0012369

SINGLE-SHELL TANK WASTE CHARACTERIZATION FOR TANK 241-U-110 CORE 9

DATA PACKAGE

SECTION

3 OF 10

012369
3 of 10

SST

WASTE CHARACTERIZATION PROJECT

CORE 9 DATA REPORT

REV. 0

APPENDIX C

PHYSICAL PROPERTIES

C1 - INTRODUCTION

Introduction to Physical Properties Primary Data Package

This section of the Core 9 Primary Data Package contains primary or "raw" data collected during preparation and analysis of physical properties on Core 9 samples. 325-A Hot Cell operations uses a numbering system related to tank number, core number, and segment. Within the 325-B Hot Cells, all analytical information is tracked by the laboratory sample number.

C2 - LABORATORY ANALYST

SIGNATURE LIST

SAMPLE PREPARATION AND PHYSICAL TESTING
LABORATORY ANALYST SIGNATURE LIST

Analyst Name	Initials	Written Name	Initials
Thomas K. Andrews	TKA		
Dale V. Archer	DVA		
John L. Green	JLG		JLG
F. Vaughn Hoopes	FVH		
Mary E. Peterson	MEP		MEP.
GARRY ~~Gary~~ M. Richardson	GMR		GMR
Randall D. Scheele	RDS		
Elmer H. Shade	EHS		
Rick T. Steele	RTS		RTS
Joel M. Tingey	JMT		JMT

C3 - 325A HOT CELL EXTRUSION/-

CHARACTERIZATION LRB

BNW-53672
01-12-90

PACIFIC NORTHWEST LABORATORY
ISSUED
JAN 12 1990
BATTELLE RECORDS MGMT.

THIS BOOK IS INTENDED TO BE USED FOR RECORDING RESEARCH PERFORMED FOR THE U.S. DEPARTMENT OF ENERGY UNDER BNW'S OPERATING CONTRACT EY-76-C-06-1830.

M62019

LABORATORY RECORD BOOK NUMBER BNW- 53672	This document consists of ..... pages, copy no. .....
TITLE (INDICATE SUBJECT CONTENT) project #76021 CHARACTERIZATION OF SST WASTE	

AUTHOR - DIVISION AND DEPARTMENT

PERIOD COVERED FROM TO

Route To	P. R. No.	Location	Route Date	Signature & Date
JM Jungey	38859	P7-25	01-12-90	JM Jungey 1/15/90

C03-001

WORK PLACE COPY

November 28, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-1-EXT

Extrusion of Sample
Tank 241-B-110 Core 9 Segment 1

When you have finished an instruction, put a check in from of the item.

General Instructions:

1) Keep the sample in a sealed container as much as possible to prevent it from drying out.
3) After centrifuging the solids volume is the average of the high and low volumes of the solids.
3) All requested weights for sample + container are for a closed container.
4) Identify the instrument used for any measurement by reference number or by the calibration ID and provide the calibration expiration date.

M&TE List

✓ Balance 1:
Calib ID 388-06-01-016 Calib Exp Date 11-30-89
Location "A" Cell

✓ Balance 2:
Calib ID 362-06-01-035 Calib Exp Date ~~11-30-89~~ 2-2-90 JKD 11-27-89
Location "B" Cell

✓ Thermocouple 1:
Calib ID 321859 Calib Exp Date 12-19-89
Type K Ser. #6926 Location "B" Cell

✓ Digital Thermometer:
Calib ID 362-79-06-002 Calib Exp Date 7-12-90

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53672 NOV 13 '90

Signature JKAndrews Date 11-27-89 LRB 53672 Page 54

Date

November 28, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-1-EXT
Page 2 of 5

RECEIPT OF 241-B-110 CORE 9 SEGMENT 1

✓1. Record the identifications provided on the chain-of-custody record with the samples and compare to the numbers inscribed on the sampler.

Sampler # 9

__2. Receive and transfer the samplers and liners into B-Cell and extrude using SOP No 325-EXT-1, RECEIPT AND EXTRUSION OF CORE SAMPLES AT THE 325A SHIELDED FACILITY; 325-A-29, RECEIVING OF WASTE TANK SAMPLES IN ONSITE TRANFER CASK; and PNL Technical Procedure PNL-ALO-130, PROCEDURE FOR THE RECEIPT AND INSPECTION OF SINGLE SHELL TANK (SST) SAMPLES.

EXTRUSION AND SAMPLING OF 241-B-110 CORE 9 SEGMENT 1

__3. Weigh two labeled 20 mL prepared glass vials and caps for volatile organic analysis.

	110B-C9-VOL1	110B-C9-VOS1
Vial & Cap	____ g	17.342 g
Balance	#1	

NO BOTTLE USED FOR THIS VOLATILE ORGANIC ANALYSIS SINCE NO SAMPLE FOUND FOR THIS SEGMENT JMT 11/27/89

__4. Weigh a 250 mL and a 500 mL safety jar labeled 110B-C9-DL1 and 110B-C9-SOL1, respectively.

	110B-C9-DL1	110B-C9-SOL1
Jar + Lid	____ g	333.00 g
Balance	#2	

__5. Weigh the labeled plastic scintillation vial 110B-C9-PS1.

	110B-C9-PS1
Jar + Lid	6.699 g
Balance	1

__6. Measure cell temperature. 30.5 C
Thermometer ID Digital Thermocouple ID K6926

Signature [signature] Date 11-27-89 LRB 53672 Page 55

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November 28, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-1-EXT
Page 3 of 5

✓7. Weigh the extruder tray on balance 2.

Extruder Tray 794.60 g

✓8. Prepare the camera for use.

✓9. Lift the bottom end of the liner and drain any oil from the liner into the dish. Be careful the sampler doesn't slide out of the liner.

✓10. When all of the oil has drained from the liner, remove the dish and inspect the oil collected to determine whether any sample is present.
Amount of Sample none Amount of oil none

✓11. Wipe the sampler with rags to remove any residual oil, if needed.

✓12. Remove the V-Ring seal from the valve end of sampler with a 3/32" allen wrench.

✓13. Move the extruder platform to the forward position. Set the torque and speed switches to 0 and the directional switch to brake.

✓14. Transfer the sampler to the extruder making sure that the valve closure wires are at top, put a wooden block under the rear of the sampler, insert push rod into the sampler, and remove wooden block. Seat and lock the push rod in back of extruder. Clamp the sampler into position.

✓15. Place the sampler valve wrench into closed valve slot. (Horizontal is closed and vertical is open.)

✓16. Place the weighed 250 mL jar 110B-C9-DL1 into position under the drain spout of the extruder collection tray to collect any free liquid from the sample.

✓17. Open the sampler valve. With the valve closure wires at top, turn the valve counterclockwise (towards the front) to open the valve. Confirm that the valve is open before proceeding.

✓18. To extrude the sample, switch the directional switch to reverse and set the torque at less than or equal to 30. Do not exceed a torque setting of 30! Gradually increase the speed. Do not exceed a speed setting of 50.

✓19. Watch carefully as the rod and piston approach the valve, paying close attention that the extruder does not bind or catch. Continue extruding until the piston falls into the tray.

— no sample —

Signature [illegible] Date 1-27-89 LRB 53672 Page 56

ADDITIONAL PAGES NOT PLACED IN LRB (pages 4 & 5) SINCE NO DATA WAS PLACED ON THESE PAGES BECAUSE NO SAMPLE WAS PRESENT IN THIS SAMPLER. [illegible] 11/5/90

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NOTEBOOK NO. 53672

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CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number 5-030-89 (2) Sample Number 89-054 (3) Supervisor D. C. Hartley

(4) Tank 110B (5) Riser 3 (6) Segment 1 (7) Cask Serial Number C1016

Radiation Survey Data:	(8) FIELD	(20) LABORATORY
Over Top Dose Rate	.1 Mr/HR	
Side Dose Rate	.2 Mr/HR	
Bottom Dose Rate	.5 mr/HR.	
Smearable Contamination	< DET. (alpha)	(alpha)
	< DET. (beta gamma)	(beta-gamma)
	RPT Randy Beart (Signature)	RPT (Signature)

(9) Shipment Description:	
A. Work Package Number	2W-89-01056/W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	9
D. Date and Time Sampler Unseated	11-20-89, 1535
E. Expected Liquid Content	20%
F. Expected Solid Content	80%
G. Dose Rate Through Drill String	1 mr/HR
H. Expected Sample Length	19"

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

Cont#9 WHC-EP-0210 Waste Characterization Plan for the Hanford Site Single-Shell Tank

*Reference laboratory work request, if available.

Comments:

(11) POINT OF ORIGIN	(12) SENDER NAME / SENDER SIGNATURE	(13) DATE AND TIME RELEASED	(14) DESTINATION	(16) RECIPIENT NAME / RECIPIENT SIGNATURE	(17) DATE AND TIME RECEIVED
241-B 110	D. C. Hartley / DC Hartley	11-22-89 1005	325 BLDG. 300 Area	John L Green / John L Green	11-22-89 1115

(15) Seal Intact Upon Release?	(18) Seal Intact Upon Receipt?	(19) Seal Data Consistent with this Record? Shipment No.	Sample No.
☒ Yes ☐ No	☑ Yes ☐ No	☑ Yes ☐ No	☑ Yes ☐ No

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CO3-035

No. 53672 NOV 13 '90

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CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number 5-030-89 (2) Sample Number 89-055 (3) Supervisor D.C. Hartley

(4) Tank 110B (5) Riser 3 (6) Segment 2 (7) Cask Serial Number C1022

Radiation Survey Data:	(8) FIELD	(20) LABORATORY
Over Top Dose Rate	.2 mR/HR	
Side Dose Rate	2.4 mV/HR	
Bottom Dose Rate	.4 mV/HR	
Smearable Contamination	< DET. (alpha)	(alpha)
	< DET. (beta-gamma)	(beta-gamma)
	RPT Randy Bonus (Signature)	RPT (Signature)

(9) Shipment Description:	
A. Work Package Number	2W-89-01056/W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	43
D. Date and Time Sampler Unseated	11-20-89, 60 mV/HR.
E. Expected Liquid Content	20%
F. Expected Solid Content	80%
G. Dose Rate Through Drill String	60 mV/HR.
H. Expected Sample Length	19"

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

Core #9 WHC-EP-0710 Waste Characterization Plan for the Hanford Site Single-Shell Tanks

*Reference laboratory work request, if available.

Comments:

(11) POINT OF ORIGIN	(12) SENDER NAME / SENDER SIGNATURE	(13) DATE AND TIME RELEASED	(14) DESTINATION	(16) RECIPIENT NAME / RECIPIENT SIGNATURE	(17) DATE AND TIME RECEIVED
241-B 110	D.C. Hartley / DC Hartley	11-22-89 1005	225 Labs 300 Area	John L Green / John L Green	11-22-89 1115

(15) Seal Intact Upon Release?	(18) Seal Intact Upon Receipt?	(19) Seal Data Consistent with this Record? Shipment No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

C03-063

WORK PLACE COPY

November 28, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-2-EXT

Extrusion of Sample
Tank 241-B-110 Core 9 Segment 2

When you have finished an instruction, put a check in from of the item.

General Instructions:

1) Keep the sample in a sealed container as much as possible to prevent it from drying out.
3) After centrifuging the solids volume is the average of the high and low volumes of the solids.
3) All requested weights for sample + container are for a closed container.
4) Identify the instrument used for any measurement by reference number or by the calibration ID and provide the calibration expiration date.

M&TE List

✓ Balance 1:
Calib ID 388-06-01-016 Calib Exp Date 11-30-89
Location "A" Cell

✓ Balance 2:
Calib ID 362-06-01-035 Calib Exp Date ~~11-30-89~~ 2-2-90 11-28-89
Location "B" Cell

✓ Thermocouple 1:
Calib ID 321859 Calib Exp Date 12-19-89
Type K Ser. #6926 Location "B" Cell

✓ Digital Thermometer:
Calib ID 362-79-06-002 Calib Exp Date 7-12-90

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Signature JKAndrews Date 11-28-89 LRB 53672 Page 59

November 28, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-2-EXT
Page 2 of 5

RECEIPT OF 241-B-110 CORE 9 SEGMENT 2

✓1. Record the identifications provided on the chain-of-custody record with the samples and compare to the numbers inscribed on the sampler.

Sampler # 43

✓2. Receive and transfer the samplers and liners into B-Cell and extrude using SOP No 325-EXT-1, RECEIPT AND EXTRUSION OF CORE SAMPLES AT THE 325A SHIELDED FACILITY; 325-A-29, RECEIVING OF WASTE TANK SAMPLES IN ONSITE TRANFER CASK; and PNL Technical Procedure PNL-ALO-130, PROCEDURE FOR THE RECEIPT AND INSPECTION OF SINGLE SHELL TANK (SST) SAMPLES.

