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Accession #: D196038119

Document #: SD-WM-DP-157

Title/Desc:
FINAL REPORT FOR TANK 241BX112 AUGER SAMPLES
95-AUG-047 & 95-AUG-048

Pages: 85

COMPLETE

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 629011

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	3a. USQ Required?	4. Date
Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	John M. Conner, Data Assessment & Interpretation/R2-12/373-2711	[] Yes [X] No	02-15-96
	5. Project Title/No./Work Order No. Tank 241-BX-112	6. Bldg./Sys./Fac. No. NA	7. Approval Designator Q
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-DP-157, REV. 0	9. Related ECN No(s). NA	10. Related PO No. NA

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	NA	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

This ECN is being generated in order to update/add additional information to the existing document.

13a. Justification (mark one)

Criteria Change	[X]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

This ECN will assist in the completion of the documentation process for this document.

14. Distribution (include name, MSIN, and no. of copies)

See Attached Distribution Sheet.

RELEASE STAMP

DATE: HANFORD RELEASE

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FEB 29 1996

A-7900-013-2 (11/94) GEF095

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 629011

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
NA		

20. Approvals

	Signature	Date		Signature	Date
OPERATIONS AND ENGINEERING			ARCHITECT-ENGINEER		
Cog. Eng. J. M. Conner	J.M. Conner	2/27/96	PE		
Cog. Mgr. J. G. Kristofzski	John Kristofzski	2/27/96	QA		
AEQA E. W. Miller	E.W. Miller	2/27/96	Safety		
QA T. L. Tung	Tom L. Tung	2/27/96	Design		
Environ.			Environ.		
Other			Other		
Production Planning & Control A. D. Rice		2-27-96			
R.D. Schreiber	Ruth D. Schreiber	2/29/96			
			DEPARTMENT OF ENERGY		
			Signature or a Control Number that tracks the Approval Signature		
			ADDITIONAL		

"FINAL REPORT FOR TANK 241-BX-112, AUGER SAMPLES 95-AUG-047 AND 95-AUG-048."

John M. Conner
Westinghouse Hanford Company, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

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RECORD OF REVISION

(1) Document Number: WHC-SD-WM-DP-157

Page 1

(2) Title: FINAL REPORT FOR TANK 241-BX-112, AUGER SAMPLES 95-AUG-047 AND 95-AUG-048

CHANGE CONTROL RECORD

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0	(7) Initially released on 12/07/95 per EDT-613475	J. M. Conner	J. G. Kristofzski
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		[illegible]	[illegible] 2-27-96

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-157, REV. 1

ANALYTICAL SERVICES

FINAL REPORT FOR TANK 241-BX-112, AUGER SAMPLES 95-AUG-047 AND 95-AUG-048

Project Coordinator: JOHN M. CONNER

Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management

by

Westinghouse Hanford Company
Box 1970
Richland, Washington

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NARRATIVE

FINAL REPORT FOR TANK 241-BX-112, AUGER SAMPLES 95-AUG-047 AND 95-AUG-048

ANALYTICAL SUMMARY

Two auger samples were taken from tank 241-BX-112 (BX-112). The samples were received at the 222-S Laboratories and underwent safety screening analyses, consisting of differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), bulk density, and determination of total alpha activity. As appropriate, the results were compared to the safety screening limits at a confidence level of 95%. All analytical results were within the action limits stated in the SAP.

Based on the results of vapor monitoring prior to sampling, the BX-112 vapor space is far below the lower explosive limit (LEL). None of the data indicate that the tank is "unsafe" when compared to the criteria (energetics, criticality, and flammability) in the *Tank Safety Screening Data Quality Objective* (Dukelow, et al., 1995). However, the tank cannot be declared "safe," as two full length profiles were not obtained by auger sampling. Core sampling will be necessary to fully satisfy the DQO.

SCOPE

This document serves as the final report deliverable for the tank BX-112 auger samples collected on November 16 and 17, 1995 (samples 95-AUG-047 and 95-AUG-048). The 222-S Laboratories received, extruded, and analyzed each sample in accordance with the SAP [1]. This report is broken into two parts. Part I contains the revised narrative, final data tables, copies of the sample chain-of-custody sheets, photographs of the extruded augers, and all raw data not included in the original reoport. Part II consists of the original 45-day safety screening report (which includes the DSC and TGA raw data).

TANK DOME SPACE FLAMMABILITY SCREENING

Prior to auger sampling, the vapor space of tank BX-112 was screened for flammability issues. The results of combustible gas monitoring inside riser 3 of tank BX-112 are presented in Table 1. This measurement is conducted in the field and recorded in the work package (work package for BX-112 auger sampling is #ES-95-00217). The results indicated that the tank vapor space was at 0% of the LEL, far below the action limit of 10% stated in the DQO [2].

Table 1. Characteristics of BX-112 Vapor Space as Determined by Combustible Gas Monitoring.

Measurement	Result
Lower Explosive Limit (LEL)	0%
Oxygen (O_2)	20.9%
Total Organic Carbon (TOC)	11.3 ppm
Ammonia (NH_3)	125 ppm

SAMPLE RECEIPT, EXTRUSION, AND SUBSAMPLING

95-AUG-047

Auger sample 95-AUG-047 was collected from riser 3 of tank BX-112 on November 16, 1995. and extruded on November 21, 1995. This was a 50 cm (20 inch) auger sampler, with 39 flutes (this was the first time that this auger was used. It has twice as many flutes as the typical auger). The sample appeared fairly homogeneous. The waste was a very wet, light-brown sludge, which tended to drip from the auger onto the extrusion tray. Flutes 1-8 at the top of the auger were bare. The material on flutes 9-16 appeared slightly less wet than the lower portion of the sample. The material on flutes 9-16, totaling 45.8 grams, was segregated as the upper half-segment solids. Flutes 17-39 contained lumpy sludge (lumps disappeared upon subsampling). A total of 165.2 grams was subsampled as the lower half-segment solids. The half segment subsamples were homogenized and subsampled for further laboratory analyses, bulk density determination, and archiving.

95-AUG-048

Auger sample 95-AUG-048 was collected from riser 2 of Tank BX-112 on November 17, 1995, and extruded on November 21. This was a 50 cm (20 inch) auger sampler, with 19 flutes. The sample appeared to be a homogeneous, medium-brown, very wet sludge. Flutes 1-6 were bare. The sample was recovered on flutes 7-19, and mostly dripped off of the auger onto the extrusion tray. Due to the apparent length of the sample recovered [30 cm (12 inches)], the moderate-to-low recovery (81.3 g), and the apparent homogeneity, the sample was not subsampled into half segments, but homogenized at the whole-segment level. Portions were then subsampled for bulk density determination and further laboratory analyses and archiving.

ANALYTICAL RESULTS

BULK DENSITY

Three subsamples were submitted for bulk density determination by centrifugation in a tared, graduated, vial per procedure LA-160-103, Rev. A-7. The results ranged from 1.31 to 1.35 g/cm^3. These results are presented in the summary tables. In order to conserve sample, duplicate analyses were not conducted.

THERMOGRAVIMETRIC ANALYSIS (TGA)

Three samples were submitted for moisture content determination by TGA per procedures LA-560-112, Rev. B-2, or LA-514-114, Rev. C-1 (a different procedure is used for each instrument). The samples were analyzed in duplicate. The results are presented in the summary tables, and the raw data scans are attached. All results were between 55.59 and 65.50 percent moisture. The relative percent difference (RPD) between sample and duplicate results for sample S95T003746 was 11.4%, which slightly exceeded the criterion

of less than 10% given in the SAP. Inspection of the raw data (attached) indicates that the sample and duplicate scans are similar in shape, except that the weight loss for the sample result appears to begin at approximately 100 °C, instead of at ambient temperature. The chemist attributed this to static charge holding the sample tray to the side of the furnace [3]. Once the static charge was overcome, the weight loss scan appears very similar in shape to to the scan of the duplicate sample (although the endpoint differs by almost 7 weight percent). The sample was rerun in duplicate. The RPD for the rerun was 1.71%. Both the original results and the results of the rerun are included in the summary tables. The results of the rerun are noted by a "1" next to the sample number.

DIFFERENTIAL SCANNING CALORIMETRY (DSC)

Three samples were submitted for determination of energetics by DSC per procedure LA-514-113, Rev. C-1 or procedure LA-514-114, Rev. C-1. The samples were analyzed in duplicate. The results are presented in the summary tables, and the raw data scans are attached. None of the samples exhibited exotherms. Since none of the samples exhibited any exotherms, the statistical calculation of an upper 95% confidence level for each sample is unnecessary.

ALPHA TOTAL

Three solids samples were submitted for total alpha analysis per procedure LA-508-101, Rev. D-2. The samples were fused per procedure LA-549-141, Rev. D-0 prior to analysis. Two fusions were prepared per sample (for duplicate results). Each fused dilution was analyzed twice; the results were averaged and reported as one value. The highest result returned was 0.219 μCi/g, more than two orders of magnitude below the action limit of 41 μCi/g. The upper 95% confidence level for each sample has been calculated and is presented in Table 2. All of the adjusted results are far below the action limit of 41 μCi/g stated in the SAP. The RPD for sample S95T003751 was 22.3%. However, no rerun was deemed necessary, as the 95% confidence limit upper value for this sample was 0.336 μCi/g, far below the action limit of 41 μCi/g.

The alpha results reported by the lab are calculated assuming a density of 1.5 g/cm^3 for solid samples. As the bulk density results recorded for these samples are all below 1.5 g/cm^3, the alpha results reported remain conservative per the calculation described in the SAP [1].

One of the two standards run with these samples exhibited a recovery slightly outside the range specified in the SAP (110.2%). Since the result was so close to being within range, and the sample results were far below the limit, a rerun was deemed unnecessary. This result was well within the method control limits of 72.3-125.9%. All quality control results are presented in the summary tables.

Table 2. Comparison of Total Alpha Results at a Confidence Level of 95%. (All units in μCi/g).

Sample Description/ Sample Number	Sample Result	Duplicate Result	Mean	Var(Mean)	Upper 95% Confidence Limit
AUG-047 UH S95T003747	0.187	0.178	0.182	2.025E-05	0.211
AUG-047 LH S95T003751	0.175	0.219	0.197	4.84E-04	0.336
AUG-048 WS S95T003755	0.183	0.170	0.176	4.23E-05	0.218
AUG-047, AUG-048 combined	-	-	0.183 (weighted mean)	5.12E-05	0.228

Notes: var(mean) - variance of the mean; UH - upper half;
LH - lower half; WS - whole segment;
weighted mean - average for each auger given equal weight

REFERENCES

[1] J. M. Conner, *Tank 241-BX-112 Auger Sampling and Analysis Plan*, WHC-SD-WM-TSAP-051, Rev. 0A, Westinghouse Hanford Company, Richland, Washington, November 15, 1995.

[2] G. T. Dukelow, et al., *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, Washington, August 31, 1995.

[3] Personal Communication with B. D. Valenzuela, December 1, 1995.

SAMPLE DATA SUMMARY

Final Report for Auger Samples 95-AUG-047/048, Tank BX-112
BX-112

CORE NUMBER: 95-AUG-047, 95-AUG-048
SEGMENT #: 95-AUG-047

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003745			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.350	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T003746	1		% Water by TGA on Perkin Elmer	%	None	None	101.0	n/a	60.72	61.77	61.25	1.71	n/a	n/a	n/a
S95T003746			% Water by TGA on Perkin Elmer	%	None	None	100.5	n/a	55.59	62.30	58.95	11.4	n/a	n/a	n/a
S95T003746			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+01	480.0	99.96	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003746			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+01	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003747	F		Alpha of Digested Solid	uCi/g	-1.0e+01	41.01	92.97	<4.33e-03	1.87e-01	1.78e-01	1.82e-01	4.93	n/a	5.47e-03	8.30E+00

L Lower Half of Segment: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003749			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.310	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T003750			% Water by TGA on Perkin Elmer	%	None	None	100.5	n/a	63.37	63.52	63.45	0.24	n/a	n/a	n/a
S95T003750			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+01	480.0	99.96	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003750			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+01	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003751	F		Alpha of Digested Solid	uCi/g	-1.0e+01	41.01	110.2	<3.12e-03	1.75e-01	2.19e-01	1.97e-01	22.3	98.47	3.80e-03	8.51E+00

=> Limit violated
=> Selected Limit

Final Report for Auger Samples 95-AUG-047/048, Tank BX-112
BX-112

CORE NUMBER: 95-AUG-047, 95-AUG-048
SEGMENT #: 95-AUG-048

SEGMENT PORTION: W Whole Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003753			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.310	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T003754			% Water by TGA using Mettler	%	None	None	100.5	n/a	65.42	65.50	65.46	0.12	n/a	n/a	n/a
S95T003754			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+01	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003754			DSC Exotherm using Mettler	Joules/g	-1.0e+01	480.0	92.44	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003755		F	Alpha of Digested Solid	uCi/g	-1.0e+01	41.01	92.97	<4.24e-03	1.83e-01	1.70e-01	1.76e-01	7.37	n/a	4.98e-03	7.73E+00

=> Limit violated
=> Selected Limit

CHAIN OF CUSTODY FORMS

WHC-SD-WM-DP-157, REV. 1

CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

(1) Shipment Number 200W-OB-TF (2) Sample Number 95-Aug-047 (3) Supervisor B. Peazwik

(4) Tank BX-112 (5) Riser 3 (6) Cask Serial Number 216

Radiation Survey Data:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	1mR@C	1mr/hr at C
Side Dose Rate	8mR@C	10mr/hr at C
Bottom Dose Rate	5mR@C	3mr/hr at C
Smearable Contamination	<20 (Alpha)	<20dpm/100cm² (Alpha)
	<1000 (Beta-Gamma)	<1000dpm/100/cm² (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description

A. Work Package Number	ES-95-00217/0
B. Cask Seal Number	~~216~~ 1662
C. Date and Time Sample Removed from Tank	11/16/95 1130AM
D. Expected Liquid Content	10%
E. Expected Solid Content	90%
F. Dose Rate Through Drill String	250mR/hr
G. Expected Sample Length	15"

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

10

BEST AVAILABLE COPY

(10) Field Comments

(32) Laboratory Comments

COPY

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
BX-112	222	Bob Peazwik	11/17/95 1320	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
Bob Peazwik		James Flaherty	11-17-95/1322	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
James Flaherty		N LAPIERS	11-17-95/1570	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(28) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
☐ No	☒ Yes ☐ No	Shipment No. ☒ Yes ☐ No	Cask Seal No. ☒ Yes ☐ No	Sample No. ☒ Yes ☐ No

002 509 373 1432 10:07 02/27/96

WHC-SD-WM-DP-157, REV. 1 3/26/96

CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

Shipment Number 200W-08-TF (2) Sample Number 95-Aug-048 (3) Supervisor B. Prazniik

Tank BX-112 (5) Riser 2 (6) Cask Serial Number C-1016

Station Survey Data:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	<0.5mR/hr	<0.5mr/hr
Side Dose Rate	2.5mR/hr	4.5mr/hr
Bottom Dose Rate	2.5mR/hr	2.8mr/hr
Smearable Contamination	<20 (Alpha)	<20dpm 100/cm² (Alpha)
	<1000 (Beta-Gamma)	<1000dpm 100/cm² (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description

A. Work Package Number	ES-95-00217/0
B. Cask Seal Number	1663
C. Date and Time Sample Removed from Tank	11/17/95 1117
D. Expected Liquid Content	10%
E. Expected Solid Content	90%
F. Dose Rate Through Drill String	150mR/hr
G. Expected Sample Length	15"

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

BEST AVAILABLE COPY

11

(9) Field Comments

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
SX-112	222S	B. Prazniik	11/17/95 1325	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
B. Prazniik		James Fuchatly	11-17-95/1430	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
James Fuchatly		N LAPIERS	11-17-95/1530	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

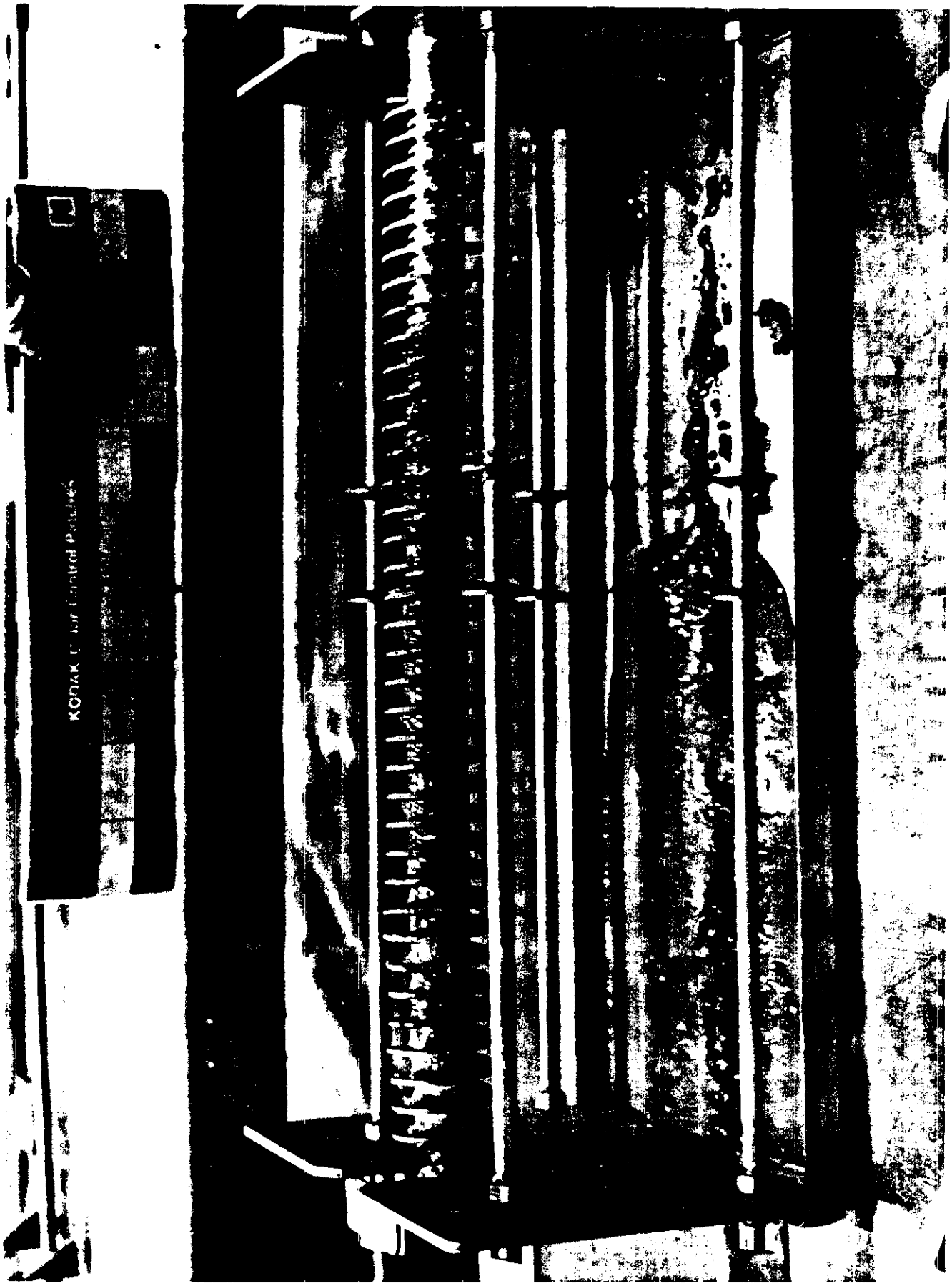
(28) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
☐ No	☑ Yes ☐ No	Shipment No. ☑ Yes ☐ No	Cask Seal No. ☑ Yes ☐ No	Sample No. ☑ Yes ☐ No

