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45 DAY SAFETY SCREENING RESULTS & FINAL REPORT FOR TANK 241-BX-110 AUGER SAMPLES 95-AUG-045 & 95-AUG-046

Pages: 91

NOV 17 1995

ENGINEERING DATA TRANSMITTAL

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1	WHC-SD-WM-DP-155	N/A	0	45-Day Safety Screening Results and Final Report for Tank 241-BX-110, Auger Samples 95-AUG-045 and 95-AUG-046	Q	2	1	1

16. KEY

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2	1	Cog.Eng. R.D. Schreiber	RDSchreiber	11/17/95							
2	1	Cog. Mgr. J.G. Kristofzski	JK	11/17/95							
2	1	QA Tzu L. Tung	Tzu L. Tung	11/17/95							
		Safety									
		Env.									
2	1	Program Support A.D. Rice	A.D. Rice	11-17-95							

18.	19.	20.	21. DOE APPROVAL (if required)
A.E. Young Signature of EDT Originator — Date 11-17-95	N/A Authorized Representative for Receiving Organization — Date	J.G. Kristofzski Cognizant Manager — Date 11/17/95	Ctrl. No. [] Approved [] Approved w/comments [] Disapproved w/comments

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Document Title:	45-Day Safety Screening Results and Final Report for Tank 241-BX-110, Auger Samples 95-AUG-045 and 95-AUG-046
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This document was reviewed following the procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara Broz 11/17/95

Kara Broz

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SUPPORTING DOCUMENT

1. Total Pages 89

2. Title	3. Number	4. Rev No.
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ANALYTICAL SERVICES

45-DAY SAFETY SCREENING RESULTS AND FINAL REPORT FOR TANK 241-BX-110, AUGER SAMPLES 95-AUG-045 AND 95-AUG-046

DATE PRINTED: NOVEMBER 14, 1995

54-7600-075

Hanford Operations and Engineering Contractor for the US Department of Energy

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NARRATIVE

45-DAY SAFETY SCREENING RESULTS AND FINAL REPORT FOR TANK 241-BX-110, AUGER SAMPLES 95-AUG-045 AND 95-AUG-046

Summary

This is the 45-day and final report for auger samples taken from risers 3 and 6 of tank 241-BX-110 (BX-110) on October 12, 1995. The samples were received at the 222-S Laboratories on October 13, 1995 and underwent safety screening analyses (differential scanning calorimetry [DSC], thermogravimetric analysis [TGA], total alpha analysis, and bulk density analysis) per the safety screening data quality objective (DQO) (Reference 1). In addition to the safety screening analyses, the tank BX-110 samples were analyzed for total organic carbon (TOC) as part of the organic safety program's DQO (Reference 2). Tank BX-110 is not on the Organic Watch List; however, it is included in Appendix B of the Operating Specification Document (OSD) as a possible Organic Watch List tank. None of the notification limits specified in the tank BX-110 Sampling and Analysis Plan (SAP) (Reference 3) were exceeded for these auger samples; therefore, this tank's classification as an Appendix B tank, based solely on these auger samples, is not warranted. It must be noted, though, that this sampling event obtained only the top 12 inches of waste in a tank which has an estimated waste depth of 71 inches. To fully justify removal of tank BX-110 from Appendix B of the OSD, core sampling must be performed.

The data summary tables included in this report summarize the analytical results associated with these auger samples. In addition, the results of the statistical analyses (calculation of the 95% confidence limits) are given in Tables 2, 3, 4, and 5 on a sample by sample basis. The 95% confidence interval limits have also been calculated assuming that these random samples represent the entire population of the 12 inches sampled (similar to a calculation on an entire tank basis). Alpha total analysis was not included in this calculation because only one auger yielded results above the detection limit. The results for the TGA, DSC, and TOC analyses are summarized in Table 1, and corroborate the conclusion that the top 12 inches of waste in this tank may be classified as "safe".

Table 1: 95% Confidence Interval Limits for the 12 Inches of Waste Sampled from Tank BX-110

Analysis	Lower or Upper Limit
TGA	0 wt% water (Lower)
DSC	30.87 J/g dry (Upper)
TOC	5376 μg C/g (Upper)

As the final report for this analysis project, this report also contains the following information: chains of custody forms, photographs of the extruded samples, sample preparation data, and the raw data for all analyses. Although not included in this report, the hot cell logbook notes may be found in Reference 4.

Sample Receipt and Extrusion

Auger Sample 95-AUG-045 (Riser 6)

Auger sample 95-AUG-045 was collected from riser 6 of tank BX-110 on October 12, 1995, and was received at the 222-S Laboratories on October 13, 1995. Extrusion took place on October 18, 1995. Solid material totalling 125.7 grams was recovered from the top half of the auger (flutes 1 through 8) and was subsampled into one jar. The solid material was greyish/blue in color and appeared crystalline, similar to crushed ice. All analyses and archiving requirements were performed for the solid subsample in accordance with Reference 3. In addition to the solids, some greyish/blue, opaque drainable liquid was obtained; however, this liquid volume was insufficient for subsampling and was not retained.

Auger Sample 95-AUG-046 (Riser 3)

Auger sample 95-AUG-046 was collected from riser 3 of tank BX-110 on October 12, 1995, and was received at the 222-S Laboratories on October 13, 1995. Extrusion took place on October 19, 1995. Solid material totalling 185.2 grams was found on the bottom half of the auger, on flutes 9 through 20. The solids were a mixture of greyish/blue granular material (predominately flutes 9 through 13) and brown sludge (flutes 14 through 20), and was subsampled into one jar. All analyses and archiving requirements were performed for the solid subsample in accordance with Reference 3. Cloudy, brown liquid was also obtained with the solids, but this liquid volume was insufficient for subsampling. In addition to the solid and liquid sample material, a small piece of cloth covered with brown sludge material was obtained from the tip of the auger. This rag was archived per direction from the Safety Program.

Analytical Results

THERMOGRAVIMETRIC ANALYSIS (Percent Moisture)

Analyses for percent water by TGA were performed on sample numbers S95T002903 and S95T002945 (auger samples 95-AUG-045 and 95-AUG-046, respectively) using procedure LA-560-112, Rev. B-0. All samples were run under a nitrogen atmosphere. Primary and duplicate results varied widely between the two auger samples, with average results of 44.45 percent and 9.04 percent water for samples S95T002903 and S95T002945, respectively. This variability in the data may be a result of heterogeneity observed in the samples due to their crystalline nature (see Sample Receipt and Extrusion section above).

The maximum acceptable analytical precision per the SAP (Reference 3) is a relative percent difference (RPD) of 10% between the primary and duplicate sample results. Although the TGA precision for sample S95T002903 was within this criterion, the precision on sample S95T002945 exceeded the acceptance criterion, with an RPD value of 38.9%. A triplicate analysis was performed on sample S95T002945 due to the high RPD value, yielding a value of 9.66 percent water. This triplicate analysis is listed in the summary tables as an individual sample result and is identified by the number "1" in the Replicate or "R" column. The Laboratory Measurement Control System (LMCS) control standards exhibited recoveries of 101.1 and 101.3 percent, which were within the program's specified accuracy control limits of 90 to 110 percent.

Statistical analyses were performed on the TGA data per the requirements of Reference 2. The 95% confidence interval lower limits for each sample submitted for TGA analysis are presented in Table 2. The 95% confidence interval lower limit (LL) for sample S95T002903 is above the minimum criterion of 17% water stated in Reference 2, but the results for sample S95T002945 are below the limit. Since the DSC results for these samples are much less than the energetics safety limit of 480 J/g (dry weight basis), the low moisture content of sample S95T002945 does not constitute unsafe conditions. Further, a small amount of drainable liquid was obtained in both auger samples (see extrusion photographs), which should be factored in when determining the safety of this sample material from tank BX-110.

Table 2. 95% Confidence Interval Lower Limits for Percent Water (Units are in %).

Sample Number and Description	Avg	$\hat{\sigma}^2_{\hat{\mu}}$	LL
S95T002903 95-AUG-045	44.45	1.20	39.55
S95T002945 95-AUG-046	9.04	3.16	6.04

AUG = auger $\hat{\sigma}^2_{\hat{\mu}}$ = variance of the mean

DIFFERENTIAL SCANNING CALORIMETRY

Differential thermal analyses were performed using procedure LA-514-113, Rev. C-0, under a nitrogen purge. All results were well below the safety screen notification limit of 480 joules/g (dry weight basis); therefore, no notifications were necessary.

The primary and duplicate sample results for samples S95T002903 and S95T002945 exceeded the precision criterion (RPD of less than 10%), with RPD values of 200% for both samples. Due to these high RPD values, triplicate analyses were performed for both samples, which yielded results of 10.99 J/g and 27.26 J/g (dry weight basis), respectively. These triplicate analyses are listed in the summary tables as additional sample results and are identified by the number "1" in the Replicate or "R" column (the value in the duplicate column is the original duplicate result; no second duplicate was performed). The Laboratory Measurement Control System (LMCS) control standards exhibited recoveries of 97.72 and 106.2 percent, which were within the program's specified accuracy control limits of 90 to 110 percent.

Statistical analyses were performed on the DSC data per the requirements of Reference 1. This document requires comparison of the 95% confidence interval upper limit of the data to the applicable limit (e.g. less than 480 J/g on a dry weight basis). The results for each sample submitted for DSC are presented in Table 3. The upper limit of the 95% confidence interval of the mean for all samples was below the safety screening criterion (Reference 3).

Table 3. 95% Confidence Interval Upper Limits for DSC (Units are in joules/gram).

Sample Number and Description	Avg	$\hat{\sigma}^2_{\hat{\mu}}$	UL
S95T002903 95-AUG-045	8.23	52.58	20.45
S95T002945 95-AUG-046	15.02	191.60	38.36

AUG = auger $\hat{\sigma}^2_{\hat{\mu}}$ = variance of the mean

ALPHA TOTAL

The alpha total analyses were performed on samples S95T002906 and S95T002946 using procedure LA-508-101, Rev. D-2. Fusion digestions were prepared using procedure LA-549-141, Rev. D-0 and are identified as "F" in the aliquot or "A" column of the summary tables. In order to determine the notification limit for this analysis, the limit of 1 g/L as specified in References 1 and 3 was converted to units of microcuries per gram using the density of each sample (1.57 g/mL and 1.7 g/mL, respectively). For sample S95T002906, the notification limit was calculated to be 39.2 μCi/g, and sample S95T002946 has a notification limit of 36.2 μCi/g.

Both samples were analyzed for total alpha twice due to original spike recoveries which were well below the acceptable criterion. This low spike recovery is most likely due to the fact that a large sample size was used for the analysis, resulting in a high amount of solids on the sample mount. Although the results of this initial run are not shown on the summary tables, the raw data has been included in this report.

Both alpha total results for the second run were well below their respective notification limits and either below or near the instrument detection limit. The spike results for both of the samples were acceptable with values of 85.04% and 82.14%, respectively. However, since the results of sample S95T002906 were below the detection limit of 3.88E-03 μCi/g, and results for sample S95T002946 averaged 0.0109 μCi/g (about 3300 times below the sample's notification limit of 36.2 μCi/g), the samples were not rerun. The Laboratory Measurement Control System (LMCS) control standard exhibited recovery of 89.84 percent, which was just outside of the program's specified accuracy control limits of 90 to 110 percent.

The statistical analysis (presented in Table 4) indicates that none of the alpha total results exceeded their safety screening notification criterion at an upper confidence level of 95%. Therefore, no additional analyses were necessary.

Table 4. 95% Confidence Interval Upper Limits for Total Alpha (Units are in μCi/g).

Sample Number and Description	Avg	$\hat{\sigma}^2_{\hat{\mu}}$	UL
S95T002906 95-AUG-045	< DL	--	--
S95T002946 95-AUG-046	0.0109	1.45E-06	0.0163

AUG = auger
DL = detection limit
$\hat{\sigma}^2_{\hat{\mu}}$ = variance of the mean

TOTAL ORGANIC CARBON

As part of the organic safety program's DQO requirements, total organic carbon (TOC) analysis was performed on the two auger samples from tank BX-110 (sample numbers S95T002903 and S95T002945). Procedure LA-342-100, Rev. A-0 (direct persulfate method) was used for the analyses. Sample and duplicate values ranged from 0.347 wt% to 0.410 wt% carbon for the two samples, which are nearly a factor of ten below the notification limit of 3 wt% carbon as specified in the SAP. Both samples met the SAP-specified precision requirement of 10% RPD, with values of 0.29 and 5.26%, respectively. Laboratory Measurement Control System (LMCS) control standard exhibited a recovery of 96.33 percent, which was within the program's specified accuracy control limits of 90 to 110 percent. The statistical analysis (presented in Table 5) indicates that, using an upper 95% confidence interval limit, none of the TOC results exceeded the safety screening criterion of 3 wt%.

Table 5. 95% Confidence Interval Upper Limits for TOC (Units are in μg C/g).

Sample Number and Description	Avg	$\hat{\sigma}^2_{\hat{\mu}}$	UL
S95T002903 95-AUG-045	3480	50	3506
S95T002945 95-AUG-046	4000	22050	4658

AUG = auger
$\hat{\sigma}^2_{\hat{\mu}}$ = variance of the mean

Project Coordinator: Ruth Schreiber

References:

(1) Dukelow, G. T., J. W. Hunt, H. Babad, J. E. Meacham, "Tank Safety Screening Data Quality Objective," WHC-SD-WM-SP-004, Rev. 2, dated August 31, 1995, Westinghouse Hanford Company, Richland, Washington.

(2) Turner, D. A., "Data Quality Objectives to Support Resolution of the Organic Complexant Safety Issue", WHC-SD-WM-DQO-006, Rev. 2, dated September 8, 1995, Westinghouse Hanford Company, Richland, Washington.

(3) Schreiber, R. D., "Tank 241-BX-110 Auger Sampling and Analysis Plan," WHC-SD-WM-TSAP-038, Rev. 0, dated October 9, 1995, Westinghouse Hanford Company, Richland, Washington.

(4) Fuller, R. K., Tank 241-BX-110, WHC-N-1276, Westinghouse Hanford Company, Richland, Washington.

SAMPLE DATA SUMMARY

45-DAY AND FINAL REPORT FOR TANK
BX-110

CORE NUMBER: n/a
SEGMENT #: 95-AUG-045

SEGMENT PORTION: W Whole Segment

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T002903			% Water by TGA using Mettler	%	101.1	n/a	45.22	43.67	44.45	3.49	n/a	n/a	n/a
S95T002903	1		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	10.99	0.00e+00	5.495	200	n/a	n/a	n/a
S95T002903			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	13.69	0.00e+00	6.845	200	n/a	n/a	n/a
S95T002903	1		DSC Exotherm using Mettler	Joules/g	106.2	n/a	6.100	n/a	n/a	n/a	n/a	n/a	n/a
S95T002903			DSC Exotherm using Mettler	Joules/g	97.72	n/a	7.600	0.00e+00	3.800	200	n/a	n/a	n/a
S95T002903			TOC by Persulfate/Coulometry	ug/g	96.33	5.100	3.48e+03	3.47e+03	3.48e+03	0.29	92.50	80.00	n/a
S95T002903			TIC by Acid/Coulometry	ug/g	99.50	2.00e-01	681.0	687.0	684.0	0.88	102.3	5.000	n/a
S95T002905			Bulk Density of Sample	g/mL	n/a	n/a	1.570	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T002906		F	Alpha of Digested Solid	uCi/g	89.84	<4.68e-03	<2.61E-03	<1.65E-3	n/a	n/a	85.04	3.88e-03	3.72E+02

45-DAY AND FINAL REPORT FOR TANK
BX-110

CORE NUMBER: n/a
SEGMENT #: 95-AUG-046

SEGMENT PORTION: W Whole Segment

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T002945	1		% Water by TGA using Mettler	%	101.3	n/a	9.660	n/a	n/a	n/a	n/a	n/a	n/a
S95T002945			% Water by TGA using Mettler	%	101.1	n/a	7.030	10.42	8.725	38.9	n/a	n/a	n/a
S95T002945	1		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	27.26	17.81	22.54	200	n/a	n/a	n/a
S95T002945			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	17.81	8.905	200	n/a	n/a	n/a
S95T002945	1		DSC Exotherm using Mettler	Joules/g	106.2	n/a	24.80	n/a	n/a	n/a	n/a	n/a	n/a
S95T002945			DSC Exotherm using Mettler	Joules/g	97.72	n/a	0.00e+00	16.20	8.100	200	n/a	n/a	n/a
S95T002945			TOC by Persulfate/Coulometry	ug/g	96.33	5.100	4.10e+03	3.89e+03	4.00e+03	5.26	n/a	80.00	n/a
S95T002945			TIC by Acid/Coulometry	ug/g	99.50	2.00e-01	946.0	931.0	938.5	1.60	n/a	5.000	n/a
S95T002946		F	Alpha of Digested Solid	uCi/g	89.84	<4.68e-03	1.01e-02	1.18e-02	1.09e-02	15.5	82.14	4.08e-03	3.90E+01
S95T002948			Bulk Density of Sample	g/mL	n/a	n/a	1.700	n/a	n/a	n/a	n/a	5.00e-01	n/a

CHAIN OF CUSTODY FORMS

CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

(1) Shipment Number: 200W-08-TF (2) Sample Number: 95-Aug-045 (3) Supervisor: James Sickels

(4) Tank: BX 116 (5) Riser: 6 (6) Cask Serial Number: C-1024

Radiation Survey Data:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	.5 mR/HR	.5 mR/hr
Side Dose Rate	1 mR/HR	1.5 mR/hr
Bottom Dose Rate	1 mR/HR	1.5 mR/hr
Smearable Contamination	<20 DPM (Alpha)	<20 dpm (Alpha)
	<1000 DPM (Beta/Gamma)	<1000 dpm (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description

A. Work Package Number	ES-95-0352
B. Cask Seal Number	2516
C. Date and Time Sample Removed from Tank	10/12/95 1036
D. Expected Liquid Content	30
E. Expected Solid Content	70
F. Dose Rate Through Drill String	45 mR/hr
G. Expected Sample Length	12"

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

11

(10) Field Comments

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
241-BX	222S	James Sickels	10/13/95 0915	

(17) Relinquished By (Sign and PRINT)	(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
James Sickels	David J Keane	10/13/95 0915	

(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
David J Keane	E E Dubs	10/13/95	

(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

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

WHC-SD-WM-DP-155, REV. 0

CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

(1) Shipment Number 200W-08-TF (2) Sample Number 95-Aug-046 (3) Supervisor James Sickels

(4) Tank BX-110 (5) Riser 3 (6) Cask Serial Number SN 59

Radiation Survey Data:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	2.5 mR/HR	2.5
Side Dose Rate	1.5 mR/HR	3.0
Bottom Dose Rate	1 mR/HR	1.5
Smearable Contamination	<20 DPM (Alpha)	<20 (Alpha)
	<1000 DPM (Beta-Gamma)	<1000 (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description

A. Work Package Number	ES-95-00352
B. Cask Seal Number	2518
C. Date and Time Sample Removed from Tank	10/12/95 1926
D. Expected Liquid Content	30 %
E. Expected Solid Content	70 %
F. Dose Rate Through Drill String	140 mR/HR
G. Expected Sample Length	12"

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

12

(10) Field Comments

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
241-BX	222S	James Sickels	10/13/95 0915	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
James Sickels		David Keane	10/13/95 0915	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
David Keane		EE Dukes	10-13-95 1025	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release? ☑ Yes ☐ No

(29) Seal Intact Upon Receipt? ☑ Yes ☐ No

(30) Seal Data Consistent with this Record?

