.264	2.972
B2O3	616.342	424.159	1031.200	9.301	0.902
BaO	0.000	0.000	0.000	0.000	0.000
CaO	3.461	13.263	38.400	-21.676	-56.447
Ce2O3	0.000	0.000	0.000	0.000	0.000
Cr2O3	0.000	0.000	0.000	0.000	0.000
Cs2O	0.000	0.000	6.400	-6.400	-100.000
CuO	0.000	0.000	0.000	0.000	0.000
Fe2O3	609.714	329.845	961.600	-22.041	-2.292
K2O	244.308	153.767	400.000	-1.925	-0.481
La2O3	0.000	0.000	0.000	0.000	0.000
Li2O	195.305	105.768	296.800	4.273	1.440
MgO	57.515	40.561	71.200	26.876	37.748
MnO	39.097	23.054	65.600	-3.449	-5.257
MoO3	0.000	0.000	0.000	0.000	0.000
Na2O	51.226	621.978	640.000	33.204	5.188
Nd2O3	0.000	0.000	0.000	0.000	0.000
NiO	0.000	0.000	0.000	0.000	0.000
P ₂ O ₅	61.774	35.174	96.000	0.948	0.987
Pr6O11	0.000	0.000	0.000	0.000	0.000
SO3	0.000	0.000	0.000	0.000	0.000
SiO2	2099.186	1230.646	3278.400	51.432	1.569
SrO	0.000	0.000	0.000	0.000	0.000
ThO2	0.000	11.770	284.800	-273.030	-95.867
TiO2	45.527	23.639	64.000	5.166	8.072
UO3	0.000	29.577	50.400	-20.823	-41.315
ZnO	0.000	0.000	0.000	0.000	0.000
ZrO2	68.551	36.929	105.600	-0.121	-0.114
Totals:	4410.718	3255.683	8000.000	-333.599	-4.170

Too much Mg, but
it should still
pass PCT check

H.S. Shygen
7/25/02

*** Main Mix Tank (MMT) Composition from ICP Measurements ***

Data File: HSD77_MMT_GF_ICP.DAT

ICP Desc:

Volume (l): 11798.00

Density (g/ml): 1.2050

Total Oxides (kg): 4410.718

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	11866.67	Al2O3	318.7115	7.2258
B	3.219334	13466.67	B2O3	616.3417	13.9737
Ba	1.116464	0.00	BaO	0.0000	0.0000
Ca	1.399052	174.00	CaO	3.4608	0.0785
Ce	1.171269	0.00	Ce2O3	0.0000	0.0000
Cr	1.461401	0.00	Cr2O3	0.0000	0.0000
Cs	1.060173	0.00	Cs2O	0.0000	0.0000
Cu	1.251692	0.00	CuO	0.0000	0.0000
Fe	1.429584	30000.00	Fe2O3	609.7143	13.8235
K	1.204537	14266.67	K2O	244.3083	5.5390
La	1.172721	0.00	La2O3	0.0000	0.0000
Li	2.152139	6383.33	Li2O	195.3050	4.4280
Mg	1.658054	2440.00	MgO	57.5154	1.3040
Mn	1.291128	2130.00	MnO	39.0971	0.8864
Mo	1.500125	0.00	MoO3	0.0000	0.0000
Na	1.347862	2673.33	Na2O	51.2264	1.1614
Nd	1.166400	0.00	Nd2O3	0.0000	0.0000
Ni	1.272470	0.00	NiO	0.0000	0.0000
P	2.290963	1896.67	P2O5	61.7738	1.4005
Pr	1.170300	0.00	Pr6O11	0.0000	0.0000
S	2.496631	0.00	SO3	0.0000	0.0000
Si	2.138930	69033.34	SiO2	2099.1858	47.5928
Sr	1.182538	0.00	SrO	0.0000	0.0000
Th	1.137931	0.00	ThO2	0.0000	0.0000
Ti	1.665027	1923.33	TiO2	45.5272	1.0322
U	1.204267	0.00	UO3	0.0000	0.0000
Zn	1.244631	0.00	ZnO	0.0000	0.0000
Zr	1.350669	3570.00	ZrO2	68.5508	1.5542

*** Concentrator Feed Makeup Tank (CFMUT) Composition from ICP Measurements ***

Data File: HSD77_CFMT_WI_ICP.DAT
ICP Desc:
Volume (l): 18602.40
Density (g/ml): 1.1800
Total Oxides (kg): 3255.683