RC-6001-326 (03/94)

PHOTOGRAPHS

11-21-95

BX-112 95-AUG-047



11-21-95

BX-112 95-AUG-048

SAMPLE HANDLING

LABCORE Data Entry Template for Worklist# 3662

Analyst: EC **Instrument:** BA000 **Book #** NA

Method: LO-160-103 Rev/Mod A-7

Worklist Comment: BX-112 95-AUG-047 RISER 3 EXTRUSION

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	INSTCHK01				EXTRUD01	SOLID	20	19.99	N/A	
		2	INSTCHK02				EXTRUD01	SOLID	500	499.69	N/A	
95000202	BX-112	3	SAMPLE	S95T003743	0		DLIQVOL1	SOLID	N/A	0		mL
95000202	BX-112	4	SAMPLE	S95T003743	0		DLIQWT01	SOLID	N/A	0		g
95000202	BX-112	5	SAMPLE	S95T003743	0		EST.G/ML	SOLID	N/A	0		g/mL
95000202	BX-112	6	SAMPLE	S95T003743	0		EXTRUD01	SOLID	N/A	complete		
95000202	BX-112	7	SAMPLE	S95T003743	0		LLIQWT01	SOLID	N/A	<5		g
95000202	BX-112	8	SAMPLE	S95T003743	0		NOTEBOOK	SOLID	N/A	N-148		
95000202	BX-112	9	SAMPLE	S95T003743	0		SLDVOL01	SOLID	N/A	NA		mL
95000202	BX-112	10	SAMPLE	S95T003743	0		SLDWT-01	SOLID	N/A	211.0		g
95000202	BX-112	11	SAMPLE	S95T003743	0		APPEAR01	SOLID	N/A	complete		
95000202	BX-112	12	SAMPLE	S95T003743	0		ORGVOL01	SOLID	N/A	0		mL

Final page for worklist # 3662

EC 11-21-95
Analyst Signature **Date**

EC 11-21-95
Analyst Signature **Date**

Reviewed by [illegible] 11-21-95

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 3663

Analyst: CC **Instrument:** BA000 **Book #** NA

Method: LO-160-103 Rev/Mod A-7

Worklist Comment: BX-112 95-AUG-048 RISER 2 EXTRUSION

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	INSTCHK01				EXTRUD01	SOLID	20	19.99	N/A	
		2	INSTCHK02				EXTRUD01	SOLID	500	499.71	N/A	
95000202	BX-112	3	SAMPLE	S95T003744	0		DLIQVOL1	SOLID	N/A	6		mL
95000202	BX-112	4	SAMPLE	S95T003744	0		DLIQWT01	SOLID	N/A	0		g
95000202	BX-112	5	SAMPLE	S95T003744	0		EST.G/ML	SOLID	N/A	0		g/mL
95000202	BX-112	6	SAMPLE	S95T003744	0		EXTRUD01	SOLID	N/A	complete		
95000202	BX-112	7	SAMPLE	S95T003744	0		LLIQWT01	SOLID	N/A	<5		g
95000202	BX-112	8	SAMPLE	S95T003744	0		NOTEBOOK	SOLID	N/A	N-1148		
95000202	BX-112	9	SAMPLE	S95T003744	0		SLDVOL01	SOLID	N/A	NA		mL
95000202	BX-112	10	SAMPLE	S95T003744	0		SLDWT-01	SOLID	N/A	81.3		g
95000202	BX-112	11	SAMPLE	S95T003744	0		APPEAR01	SOLID	N/A	complete		
95000202	BX-112	12	SAMPLE	S95T003744	0		ORGVOL01	SOLID	N/A	6		mL

Final page for worklist # 3663

CC 11-21-95
Analyst Signature **Date**

CC 11-21-95
Analyst Signature **Date**

Reviewed by [illegible] 11-21-95

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

SAMPLE PREPARATIONS

LABCORE Data Entry Template for Worklist# 3686

Analyst: [illegible] **Instrument:** FUS01 SR116355 **Book #** _____

Method: LA-549-141 Rev/Mod D-O

Worklist Comment: BX-112 FUSION01 3746->3747,3750->3751. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	.250	.250	N/A	g/L
95000202	BX-112	2 SAMPLE	S95T003747	0 F	FUSION01	SOLID	N/A	2.2464		g/L
		.5616g → .250l								
95000202	BX-112	3 SAMPLE	S95T003747	0	DOSE-02	SOLID	N/A	4.5		mrad/hour
95000202	BX-112	4 DUP	S95T003747	0 F	FUSION01	SOLID	2.2464	2.4264	N/A	g/L
		.6066g → .250l								
95000202	BX-112	5 DUP	S95T003747	0	DOSE-02	SOLID		4	N/A	mrad/hour
95000202	BX-112	6 SAMPLE	S95T003751	0 F	FUSION01	SOLID	N/A	2.2512		g/L
		.5628g → .250l								
95000202	BX-112	7 SAMPLE	S95T003751	0	DOSE-02	SOLID	N/A	3.7		mrad/hour
95000202	BX-112	8 DUP	S95T003751	0 F	FUSION01	SOLID	2.2512	2.3524	N/A	g/L
		.5881 g → .250l								
95000202	BX-112	9 DUP	S95T003751	0	DOSE-02	SOLID		3.8	N/A	mrad/hour

Final page for worklist # 3686

[illegible] 11-21-95
Analyst Signature **Date**
HPT: Scott Corbaley

[illegible] 11-22-95
Analyst Signature **Date**
Verified By [illegible]
11/22/95

Data Entry Comments:
20 ml HCl
20 mL HNO_3 } All Samples & QC.
< 1% Solids

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 3693

Analyst: OKM **Instrument:** FUS01 SR/16355 **Book #** _____

Method: LA-549-141 Rev/Mod D-O

Worklist Comment: BX-112 FUSION01 3754->3755. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				FUSION01	SOLID	.250	.250	N/A	g/L
95000202	BX-112	2	SAMPLE	S95T003755	0	F	FUSION01	SOLID	N/A	2.4668		g/L
			.6167g → .250 l									
95000202	BX-112	3	SAMPLE	S95T003755	0		DOSE-02	SOLID	N/A	7		mrad/hour
95000202	BX-112	4	DUP	S95T003755	0	F	FUSION01	SOLID	2.4668	2.4084	N/A	g/L
			.6021g → .250 l									
95000202	BX-112	5	DUP	S95T003755	0		DOSE-02	SOLID		5	N/A	mrad/hour

Final page for worklist # 3693

OKMurphy 11-21-95
Analyst Signature **Date**

HPT - Scott Corbaley

11-22-95
Analyst Signature **Date**

Verified By MLH
11/22/95

Data Entry Comments:

20ml - HCl
20ml - HNO_3 All Sample & QC.
< 1% solids

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

RADIOCHEMICAL ANALYSES

LABCORE Data Entry Template for Worklist# 3737

Analyst: SMF **Instrument:** AB00 15 **Book#** 150852

Method: LA-508-101 Rev/Mod D-2 WHC-SD-WM-DP-157, REV. 1

Worklist Comment: Determine sample size using Ludlum. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	SOLID		
2	BLNK-PREP				@ALPHA01	SOLID		
3	BLNK/BKG				@ALPHA01	SOLID		
4	SAMPLE	S95T003747	0	F	@ALPHA01	SOLID	95000202	BX-112
		Analytes Requested:			ALPHA01 , ALPHA01E			
5	DUP	S95T003747	0	F	@ALPHA01	SOLID		

Final page for worklist # 3737

11-29-95
Analyst Signature **Date**

11/29/95
Analyst Signature **Date**

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 3737

Analyst: smf **Instrument:** AB15 **Book#** _____

Method: _____ Rev/Mod _____ WHC-SD-WM-DP-157, REV. 1

Worklist Comment: Determine sample size using Ludlum. SLF

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@ALPHA01	ALPHA01	SOLID	1.28E-05	1.19E-5	92.970	% Recovery
1	STD		0		@ALPHA01	ALPHA01E	SOLID	1.00	4.62E+00	4.620	% Ct. Error
2	BLNK-PREP		0		@ALPHA01	ALPHA01	SOLID	1	<4.33E-3		uCi/g
2	BLNK-PREP		0		@ALPHA01	ALPHA01E	SOLID	1.00	4.93E+02	493.000	% Ct. Error
3	BLNK/BKG		0		@ALPHA01	ALPHA01	SOLID	1.00E+00	1.32E+00	1.320	uCi/g
4	SAMPLE	S95T003747	0	F	@ALPHA01	ALPHA01	SOLID	N/A	1.87E-01	5.470e-003	uCi/g
4	SAMPLE	S95T003747	0	F	@ALPHA01	ALPHA01E	SOLID	N/A	8.30E+00	0.000	% Ct. Error
5	DUP	S95T003747	0	F	@ALPHA01	ALPHA01	SOLID	1.87E-1	1.78E-1	4.930	RPD
5	DUP	S95T003747	0	F	@ALPHA01	ALPHA01E	SOLID	1.00	8.01E+00	8.010	% Ct. Error

Final page for worklist# 3737

Analyst Signature **Date** **Analyst Signature** **Date**

11/30/95

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

AT : LA-508-101 (D-2) STANDARD

			STANDARD	REPLICATE
Type	DETECTOR NUMBER		15	15
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	1969	1836
3737	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	150B52	150B52
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		65.203	60.770
Batch Number	Standard Value in µCi/mL		1.28E-05	
95004193	Concentration in µCi/L	=	1.23E-02	
Rerun	Replicate Concentration in µCi/L	=	1.15E-02	
0	AVERAGE CONCENTRATION in µCi/L	=	1.1921E-02	

Sample Prep: N/A

Sample #: WORKLIST#3737-STD

Instrument Code: WB26872

Prepared By: CJO

Chemist: SLF

Analyst: SMF

Date Complete: 11/29/95

Analysis Date: 11/22/95

Analysis Time: 10:00 PM

Sample Point: BX-112

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

				DETECTION LEVEL
ALPHA TOTAL CONCENTRATION in µCi/mL		1.19E-05		1.23E-07 µCi/mL
RELATIVE COUNTING ERROR	=	4.6%		

Analyst:		CJO	Date: 29-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

STANDARD.WB1 Rev. 1.0 508101ML

WHC-SD-WM-DP-152, REV. 1

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (D-2) SOLIDS

			BLNK-PREP	REPLICATE
DETECTOR NUMBER			15	15
DISH SIZE (1 , 2 , or 5)		(MS)	2	2
GROSS COUNTS		(GC)	19	15
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.43	0.43
SAMPLE SIZE in mL		(SS)	0.100	0.100
DILUTION FACTOR		(DF)	1	1
DIGEST GRAMS of SOLIDS / L		(Dg/L)	2.2464	2.2464
EFFICIENCY FACTOR		(EFF)	0.2380	0.2380
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			0.514	0.361

Blank Concentration in µCi/g	<	4.33E-03
Replicate Concentration in µCi/g	<	3.04E-03
Maximum Concentration in µCi/g	<	4.3304E-03

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	< 4.33E-03	5.47E-03 µCi/g
LESS THAN Value was Determined from Rmax.			
RELATIVE COUNTING ERROR		493.0%	

Type	BLNK-PREP
Work List	3737
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	SOLID
Batch Number	95004193
Rerun	0
Sample Prep	N/A
Sample #	S95T3747-BLNK
Instrument Code	WB26872
Prepared By	CJO
Chemist	SLF
Analyst	SMF
Date Complete	11/29/95
Analysis Date	11/22/95
Analysis Time	10:00 PM
Sample Point	BX-112

Analyst:		CJO	Date: 29-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

WHC-SD-WM-DP-157, REV. 1

AT : LA-508-101 (D-2) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		15	15
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	595	765
3737	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.2464	2.2464
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		19.403	25.070
Batch Number				
95004193	Blank Concentration in µCi/g		1.63E-01	
Rerun	Replicate Concentration in µCi/g		2.11E-01	
0	Average Concentration in µCi/g		1.8735E-01	

Sample Prep: FUSION01

Sample #: S95T003747

Instrument Code: WB26872

Prepared By: CJO

Chemist: SLF

Analyst: SMF

Date Complete: 11/29/95

Analysis Date: 11/22/95

Analysis Time: 10:00 PM

Sample Point: BX-112

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

	v RESULTS v		DETECTION LEVEL
ALPHA TOTAL	in µCi/g	1.87E-01	
RELATIVE COUNTING ERROR		8.3%	5.47E-03 µCi/g

Analyst:		CJO	Date: 29-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP5

AT : LA-508-101 (D-2) SOLIDS

			DUP	REPLICATE
DETECTOR NUMBER			15	15
DISH SIZE (1 , 2 , or 5)		(MS)	2	2
GROSS COUNTS		(GC)	637	755
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.43	0.43
SAMPLE SIZE in mL		(SS)	0.100	0.100
DILUTION FACTOR		(DF)	1	1
DIGEST GRAMS of SOLIDS / L		(Dg/L)	2.4264	2.4264
EFFICIENCY FACTOR		(EFF)	0.2380	0.2380
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			20.803	24.737

Blank Concentration in µCi/g	1.62E-01
Replicate Concentration in µCi/g	1.93E-01
Average Concentration in µCi/g	1.7761E-01

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	1.78E-01	5.07E-03 µCi/g
RELATIVE COUNTING ERROR		8.0%	

Type	DUP
Work List	3737
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	SOLID
Batch Number	95004193
Rerun	0
Sample Prep	FUSION01
Sample #	S95T003747
Instrument Code	WB26872
Prepared By	CJO
Chemist	SLF
Analyst	SMF
Date Complete	11/29/95
Analysis Date	11/22/95
Analysis Time	10:00 PM
Sample Point	BX-112

Analyst:		CJO	Date: 29-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

SAMPLE.WB1 Rev. 1.0 508101ML

LABCORE Data Entry Template for Worklist# 3872

Analyst: AKL **Instrument:** AB00 18 **Book#** ~~152B52~~ 150B52 SLF 11/30/95

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using Ludlum. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	SOLID		
2	BLNK-PREP				@ALPHA01	SOLID		
3	BLNK/BKG				@ALPHA01	SOLID		
4	SAMPLE	S95T003751	0	F	@ALPHA01	SOLID	95000202	BX-112
		Analytes Requested: ALPHA01 , ALPHA01E						
5	DUP	S95T003751	0	F	@ALPHA01	SOLID		
6	SPK	S95T003751	0	F	@ALPHA01	SOLID		

Final page for worklist # 3872

[signature] 11/25/95
Analyst Signature **Date**

[signature] 11/30/95
Analyst Signature **Date**

Data Entry Comments: RPD acceptable due to low sample alpha activity. [signature] 11/30/95

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WHC-SD-WM-DP-157, REV. 1

LABCORE Completed Worklist Report for Worklist# 3872

Analyst: akl **Instrument:** AB18 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using Ludlum. SLF

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@ALPHA01	ALPHA01	SOLID	1.28E-05	1.41E-5	110.160	% Recovery
1	STD		0		@ALPHA01	ALPHA01E	SOLID	1.00	4.44E+00	4.440	% Ct. Error
2	BLNK-PREP		0		@ALPHA01	ALPHA01	SOLID	1	<3.12E-3		uCi/g
2	BLNK-PREP		0		@ALPHA01	ALPHA01E	SOLID	1.00	1.65E+02	165.000	% Ct. Error
3	BLNK/BKG		0		@ALPHA01	ALPHA01	SOLID	1.00E+00	2.31E+00	2.310	uCi/g
4	SAMPLE	S95T003751	0	F	@ALPHA01	ALPHA01	SOLID	N/A	1.75E-01	3.800e-003	uCi/g
4	SAMPLE	S95T003751	0	F	@ALPHA01	ALPHA01E	SOLID	N/A	8.51E+00	0.000	% Ct. Error
5	DUP	S95T003751	0	F	@ALPHA01	ALPHA01	SOLID	1.75E-1	2.19E-1	22.340	RPD
5	DUP	S95T003751	0	F	@ALPHA01	ALPHA01E	SOLID	1.00	7.48E+00	7.480	% Ct. Error
6	SPK	S95T003751	0	F	@ALPHA01	ALPHA01	SOLID	3.92E-02	3.86E-02	98.470	% Recovery

