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Document #: SD-WM-DP-165

Title/Desc:
FINAL REPORT FOR TANK 241AN102 GRAB SAMPLES
2AN-95-1 THRU 2AN-95-6 & 102-AN-1 THRU 102-AN-4
[SEC 1 OF 2 PAGE 1 TO 473]

Pages: 486

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-WM-DP-165

Section 1 **of** 2

Title: Final Report for Tank 241AN102, Grab Samples 2AN-95-1 Through 2AN-95-6 & 102-AN-1 Through 102-AN-4

Date: 3-21-96 **Revision:** A000

Originator: Esch R A
Co:

Recipient:
Co:

References:

COMPLETE

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 629020

Proj. ECN

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[] 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

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13a. Justification (mark one)

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As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

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1. ECN (use no. from pg. 1) 629020

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

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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	[]		[]

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

20. Approvals

OPERATIONS AND ENGINEERING	Signature	Date	ARCHITECT-ENGINEER	Signature	Date
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Cog. Mgr. J. G. Kristofzski	John Kristofzski	3/21/96	QA		
AEQA E. W. Miller	E W Miller	3/21/96	Safety		
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Production Planning & Control A. D. Rice	A D Rice	3-21-96			
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			Signature or a Control Number that tracks the Approval Signature		
			ADDITIONAL		

FINAL REPORT FOR TANK 241-AN-102, GRAB SAMPLES 2AN-95-1 THROUGH 2AN-95-6 AND 102-AN-1 THROUGH 102-AN-4.

Ruth A. Esch
Westinghouse Hanford Company, Richland, WA 99352
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Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-165, REV. 1

ANALYTICAL SERVICES

FINAL REPORT FOR TANK 241-AN-102, GRAB SAMPLES 2AN-95-1 THROUGH 2AN-95-6 AND 102-AN-1 THROUGH 102-AN-4

Project Coordinator: Ruth A. Esch

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

by

Westinghouse Hanford Company
Box 1970

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This document consists of two sectons.

Part I consists of pages 1 through 695, plus pages 254.1, 254.1, and 2, 13, 19, 38, 125, 136, 157, 168, 172, 245, 257, 266 and 417 were intentionally left blank.

Part II consists of pages 2-1 through 2-153, and pages 2-4, 2-18, 2-24, 2-37, and 2-40 have been intentionally left blank.

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NARRATIVE

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FINAL REPORT FOR TANK 241-AN-102
GRAB SAMPLES 2AN-95-1 THROUGH 2AN-95-6 AND 102-AN-1 THROUGH 102-AN-4

Summary

Ten grab samples (2AN-95-1, 2AN-95-2, 2AN-95-3, 2AN-95-4A, 2AN-95-5A, 102-AN-1, 102-AN-2, 102-AN-3(A), 102-AN-3(B), and 102-AN-4) and one field blank (2AN-95-6) were taken from tank 241-AN-102. In support of the Safety Screening program, as specified in the Tank 241-AN-102 Grab Sampling and Analysis Plan (TSAP) (reference 1) and the Tank Safety Screening Data Quality Objective (DQO) (reference 2), total organic carbon (TOC) and cyanide (CN) were performed as secondary analyses because the differential scanning calorimetry (DSC) results exceeded the notification limit. The TOC and CN results were compared to the safety screening limits at a confidence level of 95%. In addition, in support of the Waste Compatibility program, as specified in the TSAP and the Data Quality Objectives for Tank Farms Waste Compatibility Program (reference 3), waste compatibility analyses were performed on the three supernate samples and the field blank from the latest sampling event.

The results presented in the 45 Day and in this report show that the waste in Tank 241-AN-102 has energetics greater than 480 J/g (dry) and TOC greater than 3 wt%. However, with a moisture content greater than 17 weight percent, the tank may be may be considered "conditionally" safe in accordance with the Data Quality Objective to Support Resolution of the Organic Complexant Safety Issue (reference 4).

Safety Screening Concerns

The measured concentration for the TOC analyses were all below the notification limit of 30,000 μg/mL (30,000 μg/g for solids) stated for both the safety screening and waste compatibility programs. However, the upper limit of the 95% confidence interval lies above this value. Since the measured TOC results were less than 3 weight percent (30,000 μg/g) for the solid portion of sludge samples 2AN-95-4A and 2AN-95-5A, the CN analyses were also performed on these samples. The CN results for both samples were below the notification limit of 39,000 μg/g.

Waste Compatibility Concerns

For criticality concerns, the $^{239/240}Pu$ results were all well below the prevention limit of 0.013 g/L (0.8 μCi/mL) specified in the Tank Waste Compatibility DQO. However, the potential for flammable gas accumulation should be evaluated since the weighted mean specific gravity (Sp.G.) for the supernate samples was greater than the 1.41 limit specified.

Waste Compatibility energetics decisions are based on the ratio of exothermic energy to endothermic energy. For all subsamples analyzed, this ratio was less than 1, as required.

The hydroxide results for the three samples analyzed were all below the acceptable concentration ranges required for corrosion control. Appropriate notifications were made.

The accuracy and precision criteria were satisfied for all seven of the samples analyzed for secondary safety screening analytes, and for the three samples and field blank analyzed for compatibility analytes.

Scope

This document is the final report deliverable for the tank 241-AN-102 grab samples. The samples were subsampled and analyzed in accordance with the TSAP. Included in this report are the results for the Safety Screening Program secondary analyses and Waste Compatibility analyses, with the exception of DSC, thermogravimetric analysis (TGA) and total alpha (AT) results which were presented in the 45 Day report (Part II of this document). The raw data for all analyses, with the exception of DSC and TGA, are also included in this report.

Analytical Results

Attachments

Attachment 1 is provided as a cross-reference for relating the tank farm customer ID numbers with the 222-S Laboratory sample numbers. The subsamples that were generated in the laboratory for analysis are also identified in these diagrams.

A summary of the analytical results is presented in Table 1 (pages 20 - 30).

Since the sample results for aluminum (Al) and sodium (Na) by inductively coupled plasma (ICP) exceeded the added spike concentrations by more than a factor of four, the matrix spike recovery results should not be used. The accuracy of these analyses was assessed by evaluating the serial dilution results. These results are identified in the raw data with an "_L" appended to the sample number. The samples were analyzed both undiluted and with a 5-fold serial dilution. For acceptable performance, the relative percent difference (RPD) between the serial dilution and the undiluted results must be ≤10%. The results provided in Table 2 (page 31) indicate that the accuracy of the analyses was acceptable.

Following the data summary tables is a section which contains the Data Verification and Deliverable (DVD) summary report for radionuclide analyses. This report summarizes the total alpha activity results and provides data qualifiers and total propagated uncertainty (TPU) values for results. The TPU values are based on the uncertainties inherent in each step of the analysis process. They are used to determine "reasonable" RPD values which may be used to accept valid data that do not meet the TSAP acceptance criteria. A report guide is provided on pages 80 - 94 to assist in understanding this summary report.

Safety Screening Secondary Analysis Results Summary

Total Organic Carbon (TOC)

The safety screening program requires that TOC be analyzed for any sample that exhibited a DSC exotherm greater than 480 J/g to determie whether or not the organic safety program DQO should be applied. Nine of the fourteen subsamples submitted for DSC analysis had exotherms that exceeded 480 J/g on a dry weight basis. TOC analysis was performed on ten subsamples. One supernate (102-AN-4) that did not have the DSC result exceed the action limit was also analyzed for TOC. The results ranged from 2.48e+4 to 2.79e+4 μg C/mL for the supernate samples, 2.41e+4 to 2.59e+4 μg C/mL for the supernate decanted from the solid portion of the sludges, and 1.97e+4 to 2.70e+4 μg C/g for the solid portion of the sludges.

The 95% upper confidence limits were calculated for each sample and are presented in Table 3. The results for the field blank were below the detection limit, therefore the 95% upper confidence limit was not determined. Although the measured values for the TOC are below the action limits, the upper limit for the 95% confidence interval falls above the action limit of 30,000 μg C/mL for five of the eight liquid samples analyzed, and above 30,000 μg C/g for one of the two solids analyzed.

The results listed in the table are wet-weight TOC results. The decision rules in the organic DQO are based on a limit of 3 wt% TOC on a dry-weight basis. Clearly it can be seen that if the TOC results exceed 3 wt% on a wet-weight basis, with an average moisture content of 47 percent moisture, the dry-weight calculated results will also exceed 3 wt%. However, the organic DQO decision rules state that if the moisture concentration is greater than 17 wt%, the tank may be considered "conditionally" safe, and that monitoring may be required to ensure that the waste will not dry out during interim storage.

Table 3: Comparison of TOC Results at a Confidence Level of 95%

Customer ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (mean)
SUPERNATES	µg C/mL	µg C/mL	µg C/mL		µg C/mL
102-AN-1	2.69e+4	2.62e+4	2.66e+4	495	2.88e+4
102-AN-2	2.57e+4	2.75e+4	2.66e+4	1273	3.23e+4
102-AN-4	2.57e+4	2.51e+4	2.54e+4	424	2.73e+4
2AN-95-1	2.79e+4	2.57e+4	2.68e+4	1556	3.37e+4
2AN-95-2	2.48e+4	2.65e+4	2.57e+4	1202	3.10e+4
2AN-95-3	2.65e+4	2.51e+4	2.58e+4	990	3.02e+4
SLUDGES					
Decanted Supernates	µg C/mL	µg C/mL	µg C/mL		µg C/mL
2AN-95-4A	2.41e+4	2.59e+4	2.50e+4	1273	3.07e+4
2AN-95-5A	2.43e+4	2.51e+4	2.47e+4	566	2.72e+4
Centrifuged Solids	µg C/g	µg C/g	µg C/g		µg C/g
2AN-95-4A	2.60e+4	2.70e+4	2.65e+4	707	2.97e+4
2AN-95-5A	1.97e+4	2.26e+4	2.12e+4	2051	3.03e+4

Cyanide (CN)

For the solid portion of the sludge samples the TOC results were below 3 weight percent of TOC. Therefore, CN analysis was required to determine whether or not the ferrocyanide safety program DQO should be applied. The results for the two samples ranged from 20.3 to 21.7 μg/g.

The 95% upper confidence limits were calculated for each sample and are presented in Table 4. The results show that the CN concentration is well below (three orders of magnitude lower than) the action limit of 39,000 μg/g.

Table 4: Comparison of CN Results at a Confidence Level of 95%

Customer ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (mean)
SLUDGES					
Centrifuged Solids	μg/g	μg/g	μg/g		μg/g
2AN-95-4A	21.7	20.3	21.0	0.990	25.4
2AN-95-5A	20.7	20.9	20.8	0.141	21.4

Compatibility Study Results Summary

Criticality Decision Rule

Plutonium ($^{239/240}Pu$)

$^{239/240}Pu$ concentration was measured for supernate samples 2AN-95-1, 2AN-95-2, 2AN-95-3 and the field blank (2AN-95-6) to evaluate criticality safety for waste transfers. The results for the supernates ranged of 5.19e-3 to 6.58e-3 μCi/mL. The field blank result was less than the detection limit of 2.89e-5 μCi/mL. These results are two orders of magnitude below the criticality prevention limit of 0.80 μCi/mL stated in the compatibility DQO.

Americium (^{241}Am)

^{241}Am was also analyzed. The results ranged from 1.08e-1 to 1.67e-1 μCi/mL. The field blank result was less than the detection limit of 4.64e-4 μCi/mL.

Flammable Gas Accumulation Decision Rule

Specific Gravity (Sp.G.)

The Sp.G. of the waste is currently used for dètermination of the potential to cause an accumulation of flammable gases. The flammable gas decision rule requires that the weighted mean Sp.G. not exceed 1.41. All six supernate samples were submitted for Sp.G. analysis. The results ranged from 1.37 to 1.51. The weighted mean Sp.G. = 1.416. This result exceeds the 1.41 limit to allow waste transfer.

Energetics Decision Rule

Differential Scanning Calorimetry (DSC)

For waste compatibility energetics decision concerns, the exotherm/endotherm ratio must be less than one (1). This requirement is satisfied for all samples. The actual exotherm and endotherm results and the calculated ratios are presented Table 5 (pages 32 - 33).

Corrosion Decision Rule

Nitrate (NO_3^-), Hydroxide (OH^-) and Nitrite (NO_2^-)

The results with respect to the waste compatibility corrosion rules are presented in Table 6 (pages 34 - 36). This table presents the NO_3^-, OH^-, and NO_2^- results in μg/mL and molarity (M) units. The spreadsheet compares the results to the concentration ranges specified in the waste compatibility DQO. A "YES" will appear in the appropriate space for the condition that is met. Only one of three sets of conditions must be met for OH^- and NO_2^- based on the range that the NO_3^- concentration falls in. If "NO" appears in the space under a condition, that condition is not met and a notification is required. The concentration of OH^- ranged from 3.08e+03 to 3.31e+03 μg/mL (0.181 to 0.195 M). These results are below the expected range in all cases.

Deviations

Due to the absence of solids in the supernate samples, the volume percent solids by centrifugation test was not performed on those samples.

The TSAP indicated that CN^- analysis was required on both the liquid and solid matrices if DSC results exceeded the notification limit. However, the tank coordinator (J. Jo) directed that the CN^- analysis only be performed on the solid matrix since the results for the solid matrix were three orders of magnitude below the notification limit, and the CN^- was expected to be in the solid material for this tank.

For the field blank, sample 2AN-95-6 (S95T003962), the OH^- result for the sample is reported as "pH=6.67" and the duplicate is reported as "n/a". The reason for this is that the OH^- test cannot be run if the pH is less than 10. The reported pH of 6.67 is that measured after the addition of barium chloride ($BaCl_2$). The pH measured on the sample was 9.02 without the addition of $BaCl_2$.

There were several analytes that were detected in the field blank at levels above the method detection limit. For chloride, nitrate, sulfate, chromium, and strontium (^{90}Sr), the concentration detected was at least three orders of magnitude less than those measured in the samples. This low level may be considered insignificant. For silicon, the concentration detected (3.22 μg/mL) was greater than the detection limit calculated for the field blank (0.05 μg/mL). However, this concentration is approximately six times less than the detection limit calculated for the samples (20.10μg/mL) which were analyzed at a higher dilution due to higher concentrations of some of the analytes. Therefore, the concentration may still be considered insignificant.

The pH results ranged from 13.28 to 13.35 for the samples. Results for pH that are greater than 12.5 are suspect and should be considered estimates because the highest calibration buffer available is 12.5 and pH electrode performance degrades at high pH. The average pH for the field blank, 2AN-95-6, was 9.02.

In the ion chromatography (IC) analysis, there was an organic acid in sample 2AN-95-1 that gave a response which interfered with the fluoride (F^-) results. The spike recovery of 155.1% for this sample was believed to be due to the interferant, therefore no rerun was requested. For sample 2AN-95-3 (S96T003869), the spike recovery for the NO_3^- was 136.7%, and that for the NO_2^- was 127.5%. In general, spike recoveries are unreliable when the concentration of analyte in the sample exceeds that of the spike added by at least a factor of four, as is the case here. In these situations, even the apparently good spike recoveries may, in fact, be only coincidental. The samples were not reanalyzed.

Also for the IC analysis, one batch had a detectable level F^- in the method blank. The concentration was considered insignificant (three orders of magnitude less than the sample results), and no rerun was performed.

For the ^{90}Sr analysis, a detectable level of ^{90}Sr was found in the method blank, indicated by a "B" qualifier for the sample results in the DVD report. Although this indicates contamination, the concentration level was insignificant with respect to the sample results (at least three orders of magnitude lower), therefore the analysis was not rerun.

Procedures

Table 7 lists the analytical procedures used for performing the sample analyses. Abreviations for analyses are defined in the table notes.

Table 7: Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
DSC	Supernate & Solids	N/A	LA-514-114 Rev. C-1 LA-514-113 Rev. C-1
TGA	Supernate & Solids	N/A	LA-514-114 Rev. C-1 LA-560-112 Rev. B-1
Sp.G.	Supernate	N/A	LA-510-112 Rev. C-3
pH	Supernate	N/A	LA-212-106 Rev. A-0
OH	Supernate	N/A	LA-211-102 Rev. C-0
CN	Solids	N/A	LA-695-102 Rev. E-0
IC: Cl^-, F^-, PO_4^{3-}, SO_4^{2-}, NO_3^-, NO_2^-	Supernate	N/A	LA-533-105 Rev. D-1
ICP: Al, Cr, Fe, Mn, Na, Ni, Si, U	Supernate	N/A	LA-505-161 Rev. B-0
TOC *	Supernate Sludge	N/A N/A	LA-344-105 Rev. C-0 LA-342-100 Rev. C-0
TIC *	Supernate	N/A	LA-622-102 Rev. C-0
AT	Supernate Sludge	N/A LA-549-141 Rev. E-0	LA-508-101 Rev. D-2 LA-508-101 Rev. D-2
GEA: ^{137}Cs	Supernate	N/A	LA-548-121 Rev. D-1
^{90}Sr	Supernate	N/A	LA-220-101 Rev. D-1
^{241}Am	Supernate	N/A	LA-953-103 Rev. A-4
$^{239/240}Pu$ *	Supernate	N/A	LA-943-127 Rev. B-1 LA-943-128 Rev. A-0

Notes:

* Deviations: TIC: procedure LA-344-105, listed in the referenced TSAP, is incorrect.

TOC: procedures LA-344-100 and LA-622-102 listed in the TSAP are incorrect.

$^{239/240}Pu$: procedure LA-943-127, listed in the TSAP, was used for the analysis of samples S95T003871 and S95T003872. On February 1, 1996 the laboratory began using procedure LA-943-128. This new procedure was used to analyze samples S95T003870 and S95T003963. The use of an extraction resin rather than the anion resin (as used in the former procedure) results in better tracer recovery and, therefore, better accuracy. The latter procedure will be used from now on.

+ - Preparation procedure is for fusion digest on solid.

Abreviations:
N/A = not applicable (direct samples)
DSC = differential scanning calorimetry
TGA = thermogravimetric analysis
Sp.G. = specific gravity
OH = hydroxide
CN = cyanide
IC = ion chromatography
ICP = inductively coupled plasma
TOC = total organic carbon
TIC = total inorganic carbon
AT = total alpha
GEA = gamma energy analysis

Reference

1. WHC-SD-WM-TSAP-065, Rev. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352.

2. WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352.

3. WHC-SD-WM-DQO-001, Rev. 1, "Data Quality Objectives for Tank Farms Waste Compatibility Program", dated April 24, 1995, Westinghouse Hanford Company, Richland, WA 99352.

4. WHC-SD-WM-DQO-006, Rev. 2, "Data Quality Objective to Support Resolution of the Organic Complexant Safety Issue", dated September 8, 1995, Westinghouse Hanford Company, Richland, WA 99352.

ATTACHMENT 1

AN-102 GRAB SAMPLE BREAKDOWN

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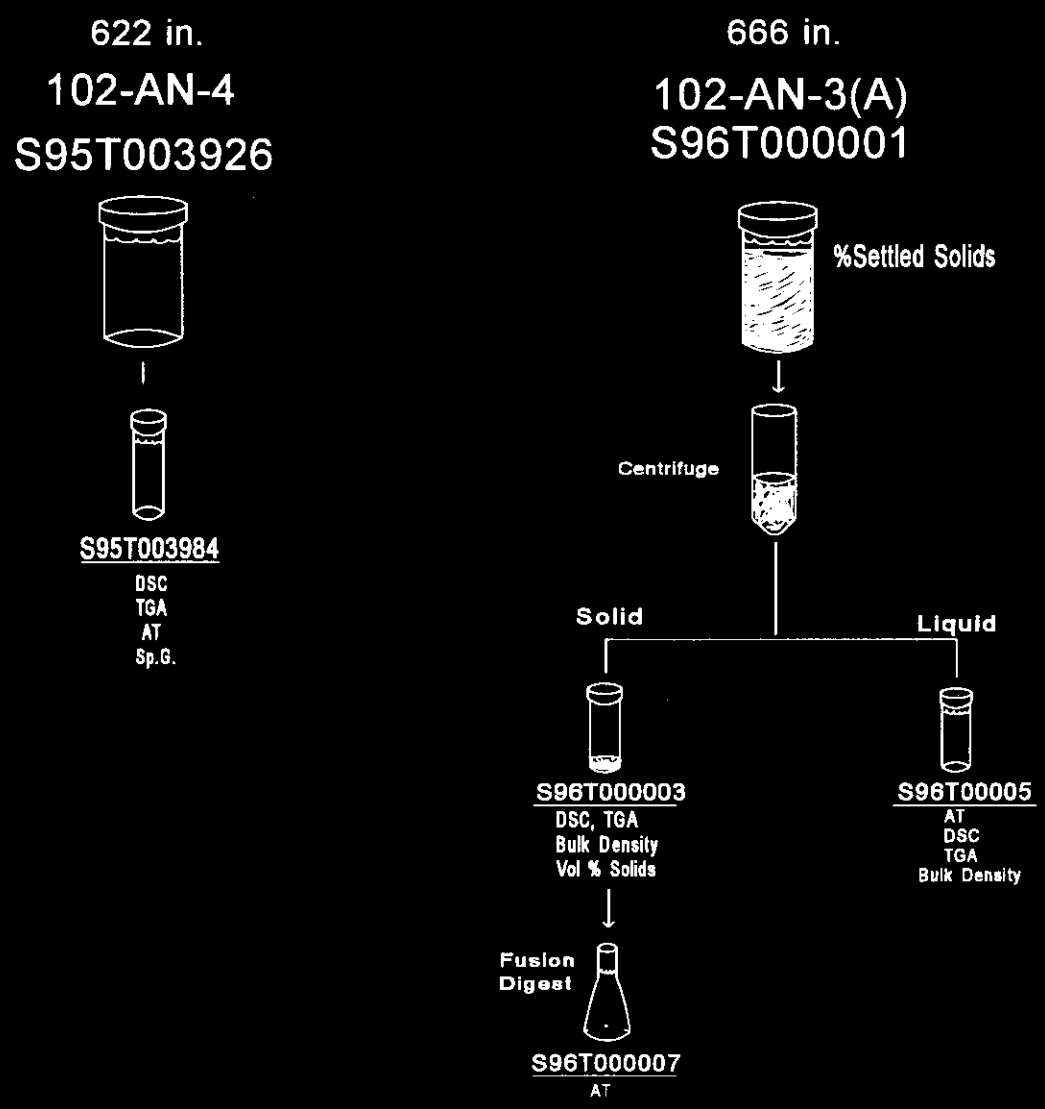
Attachment 1 (1 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 22A

October 21, 1994 Sampling Event

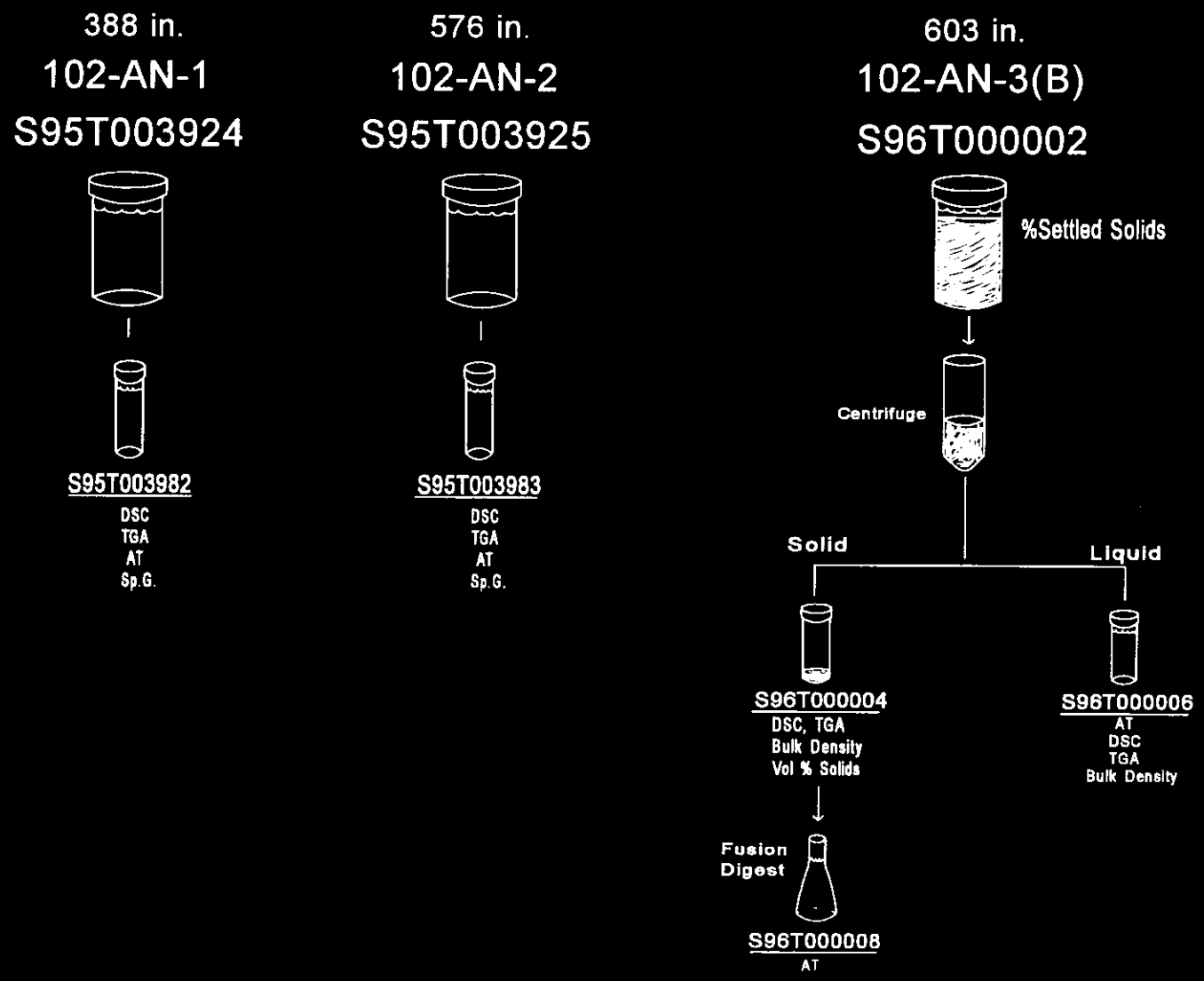


Attachment 1 (2 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 22A

February 15, 1995 Sampling Event

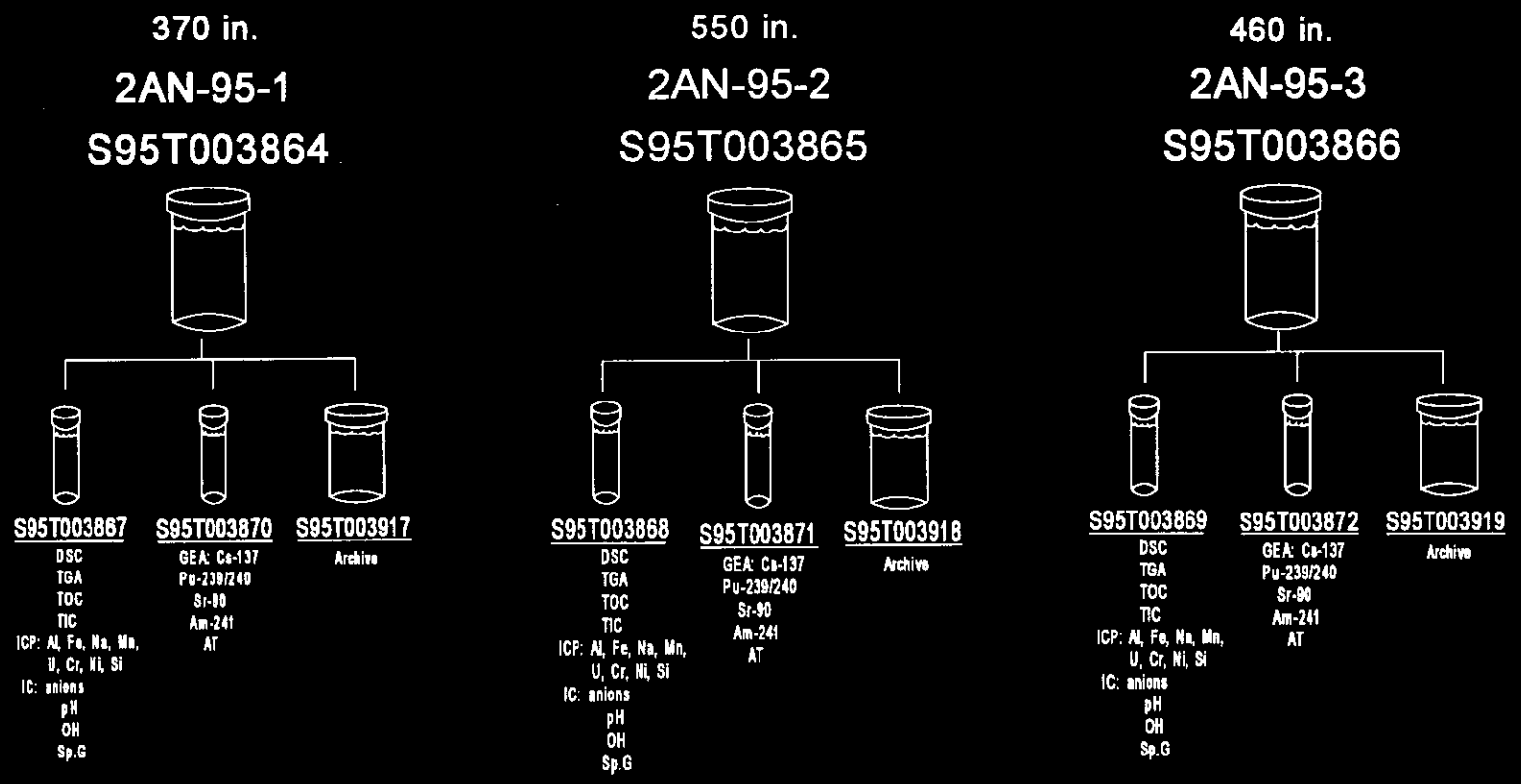


Attachment 1 (3 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

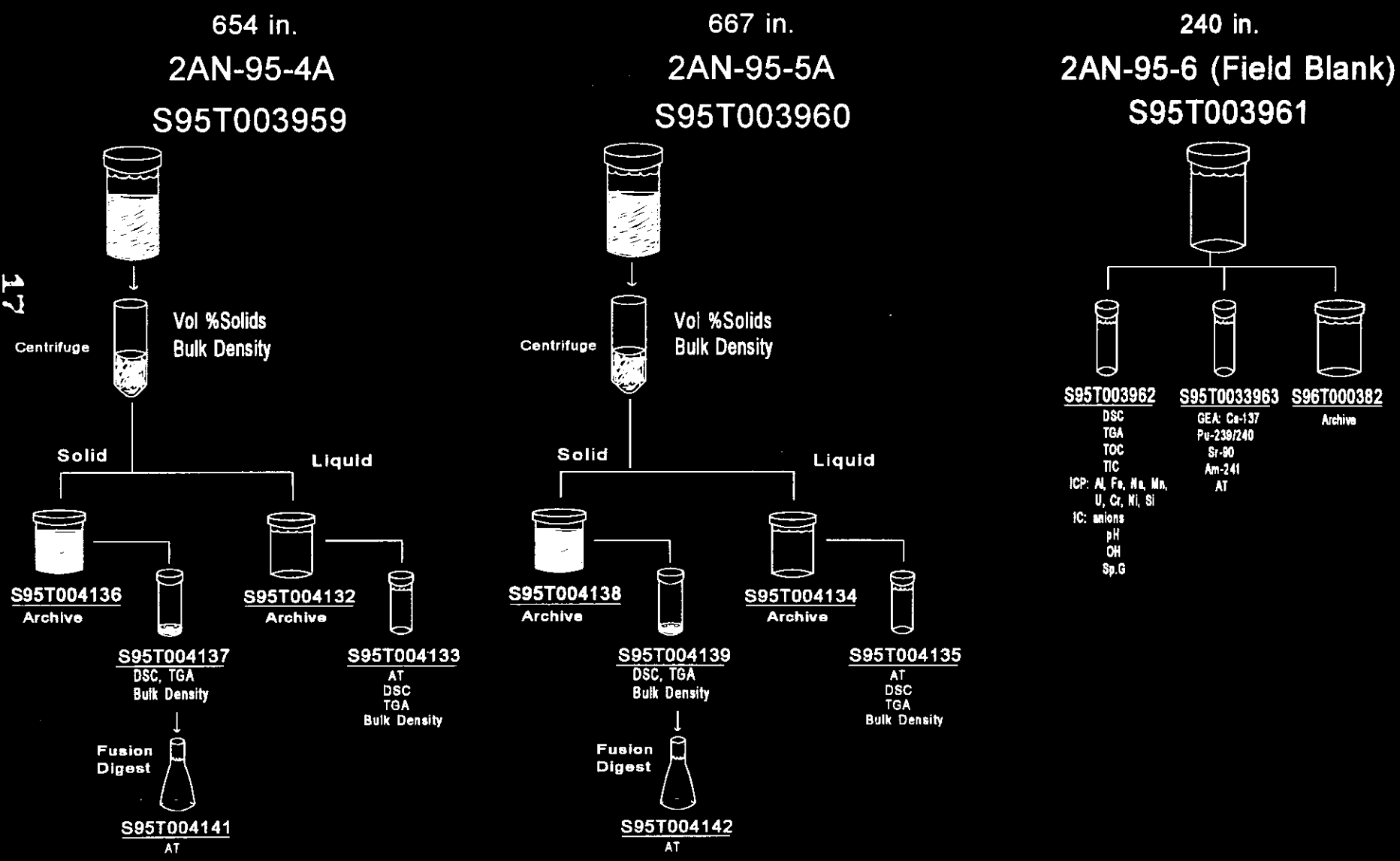
Riser 21A

November 30, 1995 Sampling Event



Attachment 1 (4 of 4)
AN-102 GRAB SAMPLE BREAKDOWN
Riser 21A

December 14, 1995 Sampling Event



SAMPLE DATA SUMMARY

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A-0002-1

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003867			Tot. Organic Carbon by Coul.	ug/mL	95.00	1.800	2.79e+04	2.570e4	2.680e4	8.21	94.10	305.0	n/a
S95T003867			Tot. Inorg. Carbon by Coul.	ug/mL	98.83	3.00e-01	1.22e+04	1.250e4	1.240e4	2.43	98.10	105.0	n/a
S95T003867			Specific Gravity	Sp.G.	100.9	n/a	1.388	1.382e0	1.385e0	0.43	n/a	1.000e-3	n/a
S95T003867			pH Direct	pH	n/a	n/a	13.33	1.332e1	1.332e1	0.08	n/a	1.000e-2	n/a
S95T003867			OH- by Pot. Titration	ug/mL	97.36	<42.00	3.31e+03	3.080e3	3.200e3	7.20	n/a	625.0	n/a
S95T003867	D		Aluminium-ICP-Acid Dil.	ug/mL	96.60	<5.000e-2	1.52e+04	1.480e4	1.500e4	2.67	n/a	20.10	n/a
S95T003867	D		Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	3.27e+02	2.970e2	3.120e2	9.62	90.50	4.010	n/a
S95T003867	D		Iron-ICP-Acid Dil.	ug/mL	99.80	<5.000e-2	65.70	4.730e1	5.650e1	32.6	91.40	20.10	n/a
S95T003867	D		Manganese-ICP-Acid Dil.	ug/mL	97.40	<1.000e-2	68.30	2.400e1	4.615e1	96.0	85.50	4.010	n/a
S95T003867	D		Sodium-ICP-Acid Dil.	ug/mL	98.00	<1.000e-1	2.21e+05	2.160e5	2.180e5	2.29	n/a	40.10	n/a
S95T003867	D		Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.000e-2	4.03e+02	3.810e2	3.920e2	5.61	93.60	8.020	n/a
S95T003867	D		Silicon-ICP-Acid Dil.	ug/mL	96.40	<5.000e-2	20.90	<2.00e1	n/a	n/a	94.10	20.10	n/a
S95T003867	D		Uranium-ICP-Acid Dil.	ug/mL	95.10	<5.000e-1	<2.00e+02	<2.00e2	n/a	n/a	112.8	200.0	n/a
S95T003867			Sulfate by IC-Dionex4000i/4500	ug/mL	92.55	<1.360e-1	1.05e+04	1.220e4	1.130e4	15.0	91.80	1.390e3	n/a
S95T003867			Phosphate-IC-Dionex 4000i/4500	ug/mL	96.15	<1.190e-1	3.53e+03	4.150e3	3.840e3	16.1	94.10	1.220e3	n/a
S95T003867			Nitrate-IC - Dionex 4000i/4500	ug/mL	94.95	<1.400e-1	1.63e+05	1.930e5	1.780e5	16.9	108.2	1.430e3	n/a
S95T003867			Nitrite-IC - Dionex 4000i/4500	ug/mL	93.82	<1.070e-1	6.04e+04	7.140e4	6.590e4	16.7	101.9	1.090e3	n/a
S95T003867			Fluoride-IC-Dionex 4000i/4500	ug/mL	89.83	<1.300e-2	<1.33e+02	<1.33e2	n/a	n/a	155.1	132.6	n/a
S95T003867			Chloride-IC-Dionex 4000i/4500	ug/mL	95.32	<1.700e-2	2.98e+03	3.320e3	3.150e3	10.8	90.50	173.4	n/a
S95T003870			Strontium-89/90 High Level	uCi/mL	92.74	7.90e-02	71.30	7.510e1	7.320e1	5.19	n/a	1.000e-2	4.72E-01
S95T003870			Pu-239/240 by TRU-SPEC Resin	uCi/mL	100.8	<6.150e-5	6.52e-03	6.580e-3	6.550e-3	0.92	n/a	3.210e-4	1.66E+00
S95T003870			Cesium-137 by GEA	uCi/mL	96.84	<7.110e-3	3.22e+02	3.230e2	3.225e2	0.31	n/a	7.000e-3	.14
S95T003870			Cobalt-60 by GEA	uCi/mL	96.15	<3.030e-3	1.43e-01	1.510e-1	1.470e-1	5.44	n/a	3.000e-3	10.27
S95T003870			Am-241 by Extraction	uCi/mL	90.88	<4.760e-3	1.67e-01	1.630e-1	1.650e-1	2.42	n/a	1.500e-2	9.61E-01

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Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003868			Tot. Organic Carbon by Coul.	ug/mL	95.00	1.800	2.48e+04	2.650e4	2.560e4	6.63	n/a	305.0	n/a
S95T003868			Tot. Inorg. Carbon by Coul.	ug/mL	98.83	3.00e-01	1.31e+04	1.350e4	1.330e4	3.01	n/a	105.0	n/a
S95T003868			Specific Gravity	Sp.G.	100.9	n/a	1.432	1.402e0	1.417e0	2.12	n/a	1.000e-3	n/a
S95T003868			pH Direct	pH	n/a	n/a	13.35	1.334e1	1.334e1	0.07	n/a	1.000e-2	n/a
S95T003868			OH- by Pot. Titration	ug/mL	98.80	<42.00	3.31e+03	3.240e3	3.280e3	2.14	n/a	1.250e3	n/a
S95T003868		D	Aluminium-ICP-Acid Dil.	ug/mL	96.60	<5.000e-2	1.44e+04	1.480e4	1.460e4	2.74	n/a	20.10	n/a
S95T003868		D	Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	2.83e+02	2.870e2	2.850e2	1.40	n/a	4.010	n/a
S95T003868		D	Iron-ICP-Acid Dil.	ug/mL	99.80	<5.000e-2	41.00	3.990e1	4.045e1	2.72	n/a	20.10	n/a
S95T003868		D	Manganese-ICP-Acid Dil.	ug/mL	97.40	<1.000e-2	21.30	2.020e1	2.075e1	5.30	n/a	4.010	n/a
S95T003868		D	Sodium-ICP-Acid Dil.	ug/mL	98.00	<1.000e-1	2.11e+05	2.160e5	2.140e5	2.34	n/a	40.10	n/a
S95T003868		D	Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.000e-2	3.81e+02	3.810e2	3.810e2	0.00	n/a	8.020	n/a
S95T003868		D	Silicon-ICP-Acid Dil.	ug/mL	96.40	<5.000e-2	< 20.00	<2.00e1	n/a	n/a	n/a	20.10	n/a
S95T003868		D	Uranium-ICP-Acid Dil.	ug/mL	95.10	<5.000e-1	<2.00e+02	<2.00e2	n/a	n/a	n/a	200.0	n/a
S95T003868			Sulfate by IC-Dionex4000i/4500	ug/mL	92.55	<1.360e-1	1.68e+04	1.740e4	1.710e4	3.51	n/a	1.390e3	n/a
S95T003868			Phosphate-IC-Dionex 4000i/4500	ug/mL	96.15	<1.190e-1	6.22e+03	5.990e3	6.110e3	3.77	n/a	1.220e3	n/a
S95T003868			Nitrate-IC - Dionex 4000i/4500	ug/mL	94.95	<1.400e-1	2.83e+05	2.990e5	2.910e5	5.50	n/a	1.430e3	n/a
S95T003868			Nitrite-IC - Dionex 4000i/4500	ug/mL	93.82	<1.070e-1	1.04e+05	1.100e5	1.070e5	2.42	n/a	1.090e3	n/a
S95T003868			Fluoride-IC-Dionex 4000i/4500	ug/mL	89.83	<1.300e-2	<1.33e+02	<1.33e2	n/a	n/a	n/a	132.6	n/a
S95T003868			Chloride-IC-Dionex 4000i/4500	ug/mL	95.32	<1.700e-2	4.72e+03	4.880e3	4.800e3	3.33	n/a	173.4	n/a
S95T003871			Strontium-89/90 High Level	uCi/mL	92.74	7.90e-02	74.40	7.390e1	7.415e1	0.67	n/a	1.000e-2	4.61E-01
S95T003871			Pu-239/240 by TRU-SPEC Resin	uCi/mL	99.22	<8.530e-4	5.19e-03	5.240e-3	5.220e-3	0.96	n/a	1.000e-3	2.76E+00
S95T003871			Cesium-137 by GEA	uCi/mL	96.84	<7.110e-3	3.13e+02	3.120e2	3.125e2	0.32	n/a	7.000e-3	.14
S95T003871			Cobalt-60 by GEA	uCi/mL	96.15	<3.030e-3	1.48e-01	1.570e-1	1.520e-1	5.90	n/a	3.000e-3	9.19
S95T003871			Am-241 by Extraction	uCi/mL	82.41	<1.790e-3	1.23e-01	1.080e-1	1.150e-1	13.0	n/a	8.000e-3	8.78E-01

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Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-3

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003869			Tot. Organic Carbon by Coul.	ug/mL	95.00	1.800	2.65e+04	2.510e4	2.580e4	5.43	n/a	305.0	n/a
S95T003869			Tot. Inorg. Carbon by Coul.	ug/mL	98.83	3.00e-01	1.30e+04	1.340e4	1.320e4	3.03	n/a	105.0	n/a
S95T003869			Specific Gravity	Sp.G.	100.9	n/a	1.394	1.383e0	1.389e0	0.79	n/a	1.000e-3	n/a
S95T003869			pH Direct	pH	n/a	n/a	13.28	1.330e1	1.329e1	0.15	n/a	1.000e-2	n/a
S95T003869			OH- by Pot. Titration	ug/mL	98.80	<42.00	3.10e+03	3.310e3	3.200e3	6.55	n/a	1.250e3	n/a
S95T003869	D		Aluminium-ICP-Acid Dil.	ug/mL	96.60	<5.000e-2	1.63e+04	1.600e4	1.620e4	1.86	n/a	20.10	n/a
S95T003869	D		Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	3.36e+02	3.200e2	3.280e2	4.88	n/a	4.010	n/a
S95T003869	D		Iron-ICP-Acid Dil.	ug/mL	99.80	<5.000e-2	61.30	5.040e1	5.585e1	19.5	n/a	20.10	n/a
S95T003869	D		Manganese-ICP-Acid Dil.	ug/mL	97.40	<1.000e-2	66.80	3.400e1	5.040e1	65.1	n/a	4.010	n/a
S95T003869	D		Sodium-ICP-Acid Dil.	ug/mL	98.00	<1.000e-1	2.37e+05	2.340e5	2.360e5	1.27	n/a	40.10	n/a
S95T003869	D		Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.000e-2	4.29e+02	4.220e2	4.255e2	1.65	n/a	8.020	n/a
S95T003869	D		Silicon-ICP-Acid Dil.	ug/mL	96.40	<5.000e-2	20.10	<2.00e1	n/a	n/a	n/a	20.10	n/a
S95T003869	D		Uranium-ICP-Acid Dil.	ug/mL	95.10	<5.000e-1	<2.00e+02	<2.00e2	n/a	n/a	n/a	200.0	n/a
S95T003869			Sulfate by IC-Dionex4000i/4500	ug/mL	97.15	<1.360e-1	1.27e+04	1.280e4	1.280e4	0.78	100.0	563.2	n/a
S95T003869			Phosphate-IC-Dionex 4000i/4500	ug/mL	95.79	<1.190e-1	4.22e+03	4.170e3	4.200e3	1.19	92.70	496.9	n/a
S95T003869			Nitrate-IC - Dionex 4000i/4500	ug/mL	98.05	2.37e-01	1.96e+05	1.970e5	1.960e5	0.51	133.8	579.7	n/a
S95T003869			Nitrite-IC - Dionex 4000i/4500	ug/mL	93.82	<1.070e-1	7.32e+04	7.270e4	7.290e4	0.69	124.3	443.1	n/a
S95T003869			Fluoride-IC-Dionex 4000i/4500	ug/mL	92.37	1.70e-02	1.45e+03	1.450e3	1.450e3	0.00	88.80	53.83	n/a
S95T003869			Chloride-IC-Dionex 4000i/4500	ug/mL	95.06	<1.700e-2	3.46e+03	3.610e3	3.530e3	4.24	95.60	70.40	n/a
S95T003872			Strontium-89/90 High Level	uCi/mL	92.74	7.90e-02	78.20	7.940e1	7.880e1	1.52	n/a	1.000e-2	4.52E-01
S95T003872			Pu-239/240 by TRU-SPEC Resin	uCi/mL	99.22	<8.530e-4	5.68e-03	5.710e-3	5.700e-3	0.53	n/a	1.000e-3	2.57E+00
S95T003872			Cesium-137 by GEA	uCi/mL	96.84	<7.110e-3	3.23e+02	3.280e2	3.255e2	1.54	n/a	7.000e-3	.14
S95T003872			Cobalt-60 by GEA	uCi/mL	96.15	<3.030e-3	1.42e-01	1.440e-1	1.430e-1	1.40	n/a	3.000e-3	10.5
S95T003872			Am-241 by Extraction	uCi/mL	82.41	<1.790e-3	1.29e-01	1.350e-1	1.320e-1	4.55	n/a	9.000e-3	8.41E-01

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Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-4A

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T004133			TOC by Persulfate/Coulometry	ug/mL	94.33	5.00e-01	2.41e+04	2.590e4	2.500e4	7.20	n/a	40.00	n/a

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003959			Volume % Solids	%	n/a	n/a	53.60	n/a	n/a	n/a	n/a	n/a	n/a
S95T004137			TOC by Persulfate/Coulometry	ug/g	95.70	1.500	2.60e+04	2.700e4	2.650e4	3.77	101.0	40.00	n/a
S95T004137			Cyanide EDTA Addition	ug/g	101.0	<3.800e-2	21.70	2.030e1	2.100e1	6.67	92.00	2.400	n/a

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Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-5A

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T004135			TOC by Persulfate/Coulometry	ug/mL	94.33	5.00e-01	2.43e+04	2.510e4	2.470e4	3.24	n/a	40.00	n/a

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003960			Volume % Solids	%	n/a	n/a	46.60	n/a	n/a	n/a	n/a	n/a	n/a
S95T004139			TOC by Persulfate/Coulometry	ug/g	95.70	1.500	1.97e+04	2.260e4	2.120e4	13.7	n/a	80.00	n/a
S95T004139			Cyanide EDTA Addition	ug/g	101.0	<3.800e-2	20.70	2.090e1	2.080e1	0.96	87.80	1.980	n/a

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A-0002-1

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-6

SEGMENT PORTION: Field Blank

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003962			Tot. Organic Carbon by Coul.	ug/mL	95.00	1.800	< 5.500	<5.50	n/a	n/a	n/a	5.000	n/a
S95T003962			Tot. Inorg. Carbon by Coul.	ug/mL	97.51	3.00e-01	< 5.000	<5.00E+0	n/a	n/a	n/a	5.000	n/a
S95T003962			Specific Gravity	Sp.G.	100.9	n/a	9.94e-01	1.015e0	1.004e0	2.09	n/a	1.000e-3	n/a
S95T003962			pH Direct	pH	n/a	n/a	9.030	9.010e0	9.020e0	0.22	n/a	1.000e-2	n/a
S95T003962			OH- by Pot. Titration	ug/mL	97.36	<42.00	pH=6.67	n/a	n/a	n/a	n/a	5.500	n/a
S95T003962		D	Aluminium-ICP-Acid Dil.	ug/mL	96.60	<5.000e-2	5.15e-02	6.080e-2	5.610e-2	16.6	n/a	5.000e-2	n/a
S95T003962		D	Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.000e-2	1.27e-02	1.350e-2	1.310e-2	6.11	n/a	1.000e-2	n/a
S95T003962		D	Iron-ICP-Acid Dil.	ug/mL	99.80	<5.000e-2	<5.00e-02	<5.00e-2	n/a	n/a	n/a	5.000e-2	n/a
S95T003962		D	Manganese-ICP-Acid Dil.	ug/mL	97.40	<1.000e-2	<1.00e-02	<1.00e-2	n/a	n/a	n/a	1.000e-2	n/a
S95T003962		D	Sodium-ICP-Acid Dil.	ug/mL	98.00	<1.000e-1	2.300	2.320e0	2.310e0	0.87	n/a	1.000e-1	n/a
S95T003962		D	Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.000e-2	<2.00e-02	<2.00e-2	n/a	n/a	n/a	2.000e-2	n/a
S95T003962		D	Silicon-ICP-Acid Dil.	ug/mL	96.40	<5.000e-2	3.200	3.240e0	3.220e0	1.24	n/a	5.000e-2	n/a
S95T003962		D	Uranium-ICP-Acid Dil.	ug/mL	95.10	<5.000e-1	<5.00e-01	<5.00e-1	n/a	n/a	n/a	5.000e-1	n/a
S95T003962			Sulfate by IC-Dionex4000i/4500	ug/mL	97.15	<1.360e-1	3.671	3.460e0	3.566e0	5.89	n/a	1.496	n/a
S95T003962			Phosphate-IC-Dionex 4000i/4500	ug/mL	95.79	<1.190e-1	< LDL	<1.32e0	n/a	n/a	n/a	1.320	n/a
S95T003962			Nitrate-IC - Dionex 4000i/4500	ug/mL	98.05	2.37e-01	6.178	6.450e0	6.314e0	4.28	n/a	1.540	n/a
S95T003962			Nitrite-IC - Dionex 4000i/4500	ug/mL	93.82	<1.070e-1	< 1.177	<1.18e0	n/a	n/a	n/a	1.177	n/a
S95T003962			Fluoride-IC-Dionex 4000i/4500	ug/mL	92.37	1.70e-02	<1.43e-01	<1.43e-1	n/a	n/a	n/a	1.430e-1	n/a
S95T003962			Chloride-IC-Dionex 4000i/4500	ug/mL	95.06	<1.700e-2	1.369	1.280e0	1.325e0	6.79	n/a	1.870e-1	n/a
S95T003963			Strontium-89/90 High Level	uCi/mL	93.55	4.14e-07	3.07e-05	3.200e-5	3.140e-5	4.15	n/a	5.040e-7	5.21E+00
S95T003963			Pu-239/240 by TRU-SPEC Resin	uCi/mL	100.8	<6.150e-5	<2.89e-05	<3.06E-5	n/a	n/a	n/a	2.890e-5	1.00E+02
S95T003963			Cesium-137 by GEA	uCi/mL	96.84	<7.110e-3	<8.05e-05	<7.93e-5	n/a	n/a	n/a	7.000e-3	n/a
S95T003963			Cobalt-60 by GEA	uCi/mL	96.15	<3.030e-3	<2.76e-05	<3.04e-5	n/a	n/a	n/a	3.000e-3	n/a
S95T003963			Am-241 by Extraction	uCi/mL	83.39	<4.230e-4	<4.64e-04	<4.59E-4	n/a	n/a	n/a	4.640e-4	1.00E+02

19-mar-1996 09:08:30
A-0002-1

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003982			Tot. Organic Carbon by Coul.	ug/mL	101.0	1.500	2.69e+04	2.620e4	2.660e4	2.64	n/a	305.0	n/a
S95T003982			Specific Gravity	Sp.G.	100.2	n/a	1.440	1.430e0	1.435e0	0.70	n/a	1.000e-3	n/a

19-mar-1996 09:08:32
A-0002-1

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003983			Tot. Organic Carbon by Coul.	ug/mL	101.0	1.500	2.57e+04	2.750e4	2.660e4	6.77	n/a	305.0	n/a
S95T003983			Specific Gravity	Sp.G.	100.2	n/a	1.390	1.510e0	1.450e0	8.28	n/a	1.000e-3	n/a

19-mar-1996 09:08:37
A-0002-1

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-4

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003984			Tot. Organic Carbon by Coul.	ug/mL	101.0	1.500	2.57e+04	2.510e4	2.540e4	2.36	97.60	305.0	n/a
S95T003984			Specific Gravity	Sp.G.	100.2	n/a	1.370	1.480e0	1.425e0	7.72	n/a	1.000e-3	n/a

19-mar-1996 09:08:35
A-0002-1

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-3(A)

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000003			Volume % Solids	%	n/a	n/a	61.20	n/a	n/a	n/a	n/a	n/a	n/a

19-mar-1996 09:08:36
A-0002-1

Table 1: Final Results for Tank 241-AN-102
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-3(B)

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000004			Volume % Solids	%	n/a	n/a	50.00	n/a	n/a	n/a	n/a	n/a	n/a

Table 2

ICP Serial Dilution Results for Tank 241-AN-102
Waste Compatibility Study

Riser 21A November 30, 1995 Sampling Event

Sample ID	Analyte	Sample Result (µg/mL) Undiluted	Serial Dilution Result (µg/mL)	RPD
S95T003867				
(2AN-95-1)	Al	1.52E+04	1.54E+04	1.3
	Na	2.21E+05	2.27E+05	2.7
S96T003868				
(2AN-95-2)	Al	1.44E+04	1.47E+04	2.1
	Na	2.11E+05	2.17E+05	2.8
S95T003869				
(2AN-95-3)	Al	1.63E+04	1.67E+04	2.4
	Na	2.37E+05	2.45E+05	3.3

RPD (Relative Percent Difference) = (ABS(Sample - Serial Dilution))/[(Sample +Serial Dilution)/2] X 100

Table 5 (1 of 2)

Additional DSC Results for Tank 241-AN-102
Waste Compatibility Study

Riser 22A October 21, 1994 Sampling Event

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S95T003984						
(102-AN-4)	Samp	223.20	437.2	863.4	127.6	0.26
	Dup	197.1	437.1	883.8	128.5	0.22
S96T000003						
(102-AN-3(A))	Samp	0.0	n/a	978.7	125.5	0.00
Solid	Dup	0.0	n/a	935.5	123.9	0.00
S96T000005						
(102-AN-3(A))	Samp	237.0	439.9	1112.2	129.7	0.21
Liquid	Dup	230.2	439.7	926.1	126.6	0.25

Energy Ratio = Exothermic Energy /Endothermic Energy
* - This ratio must be < 1 for Compatibility Energetics

Riser 22A February 15, 1995 Sampling Event

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S95T003982						
(102-AN-1)	Samp	284.2	437.8	900.1	133.8	0.32
	Dup	317.4	435.9	1075.4	137.8	0.30
S96T003983						
(102-AN-2)	Samp	361.3	441.3	1628.8	123.1	0.22
	Dup	281.0	435.0	1373.5	126.7	0.20
S96T000004						
(102-AN-3(B))	Samp	0.0	n/a	1034.6	118.3	0.00
Solid	Dup	0.0	n/a	945.7	110.5	0.00
S96T000006						
(102-AN-3(B))	Samp	0.0	n/a	1712.8	112.9	0.00
Liquid	Dup	27.47	431.8	1162.0	121.3	0.02

Energy Ratio = Exothermic Energy /Endothermic Energy
* - This ratio must be < 1 for Compatibility Energetics

Table 5 (2 of 2)

Additional DSC Results for Tank 241-AN-102
Waste Compatibility Study

Riser 21A November 30, 1995 Sampling Event

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S95T003867						
(2AN-95-1)	Samp	283.9	435.7	922.9	130.5	0.31
	Dup	284.0	437.8	968.2	133.8	0.29
S96T003868						
(2AN-95-2)	Samp	616.1	305.3	914.9	133.8	0.67
	Dup	557.8	297.5	783.7	139.9	0.71
S95T003869						
(2AN-95-3)	Samp	277.2	427.8	1149.3	128.2	0.24
	Dup	282.6	428.0	1209.8	125.0	0.23

Energy Ratio = Exothermic Energy /Endothermic Energy
* - This ratio must be < 1 for Compatibility Energetics

Riser 21A December 14, 1995 Sampling Event

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S95T004137						
(2AN-95-4A)	Samp	279.6	405.4	991.8	130.2	0.28
Solid	Dup	262.5	404.3	1008.7	131.6	0.26
S95T004133						
(2AN-95-4A)	Samp	258.0	316.9	1178.6	125.6	0.22
Liquid	Dup	252.1	317.2	1175.3	125.8	0.21
S95T004139						
(2AN-95-5A)	Samp	283.2	428.7	1037.1	131.7	0.27
Solid	Dup	327.5	429.2	1029.0	128.6	0.32
S95T004135						
(2AN-95-5A)	Samp	279.7	315.7	1147.7	128.4	0.24
Liquid	Dup	300.30	319.7	1082.3	125.6	0.28

Energy Ratio = Exothermic Energy /Endothermic Energy
* - This ratio must be < 1 for Compatibility Energetics

Table 6 (1 of 3)

WASTE COMPATIBILITY CORROSION RULES

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is [NO3]	Is [OH]	Is [NO2]	Is [OH]/[NO2]
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
S95T003867 2AN-95-1	NO3	1.63E+05	2.629				
	OH	3.31E+03	0.195				
	NO2	6.04E+04	1.313	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		>= 0.4 * [NO3]?
				YES	NO		YES
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is [NO3]	Is [OH]	Is [NO2]	Is [OH]/[NO2]
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
S95T003867 2AN-95-1 DUP	NO3	1.93E+05	3.113				
	OH	3.08E+03	0.181				
	NO2	7.14E+04	1.552	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		>= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?
				YES	NO		YES

Table 6 (2 of 3)

WASTE COMPATIBILITY CORROSION RULES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[illegible] [NO3]	[illegible] [OH]	[illegible] [NO2]	[illegible]
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
S96T003868 2AN-95-2	NO3	2.83E+05	4.565				
	OH	3.31E+03	0.195				
	NO2	1.04E+05	2.261	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		>= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?
				YES	NO		YES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[illegible] [NO3]	[illegible] [OH]	[illegible] [NO2]	[illegible]
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
S96T003868 2AN-95-2 DUP	NO3	2.99E+05	4.823				
	OH	3.24E+03	0.191				
	NO2	1.01E+05	2.196	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		>= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?
				YES	NO		YES

Table 6 (3 of 3)

WASTE COMPATIBILITY CORROSION RULES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[illegible] [NO3]	[illegible] [OH]	[illegible] [NO2]	[illegible] [OH] + [NO2]
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
S95T003869 2AN-95-3	NO3	1.96E+05	3.161				
	OH	3.10E+03	0.182				
	NO2	7.32E+04	1.591	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		>= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?
				YES	NO		YES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[illegible] [NO3]	[illegible] [OH]	[illegible] [NO2]	[illegible] [OH] + [NO2]
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	
S95T003869 2AN-95-3 DUP	NO3	1.97E+05	3.177				
	OH	3.31E+03	0.195				
	NO2	7.27E+04	1.580	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		>= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?
				YES	NO		YES

RADIOCHEMISTRY SAMPLE SUMMARY REPORT

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SDG 95000222
Contact R. A. Esch

Client TWRS
Tank AN102

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DUPLICATES

ABOUT THE DATA SUMMARY SECTION

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

SAMPLE SUMMARY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	PRIORITY	COLLECTED	RECEIVED
AN102 S1 Radchem Tests	R: S: C:	LIQUID		S95T003870			12/01/95 12:50
AN102 S1 Radchem Tests-D	R: S: C:	LIQUID		S95T003870D			
AN102 S1 Radchem Tests-S	R: S: C:	LIQUID		S95T003870S			
AN102 S2 Radchem Tests	R: S: C:	LIQUID		S95T003871			12/01/95 14:15
AN102 S2 Radchem Tests-D	R: S: C:	LIQUID		S95T003871D			
AN102 S3 Radchem Tests	R: S: C:	LIQUID		S95T003872			12/01/95 12:50
AN102 S3 Radchem Tests-D	R: S: C:	LIQUID		S95T003872D			
AN102 S4A FUSION	R: 21A S: 2AN-95-4A C: n FUSION	SOLID		S95T004141			12/15/95 10:30
AN102 S4A FUSION-DUP	R: 21A S: 2AN-95-4A C: n FUSION	SOLID		S95T004141D			
AN102 S4A FUSION-SPK	R: 21A S: 2AN-95-4A C: n FUSION	SOLID		S95T004141S			
AN102 S5A FUSION	R: 21A S: 2AN-95-5A C: n FUSION	SOLID		S95T004142			12/15/95 10:30
AN102 S5A FUSION-DUP	R: 21A S: 2AN-95-5A C: n FUSION	SOLID		S95T004142D			
AN102 S6 Radchem Tests	R: S: C:	LIQUID		S95T003963			12/15/95 10:50
AN102 S6 Radchem Tests-D	R: S: C:	LIQUID		S95T003963D			
DI Blank		LIQUID		B4766-2			
DI Blank		LIQUID		B4767-2			
DI Blank		LIQUID		B4825-2			
DI Blank		LIQUID		B4826-2			
DI Blank		LIQUID		B4865-2			
DI Blank		LIQUID		B4882-2			
DI Blank		LIQUID		B4888-2			
DI Blank		LIQUID		B5167-2			
DI Blank		LIQUID		B5367-2			
Method Blank		SOLID		B5177-2			
Lab Control Sample		LIQUID		S4766-1			
Lab Control Sample		LIQUID		S4767-1			
Lab Control Sample		LIQUID		S4825-1			
Lab Control Sample		LIQUID		S4826-1			
Lab Control Sample		LIQUID		S4865-1			
Lab Control Sample		LIQUID		S4882-1			
Lab Control Sample		LIQUID		S4888-1			
Lab Control Sample		LIQUID		S5167-1			
Lab Control Sample		LIQUID		S5367-1			
Lab Control Sample		SOLID		S5177-1			

Final Report

SAMPLE SUMMARY
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SUMMARY DATA SECTION
Page 3

Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

Client TWRS
Tank AN102

QC SUMMARY

WHC-SD-WM-DP-165, REV. I

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID		MATRIX	% MOIST	SAMPLE AMOUNT	BASIS AMOUNT	DAYS FROM/TO COLL RCVD	DAYS FROM/TO RCVD RPTD	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
95000222-F		AN102 S4A FUSION	FUSION	SOLID					88	S95T004141	
		AN102 S5A FUSION	FUSION	SOLID					88	S95T004142	
		AN102 S4A FUSION-DUP	FUSION	SOLID					88	S95T004141D	
		AN102 S4A FUSION-SPK	FUSION	SOLID					88	S95T004141S	
		AN102 S5A FUSION-DUP	FUSION	SOLID					88	S95T004142D	
95000222-L	n/a	AN102 S1 Radchem Tests		LIQUID					102	S95T003870	
		AN102 S2 Radchem Tests		LIQUID					102	S95T003871	
		AN102 S3 Radchem Tests		LIQUID					102	S95T003872	
		AN102 S6 Radchem Tests		LIQUID					88	S95T003963	
		AN102 S1 Radchem Tests-D		LIQUID					102	S95T003870D	
		AN102 S1 Radchem Tests-S		LIQUID					102	S95T003870S	
		AN102 S2 Radchem Tests-D		LIQUID					102	S95T003871D	
		AN102 S3 Radchem Tests-D		LIQUID					102	S95T003872D	
		AN102 S6 Radchem Tests-D		LIQUID					88	S95T003963D	
LIQUID		DI Blank		LIQUID						B4766-2	
		DI Blank		LIQUID						B4767-2	
		DI Blank		LIQUID						B4825-2	
		DI Blank		LIQUID						B4826-2	
		DI Blank		LIQUID						B4865-2	
		DI Blank		LIQUID						B4882-2	
		DI Blank		LIQUID						B4888-2	
		DI Blank		LIQUID						B5167-2	
		DI Blank		LIQUID						B5367-2	
		Lab Control Sample		LIQUID						S4766-1	
		Lab Control Sample		LIQUID						S4767-1	
		Lab Control Sample		LIQUID						S4825-1	
		Lab Control Sample		LIQUID						S4826-1	
		Lab Control Sample		LIQUID						S4865-1	
		Lab Control Sample		LIQUID						S4882-1	
		Lab Control Sample		LIQUID						S4888-1	
		Lab Control Sample		LIQUID						S5167-1	
		Lab Control Sample		LIQUID						S5367-1	
SOLID		Method Blank		SOLID						B5177-2	
		Lab Control Sample		SOLID						S5177-1	

Final Report

QC SUMMARY
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SUMMARY DATA SECTION
Page 4

Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-QS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

PREP BATCH SUMMARY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. /

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	LIQUID	Americium-241	96000202	15.0	2			1	1	2/2		
			96000342	15.0	1			1	1	1/1		
			96000674	15.0	1			1	1	1/1		
PU	LIQUID	Plutonium-239	96000201	15.0	2			1	1	2/2		
			96000785	15.0	2			1	1	2/2		
Gas Proportional Counting												
SR	LIQUID	Strontium-89/90	96000302	15.0	3			1	1	3/3		
			96000339	15.0	1			1	1	1/1		
Gas Proportional Counting												
AT	LIQUID	Alpha Analysis	96000688	15.0	2					2/2	1/1	
		Alpha Analysis	96000301	15.0	3			1	1	3/3	1/1	
	SOLID	Alpha Analysis	96000688	15.0				1	1			
Gamma Energy Analysis												
GEA	LIQUID	Gamma Spectroscopy	96000316	15.0	4			1	1	4/4		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

WORK SUMMARY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID / LOCATION / CUSTODY	MATRIX / Priority	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
AN102 S1 Radchem Tests		S95T003870	5167-3	AM		01/26/96		LLF	Americium-241
R: S: C:	LIQUID		4826-4	AT		01/12/96		SLF	Alpha Analysis
n/a		12/01/95	4865-3	GEA		01/15/96		PPB	Gamma Spectroscopy
			5367-3	PU		02/06/96		LLF	Plutonium-239
			4825-4	SR		01/15/96		SLF	Strontium-89/90
AN102 S1 Radchem Tests-D		S95T003870D	5167-4	AM		01/26/96		LLF	Americium-241
R: S: C:	LIQUID		4826-5	AT		01/12/96		SLF	Alpha Analysis
		12/01/95	4865-4	GEA		01/15/96		PPB	Gamma Spectroscopy
			5367-4	PU		02/06/96		LLF	Plutonium-239
			4825-5	SR		01/15/96		SLF	Strontium-89/90
AN102 S1 Radchem Tests-S		S95T003870S	4826-6	AT		01/12/96		SLF	Alpha Analysis
R: S: C:	LIQUID								
		12/01/95							
AN102 S2 Radchem Tests		S95T003871	4767-3	AM		01/10/96		LLF	Americium-241
R: S: C:	LIQUID		4826-7	AT		01/12/96		SLF	Alpha Analysis
n/a		12/01/95	4865-5	GEA		01/15/96		PPB	Gamma Spectroscopy
			4766-3	PU		01/10/96		LLF	Plutonium-239
			4825-6	SR		01/15/96		SLF	Strontium-89/90
AN102 S2 Radchem Tests-D		S95T003871D	4767-4	AM		01/10/96		LLF	Americium-241
R: S: C:	LIQUID		4826-8	AT		01/12/96		SLF	Alpha Analysis
		12/01/95	4865-6	GEA		01/15/96		PPB	Gamma Spectroscopy
			4766-4	PU		01/10/96		LLF	Plutonium-239
			4825-7	SR		01/15/96		SLF	Strontium-89/90
AN102 S3 Radchem Tests		S95T003872	4767-5	AM		01/10/96		LLF	Americium-241
R: S: C:	LIQUID		4826-9	AT		01/12/96		SLF	Alpha Analysis
n/a		12/01/95	4865-7	GEA		01/15/96		PPB	Gamma Spectroscopy
			4766-5	PU		01/10/96		LLF	Plutonium-239
			4825-8	SR		01/15/96		SLF	Strontium-89/90
AN102 S3 Radchem Tests-D		S95T003872D	4767-6	AM		01/10/96		LLF	Americium-241
R: S: C:	LIQUID		4826-10	AT		01/12/96		SLF	Alpha Analysis
		12/01/95	4865-8	GEA		01/15/96		PPB	Gamma Spectroscopy
			4766-6	PU		01/10/96		LLF	Plutonium-239
			4825-9	SR		01/15/96		SLF	Strontium-89/90

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

WORK SUMMARY, cont.

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID / LOCATION / CUSTODY	Priority	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
AN102 S4A FUSION R: 21A S: 2AN-95-4A C: n		FUSION SOLID	S95T004141 12/15/95	5177-4	AT		01/26/96		SLF	Alpha Analysis
AN102 S4A FUSION-DUP R: 21A S: 2AN-95-4A C: n		FUSION SOLID	S95T004141D 12/15/95	5177-5	AT		01/26/96		SLF	Alpha Analysis
AN102 S4A FUSION-SPK R: 21A S: 2AN-95-4A C: n		FUSION SOLID	S95T004141S 12/15/95	5177-6	AT		01/26/96		SLF	Alpha Analysis
AN102 S5A FUSION R: 21A S: 2AN-95-5A C: n		FUSION SOLID	S95T004142 12/15/95	5177-7	AT		01/26/96		SLF	Alpha Analysis
AN102 S5A FUSION-DUP R: 21A S: 2AN-95-5A C: n		FUSION SOLID	S95T004142D 12/15/95	5177-8	AT		01/26/96		SLF	Alpha Analysis
AN102 S6 Radchem Tests R: S: C: n/a		LIQUID	S95T003963 12/15/95	4882-5	AM		01/17/96		LLF	Americium-241
				4865-9	GEA		01/15/96		PPB	Gamma Spectroscopy
				5367-5	PU		02/06/96		LLF	Plutonium-239
				4888-4	SR		01/16/96		SLF	Strontium-89/90
AN102 S6 Radchem Tests-D R: S: C:		LIQUID	S95T003963D 12/15/95	4882-6	AM		01/17/96		LLF	Americium-241
				4865-10	GEA		01/15/96		PPB	Gamma Spectroscopy
				5367-6	PU		02/06/96		LLF	Plutonium-239
				4888-5	SR		01/16/96		SLF	Strontium-89/90
DI Blank		LIQUID	B4766-2	4766-2	PU		01/10/96		LLF	Plutonium-239
DI Blank		LIQUID	B4767-2	4767-2	AM		01/10/96		LLF	Americium-241
DI Blank		LIQUID	B4825-2	4825-2	SR		01/15/96		SLF	Strontium-89/90

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Contact R. A. Esch

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

WORK SUMMARY, cont.

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID / LOCATION / CUSTODY	Priority	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
DI Blank		LIQUID	B4826-2	4826-2	AT		01/12/96		SLF	Alpha Analysis
DI Blank		LIQUID	B4865-2	4865-2	GEA		01/15/96		PPB	Gamma Spectroscopy
DI Blank		LIQUID	B4882-2	4882-2	AM		01/17/96		LLF	Americium-241
DI Blank		LIQUID	B4888-2	4888-2	SR		01/16/96		SLF	Strontium-89/90
DI Blank		LIQUID	B5167-2	5167-2	AM		01/26/96		LLF	Americium-241
Method Blank		SOLID	B5177-2	5177-2	AT		01/26/96		SLF	Alpha Analysis
DI Blank		LIQUID	B5367-2	5367-2	PU		02/06/96		LLF	Plutonium-239
Lab Control Sample		LIQUID	S4766-1	4766-1	PU		01/10/96		LLF	Plutonium-239
Lab Control Sample		LIQUID	S4767-1	4767-1	AM		01/10/96		LLF	Americium-241
Lab Control Sample		LIQUID	S4825-1	4825-1	SR		01/15/96		SLF	Strontium-89/90
Lab Control Sample		LIQUID	S4826-1	4826-1	AT		01/12/96		SLF	Alpha Analysis
Lab Control Sample		LIQUID	S4865-1	4865-1	GEA		01/15/96		PPB	Gamma Spectroscopy
Lab Control Sample		LIQUID	S4882-1	4882-1	AM		01/17/96		LLF	Americium-241

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

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CLIENT SAMPLE ID / LOCATION / CUSTODY	Priority	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample		LIQUID	S4888-1	4888-1	SR		01/16/96		SLF	Strontium-89/90
Lab Control Sample		LIQUID	S5167-1	5167-1	AM		01/26/96		LLF	Americium-241
Lab Control Sample		SOLID	S5177-1	5177-1	AT		01/26/96		SLF	Alpha Analysis
Lab Control Sample		LIQUID	S5367-1	5367-1	PU		02/06/96		LLF	Plutonium-239

COUNTS OF TESTS BY SAMPLE TYPE

TEST	Priority	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM		Americium-241	222-S Lab Analytical Procedure	4			3	3	4		14
AT		Alpha Analysis	222-S Lab Analytical Procedure	2			1	1	2	1	7
AT		Alpha Analysis	222-S Lab Analytical Procedure	3			1	1	3	1	9
GEA		Gamma Spectroscopy	222-S Lab Analytical Procedure	4			1	1	4		10
PU		Plutonium-239	222-S Lab Analytical Procedure	4			2	2	4		12
SR		Strontium-89/90	222-S Lab Analytical Procedure	4			2	2	4		12
TOTALS				21			10	10	21	2	64

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

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BLANKS

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

Lab sample id B4766-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Plutonium 239/240		<8.5E-04		8.5E-04		U	PU	96000201

Lab sample id B4767-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Americium 241	14596-10-2	<1.8E-03		1.8E-03		U	AM	96000202

Lab sample id B4825-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Strontium 90	10098-97-2	7.90E-02	23	1.0E-02			SR	96000302

Lab sample id B4826-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Total Alpha	12587-46-1	<2.7E-02		2.7E-02		U	AT	96000301

Supernatant liquid

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TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

BLANKS

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

Lab sample id B4865-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
GEA Analytes								
Cobalt 60	10198-40-0	<3.0E-03		3.0E-03		U	GEA	96000316
Cesium 137	10045-97-3	<7.1E-03		7.1E-03		U	GEA	96000316

Lab sample id B4882-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Americium 241	14596-10-2	<4.2E-04		4.2E-04		U	AM	96000342

Lab sample id B4888-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Strontium 90	10098-97-2	4.14E-07	97	5.0E-07		U	SR	96000339

Supernatant liquid

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

BLANKS

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

Lab sample id B5167-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Americium 241	14596-10-2	<4.8E-03		4.8E-03		U	AM	96000674

Lab sample id B5177-2
Dept sample id
Client sample id Method Blank
Material/Matrix SOLID

ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	PREP BATCH
Total Alpha	12587-46-1	<9.8E-03		9.8E-03		U	AT	96000688

Lab sample id B5367-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Plutonium 239/240		<6.2E-05		6.2E-05		U	PU	96000785

Supernatant liquid

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

LAB CONTROL SAMPLES

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

Lab sample id S4766-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	2σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Plutonium 239/240	1.27E-01	15	9.4E-03			PU	1.28E-1	5.0	99	76-124	80-120	96000201

Lab sample id S4767-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Americium 241	2.53E-02	15	3.2E-03			AM	3.07E-2	5.0	82	80-120	80-120	96000202

Lab sample id S4825-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Strontium 90	1.15E-03	15	2.5E-06		B	SR	1.24E-3	5.0	93	78-122	80-112	96000302

Lab sample id S4826-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Alpha	1.39E-05	16	1.3E-07			AT	1.54E-5	5.0	90	78-122	70-123	96000301

Supernatant liquid

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TANK AN102, GROUP 95000222

SDG 95000222
Contact R. A. Esch

LAB CONTROL SAMPLES

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

Lab sample id S4865-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
GEA Analytes												
Cobalt 60	2.00E-02	15				GEA	2.08E-2	5.0	96	77-123	80-120	96000316
Cesium 137	2.45E-02	15				GEA	2.53E-2	5.0	97	77-123	80-120	96000316

Lab sample id S4882-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Americium 241	2.56E-02	15	3.8E-03			AM	3.07E-2	5.0	83	80-120	80-120	96000342

Lab sample id S4888-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Strontium 90	1.16E-03	16	2.6E-06			SR	1.24E-3	5.0	94	78-122	80-112	96000339

Supernatant liquid

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SDG 95000222
Contact R. A. Esch

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

LAB CONTROL SAMPLES

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. I

Lab sample id S5167-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Americium 241	2.79E-02	15	4.0E-03			AM	3.07E-2	5.0	91	78-122	80-120	96000674

Lab sample id S5177-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix SOLID

ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Alpha	4.35E-03	16	4.9E-05			AT	4.72E-3	5.0	92	77-123	90-110	96000688

Lab sample id S5367-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Plutonium 239/240	1.29E-01	16	7.2E-03			PU	1.28E-1	5.0	101	76-124	80-120	96000785

Supernatant liquid

S95T003870D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

AN102 S1 Radchem Tests

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000222
Contact R. A. Esch

Client TWRS
Tank AN102

DUPLICATE
Lab sample id S95T003870D
Dept sample id

ORIGINAL
Lab sample id S95T003870
Dept sample id
Received 12/01/95

Client sample id AN102 S1 Radchem Tests
Location/Matrix R: S: C: LIQUID
Collected
Chain of custody id n/a

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	1.73E-01	24	2.7E-02			AT	1.75E-01	24	2.7E-02		1	51	31
Strontium 90	7.51E 01	15	1.0E-02		B	SR	7.13E 01	15	1.0E-02	B	5	32	20
Americium 241	1.63E-01	15	1.5E-02			AM	1.67E-01	15	1.6E-02		2	32	20
Plutonium 239/240	6.58E-03	15	3.2E-04			PU	6.52E-03	15	3.2E-04		1	32	20
GEA Analytes													
Cobalt 60	1.51E-01	18	3.0E-03			GEA	1.43E-01	18	3.0E-03		5	38	20
Cesium 137	3.23E 02	15	7.1E-03			GEA	3.22E 02	15	7.1E-03		0	32	20

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-1 Core: n/a

Loc: Riser: 21A Seg: 2AN-95-1 Core: n/a

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

AN102 S2 Radchem Tests

DUPLICATE

WHC-SD-WM-DP-165, REV. I

SDG 95000222
Contact R. A. Esch

DUPLICATE
Lab sample id S95T003871D
Dept sample id

ORIGINAL
Lab sample id S95T003871
Dept sample id
Received 12/01/95

Client TWRS
Tank AN102

Client sample id AN102 S2 Radchem Tests
Location/Matrix R: S: C: LIQUID
Collected
Chain of custody id n/a

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	1.69E-01	25	2.7E-02			AT	1.82E-01	24	2.7E-02		7	52	31
Strontium 90	7.39E 01	15	1.0E-02		B	SR	7.44E 01	15	1.0E-02	B	1	32	20
Americium 241	1.08E-01	15	7.8E-03			AM	1.23E-01	15	8.3E-03		13	32	20
Plutonium 239/240	5.24E-03	15	8.0E-04			PU	5.19E-03	15	6.2E-04		1	32	27
GEA Analytes													
Cobalt 60	1.57E-01	17	3.0E-03			GEA	1.48E-01	18	3.0E-03		6	37	20
Cesium 137	3.12E 02	15	7.1E-03			GEA	3.13E 02	15	7.1E-03		0	32	20

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-2 Core: n/a

Loc: Riser: 21A Seg: 2AN-95-2 Core: n/a

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Protocol GRAB
Version 1.0
Form DVD-DUP
Version 3.08
Report date 03/12/96

S95T003872D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

AN102 S3 Radchem Tests

SDG 95000222
Contact R. A. Esch

DUPLICATE
Lab sample id S95T003872D
Dept sample id

ORIGINAL
Lab sample id S95T003872
Dept sample id
Received 12/01/95

Client TWRS
Tank AN102

Client sample id AN102 S3 Radchem Tests
Location/Matrix R: S: C: LIQUID
Collected
Chain of custody id n/a

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	2.02E-01	23	2.7E-02			AT	1.69E-01	25	2.7E-02		18	51	29
Strontium 90	7.94E 01	15	1.0E-02		B	SR	7.82E 01	15	1.0E-02	B	2	32	20
Americium 241	1.35E-01	15	9.7E-03			AM	1.29E-01	15	9.3E-03		5	32	20
Plutonium 239/240	5.71E-03	15	6.6E-04			PU	5.68E-03	15	6.0E-04		1	32	22
GEA Analytes													
Cobalt 60	1.44E-01	17	3.0E-03			GEA	1.42E-01	18	3.0E-03		1	38	20
Cesium 137	3.28E 02	15	7.1E-03			GEA	3.23E 02	15	7.1E-03		2	32	20

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-3 Core: n/a

Loc: Riser: 21A Seg: 2AN-95-3 Core: n/a

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DUP
Version 3.08
Report date 03/12/96

S95T003963D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

AN102 S6 Radchem Tests

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000222
Contact R. A. Esch

DUPLICATE
Lab sample id S95T003963D
Dept sample id

ORIGINAL
Lab sample id S95T003963
Dept sample id
Received 12/15/95

Client TWRS
Tank AN102

Client sample id AN102 S6 Radchem Tests
Location/Matrix R: S: C: LIQUID
Collected
Chain of custody id n/a

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Strontium 90	3.20E-05	16	5.0E-07			SR	3.07E-05	16	5.0E-07		4	34	20
Americium 241	<4.6E-04		4.6E-04		U	AM	<4.6E-04		4.6E-04	U	-		
Plutonium 239/240	<3.1E-05		3.1E-05		U	PU	<2.9E-05		2.9E-05	U	-		
GEA Analytes													
Cobalt 60	<3.0E-03		3.0E-03		U	GEA	<3.0E-03		3.0E-03	U	-		
Cesium 137	<7.1E-03		7.1E-03		U	GEA	<7.1E-03		7.1E-03	U	-		

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-6 Core: n/a

Loc: Riser: 21A Seg: 2AN-95-6 Core: n/a

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DUP
Version 3.08
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S95T004141D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

AN102 S4A FUSION

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG	95000222			Client	TWRS
Contact	R. A. Esch			Tank	AN102
	DUPLICATE		ORIGINAL		
Lab sample id	S95T004141D	Lab sample id	S95T004141	Client sample id	AN102 S4A FUSION FUSION
Dept sample id		Dept sample id		Location/Matrix	R: 21A S: 2AN-95-4A C: n SOLID
		Received	12/15/95	Collected	
				Chain of custody id	

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	4.64E-01	17	9.9E-03			AT	4.59E-01	17	9.8E-03		1	35	20

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-4A Core: n/a

Loc: Riser: 21A Seg: 2AN-95-4A Core: n/a

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Protocol	GRAB
Version	1.0
Form	DVD-DUP
Version	3.08
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S95T004142D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

AN102 S5A FUSION

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000222
Contact R. A. Esch

Client TWRS
Tank AN102

DUPLICATE		ORIGINAL			
Lab sample id	S95T004142D	Lab sample id	S95T004142	Client sample id	AN102 S5A FUSION FUSION
Dept sample id		Dept sample id		Location/Matrix	R: 21A S: 2AN-95-5A C: n SOLID
		Received	12/15/95	Collected	
				Chain of custody id	

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	3.33E-01	17	9.8E-03			AT	3.29E-01	17	9.8E-03		1	37	20

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-5A Core: n/a

Loc: Riser: 21A Seg: 2AN-95-5A Core: n/a

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DUPLICATES
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DUP
Version 3.08
Report date 03/12/96

S95T003870S

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

AN102 S1 Radchem Tests

MATRIX SPIKE

WHC-SD-WM-DP-165, REV. 1

SDG 95000222
Contact R. A. Esch

MATRIX SPIKE
Lab sample id S95T003870S
Dept sample id

ORIGINAL
Lab sample id S95T003870
Dept sample id
Received 12/01/95

Client TWRS
Tank AN102

Client sample id AN102 S1 Radchem Tests
Location/Matrix R: S: C: LIQUID
Collected
Chain of custody id n/a

ANALYTE	SPIKE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	2σ ERR %	ORIGINAL uCi/mL	2σ TPU %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Alpha	2.11E-01					AT	3.92E-2	5.0	1.75E-01	24	92		

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-1 Core: n/a

Loc: Riser: 21A Seg: 2AN-95-1 Core: n/a

S95T004141S

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

AN102 S4A FUSION

MATRIX SPIKE

WHC-SD-WM-DP-165, REV. 1

SDG 95000222
Contact R. A. Esch

MATRIX SPIKE
Lab sample id S95T004141S
Dept sample id

ORIGINAL
Lab sample id S95T004141
Dept sample id
Received 12/15/95

Client TWRS
Tank AN102

Client sample id AN102 S4A FUSION FUSION
Location/Matrix R: 21A S: 2AN-95-4A C: n SOLID
Collected
Chain of custody id

ANALYTE	SPIKE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	2σ ERR %	ORIGINAL uCi/mL	2σ TPU %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Alpha	1.38E 01					AT	1.81E01	5.0	4.59E-01	17	74	81-119	80-120

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-4A Core: n/a

Loc: Riser: 21A Seg: 2AN-95-4A Core: n/a

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MATRIX SPIKES
Page 2
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVO-MS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003870

AN102 S1 Radchem Tests

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG 95000222 Client TWRS
Contact R. A. Esch Tank AN102

Lab sample id S95T003870 Client sample id AN102 S1 Radchem Tests
Dept sample id Location/Matrix R: S: C: LIQUID
Received 12/01/95 Collected
Chain of custody id n/a

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	1.75E-01	24	2.7E-02			AT
Strontium 90	10098-97-2	7.13E 01	15	1.0E-02		B	SR
Americium 241	14596-10-2	1.67E-01	15	1.6E-02			AM
Plutonium 239/240		6.52E-03	15	3.2E-04			PU
GEA Analytes							
Cobalt 60	10198-40-0	1.43E-01	18	3.0E-03			GEA
Cesium 137	10045-97-3	3.22E 02	15	7.1E-03			GEA

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-1 Core: n/a

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DATA SHEETS
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SUMMARY DATA SECTION
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003871

AN102 S2 Radchem Tests

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG 95000222 Client TWRS
Contact R. A. Esch Tank AN102

Lab sample id S95T003871 Client sample id AN102 S2 Radchem Tests
Dept sample id Location/Matrix R: S: C: LIQUID
Received 12/01/95 Collected
Chain of custody id n/a

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	1.82E-01	24	2.7E-02			AT
Strontium 90	10098-97-2	7.44E 01	15	1.0E-02		B	SR
Americium 241	14596-10-2	1.23E-01	15	8.3E-03			AM
Plutonium 239/240		5.19E-03	15	6.2E-04			PU
GEA Analytes							
Cobalt 60	10198-40-0	1.48E-01	18	3.0E-03			GEA
Cesium 137	10045-97-3	3.13E 02	15	7.1E-03			GEA

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-2 Core: n/a

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003872

AN102 S3 Radchem Tests

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG 95000222 Client TWRS
Contact R. A. Esch Tank AN102

Lab sample id S95T003872 Client sample id AN102 S3 Radchem Tests
Dept sample id Location/Matrix R: S: C: LIQUID
Received 12/01/95 Collected
Chain of custody id n/a

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	1.69E-01	25	2.7E-02			AT
Strontium 90	10098-97-2	7.82E 01	15	1.0E-02		B	SR
Americium 241	14596-10-2	1.29E-01	15	9.3E-03			AM
Plutonium 239/240		5.68E-03	15	6.0E-04			PU
GEA Analytes							
Cobalt 60	10198-40-0	1.42E-01	18	3.0E-03			GEA
Cesium 137	10045-97-3	3.23E 02	15	7.1E-03			GEA

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-3 Core: n/a

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DS
Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T004141

AN102 S4A FUSION

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG	95000222	Client	TWRS
Contact	R. A. Esch	Tank	AN102
Lab sample id	S95T004141	Client sample id	AN102 S4A FUSION FUSION
Dept sample id		Location/Matrix	R: 21A S: 2AN-95-4A C: n SOLID
Received	12/15/95	Collected	
		Chain of custody id	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	4.59E-01	17	9.8E-03			AT

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-4A Core: n/a

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Lab id	222-S
Protocol	GRAB
Version	1.0
Form	DVD-DS
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T004142

AN102 S5A FUSION

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG	95000222	Client	TWRS
Contact	R. A. Esch	Tank	AN102
Lab sample id	S95T004142	Client sample id	AN102 S5A FUSION FUSION
Dept sample id		Location/Matrix	R: 21A S: 2AN-95-5A C: n SOLID
Received	12/15/95	Collected	
		Chain of custody id	

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	3.29E-01	17	9.8E-03			AT

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-5A Core: n/a

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Lab id	222-S
Protocol	GRAB
Version	1.0
Form	DVD-DS
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

S95T003963

AN102 S6 Radchem Tests

DATA SHEET

WHC-SD-WM-DP-165, REV. I

SDG 95000222 Client TWRS
Contact R. A. Esch Tank AN102

Lab sample id S95T003963 Client sample id AN102 S6 Radchem Tests
Dept sample id Location/Matrix R: S: C: LIQUID
Received 12/15/95 Collected
Chain of custody id n/a

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Strontium 90	10098-97-2	3.07E-05	16	5.0E-07			SR
Americium 241	14596-10-2	<4.6E-04		4.6E-04		U	AM
Plutonium 239/240		<2.9E-05		2.9E-05		U	PU
GEA Analytes							
Cobalt 60	10198-40-0	<3.0E-03		3.0E-03		U	GEA
Cesium 137	10045-97-3	<7.1E-03		7.1E-03		U	GEA

Supernatant liquid

Loc: Riser: 21A Seg: 2AN-95-6 Core: n/a

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DS
Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AM Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

AMERICIUM-241
ALPHA SPECTROSCOPY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 96000202					
AN102 S2 Radchem Tests	S95T003871			4767-3	1.23E-01
AN102 S2 Radchem Tests-D	S95T003871D			4767-4	ok
AN102 S3 Radchem Tests	S95T003872			4767-5	1.29E-01
AN102 S3 Radchem Tests-D	S95T003872D			4767-6	ok
DI Blank	B4767-2			4767-2	U
Lab Control Sample	S4767-1			4767-1	ok
Preparation batch 96000342					
AN102 S6 Radchem Tests	S95T003963			4882-5	U
AN102 S6 Radchem Tests-D	S95T003963D			4882-6	- U
DI Blank	B4882-2			4882-2	U
Lab Control Sample	S4882-1			4882-1	ok
Preparation batch 96000674					
AN102 S1 Radchem Tests	S95T003870			5167-3	1.67E-01
AN102 S1 Radchem Tests-D	S95T003870D			5167-4	ok
DI Blank	B5167-2			5167-2	U
Lab Control Sample	S5167-1			5167-1	ok

Nominal values and limits from method — RDLs (uCi/mL) Supernatant liquid

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CMS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AM Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

AMERICIUM-241
ALPHA SPECTROSCOPY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA uCi/mL	ALIQ ml	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 96000202 2σ prep error 15.0 % Reference																
AN102 S2 Radchem Tests	S95T003871			8.3E-03	1.00	1.00	101	101	50	30					01/10/96	AL105413
AN102 S2 Radchem Tests-D	S95T003871D			7.8E-03	1.00	1.00	101	116	50	30					01/10/96	AL105413
AN102 S3 Radchem Tests	S95T003872			9.3E-03	1.00	1.00	101	106	50	30					01/10/96	AL105413
AN102 S3 Radchem Tests-D	S95T003872D			9.7E-03	1.00	1.00	101	100	50	30					01/10/96	AL105391
DI Blank	B4767-2			1.8E-03	1.00		101	103	50	30					01/10/96	AL105391
Lab Control Sample	S4767-1			3.2E-03	1.00	1.00	101	101	50	30					01/10/96	AL105391
Preparation batch 96000342 2σ prep error 15.0 % Reference																
AN102 S6 Radchem Tests	S95T003963			4.6E-04	0.0500	1.00	1.00	84	50	30					01/17/96	AL105391
AN102 S6 Radchem Tests-D	S95T003963D			4.6E-04	0.0500	1.00	1.00	82	50	30					01/17/96	AL105402
DI Blank	B4882-2			4.2E-04	0.0500		1.00	92	50	30					01/17/96	AL105402
Lab Control Sample	S4882-1			3.8E-03	1.00	1.00	101	90	50	30					01/17/96	AL105391
Preparation batch 96000674 2σ prep error 15.0 % Reference																
AN102 S1 Radchem Tests	S95T003870			1.6E-02	1.00	1.00	201	88	50	30					01/26/96	AL105413
AN102 S1 Radchem Tests-D	S95T003870D			1.5E-02	1.00	1.00	201	90	50	30					01/26/96	AL105413
DI Blank	B5167-2			4.8E-03	1.00		201	83	50	30					01/26/96	AL105413
Lab Control Sample	S5167-1			4.0E-03	1.00	1.00	101	87	50	30					01/26/96	AL105413
Nominal values and limits from method					0.100			30-105	20-55	30						

PROCEDURES	REFERENCE	222-S Lab Analytical Procedure
	LO-160-103	Core Segment Extrusion Process and Sample Preparation, rev 17
	LA-953-103	Determinatin of Americium by Extraction by TRU.Spec Resin, rev 13
	LA-508-104	Total Alpha Counting by Alpha Proportional Counting, rev 14
	LA-508-161	Alpha Energy Analysis Using the Genie System, rev 11

AVERAGES ± 2 SD FOR 14 SAMPLES				
	MDA	6.1E-03	±	1.0E-02
	YIELD	94	±	20
	EFFICIENCY	50	±	0

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METHOD SUMMARIES
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Protocol GRAB
Version 1.0
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Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test PU Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

PLUTONIUM-239
ALPHA SPECTROSCOPY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 239/240
Preparation batch 96000201					
AN102 S2 Radchem Tests	S95T003871			4766-3	5.19E-03
AN102 S2 Radchem Tests-D	S95T003871D			4766-4	ok
AN102 S3 Radchem Tests	S95T003872			4766-5	5.68E-03
AN102 S3 Radchem Tests-D	S95T003872D			4766-6	ok
DI Blank	B4766-2			4766-2	U
Lab Control Sample	S4766-1			4766-1	ok
Preparation batch 96000785					
AN102 S1 Radchem Tests	S95T003870			5367-3	6.52E-03
AN102 S1 Radchem Tests-D	S95T003870D			5367-4	ok
AN102 S6 Radchem Tests	S95T003963			5367-5	U
AN102 S6 Radchem Tests-D	S95T003963D			5367-6	- U
DI Blank	B5367-2			5367-2	U
Lab Control Sample	S5367-1			5367-1	ok

Nominal values and limits from method — RDLs (uCi/mL) Supernatant liquid

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test PU Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

PLUTONIUM-239

ALPHA SPECTROSCOPY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA uCi/mL	ALIQ ml	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 96000201 2σ prep error 15.0 % Reference																
AN102 S2 Radchem Tests	S95T003871			6.2E-04	1.00	1.00	101	79	50	30					01/10/96	AL105391
AN102 S2 Radchem Tests-D	S95T003871D			8.0E-04	1.00	1.00	101	62	50	30					01/10/96	AL105413
AN102 S3 Radchem Tests	S95T003872			6.0E-04	1.00	1.00	101	84	50	30					01/10/96	AL105391
AN102 S3 Radchem Tests-D	S95T003872D			6.6E-04	1.00	1.00	101	79	50	30					01/10/96	AL105413
DI Blank	B4766-2			8.5E-04	1.00		101	34	50	30					01/10/96	AL105413
Lab Control Sample	S4766-1			9.4E-03	0.100	1.00	101	73	50	30					01/10/96	AL105391
Preparation batch 96000785 2σ prep error 15.0 % Reference																
AN102 S1 Radchem Tests	S95T003870			3.2E-04	0.0500	1.00	1.00	99	50	30					02/06/96	AL105391
AN102 S1 Radchem Tests-D	S95T003870D			3.2E-04	0.0500	1.00	1.00	100	50	30					02/06/96	AL105391
AN102 S6 Radchem Tests	S95T003963			2.9E-05	0.100	1.00	1.00	101	50	30					02/06/96	AL105391
AN102 S6 Radchem Tests-D	S95T003963D			3.1E-05	0.100	1.00	1.00	97	50	30					02/06/96	AL105391
DI Blank	B5367-2			6.2E-05	0.0500		1.00	97	50	30					02/06/96	AL105391
Lab Control Sample	S5367-1			7.2E-03	0.100	1.00	101	100	50	30					02/06/96	AL105391
Nominal values and limits from method					0.100			30-105	20-55	30						

PROCEDURES	REFERENCE	222-S Lab Analytical Procedure
	LO-160-103	Core Segment Extrusion Process and Sample Preparation, rev 17
	LA-943-127	Determination of Pu by Ion Exchange, rev 10
	LA-508-104	Total Alpha Counting by Alpha Proportional Counting, rev 14
	LA-508-161	Alpha Energy Analysis Using the Genie System, rev 11

AVERAGES ± 2 SD FOR 12 SAMPLES				
	MDA	1.7E-03	±	6.2E-03
	YIELD	84	±	41
	EFFICIENCY	50	±	0

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test SR Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

STRONTIUM-89/90
GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Strontium 90
Preparation batch 96000302					
AN102 S1 Radchem Tests	S95T003870			4825-4	7.13E 01
AN102 S1 Radchem Tests-D	S95T003870D			4825-5	ok
AN102 S2 Radchem Tests	S95T003871			4825-6	7.44E 01
AN102 S2 Radchem Tests-D	S95T003871D			4825-7	ok
AN102 S3 Radchem Tests	S95T003872			4825-8	7.82E 01
AN102 S3 Radchem Tests-D	S95T003872D			4825-9	ok
DI Blank	B4825-2			4825-2	7.90E-02
Lab Control Sample	S4825-1			4825-1	ok
Preparation batch 96000339					
AN102 S6 Radchem Tests	S95T003963			4888-4	3.07E-05
AN102 S6 Radchem Tests-D	S95T003963D			4888-5	ok
DI Blank	B4888-2			4888-2	U
Lab Control Sample	S4888-1			4888-1	ok

Nominal values and limits from method — RDLs (uCi/mL) Supernatant liquid

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test SR Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

STRONTIUM-89/90
GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA uCi/mL	ALIQ ml	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 96000302 2σ prep error 15.0 % Reference																
AN102 S1 Radchem Tests	S95T003870			1.0E-02	0.0250	1.00	101	96	42	10					01/15/96	WB2781112
AN102 S1 Radchem Tests-D	S95T003870D			1.0E-02	0.0250	1.00	101	95	42	10					01/15/96	WB2781112
AN102 S2 Radchem Tests	S95T003871			1.0E-02	0.0250	1.00	101	96	42	10					01/15/96	WB2781112
AN102 S2 Radchem Tests-D	S95T003871D			1.0E-02	0.0250	1.00	101	96	42	10					01/15/96	WB2781112
AN102 S3 Radchem Tests	S95T003872			1.0E-02	0.0250	1.00	101	95	42	10					01/15/96	WB2781112
AN102 S3 Radchem Tests-D	S95T003872D			1.0E-02	0.0250	1.00	101	95	42	10					01/15/96	WB2781112
DI Blank	B4825-2			1.0E-02	0.0250		101	96	42	10					01/15/96	WB2781112
Lab Control Sample	S4825-1			2.5E-06	1.00	1.00	1.00	97	42	10					01/15/96	WB2781112
Preparation batch 96000339 2σ prep error 15.0 % Reference																
AN102 S6 Radchem Tests	S95T003963			5.0E-07	5.00	1.00	1.00	95	42	10					01/16/96	WB2781112
AN102 S6 Radchem Tests-D	S95T003963D			5.0E-07	5.00	1.00	1.00	95	42	10					01/16/96	WB2781112
DI Blank	B4888-2			5.0E-07	5.00		1.00	95	42	10					01/16/96	WB2781112
Lab Control Sample	S4888-1			2.6E-06	1.00	1.00	1.00	93	42	10					01/16/96	WB2781112
Nominal values and limits from method					0.100			30-105	20-55	10						

PROCEDURES	REFERENCE	222-S Lab Analytical Procedure
	LO-160-103	Core Segment Extrusion Process and Sample Preparation, rev 17
	LA-220-101	High level Strontium 89/90 in aqueous samples, rev 41
	LA-508-11NB	Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD FOR 12 SAMPLES				
	MDA	5.8E-03	±	1.0E-02
	YIELD	95	±	2
	EFFICIENCY	42	±	0

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AT Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS
GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1	2σ
Preparation batch 96000688								
AN102 S4A FUSION FUSION	S95T004141			5177-4	4.59E-01			
AN102 S4A FUSION-DUP FUS	S95T004141D			5177-5	ok			
AN102 S4A FUSION-SPK FUS	S95T004141S			5177-6	LOW			
AN102 S5A FUSION FUSION	S95T004142			5177-7	3.29E-01			
AN102 S5A FUSION-DUP FUS	S95T004142D			5177-8	ok			
Nominal values and limits from method				RDLs (uCi/mL) Supernatant liquid			80 Average	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA uCi/mL	ALIQ ml	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 96000688	2σ prep error 15.0 % Reference															
AN102 S4A FUSION FUSION	S95T004141			9.8E-03	0.0500	463	1.00		24	30				01/24/96	01/26	WB26872
AN102 S4A FUSION-DUP FUS	S95T004141D			9.9E-03	0.0500	468	1.00		24	30				01/24/96	01/26	WB26872
AN102 S4A FUSION-SPK FUS	S95T004141S				0.0500	463	1.00		24	30				01/24/96	01/26	WB26872
AN102 S5A FUSION FUSION	S95T004142			9.8E-03	0.0500	463	1.00		24	30				01/24/96	01/26	WB26872
AN102 S5A FUSION-DUP FUS	S95T004142D			9.8E-03	0.0500	464	1.00		24	30				01/24/96	01/26	WB26872
Nominal values and limits from method					0.100				20-55	30						

PROCEDURES
- REFERENCE 222-S Lab Analytical Procedure
- LO-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
- LA-549-141 Fusion with Alkali Metal Hydroxide, rev 40
- LA-508-101A Alpha in liquid samples, rev 42
- LA-508-11NA Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 9.8E-03 ± 1.0E-04
EFFICIENCY 24 ± 0

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AT Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS
GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1	2σ
Preparation batch 96000301								
AN102 S1 Radchem Tests	S95T003870			4826-4	1.75E-01	1.74E-01	99	28
AN102 S1 Radchem Tests-D	S95T003870D			4826-5	ok	1.70E-01	98	28
AN102 S1 Radchem Tests-S	S95T003870S			4826-6	ok			
AN102 S2 Radchem Tests	S95T003871			4826-7	1.82E-01	1.28E-01	70	20
AN102 S2 Radchem Tests-D	S95T003871D			4826-8	ok	1.13E-01	67	19
AN102 S3 Radchem Tests	S95T003872			4826-9	1.69E-01	1.35E-01	80	23
AN102 S3 Radchem Tests-D	S95T003872D			4826-10	ok	1.41E-01	70	19
DI Blank	B4826-2			4826-2	U			
Lab Control Sample	S4826-1			4826-1	ok			

Nominal values and limits from method — RDLs (uCi/mL) Supernatant liquid: 80; Average 81

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA uCi/mL	ALIQ ml	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 96000301	2σ prep error 15.0 % Reference															
AN102 S1 Radchem Tests	S95T003870			2.7E-02	1.00	1.00	20300		23	30					01/12/96	WB27807
AN102 S1 Radchem Tests-D	S95T003870D			2.7E-02	1.00	1.00	20300		23	30					01/12/96	WB27807
AN102 S1 Radchem Tests-S	S95T003870S				1.00	1.00	1.00		23	30					01/12/96	WB27807
AN102 S2 Radchem Tests	S95T003871			2.7E-02	1.00	1.00	20300		23	30					01/12/96	WB27807
AN102 S2 Radchem Tests-D	S95T003871D			2.7E-02	1.00	1.00	20300		23	30					01/12/96	WB27807
AN102 S3 Radchem Tests	S95T003872			2.7E-02	1.00	1.00	20300		23	30					01/12/96	WB27807
AN102 S3 Radchem Tests-D	S95T003872D			2.7E-02	1.00	1.00	20300		23	30					01/12/96	WB27807
DI Blank	B4826-2			2.7E-02	1.00		20300		23	30					01/12/96	WB27807
Lab Control Sample	S4826-1			1.3E-07	10.0	1.00	1.00		23	30					01/12/96	WB27807
Nominal values and limits from method					0.100				20-55	30						

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AT Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY, cont.

ALPHA ANALYSIS

GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

PROCEDURES	REFERENCE	222-S Lab Analytical Procedure
	LO-160-103	Core Segment Extrusion Process and Sample Preparation, rev 17
	LA-508-101A	Alpha in liquid samples, rev 42
	LA-508-11NA	Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD	MDA	2.4E-02	± 1.9E-02
FOR 9 SAMPLES	EFFICIENCY	23	± 0

Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CMS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test AT Matrix SOLID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS
GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2÷1	2σ
Preparation batch 96000688								
Method Blank	B5177-2			5177-2	U			
Lab Control Sample	S5177-1			5177-1	ok			
Nominal values and limits from method				RDLs (uCi/g) Sludge			Average 80	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA uCi/g	ALIQ ml	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 96000688	2σ prep error 15.0 % Reference															
Method Blank	B5177-2			9.8E-03	0.0500	463	1.00		24	30					01/26/96	WB26872
Lab Control Sample	S5177-1			4.9E-05	10.0	463	1.00		24	30					01/26/96	WB26872
Nominal values and limits from method					0.100				20-55	30						

PROCEDURES REFERENCE 222-S Lab Analytical Procedure
LO-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
LA-549-141 Fusion with Alkali Metal Hydroxide, rev 40
LA-508-101A Alpha in liquid samples, rev 42
LA-508-11NA Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD FOR 2 SAMPLES
MDA 4.9E-03 ± 1.4E-02
EFFICIENCY 24 ± 0

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Test GEA Matrix LIQUID
SDG 95000222
Contact R. A. Esch

WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

METHOD SUMMARY

GAMMA SPECTROSCOPY
GAMMA ENERGY ANALYSIS

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137	Americium 241	Europium 154	Europium 155
Preparation batch 96000316									
AN102 S1 Radchem Tests	S95T003870			4865-3	1.43E-01	3.22E 02			
AN102 S1 Radchem Tests-D	S95T003870D			4865-4	ok	ok			
AN102 S2 Radchem Tests	S95T003871			4865-5	1.48E-01	3.13E 02			
AN102 S2 Radchem Tests-D	S95T003871D			4865-6	ok	ok			
AN102 S3 Radchem Tests	S95T003872			4865-7	1.42E-01	3.23E 02			
AN102 S3 Radchem Tests-D	S95T003872D			4865-8	ok	ok			
AN102 S6 Radchem Tests	S95T003963			4865-9	U	U			
AN102 S6 Radchem Tests-D	S95T003963D			4865-10	- U	- U			
DI Blank	B4865-2			4865-2	U	U			
Lab Control Sample	S4865-1			4865-1	ok	ok			

Nominal values and limits from method — RDLs (uCi/mL) Supernatant liquid

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA uCi/mL	ALIQ ml	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 96000316	2σ prep error 15.0 % Reference															
AN102 S1 Radchem Tests	S95T003870			7.1E-03	1.00	1.00	101			50					01/15/96	GEA02
AN102 S1 Radchem Tests-D	S95T003870D			7.1E-03	1.00	1.00	101			50					01/15/96	GEA02
AN102 S2 Radchem Tests	S95T003871			7.1E-03	1.00	1.00	101			50					01/15/96	GEA02
AN102 S2 Radchem Tests-D	S95T003871D			7.1E-03	1.00	1.00	101			50					01/15/96	GEA02
AN102 S3 Radchem Tests	S95T003872			7.1E-03	1.00	1.00	101			50					01/15/96	GEA02
AN102 S3 Radchem Tests-D	S95T003872D			7.1E-03	1.00	1.00	1.00			50					01/15/96	GEA02
AN102 S6 Radchem Tests	S95T003963			7.1E-03	1.00	1.00	1.00			50					01/15/96	GEA02
AN102 S6 Radchem Tests-D	S95T003963D			7.1E-03	0	1.00	1.00			50					01/15/96	GEA02
DI Blank	B4865-2			7.1E-03	1.00		101			50					01/15/96	GEA02
Lab Control Sample	S4865-1				1.00		1.00			50					01/15/96	GEA02
Nominal values and limits from method					0.100					50						

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WHC 222-S LABORATORY

TANK AN102, GROUP 95000222

Test GEA Matrix LIQUID
SDG 95000222
Contact R. A. Esch

METHOD SUMMARY, cont.

GAMMA SPECTROSCOPY
GAMMA ENERGY ANALYSIS

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

PROCEDURES	REFERENCE	222-S Lab Analytical Procedure
	LO-160-103	Core Segment Extrusion Process and Sample Preparation, rev 17
	LA-548-121	Preparation of Sample Mounts for Gamma Energy Analysis, rev 41
	LA-508-162	Gamma Energy Analysis - the Genie System, rev 11

AVERAGES ± 2 SD FOR 9 SAMPLES
MDA 7.1E-03 ± 0.0E 00
YIELD _____ ± _____

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SDG 95000222
Contact R. A. Esch

REPORT GUIDE

Client TWRS
Tank AN102

SAMPLE SUMMARY

WHC-SD-WM-DP-165, REV. 1

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

SDG 95000222
Contact R. A. Esch

Client TWRS
Tank AN102

PREPARATION BATCH SUMMARY

WHC-SD-WM-DP-165, REV. 1

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

SDG 95000222
Contact R. A. Esch

REPORT GUIDE

Client TWRS
Tank AN102

WORK SUMMARY

WHC-SD-WM-DP-165, REV. 1

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

SDG 95000222
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REPORT GUIDE

Client TWRS
Tank AN102

DATA SHEET
WHC-SD-WM-DP-165, REV. 1

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity). If the MDA is blank, the ERROR is used as the limit.

DATA SHEET

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J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA

DATA SHEET
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may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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Client TWRS
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LAB CONTROL SAMPLE

WHC-SD-WM-DP-165, REV. 1

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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REPORT GUIDE

Client TWRS
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DUPLICATE

WHC-SD-WM-DP-165, REV. 1

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

DUPLICATE

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2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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REPORT GUIDE

Client TWRS
Tank AN102

MATRIX SPIKE

WHC-SD-WM-DP-165, REV. 1

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

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MATRIX SPIKE
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These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

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The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data' means no amount ADDED was specified. 'LOW' and 'HIGH'

METHOD SUMMARY

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correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Preparation factors are underlined if greater than the nominal value specified for the QC batch.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

* Count times are underlined if less than the nominal value

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specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held (Analyzed - Collected) are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included.

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No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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SAMPLE SUMMARY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	PRIORITY	COLLECTED	RECEIVED
102AN R22A S1 Safety Scr	R: 22A S: 102-AN-1 C: n/	LIQUID		S95T003982			02/16/95 13:20
102AN R22A S1 Safety Scr	R: 22A S: 102-AN-1 C: n/	LIQUID		S95T003982D			
102AN R22A S2 Safety Scr	R: 22A S: 102-AN-2 C: n/	LIQUID		S95T003983			02/16/95 13:32
102AN R22A S2 Safety Scr	R: 22A S: 102-AN-2 C: n/	LIQUID		S95T003983D			
102AN R22A S4 Safety Scr	R: 22A S: 102-AN-4 C: n/	LIQUID		S95T003984			10/24/94 00:00
102AN R22A S4 Safety Scr	R: 22A S: 102-AN-4 C: n/	LIQUID		S95T003984D			
102AN S3A Dec Liq Sfty S	R: 22A S: 102-AN-3 C: n/	LIQUID		S96T000005			10/24/94 00:00
102AN S3A Dec Liq Sfty S	R: 22A S: 102-AN-3 C: n/	LIQUID		S96T000005D			
102AN S3A Dec Liq Sfty S	R: 22A S: 102-AN-3 C: n/	LIQUID		S96T000005S			
102AN S3A FUSION	R: 22A S: 102-AN-3 C: n/ FUSION	SOLID		S96T000007			10/24/94 00:00
102AN S3A FUSION-DUP	R: 22A S: 102-AN-3 C: n/ FUSION	SOLID		S96T000007D			
102AN S3A FUSION-SPK	R: 22A S: 102-AN-3 C: n/ FUSION	SOLID		S96T000007S			
102AN S3B Dec Liq Sfty S	R: 22A S: 102-AN-3 C: n/	LIQUID		S96T000006			02/16/95 14:55
102AN S3B Dec Liq Sfty S	R: 22A S: 102-AN-3 C: n/	LIQUID		S96T000006D			
102AN S3B FUSION	R: 22A S: 102-AN-3 C: n/ FUSION	SOLID		S96T000008			02/16/95 14:55
102AN S3B FUSION-DUP	R: 22A S: 102-AN-3 C: n/ FUSION	SOLID		S96T000008D			
DI Blank		LIQUID		B4800-2			
DI Blank		LIQUID		B4967-2			
Method Blank		SOLID		B5177-2			
Lab Control Sample		LIQUID		S4800-1			
Lab Control Sample		LIQUID		S4967-1			
Lab Control Sample		SOLID		S5177-1			

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

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SDG 95000227
Contact R. A. Esch

QC SUMMARY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID		MATRIX	% MOIST	SAMPLE AMOUNT	BASIS AMOUNT	DAYS FROM/TO COLL RCVD	DAYS FROM/TO RCVD RPTD	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
95000227-F		102AN S3A FUSION	FUSION	SOLID					505	S96T000007	
		102AN S3B FUSION	FUSION	SOLID					390	S96T000008	
		102AN S3A FUSION-DUP	FUSION	SOLID					505	S96T000007D	
		102AN S3A FUSION-SPK	FUSION	SOLID					505	S96T000007S	
		102AN S3B FUSION-DUP	FUSION	SOLID					390	S96T000008D	
95000227-L		102AN R22A S1 Safety Scr		LIQUID					390	S95T003982	
		102AN R22A S2 Safety Scr		LIQUID					390	S95T003983	
		102AN R22A S4 Safety Scr		LIQUID					505	S95T003984	
		102AN S3A Dec Liq Sfty S		LIQUID					505	S96T000005	
		102AN S3B Dec Liq Sfty S		LIQUID					390	S96T000006	
		102AN R22A S1 Safety Scr		LIQUID					390	S95T003982D	
		102AN R22A S2 Safety Scr		LIQUID					390	S95T003983D	
		102AN R22A S4 Safety Scr		LIQUID					505	S95T003984D	
		102AN S3A Dec Liq Sfty S		LIQUID					505	S96T000005D	
		102AN S3A Dec Liq Sfty S		LIQUID					505	S96T000005S	
		102AN S3B Dec Liq Sfty S		LIQUID					390	S96T000006D	
LIQUID		DI Blank		LIQUID						B4800-2	
		DI Blank		LIQUID						B4967-2	
		Lab Control Sample		LIQUID						S4800-1	
		Lab Control Sample		LIQUID						S4967-1	
SOLID		Method Blank		SOLID						B5177-2	
		Lab Control Sample		SOLID						S5177-1	

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-QS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

SDG 95000227
Contact R. A. Esch

PREP BATCH SUMMARY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
AT	LIQUID	Alpha Analysis	96000688	15.0	2					2/2	1/1	
		Alpha Analysis	96000249	15.0	3			1	1	3/3		
			96000430	15.0	2			1	1	2/2	1/1	
	SOLID	Alpha Analysis	96000688	15.0				1	1			

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-PBS
Version 3.08
Report date 03/12/96

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WORK SUMMARY

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID / LOCATION / CUSTODY	Priority	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
102AN R22A S1 Safety Scr R: 22A S: 102-AN-1 C: n/		LIQUID	S95T003982 02/16/95	4800-4	AT		01/15/96		SLF	Alpha Analysis
102AN R22A S1 Safety Scr R: 22A S: 102-AN-1 C: n/		LIQUID	S95T003982D 02/16/95	4800-5	AT		01/15/96		SLF	Alpha Analysis
102AN R22A S2 Safety Scr R: 22A S: 102-AN-2 C: n/		LIQUID	S95T003983 02/16/95	4800-7	AT		01/15/96		SLF	Alpha Analysis
102AN R22A S2 Safety Scr R: 22A S: 102-AN-2 C: n/		LIQUID	S95T003983D 02/16/95	4800-8	AT		01/15/96		SLF	Alpha Analysis
102AN R22A S4 Safety Scr R: 22A S: 102-AN-4 C: n/		LIQUID	S95T003984 10/24/94	4800-9	AT		01/15/96		SLF	Alpha Analysis
102AN R22A S4 Safety Scr R: 22A S: 102-AN-4 C: n/		LIQUID	S95T003984D 10/24/94	4800-10	AT		01/15/96		SLF	Alpha Analysis
102AN S3A Dec Liq Sfty S R: 22A S: 102-AN-3 C: n/		LIQUID	S96T000005 10/24/94	4967-4	AT		01/19/96		SLF	Alpha Analysis
102AN S3A Dec Liq Sfty S R: 22A S: 102-AN-3 C: n/		LIQUID	S96T000005D 10/24/94	4967-5	AT		01/19/96		SLF	Alpha Analysis
102AN S3A Dec Liq Sfty S R: 22A S: 102-AN-3 C: n/		LIQUID	S96T000005S 10/24/94	4967-6	AT		01/19/96		SLF	Alpha Analysis
102AN S3A FUSION R: 22A S: 102-AN-3 C: n/		FUSION SOLID	S96T000007 10/24/94	5177-9	AT		01/26/96		SLF	Alpha Analysis

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CWS
Version 3.08
Report date 03/12/96

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WORK SUMMARY, cont.

Client TWRS
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WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID / LOCATION / CUSTODY	Priority	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
102AN S3A FUSION-DUP R: 22A S: 102-AN-3 C: n/		FUSION SOLID	S96T000007D 10/24/94	5177-10	AT		01/26/96		SLF	Alpha Analysis
102AN S3A FUSION-SPK R: 22A S: 102-AN-3 C: n/		FUSION SOLID	S96T000007S 10/24/94	5177-11	AT		01/26/96		SLF	Alpha Analysis
102AN S3B Dec Liq Sfty S R: 22A S: 102-AN-3 C: n/		LIQUID	S96T000006 02/16/95	4967-7	AT		01/19/96		SLF	Alpha Analysis
102AN S3B Dec Liq Sfty S R: 22A S: 102-AN-3 C: n/		LIQUID	S96T000006D 02/16/95	4967-8	AT		01/19/96		SLF	Alpha Analysis
102AN S3B FUSION R: 22A S: 102-AN-3 C: n/		FUSION SOLID	S96T000008 02/16/95	5177-12	AT		01/26/96		SLF	Alpha Analysis
102AN S3B FUSION-DUP R: 22A S: 102-AN-3 C: n/		FUSION SOLID	S96T000008D 02/16/95	5177-13	AT		01/26/96		SLF	Alpha Analysis
DI Blank		LIQUID	B4800-2	4800-2	AT		01/15/96		SLF	Alpha Analysis
DI Blank		LIQUID	B4967-2	4967-2	AT		01/19/96		SLF	Alpha Analysis
Method Blank		SOLID	B5177-2	5177-2	AT		01/26/96		SLF	Alpha Analysis
Lab Control Sample		LIQUID	S4800-1	4800-1	AT		01/15/96		SLF	Alpha Analysis
Lab Control Sample		LIQUID	S4967-1	4967-1	AT		01/19/96		SLF	Alpha Analysis

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WORK SUMMARY, cont.

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Tank AN102

WHC-SD-WM-DP-165, REV. 1

CLIENT SAMPLE ID / LOCATION / CUSTODY	MATRIX / Priority	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample	SOLID	S5177-1	5177-1	AT		01/26/96		SLF	Alpha Analysis

COUNTS OF TESTS BY SAMPLE TYPE

TEST	Priority	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AT		Alpha Analysis	222-S Lab Analytical Procedure	2			1	1	2	1	7
AT		Alpha Analysis	222-S Lab Analytical Procedure	5			2	2	5	1	15
TOTALS				7			3	3	7	2	22

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BLANKS

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

Lab sample id B4800-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Total Alpha	12587-46-1	<2.2E-02		2.2E-02		U	AT	96000249

Lab sample id B4967-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Total Alpha	12587-46-1	<1.9E-02		1.9E-02		U	AT	96000430

Lab sample id B5177-2
Dept sample id
Client sample id Method Blank
Material/Matrix SOLID

ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	PREP BATCH
Total Alpha	12587-46-1	<9.8E-03		9.8E-03		U	AT	96000688

Sludge

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-BLANK
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

SDG 95000227
Contact R. A. Esch

LAB CONTROL SAMPLES

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

Lab sample id S4800-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	2σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Alpha	1.55E-05	15	1.1E-07			AT	1.54E-5	5.0	101	75-125	70-123	96000249

Lab sample id S4967-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Alpha	1.62E-05	15	9.5E-08			AT	1.54E-5	5.0	105	74-126	70-123	96000430

Lab sample id S5177-1
Dept sample id
Client sample id Lab Control Sample
Material/Matrix SOLID

ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Alpha	4.35E-03	16	4.9E-05			AT	4.72E-3	5.0	92	77-123	90-110	96000688

Sludge

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-LCS
Version 3.08
Report date 03/12/96

S95T003982D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

102AN R22A S1 Safety Scr

DUPLICATE

WHC-SD-WM-DP-165, REV. /

SDG 95000227
Contact R. A. Esch

DUPLICATE
Lab sample id S95T003982D
Dept sample id

ORIGINAL
Lab sample id S95T003982
Dept sample id
Received 02/16/95

Client TWRS
Tank AN102

Client sample id 102AN R22A S1 Safety Scr
Location/Matrix R: 22A S: 102-AN-1 C: n/ LIQUID
Collected
Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	1.56E-01	26	2.2E-02			AT	1.44E-01	26	2.2E-02		8	54	29

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-1 Core: n/a

Samp: 102AN R22A S1 Safety Screen
Loc: Riser: 22A Seg: 102-AN-1 Core: n/a

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DUPLICATES
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DUP
Version 3.08
Report date 03/12/96

S95T003983D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

102AN R22A S2 Safety Scr

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227
Contact R. A. Esch

DUPLICATE
Lab sample id S95T003983D
Dept sample id

ORIGINAL
Lab sample id S95T003983
Dept sample id
Received 02/16/95

Client TWRS
Tank AN102

Client sample id 102AN R22A S2 Safety Scr
Location/Matrix R: 22A S: 102-AN-2 C: n/ LIQUID
Collected
Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	1.16E-01	28	2.2E-02			AT	1.16E-01	29	2.2E-02		0	60	38

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-2 Core: n/a

Samp: 102AN R22A S2 Safety Screen
Loc: Riser: 22A Seg: 102-AN-2 Core: n/a

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DUP
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S95T003984D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

102AN R22A S4 Safety Scr

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227
Contact R. A. Esch

DUPLICATE
Lab sample id S95T003984D
Dept sample id

ORIGINAL
Lab sample id S95T003984
Dept sample id
Received 10/24/94

Client TWRS
Tank AN102

Client sample id 102AN R22A S4 Safety Scr
Location/Matrix R: 22A S: 102-AN-4 C: n/ LIQUID
Collected
Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	1.74E-01	25	2.2E-02			AT	1.59E-01	25	2.2E-02		9	53	26

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-4 Core: n/a

Samp: 102AN R22A S4 Safety Screen
Loc: Riser: 22A Seg: 102-AN-4 Core: n/a

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Lab id 222-S
Protocol GRAB
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S96T000005D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

102AN S3A Dec Liq Sfty S

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227
Contact R. A. Esch

DUPLICATE
Lab sample id S96T000005D
Dept sample id

ORIGINAL
Lab sample id S96T000005
Dept sample id
Received 10/24/94

Client TWRS
Tank AN102

Client sample id 102AN S3A Dec Liq Sfty S
Location/Matrix R: 22A S: 102-AN-3 C: n/ LIQUID
Collected
Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	2.08E-01	23	1.9E-02			AT	1.75E-01	24	1.9E-02		17	50	20

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Samp: 102AN S3A Dec Liq Sfty Scrn
Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DUP
Version 3.08
Report date 03/12/96

S96T000006D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

102AN S3B Dec Liq Sfty S

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227
Contact R. A. Esch

Client TWRS
Tank AN102

DUPLICATE	ORIGINAL	
Lab sample id S96T000006D	Lab sample id S96T000006	Client sample id 102AN S3B Dec Liq Sfty S
Dept sample id	Dept sample id	Location/Matrix R: 22A S: 102-AN-3 C: n/ LIQUID
	Received 02/16/95	Collected
		Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	2.18E-01	22	1.9E-02			AT	2.39E-01	22	1.9E-02		9	47	20

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Samp: 102AN S3B Dec Liq Sfty Scrn
Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DUP
Version 3.08
Report date 03/12/96

S96T000007D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

102AN S3A FUSION

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227
Contact R. A. Esch

Client TWRS
Tank AN102

DUPLICATE		ORIGINAL			
Lab sample id	S96T000007D	Lab sample id	S96T000007	Client sample id	102AN S3A FUSION FUSION
Dept sample id		Dept sample id		Location/Matrix	R: 22A S: 102-AN-3 C: n/ SOLID
		Received	10/24/94	Collected	
				Chain of custody id	

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	3.32E-01	24	3.9E-02			AT	3.06E-01	23	3.1E-02		8	49	22

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DUP
Version 3.08
Report date 03/12/96

S96T000008D

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

102AN S3B FUSION

DUPLICATE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227
Contact R. A. Esch

DUPLICATE
Lab sample id S96T000008D
Dept sample id

ORIGINAL
Lab sample id S96T000008
Dept sample id
Received 02/16/95

Client TWRS
Tank AN102

Client sample id 102AN S3B FUSION FUSION
Location/Matrix R: 22A S: 102-AN-3 C: n/ SOLID
Collected
Chain of custody id

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	7.78E-01	18	3.9E-02			AT	9.52E-01	18	4.2E-02		20	39	20

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DUP
Version 3.08
Report date 03/12/96

S96T000005S

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

102AN S3A Dec Liq Sfty S

MATRIX SPIKE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227
Contact R. A. Esch

MATRIX SPIKE
Lab sample id S96T000005S
Dept sample id

ORIGINAL
Lab sample id S96T000005
Dept sample id
Received 10/24/94

Client TWRS
Tank AN102

Client sample id 102AN S3A Dec Liq Sfty S
Location/Matrix R: 22A S: 102-AN-3 C: n/ LIQUID
Collected
Chain of custody id

ANALYTE	SPIKE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	2σ ERR %	ORIGINAL uCi/mL	2σ TPU %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Alpha	2.16E-01					AT	3.92E-2	5.0	1.75E-01	24	105		

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Samp: 102AN S3A Dec Liq Sfty Scrn
Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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MATRIX SPIKES
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-MS
Version 3.08
Report date 03/12/96

S96T000007S

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

102AN S3A FUSION

MATRIX SPIKE

WHC-SD-WM-DP-165, REV. 1

SDG 95000227
Contact R. A. Esch

MATRIX SPIKE
Lab sample id S96T000007S
Dept sample id

ORIGINAL
Lab sample id S96T000007
Dept sample id
Received 10/24/94

Client TWRS
Tank AN102

Client sample id 102AN S3A FUSION FUSION
Location/Matrix R: 22A S: 102-AN-3 C: n/ SOLID
Collected
Chain of custody id

ANALYTE	SPIKE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALIFIERS	TEST	ADDED uCi/mL	2σ ERR %	ORIGINAL uCi/mL	2σ TPU %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Alpha	4.69E 01					AT	5.80E01	5.0	3.06E-01	23	80	80-120	80-120

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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MATRIX SPIKES
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-MS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

S95T003982

TANK AN102, GROUP 95000227

102AN R22A S1 Safety Scr

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG 95000227 Client TWRS
Contact R. A. Esch Tank AN102

Lab sample id S95T003982 Client sample id 102AN R22A S1 Safety Scr
Dept sample id Location/Matrix R: 22A S: 102-AN-1 C: n/ LIQUID
Received 02/16/95 Collected
Chain of custody id

ANALYTE	CAS NO	RESULT uCi/mL	·2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	1.44E-01	26	2.2E-02			AT

Supernatant liquid

Samp: 102AN R22A S1 Safety Screen
Loc: Riser: 22A Seg: 102-AN-1 Core: n/a

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DATA SHEETS
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Lab id 222-S
Protocol GRAB
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S95T003983

102AN R22A S2 Safety Scr

DATA SHEET

WHC-SD-WM-DP-165, REV. I

SDG 95000227 Client TWRS
Contact R. A. Esch Tank AN102

Lab sample id S95T003983 Client sample id 102AN R22A S2 Safety Scr
Dept sample id Location/Matrix R: 22A S: 102-AN-2 C: n/ LIQUID
Received 02/16/95 Collected
Chain of custody id

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	1.16E-01	29	2.2E-02			AT

Supernatant liquid

Samp: 102AN R22A S2 Safety Screen
Loc: Riser: 22A Seg: 102-AN-2 Core: n/a

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Lab id 222-S
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Version 1.0
Form DVD-DS
Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S95T003984

102AN R22A S4 Safety Scr

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG 95000227 Client TWRS
Contact R. A. Esch Tank AN102

Lab sample id S95T003984 Client sample id 102AN R22A S4 Safety Scr
Dept sample id Location/Matrix R: 22A S: 102-AN-4 C: n/ LIQUID
Received 10/24/94 Collected
Chain of custody id

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	1.59E-01	25	2.2E-02			AT

Supernatant liquid

Samp: 102AN R22A S4 Safety Screen
Loc: Riser: 22A Seg: 102-AN-4 Core: n/a

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000005

102AN S3A Dec Liq Sfty S

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG 95000227
Contact R. A. Esch
Client TWRS
Tank AN102

Lab sample id S96T000005
Dept sample id
Received 10/24/94
Client sample id 102AN S3A Dec Liq Sfty S
Location/Matrix R: 22A S: 102-AN-3 C: n/ LIQUID
Collected
Chain of custody id

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	1.75E-01	24	1.9E-02			AT

Supernatant liquid

Samp: 102AN S3A Dec Liq Sfty Scrn
Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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Lab id 222-S
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Form DVD-DS
Version 3.08
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000007

102AN S3A FUSION

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG 95000227 Client TWRS
Contact R. A. Esch Tank AN102

Lab sample id S96T000007 Client sample id 102AN S3A FUSION FUSION
Dept sample id Location/Matrix R: 22A S: 102-AN-3 C: n/ SOLID
Received 10/24/94 Collected
Chain of custody id

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	3.06E-01	23	3.1E-02			AT

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

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Lab id 222-S
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WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000006

102AN S3B Dec Liq Sfty S

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG 95000227
Contact R. A. Esch
Client TWRS
Tank AN102

Lab sample id S96T000006
Dept sample id
Received 02/16/95
Client sample id 102AN S3B Dec Liq Sfty S
Location/Matrix R: 22A S: 102-AN-3 C: n/ LIQUID
Collected
Chain of custody id

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	2.39E-01	22	1.9E-02			AT

Supernatant liquid

Samp: 102AN S3B Dec Liq Sfty Scrn
Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

S96T000008

102AN S3B FUSION

DATA SHEET

WHC-SD-WM-DP-165, REV. 1

SDG 95000227 Client TWRS
Contact R. A. Esch Tank AN102

Lab sample id S96T000008 Client sample id 102AN S3B FUSION FUSION
Dept sample id Location/Matrix R: 22A S: 102-AN-3 C: n/ SOLID
Received 02/16/95 Collected
Chain of custody id

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	9.52E-01	18	4.2E-02			AT

Supernatant liquid

Loc: Riser: 22A Seg: 102-AN-3 Core: n/a

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

Test AT Matrix LIQUID
SDG 95000227
Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS
GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1	2σ
Preparation batch 96000688								
102AN S3A FUSION FUSION	S96T000007			5177-9	3.06E-01			
102AN S3A FUSION-DUP FUS	S96T000007D			5177-10	ok			
102AN S3A FUSION-SPK FUS	S96T000007S			5177-11	ok			
102AN S3B FUSION FUSION	S96T000008			5177-12	9.52E-01			
102AN S3B FUSION-DUP FUS	S96T000008D			5177-13	ok			
Nominal values and limits from method				RDLs (uCi/mL) Supernatant liquid			80 Average	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA uCi/mL	ALIQ ml	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 96000688	2σ prep error 15.0 % Reference															
102AN S3A FUSION FUSION	S96T000007			3.1E-02	0.0500	1480	1.00		24	30				01/24/96	01/26	WB26872
102AN S3A FUSION-DUP FUS	S96T000007D			3.9E-02	0.0500	1850	1.00		24	30				01/24/96	01/26	WB26872
102AN S3A FUSION-SPK FUS	S96T000007S				0.0500	1480	1.00		24	30				01/24/96	01/26	WB26872
102AN S3B FUSION FUSION	S96T000008			4.2E-02	0.0500	2010	1.00		24	30				01/24/96	01/26	WB26872
102AN S3B FUSION-DUP FUS	S96T000008D			3.9E-02	0.0500	1830	1.00		24	30				01/24/96	01/26	WB26872
Nominal values and limits from method					0.100				20-55	30						

PROCEDURES	REFERENCE	222-S Lab Analytical Procedure
	LO-160-103	Core Segment Extrusion Process and Sample Preparation, rev 17
	LA-549-141	Fusion with Alkali Metal Hydroxide, rev 40
	LA-508-101A	Alpha in liquid samples, rev 42
	LA-508-11NA	Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 3.8E-02 ± 9.4E-03
EFFICIENCY 24 ± 0

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CMS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

Test AT Matrix LIQUID
SDG 95000227
Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS

GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2÷1	2σ
Preparation batch 96000249								
102AN R22A S1 Safety Scr	S95T003982			4800-4	1.44E-01			
102AN R22A S1 Safety Scr	S95T003982D			4800-5	ok			
102AN R22A S2 Safety Scr	S95T003983			4800-7	1.16E-01			
102AN R22A S2 Safety Scr	S95T003983D			4800-8	ok			
102AN R22A S4 Safety Scr	S95T003984			4800-9	1.59E-01			
102AN R22A S4 Safety Scr	S95T003984D			4800-10	ok			
DI Blank	B4800-2			4800-2	U			
Lab Control Sample	S4800-1			4800-1	ok			
Preparation batch 96000430								
102AN S3A Dec Liq Sfty S	S96T000005			4967-4	1.75E-01			
102AN S3A Dec Liq Sfty S	S96T000005D			4967-5	ok			
102AN S3A Dec Liq Sfty S	S96T000005S			4967-6	ok			
102AN S3B Dec Liq Sfty S	S96T000006			4967-7	2.39E-01			
102AN S3B Dec Liq Sfty S	S96T000006D			4967-8	ok			
DI Blank	B4967-2			4967-2	U			
Lab Control Sample	S4967-1			4967-1	ok			

Nominal values and limits from method — RDLs (uCi/mL) Supernatant liquid — Average 80

Final Report

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CMS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

Test AT Matrix LIQUID
SDG 95000227
Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS
GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA uCi/mL	ALIQ ml	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 96000249 2σ prep error 15.0 % Reference																
102AN R22A S1 Safety Scr	S95T003982			2.2E-02	1.00	1.00	20300		21	30					01/15/96	WB27806
102AN R22A S1 Safety Scr	S95T003982D			2.2E-02	1.00	1.00	20300		21	30					01/15/96	WB27806
102AN R22A S2 Safety Scr	S95T003983			2.2E-02	1.00	1.00	20300		21	30					01/15/96	WB27806
102AN R22A S2 Safety Scr	S95T003983D			2.2E-02	1.00	1.00	20300		21	30					01/15/96	WB27806
102AN R22A S4 Safety Scr	S95T003984			2.2E-02	1.00	1.00	20300		21	30					01/15/96	WB27806
102AN R22A S4 Safety Scr	S95T003984D			2.2E-02	1.00	1.00	20300		21	30					01/15/96	WB27806
DI Blank	B4800-2			2.2E-02	1.00		20300		21	30					01/15/96	WB27806
Lab Control Sample	S4800-1			1.1E-07	10.0	1.00	1.00		21	30					01/15/96	WB27806
Preparation batch 96000430 2σ prep error 15.0 % Reference																
102AN S3A Dec Liq Sfty S	S96T000005			1.9E-02	0.500	1.00	10200		21	30					01/19/96	WB27806
102AN S3A Dec Liq Sfty S	S96T000005D			1.9E-02	0.500	1.00	10200		21	30					01/19/96	WB27806
102AN S3A Dec Liq Sfty S	S96T000005S				0.500	1.00	1.00		21	30					01/19/96	WB27806
102AN S3B Dec Liq Sfty S	S96T000006			1.9E-02	0.500	1.00	10200		21	30					01/19/96	WB27806
102AN S3B Dec Liq Sfty S	S96T000006D			1.9E-02	0.500	1.00	10200		21	30					01/19/96	WB27806
DI Blank	B4967-2			1.9E-02	0.500		10200		21	30					01/19/96	WB27806
Lab Control Sample	S4967-1			9.5E-08	10.0	1.00	1.00		21	30					01/19/96	WB27806
Nominal values and limits from method					0.100				20-55	30						

PROCEDURES
REFERENCE 222-S Lab Analytical Procedure
LO-160-103 Core Segment Extrusion Process and Sample Preparation, rev 17
LA-508-101A Alpha in liquid samples, rev 42
LA-508-11NA Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD FOR 15 SAMPLES
MDA 1.8E-02 ± 1.5E-02
EFFICIENCY 21 ± 0

Final Report

Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CMS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY

TANK AN102, GROUP 95000227

Test AT Matrix SOLID
SDG 95000227
Contact R. A. Esch

METHOD SUMMARY

ALPHA ANALYSIS
GAS PROPORTIONAL COUNTING

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. I

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Total Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1	2σ
Preparation batch 96000688								
Method Blank	B5177-2			5177-2	U			
Lab Control Sample	S5177-1			5177-1	ok			
Nominal values and limits from method				RDLs (uCi/g) Sludge			80 Average	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA uCi/g	ALIQ ml	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 96000688	2σ prep error 15.0 % Reference															
Method Blank	B5177-2			9.8E-03	0.0500	463	1.00		24	30					01/26/96	WB26872
Lab Control Sample	S5177-1			4.9E-05	10.0	463	1.00		24	30					01/26/96	WB26872
Nominal values and limits from method					0.100				20-55	30						

PROCEDURES	REFERENCE	222-S Lab Analytical Procedure
	LO-160-103	Core Segment Extrusion Process and Sample Preparation, rev 17
	LA-549-141	Fusion with Alkali Metal Hydroxide, rev 40
	LA-508-101A	Alpha in liquid samples, rev 42
	LA-508-11NA	Operation of the [Tennelec LB-5500 (n=0, A-5), LB-1000 (n=1, A-3), Gamma Products (n=4, A-2)] Alpha/Beta Counting Systems

AVERAGES ± 2 SD FOR 2 SAMPLES
MDA 4.9E-03 ± 1.4E-02
EFFICIENCY 24 ± 0

Final Report

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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-CMS
Version 3.08
Report date 03/12/96

WHC 222-S LABORATORY
TANK AN102, GROUP 95000227

SDG 95000227
Contact R. A. Esch

Client TWRS
Tank AN102

WHC-SD-WM-DP-165, REV. 1

SUMMARY DATA SECTION

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Final Report

Reviewed by

Approved by

Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-TOC
Version 3.08
Report date 03/12/96

WHC-SD-WM-DP-165, REV. 1

CHAIN OF CUSTODY FORMS

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Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☐ Normal

Collector: B. Penzwik	Company Contact: WHC Bob Penzwik 373-7751	Telephone No.: 373-7751
Project Designation: N/A	Sampling Location: AN-102	SAF No.: N/A
Ice Chest No.: N/A	Field Logbook No.: N/A	Method of Shipment: WHC
Shipped To: 222S	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks: RADIOACTIVE	Preservative / Type of Container / No. of Container(s) / Volume: N/A	
Special Handling and/or Storage: N/A		

SAMPLE ANALYSIS

Sample No.	Matrix*	Date Sampled	Time Sampled																		
102-AN-4	L	10/21/94	1322 pm				seal # 2712														Dose Rate 1000 mr/hr
102-AN-3	L	10/21/94	1347 pm				seal # 2711														Dose Rate 1000 mr/hr

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CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: B. Penzwik	Date/Time: 10/21/94 1045 pm	Received By: Suzanne Hatch	Date/Time: 24 Oct 94 1140
Relinquished By: Suzanne Hatch	Date/Time: 24/oct/94 1240	Received By: N. Lopina	Date/Time: 10-24-94
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

WHC-SD-WM-DP-165, REV. 1

Matrix*
- S = Soil
- SE = Sediment
- SO = Solid
- SL = Sludge
- W = Water
- O = Oil
- A = Air
- DS = Drum Solid
- DL = Drum Liquid
- T = Tissue
- WI = Wipe
- L = Liquid
- V = Vegetation
- X = Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original - Sample Yellow - Sampler

BC-6000-828 (9/92)

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

539-4276
373-3578

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: D. Hartley
Company Contact: Jim Sickels
Telephone No.: 373-1483
Project Designation: N/A
Sampling Location: 241-AN-102, R22A
SAF No.: N/A
Ice Chest No.: N/A
Field Logbook No.: N/A
Method of Shipment: WHC Transportation
Shipped To: 222S
Offsite Property No.: N/A
Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks: Radioactive
Special Handling and/or Storage: N/A

Preservative	N/A
Type of Container	Glass
No. of Container(s)	1
Volume	125 ml

SAMPLE ANALYSIS

Seal # 1209

Sample No.	Matrix*	Date Sampled	Time Sampled	
102-AN-1	SL	2/15/95	1939	Dose Rate on Contact 2200 mR/hr
	2/16/95			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
James Sickels	2-16-95 12:30	Daniel Dorge / Daniel Garza	12:30 pm 2-16-95
Daniel Dorge	1319 hrs 2-16-95	Sandra J Cobb	02-16-95 1330

SPECIAL INSTRUCTIONS

WHC-SD-WM-DP-165, REV. I

Matrix*
S = Soil
SE = Sediment
SO = Solid
SL = Sludge
W = Water
O = Oil
A = Air
DS = Drum Solids
DL = Drum Liquids
T = Tissue
Wi = Wipe
L = Liquid
V = Vegetation
X = Other

LABORATORY SECTION: Received By | Title | Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

DISTRIBUTION: Original - Sample Yellow - Sampler

BC-6000-828 (12/92)

12/04/95 13:50 509 373 1432 001

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: D. Hartley	Company Contact:	Telephone No.: 373-1483
Project Designation: N/A	Sampling Location: 241-AN-102 R22A	SAF No.: N/A
Ice Chest No.: N/A	Field Logbook No.: N/A	Method of Shipment: WHC TRANSPORTATION
Shipped To: 222S	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks: RADIOACTIVE	Preservative: N/A	
	Type of Container: GLASS	
	No. of Container(s): 1	
Special Handling and/or Storage: N/A	Volume: 125 ML	

SAMPLE ANALYSIS

828

Sent # 1210

Sample No.	Matrix*	Date Sampled	Time Sampled	
102-AN-2	WL	2/15/95	1957	DOSE RATE ON CONTACT 2000 mR/hr
	2-16-95			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: James Sickels	Date/Time: 2-16-95 13:50pm	Received By: Daniel Boya	Date/Time: 2-16-95 12:50pm
Relinquished By: Daniel Boya	Date/Time: 2-16-95 1331	Received By: Sandra Cobb	Date/Time: 1332 02-16-95
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

WHC-SD-WM-DP-165, REV. I

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original - Sample Yellow - Sample

BC-6000-828 (12/92)

001 509 373 1432 14:47 12/04/95

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: D. Hartley	Company Contact: Jim Sickels	Telephone No.: 373-1483 (534-4276, 373-3578)
Project Designation: N/A	Sampling Location: 241-AN-102, R22A	SAF No.: N/A
Ice Chest No.: N/A	Field Logbook No.: N/A	Method of Shipment: WHC Westinghouse Transportation
Shipped To: 222S	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks: Radioactive	Preservative: N/A	
	Type of Container: GLASS	
	No. of Container(s): 1	
Special Handling and/or Storage: N/A	Volume: 125mL	

SAMPLE ANALYSIS

Seal # 1211 2-16-95

Sample No.	Matrix*	Date Sampled	Time Sampled	
102-AN-3	W/L	2/15/95	2016	Dose Rate at Contact 2500 mR/hr

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
James Sickels	2-16-95 14:10	Daniel Garcia	2-16-95 14:10
[illegible]	2-16-95 1454	Sandra Cobb	2-16-95 1455

SPECIAL INSTRUCTIONS

WHC-SD-WM-DP-165, REV. 1

Matrix*: S = Soil; SE = Sediment; SO = Solid; SL = Sludge; W = Water; O = Oil; A = Air; DS = Drum Solids; DL = Drum Liquids; T = Tissue; WI = Wipe; L = Liquid; V = Vegetation; X = Other

LABORATORY SECTION: Received By | Title | Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

DISTRIBUTION: Original - Sample; Yellow - Samples

BC-6000-829 (12/92)

001 509 373 1432 13:54 12/04/95

12/04/95 14:45 509 373 1432 001

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 144

Page 1 of 1

Collector	R.J. Ponznik	Contact/Requestor	N/A	Telephone No. 373-7751	MSIN 57-03 FAX 373-9191
SAF No.	N/A	Sample Origin	102-AN - Risers 21A	Purchase Order/Charge Code	N/A
Project Title	N/A	Logbook No.	N/A	Ice Chest No. N/A	Temp.
Shipped To (Lab)	222S	Method of Shipment	WHC TRANSPORTATION	Bill of Lading/Air Bill No.	N/A
Protocol	N/A	Data Turnaround	N/A	Offsite Property No.	N/A

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
2AN-95-1	222S	L	11-30-95	~~8:45~~ 2045 pm	1 - Glass 125 ml.	Dose on contact 2 R/hr Seal# 1664	N/A
2AN-95-3	222S	L	11-30-95	~~9:00~~ 2100 pm	1 - Glass 125 ml	Dose on contact 1.5 R/hr Seal# 2512	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ☐ Yes ☒ No

Radioactive

SPECIAL INSTRUCTIONS Hold Time

Sample 2AN-95-3 was taken at a depth of 460" not actual depth indicated on process memo 12-1-95

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Robert J. Ponznik			12-1-95 1155				12-1-95 1202
							1250
			12-1-95 1250	N. Lapiers			12-1-95

Matrix*

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

DISTRIBUTION: White - Remain with Samples Color - Customer

WHC-SD-WM-DP-165, REV. 1

BC-6000-828 (09/9

120

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. N/A

Page 1 of 1

Collector: PEACNIK	Contact/Requestor: A	Telephone No.: 373-2751 MSIN: S7-03 FAX:
SAF No.: N/A	Sample Origin: AN102 drain 21A	Purchase Order/Charge Code: N/A
Project Title: N/A	Logbook No.: N/A	Ice Chest No.: N/A Temp.:
Shipped To (Lab): 222S	Method of Shipment: WHC TRANSPORTATION	Bill of Lading/Air Bill No.: N/A
Protocol: N/A	Date Turnaround: N/A	Offsite Property No.: N/A

Sample No.	Lab ID		Date	Time	No./Type Container	Sample Analysis	Preservative
~~2AN95-4~~ 12-1-95	222-S	SL	~~12-1-95~~ 12-1-95	~~1130~~	1-GLASS 125ml	DOSE on Contact 1.5R/hr	N/A
2AN-95-4			11-30-95	9:15pm			
						SEAL # 1059	

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes): RADIOACTIVE

MSDS: ☐ Yes ☒ No

SPECIAL INSTRUCTIONS

Hold Time

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Robert T Peacnik	12/1/95 1135	C E Byd	12-1-95 1135
C E Byd	12-1-95 12:22	R. AKITA	12/1/95 1230

Matrix*

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liquid	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

WHC-SD-WM-DP-165, REV. 1

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

DISTRIBUTION: White - Remain with Samples Color - Customer

BC-6000-828 (09/9

12/04/95 13:55 509 373 1432 TCA 001

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

S.O.C. No: NA

Page 1 of 1

Collector: PERZNIK, R.J.	Contact/Requestor: NA	Telephone No.: 373-7751	MSIN: 57-03 FAX: 373-4491
SAF No.: NA	Sample Origin: 102-AN riser 21	Purchase Order/Charge Code: NA	
Project Title: NA	Logbook No.: NA	Ice Chest No.: NA	Temp.:
Shipped To (Lab): 222-S	Method of Shipment: WHC TRANSPORTATION	Bill of Lading/Air Bill No.: NA	
Protocol: NA	Data Turnaround: NA	Offsite Property No.: NA	

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
2AN-95-2	222-S	L	11-30-95	855pm	1-Glass 125mL	Dose in Contact is 1R/hr Seal# 1665	NA
2AN-95-5	222-S	SL	11-30-95	925pm	1-Glass 125mL	Dose in Contact is 1.5R/hr Seal# 1060	NA

POSSIBLE SAMPLE HAZARDS/REMARKS (List of known wastes): RADIOACTIVE

MSDS: ☐ Yes ☑ No

SPECIAL INSTRUCTIONS: Sample 2AN-95-2 was taken at 550", not AF Depth specified on process memo. 12-1-95

Hold Time:

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
PERZNIK, R.J.	12-1-95	James Rauhauf	12-1-95 1337
James R. Rauhauf	12-1-95 1414	R ARITA	12-1-95 1415
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

Matrix:

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	W = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

Disposal Method (e.g., Return to customer, per lab procedure, used in process): Disposed By: Date/Time:

*Materials shall be picked up by requestor and returned to parent container or site of origin.