EXTRUSION AND SAMPLING OF 241-B-110 CORE 9 SEGMENT 2

✓3. Weigh two labeled 20 mL prepared glass vials and caps for volatile organic analysis.

110B-C9-VOL2

Vial & Cap 17.247 g

110B-C9-VOS2

Vial & Cap ~~336.68~~ g 20.465 (JD 11-28-89)

Balance 1

✓4. Weigh a 250 mL and a 500 mL safety jar labeled 110B-C9-DL2 and 110B-C9-SOL2, respectively.

	110B-C9-DL2	110B-C9-SOL2
Jar + Lid	N/A g	336.68 g
Balance	1	

✓5. Weigh the labeled plastic scintillation vial 110B-C9-PS2.

110B-C9-PS2

Jar + Lid 6.595 g
Balance 1

✓6. Measure cell temperature.. 31 C
Thermometer ID Digital Thermocouple ID K6926

Signature JKAndrews Date 11-28-89 LRB 53672 Page 60

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November 28, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-2-EXT
Page 3 of 5

✓7. Weigh the extruder tray on balance 2.

Extruder Tray 794.60 g

✓8. Prepare the camera for use.

✓9. Lift the bottom end of the liner and drain any oil from the liner into the dish. Be careful the sampler doesn't slide out of the liner.

✓10. When all of the oil has drained from the liner, remove the dish and inspect the oil collected to determine whether any sample is present.
Amount of Sample none Amount of oil 20 mL

✓11. Wipe the sampler with rags to remove any residual oil, if needed. 11-28-89

✓12. Remove the V-Ring seal from the valve end of sampler with a ~~3/32~~ 9/64" allen wrench.

✓13. Move the extruder platform to the forward position. Set the torque and speed switches to 0 and the directional switch to brake.

✓14. Transfer the sampler to the extruder making sure that the valve closure wires are at top, put a wooden block under the rear of the sampler, insert push rod into the sampler, and remove wooden block. Seat and lock the push rod in back of extruder. Clamp the sampler into position.

✓15. Place the sampler valve wrench into closed valve slot. (Horizontal is closed and vertical is open.)

✓16. Place the weighed 250 mL jar 110B-C9-DL2 into position under the drain spout of the extruder collection tray to collect any free liquid from the sample.

✓17. Open the sampler valve. With the valve closure wires at top, turn the valve counterclockwise (towards the front) to open the valve. Confirm that the valve is open before proceeding.

✓18. To extrude the sample, switch the directional switch to reverse and set the torque at less than or equal to 30. Do not exceed a torque setting of 30! Gradually increase the speed. Do not exceed a speed setting of 50.

✓19. Watch carefully as the rod and piston approach the valve, paying close attention that the extruder does not bind or catch. Continue extruding until the piston falls into the tray.

Signature JKAndrews Date 11-28-89 LRB 53672 Page 61

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November 28, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-2-EXT
Page 4 of 5

✓20. Transfer a 5 gm sample of the extruded solids and place it in the vial labeled 110B-C9-VOS2. Seal the vial as soon as possible. Time is of the essence. Weigh the sample.

	110B-C9-VOS2	
Total	25.740	g
Vial & Cap	20.465	g
Sample	5.275	g

Balance #2

✓21. Drain the free liquid into the 250 mL jar 110B-C9-DL2. Seal and weigh. Measure the height (ht) of sample from the bottom of the jar in mm. Estimate the volume using: Volume = (ht - 5) mm X 50mL/15 mm.

Total		g	Volume	N/A	mL
Jar + Lid		g			
Sample		g			
Balance					

No Free Liquid
JMT 11/28/89

✓22. Remove the extruder tray and weigh.

Total	1083.45	g
Extruder Tray	794.60	g
Sample	288.85	g

✓23. Position the extruder tray for photographs. Place a color bar beside the sample. Photograph the extruded sample. Record the picture number(s).

Photograph Number(s) #4 #5

✓24. Measure the dimensions of the solids in the sample and describe.

Length 18.5"/47 cm

Description Creamy texture, going in color from light tan to dark brown (chocolate)

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Signature JKLindrud Date 11-28-89 LRB 53672 Page 62

November 28, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-2-EXT
Page 5 of 5

__25. Transfer about 1.0 g of extruded solids to a weighed vial labeled 110B-C9-PS2. Deliver to 325B facility with its RFAS.

110B-C9-PS2

Total 8.260 g
Vial & Cap 6.595 g
Sample 1.665 g

Balance #2

Date Delivered 12/12/89

__26. Transfer the remaining sample to a weighed 500 mL jar labeled 110B-C9-SOL2. Seal and weigh.

110B-C9-SOL2

Total 610.23 g
Jar + Lid 336.68 g
Sample 273.55 g

__27. If there is greater than 25 ml of drainable liquids, transfer 5 ml of the drainable liquid to the organic analysis vial labeled 110B-C9-VOL2. Seal the vial and weigh. Transfer this vial and 110B-C9-VOS2 to either RT Steele or RW Stromatt as soon as possible.

110B-C9-VOL2

Total N/A g
Vial & Cap 17.247 g
Sample N/A g

Balance #2

Date Delivered N/A

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Signature [illegible] Date 11-28-89 LRB 53672 Page 63

SINGLE SHELL TANK WASTE CHARACTERIZATION
EXTRUSION OF SAMPLE

Tank ID: 241-B-110
Riser ID: 3
Core ID: 9

Segment Number: 2
Shipment #: S-030-89
WHC Sample ID: 89-055
325A Sample ID: 110B-C9-2

Drainable Liquid

Volume of Liquid in Liner : 20 ml
Volume of Liquid in Sampler: 0 ml
Weight of Liquid in Sampler: 0 g
Sample Identification : NONE

Bulk Solid

Weight of Segment : ~~288.85~~ 294.13 g
Length of Segment : 18.5 in
Bulk Density : ~~1.21~~ 1.23 g/ml JMT 1/10/90
Sample Identification : 110B-C9-SOL2

Visual Observations: The segment was light tan at the bottom and the center. The color of the segment gradually changed to darker tan and then to dark brown near the top and eventually to dark chocolate brown at the top. The sample was creamy in texture.

Photograph Numbers : 4 and 5

Analysis Samples

Particle Size
Sample Identification: 110B-C9-PS2
Bottle Weight : 6.595 g
Sample and Bottle : 8.260 g
Sample Weight : ~~1.665~~ ~~0.535~~ 1.665 g JMT 1-11-90

Volatile Organics
Sample Identification: 110B-C9-VOS2
Bottle Weight : 20.465 g
Sample and Bottle : 25.740 g
Sample Weight : 5.275 g

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Signature JM Tinger Name JM Tinger Date 1-10-90
Signature TK Andrews Name TK Andrews Date 1-12-90

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SINGLE SHELL TANK WASTE CHARACTERIZATION
HOMOGENIZATION

Tank ID: 110B
Riser ID: 3
Core ID: 9

Segment Number: 2
Shipment #: S-030-89
WHC Sample ID: 89-055
325A Sample ID: 110B-C9-2
PROCEDURE: PNL-ALO-135 OMNI MIXER METHOD JMT 4/3/90

HOMOGENIZATION

Start time 0915
End time 0945
Homogenization time 30 min

Visual observations: Grayish tan composite - darker than the 3H composite
note: after the homogenization is completed and the cup is released from the bed, there appears to be steam rising from the sample.

ANALYSIS SAMPLES

TOP
Sample Identification: 110B-C9-2T
Bottle Weight : 6.762 g
Sample and Bottle : 15.995 g
Sample Weight : 9.233 g

BOTTOM
Sample Identification: 110B-C9-2B
Bottle Weight : 6.800 g
Sample and Bottle : 16.541 g
Sample Weight : 9.741 g

ANALYSIS
Sample Identification:
Sample and Bottle Wt.: g
Bottle Weight : g
Sample Weight : g

BULK
Sample Identification: 110B-C9-2H
Sample and Bottle Wt.: 483.85 g
Bottle Weight : 261.79 g
Sample Weight : 222.06 g

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Signature K Andrews Name T K Andrews Date 12-28-89
Signature JM Tinger Name JM TINGEY Date 1-9-90

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CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number S-029-89 (2) Sample Number 89-056 (3) Supervisor DC Hartley

(4) Tank 110B (5) Riser 3 (6) Segment 3 (7) Cask Serial Number C1018

Radiation Survey Data:	(8) FIELD	(20) LABORATORY
Over Top Dose Rate	.1 mr/HR	
Side Dose Rate	1.4 mr/HR.	
Bottom Dose Rate	.4 mr/HR.	
Smearable Contamination	< DET. (alpha)	(alpha)
	< DET. (beta gamma)	(beta-gamma)
	RPT (Signature)	RPT (Signature)

(9) Shipment Description:	
A. Work Package Number	2W-89-01056/W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	29
D. Date and Time Sampler Unseated	11-20-89, 1752
E. Expected Liquid Content	20%
F. Expected Solid Content	80%
G. Dose Rate Through Drill String	75 mr/HR.
H. Expected Sample Length	19 ft

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

Core #9 WHC-EP-0210 Waste characterization Plan for the Hanford Single Shell Tanks

*Reference laboratory work request, if available.

Comments:

(11) POINT OF ORIGIN	(12) SENDER NAME / SENDER SIGNATURE	(13) DATE AND TIME RELEASED	(14) DESTINATION	(16) RECIPIENT NAME / RECIPIENT SIGNATURE	(17) DATE AND TIME RECEIVED
241-B 110	DC Hartley / DC Hartley	11-21-89 1420	325 BLDG. 300 Area	John L Green / John L Green	11-21-89 1525

(15) Seal Intact Upon Release? ☒ Yes ☐ No

(18) Seal Intact Upon Receipt? ☒ Yes ☐ No

(19) Seal Data Consistent with this Record? Shipment No. ☒ Yes ☐ No Sample No. ☒ Yes ☐ No

LRB 53672 Page 66

CO3-014

WORK PLACE COPY

December 5, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-3-EXT

Extrusion of Sample
Tank 241-B-110 Core 9 Segment 3

When you have finished an instruction, put a check in from of the item.

General Instructions:

1) Keep the sample in a sealed container as much as possible to prevent it from drying out.
3) After centrifuging the solids volume is the average of the high and low volumes of the solids.
3) All requested weights for sample + container are for a closed container.
4) Identify the instrument used for any measurement by reference number or by the calibration ID and provide the calibration expiration date.

M&TE List

✓ Balance 1:
Calib ID 388-06-01-016 Calib Exp Date 2-2-90
Location "A" Cell

✓ Balance 2:
Calib ID 362-06-01-035 Calib Exp Date 2-2-90
Location "B" Cell

✓ Thermocouple 1:
Calib ID 321859 Calib Exp Date 12-19-89
Type K Ser. #6926 Location "B" Cell

✓ Digital Thermometer:
Calib ID 362-79-06-002 Calib Exp Date 7-12-90

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Signature JK Andrews Date 12-12-89 IRB 53672 Page 67

C03-015

December 5, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-3-EXT
Page 2 of 5

RECEIPT OF 241-B-110 CORE 9 SEGMENT 3

✓1. Record the identifications provided on the chain-of-custody record with the samples and compare to the numbers inscribed on the sampler.

Sampler # 29

✓2. Receive and transfer the samplers and liners into B-Cell and extrude using SOP No 325-EXT-1, RECEIPT AND EXTRUSION OF CORE SAMPLES AT THE 325A SHIELDED FACILITY; 325-A-29, RECEIVING OF WASTE TANK SAMPLES IN ONSITE TRANFER CASK; and PNL Technical Procedure PNL-ALO-130, PROCEDURE FOR THE RECEIPT AND INSPECTION OF SINGLE SHELL TANK (SST) SAMPLES.

EXTRUSION AND SAMPLING OF 241-B-110 CORE 9 SEGMENT 3

✓3. Weigh two labeled 20 mL prepared glass vials and caps for volatile organic analysis.

110B-C9-VOL3

Vial & Cap NA g

110B-C9-VOS3

Vial & Cap 17.917 g

Balance 1

✓4. Weigh a 250 mL and a 500 mL safety jar labeled 110B-C9-DL3 and 110B-C9-SOL3, respectively.

	110B-C9-DL3	110B-C9-SOL3
Jar + Lid	NA g	332.04 g

Balance 1

✓5. Weigh the labeled plastic scintillation vial 110B-C9-PS3.