Final page for worklist# 3872

Analyst Signature Date

Analyst Signature Date

Reviewer Signature 12/1/95 Date

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

WHC-SD-WM-DP-157, REV 1

AT : LA-508-101 (D-2) STANDARD

			STANDARD	REPLICATE
DETECTOR NUMBER			18	18
DISH SIZE (1 , 2 , or 5)	(MS)		2	2
GROSS COUNTS	(GC)		1978	1964
COUNT TIME in MINUTES	(CT)		30	30
BACKGROUND in cpm	(BKG)		0.13	0.13
SAMPLE SIZE in mL	(SS)		10.000	10.000
DILUTION FACTOR	(DF)		1	1
STANDARD BOOK NUMBER	(Std BN)		150B52	150B52
EFFICIENCY FACTOR	(EFF)		0.2095	0.2095
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			65.803	65.337
Standard Value in µCi/mL			1.28E-05	
Concentration in µCi/L		=	1.41E-02	
Replicate Concentration in µCi/L		=	1.40E-02	
AVERAGE CONCENTRATION in µCi/L		=	1.4098E-02	

Type	STD
Work List	3872
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	95004364
Rerun	0
Sample Prep	N/A
Sample #	WORKLIST#3872-STD
Instrument Code	WB27809
Prepared By	CJO
Chemist	SLF
Analyst	AKL
Date Complete	11/30/95
Analysis Date	11/29/95
Analysis Time	02:00 PM
Sample Point	BX-112

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

ALPHA TOTAL CONCENTRATION in µCi/mL		1.41E-05	DETECTION LEVEL
RELATIVE COUNTING ERROR	=	4.4%	8.55E-08 µCi/mL

Analyst:		CJO	Date: 30-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

STANDARD.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (D-2) SOLIDS

			BLNK-PREP	REPLICATE
DETECTOR NUMBER			18	18
DISH SIZE (1 , 2 , or 5)		(MS)	2	2
GROSS COUNTS		(GC)	10	8
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.13	0.13
SAMPLE SIZE in mL		(SS)	0.100	0.100
DILUTION FACTOR		(DF)	1	1
DIGEST GRAMS of SOLIDS / L		(Dg/L)	2.2512	2.2512
EFFICIENCY FACTOR		(EFF)	0.2095	0.2095
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			0.203	0.326

Blank Concentration in µCi/g		1.94E-03
Replicate Concentration in µCi/g	<	3.12E-03
Maximum Concentration in µCi/g	<	3.1174E-03

Type	BLNK-PREP
Work List	3872
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	SOLID
Batch Number	95004364
Rerun	0
Sample Prep	N/A
Sample #	S95T3751-BLNK
Instrument Code	WB27809
Prepared By	CJO
Chemist	SLF
Analyst	AKL
Date Complete	11/30/95
Analysis Date	11/29/95
Analysis Time	02:00 PM
Sample Point	BX-112

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	< 3.12E-03	3.80E-03 µCi/g
LESS THAN Value was Determined from Rs.			
RELATIVE COUNTING ERROR		164.9%	

Analyst:	CJO		Date: 30-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

BLANK.WB1 Rev. 1.0 508101ML

AT : LA-508-101 (D-2) SOLIDS

			SAMPLE	REPLICATE
DETECTOR NUMBER			18	18
DISH SIZE (1 , 2 , or 5)	(MS)		2	2
GROSS COUNTS	(GC)		542	563
COUNT TIME in MINUTES	(CT)		30	30
BACKGROUND in cpm	(BKG)		0.13	0.13
SAMPLE SIZE in mL	(SS)		0.100	0.100
DILUTION FACTOR	(DF)		1	1
DIGEST GRAMS of SOLIDS / L	(Dg/L)		2.2512	2.2512
EFFICIENCY FACTOR	(EFF)		0.2095	0.2095
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			17.937	18.637

Blank Concentration in µCi/g	1.71E-01
Replicate Concentration in µCi/g	1.78E-01
Average Concentration in µCi/g	1.7466E-01

Type	SAMPLE
Work List	3872
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	SOLID
Batch Number	95004364
Rerun	0
Sample Prep	FUSION01
Sample #	S95T003751
Instrument Code	WB27809
Prepared By	CJO
Chemist	SLF
Analyst	AKL
Date Complete	11/30/95
Analysis Date	11/29/95
Analysis Time	02:00 PM
Sample Point	BX-112

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	1.75E-01	3.80E-03 µCi/g
RELATIVE COUNTING ERROR		8.5%	

Analyst:	CJO	Date: 30-Nov-95	
Signature of Chemist:	SLF	Date: 11/30/95	

SAMPLE.WB1 Rev. 1.0 50810 ML

WORKBOOK PAGE: DUP5

WHC-SD-WM-DP-151, REV. 1

AT : LA-508-101 (D-2) SOLIDS

			DUP	REPLICATE
DETECTOR NUMBER			18	18
DISH SIZE (1 , 2 , or 5)		(MS)	2	2
GROSS COUNTS		(GC)	746	699
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.13	0.13
SAMPLE SIZE in mL		(SS)	0.100	0.100
DILUTION FACTOR		(DF)	1	1
DIGEST GRAMS of SOLIDS / L		(Dg/L)	2.3524	2.3524
EFFICIENCY FACTOR		(EFF)	0.2095	0.2095
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			24.737	23.170

Blank Concentration in µCi/g	2.26E-01
Replicate Concentration in µCi/g	2.12E-01
Average Concentration in µCi/g	2.1894E-01

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	2.19E-01	3.64E-03 µCi/g
RELATIVE COUNTING ERROR		7.5%	

Type	DUP
Work List	3872
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	SOLID
Batch Number	95004364
Rerun	0
Sample Prep	FUSION01
Sample #	S95T003751
Instrument Code	WB27809
Prepared By	CJO
Chemist	SLF
Analyst	AKL
Date Complete	11/30/95
Analysis Date	11/29/95
Analysis Time	02:00 PM
Sample Point	BX-112

Analyst:		CJO	Date: 30-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE6

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
DETECTOR NUMBER			18	18
DISH SIZE 1 , 2 , or 5		(MS)	2	2
TOTAL COUNTS		(TC)	53723	55150
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.13	0.13
SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	0.100	0.100
SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	1	1
DIGEST GRAMS of SOLIDS / L		(Dg/L)	2.2512	2.2512
SPIKE VOLUME in mL		(SVol)	0.100	0.100
SPIKE DILUTION FACTOR		(SDF)	1	1
SPIKE BOOK NUMBER		(Spk BN)	119B43	119B43
SPIKE VALUE in µCi/mL		(SVal)	3.9219E-02	3.9219E-02
INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.2095	0.2095
SAMPLE + SPIKE µCi/g		(S+S)	1.71E+01	1.76E+01
AVERAGE or MAXIMUM µCi/g in SAMPLE			1.7466E-01	

Type	SPK
Work List	3872
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	SOLID
Batch Number	95004364
Rerun	0
Sample Prep	FUSION01
Sample #	S95T003751
Instrument Code	WB27809
Prepared By	CJO
Chemist	SLF
Analyst	AKL
Date Complete	11/30/95
Analysis Date	11/29/95
Analysis Time	02:00 PM
Sample Point	BX-112

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.92E-02
QC FOUND	=	3.86E-02
AVG. PERCENT SPIKE RECOVERY	=	98.5%

Analyst:		CJO	Date: 30-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

SPIKE.WB1 Rev. 1.0 508101ML

BX112

LABCORE Data Entry Template for Worklist# 3873

Analyst: SMF **Instrument:** AB00 15 **Book#** 150 B52

Method: LA-508-101 Rev/Mod D-2 WHC-SD-WM-DP-152, REV. 1

Worklist Comment: Determine sample size using Ludlum. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	SOLID		
2	BLNK-PREP				@ALPHA01	SOLID		
3	BLNK/BKG				@ALPHA01	SOLID		
4	SAMPLE	S95T003755	0	F	@ALPHA01	SOLID	95000202	BX-112
		Analytes Requested:			ALPHA01 , ALPHA01E			
5	DUP	S95T003755	0	F	@ALPHA01	SOLID		

Final page for worklist # 3873

SMF 11-29-95
Analyst Signature **Date**

C.J. Quinn 11/29/95
Analyst Signature **Date**

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 3873

Analyst: smf **Instrument:** AB15 **Book#** _____

Method: _____ Rev/Mod _____ WHC-SD-WM-DP-157, REV. 1

Worklist Comment: Determine sample size using Ludlum. SLF

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@ALPHA01	ALPHA01	SOLID	1.28E-05	1.19E-5	92.970	% Recovery
1	STD		0		@ALPHA01	ALPHA01E	SOLID	1.00	4.62E+00	4.620	% Ct. Error
2	BLNK-PREP		0		@ALPHA01	ALPHA01	SOLID	1	<4.24E-3		uCi/g
2	BLNK-PREP		0		@ALPHA01	ALPHA01E	SOLID	1.00	4.93E+02	493.000	% Ct. Error
3	BLNK/BKG		0		@ALPHA01	ALPHA01	SOLID	1.00E+00	1.36E+00	1.360	uCi/g
4	SAMPLE	S95T003755	0	F	@ALPHA01	ALPHA01	SOLID	N/A	1.83E-01	4.980e-003	uCi/g
4	SAMPLE	S95T003755	0	F	@ALPHA01	ALPHA01E	SOLID	N/A	7.73E+00	0.000	% Ct. Error
5	DUP	S95T003755	0	F	@ALPHA01	ALPHA01	SOLID	1.83E-1	1.70E-1	7.370	RPD
5	DUP	S95T003755	0	F	@ALPHA01	ALPHA01E	SOLID	1.00	7.92E+00	7.920	% Ct. Error

Final page for worklist# 3873

Analyst Signature **Date** **Analyst Signature** **Date**

11/30/95

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

AT : LA-508-101 (D-2) STANDARD

			STANDARD	REPLICATE
Type	DETECTOR NUMBER		15	15
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	1969	1836
3873	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	150B52	150B52
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		65.203	60.770
Batch Number	Standard Value in µCi/mL		1.28E-05	
95004367	Concentration in µCi/L	=	1.23E-02	
Rerun	Replicate Concentration in µCi/L	=	1.15E-02	
0	AVERAGE CONCENTRATION in µCi/L	=	1.1921E-02	

Sample Prep: N/A

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = { |(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Sample # WORKLIST#3873-STD

Instrument Code WB26872

Prepared By CJO

Chemist SLF

Analyst SMF

Date Complete 11/29/95

Analysis Date 11/22/95

Analysis Time 10:00 PM

Sample Point BX-112

			DETECTION LEVEL
ALPHA TOTAL CONCENTRATION in µCi/mL		1.19E-05	1.23E-07 µCi/mL
RELATIVE COUNTING ERROR	=	4.6%	

Analyst:		CJO	Date: 29-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

STANDARD.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (D-2) SOLIDS

			BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER		15	15
BLNK-PREP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	20	15
3873	COUNT TIME in MINUTES	(CT)	30	30
Analyte	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.4668	2.4668
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.552	0.361

Batch Number			
95004367	Blank Concentration in µCi/g	<	4.24E-03
Rerun	Replicate Concentration in µCi/g	<	2.77E-03
0	Maximum Concentration in µCi/g	<	4.2363E-03

Sample Prep: N/A

Sample #: S95T3755-BLNK

Instrument Code: WB26872

Prepared By: CJO

Chemist: SLF

Analyst: SMF

Date Complete: 11/29/95

Analysis Date: 11/22/95

Analysis Time: 10:00 PM

Sample Point: BX-112

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	< 4.24E-03	4.98E-03 µCi/g
LESS THAN Value was Determined from Rmax.			
RELATIVE COUNTING ERROR		493.0%	

Analyst:	CJO		Date: 29-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

AT : LA-508-101 (D-2) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		15	15
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	773	681
3873	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.4668	2.4668
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		25.337	22.270

Batch Number		
95004367	Blank Concentration in µCi/g	1.94E-01
Rerun	Replicate Concentration in µCi/g	1.71E-01
0	Average Concentration in µCi/g	1.8263E-01

Sample Prep: FUSION01

Sample #: S95T003755

Instrument Code: WB26872

Prepared By: CJO

Chemist: SLF

Analyst: SMF

Date Complete: 11/29/95

Analysis Date: 11/22/95

Analysis Time: 10:00 PM

Sample Point: BX-112

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	1.83E-01	4.98E-03 µCi/g
RELATIVE COUNTING ERROR		7.7%	

Analyst:	CJO		Date: 29-Nov-95
Signature of Chemist:		SLF	Date:

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP5

AT : LA-508-101 (D-2) SOLIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		15	15
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	675	650
3873	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.4084	2.4084
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		22.070	21.237

Batch Number		
95004367	Blank Concentration in µCi/g	1.73E-01
Rerun	Replicate Concentration in µCi/g	1.67E-01
0	Average Concentration in µCi/g	1.7016E-01

Sample Prep: FUSION01

Sample #: S95T003755

Instrument Code: WB26872

Prepared By: CJO

Chemist: SLF

Analyst: SMF

Date Complete: 11/29/95

Analysis Date: 11/22/95

Analysis Time: 10:00 PM

Sample Point: BX-112

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/g	1.70E-01	5.10E-03 µCi/g
RELATIVE COUNTING ERROR		7.9%	

Analyst:		CJO	Date: 29-Nov-95
Signature of Chemist:		SLF	Date: 11/30/95

SAMPLE.WB1 Rev. 1.0 508101ML

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

PART II

WHC-SD-WM-DP-157 REV. 1

WHC-SD-WM-DP-157, REV. 0

ANALYTICAL SERVICES

45-DAY SAFETY SCREENING RESULTS FOR TANK 241-BX-112, AUGER SAMPLES 95-AUG-047 AND 95-AUG 048

DATE PRINTED: NOVEMBER 30, 1995

54-7600-075

Hanford Operations and Engineering Contractor for the US Department of Energy

WHC-SD-WM-DP-157, REV. 0

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This document consists of pages 1 through 35.

NARRATIVE

45-DAY SAFETY SCREENING REPORT FOR TANK 241-BX-112, AUGER SAMPLES 95-AUG-047 AND 95-AUG-048

ANALYTICAL SUMMARY

Two auger samples were taken from tank 241-BX-112 (BX-112). The samples were received at the 222-S Laboratories and underwent safety screening analyses, consisting of differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), bulk density, and determination of total alpha activity. As appropriate, the results were compared to the safety screening limits at a confidence level of 95%. All analytical results were within the action limits stated in the SAP.

Based on the results of vapor monitoring prior to sampling, the BX-112 vapor space is far below the lower explosive limit (LEL). None of the data indicate that the tank is "unsafe" when compared to the criteria (energetics, criticality, and flammability) in the *Safety Screening Data Quality Objective* (Dukelow, et al., 1995). However, the tank cannot be declared "safe," as two full length profiles were not obtained by auger sampling. Core sampling will be necessary to fully satisfy the DQO.

Any additional analyses on the BX-112 auger samples will be included in a revision to this report.

SCOPE

This document serves as the 45-day report deliverable for the tank BX-112 auger samples collected on November 16 and 17, 1995 (samples 95-AUG-047 and 95-AUG-048). The 222-S Laboratories received, extruded, and analyzed each sample in accordance with the SAP [1]. Included in this report are the primary safety screening results obtained from the analyses, and copies of all DSC and TGA raw data scans as requested in the SAP. The results of tank dome space flammability screening are also included.

No additional testing to support safety screening analyses for these auger samples is required. Any additional analyses conducted by the 222-S Laboratories on these auger samples will be included in a revision to this report.

TANK DOME SPACE FLAMMABILITY SCREENING

Prior to auger sampling, the vapor space of tank BX-112 was screened for flammability issues. The results of combustible gas monitoring inside riser 3 of tank BX-112 are presented in Table 1. This measurement is conducted in the field and recorded in the work package (work package for BX-112 auger sampling is #ES-95-00217). The results indicated that the tank vapor space was at 0% of the LEL, far below the action limit of 10% stated in the DQO [2].

Table 1. Characteristics of BX-112 Vapor Space as Determined by Combustible Gas Monitoring.

Measurement	Result
Lower Explosive Limit (LEL)	0%
Oxygen (O_2)	20.9%
Total Organic Carbon (TOC)	11.3 ppm
Ammonia (NH_3)	125 ppm

SAMPLE RECEIPT, EXTRUSION, AND SUBSAMPLING

95-AUG-047

Auger sample 95-AUG-047 was collected from riser 3 of tank BX-112 on November 16, 1995. and extruded on November 21, 1995. This was a 50 cm (20 inch) auger sampler, with 39 flutes (this was the first time that this auger was used. It has twice as many flutes as the typical auger). The sample appeared fairly homogeneous. The waste was a very wet, light-brown sludge, which tended to drip from the auger onto the extrusion tray. Flutes 1-8 at the top of the auger were bare. The material on flutes 9-16 appeared slightly less wet than the lower portion of the sample. The material on flutes 9-16, totaling 45.8 grams, was segregated as the upper half-segment solids. Flutes 17-39 contained lumpy sludge (lumps disappeared upon subsampling). A total of 165.2 grams was subsampled as the lower half-segment solids. The half segment subsamples were homogenized and subsampled for further laboratory analyses, bulk density determination, and archiving.

95-AUG-048

Auger sample 95-AUG-048 was collected from riser 2 of Tank BX-112 on November 17, 1995, and extruded on November 21. This was a 50 cm (20 inch) auger sampler, with 19 flutes. The sample appeared to be a homogeneous, medium-brown, very wet sludge. Flutes 1-6 were bare. The sample was recovered on flutes 7-19, and mostly dripped off of the auger onto the extrusion tray. Due to the apparent length of the sample recovered [30 cm (12 inches)], the moderate-to-low recovery (81.3 g), and the apparent homogeneity, the sample was not subsampled into half segments, but homogenized and subsampled at the whole-segment level. Portions were then subsampled for bulk density determination and further laboratory analyses and archiving.

ANALYTICAL RESULTS

BULK DENSITY

Three subsamples were submitted for bulk density determination by centrifugation in a tared, graduated, vial per procedure LA-160-103, Rev. A-7. The results ranged from 1.31 to 1.35 g/cm^3. These results are presented in the summary tables. In order to conserve sample, duplicate analyses were not conducted.