White - Lab Yellow - Customer

BC-6030-828 (09/95)

WHC-SD-WM-DP-165, REV. 1

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. N/A

Page 1 of 1

Collector: Bob Praznik	Contact/Requestor: N/A	Telephone No.: 373-7751 MSIN: 57-03 FAX: 373-9191
SAF No.: N/A	Sample Origin: 241-AN-107 102 12-15-95 RISER 21A	Purchase Order/Charge Code: N/A
Project Title: N/A	Logbook No.: N/A	Ice Chest No.: N/A Temp.:
Shipped To (Lab): 222S	Method of Shipment: WHC TRANSPORTATION	Bill of Lading/Air Bill No.: N/A
Protocol: N/A	Data Turnaround: N/A	Offsite Property No.: N/A

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
2AN-95-4A	222S	SL	12/14/95	1105A	1/Glass 125mL	Dose on Contact 1.5 R/hr Seal # 4057	N/A
2AN-95-5A	222S	SL	12/14/95	1125A	1/Glass 125mL	Dose on Contact 1 R/hr Seal # 4058	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes): Radio Active

MSDS ☐ Yes ☒ No

SPECIAL INSTRUCTIONS: N/A

Hold Time: WHC-SD-WM-DP-165, REV. 1

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
James Sickels	12-15-95 0925	James R. Fenbad	12-15-95 0910
James R. Fenbad	12-15-95 0915	David J. Keane	12-15-95 0930
David J. Keane	12-15-95 10:30	Raymond Akita	12/15/95 1030

Matrix*

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

DISTRIBUTION: White - Remain with Samples Color - Customer

BC-6000-828 (09/95)

12/18/95 08:50 509 373 1432 TCI 001

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No.

Page 1 of 1

Collector: Bob Peaznik	Contact/Requestor: N/A	Telephone No.: 373-7751 MSIN: 57-03 FAX: 373-9191
SAF No.: N/A	Sample Origin: 241-AN-101 Riser 21A	Purchase Order/Charge Code: N/A
Project Title: N/A	Logbook No.: N/A	Ice Chest No.: N/A Temp.
Shipped To (Lab): 222S	Method of Shipment: WHC Transportation	Bill of Lading/Air Bill No.: N/A
Protocol: N/A	Data Turnaround: N/A	Offsite Property No.: N/A

Sample No.	Lab ID	*	Date	Time	No./Type Container	Sample Analysis	Preservative
AN-95-6	222S	L	12/14/95	1050	1/GLASS 125mL	Dose on Contact 2.5 mR/hr Seal # 4059	

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes): Radioactive

MSDS ☐ Yes ☒ No

SPECIAL INSTRUCTIONS: Field Blank

Hold Time: WHC-SD-WM-DP-165, REV. 1

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
James Sickels	12-15-95 0935	James R Fruehofer	12-15-95 0940
		Raymond Akita	
James R Fruehofer	12-15-95 1050	Raymond Akita	12/15/95 1050

Matrix*

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	Wi = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

DISTRIBUTION: White - Remain with Samples Color - Customer

BC-5000-828 (09/95)

WHC-SD-WM-DP-165, REV. 1

HOT CELL LOG BOOK

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AN-102 GRAB SAMPLES

★ **2AN-95-1** Supernate Sampled 11/30/95 from riser 21A
Sampling Depth? 370 in
Dose Rate: w/o: N/A mrad/hr

S95T003864

APPEARANCE: Dark yellow-brown liquid; no solids settled; no organic layer

Remove two 10 mL subsamples of supernate for analysis, and one 40 mL subsample for archive.

S95T003867	Inorganic Tests	Dose Rate: w/o: 1500 mrad/hr
S95T003870	Radionuclide Tests	Dose Rate: w/o: 1500 mrad/hr
S95T003917	Archive	Dose Rate: w/o: N/A mrad/hr subsample for archive will be made in hotcell.

★ **2AN-95-2** Supernate Sampled 11/30/95 from riser 21A
Sampling Depth? Not available
Dose Rate: w/o: N/A mrad/hr not available when transferred to hotcell

S95T003865

APPEARANCE: Dark yellow-brown liquid - opaque - trace of settled solids. Decanted liquid off of solids. No org. layer

Remove two ~~10~~ 15-20 mL subsamples of supernate for analysis, and one ~~40~~ 50-60 mL subsample for archive.

Bulk density ~ 1.3 g/mL

S95T003868	Inorganic Tests	Dose Rate: w/o: 2500 mrad/hr V8944 25.6g
S95T003871	Radionuclide Tests	Dose Rate: w/o: 2500 mrad/hr V8945 30.1g
S95T003918	Archive	Dose Rate: w/o: N/A mrad/hr V8919

AN-102 GRAB SAMPLES

★ **2AN-95-3** Supernate Sampled 11/30/95 from riser 21A
Sampling Depth? not available
Dose Rate: w/o: N/A mrad/hr
not available when transferred to Intell.

S95T003866

APPEARANCE: Dark yellow-brown, opaque liquid - no solids, no organic layer

Remove two ~~10~~ 15-20 mL subsamples of supernate for analysis, and one ~~10~~ 50-60 mL subsample for archive.
Bulk density ~ 1.3 g/mL

S95T003869	Inorganic Tests	Dose Rate: w/o: 2500 mrad/hr V8947 26.8 g
S95T003872	Radionuclide Tests	Dose Rate: w/o: 2500 mrad/hr V8948 26.9 g
S95T003919	Archive	Dose Rate: w/o: N/A mrad/hr V8920

★ **2AN-95-6** Field Blank Sampled 12/14/95 from riser 21A
Sampling Depth? 20 ft
Dose Rate: w/o: <0.5 mrad/hr

S95T003961

APPEARANCE: Clear, colorless liquid - no solids

Remove two 10 mL subsamples of supernate for analysis, and archive remaining sample

S95T003962	Inorganic Tests	Dose Rate: w/o: <0.5 mrad/hr
S95T003963	Radionuclide Tests	Dose Rate: w/o: <0.5 mrad/hr

AN-102 GRAB SAMPLES 1/8/96

★ **102-AN-1** Supernate Sampled 2/15/95 from riser 22A
Sampling Depth? 388"
Dose Rate: w/o: N/A mrad/hr
dose not available - sample already in hotcell.

S95T003924

APPEARANCE: Dark yellow-brown to red-brown with a trace of settled solids - No organic layer. 1/8/96

Remove one 5-10 mL subsample of supernate for analysis.

S95T003982 Safety Screen Tests Dose Rate: w/o: 600D mrad/hr

★ **102-AN-2** Supernate Sampled 2/15/95 from riser 22A
Sampling Depth? 576"
Dose Rate: w/o: N/A mrad/hr
dose not available - sample already in hotcell.

S95T003925

APPEARANCE: Dark yellow-red-brown clear liquid with a trace of settled solids - No organic layer. 1/8/96

Remove one 5-10 mL subsample of supernate for analysis.

S95T003983 Safety Screen Tests Dose Rate: w/o: 800D mrad/hr

★ **102-AN-4** Supernate Sampled 10/21/94 from riser 22A
Sampling Depth? 622"
Dose Rate: w/o: N/A mrad/hr
dose not available - sample already in hotcell.

S95T003926

APPEARANCE: Dark yellow-red-brown clear liquid with a trace of settled solids - No organic layer. 1/8/96

Remove one 5-10 ml subsample of supernate for analysis.

S95T003984 Safety Screen Tests Dose Rate: w/o: 5000 mrad/hr

AN-102 GRAB SAMPLES

1/9/96

★ **2AN-95-4A** Sludge

Sampled 12/14/95 from riser 21A
Sampling Depth?_____
Dose Rate: w/o: N/A mrad/hr > 7000 mrad
sample is in hotcell. > 7000 ~~mrad~~ mR MRC 1/9/96

S95T003959

APPEARANCE: Dark red-brown clear liquid with about 60% tan settled solids. No organic layer. MRC 1/9/96
(on right in photograph)

Measure the height of the settled solids and the total sample and calculate the volume percent settled solids according to the following equation.
measured in inches, then calculated mm

$$\text{Vol \% Settled Solids} = \frac{\text{Height solids}}{\text{Height total sample}} = \frac{50.8\text{ mm}}{82.6\text{ mm}} \times 100 = 61.5\ \%$$

Agitate sample to suspend all of the solids and transfer the entire sample to centrifuge cones. Record the volume and weight of the sample before centrifugation. If the solids settle rapidly (within a few minutes), record the volume of solids before centifugation. Centrifuge the sample for a minimum of 1 hour. Record volume of solids after centrifugation. Remove liquid and subsample for analysis and archive. Record weight of solids that remain. Subsample solids for analysis and archive.

Before centrifugation: ~ .3g of sludge remained in the jar. Contained some black granular pieces.
Check weights: 20g = 199.7 g
500g = 499.39 g 1/9/96

Final wt cone 1A + sample 71.94 g
Tare wt cone 1A 13.86 g
net wt sample 58.08 g
vol sample 40 mL
vol solids N/A mL

Final wt cone 2A + sample 73.09 g
Tare wt cone 2A 13.58 g
net wt sample 59.51 g
vol sample 40 mL
vol solids N/A mL

Solids uniformed suspended.

~~5~~ 4
MRC 1/10/96

AN-102 GRAB SAMPLES

★ 2AN-95-4A Sludge (Continued) 1/9/96

Final wt cone 3A + sludge 79.99 g
Tare wt cone 3A 14.12 g
net wt sample 65.87 g
vol sample 45 mL
vol solids N/A mL

Final wt cone 4 + sludge N/A g
Tare wt cone 4 ____ g
net wt sample ____ g
vol sample ____ mL
vol solids ____ mL

RLE 1/9/96

Record the total weight and volume of the sample as the sum of all of the cones.

Total wt. sample 183.46 g Total vol sample 125 mL

Bulk Density of sample before centrifugation: Total wt sample 183.5 g / Total vol sample 125 mL = 1.47 g/mL

After Centrifugation: after 15 min. still unable to separate solids so we will centrifuge an additional 1½ hours. Solids appearance layered with a light tan bottom and a darker gray upper.
1/11/96 RLE 1/11/96

vol sample cone 1A 40 mL
vol solids cone 1A 21 mL (16 light gray)
vol liquid cone 1A 19 mL

vol sample cone 2A 40 mL
vol solids cone 2A 21 mL (15 mL light gray)
vol liquid cone 2A 19 mL

vol sample cone 3A 45 mL
vol solids cone 3A 25 mL (17.5 mL light gray)
vol liquid cone 3A 20 mL

vol sample cone 4 ____ mL
vol solids cone 4 ____ mL
vol liquid cone 4 ____ mL

N/A RLE 1/9/96

RLE 1/11/96

AN-102 GRAB SAMPLES 1/11/96

★ **2AN-95-4A** Sludge (Continued)

Remove liquid. Subsample ~~15~~ 10 mL for analysis and ~~40~~ 60 mL for archive.
MAE 1/9/96 MAE 1/9/96

S95T004133	Analysis	Dose Rate: w/o:____ mrad/hr	V8985
S95T004132	Archive	Dose Rate: w/o:____ mrad/hr	V8968

Re-weigh cones and record weight of solids.

Final wt cone 1A + solids 44.71 g
Tare wt cone 1A 13.86 g
net wt solids 30.85 g

Final wt cone 2A + solids 47.09 g
Tare wt cone 2A 13.58 g
net wt solids 33.51 g

Final wt cone 3A + solids 54.71 g
Tare wt cone 3A 14.12 g
net wt solids 40.62 g

Final wt cone 4 + solids ____ g
Tare wt cone 4 ____ g
net wt solids ____ g

N/A MAE 1/9/96

Record the total weight and volume of the solids as the sum of all of the cones.

Total wt. solids 104.98 g Total vol solids 67 mL

Bulk Density of centrifuged solids: net wt solids 104.98 g / vol solids 67 mL = 1.57 g/mL

Vol % Solids by centrifugation = Total vol solids / Total vol sample = 67 mL / 125 mL X 100 = 53.6 %

142 MAE 1/11/96

AN-102 GRAB SAMPLES

★ **2AN-95-4A** Sludge (Continued)

S95T004137 SOLIDS For analysis (2 - 5 g) √8984

Final wt vial + solids 32.67 g

Tare wt vial 27.35 g

net wt solids 5.32 g Dose Rate: w/o:____mrad/hr

S95T004136 SOLIDS For archive √8967

Final wt vial + solids 157.99 g

Tare wt vial 85.32 g

net wt solids 72.67 g Dose Rate: w/o:____mrad/hr

AN-102 GRAB SAMPLES

★ **2AN-95-5A** Sludge

Sampled 12/14/95 from riser 21A
Sampling Depth?_____
Dose Rate: w/o: N/A mrad/hr > 7000 mrad
sample is in hotcell > 7000 mrad

S95T003960

APPEARANCE: Dark red-brown clear liquid with about 60% tan settled solids. No organic layer. RAE 1/9/96
(on left in photographs)

Measure the height of the settled solids and the total sample and calculate the volume percent settled solids according to the following equation.
measured in inches, then calculated mm.

$$\text{Vol \% Settled Solids} = \frac{\text{Height solids}}{\text{Height total sample}} = \frac{50.8 \text{ mm}}{82.6 \text{ mm}} \times 100 = 61.5\ \%$$

Agitate sample to suspend all of the solids and transfer the entire sample to centrifuge cones. Record the volume and weight of the sample before centrifugation. If the solids settle rapidly (within a few minutes), record the volume of solids before centifugation. Centrifuge the sample for a minimum of 1 hour. Record volume of solids after centrifugation. Remove liquid and subsample for analysis and archive. Record weight of solids that remain. Subsample solids for analysis and archive.

~1.7g of solid remained in original jar even after several rinsings with supernate.

Before centrifugation:
Check weights: 20g = 19.97g 1/9/96
500g = 499.35g

Final wt cone 1B + sample 75.77g
Tare wt cone 1B 13.97g
net wt sample 61.80g
vol sample ~~45~~ 42 mL RAE 1/9/96
vol solids N/A mL

Final wt cone 2B + sample 73.18g
Tare wt cone 2B 13.65g
net wt sample 59.53g
vol sample 40 mL
vol solids N/A mL

~~9~~ 8
1/10/96
RAE

AN-102 GRAB SAMPLES

★ 2AN-95-5A Sludge (Continued)

Final wt cone 3B + sludge 79.55 g
Tare wt cone 3B 13.92 g
net wt sample 65.63 g
vol sample ~~45~~ 43 mL mc 1/9/96
vol solids N/A mL

Final wt cone 4 + sludge ____ g
Tare wt cone 4 ____ g
net wt sample ____ g
vol sample ____ mL
vol solids ____ mL

N/A mc 1/9/96

Record the total weight and volume of the sample as the sum of all of the cones.

Total wt. sample 186.96 g Total vol sample 125 mL

Bulk Density of sample before centrifugation: Total wt sample 186.96 g / Total vol sample 125 mL = 1.50 g/mL

After Centrifugation: Centrifuge for N/A hours setting 7.
1/11/96 solids appeared layered with light tan/gray brown and a darker gray layer

vol sample cone 1B 42.5 mL
vol solids cone 1B 20 mL (17.5 mL light gray)
vol liquid cone 1B 22.5 mL

vol sample cone 2B 40 mL
vol solids cone 2B 19 mL (17 mL light gray)
vol liquid cone 2B 21 mL

vol sample cone 3B 44 mL
vol solids cone 3B ~~24.5~~ 20.0 mL (20 mL light gray) mc 3-12-96
vol liquid cone 3B ~~19.5~~ 24.0 mL mc 3-12-96

vol sample cone 4 ____ mL
vol solids cone 4 ____ mL
vol liquid cone 4 ____ mL

N/A mc 1/9/96

AN-102 GRAB SAMPLES 1/11/96

★ **2AN-95-5A** Sludge (Continued)

Remove liquid. Subsample 5 mL for analysis and 40 mL for archive.

S95T004135	Analysis	Dose Rate: w/o:____ mrad/hr	~~V8987~~ V8986 1/11/96
S95T004134	Archive	Dose Rate: w/o:____ mrad/hr	V8970

Re-weigh cones and record weight of solids. Started subsampling from cone 1B before re-weighing for solids. 6.14g was put into V8987 + 6.35g already put into V8968

Final wt cone 1B + solids 31.60 g
Tare wt cone 1B 13.97 g
net wt solids 17.63 g

Final wt cone 2B + solids 42.83 g
Tare wt cone 2B 13.65 g
net wt solids 29.18 g

Final wt cone 3B + solids 47.96 g
Tare wt cone 3B 13.92 g
net wt solids 34.04 g

Final wt cone 4 + solids ____ g
Tare wt cone 4 ____ g
net wt solids ____ g

N/A 1/9/96

Record the total weight and volume of the solids as the sum of all of the cones.

Total wt. solids 93.34 g Total vol solids 66.5 mL

Bulk Density of centrifuged solids: net wt solids 93.34 g / vol solids ~~66.5~~ 59.0 mL = ~~1.40~~ 1.58 g/mL 3-12-96

Vol % Solids by centrifugation = Total vol solids / Total vol sample = ~~66.5~~ 59.0 mL / 126.5 mL X 100 = ~~52.6~~ 46.6 % 3-12-96

~~11~~ 10 1/10/96

AN-102 GRAB SAMPLES 1/10/96

★ 2AN-95-5A Sludge (Continued)

S95T004139 SOLIDS For analysis (2 - 5 g) ✓ ~~8986~~ 8987 RAC 1/10/96

Final wt vial + solids 33.71 g

Tare wt vial 27.43 g

net wt solids 6.28 g Dose Rate: w/o:____mrad/hr

S95T004138 SOLIDS For archive ✓ 8969

Final wt vial + solids 144.43 g

Tare wt vial 85.79 g

net wt solids 58.64 g Dose Rate: w/o:____mrad/hr

 ~~12~~ 11 RAC 1/10/96

AN-102 GRAB SAMPLES 1/8/96

★ 102-AN-3(A) Sludge Sampled 10/21/94 from riser 22A
Sampling Depth? 66666
Dose Rate: w/o: N/A mrad/hr
No dose rate available, sample already in hotcell

S96T000001

APPEARANCE: Dark yellow-brown liquid. No organic layer
Red-tan settled solids. 1/8/96

Measure the height of the settled solids and the total sample and calculate the volume percent settled solids according to the following equation.

$$\text{Vol \% Settled Solids} = \frac{\text{Height solids}}{\text{Height total sample}} = \frac{63 \text{ mm}}{85 \text{ mm}} \times 100 = 74.1 \%$$

Remove supernate that is present above solids. Transfer the solids to centrifuge cone(s). Record the volume and weight of the sludge before centrifugation. Centrifuge the sample for a minimum of 1 hour. Record volume of solids after centrifugation. Remove liquid and subsample for analysis ~~and archive~~. Record weight of solids that remain. Subsample solids for analysis. ~~and archive.~~ 1/8/96
Homogenized sludge with vortex mixer (Genie 2) set on maximum setting for approximately 10 min., followed by stirring with a spatula — before transferring 20-25 mL to 2 cones. Sludge was much thicker than sample 102-AN-3(B) (2/15/95).

Before centrifugation:
Check weights: 20 g = 20.00 g
500 g = 500.06 g

Final wt cone 94-1 + sludge 57.26 g
Tare wt cone 1 13.60 g
net wt sludge 43.66 g
vol sludge 28.0 mL

Final wt cone 94-2 + sludge 56.97 g
Tare wt cone 2 13.42 g
net wt sludge 43.55 g
vol sludge 28.0 mL

AN-102 GRAB SAMPLES 1/8/96

★ **102-AN-3(A)** Sludge (Continued)

N/A 1/8/96

Final wt cone 3 + sludge _____ g

Tare wt cone 3 _____ g

net wt sludge _____ g

vol sludge _____ mL

N/A 1/8/96

Final wt cone 4 + sludge _____ g

Tare wt cone 4 _____ g

net wt sludge _____ g

vol sludge _____ mL

Record the total weight and volume of the sludge as the sum of all of the cones.

Total wt. sludge 87.21 g Total vol sludge 56.0 mL

Bulk Density of sludge before centrifugation: Total wt sludge 87.21 g / Total vol sludge 56.0 mL = 1.56 g/mL

After Centrifugation:

vol sludge cone 1 ~~28.5~~ 29.0 mL

vol solids cone 1 17.5 mL 1/8/96

vol liquid cone 1 ~~11.0~~ 11.5 mL 1/8/96

vol sludge cone 2 29.0 mL

vol solids cone 2 18.0 mL

vol liquid cone 2 11.0 mL

N/A 1/8/96

vol sludge cone 3 _____ mL

vol solids cone 3 _____ mL

vol liquid cone 3 _____ mL

N/A 1/8/96

vol sludge cone 4 _____ mL

vol solids cone 4 _____ mL

vol liquid cone 4 _____ mL

AN-102 GRAB SAMPLES 1/8/96

★ 102-AN-3(A) Sludge (Continued)

Remove liquid. Subsample 5 mL for analysis supplementing, if necessary, with liquid removed before centrifugation.

S96T000005 Safety Screen Analysis Dose Rate: w/o: 1000 mrad/hr

Re-weigh cones and record weight of solids.

Final wt cone 94-1 + solids 42.76 g
Tare wt cone 1 13.60 g
net wt solids 29.16 g

Final wt cone 94-2 + solids 42.65 g
Tare wt cone 2 13.42 g
net wt solids 29.23 g

~~Final wt cone 3 + solids ____ g~~
~~Tare wt. cone 3 ____ g~~
~~net wt solids ____ g~~
N/A 1/8/96

~~Final wt cone 4 + solids ____ g~~
~~Tare wt cone 4 ____ g~~
~~net wt solids ____ g~~
N/A 1/8/96

Record the total weight and volume of the solids as the sum of all of the cones.

Total wt. solids 58.39 g Total vol solids 35.5 mL

Bulk Density of centrifuged solids: net wt solids 58.39 g / vol solids 35.5 mL = 1.64 g/mL

Vol % Solids by centrifugation = Total vol solids / Total vol sludge = 35.5 mL / 58.0 ml X 100 = 61.2 %

AN-102 GRAB SAMPLES 1/8/96

★ **102-AN-3(A)** Sludge (Continued)

S96T000003 SOLIDS For Safety Screen Direct analyses (2 - 5 g)

Final wt vial + solids 30.59 g

Tare wt vial 28.59 g w/ shroud & stopper

net wt solids 2.00 g Dose Rate: w/o: 200 mrad/hr

AN-102 GRAB SAMPLES

★ 102-AN-3(B) Sludge Sampled 2/15/95 from riser 22A
Sampling Depth? 603"
Dose Rate: w/o: N/A mrad/hr
~~[illegible]~~ No dose rate available, sample already in notebook 1/8/96

S96T000002

APPEARANCE: Dark yellow-brown liquid. No organic layer. Red-tan settled solids 1/8/96

Measure the height of the settled solids and the total sample and calculate the volume percent settled solids according to the following equation.

$$\text{Vol \% Settled Solids} = \frac{\text{Height solids}}{\text{Height total sample}} = \frac{15 \text{ mm}}{80 \text{ mm}} \times 100 = 18.75\%$$

Remove supernate that is present above solids. Transfer the solids to centrifuge cone(s). Record the volume and weight of the sludge before centrifugation. Centrifuge the sample for a minimum of 1 hour. Record volume of solids after centrifugation. Remove liquid and subsample for analysis ~~and archive.~~ Record weight of solids that remain. Subsample solids for analysis. ~~and archive.~~ 1/8/96 Homogenized sludge using a vortex Genie 2 (mixer) set on maximum setting for approximately 3 minutes. Sludge seemed to mix very well and become pourable.

Before centrifugation:
Check weights: 20 g = 20.00 g
500 g = 500.06 g

Final wt cone 1 + sludge 43.14 g
Tare wt cone 1 13.56 g
net wt sludge 29.58 g
vol sludge 20.0 mL

Final wt cone 2 + sludge ____ g
Tare wt cone 2 ____ g
net wt sludge ____ g
vol sludge ____ mL

N/A 1/8/96

AN-102 GRAB SAMPLES

1/8/96

★ **102-AN-3(B)** Sludge (Continued)

Final wt cone 3 + sludge _____ g N/A RLE 1/8/96

Tare wt cone 3 _____ g

net wt sludge _____ g

vol sludge _____ ml

Final wt cone 4 + sludge _____ g RLE 1/8/96

Tare wt cone 4 _____ g

net wt sludge _____ g

vol sludge _____ ml

Record the total weight and volume of the sludge as the sum of all of the cones.

Total wt. sludge 29.58 g Total vol sludge 20.0 ml

Bulk Density of sludge before centrifugation: Total wt sludge 29.58 g / Total vol sludge 20.0 mL = 1.48 g/mL

After Centrifugation:

N/A RLE 1/8/96

vol sludge cone 1 95- 20 ml

vol solids cone 1 10 mL

vol liquid cone 1 10 ml

vol sludge cone 2 _____ ml

vol solids cone 2 _____ mL

vol liquid cone 2 _____ mL

RLE 1/8/96

vol sludge cone 3 _____ mL

vol solids cone 3 _____ mL

vol liquid cone 3 _____ mL

vol sludge cone 4 _____ mL

vol solids cone 4 _____ mL

vol liquid cone 4 _____ mL

AN-102 GRAB SAMPLES 1/8/96

★ 102-AN-3(B) Sludge (Continued)

Remove liquid. Subsample 5 mL for analysis supplementing, as necessary, with liquid that was removed before centrifugation. RAE 1/8/96

S96T000006 Safety Screen Analyses Dose Rate: w/o: 1000 mrad/hr

Re-weigh cones and record weight of solids.

Final wt cone 1 + solids 29.20 g
Tare wt cone 1 13.56 g
net wt solids 15.64 g

Final wt cone 2 + solids ____ g
Tare wt cone 2 ____ g
net wt solids ____ g
N/A RAE 1/8/96

Final wt cone 3 + solids ____ g
Tare wt cone 3 ____ g
net wt solids ____ g

Final wt cone 4 + solids ____ g
Tare wt cone 4 ____ g
net wt solids ____ g
N/A RAE 1/8/96

Record the total weight and volume of the solids as the sum of all of the cones.

Total wt. solids 15.64 g Total vol solids 10.0 mL

Bulk Density of centrifuged solids: net wt solids 15.64 g / vol solids 10.0 mL = 1.56 g/mL

Vol % Solids by centrifugation = Total vol solids / Total vol sludge = 10.0 mL / 20.0 mL X 100 = 50.0 %

AN-102 GRAB SAMPLES 1/8/96

★ 102-AN-3(B) Sludge (Continued)

S96T000004 SOLIDS For Safety Screen Direct analyses (2 - 5 g)

Final wt vial + solids 29.14 g

Tare wt vial 27.27 g w/s shroud & stopper

net wt solids 1.87 g Dose Rate: w/o: 100 mrad/hr

WHC-SD-WM-DP-165, REV. 1

CORRESPONDENCE

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From: Production Planning and Control 75725-96-003
Phone: 373-4314 T6-06
Date: January 17, 1996
Subject: IMMEDIATE NOTIFICATION: VIOLATION OF DIFFERENTIAL SCANNING CALORIMETRY LIMIT FOR SAMPLE S95T003868 FROM TANK 241-AN-102

To:	R. J. Cash	S7-15	W. Liou	S7-54
	G. B. Griffin	T6-16	M. A. Islam	R3-08
	T. J. Kelley	S7-21	H. Babad	S7-15
	N. W. Kirch	R2-11	G. N. Hanson	S5-05
	E. J. Lipke	S7-15	S. H. Rifaey	T4-07
	J. E. Meacham	S7-15	D. A. Turner	S7-15
	B. C. Simpson	R2-12	G. T. Dukelow	S7-15

cc:	J. G. Kristofzski	R2-12
	J. Jo	R2-12
	R. A. Esch	T6-06
	ADR-File/LB	

References: (1) WHC-SD-WM-TSAP-065, Rev. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352

(2) WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352

One sample from 241-AN-102, submitted for differential scanning calorimetry (DSC) determination exceeded the maximum exothermic criterion of 480 joules/gram (dry weight basis) stated in the Sampling and Analysis Plan and the Safety Screening Data Quality Objective (References 1 and 2). The sample information and analytical results are given in the table below.

R.J. Cash, et al.
Page 2
January 17, 1996

75725-96-003

Sample Description	Sample Number	DSC Results (Joules/Gram, Dry Weight)						TGA Average (wt% H_2O)
		Sample	Duplicate	Triplicate	Average	Standard Deviation of the Average	95% Upper Limit	
2AN-95-2	S95T003868	1201	1088	n/a	1144	80	1501	48.71

TGA = thermogravimetric analysis
95% Upper Limit = one-sided upper confidence limit for DSC results
n/a = Not available. No triplicate analysis was run.

This sample was obtained from riser 21A, at a depth of 550 inches. The results agreed well between the sample and duplicate, the relative percent difference was 9.9%. Two other samples collected on the same day from riser 21A exhibited exotherms of approximately 42 joules/g dry weight (based on the average wt% water for sample 2AN-95-2 listed above).

Should you have any questions regarding this notification, please feel free to contact me on 373-4314.

Ruth A. Esch
Production Planning and Control

From: Production Planning and Control 75725-96-004
Phone: 373-4314 T6-06
Date: January 30, 1996
Subject: IMMEDIATE NOTIFICATION: VIOLATION OF DIFFERENTIAL SCANNING CALORIMETRY LIMIT FOR THE LISTED SAMPLES FROM TANK 241-AN-102

To:	R. J. Cash	S7-15	W. Liou	S7-54
	G. B. Griffin	T6-16	M. N. Islam	R3-08
	T. J. Kelley	S7-21	H. Babad	S7-15
	N. W. Kirch	R2-11	G. N. Hanson	S5-05
	E. J. Lipke	S7-15	S. H. Rifaey	T4-07
	J. E. Meacham	S7-15	D. A. Turner	S7-15
	B. C. Simpson	R2-12	G. T. Dukelow	S7-15
cc:	J. G. Kristofzski	R2-12		
	J. Jo	R2-12		
	R. A. Esch	T6-06		
	ADR-File/LB			

References: (1) WHC-SD-WM-TSAP-065, Rev. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352

(2) WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352

Eight samples from 241-AN-102, submitted for differential scanning calorimetry (DSC) determinations exceeded the maximum exothermic criterion of 480 joules/gram (dry weight basis) stated in the Sampling and Analysis Plan and the Safety Screening Data Quality Objective (References 1 and 2). The sample information and analytical results are given in the table below.

Sample Description	Sample Number	DSC Results (Joules/Gram, Dry Weight)					TGA Average (wt% H_2O)
		Sample	Duplicate	Average	Standard Deviation	95% Upper Limit (Mean)	
Supernates							
102-AN-1	S95T003982	563.6	629.4	596.5	46.5	804.2	49.56
102-AN-2	S95T003983	720.3	560.2	640.3	113.2	1145.7	49.83
2AN-95-2	S95T003868	1201	1088	1144	80	1501	48.71*
2AN-95-3	S95T003869	555.3	566.1	560.7	7.6	594.8	50.08
Sludges							
Decanted Supernate							
2AN-95-4A	S95T004133	487.1	475.9	481.5	7.9	516.9	47.03
2AN-95-5A	S95T004135	556.5	597.5	577.0	29.0	706.4	49.74
Solids							
2AN-95-4A	S95T004137	488.1	458.2	473.2	21.1	567.5	42.70
2AN-95-5A	S95T004139	492.1	569.1	530.6	54.4	773.7	42.45

* - This result is the average of three results
TGA = thermogravimetric analysis
95% Upper Limit = one-sided upper confidence limit for DSC results

The results agreed well between the sample and duplicate for all but three of the samples. The samples that had an RPD larger than ±10% were: sample 102-AN-1 RPD = 11.0%; sample 102-AN-2 RPD = 25.0%; and sample 2AN-95-5A solid RPD = 14.5%. These high exotherms were expected for this tank, since 241-AN-102 contains complexed waste.

Should you have any questions regarding this notification, please feel free to contact me on 373-4314.

Ruth A. Esch
Production Planning and Control

From: Production Planning and Control 75725-96-005
Phone: 373-4314 T6-06
Date: February 2, 1996
Subject: IMMEDIATE NOTIFICATION: VIOLATION OF DIFFERENTIAL SCANNING CALORIMETRY LIMIT FOR SAMPLE S95T003867 FROM TANK 241-AN-102

To:	R. J. Cash	S7-15	W. Liou	S7-54
	G. B. Griffin	T6-16	M. N. Islam	R3-08
	T. J. Kelley	S7-21	H. Babad	S7-15
	N. W. Kirch	R2-11	G. N. Hanson	S5-05
	E. J. Lipke	S7-15	S. H. Rifaey	T4-07
	J. E. Meacham	S7-15	D. A. Turner	S7-15
	B. C. Simpson	R2-12	G. T. Dukelow	S7-15
cc:	J. G. Kristofzski	R2-12		
	J. Jo	R2-12		
	R. A. Esch	T6-06		
	ADR-File/LB			

References: (1) WHC-SD-WM-TSAP-065, Rev. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352

(2) WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352

One sample from 241-AN-102, submitted for differential scanning calorimetry (DSC) determination exceeded the maximum exothermic criterion of 480 joules/gram (dry weight basis) stated in the Sampling and Analysis Plan and the Safety Screening Data Quality Objective (References 1 and 2). The sample information and analytical results are given in the table below.

Sample Description	Sample Number	DSC Results (Joules/Gram, Dry Weight)					TGA Average (wt% H_2O)
		Sample	Duplicate	Average	Standard Deviation	95% Upper Limit (Mean)	
2AN-95-1	S95T003867	558.2	558.4	558.3	0.14	558.9	49.14

TGA = thermogravimetric analysis
95% Upper Limit = one-sided upper confidence limit for DSC results

Sample 2AN-95-1 was a supernate sample taken from riser 21A at a depth of 370 inches (cable length from top of riser) on November 30, 1995. The results agreed well between the sample and duplicate. The high exotherm was expected for this tank, since 241-AN-102 contains complexed waste.

Should you have any questions regarding this notification, please feel free to contact me on 373-4314.

Ruth A. Esch
Production Planning and Control

From: Production Planning and Control 75725-96-015
Phone: 373-4314 T6-06
Date: March 8, 1996
Subject: IMMEDIATE NOTIFICATION: HYDROXIDE CONCENTRATION OUT OF SPECIFICATION FOR CORROSION CONCERNS FOR SUPERNATE SAMPLES FROM TANK 241-AN-102

To:	R. J. Cash	S7-15	D. A. Turner	S7-15
	G. B. Griffin	T6-16	M. N. Islam	R3-08
	T. J. Kelley	S7-21	H. Babad	S7-15
	N. W. Kirch	R2-11	G. N. Hanson	S5-05
	E. J. Lipke	S7-15	S. H. Rifaey	T4-07
	J. E. Meacham	S7-15	D. A. Turner	S7-15
	B. C. Simpson	R2-12		
cc:	J. G. Kristofzski	R2-12		
	S. J. Eberlein	R2-12		
	J. Jo	R2-12		
	R. A. Esch	T6-06		
	ADR-File/LB			

References:
(1) WHC-SD-WM-TSAP-065, Rev. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352

(2) WHC-SD-WM-DQO-001, Rev. 1, "Data Quality Objectives for Tank Farms Waste Compatibility Program", dated April 24, 1995, Westinghouse Hanford Company, Richland, WA 99352

Three supernate samples from 241-AN-102, submitted for hydroxide analysis had concentrations that were below the required range for corrosion control stated in the Sampling and Analysis Plan and the Data Quality Objectives for Tank Farms Waste Compatibility Program (References 1 and 2). The sample information and analytical results are given in the table below.

Sample Description	Sample Number	Results (M)			OH Required Range
		Nitrate (NO_3^-)	Hydroxide (OH^-)	Hydroxide RPD	
2AN-95-1	S95T003867	2.63	0.195		$0.1 \times [NO_3^-] \leq [OH^-] \leq 10$ M
2AN-95-1 DUP	S95T003867	3.11	0.181	7.4%	$0.3 \text{ M} \leq [OH^-] \leq 10$ M
2AN-95-2	S95T003868	4.56	0.195		$0.3 \text{ M} \leq [OH^-] \leq 10$ M
2AN-95-2 DUP	S95T003868	4.82	0.191	2.1%	$0.3 \text{ M} \leq [OH^-] \leq 10$ M
2AN-95-3	S95T003869	3.16	0.182		$0.3 \text{ M} \leq [OH^-] \leq 10$ M
2AN-95-3 DUP	S95T003869	3.18	0.195	6.9%	$0.3 \text{ M} \leq [OH^-] \leq 10$ M

RPD = Relative percent difference between sample and duplicate results

The three supernate samples were taken from Tank 241-AN-102 riser 21A on November 30, 1995. They were analyzed for waste compatibility. According to the DQO for waste compatibility (reference 2) the required range for OH^- concentration is dependent on the concentration range of the NO_3^-. If $1.0 \text{ M} < [NO_3^-] \leq 3.0$ M, then $0.1 \times [NO_3^-] \leq [OH^-] < 10$ M. However, if $[NO_3^-] > 3.0$ M, then $0.3 \text{ M} \leq [OH^-] < 10$ M. The table above shows that the $[OH^-]$ is below the required ranges for all three samples and their duplicates. All three samples had very good agreement between the sample and duplicate OH^- results, all RPDs were less than 10%.

Should you have any questions regarding this notification, please feel free to contact me on 373-4314.

Ruth A. Esch
Production Planning and Control

SAMPLE PREPARATIONS

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LABCORE Data Entry Template for Worklist# 4790

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

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

Worklist Comment: AN-102 Grab Samples (S4A,S5A,S3A,S3B) Fusion Digestion rkf

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				FUSION01	SOLID	1	.250	N/A	g/L
95000222	AN-102 GRAB	2	SAMPLE	S95T004141	0	F	FUSION01	SOLID	N/A	2.1588		g/L
				.5397g → .250l								
95000222	AN-102 GRAB	3	SAMPLE	S95T004141	0		DOSE-02	SOLID	N/A	26		mrad/hour
95000222	AN-102 GRAB	4	DUP	S95T004141	0	F	FUSION01	SOLID	2.1588	2.1376	N/A	g/L
				.5344g → .250l								
95000222	AN-102 GRAB	5	DUP	S95T004141	0		DOSE-02	SOLID	26	25	N/A	mrad/hour
95000222	AN-102 GRAB	6	SAMPLE	S95T004142	0	F	FUSION01	SOLID	N/A	2.1584		g/L
				.5396g → .250l								
95000222	AN-102 GRAB	7	SAMPLE	S95T004142	0		DOSE-02	SOLID	N/A	25		mrad/hour
95000222	AN-102 GRAB	8	DUP	S95T004142	0	F	FUSION01	SOLID	2.1584	2.1560	N/A	g/L
				.5390g → .250l								
95000222	AN-102 GRAB	9	DUP	S95T004142	0		DOSE-02	SOLID	25	25	N/A	mrad/hour
95000227	AN-102 GRAB	10	SAMPLE	S96T000007	0	F	FUSION01	SOLID	N/A	.6760		g/L
				.1690g → .250l								
95000227	AN-102 GRAB	11	SAMPLE	S96T000007	0		DOSE-02	SOLID	N/A	6		mrad/hour
95000227	AN-102 GRAB	12	DUP	S96T000007	0	F	FUSION01	SOLID	0.6760	.5404	N/A	g/L
				.1351g → .250l								
95000227	AN-102 GRAB	13	DUP	S96T000007	0		DOSE-02	SOLID	6	6	N/A	mrad/hour
95000227	AN-102 GRAB	14	SAMPLE	S96T000008	0	F	FUSION01	SOLID	N/A	.4968		g/L
				.1429 → .250l								
95000227	AN-102 GRAB	15	SAMPLE	S96T000008	0		DOSE-02	SOLID	N/A	8		mrad/hour
95000227	AN-102 GRAB	16	DUP	S96T000008	0	F	FUSION01	SOLID	.4968	.5468	N/A	g/L
				.1367g → .250l								
95000227	AN-102 GRAB	17	DUP	S96T000008	0		DOSE-02	SOLID	8	7	N/A	mrad/hour

Data Entry Comments:

<1% Solids
40ml of H_2O_2 } For all Samples & QC
HPT was Pam Higdon

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# 4790

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

Final page for worklist # 4790

J M Murphy 1-23-96
Analyst Signature Date

Keith Fuller 1/24/96
Analyst Signature Date

S95T004137 → 4141
4139 → 4142

S96T000003 → 0007
0004 → 0008

Reviewed by R K Fuller 1/24/96

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.

WHC-SD-WM-DP-165, REV. 1

INORGANIC ANALYSES

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LABCORE Data Entry Template for Worklist# 4993

Analyst: SMF **Instrument:** BA001 _____ **Book #** 133N16-A

Method: LA-510-112 Rev/Mod C-3

Worklist Comment: SpG AN-102 (Do not run replicates)

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				SPG-01	LIQUID		1.410	N/A	Sp.G.
95000222	AN-102 GRAB	2	SAMPLE	S95T003867	0		SPG-01	LIQUID	N/A	1.388		Sp.G.
95000222	AN-102 GRAB	3	DUP	S95T003867	0		SPG-01	LIQUID	1.388	1.382	N/A	Sp.G.
95000222	AN-102 GRAB	4	SAMPLE	S95T003868	0		SPG-01	LIQUID	N/A	1.432		Sp.G.
95000222	AN-102 GRAB	5	DUP	S95T003868	0		SPG-01	LIQUID	1.432	1.402	N/A	Sp.G.
95000222	AN-102 GRAB	6	SAMPLE	S95T003869	0		SPG-01	LIQUID	N/A	1.394		Sp.G.
95000222	AN-102 GRAB	7	DUP	S95T003869	0		SPG-01	LIQUID	1.394	1.383	N/A	Sp.G.
95000222	AN-102 GRAB	8	SAMPLE	S95T003962	0		SPG-01	LIQUID	N/A	.994		Sp.G.
95000222	AN-102 GRAB	9	DUP	S95T003962	0		SPG-01	LIQUID	.994	1.015	N/A	Sp.G.

Final page for worklist # 4993

Susie M. Sutton 2-11-96 1500
Analyst Signature **Date**

2-13-96
Analyst Signature **Date**
Approved by HAnastos 2-15-96

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.

SPECIFIC GRAVITY: LA-510-112 (C-3)

WORKLIST #	ANALYST SIGNATURE	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
4993	Susie M. Dalton	2-11-96	1500	

[X] SAMPLE [X] STANDARD [ ] DUPLICATE

SAMPLE # = STD # = 133N16-A

		REPLICATE
TARE WEIGHT (g)	1.9817	1.8713
GROSS WEIGHT (g)	2.0227	2.0323
VOL. of SOLUTION (mL)	.10002	.10002

[X] SAMPLE [ ] STANDARD [X] DUPLICATE

SAMPLE # = 595T003868 Dup STD # =

		REPLICATE
TARE WEIGHT (g)	1.8907	
GROSS WEIGHT (g)	2.0309	
VOL. of SOLUTION (mL)	.10002	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE

SAMPLE # = 595T003867 ~~STD # =~~

		REPLICATE
TARE WEIGHT (g)	1.8670	
GROSS WEIGHT (g)	2.0058	
VOL. of SOLUTION (mL)	.10002	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE

SAMPLE # = 595T003869 STD # =

		REPLICATE
TARE WEIGHT (g)	1.8797	
GROSS WEIGHT (g)	2.0191	
VOL. of SOLUTION (mL)	.10002	

[X] SAMPLE [ ] STANDARD [X] DUPLICATE

SAMPLE # = 595T003867 Dup STD # =

		REPLICATE
TARE WEIGHT (g)	1.8371	
GROSS WEIGHT (g)	1.9753	
VOL. of SOLUTION (mL)	.10002	

[X] SAMPLE [ ] STANDARD [X] DUPLICATE

SAMPLE # = ~~595T003962~~ SMT STD # =
595T003869 DUP

		REPLICATE
TARE WEIGHT (g)	1.8401	
GROSS WEIGHT (g)	1.9784	
VOL. of SOLUTION (mL)	.10002	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE

SAMPLE # = 595T003868 STD # =

		REPLICATE
TARE WEIGHT (g)	1.8804	
GROSS WEIGHT (g)	2.0236	
VOL. of SOLUTION (mL)	.10002	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE

SAMPLE # = 595T003962 and Dup STD # =

		~~REPLICATE~~ Dup	SMF
TARE WEIGHT (g)	1.8487	1.8896	
GROSS WEIGHT (g)	1.9481	1.9911	
VOL. of SOLUTION (mL)	.10002	.10002	

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

		STANDARD	STANDARD
Type			
STANDARD	Gross Weight (W2)	2.0227	2.0323
Work List	Tare Weight (W1)	1.8817	1.8913
4993	Weight of Solution (W2-W1)	0.141	0.141
Test Code	Volume of Solution µL	100.0200	100.0200
SPG-01	Specific Gravity	1.410	1.410
Matrix	Specific Gravity (Average)	1.4097	
LIQUID			
Sample #			
STD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/11/96	v RESULT v		
Time	Specific Gravity Average =	1.410	
03:00 PM			

Data Entry by: [signature] Date: 02/13/96

Approved by: [signature] Date: 2-15-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0058	
Work List	Tare Weight (W1)	1.8670	
4993	Weight of Solution (W2-W1)	0.1388	0
Test Code	Volume of Solution µL	100.0200	
SPG-01	Specific Gravity	1.3877	NA
Matrix			
LIQUID			
Sample #			
S95T003867			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/11/96	v RESULT v		
Time	Specific Gravity =	1.388	
03:00 PM			

Data Entry by:	[signature]	Date:	02/13/96
Approved by:	H Anderson	Date:	2-15-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.9753	
Work List	Tare Weight (W1)	1.8371	
4993	Weight of Solution (W2-W1)	0.1382	0
Test Code	Volume of Solution µL	100.0200	
SPG-01	Specific Gravity	1.3817	NA
Matrix			
LIQUID			
Sample #			
S95T003867			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/11/96	v RESULT v		
Time	Specific Gravity =	1.382	
03:00 PM			

Data Entry by:	[signature]	Date:	02/13/96
Approved by:	[signature]	Date:	2-15-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0236	
Work List	Tare Weight (W1)	1.8804	
4993	Weight of Solution (W2-W1)	0.1432	0
Test Code	Volume of Solution µL	100.0200	
SPG-01	Specific Gravity	1.4317	NA
Matrix			
LIQUID			
Sample #			
S95T003868			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/11/96	v RESULT v		
Time	Specific Gravity =	1.432	
03:00 PM			

Data Entry by: [signature] Date: 02/13/96

Approved by: [signature] Date: 2-15-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	2.0309	
Work List	Tare Weight (W1)	1.8907	
4993	Weight of Solution (W2-W1)	0.1402	0
Test Code	Volume of Solution µL	100.0200	
SPG-01	Specific Gravity	1.4017	NA
Matrix			
LIQUID			
Sample #			
S95T003868			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/11/96	v RESULT v		
Time	Specific Gravity =	1.402	
03:00 PM			

Data Entry by: [signature] Date: 02/13/96

Approved by: [signature] Date: 2-15-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

		SAMPLE	REPLICATE
Type			
SAMPLE	Gross Weight (W2)	2.0191	
Work List	Tare Weight (W1)	1.8797	
4993	Weight of Solution (W2-W1)	0.1394	0
Test Code	Volume of Solution µL	100.0200	
SPG-01	Specific Gravity	1.3937	NA
Matrix			
LIQUID			
Sample #			
S95T003869			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SMF	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/11/96	v RESULT v		
Time	Specific Gravity =	1.394	
03:00 PM			

Data Entry by: [signature] Date: 02/13/96

Approved by: [signature] Date: 2-15-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type
DUPLICATE
Work List
4993
Test Code
SPG-01
Matrix
LIQUID
Sample #
S95T003869
Instrument Code
BA001
Analyst
SMF
Date
02/11/96
Time
03:00 PM

	DUPLICATE	REPLICATE
Gross Weight (W2)	1.9784	
Tare Weight (W1)	1.8401	
Weight of Solution (W2-W1)	0.1383	0
Volume of Solution µL	100.0200	
Specific Gravity	1.3827	NA

Gross Weight (W2) = Wt. of vial + cap + cotton + solution
Tare Weight (W1) = Wt. of vial + cap + cotton

Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]

v RESULT v

Specific Gravity =	1.383

Data Entry by:	[signature]	Date:	02/13/96
Approved by:	[signature]	Date:	2-13-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type
SAMPLE
Work List
4993
Test Code
SPG-01
Matrix
LIQUID
Sample #
S95T003962
Instrument Code
BA001
Analyst
SMF
Date
02/11/96
Time
03:00 PM

	SAMPLE	REPLICATE
Gross Weight (W2)	1.9481	
Tare Weight (W1)	1.8487	
Weight of Solution (W2-W1)	0.0994	0
Volume of Solution µL	100.0200	
Specific Gravity	0.9938	NA

Gross Weight (W2) = Wt. of vial + cap + cotton + solution
Tare Weight (W1) = Wt. of vial + cap + cotton

Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]

v RESULT v

Specific Gravity =	0.994

Data Entry by:	[signature]	Date:	02/13/96
Approved by:	[signature]	Date:	2-15-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type
DUPLICATE
Work List
4993
Test Code
SPG-01
Matrix
LIQUID
Sample #
S95T003962
Instrument Code
BA001
Analyst
SMF
Date
02/11/96
Time
03:00 PM

	DUPLICATE	REPLICATE
Gross Weight (W2)	1.9911	
Tare Weight (W1)	1.8896	
Weight of Solution (W2-W1)	0.1015	0
Volume of Solution µL	100.0200	
Specific Gravity	1.0148	NA

Gross Weight (W2) = Wt. of vial + cap + cotton + solution
Tare Weight (W1) = Wt. of vial + cap + cotton

Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]

v RESULT v

Specific Gravity = 1.015

Data Entry by: [signature] Date: 02/13/96

Approved by: [signature] Date: 2-15-96

Form 510112L1 Rev. 1.1

LABCORE Data Entry Template for Worklist# 4995

Analyst: SMF **Instrument:** BA001 _____ **Book #** 133 N 16 A

Method: LA-510-112 Rev/Mod C-3

Worklist Comment: SpG 102AN (Do not run replicates)

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				SPG-01	LIQUID		1.400	N/A	Sp.G.
95000227	AN-102 GRAB	2	SAMPLE	S95T003982	0		SPG-01	LIQUID	N/A	1.44		Sp.G.
95000227	AN-102 GRAB	3	DUP	S95T003982	0		SPG-01	LIQUID	1.44	1.43	N/A	Sp.G.
95000227	AN-102 GRAB	4	SAMPLE	S95T003983	0		SPG-01	LIQUID	N/A	1.39		Sp.G.
95000227	AN-102 GRAB	5	DUP	S95T003983	0		SPG-01	LIQUID	1.39	~~1.50~~ 1.51 HLa 2-6-96	N/A	Sp.G.
95000227	AN-102 GRAB	6	SAMPLE	S95T003984	0		SPG-01	LIQUID	N/A	1.37		Sp.G.
95000227	AN-102 GRAB	7	DUP	S95T003984	0		SPG-01	LIQUID	1.37	1.48	N/A	Sp.G.

Final page for worklist # 4995

See Attached for Signatures RHBlack 2-5-96 — Analyst Signature Date

RHBlack 2-5-96 — Analyst Signature Date

Data Entry Comments: Approved by HLa 2-7-96

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# 4995

Analyst: SMF **Instrument:** BA001 _____ **Book #** 133N16-17

Method: LA-510-112 Rev/Mod C-3

Worklist Comment: SpG 102AN (Do not run replicates)

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				SPG-01	LIQUID		1399.5	N/A	Sp.G.
95000227	AN-102 GRAB	2 SAMPLE	S95T003982	0		SPG-01	LIQUID	N/A	1438.0		Sp.G.
95000227	AN-102 GRAB	3 DUP	S95T003982	0		SPG-01	LIQUID	1438.0	~~1.42~~ 1425.6	N/A	Sp.G.
95000227	AN-102 GRAB	4 SAMPLE	S95T003983	0		SPG-01	LIQUID	N/A	1387.3		Sp.G.
95000227	AN-102 GRAB	5 DUP	S95T003983	0		SPG-01	LIQUID	1387.3	1507.6	N/A	Sp.G.
95000227	AN-102 GRAB	6 SAMPLE	S95T003984	0		SPG-01	LIQUID	N/A	1374.1		Sp.G.
95000227	AN-102 GRAB	7 DUP	S95T003984	0		SPG-01	LIQUID	1374.1	2377.4	N/A	Sp.G.

Final page for worklist # 4995

Analyst Signature Date 2-5-96 0500

Analyst Signature Date

Results on this page were reported incorrectly. The correct values are reported on the page previous to this. RCeesh 3/7/96

Data Entry Comments: Samp. Size .10017 ml

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.

SPECIFIC GRAVITY: LA-510-112 (C-3)

WORKLIST #	ANALYST SIGNATURE	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
4995	Jmfulton	~~2-4-96~~ 2-5-96	0500	

[ ] SAMPLE [X] STANDARD [ ] DUPLICATE

#1 SAMPLE # = STD STD # = 133N16-A

		REPLICATE
TARE WEIGHT (g)	1.86452	NA
GROSS WEIGHT (g)	2.00471	
VOL. of SOLUTION (mL)	.10017	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE

#2 SAMPLE # = S95T003982 STD # =

		REPLICATE
TARE WEIGHT (g)	1.82934	NA
GROSS WEIGHT (g)	1.92338	
VOL. of SOLUTION (mL)	.10017	

[ ] SAMPLE [ ] STANDARD [X] DUPLICATE

#3 SAMPLE # = S95T003982 STD # =

		REPLICATE
TARE WEIGHT (g)	1.84351	NA
GROSS WEIGHT (g)	1.94351	
VOL. of SOLUTION (mL)	.10017	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE

#4 SAMPLE # = S95T003983 STD # =

		REPLICATE
TARE WEIGHT (g)	1.86665	NA
GROSS WEIGHT (g)	2.00562	
VOL. of SOLUTION (mL)	.10017	

[ ] SAMPLE [ ] STANDARD [X] DUPLICATE

#5 SAMPLE # = S95T003983 STD # =

		REPLICATE
TARE WEIGHT (g)	1.87868	NA
GROSS WEIGHT (g)	2.02970	
VOL. of SOLUTION (mL)	.10017	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE

#6 SAMPLE # = S95T003984 STD # =

		REPLICATE
TARE WEIGHT (g)	1.80172	NA
GROSS WEIGHT (g)	1.93937	
VOL. of SOLUTION (mL)	.10017	

[ ] SAMPLE [ ] STANDARD [X] DUPLICATE

#7 SAMPLE # = S95T003984 STD # =

		REPLICATE
TARE WEIGHT (g)	1.86608	NA
GROSS WEIGHT (g)	2.01422	
VOL. of SOLUTION (mL)	.10017	

[ ] SAMPLE [ ] STANDARD [ ] DUPLICATE

SAMPLE # = STD # =

		REPLICATE
TARE WEIGHT (g)		
GROSS WEIGHT (g)		
VOL. of SOLUTION (mL)		

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	2.0047	
Work List	Tare Weight (W1)	1.8645	
4995	Weight of Solution (W2-W1)	0.14019	0
Test Code	Volume of Solution µL	100.1700	
SPG-01	Specific Gravity	1.3995	NA
Matrix			
LIQUID			
Sample #			
133N16A			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SM FULTON	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/05/96	v RESULT v		
Time	Specific Gravity =	1.400	

Data Entry by:	H Anastos	Date:	02/05/96
Approved by:	Heather Anastos	Date:	2-6-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9734	
Work List	Tare Weight (W1)	1.8293	
4995	Weight of Solution (W2-W1)	0.14404	0
Test Code	Volume of Solution µL	100.1700	
SPG-01	Specific Gravity	1.4380	NA
Matrix			
LIQUID			
Sample #			
S95T003982			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SM FULTON	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/05/96	v RESULT v		
Time	Specific Gravity =	1.438	

Data Entry by:	H Anastor	Date:	02/05/96
Approved by:	Heather Anastor	Date:	2-6-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9863	
Work List	Tare Weight (W1)	1.8435	
4995	Weight of Solution (W2-W1)	0.1428	0
Test Code	Volume of Solution µL	100.1700	
SPG-01	Specific Gravity	1.4256	NA
Matrix			
LIQUID			
Sample #			
S95T003982/DUP			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SM FULTON	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/05/96	v RESULT v		
Time	Specific Gravity =	1.426	

Data Entry by:	H Anastos	Date:	02/05/96
Approved by:	Heather Anastos	Date:	2-6-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

		SAMPLE	REPLICATE
Type			
SAMPLE	Gross Weight (W2)	2.0056	
Work List	Tare Weight (W1)	1.8667	
4995	Weight of Solution (W2-W1)	0.13897	0
Test Code	Volume of Solution µL	100.1700	
SPG-01	Specific Gravity	1.3873	NA
Matrix			
LIQUID			
Sample #			
S95T003983			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SM FULTON	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/05/96	v RESULT v		
Time	Specific Gravity =	1.387	

Data Entry by:	J. Anastos	Date:	02/05/96
Approved by:	Heather Anastos	Date:	2-6-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		SAMPLE/DUP	REPLICATE
SAMPLE/DUP	Gross Weight (W2)	2.0297	
Work List	Tare Weight (W1)	1.8787	
4995	Weight of Solution (W2-W1)	0.15102	0
Test Code	Volume of Solution µL	100.1700	
SPG-01	Specific Gravity	1.5076	NA
Matrix			
LIQUID			
Sample #			
S95T003983			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SM FULTON	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/05/96	v RESULT v		
Time	Specific Gravity =	1.508	

Data Entry by:	H Anastor	Date:	02/05/96
Approved by:	Heather Anastor	Date:	2-6-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9394	
Work List	Tare Weight (W1)	1.8017	
4995	Weight of Solution (W2-W1)	0.13765	0
Test Code	Volume of Solution µL	100.1700	
SPG-01	Specific Gravity	1.3742	NA
Matrix			
LIQUID			
Sample #			
S95T003984			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SM FULTON	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/05/96	v RESULT v		
Time	Specific Gravity =	1.374	

Data Entry by:	H Anastos	Date:	02/05/96
Approved by:	Heather Anastos	Date:	2-6-96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0142	
Work List	Tare Weight (W1)	1.8661	
4995	Weight of Solution (W2-W1)	0.14814	0
Test Code	Volume of Solution µL	100.1700	
SPG-01	Specific Gravity	1.4789	NA
Matrix			
LIQUID			
Sample #			
S95T003984/DUP			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SM FULTON	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
02/05/96	v RESULT v		
Time	Specific Gravity =	1.479	

Data Entry by:	H Anastos	Date:	02/05/96
Approved by:	Heather Anastos	Date:	2-6-96

Form 510112L1 Rev. 1.1

LABCORE Data Entry Template for Worklist# 4472

Analyst: RS **Instrument:** PH01 _____ **Book #** 144N16-B

Method: LA-212-106 Rev/Mod A-0 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: pH AN-102

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT	
95000222	AN-102 GRAB	2	SAMPLE	S95T003867	0		PH-01	LIQUID	N/A	13.33	0.01	pH	13.33 pH
95000222	AN-102 GRAB	3	DUP	S95T003867	0		PH-01	LIQUID	13.33	13.32	N/A	pH	13.32 pH
95000222	AN-102 GRAB	4	SAMPLE	S95T003868	0		PH-01	LIQUID	N/A	13.35	0.01	pH	13.35 pH
95000222	AN-102 GRAB	5	DUP	S95T003868	0		PH-01	LIQUID	13.35	13.34	N/A	pH	13.34 pH
95000222	AN-102 GRAB	6	SAMPLE	S95T003869	0		PH-01	LIQUID	N/A	13.28	0.01	pH	13.28 pH
95000222	AN-102 GRAB	7	DUP	S95T003869	0		PH-01	LIQUID	13.28	13.30	N/A	pH	13.30 pH
95000222	AN-102 GRAB	8	SAMPLE	S95T003962	0		PH-01	LIQUID	N/A	9.03	0.01	pH	9.03 pH
95000222	AN-102 GRAB	9	DUP	S95T003962	0		PH-01	LIQUID	9.03	9.01	N/A	pH	9.01 pH

Final page for worklist # 4472

R. Green 1-22-96
Analyst Signature **Date**

TE Wright 1/22/96
Analyst Signature **Date**

Reviewed RW Schwecke 1/22/96

Data Entry Comments: STD # 11N16-G 6.00 pH
STD # 144N16-B 9.20 pH

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.

worklistrpt Version 2.1 05/15/95
01/11/96 07:27

RUSH

LABCORE Data Entry Template for Worklist# 4808

Analyst: KBO **Instrument:** PH01 _____ **Book #** 57N8

Method: LA-211-102 Rev/Mod C-0 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: OH AP-101, AN-102

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				OH-01	LIQUID	1	~~2.42~~ 1.42e4	N/A	ug/mL
		2	STD				OH-01	LIQUID	1.66e4	~~1.64E~~	N/A	ug/mL
95000197	AP-101 GRAB	3	SAMPLE	S95T003734	0		OH-01	LIQUID	N/A	~~1.25e2~~ 1.25e2 NEW 1/19/96	1.25E2	ug/mL
95000197	AP-101 GRAB	4	DUP	S95T003734	0		OH-01	LIQUID	~~3.41e+1~~ 1.25e2 RWS 1/22/96	~~2.13E+1~~ 125e2 NEW 1/19/96	N/A	ug/mL
95000222	AN-102 GRAB	5	SAMPLE	S95T003868	0		OH-01	LIQUID	N/A	3.31E+3	1.25E+3	ug/mL
95000222	AN-102 GRAB	6	DUP	S95T003868	0		OH-01	LIQUID	3.31E+3	3.24e+3	N/A	ug/mL
95000222	AN-102 GRAB	7	SAMPLE	S95T003869	0		OH-01	LIQUID	N/A	3.10E+3	1.25e+3	ug/mL
95000222	AN-102 GRAB	8	DUP	S95T003869	0		OH-01	LIQUID	3.10E+3	3.31e+3	N/A	ug/mL

Final page for worklist # 4808

Analyst Signature Date 1/19/96

Analyst Signature Date 1/19/96

Reviewed RWSchneider 1/22/96

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.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

OH (AUTO) : LA-211-102 (C-0)

		BLANK
Type	Sample Size (mL) SS	3.000
BLANK	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.009
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	6.02E-04
PH01	OH in Sample in µg/mL (PPM)	1.02E+01
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
Instrument Code	Detection Limit (µg/mL)	4.17E+01
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/19/96		
Time		BLANK
	Concentration of OH in Sample (Molarity)	6.02E-04
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:	[illegible]	Date:	01/19/96
Approved by:	[illegible]	Date:	1/22/96

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

OH (AUTO) : LA-211-102 (C-0)

		STANDARD
Type	Sample Size (mL) SS	0.050
STANDARD	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.240
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.62E-01
PH01	OH in Sample in µg/mL (PPM)	1.64E+04
Matrix		
LIQUID		
Sample #		
57N8		
Instrument Code		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/19/96		
Time		STANDARD
	Concentration of OH in Sample (Molarity)	9.62E-01
	OH in Sample in µg/mL (PPM)	1.64E+04

Data Entry by:	[illegible]	Date:	01/19/96
Approved by:	[illegible]	Date:	1/20/96

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

OH (AUTO) : LA-211-102 (C-0)

		SAMPLE
Type	Sample Size (mL) SS	0.100
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.097
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.94E-01
PH01	OH in Sample in µg/mL (PPM)	3.31E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003868		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/19/96		
Time		SAMPLE
	Concentration of OH in Sample (Molarity)	1.94E-01
	OH in Sample in µg/mL (PPM)	3.31E+03

Data Entry by:	[illegible]	Date:	01/19/96
Approved by:	[illegible]	Date:	1/22/96

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

OH (AUTO) : LA-211-102 (C-0)

		DUPLICATE
Type	Sample Size (mL) SS	0.100
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.095
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.90E-01
PH01	OH in Sample in µg/mL (PPM)	3.24E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003868		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/19/96		
Time		DUPLICATE
	Concentration of OH in Sample (Molarity)	1.90E-01
	OH in Sample in µg/mL (PPM)	3.24E+03

Data Entry by:	[illegible]	Date:	01/19/96
Approved by:	RW Schneider	Date:	1/22/96

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

OH (AUTO) : LA-211-102 (C-0)

		SAMPLE
Type	Sample Size (mL) SS	0.100
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.091
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.82E-01
PH01	OH in Sample in µg/mL (PPM)	3.10E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003869		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/19/96		
Time		SAMPLE
	Concentration of OH in Sample (Molarity)	1.82E-01
	OH in Sample in µg/mL (PPM)	3.10E+03

Data Entry by:	[illegible]	Date:	01/19/96
Approved by:	[illegible]	Date:	1/22/96

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

OH (AUTO) : LA-211-102 (C-0)

		DUPLICATE
Type	Sample Size (mL) SS	0.100
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.097
4808	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.94E-01
PH01	OH in Sample in µg/mL (PPM)	3.31E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003869		
Instrument Code	Detection Limit (µg/mL)	1.25E+03
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
K. QUERIN		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/19/96		
Time		DUPLICATE
	Concentration of OH in Sample (Molarity)	1.94E-01
	OH in Sample in µg/mL (PPM)	3.31E+03

Data Entry by: [signature] Date: 01/19/96

Approved by: RW Schroeder Date: 1/22/96

Form 211102_1 Rev. 1.3

```
calibration data
date     96-01-18
pH(S) 1     7.00
pH(S) 2    10.00
t.cal.      23.0 °C
slope(rel) 1.019
U(as)       -8.1 mV
electr. input  1
        ========
```

```
date 96-01-18 time 23:07
GET pH        12  #    5
Id.#1          0
Id.#2      ~~.2005~~ BlK
pH(init)     4.79
          V/ml          pH
EP1       .009        3.75
stop volt.reached
```

```
date 96-01-19 time 00:35
GET pH        12  #    8
Id.#1 Standard 0
Id.#2      .2005 Sample
pH(init)   11.43 size .0%
          V/ml          pH
EP1       .240        9.78
EP2       .310        7.08
stop volt.reached
```

```
date 96-01-19 time 00:46
GET pH        12  #    9
Id.#1          0
Id.#2      .2005
pH(init)    5.69
          V/ml          pH
EP1       .008        4.73
stop volt.reached
        ========
```

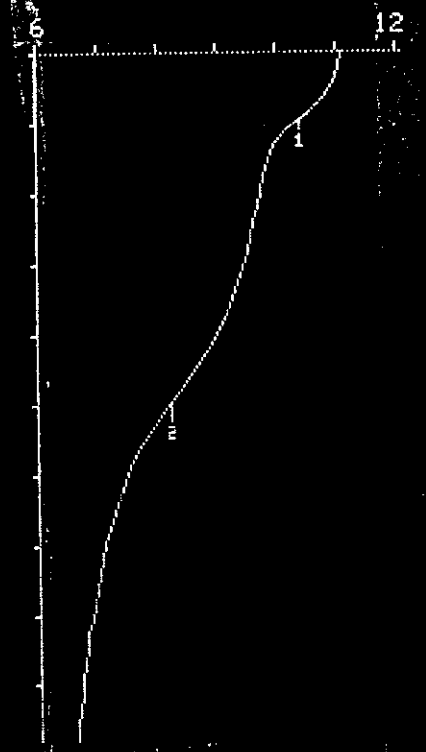
S95T003868

```
date 96-01-19 time 02:59
GET pH        12  #   12
Id.#1       3868
Id.#2      .2005
pH(init)   10.97 .100ml(SS)
          V/ml          pH
EP1       .097       10.33
EP2       .364        9.18
EP3       .493        8.58
EP4       .540        8.16
stop V reached
        ========
```

S95T003868 Dup

```
date 96-01-19 time 03:14
GET pH        12  #   13
Id.#1       3868
Id.#2      .2005 .100ml(SS)
pH(init)   11.06
          V/ml          pH
EP1       .095       10.39
EP2       .497        8.22
stop V reached
        ========
```

date 96-01-19 time 03:47
GET pH 12 # 13
.10ml/div ΔpH=1/div
start V .000 ml



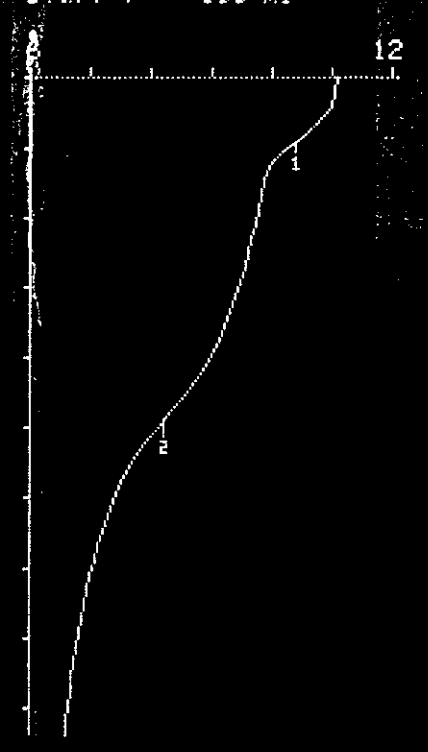
S95T003869

date 96-01-19 time 03:56
GET pH 12 # 14
Id.#1 3869
Id.#2 .2005
pH(init) 11.06

	V/ml .100ml(SS)	pH
EP1	.091	10.38
EP2	.488	8.24

stop V reached
========

date 96-01-19 time 03:57
GET pH 12 # 14
.10ml/div ΔpH=1/div
start V .000 ml



S95T003869 Dup

date 96-01-19 time 04:12
GET pH 12 # 15
Id.#1 3869
Id.#2 .2005
pH(init) 10.59

	V/ml .100ml(SS)	pH
EP1	.097	10.48
EP2	.516	8.25

stop V reached
========

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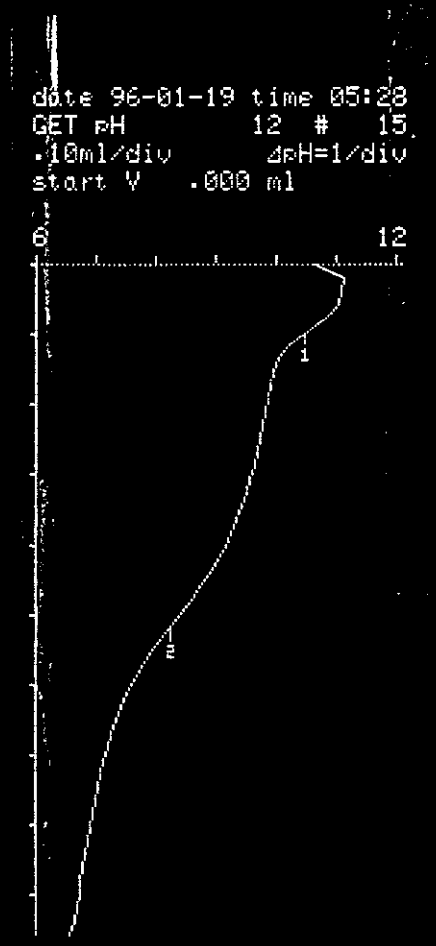


worklistrpt Version 2.1 05/15/95
01/18/96 11:39

LABCORE Data Entry Template for Worklist# 5005

Analyst: KAW **Instrument:** PH01 WC0645 **Book #** 57N8

Method: LA-211-102 Rev/Mod C-0

Worklist Comment: AN-102 OH-

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				OH-01	LIQUID	1	<42	N/A	ug/mL
		2	STD				OH-01	LIQUID	1.66e4	1.62E4	N/A	ug/mL
95000222	AN-102 GRAB	3	SAMPLE	S95T003867	0		OH-01	LIQUID	N/A	3.31E3	6.25E2	ug/mL
95000222	AN-102 GRAB	4	DUP	S95T003867	0		OH-01	LIQUID	3.31E3	3.09E3	N/A	ug/mL
95000222	AN-102 GRAB	5	SAMPLE	S95T003962	0		OH-01	LIQUID	N/A	pH=6.67	N/A	ug/mL
95000222	AN-102 GRAB	6	DUP	S95T003962	0		OH-01	LIQUID	N/A	N/A	N/A	ug/mL

Final page for worklist # 5005

R. Newbrand 1-29-96
Analyst Signature Date

[illegible] 2-1-96
Analyst Signature Date

Reviewed RW Schroeder 2/2/96

Data Entry Comments: 3867 — .200
3962 — PH TOO LOW FOR OH- ANALYSIS
pH result is ~~Prior~~ after BaCl2 addition, pH prior to reagent addition was 6.64.
RWS 2/1/96

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.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

OH (AUTO) : LA-211-102 (C-0)

		STANDARD
Type	Sample Size (mL) SS	0.050
STANDARD	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.238
	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.54E-01
OH-01	OH in Sample in µg/mL (PPM)	1.62E+04
Matrix		
LIQUID		
Sample #		
57N8		
Instrument Code		
WC06645		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RAW		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/29/96		
Time		STANDARD
09:40 AM	Concentration of OH in Sample (Molarity)	9.54E-01
	OH in Sample in µg/mL (PPM)	1.62E+04

Data Entry by:		Date:	02/01/96
Approved by:		Date:	2/2/96

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

OH (AUTO) : LA-211-102 (C-0)

Type	Sample Size (mL) SS	SAMPLE
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.194
	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.94E-01
OH-01	OH in Sample in µg/mL (PPM)	3.31E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003867		
Instrument Code	Detection Limit (µg/mL)	6.25E+02
WC06645		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RAW		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/29/96		
Time		SAMPLE
09:40 AM	Concentration of OH in Sample (Molarity)	1.94E-01
	OH in Sample in µg/mL (PPM)	3.31E+03

Data Entry by:	[illegible]	Date:	02/01/96
Approved by:	RW Schroeder	Date:	2/2/96

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

OH (AUTO) : LA-211-102 (C-0)

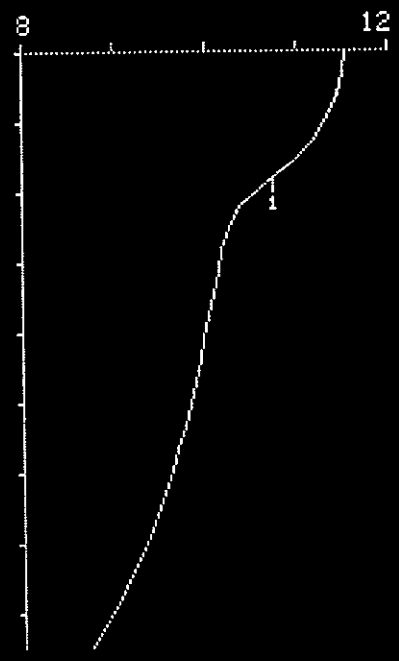
		SAMPLE
Type	Sample Size (mL) SS	0.200
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.181
	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.81E-01
OH-01	OH in Sample in µg/mL (PPM)	3.08E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S95T003867DUP		
Instrument Code	Detection Limit (µg/mL)	6.25E+02
WC06645		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RAW		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
01/29/96		
Time		SAMPLE
09:40 AM	Concentration of OH in Sample (Molarity)	1.81E-01
	OH in Sample in µg/mL (PPM)	3.08E+03

Data Entry by:	[signature]	Date:	02/01/96
Approved by:	Rus Schroeder	Date:	2/2/96

Form 211102_1 Rev. 1.3

WHC-SD-WM-DP-165, REV. 1

date 96-01-29 time 10:30
GET pH 12 # 60
.10ml/div ΔpH=1/div
start V .000 ml



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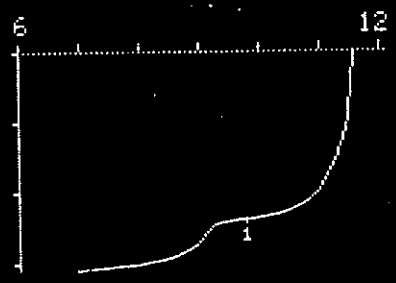
```
date 96-01-29 time 09:36
GET pH          12  #   57
Id.#1            1
Id.#2        .2005
pH(init)     11.54
            V/ml          pH
EP1         .238        9.79
stop volt.reached
```

```
date 96-01-29 time 09:37
GET pH          12  #   57
.10ml/div        ΔpH=1/div
start V    .000 ml
```




```
date 96-01-29 time 09:39
GET pH          12  #   58
Id.#1            0
Id.#2        .2005
pH(init)      6.71
            V/ml          pH
EP1         .008        5.47
manual stop
```

```
date 96-01-29 time 09:39
GET pH          12  #   58
.10ml/div        ΔpH=1/div
start V    .000 ml
```

```
Id.#1        3962
pH           6.64
pH           6.67
```

W/o BACL

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```
Id.#1        3867
pH          12.73
pH          12.74
```

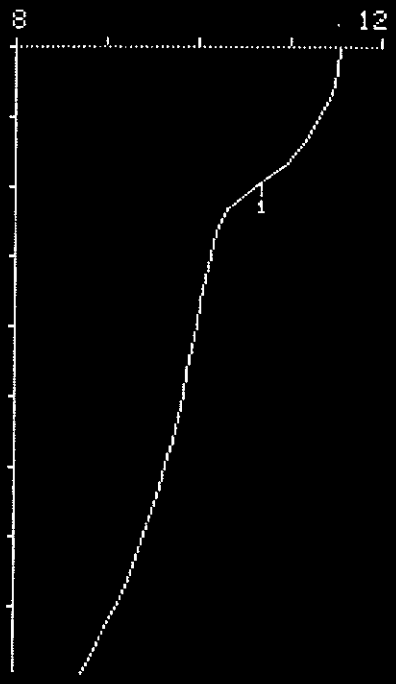
DIRECT W/o BACL

```
pH          12.64
```

W/BACL

```
date 96-01-29 time 10:12
GET pH          12  #   59
Id.#1        3867
Id.#2        .2005
pH(init)     11.54
            V/ml          pH
EP1         .194       10.67
manual stop
```

```
date 96-01-29 time 10:12
GET pH          12  #   59
.10ml/div        ΔpH=1/div
start V    .000 ml
```