Shipment No. ☑ Yes ☐ No Cask Seal No. ☑ Yes ☐ No Sample No. ☑ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management

WHC-SD-WM-DP-155, REV. 0

PHOTOGRAPHS

10-18-95
95-AUG-045
6X-110

BX-110 95-AUG-046

SAMPLE HANDLING

LABCORE Data Entry Template for Worklist# 2924

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

Method: LO-160-103 Rev/Mod A7

Worklist Comment: BX-110 95-AUG-045 RISER 6 EXTRUSION

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	INSTCHK01				EXTRUD01	SOLID	20	19.98	N/A	
		2	INSTCHK02				EXTRUD01	SOLID	500	499.75	N/A	
95000160	BX-110	3	SAMPLE	S95T002866	0		DLIQVOL1	SOLID	N/A	0		mL
95000160	BX-110	4	SAMPLE	S95T002866	0		DLIQWT01	SOLID	N/A	0		g
95000160	BX-110	5	SAMPLE	S95T002866	0		EST.G/ML	SOLID	N/A	0		g/mL
95000160	BX-110	6	SAMPLE	S95T002866	0		EXTRUD01	SOLID	N/A	Complete		
95000160	BX-110	7	SAMPLE	S95T002866	0		LLIQWT01	SOLID	N/A	0		g
95000160	BX-110	8	SAMPLE	S95T002866	0		NOTEBOOK	SOLID	N/A	~~N-1024~~ N-1276 RDK 11/15/95		
95000160	BX-110	9	SAMPLE	S95T002866	0		SLDVOL01	SOLID	N/A	NA		mL
95000160	BX-110	10	SAMPLE	S95T002866	0		SLDWT-01	SOLID	N/A	125.7		g
95000160	BX-110	11	SAMPLE	S95T002866	0		APPEAR01	SOLID	N/A	Complete		
95000160	BX-110	12	SAMPLE	S95T002866	0		ORGVOL01	SOLID	N/A	0		mL

Final page for worklist # 2924

[signature] 10-19-95
Analyst Signature **Date**

[signature] 10-19-95
Analyst Signature **Date**

Reviewed by RK Fuller 10/20/95

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# 2928

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

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

Worklist Comment: BX-110 95-AUG-046 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	499.75	N/A	
95000160	BX-110	3	SAMPLE	S95T002867	0		DLIQVOL1	SOLID	N/A	0		mL
95000160	BX-110	4	SAMPLE	S95T002867	0		DLIQWT01	SOLID	N/A	0		g
95000160	BX-110	5	SAMPLE	S95T002867	0		EST.G/ML	SOLID	N/A	0		g/mL
95000160	BX-110	6	SAMPLE	S95T002867	0		EXTRUD01	SOLID	N/A	Complete		
95000160	BX-110	7	SAMPLE	S95T002867	0		LLIQWT01	SOLID	N/A	0		g
95000160	BX-110	8	SAMPLE	S95T002867	0		NOTEBOOK	SOLID	N/A	N-1276		
95000160	BX-110	9	SAMPLE	S95T002867	0		SLDVOL01	SOLID	N/A	NA		mL
95000160	BX-110	10	SAMPLE	S95T002867	0		SLDWT-01	SOLID	N/A	185.2		g
95000160	BX-110	11	SAMPLE	S95T002867	0		APPEAR01	SOLID	N/A	Complete		
95000160	BX-110	12	SAMPLE	S95T002867	0		ORGVOL01	SOLID	N/A	0		mL

Final page for worklist # 2928

EC 10-25-95
Analyst Signature **Date**

EC 10-25-95
Analyst Signature **Date**

Reviewed by Arlin B. Berry 10-25-95

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.

Bulk Density Worksheet

Requestor: R. Schrauder

Date: 10-23-95

Tank: BX110
Core: -
Seg: -
Auger: -

Start Time: _____
End Time: _____

Homogenization Time (Min.): 2902 ABC ~~ABC~~ 595T002902 10/23/95

Jar#: 8171

Jar/Vial Size: 250 mL

Initial Weight: ~~_____ g~~

Final Weight: ~~_____ g~~

Net Weight: ~~_____ g~~

595T002905

Cone#: 8171

Final Vol: 10 mL

Initial Weight: 7.6 g

Final Weight: 22.3 g

Net Weight: 15.7 g

Appearance/Narrative: ABC 11/16/95

BLKOWSKI: ~~15.7/10 = 1.57 g/ml~~

~~15.7/10 = 1.57 g/ml~~

Tank: _____
Core: _____
Seg: _____
Auger: _____

Start Time: _____
End Time: _____

Homogenization Time (Min.): _____

Jar#: _____

Jar/Vial Size: _____ mL

Initial Weight: _____ g

Final Weight: _____ g

Net Weight: _____ g

Cone#: _____

Final Vol: _____ mL

Initial Weight: _____ g

Final Weight: _____ g

Net Weight: _____ g

Appearance/Narrative:

WHC-SD-WM-DP-155, REV. 0

Bulk Density Worksheet

Requestor: R Schreiber

Date: 10/23/95

Tank: BX/10
Core: —
Seg: —
Auger: 95-Aug-0416

Start Time: _____
End Time: _____

Homogenization Time (Min.): _____ 5957002943

Jar#: 8236
Jar/Vial Size: 250 mL
Initial Weight: 351.5 g
Final Weight: _____ g
Net Weight: _____ g

Cone#: 8236 5957002948
Final Vol: _____ mL
Initial Weight: 7.6 g
Final Weight: 29.5 g
Net Weight: 21.9 g

Appearance/Narrative:

21.9/12.5 = 1.7 g/l

Tank: _____
Core: _____
Seg: _____
Auger: _____

Start Time: _____
End Time: _____

Homogenization Time (Min.): _____

Jar#: _____
Jar/Vial Size: _____ mL
Initial Weight: _____ g
Final Weight: _____ g
Net Weight: _____ g

Cone#: _____
Final Vol: _____ mL
Initial Weight: _____ g
Final Weight: _____ g
Net Weight: _____ g

Appearance/Narrative:

WHC-SD-WM-DP-155, REV. 0

220

SAMPLE PREPARATIONS

LABCORE Data Entry Template for Worklist# 3159

Analyst: CMM **Instrument:** FUS01 AU10616 **Book #** N/A

Method: LA-549-141 Rev/Mod D-0

Worklist Comment: BX-110 FUSION - 2903->2906, 2945->2946

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	.2501	.2501	N/A	g/L
95000160	BX-110	2 SAMPLE	S95T002906	0 F	FUSION01	SOLID	N/A	2.7572		g/L
		.6893g->.2501								
95000160	BX-110	3 SAMPLE	S95T002906	0 F	DOSE-02	SOLID	N/A	5		mrad/hour
95000160	BX-110	4 DUP	S95T002906	0 F	FUSION01	SOLID	2.7572	2.6588	N/A	g/L
		.6697g->.2501								
95000160	BX-110	5 DUP	S95T002906	0 F	DOSE-02	SOLID		5	N/A	mrad/hour
95000160	BX-110	6 SAMPLE	S95T002946	0 F	FUSION01	SOLID	N/A	2.6220		g/L
		.6555g->.2501								
95000160	BX-110	7 SAMPLE	S95T002946	0 F	DOSE-02	SOLID	N/A	7.5		mrad/hour
95000160	BX-110	8 DUP	S95T002946	0 F	FUSION01	SOLID	2.6220	2.6886	N/A	g/L
		.6720g->.2501								
95000160	BX-110	9 DUP	S95T002946	0 F	DOSE-02	SOLID		7.5	N/A	mrad/hour

Final page for worklist # 3159

CMMurphy 11-1-95
Analyst Signature Date

[illegible] 11-2-95
Analyst Signature Date

Data Entry Comments:
Blank 20-ml HCl, 30ml HNO_3, <1% solids. All samples & dup - 20ml HCl, 30ml HNO_3, <1% solids.
HPT was Bob Clements

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.

Bernard Griffin II 22 11-7-95

INORGANIC ANALYSES

LABCORE Data Entry Template for Worklist# 3314

Analyst: ADP **Instrument:** DSC0 1 **Book #** 12N14-A

Method: LA-514-113 Rev/Mod C O

Worklist Comment: Please run BX-110 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID	28.45	27.8	N/A	Joules/g
95000160	BX-110	2	SAMPLE	S95T002903	0		DSC-01	SOLID	N/A	7.6		Joules/g
95000160	BX-110	3	DUP	S95T002903	0		DSC-01	SOLID	7.6	Ø	N/A	Joules/g
95000160	BX-110	4	SAMPLE	S95T002945	0		DSC-01	SOLID	N/A	Ø		Joules/g
95000160	BX-110	5	DUP	S95T002945	0		DSC-01	SOLID	Ø	16.2	N/A	Joules/g

Final page for worklist # 3314

Anthony Pirunto 11-9-95
Analyst Signature **Date**

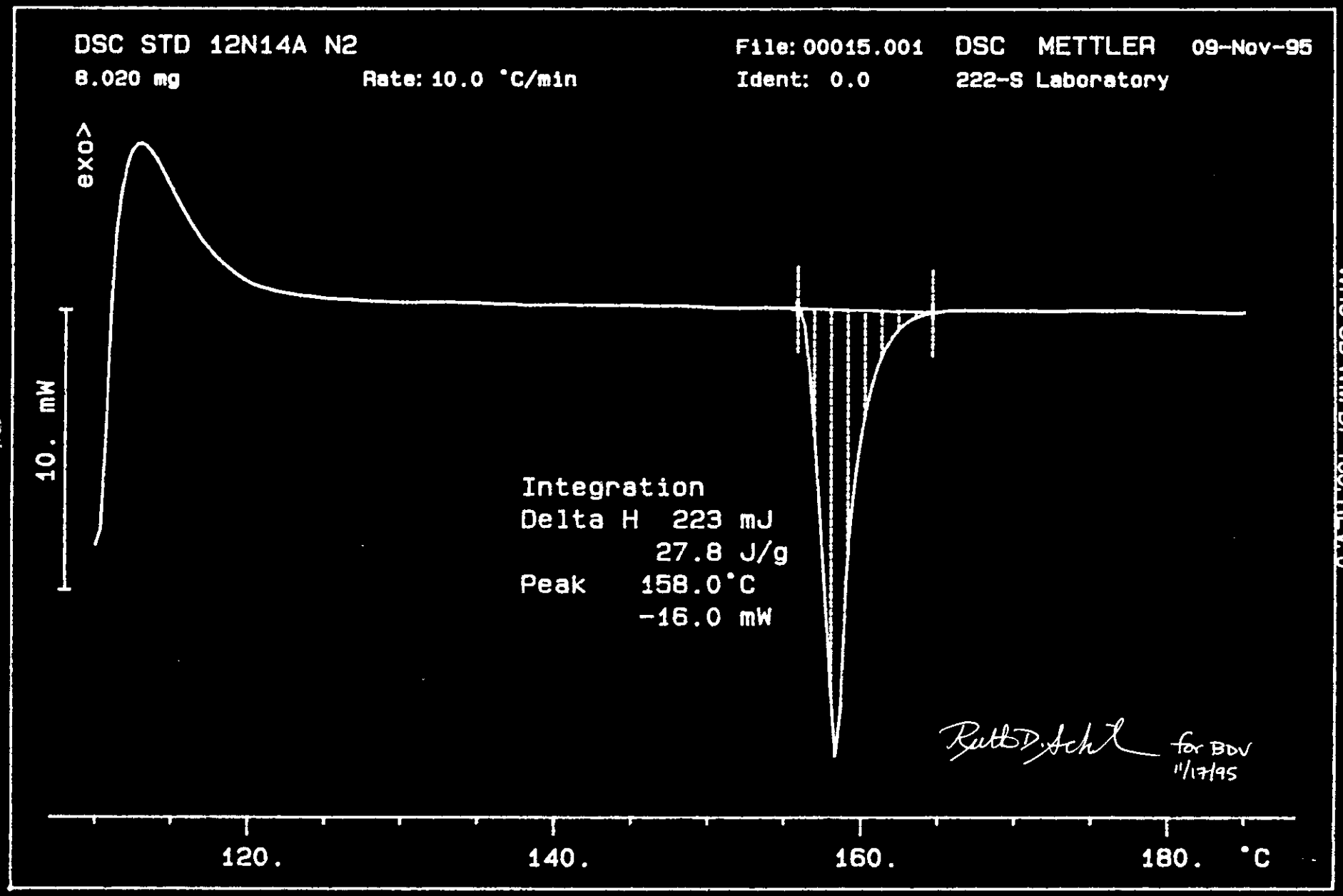
B.D. Valenzuela for Steve Peterson
Analyst Signature **Date** 11/14/95

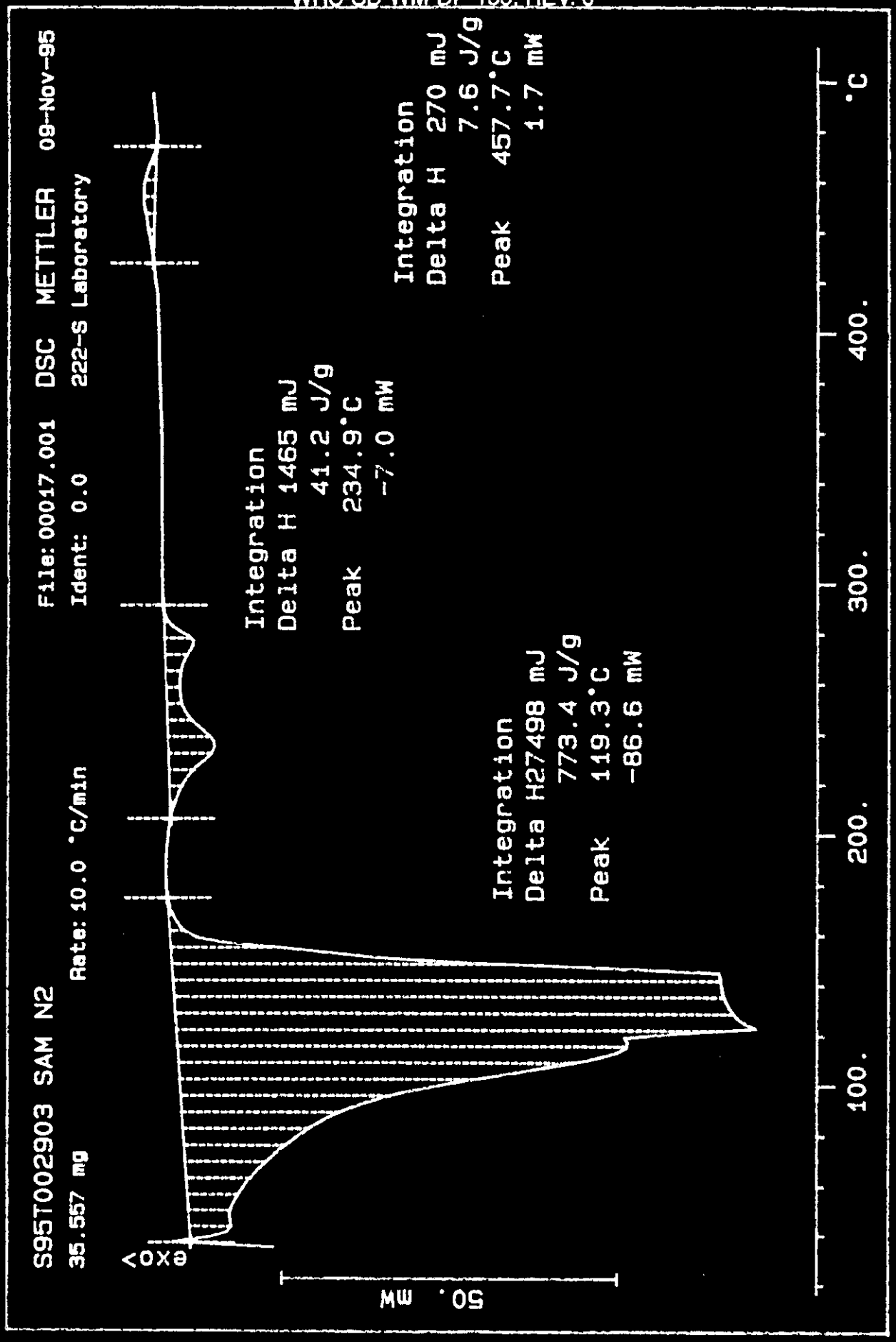
Verified by Blandina Valenzuela 11/14/95