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	4233.33	Al2O3	175.5525	5.3922
B	3.219334	6002.22	B2O3	424.1594	13.0283
Ba	1.116464	0.00	BaO	0.0000	0.0000
Ca	1.399052	431.89	CaO	13.2635	0.4074
Ce	1.171269	0.00	Ce2O3	0.0000	0.0000
Cr	1.461401	0.00	Cr2O3	0.0000	0.0000
Cs	1.060173	0.00	Cs2O	0.0000	0.0000
Cu	1.251692	0.00	CuO	0.0000	0.0000
Fe	1.429584	10511.11	Fe2O3	329.8445	10.1313
K	1.204537	5815.56	K2O	153.7667	4.7230
La	1.172721	0.00	La2O3	0.0000	0.0000
Li	2.152139	2238.89	Li2O	105.7679	3.2487
Mg	1.658054	1114.44	MgO	40.5609	1.2459
Mn	1.291128	813.44	MnO	23.0541	0.7081
Mo	1.500125	0.00	MoO3	0.0000	0.0000
Na	1.347862	21022.22	Na2O	621.9780	19.1044
Nd	1.166400	0.00	Nd2O3	0.0000	0.0000
Ni	1.272470	0.00	NiO	0.0000	0.0000
P	2.290963	699.44	P2O5	35.1740	1.0804
Pr	1.170300	0.00	Pr6O11	0.0000	0.0000
S	2.496631	0.00	SO3	0.0000	0.0000
Si	2.138930	26211.11	SiO2	1230.6456	37.7999
Sr	1.182538	0.00	SrO	0.0000	0.0000
Th	1.137931	471.22	ThO2	11.7704	0.3615
Ti	1.665027	646.78	TiO2	23.6389	0.7261
U	1.204267	1118.89	UO3	29.5775	0.9085
Zn	1.244631	0.00	ZnO	0.0000	0.0000
Zr	1.350669	1245.56	ZrO2	36.9286	1.1343

*** Target Glass Composition ***

Data File: FEED.DAT
Number of Oxides: 28
Desired Total Oxides (kg): 8000.000

Oxide Name	Target Wt %	Target Wt (kg)
Al2O3	6.000	480.000
B2O3	12.890	1031.200
BaO	0.000	0.000
CaO	0.480	38.400
Ce2O3	0.000	0.000
Cr2O3	0.000	0.000
Cs2O	0.080	6.400
CuO	0.000	0.000
Fe2O3	12.020	961.600
K2O	5.000	400.000
La2O3	0.000	0.000
Li2O	3.710	296.800
MgO	0.890	71.200
MnO	0.820	65.600
MoO3	0.000	0.000
Na2O	8.000	640.000
Nd2O3	0.000	0.000
NiO	0.000	0.000
P2O5	1.200	96.000
Pr6O11	0.000	0.000
SO3	0.000	0.000
SiO2	40.980	3278.400
SrO	0.000	0.000
ThO2	3.560	284.800
TiO2	0.800	64.000
UO3	0.630	50.400
ZnO	0.000	0.000
ZrO2	1.320	105.600

Glass Former to CFMT Transfer

Section 1

Slurry Batch # 77

65-D-02 glass former addition to

CFMT

	Send Tank BEFORE	Receipt Tank BEFORE	
Tank Name	MIX TANK	CFMT	
Tank Number	65-D-02	63-V-001	
Date	7/25/02	7/25/02	
Time	11:20	11:20	
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	77.4 N/A N/A	27.4 27.4 27.1	27.3
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.205 N/A N/A	1.589 1.663 1.660	1.630
Temp. (°C)	N/A	29.1	
Average Volume (L)	11798	4800.8 ¹⁰ _{7.25.02}	

* Instantaneous Readings

8

Section 2

Volume to be transferred ENTIRE CONTENTS OF 65-D-02

SAE Signature H.S. [Signature] Date 7/25/02

Shift Engineer Signature [Signature] Date 7-25-02

Section 3

	Send Tank AFTER	Receipt Tank AFTER	
Tank Name	MIX TANK	CFMT	
Tank Number	65-D-02	63-V-001	
Date		7/25/02	
Time		11:30 14:30 7-25-02	
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A	88.3 88.5 87.9	88.2
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	7/25/02	1.338 ¹⁰ 1.422 1.424	1.397
Temp. (°C)		26°	
Average Volume (L)		16022.6	