```
date 96-01-29 time 10:29
GET pH          12  #   60
Id.#1        3867
Id.#2        .2005
pH(init)     11.54
            V/ml          pH
EP1         .181       10.73
manual stop
        ========
```

LABCORE Data Entry Template for Worklist# 6574

Analyst: JTK **Instrument:** CN01 **Book #** 71N8G

Method: LA-695-103 Rev/Mod A-0

Worklist Comment: CN AN-102

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				CN-01	SOLID	1	<3.8e-2	N/A	ug/g
		2	STD				CN-01	SOLID	915	924	N/A	ug/g
95000222	AN-102 GRAB	3	SAMPLE	S95T004137	0		CN-01	SOLID	N/A	2.17e1	2.40	ug/g
95000222	AN-102 GRAB	4	DUP	S95T004137	0		CN-01	SOLID	2.17e1	2.03e1	N/A	ug/g
95000222	AN-102 GRAB	5	SPK	S95T004137	0		CN-01	SOLID	100	92.0	N/A	ug/g
95000222	AN-102 GRAB	6	SAMPLE	S95T004139	0		CN-01	SOLID	N/A	2.07e1	1.98	ug/g
95000222	AN-102 GRAB	7	DUP	S95T004139	0		CN-01	SOLID	2.07e1	2.09e1	N/A	ug/g
95000222	AN-102 GRAB	8	SPK	S95T004139	0		CN-01	SOLID	100	87.8	N/A	ug/g
		9	CCV				CN-01	SOLID	915	1005	N/A	ug/g
		10	CCB				CN-01	SOLID	1	<1.1e-2	N/A	ug/g

Final page for worklist # 6574

for JTK
Heather Anastro 3-15-96
Analyst Signature **Date**

~~for RTSHea~~
Heather Anastro 3-15-96
Analyst Signature **Date**
Approved by H Anastro 3-15-96

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.

CN: LA-695-102 (C-0)

Matrix: Liquid / Solid

Worklist #	Analyst	Analysis Date & Time	Instrument Code	Standard Id
	JTK	3.15.96	Spec 301 ~~CN01 WA93252~~	7/N8G

Sample#	Dissolution	Dilution	Sample Size (mL)	Abs.
1. LCS Standard	N/A	0.250mL to 25mL	0.500	.667
2. Reagent Blank	N/A	N/A	5	.004
3. 595T004137	.3965 g to 5 mL EDTA/en	N/A	1	.251
4. Duplicate	.4123 g to 5 mL EDTA/en	N/A	1	.244
5. Spike	Same as #3	Same as #3 0.250mL Std	1	.553
6. 595T004139	.4805 g to 5 mL EDTA/en	N/A	1	.289
7. Duplicate	~~.4805~~ .3799 g to 5 mL EDTA/en	N/A	1	.232
8. Spike	Same as #6	Same as #6 0.250mL Std	1	.577
9. CCV	N/A	0.250mL to 25mL	0.500	.749
10. CCB	N/A	N/A	5	.001

Comments: AN-102's ~~No worklist for these reruns~~ DE 3/15/96

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WHC-SD-WM-DP-165, REV. 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
Type		
BLANK		
Work List		
6574	Blank Aliquot in mL (SS)	5.00000
Test Code	Absorbance of Instrument Blank	0.000
CN-01	Absorbance of Blank (Reagent, Prep)	0.004
Matrix	Digest Dilution Factor	1
LIQUID	Y-Intercept Value	0.000194
Sample #	Slope Value	0.143424
BLNK	µg of Cyanide	0.027
Instrument Code	µg CN- /mL	5.31E-03
301		

Analyst	µg of Cyanide = [|Absorb. of Blank - Absorb. of Inst. Blank| - (Y-Intercept)] / Slope Value
J. KNIGHT	µg/mL of Cyanide = µg Cyanide * Digest Dilution Factor / SS (mL)
Date	0.19 Hea 3-15-96
03/15/96	Detection Limit = ~~0.055~~ µg Cyanide / SS (mL) * Digest Dilution Factor
Time	v RESULTS v

	Cyanide Concentration (µg/mL)	< Detection Limit	Detection Limit µg CN- / mL
Calibration Date			
02/23/96			~~1.10E-02~~ 3.8e-2 Hea 3.15

Data Entry by:	RTS	Date:	03/15/96
Approved by:	J Anastas	Date:	3-15-96

Form 695102C1 Rev. 1.7

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		NA	STANDARD
STANDARD	Standard Aliquot in mL		0.250
Workbook	Diluent + Standard Volume		25.00
6574	Diluted Standard in mL to be Analyzed		0.500
Lot Code	True Value CN- Concentration (µg/mL)		915
CN-01	Absorbance of Blank		0.004
Matrix	Absorbance of Standard		0.667
LIQUID	Y-Intercept Value		0.000194
Standard	Slope Value		0.143424
STD/71N8G	µg of CN in Standard		4.621
Analyst Code			
301			
Analyst			
J.KNIGHT			
Date	µg of CN-/mL in Standard		924
03/15/96			
Time	Standard % Recovery		101.0%
Calibration Date	Slope and Y-Intercept calculated from working curve calibration		
02/23/96	Original Sample Calculation from Form 695102C1		

µg of CN- in Sample+Spike = [(Absorbance of Sample+Spike - Absorbance of Blank) - (Y-Intercept)] / Slope Value
µg/mL of CN- = µg of CN- in Standard / Diluted Standard * Dilution Factor
Dilution Factor = Flask Volume / Standard Aliquot
Standard % Recovery = (µg of CN-/mL in Standard / True Value CN- Concentration (µg/mL)) * 100

Data Entry by:	RTS	Date:	03/15/96
Approved by:	H Anastn	Date:	3-15-96

Form X2 Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
SOLID	Sample Weight in grams (SS)	0.39650
Work Unit	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6574	Aliquot Analyzed from Dissolution (A)	1.00000
Test Code	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.004
Matrix	Absorbance of Sample	0.251
SOLID	Y-Intercept Value	0.000194
Sample	Slope Value	0.143424
S95T004137	µg of Cyanide	1.721
Analytical Method	µg CN- /g	2.17E+01
301		
Analyst	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
J. KNIGHT	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
Date		
03/15/96	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
Time	v RESULTS v	
	Cyanide Concentration (µg/g) 2.17E+01	Detection Limit
Calibration Date		µg CN- / g
02/23/96		2.40E+00

Data Entry by:	RTS	Date:	03/15/96
Approved by:	[illegible]	Date:	3-15-96

Form 695102C1 Rev. 1.7

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
SOLID	Sample Weight in grams (SS)	0.41230
	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6574	Aliquot Analyzed from Dissolution (A)	1.00000
	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.004
	Absorbance of Sample	0.244
SOLID	Y-Intercept Value	0.000194
	Slope Value	0.143424
S95T004137/DUP	µg of Cyanide	1.672
	µg CN- /g	2.03E+01
301		
	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
J. KNIGHT	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
03/15/96	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
	v RESULTS v	
	Cyanide Concentration (µg/g) 2.03E+01	Detection Limit µg CN- / g
		2.30E+00
02/23/96		

Data Entry by:	RTS	Date:	03/15/96
Approved by:	H Anastas	Date:	3.15.96

Form 695102C1 Rev. 1.7

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		SPIKE	NA
SPIKE	Spike Aliquot in mL	0.250	
	Diluent + Spike Standard Volume	25.00	
6574	Diluted Spike Standard in mL	0.250	
	True Value CN- Concentration (µg/mL)	915	
CN-01	Absorbance of Blank	0.004	
Matrix	Absorbance of Sample+Spike	0.553	
SOLID	Y-Intercept Value	0.000194	
	Slope Value	0.143424	
S95T004137	µg of CN- in Sample+Spike	3.826	ERR
301			
	Known µg of CN- in Original Sample	1.7210	
J.KNIGHT			
	µg of CN- in Spike	2.2875	
03/15/96			
	Spike % Recovery	92.0%	
	Slope and Y-Intercept calculated from working curve calibration		
02/23/96	Original Sample Calculation from Form 695102C1		

µg of CN- in Sample (Correced) = Known µg of CN- in Original Sample * g of Sample in Spike / g Used in Original Sample
µg of CN- in Sample+Spike = [(Absorbance of Sample+Spike - Absorbance of Blank) - (Y-Intercept)] / Slope Value
µg of CN- in Spike = LMCS Value (ppm) / Dilution Factor * Diluted Spike Standard
Dilution Factor = Spike Dilution Volume / Spike Aliquot
Spike % Recovery = (µg of CN- in Sample+Spike) - (µg of CN- in Sample) / (µg of CN- in Spike) * 100%

Data Entry by:	RTS	Date:	03/15/96
Approved by:	HWaston	Date:	3-15-96

Form X2 Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
Type: SOLID	Sample Weight in grams (SS)	0.48050
Work List: 6574	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
	Aliquot Analyzed from Dissolution (A)	1.00000
Test Code: CN-01	Dilution Factor (DF)	1.000
	Absorbance of Blank	0.004
Matrix: SOLID	Absorbance of Sample	0.289
	Y-Intercept Value	0.000194
Sample #: S95T004139	Slope Value	0.143424
	µg of Cyanide	1.986
Instrument Code: 301	µg CN- /g	2.07E+01
Analyst: J. KNIGHT	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
Date: 03/15/96	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
Time:	v RESULTS v	
	Cyanide Concentration (µg/g)	2.07E+01
Calibration Date: 02/23/96		Detection Limit µg CN- / g: 1.98E+00

Data Entry by:	RTS	Date:	03/15/96
Approved by:	HAnastn	Date:	3-15-96

Form 695102C1 Rev. 1.7

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

Type		SAMPLE
SOLID	Sample Weight in grams (SS)	0.37990
Work List	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6514	Aliquot Analyzed from Dissolution (A)	1.00000
Test Code	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.004
Matrix	Absorbance of Sample	0.232
SOLID	Y-Intercept Value	0.000194
Sample #	Slope Value	0.143424
S95T004139/DUP	µg of Cyanide	1.588
Instrument Code	µg CN- /g	2.09E+01
301		
Analyst	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
J. KNIGHT	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
Date		
03/15/96	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
Time	v RESULTS v	
	Cyanide Concentration (µg/g)	2.09E+01
Calibration Date		
02/23/96		

Detection Limit µg CN- / g
2.50E+00

Data Entry by:	RTS	Date:	03/15/96
Approved by:	H Anastn	Date:	3-15-96

Form 695102C1 Rev. 1.7

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		SPIKE	NA
SPIKE	Spike Aliquot in mL	0.250	
	Diluent + Spike Standard Volume	25.00	
6579	Diluted Spike Standard in mL	0.250	
	True Value CN- Concentration (µg/mL)	915	
CN-01	Absorbance of Blank	0.004	
	Absorbance of Sample+Spike	0.577	
SOLID	Y-Intercept Value	0.000194	
	Slope Value	0.143424	
S95T004139	µg of CN- in Sample+Spike	3.994	ERR
301			
	Known µg of CN- in Original Sample	1.9860	
J.KNIGHT			
	µg of CN- in Spike	2.2875	
03/15/96			
	Spike % Recovery	87.8%	
	Slope and Y-Intercept calculated from working curve calibration		
02/23/96	Original Sample Calculation from Form 695102C1		

µg of CN- in Sample (Correced) = Known µg of CN- in Original Sample * g of Sample in Spike / g Used in Original Sample
µg of CN- in Sample+Spike = [(Absorbance of Sample+Spike - Absorbance of Blank) - (Y-Intercept)] / Slope Value
µg of CN- in Spike = LMCS Value (ppm) / Dilution Factor * Diluted Spike Standard
Dilution Factor = Spike Dilution Volume / Spike Aliquot
Spike % Recovery = (µg of CN- in Sample+Spike) - (µg of CN- in Sample) / (µg of CN- in Spike) * 100%

Data Entry by:	RTS	Date:	03/15/96
Approved by:	HAnastn	Date:	3-15-96

Form X2 Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		NA	STANDARD
Type			
STANDARD	Standard Aliquot in mL		0.250
Work List	Diluent + Standard Volume		25.00
6574	Diluted Standard in mL to be Analyzed		0.500
Test Code	True Value CN- Concentration (µg/mL)		915
CN-01	Absorbance of Blank		0.001
Matrix	Absorbance of Standard		0.749
SOLID	Y-Intercept Value		0.007237
Sample #	Slope Value		0.147420
CCV/71N8G	µg of CN in Standard		5.025
Instrument Code			
301			
Analyst			
JTK			
Date	µg of CN-/mL in Standard		1005
03/15/96			
Time	Standard % Recovery		109.8%
Calibration Date	Slope and Y-Intercept calculated from working curve calibration		
02/25/96	Original Sample Calculation from Form 695102C1		

µg of CN- in Sample+Spike = [(Absorbance of Sample+Spike - Absorbance of Blank) - (Y-Intercept)] / Slope Value
µg/mL of CN- = µg of CN- in Standard / Diluted Standard * Dilution Factor
Dilution Factor = Flask Volume / Standard Aliquot
Standard % Recovery = (µg of CN-/mL in Standard / True Value CN- Concentration (µg/mL)) * 100

Data Entry by:	HLA	Date:	03/15/96
Approved by:	H Anastn	Date:	3-15-96

Form X2 Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

Type		SAMPLE
BLANK		
Work Unit		
6574	Blank Aliquot in mL (SS)	5.00000
Test Code	Absorbance of Instrument Blank	0.000
CN-01	Absorbance of Blank (Reagent, Prep)	0.001
Matrix	Digest Dilution Factor	1
LIQUID	Y-Intercept Value	0.007237
Sample #	Slope Value	0.147420
CCB/BLANK	µg of Cyanide	-0.042
Instrument Code	µg CN- /mL	-8.46E-03
301		
Analyst	µg of Cyanide = [|Absorb. of Blank - Absorb. of Inst. Blank| - (Y-Intercept)] / Slope Value	
J. KNIGHT	µg/mL of Cyanide = µg Cyanide * Digest Dilution Factor / SS (mL)	
Date		
03/15/96	Detection Limit = 0.055 µg Cyanide / SS (mL) * Digest Dilution Factor	
Time	v RESULTS v	

	Cyanide Concentration (µg/mL)	< Detection Limit	Detection Limit µg CN- / mL
Calibration Date			
02/25/96			1.10E-02

Data Entry by: RTS Date: 03/15/96

Approved by: H Anastor Date: 3-15-96

Form 695102C1 Rev. 1.7

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

LABCORE Data Entry Template for Worklist# 6311

Analyst: KRM **Instrument:** CN01 **Book #** 71U8G

Method: LA-695-103 Rev/Mod A-0

Worklist Comment: AN-102 CN.mjl

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				CN-01	SOLID	1	<1.10 e-2	N/A	ug/g
		2	STD				CN-01	SOLID	915	917	N/A	ug/g
95000222	AN-102 GRAB	3	SAMPLE	S95T004137	0		CN-01	SOLID	N/A	2.67 e1	9.58	ug/g
95000222	AN-102 GRAB	4	DUP	S95T004137	0		CN-01	SOLID	2.67 e1	2.63 e1	N/A	ug/g
95000222	AN-102 GRAB	5	SPK	S95T004137	0		CN-01	SOLID	100	60.3	N/A	ug/g
95000222	AN-102 GRAB	6	SAMPLE	S95T004139	0		CN-01	SOLID	N/A	2.61 e1	7.91	ug/g
95000222	AN-102 GRAB	7	DUP	S95T004139	0		CN-01	SOLID	261 e1	2.75 e1	N/A	ug/g
95000222	AN-102 GRAB	8	SPK	S95T004139	0		CN-01	SOLID	100	79.0	N/A	ug/g
		9	CCV				CN-01	SOLID	915	903	N/A	ug/g
		10	CCB				CN-01	SOLID	1	<1.10 e-2	N/A	ug/g

Final page for worklist # 6311

See Attached sheet for sig
Analyst Signature **Date**

Rev. 1# 12249

RWS 3/12/96
Analyst Signature **Date**

Reviewed RW Schroeder 3/13/96
Results rejected
RWS 3/13/96

DATA NOT USED IN PACKAGE

Data Entry Comments: Analyzed in incorrect matrix. Reanalysis in H_2O is requested. Spike recoveries were unacceptable.
Robt W Schroeder 3/13/9

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# 6311

Analyst: KRM **Instrument:** CN01 **Book #** 71/N8G

Method: LA-695-103 Rev/Mod A.0

Worklist Comment: AN-102 CN.mjl

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				CN-01	SOLID	1	<110e-2	N/A	ug/g
		2	STD				CN-01	SOLID		917	N/A	ug/g
95000222	AN-102 GRAB	3	SAMPLE	S95T004137	0		CN-01	SOLID	N/A	1.33e+2	4.79e1	ug/g
95000222	AN-102 GRAB	4	DUP	S95T004137	0		CN-01	SOLID	1.33e2	1.32e2	N/A	ug/g
95000222	AN-102 GRAB	5	SPK	S95T004137	0		CN-01	SOLID	100	60.3	N/A	ug/g
95000222	AN-102 GRAB	6	SAMPLE	S95T004139	0		CN-01	SOLID	N/A	1.30e2	3.95e1	ug/g
95000222	AN-102 GRAB	7	DUP	S95T004139	0		CN-01	SOLID	1.30e2	1.37e2	N/A	ug/g
95000222	AN-102 GRAB	8	SPK	S95T004139	0		CN-01	SOLID	100	79.0	N/A	ug/g
		9	CCV				CN-01	SOLID		903	N/A	ug/g
		10	CCB				CN-01	SOLID	1	<110e-2	N/A	ug/g

RJ Stark 3/12/96

Final page for worklist # 6311

3-9-96

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.

CN: LA-695-102 (C-0)

Matrix: Liquid / Solid

Worklist #	Analyst	Analysis Date & Time	Instrument Code	Standard Id
6311	KRM	3-9-96	CN01 WA93252	7N8G

Sample#	Dissolution	Dilution	Sample Size (mL)	Abs.
1. LCS Standard	N/A	0.250mL to 25mL	0.500	.660
2. Reagent Blank	N/A	N/A	5	.002
3.	.3965 g to 5 mL EDTA/en		.250	.078
4. Duplicate	.4123 g to 5 mL EDTA/en		.250	.080
5. Spike	Same as #3	Same as #3 0.250mL Std	.250	.276
6.	.4805 g to 5 mL EDTA/en		.250	.092
7. Duplicate	.3799 g to 5 mL EDTA/en		.250	.077
8. Spike	Same as #6	Same as #6 0.250mL Std	.250	.351
9. CCV	N/A	0.250mL to 25mL	0.500	.674
10. CCB	N/A	N/A	5	.001

Comments: Spec 301

DATA NOT USED IN PACKAGE

226

WHC-SD-WM-DP-165, REV. 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER WHC-SD-WM-DP-165, REV I

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
Type		
BLANK		
Work List		
6311	Blank Aliquot in mL (SS)	5.00000
Test Code	Absorbance of Instrument Blank	0.000
CN-01	Absorbance of Blank (Reagent, Prep)	0.002
Matrix	Digest Dilution Factor	1
LIQUID	Y-Intercept Value	0.000194
Sample	Slope Value	0.143424
BLNK	µg of Cyanide	0.013
Instrument Code	µg CN- /mL	2.52E-03
301		

Analyst: K.MONTEITH

µg of Cyanide = [|Absorb. of Blank - Absorb. of Inst. Blank| - (Y-Intercept)] / Slope Value
µg/mL of Cyanide = µg Cyanide * Digest Dilution Factor / SS (mL)

Date: 03/09/96

Detection Limit = 0.055 µg Cyanide / SS (mL) * Digest Dilution Factor

Time:

v RESULTS v

	Cyanide Concentration (µg/mL)	< Detection Limit	Detection Limit µg CN- / mL
Calibration Date			
02/23/96			1.10E-02

Data Entry by:	RTS	Date:	03/12/96
Approved by:	RW Schroeder	Date:	3/13/96

Form 695102C1 Rev. 1.7

DATA NOT USED IN PACKAGE

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		NA	STANDARD
STANDARD	Standard Aliquot in mL		0.250
	Diluent + Standard Volume		25.00
6311	Diluted Standard in mL to be Analyzed		0.500
	True Value CN- Concentration (µg/mL)		915
CN-01	Absorbance of Blank		0.002
	Absorbance of Standard		0.660
LIQUID	Y-Intercept Value		0.000194
	Slope Value		0.143424
STD/71N8G	µg of CN in Standard		4.586
301			
K. MONTEITH			
	µg of CN-/mL in Standard		917
03/09/96			
	Standard % Recovery		100.3%
	Slope and Y-Intercept calculated from working curve calibration		
02/23/96	Original Sample Calculation from Form 695102C1		

DATA NOT USED IN PACKAGE

µg of CN- in Sample+Spike = [(Absorbance of Sample+Spike - Absorbance of Blank) - (Y-Intercept)] / Slope Value
µg/mL of CN- = µg of CN- in Standard / Diluted Standard * Dilution Factor
Dilution Factor = Flask Volume / Standard Aliquot
Standard % Recovery = (µg of CN-/mL in Standard / True Value CN- Concentration (µg/mL)) * 100

Data Entry by:	RTS	Date:	03/12/96
Approved by:	RW Schroeder	Date:	3/13/96

Form X2 Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER WHC-SD-WM-DP-165, REV. I

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
SOLID	Sample Weight in grams (SS)	0.39650
Work List	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6311	Aliquot Analyzed from Dissolution (A)	0.25000
Test Code	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.002
Matrix	Absorbance of Sample	0.078
SOLID	Y-Intercept Value	0.000194
Sample #	Slope Value	0.143424
S95T004137	µg of Cyanide	0.529
Instrument Method	µg CN- /g	2.67E+01
301		
Analyst	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
K.MONTEITH	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
Date		
03/09/96	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
Comments	v RESULTS v	
	Cyanide Concentration (µg/g)	2.67E+01
Calibration Date		
02/23/96		

Detection Limit µg CN- / g
9.58E+00

Data Entry by: RTS Date: 03/12/96

Approved by: RW Schroeder Date: 3/13/96

Form 695102C1 Rev. 1.7

DATA NOT USED IN PACKAGE

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
Type		
SOLID	Sample Weight in grams (SS)	0.41230
Work List	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6311	Aliquot Analyzed from Dissolution (A)	0.25000
Test Code	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.002
Matrix	Absorbance of Sample	0.08
SOLID	Y-Intercept Value	0.000194
Sample	Slope Value	0.143424
S95T004137/DUP	µg of Cyanide	0.542
Instrument Code	µg CN- /g	2.63E+01
301		
Analyst	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
K.MONTEITH	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
Date		
03/09/96	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
Time	v RESULTS v	
	Cyanide Concentration (µg/g)	2.63E+01
Calibration Date		
02/23/96		

Detection Limit µg CN- / g
9.22E+00

Data Entry by: RTS Date: 03/12/96

Approved by: RW Schroeder Date: 3/13/96

Form 695102C1 Rev. 1.7

DATA NOT USED IN PACKAGE

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		SPIKE	NA
Type			
SPIKE	Spike Aliquot in mL	0.250	
Work List	Diluent + Spike Standard Volume	25.00	
6311	Diluted Spike Standard in mL	0.250	
Test Code	True Value CN- Concentration (µg/mL)	915	
CN-01	Absorbance of Blank	0.002	
Matrix	Absorbance of Sample+Spike	0.276	
SOLID	Y-Intercept Value	0.000194	
Sample	Slope Value	0.143424	
S95T004137	µg of CN- in Sample+Spike	1.909	
Instrument Code			
301			
Analyst	Known µg of CN- in Original Sample	0.5290	
K.MONTEITH			
Date	µg of CN- in Spike	2.2875	
03/09/96			
Value	Spike % Recovery	60.3%	
Calibration Date	Slope and Y-Intercept calculated from working curve calibration		
02/23/96	Original Sample Calculation from Form 695102C1		

DATA NOT USED IN PACKAGE

µg of CN- in Sample (Correced) = Known µg of CN- in Original Sample * g of Sample in Spike / g Used in Original Sample
µg of CN- in Sample+Spike = [(Absorbance of Sample+Spike - Absorbance of Blank) - (Y-Intercept)] / Slope Value
µg of CN- in Spike = LMCS Value (ppm) / Dilution Factor * Diluted Spike Standard
Dilution Factor = Spike Dilution Volume / Spike Aliquot
Spike % Recovery = (µg of CN- in Sample+Spike) - (µg of CN- in Sample) / (µg of CN- in Spike) * 100%

Data Entry by:	RTS	Date:	03/12/96
Approved by:	RW Schroeder	Date:	3/13/96

Form X2 Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER WHC-SD-WM-DP-165, REV. I

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

Type		SAMPLE
SOLID	Sample Weight in grams (SS)	0.48050
Work Unit	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6311	Aliquot Analyzed from Dissolution (A)	0.25000
Test Code	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.002
Matrix	Absorbance of Sample	0.092
SOLID	Y-Intercept Value	0.000194
Sample #	Slope Value	0.143424
S95T004139	µg of Cyanide	0.626
Instrument Code	µg CN- /g	2.61E+01
301		
Analyst	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
K.MONTEITH	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
Date		
03/09/96	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
Time	v RESULTS v	
	Cyanide Concentration (µg/g)	2.61E+01
Calibration Date		
02/23/96		

Detection Limit µg CN- / g
7.91E+00

Data Entry by: RTS Date: 03/12/96

Approved by: RW Schroeder Date: 3/13/96

Form 695102C1 Rev. 1.7

DATA NOT USED IN PACKAGE

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
SOLID	Sample Weight in grams (SS)	0.37990
Work List	Dissolution Volume (EDTA/en + sample) in mL (DV)	5.00000
6311	Aliquot Analyzed from Dissolution (A)	0.25000
Test Code	Dilution Factor (DF)	1.000
CN-01	Absorbance of Blank	0.002
Matrix	Absorbance of Sample	0.077
SOLID	Y-Intercept Value	0.000194
Sample ID	Slope Value	0.143424
S95T004139/DUP	µg of Cyanide	0.522
Instrument Code	µg CN- /g	2.75E+01
301		
Analyst	µg of Cyanide = [(Absorb. of Sample - Absorb. of Blank) - (Y-Intercept)] / Slope Value	
K.MONTEITH	µg/g of Cyanide = (µg Cyanide / A) * (DV / SS (g)) * DF	
Date		
03/09/96	Detection Limit = (0.19 µg Cyanide / A) * (DV / SS) * DF	
Time	v RESULTS v	
	Cyanide Concentration (µg/g)	2.75E+01
Calibration Date		
02/23/96		

Detection Limit µg CN- / g
1.00E+01

Data Entry by: KTS Date: 03/12/96

Approved by: Ru Schroeder Date: 3/13/96

Form 695102C1 Rev. 1.7

DATA NOT USED IN PACKAGE

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		SPIKE	NA
Type			
SPIKE	Spike Aliquot in mL	0.250	
Worklist	Diluent + Spike Standard Volume	25.00	
6311	Diluted Spike Standard in mL	0.250	
Test Code	True Value CN- Concentration (µg/mL)	915	
CN-01	Absorbance of Blank	0.002	
Matrix	Absorbance of Sample+Spike	0.351	
SOLID	Y-Intercept Value	0.000194	
Sample	Slope Value	0.143424	
S95T004139	µg of CN- in Sample+Spike	2.432	
Instrument Code			
301			
Analyst	Known µg of CN- in Original Sample	0.6260	
K.MONTEITH			
Date	µg of CN- in Spike	2.2875	
03/09/96			
Spike % Recovery	Spike % Recovery	79.0%	
Calibration Date	Slope and Y-Intercept calculated from working curve calibration		
02/23/96	Original Sample Calculation from Form 695102C1		

DATA NOT USED IN PACKAGE

µg of CN- in Sample (Correced) = Known µg of CN- in Original Sample * g of Sample in Spike / g Used in Original Sample
µg of CN- in Sample+Spike = [(Absorbance of Sample+Spike - Absorbance of Blank) - (Y-Intercept)] / Slope Value
µg of CN- in Spike = LMCS Value (ppm) / Dilution Factor * Diluted Spike Standard
Dilution Factor = Spike Dilution Volume / Spike Aliquot
Spike % Recovery = (µg of CN- in Sample+Spike) - (µg of CN- in Sample) / (µg of CN- in Spike) * 100%

Data Entry by:	BTS	Date:	03/12/96
Approved by:	DW Schroeder	Date:	3/13/96

Form X2 Rev. 1.0

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) BLANK, LIQUID, SOLID

		SAMPLE
BLANK		
6311	Blank Aliquot in mL (SS)	5.00000
	Absorbance of Instrument Blank	0.000
CN-01	Absorbance of Blank (Reagent, Prep)	0.001
	Digest Dilution Factor	1
LIQUID	Y-Intercept Value	0.007237
	Slope Value	0.147420
CCB	µg of Cyanide	-0.042
	µg CN- /mL	-8.46E-03
301		
	µg of Cyanide = [|Absorb. of Blank - Absorb. of Inst. Blank| - (Y-Intercept)] / Slope Value	
K.MONTEITH	µg/mL of Cyanide = µg Cyanide * Digest Dilution Factor / SS (mL)	
03/09/96	Detection Limit = 0.055 µg Cyanide / SS (mL) * Digest Dilution Factor	
	v RESULTS v	
	Cyanide Concentration (µg/mL)	< Detection Limit	Detection Limit µg CN- / mL
02/25/96			1.10E-02

Data Entry by: RTS Date: 03/12/96

Approved by: RW Schroeder Date: 3/13/96

Form 695102C1 Rev. 1.7

DATA NOT USED IN PACKAGE

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

CN- DETERMINATION : LA-695-102 (E-0) SPIKE, STANDARD

		NA	STANDARD
STANDARD	Standard Aliquot in mL		0.250
	Diluent + Standard Volume		25.00
6311	Diluted Standard in mL to be Analyzed		0.500
	True Value CN- Concentration (µg/mL)		915
CN-01	Absorbance of Blank		0.001
	Absorbance of Standard		0.674
LIQUID	Y-Intercept Value		0.007237
	Slope Value		0.147420
CCV	µg of CN in Standard		4.516
301			
K. MONTEITH			
	µg of CN-/mL in Standard		903
03/09/96			
	Standard % Recovery		98.7%
	Slope and Y-Intercept calculated from working curve calibration		
02/25/96	Original Sample Calculation from Form 695102C1		

DATA NOT USED IN PACKAGE

µg of CN- in Sample+Spike = [(Absorbance of Sample+Spike - Absorbance of Blank) - (Y-Intercept)] / Slope Value
µg/mL of CN- = µg of CN- in Standard / Diluted Standard * Dilution Factor
Dilution Factor = Flask Volume / Standard Aliquot
Standard % Recovery = (µg of CN-/mL in Standard / True Value CN- Concentration (µg/mL)) * 100

Data Entry by:	RTS	Date:	03/12/96
Approved by:	Rw Schroeder	Date:	3/13/96

Form X2 Rev. 1.0

LABCORE Completed Worklist Report for Worklist# 5008

Analyst: vlm **Instrument:** IC03 **Book#** 122N9E

Method: LA-533-105 Rev/Mod D-1

Worklist Comment: AN102 FOR IC RTS

Seq	Type	Sample#	R	A	Test		Matrix	Actual		Found	DL or Yield	Unit
1	CCB			0	@IC-QC	F	QC	1		<1.30e-2		ug/mL
1	CCB			0	@IC-QC	CL	QC	1		<1.70e-2		ug/mL
1	CCB			0	@IC-QC	NO2	QC	1		<1.07e-1		ug/mL
1	CCB			0	@IC-QC	BR	QC	1		<1.26e-1		ug/mL
1	CCB			0	@IC-QC	NO3	QC	1		<1.40e-1		ug/mL
1	CCB			0	@IC-QC	PO4	QC	1		<1.19e-1		ug/mL
1	CCB			0	@IC-QC	SO4	QC	1		<1.36e-1		ug/mL
1	CCB			0	@IC-QC	OXALATE2	QC	1		<1.05e-1		ug/mL
2	CCV			0	@IC-QC	F	QC	59		5.30e+01	89.830	% Recovery
2	CCV			0	@IC-QC	CL	QC	79		7.53e+01	95.320	% Recovery
2	CCV			0	@IC-QC	NO2	QC	534		5.01e+02	93.820	% Recovery
2	CCV			0	@IC-QC	BR	QC	575		5.27e+02	91.650	% Recovery
2	CCV			0	@IC-QC	NO3	QC	614		5.83e+02	94.950	% Recovery
2	CCV			0	@IC-QC	PO4	QC	546		5.25e+02	96.150	% Recovery
2	CCV			0	@IC-QC	SO4	QC	631		5.84e+02	92.550	% Recovery
2	CCV			0	@IC-QC	OXALATE2	QC	526		4.84e+02	92.020	% Recovery
3	SAMPLE	S95T003867		0	@IC-01	F-02	LIQUID	N/A	<	1.326e+02	132.600	ug/mL
3	SAMPLE	S95T003867		0	@IC-01	CL-02	LIQUID	N/A		2.976e+03	173.400	ug/mL
3	SAMPLE	S95T003867		0	@IC-01	NO2-02	LIQUID	N/A		6.035e+04	1.092e+003	ug/mL
3	SAMPLE	S95T003867		0	@IC-01	NO3-02	LIQUID	N/A		1.632e+05	1.428e+003	ug/mL
3	SAMPLE	S95T003867		0	@IC-01	PO4-02	LIQUID	N/A		3.526e+03	1.224e+003	ug/mL
3	SAMPLE	S95T003867		0	@IC-01	SO4-02	LIQUID	N/A		1.048e+04	1.387e+003	ug/mL
4	DUP	S95T003867		0	@IC-01	F-02	LIQUID	<1.33e2		<1.33e2		RPD
4	DUP	S95T003867		0	@IC-01	CL-02	LIQUID	2.98e+03		3.32e+03	10.790	RPD
4	DUP	S95T003867		0	@IC-01	NO2-02	LIQUID	6.04e+04		7.14e+04	16.690	RPD
4	DUP	S95T003867		0	@IC-01	NO3-02	LIQUID	1.63e+05		1.93e+05	16.850	RPD
4	DUP	S95T003867		0	@IC-01	PO4-02	LIQUID	3.53e+03		4.15e+03	16.150	RPD
4	DUP	S95T003867		0	@IC-01	SO4-02	LIQUID	1.05e+04		1.22e+04	14.980	RPD
5	SPK	S95T003867		0	@IC-01	F-02	LIQUID	100		155.1	155.100	% Recovery
5	SPK	S95T003867		0	@IC-01	CL-02	LIQUID	100		90.5	90.500	% Recovery
5	SPK	S95T003867		0	@IC-01	NO2-02	LIQUID	100		101.9	101.900	% Recovery
5	SPK	S95T003867		0	@IC-01	NO3-02	LIQUID	100		108.2	108.200	% Recovery
5	SPK	S95T003867		0	@IC-01	PO4-02	LIQUID	100		94.1	94.100	% Recovery
5	SPK	S95T003867		0	@IC-01	SO4-02	LIQUID	100		91.8	91.800	% Recovery
6	SAMPLE	S95T003868		0	@IC-01	F-02	LIQUID	N/A	<	1.326e+02	132.600	ug/mL
6	SAMPLE	S95T003868		0	@IC-01	CL-02	LIQUID	N/A		4.719e+03	173.400	ug/mL
6	SAMPLE	S95T003868		0	@IC-01	NO2-02	LIQUID	N/A		1.044e+05	1.092e+003	ug/mL
6	SAMPLE	S95T003868		0	@IC-01	NO3-02	LIQUID	N/A		2.827e+05	1.428e+003	ug/mL
6	SAMPLE	S95T003868		0	@IC-01	PO4-02	LIQUID	N/A		6.225e+03	1.224e+003	ug/mL
6	SAMPLE	S95T003868		0	@IC-01	SO4-02	LIQUID	N/A		1.684e+04	1.387e+003	ug/mL
7	DUP	S95T003868		0	@IC-01	F-02	LIQUID	<1.33e2		<1.33e2		RPD

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

LABCORE Completed Worklist Report for Worklist# 5008

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
7	DUP	S95T003868	0		@IC-01	CL-02	LIQUID	4.72e+03	4.88e+03	3.330	RPD
7	DUP	S95T003868	0		@IC-01	NO2-02	LIQUID	1.04e+05	1.10e+05	2.420	RPD
7	DUP	S95T003868	0		@IC-01	NO3-02	LIQUID	2.83e+05	2.99e+05	5.500	RPD
7	DUP	S95T003868	0		@IC-01	PO4-02	LIQUID	6.22e+03	5.99e+03	3.770	RPD
7	DUP	S95T003868	0		@IC-01	SO4-02	LIQUID	1.68e+04	1.74e+04	3.510	RPD

Comments Section:

Comments for sample# S95T003867 **and test** @IC-01 .
Spike on upload wrong will be fixed matrix interference on F

Final page for worklist# 5008

Analyst Signature **Date**

Analyst Signature **Date**

Jann Lange 3/20/96
Reviewer Signature **Date**

Spike calculations in the automatic data upload were incorrect. The correct calculations are on the forms on pages 240 and 241.

A matrix interference on F⁻ caused the high spike recovery result.

RD Eck
3/20/96

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

96 G21501. D01-> D08

LABCORE Data Entry Template for Worklist# 5008

Analyst: VLM **Instrument:** IC01 IC03 **Book#** 122N9-E

Method: LA-533-105 Rev/Mod ~~X~~ D-1 VM 02-15-96

Worklist Comment: AN102 FOR IC RTS

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S95T003867	0		@IC-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:				CL-02 , F-02 , NO2-02 , NO3-02 , PO4-02 , SO4-02			
4	DUP	S95T003867	0		@IC-01	LIQUID		
5	SPK	S95T003867	0		@IC-01	LIQUID		
6	SAMPLE	S95T003868	0		@IC-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:				CL-02 , F-02 , NO2-02 , NO3-02 , PO4-02 , SO4-02			
7	DUP	S95T003868	0		@IC-01	LIQUID		

Final page for worklist # 5008

Valerie Massey 02-~~15~~ VM 02-15-96 15-96

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

Exported in shell

Uploaded [illegible]

Spike [illegible] actual [illegible]

Data Entry Comments:

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
INORGANIC ANALYTICAL BATCH AND SUMMARY SHEET

ANION ANALYSIS ON DIONEX

SAMPLE #:	S95T003867 &		
TEST CODE:	@ic-01	ANALYST:	VL Massie
INSTRUMENT:	IC03	ANALYSIS DATE:	02/15/96
WORK LIST #:	5008	SAMPLE POINT:	An-102
BATCH ID:		SAMPLE PREP:	direct

Result Units µg/mL	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
122n9e								
S95T003867	<132.61	2.98E+03	6.04E+04	1.63E+05	3.53E+03	1.05E+04	<1285.33	<1071.11
	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 1 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S95T003867spk	155.1%	90.5%	101.9%	108.2%	94.1%	91.8%	90.4%	91.3%

NARRATIVE: **Analyst Comments:**

Chemist Comments:

Spike calculation

Raw data for calculations can be found on pages 247 (sample) and 249 (spike).

[illegible] 3/20/96

Form Completed By:	[illegible]	Date:	[illegible]
Chemist Approval:	[illegible]	Date:	[illegible]

LAB LEADER INFO	
Method:	LA-533106 d-1
Matrix:	liquid
Test Code:	@ic-01
Work List #:	5008
Batch #:	
Result Units	
(µg/g or µg/mL):	µg/mL
Spike Book Number:	122n9e
Spike Sample #:	1
Prepared By:	Jann Frye
Prepared Date:	03/07/96
Chemist:	Jann Frye
Analyst:	VL Massie
Analysis Date:	02/15/96
Time Complete:	
Instrument Code:	IC03
Rerun:	0
Sample Prep:	direct
Sample Point:	An-102
Sample Type	
STANDARD	122n9e
SAMPLE 1	S95T003867
DUPLICATE 1	
SAMPLE 2	
DUPLICATE 2	
SAMPLE 3	
DUPLICATE 3	
SAMPLE 4	
DUPLICATE 4	
SPIKE	S95T003867spk
SPIKE DUPLICATE	

PRINT

TECH INFO

	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Blank Data (µg/mL)								
Standard Data (µg/mL)								
Sample 1 Data (µg/mL)	<.013	2.98E+03	6.04E+04	1.63E+05	3.63E+03	1.05E+04	<.126	<.105
Sample 1 Dilution Factor	10201	10201	10201	10201	10201	10201	10201	10201
Sample 1 Prep DF	1	1	1	1	1	1	1	1
Duplicate 1 Data (µg/mL)								
Duplicate 1 Dilution Factor								
Duplicate 1 Prep DF								
Sample 2 Data (µg/mL)								
Sample 2 Dilution Factor								
Sample 2 Prep DF								
Duplicate 2 Data (µg/mL)								
Duplicate 2 Dilution Factor								
Duplicate 2 Prep DF								
Sample 3 Data (µg/mL)								
Sample 3 Dilution Factor								
Sample 3 Prep DF								
Duplicate 3 Data (µg/mL)								
Duplicate 3 Dilution Factor								
Duplicate 3 Prep DF								
Sample 4 Data (µg/mL)								
Sample 4 Dilution Factor								
Sample 4 Prep DF								
Duplicate 4 Data (µg/mL)								
Duplicate 4 Dilution Factor								
Duplicate 4 Prep DF								
Spike + Sample 1 (µg/mL)	9.24E+03	1.02E+04	1.15E+05	2.30E+05	5.54E+04	6.90E+04	5.25E+04	4.85E+04
Spike + Dup 1 (µg/mL)								
Spike Volume (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
Total Volume (mL)	10.10	10.10	10.10	10.10	10.10	10.10	10.10	10.10
Std. Conc. (µg/mL)	59	79	534	614	546	631	575	526
Detection Limit	0.013	0.017	0.107	0.140	0.119	0.136	0.126	0.105
Matrix Detection Limit 1	1.33E+02	1.73E+02	1.09E+03	1.43E+03	1.21E+03	1.39E+03	1.29E+03	1.07E+03
Matrix Detection Limit 2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Matrix Detection Limit 3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Matrix Detection Limit 4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Spike Recovery = [((Spike+Sample)-(Sample)*(Total Volume))/((Spike Vol.)*(Spike Std.)*(Sample DF))]*100%
Note: (For spike recovery when the sample conc. is less than detection limit you do NOT subtract sample conc.)
Duplicate Relative % Difference = ((Sample - Duplicate) / ((Sample + Duplicate) / 2) * 100%)
Less than Values are Calculated from the Detection Limit*Dilution Factor

v RESULTS v	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Sample 1 in µg/mL	<132.61	2.98E+03	6.04E+04	1.63E+05	3.63E+03	1.05E+04	<1286.33	<1071.11
Duplicate 1 in µg/mL	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 1 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sample 2 in µg/mL	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 in µg/mL	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spike % Recovery	155.1%	90.5%	101.9%	108.2%	94.1%	91.8%	90.4%	91.3%

Data Entry by: Date: 03/07/96
Approved by: Date:
Form DIONEX.WB1 Rev. 1.3

A-0010-IC DATA FILE/WORKLIST RESOLUTION 07-Mar-96

Worklist#: 5008

	Seq	Type	Sample #
=>	1	CCB	
=>	2	CCV	
=>	3	SAMPLE	S95T003867
=>	4	DUP	S95T003867
=>	5	SPK	S95T003867
=>	6	SAMPLE	S95T003868
=>	7	DUP	S95T003868

Data File: 5008FEB.CSV

Seq#	Data File	Sample Name	Dilution
1	96021501.d01	INSTR BLANK	1.00
	96021501.d02	122N9-E STD	101.00
2	96021501.d03	122N9-E STD	101.00
3	96021501.d04	S95T003867 SAMPL	10201.00
4	96021501.d05	S95T003867 DUP	10201.00
5	96021501.d06	S95T003867 SPIKE	10201.00
6	96021501.d07	S95T003868 SAMPL	10201.00
7	96021501.d08	S95T003868 DUP	10201.00

Save(F4) Abort(Shift-F3) ListFiles(Shift-F1) UploadFile(F8)

A-0010-1 WORKLIST DATA ENTRY USING SODIUM::LIMS3 05-Mar-96

PROTOCOL DETAIL INFORMATION

Seq: 5 Type: SPK Sample#: S95T003867 Aliquot: Rep: 0

Code	Name	Actual		Raw Found		Found	Yield	Q
F-02	Fluoride-IC-Di	59	<	9242.56	<	1.33e2	225.424	N
CL-02	Chloride-IC-Di	79	<	10198.9	<	1.73e2	218.987	N
NO2-02	Nitrite-IC - D	534	<	115310	<	1.09e3	204.120	N
NO3-02	Nitrate-IC - D	614	<	230342	<	1.43e3	232.899	N
PO4-02	Phosphate-IC-D	546	<	55401.3	<	1.22e3	223.443	N
SO4-02	Sulfate by IC-	631	<	68984.4	<	1.39e3	220.285	N

<Alt-Enter> Clear from cursor/move to next <Tab> Move to next

QC Chart(F5) Defaults(F6) ClearRow(F7) Delete Row(F8) >

This will be fixed in QC follow. See ACE form for right values for Spike.

Data Reprocessed On 02/26/1996 15:14:26

Sample Name: INSTR BLANK
Data File : C:\DX\DATA\96021501.d01
Method : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 2 Inject#: 1
Analyst : Column:

Date: 02/15/1996 10:19:31

WHC-SD-WM-DP-165, REV. 1

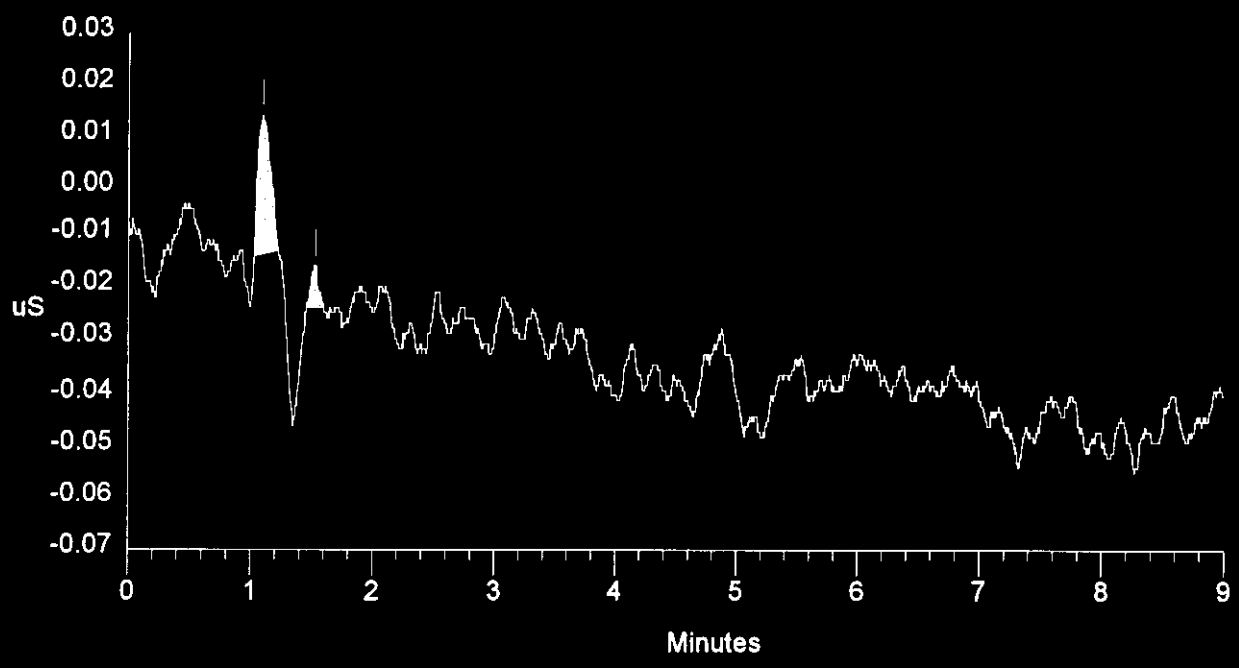
Detector:CDM-1

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	2700	5Hz	0.00	9.00		200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 96021501.d01 Sample: INSTR BLANK



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 244 TO 251

THIS PAGE WAS INTENTIONALLY LEFT BLANK

Data Reprocessed On 02/26/1996 15:14:30

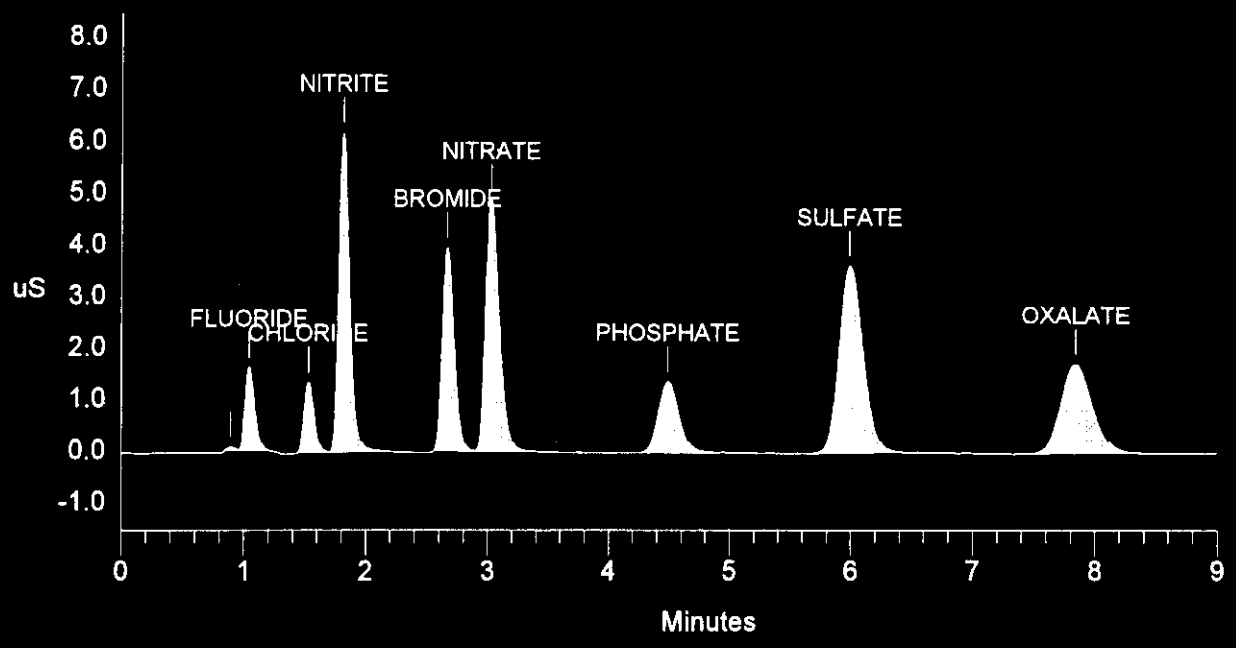
Sample Name: 122N9-E STD
Date: 02/15/1996 10:54:03
Data File : C:\DX\DATA\96021501.d03
Method : C:\DX\METHOD\ANIONS.MET
WHC-SD-WM-DP-165, REV. 1
ACI Address: 1 System: 2 Inject#: 3
Detector:CDM-1
Analyst : Column:

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	2700	5Hz	0.00	9.00		200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	54	208	2	
2	1.04	FLUORIDE	52.999	1589	8553	2	-1.57
3	1.53	CHLORIDE	75.324	1350	7509	1	-0.65
4	1.82	NITRITE	500.906	6177	37562	1	-0.18
5	2.67	BROMIDE	527.466	3964	26262	2	-0.74
6	3.03	NITRATE	582.880	4883	37956	2	-1.30
7	4.49	PHOSPHATE	525.343	1382	16023	1	-1.54
8	5.99	SULFATE	583.513	3646	49191	1	-1.96
9	7.84	OXALATE	483.935	1733	30424	1	-1.96
		Totals	3332.366	24777	213687		

File: 96021501.d03 Sample: 122N9-E STD



Data Reprocessed On 02/26/1996 15:14:32

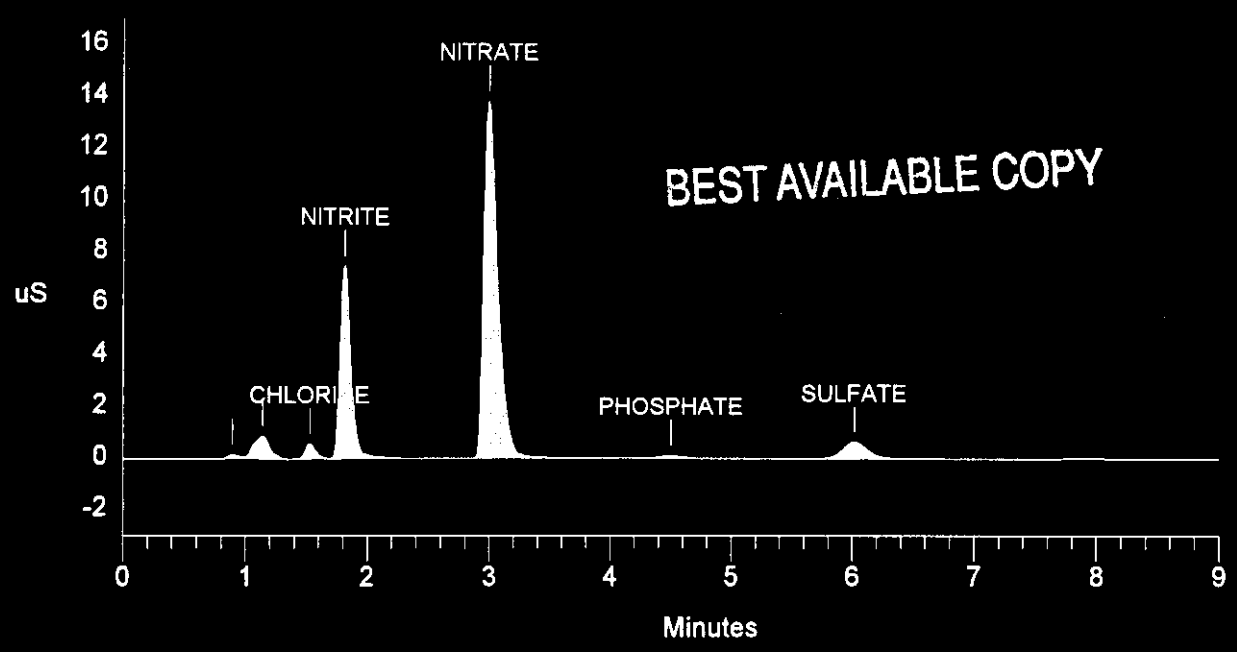
Sample Name: S95TOO3867 SAMPLE	Date: 02/15/1996 11:30:56
Data File : C:\DX\DATA\96021501.d04	WHC-SD-WM-DP-165, REV. 1
Method : C:\DX\METHOD\ANIONS.MET	
ACI Address: 1 System: 2 Inject#: 4	Detector:CDM-1
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	10201	2700	5Hz	0.00	9.00	200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	109	603	2	
2	1.14		0.000	867	7721	2	
3	1.53	CHLORIDE	2976.483	564	3184	1	-0.65
4	1.82	NITRITE	60352.251	7452	44891	1	-0.18
5	3.00	NITRATE	163229.583	13783	108756	1	-2.39
6	4.50	PHOSPHATE	3525.932	83	954	1	-1.24
7	6.02	SULFATE	10482.278	632	8683	1	-1.53
		Totals	240566.527	23489	174792		

File: 96021501.d04 Sample: S95TOO3867 SAMPLE



BEST AVAILABLE COPY

Data Reprocessed On 02/26/1996 15:14:34

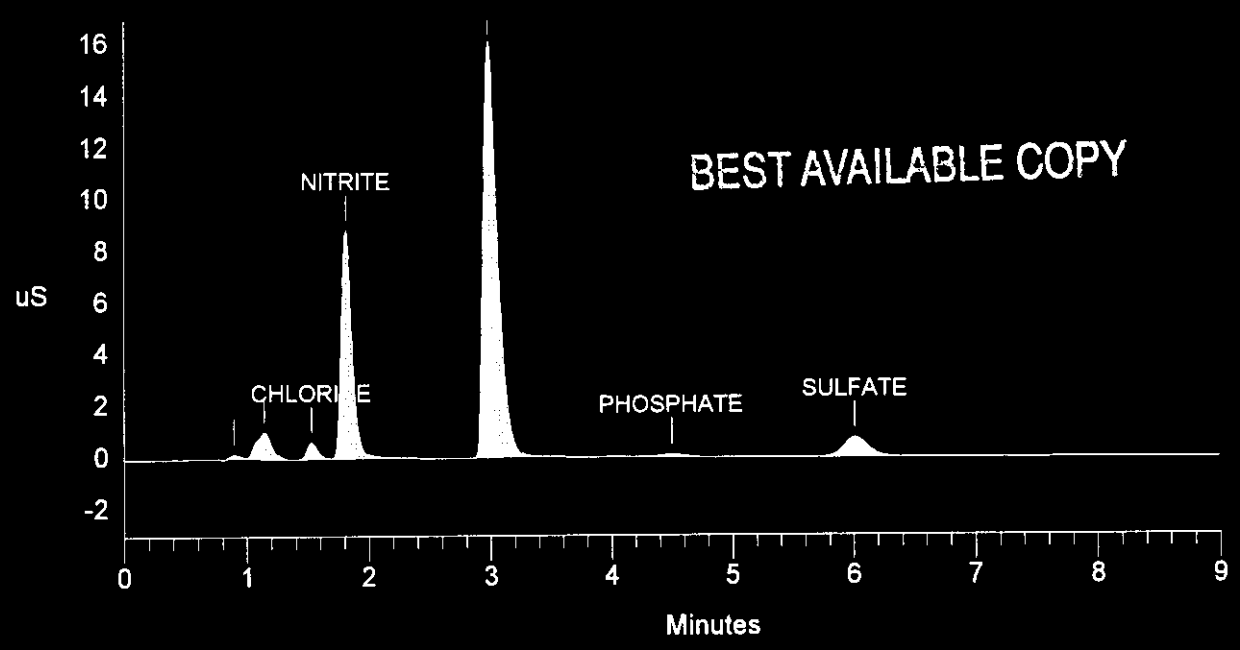
Sample Name: S95TOO3867 DUP	Date: 02/15/1996 11:45:31
Data File : C:\DX\DATA\96021501.d05	WHC-SD-WM-DP-165, REV. 1
Method : C:\DX\METHOD\ANIONS.MET	
ACI Address: 1 System: 2 Inject#: 5	Detector:CDM-1
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	2700	5Hz	0.00	9.00		200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	120	644	2	
2	1.14		0.000	1010	8774	2	
3	1.53	CHLORIDE	3323.407	620	3505	1	-0.65
4	1.82	NITRITE	71416.735	8824	53230	1	-0.18
5	2.98	NITRATE	192837.804	16001	129660	1	-2.82
6	4.50	PHOSPHATE	4153.307	99	1143	1	-1.39
7	6.01	SULFATE	12179.060	732	10085	1	-1.64
		Totals	283910.314	27406	207040		

File: 96021501.d05 Sample: S95TOO3867 DUP



BEST AVAILABLE COPY

Data Reprocessed On 02/26/1996 15:14:36

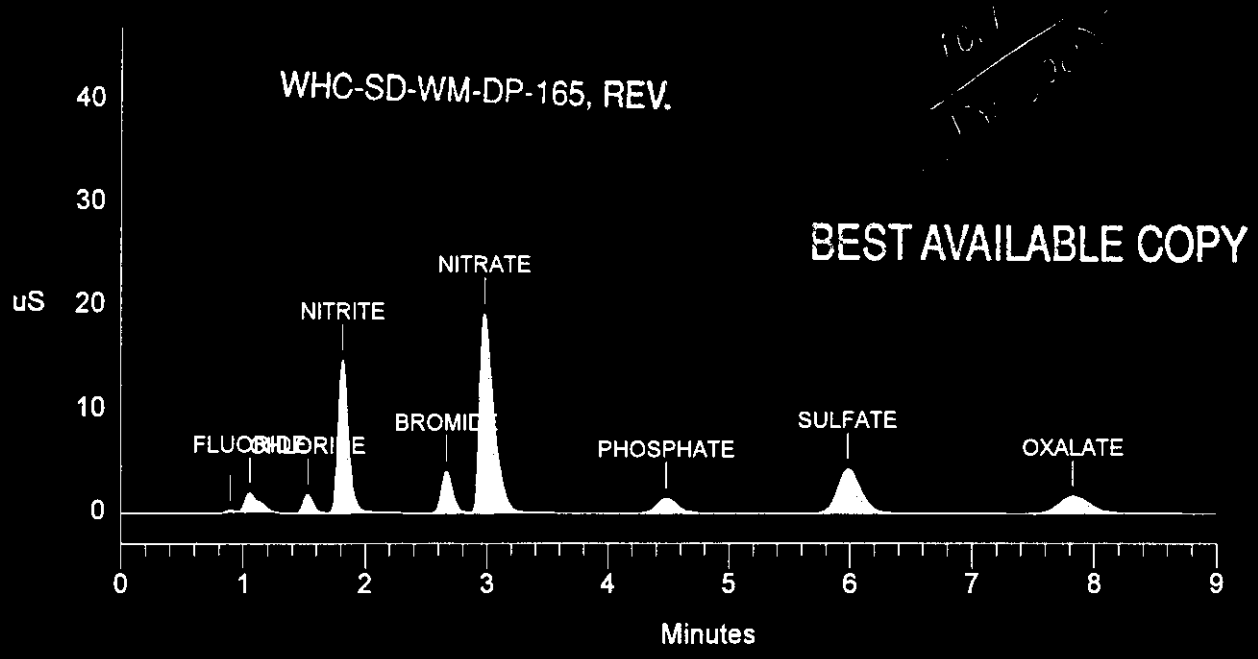
Sample Name: S95TOO3867 SPIKE	Date: 02/15/1996 13:32:16
Data File : C:\DX\DATA\96021501.d06	WHC-SD-WM-DP-165, REV. I
Method : C:\DX\METHOD\ANIONS.MET	
ACI Address: 1 System: 2 Inject#: 6	Detector:CDM-1
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	2700	5Hz	0.00	9.00		200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	149	574	2	
2	1.06	FLUORIDE	9242.559	1842	14575	2	-0.31
3	1.53	CHLORIDE	10198.866	1829	9969	2	-0.65
4	1.82	NITRITE	115309.701	14763	86649	2	-0.18
5	2.67	BROMIDE	52495.496	4069	25870	2	-0.74
6	2.98	NITRATE	230342.087	19283	156713	2	-2.82
7	4.48	PHOSPHATE	55401.330	1457	16747	1	-1.68
8	5.98	SULFATE	68984.411	4354	57720	1	-2.07
9	7.83	OXALATE	48520.536	1720	30199	1	-2.12
		Totals	590494.984	49466	399017		

File: 96021501.d06 Sample: S95TOO3867 SPIKE



BEST AVAILABLE COPY

Data Reprocessed On 02/26/1996 15:14:38

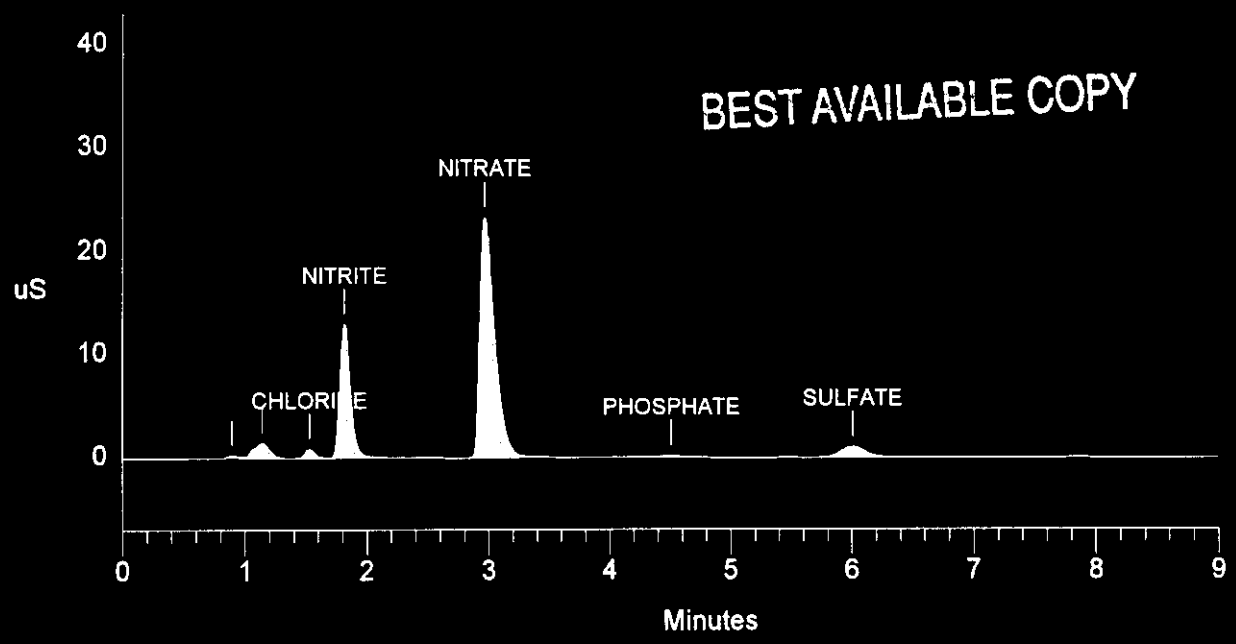
Sample Name: S95TOO3868 SAMPLE	Date: 02/15/1996 13:51:28
Data File : C:\DX\DATA\96021501.d07	WHC-SD-WM-DP-165, REV. 1
Method : C:\DX\METHOD\ANIONS.MET	
ACI Address: 1 System: 2 Inject#: 7	Detector:CDM-1
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	2700	5Hz	0.00	9.00	200	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	185	1003	2	
2	1.14		0.000	1487	12726	2	
3	1.53	CHLORIDE	4718.992	844	4800	1	-0.65
4	1.82	NITRITE	104406.982	12921	78297	1	-0.18
5	2.97	NITRATE	282707.504	23316	195651	1	-3.26
6	4.51	PHOSPHATE	6225.297	150	1764	1	-1.10
7	6.01	SULFATE	16840.580	1032	13942	1	-1.64
		Totals	414899.356	39935	308183		

File: 96021501.d07 Sample: S95TOO3868 SAMPLE



Data Reprocessed On 02/26/1996 15:14:40

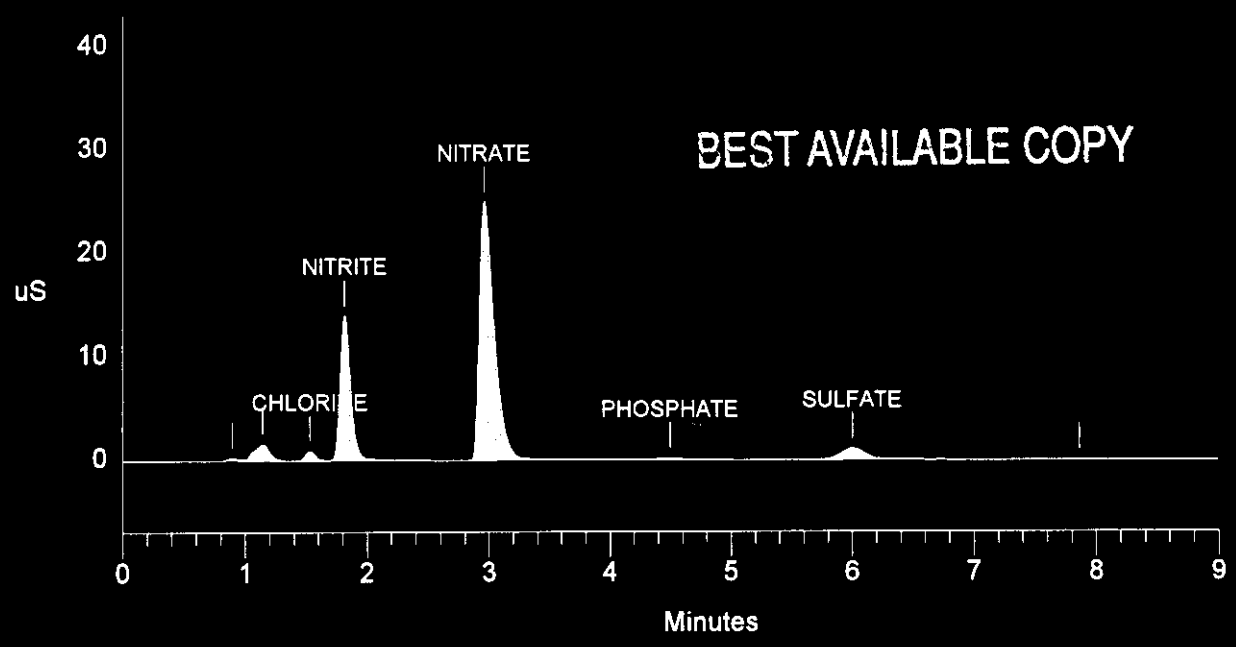
Sample Name: S95TOO3868 DUP	Date: 02/15/1996 14:08:01
Data File : C:\DX\DATA\96021501.d08	WHC-SD-WM-DP-165, REV. 1
Method : C:\DX\METHOD\ANIONS.MET	
ACI Address: 1 System: 2 Inject#: 8	Detector:CDM-1
Analyst : Column:	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	2700	5Hz	0.00	9.00		200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	203	1062	2	
2	1.14		0.000	1558	13548	2	
3	1.53	CHLORIDE	4881.927	905	4952	1	-0.65
4	1.82	NITRITE	109583.911	13905	82258	1	-0.18
5	2.96	NITRATE	299357.705	24949	208337	1	-3.47
6	4.50	PHOSPHATE	5987.020	153	1692	1	-1.39
7	6.00	SULFATE	17421.800	1086	14424	1	-1.75
		Totals	437232.363	42759	326273		

File: 96021501.d08 Sample: S95TOO3868 DUP



BEST AVAILABLE COPY

LABCORE Completed Worklist Report for Worklist# 5009

Analyst: kgh **Instrument:** IC01 **Book#** 123N9E

Method: LA-533-105 Rev/Mod D-1

Worklist Comment: AN102 FOR IC RTS

Seq	Type	Sample#	R	A	Test		Matrix	Actual		Found	DL or Yield	Unit
1	CCB			0	@IC-QC	F	QC	1		1.70e-02	2.000e-002	ug/mL
1	CCB			0	@IC-QC	CL	QC	1		<1.70e-2		ug/mL
1	CCB			0	@IC-QC	NO2	QC	1		<1.07e-1		ug/mL
1	CCB			0	@IC-QC	BR	QC	1		<1.26e-1		ug/mL
1	CCB			0	@IC-QC	NO3	QC	1		2.37e-01	0.240	ug/mL
1	CCB			0	@IC-QC	PO4	QC	1		<1.19e-1		ug/mL
1	CCB			0	@IC-QC	SO4	QC	1		<1.36e-1		ug/mL
1	CCB			0	@IC-QC	OXALATE2	QC	1		<1.05e-1		ug/mL
2	CCV			0	@IC-QC	F	QC	59		5.45e+01	92.370	% Recovery
2	CCV			0	@IC-QC	CL	QC	79		7.51e+01	95.060	% Recovery
2	CCV			0	@IC-QC	NO2	QC	534		5.01e+02	93.820	% Recovery
2	CCV			0	@IC-QC	BR	QC	575		5.48e+02	95.300	% Recovery
2	CCV			0	@IC-QC	NO3	QC	614		6.02e+02	98.050	% Recovery
2	CCV			0	@IC-QC	PO4	QC	546		5.23e+02	95.790	% Recovery
2	CCV			0	@IC-QC	SO4	QC	631		6.13e+02	97.150	% Recovery
2	CCV			0	@IC-QC	OXALATE2	QC	526		5.20e+02	98.860	% Recovery
3	SAMPLE	S95T003869		0	@IC-01	F-02	LIQUID	N/A		1.452e+03	53.830	ug/mL
3	SAMPLE	S95T003869		0	@IC-01	CL-02	LIQUID	N/A		3.459e+03	70.400	ug/mL
3	SAMPLE	S95T003869		0	@IC-01	NO2-02	LIQUID	N/A		7.316e+04	443.100	ug/mL
3	SAMPLE	S95T003869		0	@IC-01	NO3-02	LIQUID	N/A		1.959e+05	579.700	ug/mL
3	SAMPLE	S95T003869		0	@IC-01	PO4-02	LIQUID	N/A		4.220e+03	496.900	ug/mL
3	SAMPLE	S95T003869		0	@IC-01	SO4-02	LIQUID	N/A		1.270e+04	563.200	ug/mL
4	DUP	S95T003869		0	@IC-01	F-02	LIQUID	1.45e+03		1.45e+03	0.000	RPD
4	DUP	S95T003869		0	@IC-01	CL-02	LIQUID	3.46e+03		3.61e+03	4.240	RPD
4	DUP	S95T003869		0	@IC-01	NO2-02	LIQUID	7.32e+04		7.27e+04	0.690	RPD
4	DUP	S95T003869		0	@IC-01	NO3-02	LIQUID	1.96e+05		1.97e+05	0.510	RPD
4	DUP	S95T003869		0	@IC-01	PO4-02	LIQUID	4.22e+03		4.17e+03	1.190	RPD
4	DUP	S95T003869		0	@IC-01	SO4-02	LIQUID	1.27e+04		1.28e+04	0.780	RPD
5	SPK	S95T003869		0	@IC-01	F-02	LIQUID	100		88.8	88.800	% Recovery
5	SPK	S95T003869		0	@IC-01	CL-02	LIQUID	100		95.6	95.600	% Recovery
5	SPK	S95T003869		0	@IC-01	NO2-02	LIQUID	100		124.3	124.300	% Recovery
5	SPK	S95T003869		0	@IC-01	BR-02	LIQUID	100		90.2	90.400	% Recovery
5	SPK	S95T003869		0	@IC-01	NO3-02	LIQUID	100		133.8	133.800	% Recovery
5	SPK	S95T003869		0	@IC-01	PO4-02	LIQUID	100		92.7	92.700	% Recovery
5	SPK	S95T003869		0	@IC-01	SO4-02	LIQUID	100		100.0	100.000	% Recovery
5	SPK	S95T003869		0	@IC-01	OXALATE2	LIQUID	100		97.9	97.900	% Recovery
6	SAMPLE	S95T003962		0	@IC-01	F-02	LIQUID	N/A	<	1.43e-01	0.143	ug/mL
6	SAMPLE	S95T003962		0	@IC-01	CL-02	LIQUID	N/A		1.369e+00	0.187	ug/mL
6	SAMPLE	S95T003962		0	@IC-01	NO2-02	LIQUID	N/A	<	1.177e+00	1.177	ug/mL
6	SAMPLE	S95T003962		0	@IC-01	NO3-02	LIQUID	N/A		6.178e+00	1.540	ug/mL
6	SAMPLE	S95T003962		0	@IC-01	PO4-02	LIQUID	N/A	<	LDL	1.320	ug/mL

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

LABCORE Completed Worklist Report for Worklist# 5009

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
6	SAMPLE	S95T003962		0	@IC-01	SO4-02	LIQUID	N/A	3.671e+00	1.496	ug/mL
7	DUP	S95T003962		0	@IC-01	F-02	LIQUID	<1.43e-1	<1.43e-1		RPD
7	DUP	S95T003962		0	@IC-01	CL-02	LIQUID	1.37e+00	1.28e+00	6.790	RPD
7	DUP	S95T003962		0	@IC-01	NO2-02	LIQUID	<1.18e0	<1.18e0		RPD
7	DUP	S95T003962		0	@IC-01	NO3-02	LIQUID	6.18e+00	6.45e+00	4.280	RPD
7	DUP	S95T003962		0	@IC-01	PO4-02	LIQUID	<1.32e0	<1.32e0		RPD
7	DUP	S95T003962		0	@IC-01	SO4-02	LIQUID	3.67e+00	3.46e+00	5.890	RPD

Final page for worklist# 5009

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 5009

Analyst: [illegible] **Instrument:** IC01 _____ **Book#** 22219-C

Method: LA-533-105 **Rev/Mod** D-1

Worklist Comment: AN102 FOR IC RTS

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S95T003869	0		@IC-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested:			CL-02 , F-02 , NO2-02 , NO3-02 , PO4-02 , SO4-02			
4	DUP	S95T003869	0		@IC-01	LIQUID		
5	SPK	S95T003869	0		@IC-01	LIQUID		
6	SAMPLE	S95T003962	0		@IC-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested:			CL-02 , F-02 , NO2-02 , NO3-02 , PO4-02 , SO4-02			
7	DUP	S95T003962	0		@IC-01	LIQUID		

Final page for worklist # 5009

[illegible] 2-15-96
Analyst Signature **Date**

Analyst Signature **Date**

Inshell
Uploaded M. Smith 2/28/96

Data Entry Comments: On SAMPLE + Dup S95T003962 - THERE WAS insufficient sample. I ran a sample + a replicate both at 1000-10. NO MORE SAMPLE AT ALL.

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
INORGANIC ANALYTICAL BATCH AND SUMMARY SHEET

ANION ANALYSIS ON DIONEX

SAMPLE #:	S95T003869		
TEST CODE:	@ic-01	ANALYST:	Kristin Higbee
INSTRUMENT:	ic01	ANALYSIS DATE:	02/15/96
WORK LIST #:	5009	SAMPLE POINT:	AN-102
BATCH ID:		SAMPLE PREP:	direct

Result Units µg/mL	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
S95T003869	1.45E+03	3.46E+03	7.32E+04	1.96E+05	4.22E+03	1.27E+04	7.86E+02	6.93E+02
	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 1 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S95T003869spk	88.8%	95.6%	124.3%	133.8%	92.7%	100.0%	90.2%	97.9%

NARRATIVE: Analyst Comments:

Chemist Comments:

Raw data for spike may be found on p. 262.
Raw data for the sample is on p. 258.
This data was manually entered into lab core. because at the time of the original data upload, the spike recovery for some dilution factors was calculated incorrectly. RVE 3/21/96

JMF 3/20/96

Form Completed By:	[signature]	Date:	3/20/96
Chemist Approval:	[signature]	Date:	3/20/96

254.1

LAB LEADER INFO	
Method:	La-533-105
Matrix:	liquid
Test Code:	ic-01
Work List #:	5009
Batch #:	
Result Units	
(µg/g or µg/mL):	µg/mL
Spike Book Number:	122n9e
Spike Sample #:	1
Prepared By:	Jann Frye
Prepared Date:	03/20/96
Chemist:	Jann Frye
Analyst:	Kristin Higbee
Analysis Date:	02/15/96
Time Complete:	
Instrument Code:	ic01
Rerun:	
Sample Prep:	direct
Sample Point:	AN-102
Sample Type	
STANDARD	
SAMPLE 1	S95T003869
DUPLICATE 1	
SAMPLE 2	
DUPLICATE 2	
SAMPLE 3	
DUPLICATE 3	
SAMPLE 4	
DUPLICATE 4	
SPIKE	S95T003869spk
SPIKE DUPLICATE	

PRINT

TECH INFO	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Blank Data (µg/mL)								
Standard Data (µg/mL)								
Sample 1 Data (µg/mL)	1.45E+03	3.46E+03	7.32E+04	1.96E+05	4.22E+03	1.27E+04	7.86E+02	6.93E+02
Sample 1 Dilution Factor	4141	4141	4141	4141	4141	4141	4141	4141
Sample 1 Prep DF	1	1	1	1	1	1	1	1
Duplicate 1 Data (µg/mL)								
Duplicate 1 Dilution Factor								
Duplicate 1 Prep DF								
Sample 2 Data (µg/mL)								
Sample 2 Dilution Factor								
Sample 2 Prep DF								
Duplicate 2 Data (µg/mL)								
Duplicate 2 Dilution Factor								
Duplicate 2 Prep DF								
Sample 3 Data (µg/mL)								
Sample 3 Dilution Factor								
Sample 3 Prep DF								
Duplicate 3 Data (µg/mL)								
Duplicate 3 Dilution Factor								
Duplicate 3 Prep DF								
Sample 4 Data (µg/mL)								
Sample 4 Dilution Factor								
Sample 4 Prep DF								
Duplicate 4 Data (µg/mL)								
Duplicate 4 Dilution Factor								
Duplicate 4 Prep DF								
Spike + Sample 1 (µg/mL)	3.67E+03	6.51E+03	1.00E+05	2.29E+05	2.47E+04	3.82E+04	2.17E+04	2.15E+04
Spike + Dup 1 (µg/mL)								
Spike Volume (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
Total Volume (mL)	10.25	10.25	10.25	10.25	10.25	10.25	10.25	10.25
Std. Conc. (µg/mL)	59	79	534	614	546	631	575	526
Detection Limit	0.013	0.017	0.107	0.140	0.119	0.136	0.126	0.105
Matrix Detection Limit 1	5.38E+01	7.04E+01	4.43E+02	5.80E+02	4.93E+02	5.63E+02	5.22E+02	4.35E+02
Matrix Detection Limit 2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Matrix Detection Limit 3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Matrix Detection Limit 4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Spike Recovery = [((Spike+Sample)-(Sample)*(Total Volume))/((Spike Vol.)*(Spike Std.)*(Sample DF))]*100%
Note: (For spike recovery when the sample conc. is less than detection limit you do NOT subtract sample conc.)
Duplicate Relative % Difference = ((Sample - Duplicate) / ((Sample + Duplicate) / 2) * 100%)
Less than Values are Calculated from the Detection Limit*Dilution Factor

v RESULTS v	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Sample 1 in µg/mL	1.45E+03	3.46E+03	7.32E+04	1.96E+05	4.22E+03	1.27E+04	7.86E+02	6.93E+02
Duplicate 1 in µg/mL	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 1 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sample 2 in µg/mL	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 in µg/mL	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00
Duplicate 2 RPD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spike % Recovery	88.8%	95.6%	124.3%	133.8%	92.7%	100.0%	90.2%	97.9%

Data Entry by: Jann Frye Date: 03/20/96
Approved by: Jann Frye Date: 3/20/96
Form DIONEX.WB1 Rev. 1.3

254.2

Data Reprocessed On 02/26/1996 16:18:18

Sample Name: BLANK Date: 02/15/1996 12:41:14
Data File : C:\DX\DATA\96021471.d11 WHC-SD-WM-DP-165, REV. 1
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 11 Detector:CDM-2
Analyst Column: AG4A/AS4A anion column

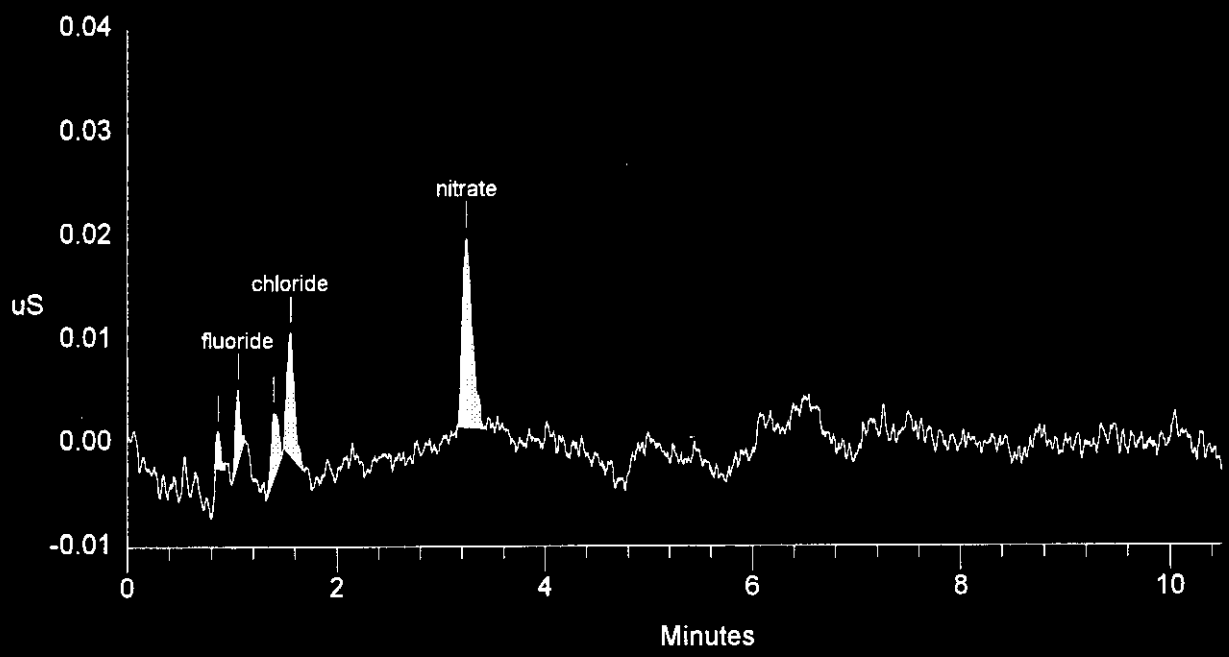
for RBHughes 3/5/96

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3150	5Hz	0.00	10.50	20000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.06	fluoride	0.017	7016	21496	1	4.95
3	1.40		0.000	6516	29672	1	
4	1.56	chloride	0.014	11859	58026	1	-0.64
5	3.25	nitrate	0.237	18315	117680	1	3.07
		Totals	0.268	43705	226874		

File: 96021471.d11 Sample: BLANK



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 255 TO 266

Data Reprocessed On 02/26/1996 16:18:21

Sample Name: 122N9-E STD Date: 02/15/1996 12:58:43
Data File : C:\DX\DATA\96021471.d12 WHC-SD-WM-DP-165, REV. 1
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 12 Detector:CDM-2
Analyst : Column: AG4A/AS4A anion column

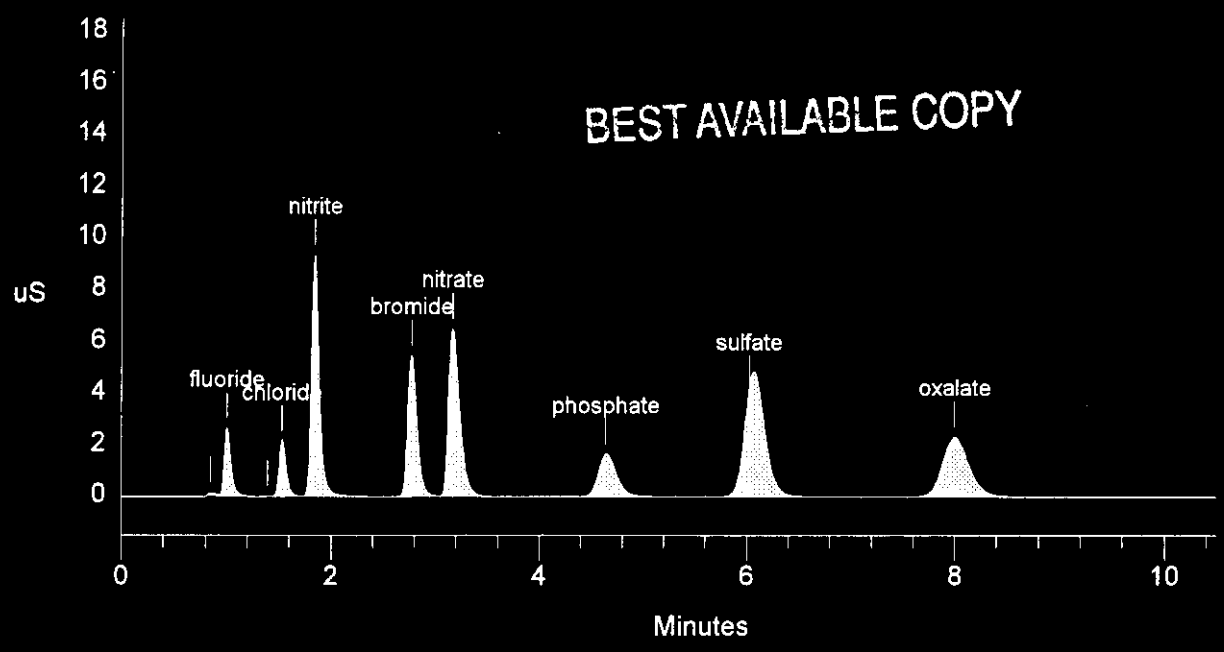
3/5/96

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3150	5Hz	0.00	10.50	20000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	85852	373634	2	
2	1.01	fluoride	54.462	2610707	11476733	2	-0.33
3	1.39		0.000	15871	68858	1	
4	1.53	chloride	75.142	2140338	9939076	1	-2.34
5	1.85	nitrite	501.038	9316766	47894280	1	-3.32
6	2.77	bromide	548.334	5480717	34009308	1	-1.65
7	3.17	nitrate	602.462	6499698	48439188	1	0.53
8	4.64	phosphate	523.214	1648200	20758180	1	-1.07
9	6.03	sulfate	612.632	4116542	64430850	1	-2.64
10	8.00	oxalate	519.910	2342511	40923822	1	-1.36
		Totals	3437.195	34257201	278313929		

File: 96021471.d12 Sample: 122N9-E STD



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Data Reprocessed On 02/26/1996 16:18:26

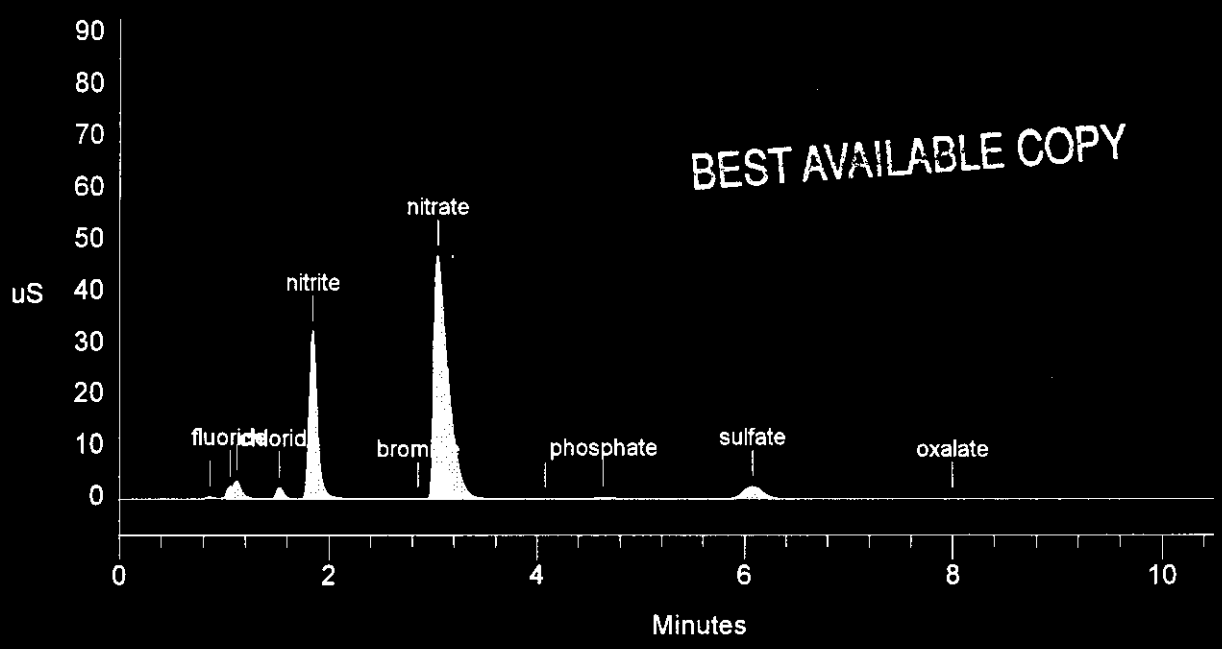
Sample Name: S95T003869 SAM
Date: 02/15/1996 14:01:56
Data File : C:\DX\DATA\96021471.d14
WHC-SD-WM-DP-165, REV. 1
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 14 Detector:CDM-2
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50	20000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.86		0.000	333525	1665158	2	
2	1.05	fluoride	1452.276	2343075	7331396	2	4.29
3	1.12		0.000	3521575	19158298	2	
4	1.53	chloride	3459.083	2163983	11187278	1	-2.76
5	1.85	nitrite	73158.841	32535584	176049034	1	-3.32
6	2.85	bromide	786.350	20830	120094	1	1.18
7	3.05	nitrate	195903.466	47192347	444191794	1	-3.28
8	4.08		0.000	19734	224232	1	
9	4.64	phosphate	4220.435	289400	3629976	1	-1.07
10	6.08	sulfate	12697.528	2369543	31361290	1	-1.78
11	8.00	oxalate	693.014	63220	1126488	1	-1.36
		Totals	292370.993	90852815	696045038		

File: 96021471.d14 Sample: S95T003869 SAM



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Data Reprocessed On 02/26/1996 16:18:28

Sample Name: S95T003869 DUP
Data File : C:\DX\DATA\96021471.d15
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 15
Analyst :

Date: 02/15/1996 14:17:19
WHC-SD-WM-DP-165, REV. 1

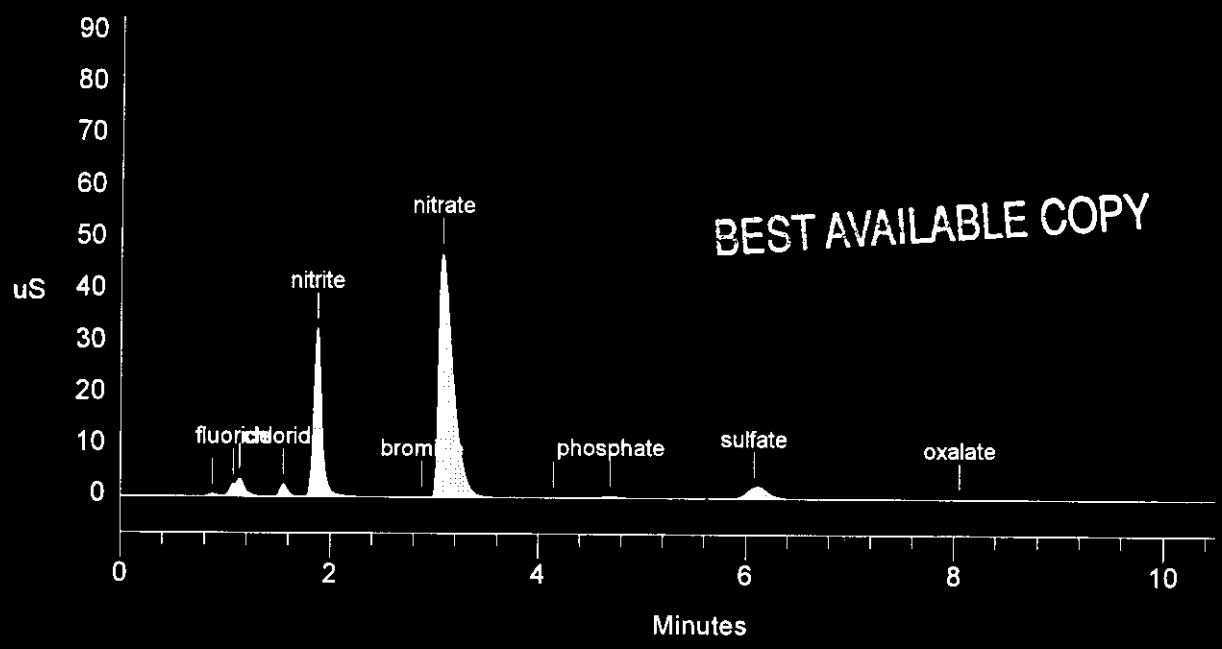
Detector:CDM-2
Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50	20000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	305955	1473797	2	
2	1.07	fluoride	1454.437	2324632	7342858	2	6.27
3	1.13		0.000	3461464	18930119	2	
4	1.55	chloride	3611.245	2391550	11690138	1	-1.06
5	1.87	nitrite	72739.445	32653321	175018426	1	-1.92
6	2.88	bromide	852.071	35109	221120	1	2.13
7	3.07	nitrate	196859.588	47297025	446705892	1	-2.43
8	4.15		0.000	11731	122288	1	
9	4.69	phosphate	4173.269	298123	3583674	1	0.07
10	6.08	sulfate	12796.395	2156777	31622350	1	-1.78
11	8.05	oxalate	694.816	65830	1129944	1	-0.70
		Totals	293181.265	91001517	697840605		

File: 96021471.d15 Sample: S95T003869 DUP



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Data Reprocessed On 02/26/1996 16:18:31

Sample Name: S95T003869 SPK
Data File : C:\DX\DATA\96021471.d16
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 16
Analyst :

Date: 02/15/1996 14:34:28

WHC-SD-WM-DP-165, REV. 1

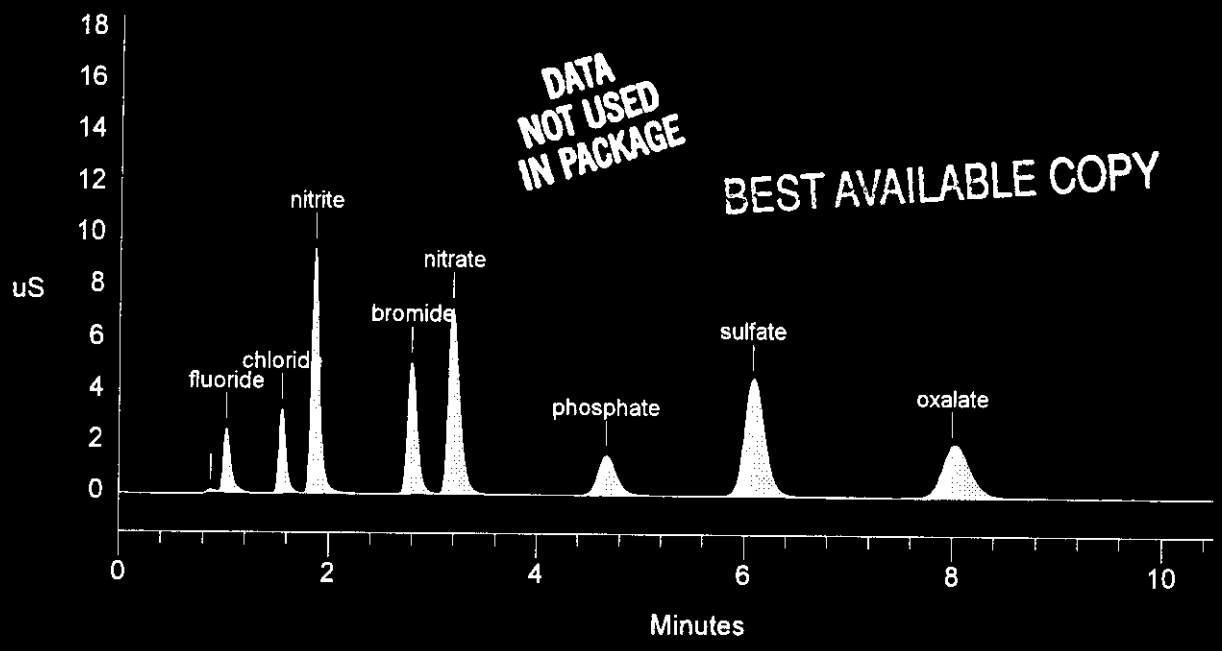
Detector:CDM-2
Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50	20000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	84556	374044	2	
2	1.02	fluoride	2319.623	2488118	11937454	2	0.99
3	1.55	chloride	4533.366	3289779	14746646	1	-1.06
4	1.87	nitrite	20901.065	9473045	48759782	1	-2.27
5	2.79	bromide	21500.326	5131597	32452254	1	-0.95
6	3.19	nitrate	27189.217	7215574	53581410	1	1.16
7	4.67	phosphate	20170.075	1552253	19469218	1	-0.50
8	6.08	sulfate	23982.540	4572590	61384664	1	-1.78
9	8.00	oxalate	19696.199	1999771	37778328	1	-1.36
		Totals	140292.412	35807282	280483800		

File: 96021471.d16 Sample: S95T003869 SPK



DATA NOT USED IN PACKAGE

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Data Reprocessed On 02/26/1996 16:18:33

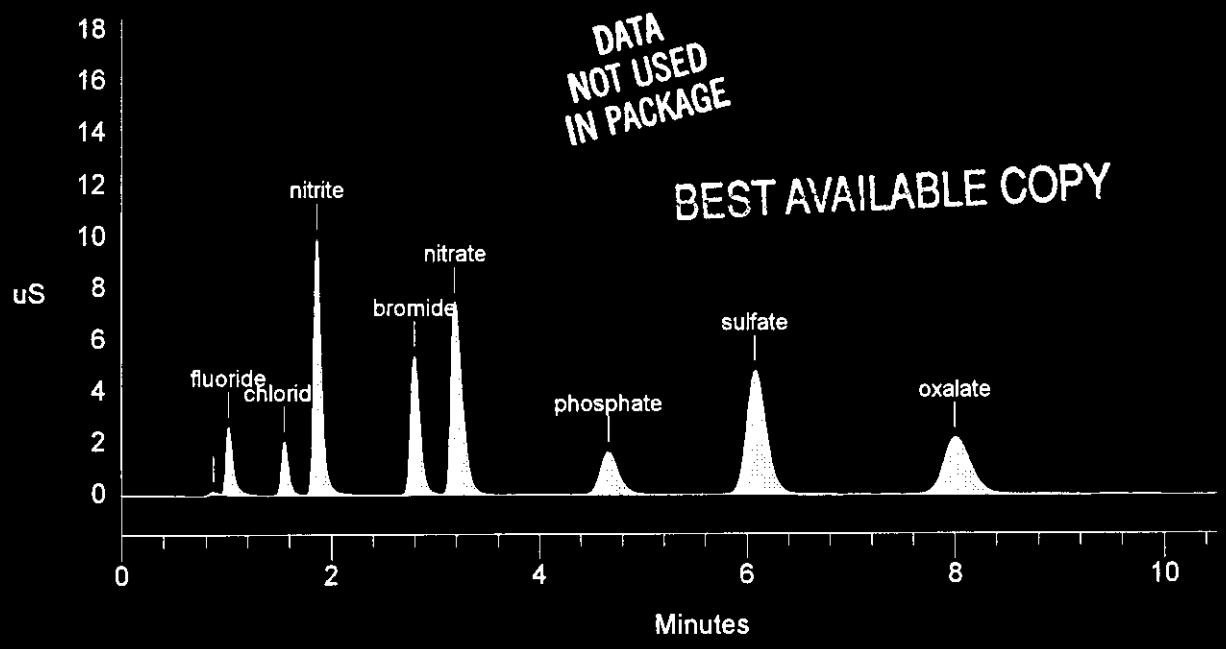
Sample Name: S95T003869 SPK	Date: 02/15/1996 14:51:12
Data File : C:\DX\DATA\96021471.d17	WHC-SD-WM-DP-165, REV. I
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 17	Detector:CDM-2
Analyst :	Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50	20000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	88965	389141	2	
2	1.02	fluoride	2348.444	2625062	12090675	2	0.99
3	1.55	chloride	2955.731	2064780	9526808	1	-1.06
4	1.87	nitrite	21941.325	9964550	51271854	1	-2.27
5	2.80	bromide	21939.308	5385274	33148444	1	-0.71
6	3.19	nitrate	28520.419	7466904	56338362	1	1.16
7	4.67	phosphate	21116.990	1652275	20421268	1	-0.50
8	6.08	sulfate	24726.551	4808500	63380294	1	-1.78
9	8.00	oxalate	20583.294	2190639	39500258	1	-1.36
		Totals	144132.061	36246950	286067104		

File: 96021471.d17 Sample: S95T003869 SPK



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Data Reprocessed On 02/26/1996 16:18:36

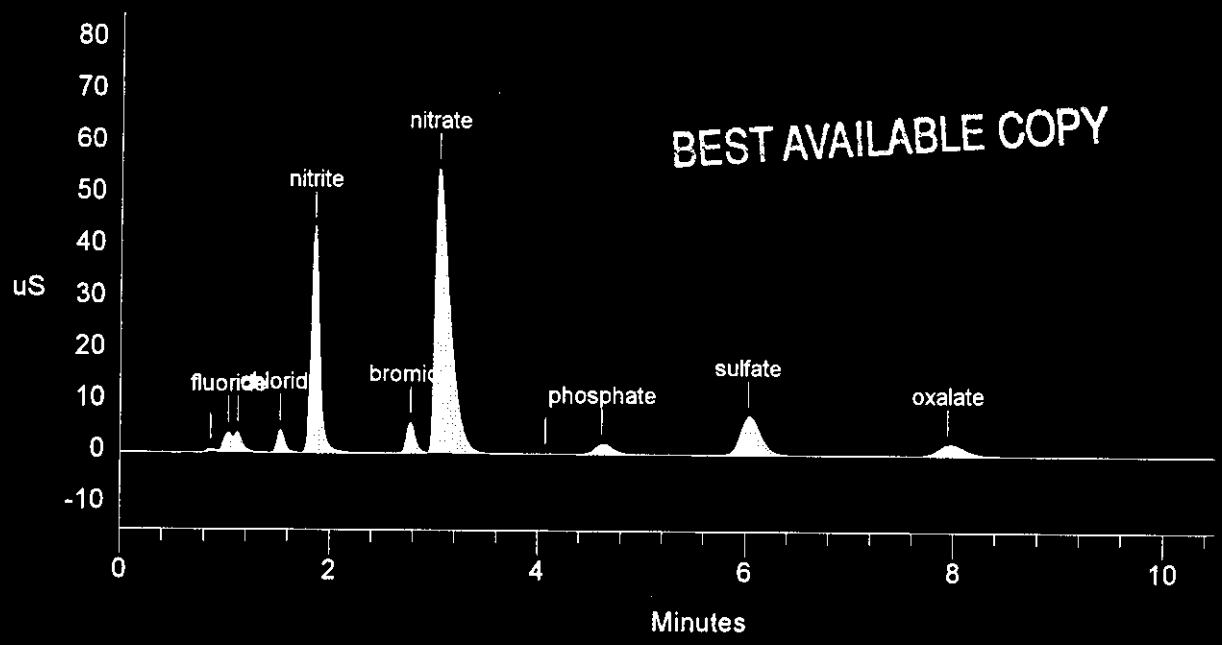
Sample Name: S95T003869 SPK
Date: 02/15/1996 15:08:30
Data File : C:\DX\DATA\96021471.d18
Method : C:\DX\METHOD\KIT.MET
WHC-SD-WM-DP-165, REV. 1
ACI Address: 1 System: 1 Inject#: 18
Detector:CDM-2
Analyst :
Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50	20000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.86		0.000	377562	1676392	2	
2	1.03	fluoride	3569.289	3654098	18591052	2	2.31
3	1.12		0.000	3836916	21239101	2	
4	1.53	chloride	6509.260	4310567	21349508	1	-2.76
5	1.85	nitrite	99970.838	43568926	242247930	1	-2.97
6	2.77	bromide	21741.204	5837210	32834209	1	-1.65
7	3.04	nitrate	229084.637	54860947	534157289	1	-3.49
8	4.07		0.000	19559	229896	1	
9	4.61	phosphate	24659.790	1892238	23995256	1	-1.63
10	6.03	sulfate	38180.120	7380669	99824686	1	-2.64
11	7.95	oxalate	21495.796	2191815	41272542	1	-2.01
		Totals	445210.934	127930506	1037417862		

File: 96021471.d18 Sample: S95T003869 SPK



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Data Reprocessed On 02/26/1996 16:18:39

Sample Name: S95T003962 SAM
Data File : C:\DX\DATA\96021471.d19
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 19
Analyst :

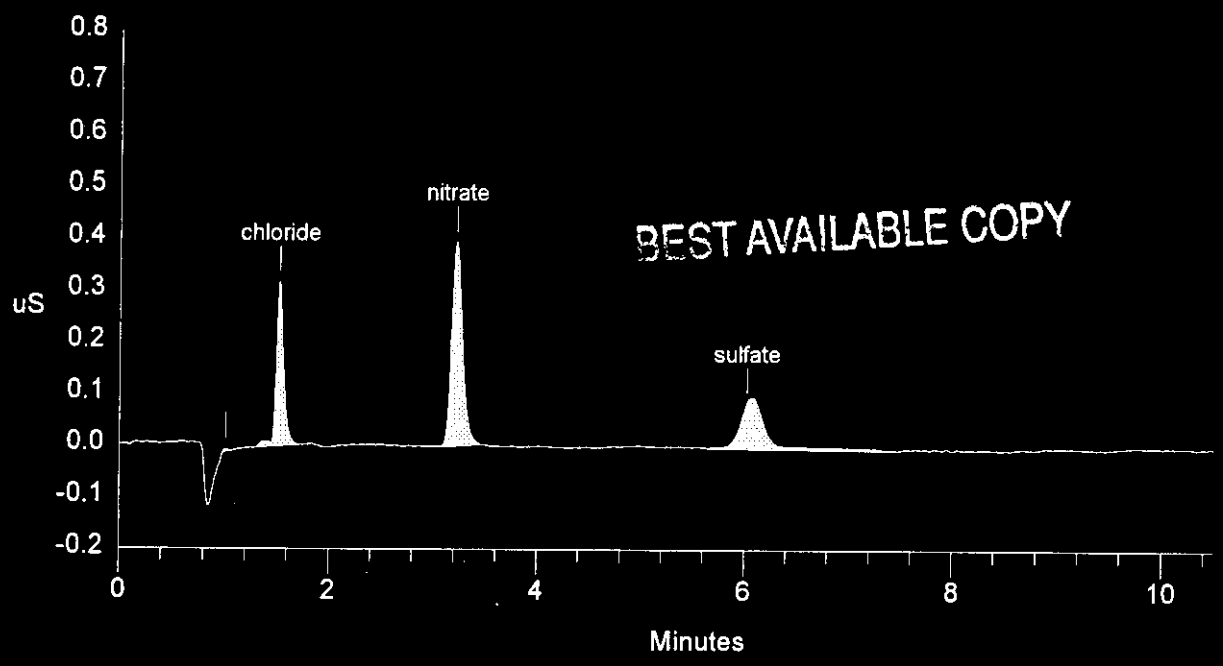
Date: 02/15/1996 16:40:59
WHC-SD-WM-DP-165, REV. I
Detector:CDM-2
Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	11	3150	5Hz	0.00	10.50	20000

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.53	chloride	1.369	317079	1541332	1	-2.76
3	3.22	nitrate	6.178	393905	2826866	1	2.22
4	6.03	sulfate	3.671	88365	1705440	1	-2.64
		Totals	11.218	799348	6073638		

File: 96021471.d19 Sample: S95T003962 SAM



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Data Reprocessed On 02/26/1996 16:18:41

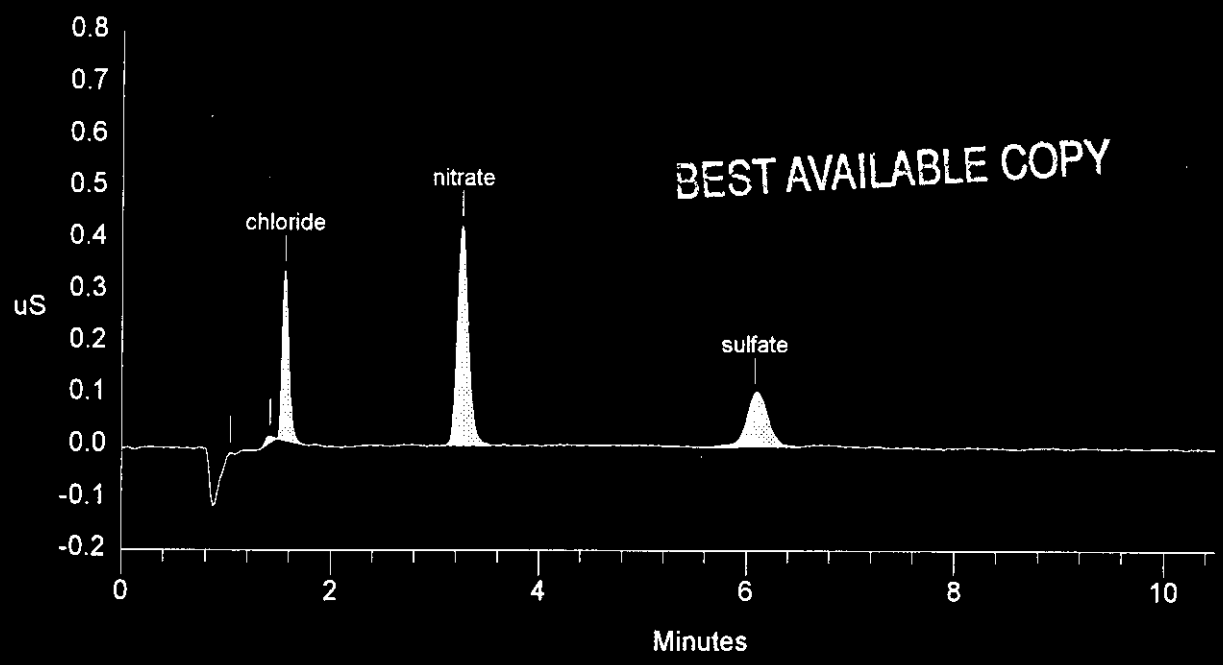
Sample Name: S95T003962 REP Date: 02/15/1996 16:54:57
Data File : C:\DX\DATA\96021471.d20 WHC-SD-WM-DP-165, REV. I
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 20 Detector:CDM-2
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	11	3150	5Hz	0.00	10.50	20000	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.42		0.000	13382	68692	1	
3	1.56	chloride	1.279	325938	1430188	1	-0.64
4	3.26	nitrate	6.448	421703	3032076	1	3.49
5	6.08	sulfate	3.460	101339	1498772	1	-1.78
		Totals	11.187	862361	6029728		

File: 96021471.d20 Sample: S95T003962 REP



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A-0010-IC DATA FILE/WORKLIST RESOLUTION 28-Feb-96

Worklist#: 5009

	Seq	Type	Sample #
=>	1	CCB	
=>	2	CCV	
=>	3	SAMPLE	S95T003869
=>	4	DUP	S95T003869
=>	5	SPK	S95T003869
=>	6	SAMPLE	S95T003962
=>	7	DUP	S95T003962

Data File: 5009FEB.CSV

Seq#	Data File	Sample Name	Dilution
1	96021471.d11	BLANK	1.00
2	96021471.d12	122N9-E STD	101.00
	96021471.d13	S95T003869	10201.00
3	96021471.d14	S95T003869 SAM	4141.00
4	96021471.d15	S95T003869 DUP	4141.00
	96021471.d16	S95T003869 SPK	4141.00
	96021471.d17	S95T003869 SPK	4141.00
5	96021471.d18	S95T003869 SPK	4141.00
6	96021471.d19	S95T003962 SAM	11.00
7	96021471.d20	S95T003962 REP	11.00

Save(F4) Abort(Shift-F3) ListFiles(Shift-F1) UploadFile(F8)

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LABCORE Data Entry Template for Worklist# 4898

Analyst: D.K. Sato **Instrument:** ICP01 2 SP 3/11/96 **Book#** 50B484

Method: LA-505-151/161 Rev/Mod B-0 SP 3/11/96 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: ICP AN-102 (DIRECT)

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@ICP-QC	QC		
2	ICB				@ICP-QC	QC		
3	ICSA				@ICP-QC	QC		
4	ICSAB				@ICP-QC	QC		
5	SAMPLE	S95T003867	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:	AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01						
6	DUP	S95T003867	0	D	@ICP-D01	LIQUID		
7	SPK	S95T003867	0	D	@ICP-D01	LIQUID		
8	CCV				@ICP-QC	QC		
9	CCB				@ICP-QC	QC		
10	SAMPLE	S95T003868	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:	AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01						
11	DUP	S95T003868	0	D	@ICP-D01	LIQUID		
12	SAMPLE	S95T003869	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:	AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01						
13	DUP	S95T003869	0	D	@ICP-D01	LIQUID		
14	SAMPLE	S95T003962	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:	AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01						
15	DUP	S95T003962	0	D	@ICP-D01	LIQUID		

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 4898

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
16	ICSA				@ICP-QC	QC		
17	ICSAB				@ICP-QC	QC		
18	CCV				@ICP-QC	QC		
19	CCB				@ICP-QC	QC		

Final page for worklist # 4898

For: Saul M. Parry

D.K. Sato 3/8/96
Analyst Signature Date

Reviewed by:
Saul M. Parry 3/11/96
Analyst Signature Date

Data Entry Comments:

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

RERUN AN-102

			D.F.
ICV ICB ICSA ICSAB	S95T003867_L	.025mL-10mL-2mL-8mL	~~2050~~ 2005
	S95T003867	.025mL-10mL	~~410~~ 401
	S95T003867_D	.025mL-10mL	~~410~~ 401
	S95T003867_M	.025mL-2mL-8mL	~~410~~ 401
CCV CCB	S95T003868_L	.025mL-10mL-2mL-8mL	~~2050~~ 2005
	S95T003868	.025mL-10mL	~~410~~ 401
	S95T003868_D	.025mL-10mL	~~410~~ 401
	S95T003869_L	.025mL-10mL-2mL-8mL	~~2050~~ 2005
	S95T003869	.025mL-10mL	~~410~~ 401
CCV CCB	S95T003869_D	.025mL-10mL	~~410~~ 401
	~~S95T003862_L~~	~~2mL-8mL~~	~~5~~
	S95T003862	DIRECT	1
	S95T003862_D	DIRECT	1

NO 5X NEEDED KC

ICSA
ICSAB
CCV
CCB

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 269 TO 274.

3-8-96

Analysis Report Summary Fri 03-08-96 02:58:39 PM page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	960308B	ICP2	03/08/96	13:28	BJG	Q	CONC
2	ICB	960308B	ICP2	03/08/96	13:35	BJG	Q	CONC
3	ICSA	960308B	ICP2	03/08/96	13:39	BJG	Q	CONC
4	ICSAB	960308B	ICP2	03/08/96	13:42	BJG	Q	CONC
5	S95T003867_L	960308B	ICP2	03/08/96	13:46	BJG	S	CONC
6	S95T003867	960308B	ICP2	03/08/96	13:49	BJG	S	CONC
7	S95T003867_D	960308B	ICP2	03/08/96	13:53	BJG	S	CONC
8	S95T003867_A	960308B	ICP2	03/08/96	13:57	BJG	S	CONC
9	CCV	960308B	ICP2	03/08/96	14:02	BJG	Q	CONC
10	CCB	960308B	ICP2	03/08/96	14:06	BJG	Q	CONC
11	S95T003868_L	960308B	ICP2	03/08/96	14:09	BJG	S	CONC
12	S95T003868	960308B	ICP2	03/08/96	14:12	BJG	S	CONC
13	S95T003868_D	960308B	ICP2	03/08/96	14:15	BJG	S	CONC
14	S95T003869_L	960308B	ICP2	03/08/96	14:19	BJG	S	CONC
15	S95T003869	960308B	ICP2	03/08/96	14:23	BJG	S	CONC
16	S95T003869_D	960308B	ICP2	03/08/96	14:28	BJG	S	CONC
17	CCV	960308B	ICP2	03/08/96	14:32	BJG	Q	CONC
18	CCB	960308B	ICP2	03/08/96	14:36	BJG	Q	CONC
19	S95T003962	960308B	ICP2	03/08/96	14:39	BJG	S	CONC
20	S95T003962_D	960308B	ICP2	03/08/96	14:43	BJG	S	CONC
21	ICSA	960308B	ICP2	03/08/96	14:46	BJG	Q	CONC
22	ICSAB	960308B	ICP2	03/08/96	14:49	BJG	Q	CONC
23	CCV	960308B	ICP2	03/08/96	14:52	BJG	Q	CONC
24	CCB	960308B	ICP2	03/08/96	14:55	BJG	Q	CONC

WHC-SD-WM-DP-165, REV. 1

3-8-96

AJ-102

S95T003867-69

S95T003962

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.937	4.826	5.097	4.929	4.878	5.077
2	ICB	-.0007	.0180	.0119	.0029	.0001	.0004
3	ICSA	.0006	235.7	-.0593	-.0016	.0025	.0005
4	ICSAB	.9623	233.9	-.0744	-.0011	.4772	.4730
5	S95T003867_L	14.26	15420.	-55.42	38.63	1.717	.3458
6	S95T003867_	15.64	15190.	-39.50	41.64	1.741	.0783
7	S95T003867_D	15.31	14800.	-37.38	42.13	1.295	.0915
8	S95T003867_A	381.1	15520.	378.5	419.4	382.4	393.6
9	CCV	4.935	4.809	5.077	4.924	4.882	5.051
10	CCB	-.0017	-.0008	.0019	.0025	.0000	.0002
11	S95T003868_L	13.07	14690.	-34.39	41.96	.9996	-.0076
12	S95T003868_	15.00	14440.	-43.93	37.43	1.194	.0360
13	S95T003868_D	15.40	14770.	-40.98	40.46	1.170	.0621
14	S95T003869_L	15.30	16670.	-37.64	37.78	1.533	.3465
15	S95T003869_	16.50	16290.	-40.73	42.64	1.547	.0781
16	S95T003869_D	16.06	16050.	-36.48	42.48	1.332	.0756
17	CCV	4.850	4.730	4.996	4.864	4.725	4.949
18	CCB	.0004	.0034	.0145	-.0008	.0001	.0002
19	S95T003962	-.0010	.0515	.0195	.0548	.0621	.0001
20	S95T003962_D	-.0005	.0608	.0164	.0523	.0623	.0003
21	ICSA	.0003	235.3	-.0843	.0049	.0024	.0005
22	ICSAB	.9584	232.6	-.0419	.0025	.4711	.4717
23	CCV	4.889	4.768	5.023	4.940	4.802	5.027
24	CCB	.0001	.0049	-.0024	.0029	.0001	.0002

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.081	4.965	4.970	5.021	5.017	5.025
2	ICB	-.0042	-.0016	-.0006	-.0056	.0001	-.0000
3	ICSA	-.0153	247.7	-.0014	.0154	-.0004	.0031
4	ICSAB	-.0244	246.2	.9383	.0124	.4677	.4789
5	S95T003867_L	-4.043	516.1	62.76	-5.442	1.418	332.4
6	S95T003867_	-5.946	480.3	60.38	7.095	3.831	327.1
7	S95T003867_D	-3.014	463.8	58.54	3.561	3.836	297.1
8	S95T003867_A	389.4	866.2	438.1	400.9	388.6	690.1
9	CCV	5.090	5.045	4.923	4.981	4.987	5.009
10	CCB	.0220	-.0042	-.0013	-.0209	-.0017	.0009
11	S95T003868_L	10.88	474.5	53.64	-1.803	3.591	287.5
12	S95T003868_	-3.929	454.5	56.14	5.756	3.491	283.2
13	S95T003868_D	-1.314	462.5	57.25	4.589	3.183	286.7
14	S95T003869_L	-43.95	539.2	62.72	-8.431	2.708	341.8
15	S95T003869_	-15.71	516.8	63.91	1.833	3.867	336.2
16	S95T003869_D	-3.112	502.0	62.92	5.056	3.915	319.6
17	CCV	4.955	4.952	4.842	4.833	4.900	4.917
18	CCB	-.0114	.0011	-.0005	-.0014	-.0001	.0017
19	S95T003962	-.0198	.5845	-.0008	-.0031	-.0002	.0127
20	S95T003962_D	-.0143	.5837	-.0004	-.0009	.0003	.0135
21	ICSA	.0017	245.7	-.0018	.0091	.0014	.0043
22	ICSAB	-.0042	245.6	.9347	.0055	.4668	.4767
23	CCV	5.034	5.020	4.889	4.892	4.947	4.958
24	CCB	-.0175	-.0021	-.0016	-.0065	-.0004	.0013

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.098	-.0006	4.990	4.801	4.950	4.949
2	ICB	-.0007	-.0006	-.0002	-.0208	-.0013	-.0005
3	ICSA	-.0114	-.0201	95.11	.1786	-.0049	.0031
4	ICSAB	.4747	-.0186	94.30	.0598	-.0060	.9683
5	S95T003867_L	25.02	2.689	55.29	2072.	14.75	1.589
6	S95T003867	24.06	.7814	65.66	2285.	16.44	.1300
7	S95T003867_D	23.53	.5796	47.30	2321.	15.19	.0835
8	S95T003867_A	418.1	.3509	432.4	2641.	403.4	391.4
9	CCV	5.079	.0001	4.983	4.978	4.888	4.969
10	CCB	-.0009	.0002	-.0018	-.1852	-.0025	.0003
11	S95T003868_L	23.29	1.334	26.76	2373.	13.73	.9056
12	S95T003868	22.75	.7179	40.96	2296.	15.19	.1757
13	S95T003868_D	22.91	.3639	39.95	2228.	15.41	-.1455
14	S95T003869_L	22.80	1.190	48.69	2213.	15.20	1.361
15	S95T003869	25.56	.7202	61.28	2504.	17.01	.1748
16	S95T003869_D	25.10	.6586	50.40	2336.	16.62	.0823
17	CCV	4.963	.0001	4.896	4.774	4.744	4.868
18	CCB	.0004	.0004	-.0006	.0134	-.0002	.0007
19	S95T003962	.0006	.0019	-.0034	.2338	-.0003	.0014
20	S95T003962_D	.0013	.0021	-.0044	.4738	.0007	.0018
21	ICSA	-.0102	-.0201	94.54	-.1563	-.0064	.0030
22	ICSAB	.4727	-.0197	93.79	.0993	-.0058	.9642
23	CCV	5.032	.0006	4.928	5.018	4.810	4.932
24	CCB	.0009	.0005	-.0002	.2192	-.0011	.0007

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.812	4.867	5.024	4.902	4.969	4.923
2	ICB	-.0069	.0002	-.0003	-.0088	-.0044	-.0040
3	ICSA	240.9	-.0066	-.0108	194.6	.0013	-.0075
4	ICSAB	239.9	.4463	-.0123	194.3	.0053	.9257
5	S95T003867_L	-5.530	69.44	44.82	226800.	28.11	413.9
6	S95T003867	-3.065	68.31	49.62	220800.	30.68	402.8
7	S95T003867_D	-4.006	24.02	48.78	216200.	29.07	389.5
8	S95T003867_A	361.4	411.0	441.8	222000.	420.8	777.7
9	CCV	4.810	4.853	5.007	4.879	4.940	4.943
10	CCB	-.0037	.0003	-.0013	.0034	-.0023	-.0007
11	S95T003868_L	-14.18	21.70	39.95	217400.	32.10	388.7
12	S95T003868	-1.652	21.31	46.54	211000.	28.13	380.7
13	S95T003868_D	-5.142	20.22	48.85	216300.	28.37	389.6
14	S95T003869_L	-31.49	68.59	53.89	245300.	23.95	444.0
15	S95T003869	-6.783	66.77	52.46	237300.	32.32	428.7
16	S95T003869_D	-5.589	33.99	51.58	233600.	29.49	421.6
17	CCV	4.735	4.759	4.903	4.783	4.782	4.819
18	CCB	-.0031	.0002	-.0015	.0034	.0016	.0053
19	S95T003962	.0921	.0006	-.0021	2.304	.0014	-.0025
20	S95T003962_D	.1069	.0007	.0011	2.318	.0033	.0028
21	ICSA	240.9	-.0070	-.0132	194.7	.0063	.0016
22	ICSAB	238.9	.4417	-.0168	193.0	.0086	.9030
23	CCV	4.766	4.804	4.943	4.848	4.857	4.874
24	CCB	.0011	.0003	-.0033	.0046	.0018	.0008

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.087	4.908	4.957	4.795	4.830	4.817
2	ICB	.0126	.0027	-.0072	.0066	.0184	-.0001
3	ICSA	.0059	.0254	-.0399	-.0015	-.0450	.0076
4	ICSAB	.0289	1.006	-.0538	-.0002	-.0483	.0101
5	S95T003867_L	1838.	182.8	5253.	-4.160	53.98	20.92
6	S95T003867	1836.	177.7	5127.	1.820	37.12	20.88
7	S95T003867_D	1736.	167.5	4971.	2.143	45.54	18.44
8	S95T003867_A	2163.	553.1	5403.	374.3	490.9	398.1
9	CCV	4.961	4.907	4.934	4.772	4.831	4.831
10	CCB	.0175	-.0041	-.0028	-.0036	.0160	.0035
11	S95T003868_L	1652.	152.7	4967.	-22.82	48.64	14.06
12	S95T003868	1671.	167.8	4895.	-2.481	32.53	17.67
13	S95T003868_D	1733.	170.6	4940.	2.648	42.65	15.88
14	S95T003869_L	2072.	213.8	5598.	-10.31	37.30	19.45
15	S95T003869	2068.	182.7	5483.	5.447	52.53	20.08
16	S95T003869_D	1908.	179.7	5380.	2.397	53.02	19.16
17	CCV	4.926	4.824	4.908	4.679	4.744	4.768
18	CCB	.0077	.0079	.0045	.0018	-.0025	.0014
19	S95T003962	.0028	-.0053	.0191	-.0034	.0057	3.203
20	S95T003962_D	-.0026	.0073	.0185	.0002	.0172	3.236
21	ICSA	.0378	.0168	-.0360	.0029	-.0635	.0037
22	ICSAB	.0335	.9955	-.0350	.0038	-.0828	.0155
23	CCV	5.026	4.858	4.957	4.726	4.819	4.816
24	CCB	.0160	.0056	-.0123	.0036	.0081	.0043

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.856	4.874	.0449	4.876	4.796	9.510
2	ICB	-.0075	-.0001	.0036	-.0007	.0018	-.0344
3	ICSA	.0080	-.0025	.0221	.0012	-.0216	.0879
4	ICSAB	.0097	-.0024	.0174	.0016	-.0214	.0934
5	S95T003867_L	28.74	3.217	-10.22	-.5552	33.50	195.6
6	S95T003867	8.948	2.960	1.678	-.1375	-8.534	130.2
7	S95T003867_D	5.722	2.857	-.8544	-.2521	6.031	146.5
8	S95T003867_A	382.8	383.3	4.187	377.6	365.0	903.6
9	CCV	4.790	4.837	.0463	4.818	4.753	9.432
10	CCB	.0044	.0001	-.0054	-.0003	-.0103	.0165
11	S95T003868_L	20.31	2.917	-8.659	-.5392	-24.38	153.0
12	S95T003868	8.859	2.798	.7971	-.1416	7.153	130.7
13	S95T003868_D	4.501	2.836	-.9397	-.1677	3.522	155.1
14	S95T003869_L	23.68	3.421	-7.959	-2.365	-.5197	180.7
15	S95T003869	9.255	3.160	-.8976	-.0656	4.565	147.4
16	S95T003869_D	6.799	3.118	-1.568	-.3557	4.799	168.6
17	CCV	4.660	4.698	.0474	4.707	4.659	9.150
18	CCB	.0055	.0000	.0009	-.0002	.0035	.0213
19	S95T003962	.0209	.0025	-.0083	-.0001	.0017	.1000
20	S95T003962_D	.0277	.0025	-.0020	.0007	.0142	.1109
21	ICSA	.0040	-.0024	.0154	.0014	-.0139	.0772
22	ICSAB	.0133	-.0024	.0182	.0019	-.0083	.1011
23	CCV	4.721	4.766	.0398	4.749	4.717	9.275
24	CCB	.0077	.0000	-.0058	-.0000	.0177	.0238

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.003	.0063	5.000	4.918
2	ICB	-.0018	-.0007	.0021	-.0019
3	ICSA	.0009	.0077	.0008	-.0035
4	ICSAB	.4657	.0080	.9698	-.0032
5	S95T003867_L	2.678	4.005	16.25	11.75
6	S95T003867	.2122	3.403	14.07	9.605
7	S95T003867_D	-.0803	3.145	13.47	8.857
8	S95T003867_A	386.8	3.641	399.4	390.2
9	CCV	4.976	.0069	5.008	4.864
10	CCB	.0001	.0001	.0006	.0004
11	S95T003868_L	.7004	3.394	15.80	9.034
12	S95T003868	.3617	3.183	16.19	8.216
13	S95T003868_D	-.7136	2.953	16.77	8.058
14	S95T003869_L	.9698	3.696	19.83	9.611
15	S95T003869	.4587	3.585	16.54	10.04
16	S95T003869_D	-.3997	3.356	15.55	9.413
17	CCV	4.876	.0067	4.948	4.747
18	CCB	.0003	.0001	.0007	-.0001
19	S95T003962	.0029	.0009	.0011	.0021
20	S95T003962_D	.0039	.0009	.0026	.0023
21	ICSA	-.0005	.0074	.0013	-.0046
22	ICSAB	.4635	.0078	.9670	-.0033
23	CCV	4.929	.0070	4.984	4.802
24	CCB	.0005	.0001	.0005	.0004

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

File: 960206F

LABCORE Data Entry Template for Worklist# 4898

Analyst: JK Soto **Instrument:** ICP012 **Book#** 508482

Method: LA-505-151/161 Rev/Mod B-0

Worklist Comment: ICP AN-102 (DIRECT)

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@ICP-QC	QC		
2	ICB				@ICP-QC	QC		
3	ICSA				@ICP-QC	QC		
4	ICSAB				@ICP-QC	QC		
5	SAMPLE	S95T003867	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:	AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01						
6	DUP	S95T003867	0	D	@ICP-D01	LIQUID		
7	SPK	S95T003867	0	D	@ICP-D01	LIQUID		
8	CCV				@ICP-QC	QC		
9	CCB				@ICP-QC	QC		
10	SAMPLE	S95T003868	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:	AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01						
11	DUP	S95T003868	0	D	@ICP-D01	LIQUID		
12	SAMPLE	S95T003869	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:	AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01						
13	DUP	S95T003869	0	D	@ICP-D01	LIQUID		
14	SAMPLE	S95T003962	0	D	@ICP-D01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:	AL-D-01 , CR-D-01 , FE-D-01 , MN-D-01 , NA-D-01 , NI-D-01 , SI-D-01 , U-D-01						
15	DUP	S95T003962	0	D	@ICP-D01	LIQUID		

DATA NOT USED IN PACKAGE

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 4898

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
16	ICSA				@ICP-QC	QC		
17	ICSAB				@ICP-QC	QC		
18	CCV				@ICP-QC	QC		
19	CCB				@ICP-QC	QC		

Final page for worklist # 4898

K [illegible] 04-04-96
Analyst Signature Date

Reviewed by:
[illegible] 2/7/96
Analyst Signature Date

S95T003847 , .025-15 ml , DF 601
S95T003847_D .025-15 601
S95T003847_G .025-15 601 , .025 ml sample + 3 ml 5573 + 12 ml HNO3
S95T003848 , .025-15 , DF 601
S95T003848_D .025-15 601
S95T003849_ .025-15 , DF 601
S95T003849_D , 025-15 601
S95T003942 [illegible] DF 1
S95T003942_D [illegible] 1

DATA NOT USED IN PACKAGE

Data Entry Comments:

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

Analysis Report Summary Tue 02-06-96 09:04:05 PM page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	960206F	ICP2	02/06/96	18:33	DKS	Q	CONC
2	ICB	960206F	ICP2	02/06/96	18:36	DKS	Q	CONC
3	ICSA	960206F	ICP2	02/06/96	18:39	DKS	Q	CONC
4	ICSAB	960206F	ICP2	02/06/96	18:42	DKS	Q	CONC
5	S95T003867	960206F	ICP2	02/06/96	18:46	DKS	S	CONC
6	S95T003867_D	960206F	ICP2	02/06/96	18:51	DKS	S	CONC
7	S95T003867_A	960206F	ICP2	02/06/96	18:54	DKS	S	CONC
8	CCV	960206F	ICP2	02/06/96	19:01	DKS	Q	CONC
9	CCB	960206F	ICP2	02/06/96	19:05	DKS	Q	CONC
10	S95T003868	960206F	ICP2	02/06/96	20:28	DKS	S	CONC
11	S95T003868_D	960206F	ICP2	02/06/96	20:31	DKS	S	CONC
12	S95T003869	960206F	ICP2	02/06/96	20:34	DKS	S	CONC
13	S95T003869_D	960206F	ICP2	02/06/96	20:37	DKS	S	CONC
14	S95T003962	960206F	ICP2	02/06/96	20:43	DKS	S	CONC
15	S95T003962_D	960206F	ICP2	02/06/96	20:46	DKS	S	CONC
16	ICSA	960206F	ICP2	02/06/96	20:50	DKS	Q	CONC
17	ICSAB	960206F	ICP2	02/06/96	20:52	DKS	Q	CONC
18	CCV_1	960206F	ICP2	02/06/96	20:56	DKS	Q	CONC
19	CCB_1	960206F	ICP2	02/06/96	20:59	DKS	Q	CONC

JK 2/8
02-06-96
GN-102 S95T003867
S95T003868
S95T003869
S95T003962
worklist # 4878

WHC-SD-WM-DP-165, REV. 1

DATA NOT USED IN PACKAGE

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.958	4.814	5.126	4.826	4.859	5.137
2	ICB	-.0004	-.0015	-.0099	-.0004	.0001	-.0002
3	ICSA	-.0000	233.3	-.0209	.0048	.0024	.0000
4	ICSAB	.9695	232.5	-.0196	.0018	.4721	.4747
5	S95T003867	15.22	15070.	-46.89	40.67	1.284	-.0543
6	S95T003867_D	15.83	15250.	-44.87	42.82	1.256	-.0541
7	S95T003867_A	576.3	16010.	589.2	606.4	577.3	608.9
8	CCV	4.936	4.812	5.079	4.820	4.840	5.046
9	CCB	-.0011	-.0023	-.0102	-.0009	.0000	-.0002
10	S95T003868	19.41	19410.	-56.51	49.83	1.549	-.0801
11	S95T003868_D	19.26	18810.	-55.46	50.37	1.494	-.0334
12	S95T003869	16.97	17210.	-49.17	43.90	1.385	-.1988
13	S95T003869_D	16.59	16800.	-52.28	42.83	1.321	-.1986
14	S95T003962	-.0012	.0439	.0124	.0470	.0732	-.0002
15	S95T003962_D	-.0021	.0826	.0045	.0479	.0781	-.0002
16	ICSA	.0002	232.7	-.0073	.0016	.0023	.0000
17	ICSAB	.9704	232.4	-.0148	-.0003	.4690	.4783
18	CCV_1	4.943	4.769	5.048	4.799	4.813	5.052
19	CCB_1	-.0001	.0059	-.0070	.0054	.0000	-.0000

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.026	5.140	5.097	5.059	5.025	5.107
2	ICB	-.0233	-.0015	-.0023	.0029	.0011	.0007
3	ICSA	-.0173	248.9	-.0005	.0167	.0040	.0021
4	ICSAB	-.0230	246.7	.9561	.0162	.4677	.4798
5	S95T003867	-6.511	477.6	59.92	1.779	5.116	303.6
6	S95T003867_D	-33.74	479.4	60.89	.8129	3.533	307.2
7	S95T003867_A	579.0	1090.	658.0	605.7	592.5	909.8
8	CCV	5.029	5.063	5.001	5.036	4.946	5.038
9	CCB	-.0463	-.0040	-.0017	-.0012	-.0001	.0003
10	S95T003868	-14.80	616.2	77.69	4.288	4.857	393.5
11	S95T003868_D	-18.78	599.4	75.67	6.471	5.686	381.6
12	S95T003869	2.580	557.3	69.57	5.479	5.104	348.3
13	S95T003869_D	-11.60	531.2	66.80	.3901	3.528	336.0
14	S95T003962	-.0137	.6289	-.0009	-.0054	.0012	.0100
15	S95T003962_D	-.0330	.6545	-.0019	.0034	-.0003	.0102
16	ICSA	-.0028	247.9	-.0003	.0147	.0007	.0017
17	ICSAB	-.0375	248.4	.9631	.0191	.4640	.4834
18	CCV_1	4.961	5.110	5.044	5.036	4.976	5.068
19	CCB_1	-.0265	-.0014	-.0021	.0069	.0005	.0001

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	4.933	-.0022	5.077	4.827	4.950	4.871
2	ICB	.0007	.0008	.0010	-.0719	.0013	.0005
3	ICSA	-.0098	-.0534	93.77	.1019	-.0041	.0032
4	ICSAB	.4641	-.0492	92.74	.1246	-.0038	.9555
5	S95T003867	23.90	.5770	51.53	2228.	15.90	-.2140
6	S95T003867_D	24.04	.5280	51.02	2405.	16.24	-.2138
7	S95T003867_A	610.3	.1082	646.9	2876.	609.9	585.5

DATA NOT USED IN PACKAGE

WHC-SD-WM-DP-165, REV. 1

#	Sample Name	Cu	Eu	Fe	K	La	Li
8	CCV	4.923	-.0028	5.009	4.874	4.922	4.908
9	CCB	.0012	.0003	.0009	.0139	.0000	.0001
10	S95T003868	30.71	.7728	65.45	2961.	20.22	.1977
11	S95T003868_D	29.44	.9064	62.92	2835.	20.03	.3346
12	S95T003869_	26.81	1.078	56.18	2549.	18.12	.6117
13	S95T003869_D	25.83	.8985	53.12	2532.	17.09	.3361
14	S95T003962_	.0016	.0023	.0013	.2284	-.0007	.0014
15	S95T003962_D	.0004	.0022	.0022	.3370	.0002	.0017
16	ICSA	-.0099	-.0528	93.52	.1901	-.0038	.0035
17	ICSAB	.4622	-.0510	93.07	.0357	-.0036	.9491
18	CCV_1	4.888	-.0016	5.010	5.038	4.917	4.845
19	CCB_1	.0007	.0016	.0014	.1264	.0020	.0010

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.816	4.950	4.996	4.861	5.008	5.026
2	ICB	.0114	.0003	-.0005	.0066	.0017	.0021
3	ICSA	237.0	-.0057	-.0136	192.0	.0049	.0070
4	ICSAB	237.2	.4502	-.0184	192.9	.0070	.9144
5	S95T003867	-.9662	24.63	48.43	219700.	30.54	397.0
6	S95T003867_D	-1.104	23.89	48.33	222300.	30.65	414.8
7	S95T003867_A	556.3	594.6	640.1	226200.	631.9	1001.
8	CCV	4.789	4.886	4.922	4.866	4.991	4.916
9	CCB	.0085	-.0001	-.0026	-.0009	.0007	.0003
10	S95T003868	-2.804	40.43	64.61	281000.	38.24	512.9
11	S95T003868_D	1.444	35.10	60.58	271700.	39.24	512.1
12	S95T003869_	-.2130	32.10	56.53	248900.	35.06	464.3
13	S95T003869_D	-2.056	27.02	54.35	243700.	32.57	454.7
14	S95T003962_	.1016	.0005	-.0027	1.988	.0024	.0001
15	S95T003962_D	.0949	.0007	-.0015	2.022	-.0002	-.0016
16	ICSA	236.5	-.0057	-.0117	191.5	.0062	-.0065
17	ICSAB	237.2	.4525	-.0145	191.9	.0041	.9313
18	CCV_1	4.764	4.909	4.945	4.826	4.991	4.976
19	CCB_1	.0069	.0004	-.0010	.0123	.0016	.0019

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.026	5.096	5.012	4.706	4.922	4.796
2	ICB	-.0048	-.0012	.0091	.0068	-.0029	.0041
3	ICSA	.0352	.0657	-.0257	-.0055	-.0282	.0117
4	ICSAB	.0281	1.034	-.0420	.0012	-.0344	.0150
5	S95T003867	1776.	180.4	5149.	-2.133	36.58	14.75
6	S95T003867_D	1764.	173.7	5186.	9.045	36.67	13.97
7	S95T003867_A	2425.	767.7	5838.	556.9	687.7	588.3
8	CCV	4.811	5.017	4.939	4.622	4.820	4.754
9	CCB	-.0060	.0165	-.0016	.0000	-.0355	-.0019
10	S95T003868	2243.	237.8	6643.	-3.282	40.61	17.77
11	S95T003868_D	2185.	227.6	6411.	.9077	48.64	16.78
12	S95T003869_	1994.	207.8	5874.	4.193	44.20	17.88
13	S95T003869_D	1933.	204.5	5711.	-.8119	40.03	17.52
14	S95T003962_	-.0085	.0006	.0866	.0051	.0016	3.176
15	S95T003962_D	.0142	.0116	.0701	-.0022	-.0014	3.221

WHC-SD-WM-DP-165, REV. 1

DATA NOT USED IN PACKAGE

#	Sample Name	P	Pb	S	Sb	Se	Si
16	ICSA	.0173	.0726	-.0372	-.0016	-.0200	.0073
17	ICSAB	.0264	1.056	-.0325	-.0004	-.0223	.0148
18	CCV_1	4.856	5.061	4.939	4.644	4.833	4.756
19	CCB_1	-.0078	.0057	-.0048	.0091	-.0117	.0040

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.822	4.869	-.0040	4.766	4.881	9.213
2	ICB	.0157	.0001	-.0067	.0002	.0016	.0330
3	ICSA	.0169	-.0022	.0031	.0017	-.0029	.1016
4	ICSAB	.0120	-.0024	-.0025	.0017	.0241	.0986
5	S95T003867	6.539	2.993	-3.153	-.0709	11.07	131.7
6	S95T003867_D	6.280	2.927	-2.315	.3782	13.78	128.3
7	S95T003867_A	584.2	583.9	-4.859	566.0	594.9	1241.
8	CCV	4.800	4.835	-.0012	4.718	4.823	9.163
9	CCB	.0032	.0000	-.0074	.0005	-.0294	-.0046
10	S95T003868	13.30	3.904	-3.625	-.2304	-9.760	169.5
11	S95T003868_D	14.05	3.706	-2.828	.5047	-9.078	188.5
12	S95T003869	17.20	3.447	-5.900	.5083	-1.809	165.6
13	S95T003869_D	12.12	3.120	-6.126	.2060	11.56	161.3
14	S95T003962	.0290	.0026	-.0109	.0009	-.0049	.0895
15	S95T003962_D	.0289	.0026	-.0110	.0009	.0108	.1106
16	ICSA	.0212	-.0021	.0033	.0012	-.0167	.1270
17	ICSAB	.0178	-.0021	.0048	.0020	.0106	.1018
18	CCV_1	4.778	4.832	-.0044	4.733	4.870	9.170
19	CCB_1	.0188	.0001	-.0056	.0002	.0112	.0575

#	Sample Name	V	Y	Zn	Zr
1	ICV	4.908	.0066	4.961	4.928
2	ICB	.0024	.0005	.0001	.0027
3	ICSA	.0021	.0080	-.0033	-.0001
4	ICSAB	.4583	.0076	.9468	-.0000
5	S95T003867	.2388	3.054	12.90	10.15
6	S95T003867_D	.0171	2.961	15.07	9.867
7	S95T003867_A	580.5	3.713	599.9	597.0
8	CCV	4.852	.0063	4.897	4.879
9	CCB	.0006	.0001	-.0013	.0017
10	S95T003868	.4805	3.980	24.18	12.98
11	S95T003868_D	.9021	3.925	20.93	12.67
12	S95T003869	2.088	3.793	19.46	12.72
13	S95T003869_D	1.198	3.607	16.41	11.43
14	S95T003962	.0044	.0011	.0010	.0040
15	S95T003962_D	.0047	.0012	.0021	.0047
16	ICSA	.0027	.0081	-.0031	.0006
17	ICSAB	.4617	.0082	.9537	.0004
18	CCV_1	4.863	.0068	4.924	4.889
19	CCB_1	.0039	.0009	.0003	.0036

JK 02-06-96

DATA NOT USED IN PACKAGE

WHC-SD-WM-DP-165, REV. 1

LABCORE Data Entry Template for Worklist# 4999

Analyst: KRM **Instrument:** TOC01 **Book #** 16 N12 D

Method: LA-344-105 Rev/Mod C-0

Worklist Comment: TOC combustion AN-102

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TOC-01	LIQUID	1	1.8	N/A	ug/mL
		2	STD				TOC-01	LIQUID	~~2.99E+3~~ 3.00e3 RWS 1/29/96	2.85E+3	N/A	ug/mL
95000222	AN-102 GRAB	3	SAMPLE	S95T003867	0		TOC-01	LIQUID	N/A	2.79e+4	3.05e+2	ug/mL
95000222	AN-102 GRAB	4	DUP	S95T003867	0		TOC-01	LIQUID	2.79E+4	2.57E+4	N/A	ug/mL
95000222	AN-102 GRAB	5	SPK	S95T003867	0		TOC-01	LIQUID	100	94.1	N/A	ug/mL
95000222	AN-102 GRAB	6	SAMPLE	S95T003868	0		TOC-01	LIQUID	N/A	2.48E+4	3.05E+2	ug/mL
95000222	AN-102 GRAB	7	DUP	S95T003868	0		TOC-01	LIQUID	2.48E+4	2.65+4	N/A	ug/mL
95000222	AN-102 GRAB	8	SAMPLE	S95T003869	0		TOC-01	LIQUID	N/A	2.65E+4	3.05E+2	ug/mL
95000222	AN-102 GRAB	9	DUP	S95T003869	0		TOC-01	LIQUID	2.65E+4	2.51E+4	N/A	ug/mL
95000222	AN-102 GRAB	10	SAMPLE	S95T003962	0		TOC-01	LIQUID	N/A	<5.50	5.50	ug/mL
95000222	AN-102 GRAB	11	DUP	S95T003962	0		TOC-01	LIQUID	<5.50	<5.50	N/A	ug/mL

Final page for worklist # 4999

Analyst Signature Date

TE Whitt 1/26/96
Analyst Signature Date

Reviewed RW Schroeder 1/29/96

Data Entry Comments: Rather than reporting the calculated concentration of the blank, we chose to report the absolute value of the difference between the blank and baseline. This shows control better. The ACE form does not allow this, yet. The correction has been made and is pending user acceptance testing.

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.

This is true for all TIC and TOC blank reports.

RW Schroeder 3/20/96

TOC: LA-344-105 (C-0)

WORKLIST # 9999

ANALYST SIGNATURE

ANALYSIS DATE 1-25-96

ANALYSIS TIME 11:30

INSTRUMENT CODE

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☒ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)	
Volume H2SO4 Added to SAMPLE (mL)	2 mL
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	No
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☒ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = 595T003867 STD # =

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	YES
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☒ SPIKE ☐ BLANK ☐ TRIPLICATE

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SAMPLE # = STD # = 11N120

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	No
Amount SPIKE Standard Added (mL)	.5
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

.5 mL of Sample and .5 mL Spike

☐ SAMPLE ☐ STANDARD ☒ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = 595T003868 STD # =

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	No
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☒ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # = 16N120

Amount of SAMPLE Used (mL)	.2
Volume H2SO4 Added to SAMPLE (mL)	2
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	No
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☐ SAMPLE ☐ STANDARD ☒ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = 595T003867 STD # =

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	No
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☒ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = 595T003868 STD # =

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	No
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☒ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = 595T003869 STD # =

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	No
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

TOC: LA-344-105 (C-0)

WORKLIST #	ANALYST SIGNATURE	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
4999	[signature]	1-25-96	11:30	

[ ] SAMPLE STANDARD [X] DUPLICATE BASELINE [ ] SPIKE BLANK [ ] TRIPLICATE

SAMPLE # = 595T003869 STD # =

Volume SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	no
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE STANDARD [ ] DUPLICATE BASELINE [ ] SPIKE BLANK [ ] TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL)	
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[X] SAMPLE STANDARD [ ] DUPLICATE BASELINE [ ] SPIKE BLANK [ ] TRIPLICATE

SAMPLE # = 595T003962 STD # =

Amount of SAMPLE Used (mL)	2
Volume H2SO4 Added to SAMPLE (mL)	.2
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	no
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE STANDARD [ ] DUPLICATE BASELINE [ ] SPIKE BLANK [ ] TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL)	
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[X] SAMPLE STANDARD [ ] DUPLICATE BASELINE [ ] SPIKE BLANK [ ] TRIPLICATE

SAMPLE # = 595T003962 STD # =

Amount of SAMPLE Used (mL)	2
Volume H2SO4 Added to SAMPLE (mL)	.2
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	no
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE STANDARD [ ] DUPLICATE BASELINE [ ] SPIKE BLANK [ ] TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL)	
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE STANDARD [ ] DUPLICATE BASELINE [ ] SPIKE BLANK [ ] TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL)	
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

				BLANK
Type	Sample Volume in mL		(SS)	0.200
BLANK	H2SO4 Volume in mL		(VR)	2.000
Work List	Volume Injected in mL		(VI)	0.200
4999	Dilution Factor		(DF)	1
Test Code	Digest Dilution Factor		(DDF)	1
TOC01	µg of Carbon in Sample		(C1)	7.5
Matrix	µg of Carbon in Blank		(C2)	5.7
LIQUID	g of Carbon/L	=		~~0.00E-03~~ 1.8
Sample #				1.8 RWS 3/20/96
Instrument Code				
WC16130				
Analyst				
K. MONTEITH				
Date				
01/25/96				
Time				
05:45 AM				

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) $\frac{1 \mu g\ C * DF * DDF}{VI}$

$|7.5-5.7| = 1.8$

3/20/96

µg Carbon/mL =	1.8 RWS ~~0.00E+00~~	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	[signature]	Date:	01/26/96
Approved by:	[signature]	Date:	1/29/96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.200
STANDARD	H2SO4 Volume in mL	(VR)	2.000
Work List	Volume Injected in mL	(VI)	0.200
4999	Dilution Factor	(DF)	11
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	57.6
Matrix	µg of Carbon in Blank	(C2)	5.7
LIQUID	g of Carbon/L =		2.85E+00

Sample #	16N12D
Instrument Code	WC16130
Analyst	K. MONTEITH
Date	01/25/96
Time	05:45 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$

µg Carbon/mL =	2.85E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by: [signature] Date: 01/26/96

Approved by: RW Schroeder Date: 1/29/96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			SAMPLE
Sample Volume in mL	(SS)		0.100
H2SO4 Volume in mL	(VR)		6.000
Volume Injected in mL	(VI)		0.200
Dilution Factor	(DF)		61
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		97.1
µg of Carbon in Blank	(C2)		5.7
g of Carbon/L		=	2.79E+01

Type	SAMPLE
Work List	4999
Test Code	TOC01
Matrix	LIQUID
Sample #	S95T003867
Instrument Code	WC16130
Analyst	K. MONTEITH
Date	01/25/96
Time	05:45 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$

µg Carbon/mL =	2.79E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by: [signature] Date: 01/26/96

Approved by: [signature] Date: 1/29/96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			DUPLICATE
Sample Volume in mL	(SS)		0.100
H2SO4 Volume in mL	(VR)		6.000
Volume Injected in mL	(VI)		0.200
Dilution Factor	(DF)		61
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		89.9
µg of Carbon in Blank	(C2)		5.7
g of Carbon/L		=	2.57E+01

Type	DUPLICATE
Work List	4999
Test Code	TOC01
Matrix	LIQUID
Sample #	S95T003867
Instrument Code	WC16130
Analyst	K. MONTEITH
Date	01/25/96
Time	05:45 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$

µg Carbon/mL =	2.57E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by: [signature] Date: 01/26/96

Approved by: [signature] Date: 1/29/96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

TOC: LA-344-105 SPIKED SAMPLE

SPIKE

Type	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	0.100	Sample Size in mL (SS)	0.500
Work List	H2SO4 Volume in mL	6.000	Spike Volume in mL	0.500
4999	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.000
Test Code	µg of Carbon in Sample	97.1	Volume Injected in mL	0.200
TOC01	µg of Carbon in Blank	5.7	Sample Pre-Spike Dil. Factor (PDF)	61
Matrix			Spike Value (µg/ml)	748
LIQUID			µg C in Sample + Spike	121.8
Sample #			µg C in Blank	5.7
S95T003867				
Instrument Code				
WC16130				
Analyst				
K. MONTEITH				
Date				
01/25/96				
Time				
08:57 AM				

PERCENT SPIKE REC = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]
- [(µgC sample - µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)]

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Correction Factor = $\frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

Sample Pre-Spike Dilution Factor = $\frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 94.1%

Data Entry by: TE Wright Date: 26-Jan-96

Approved by: RW Schroeder Date: 1/29/96

Form X Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

TOC : LA-344-105 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.100
SAMPLE	H2SO4 Volume in mL	(VR)	6.000
Work List	Volume Injected in mL	(VI)	0.200
4999	Dilution Factor	(DF)	61
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	86.9
Matrix	µg of Carbon in Blank	(C2)	5.7
LIQUID	g of Carbon/L	=	2.48E+01
Sample #			
S95T003868			
Instrument Code			
WC16130			
Analyst			
K. MONTEITH			
Date			
01/25/96			
Time			
05:45 AM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$

µg Carbon/mL =	2.48E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by: K. Wright Date: 01/26/96

Approved by: RW Schneider Date: 1/29/96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.100
DUPLICATE	H2SO4 Volume in mL	(VR)	6.000
Work List	Volume Injected in mL	(VI)	0.200
4999	Dilution Factor	(DF)	61
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	92.7
Matrix	µg of Carbon in Blank	(C2)	5.7
LIQUID	g of Carbon/L	=	2.65E+01

Sample #
S95T003868
Instrument Code
WC16130
Analyst
K. MONTEITH
Date
01/25/96
Time
05:45 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) $\frac{1 \text{ µg C} * DF * DDF}{VI}$

µg Carbon/mL =	2.65E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by:	[illegible]	Date:	01/26/96
Approved by:	[illegible]	Date:	1/29/96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.100
SAMPLE	H2SO4 Volume in mL	(VR)	6.000
Work List	Volume Injected in mL	(VI)	0.200
4999	Dilution Factor	(DF)	61
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	92.6
Matrix	µg of Carbon in Blank	(C2)	5.7
LIQUID	g of Carbon/L	=	2.65E+01

Sample #	S95T003869
Instrument Code	WC16130
Analyst	K. MONTEITH
Date	01/25/96
Time	05:45 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) $\frac{1 \text{ µg C} * DF * DDF}{VI}$

µg Carbon/mL =	2.65E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by: [signature] Date: 01/26/96

Approved by: [signature] Date: 1/29/96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

				DUPLICATE
Type	Sample Volume in mL		(SS)	0.100
DUPLICATE	H2SO4 Volume in mL		(VR)	6.000
Work List	Volume Injected in mL		(VI)	0.200
4999	Dilution Factor		(DF)	61
Test Code	Digest Dilution Factor		(DDF)	1
TOC01	µg of Carbon in Sample		(C1)	87.9
Matrix	µg of Carbon in Blank		(C2)	5.7
LIQUID	g of Carbon/L	=		2.51E+01

Sample #
S95T003869
Instrument Code
WC16130
Analyst
K. MONTEITH
Date
01/25/96
Time
05:45 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) $\frac{1 \text{ µg C} * DF * DDF}{VI}$

µg Carbon/mL =	2.51E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by: [illegible] Date: 01/26/96

Approved by: [illegible] Date: 1/29/96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

				SAMPLE
Type	Sample Volume in mL		(SS)	2.000
SAMPLE	H2SO4 Volume in mL		(VR)	0.200
Work List	Volume Injected in mL		(VI)	0.200
4999	Dilution Factor		(DF)	1.1
Test Code	Digest Dilution Factor		(DDF)	1
TOC01	µg of Carbon in Sample		(C1)	6.5
Matrix	µg of Carbon in Blank		(C2)	5.7
LIQUID	g of Carbon/L	=	<	5.50E-03

Sample #
S95T003962
Instrument Code
WC16130
Analyst
K. MONTEITH
Date
01/25/96
Time
05:45 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) $\frac{1 \text{ µg C} * DF * DDF}{VI}$

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL =	<	5.50E+00	DETECTION LEVEL in µg/mL
			5.50E+00

Data Entry by: [signature] Date: 01/26/96

Approved by: [signature] Date: 1/29/96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

				DUPLICATE
Type	Sample Volume in mL	(SS)		2.000
DUPLICATE	H2SO4 Volume in mL	(VR)		0.200
Work List	Volume Injected in mL	(VI)		0.200
4999	Dilution Factor	(DF)		1.1
Test Code	Digest Dilution Factor	(DDF)		1
TOC01	µg of Carbon in Sample	(C1)		2.9
Matrix	µg of Carbon in Blank	(C2)		5.7
LIQUID	g of Carbon/L	=	<	5.50E-03

Sample #	
S95T003962	
Instrument Code	
WC16130	
Analyst	
K. MONTEITH	
Date	
01/25/96	
Time	
05:45 AM	

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) $\frac{1 \mu g C * DF * DDF}{VI}$

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL =	<	5.50E+00	DETECTION LEVEL in µg/mL
			5.50E+00

Data Entry by:	[illegible]	Date:	01/26/96
Approved by:	Rick Schroeder	Date:	1/29/96

Form 344105_C Rev. 1.1

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

Sample: BLK Date: 01/25/96 Time: 05:45:05

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	1.00	70.00
3	1.50	1.60	37.50
4	2.00	2.00	20.00
5	2.50	2.40	16.67
6	3.00	3.10	22.58
7	3.50	3.30	6.06
8	4.00	3.80	13.16
9	4.50	4.00	5.00
10	5.00	4.50	11.11
11	5.51	4.80	6.25
12	6.00	5.10	5.88
13	6.50	5.50	7.27
14	7.00	5.70	3.51

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 296 TO 307.

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

Sample Run By: 1-25-96
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK Date: 01/25/96 Time: 06:54:04

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	1.20	100.00
3	1.51	2.60	53.85
4	2.01	3.00	13.33
5	2.51	3.50	14.29
6	3.01	3.70	5.41
7	3.51	4.30	13.95
8	4.01	4.50	4.44
9	4.51	5.10	11.76
10	5.01	5.50	7.27
11	5.51	6.00	8.33
12	6.01	6.40	6.25
13	6.51	6.90	7.25
14	7.00	7.50	8.00

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(7.5 - 5.700844)(1)/(200) = +9.0E-03 g/L Carbon
(7.5 - 5.700844)(1)/(200)(12) = +7.5E-04 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 01/25/96 Time: 06:28:18

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.40	0.00
2	1.01	35.40	96.05
3	1.51	44.20	19.91
4	2.01	47.40	6.75
5	2.51	49.70	4.63
6	3.01	51.30	3.12
7	3.51	52.90	3.02
8	4.01	54.00	2.04
9	4.51	54.80	1.46
10	5.01	55.40	1.08
11	5.51	56.00	1.07
12	6.01	56.40	0.71
13	6.50	57.10	1.23
14	7.00	57.60	0.87

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(57.6 - 5.700819)(11)/(200) = +2.85E+00 g/L Carbon
(57.6 - 5.700819)(11)/(200)(12) = +2.38E-01 Molar Carbon

Sample Run By: KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T3867 Date: 01/25/96 Time: 07:18:46

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.40	0.00
2	1.01	52.40	97.33
3	1.51	74.30	29.48
4	2.01	81.20	8.50
5	2.51	85.50	5.03
6	3.01	88.60	3.50
7	3.51	90.60	2.21
8	4.01	92.30	1.84
9	4.51	93.60	1.39
10	5.01	94.60	1.06
11	5.51	95.50	0.94
12	6.01	96.00	0.52
13	6.51	96.80	0.83
14	7.00	97.10	0.31

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(97.1 - 5.700819)(61)/(200) = +2.79E+01 g/L Carbon
(97.1 - 5.700819)(61)/(200)(12) = +2.32E+00 Molar Carbon

Sample Run By: KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3867 DUP Date: 01/25/96 Time: 08:44:29

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	51.70	97.87
3	1.51	69.00	25.07
4	2.01	75.70	8.85
5	2.51	79.30	4.54
6	3.01	82.20	3.53
7	3.51	83.90	2.03
8	4.01	85.40	1.76
9	4.51	86.70	1.50
10	5.00	87.80	1.25
11	5.50	88.20	0.45
12	6.00	89.00	0.90
13	6.50	89.60	0.67
14	7.00	89.90	0.33

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(89.9 - 5.700149)(61)/(200) = +2.57E+01 g/L Carbon
(89.9 - 5.700149)(61)/(200)(12) = +2.14E+00 Molar Carbon

Sample Run By: KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3867 SPK Date: 01/25/96 Time: 08:57:13

Sample Size = 200 uL
Dil Factor = 122
Blank ID # = BLK
Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.10	0.00
2	1.01	24.20	91.32
3	1.51	88.90	72.78
4	2.01	101.40	12.33
5	2.51	107.70	5.85
6	3.00	111.90	3.75
7	3.51	115.00	2.70
8	4.01	116.30	1.12
9	4.50	118.30	1.69
10	5.00	119.90	1.33
11	5.50	120.40	0.42
12	6.00	121.40	0.82
13	6.50	121.50	0.08
14	7.00	121.80	0.25

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(121.8 - 5.700025)(122)/(200) = +7.082E+01 g/L Carbon
(121.8 - 5.700025)(122)/(200)(12) = +5.902E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3868 Date: 01/25/96 Time: 09:13:50

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	42.00	100.00
3	1.51	64.20	34.58
4	2.01	70.80	9.32
5	2.51	75.00	5.60
6	3.01	77.80	3.60
7	3.51	80.50	3.35
8	4.01	81.30	0.98
9	4.50	82.30	1.22
10	5.00	83.50	1.44
11	5.50	84.90	1.65
12	6.00	85.40	0.59
13	6.50	86.00	0.70
14	7.00	86.90	1.04

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(86.9 - 5.700174)(61)/(200) = +2.48E+01 g/L Carbon
(86.9 - 5.700174)(61)/(200)(12) = +2.06E+00 Molar Carbon

Sample Run By: KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: S95T3868 DUP Date: 01/25/96 Time: 09:30:38

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	45.80	100.00
3	1.51	66.80	31.44
4	2.01	74.50	10.34
5	2.51	79.10	5.82
6	3.01	82.40	4.00
7	3.51	84.70	2.72
8	4.00	86.30	1.85
9	4.50	87.50	1.37
10	5.00	89.20	1.91
11	5.51	90.30	1.22
12	6.01	91.40	1.20
13	6.51	91.90	0.54
14	7.00	92.70	0.86

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(92.7 - 5.700869)(61)/(200) = +2.65E+01 g/L Carbon
(92.7 - 5.700869)(61)/(200)(12) = +2.21E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3869 Date: 01/25/96 Time: 09:39:07

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.00	41.10	100.00
3	1.50	67.30	38.93
4	2.00	76.70	12.26
5	2.50	82.00	6.46
6	3.00	85.30	3.87
7	3.50	87.30	2.29
8	4.00	88.40	1.24
9	4.50	88.50	0.11
10	5.00	90.00	1.67
11	5.50	90.60	0.66
12	6.00	91.40	0.88
13	6.50	92.20	0.87
14	7.00	92.60	0.43

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(92.6 - 5.699975)(61)/(200) = +2.65E+01 g/L Carbon
(92.6 - 5.699975)(61)/(200)(12) = +2.21E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
WHC-SD-WM-DP-165, REV. 1

Sample: S95T3869 DUP Date: 01/25/96 Time: 09:47:30

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .8138422 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	36.90	100.00
3	1.51	61.30	39.80
4	2.01	69.90	12.30
5	2.51	74.70	6.43
6	3.01	78.80	5.20
7	3.51	80.30	1.87
8	4.01	82.90	3.14
9	4.50	84.50	1.89
10	5.00	85.60	1.29
11	5.50	87.10	1.72
12	6.00	87.20	0.11
13	6.50	87.40	0.23
14	7.00	87.90	0.57

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(87.9 - 5.700174)(61)/(200) = +2.51E+01 g/L Carbon
(87.9 - 5.700174)(61)/(200)(12) = +2.09E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: S95T3962 Date: 01/25/96 Time: 10:14:27

Sample Size = 200 uL
Dil Factor = 1.1
Blank ID # =
Blank Value = .81 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.20	100.00
3	1.51	1.90	89.47
4	2.01	2.00	5.00
5	2.51	3.30	39.39
6	3.00	3.70	10.81
7	3.50	4.90	24.49
8	4.00	5.00	2.00
9	4.50	5.10	1.96
10	5.00	5.70	10.53
11	5.50	6.20	8.06
12	6.00	6.50	4.62
13	6.50	6.50	0.00
14	7.00	6.50	0.00

USER INPUT BLANK VALUE
BLANK VALUE = 5.67309 micrograms carbon
BLANK FACTOR = 5.67309 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(6.5 - 5.672422)(1.1)/(200) = < 5.00 E-3 g/L Carbon
(6.5 - 5.672422)(1.1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3962 DUP Date: 01/25/96 Time: 10:49:28

Sample Size = 200 uL
Dil Factor = 1.1
Blank ID # =
Blank Value = .81 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.51	0.00	0.00
4	2.01	0.10	100.00
5	2.51	1.10	90.91
6	3.01	1.20	8.33
7	3.51	1.40	14.29
8	4.01	1.80	22.22
9	4.51	2.70	33.33
10	5.01	2.90	6.90
11	5.51	2.90	0.00
12	6.01	2.90	0.00
13	6.51	2.90	0.00
14	7.00	2.90	0.00

USER INPUT BLANK VALUE
BLANK VALUE = 5.67309 micrograms carbon
BLANK FACTOR = 5.67309 / 7.003815 = +8.1E-01 ug/min Carbon

SAMPLE RESULTS:
(2.9 - 5.673906)(1.1)/(200) = < 5.00 E-3 g/L Carbon
(2.9 - 5.673906)(1.1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

LABCORE Data Entry Template for Worklist# 5364

Analyst: KRM **Instrument:** TOC01 _____ **Book #** 16N12D

Method: LA-344-105 Rev/Mod C-0

Worklist Comment: 102-AN TOC BY COUL. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TOC-01	LIQUID	1	~~2.66E00~~ 1.5 HLa 2-23-96	N/A	ug/mL
		2	STD				TOC-01	LIQUID	3000	3.03 E3	N/A	ug/mL
95000227	AN-102 GRAB	3	SAMPLE	S95T003984	0		TOC-01	LIQUID	N/A	2.57 E4	3.05 e2	ug/mL
95000227	AN-102 GRAB	4	DUP	S95T003984	0		TOC-01	LIQUID	2.57 E4	2.51 E4	N/A	ug/mL
95000227	AN-102 GRAB	5	SPK	S95T003984	0		TOC-01	LIQUID	100	97.6	N/A	ug/mL
95000227	AN-102 GRAB	6	SAMPLE	S95T003982	0		TOC-01	LIQUID	N/A	2.69 E4	3.05 e2	ug/mL
95000227	AN-102 GRAB	7	DUP	S95T003982	0		TOC-01	LIQUID	2.69 E4	2.62 E4	N/A	ug/mL
95000227	AN-102 GRAB	8	SAMPLE	S95T003983	0		TOC-01	LIQUID	N/A	2.57 E4 ~~2.52 E4~~ 2-16-96	3.05 e2	ug/mL
95000227	AN-102 GRAB	9	DUP	S95T003983	0		TOC-01	LIQUID	2.57 E4	2.75 E4	N/A	ug/mL

Final page for worklist # 5364

2-15-96
Analyst Signature **Date**

2-16-96
Analyst Signature **Date**

Reviewed RW Schroeder 2/20/96

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.

TOC: LA-344-105 (C-0)

WORKLIST #	ANALYST SIGNATURE	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
5364		2-15-96		

[ ] SAMPLE [ ] STANDARD [X] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)	2-15-96
Volume H2SO4 Added to SAMPLE (mL)	3
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = STD # = 16N12B

Amount of SAMPLE Used (mL)	.2
Volume H2SO4 Added to SAMPLE (mL)	3
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003984 STD # =

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	Y
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE [ ] STANDARD [X] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003984 STD # =

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	N
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [X] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003984 STD # = 11N12H

Amount of SAMPLE Used (mL)	.4
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	Y
Amount SPIKE Standard Added (mL)	.4
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	—
Final Coulometer Reading in µg Carbon (Optional)	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003982 STD # =

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	N
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE [ ] STANDARD [X] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003982 STD # =

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	N
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003983 STD # =

Amount of SAMPLE Used (mL)	.1
Volume H2SO4 Added to SAMPLE (mL)	6
Volume INJECTED (mL)	.2
Was Sample Dilution Used for SPIKE? Y or N	N
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

TOC: LA-344-105 (C-0)

WORKLIST # _____ ANALYST SIGNATURE _____ ANALYSIS DATE _____ ANALYSIS TIME _____ INSTRUMENT CODE _____

☐ SAMPLE ☐ STANDARD ☒ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = S95T003983 STD # =

Volume SAMPLE Used (mL) .1
Volume H2SO4 Added to SAMPLE (mL) 6
Volume INJECTED (mL) .3
Was Sample Dilution Used for SPIKE? Y or N N
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.200
STANDARD	H2SO4 Volume in mL	(VR)	2.000
Work List	Volume Injected in mL	(VI)	0.200
5364	Dilution Factor	(DF)	11
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	56.5
Matrix	µg of Carbon in Blank	(C2)	1.4
LIQUID	g of Carbon/L	=	3.03E+00

Sample #
16N12D
Instrument Code
Analyst
KRM
Date
02/15/96
Time

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{VI}$

µg Carbon/mL =	3.03E+03	DETECTION LEVEL in µg/mL
		5.50E+01

Data Entry by:		Date:	02/20/96
Approved by:		Date:	2-23-96

Form 344105_C Rev. 1.1 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.200
BLANK	H2SO4 Volume in mL	(VR)	2.000
Work List	Volume Injected in mL	(VI)	0.200
5364	Dilution Factor	(DF)	1
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	2.9
Matrix	µg of Carbon in Blank	(C2)	1.4
LIQUID	g of Carbon/L	=	~~7.50E-03~~
Sample #			
BLNK			
Instrument Code			
Analyst			
KRM			
Date			
02/15/96			
Time			

1.5 RWS 3/20/96

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$

$|2.9 - 1.4| = 1.5$

µg Carbon/mL =	1.5 RWS 3/20/96 ~~7.50E+00~~	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	RS	Date:	02/20/96
Approved by:	H Anastn	Date:	2-23-96

Form 344105_C Rev. 1.1 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.100
SAMPLE	H2SO4 Volume in mL	(VR)	6.000
Work List	Volume Injected in mL	(VI)	0.200
5364	Dilution Factor	(DF)	61
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	85.6
Matrix	µg of Carbon in Blank	(C2)	1.4
LIQUID	g of Carbon/L	=	2.57E+01

Sample #	
S95T003984	
Instrument Code	
Analyst	
KRM	
Date	
02/15/96	
Time	

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{VI}$

µg Carbon/mL =	2.57E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by:	[signature]	Date:	02/20/96
Approved by:	[signature]	Date:	2-23-96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

				DUPLICATE
Type	Sample Volume in mL		(SS)	0.100
DUPLICATE	H2SO4 Volume in mL		(VR)	6.000
Work List	Volume Injected in mL		(VI)	0.200
5364	Dilution Factor		(DF)	61
Test Code	Digest Dilution Factor		(DDF)	1
TOC01	µg of Carbon in Sample		(C1)	83.8
Matrix	µg of Carbon in Blank		(C2)	1.4
LIQUID	g of Carbon/L	=		2.51E+01
Sample #				
S95T003984DUP				
Instrument Code				
Analyst				
KRM				
Date				
02/15/96				
Time				

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$

µg Carbon/mL =	2.51E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by:	[signature]	Date:	02/20/96
Approved by:	[signature]	Date:	2-23-96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

TOC: LA-344-105 SPIKED SAMPLE

SPIKE

Type	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	0.100	Sample Size in mL (SS)	0.400
Work List	H2SO4 Volume in mL	6.000	Spike Volume in mL	0.400
5364	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.000
Test Code	µg of Carbon in Sample	85.6	Volume Injected in mL	0.200
toc-01	µg of Carbon in Blank	1.4	Sample Pre-Spike Dil. Factor (PDF)	61
Matrix			Spike Value (µg/ml)	748
LIQUID			µg C in Sample + Spike	116.5
Sample #			µg C in Blank	1.4
S95T003984				
Instrument Code				
TOC01				
Analyst				
KRM				
Date				
02/15				
Time				

PERCENT SPIKE RE = µg Carbon Recovered from Spike * 100 / µg Carbon in Spike

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]
- [(µgC sample - µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)]

Spike Correction Factor = Total volume in spiked sample vial (mL) / Volume injected (mL)

Sample Correction Factor = Total volume in sample vial (mL) / Volume injected (mL)

Sample Size Correction Factor = Sample size in (mL) in spiked vial / Sample size (mL) in sample

Sample Pre-Spike Dilution Factor = 1 / Dilution of Sample Before Added to Spike Vial

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 97.6%

Data Entry by:	[illegible]	Date:	16-Feb-96
Approved by:	[illegible]	Date:	2/20/96

Form X Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			SAMPLE
Sample Volume in mL	(SS)		0.100
H2SO4 Volume in mL	(VR)		6.000
Volume Injected in mL	(VI)		0.200
Dilution Factor	(DF)		61
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		89.7
µg of Carbon in Blank	(C2)		1.4
g of Carbon/L		=	2.69E+01

Type	SAMPLE
Work List	5364
Test Code	TOC01
Matrix	LIQUID
Sample #	S95T003982
Instrument Code	
Analyst	KRM
Date	02/15/96
Time	

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$

µg Carbon/mL =	2.69E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by:		Date:	02/20/96
Approved by:		Date:	2-23-96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.100
DUPLICATE	H2SO4 Volume in mL	(VR)	6.000
Work List	Volume Injected in mL	(VI)	0.200
5364	Dilution Factor	(DF)	61
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	87.2
Matrix	µg of Carbon in Blank	(C2)	1.4
LIQUID	g of Carbon/L	=	2.62E+01
Sample #			
S95T003982DUP			
Instrument Code			
Analyst			
KRM			
Date			
02/15/96			
Time			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$

µg Carbon/mL =	2.62E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by:		Date:	02/20/96
Approved by:		Date:	2-23-96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.100
SAMPLE	H2SO4 Volume in mL	(VR)	6.000
Work List	Volume Injected in mL	(VI)	0.200
5364	Dilution Factor	(DF)	61
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	85.7
Matrix	µg of Carbon in Blank	(C2)	1.4
LIQUID	g of Carbon/L	=	2.57E+01
Sample #			
S95T003983			
Instrument Code			
Analyst			
KRM			
Date			
02/15/96			
Time			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{VI * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 mL/L

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{VI}$

µg Carbon/mL =	2.57E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by:		Date:	02/20/96
Approved by:		Date:	2-23-96

Form 344105_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.100
DUPLICATE	H2SO4 Volume in mL	(VR)	6.000
Work List	Volume Injected in mL	(VI)	0.200
5364	Dilution Factor	(DF)	61
Test Code	Digest Dilution Factor	(DDF)	1
TOC01	µg of Carbon in Sample	(C1)	91.4
Matrix	µg of Carbon in Blank	(C2)	1.4
LIQUID	g of Carbon/L	=	2.75E+01
Sample #			
S95T003983DUP			
Instrument Code			
Analyst			
KRM			
Date			
02/15/96			
Time			

$$\text{g of Carbon/L} = \frac{(C1-C2) * DF * DDF}{VI * 1000}$$

$$\text{µg of Carbon/mL} = \text{g of Carbon/L} * 1000000\ \text{µg/g} / 1000\ \text{mL/L}$$

$$\text{Detection Level (µg/mL)} = \frac{1\ \text{µg C} * DF * DDF}{VI}$$

µg Carbon/mL =	2.75E+04	DETECTION LEVEL in µg/mL
		3.05E+02

Data Entry by:		Date:	02/20/96
Approved by:		Date:	2-23-96

Form 344105_C Rev. 1.1

P

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

WHC-SD-WM-DP-165, REV. 1

Sample: BLK Date: 02/15/96 Time: 21:20:02

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 12
Max Readings = 12
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.40	75.00
3	1.51	0.70	42.86
4	2.01	0.90	22.22
5	2.51	0.90	0.00
6	3.01	1.10	18.18
7	3.51	1.10	0.00
8	4.00	1.20	8.33
9	4.50	1.20	0.00
10	5.00	1.30	7.69
11	5.50	1.30	0.00
12	6.00	1.40	7.14

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 320 TO 329

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

Sample Run By: KR MONTEITH 00000 2-15-96

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: STD Date: 02/15/96 Time: 21:33:54

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH
Min Readings = 12
Max Readings = 12
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	30.50	98.03
3	1.51	48.70	37.37
4	2.01	53.50	8.97
5	2.51	54.80	2.37
6	3.01	55.40	1.08
7	3.51	55.70	0.54
8	4.01	55.80	0.18
9	4.50	56.00	0.36
10	5.00	56.10	0.18
11	5.50	56.30	0.36
12	6.00	56.50	0.35

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

SAMPLE RESULTS:
(56.5 - 1.399801)(11)/(200) = +3.03E+00 g/L Carbon
(56.5 - 1.399801)(11)/(200)(12) = +2.53E-01 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: R BLK Date: 02/15/96 Time: 21:54:30

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH
Min Readings = 12
Max Readings = 12
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.90	100.00
3	1.51	1.30	30.77
4	2.01	1.50	13.33
5	2.51	1.70	11.76
6	3.01	1.80	5.56
7	3.51	2.00	10.00
8	4.00	2.30	13.04
9	4.50	2.40	4.17
10	5.00	2.50	4.00
11	5.50	2.60	3.85
12	6.00	2.90	10.34

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

SAMPLE RESULTS:
(2.9 - 1.399971)(1)/(200) = +7.5E-03 g/L Carbon
(2.9 - 1.399971)(1)/(200)(12) = +6.3E-04 Molar Carbon
<<<< WARNING- PERCENT DIFFERENCE EXCEEDS 10 PERCENT >>>>
This warning does not pose a problem with the sample analysis. RWE 3/15/96

Sample Run By: KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. I

Sample: S95T3984 Date: 02/15/96 Time: 22:22:19

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH
Min Readings = 12
Max Readings = 12
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	32.00	98.44
3	1.51	66.40	51.81
4	2.00	75.50	12.05
5	2.50	79.90	5.51
6	3.00	82.10	2.68
7	3.50	83.40	1.56
8	4.00	84.10	0.83
9	4.50	84.50	0.47
10	5.00	85.00	0.59
11	5.50	85.30	0.35
12	6.00	85.60	0.35

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

SAMPLE RESULTS:
(85.6 - 1.399971)(61)/(200) = +2.57E+01 g/L Carbon
(85.6 - 1.399971)(61)/(200)(12) = +2.14E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: S95T3984 DUP Date: 02/15/96 Time: 22:40:22

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH
Min Readings = 12
Max Readings = 12
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	51.80	99.23
3	1.51	68.10	23.94
4	2.01	74.60	8.71
5	2.51	78.00	4.36
6	3.01	80.20	2.74
7	3.51	81.50	1.60
8	4.01	82.20	0.85
9	4.51	82.70	0.60
10	5.01	83.10	0.48
11	5.51	83.50	0.48
12	6.01	83.80	0.36

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

SAMPLE RESULTS:
(83.8 - 1.400228)(61)/(200) = +2.51E+01 g/L Carbon
(83.8 - 1.400228)(61)/(200)(12) = +2.09E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: S95T3984 SPK Date: 02/15/96 Time: 22:31:36

Sample Size = 200 uL
Dil Factor = 122
Blank ID # = BLK
Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH
Min Readings = 12
Max Readings = 12
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	62.70	99.20
3	1.51	92.50	32.22
4	2.00	102.90	10.11
5	2.50	108.60	5.25
6	3.00	111.90	2.95
7	3.50	113.50	1.41
8	4.00	114.60	0.96
9	4.50	115.20	0.52
10	5.00	115.90	0.60
11	5.50	116.20	0.26
12	6.00	116.50	0.26

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

SAMPLE RESULTS:
(116.5 - 1.4)(122)/(200) = +7.021E+01 g/L Carbon
(116.5 - 1.4)(122)/(200)(12) = +5.851E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
WHC-SD-WM-DP-165, REV. 1

Sample: S95T3982 Date: 02/15/96 Time: 22:51:40

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH
Min Readings = 12
Max Readings = 12
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	52.50	98.86
3	1.51	71.40	26.47
4	2.01	78.50	9.04
5	2.51	82.70	5.08
6	3.01	85.10	2.82
7	3.51	86.60	1.73
8	4.01	87.60	1.14
9	4.51	88.40	0.90
10	5.01	88.90	0.56
11	5.51	89.40	0.56
12	6.01	89.70	0.33

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

SAMPLE RESULTS:
(89.7 - 1.400171)(61)/(200) = +2.69E+01 g/L Carbon
(89.7 - 1.400171)(61)/(200)(12) = +2.24E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3982 DUP Date: 02/15/96 Time: 22:59:23

Sample Size = 200 uL Analyst : KR MONTEITH
Dil Factor = 61 Min Readings = 12
Blank ID # = BLK Max Readings = 12
Blank Value = .2331673 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	55.40	98.56
3	1.51	69.50	20.29
4	2.01	75.70	8.19
5	2.51	79.60	4.90
6	3.01	81.80	2.69
7	3.51	83.60	2.15
8	4.01	84.70	1.30
9	4.51	85.60	1.05
10	5.01	86.30	0.81
11	5.51	86.70	0.46
12	6.01	87.20	0.57

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

SAMPLE RESULTS:
(87.2 - 1.400228)(61)/(200) = +2.62E+01 g/L Carbon
(87.2 - 1.400228)(61)/(200)(12) = +2.18E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

P

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3983 Date: 02/15/96 Time: 23:07:16

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH
Min Readings = 12
Max Readings = 12
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	43.00	97.91
3	1.51	66.60	35.44
4	2.01	74.10	10.12
5	2.51	78.50	5.61
6	3.01	81.20	3.33
7	3.51	82.80	1.93
8	4.01	83.80	1.19
9	4.50	84.40	0.71
10	5.01	84.90	0.59
11	5.50	85.30	0.47
12	6.00	85.70	0.47

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

SAMPLE RESULTS:
(85.7 - 1.399971)(61)/(200) = +2.57E+01 g/L Carbon
(85.7 - 1.399971)(61)/(200)(12) = +2.14E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T3983 DUP Date: 02/15/96 Time: 23:14:45

Sample Size = 200 uL
Dil Factor = 61
Blank ID # = BLK
Blank Value = .2331673 ug/minute C

Analyst : KR MONTEITH
Min Readings = 12
Max Readings = 12
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	48.20	98.55
3	1.51	69.40	30.55
4	2.01	77.70	10.68
5	2.51	82.70	6.05
6	3.01	85.70	3.50
7	3.51	87.80	2.39
8	4.00	88.80	1.13
9	4.50	89.90	1.22
10	5.00	90.40	0.55
11	5.51	90.90	0.55
12	6.00	91.40	0.55

BLANK VALUE = 1.4 micrograms carbon
BLANK FACTOR = 1.4 / 6.004272 = +2.3E-01 ug/min Carbon

SAMPLE RESULTS:
(91.4 - 1.399971)(61)/(200) = +2.75E+01 g/L Carbon
(91.4 - 1.399971)(61)/(200)(12) = +2.29E+00 Molar Carbon

Sample Run By: KR MONTEITH 00000

LABCORE Data Entry Template for Worklist# 6319

Analyst: JLS2 **Instrument:** TOC01 _____ **Book #** 17N12-F TIC
16N12-D TOC

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

Worklist Comment: AN-102 TOC. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TOC-02	LIQUID	1	.5	N/A	ug/mL
		2	STD				TOC-02	LIQUID	2.00 E+3	2.83 E+3	N/A	ug/mL
95000222	AN-102 GRAB	3	SAMPLE	S95T004133	0		TOC-02	LIQUID	N/A	2.41 E+4		ug/mL
95000222	AN-102 GRAB	4	DUP	S95T004133	0		TOC-02	LIQUID	2.41 E4	2.59 E4	N/A	ug/mL
95000222	AN-102 GRAB	5	SPK	S95T004133	0		TOC-02	LIQUID	100	104	N/A	ug/mL
95000222	AN-102 GRAB	6	SAMPLE	S95T004135	0		TOC-02	LIQUID	N/A	2.43 E+4		ug/mL
95000222	AN-102 GRAB	7	DUP	S95T004135	0		TOC-02	LIQUID	2.43 E+4	2.51 E+4	N/A	ug/mL

Final page for worklist # 6319

Jacque Steele 3/10/96
Analyst Signature Date

[illegible] 3/11/96
Analyst Signature Date

Reviewed RW Schroeder 3/12/96

Data Entry Comments: The TIC data has been generated as a consequence of analyzing for TOC by this method. Although the TIC analysis was not requested by the customer, it is include with the data package as supporting data or futher needs.

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.

RW Schroeder 3/20/96

This is done by procedure and will be and has been for future and past worklists

TOC: LA-344-105 (C-0)

WORKLIST # _____ ANALYST SIGNATURE _____ ANALYSIS DATE _____ ANALYSIS TIME _____ INSTRUMENT CODE _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL) _____
Volume H2SO4 Added to SAMPLE (mL) _____
Volume INJECTED (mL) _____
Was Sample Dilution Used for SPIKE? Y or N _____
Amount SPIKE Standard Added (mL) _____
Volume H2SO4 Added to SAMPLE + SPIKE (mL) _____
Final Coulometer Reading in µg Carbon (Optional) _____

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>> WHC-SD-WM-DP-165, REV. I

Sample: BASE Date: 03/10/96 Time: 11:46:02

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

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	1.00	80.00
3	1.50	4.50	77.78
4	2.00	12.20	63.11
5	2.50	19.30	36.79
6	3.00	23.30	17.17
7	3.50	25.10	7.17
8	4.00	26.20	4.20
9	4.50	27.10	3.32
10	5.00	27.60	1.81
11	5.50	28.10	1.78
12	6.00	28.50	1.40
13	6.50	28.90	1.38
14	7.00	29.20	1.03
15	7.50	29.60	1.35
16	8.00	29.90	1.00
17	8.50	30.20	0.99
18	9.00	30.60	1.31
19	9.50	30.80	0.65
20	10.00	31.10	0.96
21	10.50	31.30	0.64
22	11.00	31.60	0.95

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 332 TO 349.

BLANK VALUE = 31.6 micrograms carbon
BLANK FACTOR = 31.6 / 10.99884 = +2.87E+00 ug/min Carbon

~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This message is not applicable to this method. 3/15/96

Sample Run By: Jackie Steele 3-10-96
JL STEELE 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV 1

Sample: STD 16N12-D Date: 03/10/96 Time: 12:13:53

Sample Size = 200 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.87 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.00	6.70	94.03
3	1.50	34.40	80.52
4	2.00	116.00	70.34
5	2.50	289.30	59.90
6	3.00	462.10	37.39
7	3.50	543.80	15.02
8	4.00	575.90	5.57
9	4.50	586.20	1.76
10	5.00	589.50	0.56
11	5.50	590.90	0.24
12	6.00	592.00	0.19
13	6.50	592.80	0.13
14	7.00	593.60	0.13
15	7.50	594.20	0.10
16	8.00	594.90	0.12
17	8.50	595.40	0.08
18	9.00	596.00	0.10
19	9.50	596.40	0.07
20	10.00	596.90	0.08
21	10.50	597.30	0.07
22	11.00	597.80	0.08

USER INPUT BLANK VALUE
BLANK VALUE = 31.56667 micrograms carbon
BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:
(597.8 - 31.56369)(1)/(200) = +2.831E+00 g/L Carbon
(597.8 - 31.56369)(1)/(200)(12) = +2.359E-01 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This method is not applicable to this method. RDE 3/15/96

Sample Run By: Jackie Steele
JL STEELE 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: BLANK Date: 03/10/96 Time: 12:39:25

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.87 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	2.10	80.95
3	1.51	6.00	65.00
4	2.01	12.90	53.49
5	2.51	18.40	29.89
6	3.00	21.70	15.21
7	3.50	23.50	7.66
8	4.00	24.60	4.47
9	4.50	25.40	3.15
10	5.00	26.10	2.68
11	5.50	26.60	1.88
12	6.00	27.20	2.21
13	6.50	27.70	1.81
14	7.00	28.10	1.42
15	7.50	28.50	1.40
16	8.00	28.90	1.38
17	8.50	29.40	1.70
18	9.00	29.70	1.01
19	9.50	30.10	1.33
20	10.00	30.50	1.31
21	10.50	30.70	0.65
22	11.00	31.10	1.29

USER INPUT BLANK VALUE
BLANK VALUE = 31.56667 micrograms carbon
BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:
(31.1 - 31.57175)(1)/(1) = < 5.00 E-3 g/L Carbon
(31.1 - 31.57175)(1)/(1)(12) = < 4.17 E-4 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This message is not applicable to this method. KRE 3/15/96

Sample Run By: Jackie Steele
JL STEELE 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T004133 Date: 03/10/96 Time: 14:06:39

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.87 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.70	0.00
2	1.01	57.90	95.34
3	1.50	252.40	77.06
4	2.00	852.10	70.38
5	2.50	1598.60	46.70
6	3.00	2345.40	31.84
7	3.50	3092.30	24.15
8	4.00	3839.50	19.46
9	4.50	4586.20	16.28
10	5.00	5333.40	14.01
11	5.50	6080.90	12.29
12	6.00	6827.20	10.93
13	6.50	7574.50	9.87
14	7.00	8321.60	8.98
15	7.50	9068.50	8.24
16	8.00	9815.80	7.61
17	8.50	%10562.20	7.07
18	9.00	%11309.20	6.61
19	9.50	%11992.40	5.70
20	10.00	%12054.00	0.51
21	10.50	%12066.70	0.11
22	11.00	%12076.60	0.08

USER INPUT BLANK VALUE
BLANK VALUE = 31.56667 micrograms carbon
BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:
(12076.6 - 31.56895)(1)/(1) = +1.2045E+04 g/L Carbon
(12076.6 - 31.56895)(1)/(1)(12) = +1.0038E+03 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This message is not applicable to this method. RWC 3/15/96

Sample Run By: Jackie Steele
JL STEELE 00000

12045. / .500 ml = 2.41 E+4

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 4133 DUP Date: 03/10/96 Time: 14:36:09

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.87 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	29.80	98.32
3	1.50	90.80	67.18
4	2.00	230.00	60.52
5	2.50	634.40	63.75
6	3.00	990.80	35.97
7	3.50	1144.00	13.39
8	4.00	1217.10	6.01
9	4.50	1261.80	3.54
10	5.00	1285.40	1.84
11	5.50	1296.90	0.89
12	6.00	1304.00	0.54
13	6.50	1309.10	0.39
14	7.00	1313.10	0.30
15	7.50	1316.30	0.24
16	8.00	1319.00	0.20
17	8.50	1321.10	0.16
18	9.00	1323.00	0.14
19	9.50	1324.60	0.12
20	10.00	1325.90	0.10
21	10.50	1327.30	0.11
22	11.00	1328.40	0.08

USER INPUT BLANK VALUE
BLANK VALUE = 31.56667 micrograms carbon
BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:
(1328.4 - 31.56912)(1)/(1) = +1.2968E+03 g/L Carbon
(1328.4 - 31.56912)(1)/(1)(12) = +1.0807E+02 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This message is not applicable to this method. roe 3/15/96

Sample Run By: JL STEELE 00000

$\frac{1296.8}{.05} = 2.59E4$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 4133 SPIKE Date: 03/10/96 Time: 15:03:23

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.87 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	16.40	95.73
3	1.51	78.60	79.13
4	2.01	303.80	74.13
5	2.51	789.50	61.52
6	3.00	1190.60	33.69
7	3.50	1376.30	13.49
8	4.00	1455.00	5.41
9	4.50	1500.50	3.03
10	5.00	1527.90	1.79
11	5.50	1541.80	0.90
12	6.00	1548.90	0.46
13	6.50	1554.60	0.37
14	7.00	1558.60	0.26
15	7.50	1561.80	0.20
16	8.00	1564.60	0.18
17	8.50	1567.10	0.16
18	9.00	1569.10	0.13
19	9.50	1571.10	0.13
20	10.00	1572.50	0.09
21	10.50	1574.20	0.11
22	11.00	1575.30	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 31.56667 micrograms carbon
BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:
(1575.3 - 31.57193)(1)/(1) = +1.5437E+03 g/L Carbon
(1575.3 - 31.57193)(1)/(1)(12) = +1.2864E+02 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This message is not applicable to this method. MOE 3/15/96

.05 mL
.100 mL 1% N12-D

Sample Run By: JL STEELE 00000

$\frac{12076.6}{.500} \times .05 + 300 = 1507.66$ (337)

$\frac{1575.30}{1507.66} = 104.49\%$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T004135 Date: 03/10/96 Time: 15:28:41

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.87 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	21.90	96.80
3	1.51	144.30	84.82
4	2.00	525.20	72.52
5	2.50	889.50	40.96
6	3.00	1064.30	16.42
7	3.50	1137.10	6.40
8	4.00	1180.60	3.68
9	4.50	1206.60	2.15
10	5.00	1219.60	1.07
11	5.50	1226.20	0.54
12	6.00	1230.70	0.37
13	6.50	1234.30	0.29
14	7.00	1237.00	0.22
15	7.50	1239.30	0.19
16	8.00	1241.40	0.17
17	8.50	1243.10	0.14
18	9.00	1244.60	0.12
19	9.50	1245.80	0.10
20	10.00	1246.80	0.08
21	10.50	1247.90	0.09
22	11.00	1249.00	0.09

USER INPUT BLANK VALUE
BLANK VALUE = 31.56667 micrograms carbon
BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:
(1249 - 31.56667)(1)/(1) = +1.2174E+03 g/L Carbon
(1249 - 31.56667)(1)/(1)(12) = +1.0145E+02 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This message is not applicable to this method. KOE 3/15/96

Sample Run By: JL STEELE 00000

$\frac{1217.4}{.050} = 2.4348\ E+4$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 4135 DUP Date: 03/10/96 Time: 15:54:00

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.87 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	17.30	96.53
3	1.51	94.20	81.63
4	2.00	363.90	74.11
5	2.50	767.80	52.60
6	3.00	1020.40	24.76
7	3.50	1125.80	9.36
8	4.00	1183.10	4.84
9	4.50	1221.20	3.12
10	5.00	1244.10	1.84
11	5.50	1257.00	1.03
12	6.00	1263.70	0.53
13	6.50	1268.50	0.38
14	7.00	1272.30	0.30
15	7.50	1275.30	0.24
16	8.00	1277.70	0.19
17	8.50	1280.00	0.18
18	9.00	1281.90	0.15
19	9.50	1283.70	0.14
20	10.00	1285.10	0.11
21	10.50	1286.60	0.12
22	11.00	1287.80	0.09

USER INPUT BLANK VALUE
BLANK VALUE = 31.56667 micrograms carbon
BLANK FACTOR = 31.56667 / 10.99884 = +2.9E+00 ug/min Carbon

SAMPLE RESULTS:
(1287.8 - 31.56667)(1)/(1) = +1.2562E+03 g/L Carbon
(1287.8 - 31.56667)(1)/(1)(12) = +1.0469E+02 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This message is not applicable to this method. KOE 3/15/96

Sample Run By: JL STEELE 00000

$\frac{1256.2}{.050 mL} = 2.5124E4$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 17N12-G Date: 03/10/96 Time: 16:07:24

Sample Size = 500 uL
Dil Factor = 1
Blank ID # =
Blank Value = .44 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.40	0.00
2	1.01	349.20	99.31
3	1.51	1096.00	68.14
4	2.00	1842.90	40.53
5	2.50	2589.40	28.83
6	3.00	2924.50	11.46
7	3.50	2989.20	2.16
8	4.00	3026.60	1.24
9	4.50	3041.00	0.47
10	5.00	3045.10	0.13
11	5.50	3047.30	0.07
12	6.00	3048.70	0.05
13	6.50	3049.70	0.03
14	7.00	3050.40	0.02
15	7.50	3051.00	0.02
16	8.00	3051.50	0.02
17	8.50	3051.90	0.01
18	9.00	3052.40	0.02
19	9.50	3052.60	0.01
20	10.00	3052.80	0.01
21	10.50	3053.20	0.01
22	11.00	3053.40	0.01

USER INPUT BLANK VALUE
BLANK VALUE = 4.83949 micrograms carbon
BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:
(3053.4 - 4.840752)(1)/(500) = +6.0971E+00 g/L Carbon
(3053.4 - 4.840752)(1)/(500)(12) = +5.0809E-01 Molar Carbon

Sample Run By: _____
JL STEELE 00000

High Range Std

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

WHC-SD-WM-DP-165, REV. 1

Sample: BASE Date: 03/10/96 Time: 11:33:39

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

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.00	0.80	37.50
3	1.50	1.00	20.00
4	2.00	1.30	23.08
5	2.50	1.40	7.14
6	3.00	1.70	17.65
7	3.50	2.00	15.00
8	4.00	2.10	4.76
9	4.50	2.20	4.55
10	5.00	2.50	12.00
11	5.50	2.70	7.41
12	6.00	2.90	6.90
13	6.50	3.10	6.45
14	7.00	3.20	3.13
15	7.50	3.40	5.88
16	8.00	3.70	8.11
17	8.50	3.80	2.63
18	9.00	4.00	5.00
19	9.50	4.30	6.98
20	10.00	4.40	2.27
21	10.50	4.60	4.35
22	11.00	4.80	4.17

BLANK VALUE = 4.8 micrograms carbon
BLANK FACTOR = 4.8 / 11.00073 = +4.4E-01 ug/min Carbon

Sample Run By: Jacque Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: STD 17N12-F Date: 03/10/96 Time: 11:59:53

Sample Size = 1000 uL
Dil Factor = 1
Blank ID # =
Blank Value = .44 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	51.60	99.22
3	1.50	222.50	76.81
4	2.00	378.60	41.23
5	2.50	477.50	20.71
6	3.00	533.70	10.53
7	3.50	560.30	4.75
8	4.00	570.10	1.72
9	4.50	573.60	0.61
10	5.00	575.30	0.30
11	5.50	576.10	0.14
12	6.00	576.70	0.10
13	6.50	577.10	0.07
14	7.00	577.60	0.09
15	7.50	578.00	0.07
16	8.00	578.40	0.07
17	8.50	578.80	0.07
18	9.00	579.10	0.05
19	9.50	579.40	0.05
20	10.00	579.80	0.07
21	10.50	580.10	0.05
22	11.00	580.40	0.05

USER INPUT BLANK VALUE
BLANK VALUE = 4.83949 micrograms carbon
BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:
(580.4 - 4.839839)(1)/(1000) = +5.756E-01 g/L Carbon
(580.4 - 4.839839)(1)/(1000)(12) = +4.796E-02 Molar Carbon

Sample Run By: Jackie Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: BLANK Date: 03/10/96 Time: 12:27:04

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .44 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.00	50.00
3	1.50	1.50	33.33
4	2.00	1.90	21.05
5	2.50	2.40	20.83
6	3.00	2.70	11.11
7	3.50	3.10	12.90
8	4.00	3.30	6.06
9	4.50	3.70	10.81
10	5.00	4.00	7.50
11	5.50	4.30	6.98
12	6.00	4.60	6.52
13	6.50	4.90	6.12
14	7.00	5.20	5.77
15	7.50	5.60	7.14
16	8.00	5.80	3.45
17	8.50	6.10	4.92
18	9.00	6.40	4.69
19	9.50	6.70	4.48
20	10.00	7.10	5.63
21	10.50	7.30	2.74
22	11.00	7.70	5.19

USER INPUT BLANK VALUE
BLANK VALUE = 4.83949 micrograms carbon
BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:
(7.7 - 4.840295)(1)/(1) = +2.9E+00 g/L Carbon
(7.7 - 4.840295)(1)/(1)(12) = +2.4E-01 Molar Carbon

Sample Run By: Jackie Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T004133 Date: 03/10/96 Time: 13:53:53

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .44 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	5.00	0.00
2	1.01	466.20	98.93
3	1.51	1212.70	61.56
4	2.00	1960.00	38.13
5	2.50	2707.10	27.60
6	3.00	3453.40	21.61
7	3.50	4201.00	17.80
8	4.00	4947.50	15.09
9	4.50	5694.30	13.11
10	5.00	6314.50	9.82
11	5.50	6334.50	0.32
12	6.00	6344.60	0.16
13	6.50	6352.50	0.12
14	7.00	6358.40	0.09
15	7.50	6363.60	0.08
16	8.00	6367.80	0.07
17	8.50	6371.70	0.06
18	9.00	6375.20	0.05
19	9.50	6378.00	0.04
20	10.00	6380.80	0.04
21	10.50	6383.30	0.04
22	11.00	6385.70	0.04

USER INPUT BLANK VALUE
BLANK VALUE = 4.83949 micrograms carbon
BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:
(6385.7 - 4.83949)(1)/(1) = +6.3809E+03 g/L Carbon
(6385.7 - 4.83949)(1)/(1)(12) = +5.3174E+02 Molar Carbon

Sample Run By: Jane Steele
JL STEELE 00000

.500 ml

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: 4133 DUP Date: 03/10/96 Time: 14:23:42

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .44 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.40	0.00
2	1.01	48.90	95.09
3	1.51	246.70	80.18
4	2.00	429.50	42.56
5	2.50	549.30	21.81
6	3.00	619.80	11.37
7	3.50	655.90	5.50
8	4.00	667.20	1.69
9	4.50	671.40	0.63
10	5.00	674.10	0.40
11	5.50	675.80	0.25
12	6.00	677.10	0.19
13	6.50	678.40	0.19
14	7.00	679.40	0.15
15	7.50	680.40	0.15
16	8.00	681.20	0.12
17	8.50	682.00	0.12
18	9.00	682.60	0.09
19	9.50	683.30	0.10
20	10.00	683.90	0.09
21	10.50	684.50	0.09
22	11.00	685.00	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 4.83949 micrograms carbon
BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:
(685 - 4.83992)(1)/(1) = +6.802E+02 g/L Carbon
(685 - 4.83992)(1)/(1)(12) = +5.668E+01 Molar Carbon

Sample Run By: Jackie Steele
JL STEELE 00000

.050 ml

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV 1

Sample: 4133 SPIKE Date: 03/10/96 Time: 14:51:04

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .44 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	62.50	98.24
3	1.51	358.20	82.55
4	2.00	625.60	42.74
5	2.50	780.80	19.88
6	3.00	864.10	9.64
7	3.50	914.10	5.47
8	4.00	938.40	2.59
9	4.50	945.70	0.77
10	5.00	948.90	0.34
11	5.50	950.70	0.19
12	6.00	952.10	0.15
13	6.50	953.40	0.14
14	7.00	954.50	0.12
15	7.50	955.40	0.09
16	8.00	956.20	0.08
17	8.50	957.00	0.08
18	9.00	957.80	0.08
19	9.50	958.40	0.06
20	10.00	959.00	0.06
21	10.50	959.50	0.05
22	11.00	960.30	0.08

USER INPUT BLANK VALUE
BLANK VALUE = 4.83949 micrograms carbon
BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:
(960.3 - 4.839866)(1)/(1) = +9.555E+02 g/L Carbon
(960.3 - 4.839866)(1)/(1)(12) = +7.962E+01 Molar Carbon

Sample Run By: JL STEELE 00000

.050ml

.500ml 17N12-F

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T004135 Date: 03/10/96 Time: 15:16:36

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .44 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.30	0.00
2	1.01	45.90	92.81
3	1.51	239.40	80.83
4	2.01	405.80	41.01
5	2.50	500.60	18.94
6	3.00	561.50	10.85
7	3.50	598.80	6.23
8	4.00	617.00	2.95
9	4.50	622.70	0.92
10	5.00	625.30	0.42
11	5.50	627.20	0.30
12	6.00	628.50	0.21
13	6.50	629.60	0.17
14	7.00	630.60	0.16
15	7.50	631.60	0.16
16	8.00	632.40	0.13
17	8.50	633.30	0.14
18	9.00	634.00	0.11
19	9.50	634.50	0.08
20	10.00	635.30	0.13
21	10.50	635.90	0.09
22	11.00	636.40	0.08

USER INPUT BLANK VALUE
BLANK VALUE = 4.83949 micrograms carbon
BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:
(636.4 - 4.840242)(1)/(1) = +6.316E+02 g/L Carbon
(636.4 - 4.840242)(1)/(1)(12) = +5.263E+01 Molar Carbon

Sample Run By: _____
JL STEELE 00000

.050 ml

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: 4135 DUP Date: 03/10/96 Time: 15:41:54

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .44 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	60.80	98.19
3	1.51	277.00	78.05
4	2.00	441.60	37.27
5	2.50	527.90	16.35
6	3.00	585.50	9.84
7	3.50	621.70	5.82
8	4.00	640.70	2.97
9	4.50	646.90	0.96
10	5.00	649.50	0.40
11	5.50	651.60	0.32
12	6.00	652.90	0.20
13	6.50	654.10	0.18
14	7.00	655.30	0.18
15	7.50	656.20	0.14
16	8.00	657.30	0.17
17	8.50	657.90	0.09
18	9.00	658.70	0.12
19	9.50	659.40	0.11
20	10.00	660.10	0.11
21	10.50	660.80	0.11
22	11.00	661.30	0.08

USER INPUT BLANK VALUE
BLANK VALUE = 4.83949 micrograms carbon
BLANK FACTOR = 4.83949 / 10.99884 = +4.4E-01 ug/min Carbon

SAMPLE RESULTS:
(661.3 - 4.83949)(1)/(1) = +6.565E+02 g/L Carbon
(661.3 - 4.83949)(1)/(1)(12) = +5.471E+01 Molar Carbon

Sample Run By: _____
JL STEELE 00000

LABCORE Data Entry Template for Worklist# 6320

Analyst: JLS2 **Instrument:** TOC01 _____ **Book #** 16N12-D

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

Worklist Comment: AN-102 TOC. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TOC-02	SOLID	1	1.5	N/A	ug/g
		2	STD				TOC-02	SOLID	3.00E3 ~~3.00E3~~ 3/12/96	2.87E3 ~~3.72E3~~ 3/12/96	N/A	ug/g
95000222	AN-102 GRAB	3	SAMPLE	S95T004137	0		TOC-02	SOLID	N/A	2.60E4	40.0	ug/g
95000222	AN-102 GRAB	4	DUP	S95T004137	0		TOC-02	SOLID	2.60E4	2.70E4	N/A	ug/g
95000222	AN-102 GRAB	5	SPK	S95T004137	0		TOC-02	SOLID	100	101	N/A	ug/g
95000222	AN-102 GRAB	6	SAMPLE	S95T004139	0		TOC-02	SOLID	N/A	1.97E4	40.0	ug/g
95000222	AN-102 GRAB	7	DUP	S95T004139	0		TOC-02	SOLID	1.97E4	2.26E4	N/A	ug/g

Final page for worklist # 6320

Jacque Steele 3/11/96
Analyst Signature **Date**

RLStub 3/12/96
Analyst Signature **Date**

Reviewed RW Schroeder 3/13/96

Data Entry Comments: TIC data included as additional information that is generated by this procedure. CDEd 3/20/96

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: BASE Date: 03/11/96 Time: 10:21:02

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

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.60	50.00
3	1.50	0.90	33.33
4	2.00	1.20	25.00
5	2.50	1.50	20.00
6	3.00	1.80	16.67
7	3.50	2.10	14.29
8	4.00	2.50	16.00
9	4.50	2.80	10.71
10	5.00	3.10	9.68
11	5.50	3.40	8.82
12	6.00	3.70	8.11
13	6.50	4.00	7.50
14	7.00	4.20	4.76
15	7.50	4.50	6.67
16	8.00	4.80	6.25
17	8.50	5.10	5.88
18	9.00	5.40	5.56
19	9.50	5.70	5.26
20	10.00	6.00	5.00
21	10.50	6.30	4.76
22	11.00	6.60	4.55

BLANK VALUE = 6.6 micrograms carbon
BLANK FACTOR = 6.6 / 10.99878 = +6.0E-01 ug/min Carbon

Sample Run By: Jacob Steele 3-11-96
JL ~~STEELE~~ 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 350 TO 365.

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

Sample: BASE Date: 03/11/96 Time: 10:33:49

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

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.30	61.54
3	1.51	2.30	43.48
4	2.00	6.30	63.49
5	2.50	12.00	47.50
6	3.00	16.30	26.38
7	3.50	18.80	13.30
8	4.00	20.10	6.47
9	4.50	20.80	3.37
10	5.00	21.50	3.26
11	5.50	22.10	2.71
12	6.00	22.60	2.21
13	6.50	23.00	1.74
14	7.00	23.50	2.13
15	7.50	23.90	1.67
16	8.00	24.20	1.24
17	8.50	24.60	1.63
18	9.00	24.90	1.20
19	9.50	25.30	1.58
20	10.00	25.60	1.17
21	10.50	26.00	1.54
22	11.00	26.30	1.14

BLANK VALUE = 26.3 micrograms carbon
BLANK FACTOR = 26.3 / 10.99884 = +2.39E+00 ug/min Carbon

~~<<<< WARNING BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This blank level is acceptable for this method.
RDE 3/15/96

Sample Run By: JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 17N12-F Date: 03/11/96 Time: 10:47:31

Sample Size = 1000 uL
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.30	0.00
2	1.01	39.50	96.71
3	1.51	204.20	80.66
4	2.00	368.50	44.59
5	2.50	478.80	23.04
6	3.00	546.70	12.42
7	3.50	582.10	6.08
8	4.00	598.60	2.76
9	4.50	605.30	1.11
10	5.00	608.20	0.48
11	5.50	609.70	0.25
12	6.00	610.40	0.11
13	6.50	611.00	0.10
14	7.00	611.40	0.07
15	7.50	611.80	0.07
16	8.00	612.30	0.08
17	8.50	612.60	0.05
18	9.00	613.00	0.07
19	9.50	613.40	0.07
20	10.00	613.70	0.05
21	10.50	614.00	0.05
22	11.00	614.40	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 6.599305 micrograms carbon
BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:
(614.4 - 6.599268)(1)/(1000) = +6.078E-01 g/L Carbon
(614.4 - 6.599268)(1)/(1000)(12) = +5.065E-02 Molar Carbon

Sample Run By: _____
JL STEELE 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
WHC-SD-WM-DP-165, REV. 1

Sample: STD 16N12-D Date: 03/11/96 Time: 11:00:17

Sample Size = 1 uL .200 ml
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	17.70	97.74
3	1.51	78.90	77.57
4	2.00	203.40	61.21
5	2.50	389.20	47.74
6	3.00	511.50	23.91
7	3.50	563.60	9.24
8	4.00	583.40	3.39
9	4.50	589.10	0.97
10	5.00	591.60	0.42
11	5.50	593.10	0.25
12	6.00	594.10	0.17
13	6.50	594.80	0.12
14	7.00	595.50	0.12
15	7.50	596.20	0.12
16	8.00	596.80	0.10
17	8.50	597.30	0.08
18	9.00	597.80	0.08
19	9.50	598.20	0.07
20	10.00	598.70	0.08
21	10.50	599.10	0.07
22	11.00	599.50	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 26.28723 micrograms carbon
BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:
2.8 (dd) E+00 RRE 3/15/96
(599.5 - 26.29146)(1)/(1)(200) = ~~+5.732E+02~~ g/L Carbon
(599.5 - 26.29146)(1)/(1)(12) = +4.777E+01 Molar Carbon
~~<<<< WARNING -- BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This blank acceptable for this method. RRE 3/15/96

Sample Run By: _____
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK Date: 03/11/96 Time: 11:15:12

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.20	50.00
3	1.50	1.70	29.41
4	2.00	2.10	19.05
5	2.50	2.40	12.50
6	3.00	2.70	11.11
7	3.50	3.10	12.90
8	4.00	3.30	6.06
9	4.50	3.60	8.33
10	5.00	3.90	7.69
11	5.50	4.20	7.14
12	6.00	4.50	6.67
13	6.50	4.80	6.25
14	7.00	5.10	5.88
15	7.50	5.40	5.56
16	8.00	5.60	3.57
17	8.50	5.90	5.08
18	9.00	6.20	4.84
19	9.50	6.50	4.62
20	10.00	6.80	4.41
21	10.50	7.10	4.23
22	11.00	7.30	2.74

USER INPUT BLANK VALUE
BLANK VALUE = 6.599305 micrograms carbon
BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:
(7.3 - 6.598792)(1)/(1) = +7.0E-01 g/L Carbon
(7.3 - 6.598792)(1)/(1)(12) = +5.8E-02 Molar Carbon

Sample Run By: _____
JL STEELE 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK Date: 03/11/96 Time: 11:28:29

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	2.40	79.17
3	1.51	5.50	56.36
4	2.01	9.60	42.71
5	2.51	13.50	28.89
6	3.01	16.10	16.15
7	3.51	17.70	9.04
8	4.01	18.70	5.35
9	4.50	19.50	4.10
10	5.00	20.10	2.99
11	5.50	20.70	2.90
12	6.00	21.20	2.36
13	6.50	21.60	1.85
14	7.00	22.00	1.82
15	7.50	22.40	1.79
16	8.00	22.80	1.75
17	8.50	23.10	1.30
18	9.00	23.50	1.70
19	9.50	23.90	1.67
20	10.00	24.20	1.24
21	10.50	24.50	1.22
22	11.00	24.80	1.21

USER INPUT BLANK VALUE
BLANK VALUE = 26.28723 micrograms carbon
BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:
(24.8 - 26.2916)(1)/(1) = < 5.00 E-3 g/L Carbon
(24.8 - 26.2916)(1)/(1)(12) = < 4.17 E-4 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This blank is acceptable for this method. RAC 3/15/96

Sample Run By: JL STEELE 00000

|26.3 - 24.8| = 1.5

355

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T004137 Date: 03/11/96 Time: 11:41:24

Sample Size = 1 uL .0460 g
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	92.70	99.14
3	1.51	265.20	65.05
4	2.00	388.10	31.67
5	2.50	459.40	15.52
6	3.00	519.30	11.53
7	3.50	582.80	10.90
8	4.00	633.80	8.05
9	4.50	667.50	5.05
10	5.00	684.90	2.54
11	5.50	697.20	1.76
12	6.00	704.90	1.09
13	6.50	708.90	0.56
14	7.00	711.20	0.32
15	7.50	712.60	0.20
16	8.00	714.20	0.22
17	8.50	715.90	0.24
18	9.00	716.80	0.13
19	9.50	717.50	0.10
20	10.00	718.20	0.10
21	10.50	718.80	0.08
22	11.00	719.30	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 6.599305 micrograms carbon
BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:
(719.3 - 6.600403)(1)/(1) = +7.127E+02 g/L Carbon
(719.3 - 6.600403)(1)/(1)(12) = +5.939E+01 Molar Carbon

Sample Run By: JL STEELE 00000

$\frac{712.7}{.0460} = 1.5493^{E4}$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T004137 Date: 03/11/96 Time: 11:54:40

Sample Size = 1 uL .0460 g
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.70	0.00
2	1.01	165.90	97.77
3	1.51	332.10	50.05
4	2.00	514.60	35.46
5	2.50	787.40	34.65
6	3.00	994.10	20.79
7	3.50	1098.30	9.49
8	4.00	1149.90	4.49
9	4.50	1175.30	2.16
10	5.00	1188.10	1.08
11	5.50	1196.20	0.68
12	6.00	1201.70	0.46
13	6.50	1205.70	0.33
14	7.00	1208.80	0.26
15	7.50	1211.30	0.21
16	8.00	1213.40	0.17
17	8.50	1215.10	0.14
18	9.00	1216.60	0.12
19	9.50	1218.00	0.11
20	10.00	1219.20	0.10
21	10.50	1220.20	0.08
22	11.00	1221.20	0.08

USER INPUT BLANK VALUE
BLANK VALUE = 26.28723 micrograms carbon
BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:
(1221.2 - 26.2916)(1)/(1) = +1.1949E+03 g/L Carbon
(1221.2 - 26.2916)(1)/(1)(12) = +9.9576E+01 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
-this blank acceptable for this method. rae 3/15/96

Sample Run By: JL STEELE 00000

$\frac{1194.9}{.0460g} = 2.5976^{E4}$ 357

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4137 DUP Date: 03/11/96 Time: 12:11:56

Sample Size = 1 uL .0451g
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.60	0.00
2	1.01	20.20	97.03
3	1.50	85.40	76.35
4	2.00	140.70	39.30
5	2.50	181.30	22.39
6	3.00	223.20	18.77
7	3.50	271.80	17.88
8	4.00	331.70	18.06
9	4.50	403.80	17.86
10	5.00	481.70	16.17
11	5.50	588.00	18.08
12	6.00	666.00	11.71
13	6.50	705.70	5.63
14	7.00	720.90	2.11
15	7.50	726.90	0.83
16	8.00	730.10	0.44
17	8.50	732.20	0.29
18	9.00	733.70	0.20
19	9.50	734.70	0.14
20	10.00	735.50	0.11
21	10.50	736.20	0.10
22	11.00	736.90	0.09

USER INPUT BLANK VALUE
BLANK VALUE = 6.599305 micrograms carbon
BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:
(736.9 - 6.598792)(1)/(1) = +7.303E+02 g/L Carbon
(736.9 - 6.598792)(1)/(1)(12) = +6.086E+01 Molar Carbon

Sample Run By: JL STEELE 00000

$\frac{730.3}{.0451} = 1.6193E4$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4137 DUP Date: 03/11/96 Time: 12:24:44

Sample Size = 1 uL .0451g
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.00	0.00
2	1.01	145.80	99.31
3	1.51	354.30	58.85
4	2.00	594.30	40.38
5	2.50	887.20	33.01
6	3.00	1065.30	16.72
7	3.50	1144.90	6.95
8	4.00	1185.00	3.38
9	4.50	1205.50	1.70
10	5.00	1216.10	0.87
11	5.50	1222.80	0.55
12	6.00	1227.70	0.40
13	6.50	1231.40	0.30
14	7.00	1234.10	0.22
15	7.50	1236.40	0.19
16	8.00	1238.30	0.15
17	8.50	1239.80	0.12
18	9.00	1241.20	0.11
19	9.50	1242.40	0.10
20	10.00	1243.60	0.10
21	10.50	1244.50	0.07
22	11.00	1245.50	0.08

USER INPUT BLANK VALUE
BLANK VALUE = 26.28723 micrograms carbon
BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:
(1245.5 - 26.28956)(1)/(1) = +1.2192E+03 g/L Carbon
(1245.5 - 26.28956)(1)/(1)(12) = +1.0160E+02 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This blank is acceptable for this method. LOE 3/15/96

Sample Run By: JL STEELE 00000

$\frac{1219.2}{.0451} = 2.7033^{E4}$

WHC-SD-WM-DP-165, REV. 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4137 SPIKE Date: 03/11/96 Time: 12:40:48

Sample Size = 1 uL .0403g
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.60	0.00
2	1.01	152.80	98.95
3	1.50	438.30	65.14
4	2.00	637.90	31.29
5	2.50	752.80	15.26
6	3.00	815.90	7.73
7	3.50	854.60	4.53
8	4.00	885.80	3.52
9	4.50	902.10	1.81
10	5.00	917.20	1.65
11	5.50	932.10	1.60
12	6.00	939.90	0.83
13	6.50	947.50	0.80
14	7.00	951.80	0.45
15	7.50	954.00	0.23
16	8.00	955.40	0.15
17	8.50	956.60	0.13
18	9.00	957.50	0.09
19	9.50	958.30	0.08
20	10.00	959.00	0.07
21	10.50	959.70	0.07
22	11.00	960.40	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 6.599305 micrograms carbon
BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:
(960.4 - 6.599305)(1)/(1) = +9.538E+02 g/L Carbon
(960.4 - 6.599305)(1)/(1)(12) = +7.948E+01 Molar Carbon

3/15/96

Sample Run By: JL STEELE 00000

$$\frac{960.40}{\left(\frac{719.30}{.0403}\right)(.0403)+300} = \frac{960.40}{930.16732} = 103.25\%$$

360

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4137 SPIKE Date: 03/11/96 Time: 12:53:18

Sample Size = 1 uL .0403g
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.00	0.00
2	1.01	125.30	99.20
3	1.50	311.50	59.78
4	2.00	603.70	48.40
5	2.50	968.20	37.65
6	3.00	1181.90	18.08
7	3.50	1277.90	7.51
8	4.00	1321.00	3.26
9	4.50	1342.90	1.63
10	5.00	1354.00	0.82
11	5.50	1360.70	0.49
12	6.00	1365.40	0.34
13	6.50	1368.90	0.26
14	7.00	1371.50	0.19
15	7.50	1373.70	0.16
16	8.00	1375.60	0.14
17	8.50	1377.30	0.12
18	9.00	1378.70	0.10
19	9.50	1379.90	0.09
20	10.00	1381.00	0.08
21	10.50	1382.00	0.07
22	11.00	1382.90	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 26.28723 micrograms carbon
BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:
(1382.9 - 26.28927)(1)/(1) = +1.3566E+03 g/L Carbon
(1382.9 - 26.28927)(1)/(1)(12) = +1.1305E+02 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This blank is acceptable for this method. ROE 3/15/96

.04038

Sample Run By: JL STEELE 00000

$$\frac{1382.90}{\left(\frac{1221.20}{.0403}\right)(.0403)+300} = \frac{1382.90}{1369.8772} = 100.95\%$$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T004139 Date: 03/11/96 Time: 13:09:36

Sample Size = 1 uL .0375g
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.80	0.00
2	1.01	145.00	98.07
3	1.51	368.60	60.66
4	2.01	479.10	23.06
5	2.51	533.60	10.21
6	3.01	573.50	6.96
7	3.51	605.10	5.22
8	4.00	621.50	2.64
9	4.50	627.60	0.97
10	5.00	630.60	0.48
11	5.50	632.50	0.30
12	6.00	633.70	0.19
13	6.50	634.70	0.16
14	7.00	635.80	0.17
15	7.50	636.80	0.16
16	8.00	637.60	0.13
17	8.50	638.30	0.11
18	9.00	638.90	0.09
19	9.50	639.50	0.09
20	10.00	640.10	0.09
21	10.50	640.60	0.08
22	11.00	641.10	0.08

USER INPUT BLANK VALUE
BLANK VALUE = 6.599305 micrograms carbon
BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:
(641.1 - 6.601502)(1)/(1) = +6.345E+02 g/L Carbon
(641.1 - 6.601502)(1)/(1)(12) = +5.287E+01 Molar Carbon

Sample Run By: JL STEELE 00000

$\frac{6345}{.0375} = 1.69200E4$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T004139 Date: 03/11/96 Time: 13:22:11

Sample Size = 1 uL .0375g
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	93.60	99.15
3	1.50	229.60	59.23
4	2.00	393.20	41.61
5	2.50	551.60	28.72
6	3.01	646.80	14.72
7	3.51	697.00	7.20
8	4.00	722.20	3.49
9	4.50	734.50	1.67
10	5.00	741.20	0.90
11	5.50	745.90	0.63
12	6.00	749.30	0.45
13	6.50	752.00	0.36
14	7.00	754.20	0.29
15	7.50	755.90	0.22
16	8.00	757.50	0.21
17	8.50	758.80	0.17
18	9.00	760.00	0.16
19	9.50	761.00	0.13
20	10.00	762.00	0.13
21	10.50	762.80	0.10
22	11.00	763.60	0.10

USER INPUT BLANK VALUE
BLANK VALUE = 26.28723 micrograms carbon
BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:
(763.6 - 26.28708)(1)/(1) = +7.373E+02 g/L Carbon
(763.6 - 26.28708)(1)/(1)(12) = +6.144E+01 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This blank is acceptable for this method JDE 3/15/96

Sample Run By: JL STEELE 00000

$\frac{737.3}{.0375} = 1.9661^{E4}$

363

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4139 DUP Date: 03/11/96 Time: 13:38:00

Sample Size = 1 uL .0587g
Dil Factor = 1
Blank ID # =
Blank Value = .6 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.00	0.00
2	1.01	44.00	95.45
3	1.50	86.70	49.25
4	2.00	118.20	26.65
5	2.50	179.10	34.00
6	3.00	272.50	34.28
7	3.50	455.70	40.20
8	4.00	688.20	33.78
9	4.50	875.90	21.43
10	5.00	948.90	7.69
11	5.50	980.70	3.24
12	6.00	992.50	1.19
13	6.50	997.00	0.45
14	7.00	999.60	0.26
15	7.50	1001.50	0.19
16	8.00	1003.00	0.15
17	8.50	1004.40	0.14
18	9.00	1005.70	0.13
19	9.50	1006.80	0.11
20	10.00	1007.80	0.10
21	10.50	1008.60	0.08
22	11.00	1009.30	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 6.599305 micrograms carbon
BLANK FACTOR = 6.599305 / 10.99884 = +6.0E-01 ug/min Carbon

SAMPLE RESULTS:
(1009.3 - 6.599927)(1)/(1) = +1.0027E+03 g/L Carbon
(1009.3 - 6.599927)(1)/(1)(12) = +8.3558E+01 Molar Carbon

Sample Run By: JL STEELE 00000

$\frac{1002.7}{.0587} = 1.7082^{E4}$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 4139 DUP Date: 03/11/96 Time: 13:51:13

Sample Size = 1 uL .0587g
Dil Factor = 1
Blank ID # =
Blank Value = 2.39 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	103.80	99.23
3	1.51	318.10	67.37
4	2.00	510.60	37.70
5	2.50	815.90	37.42
6	3.00	1061.70	23.15
7	3.50	1195.90	11.22
8	4.00	1262.20	5.25
9	4.50	1298.90	2.83
10	5.00	1317.10	1.38
11	5.50	1326.60	0.72
12	6.00	1333.00	0.48
13	6.50	1337.70	0.35
14	7.00	1341.20	0.26
15	7.50	1344.00	0.21
16	8.00	1346.40	0.18
17	8.50	1348.30	0.14
18	9.00	1350.00	0.13
19	9.50	1351.50	0.11
20	10.00	1352.70	0.09
21	10.50	1353.90	0.09
22	11.00	1354.90	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 26.28723 micrograms carbon
BLANK FACTOR = 26.28723 / 10.99884 = +2.4E+00 ug/min Carbon

SAMPLE RESULTS:
(1354.9 - 26.28927)(1)/(1) = +1.3286E+03 g/L Carbon
(1354.9 - 26.28927)(1)/(1)(12) = +1.1072E+02 Molar Carbon
~~<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>~~
This blank is acceptable for this method KOE 3/15/96.

Sample Run By: JL STEELE 00000

$\frac{1328.4}{.0587} = 2.2634^{E4}$

LABCORE Completed Worklist Report for Worklist# 4997

Analyst: slh **Instrument:** TIC01 **Book#** 17N12F

Method: LA-622-102 Rev/Mod C-0 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: TIC AN-102

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK			0	TIC-01	LIQUID	1	3.00E-1	0.300	ug/mL
2	STD			0	TIC-01	LIQUID	6.02E+02	5.87E+2	97.510	% Recovery
3	SAMPLE	S95T003867		0	TIC-01	LIQUID	N/A	1.40E+04	20.000	ug/mL
4	DUP	S95T003867		0	TIC-01	LIQUID	1.40E+4	1.39E+4	0.720	RPD
5	SPK	S95T003867		0	TIC-01	LIQUID	6.02E+02	8.18E+02	135.880	% Recovery
6	SAMPLE	S95T003868		0	TIC-01	LIQUID	N/A	1.39E+04	20.000	ug/mL
7	DUP	S95T003868		0	TIC-01	LIQUID	1.39E+4	1.40E+4	0.720	RPD
8	SAMPLE	S95T003869		0	TIC-01	LIQUID	N/A	1.39E+04	20.000	ug/mL
9	DUP	S95T003869		0	TIC-01	LIQUID	1.39E+4	1.40E+4	0.720	RPD
10	SAMPLE	S95T003962		0	TIC-01	LIQUID	N/A <	5.00E+00	5.000	ug/mL
11	DUP	S95T003962		0	TIC-01	LIQUID	<5.00E+0	<5.00E+0		RPD

Final page for worklist# 4997

Analyst Signature Date Analyst Signature Date

H Anastas 2-9-96
Reviewer Signature Date

Samples 3867, 3868, and 3869 ~~Batch~~ HLA 2-15-96 will be rejected. These Samples should be diluted and rerun. HLA

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

LABCORE Data Entry Template for Worklist# 4997

Analyst: SLH **Instrument:** TIC01 **Book #** 17N12-F

Method: LA-622-102 Rev/Mod C.0

WHC-SD-WM-DP-165, REV. 1

Worklist Comment: TIC AN-102

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TIC-01	LIQUID			N/A	ug/mL
		2	STD				TIC-01	LIQUID			N/A	ug/mL
95000222	AN-102 GRAB	3	SAMPLE	S95T003867	0		TIC-01	LIQUID	N/A			ug/mL
95000222	AN-102 GRAB	4	DUP	S95T003867	0		TIC-01	LIQUID			N/A	ug/mL
95000222	AN-102 GRAB	5	SPK	S95T003867	0		TIC-01	LIQUID			N/A	ug/mL
95000222	AN-102 GRAB	6	SAMPLE	S95T003868	0		TIC-01	LIQUID	N/A			ug/mL
95000222	AN-102 GRAB	7	DUP	S95T003868	0		TIC-01	LIQUID			N/A	ug/mL
95000222	AN-102 GRAB	8	SAMPLE	S95T003869	0		TIC-01	LIQUID	N/A			ug/mL
95000222	AN-102 GRAB	9	DUP	S95T003869	0		TIC-01	LIQUID			N/A	ug/mL
95000222	AN-102 GRAB	10	SAMPLE	S95T003962	0		TIC-01	LIQUID	N/A			ug/mL
95000222	AN-102 GRAB	11	DUP	S95T003962	0		TIC-01	LIQUID			N/A	ug/mL

Final page for worklist # 4997

Sandra Alfred Bartright
Analyst Signature **Date** ~~1-31-96~~ SLHB 2-1-96

Heather Anastn 2-9-96
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.

TIC 622

~~TOC~~ LA-~~341-105~~ (C-0)

WORKLIST #	ANALYST SIGNATURE	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
4997	S Ford Beatrighy	2-1-99	1330	

[X] SAMPLE/STANDARD [ ] DUPLICATE/BASELINE [ ] SPIKE/BLANK [ ] TRIPLICATE

SAMPLE # = S95T03869 STD # =

Volume SAMPLE Used (mL)	.050
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	7000

[ ] SAMPLE/STANDARD [X] DUPLICATE/BASELINE [ ] SPIKE/BLANK [ ] TRIPLICATE

SAMPLE # = S95T03869 STD # =

Amount of SAMPLE Used (mL)	.050
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	702.2

[X] SAMPLE/STANDARD [ ] DUPLICATE/BASELINE [ ] SPIKE/BLANK [ ] TRIPLICATE

SAMPLE # = S95T03962 STD # =

Amount of SAMPLE Used (mL)	.200
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	4.1

[X] SAMPLE/STANDARD [ ] DUPLICATE/BASELINE [ ] SPIKE/BLANK [ ] TRIPLICATE

SAMPLE # = S95T03962 STD # =

Amount of SAMPLE Used (mL)	.200
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	3.4

[ ] SAMPLE/STANDARD [ ] DUPLICATE/BASELINE [ ] SPIKE/BLANK [ ] TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL)	
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE/STANDARD [ ] DUPLICATE/BASELINE [ ] SPIKE/BLANK [ ] TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL)	
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE/STANDARD [ ] DUPLICATE/BASELINE [ ] SPIKE/BLANK [ ] TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL)	
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE/STANDARD [ ] DUPLICATE/BASELINE [ ] SPIKE/BLANK [ ] TRIPLICATE

SAMPLE # = STD # =

Amount of SAMPLE Used (mL)	
Volume H2SO4 Added to SAMPLE (mL)	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2SO4 Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

WORKBOOK PAGE: BLANK1

TIC : LA-622-102 (C-0) LIQUIDS

			BLNK
Type	Sample Volume in mL	(SS)	0.200
BLNK	H2O Volume in mL	(VR)	0.000
Workbook	Volume Injected in mL	(VI)	0.200
4997	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
TIC-01	µg of Carbon in Blank	(C1)	4.1
Matrix	µg of Carbon from Baseline	(C2)	3.8
LIQUID			
Epic Number			
96000468	µg of Carbon = |C1-C2|		
Rerun			
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
Sample Prep			
N/A			
Sample #			
BLANK			
Instrument Code			
TIC01			
Prepared By			
HLA			
Chemist			
HLA			
Analyst			
SHB			
Date Complete			
02/07/96			
Analysis Date			
02/01/96			
Analysis Time	Method Detection Limit in µg/mL		5.00E+00
01:30 PM			
Sample Point	µg of Carbon		3.00E-01

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	Heather Anasto	Date:	2-9-96

BLANK.WB1 REV 1.0 622102ML

TIC : LA-622-102 (C-0) LIQUIDS

			STD
Type	Sample Volume in mL	(SS)	0.200
STD	H2O Volume in mL	(VR)	0.000
Work Place	Volume Injected in mL	(VI)	0.200
4997	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
TIC-01	µg of Carbon Found	(C1)	121.1
Matrix	µg of Carbon from Baseline	(C2)	3.8
LIQUID	Standard Book Number		17N12F
Batch Number	Standard Value (µg/ml)		602
96000468			
Rerun			
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI		
Sample Prep			
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
Sample #			
17N12F			
Instrument Code			
TIC01			
Prepared By			
HLA			
Chemist			
HLA			
Analyst			
SHB			
Date Complete			
02/07/96			
Analysis Date			
02/01/96			
Analysis Time	Method Detection Limit in µg/mL		5.00E+00
01:30 PM	QC Actual in µg/mL		6.02E+02
Sample Point	QC Found in µg/mL		5.86E+02
	Percent Standard Recovery		97.4

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	H Chrestn	Date:	2/9/96

BLANK.WB1 REV 1.0 622102ML

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TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.200
SAMPLE	H2O Volume in mL	(VR)	0.000
Workbook	Volume Injected in mL	(VI)	0.200
4997	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
TIC-01	µg of Carbon in Sample	(C1)	4.1
Matrix	µg of Carbon from Baseline	(C2)	3.8
LIQUID			
Batch Number			
96000468			
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S95T003962			
Instrument Code			
TIC01			
Prepared By			
HLA			
Chemist			
HLA			
Analyst			
SHB			
Date Complete			
02/07/96			
Analysis Date	NOTE: Reported Result is Below Detection Level.		
02/01/96			
Analysis Time	Method Detection Limit in µg/mL		5.00E+00
01:30 PM			
Sample Point	µg of Carbon/mL	<	5.00E+00

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	H Anastin	Date:	2/9/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: DUP11

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
Sample Volume in mL	(SS)		0.200
H2O Volume in mL	(VR)		0.000
Volume Injected in mL	(VI)		0.200
Dilution Factor (calculated)	(DF)		1.000
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		3.4
µg of Carbon from Baseline	(C2)		3.8
Sample Result			5.00E+00

Type	DUP
Work Batch	4997
Test Code	TIC-01
Matrix	LIQUID
Batch Number	96000468
Rerun	0
Sample Prep	N/A
Sample #	S95T003962
Instrument Code	TIC01
Prepared By	HLA
Chemist	HLA
Analyst	SHB
Date Complete	02/07/96
Analysis Date	02/01/96
Analysis Time	01:30 PM
Sample Point	

µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)

Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI

RPD (of Sample and Dup Results) = | Difference | / Average

NOTE: Reported Result is Below Detection Level.

Method Detection Limit in µg/mL		5.00E+00
µg of Carbon/mL	<	5.00E+00
RPD (of Sam and Dup Results)		0.0000

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	H Anastn	Date:	2/9/96

SAMPLE.WB1 REV 1.0 622102ML

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

Sample: BLK *Date: 02/01/96* *Time: 06:53:42*

Sample Size = 200 uL *Analyst : SL HOOD*
Dil Factor = 1 *Min Readings = 14*
Blank ID # = BLK *Max Readings = 14*
Blank Value = N/A *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.50	40.00
3	1.51	0.70	28.57
4	2.01	1.10	36.36
5	2.51	1.50	26.67
6	3.01	1.70	11.76
7	3.51	1.90	10.53
8	4.01	2.20	13.64
9	4.50	2.50	12.00
10	5.00	2.70	7.41
11	5.51	3.00	10.00
12	6.00	3.30	9.09
13	6.50	3.50	5.71
14	7.00	3.80	7.89

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

Sample Run By: Sandra Ann Boatright 2-1-96
SL HOOD / *00000*

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 373 TO 377

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 02/01/96 Time: 07:03:05

Sample Size = 200 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = .5424811 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	16.10	96.27
3	1.51	44.50	63.82
4	2.01	69.30	35.79
5	2.51	88.10	21.34
6	3.01	100.20	12.08
7	3.51	108.00	7.22
8	4.01	113.00	4.42
9	4.50	116.20	2.75
10	5.00	118.10	1.61
11	5.51	119.30	1.01
12	6.01	120.30	0.83
13	6.51	120.70	0.33
14	7.00	121.10	0.33

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(121.1 - 3.799984)(1)/(200) = +5.865E-01 g/L Carbon
(121.1 - 3.799984)(1)/(200)(12) = +4.888E-02 Molar Carbon

Sample Run By: _____
SL HOOD 00000

$$\frac{121.1 - 3.8}{.2} = 586.5$$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: B-2 *Date: 02/01/96* *Time: 08:41:32*

Sample Size = 200 uL *Analyst : SL HOOD*
Dil Factor = 1 *Min Readings = 14*
Blank ID # = BLK *Max Readings = 14*
Blank Value = .5424811 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.50	60.00
3	1.50	1.00	50.00
4	2.00	1.20	16.67
5	2.50	1.60	25.00
6	3.00	1.90	15.79
7	3.51	2.20	13.64
8	4.00	2.40	8.33
9	4.50	2.70	11.11
10	5.00	3.00	10.00
11	5.50	3.20	6.25
12	6.00	3.50	8.57
13	6.50	3.70	5.41
14	7.00	4.10	9.76

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(4.1 - 3.79899)(1)/(200) = < 5.00 E-3 g/L Carbon
(4.1 - 3.79899)(1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
SL HOOD *00000*

$|4.1 - 3.8| = 0.3$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T03962 Date: 02/01/96 Time: 10:51:59

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5424811 ug/minute C

Analyst : SL HOOD
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.60	66.67
3	1.51	1.10	45.45
4	2.00	1.60	31.25
5	2.50	1.90	15.79
6	3.00	2.30	17.39
7	3.51	2.50	8.00
8	4.01	2.80	10.71
9	4.50	3.00	6.67
10	5.00	3.20	6.25
11	5.50	3.40	5.88
12	6.00	3.70	8.11
13	6.50	3.80	2.63
14	7.00	4.10	7.32

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(4.1 - 3.79899)(1)/(200) = < 5.00 E-3 g/L Carbon
(4.1 - 3.79899)(1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
SL HOOD 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T03962 DUP Date: 02/01/96 Time: 12:55:17

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5424811 ug/minute C

Analyst : SL HOOD
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.50	80.00
3	1.51	1.00	50.00
4	2.01	1.40	28.57
5	2.51	1.70	17.65
6	3.01	2.00	15.00
7	3.51	2.20	9.09
8	4.01	2.40	8.33
9	4.51	2.50	4.00
10	5.01	2.70	7.41
11	5.51	2.90	6.90
12	6.01	3.00	3.33
13	6.51	3.20	6.25
14	7.00	3.40	5.88

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(3.4 - 3.799984)(1)/(200) = < 5.00 E-3 g/L Carbon
(3.4 - 3.799984)(1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
SL HOOD 00000

worklistrpt Version 2.1 05/15/95
02/16/96 10:36

LABCORE Data Entry Template for Worklist# 5752

Analyst: JBS **Instrument:** TIC01 **Book #** 17N12-F

Method: LA-622-102 Rev/Mod < 0

Worklist Comment: AN102 TIC-01. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TIC-01	LIQUID	1	0.3	N/A	ug/mL
		2	STD				TIC-01	LIQUID	~~602~~ 601 FS 2-27-96	594	N/A	ug/mL
95000222	AN-102 GRAB	3	SAMPLE	S95T003867	0		TIC-01	LIQUID	N/A	1.22e4	1.05e2	ug/mL
95000222	AN-102 GRAB	4	DUP	S95T003867	0		TIC-01	LIQUID	1.22e4	1.25e4	N/A	ug/mL
95000222	AN-102 GRAB	5	SPK	S95T003867	0		TIC-01	LIQUID	100	98.1	N/A	ug/mL
95000222	AN-102 GRAB	6	SAMPLE	S95T003868	0		TIC-01	LIQUID	N/A	1.31e4	1.05e2	ug/mL
95000222	AN-102 GRAB	7	DUP	S95T003868	0		TIC-01	LIQUID	1.31e4	1.35e4	N/A	ug/mL
95000222	AN-102 GRAB	8	SAMPLE	S95T003869	0		TIC-01	LIQUID	N/A	1.30e4	1.05e2	ug/mL
95000222	AN-102 GRAB	9	DUP	S95T003869	0		TIC-01	LIQUID	1.30e4	1.34e4	N/A	ug/mL

Final page for worklist # 5752

JBS Buffum 2-20-96
Analyst Signature Date

RC Jones 2-27-96
Analyst Signature Date

Approved by
H Anastas 2-29-96

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.

TIC: LA-622-102 (C-0)

WORKLIST #	ANALYST SIGNATURE	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
5752	[signature]	2-28-96		

[ ] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [X] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)	.200 ml
Volume H2O Added to SAMPLE	~~.200 @ H2O~~
Volume INJECTED (mL)	.200 @ H2O
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

[ ] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [X] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003867 spk STD # =

DF 42

Volume SAMPLE Used (mL)	.200
Volume H2O Added to SAMPLE	
Volume INJECTED (mL)	.200
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	.200
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

org Dilution .058 - 1.0 ml → .200 + .200 spk - .200 Inject

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = STD # = 17N12-F

Volume SAMPLE Used (mL)	.200
Volume H2O Added to SAMPLE	Ø
Volume INJECTED (mL)	.200
Was Sample Dilution Used for SPIKE? Y or N	—
Amount SPIKE Standard Added (mL)	—
Volume H2O Added to SAMPLE + SPIKE (mL)	—
Final Coulometer Reading in µg Carbon (Optional)	

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003868 STD # =

DF 21

Volume SAMPLE Used (mL)	.050 ml
Volume H2O Added to SAMPLE	1.0 ml @ H2O
Volume INJECTED (mL)	.200 ml
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

.050 - 1.0 - .200 Inject

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003867 STD # =

DF 21

Volume SAMPLE Used (mL)	~~.200~~ .050 ml
Volume H2O Added to SAMPLE	1.0 ml
Volume INJECTED (mL)	.200
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Re Final Coulometer Reading in µg Carbon (Optional)	

.050 - 1 ml H2O - .200 Inject

[ ] SAMPLE [ ] STANDARD [X] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003868 Dup STD # =

DF 21

Volume SAMPLE Used (mL)	.050 ml
Volume H2O Added to SAMPLE	1.0 ml
Volume INJECTED (mL)	.200 ml
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

.050 - 1.0 - .200 inject

[ ] SAMPLE [ ] STANDARD [X] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003867 Dup STD # =

Volume SAMPLE Used (mL)	.050 ml
Volume H2O Added to SAMPLE	1.0 ml
Volume INJECTED (mL)	.200 ml
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

DF 21

.050 - 1.0 - .200 inject

[X] SAMPLE [ ] STANDARD [ ] DUPLICATE [ ] BASELINE [ ] SPIKE [ ] BLANK [ ] TRIPLICATE

SAMPLE # = 595T003869 STD # =

DF 21

Volume SAMPLE Used (mL)	.050 ml
Volume H2O Added to SAMPLE	1.0 ml
Volume INJECTED (mL)	.200 ml
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

.050 - 1.0 - .200 Inject

TIC: LA-622-102 (C-0)

WORKLIST #	ANALYST SIGNATURE	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
5752	[illegible]	2-20-96		

☐ SAMPLE ☐ STANDARD ☒ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = S95T003869 Dup STD # =

Volume SAMPLE Used (mL)	.050 ml
Volume H2O Added to SAMPLE	1.0 ml
Volume INJECTED (mL)	.200 ml
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	.050 - 1.0 - .200 inject

DF 21

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)	
Volume H2O Added to SAMPLE	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)	
Volume H2O Added to SAMPLE	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)	
Volume H2O Added to SAMPLE	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)	
Volume H2O Added to SAMPLE	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)	
Volume H2O Added to SAMPLE	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)	
Volume H2O Added to SAMPLE	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE ☐ BASELINE ☐ SPIKE ☐ BLANK ☐ TRIPLICATE

SAMPLE # = STD # =

Volume SAMPLE Used (mL)	
Volume H2O Added to SAMPLE	
Volume INJECTED (mL)	
Was Sample Dilution Used for SPIKE? Y or N	
Amount SPIKE Standard Added (mL)	
Volume H2O Added to SAMPLE + SPIKE (mL)	
Final Coulometer Reading in µg Carbon (Optional)	

380

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0) LIQUIDS

			BLANK
Sample Volume in mL	(SS)		0.200
Dilution Factor	(DF)		1.000
Digest Dilution Factor	(DDF)		1.000
µg of Carbon in Sample	(C1)		3.3
µg of Carbon in Blank	(C2)		3
g of Carbon/L	=	<	~~5.00E-03~~ 0.30

RWS 3/20/96

Type	BLANK
Work List	5752
Test Code	TIC01
Matrix	LIQUID
Sample #	BLANK
Instrument Code	WC16130
Analyst	DG GRIFFIN
Date	02/20/96
Time	06:19 PM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

NOTE: Reported Result is Below Detection Level

$|3.3-3| = 0.3$

absolute value of difference of Blank and baseline ~~µg Carbon/mL~~ =	0.30 ~~< 5.00E+00~~ RWS 3/20/96	DETECTION LEVEL in µg/mL ~~5.00E+00~~ RWS 3/20/96

Data Entry by:	[illegible]	Date:	02/23/96
Approved by:	RW Schroeder	Date:	2/26/96

Form 622102_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0) LIQUIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.200
STANDARD	Dilution Factor	(DF)	1.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	121.8
Test Code	µg of Carbon in Blank	(C2)	3
TIC01			
Matrix			
LIQUID	g of Carbon/L	=	5.94E-01
Sample #			
17N12F			
Instrument Code			
WC16130			
Analyst			
DG GRIFFIN			
Date			
02/20/96			
Time			
06:19 PM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

µg Carbon/mL =	5.94E+02	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	[illegible]	Date:	02/23/96
Approved by:	[illegible]	Date:	2/26/96

Form 622102_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0) LIQUIDS

			Sample
Type	Sample Volume in mL	(SS)	0.200
Sample	Dilution Factor	(DF)	21.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	119.1
Test Code	µg of Carbon in Blank	(C2)	3
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.22E+01
Sample #			
S95T003867			
Instrument Code			
WC16130			
Analyst			
DG Griffin			
Date			
02/20/96			
Time			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

µg Carbon/mL =	1.22E+04	DETECTION LEVEL in µg/mL
		1.05E+02

Data Entry by:	RWS	Date:	02/26/96
Approved by:	H Ornestin	Date:	2-29-96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0) LIQUIDS

			Duplicate
Type	Sample Volume in mL	(SS)	0.200
Duplicate	Dilution Factor	(DF)	21.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	121.6
Test Code	µg of Carbon in Blank	(C2)	3
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.25E+01
Sample #			
S95T003867			
Instrument Code			
WC16130			
Analyst			
DG Griffin			
Date			
02/20/96			
Time			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

µg Carbon/mL =	1.25E+04	DETECTION LEVEL in µg/mL
		1.05E+02

Data Entry by:	RWS	Date:	02/26/96
Approved by:	[illegible]	Date:	2-29-96

PLACE ANALYTICAL CARD IN BOX BELOW-DO NOT WRITE IN SPACE

WHC-SD-WM-DP-165, REV. 1

TIC LA622-102

~~TOC: LA-344-105~~

SPIKED SAMPLE

SPIKE

Type	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	0.050	Sample Size in mL (SS)	0.200
Worklist	H2SO4 Volume in mL	1.000	Spike Volume in mL	0.200
5752	Volume Injected in mL	0.200	H2SO4 Volume in mL	0.000
Test Code	µg of Carbon in Sample	119.1	Volume Injected in mL	0.200
TIC01	µg of Carbon in Blank	3	Sample Pre-Spike Dil. Factor (PDF)	21
Matrix			Spike Value (µg/ml)	602
Liquid			µg C in Sample + Spike	120.1
Sample #			µg C in Blank	3
S95T003867				
Instrument Code				
WC16130				
Analyst				
DG Griffin				
Date				
02/20/96				
Time				

PERCENT SPIKE RE = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]
- [(µgC sample - µgC blank) * (Sample Correction Factor) * (Sample Size Correction Factor) * (PDF)]

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Correction Factor = $\frac{\text{Total volume in sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

Sample Pre-Spike Dilution Factor = $\frac{1}{\text{Dilution of Sample Before Added to Spike Vial}}$

WHERE : µg Carbon in Spike = Spike Value (µg/mL) * Spike Volume (mL)

Percent Spike Recovery 98.1%

Data Entry by:	RWS	Date:	26-Feb-96
Approved by:	[illegible]	Date:	2-29-96

Form X Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0) LIQUIDS

			Sample
Type	Sample Volume in mL	(SS)	0.200
Sample	Dilution Factor	(DF)	21.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	127.9
Test Code	µg of Carbon in Blank	(C2)	3
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.31E+01
Sample #			
S95T003868			
Instrument Code			
WC16130			
Analyst			
DG Griffin			
Date			
02/20/96			
Time			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

µg Carbon/mL =	1.31E+04	DETECTION LEVEL in µg/mL
		1.05E+02

Data Entry by:	RWS	Date:	02/26/96
Approved by:	[illegible]	Date:	2-29-96

Form 622102_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0) LIQUIDS

			Duplicate
Type	Sample Volume in mL	(SS)	0.200
Duplicate	Dilution Factor	(DF)	21.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	131.7
Test Code	µg of Carbon in Blank	(C2)	3
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.35E+01
Sample #			
S95T003868			
Instrument Code			
WC16130			
Analyst			
DG Griffin			
Date			
02/20/96			
Time			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

µg Carbon/mL =	1.35E+04	DETECTION LEVEL in µg/mL
		1.05E+02

Data Entry by:	RWS	Date:	02/26/96
Approved by:	H Amrotn	Date:	2-29-96

Form 622102_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0) LIQUIDS

			Sample
Type	Sample Volume in mL	(SS)	0.200
Sample	Dilution Factor	(DF)	21.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	126.7
Test Code	µg of Carbon in Blank	(C2)	3
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.30E+01
Sample #			
S95T003869			
Instrument Code			
WC16130			
Analyst			
DG Griffin			
Date			
02/20/96			
Time			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

µg Carbon/mL =	1.30E+04	DETECTION LEVEL in µg/mL
		1.05E+02

Data Entry by:	RWS	Date:	02/26/96
Approved by:	H Ainestro	Date:	2-29-96

Form 622102_C Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-165, REV. I

TIC : LA-622-102 (C-0) LIQUIDS

			Duplicate
Type	Sample Volume in mL	(SS)	0.200
Duplicate	Dilution Factor	(DF)	21.000
Work List	Digest Dilution Factor	(DDF)	1.000
5752	µg of Carbon in Sample	(C1)	131
Test Code	µg of Carbon in Blank	(C2)	3
TIC-01			
Matrix			
Liquid	g of Carbon/L	=	1.34E+01
Sample #			
S95T003869			
Instrument Code			
WC16130			
Analyst			
DG Griffin			
Date			
02/20/96			
Time			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

µg Carbon/mL =	1.34E+04	DETECTION LEVEL in µg/mL
		1.05E+02

Data Entry by:	RWS	Date:	02/26/96
Approved by:	H Anastas	Date:	2-29-96

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

Sample: BLANK Date: 02/20/96 Time: 18:19:00

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLANK
Blank Value = N/A

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.30	66.67
3	1.51	0.60	50.00
4	2.01	0.90	33.33
5	2.51	1.20	25.00
6	3.01	1.40	14.29
7	3.51	1.60	12.50
8	4.01	1.80	11.11
9	4.51	2.00	10.00
10	5.01	2.20	9.09
11	5.51	2.40	8.33
12	6.01	2.60	7.69
13	6.51	2.80	7.14
14	7.00	3.00	6.67

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

Sample Run By: _____
DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: BLK Date: 02/20/96 Time: 18:38:49

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLANK
Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.70	42.86
4	2.01	1.10	36.36
5	2.51	1.30	15.38
6	3.01	1.50	13.33
7	3.51	1.70	11.76
8	4.00	2.00	15.00
9	4.50	2.20	9.09
10	5.00	2.40	8.33
11	5.50	2.60	7.69
12	6.00	2.80	7.14
13	6.50	3.00	6.67
14	7.00	3.30	9.09

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(3.3 - 3)(1)/(200) = < 5.00 E-3 g/L Carbon
(3.3 - 3)(1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: LMCS STD. Date: 02/20/96 Time: 18:50:23

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLANK
Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	26.60	98.50
3	1.50	69.00	61.45
4	2.00	95.60	27.82
5	2.50	109.00	12.29
6	3.01	115.10	5.30
7	3.50	117.70	2.21
8	4.00	118.90	1.01
9	4.50	119.60	0.59
10	5.00	120.10	0.42
11	5.50	120.60	0.41
12	6.00	121.00	0.33
13	6.50	121.50	0.41
14	7.00	121.80	0.25

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(121.8 - 2.999634)(1)/(200) = +5.940E-01 g/L Carbon
(121.8 - 2.999634)(1)/(200)(12) = +4.950E-02 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T003867 Date: 02/20/96 Time: 20:32:07

Sample Size = 200 uL
Dil Factor = 21
Blank ID # = BLANK
Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	37.80	98.41
3	1.50	78.60	51.91
4	2.00	99.80	21.24
5	2.50	109.40	8.78
6	3.00	113.60	3.70
7	3.50	115.60	1.73
8	4.00	116.50	0.77
9	4.50	117.20	0.60
10	5.00	117.70	0.42
11	5.50	118.00	0.25
12	6.00	118.50	0.42
13	6.50	118.70	0.17
14	7.00	119.10	0.34

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(119.1 - 2.999216)(21)/(200) = +1.219E+01 g/L Carbon
(119.1 - 2.999216)(21)/(200)(12) = +1.016E+00 Molar Carbon

Sample Run By: DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T003867DUP Date: 02/20/96 Time: 20:41:33

Sample Size = 200 uL
Dil Factor = 21
Blank ID # = BLANK
Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	40.20	98.01
3	1.51	81.20	50.49
4	2.01	102.20	20.55
5	2.51	112.10	8.83
6	3.01	116.40	3.69
7	3.51	118.30	1.61
8	4.01	119.40	0.92
9	4.50	119.80	0.33
10	5.00	120.20	0.33
11	5.50	120.60	0.33
12	6.00	120.90	0.25
13	6.51	121.30	0.33
14	7.00	121.60	0.25

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(121.6 - 3.000052)(21)/(200) = +1.245E+01 g/L Carbon
(121.6 - 3.000052)(21)/(200)(12) = +1.038E+00 Molar Carbon

Sample Run By: DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV WRC-SD-WM-DP-165, REV. 1

Sample: S95T003867SPK Date: 02/20/96 Time: 20:58:09

Sample Size = 200 uL
Dil Factor = 42
Blank ID # = BLANK
Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	37.00	98.11
3	1.51	77.50	52.26
4	2.01	99.10	21.80
5	2.51	109.70	9.66
6	3.01	114.50	4.19
7	3.51	116.80	1.97
8	4.01	117.70	0.76
9	4.51	118.30	0.51
10	5.01	118.80	0.42
11	5.51	119.20	0.34
12	6.01	119.60	0.33
13	6.51	119.80	0.17
14	7.00	120.10	0.25

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(120.1 - 3)(42)/(200) = +2.459E+01 g/L Carbon
(120.1 - 3)(42)/(200)(12) = +2.049E+00 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T003868 Date: 02/20/96 Time: 21:12:57

Sample Size = 200 uL
Dil Factor = 21
Blank ID # = BLANK
Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	45.90	97.60
3	1.51	87.60	47.60
4	2.01	108.00	18.89
5	2.51	117.70	8.24
6	3.01	122.20	3.68
7	3.51	124.30	1.69
8	4.01	125.20	0.72
9	4.51	125.90	0.56
10	5.01	126.40	0.40
11	5.51	126.90	0.39
12	6.01	127.20	0.24
13	6.51	127.50	0.24
14	7.00	127.90	0.31

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(127.9 - 3)(21)/(200) = +1.311E+01 g/L Carbon
(127.9 - 3)(21)/(200)(12) = +1.093E+00 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T003868DUP Date: 02/20/96 Time: 21:22:40

Sample Size = 200 uL
Dil Factor = 21
Blank ID # = BLANK
Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	45.40	98.02
3	1.51	87.20	47.94
4	2.01	109.20	20.15
5	2.51	120.10	9.08
6	3.01	125.30	4.15
7	3.51	127.70	1.88
8	4.01	128.90	0.93
9	4.51	129.70	0.62
10	5.01	130.30	0.46
11	5.51	130.60	0.23
12	6.01	131.00	0.31
13	6.51	131.40	0.30
14	7.00	131.70	0.23

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(131.7 - 3.000052)(21)/(200) = +1.351E+01 g/L Carbon
(131.7 - 3.000052)(21)/(200)(12) = +1.126E+00 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T003869 Date: 02/20/96 Time: 21:36:36

Sample Size = 200 uL
Dil Factor = 21
Blank ID # = BLANK
Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	45.00	98.00
3	1.51	85.00	47.06
4	2.00	105.20	19.20
5	2.50	115.30	8.76
6	3.00	120.20	4.08
7	3.50	122.60	1.96
8	4.00	123.80	0.97
9	4.50	124.60	0.64
10	5.00	125.10	0.40
11	5.50	125.60	0.40
12	6.00	125.90	0.24
13	6.50	126.40	0.40
14	7.00	126.70	0.24

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(126.7 - 2.999216)(21)/(200) = +1.299E+01 g/L Carbon
(126.7 - 2.999216)(21)/(200)(12) = +1.082E+00 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-165, REV. 1

Sample: S95T003869DUP Date: 02/20/96 Time: 21:45:23

Sample Size = 200 uL
Dil Factor = 21
Blank ID # = BLANK
Blank Value = .4282801 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	47.00	97.66
3	1.51	86.60	45.73
4	2.01	107.90	19.74
5	2.51	118.60	9.02
6	3.01	124.10	4.43
7	3.51	126.60	1.97
8	4.01	128.10	1.17
9	4.51	128.90	0.62
10	5.00	129.40	0.39
11	5.51	129.90	0.38
12	6.01	130.30	0.31
13	6.51	130.70	0.31
14	7.01	131.00	0.23

BLANK VALUE = 3 micrograms carbon
BLANK FACTOR = 3 / 7.004761 = +4.3E-01 ug/min Carbon

SAMPLE RESULTS:
(131 - 3.000104)(21)/(200) = +1.344E+01 g/L Carbon
(131 - 3.000104)(21)/(200)(12) = +1.120E+00 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL Date: 02/01/96
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5424811 ug/minute C

Analyst : SL HOOD
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.00	0.00
2	1.01	195.60	98.47
3	1.50	448.90	56.43
4	2.00	587.40	23.58
5	2.50	650.80	9.74
6	3.00	679.60	4.24
7	3.50	691.80	1.76
8	4.00	696.80	0.72
9	4.50	698.90	0.30
10	5.00	700.00	0.16
11	5.50	700.70	0.10
12	6.00	701.20	0.07
13	6.50	701.70	0.07
14	7.00	702.20	0.07

s carbon
2 =

DATA NOT USED IN PACKAGE

+5.4E-01 ug/min Carbon
+1.397E+01 g/L Carbon
+1.164E+00 Molar Carbon

00000

WORKBOOK PAGE: SAM3 WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.050
SAMPLE	H2O Volume in mL	(VR)	0.000
Work List	Volume Injected in mL	(VI)	0.050
4997	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
TIC-01	µg of Carbon in Sample	(C1)	704.1
Matrix	µg of Carbon from Baseline	(C2)	3.8
LIQUID			
Batch Number			
96000468			
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S95T003867			
Instrument Code			
TIC01			
Prepared By			
HLA			
Chemist			
HLA			
Analyst			
SHB			
Date Complete			
02/07/96			
Analysis Date			
02/01/96			
Analysis Time	Method Detection Limit in µg/mL		2.00E+01
01:30 PM			
Sample Point	µg of Carbon/mL		1.40E+04

DATA NOT USED IN PACKAGE

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	[signature]	Date:	2/9/96

SAMPLE.WB1 REV 1.0 622102ML

402

WORKBOOK PAGE: DUP4

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
Sample Volume in mL	(SS)		0.050
H2O Volume in mL	(VR)		0.000
Volume Injected in mL	(VI)		0.050
Dilution Factor (calculated)	(DF)		1.000
Digest Dilution Factor	(DDF)		1
µg of Carbon in Sample	(C1)		697.5
µg of Carbon from Baseline	(C2)		3.8
Sample Result			1.40E+04

Type	DUP
Work List	4997
Test Code	TIC-01
Matrix	LIQUID
Batch Number	96000468
Rerun	0
Sample Prep	N/A
Sample #	S95T003867
Instrument Code	TIC01
Prepared By	HLA
Chemist	HLA
Analyst	SHB
Date Complete	02/07/96
Analysis Date	02/01/96
Analysis Time	01:30 PM
Sample Point	

µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)

Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI

RPD (of Sample and Dup Results) = | Difference | / Average

DATA NOT USED IN PACKAGE

Method Detection Limit in µg/mL	2.00E+01
µg of Carbon/mL	1.39E+04
RPD (of Sam and Dup Results)	0.0095

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	H Anastn	Date:	2/9/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SPIKE5

TIC : LA-622-102 (C-0) LIQUIDS

Type	SPK
Work List	4997
Test Code	
Matrix	LIQUID
Batch Number	96000468
Rerun #	0
Sample Prep	N/A
Sample #	S95T003867
Instrument Code	TIC01
Prepared By	HLA
Chemist	HLA
Analyst	SHB
Date Complete	02/07/96
Analysis Date	02/01/96
Analysis Time	01:30 PM
Sample Point	

Sample Vial Data		
Sample Volume in mL	(SS)	0.050
H2O Volume in mL	(VR)	0.000
Volume Injected in mL	(VI)	0.050
µg of Carbon in Sample	(C1)	704.1
µg of Carbon from Baseline	(C2)	3.8

Spiked Vial Data		SPIKE
Was the sample dilution used?	(yes/no)	NO
Sample Volume in mL	(SPK SS)	0.050
H2O Volume in mL	(SPK VR)	0.000
Amount of Spike Std. in mL	(SPK VOL)	0.100
Volume Injected in mL	(SPK VI)	0.050
µg C in Sample + Spike	(C3)	264.5
Pre-Spike Dilution Factor	(PDF)	1
Spike Book Number		17N12F
Spike Value in µg/ml		602

Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI

Sample Correction Factor (SAM CF) = (SS + VR) / (VI)

Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)

Percent Spike Recovery = (QC Found) / (QC Actual) * 100

DATA NOT USED IN PACKAGE

QC Actual in µg/mL	6.02E+02
QC Found in µg/mL	8.18E+02
Percent Spike Recovery	135.9

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	H Anastn	Date:	2/9/96

SPIKE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SAM6

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.050
SAMPLE	H2O Volume in mL	(VR)	0.000
Workbook	Volume Injected in mL	(VI)	0.050
4997	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
TIC-01	µg of Carbon in Sample	(C1)	700.1
Matrix	µg of Carbon from Baseline	(C2)	3.8
LIQUID			
Batch Number			
96000468			
Rerun #	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S95T003868			
Instrument Code			
TIC01			
Prepared By			
HLA			
Chemist			
HLA			
Analyst			
SHB			
Date Complete			
02/07/96			
Analysis Date			
02/01/96			
Analysis Time	Method Detection Limit in µg/mL		2.00E+01
01:30 PM			
Sample Point	µg of Carbon/mL		1.39E+04

DATA NOT USED IN PACKAGE

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	H Anastas	Date:	2/9/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: DUP7

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.050
DUP	H2O Volume in mL	(VR)	0.000
Worklist	Volume Injected in mL	(VI)	0.050
4997	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
TIC-01	µg of Carbon in Sample	(C1)	701.4
Matrix	µg of Carbon from Baseline	(C2)	3.8
LIQUID	Sample Result		1.39E+04
Batch Number			
96000468			
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #	RPD (of Sample and Dup Results) = | Difference | / Average		
S95T003868			
Instrument Code			
TIC01			
Prepared By			
HLA			
Chemist			
HLA			
Analyst			
SHB			
Date Complete			
02/07/96			
Analysis Date			
02/01/96			
Analysis Time	Method Detection Limit in µg/mL		2.00E+01
01:30 PM			
Sample Point	µg of Carbon/mL		1.40E+04
	RPD (of Sam and Dup Results)		0.0037

DATA NOT USED IN PACKAGE

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	H Anastas	Date:	2/9/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SAM8 WHC-SD-WM-DP-165, REV. 1

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.050
SAMPLE	H2O Volume in mL	(VR)	0.000
Volume	Volume Injected in mL	(VI)	0.050
4997	Dilution Factor (calculated)	(DF)	1.000
Digest Dilution	Digest Dilution Factor	(DDF)	1
TIC-01	µg of Carbon in Sample	(C1)	700
Matrix	µg of Carbon from Baseline	(C2)	3.8
LIQUID			
Batch Number			
96000468			
Reduction	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S95T003869			
Treatment Code			
TIC01			
Prepared By			
HLA			
Chemist			
HLA			
Analyst			
SHB			
Date Complete			
02/07/96			
Analysis Date			
02/01/96			
Analysis Time	Method Detection Limit in µg/mL		2.00E+01
01:30 PM			
Sample Point	µg of Carbon/mL		1.39E+04

DATA NOT USED IN PACKAGE

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	H Anastin	Date:	2/9/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: DUP9

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.050
DUP	H2O Volume in mL	(VR)	0.000
Work List	Volume Injected in mL	(VI)	0.050
4997	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
TIC-01	µg of Carbon in Sample	(C1)	702.2
Matrix	µg of Carbon from Baseline	(C2)	3.8
LIQUID	Sample Result		1.39E+04
Batch Number			
96000468			
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Lab Sample #	RPD (of Sample and Dup Results) = | Difference | / Average		
S95T003869			
Instrument Code			
TIC01			
Prepared By			
HLA			
Chemist			
HLA			
Analyst			
SHB			
Date Complete			
02/07/96			
Analysis Date			
02/01/96			
Analysis Time	Method Detection Limit in µg/mL		2.00E+01
01:30 PM			
Sample Point	µg of Carbon/mL		1.40E+04
	RPD (of Sam and Dup Results)		0.0032

DATA NOT USED IN PACKAGE

Data Entered By:	HLA	Date:	02/07/96
Signature of Chemist:	H Anaston	Date:	2/9/96

SAMPLE.WB1 REV 1.0 622102ML

408

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T003867 Date: 02/01/96 Time: 09:13:43

Sample Size = 50 uL *Analyst : SL HOOD*
Dil Factor = 1 *Min Readings = 14*
Blank ID # = BLK *Max Readings = 14*
Blank Value = .5424811 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	14.40	0.00
2	1.01	296.60	95.14
3	1.51	520.80	43.05
4	2.01	616.90	15.58
5	2.51	660.20	6.56
6	3.01	680.20	2.94
7	3.51	690.60	1.51
8	4.01	696.30	0.82
9	4.51	699.30	0.43
10	5.01	701.00	0.24
11	5.51	702.10	0.16
12	6.01	702.90	0.11
13	6.51	703.60	0.10
14	7.00	704.10	0.07

DATA NOT USED IN PACKAGE

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(704.1 - 3.800017)(1)/(50) = +1.401E+01 g/L Carbon
(704.1 - 3.800017)(1)/(50)(12) = +1.167E+00 Molar Carbon

Sample Run By: _____
SL HOOD *00000*

$$\frac{704.1 - 3.8}{0.05} = 1.40e^4$$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T003867 DU Date: 02/01/96 Time: 09:26:26

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL *Analyst : SL HOOD*
Dil Factor = 1 *Min Readings = 14*
Blank ID # = BLK *Max Readings = 14*
Blank Value = .5424811 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	9.30	0.00
2	1.01	276.30	96.63
3	1.51	505.80	45.37
4	2.01	604.40	16.31
5	2.51	647.50	6.66
6	3.01	670.30	3.40
7	3.51	681.30	1.61
8	4.01	687.80	0.95
9	4.50	691.40	0.52
10	5.00	693.70	0.33
11	5.51	695.10	0.20
12	6.00	696.20	0.16
13	6.51	697.00	0.11
14	7.00	697.50	0.07

DATA
NOT USED
IN PACKAGE

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(697.5 - 3.799984)(1)/(50) = +1.387E+01 g/L Carbon
(697.5 - 3.799984)(1)/(50)(12) = +1.156E+00 Molar Carbon

Sample Run By: _____
SL HOOD 00000

$$\frac{695.5-3.8}{0.05} = 1.38e^{4}$$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T03867 SPK Date: 02/01/96 Time: 09:41:34

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL *Analyst : SL HOOD*
Dil Factor = 3 *Min Readings = 14*
Blank ID # = BLK *Max Readings = 14*
Blank Value = .5424811 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.30	0.00
2	1.01	110.80	97.92
3	1.51	194.70	43.09
4	2.01	229.90	15.31
5	2.51	246.00	6.54
6	3.00	253.60	3.00
7	3.50	257.70	1.59
8	4.00	259.90	0.85
9	4.50	261.40	0.57
10	5.00	262.30	0.34
11	5.50	263.10	0.30
12	6.00	263.60	0.19
13	6.50	264.00	0.15
14	7.00	264.50	0.19

DATA NOT USED IN PACKAGE

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(264.5 - 3.79952)(3)/(50) = +1.564E+01 g/L Carbon
(264.5 - 3.79952)(3)/(50)(12) = +1.304E+00 Molar Carbon

Sample Run By: _____
SL HOOD 00000

$$\frac{264.5}{\left(\frac{704.1}{.05}\right)0.05 + 300}$$

HLA 2-5-96

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T03868 Date: 02/01/96 Time: 09:55:01

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL *Analyst : SL HOOD*
Dil Factor = 1 *Min Readings = 14*
Blank ID # = BLK *Max Readings = 14*
Blank Value = .5424811 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	10.50	0.00
2	1.01	292.00	96.40
3	1.51	507.80	42.50
4	2.00	599.80	15.34
5	2.50	643.80	6.83
6	3.00	667.60	3.57
7	3.50	680.80	1.94
8	4.00	688.30	1.09
9	4.50	692.90	0.66
10	5.00	695.60	0.39
11	5.50	697.40	0.26
12	6.00	698.50	0.16
13	6.50	699.40	0.13
14	7.00	700.10	0.10

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

DATA
NOT USED
IN PACKAGE

SAMPLE RESULTS:
(700.1 - 3.79952)(1)/(50) = +1.393E+01 g/L Carbon
(700.1 - 3.79952)(1)/(50)(12) = +1.161E+00 Molar Carbon

Sample Run By: _____
SL HOOD *00000*

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T03868 DUP Date: 02/01/96 Time: 10:08:48

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL *Analyst : SL HOOD*
Dil Factor = 1 *Min Readings = 14*
Blank ID # = BLK *Max Readings = 14*
Blank Value = .5424811 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	9.50	0.00
2	1.01	292.50	96.75
3	1.51	504.60	42.03
4	2.00	594.20	15.08
5	2.50	640.10	7.17
6	3.01	665.40	3.80
7	3.51	679.40	2.06
8	4.01	687.70	1.21
9	4.50	693.00	0.76
10	5.00	696.10	0.45
11	5.50	698.30	0.32
12	6.00	699.70	0.20
13	6.50	700.60	0.13
14	7.00	701.40	0.11

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(701.4 - 3.79952)(1)/(50) = +1.395E+01 g/L Carbon
(701.4 - 3.79952)(1)/(50)(12) = +1.163E+00 Molar Carbon

DATA NOT USED IN PACKAGE

Sample Run By: _____
SL HOOD 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-165, REV. 1

Sample: S95T03869 Date: 02/01/96 Time: 10:25:27

Sample Size = 50 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5424811 ug/minute C

Analyst : SL HOOD
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.30	0.00
2	1.01	185.80	98.22
3	1.51	429.60	56.75
4	2.01	571.90	24.88
5	2.51	640.20	10.67
6	3.01	672.20	4.76
7	3.51	687.00	2.15
8	4.01	693.70	0.97
9	4.50	696.40	0.39
10	5.01	697.80	0.20
11	5.51	698.60	0.11
12	6.01	699.10	0.07
13	6.51	699.60	0.07
14	7.00	700.00	0.06

DATA
NOT USED
IN PACKAGE

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 7.004852 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(700 - 3.799984)(1)/(50) = +1.392E+01 g/L Carbon
(700 - 3.799984)(1)/(50)(12) = +1.160E+00 Molar Carbon

Sample Run By: _____
SL HOOD 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S95T03869 DUP Date: 02/01/96 Time: 10:33:33

WHC-SD-WM-DP-165, REV. 1

Sample Size = 50 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5424811 ug/minute C

Analyst : SL HOOD
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.00	0.00
2	1.01	195.60	98.47
3	1.50	448.90	56.43
4	2.00	587.40	23.58
5	2.50	650.80	9.74
6	3.00	679.60	4.24
7	3.50	691.80	1.76
8	4.00	696.80	0.72
9	4.50	698.90	0.30
10	5.00	700.00	0.16
11	5.50	700.70	0.10
12	6.00	701.20	0.07
13	6.50	701.70	0.07
14	7.00	702.20	0.07

DATA NOT USED IN PACKAGE

BLANK VALUE = 3.8 micrograms carbon
LANK FACTOR = 3.8 / 7.004852 =

AMPLE RESULTS:
702.2 - 3.79899)(1)/(50) = +5.4E-01 ug/min Carbon
702.2 - 3.79899)(1)/(50)(12) = +1.397E+01 g/L Carbon
+1.164E+00 Molar Carbon

Sample Run By: SL HOOD

00000

WHC-SD-WM-DP-165, REV. 1

RADIOCHEMICAL ANALYSES

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LABCORE Data Entry Template for Worklist# 4800

Analyst: JMV **Instrument:** AB00 16 **Book#** 14856

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

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

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	LIQUID		
2	BLNK				@ALPHA01	LIQUID		
3	BLNK/BKG				@ALPHA01	LIQUID		
4	SAMPLE	S95T003982	0		@ALPHA01	LIQUID	95000227	AN-102 GRAB
		Analytes Requested:			ALPHA01 , ALPHA01E			
5	DUP	S95T003982	0		@ALPHA01	LIQUID		
6	SPK	S95T003982	0		@ALPHA01	LIQUID		
7	SAMPLE	S95T003983	0		@ALPHA01	LIQUID	95000227	AN-102 GRAB
		Analytes Requested:			ALPHA01 , ALPHA01E			
8	DUP	S95T003983	0		@ALPHA01	LIQUID		
9	SAMPLE	S95T003984	0		@ALPHA01	LIQUID	95000227	AN-102 GRAB
		Analytes Requested:			ALPHA01 , ALPHA01E			
10	DUP	S95T003984	0		@ALPHA01	LIQUID		

Final page for worklist # 4800

Analyst Signature Date

Analyst Signature Date 1/16/96

C.J. Spencer 1/16/96

Data Entry Comments: Spike 119343

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

LABCORE Completed Worklist Report for Worklist# 4800

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

Method: _____Rev/Mod _____

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	LIQUID	1.54E-05	1.55E-5	100.650	% Recovery
1	STD		0	@ALPHA01	ALPHA01E	LIQUID	1.00	4.24E+00	4.240	% Ct. Error
2	BLNK		0	@ALPHA01	ALPHA01	LIQUID	1	<8.88E-3		uCi/mL
2	BLNK		0	@ALPHA01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0	@ALPHA01	ALPHA01	LIQUID	1.00E+00	5.07E-01	0.510	uCi/mL
4	SAMPLE	S95T003982	0	@ALPHA01	ALPHA01	LIQUID	N/A	1.44E-01	2.170e-002	uCi/mL
4	SAMPLE	S95T003982	0	@ALPHA01	ALPHA01E	LIQUID	N/A	2.10E+01	0.000	% Ct. Error
5	DUP	S95T003982	0	@ALPHA01	ALPHA01	LIQUID	1.44E-1	1.56E-1	8.000	RPD
5	DUP	S95T003982	0	@ALPHA01	ALPHA01E	LIQUID	1.00	2.07E+01	20.700	% Ct. Error
6	SPK	S95T003982	0	@ALPHA01	ALPHA01	LIQUID	3.92E-02	3.94E-02	100.510	% Recovery
7	SAMPLE	S95T003983	0	@ALPHA01	ALPHA01	LIQUID	N/A	1.16E-01	2.170e-002	uCi/mL
7	SAMPLE	S95T003983	0	@ALPHA01	ALPHA01E	LIQUID	N/A	2.54E+01	0.000	% Ct. Error
8	DUP	S95T003983	0	@ALPHA01	ALPHA01	LIQUID	1.16E-1	1.16E-1	0.000	RPD
8	DUP	S95T003983	0	@ALPHA01	ALPHA01E	LIQUID	1.00	2.37E+01	23.700	% Ct. Error
9	SAMPLE	S95T003984	0	@ALPHA01	ALPHA01	LIQUID	N/A	1.59E-01	2.170e-002	uCi/mL
9	SAMPLE	S95T003984	0	@ALPHA01	ALPHA01E	LIQUID	N/A	2.02E+01	0.000	% Ct. Error
10	DUP	S95T003984	0	@ALPHA01	ALPHA01	LIQUID	1.59E-1	1.74E-1	9.010	RPD
10	DUP	S95T003984	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.93E+01	19.300	% Ct. Error

Final page for worklist# 4800

Analyst Signature Date

Analyst Signature Date

1/22/96

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)	2154	2217
4800	COUNT TIME in MINUTES	(CT)	30	30
A (or TB)	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)	14B56	14B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		71.570	73.670
Batch Number	Standard Value in µCi/mL		1.54E-05	
96000249	Concentration in µCi/L	=	1.53E-02	
Rerun	Replicate Concentration in µCi/L	=	1.58E-02	
0	AVERAGE CONCENTRATION in µCi/L	=	1.5547E-02	

Sample Prep: N/A

Sample #: WL4800

Instrument Code: WB27806

Prepared By: MCB

Chemist: SLF

Analyst: JMV

Date Complete: 01/16/96

Analysis Date: 01/15/96

Analysis Time: 02:00 PM

Sample Point: AN-102 GRAB

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	1.55E-05	
RELATIVE COUNTING ERROR	4.2%	1.07E-07 µCi/mL

Analyst:		MCB	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

STANDARD.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK2

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

			BLNK	REPLICATE
DETECTOR NUMBER			16	16
DISH SIZE (1 , 2 , or 5)	(MS)		2	2
GROSS COUNTS	(GC)		4	3
COUNT TIME in MINUTES	(CT)		30	30
BACKGROUND in cpm	(BKG)		0.23	0.23
SAMPLE SIZE in mL	(SS)		1.000	1.000
DILUTION FACTOR	(DF)		20301	20301
DIGEST DILUTION FACTOR	(DDF)		1	1
EFFICIENCY FACTOR	(EFF)		0.2104	0.2104
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			0.204	0.204
Blank Concentration in µCi/L		<	8.88E+00	
Replicate Concentration in µCi/L		<	8.88E+00	
Maximum Concentration in µCi/L		<	8.8802E+00	

Type	BLNK
Work List	4800
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96000249
Rerun	0
Sample Prep	N/A
Sample #	WL4800
Instrument Code	WB27806
Prepared By	MCB
Chemist	SLF
Analyst	JMV
Date Complete	01/16/96
Analysis Date	01/15/96
Analysis Time	02:00 PM
Sample Point	AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	< 8.88E-03	2.17E-02 µCi/mL
LESS Than Value was Determined from Lc. RK 1/16/96			
RELATIVE COUNTING ERROR		500.0%	

Analyst:		MCB	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	106	107
4800	COUNT TIME in MINUTES	(CT)	30	30
AT or IS ?	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.303	3.337

Batch Number	
96000249	Blank Concentration in µCi/L 1.44E+02
Rerun	Replicate Concentration in µCi/L 1.45E+02
0	Average Concentration in µCi/L 1.4430E+02
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S95T003982	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
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	
SLF	
Analyst	
JMV	
Date Complete	
01/16/96	
Analysis Date	
01/15/96	
Analysis Time	
02:00 PM	
Sample Point	
AN-102 GRAB	

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.44E-01	
RELATIVE COUNTING ERROR		21.0%	2.17E-02 µCi/mL

RM 1/26/96

Analyst:	MCB		Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: DUP5

WHC-SD-WM-DP-165, REV. 1

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

			DUP	REPLICATE
DETECTOR NUMBER			16	16
DISH SIZE (1 , 2 , or 5)	(MS)		2	2
GROSS COUNTS	(GC)		109	120
COUNT TIME in MINUTES	(CT)		30	30
BACKGROUND in cpm	(BKG)		0.23	0.23
SAMPLE SIZE in mL	(SS)		1.000	1.000
DILUTION FACTOR	(DF)		20301	20301
DIGEST DILUTION FACTOR	(DDF)		1	1
EFFICIENCY FACTOR	(EFF)		0.2104	0.2104
Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE			3.403	3.770

Blank Concentration in µCi/L	1.48E+02
Replicate Concentration in µCi/L	1.64E+02
Average Concentration in µCi/L	1.5589E+02

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.56E-01	2.17E-02 µCi/mL
RELATIVE COUNTING ERROR		20.7%	

RE 1/26/96

Type	DUP
Work List	4800
Form Id	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96000249
Rerun	0
Sample Prep	N/A
Sample #	S95T003982
Instrument Code	WB27806
Prepared By	MCB
Chemist	SLF
Analyst	JMV
Date Complete	01/16/96
Analysis Date	01/15/96
Analysis Time	02:00 PM
Sample Point	AN-102 GRAB

Analyst:		MCB	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: SPIKE6

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

			SPIKE	REPLICATE
DETECTOR NUMBER			16	16
DISH SIZE 1 , 2 , or 5		(MS)	2	2
TOTAL COUNTS		(TC)	56674	53937
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.23	0.23
SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	1.000	1.000
SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	20301	20301
DIGEST DILUTION FACTOR		(DDF)	1	1
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)	3.9211E-02	3.9211E-02
INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.2104	0.2104
SAMPLE + SPIKE µCi/mL		(S+S)	8.21E+01	7.81E+01
AVERAGE or MAXIMUM µCi/mL in SAMPLE			1.4430E-01	

Type
SPK
Work List
4800
AT or TB ?
AT
Test Code
@ALPHA01
Matrix
LIQUID
Batch Number
96000249
Rerun
0
Sample Prep
N/A
Sample #
S95T003982
Instrument Code
WB27806
Prepared By
MCB
Chemist
SLF
Analyst
JMV
Date Complete
01/16/96
Analysis Date
01/15/96
Analysis Time
02:00 PM
Sample Point
AN-102 GRAB

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

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

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

QC ACTUAL	=	3.92E-02
QC FOUND	=	3.94E-02
AVG. PERCENT SPIKE RECOVERY	=	100.5%

Analyst:		MCB	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

SPIKE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM7

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	96	78
4800	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		2.970	2.370

Batch Number		
96000249	Blank Concentration in µCi/L	1.29E+02
Rerun	Replicate Concentration in µCi/L	1.03E+02
0	Average Concentration in µCi/L	1.1605E+02

Sample Prep: N/A

Sample #: S95T003983

Instrument Code: WB27806

Prepared By: MCB

Chemist: SLF

Analyst: JMV

Date Complete: 01/16/96

Analysis Date: 01/15/96

Analysis Time: 02:00 PM

Sample Point: AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.16E-01	2.17E-02 µCi/mL
RELATIVE COUNTING ERROR		25.4%	

JMV 1/26/96

Analyst:	MCB	Date: 16-Jan-96	
Signature of Chemist:	SLF	Date: 1/18/96	

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: DUP8

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

			DUP	REPLICATE
Type	DETECTOR NUMBER		16	16
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	87	87
4800	COUNT TIME in MINUTES	(CT)	30	30
AT or TB K	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		2.670	2.670

Batch Number	
96000249	Blank Concentration in µCi/L 1.16E+02
Rerun	Replicate Concentration in µCi/L 1.16E+02
0	Average Concentration in µCi/L 1.1605E+02
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S95T003983	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
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/mL 1.16E-01
Analyst	
JMV	RRC 1/26/96
Date Complete	
01/16/96	RELATIVE COUNTING ERROR 23.7%
Analysis Date	
01/15/96	
Analysis Time	
02:00 PM	
Sample Point	
AN-102 GRAB	

DETECTION LEVEL
2.17E-02 µCi/mL

Analyst:		MCB	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: SAM9

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	113	120
4800	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.537	3.770

Batch Number		
96000249	Blank Concentration in µCi/L	1.54E+02
Rerun	Replicate Concentration in µCi/L	1.64E+02
0	Average Concentration in µCi/L	1.5878E+02

Sample Prep: N/A

Sample #: S95T003984

Instrument Code: WB27806

Prepared By: MCB

Chemist: SLF

Analyst: JMV

Date Complete: 01/16/96

Analysis Date: 01/15/96

Analysis Time: 02:00 PM

Sample Point: AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.59E-01	2.17E-02 µCi/mL
RELATIVE COUNTING ERROR		20.2%	

RA 1/26/96

Analyst:	MCB	Date: 16-Jan-96	
Signature of Chemist:	SLF	Date: 1/18/96	

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: DUP10

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

			DUP	REPLICATE
DETECTOR NUMBER			16	16
DISH SIZE (1 , 2 , or 5)		(MS)	2	2
GROSS COUNTS		(GC)	132	122
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.23	0.23
SAMPLE SIZE in mL		(SS)	1.000	1.000
DILUTION FACTOR		(DF)	20301	20301
DIGEST DILUTION FACTOR		(DDF)	1	1
EFFICIENCY FACTOR		(EFF)	0.2104	0.2104
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			4.170	3.837

Blank Concentration in µCi/L	1.81E+02
Replicate Concentration in µCi/L	1.67E+02
Average Concentration in µCi/L	1.7400E+02

Type	DUP
Work List	4800
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96000249
Rerun	0
Sample Prep	N/A
Sample #	S95T003984
Instrument Code	WB27806
Prepared By	MCB
Chemist	SLF
Analyst	JMV
Date Complete	01/16/96
Analysis Date	01/15/96
Analysis Time	02:00 PM
Sample Point	AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

ALPHA TOTAL	in µCi/mL	1.74E-01	DETECTION LEVEL
RELATIVE COUNTING ERROR		19.3%	2.17E-02 µCi/mL

RCK 1/26/96

Analyst:		MCB	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

SAMPLE.WB1 Rev. 1. 508101ML

LABCORE Data Entry Template for Worklist# 4826

Analyst: S.C.L **Instrument:** AB00 14 **Book#** 14856

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

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

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	LIQUID		
2	BLNK				@ALPHA01	LIQUID		
3	BLNK/BKG				@ALPHA01	LIQUID		
4	SAMPLE	S95T003870	0		@ALPHA01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:				ALPHA01 , ALPHA01E			
5	DUP	S95T003870	0		@ALPHA01	LIQUID		
6	SPK	S95T003870	0		@ALPHA01	LIQUID		
7	SAMPLE	S95T003871	0		@ALPHA01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:				ALPHA01 , ALPHA01E			
8	DUP	S95T003871	0		@ALPHA01	LIQUID		
9	SAMPLE	S95T003872	0		@ALPHA01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested:				ALPHA01 , ALPHA01E			
10	DUP	S95T003872	0		@ALPHA01	LIQUID		

Final page for worklist # 4826

Sue C Li 1-12-96
Analyst Signature Date

C.J. Quinn 1/16/96
Analyst Signature Date

M B Brown 1/14/96

Data Entry Comments:

Spike : 119843

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

LABCORE Completed Worklist Report for Worklist# 4826

Analyst: scl **Instrument:** AB14 **Book#** _____

Method: _____ Rev/Mod _____

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	LIQUID	1.54E-05	1.39E-5	90.260	% Recovery
1	STD		0	@ALPHA01	ALPHA01E	LIQUID	1.00	4.37E+00	4.370	% Ct. Error
2	BLNK		0	@ALPHA01	ALPHA01	LIQUID	1	<1.17E-2		uCi/mL
2	BLNK		0	@ALPHA01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0	@ALPHA01	ALPHA01	LIQUID	1.00E+00	7.45E-01	0.750	uCi/mL
4	SAMPLE	S95T003870	0	@ALPHA01	ALPHA01	LIQUID	N/A	1.75E-01	2.710e-002	uCi/mL
4	SAMPLE	S95T003870	0	@ALPHA01	ALPHA01E	LIQUID	N/A	1.91E+01	0.000	% Ct. Error
5	DUP	S95T003870	0	@ALPHA01	ALPHA01	LIQUID	1.75E-1	1.73E-1	1.150	RPD
5	DUP	S95T003870	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.91E+01	19.100	% Ct. Error
6	SPK	S95T003870	0	@ALPHA01	ALPHA01	LIQUID	3.92E-02	3.57E-02	91.070	% Recovery
7	SAMPLE	S95T003871	0	@ALPHA01	ALPHA01	LIQUID	N/A	1.82E-01	2.710e-002	uCi/mL
7	SAMPLE	S95T003871	0	@ALPHA01	ALPHA01E	LIQUID	N/A	1.91E+01	0.000	% Ct. Error
8	DUP	S95T003871	0	@ALPHA01	ALPHA01	LIQUID	1.82E-1	1.69E-1	7.410	RPD
8	DUP	S95T003871	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.96E+01	19.600	% Ct. Error
9	SAMPLE	S95T003872	0	@ALPHA01	ALPHA01	LIQUID	N/A	1.69E-01	2.710e-002	uCi/mL
9	SAMPLE	S95T003872	0	@ALPHA01	ALPHA01E	LIQUID	N/A	2.01E+01	0.000	% Ct. Error
10	DUP	S95T003872	0	@ALPHA01	ALPHA01	LIQUID	1.69E-1	2.02E-1	17.790	RPD
10	DUP	S95T003872	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.79E+01	17.900	% Ct. Error

Final page for worklist# 4826

Analyst Signature Date

Analyst Signature Date

1/22/96

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		14	14
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	2050	2189
4826	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.47	0.47
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	14B56	14B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		67.863	72.497
Batch Number	Standard Value in µCi/mL		1.54E-05	
96000301	Concentration in µCi/L	=	1.34E-02	
Rerun	Replicate Concentration in µCi/L	=	1.44E-02	
0	AVERAGE CONCENTRATION in µCi/L	=	1.3902E-02	
Sample Prep				
N/A				
Sample #				
WL#4826				
Instrument Code				
WB27807				
Prepared By				
CJO				
Chemist				
SLF				
Analyst				
SCL				
Date Complete				
01/16/96				
Analysis Date				
01/12/96				
Analysis Time				
08:30 AM				
Sample Point				
AN-102 GRAB				

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		1.39E-05	DETECTION LEVEL
RELATIVE COUNTING ERROR	=	4.4%	1.34E-07 µCi/mL

Analyst:	CJO	Date: 16-Jan-96	
Signature of Chemist:	SLF	Date: 1/18/96	

STANDARD.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK2

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

			BLNK	REPLICATE
Type	DETECTOR NUMBER		14	14
BLNK	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	14	7
4826	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.47	0.47
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.292	0.292

Batch Number			
96000301	Blank Concentration in µCi/L	<	1.17E+01
Rerun	Replicate Concentration in µCi/L	<	1.17E+01
0	Maximum Concentration in µCi/L	<	1.1745E+01

Sample Prep: N/A

Sample #: WL#4826

Instrument Code: WB27807

Prepared By: CJO

Chemist: SLF

Analyst: SCL

Date Complete: 01/16/96

Analysis Date: 01/12/96

Analysis Time: 08:30 AM

Sample Point: AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	< 1.17E-02	2.71E-02 µCi/mL
LESS Than Value was Determined from Lc.	RWE 1/26/96		
RELATIVE COUNTING ERROR		500.0%	

Analyst:		CJO	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

WHC-SD-WM-DP-165, REV. 1

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		14	14
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	148	142
4826	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.47	0.47
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.463	4.263

Batch Number	
96000301	Blank Concentration in µCi/L 1.79E+02
Rerun	Replicate Concentration in µCi/L 1.71E+02
0	Average Concentration in µCi/L 1.7547E+02
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S95T003870	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
CJO	
Chemist	
SLF	
Analyst	
SCL	
Date Complete	
01/16/96	
Analysis Date	
01/12/96	
Analysis Time	
08:30 AM	
Sample Point	
AN-102 GRAB	

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.75E-01	2.71E-02 µCi/mL
RELATIVE COUNTING ERROR		19.1%	

rdz 1/26/96

Analyst:		CJO	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP5

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

			DUP	REPLICATE
Type	DETECTOR NUMBER		14	14
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	145	142
4826	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.47	0.47
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.363	4.263

Batch Number	
96000301	Blank Concentration in µCi/L 1.75E+02
Rerun	Replicate Concentration in µCi/L 1.71E+02
0	Average Concentration in µCi/L 1.7346E+02
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S95T003870	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
CJO	
Chemist	
SLF	
Analyst	
SCL	
Date Complete	
01/16/96	
Analysis Date	
01/12/96	
Analysis Time	
08:30 AM	
Sample Point	
AN-102 GRAB	

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.73E-01	
RELATIVE COUNTING ERROR		19.1%	2.71E-02 µCi/mL

rat 1/20/96

Analyst:		CJO	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

SAMPLE.WB1 Rev. 1.0 508101ML

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

				SPIKE	REPLICATE
DETECTOR NUMBER				14	14
DISH SIZE 1 , 2 , or 5			(MS)	2	2
TOTAL COUNTS			(TC)	52736	55666
COUNT TIME in MINUTES			(CT)	30	30
BACKGROUND in cpm			(BKG)	0.47	0.47
SAMPLE VOLUME in mL	(Spiked Vial)		(SS)	1.000	1.000
SAMPLE DILUTION FACTOR	(Spiked Vial)		(DF)	20301	20301
DIGEST DILUTION FACTOR			(DDF)	1	1
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)	3.9211E-02	3.9211E-02
INSTRUMENT EFFICIENCY FACTOR			(EFF)	0.2274	0.2274
SAMPLE + SPIKE µCi/mL			(S+S)	7.07E+01	7.46E+01
AVERAGE or MAXIMUM µCi/mL in SAMPLE				1.7547E-01	

Type	SPK
Work List	4826
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96000301
Rerun	0
Sample Prep	N/A
Sample #	S95T003870
Instrument Code	WB27807
Prepared By	CJO
Chemist	SLF
Analyst	SCL
Date Complete	01/16/96
Analysis Date	01/12/96
Analysis Time	08:30 AM
Sample Point	AN-102 GRAB

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

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

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

QC ACTUAL	=	3.92E-02
QC FOUND	=	3.57E-02
AVG. PERCENT SPIKE RECOVERY	=	91.0%

Analyst:	CJO	Date: 16-Jan-96
Signature of Chemist:	SLF	Date: 1/18/96

SPIKE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM7

WHC-SD-WM-DP-165, REV. 1

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

			SAMPLE	REPLICATE
DETECTOR NUMBER			14	14
DISH SIZE (1 , 2 , or 5)	(MS)		2	2
GROSS COUNTS	(GC)		157	143
COUNT TIME in MINUTES	(CT)		30	30
BACKGROUND in cpm	(BKG)		0.47	0.47
SAMPLE SIZE in mL	(SS)		1.000	1.000
DILUTION FACTOR	(DF)		20301	20301
DIGEST DILUTION FACTOR	(DDF)		1	1
EFFICIENCY FACTOR	(EFF)		0.2274	0.2274
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			4.763	4.297
Blank Concentration in µCi/L			1.92E+02	
Replicate Concentration in µCi/L			1.73E+02	
Average Concentration in µCi/L			1.8217E+02	

Type	SAMPLE
Work List	4826
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96000301
Rerun	0
Sample Prep	N/A
Sample #	S95T003871
Instrument Code	WB27807
Prepared By	CJO
Chemist	SLF
Analyst	SCL
Date Complete	01/16/96
Analysis Date	01/12/96
Analysis Time	08:30 AM
Sample Point	AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.82E-01	2.71E-02 µCi/mL
RELATIVE COUNTING ERROR		19.1%	

rpt 1/26/96

Analyst:	CJO	Date: 16-Jan-96	
Signature of Chemist:	SLF	Date: 1/18/96	

SAMPLE.WB1 Rev. 1.0 508101ML

I:\508101\OUT\AT4826.WB1 01/16/96

WORKBOOK PAGE: DUP8

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

			DUP	REPLICATE
Type	DETECTOR NUMBER		14	14
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	144	137
4826	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.47	0.47
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.330	4.097

Batch Number	
96000301	Blank Concentration in µCi/L 1.74E+02
Rerun	Replicate Concentration in µCi/L 1.65E+02
0	Average Concentration in µCi/L 1.6943E+02
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S95T003871	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
CJO	
Chemist	v RESULTS v
SLF	ALPHA TOTAL in µCi/mL 1.69E-01
Analyst	RKE 1/26/96
SCL	
Date Complete	
01/16/96	RELATIVE COUNTING ERROR 19.6%
Analysis Date	
01/12/96	
Analysis Time	
08:30 AM	
Sample Point	
AN-102 GRAB	

DETECTION LEVEL
2.71E-02 µCi/mL

Analyst:		CJO	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM9

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		14	14
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	148	132
4826	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.47	0.47
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.463	3.930
Batch Number				
96000301	Blank Concentration in µCi/L		1.79E+02	
Rerun	Replicate Concentration in µCi/L		1.58E+02	
0	Average Concentration in µCi/L		1.6876E+02	

Sample Prep: N/A

Sample #: S95T003872

Instrument Code: WB27807

Prepared By: CJO

Chemist: SLF

Analyst: SCL

Date Complete: 01/16/96

Analysis Date: 01/12/96

Analysis Time: 08:30 AM

Sample Point: AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.69E-01	2.71E-02 µCi/mL
RELATIVE COUNTING ERROR		20.1%	

RAZ 1/26/96

Analyst:		CJO	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP1

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

			DUP	REPLICATE
Type	DETECTOR NUMBER		14	14
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	173	157
4826	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.47	0.47
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		5.297	4.763

Batch Number	
96000301	Blank Concentration in µCi/L 2.13E+02
Rerun	Replicate Concentration in µCi/L 1.92E+02
0	Average Concentration in µCi/L 2.0227E+02
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S95T003872	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
CJO	
Chemist	v RESULTS v
SLF	ALPHA TOTAL in µCi/mL 2.02E-01
Analyst	
SCL	
Date Complete	
01/16/96	RELATIVE COUNTING ERROR 17.9%
Analysis Date	
01/12/96	
Analysis Time	
08:30 AM	
Sample Point	
AN-102 GRAB	

ave 1/26/96

DETECTION LEVEL
2.71E-02 µCi/mL

Analyst:		CJO	Date: 16-Jan-96
Signature of Chemist:		SLF	Date: 1/18/96

SAMPLE.WB1 Rev. 1.0 508101ML

LABCORE Data Entry Template for Worklist# 4967

Analyst: SCL **Instrument:** AB00 #16 **Book#** 14856

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

Worklist Comment: Use .1-10-.1-10-.5 mL sample size. Rerun #1. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	LIQUID		
2	BLNK				@ALPHA01	LIQUID		
3	BLNK/BKG				@ALPHA01	LIQUID		
4	SAMPLE	S96T000005	0		@ALPHA01	LIQUID	95000227	AN-102 GRAB
		Analytes Requested:			ALPHA01 , ALPHA01E			
5	DUP	S96T000005	0		@ALPHA01	LIQUID		
6	SPK	S96T000005	0		@ALPHA01	LIQUID		
7	SAMPLE	S96T000006	0		@ALPHA01	LIQUID	95000227	AN-102 GRAB
		Analytes Requested:			ALPHA01 , ALPHA01E			
8	DUP	S96T000006	0		@ALPHA01	LIQUID		

Sue C Lee 1-19-96 **Final page for worklist # 4967**

SL

Analyst Signature Date 1/19/96

Analyst Signature Date 1/22/96

1/22/96

Data Entry Comments:

Spike : 119843

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

LABCORE Completed Worklist Report for Worklist# 4967

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

Method: _____ Rev/Mod _____

Worklist Comment: Use .1-10-.1-10-.5 mL sample size. Rerun #1. SLF

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@ALPHA01 ALPHA01	LIQUID	1.54E-05	1.62E-5	105.190	% Recovery
1	STD		0		@ALPHA01 ALPHA01E	LIQUID	1.00	4.20E+00	4.200	% Ct. Error
2	BLNK		0		@ALPHA01 ALPHA01	LIQUID	1	<9.31E-3		uCi/mL
2	BLNK		0		@ALPHA01 ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0		@ALPHA01 ALPHA01	LIQUID	1.00E+00	9.80E-01	0.980	uCi/mL
4	SAMPLE	S96T000005	0		@ALPHA01 ALPHA01	LIQUID	N/A	1.75E-01	1.930e-002	uCi/mL
4	SAMPLE	S96T000005	0		@ALPHA01 ALPHA01E	LIQUID	N/A	1.89E+01	0.000	% Ct. Error
5	DUP	S96T000005	0		@ALPHA01 ALPHA01	LIQUID	1.75E-1	2.08E-1	17.230	RPD
5	DUP	S96T000005	0		@ALPHA01 ALPHA01E	LIQUID	1.00	1.72E+01	17.200	% Ct. Error
6	SPK	S96T000005	0		@ALPHA01 ALPHA01	LIQUID	3.92E-02	4.10E-02	104.590	% Recovery
7	SAMPLE	S96T000006	0		@ALPHA01 ALPHA01	LIQUID	N/A	2.39E-01	1.930e-002	uCi/mL
7	SAMPLE	S96T000006	0		@ALPHA01 ALPHA01E	LIQUID	N/A	1.61E+01	0.000	% Ct. Error
8	DUP	S96T000006	0		@ALPHA01 ALPHA01	LIQUID	2.39E-1	2.18E-1	9.190	RPD
8	DUP	S96T000006	0		@ALPHA01 ALPHA01E	LIQUID	1.00	1.72E+01	17.200	% Ct. Error

Final page for worklist# 4967

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date 1/24/96

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

WORKBOOK PAGE: STD1

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

			STANDARD	REPLICATE
STD	DETECTOR NUMBER		16	16
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
4967	GROSS COUNTS	(GC)	2348	2189
	COUNT TIME in MINUTES	(CT)	30	30
AT	BACKGROUND in cpm	(BKG)	0.17	0.17
@ALPHA01	SAMPLE SIZE in mL	(SS)	10.000	10.000
LIQUID	DILUTION FACTOR	(DF)	1	1
96000430	STANDARD BOOK NUMBER	(Std BN)	14B56	14B56
0	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
N/A	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		78.097	72.797
WL#4967	Standard Value in µCi/mL		1.54E-05	
WB27806	Concentration in µCi/L	=	1.67E-02	
SEH	Replicate Concentration in µCi/L	=	1.56E-02	
SLF	AVERAGE CONCENTRATION in µCi/L	=	1.6153E-02	

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		1.62E-05	9.46E-08 µCi/mL
RELATIVE COUNTING ERROR	=	4.2%	

Date Complete: 01/22/96

Analysis Date: 01/19/96

Analysis Time: 01:00 PM

Sample Point: AN-102 GRAB

Analyst:	SEH	Date: 22-Jan-96	
Signature of Chemist:	SLF	Date: 1/23/96	

STANDARD.WB1 Rev. 1.0 508101M

WORKBOOK PAGE: BLANK2

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

			BLNK	REPLICATE
	DETECTOR NUMBER		16	2
BLNK	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	0	4
4967	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.17	0.17
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
	DILUTION FACTOR	(DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.213	0.176

96000430	Blank Concentration in µCi/L	<	9.31E+00
	Replicate Concentration in µCi/L	<	7.67E+00
0	Maximum Concentration in µCi/L	<	9.3142E+00

N/A

WL#4967

WB27806

SEH

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

SLF

ALPHA TOTAL in µCi/mL (Maximum)	=	< 9.31E-03	DETECTION LEVEL
LESS THAN Value was Determined from Rmax.			1.93E-02 µCi/mL
RELATIVE COUNTING ERROR		500.0%	

SCL

01/22/96

01/19/96

01:00 PM

AN-102 GRAB

Analyst:	SCL	Date: 22-Jan-96	
Signature of Chemist:	SLF	Date: 1/23/96	

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Total Counts	GROSS COUNTS	(GC)	122	128
4967	COUNT TIME in MINUTES	(CT)	30	30
Avg Bkg	BACKGROUND in cpm	(BKG)	0.17	0.17
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
Dilution	DILUTION FACTOR	(DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.897	4.097

Batch Number	
96000430	Blank Concentration in µCi/L 1.70E+02
Replicate	Replicate Concentration in µCi/L 1.79E+02
0	Average Concentration in µCi/L 1.7457E+02

Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T000005	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
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	
SEH	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) in µCi/mL 1.75E-01
Analyst	
SCL	RHE 3/8/96
Date Complete	
01/22/96	RELATIVE COUNTING ERROR 18.9%
Analysis Date	
01/19/96	
Analysis Time	
01:00 PM	
Sample Point	
AN-102 GRAB	

DETECTION LEVEL
1.93E-02 µCi/mL

Analyst:		SCL	Date: 22-Jan-96
Signature of Chemist:		SLF	Date: 1/23/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP5

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

			DUP	REPLICATE
VC	DETECTOR NUMBER		16	16
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Total Alpha	GROSS COUNTS	(GC)	152	144
4967	COUNT TIME in MINUTES	(CT)	30	30
Total Beta	BACKGROUND in cpm	(BKG)	0.17	0.17
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
Lab Code	DILUTION FACTOR	(DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.897	4.630

Batch Number		
96000430	Blank Concentration in µCi/L	2.14E+02
Rerun	Replicate Concentration in µCi/L	2.02E+02
0	Average Concentration in µCi/L	2.0806E+02

Sample Prep
N/A

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

Sample
S96T000005

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

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

Instrument Code
WB27806

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.

Prepared By
SEH

Chemist
SLF

ALPHA TOTAL in µCi/mL (Average) in µCi/mL	2.08E-01	DETECTION LEVEL	
RELATIVE COUNTING ERROR	17.2%	1.93E-02 µCi/mL	

Analyst
SCL

Date Complete
01/22/96

Analysis Date
01/19/96

Analysis Time
01:00 PM

Sample Point
AN-102 GRAB

Analyst:	SCL	Date: 22-Jan-96	
Signature of Chemist:	SLF	Date: 1/23/96	

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE6

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

			SPIKE	REPLICATE
Vial	DETECTOR NUMBER		16	16
SPK	DISH SIZE 1, 2, or 5	(MS)	2	2
Work Unit	TOTAL COUNTS	(TC)	58454	56785
4967	COUNT TIME in MINUTES	(CT)	30	30
Analyte	BACKGROUND in cpm	(BKG)	0.17	0.17
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.500	0.500
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	SPIKE VOLUME in mL	(SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR	(SDF)	1	1
Batch Number	SPIKE BOOK NUMBER	(Spk BN)	119B43	119B43
96000430	SPIKE VALUE in µCi/mL	(SVal)	3.9210E-02	3.9210E-02
Rotun	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
0	SAMPLE + SPIKE µCi/mL	(S+S)	8.51E+01	8.27E+01
Sample Prep	AVERAGE or MAXIMUM µCi/mL in SAMPLE		1.8622E-01	
N/A				
Sample #				
S96T000005				
Instrument Code				
WB27806				
Prepared By				
SEH				
Chemist				
SLF				
Analyst				
SCL				
Date Complete				
01/22/96				
Analysis Date				
01/19/96				
Analysis Time				
01:00 PM				
Sample Point				
AN-102 GRAB				

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

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

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

QC ACTUAL	=	3.92E-02
QC FOUND	=	4.10E-02
AVG. PERCENT SPIKE RECOVERY	=	104.6%

Analyst:		SEH	Date: 22-Jan-96
Signature of Chemist:		SLF	Date: 1/23/96

SPIKE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM7

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

			SAMPLE	REPLICATE
	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Worksheet	GROSS COUNTS	(GC)	176	162
4967	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.17	0.17
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
Cell Code	DILUTION FACTOR	(DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		5.697	5.230

Batch Number		
96000430	Blank Concentration in µCi/L	2.49E+02
Rerun	Replicate Concentration in µCi/L	2.28E+02
0	Average Concentration in µCi/L	2.3863E+02

Sample Prep
N/A

Sample
S96T000006

Instrument Code
WB27806

Prepared By
SEH

Chemist
SLF

Analyst
SCL

Date Complete
01/22/96

Analysis Date
01/19/96

Analysis Time
01:00 PM

Sample Point
AN-102 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG
ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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 in µCi/mL (Average) in µCi/mL		2.39E-01	1.93E-02 µCi/mL
RELATIVE COUNTING ERROR		16.1%	

Analyst:		SCL	Date: 22-Jan-96
Signature of Chemist:		SLF	Date: 1/23/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP8

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

			DUP	REPLICATE
Vial	DETECTOR NUMBER		16	16
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Worksheet	GROSS COUNTS	(GC)	166	144
4967	COUNT TIME in MINUTES	(CT)	30	30
Vial Type	BACKGROUND in cpm	(BKG)	0.17	0.17
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
Factor	DILUTION FACTOR	(DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		5.363	4.630

Batch Number	
96000430	Blank Concentration in µCi/L 2.34E+02
Batch	Replicate Concentration in µCi/L 2.02E+02
0	Average Concentration in µCi/L 2.1825E+02

Sample Prep
N/A

Sample
S96T000006

Instrument Code
WB27806

Prepared By
SEH

Chemist
SLF

Analyst
SCL

Date Complete
01/22/96

Analysis Date
01/19/96

Analysis Time
01:00 PM

Sample Point
AN-102 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG
ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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 in µCi/mL (Average) in µCi/mL	2.18E-01	DETECTION LEVEL	
RELATIVE COUNTING ERROR	17.2%	1.93E-02 µCi/mL	

VK 3/8/96

Analyst:	SCL	Date: 22-Jan-96	
Signature of Chemist:	SLF	Date: 1/23/96	

SAMPLE.WB1 Rev. 1.0 508101ML

448

cem 11

LABCORE Data Entry Template for Worklist# 4972

Analyst: AVL **Instrument:** AB00 14 **Book#** 23B56

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

Worklist Comment: Determine Sample Size Using Ludlum.(if spk, use .1ml spk)lc

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	LIQUID		
2	BLNK				@ALPHA01	LIQUID		
3	BLNK/BKG				@ALPHA01	LIQUID		
4	SAMPLE	S95T004135	0		@ALPHA01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested:			ALPHA01 , ALPHA01E			
5	DUP	S95T004135	0		@ALPHA01	LIQUID		
6	SAMPLE	S95T003963	0		@ALPHA01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested:			ALPHA01 , ALPHA01E			
7	DUP	S95T003963	0		@ALPHA01	LIQUID		
8	SAMPLE	S95T004133	0		@ALPHA01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested:			ALPHA01 , ALPHA01E			
9	DUP	S95T004133	0		@ALPHA01	LIQUID		
10	SPK	S95T004133	0		@ALPHA01	LIQUID		

JB 1/92

Final page for worklist # 4972

C Lewis 1/24/96
Analyst Signature **Date**

M Brown 1/25/96
Analyst Signature **Date**

SE Hogan 1/25/96

Data Entry Comments:

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

LABCORE Completed Worklist Report for Worklist# 4972

Analyst: akl **Instrument:** AB14 **Book#** _____

Method: _____Rev/Mod _____

Worklist Comment: Determine Sample Size Using Ludlum.(if spk, use .1ml spk)lc

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@ALPHA01 ALPHA01	LIQUID	1.02E-05	9.95E-6	97.550	% Recovery
1	STD			0	@ALPHA01 ALPHA01E	LIQUID	1.00	5.13E+00	5.130	% Ct. Error
2	BLNK			0	@ALPHA01 ALPHA01	LIQUID	1	<2.40E-2		uCi/mL
2	BLNK			0	@ALPHA01 ALPHA01E	LIQUID	1.00	3.39E+02	339.000	% Ct. Error
3	BLNK/BKG			0	@ALPHA01 ALPHA01	LIQUID	1.00E+00	1.35E+00	1.350	uCi/mL
4	SAMPLE	S95T004135		0	@ALPHA01 ALPHA01	LIQUID	N/A	1.37E-01	3.260e-002	uCi/mL
4	SAMPLE	S95T004135		0	@ALPHA01 ALPHA01E	LIQUID	N/A	3.06E+01	0.000	% Ct. Error
5	DUP	S95T004135		0	@ALPHA01 ALPHA01	LIQUID	1.37E-1	1.53E-1	11.030	RPD
5	DUP	S95T004135		0	@ALPHA01 ALPHA01E	LIQUID	1.00	2.41E+01	24.100	% Ct. Error
6	SAMPLE	S95T003963		0	@ALPHA01 ALPHA01	LIQUID	N/A <	5.83E-06	1.210e-005	uCi/mL
6	SAMPLE	S95T003963		0	@ALPHA01 ALPHA01E	LIQUID	N/A	5.00E+02	0.000	% Ct. Error
7	DUP	S95T003963		0	@ALPHA01 ALPHA01	LIQUID	<5.83E-6	<1.04E-5		RPD
7	DUP	S95T003963		0	@ALPHA01 ALPHA01E	LIQUID	1.00	1.76E+02	176.000	% Ct. Error
8	SAMPLE	S95T004133		0	@ALPHA01 ALPHA01	LIQUID	N/A	1.68E-01	3.260e-002	uCi/mL
8	SAMPLE	S95T004133		0	@ALPHA01 ALPHA01E	LIQUID	N/A	2.37E+01	0.000	% Ct. Error
9	DUP	S95T004133		0	@ALPHA01 ALPHA01	LIQUID	1.68E-1	1.71E-1	1.770	RPD
9	DUP	S95T004133		0	@ALPHA01 ALPHA01E	LIQUID	1.00	2.29E+01	22.900	% Ct. Error
10	SPK	S95T004133		0	@ALPHA01 ALPHA01	LIQUID	3.92E-02	4.32E-02	110.200	% Recovery

Final page for worklist# 4972

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

1/26/96

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
DETECTOR NUMBER			14	14
DISH SIZE (1 , 2 , or 5)	(MS)		2	2
GROSS COUNTS	(GC)		1494	1542
COUNT TIME in MINUTES	(CT)		30	30
BACKGROUND in cpm	(BKG)		0.37	0.37
SAMPLE SIZE in mL	(SS)		10.000	10.000
DILUTION FACTOR	(DF)		1	1
STANDARD BOOK NUMBER	(Std BN)		23B56	23B56
EFFICIENCY FACTOR	(EFF)		0.2274	0.2274
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			49.430	51.030
Standard Value in µCi/mL			1.02E-05	
Concentration in µCi/L		=	9.79E-03	
Replicate Concentration in µCi/L		=	1.01E-02	
AVERAGE CONCENTRATION in µCi/L		=	9.9499E-03	

Type	STD
Work List	4972
AT or YB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96000436
Rerun	0
Sample Prep	N/A
Sample #	WL4972
Instrument Code	WB27807
Prepared By	MCB
Chemist	SLF
Analyst	AKL
Date Complete	01/25/96
Analysis Date	01/24/96
Analysis Time	02:00 PM
Sample Point	AN-102 GRAB

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	9.95E-06	1.21E-07 µCi/mL
RELATIVE COUNTING ERROR	5.1%	

Analyst: MCB Date: 25-Jan-96

Signature of Chemist: SLF Date: 1/26/96

STANDARD.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK2

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

			BLNK	REPLICATE
Type	DETECTOR NUMBER		14	14
BLNK	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	16	14
4972	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	27001	27001
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.450	0.372
Batch Number				
96000436	Blank Concentration in µCi/L	<	2.40E+01	
Rerun	Replicate Concentration in µCi/L	<	1.99E+01	
0	Maximum Concentration in µCi/L	<	2.4050E+01	

Sample Prep: N/A

Sample #: WL4972

Instrument Code: WB27807

Prepared By: MCB

Chemist: SLF

Analyst: AKL

Date Complete: 01/25/96

Analysis Date: 01/24/96

Analysis Time: 02:00 PM

Sample Point: AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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 in µCi/mL (Maximum) =	< 2.40E-02	3.26E-02 µCi/mL
LESS THAN Value was Determined from Rmax.		
RELATIVE COUNTING ERROR	338.6%	

Analyst:		AKL	Date: 25-Jan-96
Signature of Chemist:		SLF	Date: 1/26/96

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		14	14
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	108	68
4972	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	27001	27001
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.230	1.897

Batch Number	
96000436	Blank Concentration in µCi/L 1.73E+02
Rerun	Replicate Concentration in µCi/L 1.01E+02
0	Average Concentration in µCi/L 1.3710E+02
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S95T004135	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
MCB	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) in µCi/mL 1.37E-01
Analyst	
AKL	
Date Complete	
01/25/96	RELATIVE COUNTING ERROR 30.6%
Analysis Date	
01/24/96	
Analysis Time	
02:00 PM	
Sample Point	
AN-102 GRAB	

DETECTION LEVEL 3.26E-02 µCi/mL

Analyst:		AKL	Date: 25-Jan-96
Signature of Chemist:		SLF	Date: 1/26/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP5

WHC-SD-WM-DP-165, REV. 1

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

			DUP	REPLICATE
Type	DETECTOR NUMBER		14	14
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	95	99
4972	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	27001	27001
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		2.797	2.930

Batch Number	
96000436	Blank Concentration in µCi/L 1.50E+02
Rerun	Replicate Concentration in µCi/L 1.57E+02
0	Average Concentration in µCi/L 1.5315E+02

Sample Prep: N/A

Sample #: S95T004135

Instrument Code: WB27807

Prepared By: MCB

Chemist: SLF

Analyst: AKL

Date Complete: 01/25/96

Analysis Date: 01/24/96

Analysis Time: 02:00 PM

Sample Point: AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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 in µCi/mL (Average) in µCi/mL	1.53E-01	DETECTION LEVEL	
			3.26E-02 µCi/mL
RELATIVE COUNTING ERROR	24.1%		

3/18/96

Analyst:	AKL	Date: 25-Jan-96	
Signature of Chemist:	SLF	Date: 1/26/96	

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM6

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		14	14
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	12	7
4972	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.294	0.259
Batch Number				
96000436	Blank Concentration in µCi/L	<	5.83E-03	
Rerun	Replicate Concentration in µCi/L	<	5.13E-03	
0	Maximum Concentration in µCi/L	<	5.8306E-03	

Sample Prep
N/A

Sample #
S95T003963

Instrument Code
WB27807

Prepared By
MCB

Chemist
SLF

Analyst
AKL

Date Complete
01/25/96

Analysis Date
01/24/96

Analysis Time
02:00 PM

Sample Point
AN-102 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG
ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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 in µCi/mL (Maximum) in µCi/mL		< 5.83E-06	1.21E-05 µCi/mL
LESS THAN Value was Determined from Rmax.	RMC 3/8/96		
RELATIVE COUNTING ERROR		500.0%	

Analyst:		AKL	Date: 25-Jan-96
Signature of Chemist:		SLF	Date: 1/26/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP7

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

			DUP	REPLICATE
LY96	DETECTOR NUMBER		14	14
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	17	18
4972	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.488	0.527

Batch Number		
96000436	Blank Concentration in µCi/L	< 9.67E-03
Rerun	Replicate Concentration in µCi/L	< 1.04E-02
0	Maximum Concentration in µCi/L	< 1.0433E-02

Sample Prep: N/A

Sample #: S95T003963

Instrument Code: WB27807

Prepared By: MCB

Chemist: SLF

Analyst: AKL

Date Complete: 01/25/96

Analysis Date: 01/24/96

Analysis Time: 02:00 PM

Sample Point: AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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 in µCi/mL (Maximum) in µCi/mL		< 1.04E-05	DETECTION LEVEL
LESS THAN Value was Determined from Rmax.	3/8/96		1.21E-05 µCi/mL
RELATIVE COUNTING ERROR		176.1%	

Analyst:		AKL	Date: 25-Jan-96
Signature of Chemist:		SLF	Date: 1/26/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM8

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		14	14
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	97	114
4972	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	27001	27001
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		2.863	3.430

Batch Number	
96000436	Blank Concentration in µCi/L 1.53E+02
Rerun	Replicate Concentration in µCi/L 1.83E+02
0	Average Concentration in µCi/L 1.6830E+02
Sample Plan	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S95T004133	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
MCB	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) in µCi/mL 1.68E-01
Analyst	
AKL	
Date Complete	
01/25/96	RELATIVE COUNTING ERROR 23.7%
Analysis Date	
01/24/96	
Analysis Time	
02:00 PM	
Sample Point	
AN-102 GRAB	

MR 3/5/96

DETECTION LEVEL
3.26E-02 µCi/mL

Analyst:		AKL	Date: 25-Jan-96
Signature of Chemist:		SLF	Date: 1/26/96

SAMPLE.WB1 Rev. 1.0 508101ML

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

			DUP	REPLICATE
	DETECTOR NUMBER		14	14
	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	102	112
	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.37	0.37
	SAMPLE SIZE in mL	(SS)	1.000	1.000
	DILUTION FACTOR	(DF)	27001	27001
	DIGEST DILUTION FACTOR	(DDF)	1	1
	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.030	3.363

Blank Concentration in µCi/L	1.62E+02
Replicate Concentration in µCi/L	1.80E+02
Average Concentration in µCi/L	1.7098E+02

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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 in µCi/mL (Average) in µCi/mL	1.71E-01	DETECTION LEVEL
RELATIVE COUNTING ERROR	22.9%	3.26E-02 µCi/mL

Type	DUP
Work List	4972
AT or TS ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96000436
Rerun	0
Sample Prep	N/A
Sample #	S95T004133
Instrument Code	WB27807
Prepared By	MCB
Chemist	SLF
Analyst	AKL
Date Complete	01/25/96
Analysis Date	01/24/96
Analysis Time	02:00 PM
Sample Point	AN-102 GRAB

Analyst: AKL Date: 25-Jan-96

Signature of Chemist: SLF Date: 1/26/96

SAMPLE.WB1 Rev. 1.0 508101ML

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

			SPIKE	REPLICATE
DETECTOR NUMBER			14	14
DISH SIZE 1 , 2 , or 5		(MS)	2	2
TOTAL COUNTS		(TC)	65270	65749
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.37	0.37
SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	1.000	1.000
SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	27001	27001
DIGEST DILUTION FACTOR		(DDF)	1	1
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)	3.9209E-02	3.9209E-02
INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.2274	0.2274
SAMPLE + SPIKE µCi/mL		(S+S)	1.16E+02	1.17E+02
AVERAGE or MAXIMUM µCi/mL in SAMPLE			1.6830E-01	

Type	SPK
Work List	4972
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96000436
Rerun	0
Sample Prep	N/A
Sample #	S95T004133
Instrument Code	WB27807
Prepared By	MCB
Chemist	SLF
Analyst	AKL
Date Complete	01/25/96
Analysis Date	01/24/96
Analysis Time	02:00 PM
Sample Point	AN-102 GRAB

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

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

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

QC ACTUAL	=	3.92E-02
QC FOUND	=	4.32E-02
AVG. PERCENT SPIKE RECOVERY	=	110.1%

Analyst:	MCB	Date: 25-Jan-96
Signature of Chemist:	SLF	Date: 1/26/96

SPIKE.WB1 Rev. 1.0 508101ML

LABCORE Data Entry Template for Worklist# 5177

Analyst: S.C.C **Instrument:** AB00 15 **Book#** 23856

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

Worklist Comment: RUSH! @ALPHA01, Determine sample size using Ludlum. skm

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	S95T004141	0	F	@ALPHA01	SOLID	95000222	AN-102 GRAB
		Analytes Requested: ALPHA01 , ALPHA01E						
5	DUP	S95T004141	0	F	@ALPHA01	SOLID		
6	SPK	S95T004141	0	F	@ALPHA01	SOLID		
7	SAMPLE	S95T004142	0	F	@ALPHA01	SOLID	95000222	AN-102 GRAB
		Analytes Requested: ALPHA01 , ALPHA01E						
8	DUP	S95T004142	0	F	@ALPHA01	SOLID		
9	SAMPLE	S96T000007	0	F	@ALPHA01	SOLID	95000227	AN-102 GRAB
		Analytes Requested: ALPHA01 , ALPHA01E						
10	DUP	S96T000007	0	F	@ALPHA01	SOLID		
11	SPK	S96T000007	0	F	@ALPHA01	SOLID		
12	SAMPLE	S96T000008	0	F	@ALPHA01	SOLID	95000227	AN-102 GRAB
		Analytes Requested: ALPHA01 , ALPHA01E						
13	DUP	S96T000008	0	F	@ALPHA01	SOLID		

Final page for worklist # 5177

Analyst Signature: [signature] Date: 1-26-16

Analyst Signature: [signature] Date: 1/29/96

[signature] 1/29/96

Data Entry Comments: The elevated RPD for sample # 8 is due to low sample alpha activity. No recan requested.

[signature] 1/29/96

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

LABCORE Completed Worklist Report for Worklist# 5177

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

Method: _____ Rev/Mod _____

Worklist Comment: RUSH! @ALPHA01, Determine sample size using Ludlum. skm

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@ALPHA01	ALPHA01	SOLID	1.02E-05	9.39E-6	92.060	% Recovery
1	STD		0		@ALPHA01	ALPHA01E	SOLID	1.00	5.12E+00	5.120	% Ct. Error
2	BLNK-PREP		0		@ALPHA01	ALPHA01	SOLID	1	<1.11E-2		uCi/g
2	BLNK-PREP		0		@ALPHA01	ALPHA01E	SOLID	1.00	1.40E+02	140.000	% Ct. Error
3	BLNK/BKG		0		@ALPHA01	ALPHA01	SOLID	1.00E+00	2.44E+00	2.440	uCi/g
4	SAMPLE	S95T004141	0	F	@ALPHA01	ALPHA01	SOLID	N/A	4.59E-01	9.770e-003	uCi/g
4	SAMPLE	S95T004141	0	F	@ALPHA01	ALPHA01E	SOLID	N/A	7.17E+00	0.000	% Ct. Error
5	DUP	S95T004141	0	F	@ALPHA01	ALPHA01	SOLID	4.59E-1	4.64E-1	1.080	RPD
5	DUP	S95T004141	0	F	@ALPHA01	ALPHA01E	SOLID	1.00	7.09E+00	7.090	% Ct. Error
6	SPK	S95T004141	0	F	@ALPHA01	ALPHA01	SOLID	3.92E-02	2.89E-02	73.720	% Recovery
7	SAMPLE	S95T004142	0	F	@ALPHA01	ALPHA01	SOLID	N/A	3.29E-01	9.770e-003	uCi/g
7	SAMPLE	S95T004142	0	F	@ALPHA01	ALPHA01E	SOLID	N/A	8.44E+00	0.000	% Ct. Error
8	DUP	S95T004142	0	F	@ALPHA01	ALPHA01	SOLID	3.29E-1	3.33E-1	1.210	RPD
8	DUP	S95T004142	0	F	@ALPHA01	ALPHA01E	SOLID	1.00	8.57E+00	8.570	% Ct. Error
9	SAMPLE	S96T000007	0	F	@ALPHA01	ALPHA01	SOLID	N/A	3.06E-01	3.120e-002	uCi/g
9	SAMPLE	S96T000007	0	F	@ALPHA01	ALPHA01E	SOLID	N/A	1.71E+01	0.000	% Ct. Error
10	DUP	S96T000007	0	F	@ALPHA01	ALPHA01	SOLID	3.06E-1	3.32E-1	8.150	RPD
10	DUP	S96T000007	0	F	@ALPHA01	ALPHA01E	SOLID	1.00	1.85E+01	18.500	% Ct. Error
11	SPK	S96T000007	0	F	@ALPHA01	ALPHA01	SOLID	3.92E-02	3.15E-02	80.360	% Recovery
12	SAMPLE	S96T000008	0	F	@ALPHA01	ALPHA01	SOLID	N/A	9.52E-01	4.250e-002	uCi/g
12	SAMPLE	S96T000008	0	F	@ALPHA01	ALPHA01E	SOLID	N/A	1.07E+01	0.000	% Ct. Error
13	DUP	S96T000008	0	F	@ALPHA01	ALPHA01	SOLID	9.52E-1	7.78E-1	20.120	RPD
13	DUP	S96T000008	0	F	@ALPHA01	ALPHA01E	SOLID	1.00	1.10E+01	11.000	% Ct. Error

Final page for worklist# 5177

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

1/29/96

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)	1492	1502
5177	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	23B56	23B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		49.433	49.767
Batch Number	Standard Value in µCi/mL		1.02E-05	
96000688	Concentration in µCi/L	=	9.36E-03	
Rerun	Replicate Concentration in µCi/L	=	9.42E-03	
0	AVERAGE CONCENTRATION in µCi/L	=	9.3875E-03	

Sample Prep: N/A

Sample #: WL#5177

Instrument Code: WB26872

Prepared By: SEH

Chemist: SLF

Analyst: SCL

Date Complete: 01/29/96

Analysis Date: 01/26/96

Analysis Time: 08:00 AM

Sample Point: AN-102

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	9.39E-06	1.05E-07 µCi/mL
RELATIVE COUNTING ERROR	5.1%	

Analyst:		SEH	Date: 29-Jan-96
Signature of Chemist:		SLF	Date: 1/29/96

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)	28	16
5177	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.050	0.050
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.1588	2.1588
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.633	0.508

Batch Number			
96000688	Blank Concentration in µCi/g		1.11E-02
Rerun	Replicate Concentration in µCi/g	<	8.91E-03
0	Maximum Concentration in µCi/g	<	1.1105E-02

Sample Prep
N/A

Sample #
WL#5177

Instrument Code
WB26872

Prepared By
SEH

Chemist
SLF

Analyst
SCL

Date Complete
01/29/96

Analysis Date
01/26/96

Analysis Time
08:00 AM

Sample Point
AN-102

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.

ALPHA TOTAL in µCi/g	(Maximum)	=	< 1.11E-02	DETECTION LEVEL
LESS THAN Value was Determined from Rs.				9.77E-03 µCi/g
RELATIVE COUNTING ERROR			140.0%	

Analyst:	SCL		Date: 29-Jan-96
Signature of Chemist:		SLF	Date: 1/29/96

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	815
5177	COUNT TIME in MINUTES	(CT)	30	30
A1 or 1B ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.050	0.050
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.1588	2.1588
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		25.467	26.867

Blank Concentration in µCi/g	4.47E-01
Replicate Concentration in µCi/g	4.71E-01
Average Concentration in µCi/g	4.5881E-01

Batch Number: 96000688
Rerun: 0
Sample Prep: FUSION01
Sample #: S95T004141
Instrument Code: WB26872
Prepared By: SEH
Chemist: SLF
Analyst: SCL
Date Complete: 01/29/96
Analysis Date: 01/26/96
Analysis Time: 08:00 AM
Sample Point: AN-102

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.

		DETECTION LEVEL
ALPHA TOTAL in µCi/g (Average) =	4.59E-01	9.77E-03 µCi/g
RELATIVE COUNTING ERROR	7.2%	

Analyst:		SCL	Date: 29-Jan-96
Signature of Chemist:		SLF	Date: 1/29/96

SAMPLE.WB1 Rev. 1. 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)		790	801
COUNT TIME in MINUTES	(CT)		30	30
BACKGROUND in cpm	(BKG)		0.3	0.3
SAMPLE SIZE in mL	(SS)		0.050	0.050
DILUTION FACTOR	(DF)		1	1
DIGEST GRAMS of SOLIDS / L	(Dg/L)		2.1376	2.1376
EFFICIENCY FACTOR	(EFF)		0.2380	0.2380
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			26.033	26.400

Blank Concentration in µCi/g	4.61E-01
Replicate Concentration in µCi/g	4.67E-01
Average Concentration in µCi/g	4.6425E-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.

ALPHA TOTAL in µCi/g (Average)	=	4.64E-01	DETECTION LEVEL
RELATIVE COUNTING ERROR		7.1%	9.87E-03 µCi/g

Type	DUP
Work List	5177
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	SOLID
Batch Number	96000688
Rerun	0
Sample Prep	FUSION01
Sample #	S95T004141
Instrument Code	WB26872
Prepared By	SEH
Chemist	SLF
Analyst	SCL
Date Complete	01/29/96
Analysis Date	01/26/96
Analysis Time	08:00 AM
Sample Point	AN-102

Analyst:	SCL	Date: 29-Jan-96	
Signature of Chemist:	SLF	Date: 1/27/96	

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: SPIKE6

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

			SPIKE	REPLICATE
DETECTOR NUMBER			15	15
DISH SIZE 1 , 2 , or 5		(MS)	2	2
TOTAL COUNTS		(TC)	48962	44368
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.3	0.3
SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	0.050	0.050
SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	1	1
DIGEST GRAMS of SOLIDS / L		(Dg/L)	2.1588	2.1588
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)	3.9209E-02	3.9209E-02
INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.238	0.238
SAMPLE + SPIKE µCi/g		(S+S)	2.86E+01	2.59E+01
AVERAGE or MAXIMUM µCi/g in SAMPLE			4.5881E-01	

Type
SPK
Work List
5177
AT or TB ?
AT
Test Code
@ALPHA01
Matrix
SOLID
Batch Number
96000688
Rerun
0
Sample Prep
FUSION01
Sample #
S95T004141
Instrument Code
WB26872
Prepared By
SEH
Chemist
SLF
Analyst
SCL
Date Complete
01/29/96
Analysis Date
01/26/96
Analysis Time
08:00 AM
Sample Point
AN-102

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	=	2.89E-02
AVG. PERCENT SPIKE RECOVERY	=	73.8%

Analyst:		SEH	Date: 29-Jan-96
Signature of Chemist:		SLF	Date: 1/29/96

SPIKE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM7

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)	566	579
5177	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.050	0.050
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.1584	2.1584
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		18.567	19.000

Batch Number	
96000688	Blank Concentration in µCi/g 3.26E-01
Rerun	Replicate Concentration in µCi/g 3.33E-01
0	Average Concentration in µCi/g 3.2941E-01
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)
S95T004142	
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	ALPHA TOTAL in µCi/g (Average) = 3.29E-01
Analyst	
SCL	
Date Complete	
01/29/96	RELATIVE COUNTING ERROR 8.4%
Analysis Date	
01/26/96	
Analysis Time	
08:00 AM	
Sample Point	
AN-102	

DETECTION LEVEL
9.77E-03 µCi/g

Analyst:		SCL	Date: 29-Jan-96
Signature of Chemist:		SLF	Date: 1/29/96

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: DUP8

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)	549	606
5177	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.050	0.050
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.156	2.156
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		18.000	19.900

Batch Number	
96000688	Blank Concentration in µCi/g 3.16E-01
Rerun	Replicate Concentration in µCi/g 3.49E-01
0	Average Concentration in µCi/g 3.3271E-01

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)
S95T004142	
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	ALPHA TOTAL in µCi/g (Average) = 3.33E-01
Analyst	
SCL	
Date Complete	
01/29/96	RELATIVE COUNTING ERROR 8.6%
Analysis Date	
01/26/96	
Analysis Time	
08:00 AM	
Sample Point	
AN-102	

DETECTION LEVEL
9.79E-03 µCi/g

Analyst:		SCL	Date: 29-Jan-96
Signature of Chemist:		SLF	Date: 1/29/96

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: SAM9

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)	156	190
5177	COUNT TIME in MINUTES	(CT)	30	30
"A" or "B"	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.050	0.050
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	0.676	0.676
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.900	6.033

Batch Number	
96000688	Blank Concentration in µCi/g 2.74E-01
Rerun	Replicate Concentration in µCi/g 3.38E-01
0	Average Concentration in µCi/g 3.0611E-01
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)
S96T000007	
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	ALPHA TOTAL in µCi/g (Average) = 3.06E-01
Analyst	
SCL	
Date Complete	
01/29/96	RELATIVE COUNTING ERROR 17.1%
Analysis Date	
01/26/96	
Analysis Time	
08:00 AM	
Sample Point	
AN-102	

DETECTION LEVEL
3.12E-02 µCi/g

Analyst:		SCL	Date: 29-Jan-96
Signature of Chemist:		SLF	Date: 1/29/96

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: DUP10

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)		137	165
COUNT TIME in MINUTES	(CT)		30	30
BACKGROUND in cpm	(BKG)		0.3	0.3
SAMPLE SIZE in mL	(SS)		0.050	0.050
DILUTION FACTOR	(DF)		1	1
DIGEST GRAMS of SOLIDS / L	(Dg/L)		0.5404	0.5404
EFFICIENCY FACTOR	(EFF)		0.2380	0.2380
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			4.267	5.200
Blank Concentration in µCi/g			2.99E-01	
Replicate Concentration in µCi/g			3.64E-01	
Average Concentration in µCi/g			3.3155E-01	
ALPHA TOTAL in µCi/g (Average)		=	3.32E-01	
RELATIVE COUNTING ERROR			18.5%	

Type	DUP
Work List	5177
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	SOLID
Batch Number	96000688
Rerun	0
Sample Prep	FUSION01
Sample #	S96T000007
Instrument Code	WB26872
Prepared By	SEH
Chemist	SLF
Analyst	SCL
Date Complete	01/29/96
Analysis Date	01/26/96
Analysis Time	08:00 AM
Sample Point	AN-102

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.

DETECTION LEVEL
3.90E-02 µCi/g

Analyst:		SCL	Date: 29-Jan-96
Signature of Chemist:		SLF	Date: 1/29/96

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: SPIKE11

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

			SPIKE	REPLICATE
DETECTOR NUMBER			15	15
DISH SIZE 1 , 2 , or 5		(MS)	2	2
TOTAL COUNTS		(TC)	51543	48747
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.3	0.3
SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	0.050	0.050
SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	1	1
DIGEST GRAMS of SOLIDS / L		(Dg/L)	0.676	0.676
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)	3.9209E-02	3.9209E-02
INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.238	0.238
SAMPLE + SPIKE µCi/g		(S+S)	9.62E+01	9.10E+01
AVERAGE or MAXIMUM µCi/g in SAMPLE			3.0611E-01	

Type	SPK
Work List	5177
AT or IB ?	AT
Test Code	@ALPHA01
Matrix	SOLID
Batch Number	96000688
Rerun	0
Sample Prep	FUSION01
Sample #	S96T000007
Instrument Code	WB26872
Prepared By	SEH
Chemist	SLF
Analyst	SCL
Date Complete	01/29/96
Analysis Date	01/26/96
Analysis Time	08:00 AM
Sample Point	AN-102

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	=	3.15E-02
AVG. PERCENT SPIKE RECOVERY	=	80.4%

Analyst:		SEH	Date: 29-Jan-96
Signature of Chemist:		SLF	Date: 1/29/96

SPIKE.WB1 Rev. 1.0 508101MU

WORKBOOK PAGE: SAM12

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)	364	404
5177	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.050	0.050
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	0.4968	0.4968
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		11.833	13.167

Blank Concentration in µCi/g	9.02E-01
Replicate Concentration in µCi/g	1.00E+00
Average Concentration in µCi/g	9.5242E-01

Batch Number: 96000688
Rerun: 0
Sample Prep: FUSION01
Sample #: S96T000008
Instrument Code: WB26872
Prepared By: SEH
Chemist: SLF
Analyst: SCL
Date Complete: 01/29/96
Analysis Date: 01/26/96
Analysis Time: 08:00 AM
Sample Point: AN-102

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.

			DETECTION LEVEL
ALPHA TOTAL in µCi/g (Average)	=	9.52E-01	
RELATIVE COUNTING ERROR		10.7%	4.25E-02 µCi/g

Analyst:		SCL	Date: 29-Jan-96
Signature of Chemist:		SLF	Date: 1/29/96

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: DUP13

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)	348	344
	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.3	0.3
	SAMPLE SIZE in mL	(SS)	0.050	0.050
	DILUTION FACTOR	(DF)	1	1
	DIGEST GRAMS of SOLIDS / L	(Dg/L)	0.5468	0.5468
	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		11.300	11.167

Blank Concentration in µCi/g	7.82E-01
Replicate Concentration in µCi/g	7.73E-01
Average Concentration in µCi/g	7.7764E-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.

ALPHA TOTAL in µCi/g (Average)	=	7.78E-01	DETECTION LEVEL
RELATIVE COUNTING ERROR		11.0%	3.86E-02 µCi/g

Type	DUP
Work List	5177
AT or LB?	AT
Test Code	@ALPHA01
Matrix	SOLID
Batch Number	96000688
Rerun	0
Sample Prep	FUSION01
Sample #	S96T000008
Instrument Code	WB26872
Prepared By	SEH
Chemist	SLF
Analyst	SCL
Date Complete	01/29/96
Analysis Date	01/26/96
Analysis Time	08:00 AM
Sample Point	AN-102

Analyst:	SCL	Date: 29-Jan-96	
Signature of Chemist:	SLF	Date: 1/29/96	

SAMPLE.WB1 Rev. 1. 508101ML

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Accession #: D196061100

Document #: SD-WM-DP-165

Title/Desc:
FINAL REPORT FOR TANK 241AN102 GRAB SAMPLES
2AN-95-1 THRU 2AN-95-6 & 102-AN-1 THRU 102-AN-4
[SEC 2 OF 2 PAGE 474 TO 2-153]

Pages: 378

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-WM-DP-165

Section 2 **of** 2

Title: Final Report for Tank 241 AN102, Grab Samples 2AN-95-1 Through 2AN-95-6 & 102-AN-1 Through 102-AN-4

Date: 3-21-96 **Revision:** A000

Originator: Esch R A
Co:

Recipient:
Co:

References:

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

LABCORE Data Entry Template for Worklist# 4801

Analyst: S.C.L **Instrument:** AB00 15 **Book #** 14056

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

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	LIQUID			N/A	uCi/mL
		1	STD				@ALPHA01 ALPHA01E	LIQUID			N/A	% Ct. Error
		2	BLNK				@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
		2	BLNK				@ALPHA01 ALPHA01E	LIQUID			N/A	% Ct. Error
		3	BLNK/BKG				@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
95000227	AN-102 GRAB	4	SAMPLE	S96T000005	0		@ALPHA01 ALPHA01	LIQUID	N/A			uCi/mL
95000227	AN-102 GRAB	4	SAMPLE	S96T000005	0		@ALPHA01 ALPHA01E	LIQUID	N/A			% Ct. Error
95000227	AN-102 GRAB	5	DUP	S96T000005	0		@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
95000227	AN-102 GRAB	5	DUP	S96T000005	0		@ALPHA01 ALPHA01E	LIQUID			N/A	% Ct. Error
95000227	AN-102 GRAB	6	SPK	S96T000005	0		@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
95000227	AN-102 GRAB	7	SAMPLE	S96T000006	0		@ALPHA01 ALPHA01	LIQUID	N/A			uCi/mL
95000227	AN-102 GRAB	7	SAMPLE	S96T000006	0		@ALPHA01 ALPHA01E	LIQUID	N/A			% Ct. Error
95000227	AN-102 GRAB	8	DUP	S96T000006	0		@ALPHA01 ALPHA01	LIQUID			N/A	uCi/mL
95000227	AN-102 GRAB	8	DUP	S96T000006	0		@ALPHA01 ALPHA01E	LIQUID			N/A	% Ct. Error

DATA NOT USED IN PACKAGE

Final page for worklist # 4801

S C Le 1-10-96
Analyst Signature Date

DATA NOT USED IN PACKAGE

SE Hogan 1/12/96
Analyst Signature Date

C.J. Quinn 1/15/96

Data Entry Comments:

SPK recovery is out of control limits. Batch Spike: 119B43 will be rerun. [illegible] 1/16/96

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 Completed Worklist Report for Worklist# 4801

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

Method: _____ Rev/Mod _____

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	LIQUID	1.54E-05	1.36E-5	88.310	% Recovery
1	STD		0	@ALPHA01	ALPHA01E	LIQUID	1.00	4.24E+00	4.240	% Ct. Error
2	BLNK		0	@ALPHA01	ALPHA01	LIQUID	1	<1.57E-2		uCi/mL
2	BLNK		0	@ALPHA01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0	@ALPHA01	ALPHA01	LIQUID	1.00E+00	1.45E+00	1.450	uCi/mL
4	SAMPLE	S96T000005	0	@ALPHA01	ALPHA01	LIQUID	N/A	1.63E-01	1.920e-002	uCi/mL
4	SAMPLE	S96T000005	0	@ALPHA01	ALPHA01E	LIQUID	N/A	1.89E+01	0.000	% Ct. Error
5	DUP	S96T000005	0	@ALPHA01	ALPHA01	LIQUID	1.63E-1	1.89E-1	14.770	RPD
5	DUP	S96T000005	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.75E+01	17.500	% Ct. Error
6	SPK	S96T000005	0	@ALPHA01	ALPHA01	LIQUID	3.92E-02	1.90E-02	48.470	% Recovery
7	SAMPLE	S96T000006	0	@ALPHA01	ALPHA01	LIQUID	N/A	1.83E-01	1.920e-002	uCi/mL
7	SAMPLE	S96T000006	0	@ALPHA01	ALPHA01E	LIQUID	N/A	1.78E+01	0.000	% Ct. Error
8	DUP	S96T000006	0	@ALPHA01	ALPHA01	LIQUID	1.83E-1	1.78E-1	2.770	RPD
8	DUP	S96T000006	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.89E+01	18.900	% Ct. Error

Final page for worklist# 4801

Analyst Signature Date

Analyst Signature Date

1/17/96

Reviewer Signature Date

DATA NOT USED IN PACKAGE

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

WORKBOOK PAGE: STD1

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

			STANDARD	REPLICATE
DETECTOR NUMBER			15	15
DISH SIZE (1 , 2 , or 5)		(MS)	2	2
GROSS COUNTS		(GC)	2167	2156
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.23	0.23
SAMPLE SIZE in mL		(SS)	10.000	10.000
DILUTION FACTOR		(DF)	1	1
STANDARD BOOK NUMBER		(Std BN)	14B56	14B56
EFFICIENCY FACTOR		(EFF)	0.2380	0.2380
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			72.003	71.637
Standard Value in µCi/mL			1.54E-05	
Concentration in µCi/L	=		1.36E-02	
Replicate Concentration in µCi/L	=		1.36E-02	
AVERAGE CONCENTRATION in µCi/L	=		1.3593E-02	

Type	STD
Work List	4801
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96000250
Rerun	0
Sample Prep	N/A
Sample #	WL#4801
Instrument Code	WB26872
Prepared By	SEH
Chemist	SLF
Analyst	SCL
Date Complete	01/12/96
Analysis Date	01/10/96
Analysis Time	11:00 AM
Sample Point	AN-102 GRAB

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		1.36E-05	9.45E-08 µCi/mL
RELATIVE COUNTING ERROR	=	4.2%	

Analyst:	SEH	Date: 12-Jan-96	
Signature of Chemist:	SLF	Date: 1/16/96	

STANDARD.WB1 Rev. 1.0 508101ML

DATA NOT USED PACKAGE

WORKBOOK PAGE: BLANK2

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

			BLNK	REPLICATE
Type	DETECTOR NUMBER		15	15
BLNK	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	8	12
4801	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.249	0.409
Batch Number				
96000250	Blank Concentration in µCi/L	<	9.57E+00	
Rerun	Replicate Concentration in µCi/L	<	1.57E+01	
0	Maximum Concentration in µCi/L	<	1.5719E+01	
Sample Prep				
N/A				
Sample #				
WL#4801				
Instrument Code				
WB26872				
Prepared By				
SEH				
Chemist				
SLF				
Analyst				
SCL				
Date Complete				
01/12/96				
Analysis Date				
01/10/96				
Analysis Time				
11:00 AM				
Sample Point				
AN-102 GRAB				

Rs (Sample Count Rate) = (TC / CT) - BKG
ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/m L	< 1.57E-02	1.92E-02 µCi/mL
LESS THAN Value was Determined from Rmax.			
RELATIVE COUNTING ERROR		500.0%	

MC 3/8/96

Analyst:		SEH	Date: 12-Jan-96
Signature of Chemist:		SLF	Date: 1/16/96

BLANK.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WHC-SD-WM-DP-165, REV. 1

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		15	15
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	127	141
4801	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.003	4.470

Batch Number	
96000250	Blank Concentration in µCi/L 1.54E+02
Rerun	Replicate Concentration in µCi/L 1.72E+02
0	Average Concentration in µCi/L 1.6278E+02
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T000005	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	
Analyst	
SCL	
Date Complete	
01/12/96	
Analysis Date	
01/10/96	
Analysis Time	
11:00 AM	
Sample Point	
AN-102 GRAB	

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.63E-01	
RELATIVE COUNTING ERROR		18.9%	1.92E-02 µCi/mL

rae 3/8/96

Analyst:		SEH	Date: 12-Jan-96
Signature of Chemist:		SLF	Date: 1/16/96

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP5

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

			DUP	REPLICATE
Type	DETECTOR NUMBER		15	15
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	145	164
4801	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.603	5.237
Batch Number				
96000250	Blank Concentration in µCi/L		1.77E+02	
Rerun	Replicate Concentration in µCi/L		2.01E+02	
0	Average Concentration in µCi/L		1.8904E+02	

Sample Prep: N/A

Sample #: S96T000005

Instrument Code: WB26872

Prepared By: SEH

Chemist: SLF

Analyst: SCL

Date Complete: 01/12/96

Analysis Date: 01/10/96

Analysis Time: 11:00 AM

Sample Point: AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.89E-01	1.92E-02 µCi/mL
RELATIVE COUNTING ERROR		17.5%	

RR 3/9/96

Analyst:		SEH	Date: 12-Jan-96
Signature of Chemist:		SLF	Date: 1/16/96

SAMPLE.WB1 Rev. 1.0 508101ML

DATA ...GED ...KAGE

WORKBOOK PAGE: SPIKE6

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

			SPIKE	REPLICATE
DETECTOR NUMBER			15	15
DISH SIZE 1 , 2 , or 5		(MS)	2	2
TOTAL COUNTS		(TC)	29926	30508
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.23	0.23
SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	1.000	1.000
SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	20301	20301
DIGEST DILUTION FACTOR		(DDF)	1	1
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)	3.9211E-02	3.9211E-02
INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.238	0.238
SAMPLE + SPIKE µCi/mL		(S+S)	3.83E+01	3.91E+01
AVERAGE or MAXIMUM µCi/mL in SAMPLE			1.6278E-01	

Type
SPK
Work List
4801
AT or TB ?
AT
Test Code
@ALPHA01
Matrix
LIQUID
Batch Number
96000250
Rerun
0
Sample Prep
N/A
Sample #
S96T000005
Instrument Code
WB26872
Prepared By
SEH
Chemist
SLF
Analyst
SCL
Date Complete
01/12/96
Analysis Date
01/10/96
Analysis Time
11:00 AM
Sample Point
AN-102 GRAB

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

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

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

QC ACTUAL	=	3.92E-02
QC FOUND	=	1.90E-02
AVG. PERCENT SPIKE RECOVERY	=	48.4%

Analyst:		SEH	Date: 12-Jan-96
Signature of Chemist:		SLF	Date: 1/16/96

SPIKE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM7

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

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		15	15
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	159	141
4801	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		5.070	4.470
Batch Number				
96000250	Blank Concentration in µCi/L		1.95E+02	
Rerun	Replicate Concentration in µCi/L		1.72E+02	
0	Average Concentration in µCi/L		1.8328E+02	

Sample Prep: N/A

Sample #: S96T000006

Instrument Code: WB26872

Prepared By: SEH

Chemist: SLF

Analyst: SCL

Date Complete: 01/12/96

Analysis Date: 01/10/96

Analysis Time: 11:00 AM

Sample Point: AN-102 GRAB

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

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (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.

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.83E-01	1.92E-02 µCi/mL
RELATIVE COUNTING ERROR		17.8%	

RRE 3/8/96

Analyst:		SEH	Date: 12-Jan-96
Signature of Chemist:		SLF	Date: 1/16/96

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED CKAGE

WORKBOOK PAGE: DUP8

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

			DUP	REPLICATE
Type	DETECTOR NUMBER		15	15
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	165	127
4801	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.23	0.23
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	20301	20301
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		5.270	4.003

Batch Number	
96000250	Blank Concentration in µCi/L 2.02E+02
Rerun	Replicate Concentration in µCi/L 1.54E+02
0	Average Concentration in µCi/L 1.7815E+02
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T000006	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	
Analyst	
SCL	
Date Complete	
01/12/96	
Analysis Date	
01/10/96	
Analysis Time	
11:00 AM	
Sample Point	
AN-102 GRAB	

v RESULTS v

			DETECTION LEVEL
ALPHA TOTAL	in µCi/mL	1.78E-01	
			1.92E-02 µCi/mL
RELATIVE COUNTING ERROR		18.9%	

KDE 3/8/96

Analyst:		SEH	Date: 12-Jan-96
Signature of Chemist:		SLF	Date: 1/16/96

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

LABCORE Completed Worklist Report for Worklist# 4865

Analyst: rwk **Instrument:** GEA02 **Book#** 144852

Method: LA-548-121 Rev/Mod D-1

Worklist Comment: AN102 GEA 3870,71,72 SS=.100-10-1. for 3963 use 1ml SS. gjh

Seq	Type	Sample#	R	A	Test	Matrix	Actual		Found	DL or Yield	Unit
1	STD		0	@GEA-01	C060-02	LIQUID	0.0208		2.00e-02	96.150	% Recovery
1	STD		0	@GEA-01	C060-02E	LIQUID	1		1.55	1.550	% Ct. Error
1	STD		0	@GEA-01	CS13702	LIQUID	0.0253		2.45e-02	96.840	% Recovery
1	STD		0	@GEA-01	CS13702E	LIQUID	1		1.66	1.660	% Ct. Error
2	BLNK		0	@GEA-01	C060-02	LIQUID	1		<3.03e-3		uCi/mL
2	BLNK		0	@GEA-01	CS13702	LIQUID	1		<7.11e-3		uCi/mL
3	SAMPLE	S95T003870	0	@GEA-01	C060-02	LIQUID	N/A		1.430e-01	3.000e-003	uCi/mL
3	SAMPLE	S95T003870	0	@GEA-01	C060-02E	LIQUID	N/A		10.27	0.000	% Ct. Error
3	SAMPLE	S95T003870	0	@GEA-01	CS13702	LIQUID	N/A		3.220e+02	7.000e-003	uCi/mL
3	SAMPLE	S95T003870	0	@GEA-01	CS13702E	LIQUID	N/A		.14	0.000	% Ct. Error
4	DUP	S95T003870	0	@GEA-01	C060-02	LIQUID	1.43e-01		1.51e-01	5.440	RPD
4	DUP	S95T003870	0	@GEA-01	C060-02E	LIQUID	1		9.17	9.170	% Ct. Error
4	DUP	S95T003870	0	@GEA-01	CS13702	LIQUID	3.22e+02		3.23e+02	0.310	RPD
4	DUP	S95T003870	0	@GEA-01	CS13702E	LIQUID	1		.14	0.140	% Ct. Error
5	SAMPLE	S95T003871	0	@GEA-01	C060-02	LIQUID	N/A		1.480e-01	3.000e-003	uCi/mL
5	SAMPLE	S95T003871	0	@GEA-01	C060-02E	LIQUID	N/A		9.19	0.000	% Ct. Error
5	SAMPLE	S95T003871	0	@GEA-01	CS13702	LIQUID	N/A		3.130e+02	7.000e-003	uCi/mL
5	SAMPLE	S95T003871	0	@GEA-01	CS13702E	LIQUID	N/A		.14	0.000	% Ct. Error
6	DUP	S95T003871	0	@GEA-01	C060-02	LIQUID	1.48e-01		1.57e-01	5.900	RPD
6	DUP	S95T003871	0	@GEA-01	C060-02E	LIQUID	1		8.93	8.930	% Ct. Error
6	DUP	S95T003871	0	@GEA-01	CS13702	LIQUID	3.13e+02		3.12e+02	0.320	RPD
6	DUP	S95T003871	0	@GEA-01	CS13702E	LIQUID	1		.14	0.140	% Ct. Error
7	SAMPLE	S95T003872	0	@GEA-01	C060-02	LIQUID	N/A		1.420e-01	3.000e-003	uCi/mL
7	SAMPLE	S95T003872	0	@GEA-01	C060-02E	LIQUID	N/A		10.5	0.000	% Ct. Error
7	SAMPLE	S95T003872	0	@GEA-01	CS13702	LIQUID	N/A		3.230e+02	7.000e-003	uCi/mL
7	SAMPLE	S95T003872	0	@GEA-01	CS13702E	LIQUID	N/A		.14	0.000	% Ct. Error
8	DUP	S95T003872	0	@GEA-01	C060-02	LIQUID	1.42e-01		1.44e-01	1.400	RPD
8	DUP	S95T003872	0	@GEA-01	C060-02E	LIQUID	1		8.93	8.930	% Ct. Error
8	DUP	S95T003872	0	@GEA-01	CS13702	LIQUID	3.23e+02		3.28e+02	1.540	RPD
8	DUP	S95T003872	0	@GEA-01	CS13702E	LIQUID	1		.14	0.140	% Ct. Error
9	SAMPLE	S95T003963	0	@GEA-01	C060-02	LIQUID	N/A	<	2.760e-05	3.000e-003	uCi/mL
9	SAMPLE	S95T003963	0	@GEA-01	C060-02E	LIQUID	N/A		n/a	0.000	% Ct. Error
9	SAMPLE	S95T003963	0	@GEA-01	CS13702	LIQUID	N/A	<	8.050e-05	7.000e-003	uCi/mL
9	SAMPLE	S95T003963	0	@GEA-01	CS13702E	LIQUID	N/A		n/a	0.000	% Ct. Error
10	DUP	S95T003963	0	@GEA-01	C060-02	LIQUID	<2.76e-5		<3.04e-5		RPD
10	DUP	S95T003963	0	@GEA-01	C060-02E	LIQUID	1		n/a		% Ct. Error
10	DUP	S95T003963	0	@GEA-01	CS13702	LIQUID	<8.05e-5		<7.93e-5		RPD
10	DUP	S95T003963	0	@GEA-01	CS13702E	LIQUID	1		n/a		% Ct. Error

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

LABCORE Completed Worklist Report for Worklist# 4865

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit

Final page for worklist# 4865

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date 1/17/96

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

LABCORE Data Entry Template for Worklist# 4865

Analyst: RK **Instrument:** GEA00 2 **Book#** 144852

Method: LA-548-121 Rev/Mod D-1

Worklist Comment: AN102 GEA 3870,71,72 SS=.100-10-1. for 3963 use 1ml SS. gjh

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@GEA-01	LIQUID		
2	BLNK				@GEA-01	LIQUID		
3	SAMPLE	S95T003870	0		@GEA-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E							
4	DUP	S95T003870	0		@GEA-01	LIQUID		
5	SAMPLE	S95T003871	0		@GEA-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E							
6	DUP	S95T003871	0		@GEA-01	LIQUID		
7	SAMPLE	S95T003872	0		@GEA-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E							
8	DUP	S95T003872	0		@GEA-01	LIQUID		
9	SAMPLE	S95T003963	0		@GEA-01	LIQUID	95000222	AN-102 GRAB
	Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E							
10	DUP	S95T003963	0		@GEA-01	LIQUID		

Final page for worklist # 4865

Analyst Signature 1/15/96 Date

Analyst Signature 1/16/96 Date

SE Hogan 1/16/96

Data Entry Comments:

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