110B-C9-PS3

Jar + Lid 6.710 g
Balance 1

✓6. Measure cell temperature. 32 °C
Thermometer ID 262-79-06-002 Thermocouple ID 321559

Signature TK Andrews Date 12-12-89 LRB 53672 Page 68

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✓7. Weigh the extruder tray on balance 2.

Extruder Tray 794.73 g

✓8. Prepare the camera for use.

✓9. Lift the bottom end of the liner and drain any oil from the liner into the dish. Be careful the sampler doesn't slide out of the liner.

✓10. When all of the oil has drained from the liner, remove the dish and inspect the oil collected to determine whether any sample is present.
Amount of Sample none Amount of oil [illegible]

✓11. Wipe the sampler with rags to remove any residual oil, if needed.

✓12. Remove the V-Ring seal from the valve end of sampler with a 3/32" allen wrench.

✓13. Move the extruder platform to the forward position. Set the torque and speed switches to 0 and the directional switch to brake.

✓14. Transfer the sampler to the extruder making sure that the valve closure wires are at top, put a wooden block under the rear of the sampler, insert push rod into the sampler, and remove wooden block. Seat and lock the push rod in back of extruder. Clamp the sampler into position.

✓15. Place the sampler valve wrench into closed valve slot. (Horizontal is closed and vertical is open.)

✓16. Place the weighed 250 mL jar 110B-C9-DL3 into position under the drain spout of the extruder collection tray to collect any free liquid from the sample.

✓17. Open the sampler valve. With the valve closure wires at top, turn the valve counterclockwise (towards the front) to open the valve. Confirm that the valve is open before proceeding.

✓18. To extrude the sample, switch the directional switch to reverse and set the torque at less than or equal to 30. Do not exceed a torque setting of 30! Gradually increase the speed. Do not exceed a speed setting of 50.

✓19. Watch carefully as the rod and piston approach the valve, paying close attention that the extruder does not bind or catch. Continue extruding until the piston falls into the tray.

Signature JKAndrews Date 12-12-89 LRB 53672 Page 69

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December 5, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-3-EXT
Page 4 of 5

✓ 20. Transfer a 5 gm sample of the extruded solids and place it in the vial labeled 110B-C9-VOS3. Seal the vial as soon as possible. Time is of the essence. Weigh the sample.

	110B-C9-VOS3	
Total	26.757	g
Vial & Cap	17.917	g
Sample	8.84	g

Balance 2

✓ 21. Drain the free liquid into the 250 mL jar 110B-C9-DL3. Seal and weigh. Measure the height (ht) of sample from the bottom of the jar in mm. Estimate the volume using: Volume = (ht - 5) mm X 50mL/15 mm.

Total		g	Volume	NA	mL
Jar + Lid	NA	g			
Sample		g			

Balance

✓ 22. Remove the extruder tray and weigh.

Total	1104.68	g
Extruder Tray	794.73	g
Sample	309.95	g

✓ 23. Position the extruder tray for photographs. Place a color bar beside the sample. Photograph the extruded sample. Record the picture number(s).

Photograph Number(s) #6 #7

✓ 24. Measure the dimensions of the solids in the sample and describe.

Length 19 x 2.54 = 48.26 cm

Description color from light tan to a light brown not as dark in color on top as was Sep #2 more uniform in color throughout sample

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Signature [illegible] Date 12-12-89 LRB 53672 Page 70

December 5, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-3-EXT
Page 5 of 5

__25. Transfer about 1.0 g of extruded solids to a weighed vial labeled 110B-C9-PS3. Deliver to 325B facility with its RFAS.

110B-C9-PS3

Total 8.04 g
Vial & Cap 6.710 g
Sample 1.33 g

Balance 2

Date Delivered 12-12-89

__26. Transfer the remaining sample to a weighed 500 mL jar labeled 110B-C9-SOL3. Seal and weigh.

110B-C9-SOL3

Total 632.25 g
Jar + Lid 332.04 g
Sample ~~300.21~~ g
300.21

__27. If there is greater than 25 ml of drainable liquids, transfer 5 ml of the drainable liquid to the organic analysis vial labeled 110B-C9-VOL3. Seal the vial and weigh. Transfer this vial and 110B-C9-VOS3 to either RT Steele or RW Stromatt as soon as possible.

110B-C9-VOL3

Total ___ g
Vial & Cap NA g
Sample ___ g

Balance NA

Date Delivered ___

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BNW LABORATORY NOTEBOOK NO. 53672

Signature [signature] Date 12-12-89 LRB 53672 Page 71

SINGLE SHELL TANK WASTE CHARACTERIZATION
EXTRUSION OF SAMPLE

Tank ID: 241-B-110
Riser ID: 3
Core ID: 9

Segment Number: 3
Shipment #: S-029-89
WHC Sample ID: 89-056
325A Sample ID: 110B-C9-3

Drainable Liquid

Volume of Liquid in Liner : 15 ml
Volume of Liquid in Sampler: 0 ml
Weight of Liquid in Sampler: 0 g
Sample Identification : NONE

Bulk Solid

Weight of Segment : ~~309.95~~ 318.79 g JMT 1/10/90
Length of Segment : 19 in
Bulk Density : ~~1.27~~ 1.30 g/ml
Sample Identification : 110B-C9-SOL3

Visual Observations: The segment was light tan at the bottom and gradually changed to light brown at the top. The sample was creamy in texture.

Photograph Numbers : 6 and 7

Analysis Samples

Particle Size
Sample Identification: 110B-C9-PS3
Bottle Weight : 6.710 g
Sample and Bottle : 8.040 g
Sample Weight : 1.330 g

Volatile Organics
Sample Identification: 110B-C9-VOS3
Bottle Weight : 17.917 g
Sample and Bottle : 26.757 g
Sample Weight : 8.840 g

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53672

Signature JM Tingey Name JM TINGEY Date 1-10-90
Signature TK Andrews Name TK Andrews Date 1-12-90

SINGLE SHELL TANK WASTE CHARACTERIZATION
HOMOGENIZATION

Tank ID: 110B
Riser ID: 3
Core ID: 9

Segment Number: 3
Shipment #: S-029-89
WHC Sample ID: 89-056
325A Sample ID: 110B-C9-3
PROCEDURE : PNL-ALO-135 OMNI MIXER METHOD JMT 4/3/90

HOMOGENIZATION

Start time 12:15
End time 12:45
Homogenization time 30 min

Visual observations: Light grayish tan composite

Note: After 30 min homogenization, there appears to be steam/vapor rising from the cap when it is released from the head.

ANALYSIS SAMPLES

TOP
Sample Identification: 110B-C9-3T
Bottle Weight : 6.648 g
Sample and Bottle : 17.219 g
Sample Weight : 10.571 g

BOTTOM
Sample Identification: 110B-C9-3B
Bottle Weight : 6.726 g
Sample and Bottle : 17.910 g
Sample Weight : 11.184 g

ANALYSIS
Sample Identification: 110B-C9-3VD
Sample and Bottle Wt.: 48.735 g
Bottle Weight : 23.910 ~~20.859~~ g JKD 3-30-90
Sample Weight : 25.825 g

BULK
Sample Identification: 110B-C9-3H
Sample and Bottle Wt.: 515.07 g
Bottle Weight : 263.15 g
Sample Weight : 251.92 g

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BATTELLE LABORATORY NOTEBOOK NO. 53672

Signature TK Andrews Name T K Andrews Date 12-28-89
Signature JM Tinger Name JM TINGEY Date 1-9-90

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CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number 5-029-89 (2) Sample Number 89-057 (3) Supervisor DCHartley

(4) Tank 11DB (5) Riser 3 (6) Segment 4 (7) Cask Serial Number 1004C

Radiation Survey Data:	(8) FIELD	(20) LABORATORY
Over Top Dose Rate	.1 mr/hr	
Side Dose Rate	1.3 mr/hr	
Bottom Dose Rate	1.1 mr/hr	
Smearable Contamination	<DET. (alpha)	(alpha)
	<DET. (beta-gamma)	(beta-gamma)
	RPT (Signature)	RPT (Signature)

(9) Shipment Description:	
A. Work Package Number	2W-89-01056/W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	41
D. Date and Time Sampler Unseated	11-20-89 2100
E. Expected Liquid Content	20%
F. Expected Solid Content	80%
G. Dose Rate Through Drill String	60 mr/hr
H. Expected Sample Length	19"

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

Core #9 WHC-EP-0210 Waste Characterization Plan for the Hanford Site Single-Shell Tanks

*Reference laboratory work request, if available.

Comments:

(11) POINT OF ORIGIN	(12) SENDER NAME / SENDER SIGNATURE	(13) DATE AND TIME RELEASED	(14) DESTINATION	(16) RECIPIENT NAME / RECIPIENT SIGNATURE	(17) DATE AND TIME RECEIVED
241-B 110	DCHartley / DCHartley	11-21-89 1420	325 Bldg. 300 Area	John L Green / John L Green	11-21-89 1525

(15) Seal Intact Upon Release?	(18) Seal Intact Upon Receipt?	(19) Seal Data Consistent with this Record? Shipment No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

C03-022

WORK PLACE COPY

December 5, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-~~3~~4-EXT
Page 1 of 5

12/5/89

Extrusion of Sample
Tank 241-B-110 Core 9 Segment 4

When you have finished an instruction, put a check in from of the item.

General Instructions:

1) Keep the sample in a sealed container as much as possible to prevent it from drying out.
3) After centrifuging the solids volume is the average of the high and low volumes of the solids.
3) All requested weights for sample + container are for a closed container.
4) Identify the instrument used for any measurement by reference number or by the calibration ID and provide the calibration expiration date.

M&TE List

✓ Balance 1:
Calib ID 388-06-01-016 Calib Exp Date 2-2-90
Location "A" Cell

✓ Balance 2:
Calib ID 362-06-01-035 Calib Exp Date 2-2-90
Location "B" Cell

✓ Thermocouple 1:
Calib ID 321859 Calib Exp Date 12-19-89
Type K Ser. #6926 Location "B" Cell

✓ Digital Thermometer:
Calib ID 362-79-06-002 Calib Exp Date 7-12-90

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Signature HK Andrews Date 12-12-89 IRB 53672 Page 75

December 5, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-~~3~~-EXT
Page 2 of 5

12/5/89

RECEIPT OF 241-B-110 CORE 9 SEGMENT 4

✓1. Record the identifications provided on the chain-of-custody record with the samples and compare to the numbers inscribed on the sampler.

Sampler # 49 41 JKA

✓2. Receive and transfer the samplers and liners into B-Cell and extrude using SOP No 325-EXT-1, RECEIPT AND EXTRUSION OF CORE SAMPLES AT THE 325A SHIELDED FACILITY; 325-A-29, RECEIVING OF WASTE TANK SAMPLES IN ONSITE TRANFER CASK; and PNL Technical Procedure PNL-ALO-130, PROCEDURE FOR THE RECEIPT AND INSPECTION OF SINGLE SHELL TANK (SST) SAMPLES.

EXTRUSION AND SAMPLING OF 241-B-110 CORE 9 SEGMENT 4

NA 3. Weigh two labeled 20 mL prepared glass vials and caps for volatile organic analysis.

110B-C9-VOL4

Vial & Cap NA g

110B-C9-VOS4

Vial & Cap 17.60 g

Balance 2

✓4. Weigh a 250 mL and a 500 mL safety jar labeled 110B-C9-DL4 and 110B-C9-SOL4, respectively.

	110B-C9-DL4	110B-C9-SOL4
Jar + Lid	NA g	33.99 g

Balance 2

✓5. Weigh the labeled plastic scintillation vial 110B-C9-PS4.

110B-C9-PS4

Jar + Lid 6.68 g
Balance 2

✓6. Measure cell temperature. 22 °C
Thermometer ID 362-77-016-002 Thermocouple ID 321857

Signature JKDudrow Date 12-12-89 LRB 53672 Page 76

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December 5, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-~~7~~ 4 EXT
Page 3 of 5

12/5/89

7. Weigh the extruder tray on balance 2.

   Extruder Tray 794.75 g

8. Prepare the camera for use.

9. Lift the bottom end of the liner and drain any oil from the liner into the dish. Be careful the sampler doesn't slide out of the liner.

10. When all of the oil has drained from the liner, remove the dish and inspect the oil collected to determine whether any sample is present.
    Amount of Sample none Amount of oil [illegible]

11. Wipe the sampler with rags to remove any residual oil, if needed.

12. Remove the V-Ring seal from the valve end of sampler with a 3/32" allen wrench.

13. Move the extruder platform to the forward position. Set the torque and speed switches to 0 and the directional switch to brake.