Total Flush Water (L) 252

VOSS Signature [Signature] Date 7-25-02

Sugar Addition & Transfer to CFMT

APPENDIX C
Transfer Data Sheet
(Page 1 of 1)

SOP 63-34
Rev. 5
Page 41 of 47

Section 1

Slurry Batch # 77

SUGAR ADDITION

	Send Tank BEFORE			Receipt Tank BEFORE		
Tank Name	SHIM TANK			CFMT		
Tank Number	D-04			63-V-001		
Date	7/30/02			7/30/02		
Time	10:35			16:30		
LIX* (Inches) AGITATOR OFF (1, 2, or 3 readings)	18.46	18.46	18.46	90.6	88.9	90.2
		18.46				
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	1.332	1.332	1.332	1.329	1.418	1.409
		1.332				
Temp. (°C)	70F			28C		
Average Volume (L)	736			16335.9		

* Instantaneous Readings

Section 2

Volume to be transferred 736 L (EMPTY THE SHIM TANK)

SAE Signature H.S. Dwyer Date 7/30/02

Shift Engineer Signature [Signature] Date 7-30-02

Section 3

	Send Tank AFTER			Receipt Tank AFTER		
Tank Name	SHIM TANK			CFMT		
Tank Number	D-04			63-V-001		
Date				7-30-02		
Time				11:14		
LIX (Inches) AGITATOR OFF (1, 2, or 3 readings)	N/A 150			96.3	96.5	95.9
DIX (Sp.Gr.) AGITATOR OFF (1, 2, or 3 readings)	N/A 7/30/02			1.321	1.406	1.402
Temp. (°C)				28°C		
Average Volume (L)				17515.2		

Total Flush Water (L) 150

VOSS Signature [Signature] Date 7-30-02

SUGAR CALCULATION

H.S. Dhingra
Date: 7-30-02

BATCH NUMBER 77

WGF DATA

NO3 114333 ppm
TOC 4666 ppm
Zr 3388 ppm
CFMT VOL 16022.6 LITERS
CFMT DEN 1.40 g/mL

MEASURABLE NITRATE CALCULATION

2559.18 kg NO3

NO3 FROM ZIRCONYL NITRATE

103.09 kg NO3

TOTAL NITRATE 2662.27 kg NO3

MEASURED TOC 104.44 kg TOC

ASSUME IFO=3 AND TS=0.55

TOC TO BE ADDED 294.90 kg TOC

SUGAR TO BE ADDED 700.02 kg SUGAR

ASSUMING A 70% SOLUTION IN WATER, ALSO ADD 300.01 L WATER

Cold Chemical Feed Batch Preparation

Slurry Batch # 77

Tank # D-4

Description Sugar Shim

SAE R. Palmer

Date 7-29-02

Chemical	Amount Required	Amount Added	Code #	Lot #	Added By
Demin Water	300 ± 3 L	300 L	—	—	<i>[Signature]</i>
Sucrose (Sugar)	700 ± 7 Kg	700 Kg	C2140	51107/1.1 58279/1.3	<i>[Signature]</i>
Nothing further					
7-29-02					

VOSS Signature *[Signature]*

Date 7-29-02

SAE Review *[Signature]*

Date 7-30-02

Sugared Feed Analyses

VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(MS-48);SAE FAX 4169

Copied for Recipients

FAXed to Recipients

Copied for File

package page 1 of 16

Login Date: 31-Jul-02

VAST Sample ID: 02-1183

Sample Point:	CFMT
Sample Type:	SF (ACT #25C)
Collected:	7/30/2002 2100

Department	HLWO (VIT)
Customer's ID:	77SF 1-3,7-8

Analysis	Result ***	Uncertainty	Lab Use Only
TOC	1.6E+4	ug/g	Rep1 (B77SF#1): U1
TOC	1.4E+4	ug/g	Rep2 (B77SF#1DUP): U1
TOC	1.6E+4	ug/g	Rep3 (B77SF#2): U1
TOC	1.6E+4	ug/g	Rep4 (B77SF#2DUP): U1
TOC	1.6E+4	ug/g	Rep5 (B77SF#3): U1
TOC	1.6E+4	ug/g	Rep6 (B77SF#3DUP): U1
NO3	9.94E+4	ug/g	Rep1 (B77SF#1): U1
NO3	8.75E+4	ug/g	Rep2 (B77SF#1DUP): U1
NO3	9.78E+4	ug/g	Rep3 (B77SF#2): U1
NO3	9.88E+4	ug/g	Rep4 (B77SF#2DUP): U1
NO3	9.59E+4	ug/g	Rep5 (B77SF#3): U1
NO3	9.82E+4	ug/g	Rep6 (B77SF#3DUP): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected

U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Chet W. Wean

Name

8/2/02

22:40

Date & Time

Report Date: 02-Aug-02



VAST

Vitrification Analytical Sample Tracking

A&PC Report of Analysis

Report Recipients: SAE(MS-48);SAE FAX 4169

Copied for Recipients

FAXed to Recipients

Copied for File

package page 1 of 5

Login Date: 31-Jul-02

VAST Sample ID: 02-1184

Sample Point:	CFMT
Sample Type:	SF (ACT #25C)
Collected:	7/30/2002 2100

Department	HLWO (VIT)
Customer's ID:	77SF 4-6

Analysis	Result ***	Uncertainty	Lab Use Only
pH	6.5 (34 °C)	su 0.1	Rep1 (B77SF #4): no flags
pH	6.5 (34 °C)	su 0.1	Rep2 (B77SF #5): no flags
pH	6.5 (34 °C)	su 0.1	Rep3 (B77SF #6): no flags
Tot Solids	49.86	%	Rep1 (B77SF-4): U1
Tot Solids	50.03	%	Rep2 (B77SF-5): U1
Tot Solos	49.57	%	Rep3 (B77SF-6): U1

NOTES: (Contact the A&PC Supervisor if you have questions.)

The uncertainty, if provided, pertains to the 95% confidence level on counting statistics.

*** The instrument used to determine gamma measurements is calibrated for samples of a specified matrix. The density associated with oil samples is not consistent with that of the specified sample matrix. Therefore, due to matrix of the sample and the unknown accuracy in which the sample was prepared, gamma results associated with oil samples are approximate.

'Lab Use Only' Flags: A0 - unknown approval error; A1 - approval not defined; A2 - approval not entered; A3 - result rejected
 U0 - unknown uncertainty error; U1 - uncertainty not defined; U2 - uncertainty not entered

Approved By

Paul D. Bealony

Name

8/1/02 1405

Date & Time

Report Date: 01-Aug-02



Waste + Glass Formers SAMPSTAT

VITRIFICATION LAB SAMPLE STATISTICS

TUE JUL 30, 2002

SAMPLE IDS: hsd77gfwi

09:55:47

SAMPLE FILE: HSD77GF

DENSITY (g/ml): N/A

*** LAB SAMPLE DATA ***

Element	Sample Data (ug/g)					*-Denotes Outlier
Al	10900.00 11300.00	11300.00 11300.00	11400.00 11200.00	11000.00 10800.00	11300.00	
B	13900.00 14700.00	14600.00 14700.00	14900.00 14500.00	14900.00 14100.00	14700.00	
Ca	384.00 392.00	420.00 418.00	413.00 434.00	405.00 384.00	410.00	
Fe	27900.00 29300.00	29200.00 29600.00	29500.00 28900.00	28600.00 28100.00	29400.00	
K	14100.00 14600.00	14400.00 14900.00	14700.00 14300.00	14900.00 13800.00	14800.00	
Li	5700.00 5960.00	5960.00 5960.00	5990.00 5880.00	5810.00 5780.00	6010.00	
Mg	2570.00 2720.00	2720.00 2730.00	2760.00 2680.00	2640.00 2610.00	2740.00	
Mn	2010.00 2100.00	2100.00 2130.00	2150.00 2070.00	2090.00 2040.00	2150.00	
Na	19800.00 22300.00	22200.00 21500.00	22600.00 22200.00	20100.00 21400.00	22300.00	
P	1720.00 1730.00	1680.00 2070.00	1710.00 1880.00	1700.00 1770.00	1700.00	
Si	65800.00 69200.00	69100.00 69400.00	69700.00 68700.00	67400.00 66100.00	69200.00	
Th	484.00 463.00	487.00 447.00	489.00 544.00	522.00 482.00	470.00	
Ti	1720.00 1730.00	1680.00 1680.00	1710.00 1670.00	1700.00 1610.00	1700.00	
U	794.00 1290.00	1290.00 1110.00	1360.00 1280.00	813.00 1160.00	1260.00	
Zr	3280.00 3410.00	3420.00 3440.00	3460.00 3380.00	3370.00 3280.00	3450.00	