```
*****************************************************************************
* 222-S Laboratory Counting Room   15-JAN-1996 10:13:56.65                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              WL#4865
Sample ID:               WL#4865-STD
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2551.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:07.23 sec
Dead Time:               0.2%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       15-JAN-1996 09:23:10.05
Decayed to:              15-JAN-1996 09:23:10.05
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 CJO
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      21-MAR-1994 09:31:55.15
 Date of last efficiency calibration:  21-MAR-1994 09:43:42.61
*****************************************************************************
```

WHC-SD-WM-DP-165, REV. 1

Removed by: 1-15-96

Verified by: 1-16-96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.65*	17671	1.56	1323.32	1316	15	1.7		CS-137	24.5
0	1173.23	10251	1.88	2346.51	2337	19	2.2		CO-60	20.1
0	1332.51	9123	2.03	2665.17	2655	21	2.2		CO-60	19.9

Summary of Nuclide Activity
Sample ID : WL#4865-STD

Acquisition date : 15-JAN-1996 09:23:10

Total number of lines in spectrum	3	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	3	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.000	1.999E+01	1.999E+01	0.031E+01	1.55	
CS-137	30.00Y	1.000	2.452E+01	2.452E+01	0.041E+01	1.66	
		Total Activity :	4.452E+01	4.452E+01			
		Grand Total Activity :	4.452E+01	4.452E+01			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : WL#4865-STD Acquisition date : 15-JAN-1996 09:23:10

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	883.	477.59	1.2053E+00
NA-22	76.	1274.53	8.4904E-02
NA-24	14.	1368.55	3.9375E-02
K-40	125.	1460.75	1.1389E+00
SC-46	408.	1120.55	1.7669E-01
CR-51	889.	320.08	9.0236E-01
MN-54	498.	834.83	1.4953E-01
CO-56	564.	846.76	1.6111E-01
CO-57	1084.	122.06	7.3609E-02
CO-58	510.	810.78	1.4841E-01
FE-59	514.	1099.25	3.4474E-01
ZN-65	481.	1115.55	3.7686E-01
SE-75	1145.	264.66	1.5459E-01
KR-85	703.	514.00	2.7317E+01
SR-85	703.	514.01	1.2349E-01
Y-88	11.	1836.06	4.2920E-02
Y-90	13.	1760.70	1.6177E-01
Y-91	138.	1204.67	3.6522E+01
NB-94	616.	871.09	1.7239E-01
NB-95	430.	765.78	1.2938E-01
ZR-95	411.	756.73	2.2925E-01
RU-103	683.	497.08	1.2487E-01
RURH-106	515.	621.93	2.3913E+00
AG-108m	418.	722.94	1.3353E-01
CD-109	999.	88.03	2.4269E+00
AG-110M	827.	657.76	1.6635E-01
SN-113	891.	391.69	1.6430E-01
TE-123m	1079.	159.00	7.3500E-02
SB-124	540.	602.73	1.2103E-01
SB-125	968.	427.89	4.0173E-01
TE-125m	998.	109.27	2.3417E+01
I-129	940.	39.60	0.0000E+00
I-131	882.	364.48	1.2241E-01
XE-131m	1067.	163.93	3.1723E+00
BA-133	905.	356.02	1.5941E-01
CS-134	543.	604.70	1.2194E-01
CS-136	504.	818.51	1.4849E-01
CS-138	15.	1435.86	8.8272E-02
CE-139	1090.	165.85	7.9009E-02
BA-140	594.	537.31	4.6422E-01
LA-140	16.	1596.21	4.9973E-02
CE-141	1163.	145.44	1.3046E-01
CE-144	1103.	133.51	5.5531E-01
CEPR-144	1102.	133.51	1.1096E+00
EU-152	25.	1408.01	2.5463E-01
EU-154	76.	1274.51	2.4687E-01
EU-155	957.	86.54	2.6915E-01
HF-181	801.	482.18	1.4887E-01
TA-182	922.	67.75	3.6570E-01
HG-203	1084.	279.20	1.1189E-01
BI-207	513.	569.70	1.1274E-01

WHC-SD-WM-DP-165, REV. 1

Sample ID : WL#4865-STD Acquisition date : 15-JAN-1996 09:23:10

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	1077.	277.36	1.4329E+00
PB-210	906.	46.50	0.0000E+00
BI-212	422.	727.18	1.8402E+00
PB-212	1309.	238.63	2.0646E-01
BI-214	517.	609.31	2.6089E-01
PB-214	931.	351.92	4.9610E-01
RA-224	1221.	240.99	2.2127E+00
RA-226	1217.	186.10	2.0353E+00
AC-228	641.	911.21	6.8707E-01
TH-228	920.	84.37	7.1508E+00
TH-229	962.	88.47	3.4521E-01
U-232	874.	57.78	1.3313E+02
PA-233	953.	312.17	2.3952E-01
PA-234M	506.	1001.03	3.0049E-01
TH-234	888.	63.29	4.0915E+00
U-235	1216.	185.71	1.2367E-01
NP-237	955.	86.48	7.1185E-01
U-237	870.	59.54	6.7214E-01
NP-238	554.	984.45	6.6081E-01
NP-239	931.	106.12	2.8823E-01
PU-239	1084.	129.30	9.6111E+02
AM-241	870.	59.54	6.4472E-01
AM-243	936.	74.67	1.9604E-01