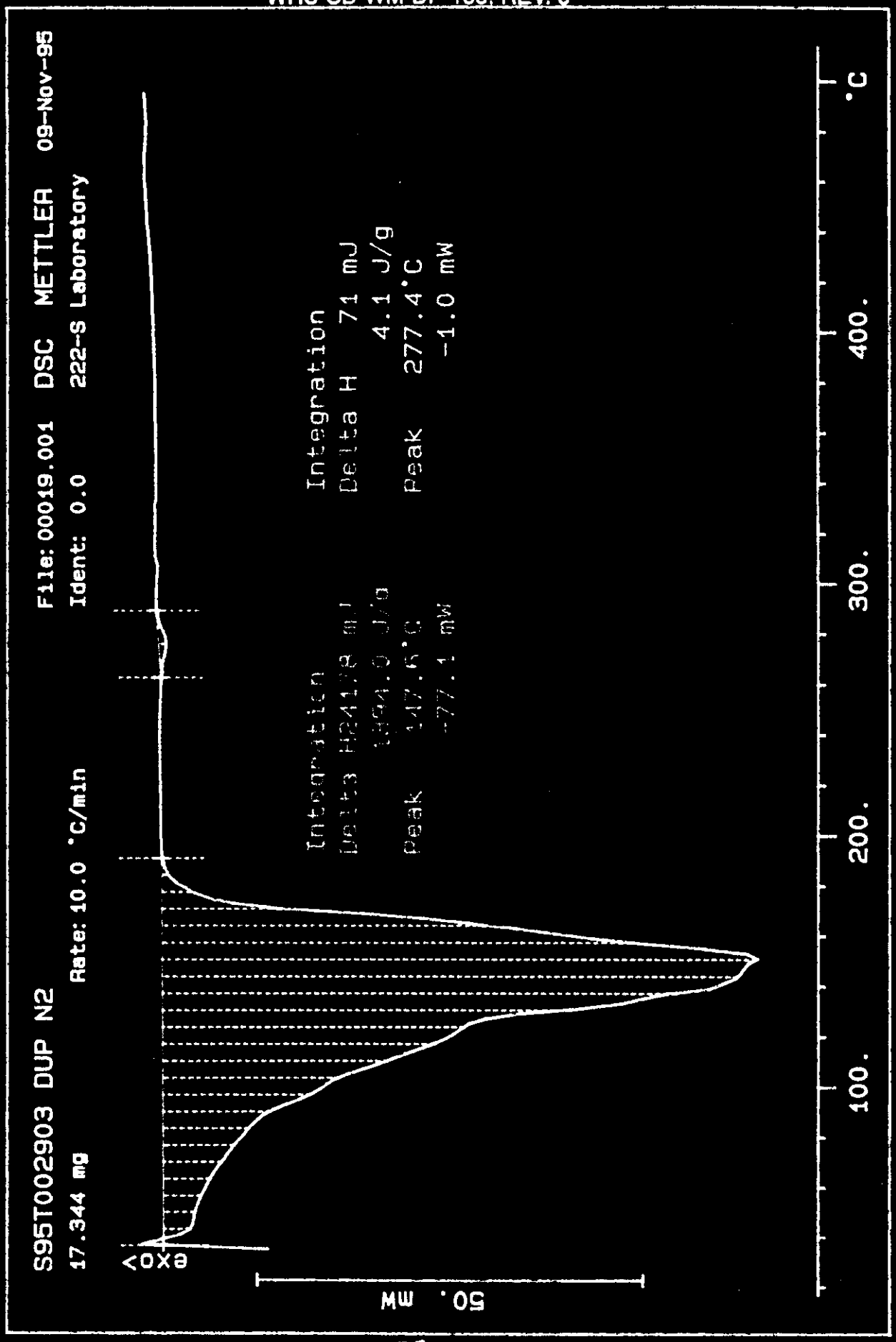
Data Entry Comments: S95T002903 produced two endotherms at 119.3°C with a delta H of 773.4 J/g and another at 234.9°C with a delta H of 41.2 J/g. S95T002945 produced two endotherms at 119.3°C with a delta H of 808.5 J/g and second at 230.9°C with a delta H of 74.2 J/g

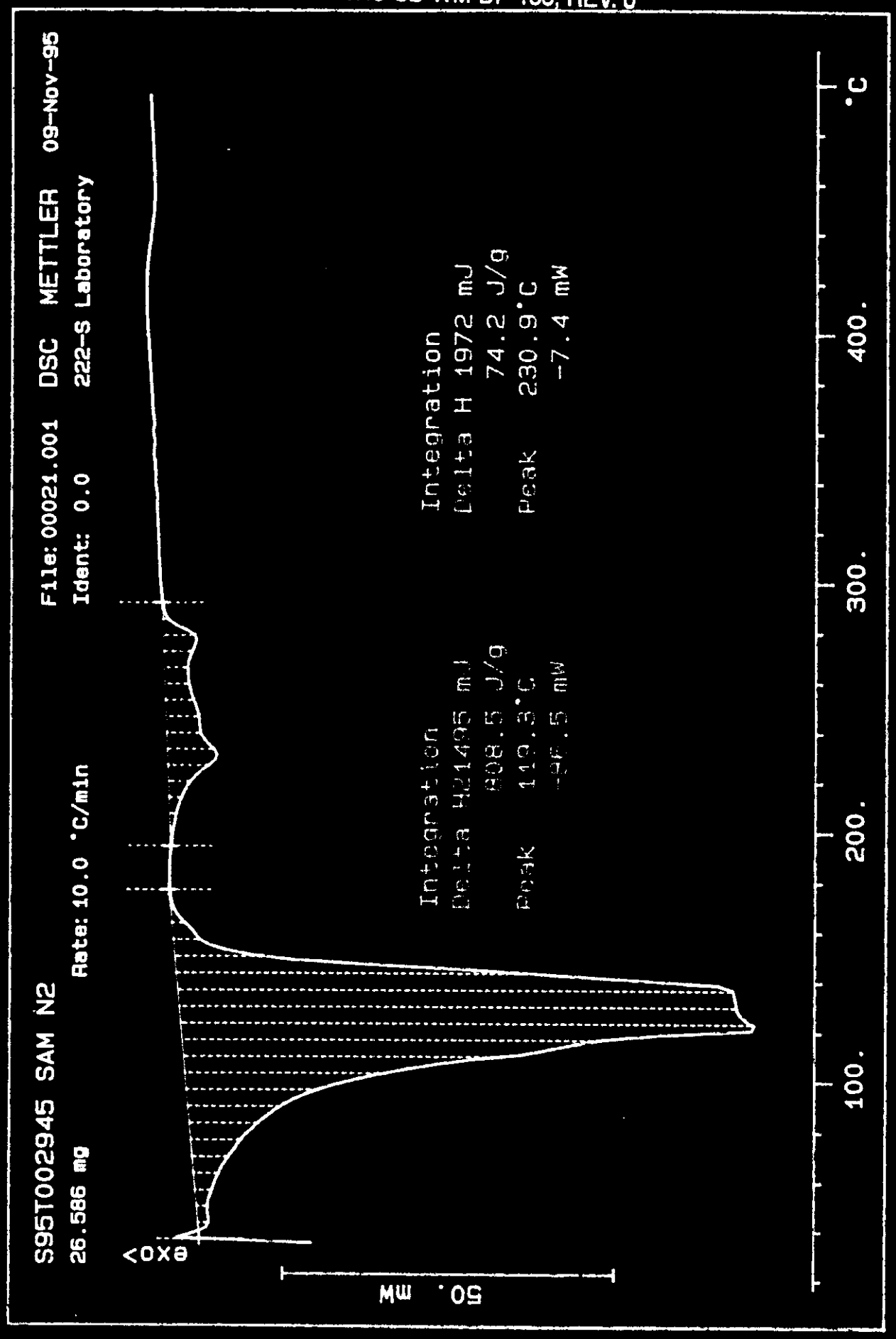
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

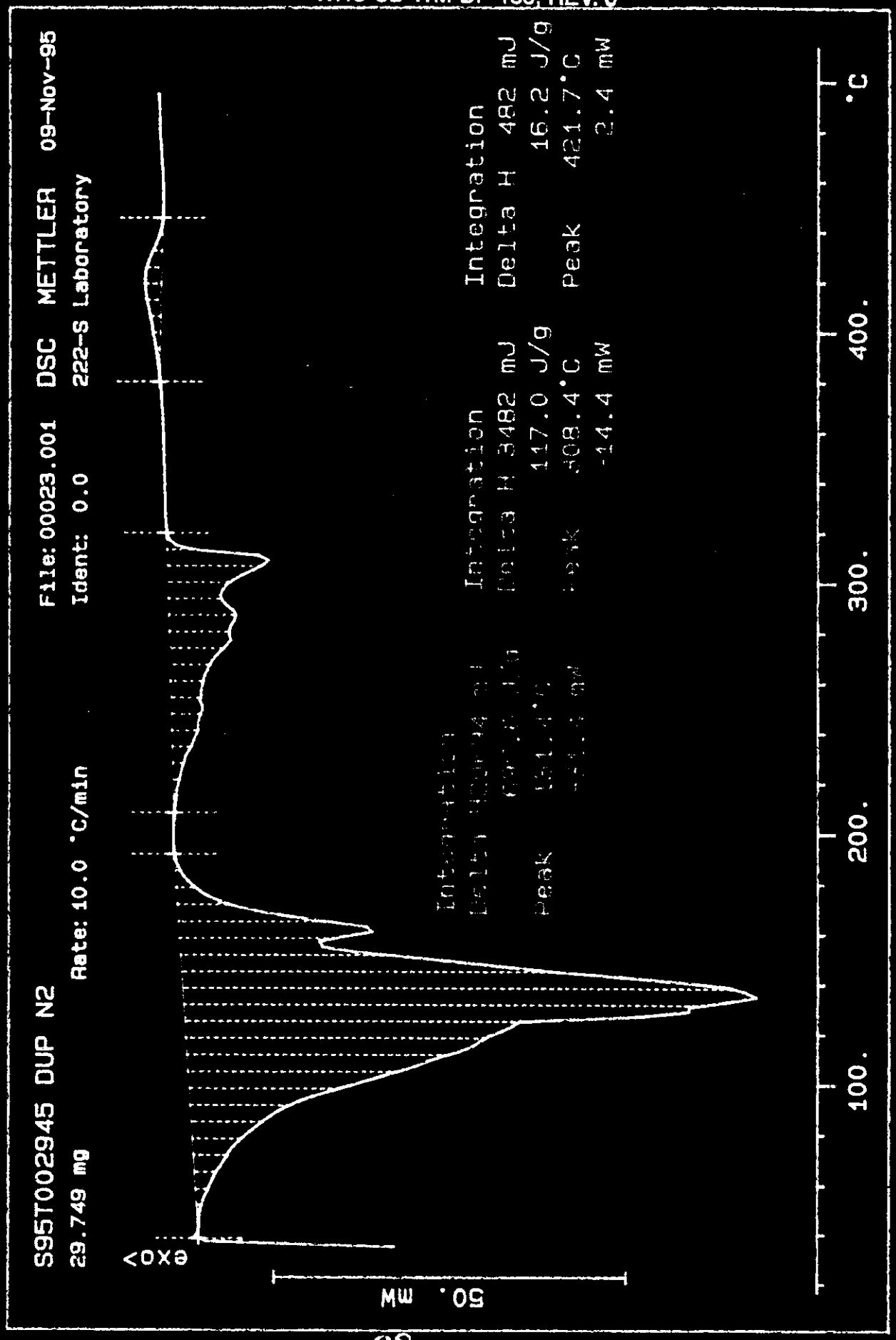
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 25 TO 28.




S95T002903 SAM N2
35.557 mg
Rate: 10.0 °C/min
File: 00017.001 DSC METTLER 09-Nov-95
Ident: 0.0 222-S Laboratory
Integration
Delta H 1465 mJ
41.2 J/g
Peak 234.9°C
-7.0 mW
Integration
Delta H 270 mJ
7.6 J/g
Peak 457.7°C
1.7 mW
Integration
Delta H27498 mJ
773.4 J/g
Peak 119.3°C
-86.6 mW
exo>
50. mW
100.
200.
300.
400.
°C


S95T002903 DUP N2
17.344 mg
Rate: 10.0 °C/min
File: 00019.001 DSC METTLER 09-Nov-95
Ident: 0.0 222-S Laboratory
Integration
Delta H 71 mJ
4.1 J/g
Peak 277.4°C
-1.0 mW
Integration
Delta H 2411.8 mJ
1394.0 J/g
Peak 147.6°C
-77.1 mW
exo>
50. mW
100.
200.
300.
400.
°C


S95T002945 SAM N2
26.586 mg
Rate: 10.0 °C/min
File: 00021.001 DSC METTLER 09-Nov-95
Ident: 0.0 222-S Laboratory
Integration
Delta H 421495 mJ
808.5 J/g
Peak 119.3°C
-96.5 mW
Integration
Delta H 1972 mJ
74.2 J/g
Peak 230.9°C
-7.4 mW
exo>
50. mW
100.
200.
300.
400.
°C


S95T002945 DUP N2
29.749 mg
Rate: 10.0 °C/min
File: 00023.001
Ident: 0.0
DSC METTLER 09-Nov-95
222-S Laboratory
Integration
Delta H 3482 mJ
117.0 J/g
Peak 408.4°C
-14.4 mW
Integration
Delta H 482 mJ
16.2 J/g
Peak 421.7°C
2.4 mW
exo>
50. mW
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 3503

Analyst: JBS **Instrument:** DSC0 1 **Book #** 12N14A

Method: LA-514-113 Rev/Mod C-0

Worklist Comment: Please run BX-110 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID	28.45	30.2	N/A	Joules/g
95000160	BX-110	2	SAMPLE	S95T002903	1		DSC-01	SOLID	N/A	6.1		Joules/g
95000160	BX-110	3	SAMPLE	S95T002945	1		DSC-01	SOLID	N/A	24.8		Joules/g