Element *ref*
3-31-03

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: hsd77gfwi
SAMPLE FILE: HSD77GF

TUE JUL 30, 2002
09:55:47
DENSITY (g/ml): N/A

*** LAB SAMPLE STATISTICS ***

Elem	N	OL	Mean	Maximum	Minimum	Std Dev	Conf Limit	%Error
Al	09	00	11166.67	11400.00	10800.00	212.13	163.06	1.46
B	09	00	14555.56	14900.00	13900.00	343.19	263.80	1.81
Ca	09	00	406.67	434.00	384.00	17.14	13.17	3.24
Fe	09	00	28944.45	29600.00	27900.00	618.69	475.57	1.64
K	09	00	14500.00	14900.00	13800.00	380.79	292.70	2.02
Li	09	00	5894.44	6010.00	5700.00	108.18	83.15	1.41
Mg	09	00	2685.56	2760.00	2570.00	65.21	50.13	1.87
Mn	09	00	2093.33	2150.00	2010.00	47.70	36.66	1.75
Na	09	00	21600.00	22600.00	19800.00	1014.89	780.11	3.61
P	09	00	1773.33	2070.00	1680.00	126.29	97.08	5.47
Si	09	00	68288.89	69700.00	65800.00	1478.55	1136.51	1.66
Th	09	00	487.56	544.00	447.00	29.53	22.70	4.65
Ti	09	00	1688.89	1730.00	1610.00	35.51	27.30	1.62
U	09	00	1150.78	1360.00	794.00	210.45	161.76	14.06
Zr	09	00	3387.78	3460.00	3280.00	67.97	52.24	1.54

N = Number of data samples.
OL = Number of outlier samples.
N - OL = Number of samples used for statistics.

VITRIFICATION LAB SAMPLE STATISTICS
SAMPLE IDS: hsd77gfwi
SAMPLE FILE: HSD77GF

TUE JUL 30, 2002
09:55:47
DENSITY (g/ml): N/A

*** Oxide Data Generated From Mean Samples ***

ICP Desc:
Volume (l): 16022.60
Density (g/ml): 1.4000
Total Oxides (kg): 7532.087

Element	O/M Ratio	ICP Value (ug/g)	Oxide Name	Oxide Wt (kg)	Oxide Wt %
Al	1.889181	11166.67	Al2O3	473.2146	6.2826
B	3.219334	14555.56	B2O3	1051.1285	13.9553
Ca	1.399052	406.67	CaO	12.7624	0.1694
Fe	1.429584	28944.45	Fe2O3	928.1879	12.3231
K	1.204537	14500.00	K2O	391.7862	5.2016
Li	2.152139	5894.44	Li2O	284.5602	3.7780
Mg	1.658054	2685.56	MgO	99.8835	1.3261
Mn	1.291128	2093.33	MnO	60.6274	0.8049
Na	1.347862	21600.00	Na2O	653.0707	8.6705
P	2.290963	1773.33	P2O5	91.1317	1.2099
Si	2.138930	68288.89	SiO2	3276.4810	43.5003
Th	1.137931	487.56	ThO2	12.4452	0.1652
Ti	1.665027	1688.89	TiO2	63.0788	0.8375
U	1.204267	1150.78	UO3	31.0867	0.4127
Zr	1.350669	3387.78	ZrO2	102.6419	1.3627

MFHT Oxide Loading and IFO

APPENDIX H
 GLASS YIELD CALCULATION
 (Page 1 of 1)

SLURRY BATCH # 77

INITIAL MFHT OXIDE INVENTORY:

$V_{MFHT, I} = \underline{1169.3} \text{ L}$
 $(GLASS\ YIELD)_{MFHT, i} = \underline{0.526} \text{ KG/L (FROM PRIOR BATCH CALCULATION)}$

$OXIDE_{MFHT, i} = V_{MFHT, i} (GLASS\ YIELD)_{MFHT, i}$

$OXIDE_{MFHT, I} = \underline{615.1} \text{ KG}$

OXIDES ADDED, FROM CFMT:

$OXIDE_{CFMT, I} = \underline{7682.5} \text{ KG}$ (FROM SAMPSTAT OUTPUT, "TOTAL OXIDES IN TANK," + 0.4582 * Li₂O PRIOR TO TRANSFER)
6
2-21-02