```
*****************************************************************************
* 222-S Laboratory Counting Room   15-JAN-1996 13:16:00.49                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              4865
Sample ID:               W/L#4865-BLK
Sample Size:             1.00000E-03 L
Dilution Factor:         1.01000E+02

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2555.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:00.46 sec
Dead Time:               0.0%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       15-JAN-1996 12:25:24.08
Decayed to:              15-JAN-1996 12:25:24.08
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 ALJ
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      21-MAR-1994 09:31:55.15
 Date of last efficiency calibration:  21-MAR-1994 09:43:42.61
*****************************************************************************

Post-NID Peak Search Report
***** No peaks found *****
```

WHC-SD-WM-DP-165, REV. 1

Removed by: 1-15-96

Verified by: 1-16-96

Sample ID : W/L#4865-BLK
Acquisition date : 15-JAN-1996 12:25:24

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : W/L#4865-BLK

Acquisition date : 15-JAN-1996 12:25:24

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	27.	477.59	2.1164E+01
NA-22	7.	1274.53	2.6565E+00
NA-24	4.	1368.55	2.1195E+00
K-40	106.	1460.75	1.0623E+02
SC-46	20.	1120.55	3.9319E+00
CR-51	70.	320.08	2.5521E+01
MN-54	16.	834.83	2.7134E+00
CO-56	16.	846.76	2.7416E+00
CO-57	65.	122.06	1.8176E+00
CO-58	10.	810.78	2.0962E+00
FE-59	11.	1099.25	5.0294E+00
CO-60	9.	1332.50	3.0270E+00
ZN-65	12.	1115.55	5.9754E+00
SE-75	61.	264.66	3.6106E+00
KR-85	40.	514.00	6.5883E+02
SR-85	40.	514.01	2.9733E+00
Y-88	1.	1836.06	1.3305E+00
Y-90	1.	1760.70	4.4984E+00
Y-91	16.	1204.67	1.2650E+03
NB-94	17.	871.09	2.9029E+00
NB-95	17.	765.78	2.6275E+00
ZR-95	14.	756.73	4.2749E+00
RU-103	32.	497.08	2.7152E+00
RURH-106	27.	621.93	5.5502E+01
AG-108m	13.	722.94	2.3618E+00
CD-109	72.	88.03	6.5868E+01
AG-110M	26.	657.76	2.9877E+00
SN-113	40.	391.69	3.5199E+00
TE-123m	71.	159.00	1.9093E+00
SB-124	18.	602.73	2.2316E+00
SB-125	43.	427.89	8.5329E+00
TE-125m	64.	109.27	6.0073E+02
I-129	56.	39.60	0.0000E+00
I-131	48.	364.48	2.8881E+00
XE-131m	84.	163.93	8.9727E+01
BA-133	32.	356.02	3.0137E+00
CS-134	24.	604.70	2.5693E+00
CS-136	20.	818.51	2.9797E+00
CS-137	119.	661.66	7.1051E+00
CS-138	3.	1435.86	4.0202E+00
CE-139	84.	165.85	2.2095E+00
BA-140	23.	537.31	9.3023E+00
LA-140	7.	1596.21	3.2262E+00
CE-141	76.	145.44	3.3632E+00
CE-144	66.	133.51	1.3745E+01
CEPR-144	66.	133.51	2.7469E+01
EU-152	8.	1408.01	1.4470E+01
EU-154	7.	1274.51	7.7178E+00
EU-155	74.	86.54	7.5689E+00
HF-181	36.	482.18	3.1845E+00
TA-182	60.	67.75	9.3869E+00

Minimum Detectable Activity Report (continued) Page : 4
Sample ID : W/L#4865-BLK Acquisition date : 15-JAN-1996 12:25:24

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
HG-203	55.	279.20	2.5445E+00
BI-207	31.	569.70	2.8003E+00
TL-208	54.	277.36	3.2384E+01
PB-210	52.	46.50	0.0000E+00
BI-212	19.	727.18	3.9643E+01
PB-212	93.	238.63	5.5494E+00
BI-214	40.	609.31	7.3477E+00
PB-214	55.	351.92	1.2170E+01
RA-224	69.	240.99	5.3295E+01
RA-226	69.	186.10	4.9003E+01
AC-228	27.	911.21	1.4350E+01
TH-228	74.	84.37	2.0517E+02
TH-229	80.	88.47	1.0076E+01
U-232	61.	57.78	3.5675E+03
PA-233	48.	312.17	5.4117E+00
PA-234M	12.	1001.03	4.7662E+00
TH-234	62.	63.29	1.0879E+02
U-235	75.	185.71	3.1013E+00
NP-237	75.	86.48	2.0118E+01
U-237	36.	59.54	1.3738E+01
NP-238	13.	984.45	1.0240E+01
NP-239	51.	106.12	6.7957E+00
PU-239	83.	129.30	2.6793E+04
AM-241	36.	59.54	1.3178E+01
AM-243	94.	74.67	6.2589E+00

```
*****************************************************************************
* 222-S Laboratory Counting Room   15-JAN-1996 12:19:30.49                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
```

WHC-SD-WM-DP-165, REV. 1

```
Worklist #:              4865
Sample ID:               S95T003870-SAM
Sample Size:             1.00000E-03 L
Dilution Factor:         1.01000E+02

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2554.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:55:50.33 sec
Dead Time:                10%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       15-JAN-1996 11:22:58.39
Decayed to:              15-JAN-1996 11:22:58.39
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 ALJ
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      21-MAR-1994 09:31:55.15
 Date of last efficiency calibration:  21-MAR-1994 09:43:42.61
*****************************************************************************
```

Removed by: RA Johnson 1-15-96

Verified by: RA Johnson 1-16-96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	86.53	1397	1.08	173.53	171	7	61.5		NP-237	699.
									EU-155	264.
0	105.24	1339	1.25	210.92	209	5	49.6		EU-155	289.
0	122.91	2714	1.16	246.26	244	6	29.3		~~CO-57~~	132.
									EU-154	279.
0	185.93*	1005	1.04	372.23	370	6	85.5		RA-226	1.274E+03
0	661.67*	2305122	1.55	1323.35	1315	17	0.1		CS-137	3.231E+05
0	723.41	459	1.27	1446.82	1444	8	54.3		EU-154	296.
0	1004.40	322	1.51	2008.79	2004	11	54.1		EU-154	309.
0	1173.27	839	2.20	2346.60	2341	13	14.5		CO-60	167.
0	1274.53	510	2.07	2549.17	2542	15	26.2		EU-154	314.
									~~NA-22~~	108.
0	1322.43	1393	2.42	2645.01	2638	15	10.5			
0	1332.46	655	1.93	2665.07	2658	17	11.8		CO-60	144.
0	1597.34	26	1.33	3195.08	3190	12	101.6			

Summary of Nuclide Activity

Sample ID : S95T003870-~~SAM~~ Dup arz 3/8/96

Acquisition date : 15-JAN-1996 11:22:58

WHC-SD-WM-DP-165, REV. 1

Total number of lines in spectrum	12	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	11	91.67%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~NA-22~~	~~2.60Y~~	~~1.000~~	~~1.081E+02~~	~~1.081E+02~~	~~0.283E+02~~	~~26.19~~	Eu-154
~~CO-57~~	~~271.80D~~	~~1.000~~	~~1.318E+02~~	~~1.318E+02~~	~~0.386E+02~~	~~29.29~~	Eu-154
CO-60	5.27Y	1.000	1.513E+02	1.513E+02	0.139E+02	9.17	
CS-137	30.00Y	1.000	3.231E+05	3.231E+05	0.004E+05	0.14	
EU-154	8.59Y	1.000	3.020E+02	3.020E+02	1.158E+02	38.34	
EU-155	4.68Y	1.000	2.894E+02	2.894E+02	1.434E+02	49.56	
~~RA-226~~	~~1600.00Y~~	~~1.000~~	~~1.274E+03~~	~~1.274E+03~~	~~1.089E+03~~	~~85.47~~	>50%
~~NP-237~~	~~2.14E+06Y~~	~~1.000~~	~~6.989E+02~~	~~6.989E+02~~	~~4.298E+02~~	~~61.50~~	>50%
			---	---			
Total Activity :			3.260E+05	3.260E+05			

Grand Total Activity : 3.260E+05 3.260E+05

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : S95T003870-~~SAM~~ Dup
RMC 3/8/96

Acquisition date : 15-JAN-1996 11:22:58

WHC-SD-WM-DP-165, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	77639.	477.59	1.1416E+03
NA-24	92.	1368.55	1.0241E+01
K-40	142.	1460.75	1.2266E+02
SC-46	1220.	1120.55	3.0874E+01
CR-51	62865.	320.08	7.6638E+02
MN-54	3780.	834.83	4.1595E+01
CO-56	3639.	846.76	4.1324E+01
CO-58	4145.	810.78	4.2726E+01
FE-59	1316.	1099.25	5.5723E+01
ZN-65	1181.	1115.55	5.9644E+01
SE-75	69574.	264.66	1.2170E+02
KR-85	40967.	514.00	2.1063E+04
SR-85	40962.	514.01	9.5237E+01
Y-88	8.	1836.06	3.7633E+00
Y-90	9.	1760.70	1.3455E+01
Y-91	623.	1204.67	7.8443E+03
NB-94	3369.	871.09	4.0722E+01
NB-95	4739.	765.78	4.3381E+01
ZR-95	5211.	756.73	8.2446E+01
RU-103	49683.	497.08	1.0756E+02
RURH-106	18385.	621.93	1.4426E+03
AG-108m	6556.	722.94	5.3382E+01
CD-109	60148.	88.03	1.9018E+03
AG-110M	58508.	657.76	1.4131E+02
SN-113	68561.	391.69	1.4554E+02
TE-123m	68766.	159.00	5.9259E+01
SB-124	19046.	602.73	7.2605E+01
SB-125	79307.	427.89	3.6733E+02
TE-125m	63475.	109.27	1.8861E+04
I-129	56152.	39.60	0.0000E+00
I-131	65359.	364.48	1.0646E+02
XE-131m	68785.	163.93	2.5729E+03
BA-133	63556.	356.02	1.3493E+02
CS-134	19122.	604.70	7.3076E+01
CS-136	4026.	818.51	4.2372E+01
CS-138	56.	1435.86	1.8288E+01
CE-139	68845.	165.85	6.3410E+01
BA-140	30913.	537.31	3.3818E+02
LA-140	66.	1596.21	1.0114E+01
CE-141	69254.	145.44	1.0169E+02
CE-144	69816.	133.51	4.4632E+02
CEPR-144	69815.	133.51	8.9184E+02
EU-152	72.	1408.01	4.3467E+01
HF-181	63433.	482.18	1.3380E+02
TA-182	56214.	67.75	2.8848E+02
HG-203	67321.	279.20	8.9070E+01
BI-207	21407.	569.70	7.3531E+01
TL-208	67501.	277.36	1.1460E+03
PB-210	55474.	46.50	0.0000E+00
BI-212	5969.	727.18	6.9900E+02
PB-212	78366.	238.63	1.6134E+02

Sample ID : S95T003870-~~SAM~~ DUP rat 3/8/96 Acquisition date : 15-JAN-1996 11:22:58

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-214	18845.	609.31	1.5902E+02
PB-214	63292.	351.92	4.3761E+02
RA-224	77075.	240.99	1.7765E+03
AC-228	2703.	911.21	1.4246E+02
TH-228	59465.	84.37	5.8064E+03
TH-229	59722.	88.47	2.7470E+02
U-232	55418.	57.78	1.0709E+05
PA-233	63657.	312.17	1.9776E+02
PA-234M	1875.	1001.03	5.8401E+01
TH-234	55685.	63.29	3.2731E+03
U-235	86938.	185.71	1.0559E+02
U-237	55674.	59.54	5.4331E+02
NP-238	1927.	984.45	1.2453E+02
NP-239	63420.	106.12	2.4043E+02
PU-239	69059.	129.30	7.7493E+05
AM-241	55674.	59.54	5.2105E+02
AM-243	57247.	74.67	1.5484E+02

```
*****************************************************************************
* 222-S Laboratory Counting Room   15-JAN-1996 14:17:36.65                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              4865
Sample ID:               S95T003870-~~DUP~~ SAM
Sample Size:             1.00000E-03 L
Dilution Factor:         1.01000E+02

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2556.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:55:48.16 sec
Dead Time:                10%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       15-JAN-1996 13:21:10.50
Decayed to:              15-JAN-1996 13:21:10.50
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 ALJ
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      21-MAR-1994 09:31:55.15
 Date of last efficiency calibration:  21-MAR-1994 09:43:42.61
*****************************************************************************
```

WHC-SD-WM-DP-165, REV. 1

Removed by: [signature] 1-15-96

Verified by: [signature] 1-16-96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	86.35*	1010	1.26	173.17	171	7	85.0		NP-237	506.
									EU-155	191.
0	105.07	717	1.01	210.60	209	5	92.0		EU-155	155.
0	123.02	2414	1.02	246.46	244	6	32.8		CO-57	117.
0	661.66*	2293491	1.55	1323.35	1315	17	0.1		CS-137	3.215E+05
0	1004.80	386	1.63	2009.60	2005	10	41.0			
0	1173.35	796	2.02	2346.76	2336	20	23.0		CO-60	158.
0	1274.63	576	1.87	2549.37	2543	15	22.5		NA-22	122.
0	1322.36	1456	2.92	2644.88	2637	22	12.9			
0	1332.57	639	1.54	2665.30	2658	16	11.5		CO-60	140.

Summary of Nuclide Activity
Sample ID : S95T003870-~~DUP~~ SAM
RAL 3/8/96

Acquisition date : 15-JAN-1996 13:21:10

WHC-SD-WM-DP-165, REV. 1

Total number of lines in spectrum	9	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	8	88.89%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~NA-22~~	~~2.60Y~~	~~1.000~~	~~1.220E+02~~	~~1.220E+02~~	~~0.274E+02~~	~~22.45~~	13Cs
~~CO-57~~	~~271.80D~~	~~1.000~~	~~1.172E+02~~	~~1.172E+02~~	~~0.385E+02~~	~~32.82~~	154Eu
CO-60	5.27Y	1.000	1.433E+02	1.433E+02	0.147E+02	10.27	
CS-137	30.00Y	1.000	3.215E+05	3.215E+05	0.004E+05	0.14	
~~EU-155~~	~~4.68Y~~	~~1.000~~	~~1.549E+02~~	~~1.549E+02~~	~~1.426E+02~~	~~92.04~~	75%
~~NP-237~~	~~2.14E+06Y~~	~~1.000~~	~~5.056E+02~~	~~5.056E+02~~	~~4.298E+02~~	~~85.02~~	75%
			---	---			
Total Activity :			3.225E+05	3.225E+05			

Grand Total Activity : 3.225E+05 3.225E+05

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : S95T003870-~~DUP~~ SAM
rcvd 3/8/96

Acquisition date : 15-JAN-1996 13:21:10

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	76466.	477.59	1.1329E+03
NA-24	92.	1368.55	1.0206E+01
K-40	144.	1460.75	1.2366E+02
SC-46	1138.	1120.55	2.9810E+01
CR-51	62550.	320.08	7.6445E+02
MN-54	3756.	834.83	4.1461E+01
CO-56	3592.	846.76	4.1052E+01
CO-58	4089.	810.78	4.2432E+01
FE-59	1302.	1099.25	5.5421E+01
ZN-65	1236.	1115.55	6.1023E+01
SE-75	69299.	264.66	1.2146E+02
KR-85	40544.	514.00	2.0954E+04
SR-85	40541.	514.01	9.4746E+01
Y-88	5.	1836.06	2.9593E+00
Y-90	17.	1760.70	1.8359E+01
Y-91	604.	1204.67	7.7236E+03
NB-94	3431.	871.09	4.1093E+01
NB-95	4752.	765.78	4.3441E+01
ZR-95	5186.	756.73	8.2246E+01
RU-103	49440.	497.08	1.0730E+02
RURH-106	18341.	621.93	1.4409E+03
AG-108m	6701.	722.94	5.3973E+01
CD-109	60376.	88.03	1.9054E+03
AG-110M	58347.	657.76	1.4111E+02
SN-113	68723.	391.69	1.4571E+02
TE-123m	69001.	159.00	5.9360E+01
SB-124	18863.	602.73	7.2254E+01
SB-125	78523.	427.89	3.6551E+02
TE-125m	62768.	109.27	1.8755E+04
I-129	56156.	39.60	0.0000E+00
I-131	64288.	364.48	1.0558E+02
XE-131m	68944.	163.93	2.5758E+03
BA-133	63581.	356.02	1.3496E+02
CS-134	19059.	604.70	7.2956E+01
CS-136	3971.	818.51	4.2082E+01
CS-138	53.	1435.86	1.7808E+01
CE-139	68957.	165.85	6.3462E+01
BA-140	30813.	537.31	3.3763E+02
LA-140	44.	1596.21	8.3116E+00
CE-141	69158.	145.44	1.0162E+02
CE-144	69114.	133.51	4.4407E+02
CEPR-144	69113.	133.51	8.8734E+02
EU-152	65.	1408.01	4.1152E+01
EU-154	1135.	1274.51	9.6518E+01
HF-181	62685.	482.18	1.3301E+02
TA-182	55962.	67.75	2.8783E+02
HG-203	66395.	279.20	8.8456E+01
BI-207	20912.	569.70	7.2675E+01
TL-208	67068.	277.36	1.1423E+03
PB-210	55151.	46.50	0.0000E+00
BI-212	5922.	727.18	6.9623E+02

Sample ID : S95T003870-~~DUP~~ SAM 3/8/96 Acquisition date : 15-JAN-1996 13:21:10

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	77480.	238.63	1.6042E+02
BI-214	18958.	609.31	1.5950E+02
PB-214	63661.	351.92	4.3872E+02
RA-224	76415.	240.99	1.7688E+03
RA-226	87531.	186.10	1.7431E+03
AC-228	2627.	911.21	1.4044E+02
TH-228	59198.	84.37	5.7933E+03
TH-229	60022.	88.47	2.7539E+02
U-232	54997.	57.78	1.0669E+05
PA-233	62747.	312.17	1.9634E+02
PA-234M	1876.	1001.03	5.8417E+01
TH-234	55291.	63.29	3.2615E+03
U-235	86572.	185.71	1.0537E+02
U-237	55191.	59.54	5.4095E+02
NP-238	1885.	984.45	1.2316E+02
NP-239	62616.	106.12	2.3890E+02
PU-239	68855.	129.30	7.7378E+05
AM-241	55191.	59.54	5.1878E+02
AM-243	57553.	74.67	1.5525E+02

```
*****************************************************************************
* 222-S Laboratory Counting Room   15-JAN-1996 15:16:38.80                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
```

WHC-SD-WM-DP-165, REV. 1

```
Worklist #:              4865
Sample ID:               S95T003871-SAM
Sample Size:             1.00000E-03 L
Dilution Factor:         1.01000E+02
```

Removed by: [signature]

```
      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2557.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:55:37.86 sec
Dead Time:                10%
```

Verified by: [signature] 1-16-96

```
      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       15-JAN-1996 14:20:20.91
Decayed to:              15-JAN-1996 14:20:20.91
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 ALJ
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       21-MAR-1994 09:31:55.15
 Date of last efficiency calibration:   21-MAR-1994 09:43:42.61
*****************************************************************************
```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	32.16*	784	2.61	64.86	62	6	99.9			
0	86.40*	1374	1.44	173.28	171	6	54.5		NP-237	688.
									EU-155	260.
0	105.15	968	1.35	210.74	209	5	67.5		EU-155	209.
0	123.06	2494	1.17	246.55	244	7	35.5		~~CO-57~~	121.
									EU-154	256.
0	185.87*	1169	1.57	372.10	370	6	72.5		~~RA-226~~	1.481E+03
0	661.67*	2235798	1.54	1323.35	1315	17	0.1		CS-137	3.134E+05
0	723.45	578	1.72	1446.89	1443	9	46.4		EU-154	372.
0	1004.41	279	1.50	2008.82	2005	9	49.9		EU-154	267.
0	1173.14	774	2.02	2346.35	2340	14	16.9		CO-60	154.
0	1274.41	600	1.94	2548.94	2542	14	19.9		EU-154	370.
									~~NA-22~~	127.
0	1322.55	1136	2.76	2645.24	2638	20	16.2			
0	1332.64	664	1.95	2665.43	2657	19	10.9		CO-60	146.
0	1596.49	31	1.65	3193.40	3188	14	72.7			

Summary of Nuclide Activity
Sample ID : S95T003871-SAM

Acquisition date : 15-JAN-1996 14:20:20

Total number of lines in spectrum 13
Number of unidentified lines 2
Number of lines tentatively identified by NID 11 84.62%

WHC-SD-WM-DP-165, REV. 1

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~NA-22~~	~~2.60Y~~	~~1.000~~	~~1.272E+02~~	~~1.272E+02~~	~~0.253E+02~~	~~19.89~~	Eu-154
~~CO-57~~	~~271.80D~~	~~1.000~~	~~1.211E+02~~	~~1.211E+02~~	~~0.430E+02~~	~~35.48~~	Eu-154
CO-60	5.27Y	1.000	1.480E+02	1.480E+02	0.136E+02	9.19	
CS-137	30.00Y	1.000	3.134E+05	3.134E+05	0.004E+05	0.14	
EU-154	8.59Y	1.000	3.065E+02	3.065E+02	1.055E+02	34.41	
~~EU-155~~	~~4.68Y~~	~~1.000~~	~~2.093E+02~~	~~2.093E+02~~	~~1.413E+02~~	~~67.48~~	>50%
~~RA-226~~	~~1600.00Y~~	~~1.000~~	~~1.481E+03~~	~~1.481E+03~~	~~1.074E+03~~	~~72.50~~	>50%
~~NP-237~~	~~2.14E+06Y~~	~~1.000~~	~~6.877E+02~~	~~6.877E+02~~	~~3.746E+02~~	~~54.47~~	>50%
			---	---			
	Total Activity :		3.165E+05	3.165E+05			

Grand Total Activity : 3.165E+05 3.165E+05

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : S95T003871-SAM

Acquisition date : 15-JAN-1996 14:20:20

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	74381.	477.59	1.1174E+03
NA-24	68.	1368.55	8.7686E+00
K-40	148.	1460.75	1.2551E+02
SC-46	1115.	1120.55	2.9510E+01
CR-51	61083.	320.08	7.5543E+02
MN-54	3346.	834.83	3.9134E+01
CO-56	3520.	846.76	4.0642E+01
CO-58	3900.	810.78	4.1443E+01
FE-59	1268.	1099.25	5.4693E+01
ZN-65	1086.	1115.55	5.7180E+01
SE-75	67451.	264.66	1.1983E+02
KR-85	39896.	514.00	2.0786E+04
SR-85	39890.	514.01	9.3983E+01
Y-88	6.	1836.06	3.2446E+00
Y-90	12.	1760.70	1.5838E+01
Y-91	580.	1204.67	7.5693E+03
NB-94	3196.	871.09	3.9659E+01
NB-95	4624.	765.78	4.2851E+01
ZR-95	4866.	756.73	7.9665E+01
RU-103	48013.	497.08	1.0574E+02
RURH-106	17915.	621.93	1.4241E+03
AG-108m	6314.	722.94	5.2389E+01
CD-109	58464.	88.03	1.8750E+03
AG-110M	55923.	657.76	1.3815E+02
SN-113	65924.	391.69	1.4271E+02
TE-123m	66645.	159.00	5.8338E+01
SB-124	18318.	602.73	7.1203E+01
SB-125	76359.	427.89	3.6044E+02
TE-125m	61034.	109.27	1.8495E+04
I-129	54835.	39.60	0.0000E+00
I-131	62760.	364.48	1.0432E+02
XE-131m	66744.	163.93	2.5344E+03
BA-133	61840.	356.02	1.3310E+02
CS-134	18331.	604.70	7.1549E+01
CS-136	3774.	818.51	4.1026E+01
CS-138	56.	1435.86	1.8173E+01
CE-139	67317.	165.85	6.2703E+01
BA-140	29867.	537.31	3.3240E+02
LA-140	50.	1596.21	8.8591E+00
CE-141	67059.	145.44	1.0007E+02
CE-144	67466.	133.51	4.3875E+02
CEPR-144	67465.	133.51	8.7670E+02
EU-152	63.	1408.01	4.0705E+01
HF-181	60702.	482.18	1.3089E+02
TA-182	54383.	67.75	2.8374E+02
HG-203	64450.	279.20	8.7150E+01
BI-207	20645.	569.70	7.2210E+01
TL-208	64680.	277.36	1.1218E+03
PB-210	53979.	46.50	0.0000E+00
BI-212	5482.	727.18	6.6987E+02
PB-212	76126.	238.63	1.5902E+02

Sample ID : S95T003871-SAM Acquisition date : 15-JAN-1996 14:20:20

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-214	18332.	609.31	1.5684E+02
PB-214	61638.	351.92	4.3096E+02
RA-224	74826.	240.99	1.7503E+03
AC-228	2386.	911.21	1.3384E+02
TH-228	57718.	84.37	5.7205E+03
TH-229	58165.	88.47	2.7110E+02
U-232	53889.	57.78	1.0561E+05
PA-233	61397.	312.17	1.9421E+02
PA-234M	1652.	1001.03	5.4828E+01
TH-234	53780.	63.29	3.2167E+03
U-235	84610.	185.71	1.0417E+02
U-237	54171.	59.54	5.3592E+02
NP-238	1812.	984.45	1.2073E+02
NP-239	61562.	106.12	2.3688E+02
PU-239	66931.	129.30	7.6290E+05
AM-241	54170.	59.54	5.1396E+02
AM-243	55311.	74.67	1.5220E+02

```
*****************************************************************************
* 222-S Laboratory Counting Room   15-JAN-1996 16:17:50.11                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              4865
Sample ID:               S95T003871-DUP
Sample Size:             1.00000E-03 L
Dilution Factor:         1.01000E+02

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2558.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:55:37.15 sec
Dead Time:                10%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       15-JAN-1996 15:21:33.37
Decayed to:              15-JAN-1996 15:21:33.37
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 ALJ
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       21-MAR-1994 09:31:55.15
 Date of last efficiency calibration:   21-MAR-1994 09:43:42.61
*****************************************************************************
```

WHC-SD-WM-DP-165, REV. 1

Removed by: 1-15-96

Verified by: 1-16-96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	86.62	1366	0.92	173.71	171	7	61.9		NP-237	684.
									EU-155	258.
									CD-109	2.278E+03
0	105.25	840	1.30	210.96	209	5	77.9		EU-155	182.
0	123.07	2510	1.17	246.57	244	7	35.1		~~CO-57~~	122.
									EU-154	258.
0	661.67*	2227812	1.54	1323.35	1315	17	0.1		CS-137	3.123E+05
0	723.63	527	1.07	1447.25	1443	9	50.3		EU-154	339.
0	995.73	185	1.74	1991.46	1988	9	76.6		EU-154	305.
0	1004.78	421	1.36	2009.55	2004	11	39.3		EU-154	403.
0	1173.50	892	2.06	2347.06	2340	17	16.7		CO-60	177.
0	1274.33	497	2.14	2548.77	2543	13	22.2		EU-154	306.
									~~NA-22~~	105.
0	1322.23	1419	3.00	2644.61	2636	19	11.9			
0	1332.47	687	1.99	2665.10	2656	18	10.5		CO-60	151.

Summary of Nuclide Activity
Sample ID : S95T003871-DUP

Acquisition date : 15-JAN-1996 15:21:33

Total number of lines in spectrum 11
Number of unidentified lines 1
Number of lines tentatively identified by NID 10 90.91%

WHC-SD-WM-DP-165, REV. 1

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~NA-22~~	~~2.60Y~~	~~1.000~~	~~1.055E+02~~	~~1.055E+02~~	~~0.235E+02~~	~~22.24~~	Eu-154
~~CO-57~~	~~271.80D~~	~~1.000~~	~~1.219E+02~~	~~1.219E+02~~	~~0.428E+02~~	~~35.11~~	Eu-154
CO-60	5.27Y	1.000	1.567E+02	1.567E+02	0.140E+02	8.93	
~~CD-109~~	~~462.90D~~	~~1.000~~	~~2.278E+03~~	~~2.278E+03~~	~~1.411E+03~~	~~61.92~~	>50%
CS-137	30.00Y	1.000	3.123E+05	3.123E+05	0.004E+05	0.14	
EU-154	8.59Y	1.000	3.599E+02	3.599E+02	1.040E+02	28.88	
~~EU-155~~	~~4.68Y~~	~~1.000~~	~~1.816E+02~~	~~1.816E+02~~	~~1.415E+02~~	~~77.90~~	>50%
~~NP-237~~	~~2.14E+06Y~~	~~1.000~~	~~6.836E+02~~	~~6.836E+02~~	~~4.233E+02~~	~~61.92~~	>50%
			---	---			
	Total Activity :		3.161E+05	3.161E+05			

Grand Total Activity : 3.161E+05 3.161E+05

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : S95T003871-DUP

Acquisition date : 15-JAN-1996 15:21:33

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	74431.	477.59	1.1177E+03
NA-24	82.	1368.55	9.6572E+00
K-40	145.	1460.75	1.2429E+02
SC-46	1133.	1120.55	2.9754E+01
CR-51	60956.	320.08	7.5465E+02
MN-54	3545.	834.83	4.0277E+01
CO-56	3527.	846.76	4.0680E+01
CO-58	3820.	810.78	4.1015E+01
FE-59	1207.	1099.25	5.3374E+01
ZN-65	1121.	1115.55	5.8108E+01
SE-75	67690.	264.66	1.2004E+02
KR-85	40144.	514.00	2.0850E+04
SR-85	40142.	514.01	9.4279E+01
Y-88	13.	1836.06	4.7874E+00
Y-90	7.	1760.70	1.2282E+01
Y-91	540.	1204.67	7.2987E+03
NB-94	3124.	871.09	3.9210E+01
NB-95	4383.	765.78	4.1718E+01
ZR-95	4947.	756.73	8.0326E+01
RU-103	47720.	497.08	1.0541E+02
RURH-106	17797.	621.93	1.4194E+03
AG-108m	6149.	722.94	5.1699E+01
AG-110M	56323.	657.76	1.3864E+02
SN-113	66525.	391.69	1.4336E+02
TE-123m	66921.	159.00	5.8458E+01
SB-124	18546.	602.73	7.1645E+01
SB-125	76321.	427.89	3.6035E+02
TE-125m	60981.	109.27	1.8486E+04
I-129	54849.	39.60	0.0000E+00
I-131	62699.	364.48	1.0427E+02
XE-131m	66618.	163.93	2.5320E+03
BA-133	61324.	356.02	1.3254E+02
CS-134	18477.	604.70	7.1833E+01
CS-136	3784.	818.51	4.1082E+01
CS-138	53.	1435.86	1.7712E+01
CE-139	67284.	165.85	6.2687E+01
BA-140	29717.	537.31	3.3157E+02
LA-140	45.	1596.21	8.4060E+00
CE-141	67275.	145.44	1.0023E+02
CE-144	67367.	133.51	4.3842E+02
CEPR-144	67368.	133.51	8.7607E+02
EU-152	68.	1408.01	4.2212E+01
HF-181	60882.	482.18	1.3108E+02
TA-182	54538.	67.75	2.8414E+02
HG-203	65339.	279.20	8.7749E+01
BI-207	20509.	569.70	7.1971E+01
TL-208	65288.	277.36	1.1271E+03
PB-210	53163.	46.50	0.0000E+00
BI-212	5570.	727.18	6.7522E+02
PB-212	75577.	238.63	1.5844E+02
BI-214	18064.	609.31	1.5569E+02

WHC-SD-WM-DP-165, REV. 1

Sample ID : S95T003871-DUP Acquisition date : 15-JAN-1996 15:21:33

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-214	61319.	351.92	4.2979E+02
RA-224	74250.	240.99	1.7436E+03
RA-226	85500.	186.10	1.7228E+03
AC-228	2462.	911.21	1.3596E+02
TH-228	57655.	84.37	5.7173E+03
TH-229	57973.	88.47	2.7065E+02
U-232	53912.	57.78	1.0563E+05
PA-233	61514.	312.17	1.9440E+02
PA-234M	1803.	1001.03	5.7267E+01
TH-234	53706.	63.29	3.2145E+03
U-235	84678.	185.71	1.0421E+02
U-237	54216.	59.54	5.3615E+02
NP-238	1747.	984.45	1.1856E+02
NP-239	61709.	106.12	2.3716E+02
PU-239	67054.	129.30	7.6360E+05
AM-241	54216.	59.54	5.1418E+02
AM-243	55622.	74.67	1.5262E+02

```
*****************************************************************************
* 222-S Laboratory Counting Room   15-JAN-1996 17:29:02.72                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
```

WHC-SD-WM-DP-165, REV. 1

```
Worklist #:              4865
Sample ID:               S95T003872-SAM
Sample Size:             1.00000E-03 L
Dilution Factor:         1.01000E+02

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2559.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:55:49.88 sec
Dead Time:                10%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       15-JAN-1996 16:32:33.42
Decayed to:              15-JAN-1996 16:32:33.42
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 ALJ
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      21-MAR-1994 09:31:55.15
 Date of last efficiency calibration:  21-MAR-1994 09:43:42.61
*****************************************************************************
```

Removed by: 1-15-96

Verified by: 1-16-96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	86.54	1280	1.41	173.56	171	6	59.3		NP-237	641.
									CD-109	2.135E+03
0	123.26	2391	1.03	246.94	245	6	33.4		~~CO-57~~	116.
									EU-154	246.
0	661.66*	2304305	1.54	1323.35	1315	17	0.1		CS-137	3.230E+05
0	723.36	413	1.64	1446.72	1444	8	61.0		EU-154	266.
0	996.37	157	0.81	1992.73	1989	8	84.0		EU-154	259.
0	1004.83	422	2.17	2009.67	2004	12	42.9		EU-154	405.
0	1173.31	657	2.10	2346.68	2339	15	23.0		CO-60	130.
0	1274.49	563	1.87	2549.09	2542	14	20.8		EU-154	347.
									~~NA-22~~	119.
0	1322.34	1341	2.49	2644.83	2637	20	13.7			
0	1332.57	664	1.90	2665.30	2657	18	11.8		CO-60	146.

Summary of Nuclide Activity
Sample ID : S95T003872-SAM Acquisition date : 15-JAN-1996 16:32:33

WHC-SD-WM-DP-165, REV. 1

Total number of lines in spectrum 10
Number of unidentified lines 1
Number of lines tentatively identified by NID 9 90.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~NA-22~~	~~2.60Y~~	~~1.000~~	~~1.194E+02~~	~~1.194E+02~~	~~0.248E+02~~	~~20.80~~	Eu-154
~~CO-57~~	~~271.80D~~	~~1.000~~	~~1.161E+02~~	~~1.161E+02~~	~~0.388E+02~~	~~33.38~~	Eu-154
CO-60	5.27Y	1.000	1.421E+02	1.421E+02	0.149E+02	10.50	
~~CD-109~~	~~462.90D~~	~~1.000~~	~~2.135E+03~~	~~2.135E+03~~	~~1.267E+03~~	~~59.35~~	> 50%
CS-137	30.00Y	1.000	3.230E+05	3.230E+05	0.004E+05	0.14	
EU-154	8.59Y	1.000	3.141E+02	3.141E+02	1.041E+02	33.13	
~~NP-237~~	~~2.14E+06Y~~	~~1.000~~	~~6.408E+02~~	~~6.408E+02~~	~~3.803E+02~~	~~59.35~~	> 50%
			---	---			
	Total Activity :		3.264E+05	3.264E+05			

Grand Total Activity : 3.264E+05 3.264E+05

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : S95T003872-SAM Acquisition date : 15-JAN-1996 16:32:33

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	77149.	477.59	1.1380E+03
NA-24	75.	1368.55	9.2450E+00
K-40	148.	1460.75	1.2554E+02
SC-46	1194.	1120.55	3.0542E+01
CR-51	62791.	320.08	7.6593E+02
MN-54	3800.	834.83	4.1706E+01
CO-56	3656.	846.76	4.1419E+01
CO-58	4062.	810.78	4.2293E+01
FE-59	1340.	1099.25	5.6239E+01
ZN-65	1243.	1115.55	6.1175E+01
SE-75	70000.	264.66	1.2207E+02
KR-85	41203.	514.00	2.1124E+04
SR-85	41197.	514.01	9.5510E+01
Y-88	10.	1836.06	4.1371E+00
Y-90	9.	1760.70	1.3866E+01
Y-91	618.	1204.67	7.8128E+03
NB-94	3331.	871.09	4.0491E+01
NB-95	4725.	765.78	4.3315E+01
ZR-95	5135.	756.73	8.1836E+01
RU-103	49796.	497.08	1.0768E+02
RURH-106	18640.	621.93	1.4526E+03
AG-108m	6675.	722.94	5.3865E+01
AG-110M	58489.	657.76	1.4129E+02
SN-113	68794.	391.69	1.4578E+02
TE-123m	69131.	159.00	5.9416E+01
SB-124	19118.	602.73	7.2742E+01
SB-125	78844.	427.89	3.6625E+02
TE-125m	63258.	109.27	1.8828E+04
I-129	56544.	39.60	0.0000E+00
I-131	64263.	364.48	1.0556E+02
XE-131m	68934.	163.93	2.5756E+03
BA-133	63918.	356.02	1.3532E+02
CS-134	19051.	604.70	7.2941E+01
CS-136	4071.	818.51	4.2613E+01
CS-138	53.	1435.86	1.7808E+01
CE-139	69359.	165.85	6.3646E+01
BA-140	30491.	537.31	3.3586E+02
LA-140	45.	1596.21	8.3392E+00
CE-141	68937.	145.44	1.0146E+02
CE-144	69664.	133.51	4.4584E+02
CEPR-144	69663.	133.51	8.9087E+02
EU-152	74.	1408.01	4.4127E+01
EU-155	60800.	86.54	2.1663E+02
HF-181	63274.	482.18	1.3363E+02
TA-182	56351.	67.75	2.8883E+02
HG-203	66740.	279.20	8.8685E+01
BI-207	21355.	569.70	7.3441E+01
TL-208	66979.	277.36	1.1416E+03
PB-210	55502.	46.50	0.0000E+00
BI-212	5961.	727.18	6.9852E+02
PB-212	77737.	238.63	1.6069E+02

Sample ID : S95T003872-SAM Acquisition date : 15-JAN-1996 16:32:33

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-214	18985.	609.31	1.5961E+02
PB-214	63583.	351.92	4.3858E+02
RA-224	76958.	240.99	1.7751E+03
RA-226	87969.	186.10	1.7475E+03
AC-228	2605.	911.21	1.3985E+02
TH-228	59449.	84.37	5.8056E+03
TH-229	59861.	88.47	2.7502E+02
U-232	55400.	57.78	1.0708E+05
PA-233	63461.	312.17	1.9745E+02
PA-234M	1950.	1001.03	5.9566E+01
TH-234	55619.	63.29	3.2712E+03
U-235	86877.	185.71	1.0556E+02
U-237	55699.	59.54	5.4343E+02
NP-238	1851.	984.45	1.2204E+02
NP-239	63054.	106.12	2.3974E+02
PU-239	68749.	129.30	7.7319E+05
AM-241	55698.	59.54	5.2116E+02
AM-243	57670.	74.67	1.5541E+02

```
*****************************************************************************
* 222-S Laboratory Counting Room   15-JAN-1996 18:28:11.45                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:            4865
Sample ID:             S95T003872-DUP
Sample Size:           1.00000E-03 L
Dilution Factor:       1.01000E+02

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:           GEA2
File Number:           dka300:[spec.GEA2]2g2560.cnf
Geometry:              42
Count Time:            0 00:50:00.00 sec
Real Time:             0 00:55:55.00 sec
Dead Time:              11%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:     15-JAN-1996 17:31:36.26
Decayed to:            15-JAN-1996 17:31:36.26
Standard Deviations:   2
Analysis Library:      ENVGEA
Analyst:               ALJ
Background Subtract:   DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      21-MAR-1994 09:31:55.15
 Date of last efficiency calibration:  21-MAR-1994 09:43:42.61
*****************************************************************************
```

WHC-SD-WM-DP-165, REV. 1

Removed by: Ron Baeler

Verified by: R A Jones 1-16-96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	41.57	721	1.45	83.67	82	6	107.0			
0	86.66	1626	1.13	173.80	171	7	53.2		~~NP-237~~	814.
									EU-155	307.
									~~CD-109~~	2.712E+03
0	105.35	1493	1.51	211.14	209	7	58.2		EU-155	323.
0	123.07	2684	1.13	246.56	244	7	33.6		~~CO-57~~	130.
									EU-154	276.
0	661.66*	2336947	1.55	1323.34	1315	17	0.1		CS-137	3.275E+05
0	723.25	251	1.04	1446.51	1444	7	91.5		EU-154	162.
0	1004.98	455	1.10	2009.97	2006	9	31.8		EU-154	437.
0	1173.27	719	1.78	2346.59	2341	12	17.4		CO-60	143.
0	1274.33	696	1.71	2548.79	2542	16	18.9		EU-154	429.
									~~NA-22~~	148.
0	1322.27	1503	2.69	2644.69	2637	21	12.5			
0	1332.63	660	1.73	2665.42	2659	14	10.4		CO-60	145.

Summary of Nuclide Activity
Sample ID : S95T003872-DUP

Acquisition date : 15-JAN-1996 17:31:36

WHC-SD-WM-DP-165, REV. 1

Total number of lines in spectrum 11
Number of unidentified lines 2
Number of lines tentatively identified by NID 9 81.82%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~NA-22~~	~~2.60Y~~	~~1.000~~	~~1.476E+02~~	~~1.476E+02~~	~~0.279E+02~~	~~18.93~~	Eu-154
~~CO-57~~	~~271.80D~~	~~1.000~~	~~1.303E+02~~	~~1.303E+02~~	~~0.438E+02~~	~~33.63~~	Eu-154
CO-60	5.27Y	1.000	1.444E+02	1.444E+02	0.129E+02	8.93	
~~CD-109~~	~~462.90D~~	~~1.000~~	~~2.712E+03~~	~~2.712E+03~~	~~1.442E+03~~	~~53.19~~	>50%
CS-137	30.00Y	1.000	3.275E+05	3.275E+05	0.005E+05	0.14	
EU-154	8.59Y	1.000	3.078E+02	3.078E+02	1.013E+02	32.91	
~~EU-155~~	~~4.68Y~~	~~1.000~~	~~3.228E+02~~	~~3.228E+02~~	~~1.878E+02~~	~~58.19~~	>50%
~~NP-237~~	~~2.14E+06Y~~	~~1.000~~	~~8.139E+02~~	~~8.139E+02~~	~~4.329E+02~~	~~53.19~~	>50%
		Total Activity :	3.321E+05	3.321E+05			
		Grand Total Activity :	3.321E+05	3.321E+05			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : S95T003872-DUP Acquisition date : 15-JAN-1996 17:31:36

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	78680.	477.59	1.1492E+03
NA-24	87.	1368.55	9.9730E+00
K-40	143.	1460.75	1.2326E+02
SC-46	1246.	1120.55	3.1201E+01
CR-51	63499.	320.08	7.7023E+02
MN-54	3838.	834.83	4.1909E+01
CO-56	3713.	846.76	4.1738E+01
CO-58	4282.	810.78	4.3423E+01
FE-59	1370.	1099.25	5.6863E+01
ZN-65	1296.	1115.55	6.2484E+01
SE-75	70836.	264.66	1.2280E+02
KR-85	41829.	514.00	2.1283E+04
SR-85	41824.	514.01	9.6234E+01
Y-88	10.	1836.06	4.2776E+00
Y-90	10.	1760.70	1.4578E+01
Y-91	627.	1204.67	7.8707E+03
NB-94	3529.	871.09	4.1676E+01
NB-95	5007.	765.78	4.4590E+01
ZR-95	5282.	756.73	8.3003E+01
RU-103	50297.	497.08	1.0822E+02
RURH-106	18782.	621.93	1.4581E+03
AG-108m	6688.	722.94	5.3921E+01
AG-110M	59677.	657.76	1.4271E+02
SN-113	69723.	391.69	1.4677E+02
TE-123m	70056.	159.00	5.9812E+01
SB-124	19408.	602.73	7.3291E+01
SB-125	80308.	427.89	3.6964E+02
TE-125m	63632.	109.27	1.8884E+04
I-129	57230.	39.60	0.0000E+00
I-131	65288.	364.48	1.0640E+02
XE-131m	69621.	163.93	2.5884E+03
BA-133	64084.	356.02	1.3549E+02
CS-134	19461.	604.70	7.3721E+01
CS-136	4169.	818.51	4.3121E+01
CS-138	61.	1435.86	1.9095E+01
CE-139	69572.	165.85	6.3744E+01
BA-140	31009.	537.31	3.3870E+02
LA-140	41.	1596.21	7.9704E+00
CE-141	70262.	145.44	1.0243E+02
CE-144	70066.	133.51	4.4712E+02
CEPR-144	70065.	133.51	8.9343E+02
EU-152	67.	1408.01	4.1724E+01
HF-181	63908.	482.18	1.3430E+02
TA-182	57017.	67.75	2.9053E+02
HG-203	67902.	279.20	8.9454E+01
BI-207	21511.	569.70	7.3710E+01
TL-208	67953.	277.36	1.1499E+03
PB-210	56421.	46.50	0.0000E+00
BI-212	6254.	727.18	7.1547E+02
PB-212	79249.	238.63	1.6224E+02
BI-214	19103.	609.31	1.6011E+02

Sample ID : S95T003872-DUP Acquisition date : 15-JAN-1996 17:31:36

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-214	65188.	351.92	4.4445E+02
RA-224	78210.	240.99	1.7895E+03
RA-226	88928.	186.10	1.7570E+03
AC-228	2737.	911.21	1.4336E+02
TH-228	60288.	84.37	5.8464E+03
TH-229	60529.	88.47	2.7655E+02
U-232	55911.	57.78	1.0757E+05
PA-233	64051.	312.17	1.9837E+02
PA-234M	1934.	1001.03	5.9318E+01
TH-234	56326.	63.29	3.2919E+03
U-235	88071.	185.71	1.0628E+02
U-237	56277.	59.54	5.4625E+02
NP-238	2041.	984.45	1.2816E+02
NP-239	63964.	106.12	2.4146E+02
PU-239	70024.	129.30	7.8033E+05
AM-241	56277.	59.54	5.2386E+02
AM-243	58507.	74.67	1.5653E+02

```
*****************************************************************************
* 222-S Laboratory Counting Room   15-JAN-1996 19:42:44.37                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              4865
Sample ID:               S95T003963-SAM
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2561.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:00.49 sec
Dead Time:               0.0%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       15-JAN-1996 18:52:06.01
Decayed to:              15-JAN-1996 18:52:06.01
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 EMB
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      21-MAR-1994 09:31:55.15
 Date of last efficiency calibration:  21-MAR-1994 09:43:42.61
*****************************************************************************
```

WHC-SD-WM-DP-165, REV. 1

Removed by: Em Baeche

Verified by: R B Jones 1-16-96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	610.05*	22	0.81	1220.14	1214	15110.5				

Sample ID : S95T003963-SAM Acquisition date : 15-JAN-1996 18:52:06

Total number of lines in spectrum 1 WHC-SD-WM-DP-165, REV 1
Number of unidentified lines 0
Number of lines tentatively identified by NID 1 100.00%
**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : S95T003963-SAM Acquisition date : 15-JAN-1996 18:52:06

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	27.	477.59	2.0994E-01
NA-22	8.	1274.53	2.7533E-02
NA-24	2.	1368.55	1.4899E-02
K-40	120.	1460.75	1.1176E+00
SC-46	13.	1120.55	3.1600E-02
CR-51	48.	320.08	2.0912E-01
MN-54	12.	834.83	2.3220E-02
CO-56	15.	846.76	2.6283E-02
CO-57	78.	122.06	1.9769E-02
CO-58	16.	810.78	2.6152E-02
FE-59	14.	1099.25	5.7181E-02
CO-60	7.	1332.50	2.7632E-02
ZN-65	7.	1115.55	4.5459E-02
SE-75	60.	264.66	3.5401E-02
KR-85	48.	514.00	7.1337E+00
SR-85	48.	514.01	3.2171E-02
Y-88	3.	1836.06	2.2614E-02
Y-90	4.	1760.70	8.6195E-02
Y-91	13.	1204.67	1.1202E+01
NB-94	16.	871.09	2.7676E-02
NB-95	15.	765.78	2.4537E-02
ZR-95	9.	756.73	3.3922E-02
RU-103	36.	497.08	2.8512E-02
RURH-106	21.	621.93	4.8113E-01
AG-108m	10.	722.94	2.0210E-02
CD-109	64.	88.03	6.1559E-01
AG-110M	32.	657.76	3.2556E-02
SN-113	48.	391.69	3.8109E-02
TE-123m	75.	159.00	1.9339E-02
SB-124	27.	602.73	2.7062E-02
SB-125	39.	427.89	8.0468E-02
TE-125m	73.	109.27	6.3425E+00
I-129	55.	39.60	0.0000E+00
I-131	54.	364.48	3.0380E-02
XE-131m	78.	163.93	8.5789E-01
BA-133	39.	356.02	3.3098E-02
CS-134	27.	604.70	2.6952E-02
CS-136	10.	818.51	2.0843E-02
CS-137	156.	661.66	8.0541E-02
CS-138	6.	1435.86	5.8028E-02
CE-139	72.	165.85	2.0238E-02
BA-140	30.	537.31	1.0474E-01
LA-140	6.	1596.21	3.1231E-02
CE-141	79.	145.44	3.4025E-02
CE-144	78.	133.51	1.4779E-01
CEPR-144	78.	133.51	2.9520E-01
EU-152	7.	1408.01	1.2954E-01
EU-154	8.	1274.51	8.0191E-02
EU-155	64.	86.54	6.9624E-02
HF-181	40.	482.18	3.3092E-02
TA-182	64.	67.75	9.6270E-02

Sample ID : S95T003963-SAM Acquisition date : 15-JAN-1996 18:52:06

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
HG-203	53.	279.20	2.4710E-02
BI-207	15.	569.70	1.9047E-02
TL-208	60.	277.36	3.3693E-01
PB-210	57.	46.50	0.0000E+00
BI-212	25.	727.18	4.4662E-01
PB-212	89.	238.63	5.3760E-02
BI-214	49.	609.31	8.0084E-02
PB-214	51.	351.92	1.1562E-01
RA-224	75.	240.99	5.4945E-01
RA-226	88.	186.10	5.4602E-01
AC-228	29.	911.21	1.4664E-01
TH-228	62.	84.37	1.8616E+00
TH-229	70.	88.47	9.3259E-02
U-232	64.	57.78	3.6011E+01
PA-233	49.	312.17	5.4079E-02
PA-234M	18.	1001.03	5.6617E-02
TH-234	62.	63.29	1.0798E+00
U-235	89.	185.71	3.3426E-02
NP-237	63.	86.48	1.8326E-01
U-237	63.	59.54	1.8132E-01
NP-238	18.	984.45	1.1894E-01
NP-239	81.	106.12	8.5042E-02
PU-239	80.	129.30	2.6141E+02
AM-241	63.	59.54	1.7393E-01
AM-243	68.	74.67	5.2653E-02

```
*****************************************************************************
* 222-S Laboratory Counting Room   15-JAN-1996 20:45:43.17                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              4865
Sample ID:               S95T00396-DUP
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2562.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:00.47 sec
Dead Time:               0.0%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       15-JAN-1996 19:54:24.38
Decayed to:              15-JAN-1996 19:54:24.38
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 EMB
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       21-MAR-1994 09:31:55.15
 Date of last efficiency calibration:   21-MAR-1994 09:43:42.61
*****************************************************************************

Post-NID Peak Search Report
***** No peaks found *****
```

WHC-SD-WM-DP-165, REV. 1

Removed by: Em Barela

Verified by: R Jones 1-16-96

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : S95T00396-DUP

Acquisition date : 15-JAN-1996 19:54:24

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	38.	477.59	2.5122E-01
NA-22	8.	1274.53	2.7613E-02
NA-24	12.	1368.55	3.6445E-02
K-40	109.	1460.75	1.0639E+00
SC-46	16.	1120.55	3.4820E-02
CR-51	38.	320.08	1.8589E-01
MN-54	18.	834.83	2.8268E-02
CO-56	22.	846.76	3.1797E-02
CO-57	72.	122.06	1.8999E-02
CO-58	9.	810.78	1.9710E-02
FE-59	16.	1099.25	6.1518E-02
CO-60	9.	1332.50	3.0354E-02
ZN-65	9.	1115.55	5.1646E-02
SE-75	64.	264.66	3.6667E-02
KR-85	38.	514.00	6.3926E+00
SR-85	38.	514.01	2.8833E-02
Y-88	2.	1836.06	1.8630E-02
Y-90	3.	1760.70	8.3214E-02
Y-91	10.	1204.67	1.0056E+01
NB-94	24.	871.09	3.4148E-02
NB-95	23.	765.78	3.0224E-02
ZR-95	21.	756.73	5.2190E-02
RU-103	27.	497.08	2.4975E-02
RURH-106	24.	621.93	5.2066E-01
AG-108m	14.	722.94	2.4061E-02
CD-109	66.	88.03	6.2201E-01
AG-110M	27.	657.76	3.0082E-02
SN-113	35.	391.69	3.2644E-02
TE-123m	86.	159.00	2.0699E-02
SB-124	26.	602.73	2.6484E-02
SB-125	38.	427.89	7.9201E-02
TE-125m	76.	109.27	6.4609E+00
I-129	65.	39.60	0.0000E+00
I-131	40.	364.48	2.5918E-02
XE-131m	75.	163.93	8.4208E-01
BA-133	48.	356.02	3.6775E-02
CS-134	27.	604.70	2.7230E-02
CS-136	12.	818.51	2.2759E-02
CS-137	151.	661.66	7.9320E-02
CS-138	12.	1435.86	7.9609E-02
CE-139	77.	165.85	2.1046E-02
BA-140	23.	537.31	9.1827E-02
LA-140	5.	1596.21	2.7765E-02
CE-141	73.	145.44	3.2741E-02
CE-144	69.	133.51	1.3870E-01
CEPR-144	69.	133.51	2.7728E-01
EU-152	8.	1408.01	1.3909E-01
EU-154	8.	1274.51	8.0223E-02
EU-155	67.	86.54	7.1079E-02
HF-181	33.	482.18	3.0322E-02
TA-182	65.	67.75	9.7458E-02

Sample ID : S95T00396-DUP Acquisition date : 15-JAN-1996 19:54:24

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
HG-203	52.	279.20	2.4399E-02
BI-207	19.	569.70	2.1913E-02
TL-208	46.	277.36	2.9565E-01
PB-210	52.	46.50	0.0000E+00
BI-212	22.	727.18	4.2016E-01
PB-212	69.	238.63	4.7331E-02
BI-214	37.	609.31	6.9775E-02
PB-214	57.	351.92	1.2300E-01
RA-224	62.	240.99	4.9862E-01
RA-226	91.	186.10	5.5668E-01
AC-228	27.	911.21	1.4207E-01
TH-228	71.	84.37	1.9805E+00
TH-229	66.	88.47	9.0442E-02
U-232	58.	57.78	3.4394E+01
PA-233	62.	312.17	6.0942E-02
PA-234M	18.	1001.03	5.6079E-02
TH-234	66.	63.29	1.1133E+00
U-235	90.	185.71	3.3620E-02
NP-237	67.	86.48	1.8844E-01
U-237	68.	59.54	1.8821E-01
NP-238	10.	984.45	8.7967E-02
NP-239	68.	106.12	7.7784E-02
PU-239	72.	129.30	2.4750E+02
AM-241	68.	59.54	1.8053E-01
AM-243	59.	74.67	4.9159E-02

LABCORE Data Entry Template for Worklist# 4825

Analyst: RK **Instrument:** AB00 12 **Book#** 9856

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: Determine sample size using Ludlum. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	LIQUID		
2	BLNK				@SR90-01	LIQUID		
3	BLNK/BKG				@SR90-01	LIQUID		
4	SAMPLE	S95T003870	0		@SR90-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5	DUP	S95T003870	0		@SR90-01	LIQUID		
6	SAMPLE	S95T003871	0		@SR90-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7	DUP	S95T003871	0		@SR90-01	LIQUID		
8	SAMPLE	S95T003872	0		@SR90-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
9	DUP	S95T003872	0		@SR90-01	LIQUID		

Final page for worklist # 4825

Rob King 1/15/96
Analyst Signature Date

[illegible] 1/16/96
Analyst Signature Date

C.J. Quinn 1/16/96

Data Entry Comments: BLNK value indicates contamination, but at insignificant levels compared to the samples. [illegible] 1/18/96

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

LABCORE Completed Worklist Report for Worklist# 4825

Analyst: rwk **Instrument:** AB12 **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	@SR90-01 SR90-01	LIQUID	1.24E-03	1.15E-3	92.740	% Recovery
1	STD			0	@SR90-01 SR90-01C	LIQUID	100	9.70E+01	97.000	% Recovery
1	STD			0	@SR90-01 SR90-01E	LIQUID	1.00	1.86E+00	1.860	% Ct. Error
2	BLNK			0	@SR90-01 SR90-01	LIQUID	1	7.90E-2	8.000e-002	uCi/mL
2	BLNK			0	@SR90-01 SR90-01C	LIQUID	100	9.60E+01	96.000	% Recovery
2	BLNK			0	@SR90-01 SR90-01E	LIQUID	1.00	1.68E+01	16.800	% Ct. Error
3	BLNK/BKG			0	@SR90-01 SR90-01	LIQUID	1	6.00E+00	6.000	uCi/mL
4	SAMPLE	S95T003870		0	@SR90-01 SR90-01	LIQUID	N/A	7.13E+01	1.010e-002	uCi/mL
4	SAMPLE	S95T003870		0	@SR90-01 SR90-01C	LIQUID	N/A	9.62E+01	1.000e-004	% Recovery
4	SAMPLE	S95T003870		0	@SR90-01 SR90-01E	LIQUID	N/A	4.72E-01	0.000	% Ct. Error
5	DUP	S95T003870		0	@SR90-01 SR90-01	LIQUID	7.13E+1	7.51E+1	5.190	RPD
5	DUP	S95T003870		0	@SR90-01 SR90-01C	LIQUID	100	9.47E+01	94.700	% Recovery
5	DUP	S95T003870		0	@SR90-01 SR90-01E	LIQUID	1.00	4.63E-01	0.460	% Ct. Error
6	SAMPLE	S95T003871		0	@SR90-01 SR90-01	LIQUID	N/A	7.44E+01	1.000e-002	uCi/mL
6	SAMPLE	S95T003871		0	@SR90-01 SR90-01C	LIQUID	N/A	9.64E+01	1.000e-004	% Recovery
6	SAMPLE	S95T003871		0	@SR90-01 SR90-01E	LIQUID	N/A	4.61E-01	0.000	% Ct. Error
7	DUP	S95T003871		0	@SR90-01 SR90-01	LIQUID	7.44E+1	7.39E+1	0.670	RPD
7	DUP	S95T003871		0	@SR90-01 SR90-01C	LIQUID	100	9.55E+01	95.500	% Recovery
7	DUP	S95T003871		0	@SR90-01 SR90-01E	LIQUID	1.00	4.63E-01	0.460	% Ct. Error
8	SAMPLE	S95T003872		0	@SR90-01 SR90-01	LIQUID	N/A	7.82E+01	1.010e-002	uCi/mL
8	SAMPLE	S95T003872		0	@SR90-01 SR90-01C	LIQUID	N/A	9.50E+01	1.000e-004	% Recovery
8	SAMPLE	S95T003872		0	@SR90-01 SR90-01E	LIQUID	N/A	4.52E-01	0.000	% Ct. Error
9	DUP	S95T003872		0	@SR90-01 SR90-01	LIQUID	7.82E+1	7.94E+1	1.520	RPD
9	DUP	S95T003872		0	@SR90-01 SR90-01C	LIQUID	100	9.52E+01	95.200	% Recovery
9	DUP	S95T003872		0	@SR90-01 SR90-01E	LIQUID	1.00	4.47E-01	0.450	% Ct. Error

Final page for worklist# 4825

Analyst Signature Date

Analyst Signature Date

1/18/96

Reviewer Signature Date

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

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

							STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
STD	TOTAL COUNTS	(TC)	11276	GROSS WEIGHT	(W2)		7.2938
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.1968
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)		0.0970
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		7.38
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	1123.80	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)		2.44
0	TIME OF COUNT	(TOC)	05:10	Sr-89/90 CONC. in µCi/L			1.1502E+00
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A	STANDARD BOOK #		9B56				
Sample #	STANDARD VALUE in µCi/mL		1.2366E-03				
WL4825							
Instrument Code							
WB27811							
Prepared By							
MCB							
Chemist							
SLF							
Analyst							
RWK							
Date Complete							
01/16/96							
Analysis Date							
01/15/96							
Analysis Time							
09:47 PM							
Sample Point							
AN-102 GRAB							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0
RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
Percent Carrier Recovery = (Net Weight / Expected weight) * 100
NOTE: Expected weight = CVA * 0.1
Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.15E-03	µCi/mL
RELATIVE COUNTING ERROR	1.9%	
PERCENT CARRIER RECOVERY	97.0%	

DETECTION LEVEL
2.50E-06 µCi/L

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

STANDARD.WB1 REV 1.2 22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							BLNK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
BLNK	TOTAL COUNTS	(TC)	228	GROSS WEIGHT	(W2)		7.3308
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2348
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)		0.0960
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)		7.80
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	19.00	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax			N/A
Rerun #	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)		2.44
0	TIME OF COUNT	(TOC)	05:35	Sr-89/90 CONC in µCi/L			7.9048E+01
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
WL4825							
Instrument Code							
WB27811							
Prepared By							
MCB							
Chemist							
SLF							
Analyst							
RWK							
Date Complete							
01/16/96							
Analysis Date							
01/15/96							
Analysis Time							
09:47 PM							
Sample Point							
AN-102 GRAB							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

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

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

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

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

pcz 3/8/96

µCi/mL

Sr-89/90 CONCENTRATION	7.90E-02	µCi/m	DETECTION LEVEL
RELATIVE COUNTING ERROR	16.8%		1.01E-02 µCi/mL
PERCENT CARRIER RECOVERY	96.0%		

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

BLANK.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	172230	GROSS WEIGHT	(W2)		7.3059
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2097
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)		0.0962
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)		8.05
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	17219.20	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)		2.44
0	TIME OF COUNT	(TOC)	05:50	Sr-89/90 CONC in µCi/L			7.1310E+04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
S95T003870							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
01/16/96							
Analysis Date							DETECTION LEVEL
01/15/96	Sr-89/90 CONCENTRATION		7.13E+01		µCi/mL		
Analysis Time							
09:47 PM	RELATIVE COUNTING ERROR		0.5%				1.01E-02 µCi/mL
Sample Point							
AN-102 GRAB	PERCENT CARRIER RECOVERY		96.2%				

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	179043	GROSS WEIGHT	(W2)		7.3603
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2656
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)		0.0947
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)		8.38
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	17900.50	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)		2.44
0	TIME OF COUNT	(TOC)	06:10	Sr-89/90 CONC in µCi/L			7.5053E+04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
S95T003870							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
01/16/96							
Analysis Date							DETECTION
01/15/96	Sr-89/90 CONCENTRATION			7.51E+01		µCi/mL	LEVEL
Analysis Time							
09:47 PM	RELATIVE COUNTING ERROR			0.5%			1.02E-02
Sample Point							µCi/mL
AN-102 GRAB	PERCENT CARRIER RECOVERY			94.7%			

Analyst:		RWK	Date:	16-Jan-96
Signature of Chemist:		SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM6

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	181176	GROSS WEIGHT	(W2)		7.2778
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.1814
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)		0.0964
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)		8.72
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	18113.80	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)		2.44
0	TIME OF COUNT	(TOC)	06:30	Sr-89/90 CONC in µCi/L			7.4360E+04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
S95T003871							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
01/16/96							
Analysis Date							DETECTION LEVEL
01/15/96	Sr-89/90 CONCENTRATION			7.44E+01		µCi/mL	
Analysis Time							
09:47 PM	RELATIVE COUNTING ERROR			0.5%			1.00E-02 µCi/mL
Sample Point							
AN-102 GRAB	PERCENT CARRIER RECOVERY			96.4%			

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP7

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	178959	GROSS WEIGHT	(W2)		7.2818
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.1863
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)		0.0955
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)		9.05
@SR90-01	DILUTION FACTOR	(DF)	101				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	17892.10	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96000302	TIME OF SEPARATION	(ST)	21:47	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)		2.44
0	TIME OF COUNT	(TOC)	06:50	Sr-89/90 CONC in µCi/L			7.3897E+04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
S95T003871							
Instrument Code							
WB27811							
Prepared By							
MCB							
Chemist							
SLF							
Analyst							
RWK							
Date Complete							
01/16/96							
Analysis Date							
01/15/96							
Analysis Time							
09:47 PM							
Sample Point							
AN-102 GRAB							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

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

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

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

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	7.39E+01	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	0.5%		1.01E-02 µCi/mL
PERCENT CARRIER RECOVERY	95.5%		

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM8

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	188472	GROSS WEIGHT	(W2)	7.3321
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2371
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0950
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)	9.08
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	18843.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96000302	TIME OF SEPARATION	(ST)	21:55	Rmax		N/A
Batch	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)	2.44
0	TIME OF COUNT	(TOC)	07:00	Sr-89/90 CONC in µCi/L		7.8210E+04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96			
N/A						
Sample #						
S95T003872						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
01/16/96	
Analysis Date	
01/15/96	
Analysis Time	
09:47 PM	
Sample Point	
AN-102 GRAB	

Sr-89/90 CONCENTRATION	7.82E+01	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	0.5%		1.01E-02 µCi/mL
PERCENT CARRIER RECOVERY	95.0%		

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP9

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	192163	GROSS WEIGHT	(W2)	7.3389
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2437
4825	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)	0.0952
Test Code	SAMPLE VOLUME in mL	(SS)	0.025	DELTA TIME (HOURS)	(DT)	9.33
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	19212.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96000302	TIME OF SEPARATION	(ST)	21:55	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	01/15/96	DETECTION LIMIT	(Ld)	2.44
0	TIME OF COUNT	(TOC)	07:15	Sr-89/90 CONC in µCi/L		7.9379E+04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96			
N/A						
Sample #						
S95T003872						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
01/16/96						
Analysis Date						
01/15/96	Sr-89/90 CONCENTRATION		7.94E+01	µCi/mL		
Analysis Time						
09:47 PM	RELATIVE COUNTING ERROR		0.4%			
Sample Point						
AN-102 GRAB	PERCENT CARRIER RECOVERY		95.2%			

DETECTION LEVEL 1.01E-02 µCi/mL

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2 22010NML

LABCORE Data Entry Template for Worklist# 4888

Analyst: RK **Instrument:** AB00 12 **Book#** 9B56

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: Determine sample size using Ludlum. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	LIQUID		
2	BLNK				@SR90-01	LIQUID		
3	BLNK/BKG				@SR90-01	LIQUID		
4	SAMPLE	S95T003963	0		@SR90-01	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5	DUP	S95T003963	0		@SR90-01	LIQUID		

Final page for worklist # 4888

Analyst Signature 1/16/96 Date

Analyst Signature 1/16/96 Date

Data Entry Comments:

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

LABCORE Completed Worklist Report for Worklist# 4888

Analyst: rwk **Instrument:** AB12 **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	@SR90-01 SR90-01	LIQUID	1.24E-03	1.16E-3	93.550	% Recovery
1	STD			0	@SR90-01 SR90-01C	LIQUID	100	9.29E+01	92.900	% Recovery
1	STD			0	@SR90-01 SR90-01E	LIQUID	1.00	1.89E+00	1.890	% Ct. Error
2	BLNK			0	@SR90-01 SR90-01	LIQUID	1	4.14E-7	0.000	uCi/mL
2	BLNK			0	@SR90-01 SR90-01C	LIQUID	100	9.50E+01	95.000	% Recovery
2	BLNK			0	@SR90-01 SR90-01E	LIQUID	1.00	9.60E+01	96.000	% Ct. Error
3	BLNK/BKG			0	@SR90-01 SR90-01	LIQUID	1	1.53E+00	1.530	uCi/mL
4	SAMPLE	S95T003963		0	@SR90-01 SR90-01	LIQUID	N/A	3.07E-05	5.040e-007	uCi/mL
4	SAMPLE	S95T003963		0	@SR90-01 SR90-01C	LIQUID	N/A	9.49E+01	1.000e-004	% Recovery
4	SAMPLE	S95T003963		0	@SR90-01 SR90-01E	LIQUID	N/A	5.21E+00	0.000	% Ct. Error
5	DUP	S95T003963		0	@SR90-01 SR90-01	LIQUID	3.07E-5	3.20E-5	4.150	RPD
5	DUP	S95T003963		0	@SR90-01 SR90-01C	LIQUID	100	9.46E+01	94.600	% Recovery
5	DUP	S95T003963		0	@SR90-01 SR90-01E	LIQUID	1.00	5.10E+00	5.100	% Ct. Error

Final page for worklist# 4888

Analyst Signature Date

Analyst Signature Date

Reviewer Signature 1/18/96 Date

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

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

							STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
STD	TOTAL COUNTS	(TC)	10913	GROSS WEIGHT	(W2)		7.3198
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2269
4888	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)		0.0929
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		7.85
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	1087.50	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96000339	TIME OF SEPARATION	(ST)	01:29	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	01/16/96	DETECTION LIMIT	(Ld)		2.44
0	TIME OF COUNT	(TOC)	09:20	Sr-89/90 CONC. in µCi/L			1.1567E+00
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A	STANDARD BOOK #		9B56				
Sample #	STANDARD VALUE in µCi/mL		1.2366E-03				
WL4888							
Instrument Code							
WB27811							
Prepared By							
MCB							
Chemist							
SLF							
Analyst							
RWK							
Date Complete							
01/16/96							
Analysis Date							
01/16/96							
Analysis Time							
01:29 AM							
Sample Point							
AN-102 GRAB							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

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

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

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

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.16E-03	µCi/mL
RELATIVE COUNTING ERROR	1.9%	
PERCENT CARRIER RECOVERY	92.9%	

DETECTION LEVEL

2.59E-06 µCi/L

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

STANDARD WB1 REV 1.2 22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							BLNK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
BLNK	TOTAL COUNTS	(TC)	58	GROSS WEIGHT	(W2)		7.2670
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.1720
4888	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)		0.0950
Test Code	SAMPLE VOLUME in mL	(SS)	5.000	DELTA TIME (HOURS)	(DT)		8.32
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	2.00	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96000339	TIME OF SEPARATION	(ST)	01:29	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	01/16/96	DETECTION LIMIT	(Ld)		2.44
0	TIME OF COUNT	(TOC)	09:48	Sr-89/90 CONC in µCi/L			4.1409E-04
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
WL4888							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
01/16/96							
Analysis Date					µCi/mL		DETECTION LEVEL
01/16/96	Sr-89/90 CONCENTRATION			4.14E-07	~~µCi/m~~		
Analysis Time							
01:29 AM	RELATIVE COUNTING ERROR			96.0%			5.05E-07 µCi/mL
Sample Point							
AN-102 GRAB	PERCENT CARRIER RECOVERY			95.0%			

Analyst:		RWK	Date:	16-Jan-96
Signature of Chemist:		SLF	Date:	1/18/96

BLANK.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	1525	GROSS WEIGHT	(W2)		7.3191
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2242
4888	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)		0.0949
Test Code	SAMPLE VOLUME in mL	(SS)	5.000	DELTA TIME (HOURS)	(DT)		8.60
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	148.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96000339	TIME OF SEPARATION	(ST)	01:29	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	01/16/96	DETECTION LIMIT	(Ld)		2.44
0	TIME OF COUNT	(TOC)	10:05	Sr-89/90 CONC in µCi/L			3.0733E-02
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
S95T003963							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
RWK	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
01/16/96							
Analysis Date							DETECTION LEVEL
01/16/96	Sr-89/90 CONCENTRATION			3.07E-05		µCi/mL	
Analysis Time							
01:29 AM	RELATIVE COUNTING ERROR			5.2%			5.04E-07 µCi/mL
Sample Point							
AN-102 GRAB	PERCENT CARRIER RECOVERY			94.9%			

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	1588	GROSS WEIGHT	(W2)		7.3111
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2165
4888	BACKGROUND in cpm	(BKG)	3.8	NET WEIGHT	(W3)		0.0946
Test Code	SAMPLE VOLUME in mL	(SS)	5.000	DELTA TIME (HOURS)	(DT)		9.02
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	155.00	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.17	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96000339	TIME OF SEPARATION	(ST)	01:29	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	01/16/96	DETECTION LIMIT	(Ld)		2.44
0	TIME OF COUNT	(TOC)	10:30	Sr-89/90 CONC in µCi/L			3.2004E-02
Sample Prep	DATE OF COUNT	(DOC)	01/16/96				
N/A							
Sample #							
S95T003963							
Instrument Code							
WB27811							
Prepared By							
MCB							
Chemist							
SLF							
Analyst							
RWK							
Date Complete							
01/16/96							
Analysis Date							
01/16/96							
Analysis Time							
01:29 AM							
Sample Point							
AN-102 GRAB							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

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

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

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

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	3.20E-05	µCi/mL
RELATIVE COUNTING ERROR	5.1%	
PERCENT CARRIER RECOVERY	94.6%	

DETECTION LEVEL 5.04E-07 µCi/mL

Analyst:	RWK	Date:	16-Jan-96
Signature of Chemist:	SLF	Date:	1/18/96

SAMPLE.WB1 REV 1.2 22010NML

LABCORE Completed Worklist Report for Worklist# 4767

Analyst: akl **Instrument:** AM01 **Book#** 104B43

Method: LA-953-103 Rev/Mod A-4

Worklist Comment: Determine sample size by Ludlum. --LLF

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@AM24101	AM24101	LIQUID	3.07E-02	2.53E-2	82.410	% Recovery
1	STD		0	@AM24101	AM24101E	LIQUID	1.00	1.18E+00	1.180	% Ct. Error
1	STD		0	@AM24101	AM24101T	LIQUID	100	1.01E+02	101.000	% Recovery
2	BLNK		0	@AM24101	AM24101	LIQUID	1	<1.79E-3		uCi/mL
2	BLNK		0	@AM24101	AM24101E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
2	BLNK		0	@AM24101	AM24101T	LIQUID	100	1.03E+02	103.000	% Recovery
3	SAMPLE	S95T003871	0	@AM24101	AM24101	LIQUID	N/A	1.23E-01	8.300e-003	uCi/mL
3	SAMPLE	S95T003871	0	@AM24101	AM24101E	LIQUID	N/A	8.78E-01	0.000	% Ct. Error
3	SAMPLE	S95T003871	0	@AM24101	AM24101T	LIQUID	N/A	1.01E+02	1.000e-007	% Recovery
4	DUP	S95T003871	0	@AM24101	AM24101	LIQUID	1.23E-1	1.08E-1	12.990	RPD
4	DUP	S95T003871	0	@AM24101	AM24101E	LIQUID	1.00	8.13E-01	0.810	% Ct. Error
4	DUP	S95T003871	0	@AM24101	AM24101T	LIQUID	100	1.16E+02	116.000	% Recovery
5	SAMPLE	S95T003872	0	@AM24101	AM24101	LIQUID	N/A	1.29E-01	9.330e-003	uCi/mL
5	SAMPLE	S95T003872	0	@AM24101	AM24101E	LIQUID	N/A	8.41E-01	0.000	% Ct. Error
5	SAMPLE	S95T003872	0	@AM24101	AM24101T	LIQUID	N/A	1.06E+02	1.000e-007	% Recovery
6	DUP	S95T003872	0	@AM24101	AM24101	LIQUID	1.29E-1	1.35E-1	4.550	RPD
6	DUP	S95T003872	0	@AM24101	AM24101E	LIQUID	1.00	8.30E-01	0.830	% Ct. Error
6	DUP	S95T003872	0	@AM24101	AM24101T	LIQUID	100	9.98E+01	99.800	% Recovery

Final page for worklist# 4767

Analyst Signature Date

Analyst Signature Date

[signature] 23 Jan 96
Reviewer Signature Date

Cm 243/244 and Cm 242 activity below the detection limit!
[signature] 23 Jan 96

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

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LABCORE Data Entry Template for Worklist# 4767

Analyst: AKL **Instrument:** AM01 _____ **Book#** 104B43

Method: LA-953-103 Rev/Mod A-4

Worklist Comment: Determine sample size by Ludlum. --LLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	LIQUID		
2	BLNK				@AM24101	LIQUID		
3	SAMPLE	S95T003871	0		@AM24101	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: AM24101 , AM24101E, AM24101T						
4	DUP	S95T003871	0		@AM24101	LIQUID		
5	SAMPLE	S95T003872	0		@AM24101	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: AM24101 , AM24101E, AM24101T						
6	DUP	S95T003872	0		@AM24101	LIQUID		

Final page for worklist # 4767

[signature] 1/10/96
Analyst Signature **Date**

SE Hogan 1/12/96
Analyst Signature **Date**

MB Brown 1/12/96

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID

						STD
Type	Date Counted		JAN-11-96	Am 241 AEA Frac.	(C241)	0.393
STD	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.534
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
4767	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		21445
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		99.16
LIQUID	Detector Number		1	Am 243 cpm		134.93
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		0
96000202	Standard Book No		104B43	AEA Count Time	(min)	480
Rerun	Standard Value in µCi/mL		0.03067	Am 241 µCi/L =		2.5281E+01
0				Cm 243/244 µCi/L =	<	3.2164E+00
Sample Prep						
N/A						
Sample Number						
WL#4767						
Instrument Code						
AL10539						
Prepared By						
SEH						
Chemist						
LLF						
Analyst						
AKL						
Date Complete						
01/12/96						
Analysis Date						
01/10/96						
Analysis Time						
12:00 PM						
Sample Point						
AN-102 GRAB						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	2.53E-02	
Relative Counting Error =	1.2%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL	< 3.22E-03	
Relative Counting Error =	100.0%	
Am 243 Tracer Recovery =	100.5%	

DETECTION LEVELS in µCi/mL	
Am 241	3.22E-03
Cm 243/244	3.22E-03

Analyst:	AKL	Date:	01/12/96
Signature of Chemist:	LLF	Date:	23 Jan 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		JAN-11-96	Am 241 AEA Frac.	(C241)	BLNK 0
BLNK	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.959
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
4767	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		12239
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		0
LIQUID	Detector Number		1	Am 243 cpm		148.43
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		0
96000202				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	1.7910E+00
0				Cm 243/244 µCi/L =	<	1.7910E+00
Sample Prep						
N/A						
Sample Number						
WL#4767						
Instrument Code						
AL10539						
Prepared By						
SEH						
Chemist						
LLF						
Analyst						
AKL						
Date Complete						
01/12/96						
Analysis Date						
01/10/96						
Analysis Time						
12:00 PM						
Sample Point						
AN-102 GRAB						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL	=	< 1.79E-03	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 1.79E-03
Cm 243/244 µCi/mL		< 1.79E-03	
Relative Counting Error	=	100.0%	Cm 243/244 1.79E-03
Am 243 Tracer Recovery	=	102.6%	

Analyst:	AKL	Date:	01/12/96
Signature of Chemist: [signature]	LLF	Date:	23 Jan 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		JAN-11-96	Am 241 AEA Frac.	(C241)	SAMPLE 0.739
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.207
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0.04
4767	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		55235
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		474.81
LIQUID	Detector Number		3	Am 243 cpm		132.84
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		25.4
96000202				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =		1.2263E+02
0				Cm 243/244 µCi/L =	<	8.2973E+00
Sample Prep						
N/A						

Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
S95T003871	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Instrument Code	
AL10541	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV
SEH	
Chemist	
LLF	
Analyst	
AKL	
Date Complete	
01/12/96	
Analysis Date	
01/10/96	
Analysis Time	
12:00 PM	
Sample Point	
AN-102 GRAB	

Am 241 µCi/mL =	1.23E-01	
Relative Counting Error =	0.9%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL	< 8.30E-03	
Relative Counting Error =	1.9%	
Am 243 Tracer Recovery =	100.7%	

DETECTION LEVELS in µCi/mL	
Am 241	8.30E-03
Cm 243/244	8.30E-03

Analyst:	AKL	Date:	01/12/96
Signature of Chemist: [signature]	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

							DUP
Type	Date Counted		JAN-11-96	Am 241 AEA Frac.	(C241)		0.69
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.22
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)		0.037
4767	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			59923
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)		4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm			501.6
LIQUID	Detector Number		3	Am 243 cpm			159.78
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm			26.84
96000202				AEA Count Time	(min)		480
Aliquot				Am 241 µCi/L =			1.0774E+02
0				Cm 243/244 µCi/L =		<	7.8070E+00
Sample Prep							
N/A							

Sample Number: S95T003871

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Instrument Code: AL10541

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Prepared By: SEH

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist: LLF

Am 241 µCi/mL =	1.08E-01	
Relative Counting Error =	0.8%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL	< 7.81E-03	
Relative Counting Error =	1.9%	
Am 243 Tracer Recovery =	116.2%	

DETECTION LEVELS In µCi/mL
Am 241
7.81E-03
Cm 243/244
7.81E-03

Analyst: AKL

Date Complete: 01/12/96

Analysis Date: 01/10/96

Analysis Time: 12:00 PM

Sample Point: AN-102 GRAB

Analyst:	AKL	Date:	01/12/96
Signature of Chemist:	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

							SAMPLE
Type	Date Counted		JAN-11-96	Am 241 AEA Frac.	(C241)		0.692
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.184
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)		0.038
4767	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			65485
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)		4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm			540.55
LIQUID	Detector Number		3	Am 243 cpm			143.33
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm			29.39
96000202				AEA Count Time	(min)		480
Aliquot				Am 241 µCi/L =			1.2919E+02
0				Cm 243/244 µCi/L =		<	9.3345E+00
Sample Prep							
N/A							

Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
S95T003872	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Instrument Code	
AL10541	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV
SEH	
Chemist	
LLF	
Analyst	
AKL	
Date Complete	
01/12/96	
Analysis Date	
01/10/96	
Analysis Time	
12:00 PM	
Sample Point	
AN-102 GRAB	

Am 241 µCi/mL =	1.29E-01	
Relative Counting Error =	0.8%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL	< 9.33E-03	
Relative Counting Error =	1.8%	
Am 243 Tracer Recovery =	106.2%	

DETECTION LEVELS in µCi/mL
Am 241
9.33E-03
Cm 243/244
9.33E-03

Analyst:	AKL	Date:	01/12/96
Signature of Chemist:	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		JAN-11-96	Am 241 AEA Frac.	(C241)	DUP 0.702
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.178
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0.038
4767	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		63590
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		574.45
LIQUID	Detector Number		1	Am 243 cpm		145.7
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		31.37
96000202				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =		1.3547E+02
0				Cm 243/244 µCi/L =	<	9.6730E+00
Sample Prep						
N/A						
Sample Number						
S95T003872						
Instrument Code						
AL10539						
Prepared By						
SEH						
Chemist						
LLF						
Analyst						
AKL						
Date Complete						
01/12/96						
Analysis Date						
01/10/96						
Analysis Time						
12:00 PM						
Sample Point						
AN-102 GRAB						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	1.35E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	0.8%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 9.67E-03
Cm 243/244 µCi/mL		< 9.67E-03	
Relative Counting Error	=	1.8%	Cm 243/244 9.67E-03
Am 243 Tracer Recovery	=	99.8%	

Analyst:	AKL	Date:	01/12/96
Signature of Chemist:	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2 953103ML

1-11-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
WL4767-STD
File ID: 19a1988.CNF

Counted on: 1/11/96 @11: 8
Detector: AEA19
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	4135.2	4135.2	298.638	298.638	10.000	4.366	5.000	3.142
2	6174.6	6174.6	253.203	253.203	10.000	3.252	5.000	2.325

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.393	5.487	5.499	-.012	0.02	99.16	0.9	17657.6	0.795E-02
	Am241		5.479	5.499	-.020				13524.9	0.609E-02
2	Am243	0.534	5.270	5.286	-.016	0.02	134.93	0.8	17473.7	0.787E-02
Totals:		0.927	<--valid peaks only-->				234.10			

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0047)*Channel
Energy range (MeV): 4.096 TO 6.502
Efficiency = 0.0078 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	121225.0	100.000
Smoothed	121226.4	100.001
Composite fit	112382.1	92.705
Residuals	8842.9	7.295

Analyzed by: _____
VR

Spectrum 19a1988.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 38908.6


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...2..
.....................2
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1.
....1.
........................ 1
.........................................  1
....1.....
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Raw Data Dump for AEA Spectrum: 19a1988.CNF

1	0.	0.	0.	1.	1.	0.	0.	2.	0.	0.
11	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
21	0.	5.	0.	1.	0.	1.	0.	3.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	2.	2.
41	1.	1.	0.	3.	0.	2.	4.	1.	2.	2.
51	0.	1.	1.	1.	0.	1.	1.	0.	1.	0.
61	1.	3.	0.	0.	6.	0.	1.	1.	1.	0.
71	1.	1.	2.	1.	1.	1.	1.	4.	4.	1.
81	0.	1.	1.	1.	2.	1.	1.	2.	0.	0.
91	1.	3.	2.	3.	0.	1.	2.	1.	3.	1.
101	2.	0.	4.	3.	2.	1.	4.	0.	1.	4.
111	1.	1.	1.	1.	2.	0.	4.	3.	0.	1.
121	3.	2.	3.	5.	6.	2.	1.	2.	4.	3.
131	3.	6.	4.	6.	6.	1.	3.	2.	5.	2.
141	4.	4.	3.	4.	4.	6.	5.	4.	3.	8.
151	5.	5.	4.	2.	9.	5.	8.	7.	4.	8.
161	4.	4.	4.	6.	8.	3.	8.	2.	8.	7.
171	6.	7.	8.	8.	10.	10.	6.	11.	10.	5.
181	7.	8.	10.	10.	9.	13.	7.	16.	11.	11.
191	11.	23.	15.	15.	11.	17.	22.	19.	18.	20.
201	18.	25.	26.	22.	31.	19.	32.	31.	31.	33.
211	31.	38.	35.	48.	49.	48.	47.	60.	72.	79.
221	80.	74.	88.	97.	125.	132.	136.	150.	184.	212.
231	246.	270.	270.	322.	371.	350.	414.	528.	582.	698.
241	858.	1126.	1259.	1540.	1784.	1975.	2151.	2640.	3168.	4089.
251	5366.	6880.	7751.	7620.	6079.	3563.	1700.	817.	547.	441.
261	428.	400.	393.	401.	369.	319.	274.	225.	196.	148.
271	127.	116.	110.	116.	137.	136.	194.	182.	194.	276.
281	239.	325.	339.	407.	500.	596.	730.	835.	1008.	1199.
291	1287.	1415.	1636.	1971.	2614.	3379.	4271.	4965.	5173.	4529.
301	3237.	1950.	1206.	894.	802.	708.	605.	465.	355.	256.
311	183.	106.	68.	19.	3.	0.	0.	0.	0.	0.
321	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
331	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
341	2.	0.	0.	0.	0.	0.	1.	2.	0.	4.
351	0.	2.	1.	0.	1.	3.	2.	2.	3.	1.
361	2.	1.	1.	0.	1.	1.	0.	0.	0.	1.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

AKJ 1-11-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01

DATA REDUCTION REPORT

SAMPLE
WL4767-BLK
File ID: 20a2090.CNF

WHC-SD-WM-DP-165, REV. 1

Counted on: 1/11/96 @11: 9
Detector: AEA20
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	12.6	12.6	298.333	298.333	10.000	4.317	5.000	1.794
2	5658.6	5658.6	253.310	253.310	10.000	4.221	5.000	2.332

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.474			0.38	14.5		
2	Am243	0.959	5.270	5.267	0.0030	0.02	148.43	0.7	11024.1	0.497E-02
Totals:		0.959	<--valid peaks only-->				148.43			

DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.457
Efficiency = 0.0136 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	74302.0	100.000
Smoothed	74301.9	100.000
Composite fit	71442.0	96.151
Residuals	2860.0	3.849

Analyzed by: _____
VR

Spectrum 20a2090.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 38518.3


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.2
...... 2
.........................2.
.......................................................................2
....................2.
....

1
1
1
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Raw Data Dump for AEA Spectrum: 20a2090.CNF

1	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.
11	0.	1.	0.	0.	1.	0.	1.	0.	0.	0.
21	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
31	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
51	0.	0.	2.	0.	0.	1.	0.	0.	1.	1.
61	1.	0.	0.	1.	1.	0.	0.	0.	1.	0.
71	1.	2.	0.	1.	0.	1.	0.	1.	2.	1.
81	0.	2.	0.	1.	1.	1.	1.	0.	3.	1.
91	0.	1.	0.	0.	2.	3.	0.	2.	2.	1.
101	1.	1.	1.	1.	1.	0.	0.	1.	1.	2.
111	1.	1.	1.	2.	2.	0.	1.	2.	1.	1.
121	0.	0.	1.	3.	3.	0.	2.	2.	2.	4.
131	1.	0.	0.	0.	3.	3.	0.	1.	1.	2.
141	5.	3.	4.	4.	3.	3.	5.	2.	2.	3.
151	2.	5.	1.	4.	2.	1.	1.	0.	2.	4.
161	3.	1.	3.	2.	2.	4.	3.	7.	7.	2.
171	2.	3.	3.	3.	4.	2.	6.	2.	2.	5.
181	5.	2.	1.	5.	4.	3.	5.	7.	2.	2.
191	7.	9.	8.	6.	7.	11.	9.	12.	10.	8.
201	11.	9.	15.	13.	12.	13.	25.	17.	18.	15.
211	19.	18.	28.	32.	22.	35.	31.	32.	46.	33.
221	48.	43.	61.	63.	79.	90.	108.	114.	136.	168.
231	188.	241.	268.	285.	314.	387.	522.	539.	720.	900.
241	1044.	1237.	1555.	1897.	2274.	2673.	2995.	3384.	3860.	4463.
251	5340.	5958.	6544.	6684.	6039.	4336.	2315.	1080.	673.	514.
261	484.	388.	421.	377.	342.	321.	260.	185.	151.	100.
271	86.	37.	14.	3.	0.	1.	0.	0.	0.	1.
281	0.	0.	0.	1.	1.	3.	3.	1.	5.	5.
291	5.	3.	4.	8.	9.	13.	12.	14.	16.	15.
301	6.	3.	5.	2.	3.	2.	1.	4.	1.	2.
311	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
341	0.	0.	0.	0.	1.	1.	1.	1.	3.	2.
351	1.	0.	1.	4.	4.	7.	2.	0.	4.	1.
361	4.	3.	1.	1.	0.	1.	0.	0.	1.	1.
371	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

1-11-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3871-SAM
File ID: 21a2194.CNF

Counted on: 1/11/96 @11:10
Detector: AEA21
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	61.2	61.2	432.704	432.704	10.000	3.815	5.000	1.313
2	819.9	819.9	366.196	366.196	12.000	4.301	6.000	1.716
3	15342.4	15342.4	298.145	298.145	14.000	6.245	7.000	3.049
4	4518.0	4518.0	252.525	252.500	12.000	4.870	6.000	2.280
5?	14.1	14.1	194.329	193.312	42.000	34.601	21.000	1.854

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		6.123			2.02	6.3		
2	Cm243	0.040	5.779	5.811	-.032	0.02	25.40	1.8	1922.3	0.866E-03
	Cm244		5.795	5.811	-.016				1403.3	0.632E-03
3	Pu238	0.739	5.487	5.491	-.004	0.03	474.81	0.4	36434.1	0.164E-01
	Am241		5.479	5.491	-.012				27907.0	0.126E-01
4	Am243	0.207	5.270	5.276	-.006	0.02	132.84	0.8	7413.4	0.334E-02
5		????		4.998			2.30	9.6		
Totals:		0.985	<--valid peaks only-->				633.05			

DETECTOR CALIBRATION

Energy(MEV) = 4.090 + (0.0047)*Channel
Energy range (MeV): 4.090 TO 6.496
Efficiency = 0.0181 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	308522.0	100.000
Smoothed	308527.8	100.002
Composite fit	305976.6	99.175
Residuals	2545.4	0.825

Analyzed by: _____
VR

Spectrum 21a2194.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 95744.7


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Raw Data Dump for AEA Spectrum: 21a2194.CNF

1	0.	0.	1.	2.	5.	0.	3.	2.	2.	2.
11	1.	0.	2.	0.	3.	2.	2.	1.	2.	3.
21	0.	3.	0.	1.	3.	0.	3.	1.	1.	3.
31	1.	2.	2.	1.	0.	1.	2.	2.	2.	1.
41	6.	1.	4.	1.	5.	3.	3.	2.	1.	1.
51	4.	4.	2.	1.	2.	3.	1.	1.	1.	3.
61	0.	4.	1.	7.	2.	2.	3.	4.	4.	2.
71	4.	1.	2.	2.	2.	4.	6.	6.	6.	4.
81	2.	5.	3.	6.	2.	2.	6.	3.	0.	4.
91	5.	5.	3.	3.	2.	4.	6.	1.	12.	3.
101	4.	4.	8.	3.	4.	2.	4.	6.	3.	1.
111	1.	5.	7.	4.	2.	6.	5.	5.	5.	6.
121	3.	3.	4.	9.	4.	7.	6.	5.	5.	8.
131	4.	2.	6.	5.	4.	6.	5.	9.	2.	5.
141	7.	9.	12.	9.	9.	5.	5.	13.	12.	3.
151	5.	11.	6.	7.	12.	9.	9.	15.	9.	6.
161	5.	10.	8.	9.	13.	12.	8.	9.	14.	8.
171	10.	11.	12.	8.	12.	14.	8.	12.	8.	9.
181	17.	15.	14.	15.	13.	10.	15.	13.	11.	19.
191	20.	8.	18.	18.	18.	14.	15.	14.	11.	16.
201	22.	22.	28.	15.	20.	24.	30.	20.	32.	35.
211	15.	34.	34.	38.	39.	37.	42.	52.	56.	66.
221	57.	72.	80.	113.	117.	124.	132.	185.	223.	256.
231	248.	316.	368.	388.	438.	548.	613.	753.	862.	1065.
241	1382.	1577.	1747.	2056.	2374.	2670.	3048.	3511.	3802.	4246.
251	4721.	4957.	5230.	4817.	4099.	2832.	1541.	842.	548.	464.
261	428.	432.	432.	400.	414.	357.	365.	330.	388.	354.
271	381.	442.	446.	551.	661.	796.	856.	1012.	1212.	1402.
281	1594.	1912.	2257.	2796.	3333.	3870.	4643.	5581.	6405.	7621.
291	8749.	9648.	10868.	12140.	13529.	15101.	16523.	17167.	17142.	15463.
301	12347.	8381.	5371.	3721.	2889.	2362.	2032.	1604.	1276.	887.
311	654.	447.	247.	123.	45.	16.	6.	2.	0.	8.
321	2.	6.	2.	2.	2.	9.	6.	0.	8.	8.
331	9.	10.	10.	7.	9.	14.	19.	15.	21.	22.
341	27.	16.	31.	30.	42.	57.	69.	77.	99.	117.
351	133.	199.	193.	235.	283.	362.	430.	498.	540.	590.
361	647.	644.	768.	781.	849.	899.	914.	853.	700.	418.
371	180.	59.	12.	4.	3.	0.	3.	6.	2.	5.
381	3.	3.	1.	2.	5.	4.	3.	3.	1.	1.
391	0.	1.	3.	6.	1.	0.	2.	1.	2.	0.
401	1.	4.	1.	3.	1.	4.	3.	5.	6.	3.
411	2.	9.	1.	9.	7.	6.	11.	16.	23.	25.
421	27.	33.	27.	40.	39.	44.	41.	43.	43.	55.
431	60.	62.	73.	66.	51.	48.	16.	6.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

1-11-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T871-DUP
File ID: 22a2194.CNF

Counted on: 1/11/96 @11: 7
Detector: AEA22
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	69.9	69.9	435.224	435.224	10.000	3.447	5.000	1.276
2	920.5	920.5	368.048	368.047	12.000	3.651	6.000	1.522
3	17107.8	17107.8	299.278	299.278	14.000	5.697	7.000	2.971
4	5343.2	5343.2	253.273	253.260	12.000	5.060	6.000	2.335

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		6.113			2.16	6.1		
2	Cm243	0.037	5.779	5.804	-.025	0.02	26.84	1.7	2053.7	0.925E-03
	Cm244		5.795	5.804	-.009				1499.2	0.675E-03
3	Pu238	0.690	5.487	5.487	0.000	0.03	501.60	0.4	38920.2	0.175E-01
	Am241		5.479	5.487	-.008				29811.2	0.134E-01
4	Am243	0.220	5.270	5.276	-.006	0.02	159.78	0.7	9016.5	0.406E-02
Totals:		0.947	<--valid peaks only-->				688.22			

DETECTOR CALIBRATION

Energy(MEV) = 4.111 + (0.0046)*Channel
Energy range (MeV): 4.111 TO 6.466
Efficiency = 0.0179 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	348813.0	100.000
Smoothed	348813.2	100.000
Composite fit	331441.9	95.020
Residuals	17371.1	4.980

Analyzed by: _____
VR

Spectrum 22a2194.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 113351.1


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Raw Data Dump for AEA Spectrum: 22a2194.CNF

1	0.	0.	1.	1.	0.	0.	2.	1.	3.	1.
11	2.	1.	2.	0.	0.	1.	2.	0.	1.	1.
21	1.	1.	1.	3.	2.	3.	0.	2.	2.	1.
31	3.	0.	2.	0.	2.	1.	1.	1.	1.	1.
41	1.	2.	1.	2.	1.	2.	0.	0.	3.	2.
51	2.	0.	2.	1.	1.	1.	1.	2.	1.	4.
61	3.	2.	0.	3.	2.	2.	3.	4.	0.	1.
71	1.	1.	3.	4.	1.	0.	6.	2.	1.	1.
81	2.	3.	6.	0.	1.	4.	3.	4.	2.	2.
91	3.	3.	0.	3.	3.	5.	4.	6.	4.	9.
101	8.	4.	6.	4.	3.	7.	5.	6.	2.	9.
111	8.	8.	4.	11.	13.	11.	11.	10.	10.	9.
121	13.	12.	14.	14.	13.	12.	11.	12.	11.	15.
131	14.	20.	15.	17.	19.	12.	19.	26.	32.	21.
141	22.	32.	24.	33.	19.	32.	36.	31.	24.	29.
151	45.	35.	36.	54.	27.	35.	40.	40.	56.	48.
161	51.	49.	54.	49.	53.	60.	67.	58.	51.	64.
171	73.	69.	61.	71.	79.	74.	70.	85.	91.	92.
181	91.	95.	96.	93.	97.	99.	93.	99.	90.	118.
191	129.	129.	140.	112.	123.	142.	132.	141.	145.	159.
201	144.	182.	152.	172.	178.	194.	165.	194.	199.	203.
211	205.	209.	201.	218.	232.	239.	264.	243.	268.	265.
221	293.	236.	322.	318.	335.	320.	383.	389.	397.	405.
231	471.	496.	579.	596.	648.	731.	768.	898.	922.	1167.
241	1230.	1502.	1869.	2127.	2501.	2728.	3029.	3554.	3882.	4423.
251	5190.	5505.	6168.	6215.	5608.	4202.	2466.	1381.	991.	858.
261	740.	772.	719.	732.	621.	746.	677.	667.	630.	649.
271	583.	691.	667.	699.	804.	842.	954.	994.	1157.	1282.
281	1463.	1681.	1906.	2186.	2614.	3182.	3719.	4389.	5378.	6220.
291	7438.	8653.	9632.	10840.	12492.	14575.	16364.	17980.	19478.	19925.
301	17737.	13333.	8428.	5569.	4000.	3324.	2833.	2379.	1931.	1405.
311	1073.	717.	535.	294.	133.	52.	18.	18.	20.	20.
321	15.	20.	15.	22.	10.	17.	18.	22.	22.	14.
331	24.	20.	16.	30.	30.	25.	13.	27.	26.	34.
341	26.	40.	38.	46.	31.	49.	57.	67.	65.	80.
351	115.	135.	153.	192.	213.	284.	315.	367.	460.	488.
361	574.	627.	674.	685.	802.	876.	921.	1053.	1052.	939.
371	603.	335.	120.	25.	9.	6.	2.	2.	4.	2.
381	3.	3.	3.	4.	2.	6.	5.	4.	8.	3.
391	1.	4.	5.	2.	5.	1.	2.	1.	2.	3.
401	2.	3.	1.	3.	0.	3.	2.	5.	7.	4.
411	9.	6.	6.	5.	6.	3.	5.	8.	11.	16.
421	18.	21.	25.	33.	24.	39.	46.	39.	41.	57.
431	57.	44.	75.	68.	66.	86.	77.	49.	24.	11.
441	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

1-11-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3872-SAM
File ID: 23a2333.CNF

Counted on: 1/11/96 @11:11
Detector: AEA23
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	104.0	104.0	434.638	434.638	8.000	2.258	4.000	1.326
2	1415.1	1415.1	367.521	367.521	8.000	2.551	4.000	1.739
3	25345.4	25345.4	298.715	298.715	10.000	3.824	5.000	3.521
4	7143.8	7143.8	252.806	252.806	10.000	3.120	5.000	2.745
5?	18.8	18.8	146.522	146.522	180.000	1.000	90.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		6.114			2.26	6.0		
2	Cm243	0.038	5.779	5.805	-.026	0.01	29.39	1.7	362.4	0.163E-03
	Cm244		5.795	5.805	-.010				264.5	0.119E-03
3	Pu238	0.692	5.487	5.489	-.002	0.02	540.55	0.4	6757.5	0.304E-02
	Am241		5.479	5.489	-.010				5176.0	0.233E-02
4	Am243	0.184	5.270	5.278	-.008	0.01	143.33	0.7	1303.1	0.587E-03
5		????		4.789			1.49	7.3		
Totals:		0.913	<--valid peaks only-->				713.26			

DETECTOR CALIBRATION

Energy(MEV) = 4.115 + (0.0046)*Channel
Energy range (MeV): 4.115 TO 6.470
Efficiency = 0.1111 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	374914.0	100.000
Smoothed	374914.3	100.000
Composite fit	344233.9	91.817
Residuals	30680.1	8.183

Analyzed by: VR

Spectrum 23a2333.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 150583.8


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Raw Data Dump for AEA Spectrum: 23a2333.CNF

1	0.	0.	4.	1.	0.	0.	4.	3.	1.	2.
11	4.	0.	2.	2.	1.	2.	3.	1.	2.	4.
21	1.	1.	2.	2.	0.	4.	3.	2.	0.	2.
31	1.	1.	4.	3.	1.	3.	3.	1.	2.	7.
41	2.	1.	1.	3.	5.	0.	1.	3.	2.	2.
51	2.	5.	3.	1.	2.	2.	4.	3.	0.	2.
61	3.	6.	3.	2.	8.	3.	4.	3.	5.	5.
71	4.	6.	5.	4.	3.	5.	3.	4.	1.	5.
81	7.	2.	4.	4.	3.	4.	6.	6.	5.	10.
91	3.	4.	3.	8.	4.	9.	5.	6.	3.	4.
101	8.	0.	8.	8.	2.	6.	5.	9.	9.	10.
111	10.	7.	4.	5.	5.	9.	9.	7.	6.	10.
121	8.	6.	6.	5.	13.	8.	12.	10.	13.	12.
131	11.	11.	10.	13.	12.	16.	11.	11.	9.	8.
141	13.	14.	18.	18.	12.	24.	13.	20.	15.	9.
151	18.	13.	16.	21.	18.	17.	22.	29.	11.	13.
161	20.	28.	20.	22.	22.	23.	22.	26.	28.	29.
171	32.	25.	26.	36.	33.	23.	33.	32.	43.	31.
181	43.	44.	35.	63.	46.	41.	51.	34.	40.	57.
191	52.	50.	48.	47.	53.	56.	66.	63.	61.	69.
201	64.	87.	61.	76.	71.	66.	72.	86.	79.	98.
211	93.	94.	91.	89.	103.	101.	107.	132.	117.	112.
221	103.	139.	127.	159.	146.	187.	187.	193.	223.	243.
231	262.	310.	308.	312.	305.	330.	378.	470.	526.	677.
241	830.	1088.	1341.	1503.	1694.	1754.	2020.	2603.	3603.	5080.
251	6927.	8581.	9310.	8304.	5672.	2902.	1399.	877.	680.	638.
261	597.	607.	610.	663.	620.	549.	503.	447.	421.	382.
271	377.	343.	403.	463.	569.	611.	731.	832.	852.	887.
281	957.	1023.	1089.	1421.	1757.	2337.	3040.	3939.	5005.	5734.
291	5870.	6451.	7502.	9709.	13706.	18796.	25609.	31193.	33024.	28213.
301	18962.	11279.	7137.	5394.	4680.	4096.	3601.	2851.	2207.	1773.
311	1182.	768.	414.	151.	46.	17.	14.	14.	8.	10.
321	8.	7.	11.	10.	13.	14.	7.	12.	16.	6.
331	13.	15.	12.	13.	10.	8.	10.	18.	17.	16.
341	6.	22.	22.	30.	19.	26.	29.	32.	30.	59.
351	48.	65.	81.	102.	190.	254.	326.	472.	507.	555.
361	516.	481.	530.	752.	1058.	1453.	1777.	1823.	1604.	952.
371	358.	93.	29.	7.	3.	5.	3.	0.	1.	3.
381	5.	4.	5.	2.	5.	1.	1.	1.	3.	1.
391	3.	2.	0.	2.	2.	0.	4.	2.	4.	4.
401	0.	2.	4.	3.	3.	3.	4.	6.	4.	3.
411	5.	4.	3.	3.	1.	5.	6.	5.	7.	10.
421	11.	15.	31.	36.	59.	35.	40.	31.	39.	33.
431	57.	71.	83.	131.	143.	120.	62.	28.	6.	1.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

1-11-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3872-DUP
File ID: 24a2439.CNF

Counted on: 1/11/96 @11:12
Detector: AEA24
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	110.5	110.5	435.292	435.292	10.000	2.347	5.000	1.428
2	1606.6	1606.6	368.754	368.754	8.000	2.356	4.000	1.756
3	27637.3	27637.3	300.397	300.397	12.000	3.767	6.000	3.788
4	7840.2	7840.2	254.735	254.735	10.000	2.814	5.000	2.845

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		6.102			2.37	5.8		
2	Cm243	0.038	5.779	5.796	-.017	0.01	31.37	1.6	397.9	0.179E-03
	Cm244		5.795	5.796	-.001				290.5	0.131E-03
3	Pu238	0.702	5.487	5.481	0.006	0.02	574.45	0.4	7387.5	0.333E-02
	Am241		5.479	5.481	-.002				5658.5	0.255E-02
4	Am243	0.178	5.270	5.271	-.001	0.01	145.70	0.7	1362.7	0.614E-03
Totals:		0.918	<--valid peaks only-->				751.53			

DETECTOR CALIBRATION

Energy(MEV) = 4.099 + (0.0046)*Channel
Energy range (MeV): 4.099 TO 6.455
Efficiency = 0.1080 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	392852.0	100.000
Smoothed	392852.2	100.000
Composite fit	361910.2	92.124
Residuals	30941.8	7.876

Analyzed by: _____
VR

Spectrum 24a2439.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 172864.9


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.2
.2



1
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Raw Data Dump for AEA Spectrum: 24a2439.CNF

1	0.	0.	2.	0.	1.	2.	1.	1.	1.	3.
11	4.	1.	2.	5.	2.	4.	1.	3.	2.	0.
21	3.	2.	4.	3.	2.	2.	3.	1.	1.	1.
31	1.	3.	2.	1.	0.	1.	2.	3.	5.	3.
41	2.	2.	2.	5.	1.	1.	2.	5.	2.	4.
51	4.	6.	6.	8.	4.	1.	8.	5.	4.	2.
61	3.	1.	2.	9.	5.	4.	2.	1.	2.	4.
71	1.	2.	5.	4.	7.	1.	3.	3.	2.	0.
81	7.	5.	0.	3.	2.	1.	6.	4.	3.	3.
91	4.	3.	1.	3.	6.	6.	5.	3.	2.	6.
101	2.	6.	3.	7.	5.	5.	5.	5.	4.	7.
111	1.	4.	7.	4.	9.	5.	5.	8.	7.	5.
121	5.	4.	7.	5.	5.	9.	5.	7.	5.	9.
131	5.	4.	8.	10.	4.	9.	5.	5.	8.	11.
141	12.	11.	4.	6.	6.	10.	11.	9.	4.	4.
151	6.	7.	10.	6.	13.	13.	9.	9.	11.	10.
161	15.	12.	8.	9.	15.	16.	10.	12.	11.	10.
171	21.	13.	10.	18.	13.	15.	18.	11.	23.	15.
181	13.	17.	15.	23.	22.	13.	21.	20.	17.	20.
191	20.	25.	21.	22.	22.	24.	19.	23.	25.	26.
201	33.	26.	38.	38.	32.	33.	32.	34.	40.	46.
211	41.	47.	46.	47.	38.	39.	42.	43.	52.	53.
221	56.	47.	62.	73.	65.	70.	83.	88.	121.	124.
231	121.	165.	175.	213.	241.	232.	253.	264.	267.	375.
241	425.	542.	779.	1065.	1384.	1446.	1536.	1573.	1841.	2554.
251	3688.	5316.	7498.	9734.	10609.	8933.	5655.	2611.	1296.	842.
261	734.	620.	587.	589.	640.	554.	576.	473.	455.	364.
271	372.	280.	297.	282.	308.	384.	480.	591.	701.	755.
281	803.	765.	870.	905.	1077.	1381.	1807.	2368.	3343.	4314.
291	5294.	5810.	6119.	6447.	7718.	10833.	15470.	22498.	30657.	36295.
301	35482.	27292.	17165.	10233.	7338.	5912.	5276.	4558.	3971.	3106.
311	2373.	1709.	1214.	640.	287.	72.	25.	8.	2.	5.
321	4.	2.	4.	10.	6.	3.	7.	11.	8.	7.
331	8.	2.	9.	5.	2.	11.	3.	10.	8.	8.
341	10.	15.	17.	12.	14.	24.	18.	19.	27.	32.
351	45.	54.	54.	77.	97.	168.	233.	300.	456.	502.
361	553.	470.	535.	579.	738.	1067.	1481.	1951.	2116.	1900.
371	1241.	455.	103.	24.	9.	3.	3.	3.	6.	0.
381	3.	8.	5.	2.	3.	2.	4.	4.	0.	2.
391	2.	3.	5.	2.	3.	4.	4.	2.	4.	0.
401	1.	0.	1.	3.	2.	1.	3.	2.	4.	6.
411	1.	2.	3.	2.	2.	3.	4.	10.	7.	7.
421	21.	14.	31.	24.	32.	48.	38.	37.	38.	38.
431	48.	66.	75.	118.	139.	157.	103.	55.	20.	5.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 4882

Analyst: akl **Instrument:** AM01 **Book#** 104843

Method: LA-953-103 **Rev/Mod** A-4 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Determine Sample Size Using Ludlum / jls

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@	AM24101 AM24101	LIQUID	3.07E-02	2.56E-2	83.390	% Recovery
1	STD		0	@	AM24101 AM24101E	LIQUID	1.00	1.23E+00	1.230	% Ct. Error
1	STD		0	@	AM24101 AM24101T	LIQUID	100	9.03E+01	90.300	% Recovery
2	BLNK		0	@	AM24101 AM24101	LIQUID	1	<4.23E-4		uCi/mL
2	BLNK		0	@	AM24101 AM24101E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
2	BLNK		0	@	AM24101 AM24101T	LIQUID	100	9.22E+01	92.200	% Recovery
3	SAMPLE	S95T003870	0	@	AM24101 AM24101	LIQUID	N/A	1.00E-01	6.180e-003	uCi/mL
3	SAMPLE	S95T003870	0	@	AM24101 AM24101E	LIQUID	N/A	6.98E-01	0.000	% Ct. Error
3	SAMPLE	S95T003870	0	@	AM24101 AM24101T	LIQUID	N/A	1.35E+02	1.000e-007	% Recovery
4	DUP	S95T003870	0	@	AM24101 AM24101	LIQUID	1.00E-1	1.18E-1	16.510	RPD
4	DUP	S95T003870	0	@	AM24101 AM24101E	LIQUID	1.00	7.26E-01	0.730	% Ct. Error
4	DUP	S95T003870	0	@	AM24101 AM24101T	LIQUID	100	1.11E+02	111.000	% Recovery
5	SAMPLE	S95T003963	0	@	AM24101 AM24101	LIQUID	N/A <	4.64E-04	4.640e-004	uCi/mL
5	SAMPLE	S95T003963	0	@	AM24101 AM24101E	LIQUID	N/A	1.00E+02	0.000	% Ct. Error
5	SAMPLE	S95T003963	0	@	AM24101 AM24101T	LIQUID	N/A	8.40E+01	1.000e-007	% Recovery
6	DUP	S95T003963	0	@	AM24101 AM24101	LIQUID	<4.64E-4	<4.59E-4		RPD
6	DUP	S95T003963	0	@	AM24101 AM24101E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
6	DUP	S95T003963	0	@	AM24101 AM24101T	LIQUID	100	8.24E+01	82.400	% Recovery

Final page for worklist# 4882

Analyst Signature Date

Analyst Signature Date

23 Jan 96

Reviewer Signature Date

Sample S95T003870 ~~will be~~ was rerun on worklist # 5767 due to poor tracer recovery on this run. 3/8/96

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

13
52

LABCORE Data Entry Template for Worklist# 4882

Analyst: AKL **Instrument:** AM01 _____ **Book#** 104843

Method: LA-953-103 Rev/Mod A-4

Worklist Comment: Determine Sample Size Using Ludlum / jls

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	LIQUID		
2	BLNK				@AM24101	LIQUID		
3	SAMPLE	S95T003870	0		@AM24101	LIQUID	95000222	AN-102 GRAB
		Analytes Requested:			AM24101 , AM24101E, AM24101T			
4	DUP	S95T003870	0		@AM24101	LIQUID		
5	SAMPLE	S95T003963	0		@AM24101	LIQUID	95000222	AN-102 GRAB
		Analytes Requested:			AM24101 , AM24101E, AM24101T			
6	DUP	S95T003963	0		@AM24101	LIQUID		

Final page for worklist # 4882

G Lewis 1/17/96
Analyst Signature Date

[illegible] 1/18/96
Analyst Signature Date

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID

Type	Date Counted		JAN-17-96	Am 241 AEA Frac.	(C241)	STD 0.373
STD	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.501
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
4882	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		20544
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		92.14
LIQUID	Detector Number		1	Am 243 cpm		123.66
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		0
96000342	Standard Book No		104B43	AEA Count Time	(min)	480
Rerun	Standard Value in µCi/mL		0.03067	Am 241 µCi/L =		2.5575E+01
0				Cm 243/244 µCi/L =	<	3.7945E+00

Sample Prep: N/A

Sample Number: WL4882

Instrument Code: AL10539

Prepared By: MCB

Chemist: LLF

Analyst: AKL

Date Complete: 01/18/96

Analysis Date: 01/17/96

Analysis Time: 02:30 PM

Sample Point: AN-102 GRAB

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	2.56E-02
Relative Counting Error	=	1.2%
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL		< 3.79E-03
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	90.3%

DETECTION LEVELS in µCi/mL	
Am 241	3.79E-03
Cm 243/244	3.79E-03

Analyst:	AKL	Date:	01/18/96
Signature of Chemist:	LLF	Date:	23 Jan 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		JAN-17-96	Am 241 AEA Frac.	(C241)	BLNK 0
BLNK	Sample Volume in mL	(SS)	0.050	Am 243 AEA Frac.	(C243)	0.871
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
4882	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		12084
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	3
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		0
LIQUID	Detector Number		2	Am 243 cpm		121.5
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		0
96000342				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	4.2333E-01
0				Cm 243/244 µCi/L =	<	4.2333E-01
Sample Prep						
N/A						

Sample Number: WL4882

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Instrument Code: AL10540

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Prepared By: MCB

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist: LLF

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL =	< 4.23E-04	
Relative Counting Error =	100.0%	

Analyst: AKL

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 µCi/mL	< 4.23E-04	
Relative Counting Error =	100.0%	
Am 243 Tracer Recovery =	92.2%	

DETECTION LEVELS in µCi/mL	
Am 241	4.23E-04
Cm 243/244	4.23E-04

Date Complete: 01/18/96

Analysis Date: 01/17/96

Analysis Time: 02:30 PM

Sample Point: AN-102 GRAB

Analyst:	AKL	Date:	01/18/96
Signature of Chemist: [signature]	LLF	Date:	23 Jan 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

							SAMPLE
Type	Date Counted		JAN-17-96	Am 241 AEA Frac.	(C241)		0
SAMPLE	Sample Volume in mL	(SS)	0.050	Am 243 AEA Frac.	(C243)		0.872
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
4882	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			11026
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)		4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm			0
LIQUID	Detector Number		1	Am 243 cpm			119.33
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm			0
96000342				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =		<	4.6449E-01
0				Cm 243/244 µCi/L =		<	4.6449E-01
Sample Prep							
N/A							

Sample Number: S95T003963

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Instrument Code: AL10539

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Prepared By: MCB

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist: LLF

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL	=	< 4.64E-04
Relative Counting Error	=	100.0%

Analyst: AKL

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 µCi/mL		< 4.64E-04
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	84.0%

DETECTION LEVELS in µCi/mL	
Am 241	4.64E-04
Cm 243/244	4.64E-04

Date Complete: 01/18/96

Analysis Date: 01/17/96

Analysis Time: 02:30 PM

Sample Point: AN-102 GRAB

Analyst:	AKL	Date:	01/18/96
Signature of Chemist:	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

						DUP
Type	Date Counted		JAN-17-96	Am 241 AEA Frac.	(C241)	0
DUP	Sample Volume in mL	(SS)	0.050	Am 243 AEA Frac.	(C243)	0.898
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
4882	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		10487
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	3
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		0
LIQUID	Detector Number		2	Am 243 cpm		117.7
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		0
96000342				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	4.5943E-01
0				Cm 243/244 µCi/L =	<	4.5943E-01
Sample Prep						
N/A						

Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
S95T003963	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Instrument Code	
AL10540	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV
MCB	
Chemist	NOTE: Am-241 Result is a LESS THAN Value.
LLF	Am 241 µCi/mL = < 4.59E-04
Analyst	Relative Counting Error = 100.0%
AKL	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.
01/18/96	Cm 243/244 µCi/mL < 4.59E-04
Analysis Date	Relative Counting Error = 100.0%
01/17/96	Am 243 Tracer Recovery = 82.4%
Analysis Time	
02:30 PM	
Sample Point	
AN-102 GRAB	

DETECTION LEVELS in µCi/mL	
Am 241	4.59E-04
Cm 243/244	4.59E-04

Analyst:	AKL	Date:	01/18/96
Signature of Chemist: [signature]	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2 953103ML

D. H. Milicia
1-18-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
W/L488STD
File ID: 25a2546.CNF

Counted on: 1/17/96 @17:22
Detector: AEA25
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	10.2	10.2	369.090	369.090	10.000	2.429	5.000	1.843
2	4301.8	4301.8	301.461	301.461	12.000	3.582	6.000	2.979
3	6534.1	6534.1	255.825	255.825	10.000	2.629	5.000	2.318

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.789			0.20	20.0		
2	Pu238	0.373	5.487	5.478	0.009	0.02	92.14	0.9	6843.3	0.308E-02
	Am241		5.479	5.478	0.001				5241.7	0.236E-02
3	Am243	0.501	5.270	5.268	0.002	0.01	123.66	0.8	6679.9	0.301E-02
Totals:		0.874	<--valid peaks only-->				215.80			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.0187 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	118476.0	100.000
Smoothed	118477.5	100.001
Composite fit	103681.3	87.513
Residuals	14794.7	12.487

Analyzed by: _____
ALJ

Spectrum 25a2546.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 29905.5


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Raw Data Dump for AEA Spectrum: 25a2546.CNF

1	0.	0.	0.	3.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	2.	1.	1.	0.	0.	0.	1.
21	2.	1.	0.	2.	1.	0.	0.	1.	2.	2.
31	0.	2.	1.	0.	0.	0.	0.	0.	1.	1.
41	1.	1.	0.	2.	2.	0.	1.	0.	0.	0.
51	0.	0.	1.	1.	1.	0.	2.	1.	0.	2.
61	2.	2.	1.	1.	1.	2.	3.	0.	0.	3.
71	1.	0.	0.	0.	2.	4.	1.	1.	0.	1.
81	3.	4.	1.	2.	2.	2.	0.	0.	0.	0.
91	2.	0.	0.	1.	1.	1.	1.	2.	2.	2.
101	1.	1.	1.	3.	5.	1.	0.	3.	4.	2.
111	1.	3.	2.	5.	5.	4.	3.	2.	5.	2.
121	5.	2.	5.	2.	5.	2.	5.	4.	4.	2.
131	1.	7.	7.	4.	5.	5.	8.	4.	8.	6.
141	3.	5.	8.	3.	9.	7.	9.	3.	5.	2.
151	10.	8.	13.	10.	7.	5.	15.	8.	9.	14.
161	14.	10.	10.	14.	14.	8.	20.	6.	16.	14.
171	16.	24.	19.	16.	24.	15.	21.	14.	25.	14.
181	30.	19.	18.	29.	19.	26.	18.	29.	25.	39.
191	30.	30.	45.	45.	37.	42.	50.	39.	43.	55.
201	32.	54.	56.	56.	52.	75.	67.	55.	54.	66.
211	87.	71.	89.	82.	89.	88.	87.	100.	102.	105.
221	113.	101.	120.	131.	151.	132.	137.	152.	161.	203.
231	193.	224.	243.	289.	313.	336.	360.	353.	344.	446.
241	440.	571.	649.	765.	1043.	1256.	1485.	1549.	1493.	1708.
251	2039.	2823.	3936.	5932.	7814.	8958.	7750.	4761.	2168.	954.
261	693.	518.	436.	411.	420.	439.	411.	441.	379.	332.
271	263.	214.	177.	128.	106.	130.	164.	153.	184.	214.
281	223.	214.	255.	259.	275.	297.	365.	418.	509.	695.
291	891.	963.	1106.	1107.	1091.	1270.	1643.	2316.	3176.	4500.
301	5653.	5796.	4331.	2580.	1447.	1045.	899.	743.	700.	585.
311	422.	350.	249.	176.	108.	52.	11.	4.	0.	0.
321	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
331	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
341	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
351	1.	2.	1.	0.	2.	1.	1.	1.	4.	1.
361	3.	3.	5.	2.	5.	4.	7.	13.	14.	13.
371	8.	5.	2.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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1-18-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
W/L4882-BLK
File ID: 26a2651.CNF

Counted on: 1/17/96 @17:23
Detector: AEA26
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	14.5	14.5	301.570	301.570	8.000	2.287	4.000	2.504
2	7270.4	7270.4	255.586	255.586	8.000	2.322	4.000	2.686

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.496			0.24	18.1		
2	Am243	0.871	5.270	5.284	-.0140	.01	121.50	0.8	7094.1	0.320E-02
Totals:		0.871	<--valid peaks only-->				121.50			

DETECTOR CALIBRATION

Energy(MEV) = 4.108 + (0.0046)*Channel
Energy range (MeV): 4.108 TO 6.464
Efficiency = 0.0173 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	66933.0	100.000
Smoothed	66932.3	99.999
Composite fit	58441.2	87.313
Residuals	8491.8	12.687

Analyzed by: ALJ

Spectrum 26a2651.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 32608.5


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Raw Data Dump for AEA Spectrum: 26a2651.CNF

1	0.	0.	0.	0.	0.	0.	4.	0.	0.	0.
11	0.	1.	1.	0.	0.	0.	1.	0.	0.	1.
21	2.	1.	0.	3.	0.	0.	2.	0.	0.	0.
31	0.	0.	1.	0.	1.	2.	0.	0.	1.	1.
41	0.	1.	0.	0.	1.	1.	0.	0.	1.	1.
51	1.	0.	0.	0.	1.	2.	1.	0.	0.	1.
61	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
71	2.	1.	0.	1.	2.	0.	0.	0.	4.	2.
81	2.	1.	1.	2.	0.	0.	3.	1.	1.	0.
91	1.	2.	0.	3.	2.	1.	1.	0.	1.	0.
101	0.	2.	1.	1.	0.	0.	0.	1.	0.	0.
111	2.	1.	0.	1.	0.	3.	0.	0.	2.	2.
121	2.	0.	2.	0.	2.	3.	1.	0.	2.	2.
131	2.	1.	0.	3.	0.	2.	2.	3.	2.	2.
141	2.	1.	2.	1.	6.	3.	3.	2.	3.	2.
151	2.	2.	2.	0.	5.	3.	0.	1.	3.	5.
161	3.	7.	2.	2.	4.	1.	5.	4.	1.	4.
171	7.	1.	1.	5.	4.	2.	2.	6.	6.	8.
181	11.	8.	10.	9.	6.	2.	9.	11.	6.	7.
191	10.	6.	11.	6.	13.	9.	12.	10.	14.	13.
201	17.	11.	14.	11.	11.	12.	14.	21.	12.	12.
211	17.	13.	27.	27.	27.	29.	16.	28.	25.	25.
221	24.	29.	32.	39.	34.	52.	53.	48.	65.	69.
231	87.	107.	134.	166.	182.	189.	177.	167.	179.	222.
241	244.	312.	419.	620.	902.	1249.	1316.	1312.	1165.	1320.
251	1866.	2872.	4575.	7102.	9747.	10284.	8041.	4034.	1585.	785.
261	527.	448.	372.	365.	344.	370.	412.	369.	327.	201.
271	189.	119.	70.	21.	4.	1.	0.	1.	1.	0.
281	0.	0.	1.	2.	0.	2.	0.	0.	1.	4.
291	2.	3.	3.	2.	2.	1.	3.	6.	5.	18.
301	11.	27.	10.	8.	3.	3.	3.	2.	3.	2.
311	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	1.	1.	0.	1.	1.
351	1.	0.	0.	3.	1.	1.	1.	1.	3.	2.
361	3.	4.	4.	3.	0.	3.	1.	3.	4.	11.
371	8.	2.	2.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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1-18-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T003963-SAM
File ID: 29a2928.CNF

Counted on: 1/17/96 @17:24
Detector: AEA29
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	18.3	18.3	305.902	305.902	12.000	4.388	6.000	1.301
2	7255.5	7255.5	260.843	260.843	10.000	2.267	5.000	2.694

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.498			0.68	10.8		
2	Am243	0.872	5.270	5.291	-.021	0.01	119.33	0.8	1044.5	0.471E-03
Totals:		0.872	<--valid peaks only-->				119.33			

DETECTOR CALIBRATION

Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.1154 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	65694.0	100.000
Smoothed	65692.9	99.998
Composite fit	57615.0	87.702
Residuals	8079.0	12.298

Analyzed by: _____
ALJ

Spectrum 29a2928.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 41057.7


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Raw Data Dump for AEA Spectrum: 29a2928.CNF

1	0.	0.	0.	0.	0.	2.	0.	0.	1.	0.
11	0.	0.	0.	0.	1.	0.	0.	0.	2.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
41	1.	0.	0.	1.	1.	0.	0.	1.	1.	1.
51	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	2.	1.	1.	2.	0.	1.	1.	0.	0.
71	0.	1.	1.	0.	0.	1.	0.	1.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
91	1.	0.	0.	0.	0.	0.	2.	1.	1.	0.
101	0.	1.	1.	0.	1.	0.	1.	1.	0.	1.
111	3.	0.	0.	0.	1.	0.	0.	0.	0.	1.
121	2.	1.	0.	1.	2.	1.	0.	1.	3.	1.
131	2.	3.	2.	0.	2.	3.	0.	2.	1.	1.
141	0.	1.	0.	3.	3.	3.	0.	4.	3.	0.
151	5.	3.	2.	5.	4.	1.	0.	1.	5.	6.
161	1.	1.	2.	1.	5.	3.	5.	2.	5.	4.
171	4.	1.	5.	2.	2.	4.	2.	6.	9.	5.
181	7.	7.	7.	7.	4.	5.	3.	8.	8.	3.
191	5.	5.	7.	12.	8.	6.	9.	6.	6.	8.
201	7.	6.	15.	11.	14.	14.	18.	18.	21.	16.
211	21.	19.	14.	15.	15.	15.	22.	24.	19.	19.
221	25.	19.	25.	25.	23.	33.	23.	32.	41.	37.
231	42.	35.	54.	43.	59.	58.	84.	108.	142.	161.
241	149.	182.	143.	150.	175.	200.	305.	378.	549.	801.
251	1158.	1321.	1249.	1139.	1205.	1659.	2343.	3930.	6203.	9022.
261	10378.	8744.	4805.	2058.	940.	652.	493.	392.	408.	404.
271	424.	376.	391.	302.	248.	201.	152.	76.	41.	9.
281	1.	1.	1.	0.	2.	0.	0.	1.	0.	0.
291	1.	1.	1.	1.	2.	0.	2.	4.	2.	4.
301	6.	6.	7.	13.	28.	27.	19.	13.	8.	8.
311	5.	9.	1.	6.	1.	1.	1.	0.	0.	1.
321	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
351	0.	0.	0.	1.	0.	0.	1.	1.	3.	1.
361	0.	0.	0.	4.	3.	3.	3.	4.	1.	1.
371	0.	1.	4.	2.	4.	0.	1.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D.H. Milicia
1-18-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T003963-DUP
File ID: 30a3050.CNF

Counted on: 1/17/96 @17:25
Detector: AEA30
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	11.7	11.7	299.324	299.324	14.000	5.530	7.000	0.652
2	6394.9	6394.9	254.125	254.124	10.000	2.839	5.000	3.016

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.487			0.89	9.5		
2	Am243	0.898	5.270	5.279	-.009	0.01	117.70	0.8	1177.1	0.530E-03
Totals:		0.898	<--valid peaks only-->				117.70			

DETECTOR CALIBRATION

Energy(MEV) = 4.110 + (0.0046)*Channel
Energy range (MeV): 4.110 TO 6.465
Efficiency = 0.1010 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	62898.0	100.000
Smoothed	62899.5	100.002
Composite fit	56927.8	90.508
Residuals	5970.2	9.492

Analyzed by: ALJ

Spectrum 30a3050.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 35927.4