Final page for worklist # 3503

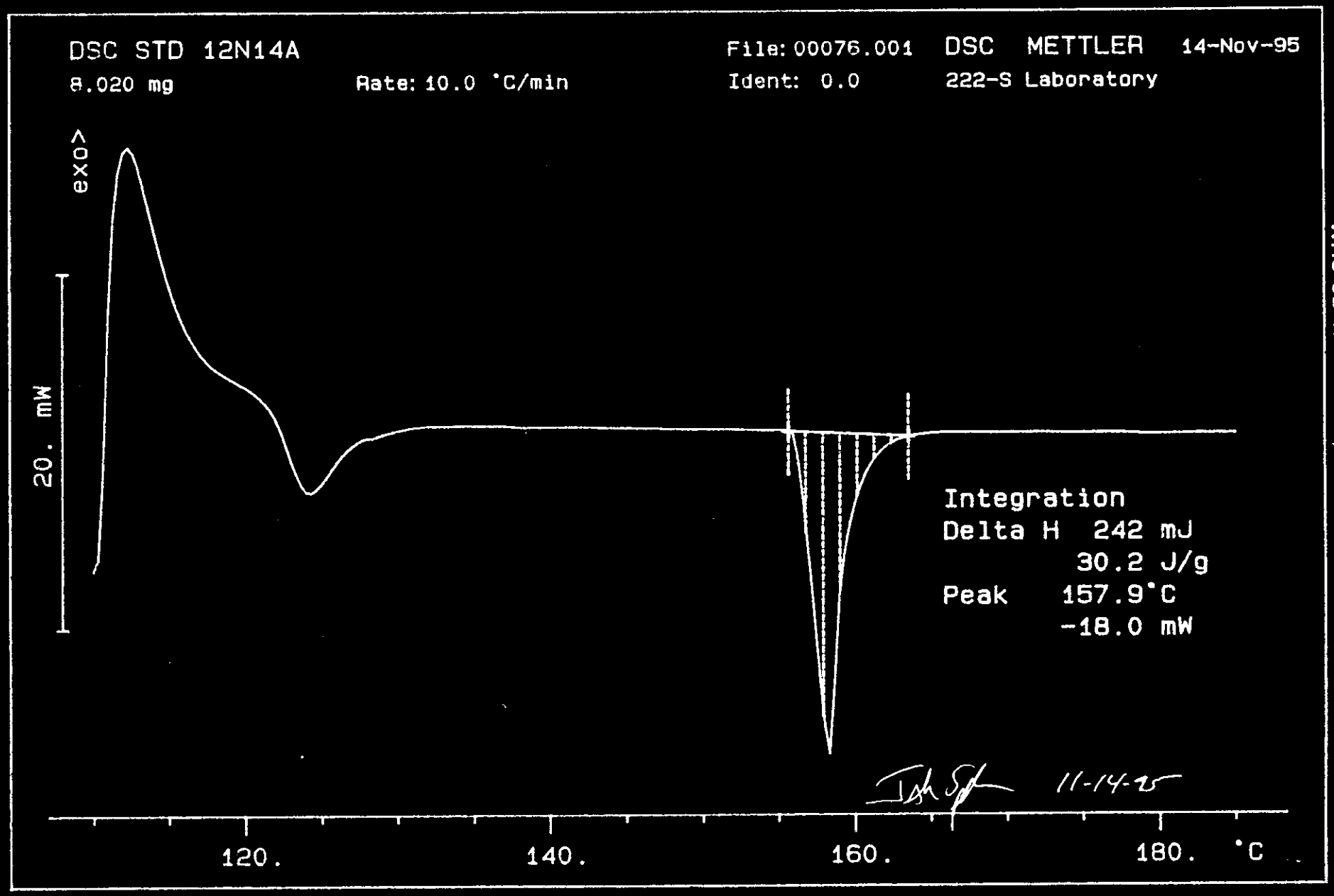
JBS 11/14/95
Analyst Signature Date

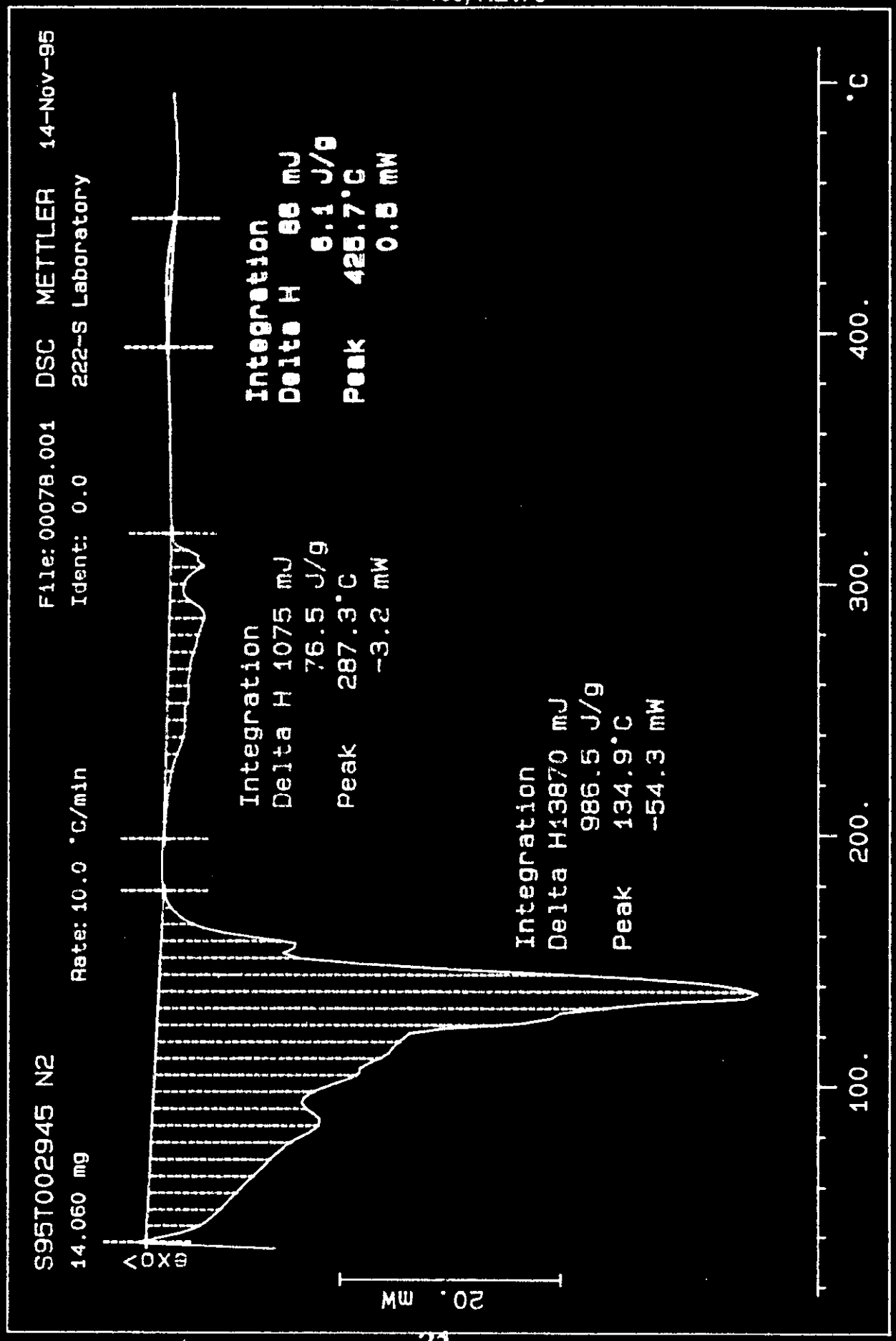
entered + printed Blandina Valenzuela
Analyst Signature Date

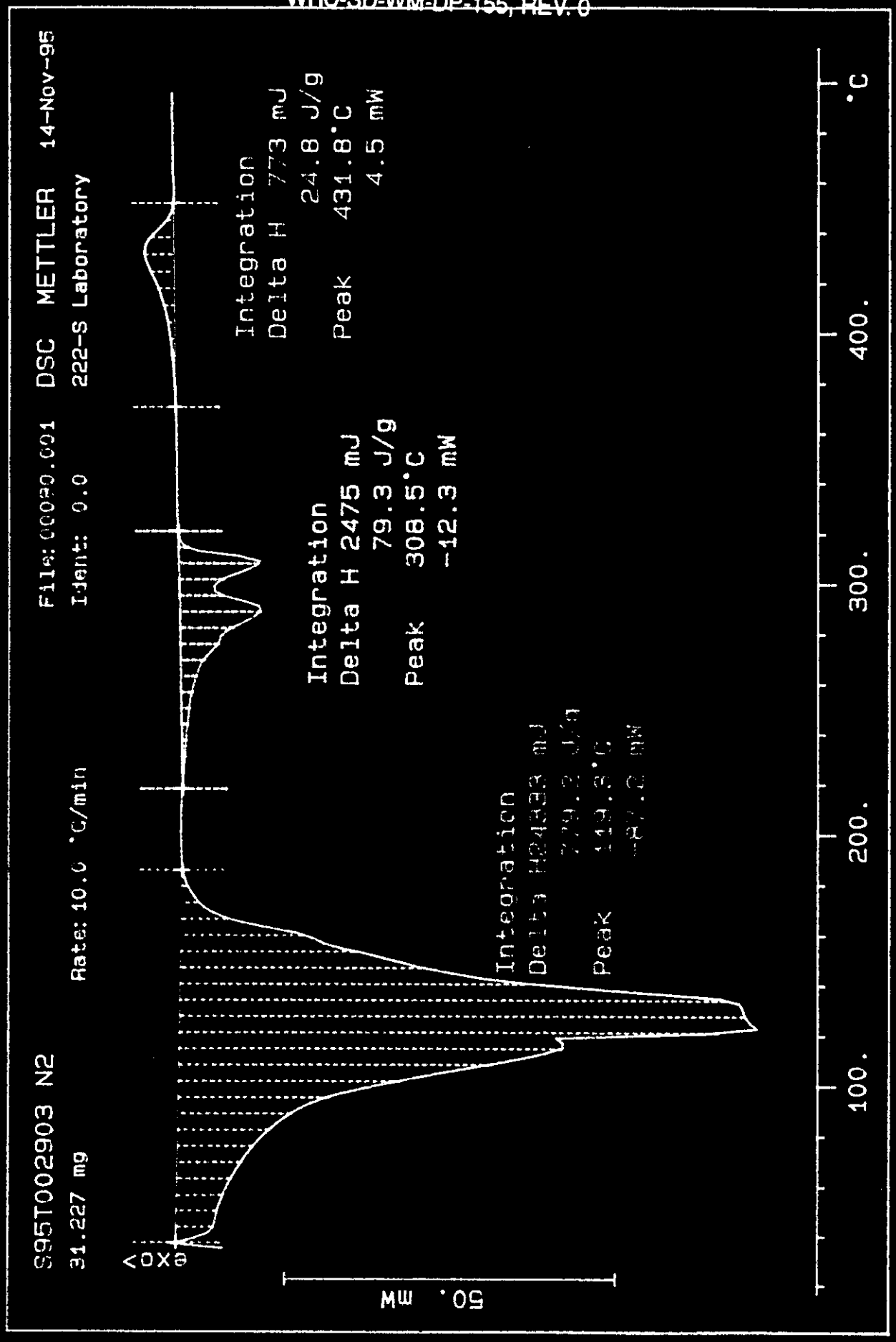
Data Entry Comments: S95T002945 produced two endotherms, one at 134.9°C with a delta H of 986.5 J/g and another at 287.3°C with a delta H of 76.5 J/g S95T002903 produced two endotherms one at 119.3°C with a delta H of 779.2 J/g and 308.5°C with a delta H of 79.3 J/g

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.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 30 TO 32.




S95T002945 N2
14.060 mg
Rate: 10.0 °C/min
File: 00078.001 DSC METTLER 14-Nov-95
Ident: 0.0 222-S Laboratory
Integration
Delta H 1075 mJ
76.5 J/g
Peak 287.3°C
-3.2 mW
Integration
Delta H13870 mJ
986.5 J/g
Peak 134.9°C
-54.3 mW
Integration
Delta H 88 mJ
8.1 J/g
Peak 425.7°C
0.8 mW
EXO>
20. mW
100.
200.
300.
400.
°C


S95T002903 N2
31.227 mg
Rate: 10.0 °C/min
File: 00020.001 DSC METTLER 14-Nov-95
Ident: 0.0 222-S Laboratory
Integration
Delta H 773 mJ
24.8 J/g
Peak 431.8°C
4.5 mW
Integration
Delta H 2475 mJ
79.3 J/g
Peak 308.5°C
-12.3 mW
Integration
Peak
<exo
50. mW
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 3509

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

Method: LA-514-113 Rev/Mod —

Worklist Comment: Dry DSC for BX-110. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
95000160	BX-110	1	SAMPLE	S95T002903	0		DSC-02	SOLID	N/A	13.69		Joules/g Dry
95000160	BX-110	2	DUP	S95T002903	0		DSC-02	SOLID	13.69	Ø	N/A	Joules/g Dry
95000160	BX-110	3	SAMPLE	S95T002903	1		DSC-02	SOLID	N/A	10.99		Joules/g Dry
95000160	BX-110	4	SAMPLE	S95T002945	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
95000160	BX-110	5	DUP	S95T002945	0		DSC-02	SOLID	Ø	17.81	N/A	Joules/g Dry
95000160	BX-110	6	SAMPLE	S95T002945	1		DSC-02	SOLID	N/A	27.26		Joules/g Dry

Data entered + verified by **Final page for worklist # 3509**

Blandina Valenzuela

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# 3124

Analyst: ADP **Instrument:** TGA0 1 **Book #** 65N8A

Method: LA-560-112 Rev/Mod B0

Worklist Comment: Please run BX-110 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID	59.74	60.41	N/A	%
95000160	BX-110	2	SAMPLE	S95T002903	0		TGA-01	SOLID	N/A	45.22		%
95000160	BX-110	3	DUP	S95T002903	0		TGA-01	SOLID	45.22	43.67	N/A	%
95000160	BX-110	4	SAMPLE	S95T002945	0		TGA-01	SOLID	N/A	7.03		%
95000160	BX-110	5	DUP	S95T002945	0		TGA-01	SOLID	7.03	10.42	N/A	%

Final page for worklist # 3124

Anthony Turner 11-9-95
Analyst Signature Date

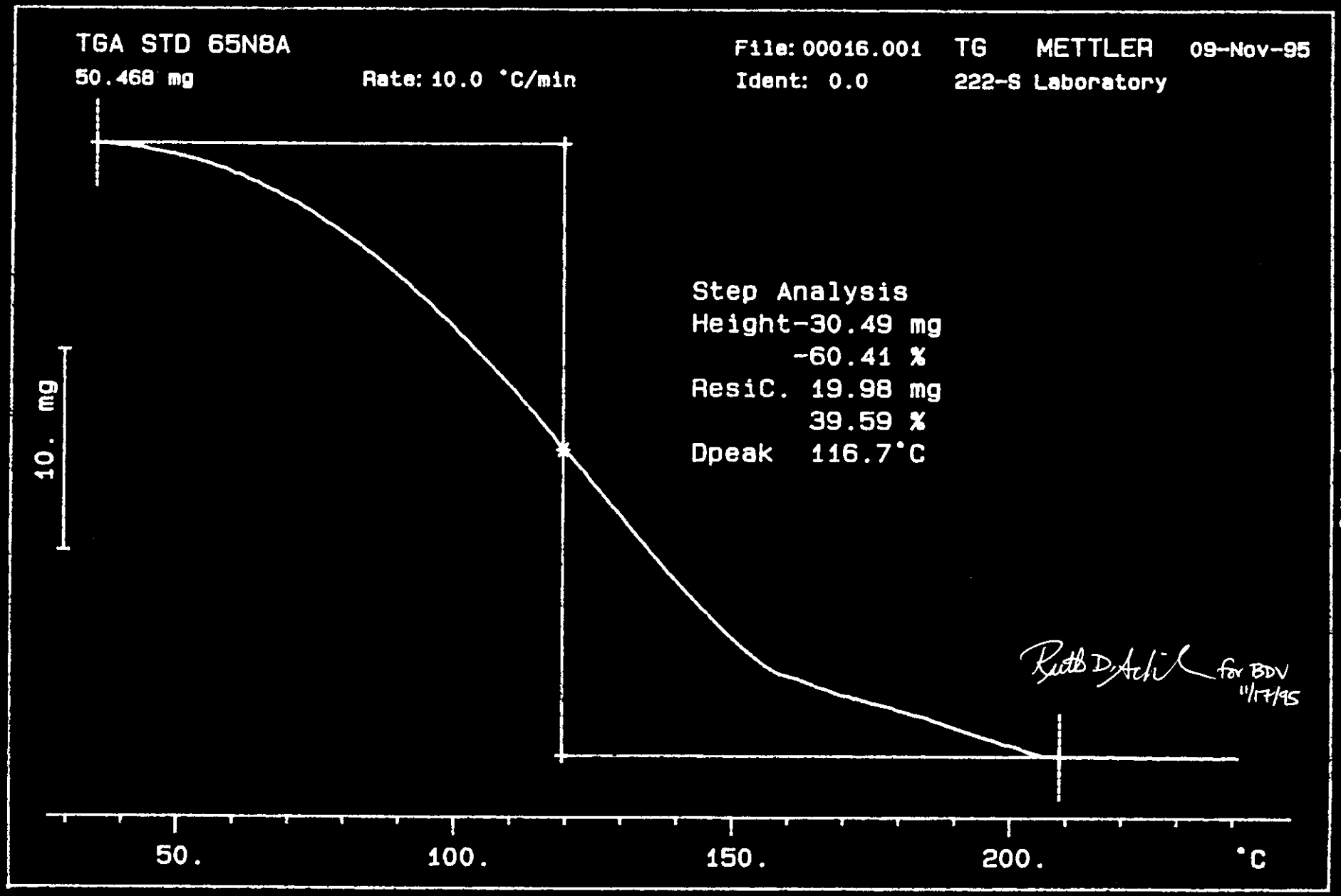
Verified by Blandina Valenzuela 11/14/95