14. Transfer the sampler to the extruder making sure that the valve closure wires are at top, put a wooden block under the rear of the sampler, insert push rod into the sampler, and remove wooden block. Seat and lock the push rod in back of extruder. Clamp the sampler into position.

15. Place the sampler valve wrench into closed valve slot. (Horizontal is closed and vertical is open.)

16. Place the weighed 250 mL jar 110B-C9-DL4 into position under the drain spout of the extruder collection tray to collect any free liquid from the sample.

17. Open the sampler valve. With the valve closure wires at top, turn the valve counterclockwise (towards the front) to open the valve. Confirm that the valve is open before proceeding.

18. To extrude the sample, switch the directional switch to reverse and set the torque at less than or equal to 30. Do not exceed a torque setting of 30! Gradually increase the speed. Do not exceed a speed setting of 50.

19. Watch carefully as the rod and piston approach the valve, paying close attention that the extruder does not bind or catch. Continue extruding until the piston falls into the tray.

Signature [illegible] Date 12-12-89 LRB 53672 Page 77

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December 5, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-~~3~~ 4-EXT
Page 4 of 5

12/5/89

✓20. Transfer a 5 gm sample of the extruded solids and place it in the vial labeled **110B-C9-VOS4**. Seal the vial as soon as possible. Time is of the essence. Weigh the sample.

110B-C9-VOS4

Total	22.77	g
Vial & Cap	17.60	g
Sample	5.17	g

Balance 2

✓21. Drain the free liquid into the 250 mL jar **110B-C9-DLA**. Seal and weigh. Measure the height (ht) of sample from the bottom of the jar in mm. Estimate the volume using: Volume = (ht - 5) mm X 50mL/15 mm.

Total		g	Volume	NA	mL
Jar + Lid	NA	g			
Sample		g			

Balance

✓22. Remove the extruder tray and weigh.

Total	1114.46	g
Extruder Tray	794.75	g
Sample	319.71	g

✓23. Position the extruder tray for photographs. Place a color bar beside the sample. Photograph the extruded sample. Record the picture number(s).

Photograph Number(s) #8 #9

✓24. Measure the dimensions of the solids in the sample and describe.

Length 19" cm

Description uniform in color, bulbous, 2" wide, less than 1/2 [illegible] color is a light tan over [illegible]

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Signature [illegible] Date 12-12-89 LRB 53672 Page 78

December 5, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-~~3~~4-EXT
Page 5 of 5

9-12/5/89

✓25. Transfer about 1.0 g of extruded solids to a weighed vial labeled 110B-C9-PS4. Deliver to 325B facility with its RFAS.

110B-C9-PS4

Total 8.10 g
Vial & Cap 6.68 g
Sample 1.42 g

Balance 2

Date Delivered 12-12-89

✓26. Transfer the remaining sample to a weighed 500 mL jar labeled 110B-C9-SOL4. Seal and weigh.

110B-C9-SOL4

Total 641.85 g
Jar + Lid 333.99 g
Sample 307.86 g

__27. If there is greater than 25 ml of drainable liquids, transfer 5 ml of the drainable liquid to the organic analysis vial labeled 110B-C9-VOL4. Seal the vial and weigh. Transfer this vial and 110B-C9-VOS4 to either RT Steele or RW Stromatt as soon as possible.

110B-C9-VOL4

Total ____ g
Vial & Cap NA g
Sample ____ g

Balance ____

Date Delivered ____

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BNW LABORATORY NOTEBOOK NO. 53672

Signature K Andrews Date 12-12-89 LRB 53672 Page 79

SINGLE SHELL TANK WASTE CHARACTERIZATION
EXTRUSION OF SAMPLE

Tank ID: 241-B-110
Riser ID: 3
Core ID: 9

Segment Number: 4
Shipment #: S-029-89
WHC Sample ID: 89-057
325A Sample ID: 110B-C9-4

Drainable Liquid

Volume of Liquid in Liner : 10 ml
Volume of Liquid in Sampler: 0 ml
Weight of Liquid in Sampler: 0 g
Sample Identification : NONE

Bulk Solid

Weight of Segment : ~~319.71~~ 324.55 g
Length of Segment : 19 in
Bulk Density : ~~1.31~~ 1.33 g/ml
Sample Identification : 110B-C9-SOL4

JMT 1/10/90

Visual Observations: The segment was light tan over the entire length of the sample. The sample was creamy in texture except for the bottom 2" which were more granular and contained less moisture.

Photograph Numbers : 8 and 9

Analysis Samples

Particle Size
Sample Identification: 110B-C9-PS4
Bottle Weight : 6.68 g
Sample and Bottle : 8.10 g
Sample Weight : 1.42 g

Volatile Organics
Sample Identification: 110B-C9-VOS4
Bottle Weight : 17.60 g
Sample and Bottle : 22.77 g
Sample Weight : 5.17 g

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Signature JM Tinger Name JM Tinger Date 1-10-90
Signature TK Andrews Name TK Andrews Date 1-12-90

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SINGLE SHELL TANK WASTE CHARACTERIZATION
HOMOGENIZATION

Tank ID: 110B
Riser ID: 3
Core ID: 9

Segment Number: 4
Shipment #: S-029-89
WHC Sample ID: 89-057
325A Sample ID: 110B-C9-4
PROCEDURE: PNL-ALO-135
OMNI MIXER METHOD

JMT 4/3/90

HOMOGENIZATION

Start time 1407
End time ~~1457~~ 1427
Homogenization time ~~30~~ min 20 min JKD 12-28-89

Visual observations: Light grayish tan in color, readily pours

~~note: Due to the steam emission the homogenization time was shortened to 20 min. No steam/vapor was observed.~~
JKA

ANALYSIS SAMPLES

TOP
Sample Identification: 110B-C9-4T
Bottle Weight : 6.749 g
Sample and Bottle : 19.311 g
Sample Weight : 10 12.562 g

BOTTOM
Sample Identification: 110B-C9-4B
Bottle Weight : 6.730 g
Sample and Bottle : 18.393 g
Sample Weight : 11.663 g

ANALYSIS
Sample Identification:
Sample and Bottle Wt.: g
Bottle Weight : g
Sample Weight : g

BULK
Sample Identification: 110B-C9-4H
Sample and Bottle Wt.: 509.30 g
Bottle Weight : 262.63 g
Sample Weight : 246.67 g

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BNW LABORATORY NOTEBOOK NO. 53672

Signature TK Andrews Name TK Andrews Date 12-29-89
Signature JM Tingey Name JM TINGEY Date 1-9-90
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BNW LABORATORY NOTEBOOK NO. 53672

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CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number 5-029-89 (2) Sample Number 89-058 (3) Supervisor DC Hartley

(4) Tank 110 B (5) Riser 3 (6) Segment 5 (7) Cask Serial Number C1024

Radiation Survey Data:	(8) FIELD	(20) LABORATORY
Over Top Dose Rate	.3 mr/hr.	
Side Dose Rate	1.0 mr/hr	
Bottom Dose Rate	.6 mr/hr	
Smearable Contamination	LDET. (alpha)	(alpha)
	LDET. (beta-gamma)	(beta-gamma)
	RPT (Signature)	RPT (Signature)

(9) Shipment Description:

A. Work Package Number	2W-89-01056/W
B. Cask Seal Number	For Future Use
C. Sampler Number Used	25
D. Date and Time Sampler Unseated	11-20-89 2203
E. Expected Liquid Content	20%
F. Expected Solid Content	80%
G. Dose Rate Through Drill String	50 mr/hr
H. Expected Sample Length	19"

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

Core #9 WHC-EP-0210 Waste characterization plan for the Hanford Site Single-Shell Tanks

*Reference laboratory work request, if available.

Comments:

(11) POINT OF ORIGIN	(12) SENDER NAME / SENDER SIGNATURE	(13) DATE AND TIME RELEASED	(14) DESTINATION	(16) RECIPIENT NAME / RECIPIENT SIGNATURE	(17) DATE AND TIME RECEIVED
241-B 110	DC Hartley / DC Hartley	11-21-89 1420	325 BLDG. 300 Area	John L Green / John L Green	11-21-89 1525

(15) Seal Intact Upon Release?	(18) Seal Intact Upon Receipt?	(19) Seal Data Consistent with this Record? Shipment No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

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CO3-030

WORK PLACE COPY

December 6, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-5-EXT

Extrusion of Sample
Tank 241-B-110 Core 9 Segment 5

When you have finished an instruction, put a check in from of the item.

General Instructions:

1) Keep the sample in a sealed container as much as possible to prevent it from drying out.
3) After centrifuging the solids volume is the average of the high and low volumes of the solids.
3) All requested weights for sample + container are for a closed container.
4) Identify the instrument used for any measurement by reference number or by the calibration ID and provide the calibration expiration date.

M&TE List

✓ Balance 1:
Calib ID 388-06-01-016 Calib Exp Date 2-2-90
Location "A" Cell

✓ Balance 2:
Calib ID 362-06-01-035 Calib Exp Date 2-2-90
Location "B" Cell

✓ Thermocouple 1:
Calib ID 321859 Calib Exp Date 12-19-89
Type K Ser. #6926 Location "B" Cell

✓ Digital Thermometer:
Calib ID 362-79-06-002 Calib Exp Date 7-12-90

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Signature TK Andrews Date 12-12-89 LRB 53672 Page 83

C03-031

December 6, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-5-EXT

RECEIPT OF 241-B-110 CORE 9 SEGMENT 5

✓1. Record the identifications provided on the chain-of-custody record with the samples and compare to the numbers inscribed on the sampler.

Sampler # 25

✓2. Receive and transfer the samplers and liners into B-Cell and extrude using SOP No 325-EXT-1, RECEIPT AND EXTRUSION OF CORE SAMPLES AT THE 325A SHIELDED FACILITY; 325-A-29, RECEIVING OF WASTE TANK SAMPLES IN ONSITE TRANFER CASK; and PNL Technical Procedure PNL-ALO-130, PROCEDURE FOR THE RECEIPT AND INSPECTION OF SINGLE SHELL TANK (SST) SAMPLES.

EXTRUSION AND SAMPLING OF 241-B-110 CORE 9 SEGMENT 5

✓3. Weigh two labeled 20 mL prepared glass vials and caps for volatile organic analysis.

	110B-C9-VOL5	110B-C9-VOS5
Vial & Cap	N/A g	17.891 g
Balance	1	

✓4. Weigh a 250 mL and a 500 mL safety jar labeled 110B-C9-DL5 and 110B-C9-SOL5, respectively.

	110B-C9-DL5	110B-C9-SOL5
Jar + Lid	_____ g	330.37 g
Balance	1	

✓5. Weigh the labeled plastic scintillation vial 110B-C9-PS5.

	110B-C9-PS5
Jar + Lid	6.646 g
Balance	1

✓6. Measure cell temperature. 32 °C
Thermometer ID 362-79-06-002 Thermocouple ID 321859

Signature JK Andrews Date 12-12-89 LRB 53672 Page 84.

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December 6, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-5-EXT
Page 3 of 5

✓ 7. Weigh the extruder tray on balance 2.

Extruder Tray 794.97 g

✓ 8. Prepare the camera for use.

✓ 9. Lift the bottom end of the liner and drain any oil from the liner into the dish. Be careful the sampler doesn't slide out of the liner.

✓ 10. When all of the oil has drained from the liner, remove the dish and inspect the oil collected to determine whether any sample is present. Amount of Sample none Amount of oil 10-15 mL

✓ 11. Wipe the sampler with rags to remove any residual oil, if needed.

✓ 12. Remove the V-Ring seal from the valve end of sampler with a 3/32" allen wrench.

✓ 13. Move the extruder platform to the forward position. Set the torque and speed switches to 0 and the directional switch to brake.

✓ 14. Transfer the sampler to the extruder making sure that the valve closure wires are at top, put a wooden block under the rear of the sampler, insert push rod into the sampler, and remove wooden block. Seat and lock the push rod in back of extruder. Clamp the sampler into position.

✓ 15. Place the sampler valve wrench into closed valve slot. (Horizontal is closed and vertical is open.)

✓ 16. Place the weighed 250 mL jar 110B-C9-DL5 into position under the drain spout of the extruder collection tray to collect any free liquid from the sample.

✓ 17. Open the sampler valve. With the valve closure wires at top, turn the valve counterclockwise (towards the front) to open the valve. Confirm that the valve is open before proceeding.

✓ 18. To extrude the sample, switch the directional switch to reverse and set the torque at less than or equal to 30. Do not exceed a torque setting of 30! Gradually increase the speed. Do not exceed a speed setting of 50.