THERMOGRAVIMETRIC ANALYSIS (TGA)

Three samples were submitted for moisture content determination by TGA per procedures LA-560-112, Rev. B-2, or LA-514-114, Rev. C-1 (a different procedure is used for each instrument). The samples were analyzed in duplicate. The results are presented in the summary tables, and the raw data scans are attached. All results were between 55.59 and 65.50 percent moisture. The relative percent difference (RPD) between sample and duplicate results for sample S95T003746 was 11.4%, which slightly exceeded the criterion of less than 10% given in the SAP. Inspection of the raw data (attached) indicates that the sample and duplicate scans are similar in shape, except that the weight loss for the sample result appears to begin at approximately 100 °C, instead of at ambient temperature. The chemist attributed this to static charge holding the sample tray to the side of the furnace [3]. Once the static charge was overcome, the weight loss scan appears very similar in shape to to the scan of the duplicate sample (although the endpoint differs by almost 7 weight percent). The sample was rerun in duplicate. The RPD for the rerun was 1.71%. Both the original results and the results of the rerun are included in the summary tables. The results of the rerun are noted by a "1" next to the sample number.

DIFFERENTIAL SCANNING CALORIMETRY (DSC)

Three samples were submitted for determination of energetics by DSC per procedure LA-514-113, Rev. C-1 or procedure LA-514-114, Rev. C-1. The samples were analyzed in duplicate. The results are presented in the summary tables, and the raw data scans are attached. None of the samples exhibited exotherms. Since none of the samples exhibited any exotherms, the statistical calculation of an upper 95% confidence level for each sample is unnecessary.

ALPHA TOTAL

Three solids samples were submitted for total alpha analysis per procedure LA-508-101, Rev. D-2. The samples were fused per procedure LA-549-141, Rev. D-0 prior to analysis. Two fusions were prepared per sample (for duplicate results). Each fused dilution was analyzed twice; the results were averaged and reported as one value. The highest result returned was 0.219 μCi/g, more than two orders of magnitude below the action limit of 41 μCi/g. The upper 95% confidence level for each sample has been calculated and is presented in Table 2. All of the adjusted results are far below the action limit of 41

μCi/g stated in the SAP. The RPD for sample S95T003751 was 22.3%. However, no rerun was deemed necessary, as the 95% confidence limit upper value for this sample was 0.336 μCi/g, far below the action limit of 41 μCi/g.

The alpha results reported by the lab are calculated assuming a density of 1.5 g/cm^3 for solid samples. As the bulk density results recorded for these samples are all below 1.5 g/cm^3, the alpha results reported remain conservative per the calculation described in the SAP [1].

One of the two standards run with these samples exhibited a recovery slightly outside the range specified in the SAP (110.2%). Since the result was so close to being within range, and the sample results were far below the limit, a rerun was deemed unnecessary. This result was well within the method control limits of 72.3-125.9%. All quality control results are presented in the summary tables.

Table 2. Comparison of Total Alpha Results at a Confidence Level of 95%.

Sample Description/ Sample Number	Sample Result	Duplicate Result	Mean	Var(Mean)	Upper 95% Confidence Limit
AUG-047 UH S95T003747	0.187	0.178	0.182	2.025E-05	0.211
AUG-047 LH S95T003751	0.175	0.219	0.197	4.84E-04	0.336
AUG-048 WS S95T003755	0.183	0.170	0.176	4.23E-05	0.218
AUG-047, AUG-048 combined	-	-	0.183 (weighted mean)	5.12E-05	0.228

Notes: var(mean) - variance of the mean; UH - upper half;
LH - lower half; WS - whole segment;
weighted mean - average for each auger given equal weight

REFERENCES

[1] J. M. Conner, *Tank 241-BX-112 Auger Sampling and Analysis Plan*, WHC-SD-WM-TSAP-051, Rev. 0A, Westinghouse Hanford Company, Richland, Washington, November 15, 1995.

[2] G. T. Dukelow, et al., *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, Washington, August 31, 1995.

[3] Personal Communication with B. D. Valenzuela, December 1, 1995.

SAMPLE DATA SUMMARY

06-dec-1995 11:25:56
A-0002-1

INTERIM

45-Day Report for Auger Samples 95-AUG-047, 95-AUG-048
BX-112

CORE NUMBER: 95-AUG-047, 95-AUG-048
SEGMENT #: 95-AUG-047

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003745			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.350	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T003746	1		% Water by TGA on Perkin Elmer	%	None	None	101.0	n/a	60.72	61.77	61.25	1.71	n/a	n/a	n/a
S95T003746			% Water by TGA on Perkin Elmer	%	None	None	100.5	n/a	55.59	62.30	58.95	11.4	n/a	n/a	n/a
S95T003746			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+01	480.0	99.97	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003746			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+01	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003747	F		Alpha of Digested Solid	uCi/g	-1.0e+01	41.01	92.97	<4.33e-03	1.87e-01	1.78e-01	1.82e-01	4.93	n/a	5.47e-03	8.30E+00

L Lower Half of Segment: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003749			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.310	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T003750			% Water by TGA on Perkin Elmer	%	None	None	100.5	n/a	63.37	63.52	63.45	0.24	n/a	n/a	n/a
S95T003750			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+01	480.0	99.97	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003750			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+01	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003751	F		Alpha of Digested Solid	uCi/g	-1.0e+01	41.01	110.2	<3.12e-03	1.75e-01	2.19e-01	1.97e-01	22.3	98.47	3.80e-03	8.51E+00

=> Limit violated
=> Selected Limit

INTERIM

49

WHC-SD-WM-DP-157, REV. 1

~~WHC-SD-WM-DP-157, REV. 0~~

INTERIM

45-Day Report for Auger Samples 95-AUG-047, 95-AUG-048
BX-112

CORE NUMBER: 95-AUG-047, 95-AUG-048
SEGMENT #: 95-AUG-048

SEGMENT PORTION: W Whole Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003753			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.310	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T003754			% Water by TGA using Mettler	%	None	None	100.5	n/a	65.42	65.50	65.46	0.12	n/a	n/a	n/a
S95T003754			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+01	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003754			DSC Exotherm using Mettler	Joules/g	-1.0e+01	480.0	92.44	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003755		F	Alpha of Digested Solid	uCi/g	-1.0e+01	41.01	92.97	<4.24e-03	1.83e-01	1.70e-01	1.76e-01	7.37	n/a	4.98e-03	7.73E+00

=> Limit violated
=> Selected Limit

INTERIM

50

WHC-SD-WM-DP-157, REV. 1

WHC-SD-WM-DP-157, REV. 0

WHC-SD-WM-DP-157, REV. 0

INORGANIC ANALYSES

LABCORE Data Entry Template for Worklist# 3729

Analyst: SMF **Instrument:** DSC01 DSC01 **Book #** 12N14A

Method: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-157, REV. 1

Worklist Comment: BX-112 DSC PLease run under N2. PRIORITY.

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				DSC-01	SOLID	28.45	26.3	N/A	Joules/g
95000202	BX-112	2 SAMPLE	S95T003754	0		DSC-01	SOLID	N/A	0		Joules/g
95000202	BX-112	3 DUP	S95T003754	0		DSC-01	SOLID	0	0	N/A	Joules/g

Final page for worklist # 3729

Analyst Signature / Date: Susie Sutton 11/21/95

Analyst Signature / Date: 11/22/95

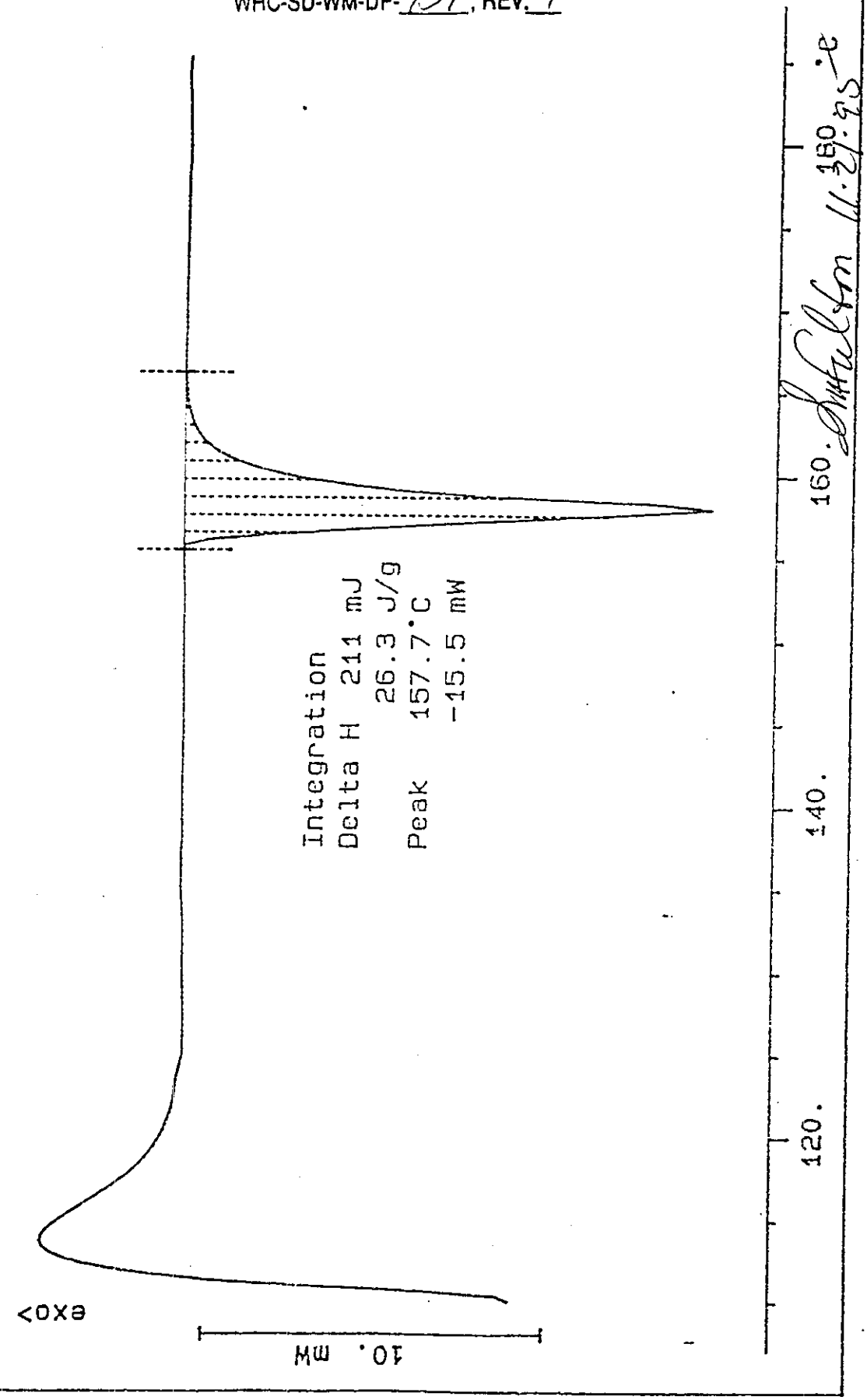
Verified by Blandina Valenzuela 11/27/95

Data Entry Comments:
Sample has another endotherm besides water endotherm at 249 °C with a value of 3.8 J/g in sample & dup. SMF

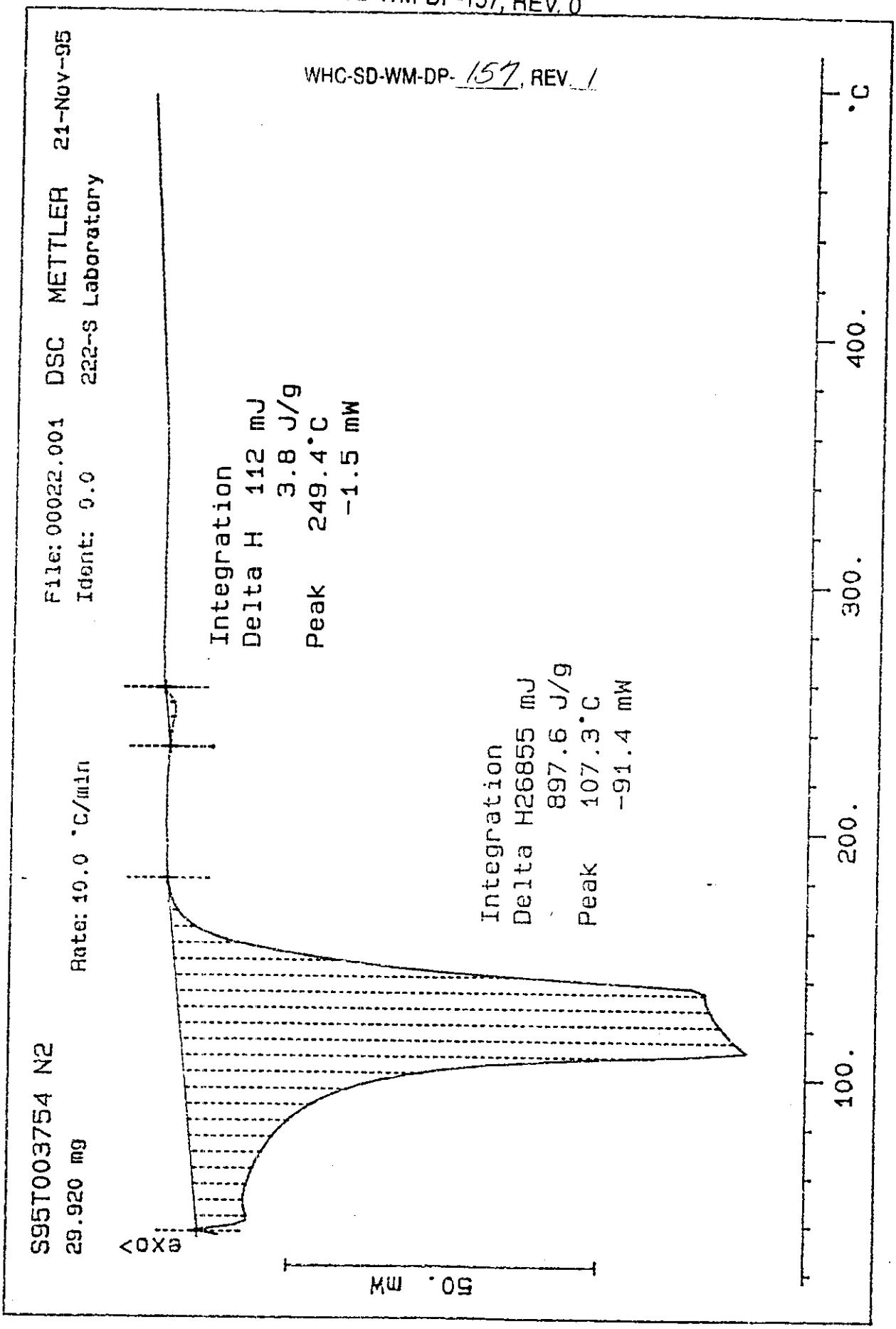
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

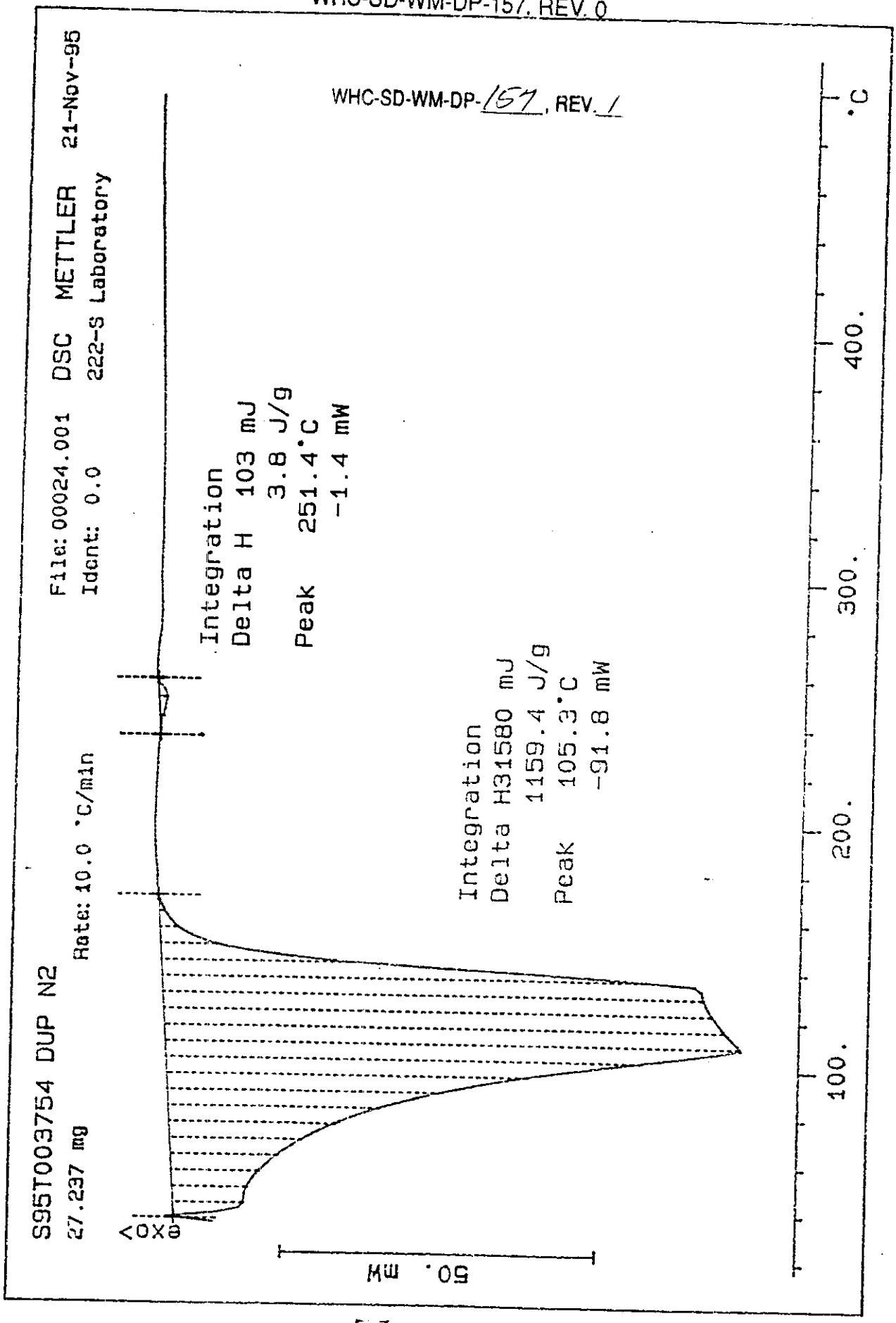
WHC-SD-WM-DP-157, REV. 1

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 53 TO 55



WHC-SD-WM-DP-157, REV. 1




WHC-SD-WM-DP-157, REV. 1
S95T003754 DUP N2
27.237 mg
Rate: 10.0 °C/min
File: 00024.001 DSC METTLER 21-Nov-95
Ident: 0.0 222-S Laboratory
Integration
Delta H 103 mJ
3.8 J/g
Peak 251.4°C
-1.4 mW
Integration
Delta H31580 mJ
1159.4 J/g
Peak 105.3°C
-91.8 mW
<exo>
50. mW
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 3735