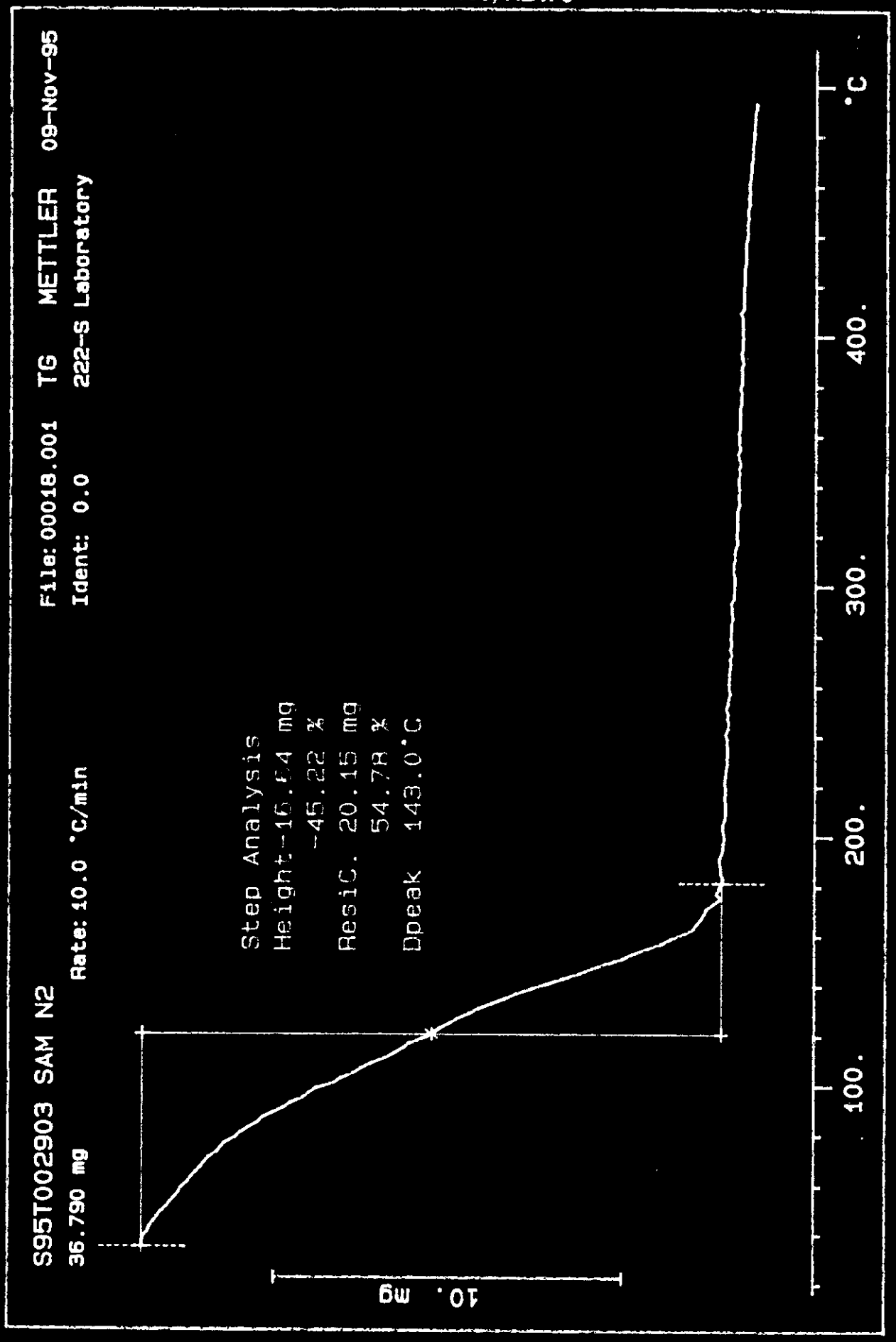
[illegible] 11/13/95
Analyst Signature Date

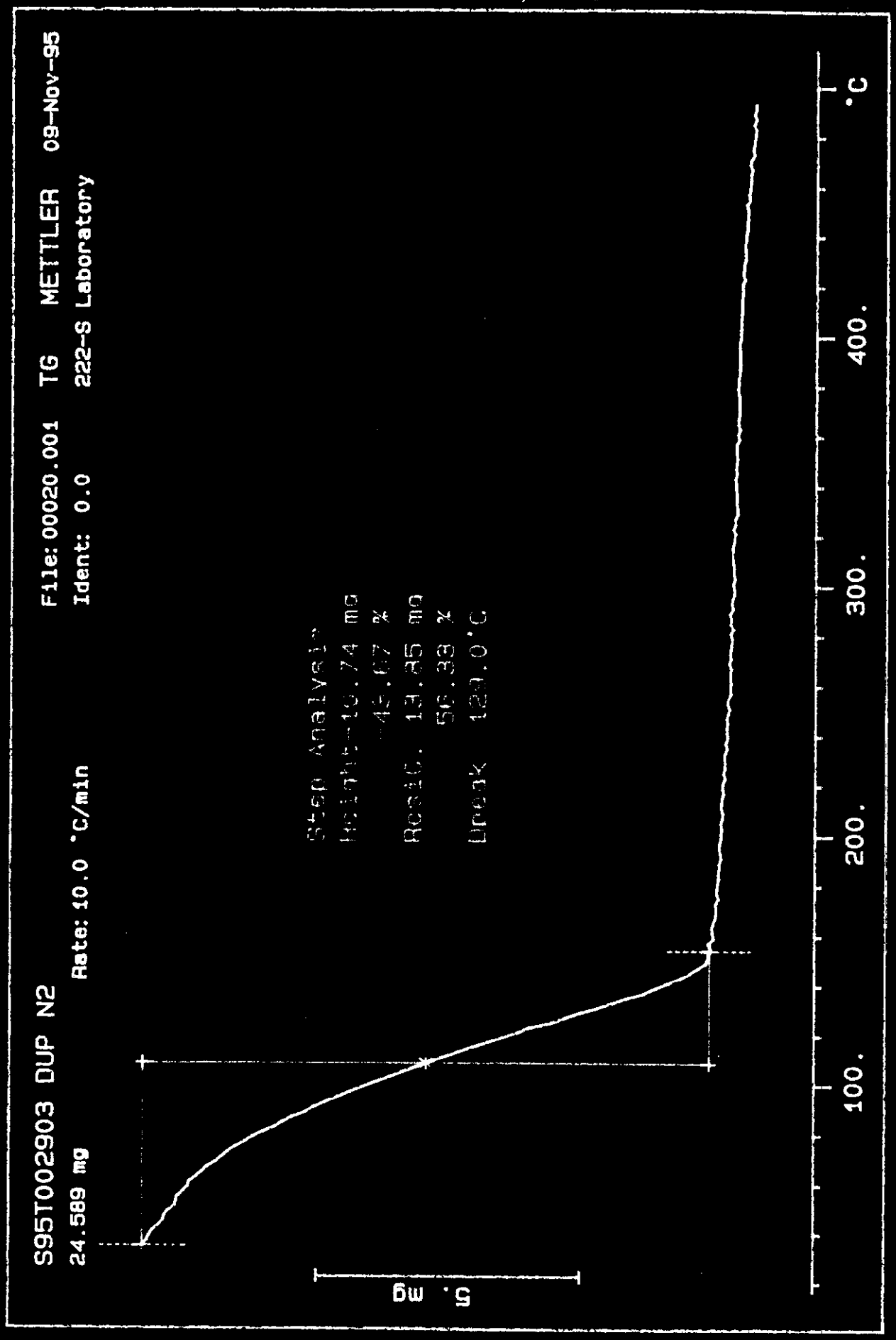
Data Entry Comments: S95T002945 produced a second weight loss step of 24.86%

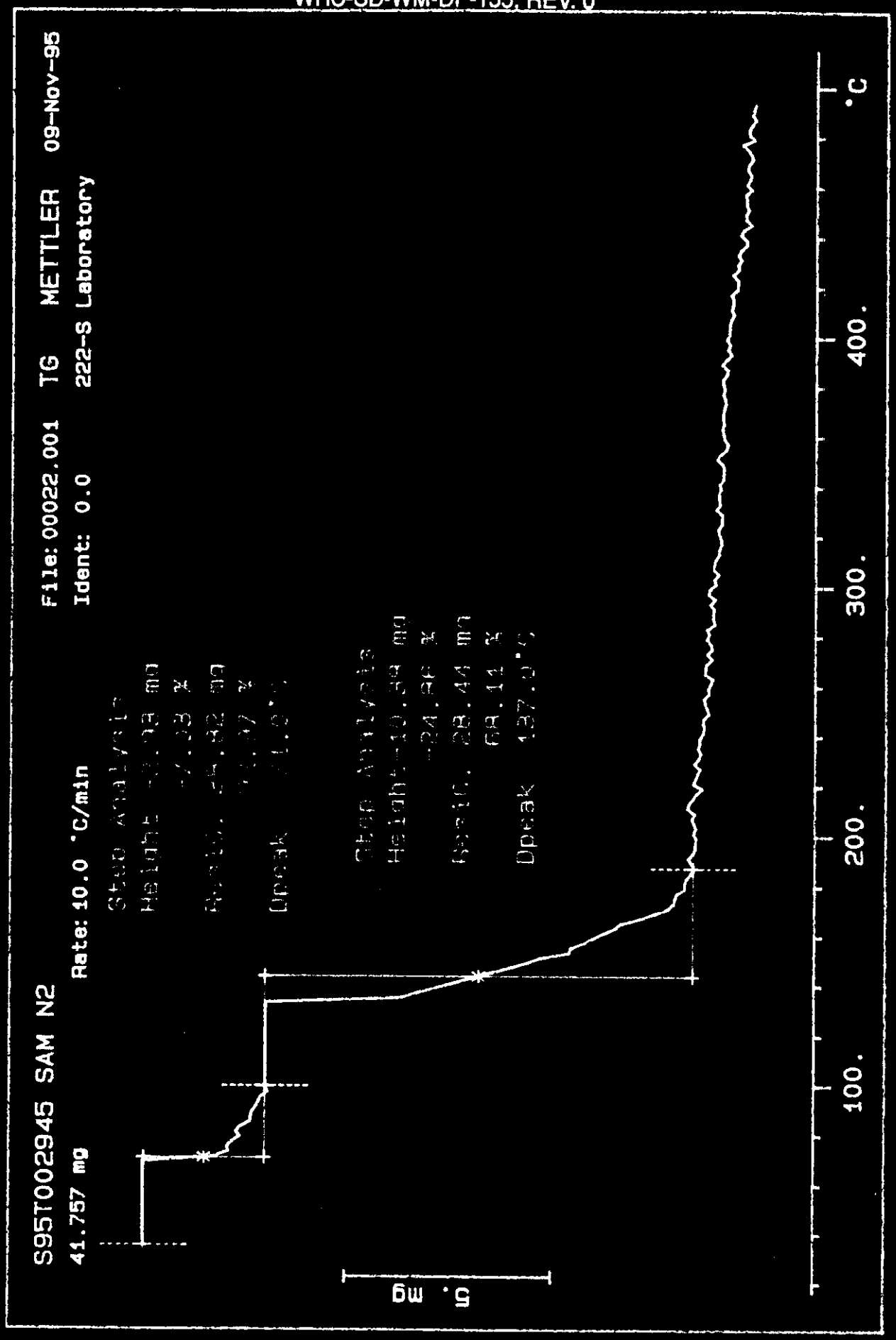
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

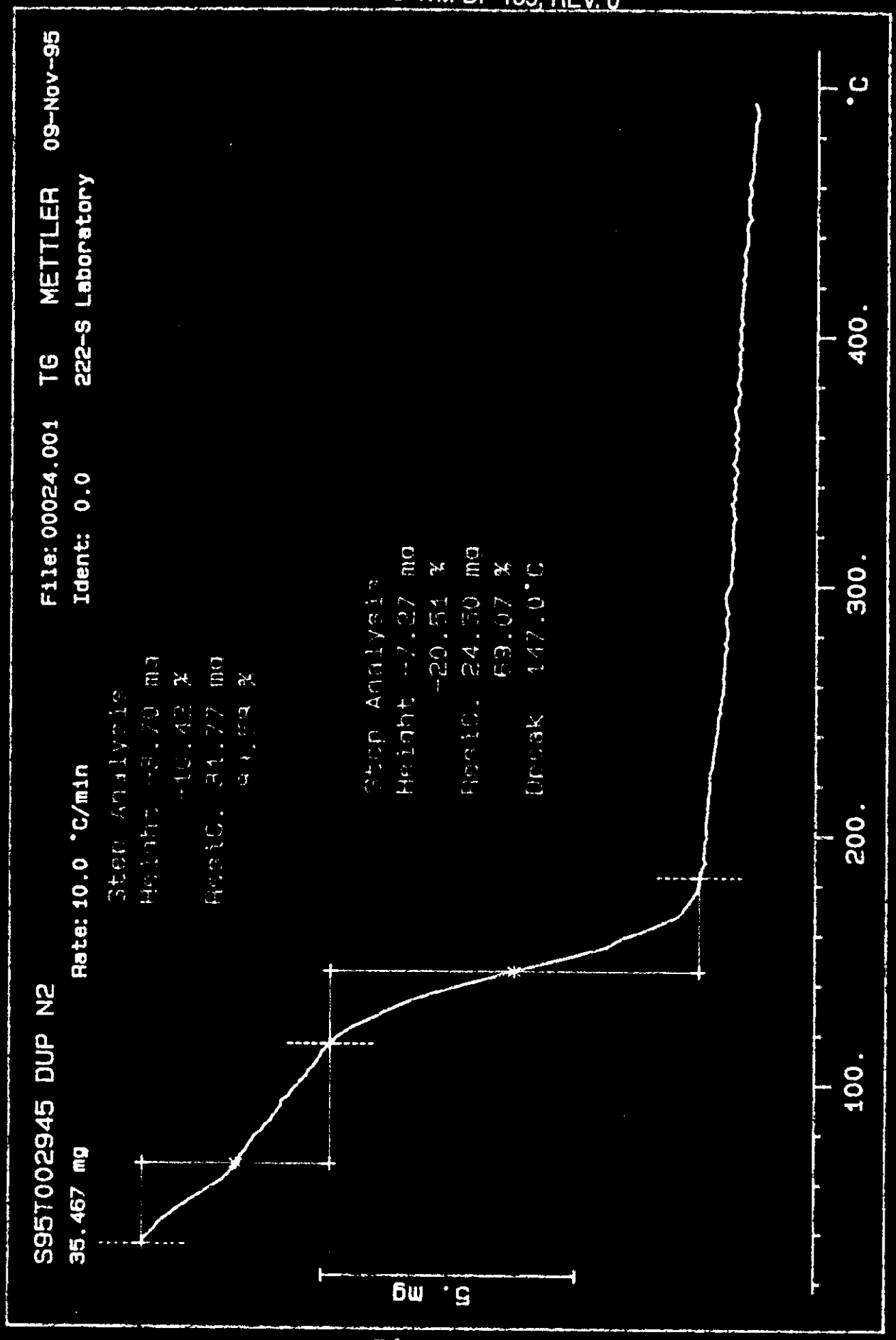
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 35 TO 39.




S95T002903 SAM N2
36.790 mg
Rate: 10.0 °C/min
File: 00018.001 TG METTLER 09-Nov-95
Ident: 0.0 222-S Laboratory
Step Analysis
Height -16.64 mg
-45.22 %
Resid. 20.15 mg
54.78 %
Dpeak 143.0 °C
10. mg
100.
200.
300.
400.
°C


S95T002903 DUP N2
24.589 mg
Rate: 10.0 °C/min
File: 00020.001 TG METTLER 09-Nov-95
Ident: 0.0 222-S Laboratory
Step Analysis
Height -10.74 mg
-45.67 %
Result 13.85 mg
56.33 %
Break 120.0 °C
5. mg
100.
200.
300.
400.
°C


S95T002945 SAM N2
41.757 mg
Rate: 10.0 °C/min
File: 00022.001 TG METTLER 09-Nov-95
Ident: 0.0 222-S Laboratory
5. mg
100.
200.
300.
400.
°C


S95T002945 DUP N2
35.467 mg
Rate: 10.0 °C/min
File: 00024.001
Ident: 0.0
TG
METTLER
09-Nov-95
222-S Laboratory
Step Analysis
Height -7.27 mg
-20.51 %
Height 24.50 mg
69.07 %
Onset 147.0°C
5. mg
100.
200.
300.
400.
°C

worklistrpt Version 2.1 05/15/95
11/14/95 11:46

LABCORE Data Entry Template for Worklist# 3504

Analyst: JdS **Instrument:** TGA0 1 **Book #** 65/48A

Method: LA-560-112 Rev/Mod B-1

Worklist Comment: Please run BX-110 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID	59.74	60.50	N/A	%
95000160	BX-110	2	SAMPLE	S95T002945	1		TGA-01	SOLID	N/A	9.66		%

Final page for worklist # 3504

Entered + verified by

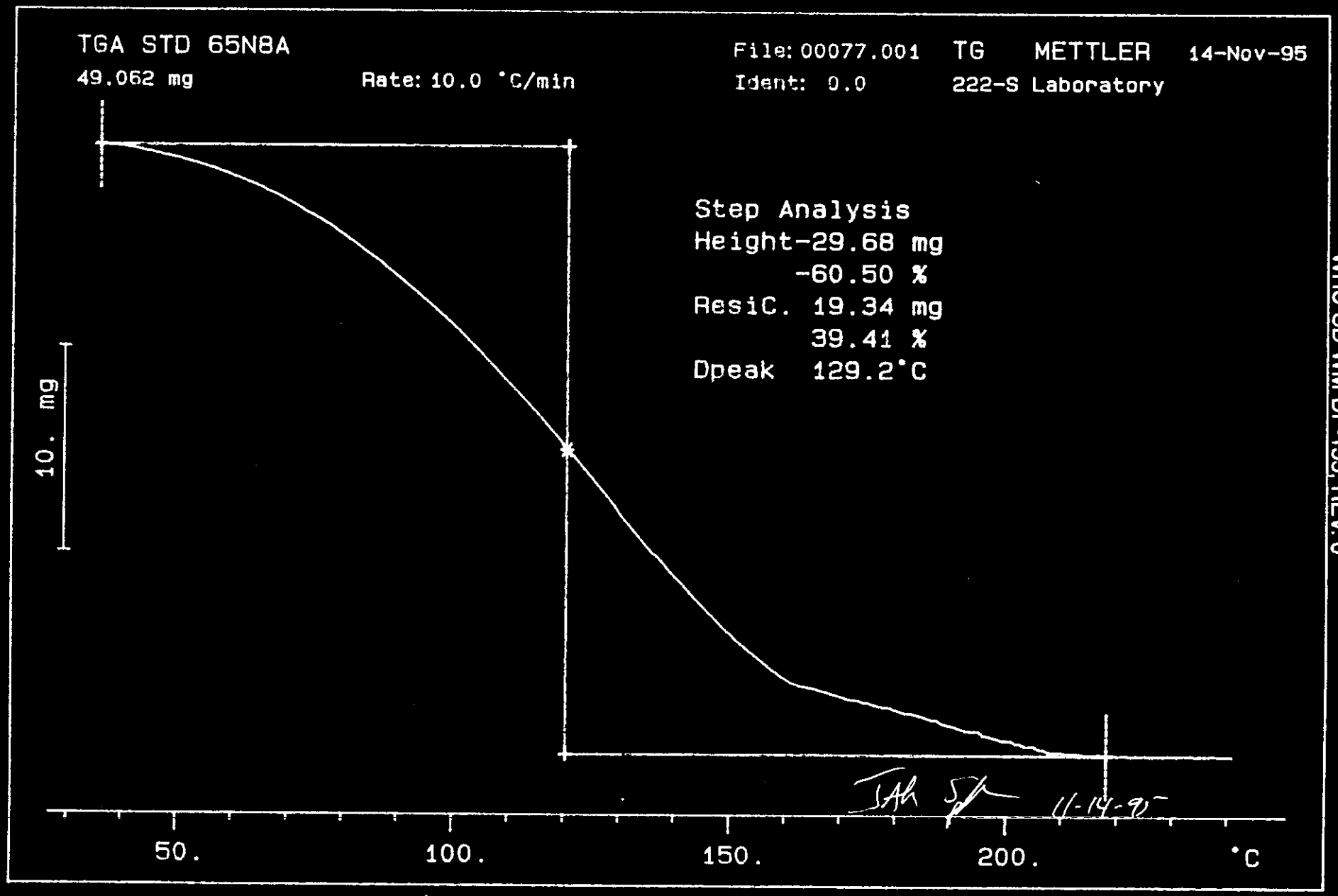
JdS 11-14-95 — Blandina Valenzuela 11/15/95