✓ 19. Watch carefully as the rod and piston approach the valve, paying close attention that the extruder does not bind or catch. Continue extruding until the piston falls into the tray.

Signature JK Andrews Date 12-12-89 LRB 53672 Page 85

BNW LABORATORY NOTEBOOK NO. 53672
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December 6, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-5-EXT
Page 4 of 5

✓20. Transfer a 5 gm sample of the extruded solids and place it in the vial labeled 110B-C9-VOS5. Seal the vial as soon as possible. Time is of the essence. Weigh the sample.

	110B-C9-VOS5	
Total	23.25	g
Vial & Cap	17.892	g
Sample	5.358	g

Balance 2

✓21. Drain the free liquid into the 250 mL jar 110B-C9-DL5. Seal and weigh. Measure the height (ht) of sample from the bottom of the jar in mm. Estimate the volume using: Volume = (ht - 5) mm X 50mL/15 mm.

Total		g	Volume	NA mL
Jar + Lid	NA	g		
Sample		g		

Balance 2

✓22. Remove the extruder tray and weigh.

Total	1093.57	g
Extruder Tray	794.97	g
Sample	298.60	g

✓23. Position the extruder tray for photographs. Place a color bar beside the sample. Photograph the extruded sample. Record the picture number(s).

Photograph Number(s) #10 #11

✓24. Measure the dimensions of the solids in the sample and describe.

Length 19" cm

Description Light brown on bottom end going to stain at 2"

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Signature TK Andrews Date 12-12-89 LRB 53672 Page 86

December 6, 1989
JM Tingey

Reference Tech Procedure: WHC-053-1
Test Instructions: 110B-C9-5-EXT
Page 5 of 5

✓25. Transfer about 1.0 g of extruded solids to a weighed vial labeled 110B-C9-PS5. Deliver to 325B facility with its RFAS.

110B-C9-PS5

Total 7.826 g
Vial & Cap 6.646 g
Sample 1.18 g

Balance 2

Date Delivered 12-12-89

✓26. Transfer the remaining sample to a weighed 500 mL jar labeled 110B-C9-SOL5. Seal and weigh.

110B-C9-SOL5

Total 637.18 g
Jar + Lid 330.37 g
Sample 306.81 g

__27. If there is greater than 25 ml of drainable liquids, transfer 5 ml of the drainable liquid to the organic analysis vial labeled 110B-C9-VOL5. Seal the vial and weigh. Transfer this vial and 110B-C9-VOS5 to either RT Steele or RW Stromatt as soon as possible.

110B-C9-VOL5

Total N/A g
Vial & Cap ____ g
Sample ____ g

Balance N/A

Date Delivered ____

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BNW LABORATORY NOTEBOOK NO. 53672

Signature JK Andrews Date 12-12-89 LRB 53672 Page 87

SINGLE SHELL TANK WASTE CHARACTERIZATION
EXTRUSION OF SAMPLE

Tank ID: 241-B-110
Riser ID: 3
Core ID: 9

Segment Number: 5
Shipment #: S-029-89
WHC Sample ID: 89-058
325A Sample ID: 110B-C9-5

Drainable Liquid

Volume of Liquid in Liner : 15 ml
Volume of Liquid in Sampler: 0 ml
Weight of Liquid in Sampler: 0 g
Sample Identification : NONE

Bulk Solid

Weight of Segment : ~~298.60~~ 303.96 g JMT 1/10/90
Length of Segment : 19 in
Bulk Density : ~~1.22~~ 1.24 g/ml
Sample Identification : 110B-C9-SOL5

Visual Observations: The segment was light brown on the bottom two inches of the sample. The remainder of the segment was light tan. The sample was creamy in texture with the top portion of the segment more fluid than the rest of the sample.

Photograph Numbers : 10 and 11

Analysis Samples

Particle Size
Sample Identification: 110B-C9-PS5
Bottle Weight : 6.646 g
Sample and Bottle : 7.826 g
Sample Weight : 1.180 g

Volatile Organics
Sample Identification: 110B-C9-VOS5
Bottle Weight : 17.892 g
Sample and Bottle : 23.250 g
Sample Weight : 5.358 g

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Signature JM Tingey Name JM TINGEY Date 1-10-90
Signature TK Andrews Name TK Andrews Date 1-12-90

SINGLE SHELL TANK WASTE CHARACTERIZATION
HOMOGENIZATION

Tank ID: 110B
Riser ID: 3
Core ID: 9

Segment Number: 5
Shipment #: S-029-89
WHC Sample ID: 89-058
325A Sample ID: 110B-C9-5

HOMOGENIZATION

PROCEDURE: PNL-AMO-135 OMNI MIXER PROCEDURE JMT 4/3/90

Start time 0830
End time 0850
Homogenization time ~~30~~ min 20 min JKA 12-29-89

Visual observations: Light grayish tan, readily pours.

ANALYSIS SAMPLES

TOP

Sample Identification: 110B-C9-5T
Bottle Weight : 6.752 g
Sample and Bottle : 17.581 g
Sample Weight : 10.829 g

BOTTOM

Sample Identification: 110B-C9-5B
Bottle Weight : 6.814 g
Sample and Bottle : 19.273 g
Sample Weight : 12.459 g

ANALYSIS

Sample Identification: 110B-C9-SVD
Sample and Bottle Wt.: ~~75.0~~ 47.806 g
Bottle Weight : 22.754 ~~20.702~~ g JKA 3-30-90
Sample Weight : 25.052 g

BULK

Sample Identification: 110B-C9-5H
Sample and Bottle Wt.: 518.15 g
Bottle Weight : 264.02 g
Sample Weight : 254.13 g

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Signature TK Andrews Name TK Andrews Date 12-29-89
Signature JM Tingey Name JM TINGEY Date 1-9-90
LRB 53672 Page 89

C4 - 325B HOT CELL SST

CHARACTERIZATION DATA LRB

BNW-52917
1—
5-13-88

PACIFIC NORTHWEST LABORATORY
RECEIVED
MAY 13 1988
BATTELLE TECH. INFO.

THIS BOOK IS INTENDED TO BE USED FOR RECORDING RESEARCH PERFORMED FOR THE U.S. DEPARTMENT OF ENERGY UNDER BNWS OPERATING CONTRACT EY-76-C-06-1830

M32950

LABORATORY RECORD BOOK NUMBER BNW- 52917	This document consists of ..... pages, copy no. .....
TITLE (INDICATE SUBJECT CONTENT) SINGE SHELL TANK CHARACTERIZATION DATA	
AUTHOR - DIVISION AND DEPARTMENT RT STEELE MATERIAL AND CHEMICAL SCIENCE CENTER CHEMICAL SCIENCE DEPARTMENT	
PERIOD COVERED FROM	TO

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AC Leaf	30969	325	MAY 13 1988	
RT STEELE	30311			Rick Steele 8/16/89

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BNW-52917	—	UNCLASSIFIED	148000

LABORATORY RECORD BOOK. AC LEAF. MAY 13, 1988.

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54-1100-005(10-84)

C04-001

78 1-3-90

1 ml Pipet 22°C
.9927 x̄ = .99253
.9921 s = .0005
.9924 RSD = .05%
.9931 N = 5
.9926
Del. = .9947 ml

Core 2 1T + 1B

Lab #	Id	Vol.	Dil.	Del. To	ACT.	Analysis
89-465-A1	C2-1T	11 ml.	11X	A Cell	3 hr	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
89-466-A1	C2-1B	11 ml.	11X	A Cell	2.5	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
89-465-A1	C2-1T	~15 ml	NONE	309	8	GEA
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
89-466-A1	C2-1B	~15 ml	NONE	309	9	GEA
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓

1-3-90

Core 9 (VOA's)

89-1561-1	89-1561-2	89-1561-3
26.1152	25.4223	25.9447
25.2656	24.4136	24.9113
0.8496 g.	1.0087 g.	1.0334 g.

89-1563-1	89-1563-2	89-1563-3
25.8206	26.5575	26.3554
24.8846	25.5563	25.2842
0.9360 g.	1.0012 g.	1.0712 g.

89-1565-1	89-1565-2	89-1565-3
26.1517	25.8590	25.9417
25.1617	24.8985	24.9527
0.9900 g.	0.9605 g.	0.9890 g.

89-1567-1	89-1567-2	89-1567-3
26.0028	25.6833	26.6122
25.0547	24.7184	25.1320
0.9481 g.	0.9649 g.	1.4802 g.

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2-12-90

Core 2-COMP2-CT (Mercury)

90-640-01	90-640-02	90-640-03	90-640-04	90-640-05
95.4875	90.7234	96.8363	.0497 mL	Blank.
95.2279	90.4978	96.6275	H-3 Spike. (1 PPM)	23°C
0.2096 g.	0.2256 g.	0.2088 g. + .0497 mL H-3 Spike. (1 PPM)	1 mL Pipet 23°C 1.0104 $\bar{x}$ = 1.0119 1.0144 S = .0016 1.0118 .16% 1.0106 1.0121 Del. = 1.0141 mL	.5 mL Pipet .0495 $\bar{x}$ = .0496 .0496 S = .0001 .0495 .11% .0496 .0497 Del. = .0497 mL

DIW

2-13-90

Core 9-3T,38 (Fusions)

90-300-A1		90-300-A2		90-300-A3
40.8211	40.5332	32.5671	32.2075	Blank.
40.2676	40.2676	31.9384	31.9384	2.6g KOH.
0.5535 g. wet	0.2656 g. Dry	0.6287 g. wet.	.2691 g. Dry	

90-301-A1		90-301-2		90-301-A3
38.2941	37.9462	42.2221	41.8874	Blank.
37.7127	37.7127	41.6420	41.6420	2.6g KOH.
0.5814 g. wet.	0.2335 g. Dry.	0.5801 g. wet.	0.2454 g. Dry.	

Core 9 (% Solids)

in: 0930, 2/13, 105°C
out: 0800, 2/14, 105°C

90-300-H1		90-300-H2	
9.0186	8.3946	9.0428	8.4368
7.9925	7.9925	8.0445	8.0445
1.0261 g. wet.	0.4021 g. Dry	0.9983 g. wet.	0.3923 g. Dry
39.19%		39.30%	

90-301-H1		90-301-H2	
9.3346	8.6837	9.1426	8.4968
8.2649	8.2649	8.0817	8.0817
1.0691 g wet	0.4188 g Dry	1.0609 g. wet	0.4151 g. Dry
39.17%		39.13%	

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2/15/90
92

Core 9, 5T, 5B (Fusions)

90-304-A1 Ni #84		90-304-A2 Ni #85		90-304-A3
48.4136	48.0992	49.4706	49.1828	BLANK.
47.8572	47.8572	48.9135	48.9135	
0.5564 g. wet	.2436 g. Dry	0.5571 g. wet	.2693 g. Dry	

90-305-A1 Ni #86		90-305-A2 Ni #87		90-305-A3
49.6797	49.3520	52.3867	52.0760	BLANK
49.1019	49.1019	51.8199	51.8199	
0.5778 g. wet	.2501 g. Dry	0.5668 g. wet	.2561 g. Dry	

Core 9-5T, 5B (Wt. % solids)

in: 0915 2/14
104°C
out: 0830 2/15
104°C

90-304-H1		90-304-H2	
9.1263	8.5168	9.0313	8.4449
8.0729	8.0729	8.0209	8.0209
1.0534 g. wet	0.4439 g. Dry	1.0104 g. wet	0.4240 g. Dry
42.14%		41.96%	

90-305-H1		90-305-H2	
9.1331	8.5528	8.9983	8.4047
8.1324	8.1324	7.9751	7.9751
1.0007 g. wet	0.4204 g. Dry	1.0232 g. wet	0.4296 g. Dry
42.01%		41.99%	

2/15/90

Core 9 Sample Distribution

Lab #	Id.	Vol	Dil.	Del. To	Act.	Anal.
90-300-A1	C9-3T	15 ml	None	309	< 1	GEA
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-301-A1	C9-3B	15 ml	None	309	< 1	GEA
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-300-A1	C9-3T	11 ml	11x	A-Cell	< 1	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-301-A1	C9-3B	11 ml	11x	A-Cell	< 1	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓

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2/16/90

1 ml. Pipet 23°C DSW
.9938 $\bar{x}$ = .9949 g.
.9951 s = .0010
.9962 .10%
.9955
.9940
Del. = .9971 ml

Core 9 Sample Distribution

Lab #	Id	Vol	Oil	Delto	ACT.	Anal. 93
90-304-A1	C9-5T	15 ml	NONE	309	<1	GEA
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-305-A1	C9-5B	15 ml	NONE.	309	<1	GEA
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-304-A1	C9-5T	11 ml	11 X	A-Cell	<1	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-305-A1	C9-5B	11 ml	11 X	A-Cell	<1	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓

2-16-90 R Stule

Reviewed all entries on pages 84-92. All calculation were checked. No errors found. All entries are legible and complete.