Analyst: SMF **Instrument:** DSC01 DSC03 **Book #** 12N14A

Method: LA-514-114 Rev/Mod C-1

WHC-SD-WM-DP-157, REV. 1

Worklist Comment: PE BX112 DSC

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	SOLID	28.45	28.44	N/A	Joules/g
95000202	BX-112	2	SAMPLE	S95T003746	0		DSC-03	SOLID	N/A	0		Joules/g
95000202	BX-112	3	DUP	S95T003746	0		DSC-03	SOLID	0	0	N/A	Joules/g
95000202	BX-112	4	SAMPLE	S95T003750	0		DSC-03	SOLID	N/A	0		Joules/g
95000202	BX-112	5	DUP	S95T003750	0		DSC-03	SOLID	0	0	N/A	Joules/g

Final page for worklist # 3735

Ann Fuge for Suzie Fulton 11/21/95
Analyst Signature Date

Verified by Blandina Valenzuela 11/27/95

Analyst Signature Date

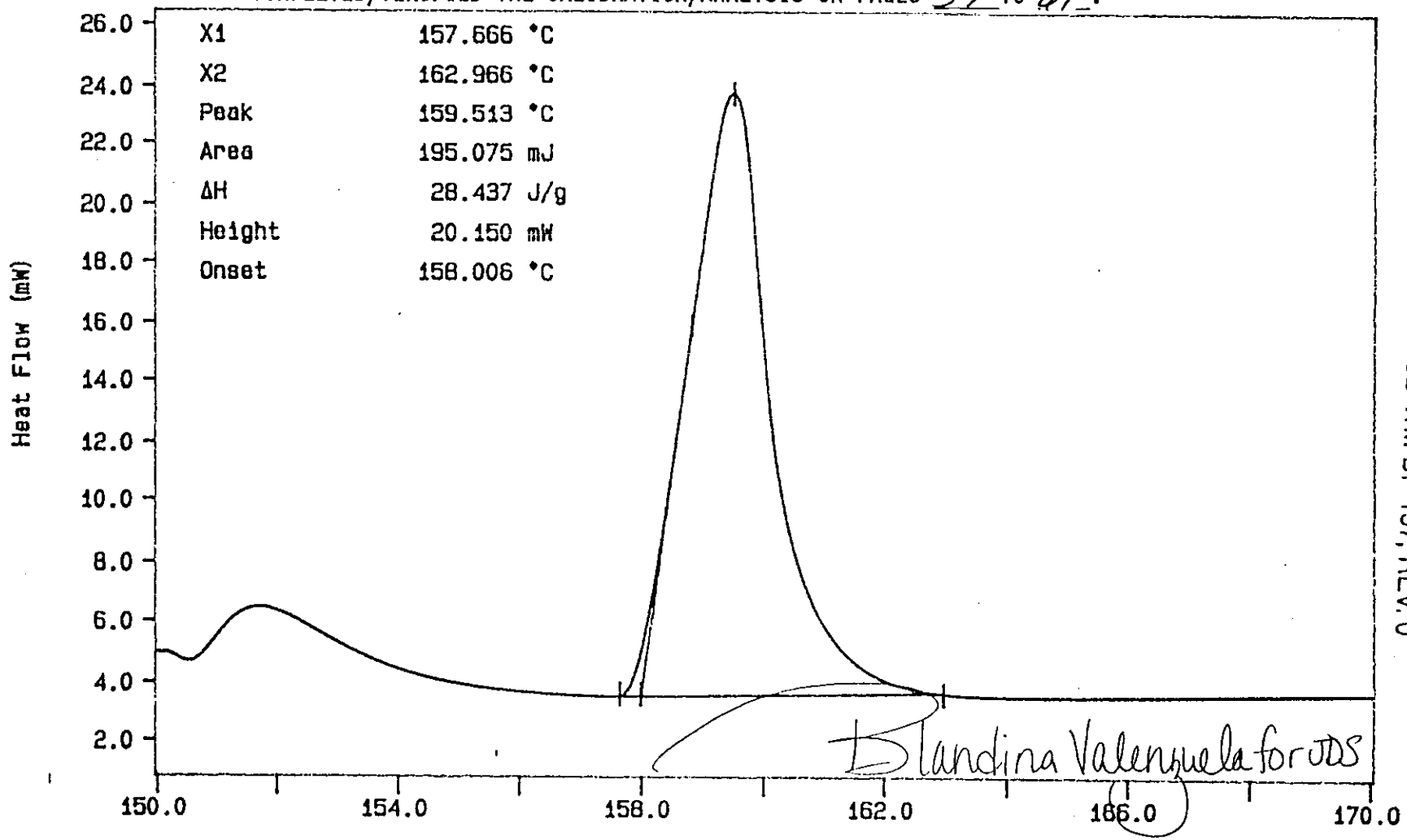
S95T003746 produced an endotherm at 119.6°C with a delta H of 1464.2 J/g

Data Entry Comments: S95T003750 produced an endotherm at ~~118.9~~ 113.8°C 11/27/95 with a delta H of 1333.3 J/g

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: DSC
File info: IND112101 Tue Nov 21 07:55:04 1995
Sample Weight: 6.860 mg
12N14A Indium at 10C/min

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 57 TO 61.



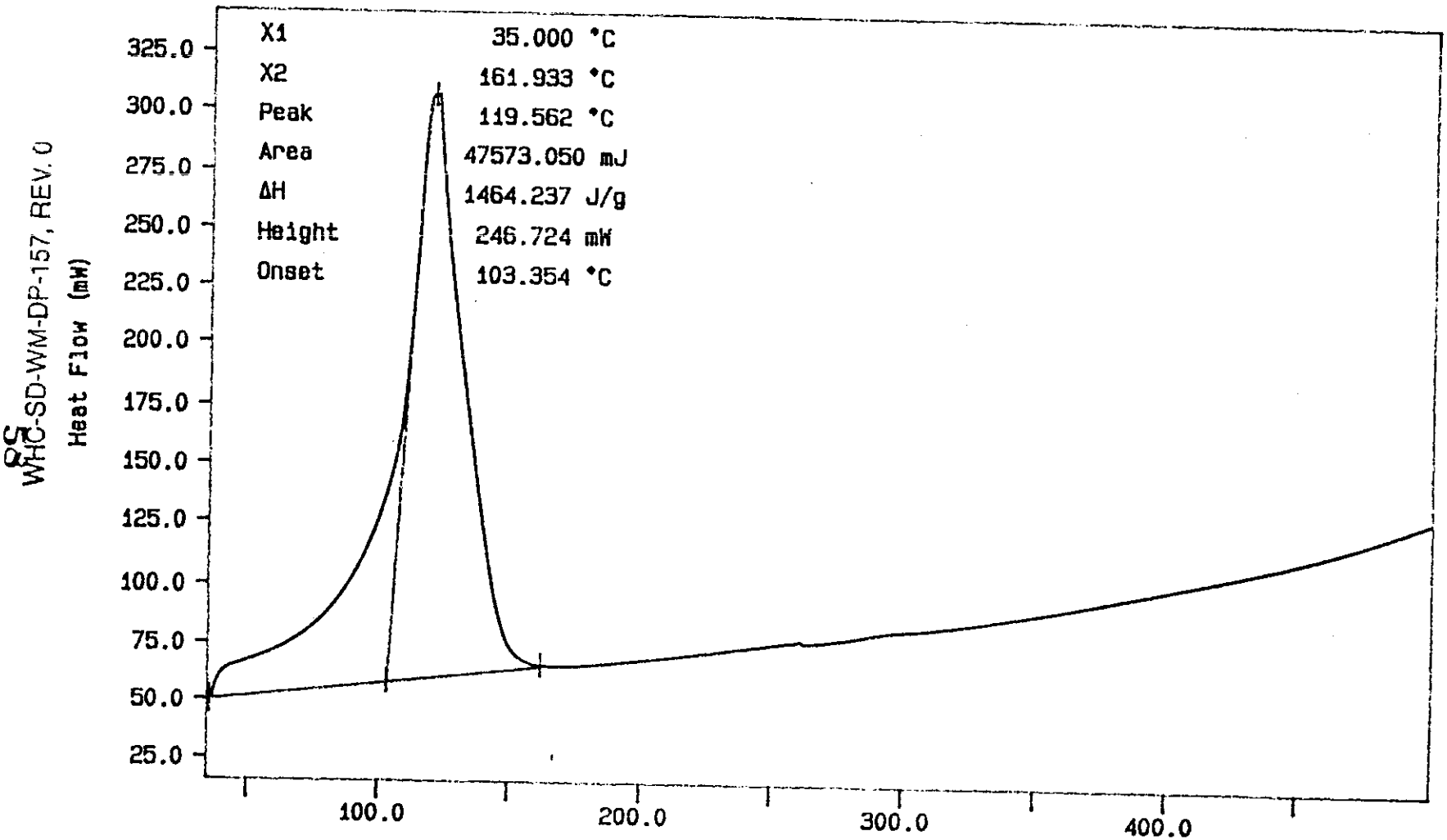
Blandina Valenzuela for JDS

N2, EXOTHERM DOWN
TEMP1: 150.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 170.0 C

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Nov 21 17:32:38 1995

WHC-SD-WM-DP-157, REV. 1

Curve 1: DSC
File info: SAM112103 Tue Nov 21 18:26:33 1995
Sample Weight: 32.490 mg
S95T003746

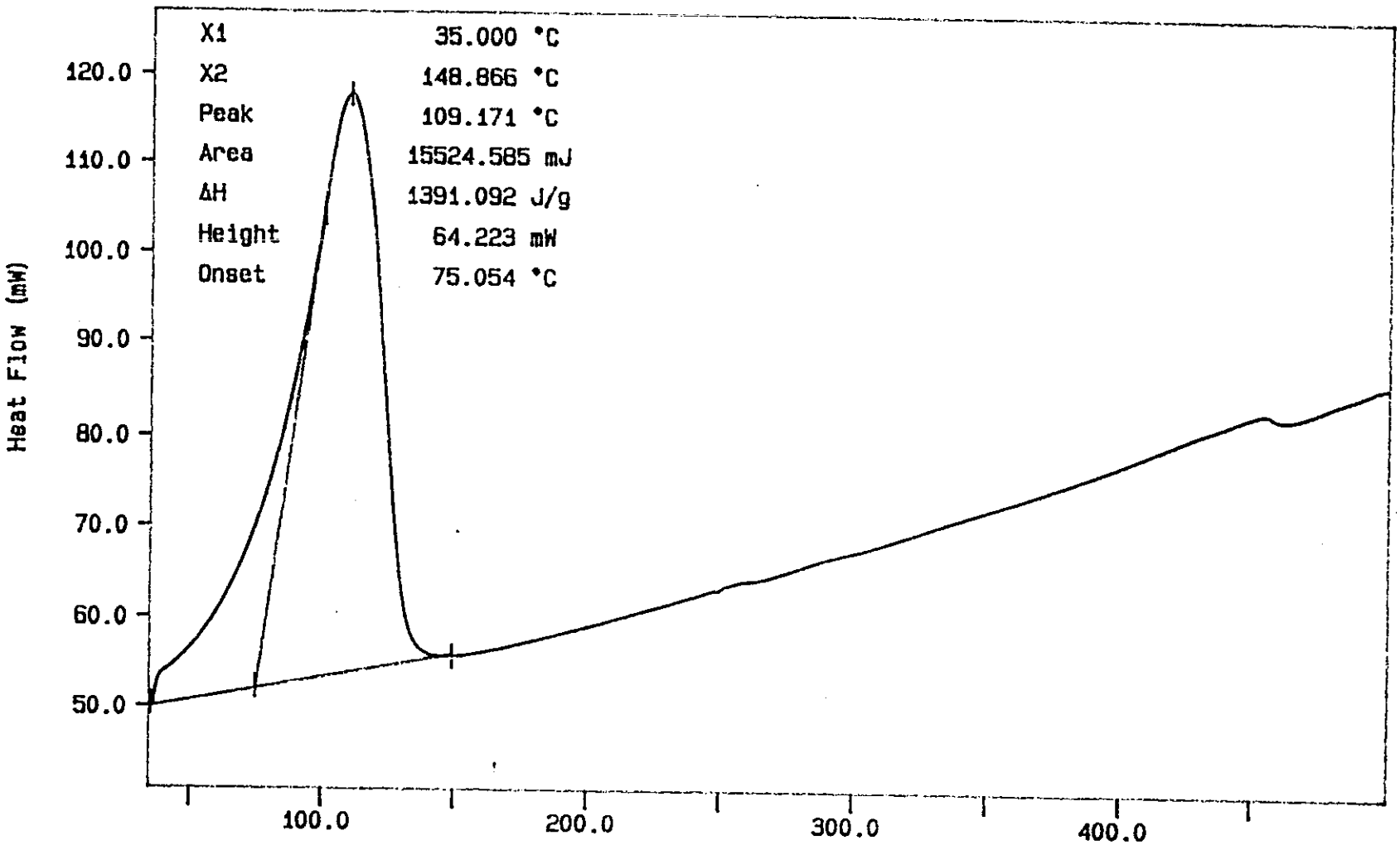


exotherm down, N2 purge gas

TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Nov 21 20:14:51 1995

Curve 1: DSC
File info: SAM112104 Tue Nov 21 21:05:32 1995
Sample Weight: 11.160 mg
S95T003746 DUP



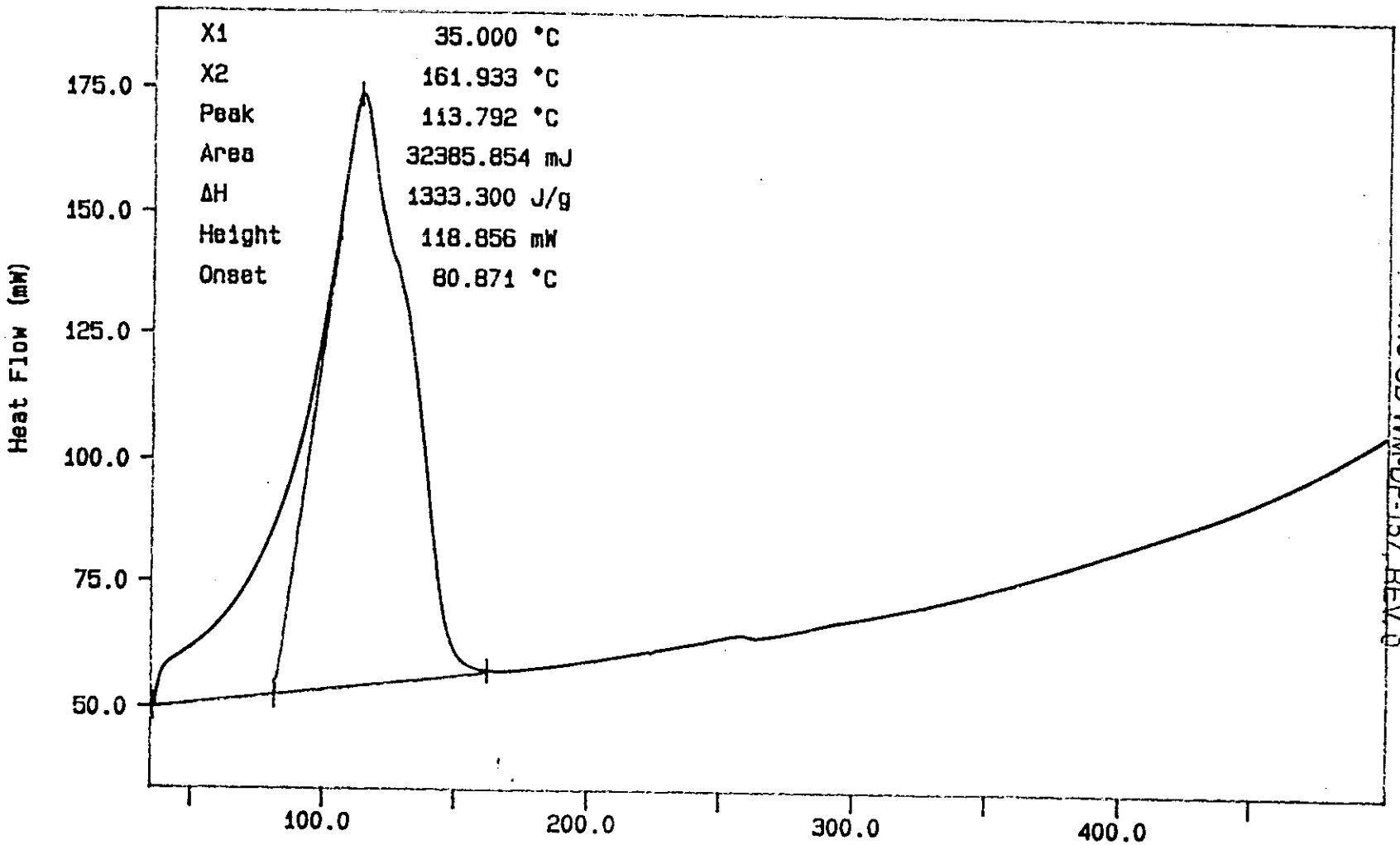
exotherm down, N2 purge gas
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Nov 21 21:09:18 1995