$V_{CFMT, I} = \underline{17,515.2} \text{ L}$

$(GLASS\ YIELD)_{CFMT} = \frac{OXIDE_{CFMT, i}}{V_{CFMT, i}}$

$(GLASS\ YIELD)_{CFMT} = \underline{0.437} \text{ KG/L}^3$

$V_{CFMT, f} = \underline{16,523.7} \text{ L}$

$OXIDE\ TRANSFERRED = (GLASS\ YIELD)_{CFMT} (V_{CFMT, i} - V_{CFMT, f})$

$OXIDE\ TRANSFERRED = \underline{7228.7} \text{ KG}$

FINAL MFHT GLASS YIELD:

$V_{MFHT, f} = \underline{18,547.6} \text{ L}$

$OXIDE_{MFHT, f} = OXIDE_{MFHT, i} + OXIDE\ TRANSFERRED$

$(GLASS\ YIELD)_{MFHT, f} = \frac{OXIDE_{MFHT, f}}{V_{MFHT, f}}$

$(GLASS\ YIELD)_{MFHT, f} = \underline{0.423} \text{ KG/L}$

R. A. Johnson

SAE

7-31-02

DATE

1 For second transfer to MFHT, recompute to include oxides transferred in first transfer and using current volume.

IFO CALCULATIONS FOR

BATCH #77

Zr concentration (from WGF SAMPSTAT)

3387.78

CFMT Volume

16022.6

Nitrates from Zr

103.3511

CFMT Density

1.4

CFMT info from Sugar Additions

Volume

17515.2

Mass

24100.92

Density

1.376

TOC concentration from AR-02-1183

15666.7

Mass of TOC

377.5818

NO3 concentration from AR-02-1183

96266.7

Mass of NO3

2320.116

Total Solids from AR-02-1184

49.8%

IFO

3.22

Raplan
9.26.02
0900

EMPTYING THE MFHT


Batch #77 was the last batch of the vitrification campaign. In order to leave a minimal amount of radioactive material behind in the mixing tanks, the water jets in the MFHT were used to dilute the final batch. This naturally would reduce the glass yield.

Attached is the summary sheet of the mass balance calculation for the final canister (WV-412). Following the eighth airlift, water was added continuously through the jets while continuing to feed the melter. Based on the amount of water added, an estimate of the glass yield was made and included in the mass balance analysis.

The dilution was started on August 13, 2002. The final pour into canister WV-412 was completed at 1020 hours on August 14, 2002.

This calculation is not critical to the performance of the melter nor is it important from a Waste Acceptance standpoint. The information is included here for completeness.

R. A. Palmer
October 2, 2002



10.2.02

Canister
WV-412

Glass yield 0.42
Melter den 2.40

423.00 (Varies after Airlift 8 due to the addition of water to the MFHT)

airlift #	Airlift start time	Airlift end time	LIX2009 Start Level	LIX2009 End Level	delta V	Melter glas density	Airlift time	glass yield	feed rate	Mass airlift kg	Total Glass
Start Feed	last level			25.10							
1.00	8.22	8.43	25.90	25.20	38.88	2.40	0.22	0.42	150.00	107.1	107.1
2.00	10.67	11.08	25.90	25.20	38.88	2.40	0.42	0.42	150.00	119.7	226.8
3.00	13.23	13.42	25.90	25.20	38.88	2.40	0.18	0.42	150.00	104.9	331.7
4.00	15.67	15.97	25.96	25.20	42.23	2.40	0.30	0.42	150.00	120.4	452.1
5.00	17.88	18.08	25.92	25.18	41.10	2.40	0.20	0.42	150.00	111.3	563.4
6.00	19.97	20.13	25.93	25.16	42.76	2.40	0.17	0.42	150.00	113.2	676.6
7.00	22.33	22.43	25.90	25.18	39.98	2.40	0.10	0.42	150.00	102.3	778.9
8.00	0.83	1.00	25.87	25.12	41.61	2.40	0.17	0.42	150.00	110.4	889.4
9.00	3.88	4.13	25.95	25.10	47.19	2.40	0.25	0.40	150.00	128.3	1017.7
10.00	6.68	7.38	25.92	25.20	40.00	2.40	0.70	0.38	150.00	136.1	1153.8
11.00	9.88	10.80	25.90	25.20	38.88	2.40	0.92	0.36	150.00	142.8	1296.6
12.00	12.02	12.40	25.09	24.80	15.92	2.40	0.38	0.35	150.00	58.3	1355.0
13.00	21.38	21.58	26.00	25.20	44.47	2.40	0.20	0.29	200.00	118.4	1473.4
14.00	23.88	0.67	25.90	25.16	41.08	2.40	0.78	0.27	200.00	141.2	1614.6
15.00	3.88	4.08	25.90	25.12	43.29	2.40	0.20	0.25	200.00	113.9	1728.5
16.00	9.48	10.28	25.95	24.38	86.57	2.40	0.80	0.21	200.00	241.7	1970.2
											1685.8
											-284.4