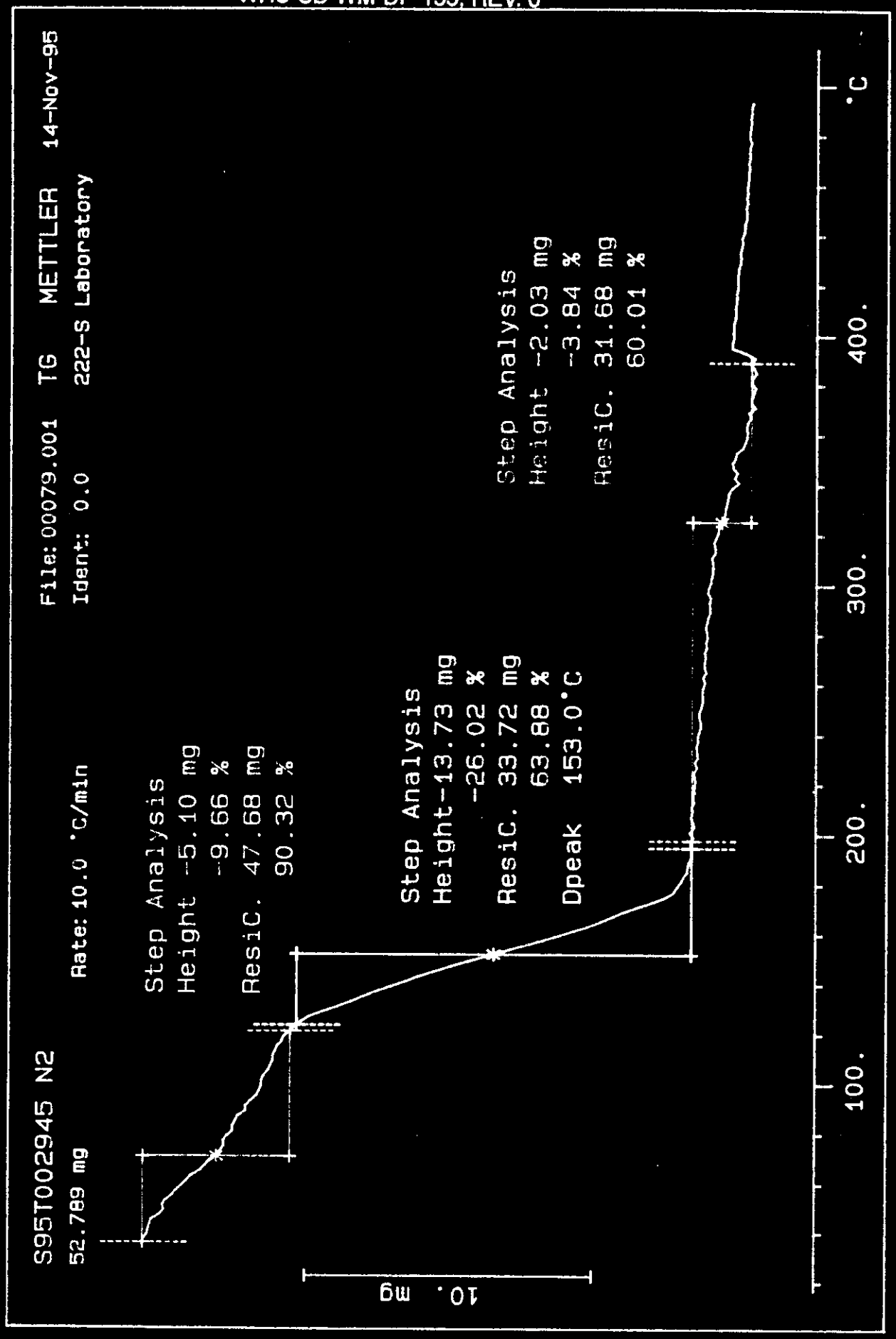
Analyst Signature **Date** **Analyst Signature** **Date**

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.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 41 TO 42.




S95T002945 N2
52.789 mg
Rate: 10.0 °C/min
File: 00079.001 TG METTLER 14-Nov-95
Ident: 0.0 222-S Laboratory
Step Analysis
Height -5.10 mg
-9.66 %
Resic. 47.68 mg
90.32 %
Step Analysis
Height-13.73 mg
-26.02 %
Resic. 33.72 mg
63.88 %
Dpeak 153.0°C
Step Analysis
Height -2.03 mg
-3.84 %
Resic. 31.68 mg
60.01 %
10. mg
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 3410

Analyst: KRM **Instrument:** CARB2 **Book #** 17N12A 16N12B

Method: LA-342-100 Rev/Mod C-0

Worklist Comment: BX-110 TICTOC1 KRM

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				@TICTOC1 TIC-02	SOLID	1	~~5.4~~ 0.2 ~~5~~ RWS 11/13/95 HRA 11-13-95	N/A	ug/g
		1	BLNK				@TICTOC1 TOC-02	SOLID	1	~~40~~ 5.1 RWS 11/13/95	N/A	ug/g
		2	STD				@TICTOC1 TIC-02	SOLID	6.00E2	5.97E2	N/A	ug/g
		2	STD				@TICTOC1 TOC-02	SOLID	3.00E3	2.89E3	N/A	ug/g
95000160	BX-110	3	SAMPLE	S95T002903	0		@TICTOC1 TIC-02	SOLID	N/A	6.81E2	5	ug/g
95000160	BX-110	3	SAMPLE	S95T002903	0		@TICTOC1 TOC-02	SOLID	N/A	3.48E3	40	ug/g
95000160	BX-110	4	DUP	S95T002903	0		@TICTOC1 TIC-02	SOLID	6.81E2	6.87E2	N/A	ug/g
95000160	BX-110	4	DUP	S95T002903	0		@TICTOC1 TOC-02	SOLID	3.48E3	3.47E3	N/A	ug/g
95000160	BX-110	5	SPK	S95T002903	0		@TICTOC1 TIC-02	SOLID	100	102.3	N/A	ug/g
95000160	BX-110	5	SPK	S95T002903	0		@TICTOC1 TOC-02	SOLID	100	92.5	N/A	ug/g
95000160	BX-110	6	SAMPLE	S95T002945	0		@TICTOC1 TIC-02	SOLID	N/A	9.46E2	5	ug/g
95000160	BX-110	6	SAMPLE	S95T002945	0		@TICTOC1 TOC-02	SOLID	N/A	4.10E3	40	ug/g
95000160	BX-110	7	DUP	S95T002945	0		@TICTOC1 TIC-02	SOLID	9.46E2	9.31E2	N/A	ug/g
95000160	BX-110	7	DUP	S95T002945	0		@TICTOC1 TOC-02	SOLID	4.10E3	3.89E3	N/A	ug/g

Final page for worklist # 3410

Analyst Signature 11-10-95 Date

Analyst Signature 11-11-95 Date

Data Entry Comments: Reviewed by H. Anastor 11-13-95

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.

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK Date: 11/10/95 Time: 08:50:59

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.80	50.00
4	2.00	1.20	33.33
5	2.50	1.50	20.00
6	3.00	1.80	16.67
7	3.50	2.00	10.00
8	4.00	2.30	13.04
9	4.50	2.60	11.54
10	5.00	2.80	7.14
11	5.50	3.00	6.67
12	6.00	3.20	6.25
13	6.50	3.50	8.57
14	7.00	3.70	5.41
15	7.50	3.90	5.13
16	8.00	4.10	4.88
17	8.50	4.30	4.65
18	9.00	4.50	4.44
19	9.50	4.80	6.25
20	10.00	5.00	4.00
21	10.50	5.20	3.85
22	11.00	5.40	3.70

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 44 TO 59.

BLANK VALUE = 5.4 micrograms carbon
BLANK FACTOR = 5.4 / 10.99969 = +4.9E-01 ug/min Carbon

Sample Run By: 11-10-95
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK Date: 11/10/95 Time: 09:04:50

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	1.20	91.67
3	1.50	4.20	71.43
4	2.00	7.40	43.24
5	2.50	9.30	20.43
6	3.01	10.40	10.58
7	3.50	11.10	6.31
8	4.00	11.60	4.31
9	4.50	12.10	4.13
10	5.00	12.60	3.97
11	5.50	13.20	4.55
12	6.00	13.70	3.65
13	6.50	14.10	2.84
14	7.00	14.40	2.08
15	7.50	14.90	3.36
16	8.00	15.20	1.97
17	8.50	15.60	2.56
18	9.00	15.80	1.27
19	9.50	16.00	1.25
20	10.00	16.50	3.03
21	10.50	16.70	1.20
22	11.00	17.00	1.76

BLANK VALUE = 17 micrograms carbon
BLANK FACTOR = 17 / 10.99982 = +1.55E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
KR MONTEITH 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 11/10/95 Time: 09:18:00

Sample Size = 1000 uL
Dil Factor = 1
Blank ID # =
Blank Value = .49 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	42.30	99.76
3	1.51	211.90	80.04
4	2.00	378.80	44.06
5	2.50	491.20	22.88
6	3.00	548.90	10.51
7	3.50	575.10	4.56
8	4.00	586.10	1.88
9	4.50	591.10	0.85
10	5.00	593.70	0.44
11	5.50	595.30	0.27
12	6.00	596.50	0.20
13	6.50	597.50	0.17
14	7.00	598.30	0.13
15	7.50	599.00	0.12
16	8.00	599.70	0.12
17	8.50	600.30	0.10
18	9.00	600.80	0.08
19	9.50	601.30	0.08
20	10.00	601.60	0.05
21	10.50	602.10	0.08
22	11.00	602.50	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 5.38991 micrograms carbon
BLANK FACTOR = 5.38991 / 10.99982 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(602.5 - 5.390359)(1)/(1000) = +5.971E-01 g/L Carbon
(602.5 - 5.390359)(1)/(1000)(12) = +4.976E-02 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 11/10/95 Time: 09:30:04

Sample Size = 200 uL
Dil Factor = 1
Blank ID # =
Blank Value = 1.55 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	10.90	96.33
3	1.50	103.20	89.44
4	2.00	291.30	64.57
5	2.50	455.50	36.05
6	3.00	534.60	14.80
7	3.50	565.50	5.46
8	4.00	576.90	1.98
9	4.50	581.40	0.77
10	5.00	584.10	0.46
11	5.50	585.80	0.29
12	6.00	587.10	0.22
13	6.50	588.30	0.20
14	7.00	589.10	0.14
15	7.50	590.10	0.17
16	8.00	590.70	0.10
17	8.50	591.60	0.15
18	9.00	592.00	0.07
19	9.50	592.60	0.10
20	10.00	593.10	0.08
21	10.50	593.60	0.08
22	11.00	594.00	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 17.04972 micrograms carbon
BLANK FACTOR = 17.04972 / 10.99982 = +1.5E+00 ug/min Carbon

SAMPLE RESULTS:
(594 - 17.05104)(1)/(200) = +2.885E+00 g/L Carbon
(594 - 17.05104)(1)/(200)(12) = +2.404E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
KR MONTEITH 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R BLK Date: 11/10/95 Time: 11:28:36

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .49 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	1.20	83.33
3	1.51	1.80	33.33
4	2.00	2.30	21.74
5	2.50	2.60	11.54
6	3.00	2.80	7.14
7	3.50	3.00	6.67
8	4.00	3.20	6.25
9	4.50	3.30	3.03
10	5.00	3.50	5.71
11	5.50	3.70	5.41
12	6.00	3.80	2.63
13	6.50	3.90	2.56
14	7.00	4.10	4.88
15	7.50	4.20	2.38
16	8.00	4.40	4.55
17	8.50	4.50	2.22
18	9.00	4.60	2.17
19	9.50	4.80	4.17
20	10.00	4.90	2.04
21	10.50	5.00	2.00
22	11.00	5.20	3.85

USER INPUT BLANK VALUE
BLANK VALUE = 5.38991 micrograms carbon
BLANK FACTOR = 5.38991 / 10.99982 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(5.2 - 5.389821)(1)/(1) = < 5.00 E-3 g/L Carbon
(5.2 - 5.389821)(1)/(1)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: KR MONTEITH 00000

< 5

P

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R BLK Date: 11/10/95 Time: 11:41:18

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 1.55 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	0.80	100.00
3	1.50	3.10	74.19
4	2.00	5.40	42.59
5	2.50	6.90	21.74
6	3.00	7.80	11.54
7	3.50	8.50	8.24
8	4.00	8.90	4.49
9	4.50	9.20	3.26
10	5.00	9.50	3.16
11	5.50	9.80	3.06
12	6.00	10.00	2.00
13	6.50	10.30	2.91
14	7.00	10.50	1.90
15	7.50	10.70	1.87
16	8.00	10.90	1.83
17	8.50	11.10	1.80
18	9.00	11.30	1.77
19	9.50	11.50	1.74
20	10.00	11.60	0.86
21	10.50	11.80	1.69
22	11.00	11.90	0.84

USER INPUT BLANK VALUE
BLANK VALUE = 17.04972 micrograms carbon
BLANK FACTOR = 17.04972 / 10.99982 = +1.5E+00 ug/min Carbon

SAMPLE RESULTS:
(11.9 - 17.04934)(1)/(1) = < 5.00 E-3 g/L Carbon
(11.9 - 17.04934)(1)/(1)(12) = < 4.17 E-4 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: KR MONTEITH 00000

L 40

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2903 Date: 11/10/95 Time: 11:55:03

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .49 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	4.40	95.45
3	1.50	15.60	71.79
4	2.00	34.90	55.30
5	2.50	51.40	32.10
6	3.00	61.10	15.88
7	3.50	66.10	7.56
8	4.00	68.60	3.64
9	4.50	69.80	1.72
10	5.00	70.60	1.13
11	5.50	71.40	1.12
12	6.00	71.90	0.70
13	6.50	72.20	0.42
14	7.00	72.50	0.41
15	7.50	72.80	0.41
16	8.00	73.10	0.41
17	8.50	73.40	0.41
18	9.00	73.70	0.41
19	9.50	73.90	0.27
20	10.00	74.20	0.40
21	10.50	74.40	0.27
22	11.00	74.80	0.53

USER INPUT BLANK VALUE
BLANK VALUE = 5.38991 micrograms carbon
BLANK FACTOR = 5.38991 / 10.99982 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(74.8 - 5.390299)(1)/(1) = +6.94E+01 g/L Carbon
(74.8 - 5.390299)(1)/(1)(12) = +5.78E+00 Molar Carbon

Sample Run By: KR MONTEITH 00000

$\frac{69.4}{.1019} = 6.81E^{2}$

P

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2903 Date: 11/10/95 Time: 12:07:48

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 1.55 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	7.20	0.00
2	1.01	173.60	95.85
3	1.51	283.20	38.70
4	2.00	331.20	14.49
5	2.50	351.20	5.69
6	3.00	358.50	2.04
7	3.50	361.60	0.86
8	4.00	363.30	0.47
9	4.50	364.70	0.38
10	5.00	365.70	0.27
11	5.50	366.60	0.25
12	6.00	367.30	0.19
13	6.50	368.00	0.19
14	7.00	368.50	0.14
15	7.50	369.10	0.16
16	8.00	369.70	0.16
17	8.50	370.10	0.11
18	9.00	370.50	0.11
19	9.50	370.90	0.11
20	10.00	371.30	0.11
21	10.50	371.60	0.08
22	11.00	372.00	0.11

USER INPUT BLANK VALUE
BLANK VALUE = 17.04972 micrograms carbon
BLANK FACTOR = 17.04972 / 10.99982 = +1.5E+00 ug/min Carbon

SAMPLE RESULTS:
(372 - 17.04953)(1)/(1) = +3.550E+02 g/L Carbon
(372 - 17.04953)(1)/(1)(12) = +2.958E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: KR MONTEITH 00000

3550.0 / .1019 = 3.48E3

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2903 Date: 11/10/95 Time: 12:24:20