WHC-SD-WM-DP-157, REV. 0

WHC-SD-WM-DP-157, REV. 0

Curve 1: DSC
File info: SAM112105 Tue Nov 21 22:19:21 1995
Sample Weight: 24.290 mg
S95T003750

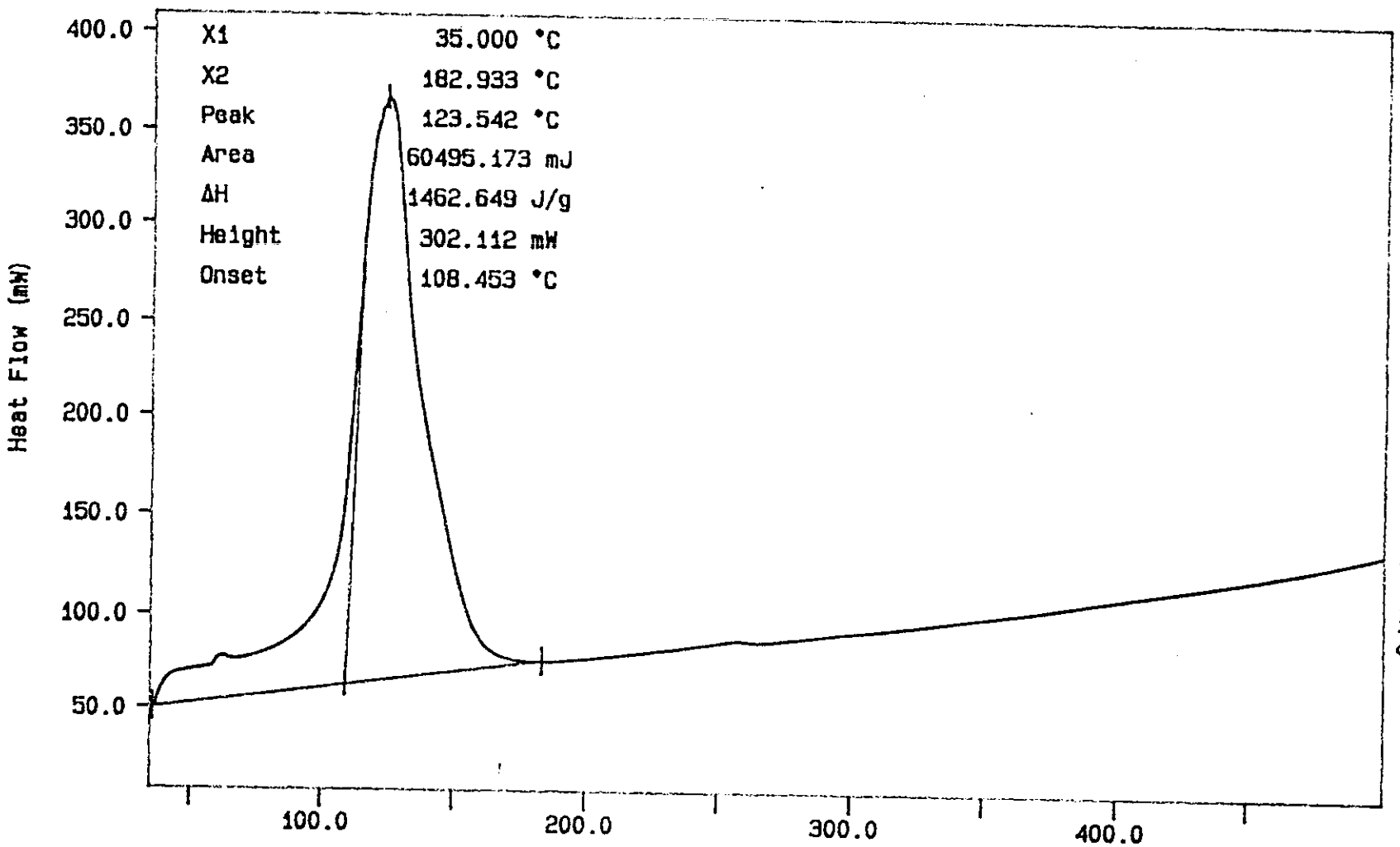


exotherm down, N2 purge gas
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Nov 21 22:24:53 1995

WHC-SD-WM-DP-157, REV. 1
WHC-SD-WM-DP-157, REV. 0

Curve 1: DSC
File info: SAM112106 Tue Nov 21 23:21:17 1995
Sample Weight: 41.360 mg
S95T003750 DUP



exotherm down, N2 purge gas
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Nov 22 00:25:42 1995

WHC-SD-WM-DP-157, REV. 1
WHC-SD-WM-DP-157, REV. 0

LABCORE Data Entry Template for Worklist# 4000

Analyst: BDV **Instrument:** DSC01 **Book #** —

Method: LA-514-113 Rev/Mod —

WHC-SD-WM-DP-157, REV. 1

Worklist Comment: Dry DSCs for BX-112. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000202	BX-112	1 SAMPLE	S95T003746	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
95000202	BX-112	2 DUP	S95T003746	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
95000202	BX-112	3 SAMPLE	S95T003750	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
95000202	BX-112	4 DUP	S95T003750	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
95000202	BX-112	5 SAMPLE	S95T003754	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
95000202	BX-112	6 DUP	S95T003754	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry

Data entered + verified by Blandina Valenzuela 12/1/95

Final page for worklist # 4000

Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 3730

Analyst: SMF **Instrument:** TGA01 TG401 **Book #** 65N84

Method: LA-560-112 Rev/Mod B-1 WHC-SD-WM-DP-157, REV. 1

Worklist Comment: BX-112 TGA. Please run under N2. PRIORITY.

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID	59.74	60.05	N/A	%
95000202	BX-112	2	SAMPLE	S95T003754	0		TGA-01	SOLID	N/A	65.42		%
95000202	BX-112	3	DUP	S95T003754	0		TGA-01	SOLID	65.42	65.50	N/A	%

Final page for worklist # 3730

Joann Fuller for Susie Fuller 11/21/95
Analyst Signature Date

Verified by Blandina Valenzuela 11/27/95

R Utt 11/22/95
Analyst Signature Date

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 64 TO 66.

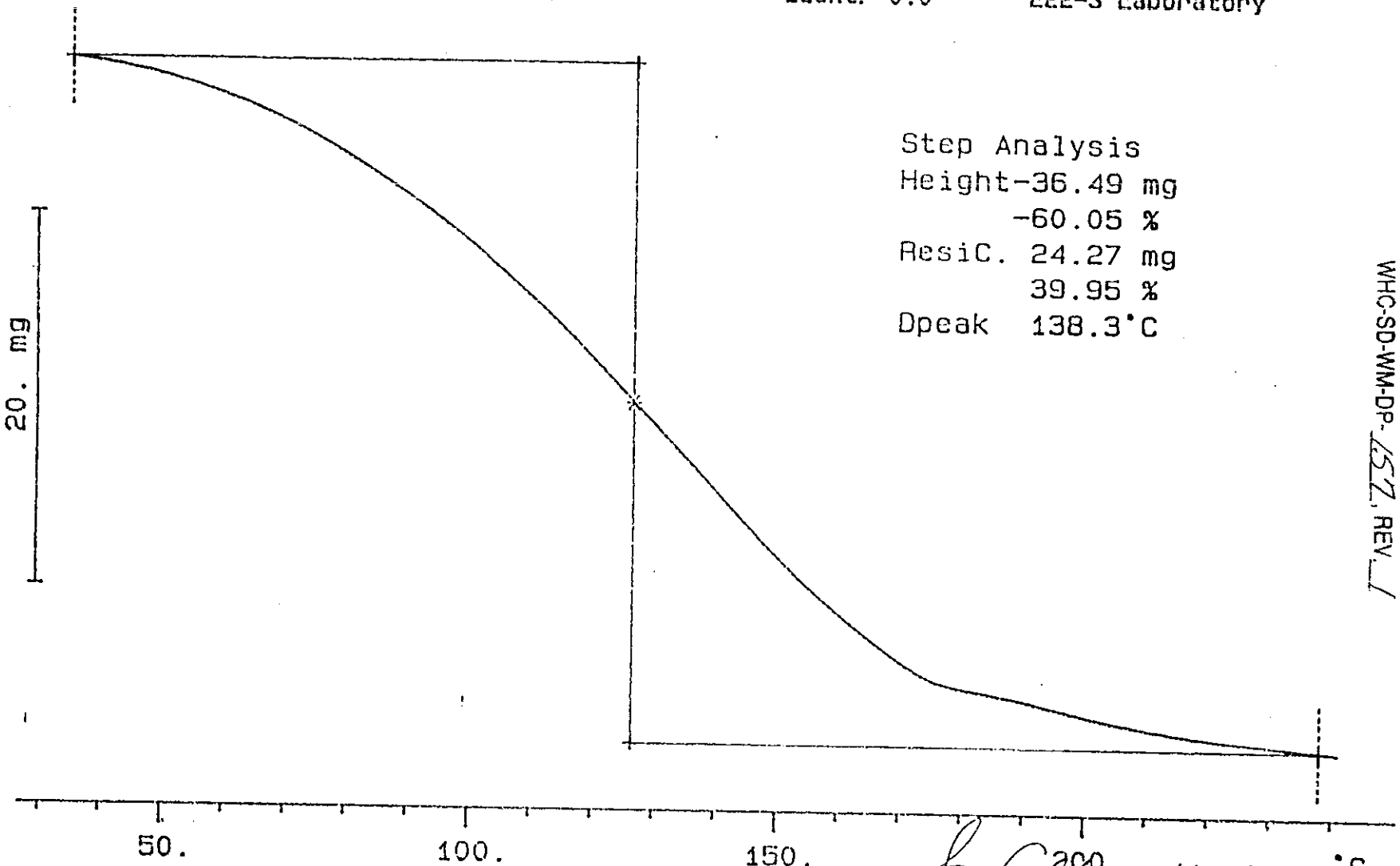
TGA STD 65N8A

60.764 mg

Rate: 10.0 °C/min

File: 00014.001 TG METTLER 21-Nov-95

Ident: 0.0 222-S Laboratory

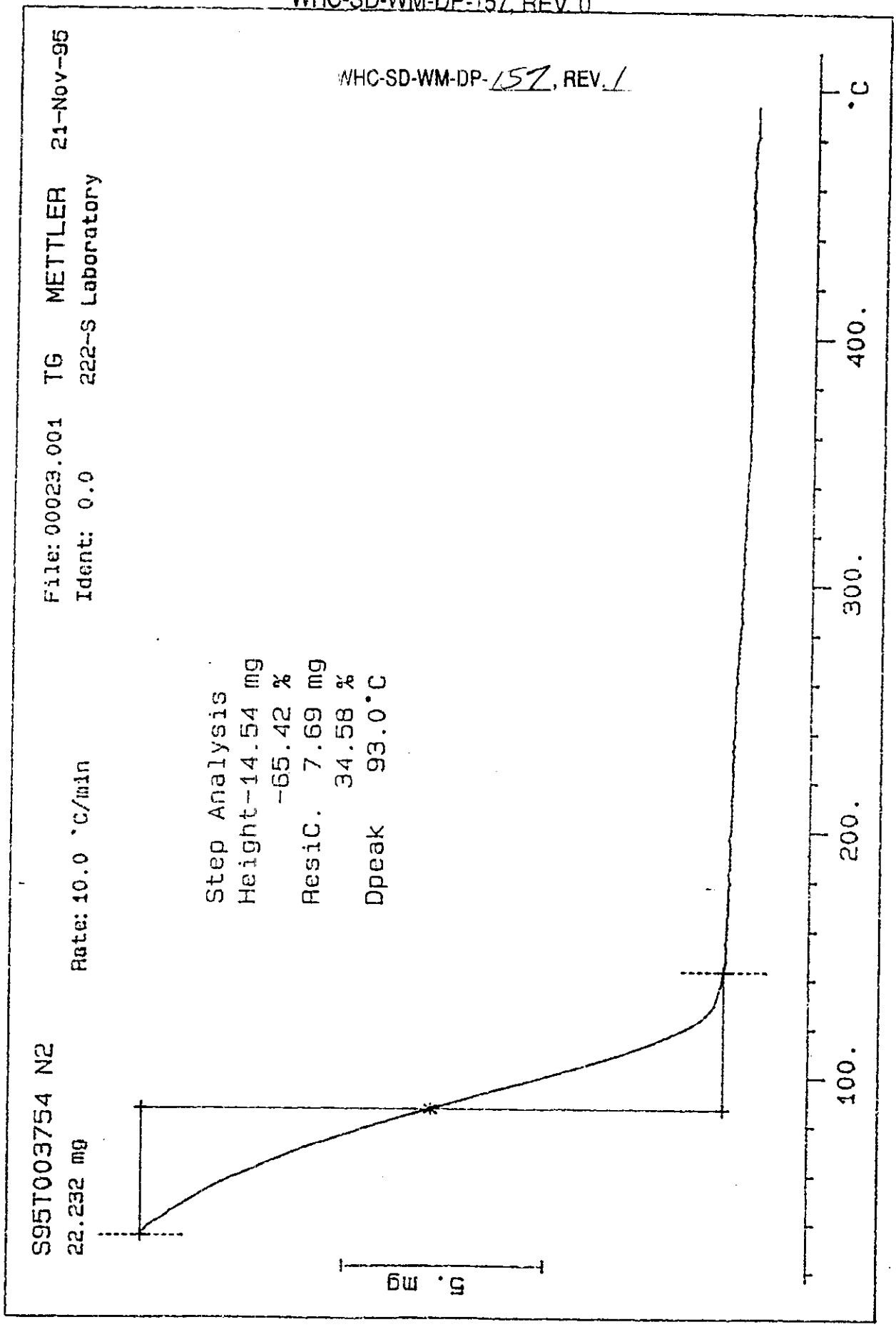


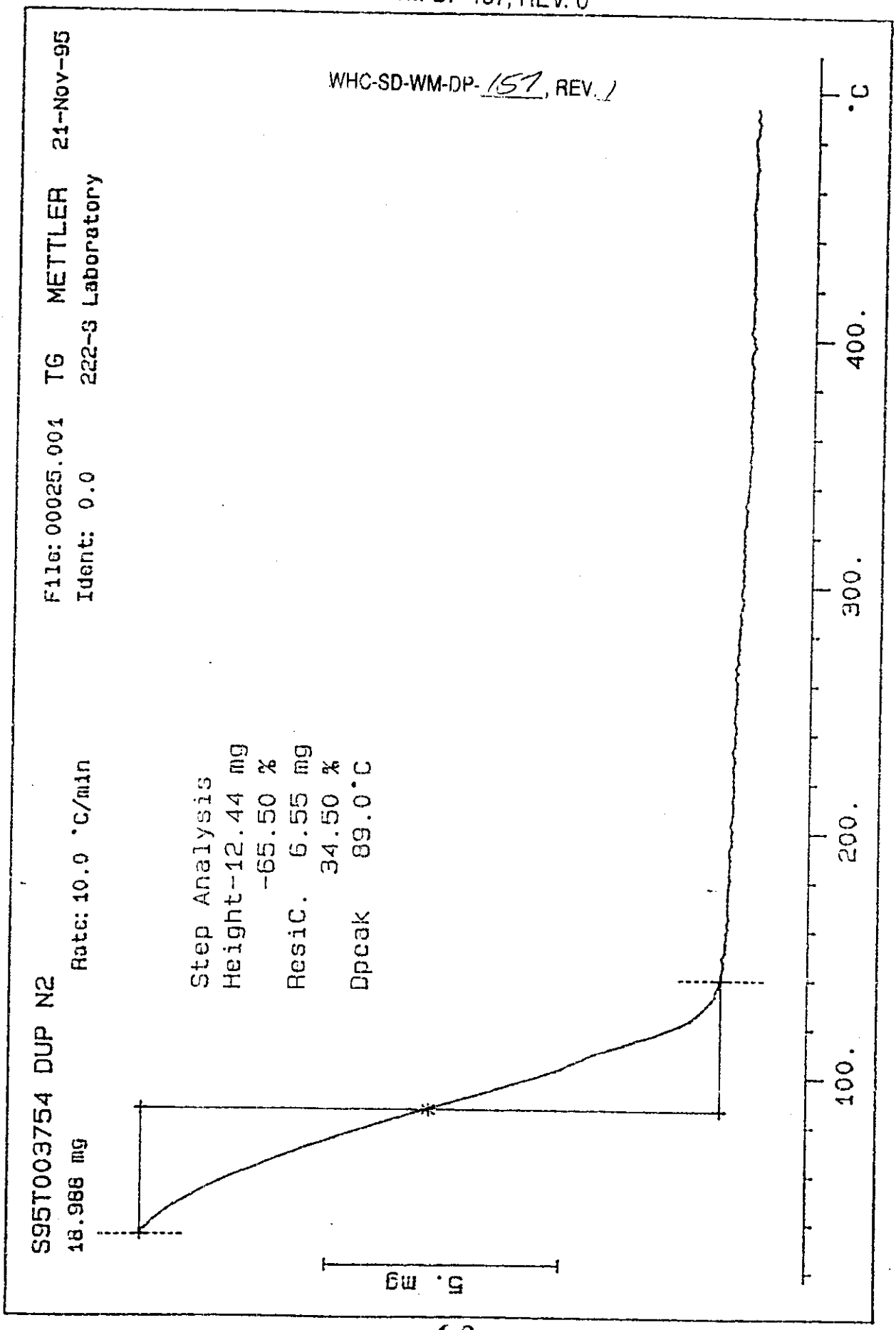
Step Analysis
Height -36.49 mg
-60.05 %
ResiC. 24.27 mg
39.95 %
Dpeak 138.3°C