MFHT mass balance

Airlift number	MFHT vol start	MFHT vol end	Change V	Glass Yield	Melter glas denisty	delta V melter	Mass Airlift kg	Total Glass
1.00	7645.00	7337.00	308.00	0.42	2.40	-5.51	117.1	117.1
2.00	7337.00	6756.00	581.00	0.42	2.40	0.00	245.8	362.8
3.00	6756.00	6684.00	72.00	0.42	2.40	0.00	30.5	393.3
4.00	6684.00	6321.00	363.00	0.42	2.40	0.00	153.5	546.8
5.00	6321.00	6103.00	218.00	0.42	2.40	1.10	94.9	641.7
6.00	6103.00	5632.00	471.00	0.42	2.40	1.10	201.9	843.6
7.00	5632.00	5341.00	291.00	0.42	2.40	-1.10	120.4	964.0
8.00	5341.00	5264.00	77.00	0.42	2.40	3.31	40.5	1004.5
9.00	5264.00	5170.00	94.00	0.40	2.40	1.10	40.4	1045.0
10.00	5170.00	5072.50	97.50	0.38	2.40	-5.51	24.0	1069.0
11.00	5072.50	4970.00	102.50	0.36	2.40	0.00	36.9	1105.9
12.00	4970.00	4922.00	48.00	0.35	2.40	21.99	69.6	1175.4
13.00	4922.00	4187.33	734.67	0.29	2.40	-21.99	161.8	1337.2
14.00	4187.33	3940.67	246.67	0.27	2.40	2.21	72.4	1409.6
15.00	3940.67	3667.33	273.33	0.25	2.40	2.20	73.9	1483.5
16.00	3667.33	3171.33	496.00	0.21	2.40	40.48	202.3	1685.8

Airlifts 8-16 have been adjusted to take into account the continuous flushing of the MFHT with water, thus adding volume to the liquid in the tank.

Copies of Referenced Documents

IR-723

The transfer of Batch #77 feed from the CFMT to the MFHT was done before the QA Hold Point was completed. This in no way affected the quality of the batch or the glass produced. An Issue Report (IR-723, attached) was produced to document this oversight.

R. A. Palmer
October 2, 2002


10.2.02

West Valley Demonstration Project

Issue Documentation Form

(Note: Only one issue to be documented on each form)

WCC# 221004

Issue Report # IR - 723

Date IR Issued: - 7/31/02

Time: 0700 Date 7/31/02
(Issue was Identified)

Originator: R. Palmer Ext. 4934

Department: HLW Completion MS WV-48

Discussed with IM yes Date/Time 7/31/02 0730

ISSUE DESCRIPTION

Issue Initiated By: QA RP Other

Facility/Location: Annex Assessment/Surveillance No. (or N/A) N7A

Description of Issue: (Attach additional pages as required) Transfer of Batch #77 feed from CFMT to MFHT was done before QA Hold Point completed.

Requirement (Cite References): SOP63-34 Section 11.0, Step 1

Descriptions: "Review the information generated through this procedure, including analytical results of tank compositions, transfer data sheets, results of the software programs, comparison between Waste Initial "target" composition and Waste plus Glass Former measured composition, and if acceptable, sign off on Appendix F., "Acceptance for Transfer of the CFMT to the MFHT" and obtain concurring signatures of another SAE and Quality Assurance and proceed with step [3]."

Immediate Actions Taken (if any): Notified Vit Operations to NOT feed the melter until this issue is resolved. Contacted QA to review the appropriate information, as described above.