Core 2 (Acid Digestion)

2/17/90

Seq. 3

90-637-B1	90-637-B2	90-637-B3	90-637-B4	90-637-B5
51.3353	51.3076	51.7461	25.4 ~~058~~ ml. 125 RTS 3-30-90	Blank.
50.3233	50.2744	50.6502	B-2 Spike	
1.0120 g.	1.0332 g.	1.0959 g. + 25.4 ~~058~~ ml. B-2 Spike. 125 RTS 3-30-90		

2/20/90

Seq. 4

90-638-B1	90-638-B2	90-638-B3	90-638-B4	90-638-B5
51.5224	51.2995	51.1824	125 RTS 3-30-90 25.4 ~~058~~ ml.	Blank.
50.5304	50.2535	50.1400	B-2 Spike.	
0.9920 g.	1.0460 g.	1.0424 g. + 25.4 ~~058~~ ml. B-2 Spike. 125 RTS 3-30-90		

Seq. 5

90-639-B1	90-639-B2	90-639-B3	90-639-B4	90-639-B5
51.0780	51.4748	51.3682	125 RTS 3-30-90 25.4 ~~058~~ ml	Blank.
50.1119	50.4823	50.3611	B-2 Spike.	
0.9661 g.	0.9925 g.	1.0071 g. + 25.4 ~~058~~ ml. B-2 Spike. 125 RTS 3-30-90		

5 ml. Pipet 23°C DIW
5.0692 $\bar{x}$ = 5.0700
5.0701 s = .0019
5.0673 .04%
5.0713
5.0721 Del. = 5.0878 ml. 25 x5

DIW 25.4058 ml 125 RTS 3-30-90

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3/9/90

Sample Distribution (Cont'd)

Lab. #	Id.	Vol	D:1	Del. To:	Act	Anal
90-709-A1	C10-3B	20ml.	None	309	<1	GEA
A2	↓	↓	↓	↓	↓	↓
90-712-A1	C10-5T	11ml	11x	A-Cell	<1	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-713-A1	C10-5B	11ml	11x	A-Cell	<1	ICP
A2	↓	↓	↓	↓	↓	↓
90-712-A1	C10-5T	20ml	None	309	<1	GEA
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-713-A1	C10-5B	20 ml	None	309	<1	GEA
A2	↓	↓	↓	↓	↓	↓

3/12/90

Core 9, T+B (Fusions) Core Composite

90-1255-A1 #9
49.3304
48.7744
0.5560 g. wet.

90-1255-A2 Ni #10
50.4051
49.8302
0.5749 g. wet.

90-1255-A3
Blank.

90-1256-A1 Ni #11
47.9876
47.4624
0.5252 g. wet.

90-1256-A2 Ni #12.
49.9431
49.3509
0.5922 g. wet.

3/13/90

Core 9 Spl. Distribution

Lab #	Id.	Vol	D:1	Del To:	Act.	Analysis
90-1255-A1	C9-T	11ml	11x	A Cell	<1	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-1256-A1	C9-B	11ml.	11x	A Cell	<1	ICP
A2	↓	↓	↓	↓	↓	↓
90-1255-A1	C9-T	20ml	None	309	<1	GEA
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-1256-A1	C9-B	20ml	None	309	<1	GEA
A2	↓	↓	↓	↓	↓	↓

1ml. P.per. 22°
.9933 .99399
.9922 .0014
.9945 .14%
.9960
.9938
0.9961 ml
DIW

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3/13/90

Core 9 T+B (wt. % solids)

90-1255-H1
9.0367
8.0157
1.0210 g. wet
8.4260
8.0157
0.4103 g. dry
40.19%

90-1255-H2
9.0360
8.0520
0.9840 g. wet
8.4477
8.0520
0.3957 g. dry
40.21%

in: 1130, 3/12 104°C
out: 0830, 3/13 104°C

90-1256-H1
9.0958
7.9672
1.1286 g. wet
8.4192
7.9672
0.4520 g. dry
40.05%

90-1256-H2
9.0610
7.9453
1.1157 g. wet
8.3917
7.9453
0.4464 g. dry
40.01%

Core 9 Comp

90-1257-H1
9.0632
8.0257
1.0375 g. wet
8.4452
8.0257
0.4195 g. dry
40.43%

90-1257-H2
9.0519
8.0503
1.0016 g. wet
8.4539
8.0503
0.4036 g. dry
40.30%

Core 10 - T+B (Fusions) (Core Comp.)

3/14/90

90-1277-A1 Ni #13
48.2577
47.6994
0.5583 g. wet

90-1277-A2 Ni #14
51.0732
50.4952
0.5780 g. wet

90-1277-A3
Blank

90-1278-~~A2~~ A1 3/15/90 Ni 15
38.4461
37.8495
0.5966 g. wet

90-1278-A2 Ni #16
41.8120
41.2322
0.5798 g. wet

Core 10 Spl. Distribution

3/15/90

Lab #	Id.	Vol	Dil	Del to:	Act.	Analysis
90-1277-A1	C10-T	11 ml	11 x	A-Cell	1 ml	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-1278-A1	C10-B	11 ml	11 x	A Cell	1	ICP
A2	↓	↓	↓	↓	↓	↓
90-1277-A1	C10-T	20 ml	NONE	309	1.5	GEA
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
90-1278-A1	C10-B	20 ml	NONE	309	1.5	GEA
A2	↓	↓	↓	↓	↓	↓

1 ml 23° DIW
.9998 x = 1.0010 g
1.0008 sx = .0006
1.0012 .08%
1.0013
1.0019
Del. 1.0035 ml

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4/23/90 90-1278-A1 took out 10 more mls. for Rad. Chem.

3/15/90

Core 10, T+B (WT. % Solids)

90-1277-H1		90-1277-H2		
9.0850	8.4626	9.0570	8.4370	IN: 1430, 3/4, 104°C
8.0305	8.0305	8.0067	8.0067	OUT: 1330, 3/5, 105°C
1.0545 g. wet	0.4321 g. Dry	1.0503 g. wet	0.4303 g. Dry	
40.98%		40.97%		

90-1278-H1		90-1278-H2	
9.0305	8.4168	9.1038	8.4557
7.9925	7.9925	8.0073	8.0073
1.0380 g. wet	0.4243 g. Dry	1.0965 g. wet	0.4484 Dry
40.88%		40.89%	

Core 10, COMP (wt. %)

90-1279-H1		90-1279-H2	
9.1165	8.4854	9.0701	8.4261
8.0505	8.0505	7.9811	7.9811
1.0660 g. wet	0.4349 g. Dry	1.0890 g. wet	0.4450 g. Dry

3/16/90

Core 9, COMP. (ICP Acid)

90-1257-A1	90-1257-A2	90-1257-A3	90-1257-A4	90-1257-A5
51.4595	51.5807	51.4156	25.3605 mL B-2 Spike	Blank
50.3598	50.5230	50.4501		
1.0997 g.	1.0577 g.	.9655 g. + 25.3605 mL B-2 Spike		

5 mL Pipet 24° DIW
5.0551 $\bar{x}$ = 5.0594
5.0506 s = .0060
5.0660 RSD = .12%
5.0619
5.0585

Del. = 5.0721 mL

250 Ml. Final Volume with 2% HCL.

3/19/90

Core 10 COMP. (ICP Acid)

90-1279-A1	90-1279-A2	90-1279-A3	90-1279-A4	90-1279-A5
51.2900	51.2654	51.7442 ★	56.1425	BLK.
50.2926	50.3801	50.6086	30.4473	
.9974 g.	.9853 g.	1.1356 g. + 55.5415	25.1952 g. B-2 Spike (25.~~0923~~ mL) .1575 mL RTS 3-27-90	
		30.1875		
		25.3540 g. B-2 Spike (~~25.2530~~ mL) 25.~~1878~~ mL RTS 3-27-90 .3160		

23° DIW
1.0078 71.0041 g
1.0037 .0023
1.0023 .23%
1.0048 DIW = 1.0060 mL
1.0020

SPG = 1.0081 g = ~~1.0041 g/mL~~ 1.0015 g/mL
RTS 3-27-90 1.0060 mL RTS 3-27-90

1.0085 $\bar{x}$ = 1.0081 g
1.0112
1.0085 B-2 Spike
1.0062 23°C
1.0063

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3/19/90

Core A-Comp (ICP Acid)

* Done with CA-T Homogenization Material. (90-714)

90-716-A1	90-716-A2	90-716-A3	90-716-A4	90-716-A5
51.4379	51.1892	51.4661 *	56.4468	BIK
50.4226	50.1240	50.3518	31.1242	
1.0153 g.	1.0652 g.	1.1143 g.	25.3226 g.	
		+	25. ~~2192~~ ml. B-2 spike.	
		52.5405	• ~~1500~~ ml RTS 3-24-90	
		27.0217	• 2847 ml B-2 spg. P. 102.	
		25.5188 g.		
		25. ~~4146~~ ml. B-2 spike.		
		• 4806 RTS 3-24-90		

Core 9-Comp (EOX)

3/20/90

90-1257-F1	90-1257-F2	90-1257-F3
25.1218	25.1049	25.1329
24.1771.	24.1884	24.1827
0.9447 g.	0.9165 g.	0.9502 g.

Core 9-Comp (Semi-vol)

90-1257-E1	90-1257-E2	90-1257-E3
25.1034	25.4106	24.9819
24.1127	24.4294	23.9639
0.9907 g.	0.9812 g.	1.0180 g.

Core 10-Comp (EOX)

90-1279-F1	90-1279-F2	90-1279-F3
~~24.9472~~ 25.4447	25.2840	25.4830
3/20/90 ~~23.9436~~ 24.4309	24.3130	24.4469
1.0138 g.	0.9710 g.	1.0361 g.

Core 10-Comp. (Semi-vol)

90-1279-E1	90-1279-E2	90-1279-E3
24.9472	25.0569	25.3233
23.9436	24.0641	24.2455
1.0036 g.	0.9928 g.	1.0778 g.

3/4, 104°C
3/5, 105°C

7-A5
BNK

24° DIW
5.0594
.0060
.12%

5.0721 ml

-1279-A5
BIK.

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Core A, Core 9, Core 10 Acid Digest.

	Lab #	Id	Vol	Oil	Del To:	ACT.	Analysis
3/21/90	90-1257-A1	C9-comp.	15 ml.	NONE	A-Cell	4 hr	ICP
	A2	↓	↓	↓	↓	↓	↓
	A3						
	A4						
	A5						
	90-1279-A1	C10-comp.	15 ml	NONE	A Cell	6 hr.	ICP
	A2	↓	↓	↓	↓	↓	↓
	A3						
	A4						
	A5						
	90-716-A1	C4-Comp.	15 ml	NONE.	A Cell	10 hr.	ICP
	A2	↓	↓	↓	↓	↓	↓
	A3						
	A4						
	A5						

3/22/90

Core 9. Comp (Acid AA)

90-1257-B1	90-1257-B2	90-1257-B3	90-1257-B4	90-1257-B5
51.2736	51.3838	51.8007	5.054% ml. AAGF-2 spike. (4 RTS 3-30-90)	Blank
50.2346	50.3352	50.7859		
1.0390 g.	1.0486 g.	1.0148 g.		