WHC-SD-WM-DP-157, REV. 1

WHC-SD-WM-DP-157, REV. 0

S M Fulton 11-21-95


S95T003754 N2
22.232 mg
Rate: 10.0 °C/min
File: 00023.001 TG METTLER 21-Nov-95
Ident: 0.0 222-S Laboratory
Step Analysis
Height-14.54 mg
-65.42 %
Resic. 7.69 mg
34.58 %
Dpeak 93.0°C
5. mg
100.
200.
300.
400.
°C



WHC-SD-WM-DP-157, REV. 1

LABCORE Data Entry Template for Worklist# 3734

Analyst: SmF **Instrument:** TGA01 TG403 **Book #** 65NBA

Method: LA-514-114 Rev/Mod C-1

Worklist Comment: PE BX-112 tga WHC-SD-WM-DP-157, REV. 1

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-03	SOLID	59.74	60.04	N/A	%
95000202	BX-112	2	SAMPLE	S95T003746	0		TGA-03	SOLID	N/A	55.59		%
95000202	BX-112	3	DUP	S95T003746	0		TGA-03	SOLID	55.59	63.30	N/A	%
95000202	BX-112	4	SAMPLE	S95T003750	0		TGA-03	SOLID	N/A	63.37		%
95000202	BX-112	5	DUP	S95T003750	0		TGA-03	SOLID	63.37	63.52	N/A	%

Final page for worklist # 3734

Analyst Signature Date 11/21/95

Analyst Signature Date 11/22/95

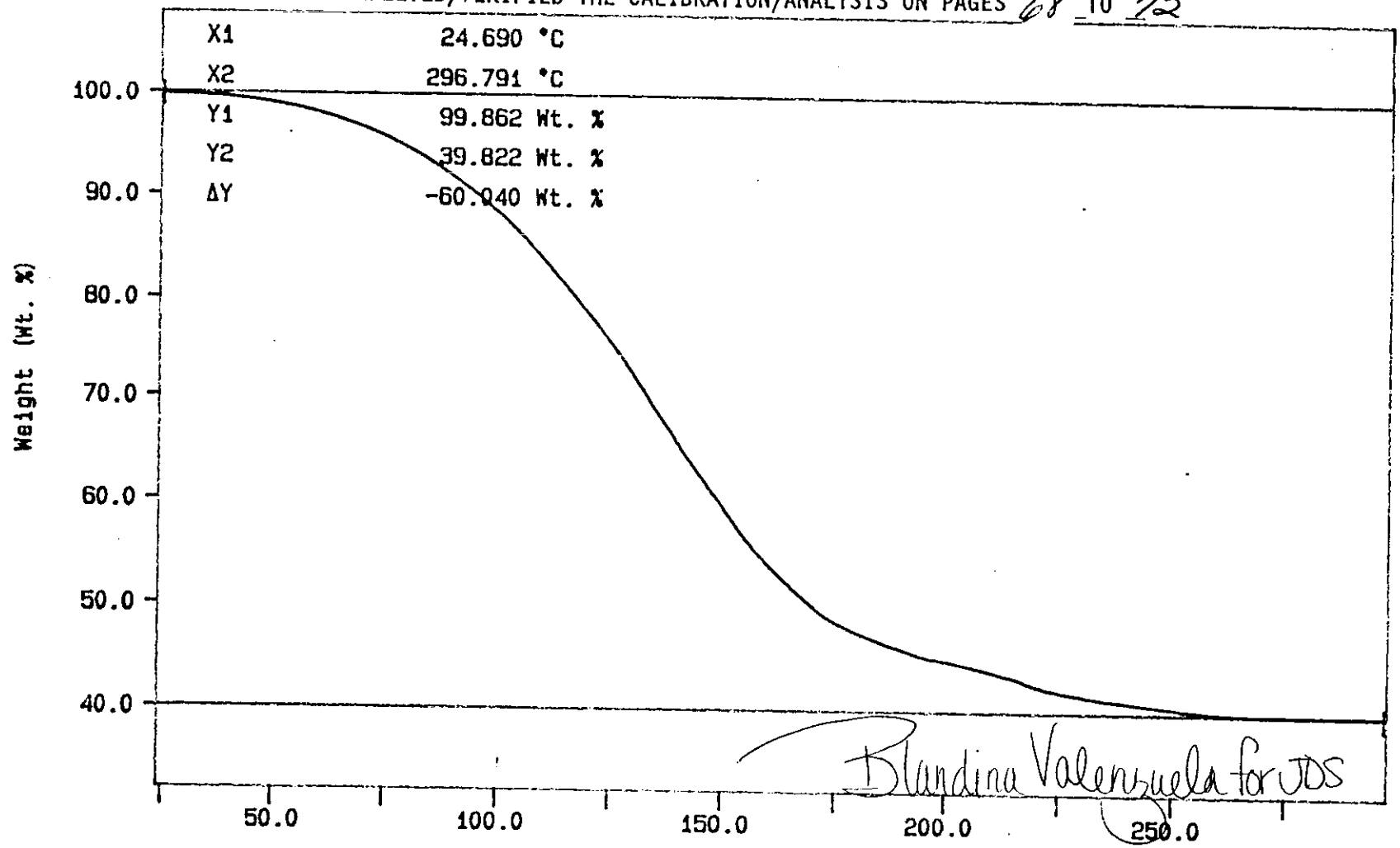
Verified by Blandina Valenzuela 11/27/95

Data Entry Comments: S95T003746: the flat portion of the thermogram is due to static electricity between the sample pan and the furnace the sample will be run again.

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: TGA
File info: TER112101 Tue Nov 21 07:47:10 1995
Sample Weight: 24.173 mg
65N8-A Terliq

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 68 TO 72



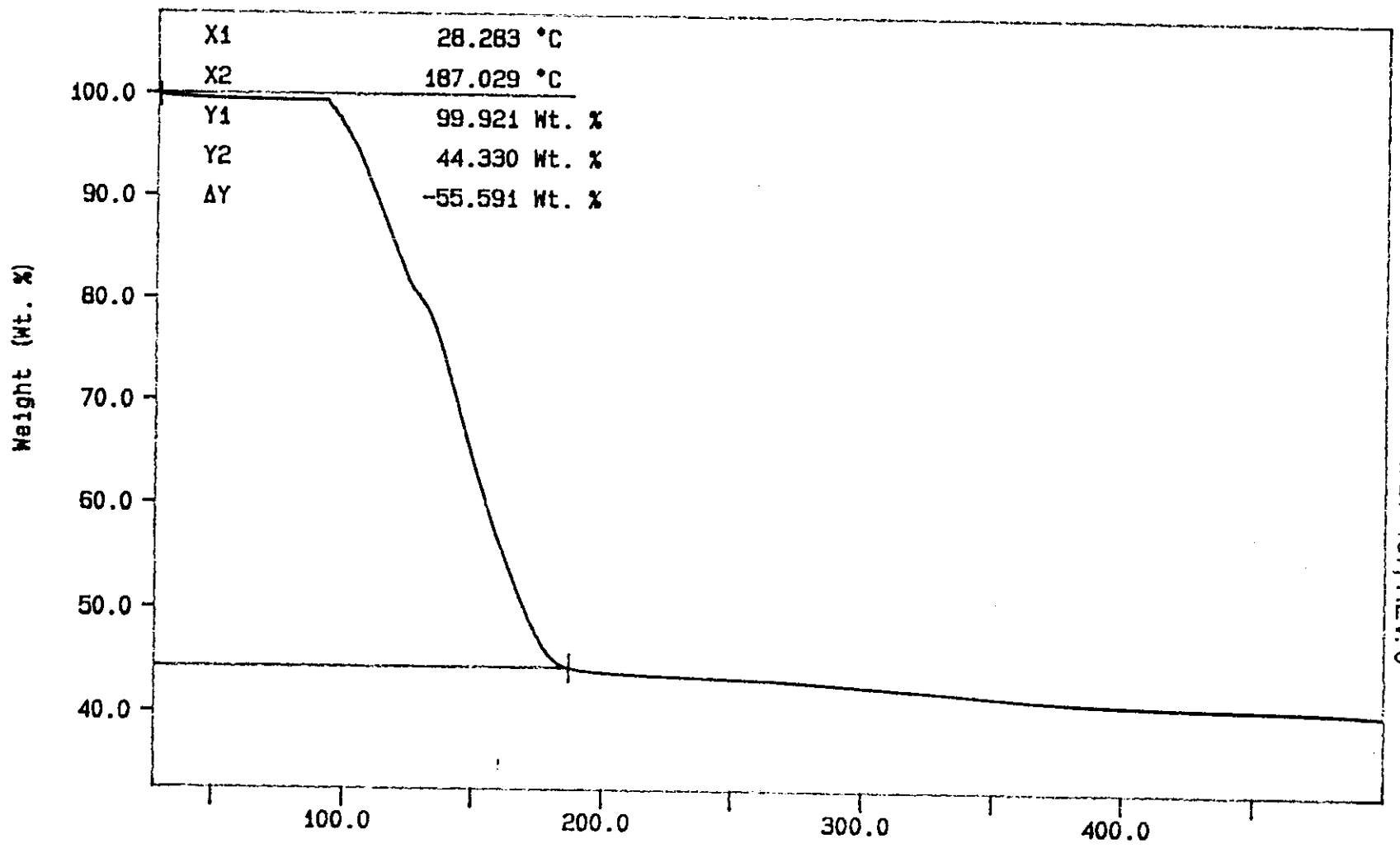
Blandina Valenzuela for JDS

N2 10C/MIN
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 300.0 C

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Nov 21 17:39:44 1995

WHC-SD-WM-DP-157, REV. 0

Curve 1: TGA
File info: SAM112103 Tue Nov 21 18:30:51 1995
Sample Weight: 32.917 mg
S95T003746



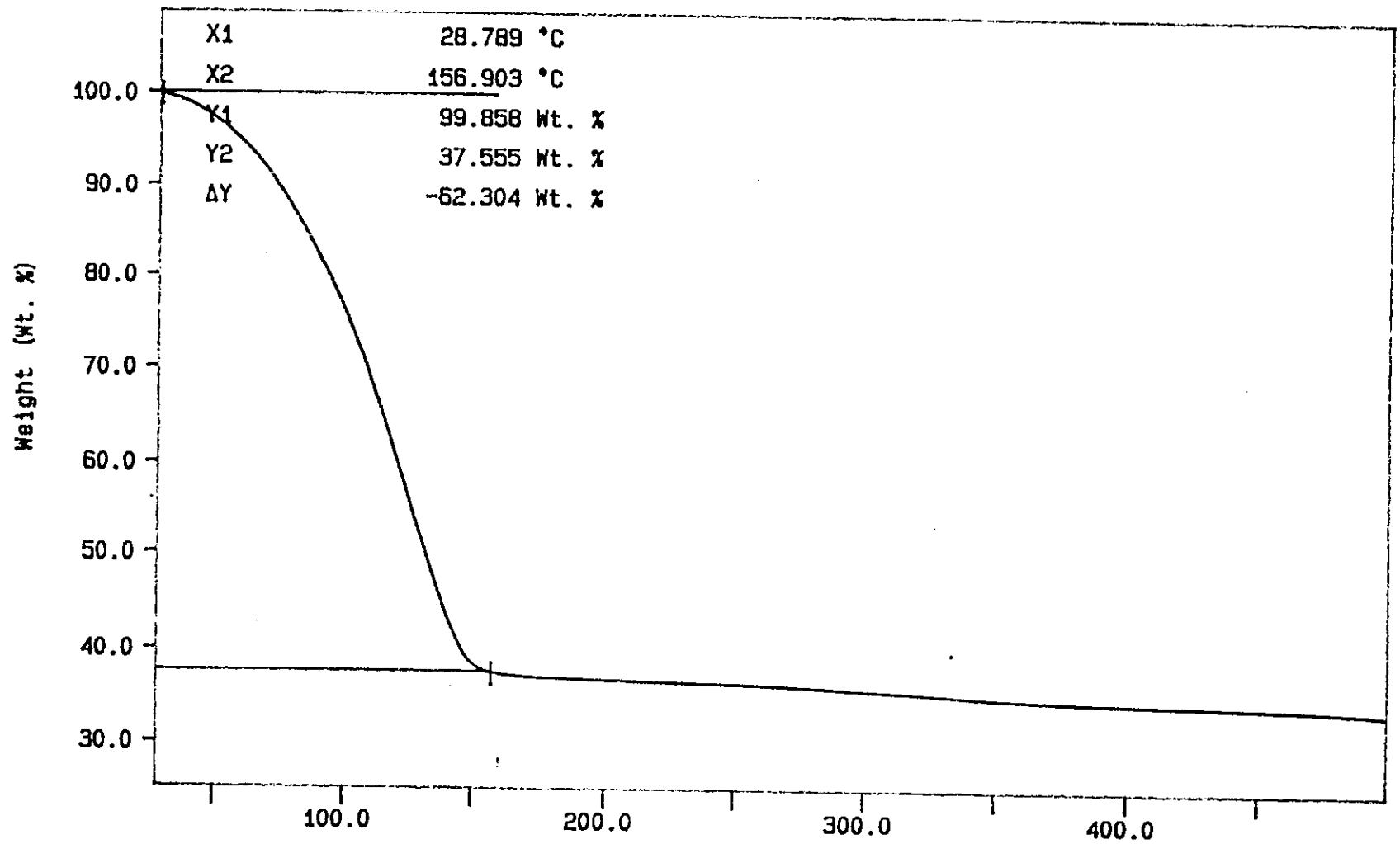
10C/MIN N2
TEMP1: 30.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Nov 21 19:04:17 1995

WHC-SD-WM-DP-157, REV. 0

WHC-SD-WM-DP-157, REV. 1

Curve 1: TGA
File info: SAM112104 Tue Nov 21 21:08:37 1995
Sample Weight: 17.745 mg
S95T003746 DUP



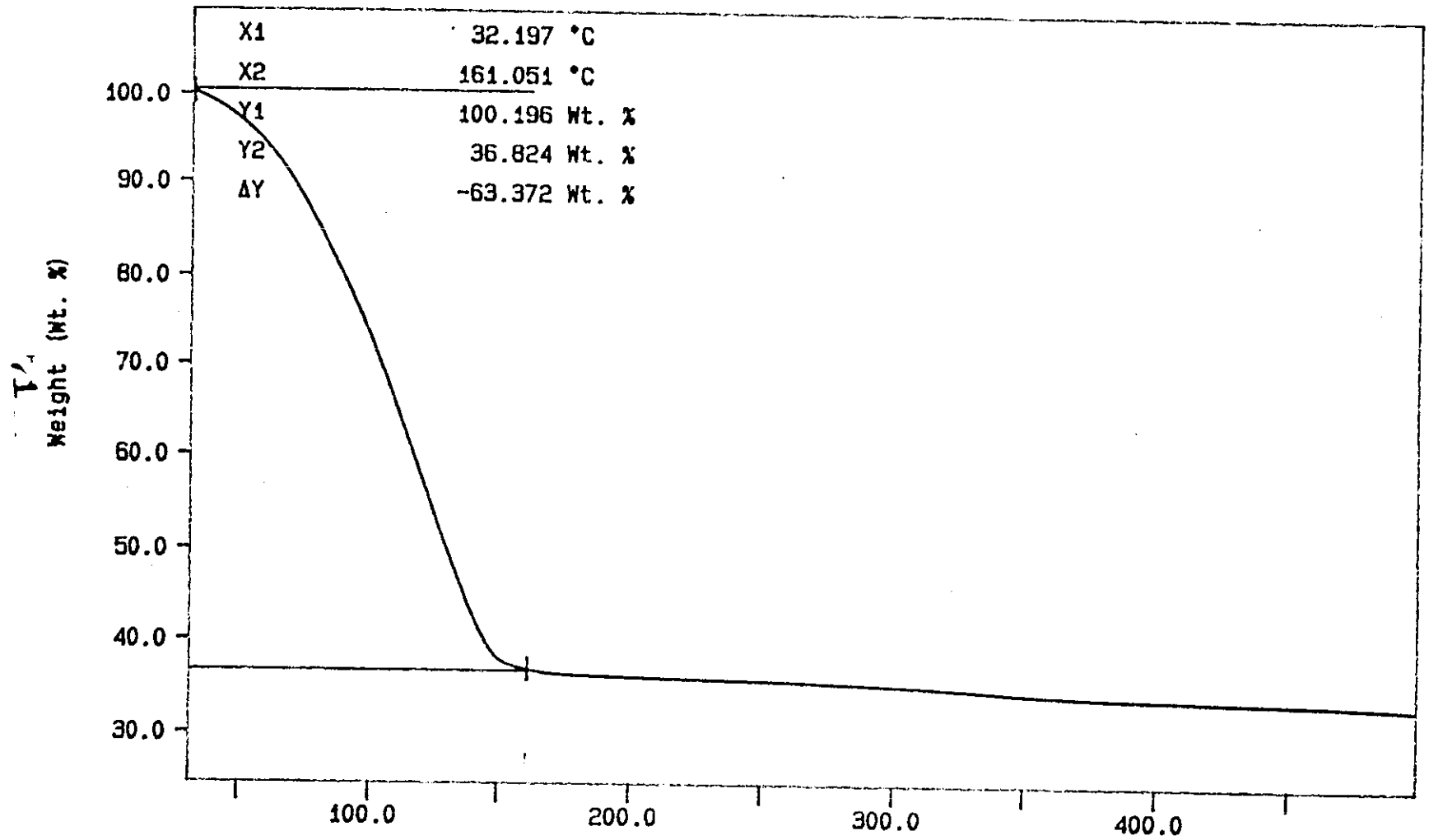
10C/MIN N2
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Nov 21 21:14:57 1995

WHC-SD-WM-DP-157, REV. 0

WHC-SD-WM-DP-157, REV. 0

Curve 1: TGA
File info: SAM112105 Tue Nov 21 22:15:25 1995
Sample Weight: 16.036 mg
S95T003750