```
2.
1.........2..
1.............................................................   2
1....................2......
1....
1
1
1
1
1
```

Raw Data Dump for AEA Spectrum: 30a3050.CNF

1	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.
21	0.	0.	0.	0.	2.	1.	0.	2.	0.	0.
31	0.	0.	0.	0.	0.	2.	1.	0.	0.	0.
41	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
51	0.	1.	0.	1.	1.	0.	1.	1.	0.	1.
61	1.	0.	1.	0.	1.	0.	0.	0.	0.	1.
71	1.	0.	1.	0.	0.	1.	0.	1.	0.	0.
81	1.	0.	0.	0.	0.	1.	0.	1.	0.	1.
91	0.	1.	1.	0.	2.	2.	2.	1.	1.	0.
101	0.	2.	1.	1.	0.	0.	0.	1.	2.	0.
111	1.	2.	0.	1.	1.	0.	2.	1.	0.	3.
121	1.	0.	2.	0.	2.	0.	2.	2.	0.	3.
131	0.	0.	1.	0.	2.	0.	1.	1.	3.	1.
141	2.	0.	0.	1.	1.	0.	5.	2.	2.	0.
151	1.	1.	2.	0.	0.	0.	2.	1.	1.	1.
161	2.	1.	2.	1.	1.	3.	0.	1.	2.	3.
171	3.	2.	2.	4.	2.	3.	2.	3.	4.	1.
181	5.	7.	2.	0.	7.	5.	3.	6.	3.	1.
191	5.	7.	3.	2.	2.	1.	4.	5.	10.	6.
201	10.	8.	11.	4.	7.	6.	5.	4.	9.	11.
211	5.	17.	12.	13.	9.	21.	13.	18.	19.	17.
221	27.	26.	27.	35.	28.	42.	47.	46.	50.	78.
231	99.	145.	154.	143.	162.	182.	167.	186.	245.	292.
241	337.	540.	764.	960.	1176.	1205.	1263.	1366.	1670.	2331.
251	3558.	5509.	7558.	8749.	7716.	5511.	3385.	1703.	845.	545.
261	385.	368.	397.	362.	348.	381.	327.	258.	222.	167.
271	104.	47.	28.	10.	3.	0.	0.	0.	0.	0.
281	0.	1.	0.	2.	1.	2.	2.	0.	1.	3.
291	3.	3.	6.	3.	7.	6.	11.	9.	17.	14.
301	9.	7.	7.	5.	7.	0.	3.	0.	2.	1.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
341	0.	1.	0.	0.	0.	1.	0.	0.	0.	1.
351	0.	0.	0.	0.	2.	0.	0.	0.	1.	2.
361	1.	1.	1.	5.	1.	1.	4.	3.	2.	4.
371	3.	1.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 5167

Analyst: akl **Instrument:** AM01 **Book#** 104643

Method: LA-953-103 Rev/Mod A-4

Worklist Comment: Use a 0.5 - 10 - 1.0 mL sample size. --LLF

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@AM24101	AM24101	LIQUID	3.07E-02	2.79E-2	90.880	% Recovery
1	STD		0	@AM24101	AM24101E	LIQUID	1.00	1.23E+00	1.230	% Ct. Error
1	STD		0	@AM24101	AM24101T	LIQUID	100	8.73E+01	87.300	% Recovery
2	BLNK		0	@AM24101	AM24101	LIQUID	1	<4.76E-3		uCi/mL
2	BLNK		0	@AM24101	AM24101E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
2	BLNK		0	@AM24101	AM24101T	LIQUID	100	8.34E+01	83.400	% Recovery
3	SAMPLE	S95T003870	0	@AM24101	AM24101	LIQUID	N/A	1.67E-01	1.550e-002	uCi/mL
3	SAMPLE	S95T003870	0	@AM24101	AM24101E	LIQUID	N/A	9.61E-01	0.000	% Ct. Error
3	SAMPLE	S95T003870	0	@AM24101	AM24101T	LIQUID	N/A	8.79E+01	1.000e-007	% Recovery
4	DUP	S95T003870	0	@AM24101	AM24101	LIQUID	1.67E-1	1.63E-1	2.420	RPD
4	DUP	S95T003870	0	@AM24101	AM24101E	LIQUID	1.00	9.53E-01	0.950	% Ct. Error
4	DUP	S95T003870	0	@AM24101	AM24101T	LIQUID	100	8.96E+01	89.600	% Recovery

Final page for worklist# 5167

Analyst Signature Date

Analyst Signature Date

31 Jan 96

Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 5167

Analyst: AKL **Instrument:** AM01 #3 **Book#** 104643

Method: LA-953-103 Rev/Mod A-4

Worklist Comment: Use a ~~0.5~~ 0.05 - 10 - 1.0 mL sample size. --LLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	LIQUID		
2	BLNK				@AM24101	LIQUID		
3	SAMPLE	S95T003870	0		@AM24101	LIQUID	95000222	AN-102 GRAB
		Analytes Requested:			AM24101 , AM24101E, AM24101T			
4	DUP	S95T003870	0		@AM24101	LIQUID		

Final page for worklist # 5167

Analyst Signature Date 1/25/96

Analyst Signature Date 1/30/96

C.J. Opanen 1/30/96

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID

Type	Date Counted		JAN-26-96	Am 241 AEA Frac.	(C241)	STD 0.401
STD	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.494
Work List	Sample D.F.	(DF)	101	Cm 243/244 AEA Frac.	(Cm)	0
5167	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		20145
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		96.34
LIQUID	Detector Number		3	Am 243 cpm		118.88
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		0
96000674	Standard Book No		104B43	AEA Count Time	(min)	480
Rerun	Standard Value in µCi/mL		0.03067	Am 241 µCi/L =		2.7884E+01
0				Cm 243/244 µCi/L =	<	3.9806E+00
Sample Prep						
N/A						
Sample Number						
WL#5167						
Instrument Code						
AL10541						
Prepared By						
SEH						
Chemist						
LLF						
Analyst						
AKL						
Date Complete						
01/29/96						
Analysis Date						
01/26/96						
Analysis Time						
12:15 PM						
Sample Point						
AN-102						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	2.79E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	1.2%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 3.98E-03
Cm 243/244 µCi/mL		< 3.98E-03	
Relative Counting Error	=	100.0%	Cm 243/244 3.98E-03
Am 243 Tracer Recovery	=	87.3%	

Analyst:	AKL	Date:	01/29/96
Signature of Chemist:	LLF	Date:	31 Jan 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

						BLNK
Type	Date Counted		JAN-26-96	Am 241 AEA Frac.	(C241)	0
BLNK	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.861
Work List	Sample D.F.	(DF)	201	Cm 243/244 AEA Frac.	(Cm)	0
5167	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		11095
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		0
LIQUID	Detector Number		3	Am 243 cpm		110.54
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		0
96000674				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	4.7581E+00
0				Cm 243/244 µCi/L =	<	4.7581E+00
Sample Prep						
N/A						

Sample Number: WL5167

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Instrument Code: AL10541

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Prepared By: SEH

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist: LLF

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL	=	< 4.76E-03
Relative Counting Error	=	100.0%

Analyst: AKL

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 µCi/mL		< 4.76E-03
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	83.4%

Date Complete: 01/29/96

Analysis Date: 01/26/96

Analysis Time: 12:15 PM

Sample Point: AN-102

DETECTION LEVELS in µCi/mL	
Am 241	4.76E-03
Cm 243/244	4.76E-03

Analyst:	AKL	Date:	01/29/96
Signature of Chemist: [signature]	LLF	Date:	31 Jan 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		JAN-26-96	Am 241 AEA Frac.	(C241)	SAMPLE 0.61
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.25
Work List	Sample D.F.	(DF)	201	Cm 243/244 AEA Frac.	(Cm)	0.033
5167	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		39959
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		298.26
LIQUID	Detector Number		3	Am 243 cpm		122.13
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		16.27
96000674				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =		1.6680E+02
0				Cm 243/244 µCi/L =	<	1.5547E+01
Sample Prep						
N/A						
Sample Number						
S95T003870						
Instrument Code						
AL10541						
Prepared By						
SEH						
Chemist						
LLF						
Analyst						
AKL						
Date Complete						
01/29/96						
Analysis Date						
01/26/96						
Analysis Time						
12:15 PM						
Sample Point						
AN-102						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	1.67E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error =	1.0%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241 1.55E-02
Cm 243/244 µCi/mL	< 1.55E-02	
Relative Counting Error =	2.4%	Cm 243/244 1.55E-02
Am 243 Tracer Recovery =	87.9%	

Analyst:	AKL	Date:	01/29/96
Signature of Chemist:	LLF	Date:	31 Jan 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

Type	Date Counted		JAN-26-96	Am 241 AEA Frac. (C241)	DUP 0.607
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac. (C243)	0.254
Work List	Sample D.F.	(DF)	201	Cm 243/244 AEA Frac. (Cm)	0.033
5167	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts	40065
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm (Bkg)	4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm	298.57
LIQUID	Detector Number		3	Am 243 cpm	124.85
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm	16.1
96000674				AEA Count Time (min)	480
Rerun				Am 241 µCi/L =	1.6337E+02
0				Cm 243/244 µCi/L = <	1.5022E+01
Sample Prep					
N/A					
Sample Number					
S95T003870					
Instrument Code					
AL10541					
Prepared By					
SEH					
Chemist					
LLF					
Analyst					
AKL					
Date Complete					
01/29/96					
Analysis Date					
01/26/96					
Analysis Time					
12:15 PM					
Sample Point					
AN-102					

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	1.63E-01	
Relative Counting Error =	1.0%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL	< 1.50E-02	
Relative Counting Error =	2.4%	
Am 243 Tracer Recovery =	89.6%	

DETECTION LEVELS in µCi/mL	
Am 241	1.50E-02
Cm 243/244	1.50E-02

Analyst:	AKL	Date:	01/29/96
Signature of Chemist:	LLF	Date:	31 Jan 96

SAMPLE.WB1 REV 1.2 953103ML

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
WL5167-STD
File ID: 13a1399.CNF

Counted on: 1/26/96 @16:11
Detector: AEA13
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	4843.3	4843.3	301.064	301.064	10.000	3.267	5.000	3.141
2	6676.5	6676.5	255.184	255.184	10.000	2.434	5.000	2.390

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.401	5.487	5.481	0.006	0.02	96.34	0.9	17378.1	0.783E-02
	Am241		5.479	5.481	-.002				13310.9	0.600E-02
2	Am243	0.494	5.270	5.270	0.000	0.01	118.88	0.8	15594.6	0.702E-02
Totals:		0.895	<--valid peaks only-->				215.22			

DETECTOR CALIBRATION
Energy(MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.452
Efficiency = 0.0077 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	115423.0	100.000
Smoothed	115423.0	100.000
Composite fit	103324.5	89.518
Residuals	12098.5	10.482

Analyzed by: _____
VR

Spectrum 13a1399.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 32798.0


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2..
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.................................................................    2
...............................2.....
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1..
..............1
.............................................................     1
.............1.......
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Raw Data Dump for AEA Spectrum: 13a1399.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	2.	0.	1.	1.	0.	1.	0.
31	0.	1.	0.	1.	3.	0.	1.	2.	0.	2.
41	0.	0.	0.	1.	0.	0.	2.	1.	0.	1.
51	1.	0.	1.	2.	3.	1.	0.	0.	0.	1.
61	0.	0.	2.	0.	0.	1.	0.	2.	1.	1.
71	2.	1.	0.	1.	2.	2.	4.	1.	2.	2.
81	0.	1.	0.	4.	3.	1.	3.	1.	3.	5.
91	2.	3.	3.	2.	3.	3.	2.	1.	3.	2.
101	3.	1.	3.	0.	5.	3.	2.	3.	3.	2.
111	1.	1.	0.	3.	5.	0.	5.	2.	3.	3.
121	3.	2.	3.	3.	0.	3.	4.	5.	4.	1.
131	5.	5.	3.	3.	6.	4.	2.	3.	5.	7.
141	5.	3.	5.	7.	8.	3.	3.	3.	4.	7.
151	4.	8.	4.	10.	6.	7.	6.	1.	5.	3.
161	6.	7.	5.	5.	9.	5.	4.	8.	9.	4.
171	6.	7.	5.	8.	10.	10.	12.	5.	7.	14.
181	9.	6.	7.	11.	11.	7.	19.	8.	11.	8.
191	14.	12.	8.	7.	14.	10.	19.	18.	17.	16.
201	10.	10.	20.	25.	21.	19.	25.	21.	28.	17.
211	19.	37.	34.	25.	21.	29.	39.	42.	43.	58.
221	48.	50.	51.	44.	55.	75.	75.	80.	112.	108.
231	122.	131.	164.	191.	239.	232.	193.	236.	252.	293.
241	352.	468.	636.	816.	1089.	1344.	1506.	1361.	1436.	1741.
251	2352.	3342.	5083.	7379.	9224.	8688.	5889.	2704.	1117.	665.
261	488.	476.	385.	356.	390.	362.	364.	318.	285.	239.
271	189.	165.	100.	64.	79.	76.	74.	116.	122.	154.
281	169.	155.	164.	191.	195.	214.	285.	397.	512.	692.
291	900.	1068.	1138.	1081.	1175.	1358.	1866.	2714.	4128.	5665.
301	6587.	5968.	3986.	2156.	1332.	1059.	853.	765.	708.	616.
311	453.	320.	247.	173.	82.	34.	8.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
351	0.	0.	1.	1.	1.	0.	3.	0.	1.	0.
361	0.	2.	1.	2.	0.	0.	0.	3.	0.	5.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
WL5167-BLK
File ID: 14a1404.CNF

Counted on: 1/26/96 @16:12
Detector: AEA14
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	12.4	12.4	302.269	302.269	12.000	3.331	6.000	1.267
2	6761.2	6761.2	256.447	256.447	10.000	2.238	5.000	2.676
3?	13.5	13.5	190.493	190.493	106.000	1.000	53.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.487			0.38	14.6		
2	Am243	0.861	5.270	5.276	-.006	0.01	110.54	0.9	9462.6	0.426E-02
3		????		4.972			1.08	8.6		
Totals:		0.861	<--valid peaks only-->				110.54			

DETECTOR CALIBRATION
Energy(MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.451
Efficiency = 0.0118 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	61623.0	100.000
Smoothed	61623.0	100.000
Composite fit	53762.6	87.244
Residuals	7860.4	12.756

Analyzed by: _____
VR

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                    Spectrum 14a1404.CNF
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:   25262.4

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Raw Data Dump for AEA Spectrum: 14a1404.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	1.	1.	0.	0.	0.	1.
31	0.	1.	0.	3.	0.	0.	1.	1.	0.	1.
41	1.	0.	0.	1.	0.	0.	0.	0.	2.	2.
51	2.	0.	0.	0.	0.	2.	1.	0.	2.	1.
61	2.	0.	0.	0.	1.	1.	0.	0.	0.	1.
71	1.	0.	0.	1.	1.	2.	2.	0.	2.	0.
81	1.	1.	2.	1.	1.	0.	1.	1.	0.	0.
91	0.	1.	1.	2.	1.	1.	0.	1.	2.	0.
101	0.	1.	1.	3.	0.	2.	1.	1.	2.	2.
111	0.	0.	1.	1.	1.	2.	1.	1.	3.	1.
121	0.	1.	1.	5.	1.	5.	2.	0.	1.	2.
131	2.	4.	1.	1.	4.	3.	6.	3.	0.	3.
141	2.	3.	0.	3.	3.	3.	1.	3.	3.	4.
151	8.	1.	2.	2.	4.	4.	6.	1.	4.	2.
161	4.	3.	1.	2.	3.	3.	2.	3.	3.	5.
171	6.	6.	7.	9.	3.	6.	5.	13.	11.	7.
181	10.	6.	8.	9.	7.	7.	7.	10.	8.	16.
191	13.	9.	9.	7.	12.	12.	7.	18.	17.	7.
201	15.	15.	21.	12.	29.	21.	19.	25.	19.	15.
211	26.	33.	40.	30.	25.	24.	33.	33.	31.	40.
221	32.	36.	36.	31.	39.	41.	50.	53.	49.	69.
231	86.	92.	110.	119.	147.	166.	173.	177.	165.	186.
241	200.	246.	272.	387.	630.	910.	1167.	1211.	1169.	1052.
251	1196.	1609.	2605.	4370.	6990.	9426.	9626.	6749.	3230.	1231.
261	656.	482.	383.	324.	326.	345.	352.	355.	305.	260.
271	205.	183.	103.	62.	14.	1.	0.	0.	0.	1.
281	0.	0.	0.	0.	0.	1.	1.	0.	1.	0.
291	3.	3.	2.	2.	4.	3.	3.	1.	7.	14.
301	11.	18.	15.	9.	10.	5.	2.	2.	1.	2.
311	1.	0.	1.	0.	1.	0.	0.	1.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
351	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
361	0.	1.	1.	1.	1.	0.	0.	1.	1.	0.
371	2.	3.	3.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3870-SAM
File ID: 15a1585.CNF

Counted on: 1/26/96 @16:12
Detector: AEA15
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	71.4	71.4	438.861	438.861	8.000	1.714	4.000	1.351
2	942.5	942.5	371.356	371.356	10.000	1.953	5.000	1.718
3	16218.2	16218.2	302.160	302.160	10.000	2.954	5.000	3.370
4	7492.5	7492.5	255.890	255.890	10.000	2.235	5.000	2.697
5?	10.2	10.2	183.440	183.440	134.000	1.000	67.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		6.123			1.25	8.0		
2	Cm243	0.033	5.779	5.812	-.033	0.01	16.27	2.2	1154.6	0.520E-03
	Cm244		5.795	5.812	-.017				842.8	0.380E-03
3	Pu238	0.610	5.487	5.494	-.007	0.01	298.26	0.5	21463.8	0.967E-02
	Am241		5.479	5.494	-.015				16440.3	0.741E-02
4	Am243	0.250	5.270	5.281	-.011	0.01	122.13	0.8	6392.1	0.288E-02
5		????		4.948			0.82	9.9		
Totals:		0.893	<--valid peaks only-->				436.66			

DETECTOR CALIBRATION

Energy(MEV) = 4.104 + (0.0046)*Channel
Energy range (MeV): 4.104 TO 6.459
Efficiency = 0.0193 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	234809.0	100.000
Smoothed	234809.0	100.000
Composite fit	210587.4	89.685
Residuals	24221.6	10.315

Analyzed by: VR

Spectrum 15a1585.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 87499.6


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Raw Data Dump for AEA Spectrum: 15a1585.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	2.	3.	0.	0.	1.
31	1.	0.	0.	0.	1.	1.	0.	4.	1.	1.
41	3.	1.	0.	2.	0.	1.	2.	0.	3.	0.
51	2.	1.	3.	0.	2.	1.	0.	3.	3.	3.
61	0.	1.	0.	3.	4.	0.	1.	3.	3.	1.
71	5.	0.	0.	1.	0.	0.	4.	4.	2.	3.
81	3.	2.	0.	1.	2.	1.	2.	0.	4.	0.
91	1.	1.	1.	3.	1.	1.	2.	3.	4.	4.
101	1.	2.	2.	2.	0.	3.	0.	2.	1.	1.
111	1.	0.	2.	1.	1.	3.	2.	3.	4.	2.
121	3.	0.	0.	3.	5.	6.	3.	1.	3.	1.
131	4.	2.	3.	0.	2.	6.	6.	6.	5.	7.
141	2.	3.	5.	0.	11.	4.	6.	3.	5.	7.
151	4.	5.	9.	8.	4.	6.	6.	5.	3.	5.
161	3.	4.	5.	6.	12.	10.	8.	3.	4.	8.
171	6.	11.	5.	8.	5.	8.	7.	8.	5.	6.
181	4.	11.	14.	11.	11.	6.	5.	4.	11.	7.
191	10.	9.	7.	8.	8.	5.	6.	8.	6.	7.
201	6.	14.	18.	19.	16.	20.	20.	19.	13.	17.
211	22.	24.	23.	23.	31.	22.	28.	25.	34.	27.
221	40.	32.	35.	39.	44.	42.	41.	63.	52.	74.
231	62.	93.	121.	164.	192.	164.	160.	182.	180.	205.
241	241.	288.	370.	575.	839.	1166.	1308.	1325.	1169.	1182.
251	1553.	2341.	3856.	6195.	9371.	10794.	8965.	5282.	2155.	980.
261	646.	477.	428.	388.	427.	433.	477.	413.	366.	334.
271	280.	259.	178.	132.	119.	133.	144.	211.	272.	324.
281	340.	389.	369.	374.	404.	467.	569.	685.	919.	1345.
291	1875.	2627.	3156.	3050.	2754.	2987.	3641.	4897.	7877.	12773.
301	18733.	22896.	20478.	13244.	7235.	4532.	3410.	2974.	2642.	2268.
311	1947.	1493.	1152.	906.	630.	278.	114.	30.	2.	1.
321	2.	3.	4.	1.	1.	1.	1.	0.	1.	1.
331	2.	5.	4.	3.	5.	4.	2.	5.	2.	7.
341	7.	8.	6.	1.	9.	7.	7.	11.	10.	10.
351	7.	10.	15.	13.	19.	30.	28.	41.	85.	121.
361	193.	282.	317.	251.	220.	215.	275.	405.	578.	971.
371	1284.	1359.	921.	371.	93.	14.	2.	2.	2.	1.
381	1.	0.	2.	1.	2.	1.	1.	3.	5.	0.
391	0.	2.	0.	2.	0.	0.	1.	1.	1.	2.
401	0.	1.	0.	0.	0.	1.	2.	2.	1.	2.
411	4.	2.	2.	8.	5.	2.	2.	3.	0.	3.
421	1.	2.	4.	2.	6.	8.	14.	24.	15.	29.
431	22.	19.	17.	16.	26.	23.	55.	81.	113.	77.
441	52.	10.	1.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. I

DATA REDUCTION REPORT

SAMPLE
S95T3870-DUP
File ID: 16a1673.CNF

Counted on: 1/26/96 @16:13
Detector: AEA16
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	59.2	59.2	437.010	437.010	8.000	1.917	4.000	1.321
2	800.7	800.7	370.167	370.167	10.000	2.158	5.000	1.437
3	14168.9	14168.9	301.692	301.692	10.000	3.430	5.000	2.864
4	6633.1	6633.1	256.040	256.040	10.000	2.526	5.000	2.181
5?	13.7	13.7	163.849	163.849	154.000	1.000	77.000	0.100
6?	3.3	3.3	153.099	152.527	16.000	1.000	8.000	0.100
7?	2.7	2.7	135.441	134.834	6.000	0.522	3.000	0.545

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		6.106			1.14	8.4		
2	Cm243	0.033	5.779	5.798	-.019	0.01	16.10	2.2	218.7	0.985E-04
	Cm244		5.795	5.798	-.003				159.7	0.719E-04
3	Pu238	0.607	5.487	5.483	0.004	0.02	298.57	0.5	4113.9	0.185E-02
	Am241		5.479	5.483	-.004				3151.1	0.142E-02
4	Am243	0.254	5.270	5.273	-.003	0.01	124.85	0.8	1251.1	0.564E-03
5		????		4.849			1.09	8.6		
6		????		4.797			0.26	36.9		
7		????		4.716			0.03	249.		
Totals:		0.893	<--valid peaks only-->				439.52			

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.451
Efficiency = 0.1008 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	236151.0	100.000
Smoothed	236150.9	100.000
Composite fit	212196.4	89.856

Residuals	23954.6	10.144

Analyzed by: VR

Spectrum 16a1673.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 82954.3


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Raw Data Dump for AEA Spectrum: 16a1673.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	1.	3.	0.	1.	3.
31	3.	1.	1.	3.	0.	2.	1.	2.	1.	4.
41	2.	3.	4.	3.	3.	5.	1.	2.	1.	0.
51	1.	3.	3.	3.	2.	3.	3.	2.	3.	4.
61	3.	4.	2.	3.	1.	2.	1.	3.	1.	0.
71	1.	0.	4.	2.	2.	5.	4.	2.	4.	4.
81	4.	5.	3.	4.	3.	2.	4.	4.	5.	5.
91	2.	3.	1.	3.	5.	7.	4.	10.	4.	4.
101	3.	8.	1.	4.	7.	4.	1.	5.	4.	1.
111	6.	8.	8.	7.	6.	5.	6.	2.	2.	12.
121	4.	8.	5.	9.	5.	11.	7.	8.	7.	7.
131	9.	6.	10.	9.	16.	9.	10.	11.	6.	8.
141	8.	5.	14.	13.	11.	13.	8.	13.	16.	9.
151	12.	11.	15.	16.	12.	10.	9.	4.	11.	5.
161	9.	18.	12.	17.	10.	15.	9.	13.	9.	13.
171	12.	12.	12.	18.	21.	11.	21.	12.	18.	20.
181	14.	21.	23.	18.	20.	20.	22.	21.	18.	26.
191	29.	17.	28.	32.	32.	35.	38.	26.	30.	36.
201	36.	40.	42.	30.	49.	24.	24.	46.	33.	54.
211	41.	38.	47.	52.	83.	58.	54.	80.	80.	76.
221	82.	108.	94.	104.	116.	136.	126.	129.	151.	167.
231	187.	218.	262.	299.	315.	374.	365.	392.	442.	462.
241	531.	558.	719.	847.	1097.	1304.	1574.	1645.	1534.	1562.
251	1896.	2480.	3580.	5300.	7636.	9085.	8486.	5300.	2405.	1101.
261	680.	590.	547.	461.	468.	470.	483.	529.	475.	444.
271	401.	364.	332.	316.	308.	320.	387.	471.	534.	636.
281	747.	784.	806.	874.	969.	1004.	1229.	1369.	1685.	2090.
291	2766.	3372.	3652.	3778.	3496.	3905.	4607.	6518.	9247.	13681.
301	17919.	19486.	15443.	9554.	5396.	3657.	2807.	2585.	2243.	1929.
311	1622.	1156.	874.	670.	401.	147.	50.	16.	3.	4.
321	4.	2.	4.	5.	4.	4.	3.	5.	2.	5.
331	7.	11.	8.	7.	9.	12.	9.	8.	10.	8.
341	11.	17.	19.	13.	18.	20.	21.	24.	32.	39.
351	33.	51.	50.	57.	58.	80.	111.	109.	152.	235.
361	296.	303.	306.	268.	243.	292.	405.	596.	889.	1058.
371	1065.	739.	315.	73.	15.	0.	1.	3.	5.	1.
381	0.	1.	1.	3.	0.	5.	0.	0.	2.	0.
391	4.	1.	1.	0.	0.	2.	3.	3.	2.	0.
401	1.	1.	0.	1.	2.	1.	3.	1.	3.	2.
411	2.	1.	1.	0.	3.	2.	3.	1.	4.	6.
421	4.	5.	5.	11.	9.	13.	19.	23.	26.	18.
431	8.	18.	19.	39.	43.	62.	83.	77.	46.	14.
441	3.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

							SAMPLE
Type	Date Counted		JAN-17-96	Am 241 AEA Frac.	(C241)		0.812
SAMPLE	Sample Volume in mL	(SS)	0.050	Am 243 AEA Frac.	(C243)		0.055
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0.044
4882	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts			278123
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)		4
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm			2601.89
LIQUID	Detector Number		1	Am 243 cpm			175.26
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm			141.41
96000342				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =			1.0042E+02
0				Cm 243/244 µCi/L =		<	6.1838E+00
Sample Prep							
N/A							

Sample Number: S95T003870

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Instrument Code: AL10539

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Prepared By: MCB

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist: LLF

Am 241 µCi/mL	=	1.00E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	0.7%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/mL		< 6.18E-03	6.18E-03
Relative Counting Error	=	1.0%	Cm 243/244
Am 243 Tracer Recovery	=	135.0%	6.18E-03

Analyst: AKL

Date Complete: 01/18/96

Analysis Date: 01/17/96

Analysis Time: 02:30 PM

Sample Point: AN-102 GRAB

Analyst:	AKL	Date:	01/18/96
Signature of Chemist:	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (A-4) LIQUID / SOLID

						DUP
Type	Date Counted		JAN-17-96	Am 241 AEA Frac.	(C241)	0.814
DUP	Sample Volume in mL	(SS)	0.050	Am 243 AEA Frac.	(C243)	0.047
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0.044
4882	Tracer Volume in mL	(SPKV)	0.100	Total AT Counts		268433
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		118B43	Background in cpm	(Bkg)	3
Matrix	Am-243 Tracer Value	(dpm/mL)	7550.4	Am 241 cpm		2792.57
LIQUID	Detector Number		2	Am 243 cpm		160.49
Batch Number	Detector Efficiency	(DetEff)	0.5000	Cm 243/244 cpm		150.42
96000342				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =		1.1781E+02
0				Cm 243/244 µCi/L =	<	7.2363E+00
Sample Prep						
N/A						
Sample Number						
S95T003870						
Instrument Code						
AL10540						
Prepared By						
MCB						
Chemist						
LLF						
Analyst						
AKL						
Date Complete						
01/18/96						
Analysis Date						
01/17/96						
Analysis Time						
02:30 PM						
Sample Point						
AN-102 GRAB						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	1.18E-01
Relative Counting Error	=	0.7%
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL		< 7.24E-03
Relative Counting Error	=	1.0%
Am 243 Tracer Recovery	=	111.4%

DETECTION LEVELS in µCi/mL
Am 241
7.24E-03
Cm 243/244
7.24E-03

Analyst:	AKL	Date:	01/18/96
Signature of Chemist: [signature]	LLF	Date:	23 Jan 96

SAMPLE.WB1 REV 1.2 953103ML

608

D H Milcia
1-18-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T003870-SAM
File ID: 27a2741.CNF

Counted on: 1/17/96 @17:23
Detector: AEA27
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	489.7	489.7	437.676	437.676	8.000	2.160	4.000	1.168
2	6653.9	6653.9	371.040	371.040	10.000	2.228	5.000	1.351
3	117686.5	117686.5	302.525	302.525	10.000	3.584	5.000	2.703
4	6718.1	6718.1	256.921	256.916	10.000	4.694	5.000	2.841
5?	91.9	91.9	151.322	151.322	176.000	1.000	88.000	0.100
6?	15.7	15.7	119.053	119.053	28.000	23.848	14.000	1.633
7?	15.4	15.4	35.448	35.117	108.000	72.505	54.000	55.612
8?	0.0	0.1	32.278	32.278	4.000	0.100	2.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		6.092			11.00	2.7		
2	Cm244	0.044	5.795	5.785	0.010	0.01	141.41	0.8	11497.0	0.518E-02
	Cm243		5.779	5.785	-.006				15749.3	0.709E-02
3	Pu238	0.812	5.487	5.470	0.017	0.02	2601.89	0.2	293800.2	0.132E+00
	Am241		5.479	5.470	0.009				225038.5	0.101E+00
4	Am243	0.055	5.270	5.261	0.009	0.02	175.26	0.7	14392.5	0.648E-02
5		????		4.775			7.29	3.3		
6		????		4.626			1.94	13.2		
7		????		4.240			1.27	12.2		
8		????		4.227			0.00	9632.		
Totals:		0.911	<--valid peaks only-->				2918.56			

DETECTOR CALIBRATION

Energy(MEV) = 4.079 + (0.0046)*Channel
Energy range (MeV): 4.079 TO 6.434
Efficiency = 0.0123 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1538575.0	100.000

Smoothed	1538588.3	100.001
Composite fit	1411280.3	91.726
Residuals	127294.8	8.274

Analyzed by: ALJ

Spectrum 27a2741.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 671606.5


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Raw Data Dump for AEA Spectrum: 27a2741.CNF

1	0.	0.	13.	14.	13.	14.	11.	11.	12.	10.
11	14.	9.	10.	13.	8.	9.	12.	15.	17.	21.
21	15.	20.	8.	16.	13.	21.	15.	20.	24.	21.
31	20.	21.	20.	24.	10.	30.	22.	19.	13.	11.
41	23.	14.	17.	18.	18.	21.	13.	23.	16.	22.
51	23.	23.	27.	11.	24.	23.	21.	20.	20.	23.
61	26.	23.	22.	20.	24.	28.	25.	20.	31.	27.
71	25.	25.	31.	29.	22.	38.	25.	25.	26.	35.
81	28.	32.	30.	38.	39.	33.	43.	29.	32.	32.
91	32.	32.	31.	37.	31.	43.	41.	48.	38.	43.
101	42.	41.	44.	50.	38.	50.	30.	35.	42.	52.
111	46.	46.	43.	43.	53.	46.	52.	49.	56.	46.
121	50.	53.	43.	44.	52.	61.	45.	59.	69.	51.
131	68.	55.	71.	57.	66.	67.	62.	85.	71.	69.
141	67.	66.	87.	77.	84.	82.	84.	82.	93.	74.
151	104.	82.	83.	84.	96.	66.	82.	103.	99.	80.
161	92.	94.	102.	102.	121.	120.	117.	100.	108.	121.
171	127.	143.	123.	123.	142.	135.	121.	140.	135.	132.
181	133.	130.	145.	180.	168.	157.	154.	171.	151.	175.
191	157.	177.	175.	153.	196.	174.	172.	178.	174.	227.
201	212.	224.	227.	254.	242.	239.	283.	257.	247.	276.
211	282.	279.	282.	300.	284.	319.	314.	331.	325.	313.
221	352.	365.	384.	412.	451.	460.	414.	448.	515.	540.
231	543.	526.	590.	588.	700.	708.	756.	854.	830.	907.
241	920.	1007.	1117.	1281.	1474.	1639.	1961.	2186.	2253.	2277.
251	2521.	2801.	3401.	4351.	5923.	7713.	8842.	8054.	5320.	3012.
261	1891.	1722.	1663.	1687.	1666.	1780.	1857.	1954.	2086.	2067.
271	2204.	2299.	2433.	2643.	2761.	2983.	3376.	3801.	4453.	5031.
281	5788.	6525.	6932.	7258.	7734.	8574.	9478.	11159.	13031.	15649.
291	20098.	25424.	30518.	33968.	34447.	35419.	39265.	47579.	62499.	85468.
301	119328.	151823.	158054.	123950.	74233.	41110.	27895.	22217.	19270.	17623.
311	15052.	11747.	8968.	6556.	4918.	2944.	1322.	423.	165.	96.
321	88.	78.	72.	80.	79.	70.	59.	87.	84.	66.
331	92.	82.	87.	72.	91.	94.	105.	97.	102.	125.
341	128.	143.	142.	135.	172.	182.	181.	211.	282.	275.
351	293.	341.	371.	432.	501.	618.	752.	936.	1230.	1596.
361	2172.	2635.	2771.	2585.	2335.	2537.	3035.	3921.	5164.	7180.
371	8862.	8459.	5741.	2343.	611.	113.	36.	46.	31.	20.
381	18.	17.	28.	18.	13.	16.	25.	13.	17.	16.
391	20.	19.	15.	8.	15.	18.	20.	13.	13.	16.
401	8.	15.	14.	6.	16.	10.	17.	13.	18.	21.
411	24.	31.	36.	18.	24.	18.	30.	22.	31.	37.
421	54.	49.	63.	94.	103.	139.	162.	220.	250.	199.
431	172.	153.	211.	202.	294.	421.	593.	675.	571.	322.
441	100.	23.	4.	1.	0.	1.	2.	3.	2.	1.
451	0.	1.	1.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.
471	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
481	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
491	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
511	0.	0.								

D. H. Milicia
1-18-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. I

DATA REDUCTION REPORT

SAMPLE
S95T003870-DUP
File ID: 28a2847.CNF

Counted on: 1/17/96 @17:24
Detector: AEA28
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	574.2	574.2	434.289	434.289	10.000	2.155	5.000	1.405
2?	17.6	17.6	410.429	408.969	10.000	2.537	5.000	1.006
3?	32.6	32.6	396.034	396.034	12.000	0.114	6.000	1.206
4	7800.7	7800.7	367.450	367.450	8.000	2.204	4.000	1.622
5	139140.5	139140.5	298.716	298.716	10.000	3.389	5.000	3.322
6	7762.8	7762.8	252.863	252.862	10.000	3.279	5.000	2.769
7?	28.2	28.2	126.927	126.927	220.000	1.000	110.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		6.106			11.66	2.6		
2		????		5.989			0.49	18.3		
3		????		5.930			0.11	39.5		
4	Cm243	0.044	5.779	5.798	-.019	0.01	150.42	0.7	23415.6	0.105E-01
	Cm244		5.795	5.798	-.003				17093.4	0.770E-02
5	Pu238	0.814	5.487	5.482	0.005	0.02	2792.57	0.2	440746.1	0.199E+00
	Am241		5.479	5.482	-.003				337592.8	0.152E+00
6	Am243	0.047	5.270	5.271	-.001	0.02	160.49	0.7	18421.8	0.830E-02
7		????		4.692			2.20	6.0		
Totals:		0.905	<--valid peaks only-->				3103.48			

DETECTOR CALIBRATION

Energy(MEV) = 4.108 + (0.0046)*Channel
Energy range (MeV): 4.108 TO 6.463
Efficiency = 0.0088 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	1646012.0	100.000
Smoothed	1646015.3	100.000
Composite fit	1496718.1	90.930

Residuals	149293.9	9.070

Analyzed by: ALJ

Spectrum 28a2847.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 806536.8


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Raw Data Dump for AEA Spectrum: 28a2847.CNF

1	0.	0.	3.	3.	7.	6.	10.	9.	5.	6.
11	2.	3.	4.	4.	4.	5.	6.	6.	7.	9.
21	6.	8.	8.	8.	5.	7.	5.	10.	6.	8.
31	6.	7.	4.	9.	9.	5.	8.	8.	9.	9.
41	5.	5.	6.	10.	3.	9.	6.	7.	14.	5.
51	7.	7.	13.	9.	13.	9.	8.	11.	17.	9.
61	12.	8.	14.	6.	12.	9.	7.	21.	2.	15.
71	7.	11.	10.	13.	10.	9.	7.	10.	14.	12.
81	11.	7.	8.	10.	18.	9.	16.	6.	13.	13.
91	12.	12.	12.	16.	12.	15.	19.	12.	20.	14.
101	18.	18.	19.	12.	17.	26.	18.	17.	11.	15.
111	14.	28.	17.	14.	17.	18.	20.	19.	24.	18.
121	16.	22.	22.	19.	28.	32.	29.	35.	22.	21.
131	25.	25.	20.	22.	28.	30.	33.	27.	41.	31.
141	31.	38.	24.	37.	43.	32.	38.	37.	32.	28.
151	41.	40.	34.	46.	44.	47.	47.	44.	48.	47.
161	64.	49.	54.	52.	63.	58.	57.	56.	61.	67.
171	70.	59.	55.	69.	77.	79.	59.	73.	85.	76.
181	78.	56.	83.	83.	86.	92.	101.	95.	108.	100.
191	107.	101.	102.	99.	117.	130.	135.	128.	128.	128.
201	148.	126.	143.	151.	177.	181.	168.	195.	182.	186.
211	186.	203.	182.	237.	233.	265.	239.	224.	258.	261.
221	294.	284.	301.	305.	354.	327.	360.	377.	447.	471.
231	508.	523.	569.	593.	609.	612.	615.	665.	833.	956.
241	1111.	1342.	1647.	1868.	1825.	1857.	2009.	2441.	3219.	4687.
251	6834.	9384.	10709.	9110.	5666.	2905.	1782.	1412.	1367.	1276.
261	1258.	1300.	1396.	1472.	1547.	1512.	1430.	1496.	1556.	1557.
271	1668.	1958.	2144.	2319.	2836.	3502.	4089.	4625.	4972.	4898.
281	5197.	5602.	6488.	7405.	9305.	11709.	15702.	21489.	27417.	30797.
291	30870.	30702.	34198.	44287.	61976.	92031.	134960.	176854.	190319.	153884.
301	95100.	53716.	36340.	28687.	24995.	22560.	19883.	15856.	12183.	9336.
311	6774.	4261.	1912.	630.	206.	71.	84.	73.	71.	63.
321	59.	63.	55.	57.	68.	62.	58.	60.	55.	53.
331	63.	57.	56.	64.	75.	82.	77.	75.	80.	93.
341	90.	98.	113.	144.	152.	151.	148.	219.	240.	261.
351	337.	379.	444.	641.	854.	1215.	1864.	2427.	2869.	2722.
361	2366.	2252.	2761.	3733.	5218.	7729.	10121.	10956.	8269.	4136.
371	1238.	247.	64.	48.	37.	29.	18.	14.	16.	16.
381	22.	16.	21.	25.	17.	21.	24.	23.	10.	12.
391	21.	12.	11.	12.	16.	19.	13.	18.	15.	9.
401	7.	11.	13.	10.	17.	15.	15.	27.	34.	25.
411	22.	29.	24.	14.	22.	21.	22.	37.	34.	56.
421	76.	99.	136.	184.	212.	243.	209.	178.	173.	184.
431	287.	413.	591.	775.	763.	561.	266.	68.	10.	2.
441	0.	2.	0.	1.	0.	2.	0.	0.	2.	0.
451	1.	0.	1.	0.	1.	0.	0.	3.	0.	3.
461	0.	0.	0.	1.	0.	0.	1.	1.	0.	1.
471	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	0.	1.	0.	1.	0.	0.	0.	0.	1.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 4766

Analyst: akl **Instrument:** PU01 **Book#** 104B43

Method: LA-943-127 Rev/Mod B-01 1/24/96

Worklist Comment: Determine sample size by Ludlum. --LLF

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@PU23901 PU23901	LIQUID	1.28E-01	1.27E-1	99.220	% Recovery
1	STD			0	@PU23901 PU23901E	LIQUID	1.00	2.29E+00	2.290	% Ct. Error
1	STD			0	@PU23901 PU23901T	LIQUID	100	7.32E+01	73.200	% Recovery
2	BLNK			0	@PU23901 PU23901	LIQUID	1	<8.53E-4		uCi/mL
2	BLNK			0	@PU23901 PU23901T	LIQUID	100	3.41E+01	34.100	% Recovery
2	BLNK			0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S95T003871		0	@PU23901 PU23901	LIQUID	N/A	5.19E-03	6.250e-004	uCi/mL
3	SAMPLE	S95T003871		0	@PU23901 PU23901T	LIQUID	N/A	7.91E+01	1.000e-007	% Recovery
3	SAMPLE	S95T003871		0	@PU23901 PU23901E	LIQUID	N/A	2.76E+00	0.000	% Ct. Error
4	DUP	S95T003871		0	@PU23901 PU23901	LIQUID	5.19E-3	5.24E-3	0.960	RPD
4	DUP	S95T003871		0	@PU23901 PU23901T	LIQUID	100	6.15E+01	61.500	% Recovery
4	DUP	S95T003871		0	@PU23901 PU23901E	LIQUID	1.00	3.04E+00	3.040	% Ct. Error
5	SAMPLE	S95T003872		0	@PU23901 PU23901	LIQUID	N/A	5.68E-03	5.980e-004	uCi/mL
5	SAMPLE	S95T003872		0	@PU23901 PU23901T	LIQUID	N/A	8.42E+01	1.000e-007	% Recovery
5	SAMPLE	S95T003872		0	@PU23901 PU23901E	LIQUID	N/A	2.57E+00	0.000	% Ct. Error
6	DUP	S95T003872		0	@PU23901 PU23901	LIQUID	5.68E-3	5.71E-3	0.530	RPD
6	DUP	S95T003872		0	@PU23901 PU23901T	LIQUID	100	7.93E+01	79.300	% Recovery
6	DUP	S95T003872		0	@PU23901 PU23901E	LIQUID	1.00	2.65E+00	2.650	% Ct. Error

Final page for worklist# 4766

Analyst Signature Date

Analyst Signature Date

24 Jan 96

Reviewer Signature Date

Quantifiable activity for Pu-238.
1/24/96

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

LABCORE Data Entry Template for Worklist# 4766

Analyst: AKL **Instrument:** PU01 B-1 **Book#** 109643

Method: LA-943-127 Rev/Mod _____

Worklist Comment: Determine sample size by Ludlum. --LLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S95T003871	0		@PU23901	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S95T003871	0		@PU23901	LIQUID		
5	SAMPLE	S95T003872	0		@PU23901	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
6	DUP	S95T003872	0		@PU23901	LIQUID		

Final page for worklist # 4766

C Fleming 1/10/96
Analyst Signature **Date**

SE Hogan 1/12/96
Analyst Signature **Date**

MB Green 1/12/96

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID

						STD
Type	DATE COUNTED		JAN-11-96	PU 236 AEA FRAC	(C236)	0.413
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.551
4766	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		5679
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	4.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm		26.760
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		35.720
96000201	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2089.664	Pu 239/240 µCi/L		1.2684E+02
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		104B43			
N/A	STANDARD VALUE in µCi/mL		0.128			
Sample #						
WL#4766						
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date					
AL10539	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]					
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV					
SEH	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]					
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)					
LLF	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]					
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					
AKL						
Date Complete	v RESULTS v					
01/12/96	Pu 239/240 µCi/mL		1.27E-01			
Analysis Date	Relative Counting Error	=	2.3%			
01/10/96						
Analysis Time						
11:20 PM						
Sample Point						
AN-102 GRAB	Pu 236 Tracer Recovery	=	73.2%			

DETECTION LEVELS in µCi/mL
Pu 239/240
9.43E-03

Analyst:	AKL	Date:	12-Jan-96
Signature of Chemist:	LLF	Date:	24 Jan 96

STANDARD.WB1 REV 1.2 943127ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

						BLNK
Type	DATE COUNTED		JAN-11-96	PU 236 AEA FRAC	(C236)	0.981
BLNK	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.000
4766	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1209
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm (Bkg)		4.000
Matrix	DETECTOR NUMBER		3	PU 236 cpm		12.400
LIQUID	EFFICIENCY FACTOR	EFF	0.5000	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		0.000
96000201	TRACER PREPARATION VALUE (dpm/mL)		2265.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2089.66	Pu 239/240 µCi/L =	<	8.530E-01
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			
Sample Prep						
N/A						

Sample #	Decay Time = Date Counted - Tracer Preparation Date
WL#4766	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
AL10541	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
LLF	
Analyst	
AKL	

v RESULTS v

Date Complete	Pu 239/240 µCi/mL	<	8.53E-04	DETECTION LEVELS in µCi/mL
01/12/96	Relative Counting Error	=	100.0%	
Analysis Date				
01/10/96	NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
Analysis Time	Pu 238 µCimL	<	8.53E-04	8.53E-04
11:20 PM	Relative Counting Error	=	100.0%	Pu 238
Sample Point	Pu 236 Tracer Recovery	=	34.1%	8.53E-04
AN-102 GRAB				

Analyst:	AKL	Date:	12-Jan-96
Signature of Chemist:	LLF	Date:	24 Jan 96

BLANK.WB1 REV 1.2 943127ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type	DATE COUNTED		JAN-11-96	PU 236 AEA FRAC (C236)	SAMPLE 0.577
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.083
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC (C239)	0.315
4766	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	4418
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm (Bkg)	4.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm	29.810
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm	4.270
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm	16.240
96000201	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2089.664	Pu 239/240 µCi/L	5.1901E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S95T003871	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
AL10539	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
LLF	
Analyst	
AKL	
Date Complete	v RESULTS v

01/12/96	Pu 239/240 µCi/mL		5.19E-03	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	2.8%	
01/10/96				
Analysis Time				Pu 239/240
11:20 PM	Pu 238 µCimL		1.37E-03	6.25E-04
Sample Point	Relative Counting Error	=	4.6%	Pu 238
AN-102 GRAB	Pu 236 Tracer Recovery	=	79.1%	6.25E-04

Analyst:	AKL	Date:	12-Jan-96
Signature of Chemist:	LLF	Date:	24 Jan 96

SAMPLE.WB1 REV 1.2 943127ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

							DUP
Type	DATE COUNTED		JAN-11-96	PU 236 AEA FRAC		(C236)	0.582
DUP	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC		(C238)	0.082
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC		(C239)	0.321
4766	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			3431
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm		(Bkg)	4.000
Matrix	DETECTOR NUMBER		3	PU 236 cpm			24.300
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm			3.430
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm			13.390
96000201	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2089.664	Pu 239/240 µCi/L			5.2436E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
N/A							

Sample #	Decay Time = Date Counted - Tracer Preparation Date
S95T003871	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
AL10541	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
LLF	
Analyst	
AKL	

v RESULTS v

Date Complete	Pu 239/240 µCi/mL		5.24E-03	DETECTION LEVELS in µCi/mL
01/12/96	Relative Counting Error	=	3.0%	
Analysis Date				
01/10/96				Pu 239/240
Analysis Time				7.97E-04
11:20 PM	Pu 238 µCimL		1.34E-03	
Sample Point	Relative Counting Error	=	5.2%	Pu 238
AN-102 GRAB	Pu 236 Tracer Recovery	=	61.5%	7.97E-04

Analyst:	AKL	Date:	12-Jan-96
Signature of Chemist:	LLF	Date:	24 Jan 96

SAMPLE.WB1 REV 1.2 943127ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

						SAMPLE
Type	DATE COUNTED		JAN-11-96	PU 236 AEA FRAC	(C236)	0.566
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.087
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.338
4766	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		4784
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	4.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm		32.480
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		5.020
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		19.400
96000201	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2089.664	Pu 239/240 µCi/L		5.6773E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000			
Sample Prep						
N/A						

Sample #	Decay Time = Date Counted - Tracer Preparation Date
S95T003872	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
AL10539	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
LLF	
Analyst	
AKL	

v RESULTS v

Date Complete				
01/12/96	Pu 239/240 µCi/mL		5.68E-03	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	2.6%	
01/10/96				
Analysis Time				Pu 239/240
11:20 PM	Pu 238 µCimL		1.46E-03	5.98E-04
Sample Point	Relative Counting Error	=	4.3%	Pu 238
AN-102 GRAB	Pu 236 Tracer Recovery	=	84.2%	5.98E-04

Analyst:	AKL	Date:	12-Jan-96
Signature of Chemist:	LLF	Date:	21 Jan 96

SAMPLE.WB1 REV 1.2 943127ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

							DUP
Type	DATE COUNTED		JAN-11-96	PU 236 AEA FRAC	(C236)		0.546
DUP	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)		0.089
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)		0.328
4766	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			4670
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)		4.000
Matrix	DETECTOR NUMBER		3	PU 236 cpm			30.430
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm			4.940
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm			18.260
96000201	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2089.664	Pu 239/240 µCi/L			5.7112E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
N/A

Sample #
S95T003872

Instrument Code
AL10541

Prepared By
SEH

Chemist
LLF

Analyst
AKL

Date Complete
01/12/96

Analysis Date
01/10/96

Analysis Time
11:20 PM

Sample Point
AN-102 GRAB

Decay Time = Date Counted - Tracer Preparation Date
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

v RESULTS v

Pu 239/240 µCi/mL		5.71E-03	DETECTION LEVELS In µCi/mL
Relative Counting Error	=	2.6%	
			Pu 239/240
Pu 238 µCimL		1.55E-03	6.59E-04
Relative Counting Error	=	4.3%	Pu 238
Pu 236 Tracer Recovery	=	79.3%	6.59E-04

Analyst:	AKL	Date:	12-Jan-96
Signature of Chemist:	LLF	Date:	24 Jan 96

SAMPLE.WB1 REV 1.2 943127ML

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

DATA REDUCTION REPORT

3-8-96

SAMPLE
WL4766-STD
File ID: 13a1374.CNF

WHC-SD-WM-DP-165, REV. 1

Counted on: 1/11/96 @14:34
Detector: AEA13
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1056.5	1056.5	363.083	363.083	10.000	2.804	5.000	1.355
2?	19.6	19.6	303.757	303.710	10.000	6.062	5.000	3.022
3	1587.1	1587.1	229.799	229.799	10.000	3.185	5.000	2.085

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.413	5.755	5.762	-.0070	.01	26.76	1.7	3413.3	0.154E-02
	Cm243		5.779	5.762	0.017				4582.3	0.206E-02
2		????		5.489			0.60	12.0		
3	Pu239	0.551	5.147	5.149	-.0020	.01	35.72	1.5	4465.5	0.201E-02
	Pu240		5.144	5.149	-.005				4465.5	0.201E-02
Totals:		0.965	<--valid peaks only-->				62.48			

DETECTOR CALIBRATION

Energy(MEV) = 4.092 + (0.0046)*Channel
Energy range (MeV): 4.092 TO 6.447
Efficiency = 0.0080 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	31097.0	100.000
Smoothed	31097.0	100.000
Composite fit	30280.7	97.375
Residuals	816.3	2.625

Analyzed by: SEH

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 625 TO 642.

Spectrum 13a1374.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10025.6


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3.
....3.
.....................3
.......................................................................3
...................3..
.
```

```
2
2
2
```

```
1
..1
........1
...........................1
.........................................1
.1..
```

Raw Data Dump for AEA Spectrum: 13a1374.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
41	0.	1.	0.	1.	0.	0.	0.	1.	0.	0.
51	1.	1.	0.	0.	1.	1.	0.	1.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	2.	0.	0.	0.	0.	2.	0.
81	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
91	0.	0.	1.	1.	0.	0.	0.	0.	0.	2.
101	1.	1.	0.	4.	1.	1.	0.	1.	0.	0.
111	1.	0.	2.	2.	1.	2.	0.	2.	1.	2.
121	1.	0.	0.	0.	0.	0.	1.	3.	1.	3.
131	3.	2.	1.	0.	1.	0.	0.	0.	1.	3.
141	0.	3.	2.	3.	1.	1.	2.	4.	3.	1.
151	4.	2.	1.	1.	1.	1.	2.	0.	2.	2.
161	0.	1.	3.	4.	1.	8.	0.	1.	3.	1.
171	3.	3.	5.	6.	1.	4.	3.	4.	4.	6.
181	5.	3.	9.	5.	5.	15.	10.	8.	6.	5.
191	7.	6.	6.	9.	13.	16.	10.	27.	19.	24.
201	26.	31.	29.	43.	48.	47.	42.	56.	51.	83.
211	92.	107.	107.	131.	171.	208.	248.	292.	367.	408.
221	437.	467.	531.	614.	746.	1047.	1218.	1569.	1852.	1975.
231	1790.	1360.	828.	380.	131.	46.	10.	1.	1.	1.
241	0.	0.	0.	2.	0.	2.	0.	0.	2.	1.
251	0.	0.	0.	2.	0.	2.	1.	1.	1.	1.
261	1.	0.	2.	1.	1.	0.	0.	0.	1.	1.
271	1.	2.	2.	1.	1.	2.	0.	2.	0.	0.
281	3.	0.	1.	2.	1.	2.	4.	7.	1.	3.
291	5.	1.	10.	12.	7.	13.	9.	10.	8.	10.
301	13.	26.	29.	10.	29.	15.	18.	8.	8.	7.
311	2.	8.	4.	7.	2.	4.	4.	6.	3.	5.
321	3.	8.	12.	7.	9.	6.	9.	16.	8.	16.
331	12.	12.	14.	22.	21.	28.	29.	27.	42.	39.
341	35.	39.	53.	63.	80.	92.	105.	114.	192.	269.
351	293.	428.	515.	504.	466.	446.	418.	478.	550.	736.
361	916.	1188.	1313.	1265.	1015.	584.	237.	45.	5.	2.
371	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
WL4766-BLK
File ID: 14a1479.CNF

Counted on: 1/11/96 @14:31
Detector: AEA14
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	384.4	384.4	361.462	361.462	10.000	3.016	5.000	1.008

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.981	5.755	5.758	-.0030	0.01	12.40	2.5	980.5	0.442E-03
Totals:		0.981	<--valid peaks only-->				12.40			

DETECTOR CALIBRATION

Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.451
Efficiency = 0.0129 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	6064.0	100.000
Smoothed	6064.0	100.000
Composite fit	5950.9	98.136
Residuals	113.1	1.864

Analyzed by: _____
SEH

Spectrum 14a1479.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2010.0


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1
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1....
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Raw Data Dump for AEA Spectrum: 14a1479.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
41	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
101	0.	0.	1.	0.	1.	1.	0.	0.	1.	0.
111	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
141	0.	0.	0.	0.	1.	0.	1.	1.	0.	1.
151	1.	1.	0.	0.	1.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
171	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
181	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
191	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
201	0.	0.	0.	0.	0.	2.	0.	0.	1.	0.
211	0.	0.	1.	0.	0.	3.	0.	2.	3.	1.
221	1.	0.	1.	3.	3.	4.	6.	3.	3.	4.
231	2.	0.	1.	0.	1.	0.	1.	0.	2.	1.
241	1.	1.	1.	1.	0.	0.	0.	2.	0.	1.
251	2.	1.	0.	2.	2.	1.	2.	2.	3.	2.
261	0.	4.	2.	0.	0.	0.	2.	0.	1.	1.
271	1.	1.	2.	3.	1.	2.	2.	1.	1.	1.
281	5.	6.	2.	1.	1.	3.	2.	4.	1.	3.
291	1.	6.	2.	2.	2.	2.	6.	4.	7.	4.
301	11.	7.	6.	4.	10.	5.	4.	5.	5.	8.
311	4.	6.	8.	2.	5.	8.	4.	13.	10.	6.
321	12.	12.	10.	17.	4.	13.	8.	10.	9.	20.
331	17.	22.	32.	19.	27.	28.	29.	34.	46.	47.
341	51.	42.	56.	70.	80.	107.	105.	134.	151.	184.
351	192.	241.	263.	223.	209.	205.	222.	280.	328.	351.
361	456.	464.	432.	287.	135.	42.	10.	1.	0.	0.
371	3.	1.	0.	0.	0.	0.	0.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3871-S
File ID: 15a1561.CNF

Counted on: 1/11/96 @14:34
Detector: AEA15
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1256.6	1256.6	362.371	362.371	8.000	2.503	4.000	1.301
2	183.6	183.6	303.615	303.612	10.000	2.769	5.000	1.563
3	748.1	748.1	228.559	228.559	10.000	3.348	5.000	2.495
4?	13.6	13.6	147.529	147.529	18.000	10.003	9.000	8.168

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.577	5.755	5.771	-.016	0.01	29.81	1.6	1609.3	0.725E-03
	Cm243		5.779	5.771	0.008				2160.5	0.973E-03
2	Pu238	0.083	5.487	5.501	-.014	0.01	4.27	4.3	313.5	0.141E-03
	Am241		5.479	5.501	-.022				240.1	0.108E-03
3	Pu239	0.315	5.147	5.156	-.009	0.02	16.24	2.2	859.5	0.387E-03
	Pu240		5.144	5.156	-.012				859.5	0.387E-03
4		????		4.783			0.44	13.5		
Totals:		0.975	<--valid peaks only-->				50.32			

DETECTOR CALIBRATION

Energy(MEV) = 4.104 + (0.0046)*Channel
Energy range (MeV): 4.104 TO 6.460
Efficiency = 0.0189 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24788.0	100.000
Smoothed	24788.0	100.000
Composite fit	24368.0	98.305
Residuals	420.0	1.695

Analyzed by: _____
SEH

Spectrum 15a1561.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6734.2


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Raw Data Dump for AEA Spectrum: 15a1561.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
41	0.	1.	0.	0.	0.	0.	2.	0.	0.	0.
51	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
61	1.	0.	0.	2.	0.	0.	0.	0.	0.	0.
71	0.	1.	0.	0.	0.	1.	1.	0.	0.	0.
81	2.	0.	0.	0.	1.	1.	1.	2.	2.	1.
91	0.	0.	1.	0.	1.	0.	0.	1.	1.	0.
101	0.	1.	0.	1.	0.	1.	1.	2.	2.	1.
111	0.	1.	1.	1.	1.	0.	4.	1.	6.	1.
121	0.	2.	1.	3.	1.	2.	2.	2.	1.	0.
131	1.	1.	0.	3.	2.	1.	0.	1.	2.	5.
141	3.	6.	7.	14.	13.	14.	16.	15.	18.	6.
151	10.	9.	8.	11.	5.	3.	6.	8.	4.	2.
161	3.	7.	2.	2.	1.	1.	1.	3.	0.	4.
171	3.	1.	1.	1.	2.	2.	2.	2.	3.	3.
181	0.	3.	4.	1.	1.	5.	3.	4.	4.	3.
191	3.	4.	3.	6.	5.	7.	6.	4.	7.	8.
201	9.	9.	8.	14.	16.	17.	22.	22.	30.	20.
211	26.	35.	45.	64.	81.	106.	137.	146.	195.	178.
221	202.	223.	305.	330.	481.	624.	779.	925.	958.	770.
231	580.	346.	182.	77.	31.	2.	0.	1.	1.	1.
241	1.	2.	1.	1.	2.	1.	1.	3.	4.	2.
251	3.	4.	5.	8.	7.	8.	5.	4.	1.	2.
261	0.	0.	2.	4.	2.	4.	0.	2.	7.	2.
271	2.	2.	1.	2.	3.	3.	5.	4.	0.	3.
281	7.	9.	5.	9.	11.	7.	5.	12.	15.	26.
291	30.	49.	53.	72.	89.	92.	78.	71.	74.	111.
301	125.	186.	211.	240.	207.	133.	65.	18.	6.	6.
311	8.	7.	6.	6.	6.	2.	5.	8.	8.	7.
321	6.	9.	9.	3.	4.	9.	8.	9.	13.	14.
331	12.	14.	7.	17.	15.	23.	19.	26.	27.	27.
341	44.	49.	62.	39.	89.	94.	104.	149.	223.	302.
351	441.	572.	620.	586.	502.	420.	425.	590.	686.	1010.
361	1326.	1525.	1653.	1361.	748.	252.	54.	3.	1.	2.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3871-D
File ID: 16a1648.CNF

Counted on: 1/11/96 @14:35
Detector: AEA16
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1005.8	1005.8	361.204	361.204	10.000	2.608	5.000	1.333
2	138.4	138.4	303.017	303.013	10.000	2.782	5.000	1.391
3	574.8	574.8	228.842	228.842	10.000	3.697	5.000	2.481

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.582	5.755	5.755	0.000	0.01	24.30	1.8	1305.3	0.588E-03
2	Pu238	0.082	5.487	5.488	-.001	0.01	3.43	4.8	251.0	0.113E-03
	Am241		5.479	5.488	-.009				192.3	0.866E-04
3	Pu239	0.321	5.147	5.147	0.000	0.02	13.39	2.4	704.5	0.317E-03
	Pu240		5.144	5.147	-.003				704.5	0.317E-03
		---					---			
Totals:		0.986	<--valid peaks only-->				41.12			

DETECTOR CALIBRATION
Energy(MEV) = 4.094 + (0.0046)*Channel
Energy range (MeV): 4.094 TO 6.449
Efficiency = 0.0190 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20032.0	100.000
Smoothed	20032.0	100.000
Composite fit	19742.8	98.556
Residuals	289.2	1.444

Analyzed by: _____
SEH

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                    Spectrum 16a1648.CNF
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    4542.3

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Raw Data Dump for AEA Spectrum: 16a1648.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
31	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
51	1.	1.	0.	0.	0.	0.	0.	1.	0.	1.
61	0.	0.	0.	0.	1.	0.	0.	1.	0.	2.
71	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
81	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
91	0.	2.	0.	0.	1.	0.	0.	0.	0.	1.
101	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.
111	0.	1.	0.	2.	0.	4.	1.	1.	2.	0.
121	2.	2.	0.	1.	1.	1.	1.	3.	1.	1.
131	1.	1.	0.	1.	3.	5.	2.	1.	0.	1.
141	0.	3.	3.	8.	5.	9.	9.	6.	9.	9.
151	14.	7.	7.	3.	5.	7.	2.	1.	4.	3.
161	4.	2.	0.	1.	0.	6.	0.	1.	0.	0.
171	1.	1.	2.	0.	1.	0.	0.	1.	2.	1.
181	1.	0.	3.	1.	1.	2.	2.	3.	1.	2.
191	4.	1.	5.	2.	5.	6.	1.	3.	8.	5.
201	5.	5.	3.	8.	11.	12.	11.	21.	12.	31.
211	25.	36.	33.	56.	78.	65.	99.	127.	145.	159.
221	179.	236.	219.	281.	378.	479.	570.	671.	691.	664.
231	495.	336.	195.	96.	45.	13.	0.	2.	2.	0.
241	0.	0.	1.	0.	2.	1.	1.	1.	0.	1.
251	0.	1.	1.	1.	2.	1.	1.	0.	3.	0.
261	1.	0.	0.	3.	1.	0.	1.	1.	1.	3.
271	0.	2.	3.	3.	2.	1.	2.	4.	3.	4.
281	6.	6.	9.	10.	6.	4.	11.	11.	11.	30.
291	38.	42.	60.	77.	64.	79.	64.	59.	87.	78.
301	126.	148.	186.	145.	139.	70.	29.	5.	1.	2.
311	1.	3.	1.	4.	2.	3.	5.	3.	5.	8.
321	2.	5.	4.	5.	3.	4.	10.	8.	6.	9.
331	14.	8.	10.	14.	17.	16.	20.	19.	30.	33.
341	36.	49.	48.	61.	92.	109.	155.	210.	283.	381.
351	433.	457.	480.	413.	361.	383.	506.	637.	865.	1077.
361	1260.	1244.	1029.	560.	185.	31.	7.	0.	0.	1.
371	1.	0.	2.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3872-S
File ID: 17a1733.CNF

Counted on: 1/11/96 @14:37
Detector: AEA17
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1085.4	1085.4	359.223	359.223	10.000	3.089	5.000	1.166
2	165.0	165.0	301.212	301.190	10.000	3.184	5.000	1.183
3	690.3	690.3	227.041	227.041	12.000	4.104	6.000	1.927
4	15.7	15.7	148.248	148.243	20.000	14.262	10.000	5.158

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.566	5.755	5.753	0.002	0.01	32.48	1.6	302.1	0.136E-03
2	Pu238	0.087	5.487	5.486	0.001	0.01	5.02	4.1	63.5	0.286E-04
	Am241		5.479	5.486	-.007				48.6	0.219E-04
3	Pu239	0.338	5.147	5.145	0.002	0.02	19.40	2.0	176.9	0.797E-04
	Pu240		5.144	5.145	-.001				176.9	0.797E-04
4	Np237	0.012	4.769	4.782	-.013	0.07	0.71	10.7	7.4	0.333E-05
Totals:		1.003	<--valid peaks only-->				57.60			

DETECTOR CALIBRATION

Energy(MEV) = 4.100 + (0.0046)*Channel
Energy range (MeV): 4.100 TO 6.456
Efficiency = 0.1097 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27565.0	100.000
Smoothed	27565.0	100.000
Composite fit	27650.4	100.310
Residuals	-85.4	-0.310

Analyzed by: SEH

Spectrum 17a1733.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6649.0


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Raw Data Dump for AEA Spectrum: 17a1733.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	1.	1.	1.	0.	0.	1.	0.	0.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	1.	1.	2.	1.	1.	0.	0.	0.	0.
51	0.	1.	0.	0.	0.	0.	0.	1.	1.	0.
61	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.
71	0.	1.	0.	0.	1.	0.	1.	1.	0.	1.
81	1.	1.	1.	1.	1.	0.	2.	2.	0.	0.
91	1.	0.	0.	1.	1.	2.	1.	0.	0.	1.
101	2.	1.	0.	3.	2.	2.	3.	1.	2.	2.
111	3.	5.	5.	1.	1.	2.	4.	2.	1.	3.
121	7.	5.	1.	2.	0.	1.	2.	1.	2.	5.
131	3.	3.	3.	6.	2.	4.	5.	6.	5.	14.
141	10.	10.	19.	8.	17.	14.	8.	20.	20.	12.
151	10.	9.	11.	7.	8.	8.	6.	5.	4.	10.
161	4.	3.	2.	1.	1.	3.	0.	3.	4.	4.
171	6.	8.	6.	2.	2.	4.	2.	4.	2.	4.
181	6.	4.	7.	3.	4.	14.	7.	12.	8.	9.
191	12.	15.	19.	14.	16.	22.	17.	20.	23.	21.
201	28.	43.	47.	50.	40.	51.	57.	71.	69.	65.
211	107.	124.	141.	144.	191.	199.	229.	286.	306.	352.
221	348.	447.	502.	600.	674.	772.	802.	743.	725.	463.
231	300.	159.	63.	22.	5.	2.	0.	1.	2.	2.
241	3.	1.	1.	2.	1.	0.	2.	3.	2.	1.
251	1.	1.	2.	4.	3.	0.	3.	0.	1.	4.
261	1.	5.	4.	1.	6.	5.	5.	7.	5.	6.
271	8.	5.	9.	8.	6.	8.	11.	8.	9.	15.
281	15.	24.	18.	21.	31.	26.	38.	43.	65.	72.
291	104.	89.	92.	103.	97.	98.	118.	128.	140.	173.
301	197.	200.	176.	108.	56.	18.	10.	13.	6.	7.
311	6.	10.	5.	8.	7.	7.	10.	9.	13.	11.
321	21.	15.	19.	18.	29.	32.	15.	28.	27.	34.
331	37.	49.	49.	51.	50.	66.	85.	91.	98.	130.
341	154.	183.	196.	215.	227.	319.	399.	487.	603.	602.
351	641.	604.	519.	564.	688.	722.	980.	1151.	1274.	1332.
361	1113.	748.	322.	88.	17.	1.	1.	1.	2.	0.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3872-D
File ID: 25a2538.CNF

Counted on: 1/11/96 @14:37
Detector: AEA25
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	997.9	997.9	360.978	360.978	10.000	3.000	5.000	1.091
2	163.8	163.8	302.987	302.954	10.000	3.327	5.000	1.270
3	643.9	643.9	228.647	228.647	12.000	4.286	6.000	2.015
4?	12.2	12.2	183.173	182.597	46.000	86.786	23.000	34.516
5	10.9	10.9	154.621	154.621	28.000	1.699	14.000	0.254

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.546	5.755	5.750	0.005	0.01	30.43	1.6	3652.7	0.165E-02
2	Pu238	0.089	5.487	5.483	0.004	0.02	4.94	4.1	807.1	0.364E-03
	Am241		5.479	5.483	-.004				618.2	0.278E-03
3	Pu239	0.328	5.147	5.141	0.006	0.02	18.28	2.1	2151.1	0.969E-03
	Pu240		5.144	5.141	0.003				2151.1	0.969E-03
4		????		4.929			1.13	34.6		
5	Np237	0.011	4.769	4.801	-.032	0.01	0.62	12.8	84.1	0.379E-04
Totals:		0.974	<--valid peaks only-->				54.27			

DETECTOR CALIBRATION
Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.445
Efficiency = 0.0085 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26744.0	100.000
Smoothed	26744.0	100.000
Composite fit	26597.3	99.452
Residuals	146.7	0.548

Analyzed by: _____
SEH

Spectrum 25a2538.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5366.4


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Raw Data Dump for AEA Spectrum: 25a2538.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
21	2.	0.	0.	0.	1.	1.	0.	0.	0.	0.
31	1.	0.	2.	0.	1.	0.	0.	1.	1.	0.
41	0.	0.	0.	0.	0.	1.	1.	0.	1.	0.
51	1.	0.	1.	1.	0.	1.	1.	2.	0.	0.
61	0.	0.	2.	0.	2.	0.	0.	0.	0.	1.
71	2.	1.	0.	0.	4.	1.	2.	2.	2.	1.
81	0.	0.	0.	0.	0.	2.	2.	1.	1.	1.
91	1.	1.	0.	2.	0.	0.	0.	2.	0.	1.
101	1.	2.	1.	1.	1.	3.	4.	0.	2.	4.
111	0.	3.	4.	1.	4.	3.	2.	4.	1.	5.
121	3.	6.	3.	1.	5.	1.	4.	2.	1.	5.
131	1.	1.	6.	5.	6.	4.	5.	5.	8.	6.
141	5.	10.	7.	10.	19.	10.	15.	10.	13.	16.
151	10.	14.	7.	9.	17.	13.	11.	6.	3.	9.
161	6.	14.	5.	6.	4.	8.	10.	4.	8.	10.
171	14.	12.	4.	8.	7.	12.	9.	10.	12.	12.
181	13.	13.	18.	14.	12.	12.	14.	4.	16.	16.
191	14.	19.	19.	17.	24.	32.	29.	14.	30.	27.
201	28.	47.	46.	34.	39.	40.	46.	58.	55.	55.
211	71.	81.	107.	115.	125.	170.	174.	218.	243.	274.
221	281.	319.	361.	461.	453.	588.	666.	707.	765.	683.
231	565.	410.	235.	127.	54.	18.	6.	3.	3.	2.
241	0.	4.	4.	2.	2.	3.	0.	4.	3.	2.
251	5.	5.	4.	4.	7.	5.	3.	2.	6.	5.
261	6.	5.	4.	9.	6.	5.	8.	7.	10.	11.
271	8.	8.	11.	13.	16.	7.	9.	10.	13.	14.
281	9.	15.	25.	21.	31.	33.	31.	38.	41.	51.
291	60.	65.	72.	95.	82.	98.	90.	111.	113.	118.
301	167.	164.	206.	184.	164.	104.	40.	22.	11.	11.
311	11.	16.	19.	20.	16.	22.	24.	16.	24.	28.
321	27.	25.	40.	19.	27.	34.	27.	32.	39.	35.
331	55.	53.	45.	65.	77.	73.	84.	100.	84.	111.
341	92.	124.	140.	163.	190.	232.	282.	308.	391.	477.
351	576.	550.	608.	507.	548.	578.	659.	774.	910.	1064.
361	1165.	1203.	968.	529.	215.	53.	6.	2.	0.	0.
371	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 5367

Analyst: akl **Instrument:** PU01 **Book#** 104B43

Method: LA-943-128 Rev/Mod A-0

Worklist Comment: Use 0.05 mL for 3870, 0.1 mL for 3963. R(1). --LLF

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@PU23901	PU23901	LIQUID	1.28E-01	1.29E-1	100.780	% Recovery
1	STD		0		@PU23901	PU23901E	LIQUID	1.00	1.96E+00	1.960	% Ct. Error
1	STD		0		@PU23901	PU23901T	LIQUID	100	1.00E+02	100.000	% Recovery
2	BLNK		0		@PU23901	PU23901	LIQUID	1	<6.15E-5		uCi/mL
2	BLNK		0		@PU23901	PU23901T	LIQUID	100	9.68E+01	96.800	% Recovery
2	BLNK		0		@PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S95T003870	0		@PU23901	PU23901	LIQUID	N/A	6.52E-03	3.210e-004	uCi/mL
3	SAMPLE	S95T003870	0		@PU23901	PU23901T	LIQUID	N/A	9.89E+01	1.000e-007	% Recovery
3	SAMPLE	S95T003870	0		@PU23901	PU23901E	LIQUID	N/A	1.66E+00	0.000	% Ct. Error
4	DUP	S95T003870	0		@PU23901	PU23901	LIQUID	6.52E-3	6.58E-3	0.920	RPD
4	DUP	S95T003870	0		@PU23901	PU23901T	LIQUID	100	1.00E+02	100.300	% Recovery
4	DUP	S95T003870	0		@PU23901	PU23901E	LIQUID	1.00	1.60E+00	1.600	% Ct. Error
5	SAMPLE	S95T003963	0		@PU23901	PU23901	LIQUID	N/A <	2.89E-05	2.890e-005	uCi/mL
5	SAMPLE	S95T003963	0		@PU23901	PU23901T	LIQUID	N/A	1.01E+02	1.000e-007	% Recovery
5	SAMPLE	S95T003963	0		@PU23901	PU23901E	LIQUID	N/A	1.00E+02	0.000	% Ct. Error
6	DUP	S95T003963	0		@PU23901	PU23901	LIQUID	<2.89E-5	<3.06E-5		RPD
6	DUP	S95T003963	0		@PU23901	PU23901T	LIQUID	100	9.70E+01	97.000	% Recovery
6	DUP	S95T003963	0		@PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error

Final page for worklist# 5367

Analyst Signature Date

Analyst Signature Date

SJFritts 8 Feb 96
Reviewer Signature Date

Pu-238 at quantifiable activities for S95T 3870.
SJF 2/8/96

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

LABCORE Data Entry Template for Worklist# 5367

Analyst: AXL **Instrument:** PU01 _____ **Book#** 104843

Method: LA-943-128 Rev/Mod A-0

Worklist Comment: Use 0.05 mL for 3870, 0.1 mL for 3963. R(1). --LLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S95T003870	0		@PU23901	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S95T003870	0		@PU23901	LIQUID		
5	SAMPLE	S95T003963	0		@PU23901	LIQUID	95000222	AN-102 GRAB
		Analytes Requested: PU23901 , PU23901E, PU23901T						
6	DUP	S95T003963	0		@PU23901	LIQUID		

Final page for worklist # 5367

Calita Lewis 2/6/96
Analyst Signature **Date**

C. Owen 2/7/96
Analyst Signature **Date**

SE Hogan 2/7/96

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-0) LIQUID

Type	DATE COUNTED		FEB-06-96	PU 236 AEA FRAC	(C236)	STD 0.390
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.539
5367	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		8019
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	4.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm		35.930
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		49.670
96000786	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
Result	PU-236 DECAY CORR'D VALUE (dpm/mL)		2053.797	Pu 239/240 µCi/L		1.2914E+02
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		104B43			
N/A	STANDARD VALUE in µCi/mL		0.128			
Sample #						
WL#5367						

Instrument Code	Decay Time = Date Counted - Tracer Preparation Date
AL10539	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
CJO	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
LLF	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
AKL	
Date Complete	
02/07/96	
Analysis Date	
02/06/96	
Analysis Time	
12:30 PM	
Sample Point	
AN-102 GRAB	

Pu 239/240 µCi/mL		1.29E-01
Relative Counting Error	=	2.0%
Pu 236 Tracer Recovery	=	100.0%

DETECTION LEVELS in µCi/mL
Pu 239/240
7.19E-03

Analyst: AKL Date: 07-Feb-96

Signature of Chemist: LLF Date: 8 Feb 96

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-0) LIQUID / SOLID

						BLNK
Type	DATE COUNTED		FEB-06-96	PU 236 AEA FRAC	(C236)	0.933
BLNK	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
5367	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		3315
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm (Bkg)		4.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm		36.250
LIQUID	EFFICIENCY FACTOR	EFF	0.5000	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		0.000
96000785	TRACER PREPARATION VALUE (dpm/mL)		2265.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2053.80	Pu 239/240 µCi/L =	<	6.149E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.00			
Sample Prep						
N/A						

Sample # WL#5367

Instrument Code AL10539

Prepared By CJO

Chemist LLF

Analyst AKL

Date Complete 02/07/96

Analysis Date 02/06/96

Analysis Time 12:30 PM

Sample Point AN-102 GRAB

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)

Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL		< 6.15E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 6.15E-05
Pu 238 µCimL		< 6.15E-05	
Relative Counting Error	=	100.0%	Pu 238 6.15E-05
Pu 236 Tracer Recovery	=	96.8%	

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist:	LLF	Date:	8 Feb 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-0) LIQUID / SOLID

Type	DATE COUNTED		FEB-06-96	PU 236 AEA FRAC	(C236)	SAMPLE 0.175
SAMPLE	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC	(C238)	0.159
Work Unit	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.617
5367	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		17531
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	4.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm		37.370
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		33.840
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		131.420
96000785	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
Aliquot	PU-236 DECAY CORR'D VALUE (dpm/mL)		2053.797	Pu 239/240 µCi/L		6.5235E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000			
Sample Prep						
N/A						
Sample #	Decay Time = Date Counted - Tracer Preparation Date					
S95T003870	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]					
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)					
AL10539	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]					
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)					
CJO	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]					
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					
LLF						
Analyst						
AKL						
Date Complete						
02/07/96	Pu 239/240 µCi/mL		6.52E-03			DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	1.7%			
02/06/96						Pu 239/240
Analysis Time						3.21E-04
12:30 PM	Pu 238 µCimL		1.68E-03			Pu 238
Sample Point	Relative Counting Error	=	2.1%			3.21E-04
AN-102 GRAB	Pu 236 Tracer Recovery	=	98.9%			

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist:	LLF	Date:	8 Feb 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-0) LIQUID / SOLID

						DUP
Type	DATE COUNTED		FEB-06-96	PU 236 AEA FRAC	(C236)	0.174
DUP	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC	(C238)	0.160
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.619
5367	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		17877
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)	4.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm		37.770
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		34.780
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm		134.500
96000785	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2053.797	Pu 239/240 µCi/L		6.5823E+00
0	PU-238 TRACER VALUE (dpm/mL)		0.000			

Sample Prep
N/A
Sample #
S95T003870
Instrument Code
AL10539
Prepared By
CJO
Chemist
LLF
Analyst
AKL
Date Complete
02/07/96
Analysis Date
02/06/96
Analysis Time
12:30 PM
Sample Point
AN-102 GRAB

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL		6.58E-03	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	1.6%	
			Pu 239/240 3.19E-04
Pu 238 µCimL		1.70E-03	
Relative Counting Error	=	2.1%	Pu 238 3.19E-04
Pu 236 Tracer Recovery	=	100.3%	

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist:	LLF	Date:	8 Feb 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (A-0) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		FEB-06-96	PU 236 AEA FRAC		(C236)	0.961
SAMPLE	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC		(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.000
5367	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			3356
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm		(Bkg)	4.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm			37.050
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm			0.000
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm			0.000
96000785	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2053.797	Pu 239/240 µCi/L =		<	2.8880E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				

Sample Point
N/A

Sample #
S95T003963

Instrument Code
AL10539

Prepared By
CJO

Chemist
LLF

Analyst
AKL

Date Complete
02/07/96

Analysis Date
02/06/96

Analysis Time
12:30 PM

Sample Point
AN-102 GRAB

Decay Time = Date Counted - Tracer Preparation Date
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]
Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL		< 2.89E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 2.89E-05
Pu 238 µCimL		< 2.89E-05	
Relative Counting Error	=	100.0%	Pu 238 2.89E-05
Pu 236 Tracer Recovery	=	100.9%	

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist:	LLF	Date:	8 Feb 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (A-0) LIQUID / SOLID

							DUP
Type	DATE COUNTED		FEB-06-96	PU 236 AEA FRAC	(C236)		0.936
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)		0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.000
5367	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			3312
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		117B43	BACKGROUND in cpm	(Bkg)		4.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm			36.640
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm			0.000
Batch Number	TRACER PREPARATION DATE		09/12/95	PU 239 cpm			0.000
96000785	TRACER PREPARATION VALUE (dpm/mL)		2265.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2053.797	Pu 239/240 µCi/L =		<	3.0575E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
N/A							
Sample #	Decay Time = Date Counted - Tracer Preparation Date						
S95T003963	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]						
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)						
AL10539	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]						
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)						
CJO	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]						
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						
LLF							
Analyst							
AKL							
Date Complete							
02/07/96	Pu 239/240 µCi/mL		< 3.06E-05				
Analysis Date	Relative Counting Error	=	100.0%				
02/06/96							
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.						
12:30 PM	Pu 238 µCimL		< 3.06E-05				
Sample Point	Relative Counting Error	=	100.0%				
AN-102 GRAB	Pu 236 Tracer Recovery	=	97.0%				

DETECTION LEVELS in µCi/mL
Pu 239/240
3.06E-05
Pu 238
3.06E-05

Analyst:	AKL	Date:	07-Feb-96
Signature of Chemist:	LLF	Date:	8 Feb 96

SAMPLE.WB1 REV 1.0 943128ML

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
W/L#5367-STD
File ID: 13a1318.CNF

Counted on: 2/ 6/96 @19:23
Detector: AEA13
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1854.8	1854.8	361.330	361.330	10.000	2.068	5.000	1.452
2?	32.9	32.9	303.096	303.095	10.000	2.337	5.000	1.298
3?	17.7	17.7	287.091	286.898	8.000	1.022	4.000	1.239
4?	41.5	41.5	264.426	264.422	10.000	2.466	5.000	3.551
5	35.3	35.3	252.838	252.540	6.000	0.029	3.000	0.003
6	2834.6	2834.6	228.438	228.437	8.000	2.464	4.000	2.589

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.390	5.755	5.765	-.0100	.01	35.93	1.5	333.6	0.150E-03
	Cm243		5.779	5.765	0.014				447.9	0.202E-03
2		????		5.497			0.74	10.4		
3		????		5.422			0.22	23.4		
4		????		5.319			0.68	10.9		
5	Am243	0.030	5.270	5.264	0.0060	.00	2.74	5.4	25.1	0.113E-04
6	Pu239	0.539	5.147	5.153	-.0060	.01	49.67	1.3	452.0	0.204E-03
	Pu240		5.144	5.153	-.009				452.0	0.204E-03
Totals:		0.959	<--valid peaks only-->				88.34			

DETECTOR CALIBRATION

Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.458
Efficiency = 0.1099 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	44221.0	100.000
Smoothed	44221.0	100.000
Composite fit	43199.3	97.690
Residuals	1021.7	2.310

ANALYZED BY: _____
ALJ

Spectrum 13a1318.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 17257.2


```
5
5
5
5
6..
5...............6.
5.............................................................6
5.....6....
5
5
4
4

3
2
2
2


1
.....1...
.........................  1
.............................1.
..
```

Raw Data Dump for AEA Spectrum: 13a1318.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
31	0.	0.	0.	0.	1.	0.	1.	2.	1.	0.
41	0.	1.	0.	1.	1.	0.	0.	0.	1.	0.
51	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.
61	2.	1.	0.	0.	0.	1.	1.	0.	0.	0.
71	0.	1.	0.	0.	1.	0.	0.	0.	1.	0.
81	3.	0.	0.	0.	0.	1.	0.	1.	2.	0.
91	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
101	0.	0.	0.	0.	0.	2.	0.	2.	0.	0.
111	0.	1.	1.	0.	1.	0.	1.	1.	0.	0.
121	0.	1.	0.	2.	0.	1.	0.	1.	1.	0.
131	0.	0.	4.	1.	1.	3.	0.	1.	1.	2.
141	2.	2.	2.	1.	1.	1.	0.	0.	0.	1.
151	1.	0.	2.	0.	1.	1.	0.	1.	1.	1.
161	2.	3.	0.	0.	1.	2.	2.	1.	0.	1.
171	2.	0.	0.	1.	1.	2.	3.	1.	0.	2.
181	0.	1.	1.	3.	3.	2.	5.	3.	4.	2.
191	0.	6.	3.	5.	6.	10.	4.	3.	7.	7.
201	6.	6.	8.	8.	8.	8.	15.	30.	14.	23.
211	41.	52.	70.	105.	217.	260.	395.	455.	458.	444.
221	430.	527.	687.	1025.	1581.	2270.	2967.	3704.	3888.	3010.
231	1631.	681.	267.	109.	8.	4.	2.	0.	2.	0.
241	0.	2.	1.	0.	3.	1.	1.	2.	9.	5.
251	7.	18.	23.	7.	14.	5.	3.	8.	8.	5.
261	13.	30.	41.	64.	50.	42.	21.	8.	11.	5.
271	6.	4.	3.	2.	1.	1.	0.	1.	6.	3.
281	3.	4.	10.	11.	7.	21.	35.	25.	12.	5.
291	3.	4.	10.	16.	9.	15.	8.	17.	11.	22.
301	25.	36.	44.	40.	31.	13.	4.	1.	0.	0.
311	2.	1.	1.	0.	2.	2.	3.	3.	1.	2.
321	2.	2.	1.	1.	4.	5.	3.	7.	10.	8.
331	11.	5.	4.	8.	10.	10.	10.	9.	17.	19.
341	17.	22.	23.	32.	32.	74.	117.	197.	342.	563.
351	743.	790.	686.	527.	401.	403.	566.	836.	1288.	1954.
361	2521.	2496.	1893.	814.	204.	25.	1.	0.	2.	0.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	2.	2.	3.	3.	4.	2.	1.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
W/L#5367-BLK
File ID: 14a1422.CNF

Counted on: 2/ 6/96 @19:24
Detector: AEA14
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1929.7	1929.7	361.745	361.745	8.000	1.939	4.000	1.401
2?	19.6	19.6	287.567	287.567	8.000	2.369	4.000	2.976
3	35.9	35.9	264.792	264.790	10.000	3.423	5.000	2.584
4?	10.3	10.3	254.144	253.193	8.000	1.694	4.000	2.372

PEAK RESULTS
Peak Error Limit: 30%

Peak		AEA	Peak Centroid				Count	%err		Activity
ID	Isotope	Frac	Exp.	Obs.	Diff.	FWHM	Rate c/m	@95	d/m	uCi/ea
1	Pu236	0.933	5.755	5.756	-.0010	0.01	36.25	1.5	2043.6	0.921E-03
2		????		5.415			0.32	15.7		
3		0.020		5.310		0.02	0.78	10.2	43.1	0.194E-04
4		????		5.257			0.15	37.8		
Totals:		0.953	<--valid peaks only-->				37.03			

DETECTOR CALIBRATION
Energy(MEV) = 4.092 + (0.0046)*Channel
Energy range (MeV): 4.092 TO 6.447
Efficiency = 0.0181 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18658.0	100.000
Smoothed	18658.0	100.000
Composite fit	18003.0	96.490
Residuals	655.0	3.510

Analyzed by: _____
ALJ

Spectrum 14a1422.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8792.1


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Raw Data Dump for AEA Spectrum: 14a1422.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	2.	1.	0.	0.	0.	1.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
81	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
91	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	2.	0.	0.	2.
111	0.	1.	0.	3.	0.	0.	1.	0.	1.	0.
121	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
131	2.	0.	0.	0.	0.	1.	2.	0.	0.	0.
141	1.	0.	1.	1.	0.	0.	1.	2.	0.	1.
151	1.	0.	1.	1.	0.	0.	0.	0.	2.	0.
161	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
171	1.	0.	0.	0.	0.	1.	0.	0.	1.	0.
181	0.	0.	0.	1.	1.	0.	2.	0.	0.	0.
191	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
201	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
211	1.	0.	1.	0.	2.	0.	2.	2.	1.	2.
221	2.	0.	2.	3.	0.	2.	0.	2.	1.	4.
231	0.	1.	0.	0.	1.	0.	1.	1.	1.	0.
241	0.	0.	2.	0.	0.	1.	3.	3.	9.	6.
251	12.	17.	16.	20.	17.	14.	8.	13.	7.	17.
261	21.	22.	37.	42.	43.	47.	27.	13.	10.	9.
271	4.	2.	0.	0.	1.	6.	3.	2.	2.	1.
281	1.	3.	3.	9.	12.	20.	26.	28.	22.	10.
291	4.	1.	2.	3.	4.	3.	1.	3.	4.	5.
301	5.	7.	7.	10.	4.	6.	1.	0.	2.	1.
311	3.	4.	2.	2.	6.	1.	3.	2.	2.	1.
321	2.	1.	7.	0.	2.	3.	7.	6.	11.	13.
331	5.	11.	5.	3.	14.	12.	14.	9.	12.	13.
341	19.	12.	24.	29.	33.	67.	90.	134.	280.	434.
351	661.	817.	804.	602.	444.	385.	487.	675.	1072.	1638.
361	2255.	2831.	2249.	1180.	401.	75.	6.	3.	1.	1.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	1.	0.	1.	0.	0.	2.	1.
471	0.	1.	0.	1.	2.	2.	6.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T003870-SAM
File ID: 15a1503.CNF

Counted on: 2/ 6/96 @19:26
Detector: AEA15
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1909.1	1909.1	362.110	362.110	10.000	2.079	5.000	1.434
2	1705.9	1705.9	303.331	303.331	10.000	2.326	5.000	1.660
3?	51.2	51.2	264.568	264.538	10.000	2.370	5.000	2.850
4?	138.4	138.4	251.986	251.637	6.000	0.000	3.000	0.112
5	6771.5	6771.5	228.387	228.387	12.000	3.040	6.000	2.905
6?	64.4	64.4	147.287	147.287	24.000	9.536	12.000	8.244

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.175	5.755	5.742	0.0130	0.01	37.37	1.5	376.8	0.170E-03
2	Pu238	0.159	5.487	5.477	0.0100	0.01	33.84	1.5	464.5	0.209E-03
	Am241		5.479	5.477	0.002				355.8	0.160E-03
3		????		5.303			0.85	10.1		
4		????		5.245			0.00	1000.		
5	Pu239	0.617	5.147	5.140	0.0070	0.01	131.42	0.8	1298.6	0.585E-03
	Pu240		5.144	5.140	0.004				1298.6	0.585E-03
6		????		4.775			2.03	6.3		
Totals:		0.951	<--valid peaks only-->				202.63			

DETECTOR CALIBRATION

Energy(MEV) = 4.113 + (0.0045)*Channel
Energy range (MeV): 4.113 TO 6.417
Efficiency = 0.1012 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	102261.0	100.000
Smoothed	102260.9	100.000
Composite fit	98661.5	96.480
Residuals	3599.5	3.520

ANALYZED BY: _____
ALJ

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                    Spectrum 15a1503.CNF
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:   42662.6

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Raw Data Dump for AEA Spectrum: 15a1503.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
31	0.	2.	1.	1.	0.	1.	2.	1.	1.	0.
41	1.	1.	1.	0.	0.	1.	2.	0.	1.	0.
51	1.	0.	2.	0.	0.	0.	0.	3.	0.	1.
61	2.	0.	1.	0.	0.	0.	0.	3.	3.	2.
71	1.	0.	0.	0.	1.	0.	2.	2.	0.	0.
81	0.	2.	1.	0.	0.	1.	1.	0.	0.	1.
91	2.	1.	1.	1.	1.	2.	1.	2.	0.	2.
101	2.	0.	1.	5.	0.	1.	1.	0.	1.	4.
111	4.	2.	4.	7.	4.	9.	6.	3.	11.	6.
121	4.	11.	10.	6.	2.	7.	6.	7.	1.	5.
131	5.	5.	8.	4.	8.	7.	8.	5.	7.	17.
141	22.	22.	41.	45.	69.	75.	77.	78.	57.	53.
151	41.	31.	37.	37.	35.	35.	38.	22.	17.	7.
161	12.	7.	13.	12.	6.	11.	9.	9.	6.	5.
171	6.	3.	3.	2.	9.	10.	7.	6.	6.	5.
181	3.	5.	8.	9.	4.	14.	7.	11.	7.	8.
191	10.	12.	7.	13.	17.	23.	18.	18.	22.	18.
201	22.	27.	28.	29.	34.	48.	44.	55.	68.	87.
211	118.	152.	221.	353.	503.	754.	970.	1146.	1191.	1210.
221	1245.	1639.	2056.	2853.	4068.	5671.	7653.	8661.	8708.	6759.
231	4439.	2518.	1289.	452.	94.	12.	4.	2.	0.	2.
241	3.	1.	1.	1.	3.	3.	3.	5.	5.	18.
251	18.	23.	25.	20.	10.	5.	6.	10.	13.	8.
261	26.	34.	41.	73.	75.	61.	19.	12.	7.	10.
271	14.	7.	9.	17.	12.	5.	9.	14.	12.	10.
281	10.	15.	15.	23.	38.	42.	61.	63.	89.	121.
291	215.	311.	509.	641.	648.	610.	469.	518.	607.	894.
301	1301.	1761.	2224.	2308.	1738.	845.	273.	67.	21.	18.
311	18.	11.	7.	5.	3.	4.	3.	2.	3.	1.
321	3.	2.	5.	3.	2.	5.	14.	5.	7.	7.
331	6.	12.	10.	9.	12.	12.	7.	12.	14.	13.
341	19.	17.	34.	38.	47.	63.	105.	140.	268.	409.
351	686.	742.	806.	621.	517.	396.	472.	669.	995.	1417.
361	2099.	2636.	2490.	1583.	734.	170.	25.	4.	8.	4.
371	12.	11.	5.	1.	0.	0.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
421	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	2.	0.	0.	1.	1.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
471	0.	0.	0.	3.	4.	0.	3.	1.	1.	0.
481	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE ~~STANDARD~~ 2/8/96

S95T003870-DUP

File ID: 16a.CNF

Counted on: 2/ 6/96 @19:27
Detector: AEA16
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	2066.2	2066.2	361.735	361.735	8.000	1.927	4.000	1.470
2	1820.7	1820.7	303.641	303.641	8.000	2.169	4.000	1.613
3?	54.2	54.2	264.979	264.952	10.000	2.319	5.000	3.245
4?	153.4	153.4	252.924	252.722	6.000	0.000	3.000	0.137
5	7269.4	7269.4	229.634	229.634	10.000	2.840	5.000	2.958
6?	68.2	68.2	149.800	149.800	20.000	7.978	10.000	7.730

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.174		37.405		0.46	37.77	1.5	8784.0	0.396E-02
2	Pu238	0.160		23.497		0.52	34.78	1.5	8087.3	0.364E-02
3		????		14.235			0.87	9.9		
4		????		11.307			0.00	1000.		
5	Cm243	0.619	5.779	5.780	-.001	0.68	134.50	0.8	42848.7	0.193E-01
	Cm244		5.795	5.780	0.015				31279.6	0.141E-01
6	Pu239	????		******			1.96	6.4		
Totals:		0.952	<--valid peaks only-->				207.05			

AK 2/8/96

DETECTOR CALIBRATION

Energy(MEV) = -49.194 + (0.2394)*Channel
Energy range (MeV): ****** TO 73.378
Efficiency = 0.0043 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	104367.0	100.000
Smoothed	104367.0	100.000
Composite fit	100755.7	96.540
Residuals	3611.3	3.460

ANALYZED BY: _____
ALJ

Spectrum 16a.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 43492.7


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Raw Data Dump for AEA Spectrum: 16a.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	6.	4.	1.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	1.	2.
41	0.	0.	2.	0.	0.	0.	1.	0.	0.	1.
51	0.	0.	0.	0.	0.	2.	1.	0.	0.	1.
61	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.
71	0.	1.	0.	1.	0.	1.	0.	0.	3.	1.
81	2.	0.	1.	2.	0.	3.	1.	1.	0.	1.
91	0.	0.	0.	1.	0.	1.	1.	1.	0.	2.
101	0.	1.	2.	2.	1.	1.	2.	1.	1.	2.
111	1.	3.	4.	1.	0.	10.	5.	4.	12.	7.
121	7.	7.	7.	5.	7.	9.	4.	8.	2.	0.
131	6.	2.	8.	4.	3.	13.	4.	4.	7.	6.
141	12.	8.	23.	29.	39.	42.	66.	74.	87.	77.
151	74.	64.	47.	29.	42.	33.	27.	34.	23.	17.
161	11.	15.	15.	7.	7.	4.	11.	2.	2.	4.
171	4.	3.	2.	2.	2.	4.	0.	0.	1.	2.
181	0.	4.	2.	2.	5.	4.	5.	2.	1.	1.
191	4.	2.	4.	8.	4.	6.	10.	6.	9.	6.
201	11.	15.	15.	8.	16.	20.	15.	30.	30.	26.
211	47.	52.	94.	132.	227.	388.	594.	900.	1117.	1125.
221	1154.	1216.	1513.	1795.	2513.	3746.	5551.	7484.	9236.	9601.
231	7981.	5042.	3031.	1446.	516.	89.	11.	2.	0.	1.
241	1.	2.	1.	2.	1.	1.	4.	1.	1.	9.
251	10.	21.	33.	30.	15.	7.	5.	5.	9.	14.
261	12.	27.	46.	64.	82.	63.	41.	21.	11.	7.
271	12.	5.	4.	6.	2.	5.	1.	10.	8.	5.
281	13.	12.	14.	11.	17.	27.	45.	57.	69.	100.
291	152.	277.	384.	603.	702.	678.	559.	464.	594.	832.
301	1156.	1673.	2213.	2498.	2156.	1126.	333.	92.	28.	19.
311	19.	6.	8.	10.	1.	0.	0.	2.	1.	2.
321	0.	0.	0.	3.	1.	2.	3.	6.	4.	10.
331	7.	6.	4.	1.	5.	7.	6.	7.	5.	8.
341	7.	9.	20.	18.	31.	48.	82.	140.	279.	463.
351	706.	845.	790.	553.	432.	405.	502.	719.	1121.	1763.
361	2536.	2969.	2467.	1259.	375.	67.	6.	5.	9.	13.
371	12.	6.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	1.	1.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
471	1.	1.	0.	5.	1.	4.	1.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01

DATA REDUCTION REPORT

WHC-SD-WM-DP-165, REV. 1

SAMPLE
S95T003963-SAM
File ID: 17a1772.CNF

Counted on: 2/ 6/96 @19:28
Detector: AEA17
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1662.1	1662.1	360.056	360.056	10.000	2.340	5.000	1.325
2?	15.4	15.4	286.526	286.524	10.000	4.520	5.000	4.043
3	33.6	33.6	263.639	263.632	10.000	3.381	5.000	2.571
4?	9.1	9.1	252.746	251.858	8.000	1.420	4.000	1.647

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.961	5.755	5.756	-.0010	.01	37.05	1.5	2976.8	0.134E-02
2		????		5.418			0.35	15.1		
3		0.019		5.313		0.02	0.73	10.6	57.2	0.258E-04
4		????		5.258			0.13	39.1		
Totals:		0.980	<--valid peaks only-->				37.78			

DETECTOR CALIBRATION
Energy(MEV) = 4.100 + (0.0046)*Channel
Energy range (MeV): 4.100 TO 6.455
Efficiency = 0.0127 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18508.0	100.000
Smoothed	18508.0	100.000
Composite fit	18364.9	99.227
Residuals	143.1	0.773

Analyzed by: _____
ALJ

Spectrum 17a1772.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8116.2


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4
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1
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.........................................1..
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Raw Data Dump for AEA Spectrum: 17a1772.CNF

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
91	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
111	1.	0.	1.	0.	1.	0.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
131	0.	0.	0.	0.	0.	1.	0.	0.	2.	0.
141	0.	0.	1.	0.	1.	0.	1.	0.	1.	1.
151	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
161	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
171	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
181	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
191	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
201	0.	0.	0.	0.	2.	0.	0.	0.	0.	1.
211	1.	0.	1.	0.	0.	1.	1.	0.	1.	1.
221	1.	0.	0.	2.	1.	2.	2.	2.	2.	1.
231	2.	1.	1.	1.	0.	0.	3.	1.	1.	1.
241	2.	2.	2.	3.	0.	0.	4.	5.	10.	7.
251	15.	18.	16.	11.	11.	9.	11.	9.	18.	21.
261	20.	35.	39.	44.	39.	22.	14.	5.	10.	3.
271	3.	2.	2.	4.	5.	1.	3.	1.	2.	2.
281	2.	8.	12.	15.	6.	21.	24.	12.	10.	2.
291	2.	5.	5.	7.	6.	7.	3.	2.	4.	2.
301	10.	10.	9.	8.	4.	1.	0.	0.	2.	2.
311	2.	3.	1.	1.	2.	3.	3.	3.	4.	6.
321	3.	5.	8.	9.	7.	7.	17.	7.	13.	10.
331	8.	19.	22.	16.	18.	20.	28.	26.	37.	40.
341	44.	60.	87.	108.	134.	207.	272.	400.	576.	725.
351	788.	733.	608.	528.	598.	739.	1003.	1371.	1821.	2206.
361	2013.	1537.	676.	184.	28.	3.	0.	2.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
461	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	2.	0.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.01

WHC-SD-WM-DP-165, REV. I

DATA REDUCTION REPORT

SAMPLE
S95T003963-DUP
File ID: 18a1847.CNF

Counted on: 2/ 6/96 @19:29
Detector: AEA18
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1998.6	1998.6	358.035	358.035	8.000	1.905	4.000	1.436
2?	19.7	19.7	283.757	283.757	12.000	2.458	6.000	3.852
3	40.4	40.4	261.514	261.513	12.000	2.437	6.000	3.319
4?	9.4	9.4	249.750	249.353	8.000	2.195	4.000	3.830

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.936	5.755	5.754	0.001	0.01	36.64	1.5	4674.0	0.211E-02
2		????		5.412			0.32	15.9		
3		0.017		5.310		0.01	0.66	11.0	82.9	0.374E-04
4		????		5.254			0.14	33.1		
Totals:		0.953	<--valid peaks only-->				37.31			

DETECTOR CALIBRATION
Energy(MEV) = 4.107 + (0.0046)*Channel
Energy range (MeV): 4.107 TO 6.462
Efficiency = 0.0080 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18793.0	100.000
Smoothed	18793.0	100.000
Composite fit	18131.4	96.479
Residuals	661.6	3.521

Analyzed by: _____
ALJ

Spectrum 18a1847.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10722.7


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4
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.............1.....
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Raw Data Dump for AEA Spectrum: 18a1847.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
61	0.	1.	0.	0.	1.	1.	0.	1.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	1.	0.	0.	2.	0.	3.	0.	0.	0.	0.
151	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
171	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
181	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
191	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
201	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
211	0.	0.	0.	0.	1.	1.	0.	0.	1.	0.
221	0.	1.	3.	4.	3.	1.	1.	2.	0.	0.
231	0.	0.	0.	0.	1.	0.	0.	1.	1.	0.
241	1.	1.	1.	0.	4.	2.	9.	14.	12.	13.
251	12.	8.	5.	6.	8.	5.	11.	13.	26.	38.
261	64.	48.	37.	25.	19.	1.	4.	3.	1.	0.
271	1.	1.	0.	1.	1.	1.	3.	4.	1.	7.
281	10.	16.	33.	23.	22.	14.	7.	2.	3.	2.
291	5.	2.	2.	4.	2.	5.	3.	7.	10.	10.
301	8.	5.	1.	1.	0.	0.	0.	0.	1.	2.
311	0.	1.	1.	0.	3.	1.	1.	4.	0.	1.
321	1.	2.	4.	4.	8.	6.	6.	3.	4.	2.
331	6.	6.	6.	5.	5.	3.	7.	12.	14.	26.
341	24.	39.	57.	119.	218.	407.	625.	768.	874.	653.
351	463.	336.	426.	585.	952.	1496.	2263.	2804.	2644.	1546.
361	540.	117.	18.	1.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	1.	2.	1.	1.
471	1.	2.	2.	0.	0.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

LABCORE Completed Worklist Report for Worklist# 4886

Analyst: akl **Instrument:** PU01 **Book#** 104643

Method: LA-943-127 Rev/Mod B-1

Worklist Comment: Determine Sample Size Using Ludlum / jls

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@	PU23901	PU23901	LIQUID	1.28E-01	1.33E-1	103.910	% Recovery
1	STD		0	@	PU23901	PU23901E	LIQUID	1.00	2.64E+00	2.640	% Ct. Error
1	STD		0	@	PU23901	PU23901T	LIQUID	100	5.62E+01	56.200	% Recovery
2	BLNK		0	@	PU23901	PU23901	LIQUID	1	<1.27E-4		uCi/mL
2	BLNK		0	@	PU23901	PU23901T	LIQUID	100	5.22E+01	52.200	% Recovery
2	BLNK		0	@	PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
3	SAMPLE	S95T003870	0	@	PU23901	PU23901	LIQUID	N/A	ERR	1.000e-007	uCi/mL
3	SAMPLE	S95T003870	0	@	PU23901	PU23901T	LIQUID	N/A	LDL	1.000e-007	% Recovery
3	SAMPLE	S95T003870	0	@	PU23901	PU23901E	LIQUID	N/A	1.00E+02	0.000	% Ct. Error
4	DUP	S95T003870	0	@	PU23901	PU23901	LIQUID	ERR	ERR		RPD
4	DUP	S95T003870	0	@	PU23901	PU23901T	LIQUID	100	0.00E+00	0.000	% Recovery
4	DUP	S95T003870	0	@	PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
5	SAMPLE	S95T003963	0	@	PU23901	PU23901	LIQUID	N/A	ERR	1.000e-007	uCi/mL
5	SAMPLE	S95T003963	0	@	PU23901	PU23901T	LIQUID	N/A	LDL	1.000e-007	% Recovery
5	SAMPLE	S95T003963	0	@	PU23901	PU23901E	LIQUID	N/A	1.00E+02	0.000	% Ct. Error
6	DUP	S95T003963	0	@	PU23901	PU23901	LIQUID	ERR	ERR		RPD
6	DUP	S95T003963	0	@	PU23901	PU23901T	LIQUID	100	0.00E+00	0.000	% Recovery
6	DUP	S95T003963	0	@	PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error

Final page for worklist# 4886

Analyst Signature Date

Analyst Signature Date

30 Jan 96

Reviewer Signature Date

DATA NOT USED IN PACKAGE

Rerun: No tracer added to samples or duplicates. 1/30/96

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

LABCORE Data Entry Template for Worklist# 4886

Analyst: AKL **Instrument:** PU01 _____ **Book#** 104B43

Method: LA-943-127 Rev/Mod B-1

Worklist Comment: Determine Sample Size Using Ludlum / jls

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S95T003870	0		@PU23901	LIQUID	95000222	AN-102 GRAB
		Analytes Requested:			PU23901 , PU23901E, PU23901T			
4	DUP	S95T003870	0		@PU23901	LIQUID		
5	SAMPLE	S95T003963	0		@PU23901	LIQUID	95000222	AN-102 GRAB
		Analytes Requested:			PU23901 , PU23901E, PU23901T			
6	DUP	S95T003963	0		@PU23901	LIQUID		

Final page for worklist # 4886

Analyst Signature 1/23/96 Date

Analyst Signature 1/24/96 Date

SE Rogan 1/24/96

DATA NOT USED IN PACKAGE

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID

Type	DATE COUNTED		JAN-23-96	PU 236 AEA FRAC	(C236)	STD 0.424
STD	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC	(C239)	0.530
4886	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		4848
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	6.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm		20.660
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		25.820
96000338	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Batch	PU-236 DECAY CORR'D VALUE (dpm/mL)		2347.415	Pu 239/240 µCi/L		1.3350E+02
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Resp	STANDARD BOOK NO		104B43			
N/A	STANDARD VALUE in µCi/mL		0.128			
Sample #						
WL4886						
Instrument Code						
AL10539						
Prepared By						
MCB						
Chemists						
LLF						
Analyst						
AKL						
Date Complete						
01/24/96						
Analysis Date						
01/23/96						
Analysis Time						
03:00 PM						
Sample Point						
AN-102 GRAB						

Decay Time = Date Counted - Tracer Preparation Date
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]
Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

v RESULTS v

Pu 239/240 µCi/mL		1.33E-01	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	2.6%	Pu 239/240 1.34E-02
Pu 236 Tracer Recovery	=	56.2%	

Analyst: AKL Date: 24-Jan-96
Signature of Chemist: LLF Date: 29 Jan 96

STANDARD.WB1 REV 1.2 943127ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type	DATE COUNTED		JAN-23-96	PU 236 AEA FRAC	(C236)	0.957
BLNK	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
4886	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2009
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		3.000
Matrix	DETECTOR NUMBER		2	PU 236 cpm		12.750
LIQUID	EFFICIENCY FACTOR	EFF	0.5000	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.000
96000338	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2347.41	Pu 239/240 µCi/L =	<	1.271E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.00			

Sample Prep
N/A

Sample #
WL4886

Instrument Code
AL10540

Prepared By
MCB

Chemist
LLF

Analyst
AKL

Date Complete
01/24/96

Analysis Date
01/23/96

Analysis Time
03:00 PM

Sample Point
AN-102 GRAB

BLNK

Decay Time = Date Counted - Tracer Preparation Date
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

v RESULTS v

Pu 239/240 µCi/mL		< 1.27E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 1.27E-04
Pu 238 µCimL		< 1.27E-04	
Relative Counting Error	=	100.0%	Pu 238 1.27E-04
Pu 236 Tracer Recovery	=	52.2%	

Analyst:	AKL	Date:	24-Jan-96
Signature of Chemist:	LLF	Date:	29 Jan 96

BLANK.WB1 REV 1.2 943127ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		JAN-23-96	PU 236 AEA FRAC	(C236)		0.000
SAMPLE	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC	(C238)		0.162
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.688
4886	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			3426
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		6.000
Matrix	DETECTOR NUMBER		3	PU 236 cpm			0.000
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm			5.080
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			21.640
96000338	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Alpha	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2347.415	Pu 239/240 µCi/L			ERR
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				

Sample Date
N/A

Sample #
S95T003870

Instrument Code
AL1053841

Prepared By
MCB

Chemist
LLF

Analyst
AKL

Date Completed
01/24/96

Analysis Date
01/23/96

Analysis Time
03:00 PM

Sample Code
AN-102 GRAB

Decay Time = Date Counted - Tracer Preparation Date
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]
Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

v RESULTS v

Pu 239/240 µCi/mL		ERR		DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%		
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238 µCimL		< ERR		ERR
Relative Counting Error	=	100.0%		Pu 238
Pu 236 Tracer Recovery	=	0.0%		ERR

Analyst:	AKL	Date:	24-Jan-96
Signature of Chemist:	LLF	Date:	29 Jan 96

SAMPLE.WB1 REV 1.2 943127ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

							DUP
Type	DATE COUNTED		JAN-23-96	PU 236 AEA FRAC		(C236)	0.000
DUP	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC		(C238)	0.178
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.747
4886	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			4705
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm		(Bkg)	6.000
Matrix	DETECTOR NUMBER		1	PU 236 cpm			0.000
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm			8.670
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			36.410
96000338	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2347.415	Pu 239/240 µCi/L			ERR
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Matrix 2 Desc							
N/A							
Sample #	Decay Time = Date Counted - Tracer Preparation Date						
S95T003870	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]						
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)						
AL10539	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]						
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-236 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)						
MCB	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]						
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100						
LLF							
Analyst							
AKL							
Date Completed	v RESULTS v						
01/24/96	Pu 239/240 µCi/mL		ERR				DETECTION LEVELS In µCi/mL
Analysis Date	Relative Counting Error	=	100.0%				
01/23/96							
Analysis Time	NOTE: Pu 238 Result Is a LESS THAN Value.						Pu 239/240
03:00 PM	Pu 238 µCimL		< ERR				ERR
Sample Point	Relative Counting Error	=	100.0%				Pu 238
AN-102 GRAB	Pu 236 Tracer Recovery	=	0.0%				ERR

Analyst:	AKL	Date:	24-Jan-96
Signature of Chemist:	LLF	Date:	29 Jan 96

SAMPLE.WB1 REV 1.2 943127ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

Type	DATE COUNTED		JAN-23-96	PU 236 AEA FRAC	(C236)	0.000
SAMPLE	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.643
4886	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		965
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)	3.000
Matrix	DETECTOR NUMBER		2	PU 236 cpm		0.000
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm		0.250
96000338	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2347.415	Pu 239/240 µCi/L		ERR
0	PU-238 TRACER VALUE (dpm/mL)		0.000			