Core 10-Comp. + 5.054% ml. AAGF-2 spike. (4 RTS 3-30-90)

3/23/90

90-1279-B1	90-1279-B2	90-1279-B3	90-1279-B4	90-1279-B5
51.3446	51.5169	51.4627	5.054% ml. AAGF-2 spike (4 RTS 3-30-90)	Blank.
50.3457	50.4147	50.3585		
0.9989 g.	1.1022 g.	1.1042 g. + 5.054% ml. AAGF-2 spike (4 RTS 3-30-90)		

Core 4-Comp.*

3/26/90

90-716-B1	90-716-B2	90-716-B3	90-716-B4	90-716-B5
51.4894	51.5819	51.1822	5.054% ml AAGF-2 spike (4 RTS 3-30-90)	Blank
50.4833	50.6200	50.1127		
1.0061 g.	0.9619 g.	1.0695 g. + 5.054% ml AAGF-2 spike (4 RTS 3-30-90)		

5 ml. Pipet 23°C DIW

5.0510 5-5.0420 g.
5.0390 5-.0101
5.0420 .2%
5.0353
5.0526

Del. = 5.054% ml (4 RTS 3-30-90)

(used C4-T 90-714)

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3/28/90

Sample Distribution

Lab #	Id.	Vol.	Oil.	Dilu.	Act.	Anal.
90-1257-B1	C9-COMP	15 ml	NONE	303	4 mL/L	AA
B2	↓	↓	↓	↓	↓	↓
B3	↓	↓	↓	↓	↓	↓
B4	↓	↓	↓	↓	↓	↓
B5	↓	↓	↓	↓	↓	↓
90-1279-B1	C10-COMP	15 ml	NONE	303	5	AA
B2	↓	↓	↓	↓	↓	↓
B3	↓	↓	↓	↓	↓	↓
B4	↓	↓	↓	↓	↓	↓
B5	↓	↓	↓	↓	↓	↓
90-714-B1	C4-COMP	15 ml	NONE	303	11	AA
B2	↓	↓	↓	↓	↓	↓
B3	↓	↓	↓	↓	↓	↓
B4	↓	↓	↓	↓	↓	↓
B5	↓	↓	↓	↓	↓	↓

3/30/90

Core 9. COMP (Water Leach)

90-1257-C1	90-1257-C2	90-1257-C3	90-1257-C4	90-1257-C5
131.5458	132.0793	98.2395	100.0000 ml.	117.4666
129.4459	130.0578	97.2374	10.0000 ml	17.2601
2.0799 g.	2.0215 g.	1.0021 g.	A2. SPIKE	100.2065 g. DIW
+	+	+	90.0000 ml. DIW	+
117.0289	122.1665	100.0000		118.8275
16.8875	18.9648	10.0000 ml. A2. SPIKE		18.7316
100.1414 g. DIW	103.2017 g.	90.0000 ml. DIW		100.0959 g. DIW
+				=
121.9902	114.0013			200.3024 g. DIW
20.0728	18.1332			
101.9174 g. DIW	95.8681 g.			
= 202.0588 g. DIW	= 199.0698 g. DIW			

3/30/90 RTS

Pages 93-105 were reviewed for legibility and completeness. Calculations were checked for accuracy of results. Errors found were corrected.

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106 4/3/90

Core 9 Sample Dist.

Lab #	Id	Vol.	Dil.	Del To:	ACT.	Analysis
90-1257-C1	C9-COMP.	20 ml.	NONE	A-Cell	.5	ICP
C2	↓	↓	↓	↓	↓	↓
C5	↓	↓	↓	↓	↓	↓
90-1257-C1	C9-COMP	20 ml.	NONE	400	.5	IC
C2	↓	↓	↓	↓	↓	↓
C3	↓	↓	↓	↓	↓	↓
C4	↓	↓	↓	↓	↓	↓
C5	↓	↓	↓	↓	↓	↓
90-1257-C1	C9-COMP	40 ml.	NONE	313	.7	$Cr(VI)^+ NH_3$
C2	↓	↓	↓	↓	↓	↓
C5	↓	↓	↓	↓	↓	↓
90-1257-C1	C9-COMP	20 ml.	NONE	WHC	.5	Complexant
C2	↓	↓	↓	↓	↓	↓
C5	↓	↓	↓	↓	↓	↓
90-1257-C1	C9-COMP	90 ml.	NONE	309	.9	GEA +
C2	↓	↓	↓	↓	↓	↓
C5	↓	↓	↓	↓	↓	↓

4/9/90

Core 10-COMP (Water Leach)

90-1279-C1	90-1279-C2	90-1279-C3	90-1279-C4	90-1279-C5
132.3842	127.9172	97.2829	90.0 ml. DIW	120.1348
130.3465	125.7413	96.1862	10.0 ml. A2-Spike	18.9617
2.0377 g.	2.1759 g.	1.0967 g.	100.0 ml. vol.	101.1731 g
+	+	+		+
121.5011	118.3265	90.0 ml. DIW		116.0844
17.2947	17.2207	10.0 ml. A2-Spike		16.7770
104.2064 g.	101.1058 g.	100.0 ml vol.		99.3054 g.
+	+			= 200.4785 g DIW
117.9255	117.1520			
19.0090	16.8487			
98.9165 g.	100.3033 g.			
= 203.1229 g. DIW	= 201.4591 g. DIW			

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Core 10_COMP. (Sample Dist)

4/10/90

Lab #	Id	Vol.	Oil.	Del. To:	ACT.	Analysis
90-1279-C1	C10-COMP	20 ml	NONE	A.Cell	<1	ICP
C2	↓	↓	↓	↓	↓	↓
C5	↓	↓	↓	↓	↓	↓
90-1279-C1	C10-COMP	20 ml		WHC	<1	COMPKXDOT
C2	↓	↓	↓	↓	↓	↓
C5	↓	↓	↓	↓	↓	↓
90-1279-C1	C10-COMP	20 ml		400	<1	IC
C2	↓	↓	↓	↓	↓	↓
C3	↓	↓	↓	↓	↓	↓
C4	↓	↓	↓	↓	↓	↓
C5	↓	↓	↓	↓	↓	↓
90-1279-C1	C10-COMP	40 ml		313	<1	Cr(VI) + NH_3
C2	↓	↓	↓	↓	↓	↓
C5	↓	↓	↓	↓	↓	↓
90-1279-C1	C10-COMP	90 ml		309	<1	GEA+
C2	↓	↓	↓	↓	↓	↓
C5	↓	↓	↓	↓	↓	↓

Core 1_COMP. (Fusion Re-check)

4/12/90

90-2949-A1 Ni #21		90-2949-A2 Ni #22		90-2949-A3
42.5086	42.2038	39.5365	39.2480	BLANK
41.8512	41.8512	38.8716	38.8716	
0.6574 g. wet	0.3526 g. dry	0.6649 g. wet	0.3764 g. dry	

Core 9_Seg 3 (ICP Acid Digestion)

4/13/90

90-1275-A1	90-1275-A2	90-1275-A3	90-1275-A4	90-1275-A5
51.3896	51.6849	51.1783	55.1899	BLANK
50.3832	50.6161	50.0828	30.1320	
1.0064 g.	1.0688 g.	1.0955 g.	25.0579 g.	
		+ 55.0044	25.0229 ml. B2.spike	
		29.8472		
		25.1572 g.		
		25.1220 ml. B2.spike		

1 ml. H2O 23° DIW
1.0045 x̄ = 1.0042
1.0072 s = .0020
1.0032 .2%
1.0043
1.0019 Delta 1.0067 ml.

1.0085 x̄ = 1.0081 g
1.0112
1.0085 B2-Spike
1.0062
1.0063 23°C

$$SPg = \frac{1.0081}{1.0067} = \boxed{1.0014\ g/ml}$$

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4/16/90

Core 1 Sample Dist.

Lab #	Id	Vol	Dil.	Del. To:	ACT.	Analysis
90-2949-A1	C1-COMP	11 ml	11x	A-Cell	2	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	0	↓

4/16/90

Core 9 - Seg. 5 (Acid Digestion, ICP)

90-1276-A1	90-1276-A2	90-1276-A3	90-1276-A4	90-1276-A5
51.1236	51.4115	51.4302 *	55.5253	BLANK
50.0438	50.3634	50.3661	30.4531	
1.0798 g.	1.0481 g.	1.0641 g.	25.0722 g.	
		+ 56.2147	25.0371 ml. B2-Spike	
		31.0633		
		25.1514 g.		
		25.1162 ml. B2-Spike		

4/17/90

Core 9 ~~and Core 10~~ 4/17/90 Sample Dist.

Lab #	Id	Vol	Dil	Del To:	ACT	Analysis
90-1275-A1	C9-Seg 3	10 ml	NONE	A-Cell	<.5	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
A4	↓	↓	↓	↓	↓	↓
A5	↓	↓	↓	↓	↓	↓
90-1276-A1	C9-Seg 5	10 ml	NONE	ACell	<.5	ICP
A2	↓	↓	↓	↓	↓	↓
A3	↓	↓	↓	↓	↓	↓
A4	↓	↓	↓	↓	↓	↓
A5	↓	↓	↓	↓	↓	↓

* I have observed that the A3 sample (Spike + Sample) consistently takes longer to filter than any of the other samples

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4/20/90

Core 9 and 10 (WT % Solids)

in: 4/19/90 0830, 104°C

90-1275-C1		90-1275-C2	
9.0969	8.5115	9.0055	8.4354
8.1193	8.1193	8.0368	8.0368
0.9776 g. wet	0.3922 g. dry	0.9687 g. wet	0.3886 g. dry
40.12%		40.12%	

out: 4/20/90 1300, 105°C

90-1276-C1		90-1276-C2	
9.1562	8.5724	9.1875	8.5888
8.1341	8.1341	8.1390	8.1390
1.0221 g. wet	0.4383 g. dry	1.0485 g. wet	0.4498 g. dry
42.88%		42.90%	

90-1280-C1		90-1280-C2	
9.1661	8.5297	9.3645	8.7271
9.0964	8.0964	8.2918	8.2918
1.0697 g. wet	0.4333 g. dry	1.0727 g. wet	0.4353 g. dry
40.51%		40.58%	

90-1281-C1		90-1281-C2	
9.1328	8.5226	9.4629	8.8610
8.0679	8.0679	8.4110	8.4110
1.0649 g. wet	0.4547 g. dry	1.0519 g. wet	0.4500 g. dry
42.70%		42.78%	

4/23/90

Core 9, Seg 3 (Water Leach)

90-1275-B1	90-1275-B2	90-1275-B3	90-1275-B4	90-1275-B5
94.3780	92.1866	95.2645	100.00	BLANK
93.3672	91.1630	94.2321	10.00 ml. A2-Spike	119.4874
1.0108 g.	1.0236 g.	1.0324 g.	90.00 ml. DIW	18.8455
+	+	+		100.6419 g DIW
117.9172	120.0609	100.0000		
16.8280	18.8603	10.0 ml. A2-Spike		
101.0892 g. DIW	101.2006 g. DIW	90.0 ml. DIW		

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4/23/90

4/19/90
,104°C

4/20/90
105°C

Core 9, Seg. 15 (Water Leach)

90-1276-B1	90-1276-B2	90-1276-B3	90-1276-B4	90-1276-B5
93.3917	95.4418	98.0604	100.00	117.8617
92.3515	94.4165	97.0375	10.00 ml. A2. Spike	17.0718
1.0402 g.	1.0253 g.	1.0229 g.	90.00 ml. DIW	100.7899 g. DIW
+	+	+		
117.0017	120.0030	100.00		
16.8454	18.8322	10.00 ml. A2. Spike		
100.1563 g. DIW	101.1708 g. DIW	90.00 ml. DIW		

4/24/90

Core 9 Sample Distribution

Lab #	Id	Vol	Dil	Delto:	ACT.	Anal.
90-1275-B1	C9-Seg3	15 ml	NONE	400	<1	IC, TC
B2	↓	↓	↓	↓	↓	↓
B3	↓	↓	↓	↓	↓	↓
B4	↓	↓	↓	↓	↓	↓
B5	↓	↓	↓	↓	↓	↓
90-1276-B1	C9-Seg5	15 ml	NONE	400	<1	IC, TC
B2	↓	↓	↓	↓	↓	↓
B3	↓	↓	↓	↓	↓	↓
B4	↓	↓	↓	↓	↓	↓
B5	↓	↓	↓	↓	↓	↓

4/26/90

Core 10, Seg. 3 (Water Leach)

90-1280-B1	90-1280-B2	90-1280-B3	90-1280-B4	90-1280-B5
92.8243	95.9580	95.4965	100.00	117.1769
91.8102	94.9524	94.4254	10.00 ml. #2. Spike	16.7898
1.0141 g.	1.0056 g.	1.0711 g.	90.00 ml. DIW	100.3871 g. DIW
+	+	+		
117.1643	118.7173	100.00		
16.7960	18.0977	10.00 ml. #2. Spike		
100.3683 g. DIW	100.6196 g. DIW	90.00 ml. DIW		

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4/27/90

Core 10-Seg 5 (Water Leach)

90-1281-B1	90-1281-B2	90-1281-B3	90-1281-B4	90-1281-B5
96.0315	97.2776	93.7460	100.00	117.4962
94.9942	96.2701	92.7111	10.00 ml H2O spike	16.9909
1.0373 g	1.0075 g	1.0349 g	90.00 ml DIW	100.4953 g DIW
+	+	+		
118.8629	116.8573	100.00		
17.7306	16.8195	10.00 ml H2O spike		
101.1323 g DIW	100.0378 g DIW	90.00 ml DIW		

4/27/90

pH Determinations on H_2O Leachates

SAMPLE			Obs pH
110B-C4-AN	90-0716	C1	7.71
		C2	7.83
		C5	5.63
110B-C9-AN	90-1257	C1	8.00
		C2	7.81
		C5	5.79
110B-C9-3UD	90-1275	B1	8.56
		B2	7.91
		B5	5.31
110B-C9-5UD	90-1276	B1	8.14
		B2	8.18
		B5	5.72
110B-C-10-AN	90-1279	B1	7.88
		C2	8.33
		C5	5.82
110B-C-10-3UD	90-1280	B1	9.00
		B2	8.86
		B5	6.00
110B-C10-5UD	90-1281	B1	8.48
		B2	8.46
		B5	6.22

CALib check points
pH 7, pH 10
pH 7 Lot 890039-24 Exp. JAN 1991
pH 10 Lot 890125-24 Exp JAN 1991

Buffer recheck values
pH 7 = 7.25
pH 10 = 9.98

COPIED FOR PNL RECORDS CENTER APR 30 '90
BNW LABORATORY NOTEBOOK NO. 52917

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

C5 - PERCENT SOLIDS DATA

PERCENT SOLIDS DATA FORM

DATE 3/13/90 SAMPLE ID # 90-1255-H1

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.0367

Tare Wt.: 8.0157

Wet Sample Wt: = 1.0210 g.