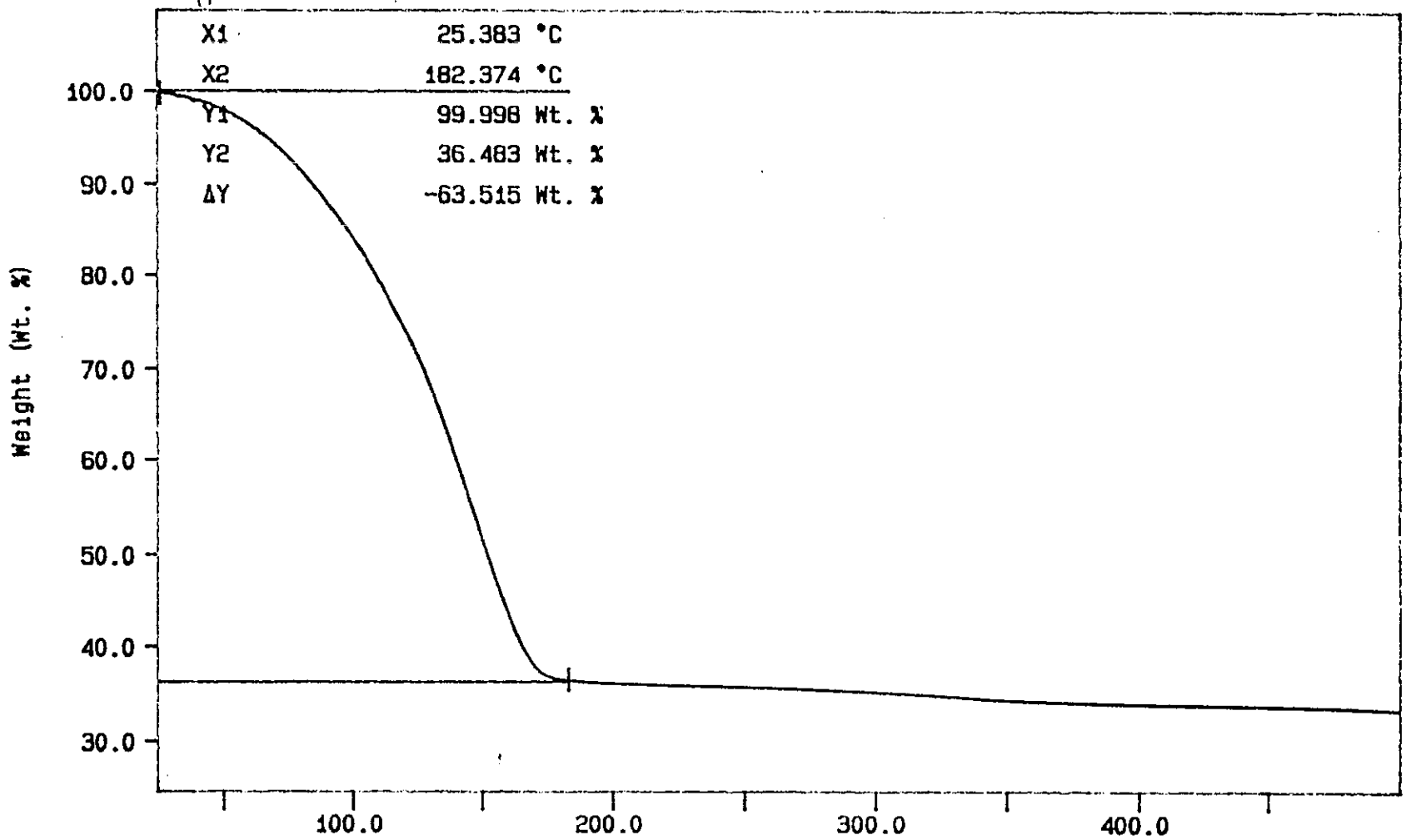


10C/MIN N2
TEMP1: 25.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Nov 21 22:31:24 1995

WHC-SD-WM-DP-157, REV. 0

Curve 1: TGA
File info: SAM112106 Tue Nov 21 23:26:24 1995
Sample Weight: 28.341 mg
S95T003750 DuP
SMF 11.21.95



10C/MIN N2
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Nov 22 00:32:42 1995

WHC-SD-WM-DP-157, REV. 0

WHC-SD-WM-DP-157, REV. 1

LABCORE Data Entry Template for Worklist# 4003

Analyst: JDS **Instrument:** TGA0 3 **Book #** 65N8-A

Method: LA-514-114 Rev/Mod C-1

WHC-SD-WM-DP-157, REV. 1

Worklist Comment: Please run BX-112 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-03	SOLID	59.74	60.32	N/A	%
95000202	BX-112	2	SAMPLE	S95T003746	1		TGA-03	SOLID	N/A	60.72		%
95000202	BX-112	3	DUP	S95T003746	1		TGA-03	SOLID	60.72	61.77	N/A	%

Final page for worklist # 4003

See attached for signatures
Analyst Signature Date 12/5/95

Verified by Blandina Valenzuela 12/6/95

[signature] 12-6-95
Analyst Signature Date

Data Entry Comments: Sample produced a second weight loss step of 3.976%

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 4003

Analyst: Jds **Instrument:** TGA0 ✓ 12/5/95 BAN **Book #** 65N8-A

Method: LA-560-112 Rev/Mod _____ WHC-SD-WM-DP-157, REV. 1

Worklist Comment: Please run BX-112 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID			N/A	%
95000202	BX-112	2	SAMPLE	S95T003746	0		TGA-01	SOLID	N/A			%
95000202	BX-112	3	DUP	S95T003746	0		TGA-01	SOLID			N/A	%

Final page for worklist # 4003

JAh Sph 12-5-95
Analyst Signature Date

Analyst Signature Date

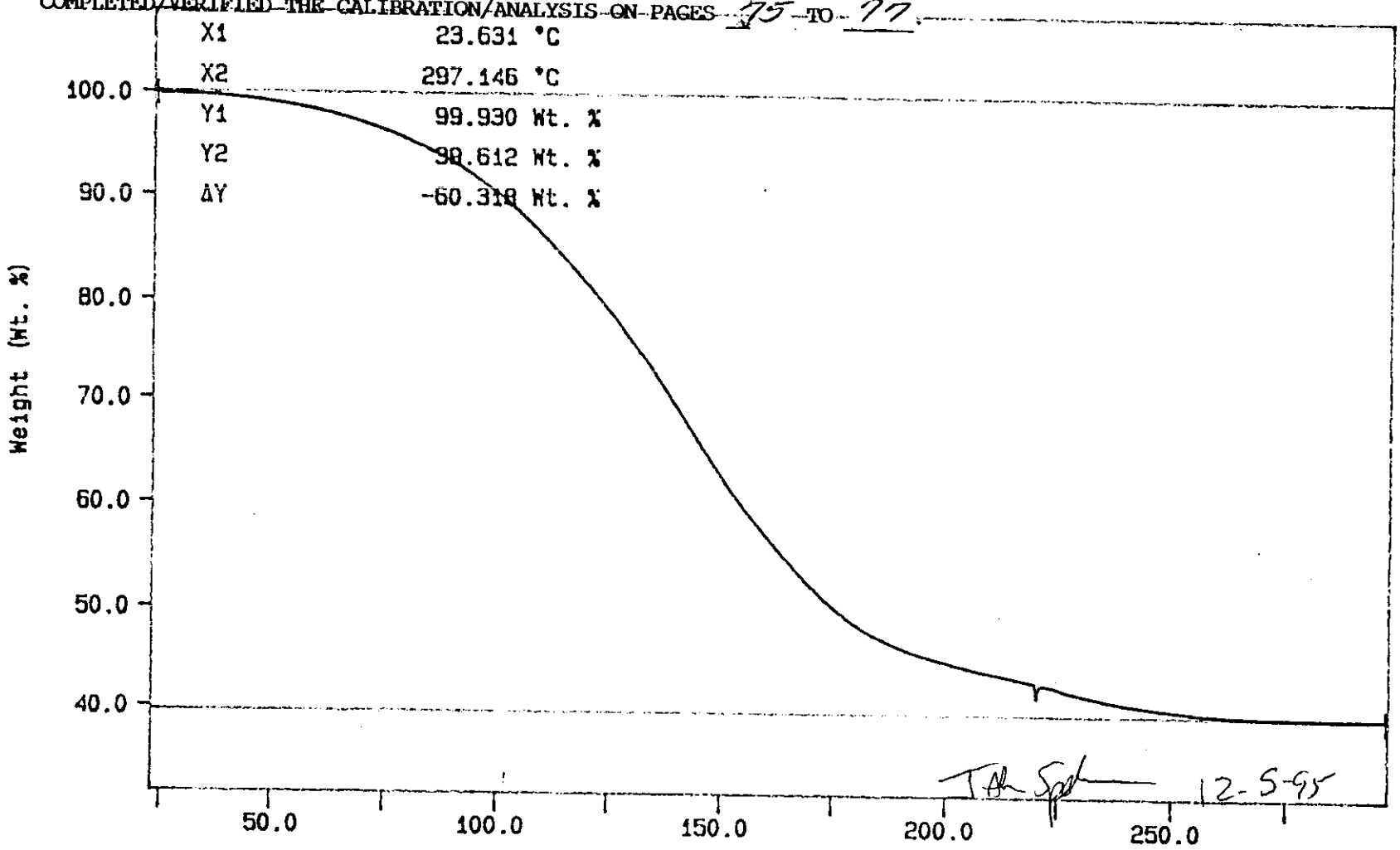
Other instrument was used.
12/5/95
BAN

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

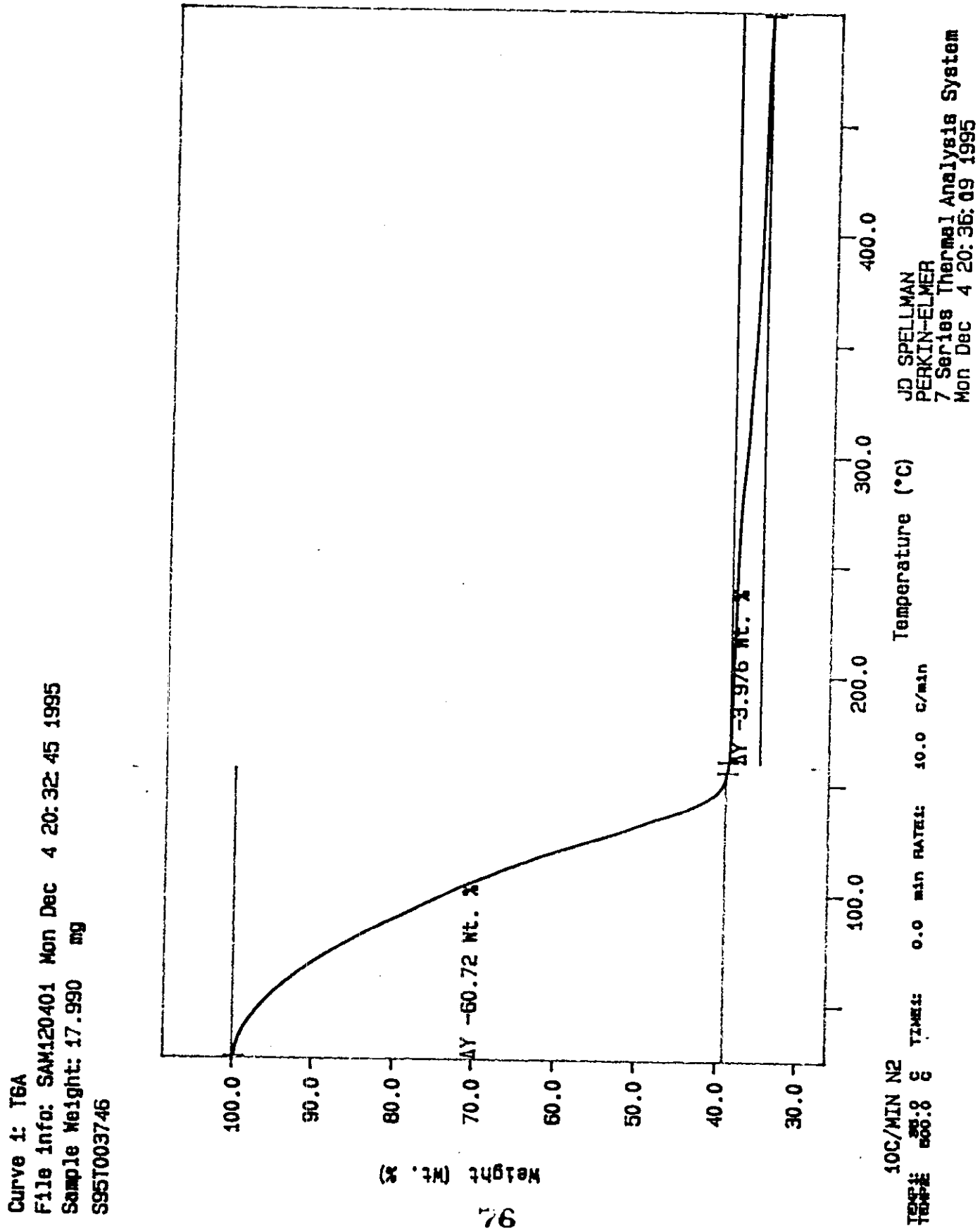
Curve 1: TGA
File info: TER120401 Mon Dec 4 18:36:35 1995
Sample Weight: 24.774 mg
65N8-A Terliq

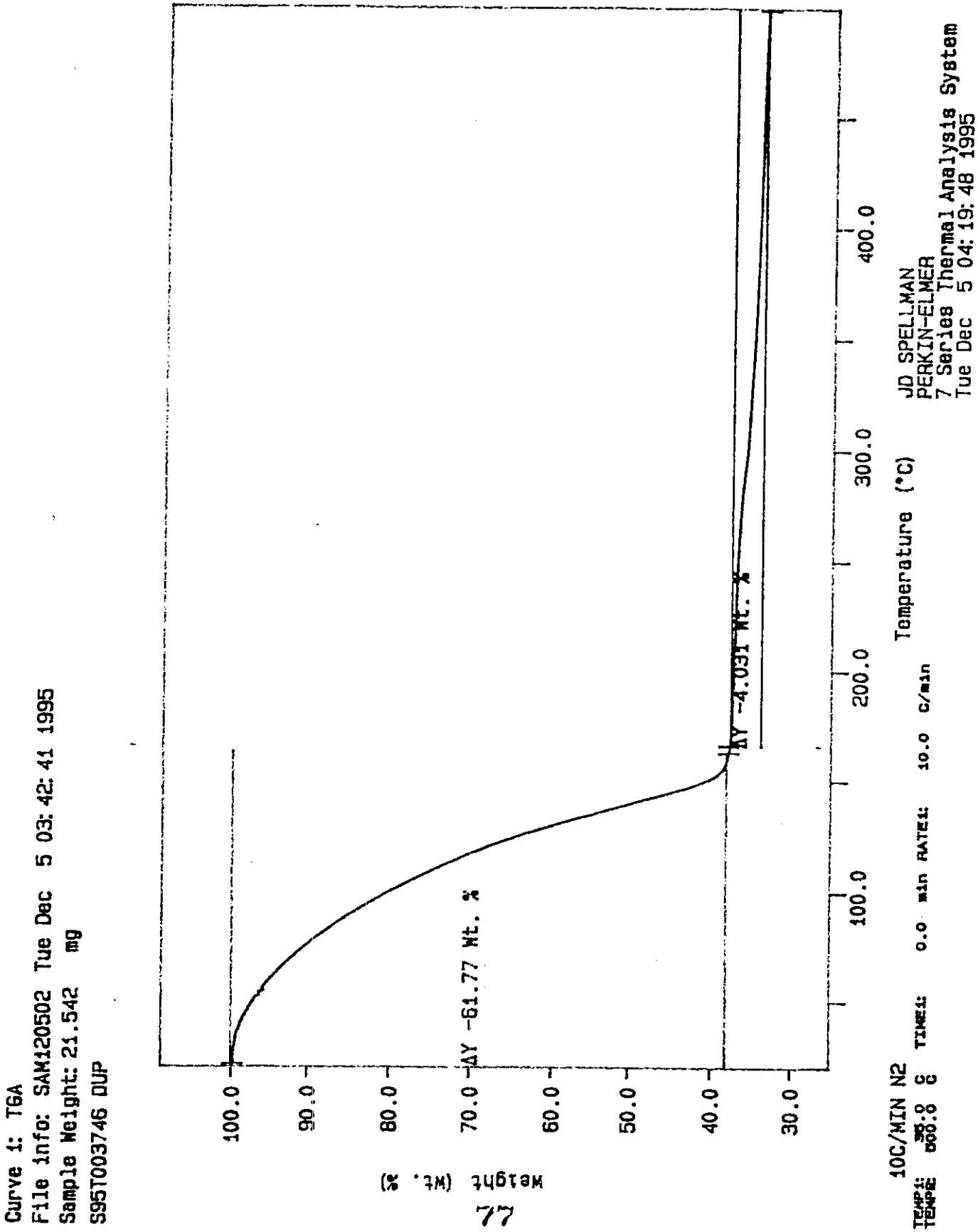
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 75 TO 77.



N2 10C/MIN
TEMP1: 30.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 300.0 C

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Dec 5 04:36:24 1995


Curve 1: T6A
File info: SAM120401 Mon Dec 4 20:32:45 1995
Sample Weight: 17.990 mg
S95T003746
Weight (Wt. %)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
ΔY -60.72 Wt. %
ΔY -3.976 Wt. %
100.0
200.0
300.0
400.0
Temperature (°C)
10C/MIN N2
TEMP: 30.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 800.0 C
JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Dec 4 20:36:09 1995


Curve 1: TGA
File info: SAM120502 Tue Dec 5 03:42:41 1995
Sample Weight: 21.542 mg
S95T003746 DUP
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
weight (Wt. %)
ΔY -61.77 Wt. %
ΔY -4.031 Wt. %
100.0
200.0
300.0
400.0
Temperature (°C)
10C/MIN N2
TEMP1: 30.0 C
TEMP2: 800.0 C
TIME1: 0.0 min RATE1: 10.0 C/min
JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Dec 5 04:19:48 1995

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		ECN NO.: 629011

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