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .49 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	5.80	98.28
3	1.51	25.50	77.25
4	2.00	51.00	50.00
5	2.50	72.30	29.46
6	3.00	88.00	17.84
7	3.50	97.50	9.74
8	4.00	102.70	5.06
9	4.50	105.40	2.56
10	5.00	107.20	1.68
11	5.50	108.10	0.83
12	6.00	109.00	0.83
13	6.50	109.60	0.55
14	7.00	110.20	0.54
15	7.50	110.80	0.54
16	8.00	111.40	0.54
17	8.50	111.90	0.45
18	9.00	112.40	0.44
19	9.50	112.90	0.44
20	10.00	113.30	0.35
21	10.50	113.80	0.44
22	11.00	114.10	0.26

USER INPUT BLANK VALUE
BLANK VALUE = 5.38991 micrograms carbon
BLANK FACTOR = 5.38991 / 10.99982 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(114.1 - 5.38991)(1)/(1) = +1.087E+02 g/L Carbon
(114.1 - 5.38991)(1)/(1)(12) = +9.059E+00 Molar Carbon

Sample Run By: KR MONTEITH 00000

$\frac{108.7}{.1582} = 6.87E^2$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2903 Date: 11/10/95 Time: 12:38:34

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 1.55 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	8.00	0.00
2	1.01	245.40	96.74
3	1.50	421.50	41.78
4	2.00	503.30	16.25
5	2.50	537.10	6.29
6	3.00	549.00	2.17
7	3.50	553.70	0.85
8	4.00	556.40	0.49
9	4.50	558.00	0.29
10	5.00	559.30	0.23
11	5.50	560.40	0.20
12	6.00	561.30	0.16
13	6.50	562.20	0.16
14	7.00	562.80	0.11
15	7.50	563.50	0.12
16	8.00	564.10	0.11
17	8.50	564.40	0.05
18	9.00	564.90	0.09
19	9.50	565.30	0.07
20	10.00	565.70	0.07
21	10.50	566.10	0.07
22	11.00	566.50	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 17.04972 micrograms carbon
BLANK FACTOR = 17.04972 / 10.99982 = +1.5E+00 ug/min Carbon

SAMPLE RESULTS:
(566.5 - 17.0482)(1)/(1) = +5.495E+02 g/L Carbon
(566.5 - 17.0482)(1)/(1)(12) = +4.579E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
KR MONTEITH 00000

$\frac{549.5}{.1582} = 3.47E^{3}$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2903 + SPK Date: 11/10/95 Time: 12:50:50

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .49 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	18.20	99.45
3	1.51	78.60	76.84
4	2.01	140.70	44.14
5	2.51	184.70	23.82
6	3.01	211.60	12.71
7	3.51	226.00	6.37
8	4.01	233.10	3.05
9	4.50	236.40	1.40
10	5.00	238.50	0.88
11	5.50	239.30	0.33
12	6.00	240.20	0.37
13	6.50	240.80	0.25
14	7.00	241.40	0.25
15	7.50	241.80	0.17
16	8.00	242.30	0.21
17	8.50	242.70	0.16
18	9.00	243.10	0.16
19	9.50	243.60	0.21
20	10.00	244.00	0.16
21	10.50	244.30	0.12
22	11.00	244.70	0.16

USER INPUT BLANK VALUE
BLANK VALUE = 5.38991 micrograms carbon
BLANK FACTOR = 5.38991 / 10.99982 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(244.7 - 5.390329)(1)/(1) = +2.393E+02 g/L Carbon
(244.7 - 5.390329)(1)/(1)(12) = +1.994E+01 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

$$\frac{244.7}{\left[\left(\frac{74.8}{.1019}\right).1217 + 150\right]} = 102.3\ \%\ Rec$$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2903 + SPK Date: 11/10/95 Time: 13:03:59

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 1.55 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	8.60	0.00
2	1.01	223.40	96.15
3	1.50	429.30	47.96
4	2.00	570.30	24.72
5	2.50	636.70	10.43
6	3.00	663.60	4.05
7	3.50	673.10	1.41
8	4.00	677.10	0.59
9	4.50	679.10	0.29
10	5.00	680.80	0.25
11	5.50	681.90	0.16
12	6.00	683.00	0.16
13	6.50	683.80	0.12
14	7.00	684.60	0.12
15	7.50	685.20	0.09
16	8.00	685.80	0.09
17	8.50	686.40	0.09
18	9.00	686.80	0.06
19	9.50	687.20	0.06
20	10.00	687.60	0.06
21	10.50	688.00	0.06
22	11.00	688.40	0.06

USER INPUT BLANK VALUE
BLANK VALUE = 17.04972 micrograms carbon
BLANK FACTOR = 17.04972 / 10.99982 = +1.5E+00 ug/min Carbon

SAMPLE RESULTS:
(688.4 - 17.05104)(1)/(1) = +6.713E+02 g/L Carbon
(688.4 - 17.05104)(1)/(1)(12) = +5.595E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: KR MONTEITH 00000

$$\frac{688.4}{\left[\left(\frac{372.0}{.1019}\right).1217 + 300\right]} = 92.5\% \text{ REC}$$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2945 Date: 11/10/95 Time: 13:16:05

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .49 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	3.80	100.00
3	1.50	17.60	78.41
4	2.00	39.40	55.33
5	2.50	62.00	36.45
6	3.00	78.50	21.02
7	3.50	88.10	10.90
8	4.00	92.90	5.17
9	4.50	95.50	2.72
10	5.00	97.70	2.25
11	5.50	98.90	1.21
12	6.00	100.20	1.30
13	6.50	101.30	1.09
14	7.00	102.40	1.07
15	7.50	103.40	0.97
16	8.00	104.10	0.67
17	8.50	105.00	0.86
18	9.00	106.00	0.94
19	9.50	106.70	0.66
20	10.00	107.60	0.84
21	10.50	108.30	0.65
22	11.00	109.10	0.73

USER INPUT BLANK VALUE
BLANK VALUE = 5.38991 micrograms carbon
BLANK FACTOR = 5.38991 / 10.99982 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(109.1 - 5.389432)(1)/(1) = +1.037E+02 g/L Carbon
(109.1 - 5.389432)(1)/(1)(12) = +8.643E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

$\frac{103.7}{.1096} = 9.46E^{2}$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2945 Date: 11/10/95 Time: 13:28:02

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 1.55 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	6.60	0.00
2	1.01	148.20	95.55
3	1.50	276.60	46.42
4	2.00	353.80	21.82
5	2.50	392.90	9.95
6	3.00	412.10	4.66
7	3.50	422.90	2.55
8	4.00	430.10	1.67
9	4.50	435.40	1.22
10	5.00	439.90	1.02
11	5.50	443.80	0.88
12	6.00	447.20	0.76
13	6.50	449.90	0.60
14	7.00	452.90	0.66
15	7.50	455.20	0.51
16	8.00	457.10	0.42
17	8.50	459.00	0.41
18	9.00	460.70	0.37
19	9.50	462.10	0.30
20	10.00	463.40	0.28
21	10.50	464.70	0.28
22	11.00	465.90	0.26

USER INPUT BLANK VALUE
BLANK VALUE = 17.04972 micrograms carbon
BLANK FACTOR = 17.04972 / 10.99982 = +1.5E+00 ug/min Carbon

SAMPLE RESULTS:
(465.9 - 17.04953)(1)/(1) = +4.489E+02 g/L Carbon
(465.9 - 17.04953)(1)/(1)(12) = +3.740E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
KR MONTEITH 00000

$\frac{448.9}{.1096} = 4.10 E^3$

TIC
~~TOC~~ TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2945 Date: 11/10/95 Time: 13:40:06

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = 11-10-95
Blank Value = ~~1.55~~ .49 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.40	0.00
2	1.01	7.90	82.28
3	1.50	32.20	75.47
4	2.00	64.90	50.39
5	2.51	94.40	31.25
6	3.01	113.80	17.05
7	3.51	124.60	8.67
8	4.00	129.30	3.63
9	4.50	132.10	2.12
10	5.00	133.80	1.27
11	5.50	135.10	0.96
12	6.00	136.30	0.88
13	6.50	137.30	0.73
14	7.00	138.50	0.87
15	7.50	139.20	0.50
16	8.00	140.30	0.78
17	8.50	141.10	0.57
18	9.00	142.00	0.63
19	9.50	142.70	0.49
20	10.00	143.60	0.63
21	10.50	144.30	0.49
22	11.00	145.00	0.48

USER INPUT BLANK VALUE
BLANK VALUE = 17.04972 micrograms carbon
BLANK FACTOR = 17.04972 / 10.99982 = +1.5E+00 ug/min Carbon

SAMPLE RESULTS:
(145 - ~~17.05104~~ 1.396E2)(1)/(1) = ~~+1.272E+02~~ 1.396E2 g/L Carbon
(145 - ~~17.05104~~)(1)/(1)(12) = +1.066E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: KR MONTEITH 00000

139.6 / .1500 = 9.31E2

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2945 Date: 11/10/95 Time: 13:52:55

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 1.55 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.30	0.00
2	1.01	122.80	98.13
3	1.51	306.70	59.96
4	2.00	425.70	27.95
5	2.50	489.80	13.09
6	3.00	522.30	6.22
7	3.50	538.40	2.99
8	4.00	548.60	1.86
9	4.50	556.50	1.42
10	5.00	562.80	1.12
11	5.50	568.10	0.93
12	6.00	572.80	0.82
13	6.50	577.30	0.78
14	7.00	580.60	0.57
15	7.50	584.10	0.60
16	8.00	587.20	0.53
17	8.50	589.80	0.44
18	9.00	592.40	0.44
19	9.50	594.40	0.34
20	10.00	596.50	0.35
21	10.50	598.40	0.32
22	11.00	600.30	0.32

USER INPUT BLANK VALUE
BLANK VALUE = 17.04972 micrograms carbon
BLANK FACTOR = 17.04972 / 10.99982 = +1.5E+00 ug/min Carbon

SAMPLE RESULTS:
(600.3 - 17.0482)(1)/(1) = +5.833E+02 g/L Carbon
(600.3 - 17.0482)(1)/(1)(12) = +4.860E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: KR MONTEITH 00000

$\frac{583.3}{.1500} = 3.89E^{3}$

RADIOCHEMICAL ANALYSES

LABCORE Data Entry Template for Worklist# 3507

Analyst: RK **Instrument:** AB00 16 **Book#** 150B52

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

Worklist Comment: .5 ML SAMPLE SIZE (BOILDOWN) / JLS FOR 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	S95T002906	0	F	@ALPHA01	SOLID	95000160	BX-110
	Analytes Requested:				ALPHA01 , ALPHA01E			
5	DUP	S95T002906	0	F	@ALPHA01	SOLID		
6	SPK	S95T002906	0	F	@ALPHA01	SOLID		
7	SAMPLE	S95T002946	0	F	@ALPHA01	SOLID	95000160	BX-110
	Analytes Requested:				ALPHA01 , ALPHA01E			
8	DUP	S95T002946	0	F	@ALPHA01	SOLID		
9	SPK	S95T002946	0	F	@ALPHA01	SOLID		

Final page for worklist # 3507

Rob King 11/14/95
Analyst Signature Date

M S Bowman 11/15/95
Analyst Signature Date

Data Entry Comments: Initial sample size .5ml brought up to 10ml with .8m HNO_3

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

LABCORE Completed Worklist Report for Worklist# 3507

Analyst: rwk **Instrument:** AB16 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: .5 ML SAMPLE SIZE (BOILDOWN) / JLS FOR SLF

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@ALPHA01 ALPHA01	SOLID	1.28E-05	1.15E-5	89.840	% Recovery
1	STD		0		@ALPHA01 ALPHA01E	SOLID	1.00	4.91E+00	4.910	% Ct. Error
2	BLNK-PREP		0		@ALPHA01 ALPHA01	SOLID	1	<4.68E-3		uCi/g
2	BLNK-PREP		0		@ALPHA01 ALPHA01E	SOLID	1.00	2.02E+02	202.000	% Ct. Error
3	BLNK/BKG		0		@ALPHA01 ALPHA01	SOLID	0.00E+00	2.61E+00	0.000	uCi/g
4	SAMPLE	S95T002906	0	F	@ALPHA01 ALPHA01	SOLID	N/A <	2.61E-03	3.880e-003	uCi/g
4	SAMPLE	S95T002906	0	F	@ALPHA01 ALPHA01E	SOLID	N/A	3.72E+02	0.000	% Ct. Error
5	DUP	S95T002906	0	F	@ALPHA01 ALPHA01	SOLID	<2.61E-3	<1.65E-3		RPD
5	DUP	S95T002906	0	F	@ALPHA01 ALPHA01E	SOLID	1.00	5.00E+02	500.000	% Ct. Error
6	SPK	S95T002906	0	F	@ALPHA01 ALPHA01	SOLID	4.48E-02	3.81E-02	85.040	% Recovery
7	SAMPLE	S95T002946	0	F	@ALPHA01 ALPHA01	SOLID	N/A	1.01E-02	4.080e-003	uCi/g
7	SAMPLE	S95T002946	0	F	@ALPHA01 ALPHA01E	SOLID	N/A	3.90E+01	0.000	% Ct. Error
8	DUP	S95T002946	0	F	@ALPHA01 ALPHA01	SOLID	1.01E-2	1.18E-2	15.530	RPD
8	DUP	S95T002946	0	F	@ALPHA01 ALPHA01E	SOLID	1.00	3.43E+01	34.300	% Ct. Error
9	SPK	S95T002946	0	F	@ALPHA01 ALPHA01	SOLID	4.48E-02	3.68E-02	82.140	% Recovery

Final page for worklist# 3507

Analyst Signature Date

Analyst Signature Date

11/15/95

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		16	16
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	1611	1619
3507	COUNT TIME in MINUTES	(CT)	30	30
Analyst	BACKGROUND in cpm	(BKG)	0.23	0.23
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)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		53.470	53.737
Batch Number	Standard Value in µCi/mL		1.28E-05	
95003934	Concentration in µCi/L	=	1.14E-02	
Run	Replicate Concentration in µCi/L	=	1.15E-02	
0	AVERAGE CONCENTRATION in µCi/L	=	1.1476E-02	

Sample Prep: N/A

Sample # WRKLST#3507

Instrument Code WB27806

Prepared By MCB

Chemist SLF

Analyst RWK

Date Complete 11/15/95

Analysis Date 11/14/95

Analysis Time 10:30 PM

Sample Point BX-110

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	1.15E-05	1.07E-07 µCi/mL
RELATIVE COUNTING ERROR	4.9%	

Analyst:		MCB	Date: 15-Nov-95
Signature of Chemist:		SLF	Date: 11/15/95

STANDARD.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK2

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

			BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER		16	16
BLNK-PREP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work Lot	GROSS COUNTS	(GC)	11	25
3507	COUNT TIME in MINUTES	(CT)	30	30
(or TB)	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	2.000	2.000
Test Code	DILUTION FACTOR	(DF)	20	20
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.7572	2.7572
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.369	0.603

Batch Number			
95003934	Blank Concentration in µCi/g	<	2.87E-03
Rerun	Replicate Concentration in µCi/g		4.68E-03
0	Maximum Concentration in µCi/g	<	4.6848E-03

Sample Prep
N/A

Sample #
S95T2906

Instrument Code
WB27806

Prepared By
MCB

Chemist
SLF

Analyst
RWK

Date Complete
11/15/95

Analysis Date
11/14/95

Analysis Time
10:30 PM

Sample Point
BX-110

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	< 4.68E-03	3.88E-03 µCi/g
LESS THAN Value was Determined from Rmax.			
RELATIVE COUNTING ERROR		202.3%	

Analyst:	MCB	Date: 15-Nov-95	
Signature of Chemist:	SLF	Date: 11/15/95	

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	17	9
3507	COUNT TIME in MINUTES	(CT)	30	30
AT or TB	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	2.000	2.000
Test Code	DILUTION FACTOR	(DF)	20	20
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.7572	2.7572
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.337	0.289

Batch Number			
95003934	Blank Concentration in µCi/g		2.61E-03
Rerun	Replicate Concentration in µCi/g	<	2.25E-03
1	Maximum Concentration in µCi/g	<	2.6142E-03

Sample Prep
FUSION01

Sample
S95T002906

Instrument Code
WB27806

Prepared By
MCB

Chemist
SLF

Analyst
RWK

Date Complete
11/15/95

Analysis Date
11/14/95

Analysis Time
10:30 PM

Sample Point
BX-110

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	< 2.61E-03	3.88E-03 µCi/g
LESS THAN Value was Determined from Rs.			
RELATIVE COUNTING ERROR		372.2%	

Analyst:	MCB		Date: 15-Nov-95
Signature of Chemist:		SLF	Date: 11/15/95

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP5

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

			DUP	REPLICATE
Type	DETECTOR NUMBER		16	16
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	5	6
3507	COUNT TIME in MINUTES	(CT)	30	30
A1 or TB	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	2.000	2.000
Test Code	DILUTION FACTOR	(DF)	20	20
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.6588	2.6588
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.204	0.204

Batch Number			
95003934	Blank Concentration in µCi/g	<	1.65E-03
Rerun	Replicate Concentration in µCi/g	<	1.65E-03
1	Maximum Concentration in µCi/g	<	1.6452E-03