Time/Date into Oven: 1130 3/12 Oven Temp: 104 °C

Time/Date out Oven: 0830 3/13 Oven Temp: 104 °C

Tare Wt. + Dry Sample: 8.4260

Tare Wt.: 8.0157

Dry Sample Wt.: 0.4103 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 40.19 %

PERCENT SOLIDS DATA FORM

DATE 3/13/90 SAMPLE ID # 90-1255-H2

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.0360

Tare Wt.: 8.0520

Wet Sample Wt: = 0.9840 g.

Time/Date into Oven: 1130 3/12 Oven Temp: 104 °C

Time/Date out Oven: 0830 3/13 Oven Temp: 104 °C

Tare Wt. + Dry Sample: 8.4477

Tare Wt.: 8.0520

Dry Sample Wt.: 0.3957 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 40.21 %

PERCENT SOLIDS DATA FORM

DATE 3/13/90 SAMPLE ID # 90-1256-H1

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.0958

Tare Wt.: 7.9672

Wet Sample Wt: = 1.1286 g.

Time/Date into Oven: 1130 3/12 Oven Temp: 104 °C

Time/Date out Oven: 0830 3/13 Oven Temp: 104 °C

Tare Wt. + Dry Sample: 8.4192

Tare Wt.: 7.9672

Dry Sample Wt.: 0.4520 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 40.05 %

PERCENT SOLIDS DATA FORM

DATE 3/13/90 SAMPLE ID # 90-1256-H2

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.0610

Tare Wt.: 7.9453

Wet Sample Wt: = 1.1157 g.

Time/Date into Oven: 1130 3/12 Oven Temp: 104 °C

Time/Date out Oven: 0830 3/13 Oven Temp: 104 °C

Tare Wt. + Dry Sample: 8.3917

Tare Wt.: 7.9453

Dry Sample Wt.: 0.4464 g.

$$\% \text{ Solids} = \frac{(\text{Dry Sample Wt.})}{(\text{Wet Sample Wt.})} \times 100\%$$

% Solids = 40.01 %

PERCENT SOLIDS DATA FORM

DATE 3/13/90 SAMPLE ID # 90-1257-H1

ANALYST [illegible] REVIEWER RTS

Tare Wt. + Wet Sample: 9.0632

Tare Wt.: 8.0257

Wet Sample Wt: = 1.0375 g.

Time/Date into Oven: 1130 3/12 Oven Temp: 104 °C

Time/Date out Oven: 0830 3/13 Oven Temp: 104 °C

Tare Wt. + Dry Sample: 8.4452

Tare Wt.: 8.0257

Dry Sample Wt.: 0.4195 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 40.43 %

PERCENT SOLIDS DATA FORM

DATE 3/13/90 SAMPLE ID # 90-1257-H2

ANALYST [illegible] REVIEWER RTS

Tare Wt. + Wet Sample: 9.0519

Tare Wt.: 8.0503

Wet Sample Wt: = 1.0016 g

Time/Date into Oven: 1130 3/12 Oven Temp: 104 °C

Time/Date out Oven: 0830 3/13 Oven Temp: 104 °C

Tare Wt. + Dry Sample: 8.4539

Tare Wt.: 8.0503

Dry Sample Wt.: 0.4036 g

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 40.30 %

Core 9

PERCENT SOLIDS DATA FORM

DATE 4/20/90 SAMPLE ID # 90-1275-C1

ANALYST [illegible] REVIEWER RTS

Tare Wt. + Wet Sample: 9.0969

Tare Wt.: 8.1193

Wet Sample Wt: = 0.9776 g.

Time/Date into Oven: 0830 4/19 Oven Temp: 104 °C

Time/Date out Oven: 1300 4/20 Oven Temp: 105 °C

Tare Wt. + Dry Sample: 8.5115

Tare Wt.: 8.1193

Dry Sample Wt.: 0.3922 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 40.12 %

Core 9

PERCENT SOLIDS DATA FORM

DATE 4/20/90 SAMPLE ID # 90-1275-C2

ANALYST [illegible] REVIEWER RTS

Tare Wt. + Wet Sample: 9.0055

Tare Wt.: 8.0368

Wet Sample Wt: = 0.9687 g.

Time/Date into Oven: 0830 4/19 Oven Temp: 104°C

Time/Date out Oven: 1300 4/20 Oven Temp: 105°C

Tare Wt. + Dry Sample: 8.4254

Tare Wt.: 8.0368

Dry Sample Wt.: 0.3886 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 40.12 %

Core 9

PERCENT SOLIDS DATA FORM

DATE 4/20/90 SAMPLE ID # 90-1276-C1

ANALYST [illegible] REVIEWER RTS

Tare Wt. + Wet Sample: 9.1562

Tare Wt.: 8.1341

Wet Sample Wt: = 1.0221 g.

Time/Date into Oven: 0830 4/19 Oven Temp: 104 °C

Time/Date out Oven: 1300 4/20 Oven Temp: 105 °C

Tare Wt. + Dry Sample: 8.5724

Tare Wt.: 8.1341

Dry Sample Wt.: 0.4383 g

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 42.88 %

Core 9

PERCENT SOLIDS DATA FORM

DATE 4/20/90 SAMPLE ID # 90-1276-C2

ANALYST [illegible] REVIEWER RTS

Tare Wt. + Wet Sample: 9.1825

Tare Wt.: 8.1390

Wet Sample Wt: = 1.0485 g.

Time/Date into Oven: 0830 4/19 Oven Temp: 104 °C

Time/Date out Oven: 1300 4/20 Oven Temp: 105 °C

Tare Wt. + Dry Sample: 8.5888

Tare Wt.: 8.1390

Dry Sample Wt.: 0.4498 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 42.90 %

PERCENT SOLIDS DATA FORM

DATE 2/15/90 SAMPLE ID # 90-304-H1

ANALYST [illegible] REVIEWER TS

Tare Wt. + Wet Sample: 9.1263

Tare Wt.: 8.0729

Wet Sample Wt: = 1.0534 g.

Time/Date into Oven: 0915 2/14 Oven Temp: 104°C

Time/Date out Oven: 0830 2/15 Oven Temp: 104°C

Tare Wt. + Dry Sample: 8.5168

Tare Wt.: 8.0729

Dry Sample Wt.: 0.4439 g.

$$\% \text{ Solids} = \frac{(\text{Dry Sample Wt.})}{(\text{Wet Sample Wt.})} \times 100\%$$

% Solids = 42.14 %

PERCENT SOLIDS DATA FORM

DATE 2/15/90 SAMPLE ID # 90-304-H2

ANALYST [illegible] REVIEWER RTS

Tare Wt. + Wet Sample: 9.0313

Tare Wt.: 8.0209

Wet Sample Wt: = 1.0104 g.

Time/Date into Oven: 0915 2/14 Oven Temp: 104 °C

Time/Date out Oven: 0830 2/15 Oven Temp: 104 °C

Tare Wt. + Dry Sample: 8.4449

Tare Wt.: 8.0209

Dry Sample Wt.: 0.4240 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 41.96 %

PERCENT SOLIDS DATA FORM

DATE 2/15/90 SAMPLE ID # 90-305-H1

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.1331

Tare Wt.: 8.1324

Wet Sample Wt: = 1.0007 g.

Time/Date into Oven: 0915 2/14 Oven Temp: 104°C

Time/Date out Oven: 0830 2/15 Oven Temp: 104°C

Tare Wt. + Dry Sample: 8.5528

Tare Wt.: 8.1324

Dry Sample Wt.: 0.4204 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 42.01 %

PERCENT SOLIDS DATA FORM

DATE 2/15/90 SAMPLE ID # 90-305-#2

ANALYST [illegible] REVIEWER RES

Tare Wt. + Wet Sample: 8.9983

Tare Wt.: 7.9751

Wet Sample Wt: = 1.0232 g.

Time/Date into Oven: 0915 2/14 Oven Temp: 104°C

Time/Date out Oven: 0830 2/15 Oven Temp: 104°C

Tare Wt. + Dry Sample: 8.4047

Tare Wt.: 7.9751

Dry Sample Wt.: 0.4296 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 41.99 %

PERCENT SOLIDS DATA FORM

DATE 2-14-90 SAMPLE ID # 90-300-H1

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.0186

Tare Wt.: 7.9925

Wet Sample Wt: = 1.0261 g.

Time/Date into Oven: 0930 2/13 Oven Temp: 105°C

Time/Date out Oven: 0800 2/14 Oven Temp: 105°C

Tare Wt. + Dry Sample: 8.3946

Tare Wt.: 7.9925

Dry Sample Wt.: 0.4021 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 39.19 %

PERCENT SOLIDS DATA FORM

DATE 2-14-90 SAMPLE ID # 90-300-H2

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.0428

Tare Wt.: 8.0445

Wet Sample Wt: = 0.9983 g.

Time/Date into Oven: 0930 2/13 Oven Temp: 105°C

Time/Date out Oven: 0800 2/14 Oven Temp: 105°C

Tare Wt. + Dry Sample: 8.4368

Tare Wt.: 8.0445

Dry Sample Wt.: 0.3923 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 39.30 %

PERCENT SOLIDS DATA FORM

DATE 2/14/90 SAMPLE ID # 90.301-H1

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.3340

Tare Wt.: 8.2649

Wet Sample Wt: = 1.0691 g.

Time/Date into Oven: 0930 2/13 Oven Temp: 105-°C

Time/Date out Oven: 0800 2/14 Oven Temp: 105-°C

Tare Wt. + Dry Sample: 8.6837

Tare Wt.: 8.2649

Dry Sample Wt.: 0.4188

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 39.17 %

PERCENT SOLIDS DATA FORM

DATE 2/14/90 SAMPLE ID # 90-301-H2

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.1426

Tare Wt.: 8.0817

Wet Sample Wt: = 1.0609 g.

Time/Date into Oven: 0930 2/13 Oven Temp: 105°C

Time/Date out Oven: 0800 2/14 Oven Temp: 105°C

Tare Wt. + Dry Sample: 8.4968

Tare Wt.: 8.0817

Dry Sample Wt.: 0.4151 g.

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 39.13 %

C6 - pH DATA

pH Form for SST

Date: 4-27-90

Analyst: RTS

Reviewer: S.V. [illegible]

Calibration check points: 7 / 10

Buffer lot number: 890039-24 / 890125-24

Buffer exp. date: JAN 1991 / JAN 1991

325A number	ALO number	Obs. pH
110B-C4-AN	90-0716 C1	7.71
"	C2	7.83
"	C5	5.63
110B-C9-AN	90-1257 C1	8.00
"	C2	7.81
"	C5	5.79
110B-C9-3UD	90-1275 B1	8.56
"	B2	7.91
"	B5	5.31
110B-C9-5UD	90-1276 B1	8.14
"	B2	8.18
"	B5	5.72
110B-C10-AN	90-1279 C1	7.88
"	C2	8.33
"	C5	5.82
–	–	–
–	–	–

C06-001

pH Form for SST

Date: 4-27-90

Analyst: RJS

Reviewer: [illegible]

Calibration check points: 7 / 10

Buffer lot number: 890039-24 / 890125-24

Buffer exp. date: Jan. 1991 / Jan. 1991

325A number	ALO number	Obs. pH
110B-C10-3VD	90-1280 B1	9.00
"	B2	8.86
"	B5	6.00
110B-C10-5VD	90-1281 B1	8.48
"	B2	8.46
"	B5	6.22