SAMPLE

Sample Corr.
N/A
Sample #
S95T003963
Instrument Code
AL10540
Prepared By
MCB
Chemist
LLF
Analyst
AKL
Date Completed
01/24/96
Analysis Date
01/23/96
Analysis Time
03:00 PM
Sample Point
AN-102 GRAB

Decay Time = Date Counted - Tracer Preparation Date
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

v RESULTS v

Pu 239/240 µCi/mL		ERR		DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%		
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238 µCimL		< ERR		ERR
Relative Counting Error	=	100.0%		Pu 238
Pu 236 Tracer Recovery	=	0.0%		ERR

Analyst:	AKL	Date:	24-Jan-96
Signature of Chemist:	LLF	Date:	29 Jan 96

SAMPLE.WB1 REV 1.2 943127ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-127 (B-1) LIQUID / SOLID

							DUP
Type	DATE COUNTED		JAN-23-96	PU 236 AEA FRAC	(C236)		0.000
DUP	SAMPLE VOLUME in mL	SS	0.050	PU 238 AEA FRAC	(C238)		0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.589
4886	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			361
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm	(Bkg)		6.000
Matrix	DETECTOR NUMBER		3	PU 236 cpm			0.000
LIQUID	EFFICIENCY FACTOR	EFF	0.500	PU 238 cpm			0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm			0.120
96000338	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2347.415	Pu 239/240 µCi/L			ERR
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S95T003963	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
AL-10541	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
MCB	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
LLF	
Analyst	
AKL	
Date Completed	v RESULTS v

01/24/96	Pu 239/240 µCi/mL		ERR	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	100.0%	
01/29/96				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
03:00 PM	Pu 238 µCimL		< ERR	ERR
Sample Point	Relative Counting Error	=	100.0%	Pu 238
AN-102 GRAB	Pu 236 Tracer Recovery	=	0.0%	ERR

Analyst:	AKL	Date:	24-Jan-96
Signature of Chemist:	LLF	Date:	29 Jan 96

SAMPLE.WB1 REV 1.2 943127ML

DATA NOT USED IN PACKAGE

677

D. H. Milbrin
1-29-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
WL4886-STD
File ID: 13a195.CNF

Counted on: 1/23/96 @23:27
Detector: AEA13
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1048.0	1048.0	361.389	361.389	10.000	2.116	5.000	1.450
2?	18.5	18.5	302.950	302.947	10.000	2.443	5.000	1.635
3	1402.4	1402.4	228.342	228.342	10.000	2.696	5.000	2.666

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.424	5.755	5.768	-.013	0.01	20.66	2.0	217.2	0.978E-04
	Cm243		5.779	5.768	0.011				291.5	0.131E-03
2		????		5.500			0.38	14.5		
3	Pu239	0.530	5.147	5.156	-.009	0.01	25.82	1.8	265.9	0.120E-03
	Pu240		5.144	5.156	-.012				265.9	0.120E-03
		---					---			
Totals:		0.954	<--valid peaks only-->				46.48			

DETECTOR CALIBRATION

Energy(MEV) = 4.106 + (0.0046)*Channel
Energy range (MeV): 4.106 TO 6.461
Efficiency = 0.0971 CPM/DPM

DATA NOT USED IN PACKAGE

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23380.0	100.000
Smoothed	23380.0	100.000
Composite fit	22499.6	96.235
Residuals	880.4	3.765

Analyzed by: _____
EMB

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                    Spectrum 13a195.CNF
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    8619.3

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2
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2

1
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DATA NOT USED IN PACKAGE

Raw Data Dump for AEA Spectrum: 13a195.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
31	1.	0.	0.	1.	0.	1.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
71	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	1.	1.	0.	0.	0.	1.	0.	0.	1.
91	1.	0.	0.	0.	0.	0.	1.	0.	0.	1.
101	1.	0.	0.	0.	0.	1.	0.	1.	1.	0.
111	0.	0.	1.	0.	1.	1.	0.	1.	1.	0.
121	0.	1.	1.	0.	0.	0.	0.	1.	0.	2.
131	0.	2.	1.	1.	0.	0.	0.	1.	0.	2.
141	0.	1.	0.	1.	0.	1.	1.	0.	2.	2.
151	0.	1.	0.	0.	0.	0.	0.	1.	1.	1.
161	1.	0.	1.	0.	1.	0.	1.	0.	0.	1.
171	1.	1.	0.	0.	3.	0.	1.	1.	2.	0.
181	1.	3.	1.	3.	0.	2.	4.	1.	2.	3.
191	4.	0.	1.	6.	3.	3.	1.	5.	5.	2.
201	5.	3.	8.	8.	8.	8.	11.	10.	12.	18.
211	18.	36.	43.	59.	85.	136.	200.	261.	235.	231.
221	254.	301.	391.	534.	817.	1146.	1590.	1812.	1830.	1394.
231	845.	383.	147.	55.	8.	0.	0.	0.	1.	0.
241	0.	0.	0.	1.	0.	0.	1.	1.	1.	1.
251	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
261	0.	0.	0.	2.	0.	2.	0.	2.	2.	0.
271	0.	0.	0.	0.	0.	1.	0.	2.	1.	1.
281	2.	1.	0.	0.	1.	2.	2.	0.	2.	0.
291	0.	7.	6.	6.	5.	6.	11.	8.	6.	12.
301	16.	16.	26.	24.	13.	5.	4.	0.	2.	0.
311	3.	4.	0.	0.	0.	1.	1.	1.	0.	0.
321	0.	1.	0.	2.	0.	2.	0.	5.	3.	4.
331	6.	2.	6.	4.	2.	3.	7.	4.	8.	6.
341	14.	9.	14.	25.	26.	45.	69.	109.	198.	312.
351	421.	463.	407.	289.	213.	288.	302.	480.	717.	1058.
361	1406.	1462.	1067.	504.	146.	26.	2.	1.	1.	1.
371	3.	4.	2.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

D Hmilcia
1-24-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. I

DATA REDUCTION REPORT

SAMPLE
WL4886-BLK
File ID: 14a1400.CNF

Counted on: 1/23/96 @23:27
Detector: AEA14
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	558.8	558.8	361.887	361.887	10.000	2.460	5.000	1.362

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.957	5.755	5.756	-.0010	.01	12.75	2.5	1032.9	0.465E-03
Totals:		0.957	<--valid peaks only-->				12.75			

DETECTOR CALIBRATION

Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.0126 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	6397.0	100.000
Smoothed	6397.0	100.000
Composite fit	6122.8	95.714
Residuals	274.2	4.286

Analyzed by: EMB

DATA NOT USED IN AVERAGE

Spectrum 14a1400.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 2765.2


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1....
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DATA NOT USED IN PACKAGE

Raw Data Dump for AEA Spectrum: 14a1400.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
61	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
81	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
91	1.	1.	0.	0.	1.	0.	0.	1.	0.	0.
101	0.	0.	0.	0.	1.	0.	2.	0.	0.	0.
111	0.	2.	0.	1.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	1.	0.	0.	2.	1.	0.	0.
131	0.	0.	1.	0.	1.	0.	0.	0.	1.	2.
141	0.	0.	1.	1.	1.	1.	0.	1.	0.	0.
151	0.	1.	0.	1.	2.	0.	0.	0.	0.	0.
161	0.	0.	3.	0.	0.	0.	0.	1.	0.	0.
171	1.	0.	1.	1.	0.	0.	3.	0.	0.	2.
181	1.	0.	1.	1.	0.	0.	1.	1.	0.	1.
191	1.	0.	0.	2.	0.	1.	2.	0.	3.	2.
201	3.	3.	1.	3.	5.	3.	1.	2.	3.	2.
211	3.	1.	2.	3.	3.	6.	5.	4.	7.	7.
221	11.	6.	4.	4.	8.	15.	9.	10.	14.	7.
231	5.	7.	1.	1.	0.	0.	0.	0.	0.	0.
241	0.	0.	0.	0.	0.	0.	0.	0.	3.	0.
251	0.	1.	1.	0.	1.	1.	1.	2.	1.	0.
261	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
271	1.	1.	0.	0.	0.	0.	2.	2.	0.	0.
281	1.	0.	0.	0.	2.	1.	0.	1.	2.	1.
291	1.	2.	2.	1.	1.	1.	1.	4.	1.	7.
301	4.	5.	2.	5.	6.	3.	1.	1.	0.	2.
311	1.	1.	1.	0.	1.	1.	2.	1.	3.	1.
321	2.	0.	4.	1.	1.	1.	1.	4.	3.	4.
331	2.	2.	1.	6.	3.	4.	5.	6.	9.	11.
341	12.	13.	11.	17.	25.	32.	55.	76.	105.	161.
351	204.	264.	242.	237.	210.	218.	222.	262.	362.	495.
361	617.	733.	678.	451.	223.	60.	12.	0.	0.	1.
371	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

DATA NOT USED IN PA[illegible]

D.H. Milbin
1-24-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T870-SAM
File ID: 15a1581.CNF

Counted on: 1/23/96 @23:28
Detector: AEA15
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	197.5	197.5	303.909	303.909	10.000	2.745	5.000	1.279
2	894.7	894.7	228.638	228.638	10.000	3.461	5.000	2.027
3	23.3	23.3	161.485	161.467	140.000	1.000	70.000	0.100
4?	16.2	16.2	155.045	155.045	10.000	0.000	5.000	4.608
5?	16.2	16.2	147.935	147.553	10.000	1.795	5.000	1.704

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.162	5.487	5.507	-.020	0.01	5.08	4.0	63.2	0.285E-04
	Am241		5.479	5.507	-.028				48.4	0.218E-04
2	Pu239	0.688	5.147	5.160	-.013	0.02	21.64	1.9	193.7	0.873E-04
	Pu240		5.144	5.160	-.016				193.7	0.873E-04
3		0.059		4.851		0.00	1.86	6.6	16.6	0.749E-05
4		????		4.822			0.00	1000.		
5		????		4.787			0.26	45.2		
Totals:		0.909	<--valid peaks only-->				28.58			

DETECTOR CALIBRATION

Energy(MEV) = 4.109 + (0.0046)*Channel
Energy range (MeV): 4.109 TO 6.464
Efficiency = 0.1117 CPM/DPM

DATA NOT USED IN PACKAGE

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	15089.0	100.000
Smoothed	15089.0	100.000
Composite fit	13846.8	91.767
Residuals	1242.2	8.233

Analyzed by: _____
EMB

Spectrum 15a1581.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5814.1


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DATA
NOT USED
IN PACKAGE

Raw Data Dump for AEA Spectrum: 15a1581.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	3.	1.	1.	2.	1.	0.
31	2.	1.	2.	1.	1.	1.	1.	0.	0.	1.
41	1.	0.	3.	2.	2.	0.	2.	2.	3.	1.
51	1.	4.	2.	1.	3.	1.	3.	2.	2.	2.
61	2.	0.	2.	2.	1.	3.	0.	1.	3.	2.
71	2.	2.	2.	0.	1.	3.	0.	2.	3.	2.
81	3.	1.	6.	0.	1.	2.	4.	2.	0.	2.
91	3.	1.	3.	1.	2.	4.	4.	4.	5.	6.
101	5.	7.	5.	3.	1.	4.	3.	1.	2.	11.
111	3.	5.	11.	7.	8.	2.	6.	6.	11.	6.
121	12.	7.	7.	6.	5.	8.	7.	11.	10.	14.
131	8.	8.	6.	10.	8.	7.	8.	13.	15.	24.
141	10.	16.	26.	32.	33.	24.	41.	30.	36.	33.
151	20.	14.	13.	17.	18.	19.	19.	21.	16.	13.
161	14.	21.	16.	18.	14.	6.	10.	13.	17.	17.
171	14.	19.	12.	12.	19.	15.	18.	13.	12.	24.
181	18.	20.	21.	29.	15.	19.	22.	29.	31.	20.
191	20.	34.	29.	41.	42.	35.	41.	38.	50.	37.
201	37.	37.	47.	55.	58.	56.	63.	61.	64.	62.
211	99.	88.	99.	127.	129.	168.	219.	254.	261.	276.
221	311.	335.	376.	466.	572.	728.	917.	1041.	1114.	997.
231	691.	423.	273.	121.	32.	7.	8.	1.	2.	4.
241	3.	1.	3.	6.	0.	3.	1.	4.	1.	2.
251	5.	5.	7.	10.	6.	5.	5.	4.	6.	8.
261	2.	4.	5.	5.	9.	4.	8.	14.	9.	5.
271	6.	8.	3.	8.	8.	12.	14.	6.	10.	10.
281	9.	17.	16.	13.	15.	16.	22.	20.	20.	31.
291	45.	56.	61.	83.	113.	125.	103.	77.	89.	116.
301	133.	179.	240.	236.	234.	190.	94.	18.	5.	1.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
351	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
361	0.	1.	1.	1.	0.	1.	0.	0.	0.	0.
371	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

DATA NOT USED IN [illegible]

D. H. Milbin
1-24-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01 WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T870-DUP
File ID: 16a1669.CNF

Counted on: 1/23/96 @23:28
Detector: AEA16
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	419.1	419.1	303.359	303.359	10.000	2.326	5.000	1.519
2	1745.4	1745.4	229.300	229.300	12.000	3.218	6.000	2.592
3	35.8	35.8	149.612	149.612	20.000	11.079	10.000	6.648

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.178	5.487	5.482	0.005	0.01	8.67	3.0	647.4	0.292E-03
	Am241		5.479	5.482	-.003				495.9	0.223E-03
2	Pu239	0.747	5.147	5.142	0.005	0.01	36.41	1.5	1957.7	0.882E-03
	Pu240		5.144	5.142	0.002				1957.7	0.882E-03
3	Np237	0.026	4.769	4.775	-.006	0.05	1.27	7.9	78.5	0.353E-04
		---					---			
Totals:		0.951	<--valid peaks only-->				46.35			

DETECTOR CALIBRATION

Energy(MEV) = 4.087 + (0.0046)*Channel
Energy range (MeV): 4.087 TO 6.442
Efficiency = 0.0186 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23400.0	100.000
Smoothed	23400.0	100.000
Composite fit	22251.7	95.093
Residuals	1148.3	4.907

DATA NOT USED IN PACKAGE

Analyzed by: _____
EMB

Spectrum 16a1669.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11106.8


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DATA NOT USED IN PACKAGE

Raw Data Dump for AEA Spectrum: 16a1669.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	1.	0.	0.	1.	3.	1.
31	3.	1.	1.	0.	1.	0.	1.	2.	0.	1.
41	0.	1.	0.	1.	0.	1.	2.	2.	0.	2.
51	0.	1.	1.	0.	1.	2.	1.	1.	1.	1.
61	1.	1.	2.	2.	2.	4.	2.	0.	2.	2.
71	2.	2.	1.	0.	0.	0.	2.	0.	6.	0.
81	1.	3.	3.	1.	2.	1.	2.	0.	2.	1.
91	1.	2.	2.	1.	1.	0.	2.	2.	1.	3.
101	2.	5.	2.	0.	2.	1.	5.	2.	3.	0.
111	4.	6.	4.	5.	2.	5.	5.	9.	2.	5.
121	5.	4.	11.	5.	5.	9.	10.	2.	5.	5.
131	1.	6.	4.	6.	6.	2.	5.	5.	7.	4.
141	6.	8.	13.	22.	27.	32.	36.	34.	46.	38.
151	32.	32.	33.	21.	19.	9.	22.	12.	15.	14.
161	10.	11.	6.	10.	6.	12.	8.	5.	12.	9.
171	7.	7.	7.	8.	4.	8.	5.	7.	7.	8.
181	10.	6.	4.	5.	7.	10.	12.	7.	13.	13.
191	12.	9.	16.	9.	11.	11.	14.	20.	10.	14.
201	22.	13.	20.	18.	20.	24.	27.	31.	37.	46.
211	49.	56.	75.	78.	123.	194.	215.	282.	316.	381.
221	383.	442.	555.	653.	892.	1167.	1539.	1995.	2173.	2135.
231	1804.	1108.	641.	312.	119.	22.	2.	0.	1.	1.
241	1.	0.	0.	0.	3.	1.	2.	2.	3.	3.
251	1.	2.	2.	3.	2.	1.	2.	1.	2.	0.
261	5.	2.	6.	2.	1.	3.	3.	2.	1.	2.
271	2.	8.	4.	5.	7.	6.	4.	1.	9.	5.
281	11.	7.	4.	8.	13.	20.	18.	15.	24.	42.
291	67.	83.	132.	166.	166.	170.	121.	158.	176.	205.
301	304.	423.	565.	536.	427.	247.	59.	12.	5.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
351	0.	0.	0.	0.	0.	1.	1.	0.	1.	5.
361	1.	1.	1.	3.	1.	0.	0.	0.	2.	2.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

DATA NOT USED IN PACKAGE

D H Milbia
1-24-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3963-SAM
File ID: 17a1752.CNF

Counted on: 1/23/96 @23:29
Detector: AEA17
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	4.5	4.5	225.679	227.334	12.000	3.507	6.000	0.587

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu239	0.643	5.147	5.143	0.004	0.02	0.25	17.9	13.3	0.600E-05
	Pu240		5.144	5.143	0.001				13.3	0.600E-05
Totals:		0.643	<--valid peaks only-->				0.25			

DETECTOR CALIBRATION

Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.453
Efficiency = 0.0188 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	187.0	100.000
Smoothed	187.0	99.999
Composite fit	120.2	64.264
Residuals	66.8	35.736

Analyzed by: EMB

DATA NOT USED IN PACKAGE

Spectrum 17a1752.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 27.1

DATA NOT USED IN PACKAGE

Raw Data Dump for AEA Spectrum: 17a1752.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
131	0.	1.	2.	1.	0.	0.	0.	0.	0.	0.
141	0.	1.	1.	0.	2.	0.	0.	0.	0.	1.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
171	1.	0.	0.	2.	0.	0.	1.	0.	0.	0.
181	0.	1.	3.	1.	2.	0.	0.	2.	0.	2.
191	4.	2.	0.	3.	2.	3.	2.	2.	1.	1.
201	2.	2.	3.	2.	1.	2.	1.	0.	2.	3.
211	1.	3.	2.	4.	5.	2.	3.	3.	4.	1.
221	2.	3.	5.	5.	2.	2.	7.	4.	5.	4.
231	1.	1.	1.	0.	0.	0.	0.	0.	0.	2.
241	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
251	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
261	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
271	0.	1.	0.	0.	1.	1.	0.	0.	0.	1.
281	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.
291	0.	1.	0.	0.	0.	1.	0.	0.	0.	3.
301	3.	0.	2.	1.	0.	1.	0.	0.	0.	0.
311	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
351	1.	0.	0.	0.	1.	0.	0.	0.	2.	1.
361	0.	1.	1.	2.	3.	0.	1.	1.	3.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

DATA NOT USED IN PACKAGE

D. H. Milicia
1-24-96

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.01

WHC-SD-WM-DP-165, REV. 1

DATA REDUCTION REPORT

SAMPLE
S95T3963-DUP
File ID: 18a1828.CNF

Counted on: 1/23/96 @23:30
Detector: AEA18
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	5.1	5.1	226.169	224.564	12.000	2.621	6.000	1.347

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu239	0.589	5.147	5.134	0.013	0.01	0.12	25.5	15.1	0.682E-05
	Pu240		5.144	5.134	0.010				15.1	0.682E-05
Totals:		0.589	<--valid peaks only-->				0.12			

DETECTOR CALIBRATION

Energy(MEV) = 4.101 + (0.0046)*Channel
Energy range (MeV): 4.101 TO 6.456
Efficiency = 0.0081 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	100.0	100.000
Smoothed	100.0	100.000
Composite fit	58.9	58.867
Residuals	41.1	41.133

Analyzed by: _____
EMB

DATA NOT USED IN PACKAGE

Spectrum 18a1828.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 22.2

DATA NOT USED IN PACKAGE

Raw Data Dump for AFA Spectrum: 18a1828.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
121	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
151	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
161	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
171	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
181	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
191	0.	2.	0.	1.	0.	0.	0.	2.	1.	2.
201	0.	0.	1.	0.	0.	0.	0.	1.	1.	2.
211	0.	5.	1.	2.	0.	3.	0.	2.	2.	0.
221	5.	5.	2.	7.	7.	6.	1.	3.	1.	0.
231	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
241	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
251	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
261	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
271	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
281	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
291	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.
301	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
351	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
361	0.	0.	0.	0.	1.	1.	4.	3.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

DATA NOT USED IN PACKAGE

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

PART II

WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 0

ANALYTICAL SERVICES

45-DAY SAFETY SCREENING RESULTS FOR TANK 241-AN-102, GRAB SAMPLES 2AN-95-1 THROUGH 2AN-95-6 AND 102-AN-1 THROUGH 102-AN-4

Project Coordinator: Ruth A. Esch

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

by

Westinghouse Hanford Company
Box 1970
Richland, Washington

2-1

WHC-SD-WM-DP-165, REV. 0

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NARRATIVE

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WHC-SD-WM-DP-165, REV. 0

45 DAY SAFETY SCREENING RESULTS FOR TANK 241-AN-102 GRAB SAMPLES 2AN-95-1 THROUGH 2AN-95-6 AND 102-AN-1 THROUGH 102-AN-4

SUMMARY

Ten supernate grab samples (2AN-95-1, 2AN-95-2, 2AN-95-3, 2AN-95-4A, 2AN-95-5A, 102-AN-1, 102-AN-2, 102-AN-3(A), 102-AN-3(B), and 102-AN-4) and one field blank (2AN-95-6) were taken from tank 241-AN-102. The following analyses were performed in support of the Safety Screening program, as specified in the Tank 241-AN-102 Grab Sampling and Analysis Plan (TSAP) (reference 1): differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), density by specific gravity (Sp.G.), and total alpha activity (AT). The results for DSC and AT were compared to the safety screening limits at a confidence level of 95%.

Based on the results of vapor monitoring prior to sampling, the vapor in tank AN-102 dome space is far below the lower flammability limits (LFL) stated in the TSAP.

Eleven out of fourteen of the samples had DSC exotherms that exceeded the action limit of 480 joules/g (dry weight basis) stated in the TSAP and the Safety Screening Data Quality Objective (references 1 & 2). These high energetics results were expected for this tank, since tank 241-AN-102 is known to contain complexed waste. Appropriate notifications were made and total organic carbon (TOC) analyses were requested. The need for RSST analysis will be determined after review of the TOC results.

The accuracy and precision criteria was satisfied for most of the sample analyses. The following did not meet the specified precision criterion of ±10%: for DSC analysis, four of ten supernate samples, and one of four sludge samples; and for AT analysis one of four sludge samples.

None of the data indicate that the tank is "unsafe" when compared to the criteria in the Safety Screening Data Quality Objective (reference 2) with the exception of the energetics. However, with the high moisture content of 50%, the tank may be considered "conditionally" safe.

SCOPE

This document serves as the 45 day report deliverable for the tank 241-AN-102 grab samples collected during three sampling events. Two samples were collected on October 21, 1994, three on February 15, 1995, and five on November 30, 1995. Two additional samples and a field blank were collected December 14, 1995 to complete the November 1995 sampling event. All of the samples were subsampled and analyzed in accordance with the TSAP (reference 1). This document summarizes sample handling with respect to each sampling event. The analytical results from each sampling event are presented in separate summary tables. The analytical results section of this report provides an overall summary of the results from all ten samples.

Attachment 1 is provided as a cross-reference for relating the tank farm customer ID numbers with the 222-S Laboratory LABCORE sample numbers. The samples are arranged with respect to the sampling event in which they were collected. The subsamples that were generated in the laboratory for analysis are also identified in these diagrams.

Included in this report are the tank dome space flammability screening and primary safety screening results. Copies of the DSC and TGA raw data are also included.

Waste Compatibility analyses were performed on the samples that were collected in the third sampling event. The results from these and any required secondary analyses will be reported in a revision to this document.

TANK DOME SPACE FLAMMABILITY SCREENING

The dome space was sampled and analyzed for the presence of flammable gases prior to sampling tank AN-102. The results of the combustible gas monitoring inside riser 21A are presented in Table 1. Although the TSAP indicates that the results shall be reported as a percentage of the lower flammability limit (%LFL), the instrumentation used to collect the data reports as a percentage of the lower explosive limit (%LEL). For the purpose of screening the tank dome space, the %LEL is an acceptable substitute for %LFL, since the two values are used interchangably in reference to the physical properties of chemical hazards (reference 3).

Table 1: Characteristics of Vapor Space as Determined by Combustible Gas Monitoring
Tank 241-AN-102, Dome Space in Riser 21A

Vapor Characteristic Measured	Results
Flammable vapor concentration as percent of lower explosion limit (LEL)	0%
Volume percent oxygen gas	20.9%
Concentration of ammonia gas	300 ppm
Concentration of total organic carbon vapor	19 ppm

ppm = parts per million

APPEARANCE AND SAMPLE HANDLING

October 21, 1994 Sampling Event

Appearance

Two grab samples (102-AN-3(A) and 102-AN-4) were removed from tank 241-AN-102 riser 22A on October 21, 1994. The (A) was appended to sample number 102-AN-3 by the project coordinator to differentiate this sample from the sample with the same number collected On February 15, 1995.

Table 2 summarizes the appearance information for the samples for this sampling event. The reported sampling depths were recorded from the tank farm sample labels attached to the sample containers.

Table 2: Appearance for Tank 241-AN-102 Liquid Grab Samples from October 21,1994

CUSTOMER ID	LAB ID	SAMP DEPTH (IN.)	APPEARANCE			
			Color	Clarity	Org Layer	Solids
102-AN-3(A)	S96T000001	666	Dark yellow/brown	Translucent	None	74.1% Red/tan settled
102-AN-4	S95T003926	622	Dark yellow/brown	Translucent	None	Trace settled

Subsampling

These two samples were collected on October 21, 1994, but were archived at the 222-S Laboratory until they were subsampled for analysis on January 8, 1996.

For sample 102-AN-4, one unfiltered subsample was recovered for safety screening analyses only.

For sample 102-AN-3(A), first the volume percent settled solids was measured. The result is listed in Table 2. The supernate above the settled solids was then removed, and the remaining sludge was transferred to two centrifuge cones for volume percent solids by centrifugation determination, and for separation of solids from remaining liquids. Bulk densities of both the solid alone and the liquid alone were determined. Subsamples were created from both the centrifuged solid and decanted liquid portions and identical analyses were performed on each.

A summary of the analytical results for these two samples is presented in Table 3.

February 15, 1995 Sampling Event

Appearance

Three grab samples (102-AN-1, 102-AN-2, and 102-AN-3(B)) were removed from tank 241-AN-102 riser 22A on February 15, 1995. The (B) was appended to sample number 102-AN-3 by the project coordinator to differentiate this sample from the sample with the same number collected on October 21, 1994.

Table 4 summarizes the appearance information for the samples for this sampling event. The reported sampling depths were recorded from the tank farm sample labels attached to the sample containers.

Table 4: Appearance for Tank 241-AN-102 Liquid Grab Samples from February 15,1995

CUSTOMER ID	LAB ID	SAMP DEPTH (IN.)	APPEARANCE			
			Color	Clarity	Org Layer	Solids
102-AN-1	S95T003924	388	Dark yellow/brown	Translucent	None	Trace settled
102-AN-2	S95T003925	576	Dark yellow/brown	Translucent	None	Trace settled
102-AN-3(B)	S96T000002	603	Dark yellow/brown	Translucent	None	18.8% Red/tan settled

Subsampling

These three samples were collected on February 15, 1995, but were archived at the 222-S Laboratory until they were subsampled for analysis on January 8, 1996.

For samples 102-AN-1 and 102-AN-2, one unfiltered subsample was recovered from each of the two samples for safety screening analyses only.

For sample 102-AN-3(B), first the volume percent settled solids was measured. The result is listed in Table 4. The supernate above the settled solids was then removed, and the remaining sludge was transferred to a centrifuge cone

for volume percent solids by centrifugation determination, and for separation of solids from remaining liquids. Bulk densities of both the solid alone and the liquid alone were determined. Subsamples were created from both the centrifuged solid and decanted liquid portions and identical analyses were performed on each.

A summary of the analytical results for these three samples is presented in Table 5.

November 30 thru December 14, 1995 Sampling Event

Appearance

A third sampling event took place November 30, 1995. Three supernates (2AN-95-1, 2AN-95-2 and 2AN-95-3) and two sludge samples (2AN-95-4 and 2AN-95-5) were taken from tank 241-AN-102 riser 21A during this sampling event. Visual observation in the 222-S Laboratory indicated that there were no solids in the two sludge samples. Therefore, it was decided that one more sampling event was needed. During the final sampling event, on December 14, 1995, two sludge samples (2AN-95-4A and 2AN-95-5A) and a field blank (2AN-95-6) were collected from riser 21A. Since the samples were clearly related and recovered from the same riser, these two sampling events will be treated as one.

Table 6 summarizes the appearance information for the samples for this sampling event. The reported sampling depths were recorded from the tank farm sample labels attached to the sample containers. Note that the sampling depth for samples 2AN-95-2 and 2AN-95-3 were switched. This change was confirmed on the sample label, as well as by notes on the chain-of-custody forms. No solids were present in 2AN-95-4 and 2AN-95-5, and no analysis was performed on these samples.

Table 6: Appearance for Tank 241-AN-102 Liquid Grab Samples from November 30 thru December 14, 1995

CUSTOMER ID	LAB ID	SAMP DEPTH (IN.)	APPEARANCE			
			Color	Clarity	Org Layer	Solids
2AN-95-1	S95T003864	370	Dark yellow/brown	Translucent	None	None
2AN-95-2	S95T003865	460	Dark yellow/brown	Translucent	None	Trace settled
2AN-95-3	S95T003866	550	Dark yellow/brown	Translucent	None	None
2AN-95-6 Field Blank	S95T003961	240	Dark yellow/brown	Translucent	None	None
2AN-95-4A	S95T003959	654	Dark yellow/brown	Translucent	None	61.5% tan settled
2AN-95-5A	S95T003960	667	Dark yellow/brown	Translucent	None	61.5% tan settled

Subsampling

These six samples were collected on November 30 and December 14, 1995 and were subsampled for analysis between January 5 and 11, 1996.

For samples 2AN-95-1, 2AN-95-2, and 2AN-95-3, two unfiltered subsamples were recovered from each for safety screening and compatibility analyses, and one from each for archive.

For samples 2AN-95-4A and 2AN-95-5A, first the volume percent settled solids was measured. The results are listed in Table 6. The samples were then shaken to suspend the settled solids. The resulting slurry for each sample was then transferred to three centrifuge cones for volume percent solids by

centrifugation determination, and for separation of solids from liquids. Bulk densities of the wet sludge, the solid alone and the liquid alone were determined. Subsamples were created from both the centrifuged solid and decanted liquid portions and identical analyses were performed on each.

A summary of the analytical results for the six acceptable samples is presented in Table 7.

ANALYTICAL RESULTS

Differential Scanning Calorimetry (DSC)

The energetics determination was performed by DSC using procedures LA-514-114 Rev. C-1 and LA-514-113 Rev. C-1. The two procedures are for the Perkin-Elmer and Mettler DSC instruments, respectively. The analysis was performed in duplicate on direct samples. The exothermic energy based on a dry weight of sample was calculated for all samples except the field blank, which did not exhibit any exotherms. The average of two TGA results (sample and duplicate) was used in the dry weight correction for all but one sample. For sample 2AN-95-2, the dry weight calculation used an average of three TGA results (sample, duplicate, and triplicate) in the calculation.

Twelve of the fourteen samples collected from this tank exhibited exotherms. Ten of the dry weight results were in the range of 389.2 joules/g to 720.0 joules/g. One sample (2AN-95-2) had a significantly larger dry weight exotherm of 1201 joules/g. The results for the remaining three samples were less than 60 joules/g.

Nine out of the fourteen wet weight results exceeded the action limit of 480 joules/g. These high results were expected based on the knowledge of the presence of a high concentration of total organic carbon (TOC) in this tank.

An interference was observed with two of the fourteen samples (2AN-95-1 and 102-AN-3(A)) analyzed for DSC that created unacceptable baseline curvature which biased the integration. These samples were reanalyzed on a different instrument and a better baseline was observed. The second instrument yielded results that were more consistant with those obtained for the other samples analyzed, therefore the first set of results were not used in this report. However, the raw data scans for these two samples are attached at the end of the document, and marked as "Data Not Used in Package".

The relative percent difference (RPD) between the sample and duplicate results for four supernate samples and one sludge sample was outside of the criterion of ±10%. The RPDs were: sample 102-AN-4 (S95T003984), RPD = 12.4%; sample 102-AN-1 (S95T003982), RPD = 11.0%; sample 102-AN-2 (S95T003983), RPD = 25.0%; sample 102-AN-3(B) (S96T000006) RPD = 200.0%; and 2AN-95-5A (S95T004139), RPD = 14.5%. Typically a triplicate sample is analyzed when the RPD is greater than 10%. However, no additional analyses were performed for sample 102-AN-3(B) because the results were well below the action limit. For the other samples, statistics show that with a third analysis, the 95% upper confidence limit would still be above the action limit.

The 95% upper confidence limit was calculated for each sample. The upper limit for eleven of the fourteen samples was greater than the action limit of 480 joules/g. The results are presented in Table 8.

Table 8: Comparison of Dry Weight DSC Results at a Confidence Level of 95%

Customer ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (mean)
SUPERNATES	joules/g	joules/g	joules/g		joules/g
102-AN-1	563.6	629.4	596.5	46.5	804.2
102-AN-2	720.3	560.2	640.3	113.2	1145.7
102-AN-4	440.8	389.2	415.0	36.5	577.9
2AN-95-1	558.2	558.4	558.3	0.14	558.9
2AN-95-2	1201	1088	1145	79.9	1501
2AN-95-3	555.3	566.1	560.7	7.6	594.8
2AN-95-6 Field Blank	0.00	0.00	0.00	0.00	0.00
SLUDGES					
Decanted Supernates	joules/g	joules/g	joules/g		joules/g
102-AN-3(A)	465.6	452.3	459.0	9.4	500.9
102-AN-3(B)	0.00	52.21	26.10	36.9	190.9
2AN-95-4A	487.1	475.9	481.5	7.9	516.9
2AN-95-5A	556.5	597.5	577.0	29.0	706.4
Centrifuged Solids	joules/g	joules/g	joules/g		joules/g
102-AN-3(A)	0.00	0.00	0.00	0.00	0.00
102-AN-3(B)	0.00	0.00	0.00	0.00	0.00
2AN-95-4A	488.1	458.2	473.2	21.1	567.5
2AN-95-5A	492.1	569.1	530.6	54.4	773.7

Thermogravimetric Analysis (TGA)

The percent moisture content was determined by TGA using procedures LA-514-114 Rev. C-1 and LA-560-112 Rev. B-1. The procedures are for the Perkin-Elmer and Mettler TGA instruments, respectively. The analysis was performed in duplicate on direct samples.

Results for the supernates and decanted supernates were in the range of 47.39 to 50.13 percent moisture. The field blank gave an average result of 100.0 percent moisture. Most of the samples (except for the field blank) produced more than one weight loss step between approximately 50° C to 400° C. Any weight less steps that occurred beyond 200 to 250° C were not included in the calculation of the final results. The relative percent difference (RPD) between sample and duplicate results for all supernate samples were within the criterion of ±10%.

The results for the centrifuged solids were in the range of 35.60 to 44.25 percent moisture. Here again, more than one weight loss step was seen for each of the samples, with only the weight loss occurring less than about 200 to 250° C used in the final calculations. The relative percent difference (RPD) between sample and duplicate results for all of the centrifuged solid samples were within the criterion of ±10%.

Density

The density measurements obtained for the sludge samples were determined by performing a bulk density analysis during subsampling, using procedure LO-160-103 Rev. B-0. A single determination was made for each phase (i.e. solids alone, liquids alone, and wet sludge (for samples 2AN-95-4A and 2AN-95-5A only)).

The densities obtained for all of the sludge samples are listed below.

102-AN-3(A)	decanted liquid	1.28 g/mL
	centrifuged solid	1.64 g/mL
102-AN-3(B)	decanted liquid	1.39 g/mL
	centrifuged solid	1.56 g/mL
2AN-95-4A	sludge	1.47 g/mL
	decanted liquid	1.35 g/mL
	centrifuged solid	1.57 g/mL
2AN-95-5A	sludge	1.50 g/mL
	decanted liquid	1.39 g/mL
	centrifuged solid	1.58 g/mL

Total Alpha (AT)

The AT determination was performed using procedure LA-508-101 Rev. D-2. The analysis was performed in duplicate on direct samples for the supernates. The solid portion of the sludge samples was prepared for analysis, in duplicate, using a fusion digest following procedure LA-549-141 Rev. D-0. The fusion digest is indicated with an "F" in the aliquot class (A#) column in the LABCORE summary tables.

The maximum result for the supernate samples was 0.202 μCi/mL. The maximum result for the supernate that was decanted off of the centrifuged solids of the sludge samples was 0.239 μCi/mL. All of the results were at least two orders of magnitude below the action limit of 61.5 μCi/mL for liquid samples. The RPDs for all supernate samples were within the criterion of ±20% for liquid samples.

The maximum result for the centrifuged solids was 0.952 μCi/g. This result is well below the action limit of 38.9 μCi/g, which is based on an average density of 1.58 g/mL for the centrifuged solids. The RPDs for all solid samples were within the criterion of ±10%, except for one (102-AN-3(B)), which had an RPD = 20.1%. This high RPD was attributed to low alpha activity in the sample. No reruns were performed because the results are significantly below the action limit, and historically, additional analyses on low activity samples have not improved the RPDs.

The 95% upper confidence limits were calculated for each sample, and are presented in Table 9. The maximum liquid result of 0.296 μCi/mL, is still well below the action limit of 61.5 μCi/mL, and 1.41 μCi/g is well below the action limit of 38.9 μCi/g for the solids.

WHC-SD-WM-DP-165, REV. 0

Table 9: Comparison of Total Alpha Results at a Confidence Level of 95%

Customer ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (mean)
SUPERNATES	µCi/mL	µCi/mL	µCi/mL		µCi/mL
102-AN-1	0.144	0.156	0.150	8.49e-3	0.188
102-AN-2	0.116	0.116	0.116	0.000	0.116
102-AN-4	0.159	0.174	0.167	1.06e-2	0.214
2AN-95-1	0.175	0.173	0.174	1.41e-3	0.180
2AN-95-2	0.182	0.169	0.176	9.19e-3	0.216
2AN-95-3	0.169	0.202	0.186	2.33e-2	0.290
2AN-95-6 Field Blank	<5.86e-6	<1.04e-5	n/a	n/a	n/a
SLUDGES					
Decanted Supernates	µCi/mL	µCi/mL	µCi/mL		µCi/mL
102-AN-3(A)	0.175	0.208	0.192	2.33e-2	0.296
102-AN-3(B)	0.239	0.218	0.229	1.48e-2	0.295
2AN-95-4A	0.168	0.171	0.170	2.12e-3	0.178
2AN-95-5A	0.137	0.153	0.145	1.13e-2	0.196
Centrifuged Solids	µCi/g	µCi/g	µCi/g		µCi/g
102-AN-3(A)	0.306	0.332	0.319	1.84e-2	0.401
102-AN-3(B)	0.952	0.778	0.865	1.23e-1	1.414
2AN-95-4A	0.459	0.464	0.462	3.54e-3	0.477
2AN-95-5A	0.329	0.333	0.331	2.83e-3	0.344

n/a - These calculations are not applicable with results that are less than the detection limit.

References

1. WHC-SD-WM-TSAP-065, REV. 1, "Tank 241-AN-102 Grab Sampling and Analysis Plan", dated December 6, 1995, Westinghouse Hanford Company, Richland, WA 99352.

2. WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352.

3. NIOSH Pocket Guide to Chemical Hazards, 1994 edition.

ATTACHMENT 1

AN-102 GRAB SAMPLE BREAKDOWN

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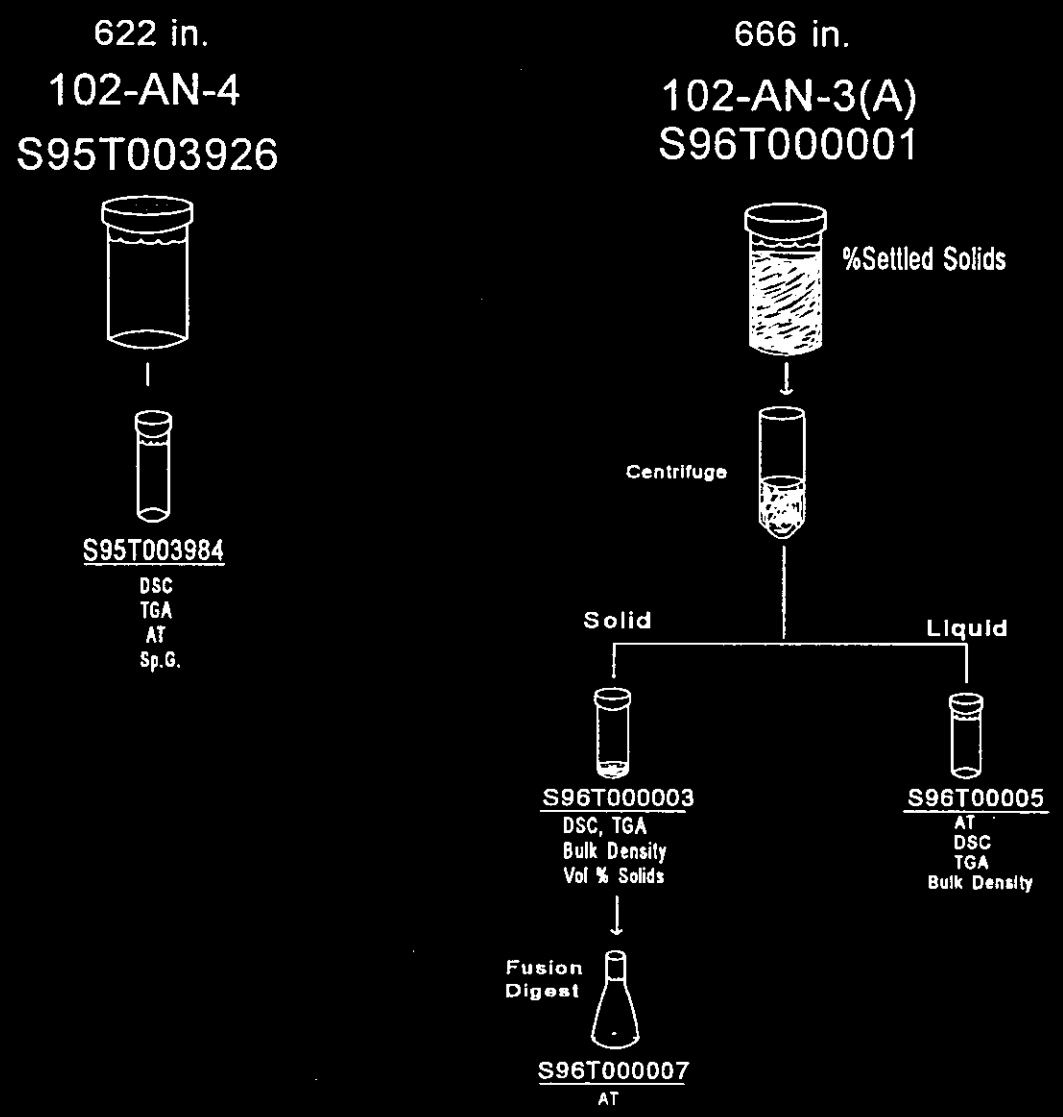
Attachment 1 (1 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 22A

October 21, 1994 Sampling Event

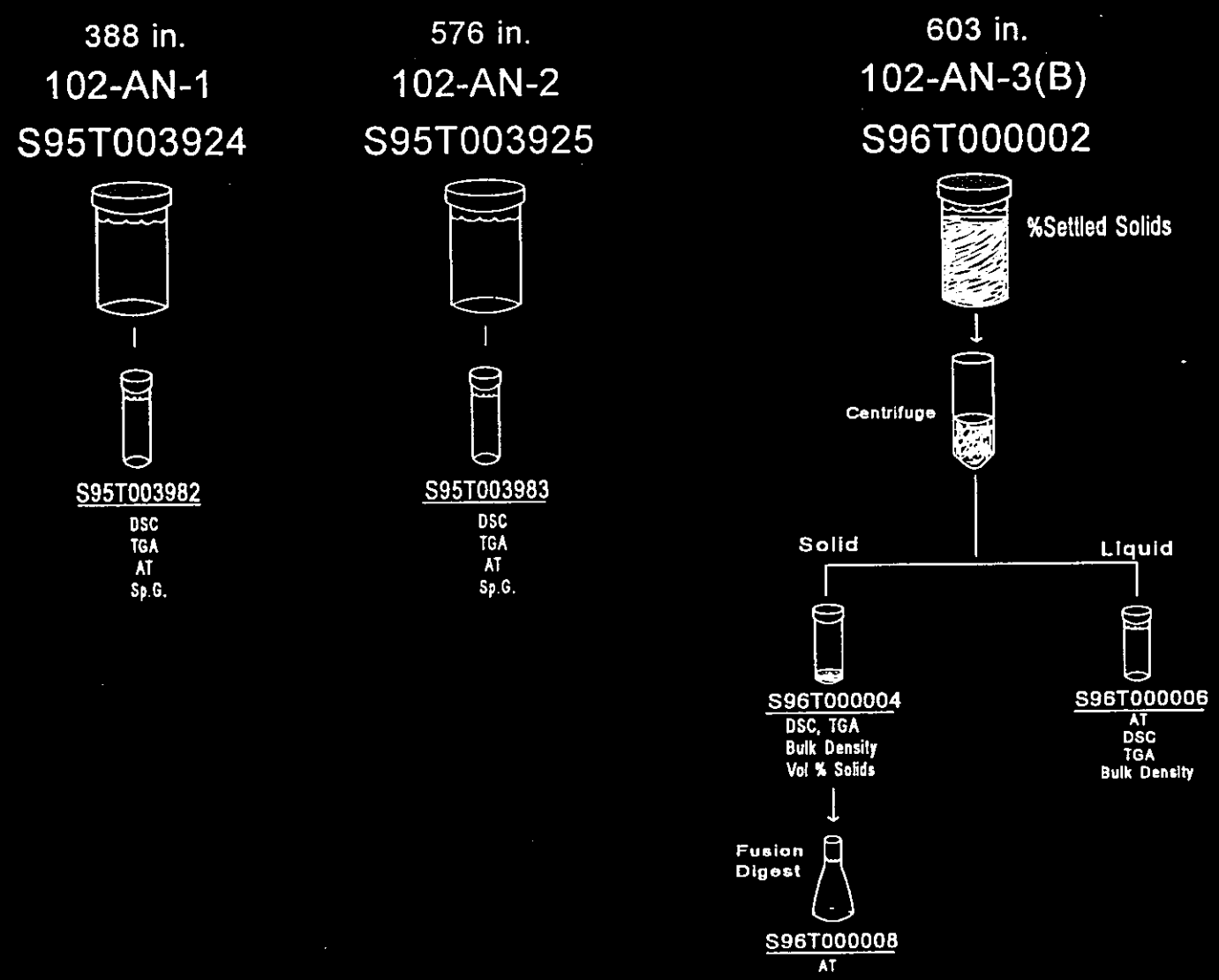


Attachment 1 (2 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 22A

February 15, 1995 Sampling Event



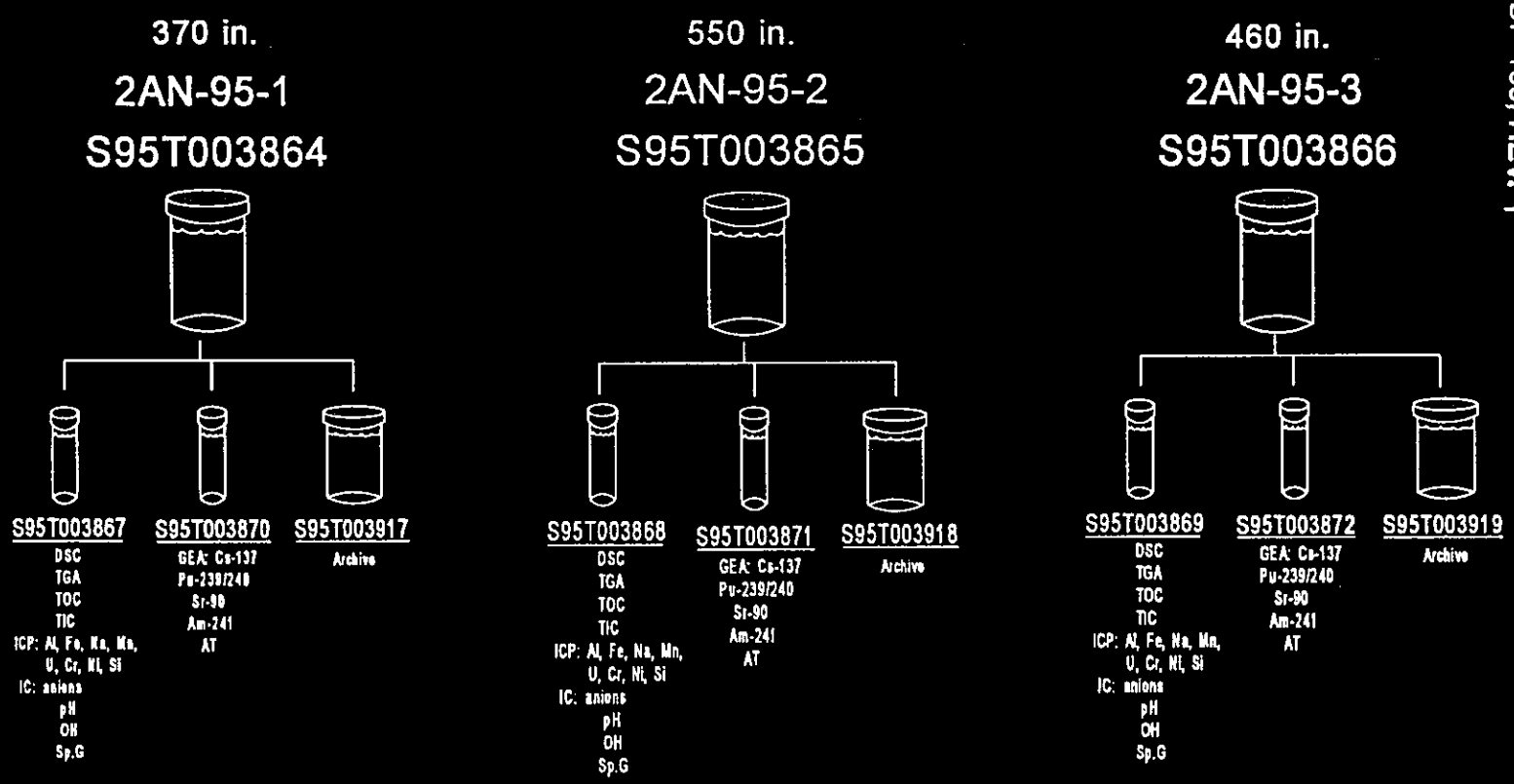
WHC-SD-WM-DP-165, REV. 1

Attachment 1 (3 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 21A

November 30, 1995 Sampling Event

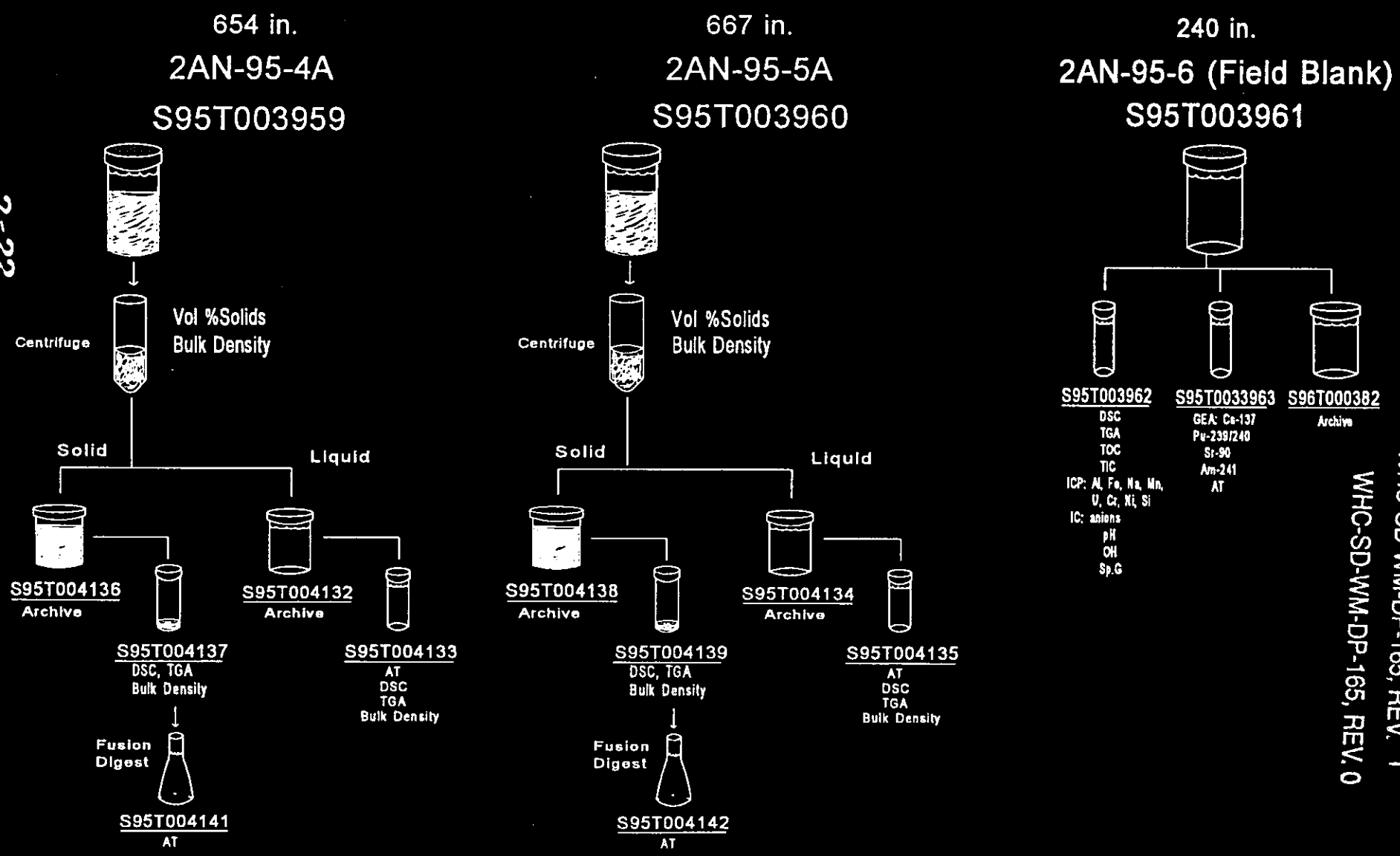


Attachment 1 (4 of 4)

AN-102 GRAB SAMPLE BREAKDOWN

Riser 21A

December 14, 1995 Sampling Event



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WHC-SD-WM-DP-165, REV. 1

WHC-SD-WM-DP-165, REV. 0

SAMPLE DATA SUMMARIES

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TAble 3: Safety Screen Results for 10/21/94 Sampling Event
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-3(A)

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000005			% Water by TGA using Mettler	%	None	None	101.7	n/a	49.09	49.10	49.09	0.02	n/a	n/a	n/a
S96T000005			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	465.6	452.3	459.0	2.90	n/a	n/a	n/a
S96T000005			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	106.9	n/a	237.0	230.2	233.6	2.91	n/a	n/a	n/a
S96T000005			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.280	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T000005			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	105.2	<9.31e-03	1.75e-01	2.08e-01	1.92e-01	17.2	104.6	1.93e-02	1.89E+01

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000003			% Water by TGA using Mettler	%	None	None	102.0	n/a	35.60	35.98	35.79	1.06	n/a	n/a	n/a
S96T000003			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	101.1	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T000003			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T000003			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.640	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T000007	F		Alpha of Digested Solid	uCi/g	-1.0e+00	38.90	92.06	<1.11e-02	3.06e-01	3.32e-01	3.19e-01	8.15	80.36	3.12e-02	1.71E+01

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Table 3: Safety Screen Results for 10/21/94 Sampling Event
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-4

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003984			% Water by TGA using Mettler	%	None	None	102.0	n/a	49.33	49.38	49.36	0.10	n/a	n/a	n/a
S95T003984			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	440.8	389.2	415.0	12.4	n/a	n/a	n/a
S95T003984			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	96.66	n/a	223.2	197.1	210.1	12.4	n/a	n/a	n/a
S95T003984			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	100.6	<8.88e-03	1.59e-01	1.74e-01	1.66e-01	9.01	n/a	2.17e-02	2.02E+01

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Table 5: Safety Screen Results for 02/15/95 Sampling Event
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003982			% Water by TGA using Mettler	%	None	None	102.0	n/a	50.06	49.07	49.56	2.00	n/a	n/a	n/a
S95T003982			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	563.6	629.4	596.5	11.0	n/a	n/a	n/a
S95T003982			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	96.66	n/a	284.2	317.4	300.8	11.0	n/a	n/a	n/a
S95T003982			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	100.6	<8.88e-03	1.44e-01	1.56e-01	1.50e-01	8.00	100.5	2.17e-02	2.10E+01

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Table 5: Safety Screen Results for 02/15/95 Sampling Event
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003983			% Water by TGA using Mettler	%	None	None	102.0	n/a	49.76	49.91	49.83	0.30	n/a	n/a	n/a
S95T003983			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	720.3	560.2	640.2	25.0	n/a	n/a	n/a
S95T003983			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	96.66	n/a	361.3	281.0	321.1	25.0	n/a	n/a	n/a
S95T003983			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	100.6	<8.88e-03	1.16e-01	1.16e-01	1.16e-01	0.00	n/a	2.17e-02	2.54E+01

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Table 5: Safety Screen Results for 02/15/95 Sampling Event
AN-102 GRAB

RISER: 22A
SEGMENT #: 102-AN-3(B)

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000006			% Water by TGA using Mettler	%	None	None	101.7	n/a	47.61	47.17	47.39	0.93	n/a	n/a	n/a
S96T000006			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	99.33	n/a	0.00e+00	27.47	13.73	200	n/a	n/a	n/a
S96T000006			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	52.21	26.11	200	n/a	n/a	n/a
S96T000006			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.390	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T000006			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.30	105.2	<9.31e-03	2.39e-01	2.18e-01	2.28e-01	9.19	n/a	1.93e-02	1.61E+01

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000004			% Water by TGA using Mettler	%	None	None	102.0	n/a	44.25	43.72	43.98	1.20	n/a	n/a	n/a
S96T000004			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	100.2	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T000004			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T000004			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.560	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T000008		F	Alpha of Digested Solid	uCi/g	-1.0e+00	38.90	92.06	<1.11e-02	9.52e-01	7.78e-01	8.65e-01	20.1	n/a	4.25e-02	1.07E+01

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Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003867			% Water by TGA on Perkin Elmer	%	None	None	101.7	n/a	49.74	48.54	49.14	2.44	n/a	n/a	n/a
S95T003867			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	558.2	558.4	558.3	0.04	n/a	n/a	n/a
S95T003867			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	104.0	n/a	283.9	284.0	283.9	0.04	n/a	n/a	n/a
S95T003870			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	90.26	<1.17e-02	1.75e-01	1.73e-01	1.74e-01	1.15	91.07	2.71e-02	1.91E+01

=> Limit violated
=> Selected Limit

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Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003868			% Water by TGA using Mettler	%	None	None	102.1	n/a	48.58	49.35	48.97	1.57	n/a	n/a	n/a
S95T003868			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.20e+03	1.09e+03	1.15e+03	9.93	n/a	n/a	n/a
S95T003868			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	108.3	n/a	616.1	557.8	587.0	9.93	n/a	n/a	n/a
S95T003871			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	90.26	<1.17e-02	1.82e-01	1.69e-01	1.75e-01	7.41	n/a	2.71e-02	1.91E+01

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=> Selected Limit

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Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-3

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003869			% Water by TGA using Mettler	%	None	None	102.5	n/a	50.13	50.02	50.08	0.22	n/a	n/a	n/a
S95T003869			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	99.75	n/a	277.2	282.6	279.9	1.93	n/a	n/a	n/a
S95T003869			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	555.3	566.1	560.7	1.93	n/a	n/a	n/a
S95T003872			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	90.26	<1.17e-02	1.69e-01	2.02e-01	1.85e-01	17.8	n/a	2.71e-02	2.01E+01

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Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-4A

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T004133			% Water by TGA on Perkin Elmer	%	None	None	101.6	n/a	45.26	48.80	47.03	7.53	n/a	n/a	n/a
S95T004133			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	98.95	n/a	258.0	252.1	255.1	2.31	n/a	n/a	n/a
S95T004133			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	487.1	475.9	481.5	2.33	n/a	n/a	n/a
S95T004133			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
S95T004133			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	97.55	<2.40e-02	1.68e-01	1.71e-01	1.70e-01	1.77	110.2	3.26e-02	2.37E+01

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003959			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.470	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004137			% Water by TGA on Perkin Elmer	%	None	None	100.6	n/a	43.35	42.06	42.70	3.02	n/a	n/a	n/a
S95T004137			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	98.70	n/a	279.7	262.5	271.1	6.34	n/a	n/a	n/a
S95T004137			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	488.1	458.2	473.1	6.32	n/a	n/a	n/a
S95T004137			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.570	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004141	F		Alpha of Digested Solid	uCi/g	-1.0e+00	38.90	92.06	<1.11e-02	4.59e-01	4.64e-01	4.62e-01	1.08	73.72	9.77e-03	7.17E+00

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Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISER: 21A
SEGMENT #: 2AN-95-5A

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T004135			% Water by TGA on Perkin Elmer	%	None	None	101.6	n/a	48.45	51.03	49.74	5.19	n/a	n/a	n/a
S95T004135			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	98.95	n/a	279.7	300.3	290.0	7.10	n/a	n/a	n/a
S95T004135			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	556.5	597.5	577.0	7.11	n/a	n/a	n/a
S95T004135			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.390	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004135			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	97.55	<2.40e-02	1.37e-01	1.53e-01	1.45e-01	11.0	n/a	3.26e-02	3.06E+01

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003960			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.500	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004139			% Water by TGA using Mettler	%	None	None	102.6	n/a	43.50	41.39	42.45	4.97	n/a	n/a	n/a
S95T004139			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	98.70	n/a	283.2	327.5	305.4	14.5	n/a	n/a	n/a
S95T004139			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	492.1	569.1	530.6	14.5	n/a	n/a	n/a
S95T004139			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.580	n/a	n/a	n/a	n/a	5.00e-01	n/a
S95T004142		F	Alpha of Digested Solid	uCi/g	-1.0e+00	38.90	92.06	<1.11e-02	3.29e-01	3.33e-01	3.31e-01	1.21	n/a	9.77e-03	8.44E+00

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Table 7: Safety Screen Results for 11/30 & 12/14/95 Events
AN-102 GRAB

RISER: 21A
SEGMENT #: ZAN-95-6

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T003962			% Water by TGA using Mettler	%	None	None	102.5	n/a	99.99	100.1	100.0	0.11	n/a	n/a	n/a
S95T003962			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	108.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T003963			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	97.55	<2.40e-02	<5.83E-06	<1.04E-5	n/a	n/a	n/a	1.21e-05	5.00E+02

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DOME SPACE FLAMMABILITY

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DATA SHEET 2 - IH&S VAPOR SURVEY

Tank No. AN102 Riser No. 21A

Location (Breather, Vent, Riser, Dome Space, Breathing zone)

Vapor	Results
O_2	20.9% O_2
LEL	0% LEL
T.O.C	2.0 PPM
NH_3	50 PPM

Tank No. AN102 Riser No. 21A

Location (Breather, Vent, Riser, Dome Space, Breathing zone)

Vapor	Results
O_2	20.9%
LEL	0% LEL
T.O.C.	19 PPM
NH_3	300 PPM

Tank No. AN102 Riser No. 21A

Location (Breather, Vent, Riser, Dome Space, Breathing zone)

Vapor	Results
O_2	20.9%
LEL	0% LEL
T.O.C.	0 PPM
NH_3	0 PPM

COMMENTS:

Kevin J. Mincomb 12-14-95
IH&S Signature/Date

WHC-SD-WM-DP-165, REV. 0

INORGANIC ANALYSES

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LABCORE Data Entry Template for Worklist# 4824

Analyst: JDS **Instrument:** DSC0 3 **Book #** 12N14B

Method: LA-514-114 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	SOLID	28.45	28.76	N/A	Joules/g
95000227	AN-102 GRAB	2	SAMPLE	S96T000003	0		DSC-03	SOLID	N/A	Ø		Joules/g
95000227	AN-102 GRAB	3	DUP	S96T000003	0		DSC-03	SOLID	Ø	Ø	N/A	Joules/g
		4	STD				DSC-03	SOLID	28.45	28.~~76~~ 51 1/24/96 BDV	N/A	Joules/g
95000227	AN-102 GRAB	5	SAMPLE	S96T000004	0		DSC-03	SOLID	N/A	Ø		Joules/g
95000227	AN-102 GRAB	6	DUP	S96T000004	0		DSC-03	SOLID	Ø	Ø	N/A	Joules/g

Final page for worklist # 4824

See attached for signatures
Analyst Signature Date 1/24/96 BDV

[illegible] 1-25-96
Analyst Signature Date

Verified by Blandina Valenzuela 1/26/96

Data Entry Comments: S96T000003 produced a small peak at approximatily 280°C this is from the instrument not the sample. It also produced an endotherm at 125.5°C with a delta H of 978.7J/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.

S96T000004 produced an endotherm at 118.3°C with a delta H of 1034.7J/g

LABCORE Data Entry Template for Worklist# 4824

JDS

Analyst: ADQ 1-16-96 **Instrument:** DSC0 _____ **Book #** 12N14B

Method: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID			N/A	Joules/g
95000227	AN-102 GRAB	2	SAMPLE	S96T000003	0		DSC-01	SOLID	N/A			Joules/g
95000227	AN-102 GRAB	3	DUP	S96T000003	0		DSC-01	SOLID			N/A	Joules/g
95000227	AN-102 GRAB	4	SAMPLE	S96T000004	0		DSC-01	SOLID	N/A			Joules/g
95000227	AN-102 GRAB	5	DUP	S96T000004	0		DSC-01	SOLID			N/A	Joules/g

Final page for worklist # 4824

ADQ 1-16-96
1-15-96

Analyst Signature **Date**

Analyst Signature **Date**

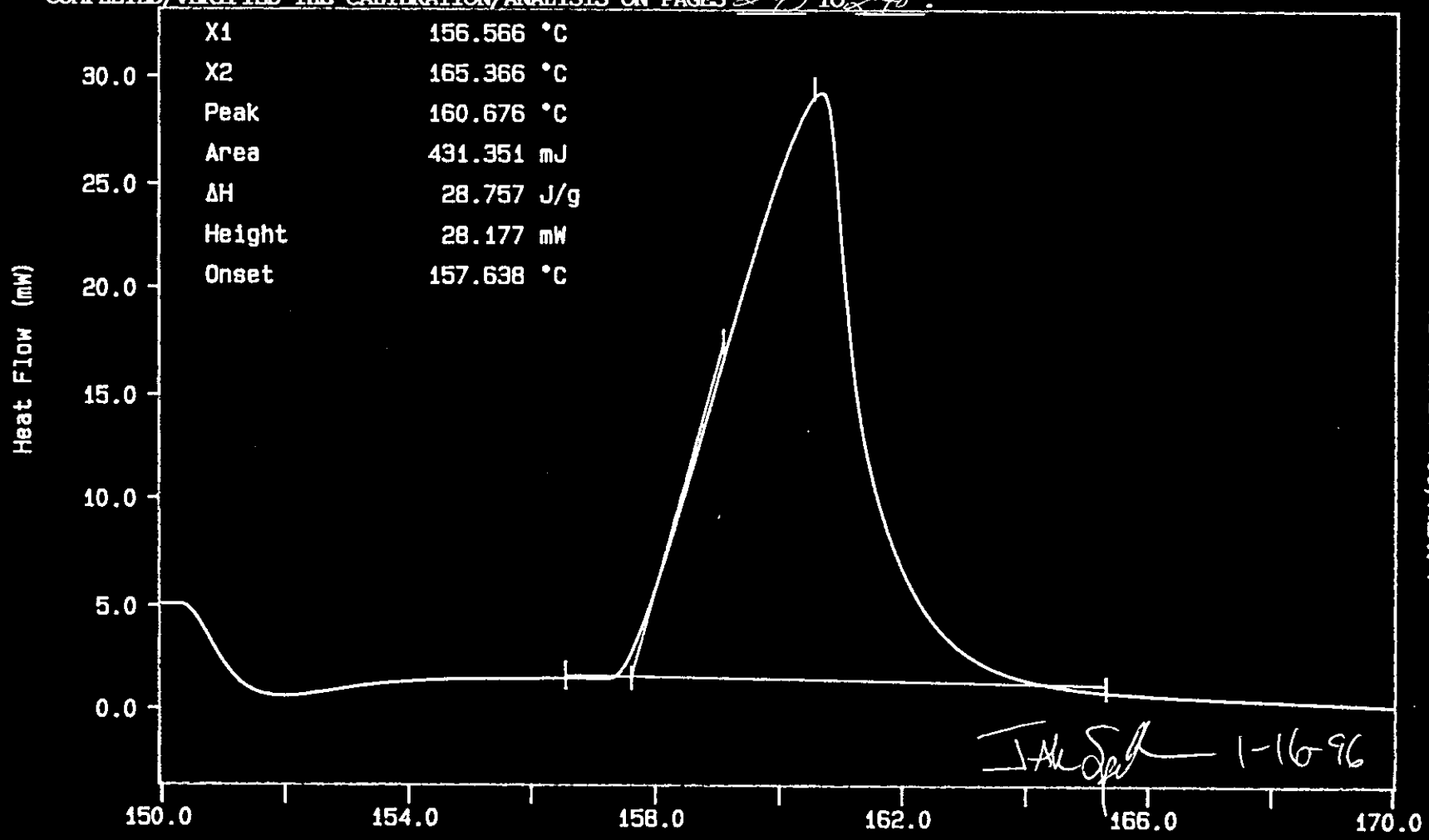
1-16-96

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: DSC
File info: IND011602 Tue Jan 16 06:53:33 1996
Sample Weight 15.000 mg
12N14B Indium at 10C/min

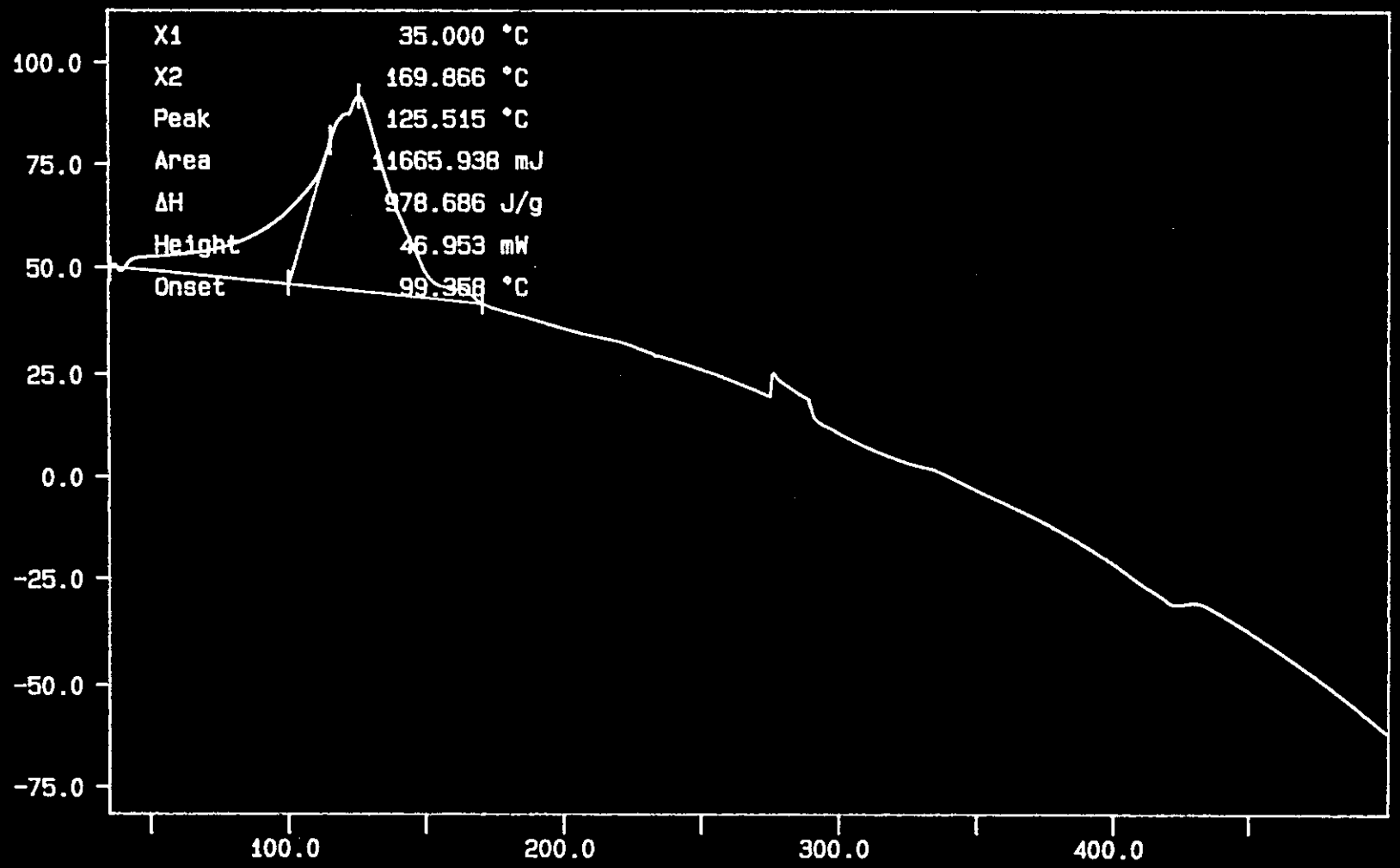
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 243 TO 248.



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 Jan 16 06:57:36 1996

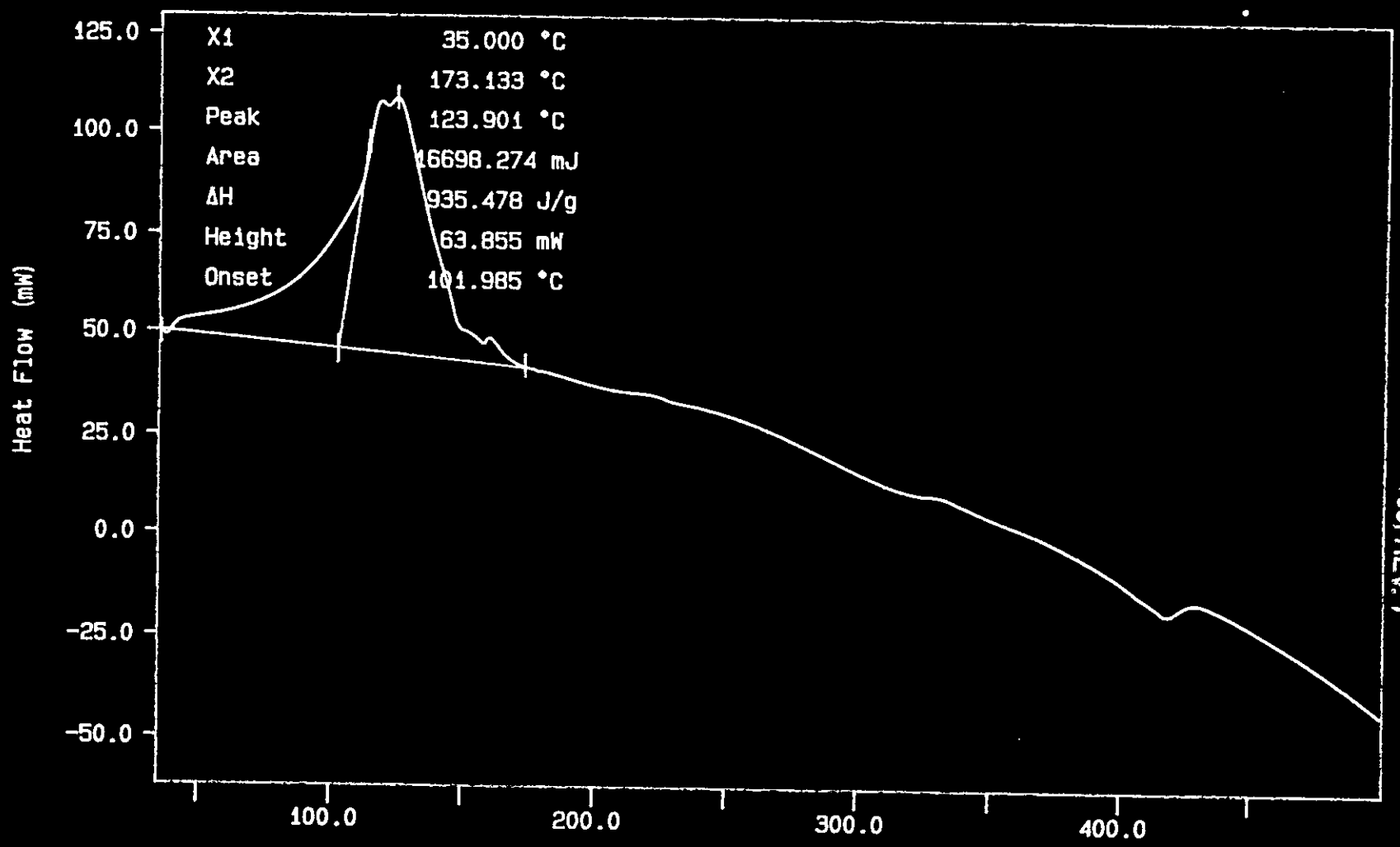
Curve 1: DSC
File info: SAM011601 Tue Jan 16 09:46:56 1996
Sample Weight: 11.920 mg
S96T000003



exotherm down, N2 purge gas
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Jan 16 14:01:58 1996

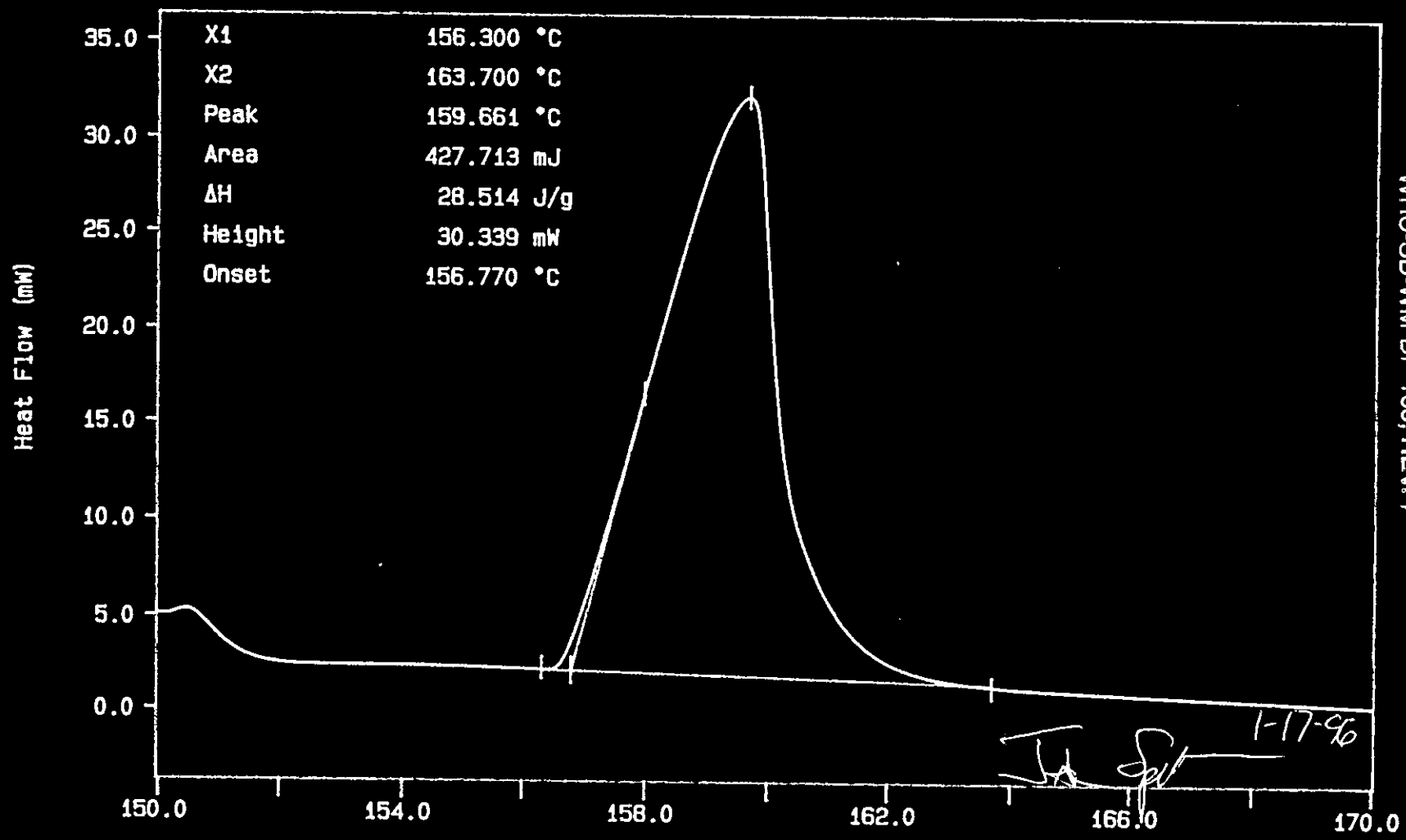
Curve 1: DSC
File info: SAM011603 Tue Jan 16 13:35:52 1996
Sample Weight: 17.850 mg
S96T000003DUP



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

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Jan 16 13:52:33 1996

Curve 1: DSC
File info: qsav2 Wed Jan 17 06:29:25 1996
Sample Weight: 15.000 mg
12N14B Indium at 10C/min

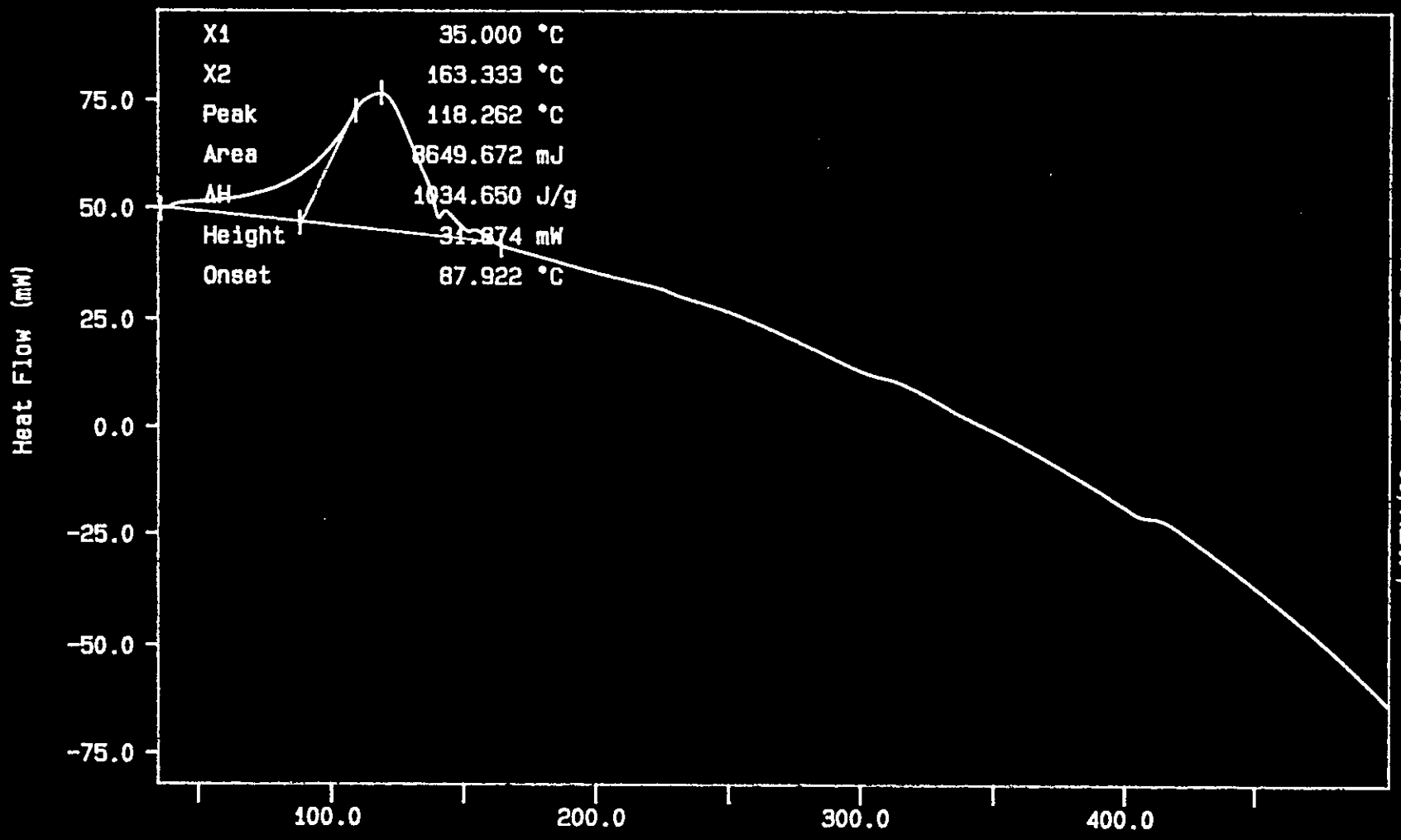


N2, EXOTHERM DOWN
TEMP1: 150.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 170.0 C

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 17 06:35:39 1996

WHC-SD-WM-DP-165, REV. 1

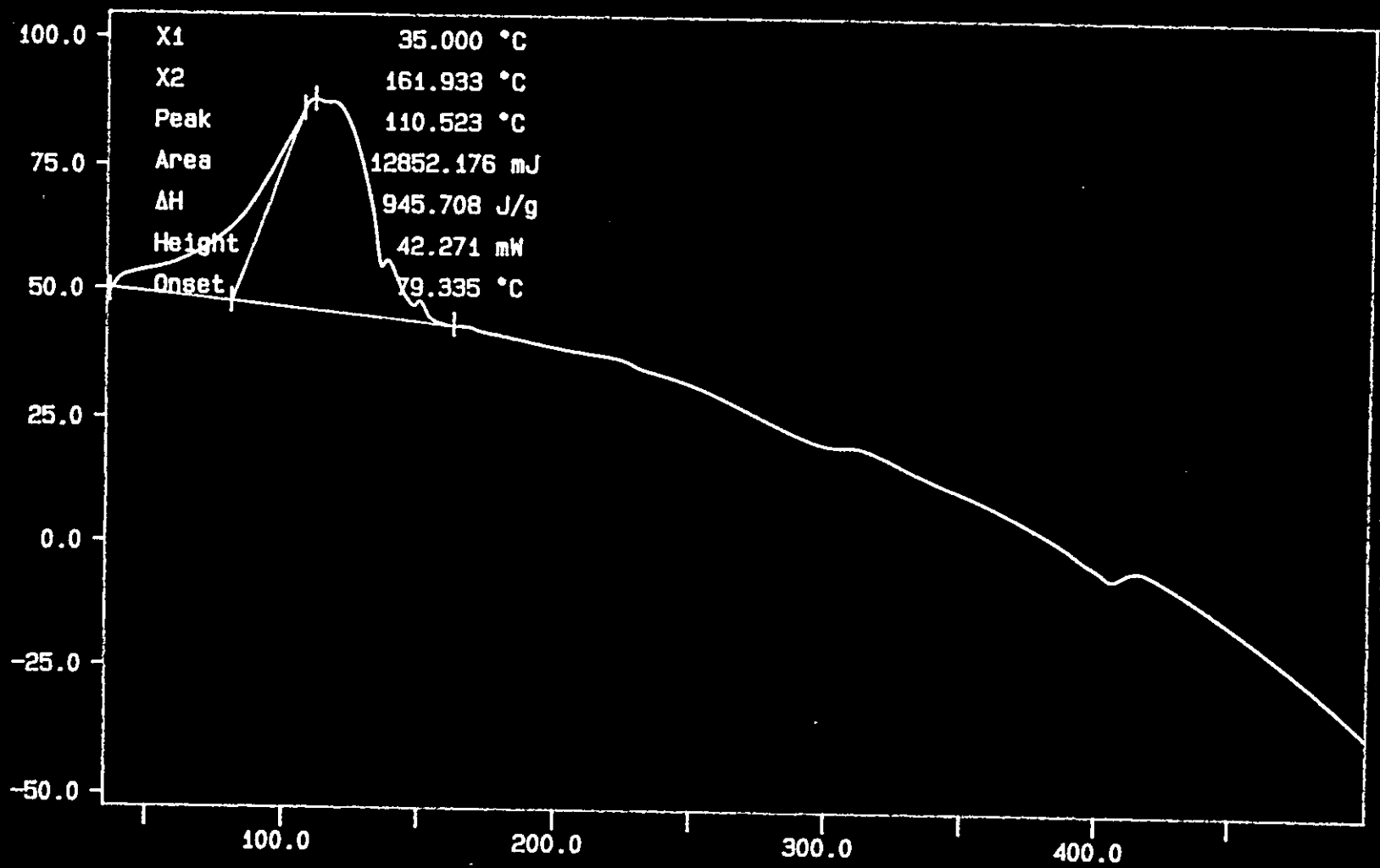
Curve 1: DSC
File info: SAM011701 Wed Jan 17 07:47:02 1996
Sample Weight: 8.360 mg
S96T000004



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

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 17 08:50:13 1996

Curve 1: DSC
File info: SAM011702 Wed Jan 17 09:41:51 1996
Sample Weight: 13.590 mg
S96T000004DUP



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

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 17 10:28:47 1996

LABCORE Data Entry Template for Worklist# 4850

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

Method: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 ~~TGA~~ DSC s under N2. bdv
LAD 1-26-96

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	LIQUID	28.45	27.5	N/A	Joules/g
95000227	AN-102 GRAB	2	SAMPLE	S95T003982	0		DSC-01	LIQUID	N/A	~~272.3~~ 284.2 1/23/96		Joules/g
95000227	AN-102 GRAB	3	DUP	S95T003982	0		DSC-01	LIQUID	~~272.3~~ 284.2 1/23/96	317.4	N/A	Joules/g
95000227	AN-102 GRAB	4	SAMPLE	S95T003983	0		DSC-01	LIQUID	N/A	361.3		Joules/g
95000227	AN-102 GRAB	5	DUP	S95T003983	0		DSC-01	LIQUID	361.3	281.0	N/A	Joules/g
95000227	AN-102 GRAB	6	SAMPLE	S95T003984	0		DSC-01	LIQUID	N/A	223.2		Joules/g
95000227	AN-102 GRAB	7	DUP	S95T003984	0		DSC-01	LIQUID	223.2	197.1	N/A	Joules/g

Final page for worklist # 4850

Analyst Signature Date 1-19-96

Analyst Signature Date 1-24-96

Rae Lynn Green 1-19-96

Verified by Blandina Valenzuela 1/26/96

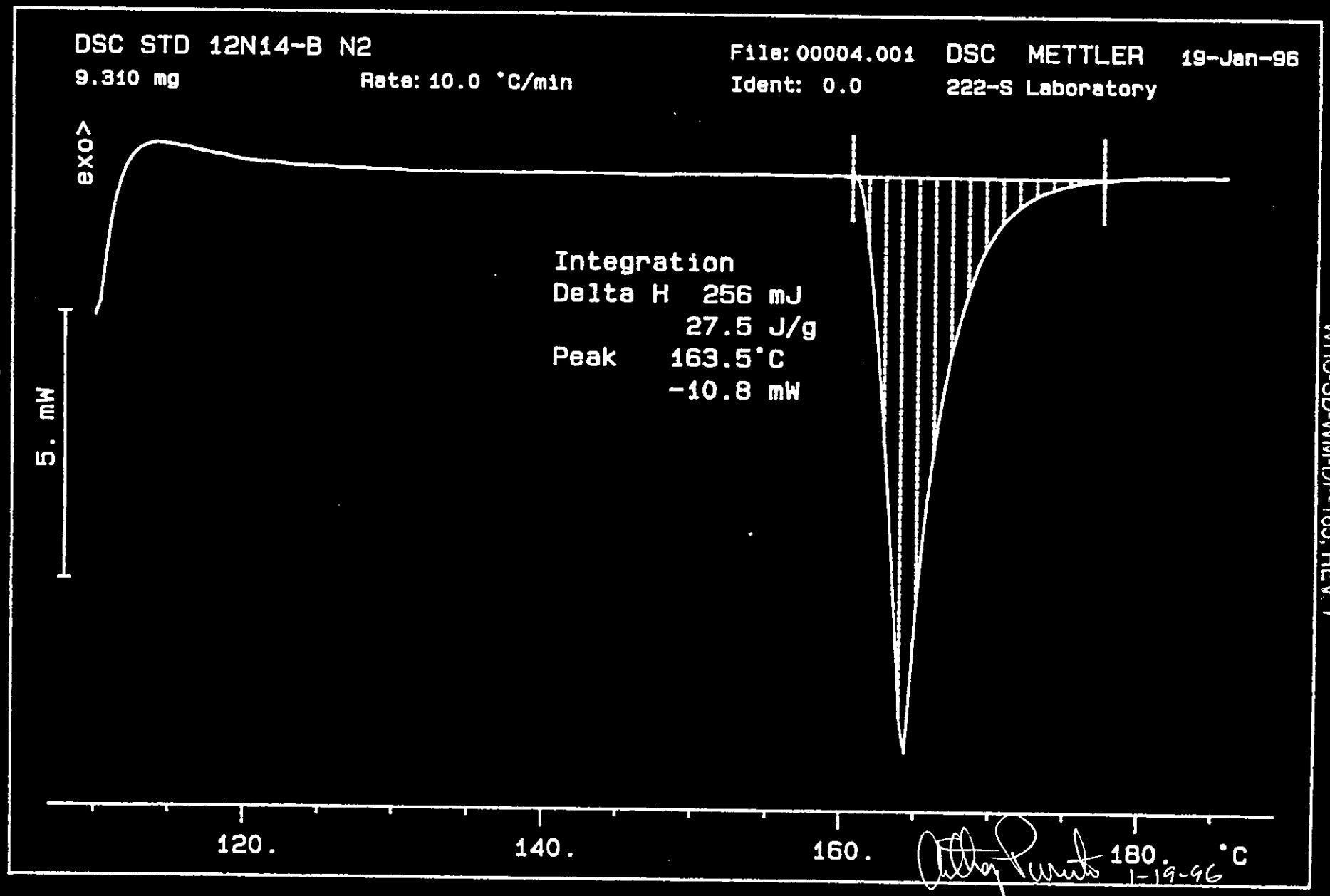
S95T003982 produced an endotherm at 133.8°C with a delta H of 900.1J/g

Data Entry Comments: S95T003983 produced an endotherm at 123~~.8~~ 1/25/96 .1°C with a delta H of 1628.8J/g

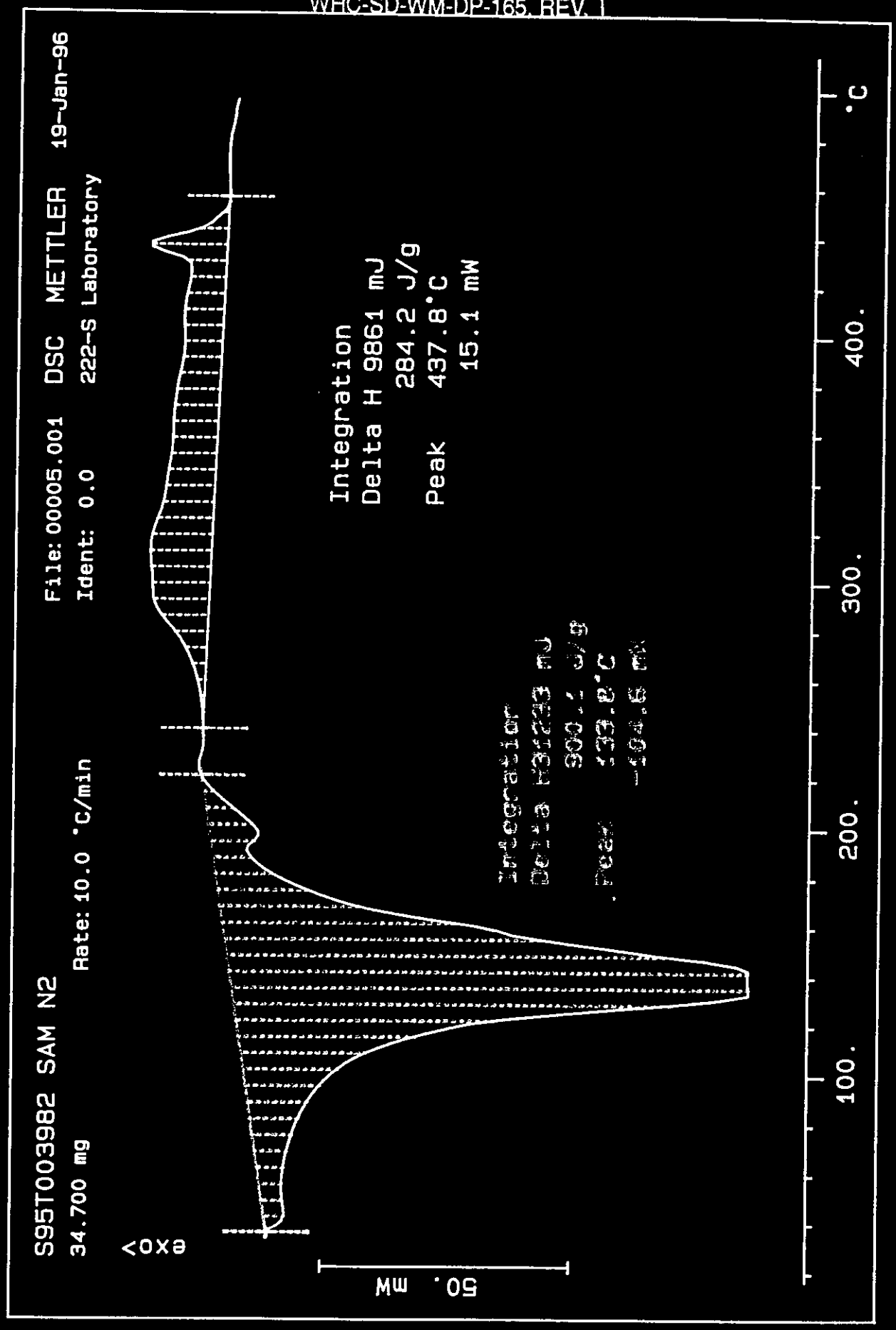
S95T003984 produced an endotherm at 127.6°C with a delta H of 863.4J/g

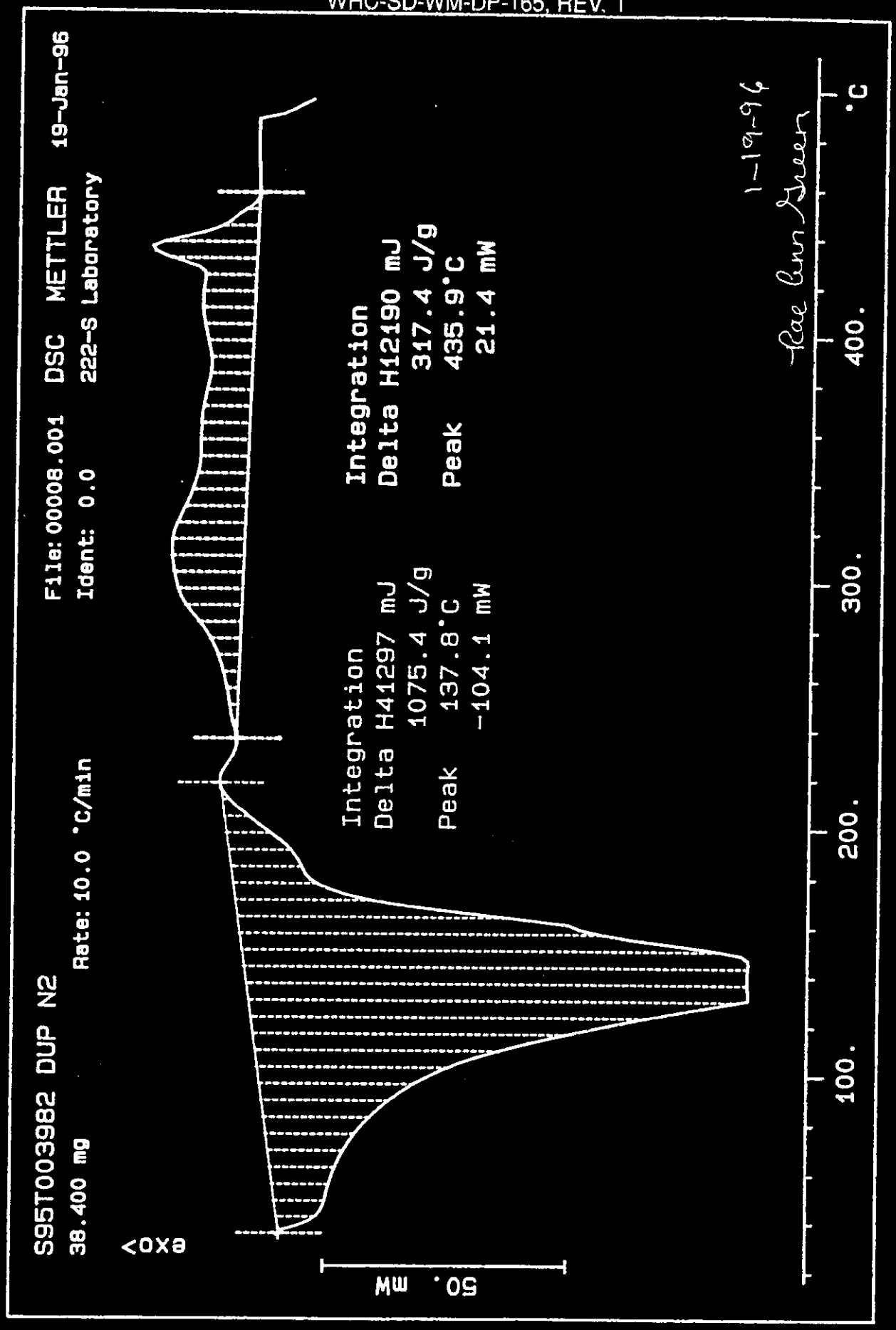
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

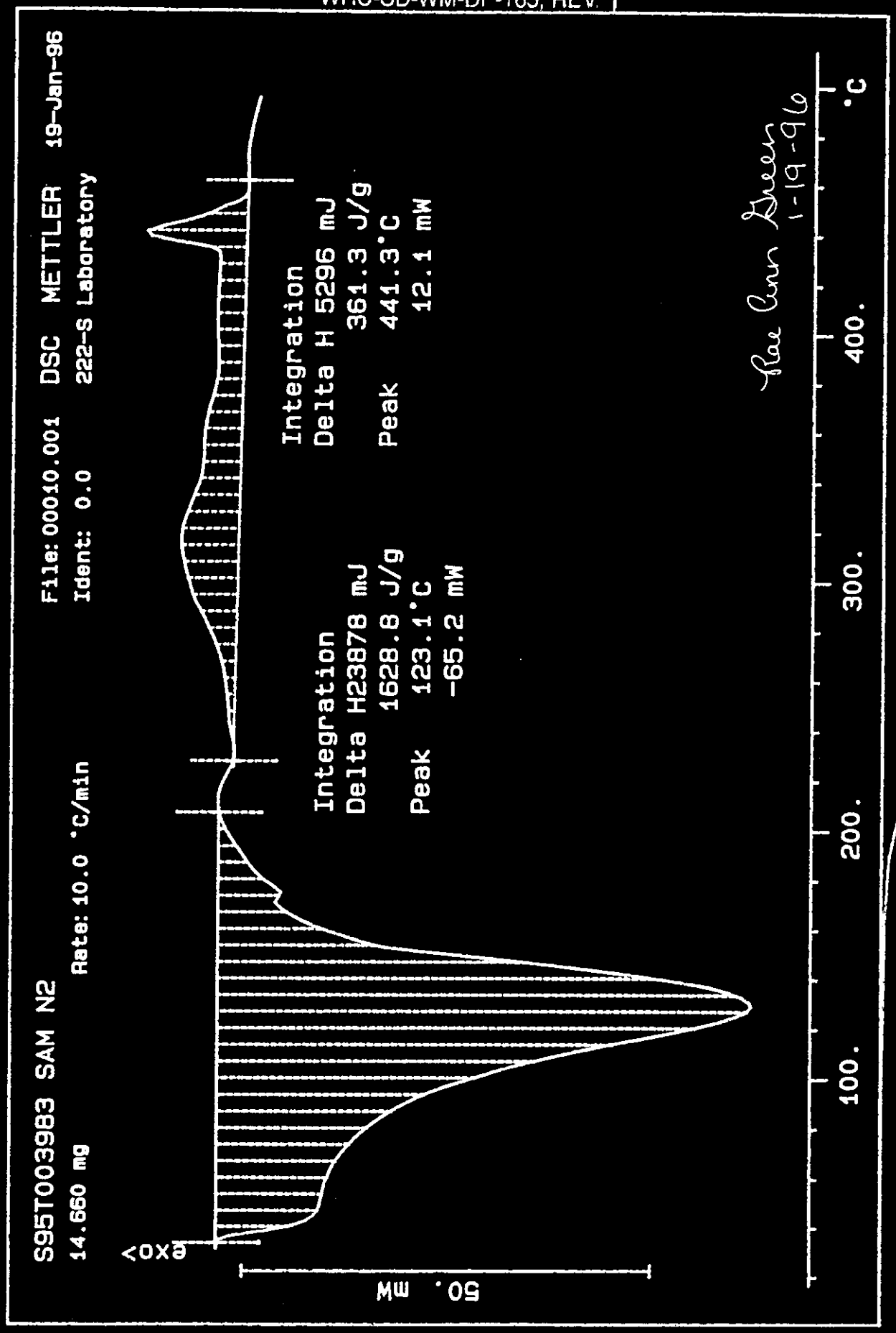
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 250 TO 256.

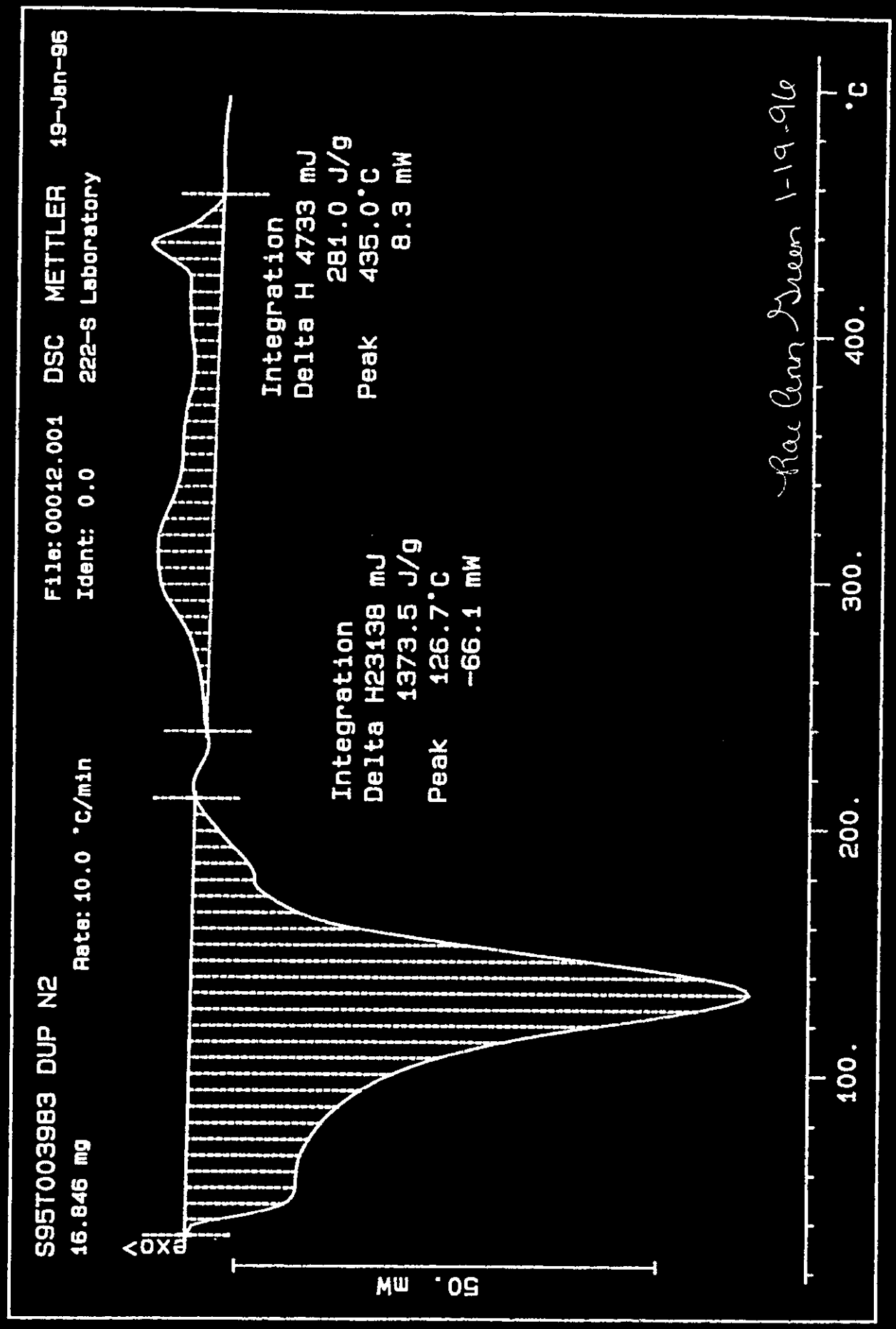


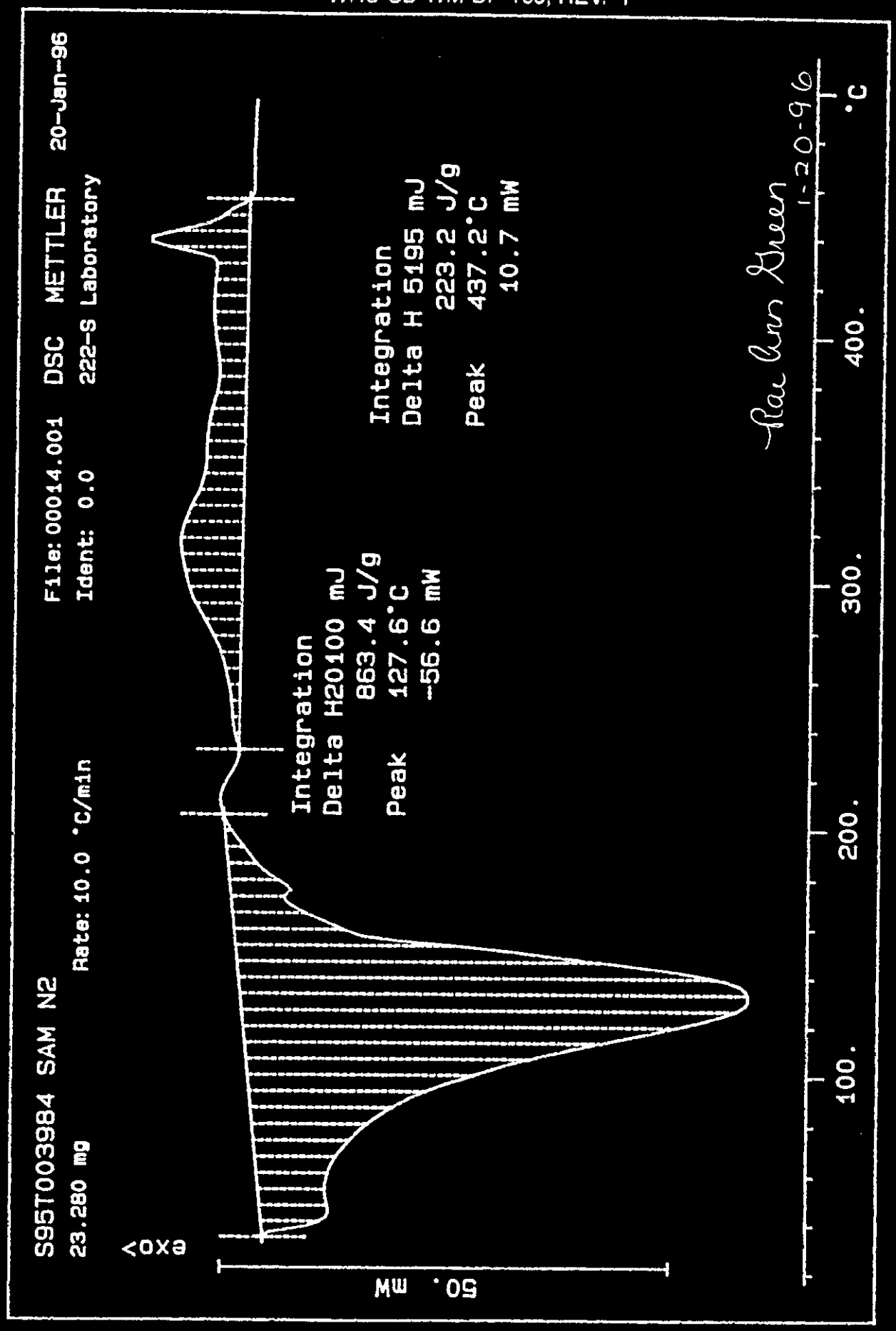
1-19-96

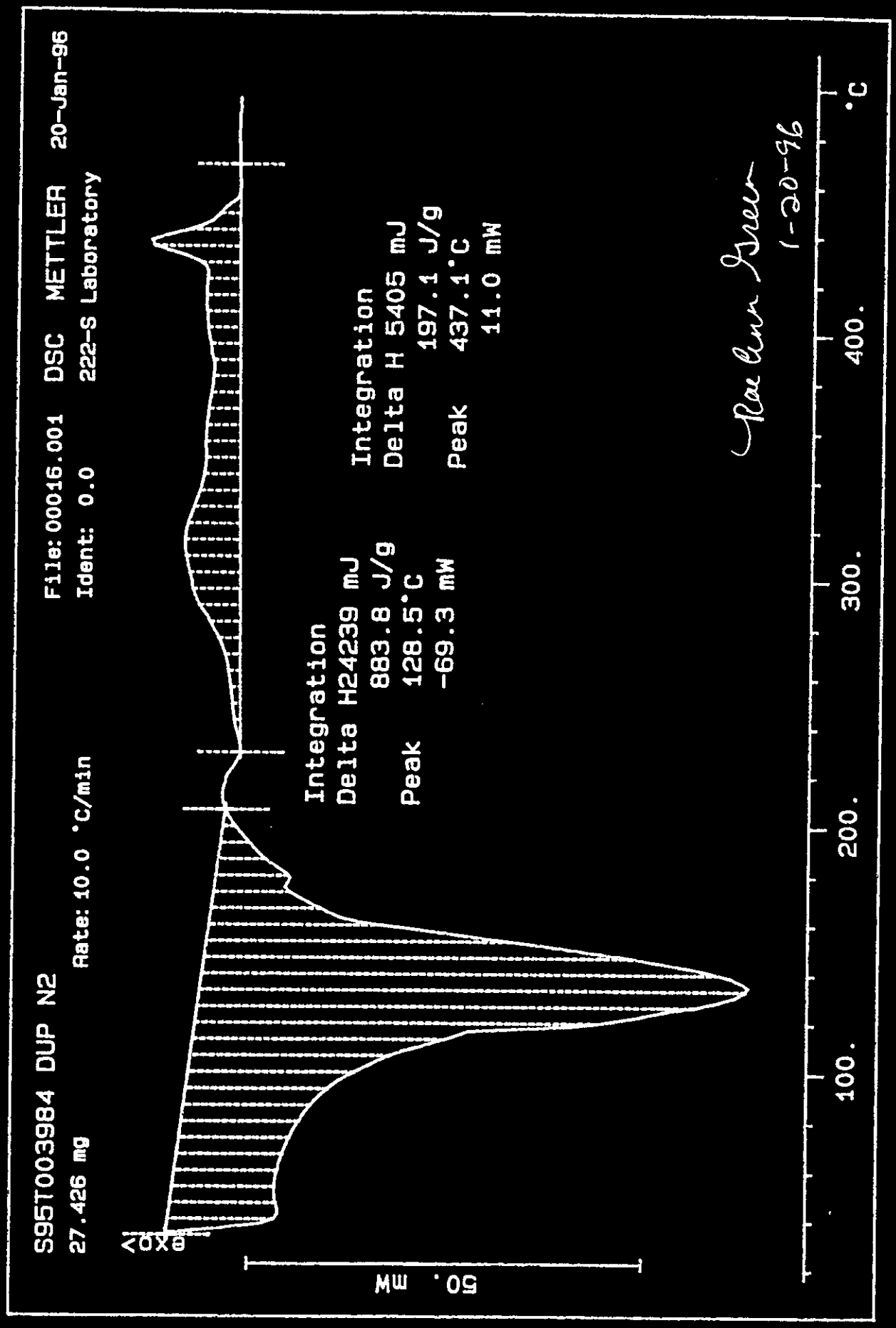

S95T003982 SAM N2
34.700 mg
Rate: 10.0 °C/min
File: 00005.001 DSC METTLER 19-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H 9861 mJ
284.2 J/g
Peak 437.8°C
15.1 mW
Integration
Delta H 8122.3 mJ
Peak 439.8°C
exo>
50. mW
100.
200.
300.
400.
°C


S95T003982 DUP N2
38.400 mg
Rate: 10.0 °C/min
File: 00008.001 DSC METTLER 19-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H41297 mJ
1075.4 J/g
Peak 137.8°C
-104.1 mW
Integration
Delta H12190 mJ
317.4 J/g
Peak 435.9°C
21.4 mW
exo>
50. mW
100.
200.
300.
400.
°C
1-19-96
Rae Ann Green


S95T003983 SAM N2
14.660 mg
Rate: 10.0 °C/min
File: 00010.001 DSC METTLER 19-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H 5296 mJ
361.3 J/g
Peak 441.3°C
12.1 mW
Integration
Delta H23878 mJ
1628.8 J/g
Peak 123.1°C
-65.2 mW
<exo
50. mW
100.
200.
300.
400.
°C
Rae Ann Green
1-19-96


S95T003983 DUP N2
16.846 mg
Rate: 10.0 °C/min
File: 00012.001 DSC METTLER 19-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H 23138 mJ
1373.5 J/g
Peak 126.7°C
-66.1 mW
Integration
Delta H 4733 mJ
281.0 J/g
Peak 435.0°C
8.3 mW
exo>
50. mW
100.
200.
300.
400.
°C
Rae Ann Green 1-19-96


S95T003984 SAM N2
23.280 mg
Rate: 10.0 °C/min
File: 00014.001 DSC METTLER 20-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H20100 mJ
863.4 J/g
Peak 127.6°C
-56.6 mW
Integration
Delta H 5195 mJ
223.2 J/g
Peak 437.2°C
10.7 mW
exo>
50. mW
100.
200.
300.
400.
°C
Rae Ann Green
1-20-96


S95T003984 DUP N2
27.426 mg
Rate: 10.0 °C/min
File: 00016.001 DSC METTLER 20-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H24239 mJ
883.8 J/g
Peak 128.5°C
-69.3 mW
Integration
Delta H 5405 mJ
197.1 J/g
Peak 437.1°C
11.0 mW
exo>
50. mW
100.
200.
300.
400.
°C
Rae Ann Green
1-20-96

LABCORE Data Entry Template for Worklist# 4851

Analyst: SMF **Instrument:** DSC0 3 **Book #** 12N14B

Method: LA-514-114 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 ~~TGA~~ DSC's s under N2. bdv 1/25/96 BDV

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	LIQUID	28.45	28.26	N/A	Joules/g
95000227	AN-102 GRAB	2	SAMPLE	S96T000005	0		DSC-03	LIQUID	N/A	15.76		Joules/g
95000227	AN-102 GRAB	3	DUP	S96T000005	0		DSC-03	LIQUID	15.76	18.15	N/A	Joules/g
95000227	AN-102 GRAB	4	SAMPLE	S96T000006	0		DSC-03	LIQUID	N/A	Ø		Joules/g
95000227	AN-102 GRAB	5	DUP	S96T000006	0		DSC-03	LIQUID	Ø	~~Ø~~ 27.47 1-30-96 BDV	N/A	Joules/g

Final page for worklist # 4851

See attached for signatures
Analyst Signature Date 1/25/96 BDV

Linda Conlin 1/28/96
Analyst Signature Date

Verified by Blandina Valenzuela 1/29/96

* Data for sample S96T000005 from this worklist will not be used in the report due to questionable baseline. Sample was rerun on worklist # 5343. RDE 2/2/96

Data Entry Comments: S96T000005 produced two endotherms one at 121.99°C with a delta H of 1205.5 J/g and the second at 260.5°C with a delta H of 1157 J/g
S96T000006 produced an endotherm at 112.9°C with a delta H of 1712.8 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.

LABCORE Data Entry Template for Worklist# 4851

Analyst: SMF **Instrument:** DSC0 _____ **Book #** 12 N14B

Method: LA-514-~~113~~ Rev/Mod _____ WHC-SD-WM-DP-165, REV. 1

SMF 1-17-96 14

Worklist Comment: Please run AN-102 ~~TGAs~~ DSC under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	LIQUID			N/A	Joules/g
95000227	AN-102 GRAB	2	SAMPLE	S96T000005	0		DSC-01	LIQUID	N/A			Joules/g
95000227	AN-102 GRAB	3	DUP	S96T000005	0		DSC-01	LIQUID			N/A	Joules/g
95000227	AN-102 GRAB	4	SAMPLE	S96T000006	0		DSC-01	LIQUID	N/A			Joules/g
95000227	AN-102 GRAB	5	DUP	S96T000006	0		DSC-01	LIQUID			N/A	Joules/g

Final page for worklist # 4851

Susie M. Sutton 1-17-96
Analyst Signature Date

Analyst Signature Date

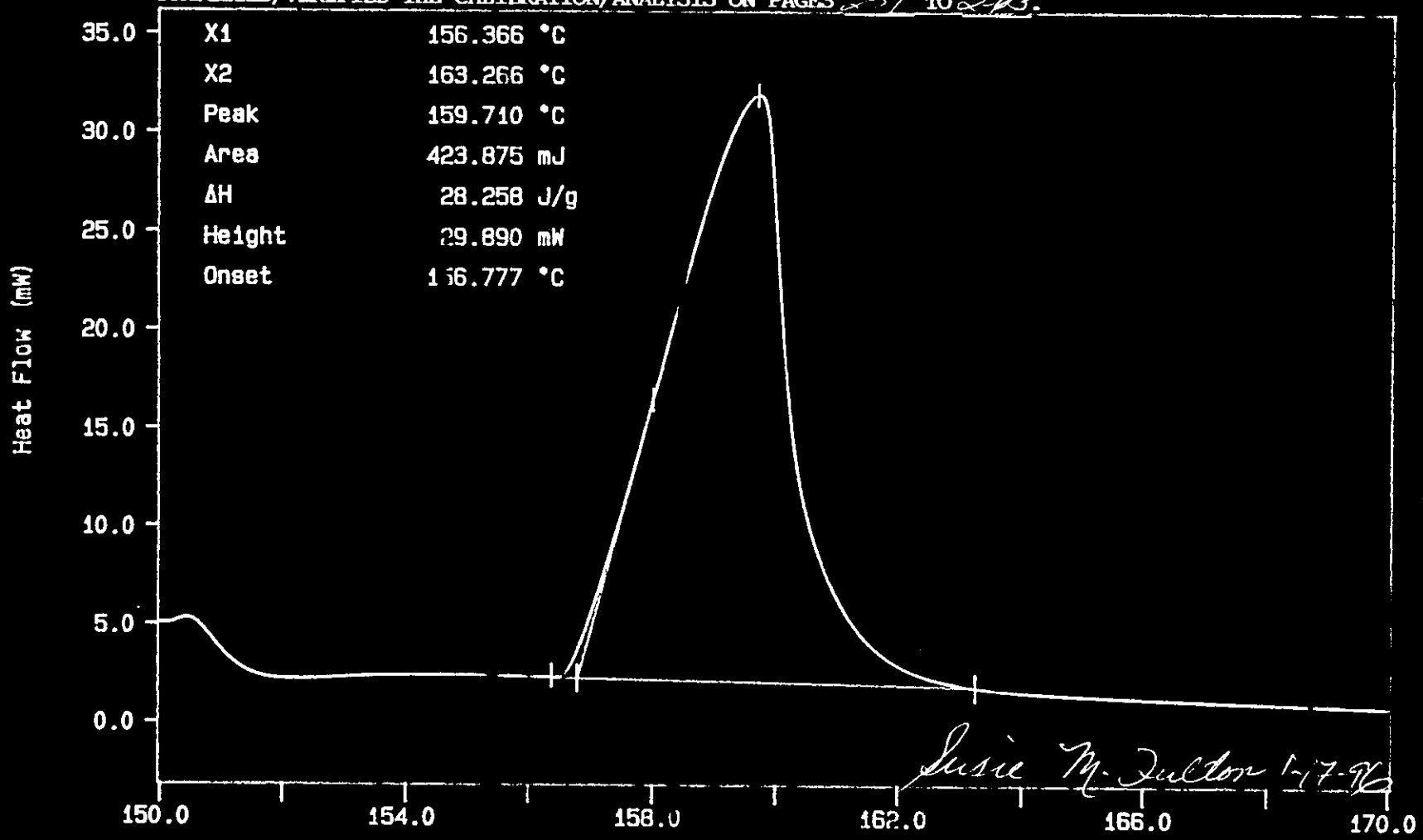
Other instruments were used.
1/29/96 BDV

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: DSC
File info: IND011701 Wed Jan 17 16:37:31 1996
Sample Weight: 15.000 mg
12N14B Indium at 10C/min

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 259 TO 263.

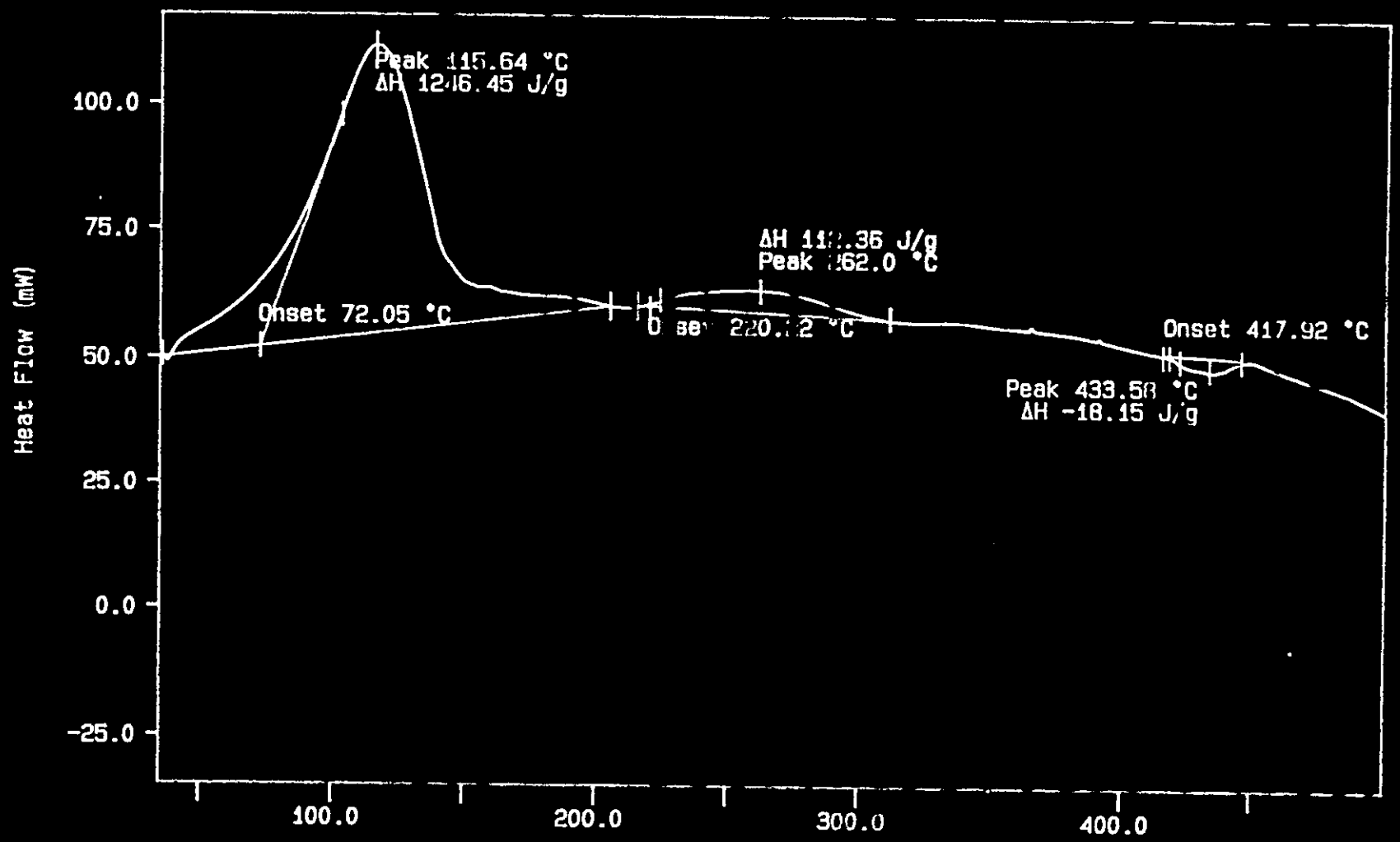


Susie M. Fulton 1-17-96

N2, EXOTHERM DOWN
TEMP1: 150.0 C TIME1: 0.0 min RATE 1: 10.0 C/min
TEMP2: 170.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 17 22:00:32 1996

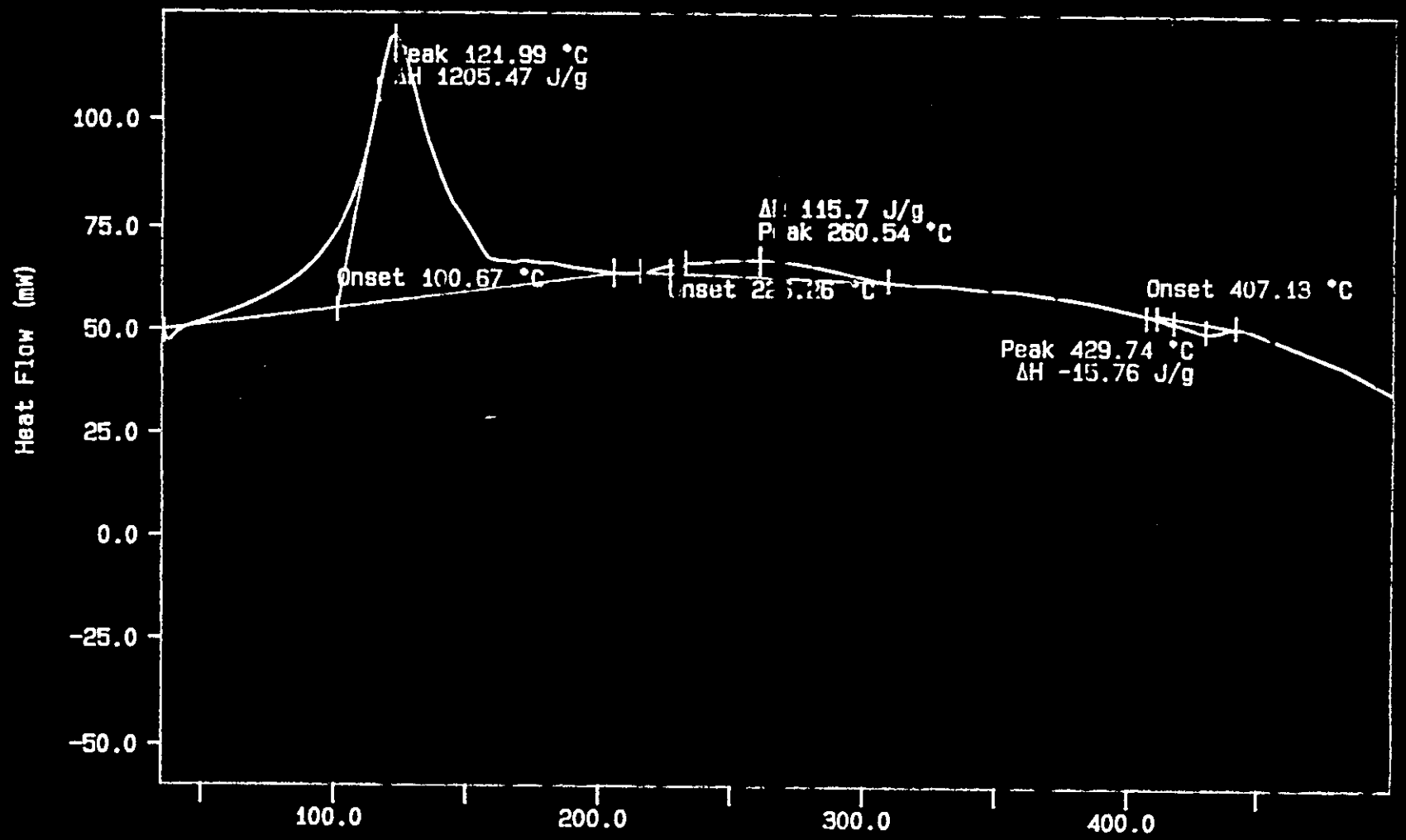
Curve 1: DSC
File info: SAM011706 Wed Jan 17 22:22:08 1996
Sample Weight: 14.360 mg
S965T000005



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
Wed Jan 17 22:27:58 1996

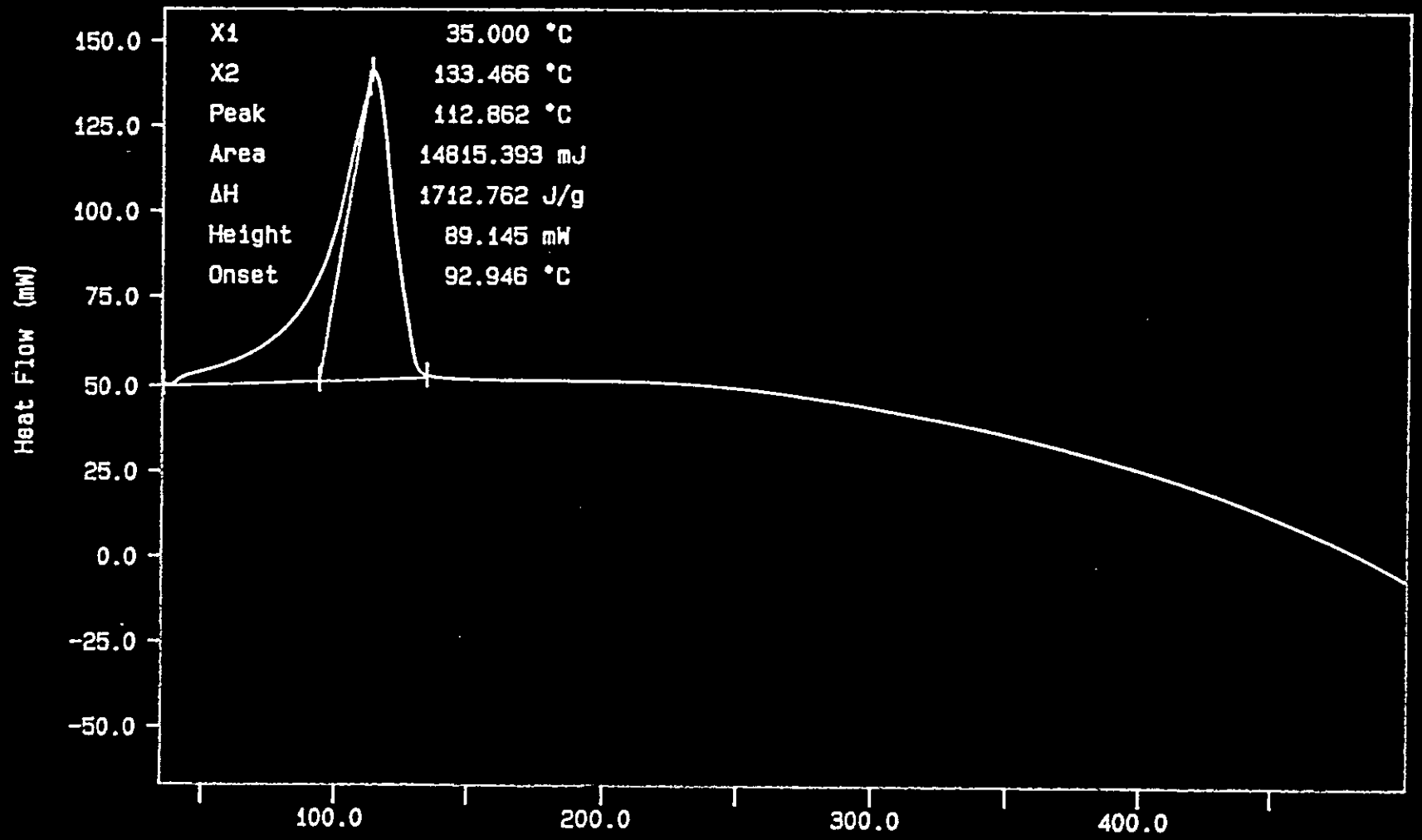
Curve 1: DSC
File info: SAM011707 Wed Jan 17 23:2[illegible]:[illegible]3 1996
Sample Weight: 12.530 mg
S96T000005 DUP



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
Thu Jan 18 01:37:04 1996

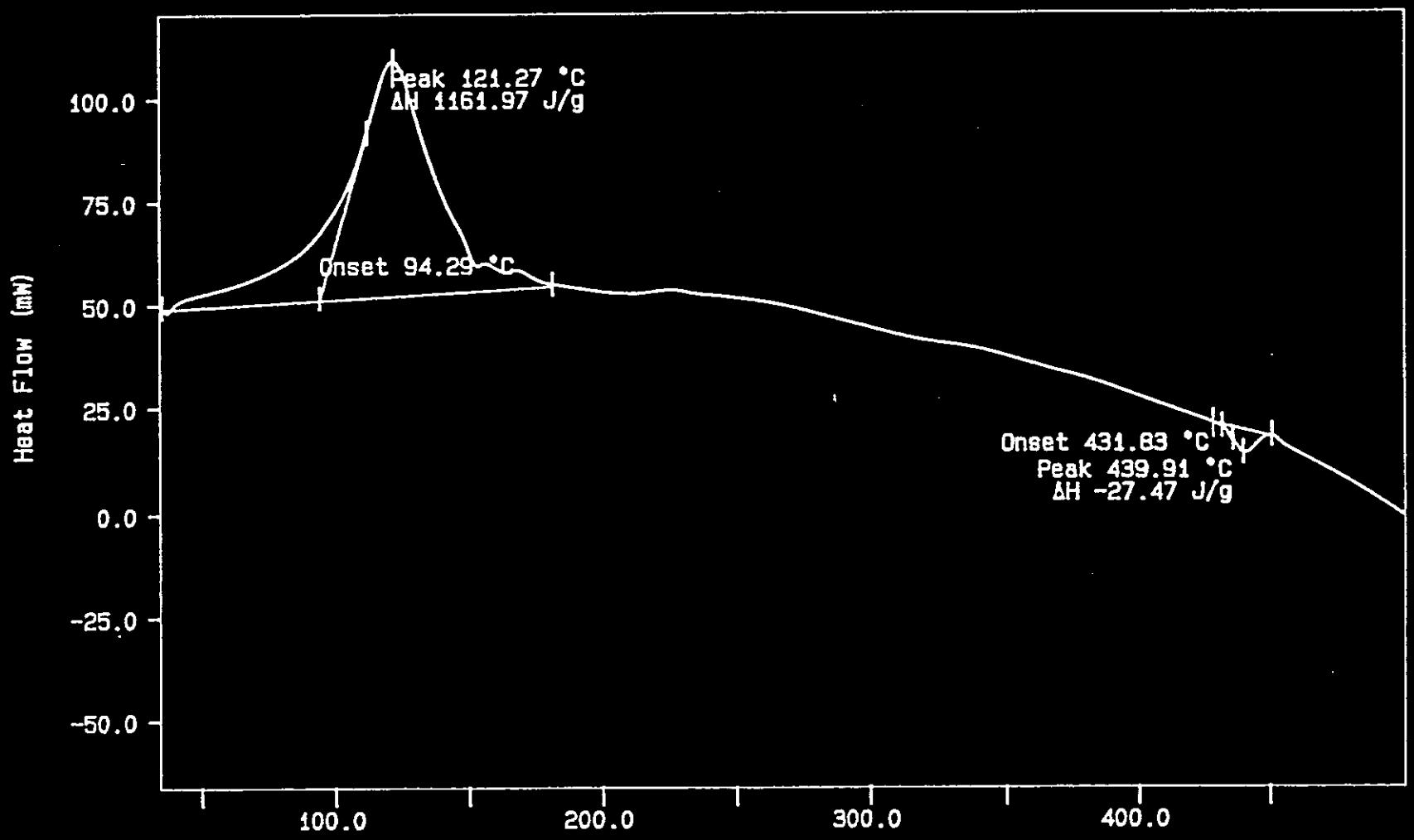
Curve 1: DSC
File info: SAM011708 Thu Jan 18 02:28:45 1996
Sample Weight: 8.650 mg
S96T000006



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
Thu Jan 18 04:01:38 1996

Curve 1: DSC
File info: SAM011709 Thu Jan 18 04:51:27 1996
Sample Weight: 11.770 mg
S96T000006 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
Thu Jan 18 19:02:27 1996

LABCORE Data Entry Template for Worklist# 4856

Analyst: ADP **Instrument:** DSC0 3 **Book #** 12 N14B

Method: LA-514-114 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	LIQUID	28.45	28.38	N/A	Joules/g
95000222	AN-102 GRAB	2	SAMPLE	S95T003867	0		DSC-03	LIQUID	N/A	22.14		Joules/g
95000222	AN-102 GRAB	3	DUP	S95T003867	0		DSC-03	LIQUID	22.14	22.01	N/A	Joules/g
95000222	AN-102 GRAB	4	SAMPLE	S95T003869	0		DSC-03	LIQUID	N/A	~~19.38~~ 277.2 J/g 1/29/96 BDV		Joules/g
95000222	AN-102 GRAB	5	DUP	S95T003869	0		DSC-03	LIQUID	~~19.38~~ 277.2	~~22.50~~ 282.61 1/29/96 BDV	N/A	Joules/g

Final page for worklist # 4856

See attached for signatures
Analyst Signature Date 1/16/96 BDV

Analyst Signature Date 1-16-96

Verified by Blandina Valenzuela 1/17/96

* Data for sample S95T003867 from this worklist will not be used in the report due to questionable baseline. Sample was rerun on worklist # 5343. BDV 2/2/96

Data Entry Comments: The original integration results were 19.38 J/g for sample and 22.50 J/g for duplicate.