Sample Prep
FUSION01

Sample #
S95T002906

Instrument Code
WB27806

Prepared By
MCB

Chemist
SLF

Analyst
RWK

Date Complete
11/15/95

Analysis Date
11/14/95

Analysis Time
10:30 PM

Sample Point
BX-110

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	< 1.65E-03	4.02E-03 µCi/g
LESS Than Value was Determined from Lc.			
RELATIVE COUNTING ERROR		500.0%	

Analyst:	MCB	Date: 15-Nov-95	
Signature of Chemist:	SLF	Date: 11/15/95	

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE6

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

			SPIKE	REPLICATE
Type	DETECTOR NUMBER		16	16
SPK	DISH SIZE 1, 2, or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	10632	10716
3507	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	2.000	2.000
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	20	20
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.7572	2.7572
Matrix	SPIKE VOLUME in mL	(SVol)	2.000	2.000
SOLID	SPIKE DILUTION FACTOR	(SDF)	100	100
Batch Number	SPIKE BOOK NUMBER	(Spk BN)	112B43	112B43
95003934	SPIKE VALUE in µCi/mL	(SVal)	4.4763E-02	4.4763E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
1	SAMPLE + SPIKE µCi/g	(S+S)	2.75E+00	2.77E+00
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE	<	2.6142E-03	
FUSION01				
Sample #				
S95T002906				
Instrument Code				
WB27806				
Prepared By				
MCB				
Chemist				
SLF				
Analyst				
RWK				
Date Complete				
11/15/95				
Analysis Date				
11/14/95				
Analysis Time				
10:30 PM				
Sample Point				
BX-110				

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

NOTE: **Original Sample result was a LESS THAN value. Zero (0) was subtracted from the spiked value for QC found calculation.**

QC ACTUAL	=	4.48E-02
QC FOUND	=	3.81E-02
AVG. PERCENT SPIKE RECOVERY	=	85.0%

Analyst:		MCB	Date: 15-Nov-95
Signature of Chemist:		SLF	Date: 11/15/95

SPIKE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM7

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	42	46
3507	COUNT TIME in MINUTES	(CT)	30	30
AT or TB	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	2.000	2.000
Test Code	DILUTION FACTOR	(DF)	20	20
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.622	2.622
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		1.170	1.303

Batch Number	
95003934	Blank Concentration in µCi/g 9.55E-03
Rerun	Replicate Concentration in µCi/g 1.06E-02
1	Average Concentration in µCi/g 1.0098E-02

Sample Prep: FUSION01

Sample #: S95T002946

Instrument Code: WB27806

Prepared By: MCB

Chemist: SLF

Analyst: RWK

Date Complete: 11/15/95

Analysis Date: 11/14/95

Analysis Time: 10:30 PM

Sample Point: BX-110

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	1.01E-02	
RELATIVE COUNTING ERROR		39.0%	4.08E-03 µCi/g

Analyst:	MCB	Date: 15-Nov-95	
Signature of Chemist:	SLF	Date: 11/15/95	

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP8

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

			DUP	REPLICATE
Type	DETECTOR NUMBER		16	16
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	53	50
3507	COUNT TIME in MINUTES	(CT)	30	30
AT or TB	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	2.000	2.000
Test Code	DILUTION FACTOR	(DF)	20	20
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.688	2.688
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		1.537	1.437

Batch Number	
95003934	Blank Concentration in µCi/g 1.22E-02
Rerun	Replicate Concentration in µCi/g 1.14E-02
1	Average Concentration in µCi/g 1.1841E-02
Sample Prep	
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)
S95T002946	
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
MCB	
Chemist	v RESULTS v
SLF	ALPHA TOTAL in µCi/g 1.18E-02
Analyst	
RWK	
Date Complete	
11/15/95	RELATIVE COUNTING ERROR 34.3%
Analysis Date	
11/14/95	
Analysis Time	
10:30 PM	
Sample Point	
BX-110	

DETECTION LEVEL
3.98E-03 µCi/g

Analyst:	MCB		Date: 15-Nov-95
Signature of Chemist:		SLF	Date: 11/15/95

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE9

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

			SPIKE	REPLICATE
Type	DETECTOR NUMBER		16	16
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	10285	10454
3507	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	2.000	2.000
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	20	20
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.622	2.622
Matrix	SPIKE VOLUME in mL	(SVol)	2.000	2.000
SOLID	SPIKE DILUTION FACTOR	(SDF)	100	100
Batch Number	SPIKE BOOK NUMBER	(Spk BN)	112B43	112B43
95003934	SPIKE VALUE in µCi/mL	(SVal)	4.4763E-02	4.4763E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
1	SAMPLE + SPIKE µCi/g	(S+S)	2.80E+00	2.84E+00
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE		1.0098E-02	
FUSION01				
Sample #				
S95T002946				
Instrument Code				
WB27806				
Prepared By				
MCB				
Chemist				
SLF				
Analyst				
RWK				
Date Complete				
11/15/95				
Analysis Date				
11/14/95				
Analysis Time				
10:30 PM				
Sample Point				
BX-110				

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	=	4.48E-02
QC FOUND	=	3.68E-02
AVG. PERCENT SPIKE RECOVERY	=	82.3%

Analyst:	MCB	Date: 15-Nov-95
Signature of Chemist:	SLF	Date: 11/15/95

SPIKE.WB1 Rev. 1.0 508101ML

THE FOLLOWING ANALYSES ARE INCLUDED IN THE DATA PACKAGE BUT THE RESULTS HAVE NOT BEEN REPORTED IN THE FINAL SUMMARY REPORTS.

LABCORE Completed Worklist Report for Worklist# 3471

Analyst: slh **Instrument:** AB15 **Book#** 150852

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

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@ALPHA01	ALPHA01	SOLID	1.28E-05	1.05E-5	82.030	% Recovery
1	STD		0		@ALPHA01	ALPHA01E	SOLID	1.00	4.86E+00	4.860	% Ct. Error
2	BLNK-PREP		0		@ALPHA01	ALPHA01	SOLID	1	<4.79E-4		uCi/g
2	BLNK-PREP		0		@ALPHA01	ALPHA01E	SOLID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0		@ALPHA01	ALPHA01	SOLID	0.00E+00	3.73E-01	0.000	uCi/g
4	SAMPLE	S95T002906	0	F	@ALPHA01	ALPHA01	SOLID	N/A <	4.79E-04	1.080e-003	uCi/g
4	SAMPLE	S95T002906	0	F	@ALPHA01	ALPHA01E	SOLID	N/A	5.00E+02	0.000	% Ct. Error
5	DUP	S95T002906	0	F	@ALPHA01	ALPHA01	SOLID	<4.79E-4	<4.96E-4		RPD
5	DUP	S95T002906	0	F	@ALPHA01	ALPHA01E	SOLID	1.00	5.00E+02	500.000	% Ct. Error
6	SPK	S95T002906	0	F	@ALPHA01	ALPHA01	SOLID	4.48E-02	1.49E-02	33.260	% Recovery
7	SAMPLE	S95T002946	0	F	@ALPHA01	ALPHA01	SOLID	N/A	1.29E-03	1.140e-003	uCi/g
7	SAMPLE	S95T002946	0	F	@ALPHA01	ALPHA01E	SOLID	N/A	6.15E+01	0.000	% Ct. Error
8	DUP	S95T002946	0	F	@ALPHA01	ALPHA01	SOLID	1.29E-3	1.31E-3	1.540	RPD
8	DUP	S95T002946	0	F	@ALPHA01	ALPHA01E	SOLID	1.00	7.33E+01	73.300	% Ct. Error
9	SPK	S95T002946	0	F	@ALPHA01	ALPHA01	SOLID	4.48E-02	2.14E-02	47.770	% Recovery

Final page for worklist# 3471

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date 11/14/95

Spike recoveries outside of project limits. Rerun.

DATA NOT USED IN PACKAGE

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

LABCORE Data Entry Template for Worklist# 3471

Analyst: SLHB **Instrument:** AB00 _____ **Book #** 150B52

Method: LA-508-101 Rev/Mod _____

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
		1	STD				@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		2	BLNK-PREP				@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
		2	BLNK-PREP				@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		3	BLNK/BKG				@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000160	BX-110	4	SAMPLE	S95T002906	0	F	@ALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000160	BX-110	4	SAMPLE	S95T002906	0	F	@ALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000160	BX-110	5	DUP	S95T002906	0	F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000160	BX-110	5	DUP	S95T002906	0	F	@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000160	BX-110	6	SPK	S95T002906	0	F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000160	BX-110	7	SAMPLE	S95T002946	0	F	@ALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000160	BX-110	7	SAMPLE	S95T002946	0	F	@ALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000160	BX-110	8	DUP	S95T002946	0	F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000160	BX-110	8	DUP	S95T002946	0	F	@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000160	BX-110	9	SPK	S95T002946	0	F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g

Final page for worklist # 3471

Sandra Hood Bootright 11-13-95 SE Horgan 11/14/95

Data Entry Comments:

DATA NOT USED IN PACKAGE

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# 3471

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
Analyst Signature		Date				Analyst Signature			Date	

DATA NOT USED IN PACKAGE

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.

WORKBOOK PAGE: STD1

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

			STANDARD	REPLICATE
	DETECTOR NUMBER		16	16
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	1696	1688
3471	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.67	0.67
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
	DILUTION FACTOR	(DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	150B52	150B52
	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		55.863	55.597
	Standard Value in µCi/mL		1.28E-05	
95003893	Concentration in µCi/L	=	1.06E-02	
	Replicate Concentration in µCi/L	=	1.05E-02	
0	AVERAGE CONCENTRATION in µCi/L	=	1.0548E-02	

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

WB26782

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

SEH

SLF

			DETECTION LEVEL
ALPHA TOTAL CONCENTRATION in µCi/mL		1.05E-05	
RELATIVE COUNTING ERROR	=	4.9%	1.49E-07 µCi/mL

SLH

11/14/95

11/13/95

10:30 PM

BX-110

Analyst:		SEH	Date: 14-Nov-95
Signature of Chemist:		SLF	Date: 11/14/95

STANDARD.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: BLANK2

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

			BLNK-PREP	REPLICATE
	DETECTOR NUMBER		15	15
BLNK-PREP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	11	4
3471	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.67	0.67
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.7572	2.7572
	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.349	0.349

95003893	Blank Concentration in µCi/g	<	4.79E-04
	Replicate Concentration in µCi/g	<	4.79E-04
0	Maximum Concentration in µCi/g	<	4.7875E-04

N/A

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

WB26782

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

SEH

v RESULTS v

				DETECTION LEVEL
SLF	ALPHA TOTAL	in µCi/g	< 4.79E-04	
SLH		LESS Than Value was Determined from L		1.08E-03 µCi/g
11/14/95	RELATIVE COUNTING ERROR		500.0%	

11/13/95

10:30 PM

BX-110

Analyst:		SEH	Date: 14-Nov-95
Signature of Chemist:		SLF	Date: 11/14/95

BLANK.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

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

			SAMPLE	REPLICATE
	DETECTOR NUMBER		15	15
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	9	11
3471	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.67	0.67
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.7572	2.7572
	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.349	0.349

Blank Concentration in µCi/g	<	4.79E-04
Replicate Concentration in µCi/g	<	4.79E-04
Maximum Concentration in µCi/g	<	4.7875E-04

95003893

0

FUSION01

S95T002906

WB26762

SEH

SLF

SLH

11/14/95

11/13/95

10:30 PM

BX-110

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	< 4.79E-04	
	LESS Than Value was Determined from L		1.08E-03 µCi/g
RELATIVE COUNTING ERROR		500.0%	

Analyst: SEH Date: 14-Nov-95

Signature of Chemist: SLF Date: 11/14/95

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP5

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

			DUP	REPLICATE
	DETECTOR NUMBER		15	15
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	8	10
3471	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.67	0.67
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.6588	2.6588
	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.349	0.349

95003893	Blank Concentration in µCi/g	<	4.96E-04
	Replicate Concentration in µCi/g	<	4.96E-04
0	Maximum Concentration in µCi/g	<	4.9647E-04

FUSION01

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

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

S95T002906

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

WB26782

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

SEH

v RESULTS v

				DETECTION LEVEL
SLF	ALPHA TOTAL	in µCi/g	< 4.96E-04	
SLH		LESS Than Value was Determined from L		1.12E-03 µCi/g
11/14/95	RELATIVE COUNTING ERROR		500.0%	

11/13/95

10:30 PM

BX-110

Analyst:		SEH	Date: 14-Nov-95
Signature of Chemist:		SLF	Date: 11/14/95

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SPIKE6

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

			SPIKE	REPLICATE
	DETECTOR NUMBER		15	15
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
	TOTAL COUNTS	(TC)	22307	24876
3471	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.67	0.67
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.500	0.500
	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.7572	2.7572
	SPIKE VOLUME in mL	(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR	(SDF)	1	1
	SPIKE BOOK NUMBER	(Spk BN)	112B43	112B43
95003893	SPIKE VALUE in µCi/mL	(SVal)	4.4763E-02	4.4763E-02
	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.238	0.238
0	SAMPLE + SPIKE µCi/g	(S+S)	1.02E+00	1.14E+00
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE	<	4.7875E-04	
FUSION01				
Sample				
S95T002906				
Instrument Code				
WB26782				
Prepared By				
SEH				
Chemist				
SLF				
Analyst				
SLH				
Date Completed				
11/14/95				
Analysis Date				
11/13/95				
Analysis Time				
10:30 PM				
Sample Form				
BX-110				

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

NOTE: **Original Sample result was a LESS THAN value. Zero (0) was subtracted from the spiked value for QC found calculation.**

QC ACTUAL	=	4.48E-02
QC FOUND	=	1.49E-02
AVG. PERCENT SPIKE RECOVERY	=	33.2%

Analyst: SEH Date: 14-Nov-95

Signature of Chemist: SLF Date: 11/14/95

SPIKE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM7

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

			SAMPLE	REPLICATE
	DETECTOR NUMBER		15	15
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	46	46
3471	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.67	0.67
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.622	2.622
	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.930	0.863

Blank Concentration in µCi/g	1.34E-03
Replicate Concentration in µCi/g	1.25E-03
Average Concentration in µCi/g	1.2945E-03

Batch Number: 95003893
Run: 0
Sample Prep: FUSION01
Lot: S95T002946
Instrument Code: WB26782
Prepared By: SEH
Chemist: SLF
Analyst: SLH
Date Complete: 11/14/95
Analysis Date: 11/13/95
Analysis Time: 10:30 PM
Sample Point: BX-110

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	1.29E-03	1.14E-03 µCi/g
RELATIVE COUNTING ERROR		61.5%	

Analyst: SEH Date: 14-Nov-95
Signature of Chemist: SLF Date: 11/14/95

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP8

WHC-SD-WM-DP-155, REV. 0

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

			DUP	REPLICATE
	DETECTOR NUMBER		15	15
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	55	41
3471	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.67	0.67
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.688	2.688
	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		1.163	0.697

95003893	Blank Concentration in µCi/g 1.64E-03
	Replicate Concentration in µCi/g 9.81E-04
0	Average Concentration in µCi/g 1.3096E-03

FUSION01

S95T002946

WB26782

SEH

SLF

SLH

11/14/95

11/13/95

10:30 PM

BX-110

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	1.31E-03	
			1.11E-03 µCi/g
RELATIVE COUNTING ERROR		73.3%	

Analyst:		SEH	Date: 14-Nov-95
Signature of Chemist:		SLF	Date: 11/14/95

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

I:\508101\OUT\AT3471.WB1 11/14/95

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

			SPIKE	REPLICATE
	DETECTOR NUMBER		15	15
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
	TOTAL COUNTS	(TC)	33566	34221
3471	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.67	0.67
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.500	0.500
	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.622	2.622
	SPIKE VOLUME in mL	(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR	(SDF)	1	1
	SPIKE BOOK NUMBER	(Spk BN)	112B43	112B43
95003893	SPIKE VALUE in µCi/mL	(SVal)	4.4763E-02	4.4763E-02
	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.238	0.238
0	SAMPLE + SPIKE µCi/g	(S+S)	1.61E+00	1.65E+00
	AVERAGE or MAXIMUM µCi/g in SAMPLE		1.2945E-03	

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BX-110

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	=	4.48E-02
QC FOUND	=	2.14E-02
AVG. PERCENT SPIKE RECOVERY	=	47.7%

Analyst:	SEH	Date: 14-Nov-95
Signature of Chemist:	SLF	Date: 11/14/95

SPIKE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

DISTRIBUTION SHEET

To Distribution	From Characterization Plans, Coordination and Reports	Page 1 of 1
		Date: 11/17/95
Project Title/Work Order WHC-SD-WM-DP-155, Rev. 0, "45-Day Safety Screening Results and Final Report for Tank 241-BX-110, Auger Samples 95-AUG-045 and 95-AUG-046"		EDT NO.: EDT-613469
		ECN NO.: N/A

Name	MSIN	Text With all Attach	EDT/ECN ONLY
Pacific Northwest Laboratory			
J. R. Gormsen	K7-28		X
S. J. Harris	K7-22	X	
K. L. Silvers	P7-27		X
U.S. Department of Energy, RL			
C. A. Babel	S7-54	X	
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J. A. Voogd	H5-03		X
Central Files	A3-88	2	
EDMC	H6-08	X	
LTIC	T6-03		X
TCRC	R2-12	X	
TFIC (Tank Farm Information Center)	R1-20		X
Washington State Department of Ecology			
Single-Shell Tank Unit Manager			
A. B. Stone	B5-18	X	
U. S. Department of Energy			
Jim Poppiti 12800 Middlebrook Rd. Trevion II, EM-36 Germantown, MD 20874			X
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