QA Hold Tag Issued Yes No

Assigned Issue Manager J. Paul  Ext. 4448 MS WV-48

Cognizant Program(s) QA EA IH&S RP SA&I Other (Specify) Vit Completion

Check One: Deficiency Improvement No Action (Justification Required) Significant Condition Yes No (If yes, root cause analysis or SWO may be required)

Expected Closure Date: 7/31/02 Cause Code 3a

Response Type (hardware only)
 *Repair Rework *Use-as-is Scrap Return to Vendor

Summary of Proposed Action(s), or Justification for No Action(s): (If a significant **yes**, this summary must include a discussion of what caused the issue, to what extent the issue effects other items or activities, what remedial actions are necessary, and what preventive actions will be taken) Attach additional pages as necessary. The error was detected before any irrevocable actions were taken. This is the last time the procedure will be used as this is the final vitrification batch. QA was contacted and asked to review the appropriate information as soon as the error was noted. The only action necessary is to have QA review that data.



Number of Action Documentation Forms Issued: 1

*Is a USQ Safety Evaluation (USQD Form WV-3306, Sections V, VI, and VII) required? NO YES

USQD Originator or Safety Analyst Signature _____ Printed _____ Date _____

If yes, attach the completed USQD Form WV-3306, Sections V, VI, and VII.

Cognizant Program Representative Concurrence:  Amy L. Brown Date 7/31/02 MS AA03

Issue Manager Approval:   Date 7/31/02 MS 48

Completion Verification to be Completed by: QA EA IH&S RP SA&I Other (Specify) _____

Action Verifier (Note: This signature not required when Action Documentation Forms are Issued or there is no action required)

N/A

Signature/Print

Organization

Date

ISSUE EVALUATION

CC:

**West Valley
Demonstration Project**

WCC# 221005

Date: 07/31/02

Action Report # IR - 723-1

Action Documentation Form

(Note: Only one action to be documented on each action form)

Action Manager: J. Paul

Ext. 4448

Department: Vit Completion

Mail Stop WV-48

Facility/Location: Annex

Requirement (Cite Reference): SOP63-34 Section 11.0, Step 1

Descriptions: "Review the information generated through this procedure, including analytical results of tank compositions, transfer data sheets, results of the software programs, comparison between Waste Initial "target" composition and Waste plus Glass Former measured composition, and if acceptable, sign off on Appendix F., "Acceptance for Transfer of the CFMT to the MFHT" and obtain concurring signatures of another SAE and Quality Assurance and proceed with step [3]."

Action : Have QA review the appropriate information (Feed Data Package for Batch #77).

Action Must be Completed as Written

Required Completion Date 07/31/02

Cognizant Program(s) QA EA IH&S RP SA&I Other (Specify) Vit Completion

Corrective Action

Improvement Action

Approval of Action:

Signature/Print Name

Date

MS

Action Manager: J. Paul

[Signature]

7/31/02

48

Cognizant Program Rep.:

[Signature] Amy L. Brown

7/31/02

AA03

Issue Manager:

[Signature]

7/31/02

48

Completion Verification to be Completed by: QA EA IH&S RP SA&I Other (Specify)

Description of Completed Action:

QA has reviewed feed data package for batch 77.

Actual Completion Date:

7/31/02

Action Complete:

[Signature]

J. Paul

Date

7/31/02

(See attached)

Acceptance of Completed Action (Describe Verification Conducted for Completion):

PER SOP63-34. SEE ATTACHED PAGE 2 of 2.

QA COMPLETE & REVIEW

Action Verifier:

[Signature]

R.A. CARTER

Signature/Print Name

QA

Organization

7/31/02

Date

APPENDIX F
Acceptance for Transfer from the CFMT to the MFHT
(Page 1 of 1)

Slurry Batch # 77

The following items have been determined to meet the acceptable range or limit
(place a check mark in the space provided):

- Results of comparison of WI "Target Amt" composition to WGF
"Oxide Wt" composition.
- Results of SPECIES RANGE program
- Results of PCTCHECK program

Slurry Acceptance Engineer 1	<u>Rafalun</u>	<u>7-30-02</u>
	Signature	Date
Slurry Acceptance Engineer 2	<u>H.S. [Signature]</u>	<u>7/30/02</u>
	Signature	Date
Quality Assurance ¹	<u>[Signature]</u>	<u>7/31/02</u>
	Signature	Date

For IR-723
Rafalun
7-31-02

1 QA Hold Point: Process point beyond which previous steps are no longer repeatable. This point requires indicated verification signature before proceeding.

IR # 723
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