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# 4856

Analyst: ADP **Instrument:** DSC0 _____ **Book #** 12014B

Method: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	LIQUID			N/A	Joules/g
95000222	AN-102 GRAB	2	SAMPLE	S95T003867	0		DSC-01	LIQUID	N/A			Joules/g
95000222	AN-102 GRAB	3	DUP	S95T003867	0		DSC-01	LIQUID			N/A	Joules/g
95000222	AN-102 GRAB	4	SAMPLE	S95T003869	0		DSC-01	LIQUID	N/A			Joules/g
95000222	AN-102 GRAB	5	DUP	S95T003869	0		DSC-01	LIQUID			N/A	Joules/g

Final page for worklist # 4856

Anthony Parentin 1-12-96
Analyst Signature **Date**

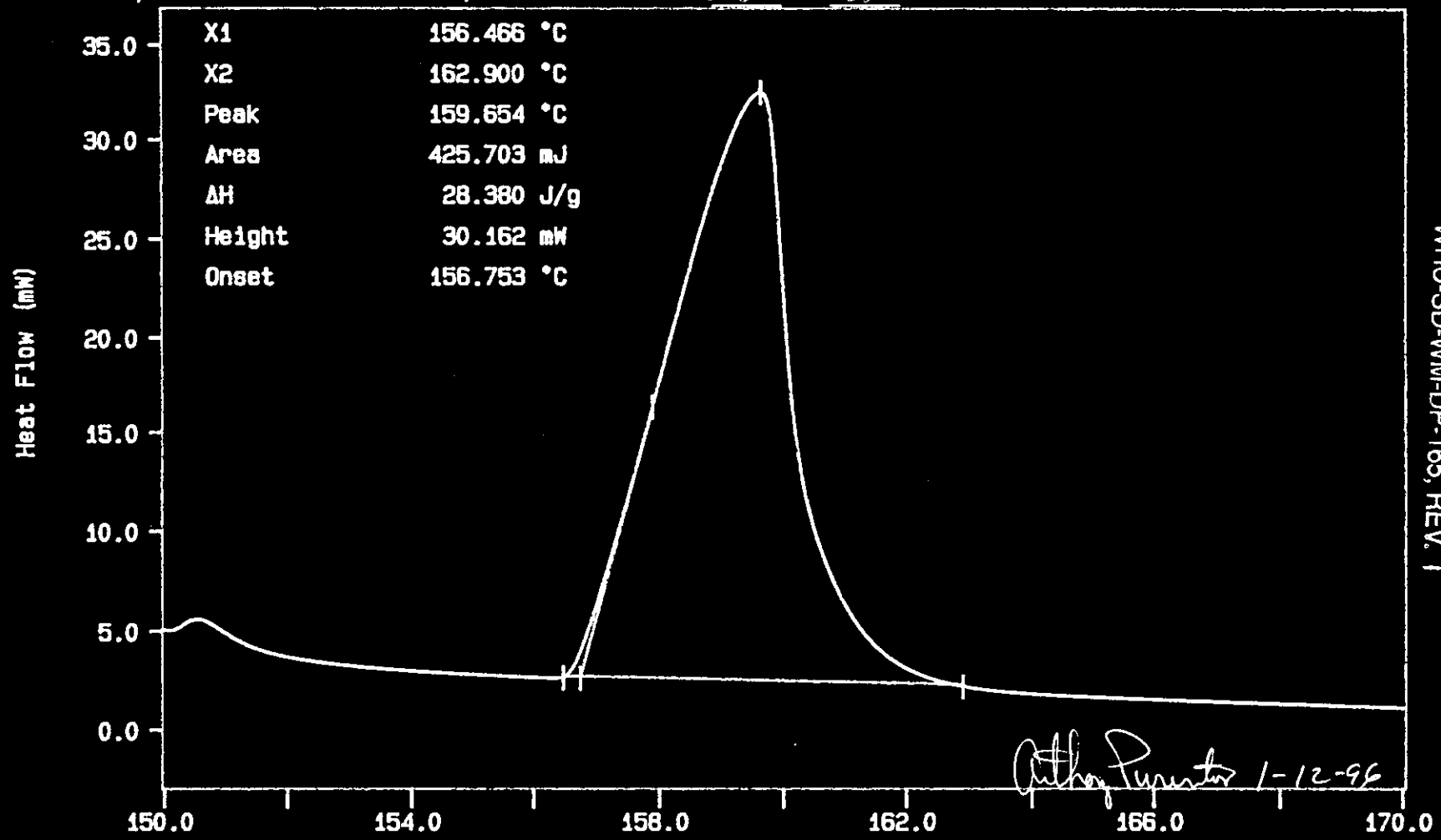
Analyst Signature **Date**

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.

Curve 1: DSC
File info: IND011202 Fri Jan 12 22:23:10 1996
Sample Weight: 15.000 mg
12N14B Indium at 10C/min

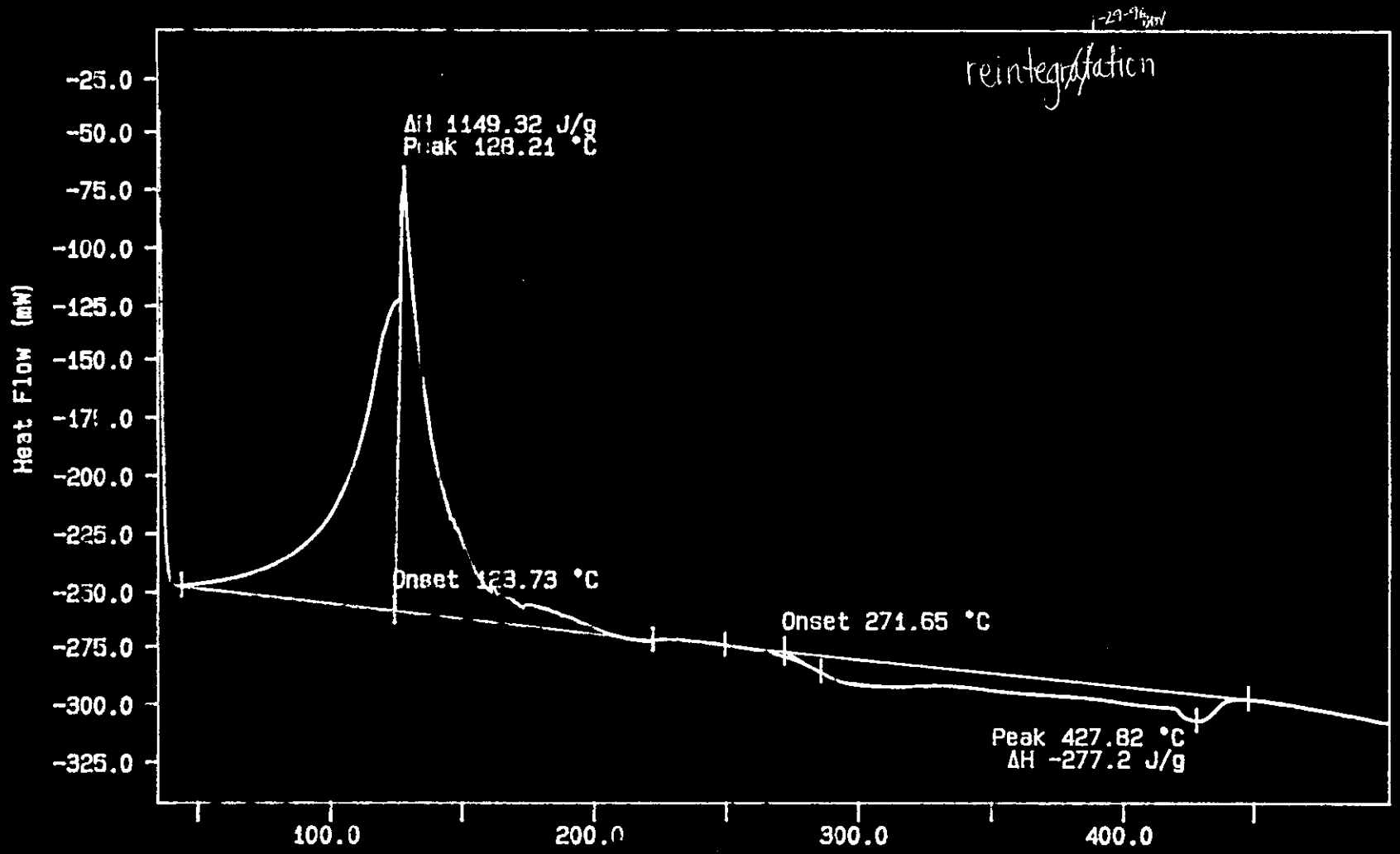
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 246 TO 248 .



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jan 12 22:29:58 1996

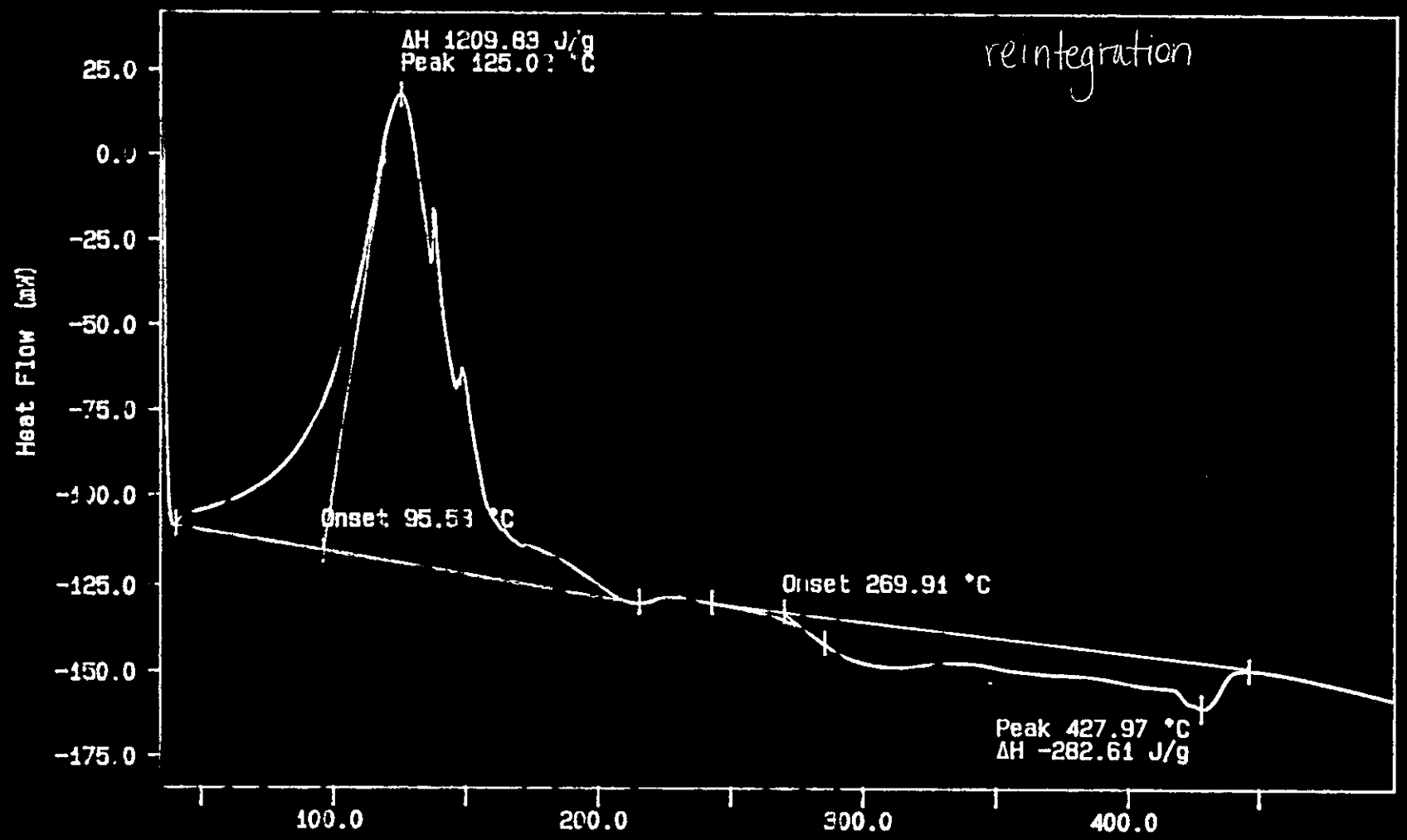
Curve 1: DSC
File info: SAM011203 Sat Jan 13 01:59:29 1996
Sample Weight: 29.770 mg
S95T003869 SAM



exotherm down, N2 purge gas
TEMP1: 30.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 400.0 C

AD FURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jan 26 10:01:41 1996

Curve 1: DSC
File info: SAH011204 Sat Jan 13 02:55:21 1996
Sample Weight: 32.210 mg
S95T003869 DUP



exotherm down, N2 purge gas
TEMP1: 25.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jan 26 10:10:16 1996

LABCORE Data Entry Template for Worklist# 4857

Analyst: ADP **Instrument:** DSC0 1 **Book #** 12N14B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	LIQUID	28.45	30.8*	N/A	Joules/g
95000222	AN-102 GRAB	2	SAMPLE	S95T003868	0		DSC-01	LIQUID	N/A	616.1		Joules/g
95000222	AN-102 GRAB	3	DUP	S95T003868	0		DSC-01	LIQUID	616.1	557.8	N/A	Joules/g
95000222	AN-102 GRAB	4	SAMPLE	S95T003962	0		DSC-01	LIQUID	N/A	Ø		Joules/g
95000222	AN-102 GRAB	5	DUP	S95T003962	0		DSC-01	LIQUID	Ø	Ø	N/A	Joules/g

Final page for worklist # 4857

Anthony Punter 1-12-96
Analyst Signature **Date**

R E Wright 1/16/96
Analyst Signature **Date**

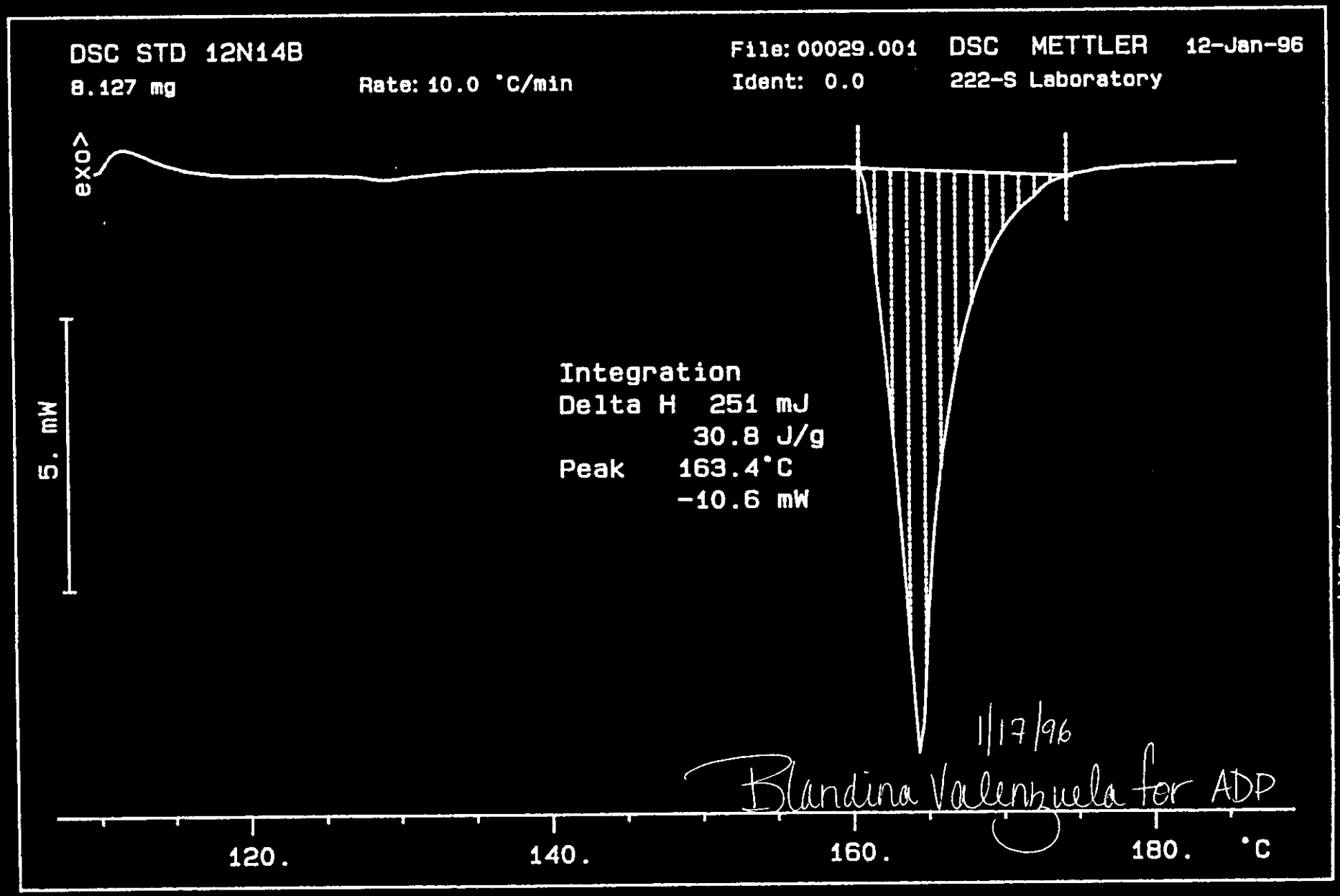
Verified by Blandina Valenzuela 1/17/96

S95T003868 produced an endotherm at 133.8°C with a delta H of 914.9 J/g

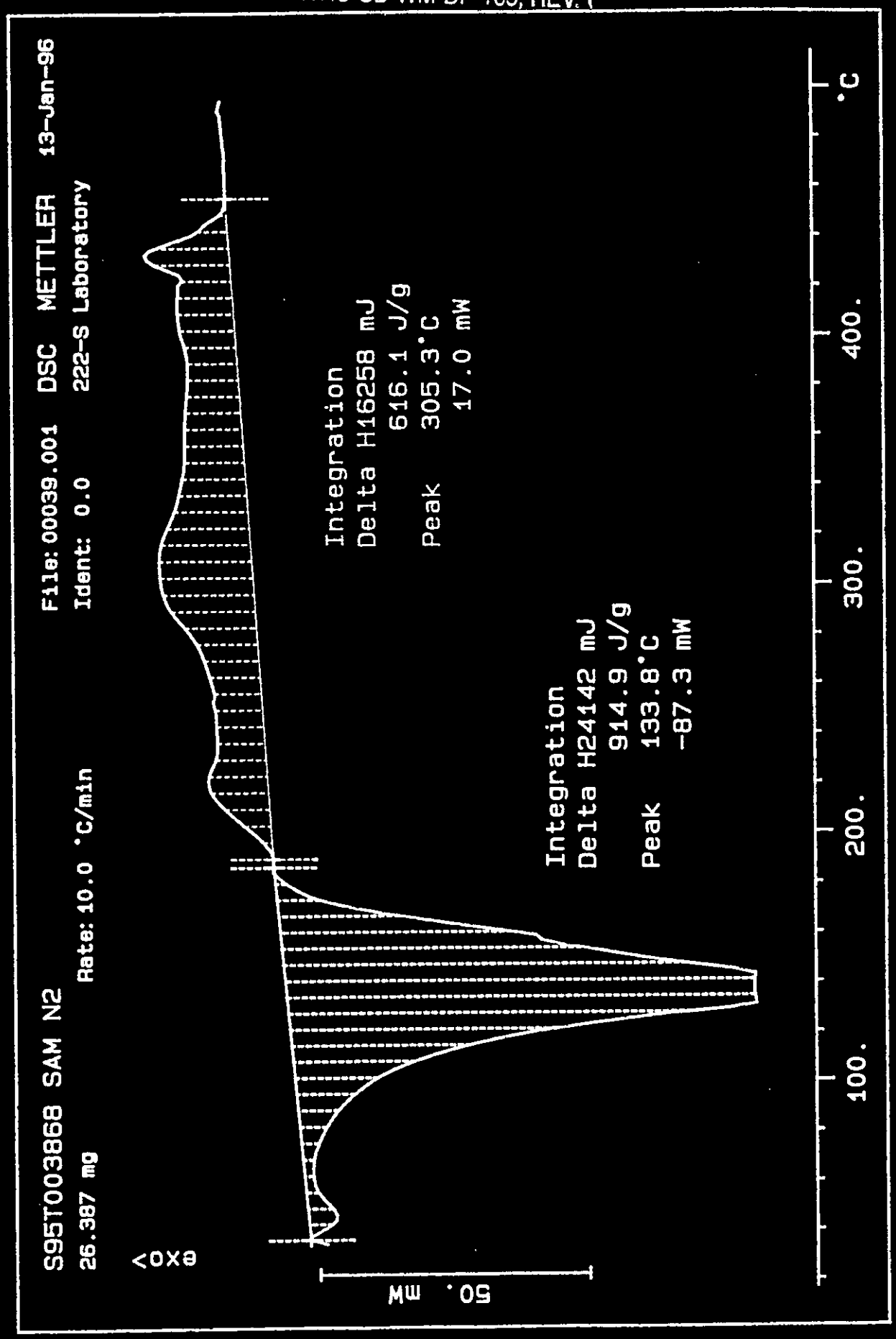
Data Entry Comments: S95T003962 produced an endotherm at 117.9°C with a delta H of 1550.7 J/g.

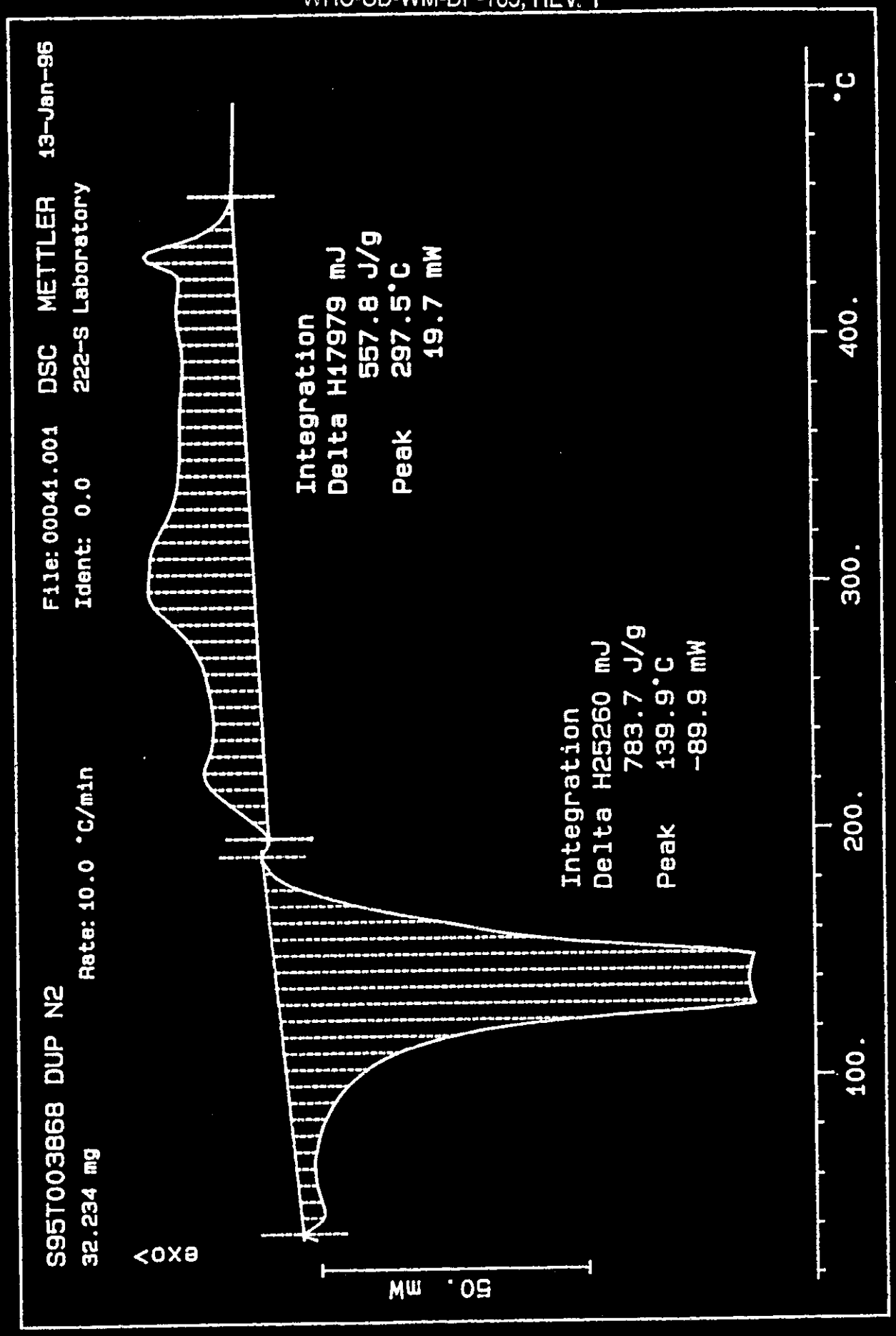
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

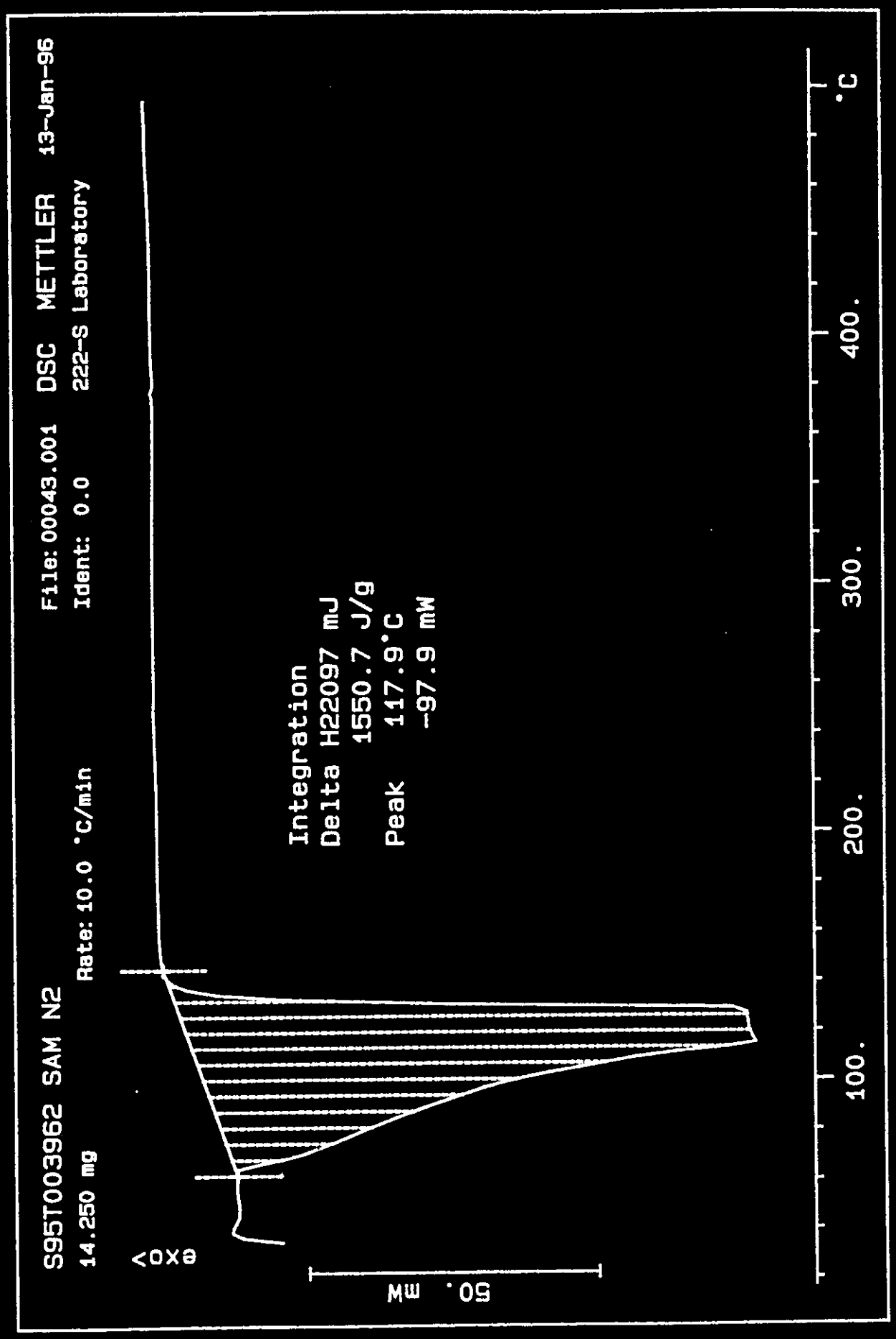
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 274 TO 274.

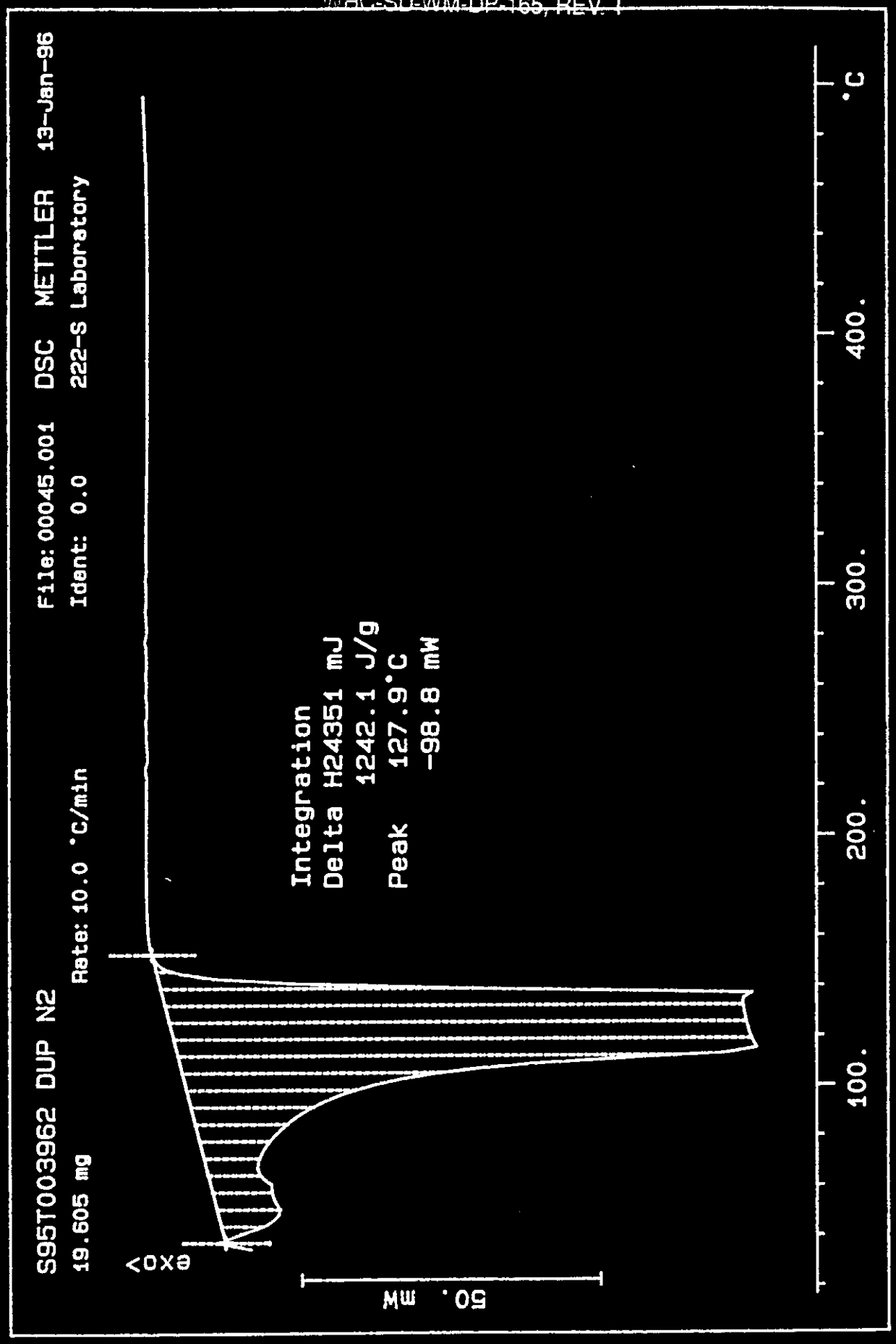


1/17/96
Blandina Valenzuela for ADP


S95T003868 SAM N2
26.387 mg
Rate: 10.0 °C/min
File: 00039.001 DSC METTLER 13-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H16258 mJ
616.1 J/g
Peak 305.3°C
17.0 mW
Integration
Delta H24142 mJ
914.9 J/g
Peak 133.8°C
-87.3 mW
exo>
50. mW
100.
200.
300.
400.
°C


S95T003868 DUP N2
32.234 mg
Rate: 10.0 °C/min
File: 00041.001 DSC METTLER 13-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H17979 mJ
557.8 J/g
Peak 297.5°C
19.7 mW
Integration
Delta H25260 mJ
783.7 J/g
Peak 139.9°C
-89.9 mW
exo>
50. mW
100.
200.
300.
400.
°C


S95T003962 SAM N2
14.250 mg
Rate: 10.0 °C/min
File: 00043.001 DSC METTLER 13-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H22097 mJ
1550.7 J/g
Peak 117.9°C
-97.9 mW
exo>
50. mW
100.
200.
300.
400.
°C


S95T003962 DUP N2
19.605 mg
Rate: 10.0 °C/min
File: 00045.001 DSC METTLER 13-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H24351 mJ
1242.1 J/g
Peak 127.9°C
-98.8 mW
exo>
50. mW
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 5122

Analyst: ADP **Instrument:** DSC0 3 **Book #** 12N14B

Method: LA-514-114 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				DSC-03	LIQUID	28.45	28.15	N/A	Joules/g
95000222	AN-102 GRAB	2 SAMPLE	S95T004133	0		DSC-03	LIQUID	N/A	258.01		Joules/g
95000222	AN-102 GRAB	3 DUP	S95T004133	0		DSC-03	LIQUID	258.01	252.12	N/A	Joules/g
95000222	AN-102 GRAB	4 SAMPLE	S95T004135	0		DSC-03	LIQUID	N/A	279.7		Joules/g
95000222	AN-102 GRAB	5 DUP	S95T004135	0		DSC-03	LIQUID	279.7	300.3	N/A	Joules/g

Final page for worklist # 5122

See attached for signatures
Analyst Signature Date 1/25/96 BDV

Analyst Signature Date 1-29-95

Data Entry Comments: S95T004133 produced one endotherm at 125.61°C with a delta H of 1178.6 J/g.
S95T004135 produced an endotherm at 128.4°C with a delta H of 1147.73

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# 5122

Analyst: ADP **Instrument:** DSC0 _____ **Book #** 12N14B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	LIQUID			N/A	Joules/g
95000222	AN-102 GRAB	2	SAMPLE	S95T004133	0		DSC-01	LIQUID	N/A			Joules/g
95000222	AN-102 GRAB	3	DUP	S95T004133	0		DSC-01	LIQUID			N/A	Joules/g
95000222	AN-102 GRAB	4	SAMPLE	S95T004135	0		DSC-01	LIQUID	N/A			Joules/g
95000222	AN-102 GRAB	5	DUP	S95T004135	0		DSC-01	LIQUID			N/A	Joules/g

Final page for worklist # 5122

Anthony Pirruto 1-23-96
Analyst Signature **Date**

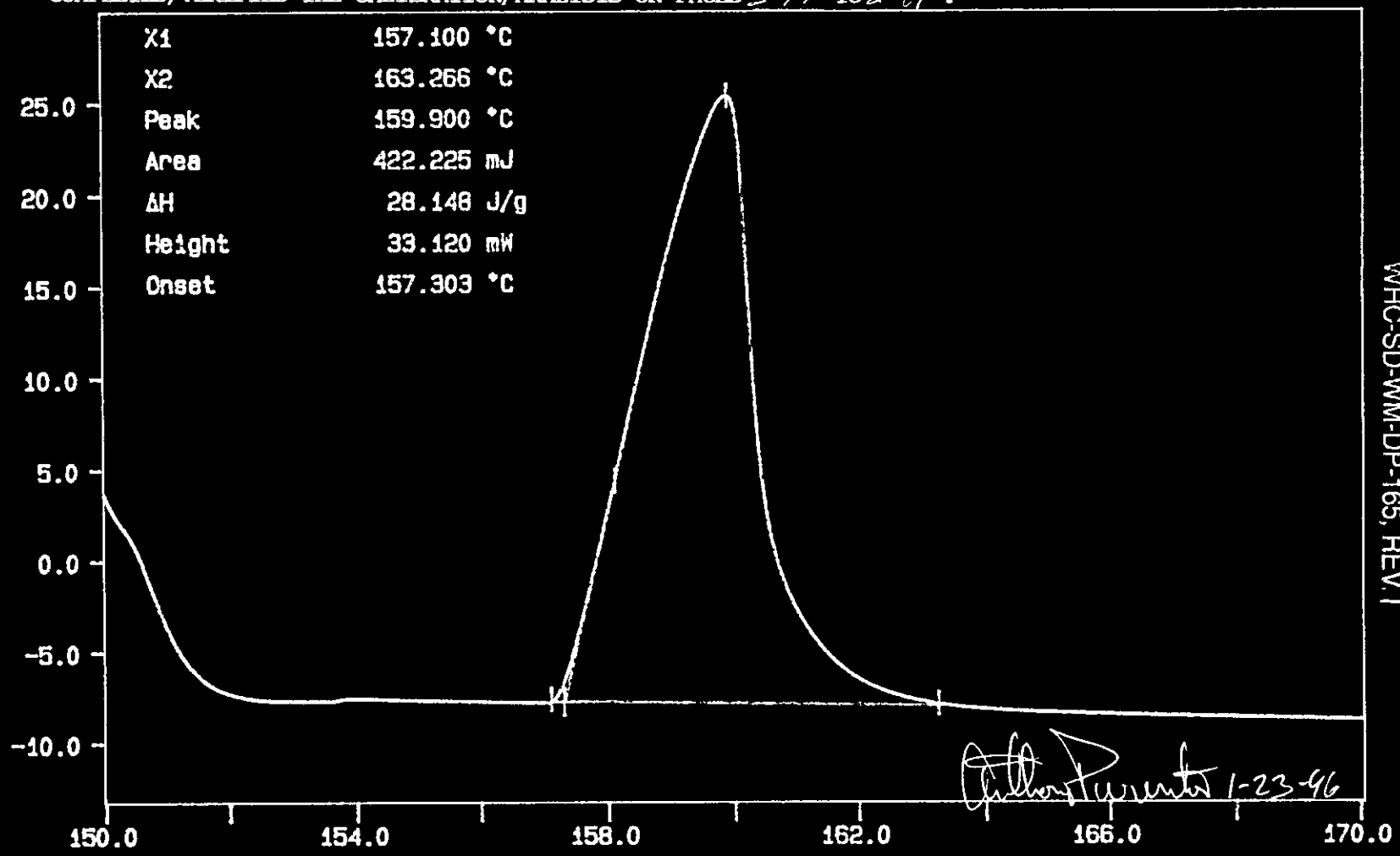
Analyst Signature **Date**

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.

Curve 1: DSC
File info: IND012301 Tue Jan 23 18:27:37 1996
Sample Weight: 15.000 mg
12N14B Indium at 10C/min

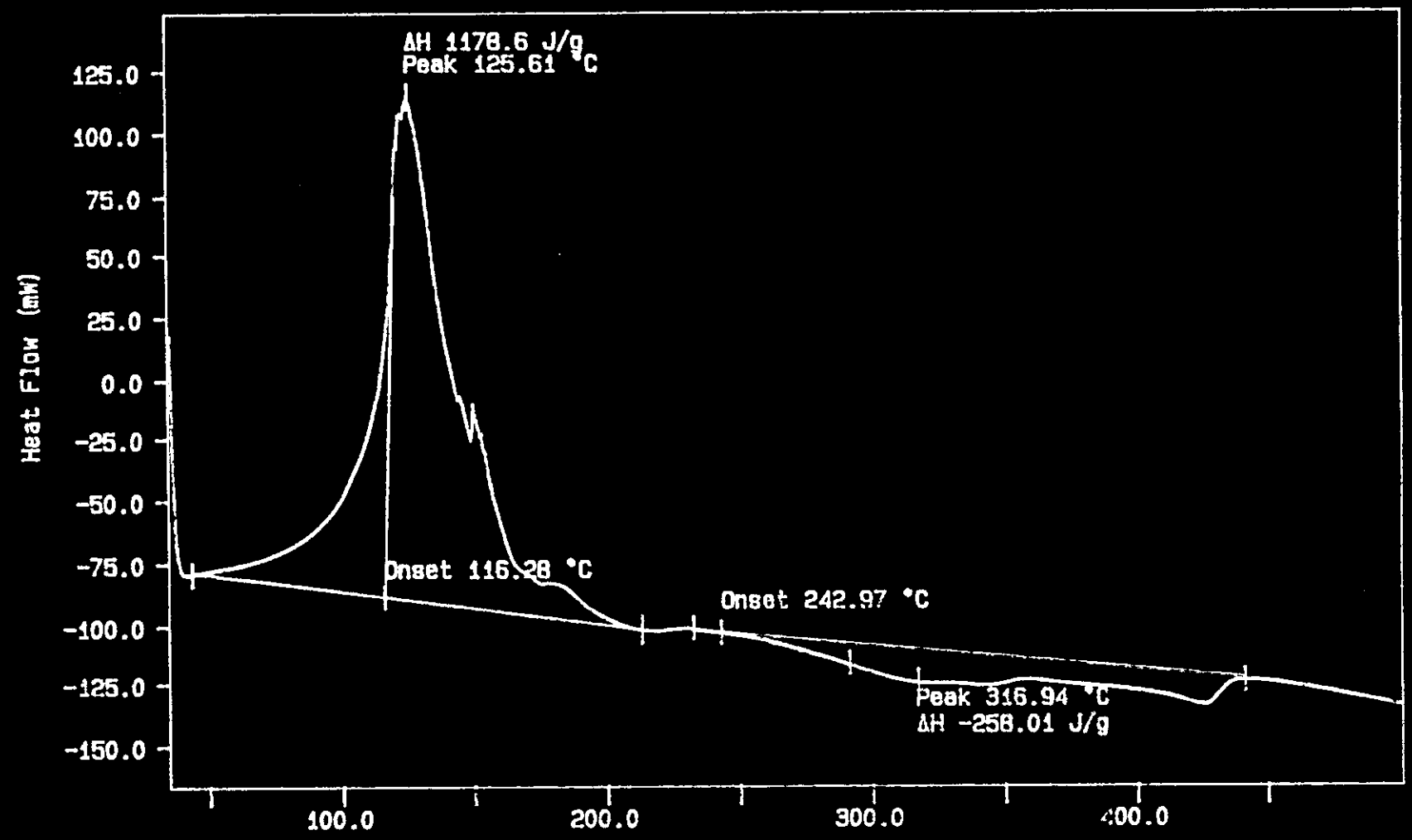
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2-77 TO 2-81.



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Jan 23 18:34:15 1996

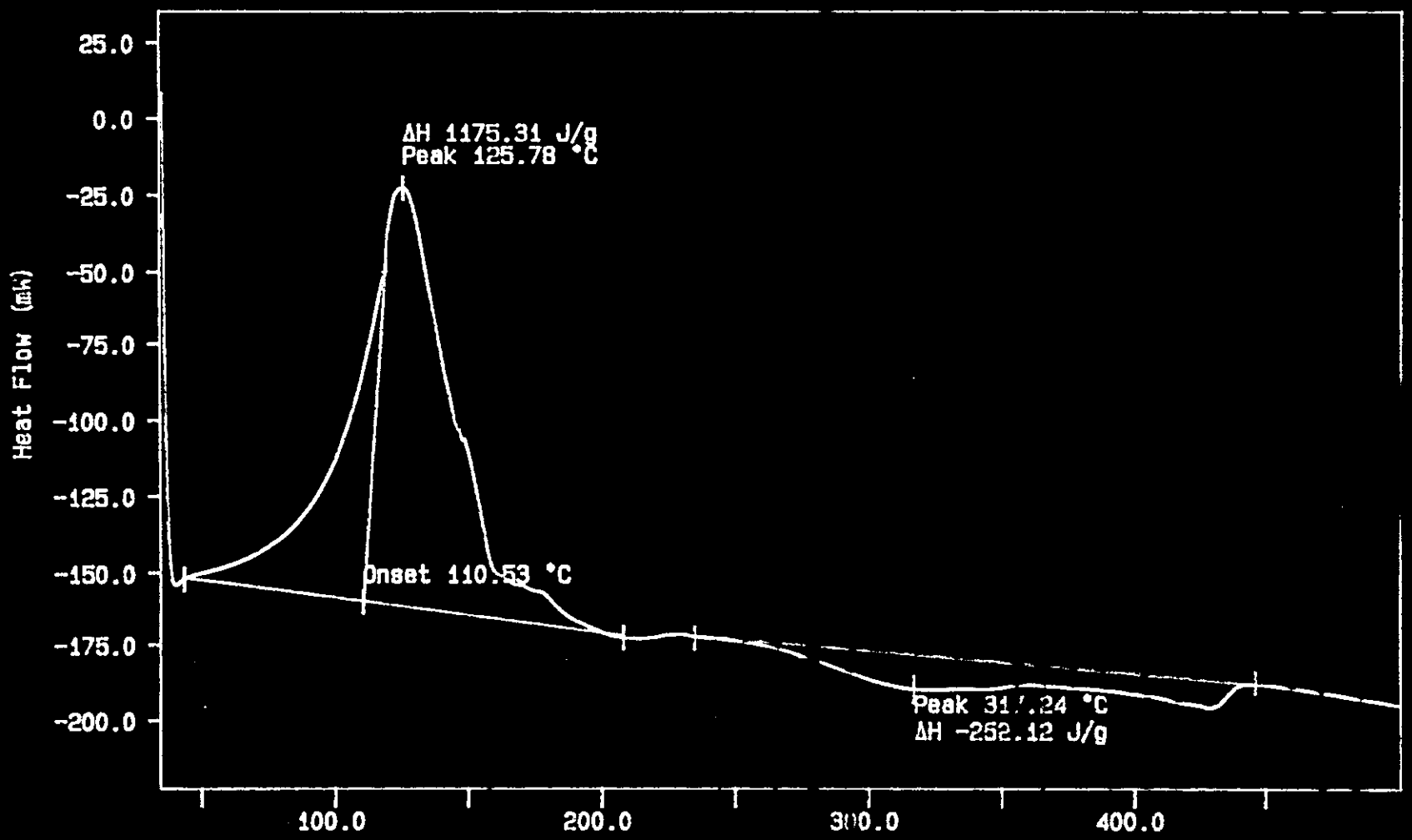
Curve 1: DSC
File info: SAM012302 Tue Jan 23 22:12:03 1996
Sample Weight: 38.650 mg
S95T0904133 SAM



exotherm down, N2 purge gas
TEMP1: 30.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 24 15:03:25 1996

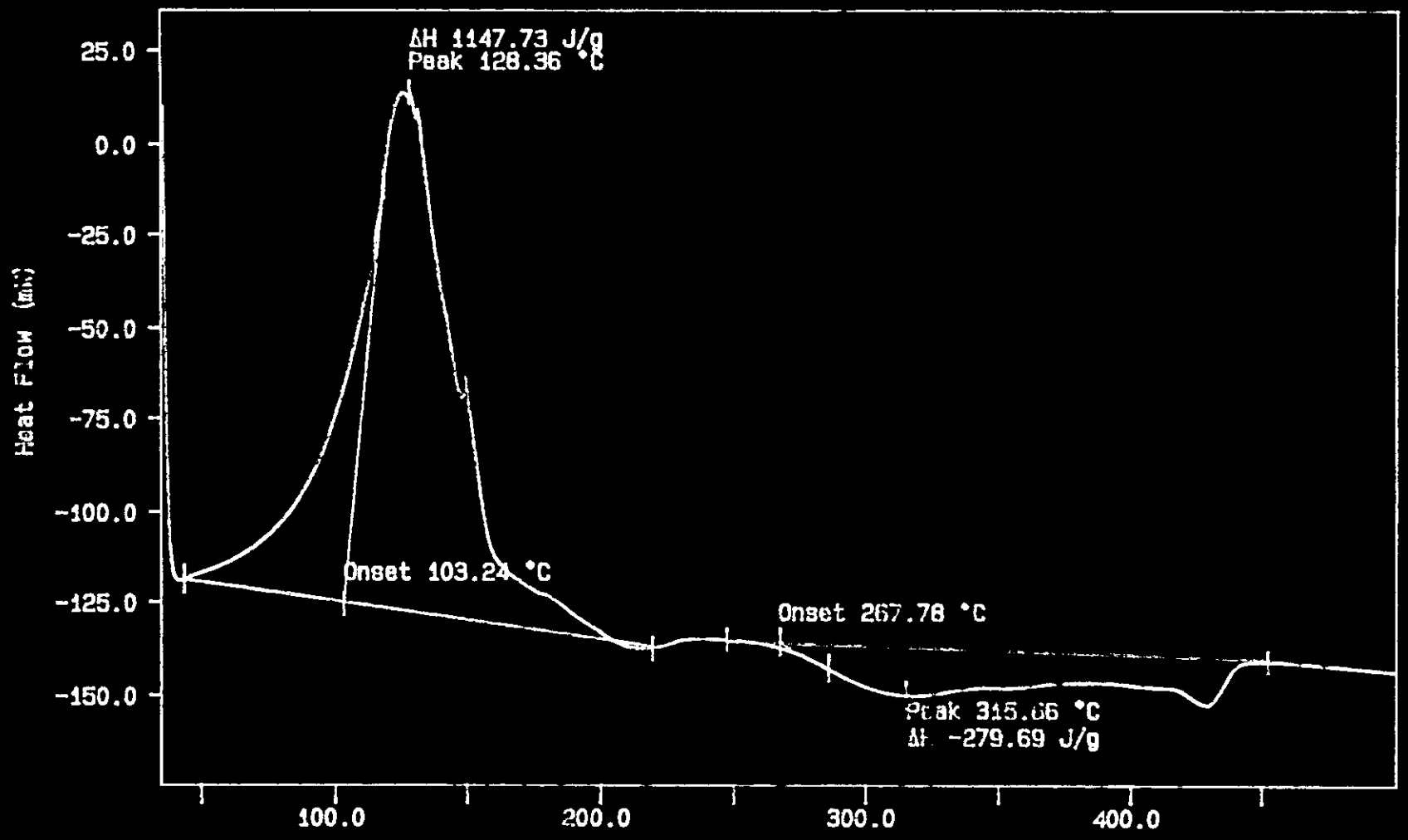
Curve 1: DSC
File info: SAM012303 Tue Jan 23 23:08:50 1996
Sample Weight: 31.990 mg
S95T004133 DUP



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 24 15:34:05 1996

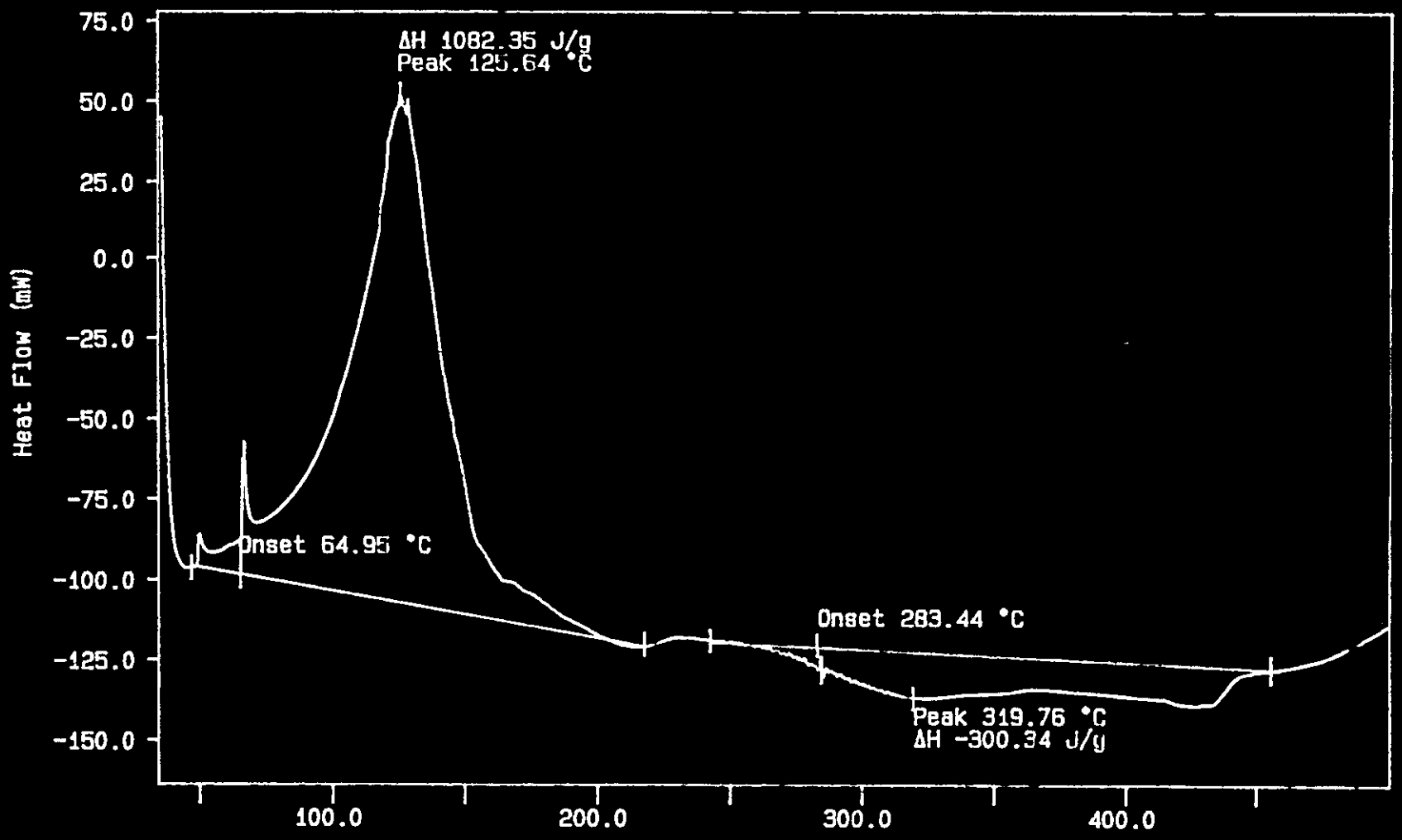
Curve 1: DSC
File info: SAM012304 Wed Jan 24 00:09:20 1996
Sample Weight: 34.370 mg
S95T004135 SAM



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

Al PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 24 15:40:45 1996

Curve 1: DSC
File info: SAM012405 Wed Jan 24 01:55:10 1996
Sample Weight: 37.630 mg
S95T004135 DUP



exotherm down, N2 purge gas
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 11:27:38 1996

LABCORE Data Entry Template for Worklist# 5132

Analyst: ADP **Instrument:** DSC0 3 **Book #** 12N14B

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

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	SOLID	28.45	28.08	N/A	Joules/g
95000222	AN-102 GRAB	2	SAMPLE	S95T004137	0		DSC-03	SOLID	N/A	279.65		Joules/g
95000222	AN-102 GRAB	3	DUP	S95T004137	0		DSC-03	SOLID	279.65	262.5	N/A	Joules/g
95000222	AN-102 GRAB	4	SAMPLE	S95T004139	0		DSC-03	SOLID	N/A	283.2		Joules/g
95000222	AN-102 GRAB	5	DUP	S95T004139	0		DSC-03	SOLID	283.2	327.5	N/A	Joules/g

Final page for worklist # 5132

See attached for signatures
Analyst Signature Date 1/25/96 BDV

Verified by Blanaina Valenzuela 1/26/96 BDV

[signature] 1-26-95
Analyst Signature Date

Data Entry Comments: S95T004137 produced an ~~second weig~~ 1/26/96 BDV endotherm at 130.17°C with a delta H of 991.8J/g
S95T004139 produced an endotherm at 131.73°C with a delta H of 1037.1J/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.

LABCORE Data Entry Template for Worklist# 5132

Analyst: _____ **Instrument:** DSC0 _____ **Book #** _____

Method: LA-514-113 Rev/Mod _____

Worklist Comment: Please run AN-102 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID			N/A	Joules/g
95000222	AN-102 GRAB	2	SAMPLE	S95T004137	0		DSC-01	SOLID	N/A			Joules/g
95000222	AN-102 GRAB	3	DUP	S95T004137	0		DSC-01	SOLID			N/A	Joules/g
95000222	AN-102 GRAB	4	SAMPLE	S95T004139	0		DSC-01	SOLID	N/A			Joules/g
95000222	AN-102 GRAB	5	DUP	S95T004139	0		DSC-01	SOLID			N/A	Joules/g

Final page for worklist # 5132

Analyst Signature Date

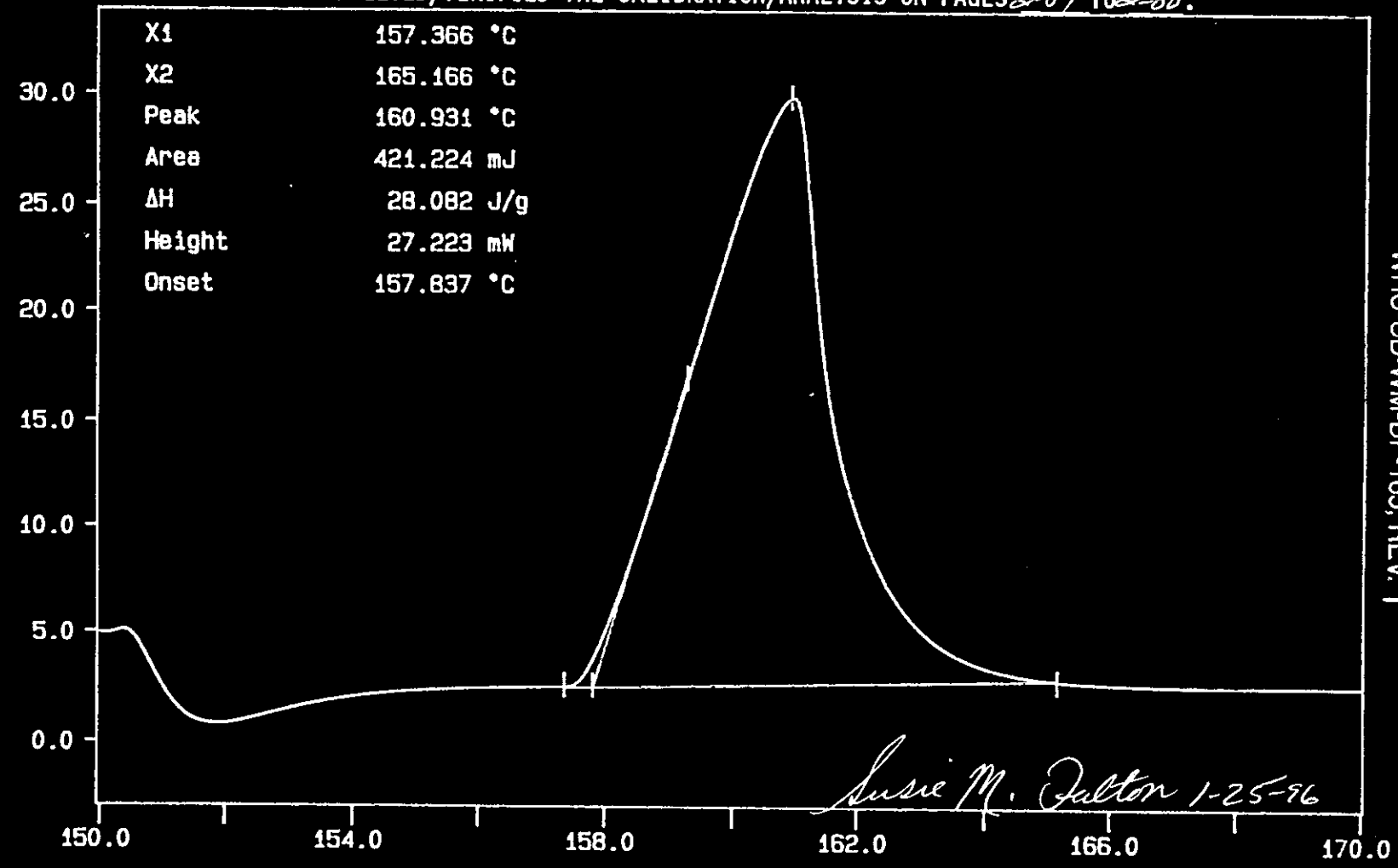
Analyst Signature Date

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.

Curve 1: DSC
File info: IND012501 Thu Jan 25 06:14:44 1996
Sample Weight: 15.000 mg
12N14B Indium at 10C/min

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 284 TO 288.

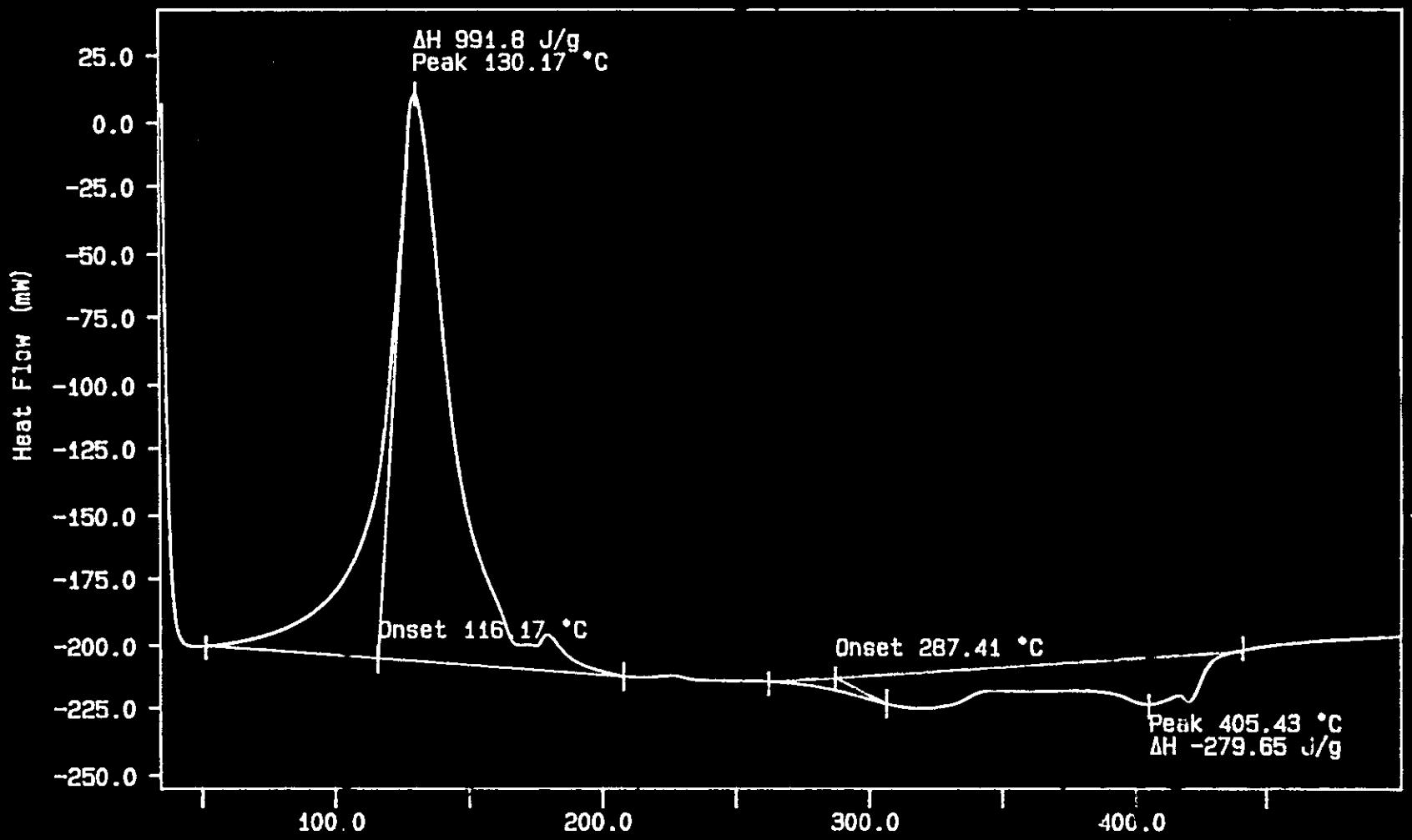


N2, EXOTHERM DOWN
TEMP1: 150.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 170.0 C

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 06:25:13 1996

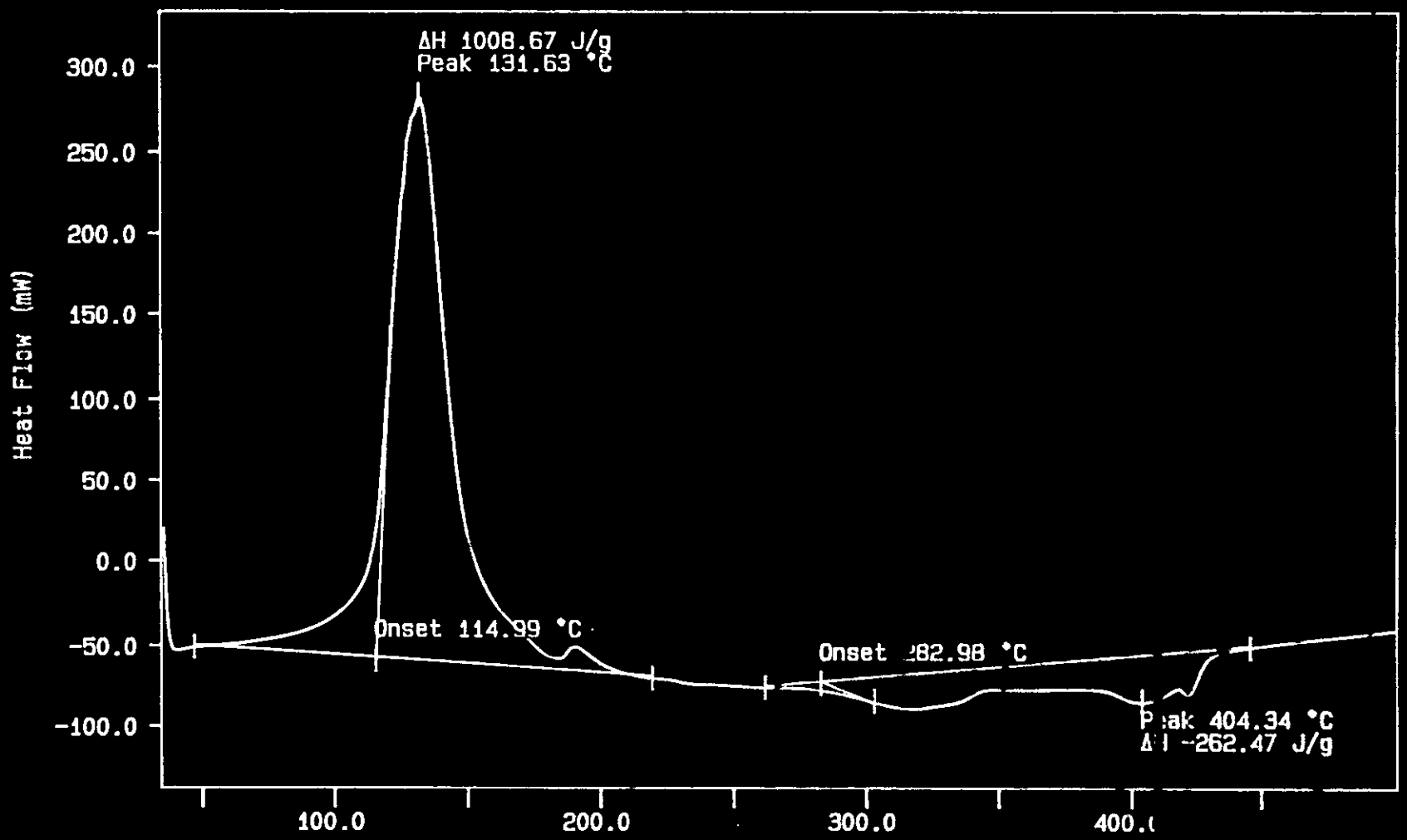
Curve 1: DSC
File info: SAM012401 Wed Jan 24 23:30:19 1996
Sample Weight: 39.350 mg
S95T004137 SAM



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 14:56:50 1996

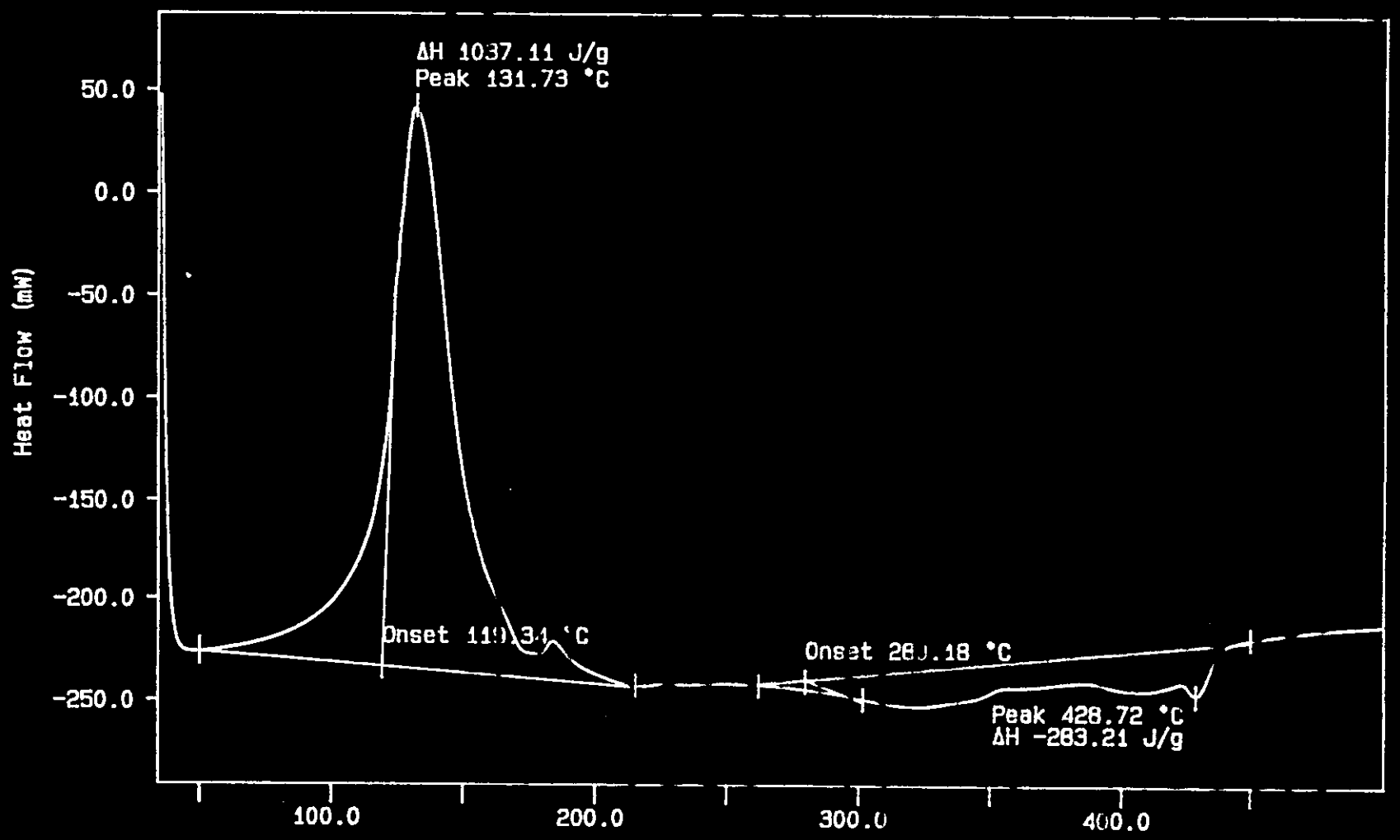
Curve 1: DSC
File info: SAM012402 Thu Jan 25 00:39:54 1996
Sample Weight: 59.970 mg
S95T004137 DUP



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 10:14:37 1996

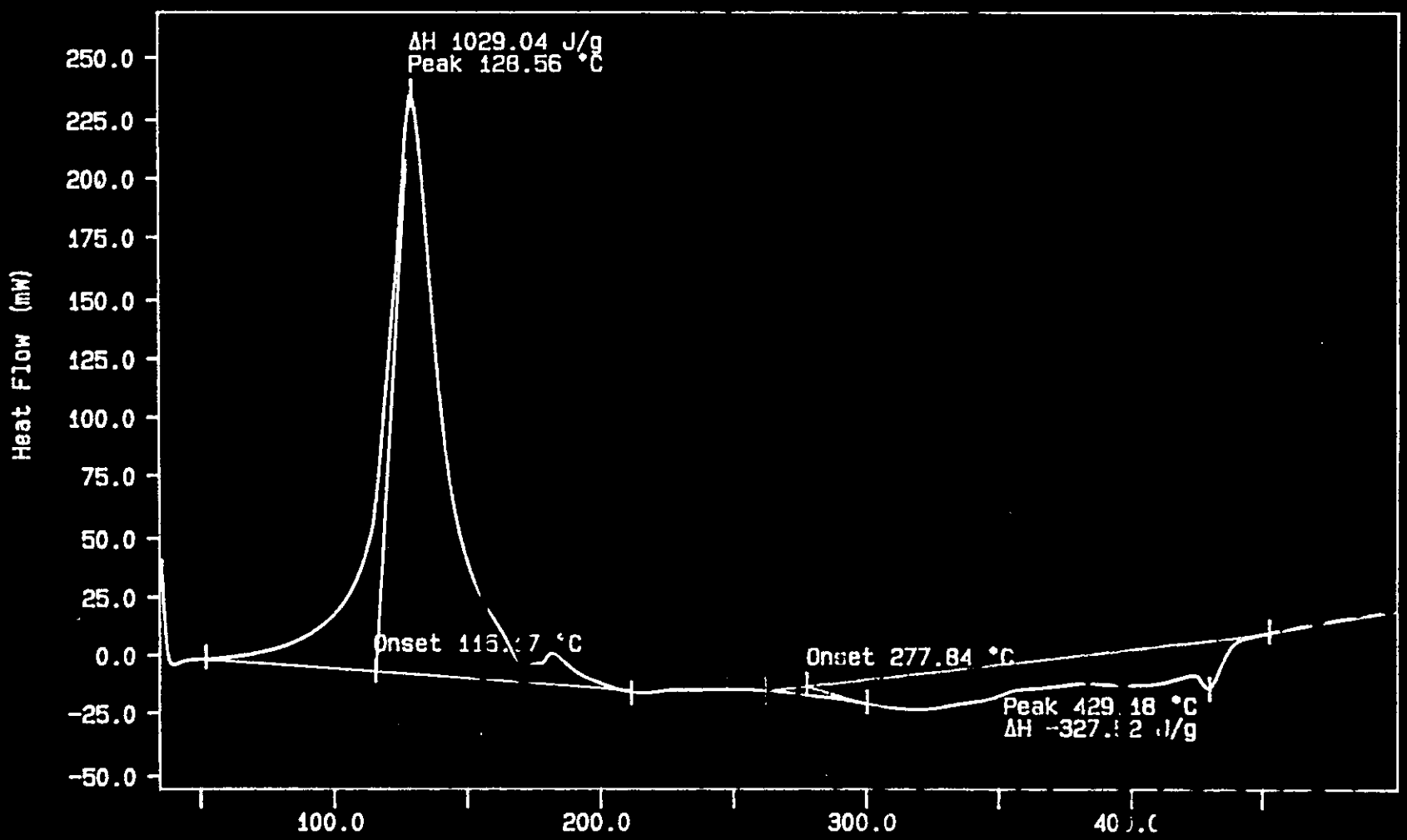
Curve 1: DSC
File info: SAM012403 Thu Jan 25 01:39:29 1996
Sample Weight: 51.900 mg
S95T004139 SAM



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 15:28:29 1996

Curve 1: DSC
File info: SAM012409 Thu Jan 25 02:50:03 1996
Sample Weight: 39.120 mg
S95T004139 DUP



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 15:21:09 1996

worklistrpt Version 2.1 05/15/95
02/01/96 15:21

LABCORE Data Entry Template for Worklist# 5343

Analyst: ADP **Instrument:** DSC01 **Book #** 12N14B

Method: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Run AN-102 DSCs on Mettler under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	LIQUID	28.45	30.4	N/A	Joules/g
95000227	AN-102 GRAB	2	SAMPLE	S96T000005	0		DSC-01	LIQUID	N/A	237.0		Joules/g
95000227	AN-102 GRAB	3	DUP	S96T000005	0		DSC-01	LIQUID	237.0	230.2	N/A	Joules/g
		4	STD				DSC-01	LIQUID	28.45	29.6	N/A	Joules/g
95000222	AN-102 GRAB	5	SAMPLE	S95T003867	0		DSC-01	LIQUID	N/A	283.9		Joules/g
95000222	AN-102 GRAB	6	DUP	S95T003867	0		DSC-01	LIQUID	283.9	284.0	N/A	Joules/g

Final page for worklist # 5343

See attached for signatures
Analyst Signature **Date**

See attached for signatures
Analyst Signature **Date**

Verified by Blandina Valenzuela
2/2/96

Data Entry Comments: S96T000005 produced two endotherms one at 129.7°C with a delta H of 1112.2 J/g and second at 233.0°C with a delta H of 20.1 J/g
S95T003867 produced an endotherm at 130.5°C with a delta H of 922.9 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.

worklistrpt Version 2.1 05/15/95
01/31/96 13:56

LABCORE Data Entry Template for Worklist# 5343

Analyst: ADP **Instrument:** DSC01 **Book #** 12814-B

Method: LA-514-113 Rev/Mod C-1 WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Run AN-102 DSCs on Mettler under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	LIQUID			N/A	Joules/g
95000227	AN-102 GRAB	2	SAMPLE	S96T000005	0		DSC-01	LIQUID	N/A			Joules/g
95000227	AN-102 GRAB	3	DUP	S96T000005	0		DSC-01	LIQUID			N/A	Joules/g
95000222	AN-102 GRAB	4	SAMPLE	S95T003867	0		DSC-01	LIQUID	N/A			Joules/g
95000222	AN-102 GRAB	5	DUP	S95T003867	0		DSC-01	LIQUID			N/A	Joules/g

Final page for worklist # 5343

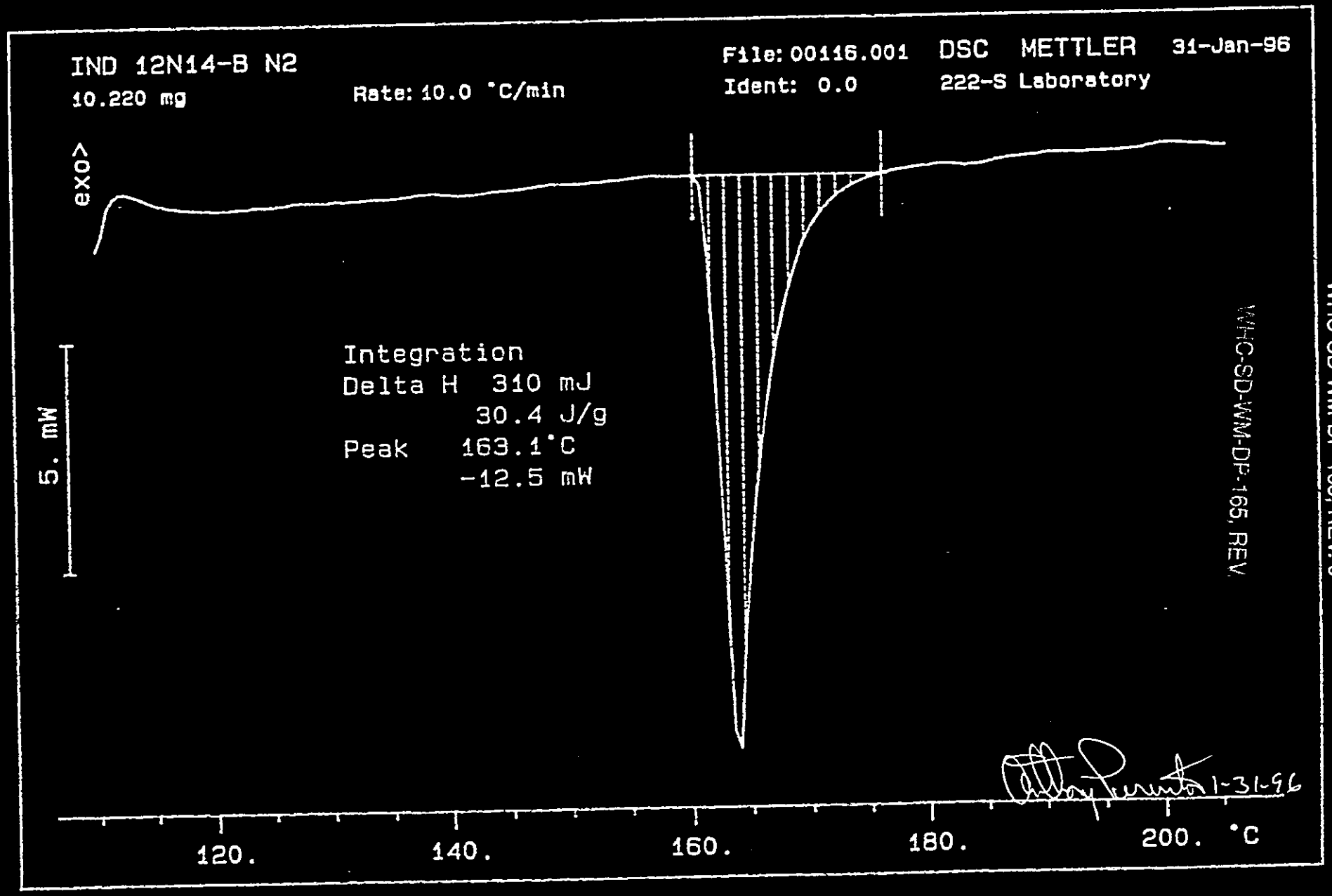
Analyst Signature 1-31-96 Date

Analyst Signature 2/2/96 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 2-91 TO 2-96

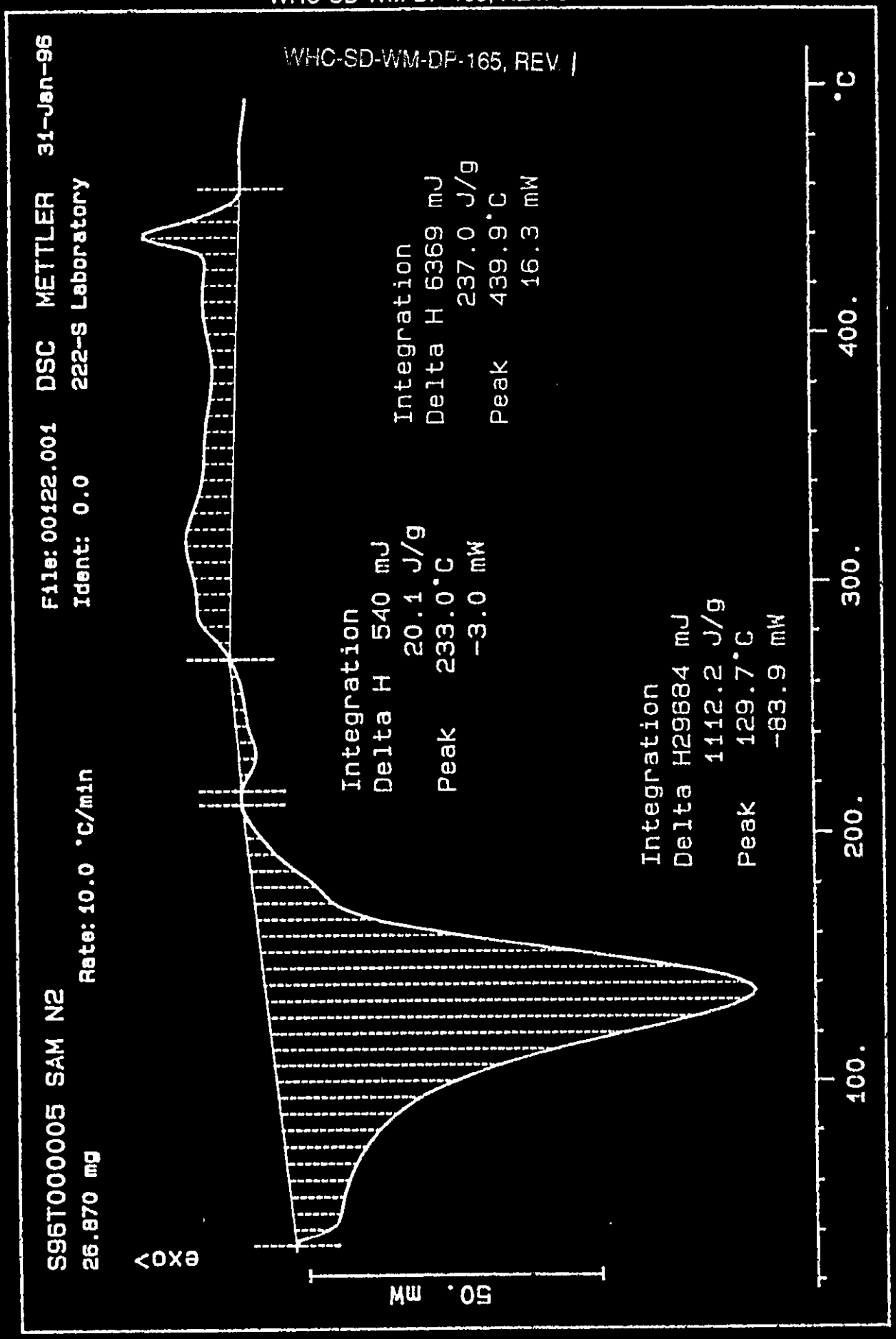


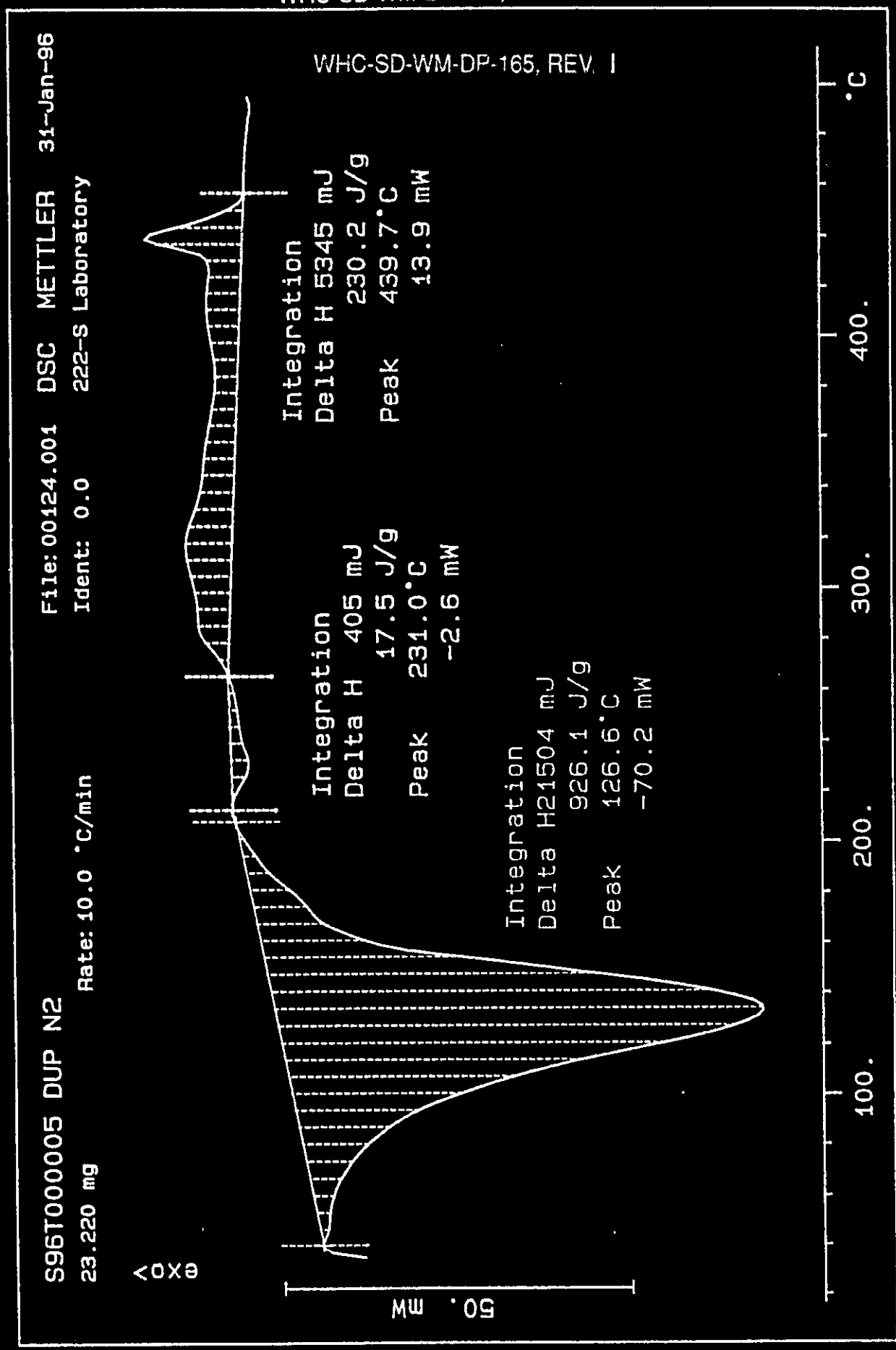
1-31-96

WHC-SD-WM-DP-165, REV. 0

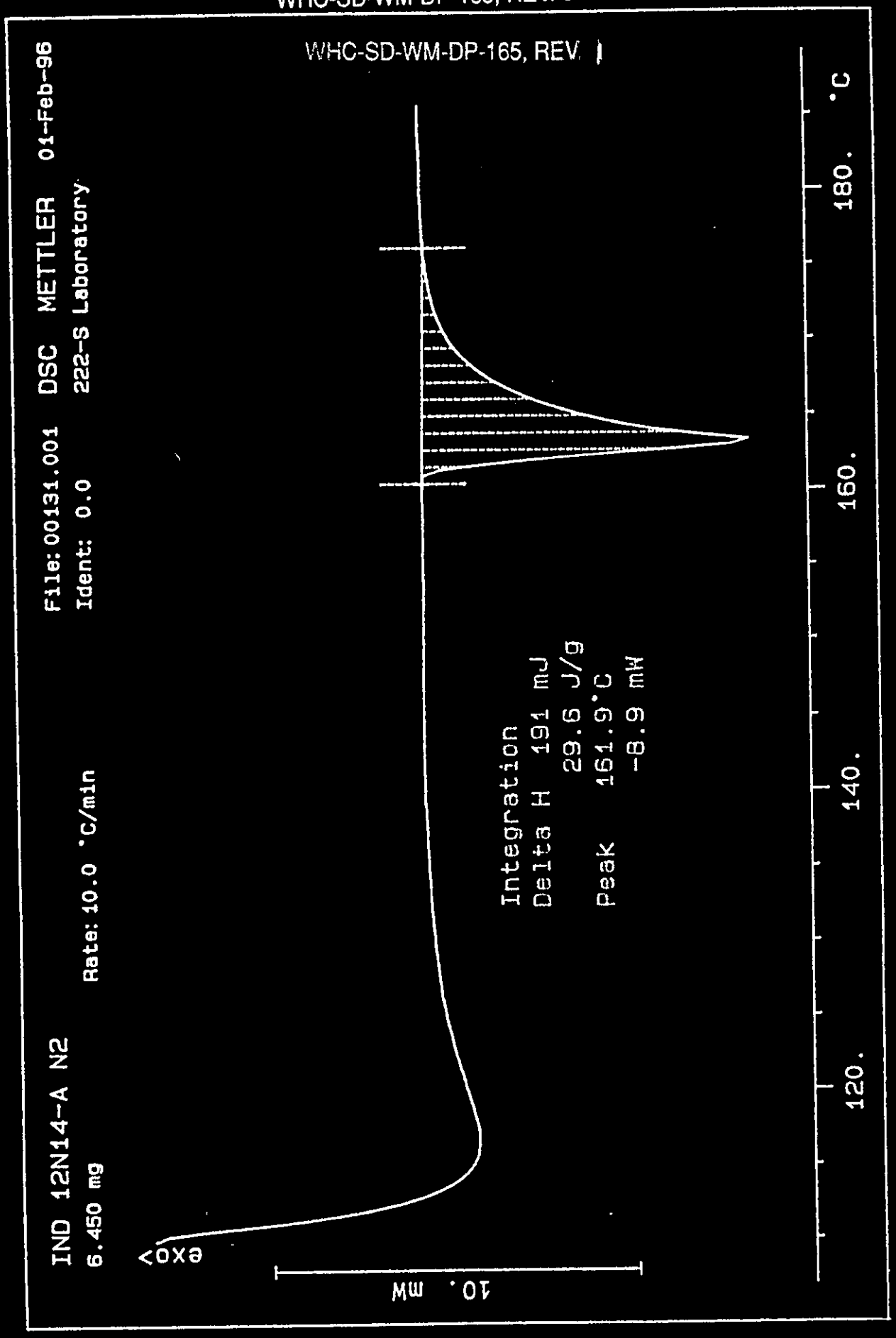
WHC-SD-WM-DP-165, REV.

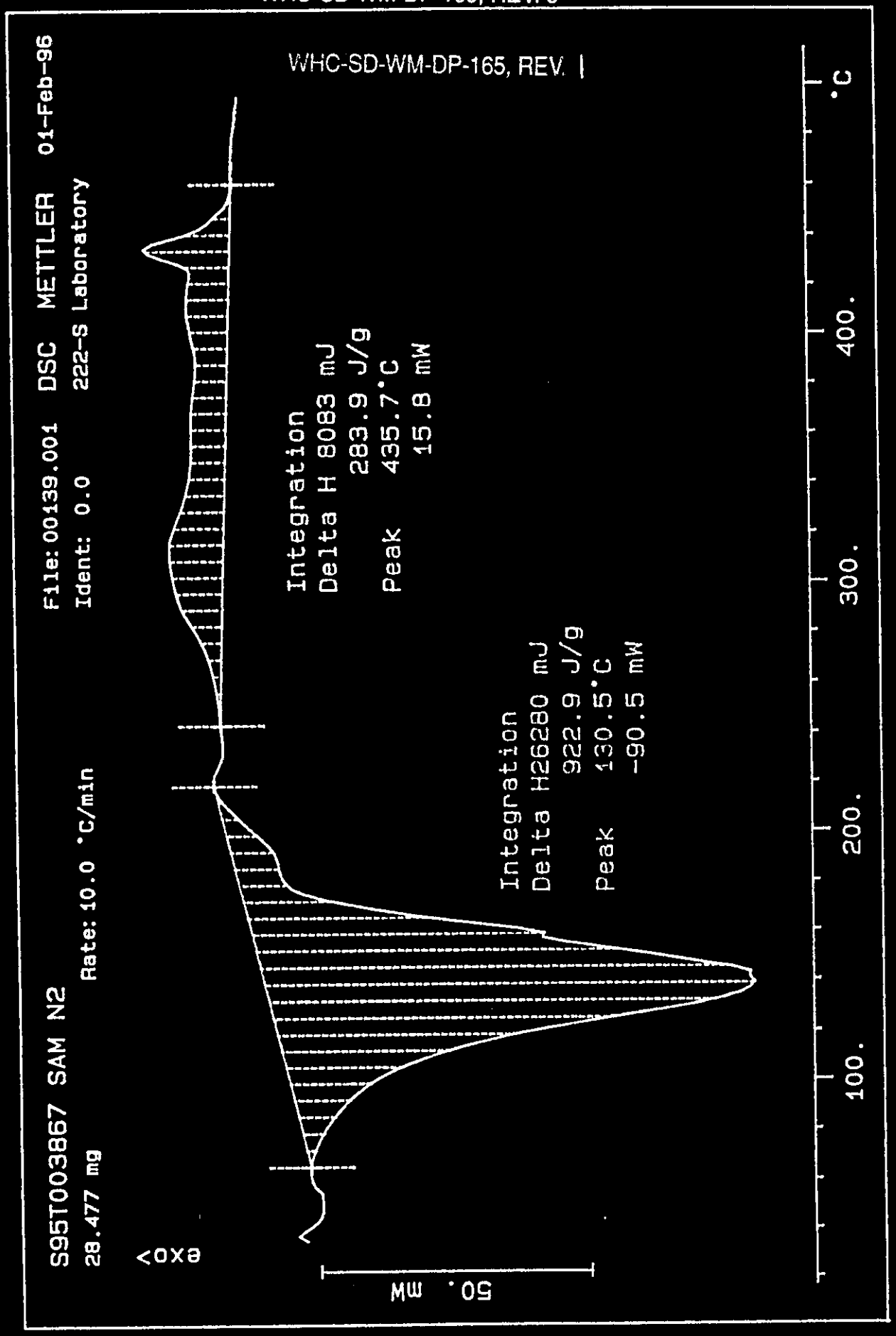
WHC-SD-WM-DP-165, REV. 0



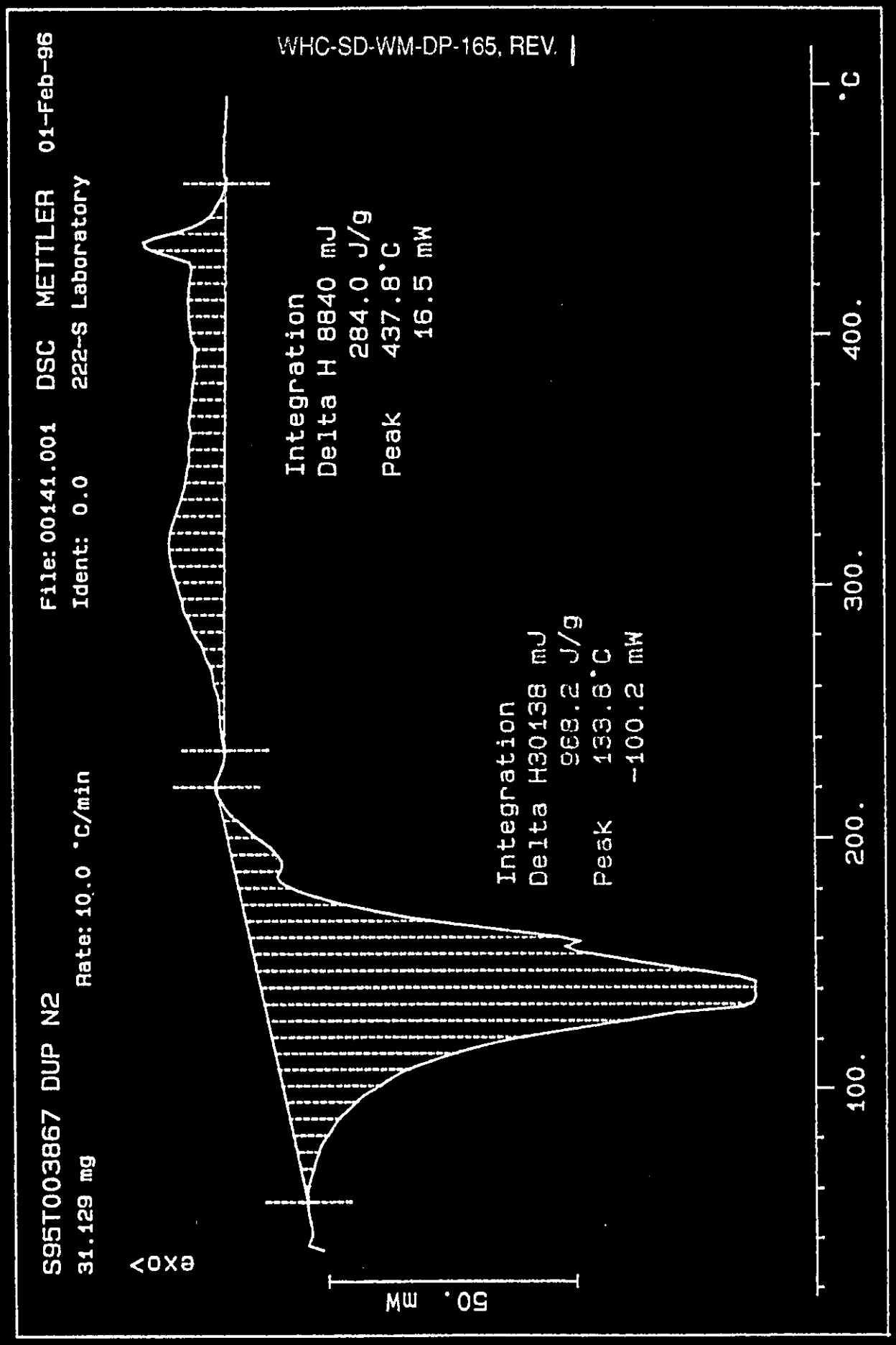

WHC-SD-WM-DP-165, REV. I
S96T000005 DUP N2
23.220 mg
Rate: 10.0 °C/min
File: 00124.001 DSC METTLER 31-Jan-96
Ident: 0.0 222-S Laboratory
Integration
Delta H 5345 mJ
230.2 J/g
Peak 439.7°C
13.9 mW
Integration
Delta H 405 mJ
17.5 J/g
Peak 231.0°C
-2.6 mW
Integration
Delta H21504 mJ
926.1 J/g
Peak 126.6°C
-70.2 mW
exo>
50. mW
100.
200.
300.
400.
°C

WHC-SD-WM-DP-165, REV. 0




WHC-SD-WM-DP-165, REV. 1
S95T003867 SAM N2
28.477 mg
Rate: 10.0 °C/min
File: 00139.001 DSC METTLER 01-Feb-96
Ident: 0.0 222-S Laboratory
Integration
Delta H 8083 mJ
283.9 J/g
Peak 435.7°C
15.8 mW
Integration
Delta H26280 mJ
922.9 J/g
Peak 130.5°C
-90.5 mW
exo>
50. mW
100.
200.
300.
400.
°C

WHC-SD-WM-DP-165, REV. 0



LABCORE Data Entry Template for Worklist# 5199

Analyst: BNV **Instrument:** DSC01 _____ **Book #** —

Method: LA-514-113 Rev/Mod —

Worklist Comment: Dry DSC for AN-102. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000227	AN-102 GRAB	1	SAMPLE	S96T000003	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
95000227	AN-102 GRAB	2	DUP	S96T000003	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
95000227	AN-102 GRAB	3	SAMPLE	S96T000004	0		DSC-02	SOLID	N/A	Ø		Joules/g Dry
95000227	AN-102 GRAB	4	DUP	S96T000004	0		DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
95000222	AN-102 GRAB	5	SAMPLE	S95T004137	0		DSC-02	SOLID	N/A	488.1		Joules/g Dry
95000222	AN-102 GRAB	6	DUP	S95T004137	0		DSC-02	SOLID	488.1	458.2	N/A	Joules/g Dry
95000222	AN-102 GRAB	7	SAMPLE	S95T004139	0		DSC-02	SOLID	N/A	492.1		Joules/g Dry
95000222	AN-102 GRAB	8	DUP	S95T004139	0		DSC-02	SOLID	492.1	569.1	N/A	Joules/g Dry

Final page for worklist # 5199

Data entered + verified by
Blandina Valenzuela 1-29-96
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.

AN-102 (solid)

CALCULATED DRY DSC			
SAMPLE NO.	DSC RESULT (J/g)	TGA RESULT (% water)	DRY DSC RESULT
S96T000003	Ø	—	Ø
03D	Ø	—	Ø
04	Ø	—	Ø
04 D	Ø	—	Ø
S95T004137	279.65	42.71	488.1
4137D	262.5	42.71	458.2
4139	283.2	42.45	492.1
4139D	327.5	42.45	569.1

LABCORE Data Entry Template for Worklist# 5200

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

Method: LA-514-113 Rev/Mod —

WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Dry DSC for AN-102. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000222	AN-102 GRAB	1	SAMPLE	S95T004133	0		DSC-02	LIQUID	N/A	487.1		Joules/g Dry
95000222	AN-102 GRAB	2	DUP	S95T004133	0		DSC-02	LIQUID	487.1	475.9	N/A	Joules/g Dry
95000222	AN-102 GRAB	3	SAMPLE	S95T004135	0		DSC-02	LIQUID	N/A	556.5		Joules/g Dry
95000222	AN-102 GRAB	4	DUP	S95T004135	0		DSC-02	LIQUID	556.5	597.5	N/A	Joules/g Dry
95000222	AN-102 GRAB	5	SAMPLE	S95T003867	0		DSC-02	LIQUID	N/A	43.53		Joules/g Dry
95000222	AN-102 GRAB	6	DUP	S95T003867	0		DSC-02	LIQUID	43.53	43.28	N/A	Joules/g Dry
95000222	AN-102 GRAB	7	SAMPLE	S95T003868	0		DSC-02	LIQUID	N/A	~~540.5~~ 1201	1-30-96 BDV	Joules/g Dry
95000222	AN-102 GRAB	8	DUP	S95T003868	0		DSC-02	LIQUID	~~540.5~~ 1201	~~551.0~~ 1088	1-30-96 N/A BDV	Joules/g Dry
95000222	AN-102 GRAB	9	SAMPLE	S95T003869	0		DSC-02	LIQUID	N/A	~~1234~~ 555.3 1-30-96 BDV	1-30-96 BDV	Joules/g Dry
95000222	AN-102 GRAB	10	DUP	S95T003869	0		DSC-02	LIQUID	~~1234~~ 555.3	~~1117~~ 566.1	1-30-96 BDV N/A	Joules/g Dry
95000227	AN-102 GRAB	11	SAMPLE	S95T003982	0		DSC-02	LIQUID	N/A	563.6		Joules/g Dry
95000227	AN-102 GRAB	12	DUP	S95T003982	0		DSC-02	LIQUID	563.6	629.4	N/A	Joules/g Dry
95000227	AN-102 GRAB	13	SAMPLE	S95T003983	0		DSC-02	LIQUID	N/A	720.3		Joules/g Dry
95000227	AN-102 GRAB	14	DUP	S95T003983	0		DSC-02	LIQUID	720.3	560.2	N/A	Joules/g Dry
95000227	AN-102 GRAB	15	SAMPLE	S95T003984	0		DSC-02	LIQUID	N/A	440.8		Joules/g Dry
95000227	AN-102 GRAB	16	DUP	S95T003984	0		DSC-02	LIQUID	440.8	389.2	N/A	Joules/g Dry
95000227	AN-102 GRAB	17	SAMPLE	S96T000005	0		DSC-02	LIQUID	N/A	30.96		Joules/g Dry
95000227	AN-102 GRAB	18	DUP	S96T000005	0		DSC-02	LIQUID	30.96	35.66	N/A	Joules/g Dry

Data Entry Comments:

Dry DSC results for samples S95T003867 and S96T000005 for this worklist will NOT be included in the report due to a DSC serum. Recalculated results are on worklist # 5401

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.

RCE 2/2/96

LABCORE Data Entry Template for Worklist# 5200

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
95000227	AN-102 GRAB	19 SAMPLE	S96T000006	0		DSC-02	LIQUID	N/A	Ø		Joules/g Dry
95000227	AN-102 GRAB	20 DUP	S96T000006	0		DSC-02	LIQUID	Ø	Ø 52.21 RRC 1/30/96	N/A	Joules/g Dry

Final page for worklist # 5200

Data entered + verified by
Blandina Valenzuela 1/29/96

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.

AN-102 (liquid)

CALCULATED DRY DSC			
SAMPLE NO.	DSC RESULT (J/g)	TGA RESULT (% water)	DRY DSC RESULT
S95T004133	258.0	47.03	487.1
4133D	252.1	47.03	475.9
4135	279.7	49.74	556.5
4135D	300.3	49.74	597.5
3867	22.14	~~49.14~~ 49.14	43.53
3867D	22.01	49.14	43.28
3868	~~277.2~~ 616.1	48.71 x avg of 3 results	~~540.5~~ 1201
3868D	~~282.61~~ 557.8	48.71	~~551.0~~ 1088
3869	~~616.1~~ 277.2	50.08	~~1234~~ 555.3
3869D	~~557.8~~ 282.61	50.08	~~1117~~ 566.1
3982	284.2	49.57	563.6
3982D	317.4	49.57	629.4
3983	361.3	49.84	720.3
3983D	281.0	49.84	560.2
3984	223.2	49.36	440.8
3984D	197.1	49.36	389.2
S96T000000~~5~~5	15.76	49.10	30.96
000005D	18.15	49.10	35.66
06	~~0~~	—	
06D	~~0~~ 27.47	— 47.39	52.21

LABCORE Data Entry Template for Worklist# 5401

Analyst: BVD **Instrument:** DSC01 **Book #** N/A

Method: LA-514-113 Rev/Mod ——

WHC-SD-WM-DP-165, REV. 1

Worklist Comment: Dry DSC RERUN for AN-102. rae

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
95000227	AN-102 GRAB	1 SAMPLE	S96T000005	0		DSC-02	LIQUID	N/A	465.6		Joules/g Dry
95000227	AN-102 GRAB	2 DUP	S96T000005	0		DSC-02	LIQUID	465.6	452.3	N/A	Joules/g Dry
95000222	AN-102 GRAB	3 SAMPLE	S95T003867	0		DSC-02	LIQUID	N/A	558.2		Joules/g Dry
95000222	AN-102 GRAB	4 DUP	S95T003867	0		DSC-02	LIQUID	558.2	558.4	N/A	Joules/g Dry

Final page for worklist # 5401

Data entered + verified by
Blandina Valenzuela 2/2/96

Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Dry DSC was recalculated because of a rerun. Used results from worklist # 5343. BVE 2/2/96

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-165, REV. 0

CALCULATED DRY DSC			
SAMPLE NO.	*DSC RESULT (J/g)	TGA RESULT (%water)	DRY DSC RESULT
S96T000005	237.0	49.10	465.6
05D	230.2	49.10	452.3
S95T003867	283.9	49.14	558.2
3867D	284.0	49.14	558.4

* DSC results are from worklist # 5343. RDE 2/2/96

LABCORE Data Entry Template for Worklist# 4845

Analyst: ADP **Instrument:** TGA0 1 **Book #** 75N8A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID	59.2	60.36	N/A	%
95000227	AN-102 GRAB	2	SAMPLE	S96T000003	0		TGA-01	SOLID	N/A	35.6		%
95000227	AN-102 GRAB	3	DUP	S96T000003	0		TGA-01	SOLID	35.6	35.98	N/A	%
95000227	AN-102 GRAB	4	SAMPLE	S96T000004	0		TGA-01	SOLID	N/A	44.25		%
95000227	AN-102 GRAB	5	DUP	S96T000004	0		TGA-01	SOLID	44.25	43.72	N/A	%

Final page for worklist # 4845

[signature] 1-20-96
Analyst Signature Date

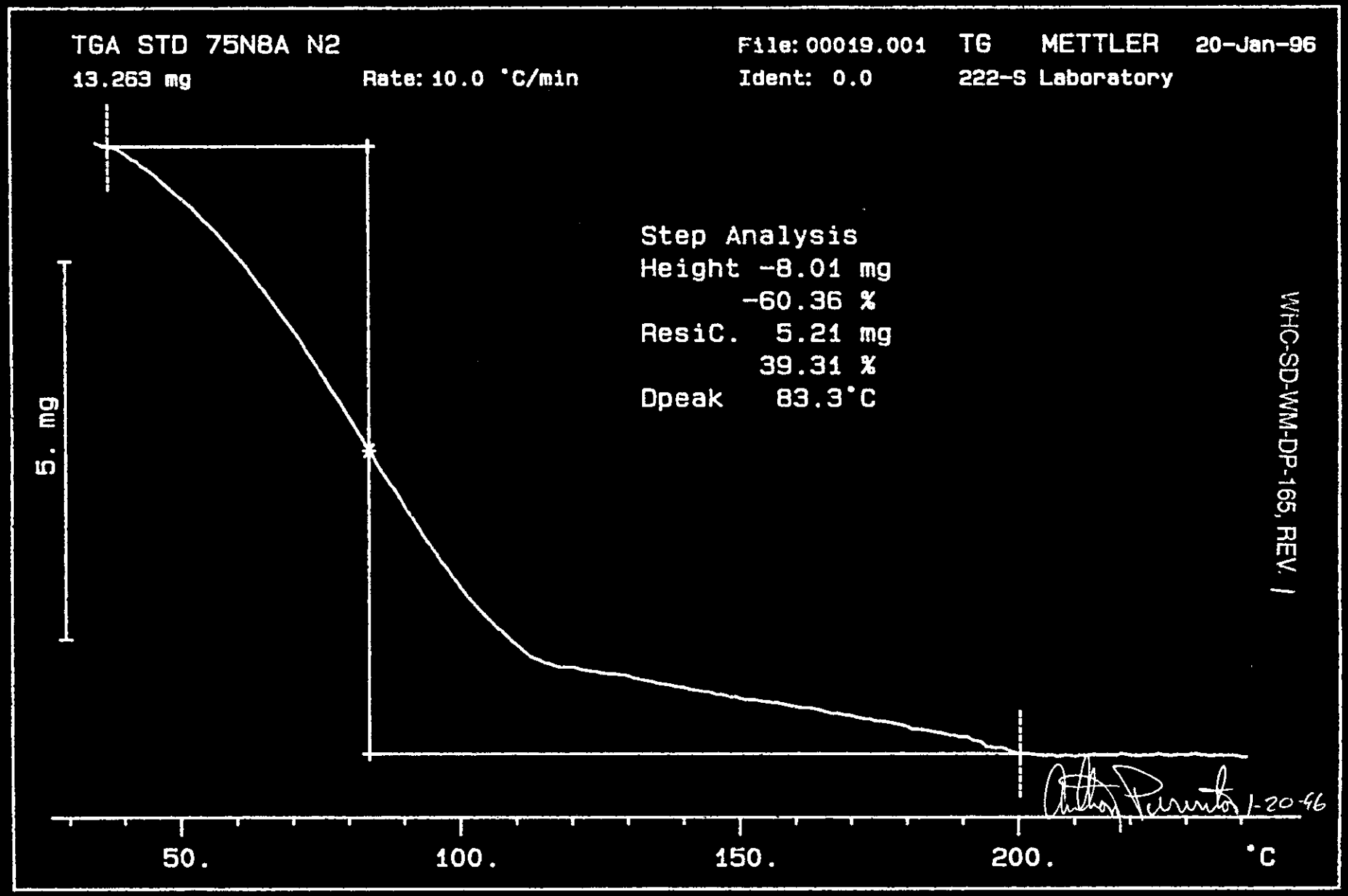
[signature] 1/24/96
Analyst Signature Date

Verified by Blandina Valenzuela 1/26/96

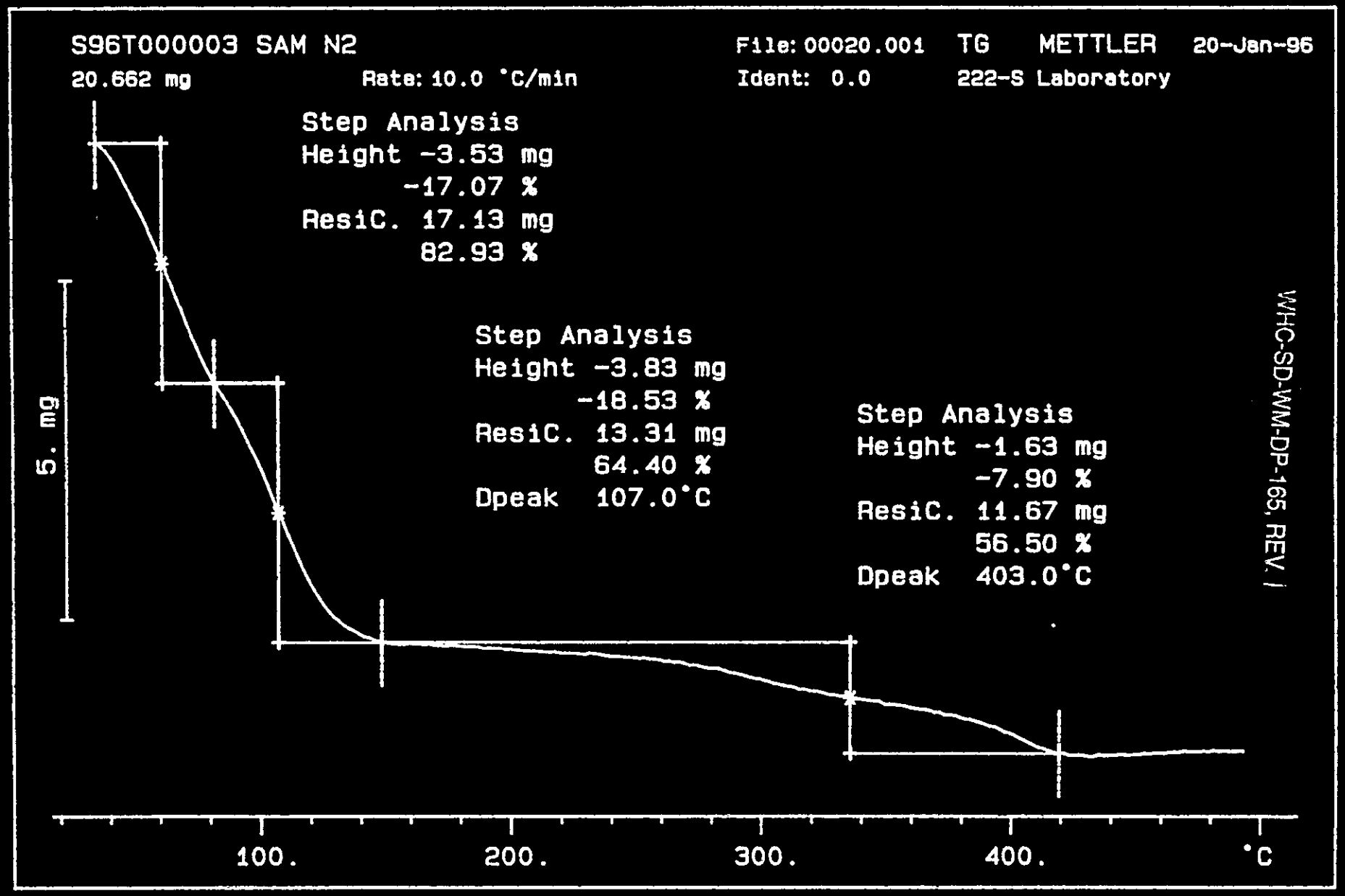
Data Entry Comments: S96T000003 produced weight loss of 7.90% at approximately 320°C. The results given are the sum of two weight loss steps. S96T000004 produced two additional weight loss of 3.65% and 4.38%

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 2-105 TO 2-109.



WHC-SD-WM-DP-165, REV. 1



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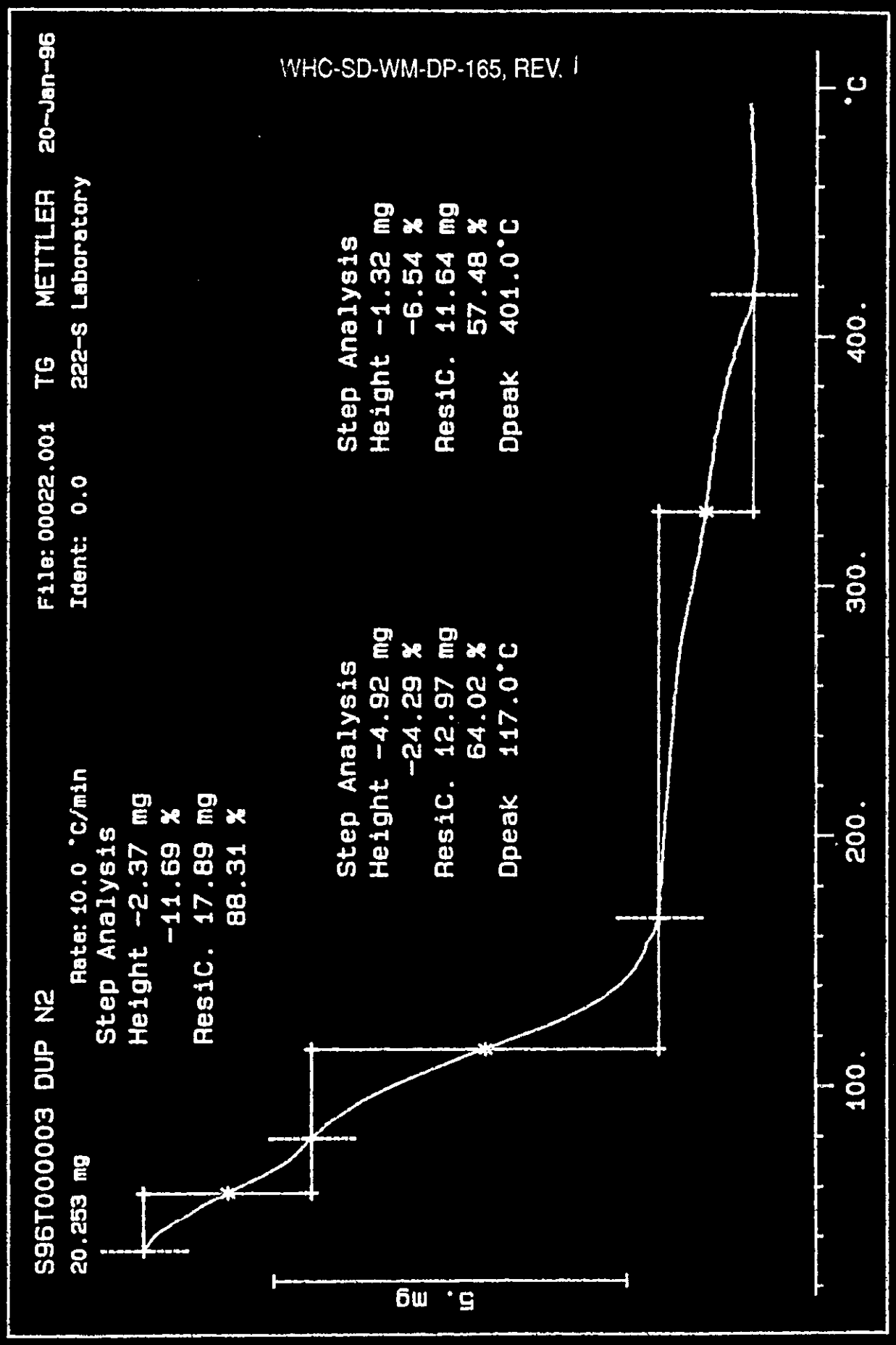
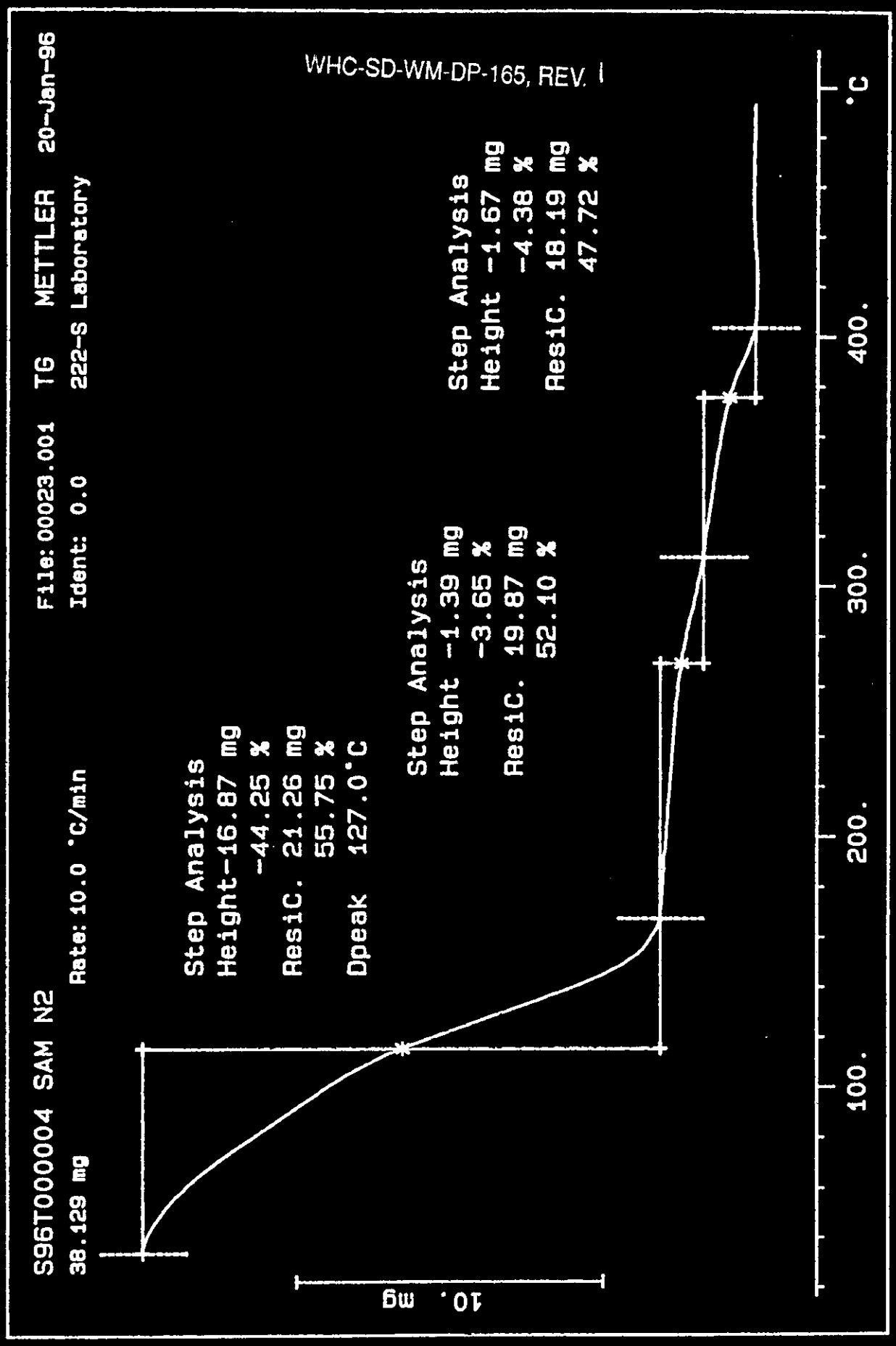
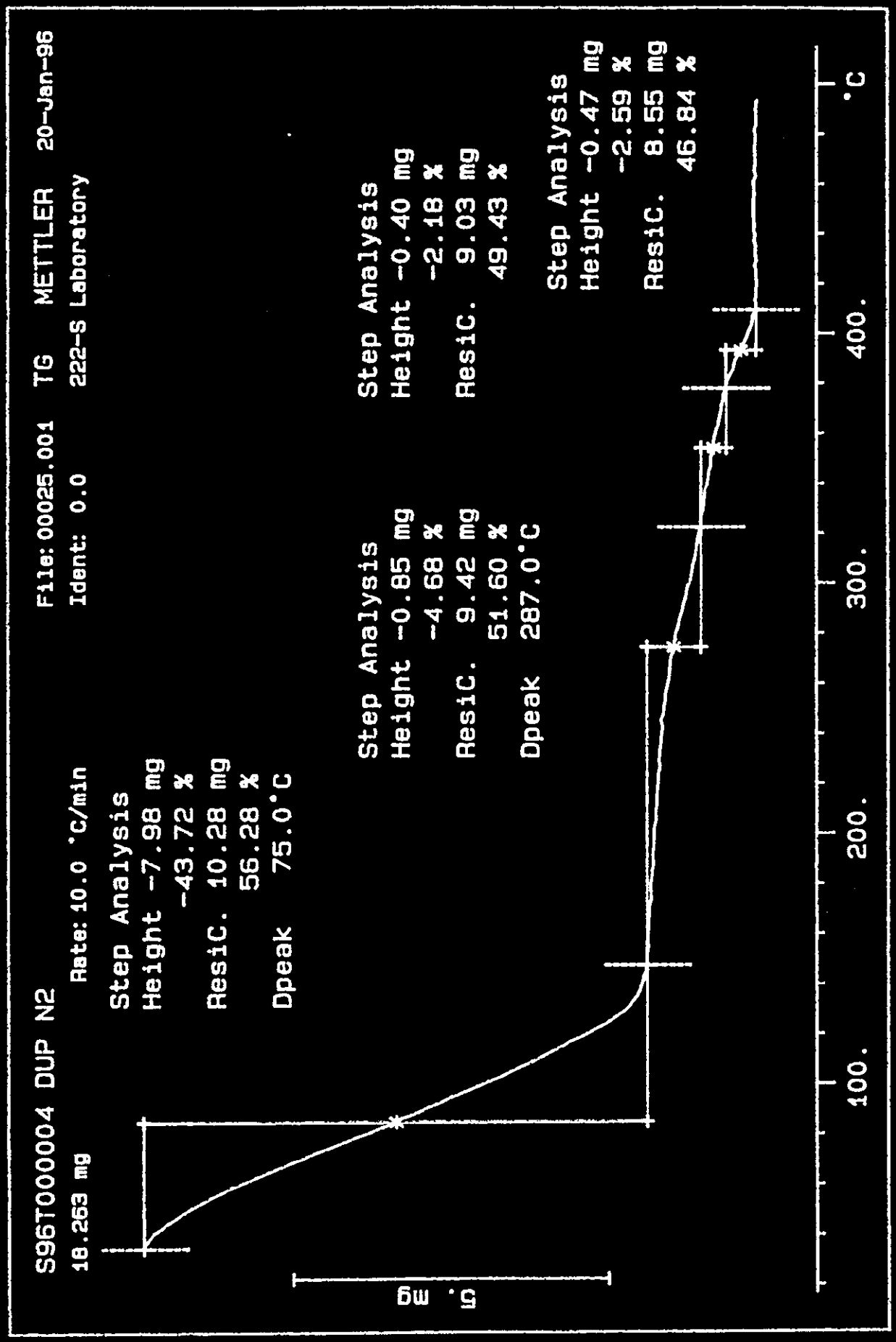

S96T000003 DUP N2
20.253 mg
Rate: 10.0 °C/min
Step Analysis
Height -2.37 mg
-11.69 %
Resic. 17.89 mg
88.31 %
File: 00022.001 TG METTLER 20-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -4.92 mg
-24.29 %
Resic. 12.97 mg
64.02 %
Dpeak 117.0°C
Step Analysis
Height -1.32 mg
-6.54 %
Resic. 11.64 mg
57.48 %
Dpeak 401.0°C
mg
100.
200.
300.
400.
°C


S96T000004 SAM N2
38.129 mg
Rate: 10.0 °C/min
File: 00023.001 TG METTLER 20-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -16.87 mg
-44.25 %
Resic. 21.26 mg
55.75 %
Dpeak 127.0°C
Step Analysis
Height -1.39 mg
-3.65 %
Resic. 19.87 mg
52.10 %
Step Analysis
Height -1.67 mg
-4.38 %
Resic. 18.19 mg
47.72 %
10. mg
100.
200.
300.
400.
°C


S96T000004 DUP N2
18.263 mg
Rate: 10.0 °C/min
File: 00025.001 TG METTLER 20-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -7.98 mg
-43.72 %
Resic. 10.28 mg
56.28 %
Dpeak 75.0°C
Step Analysis
Height -0.85 mg
-4.68 %
Resic. 9.42 mg
51.60 %
Dpeak 287.0°C
Step Analysis
Height -0.40 mg
-2.18 %
Resic. 9.03 mg
49.43 %
Step Analysis
Height -0.47 mg
-2.59 %
Resic. 8.55 mg
46.84 %
5. mg
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 4846

Analyst: ADP **Instrument:** TGA0 1 **Book #** 15N8 A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	LIQUID	59.2	60.38	N/A	%
95000227	AN-102 GRAB	2	SAMPLE	S95T003982	0		TGA-01	LIQUID	N/A	50.06		%
95000227	AN-102 GRAB	3	DUP	S95T003982	0		TGA-01	LIQUID	50.06	49.07	N/A	%
95000227	AN-102 GRAB	4	SAMPLE	S95T003983	0		TGA-01	LIQUID	N/A	49.76		%
95000227	AN-102 GRAB	5	DUP	S95T003983	0		TGA-01	LIQUID	49.76	49.91	N/A	%
95000227	AN-102 GRAB	6	SAMPLE	S95T003984	0		TGA-01	LIQUID	N/A	49.33		%
95000227	AN-102 GRAB	7	DUP	S95T003984	0		TGA-01	LIQUID	49.33	49.38	N/A	%

Final page for worklist # 4846

Arthur Purnto 1-19-96
Analyst Signature Date

[illegible] 1/24/96
Analyst Signature Date

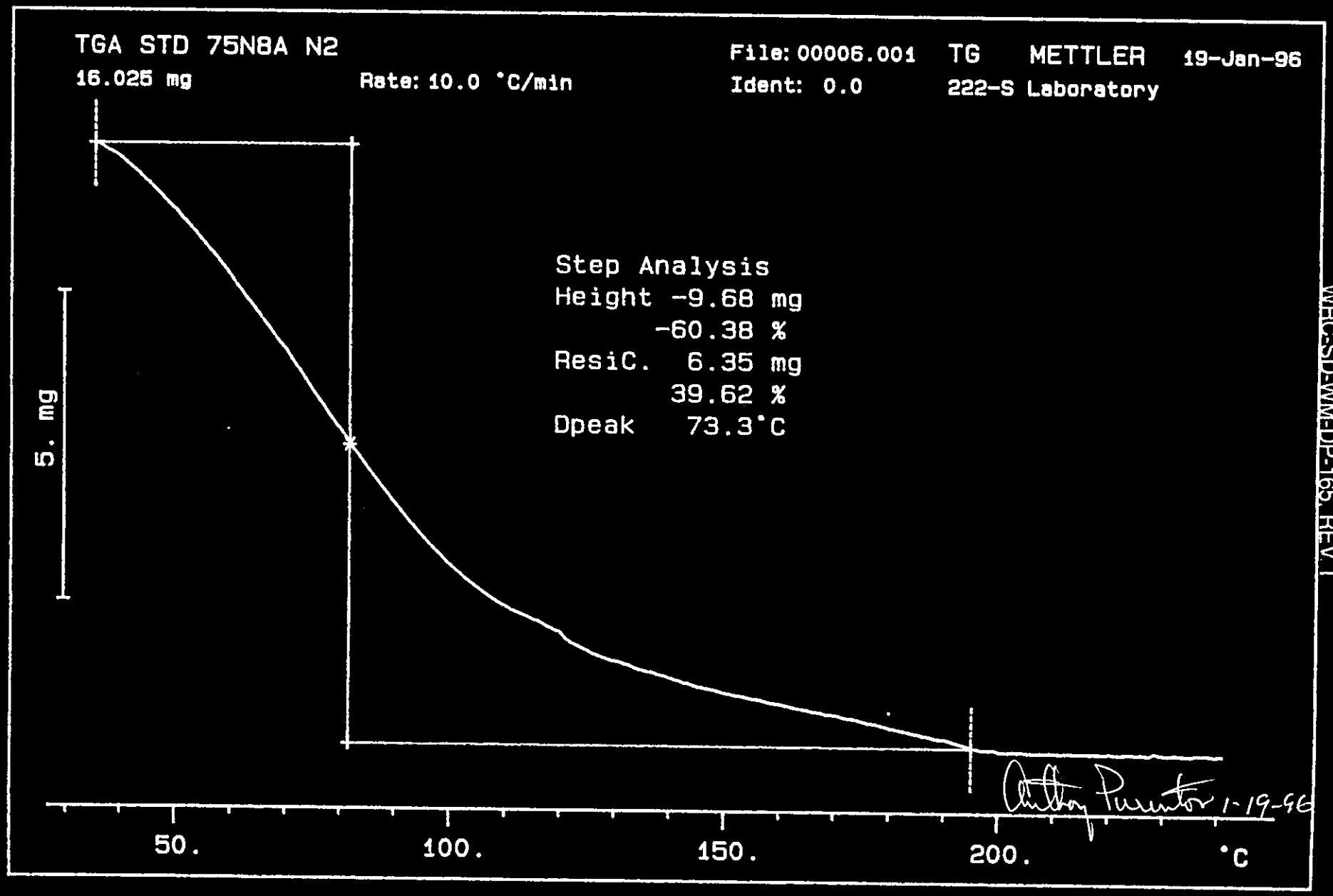
Rae Ann Green 1-19-96

Verified by Blandina Valenzuela 1/26/96

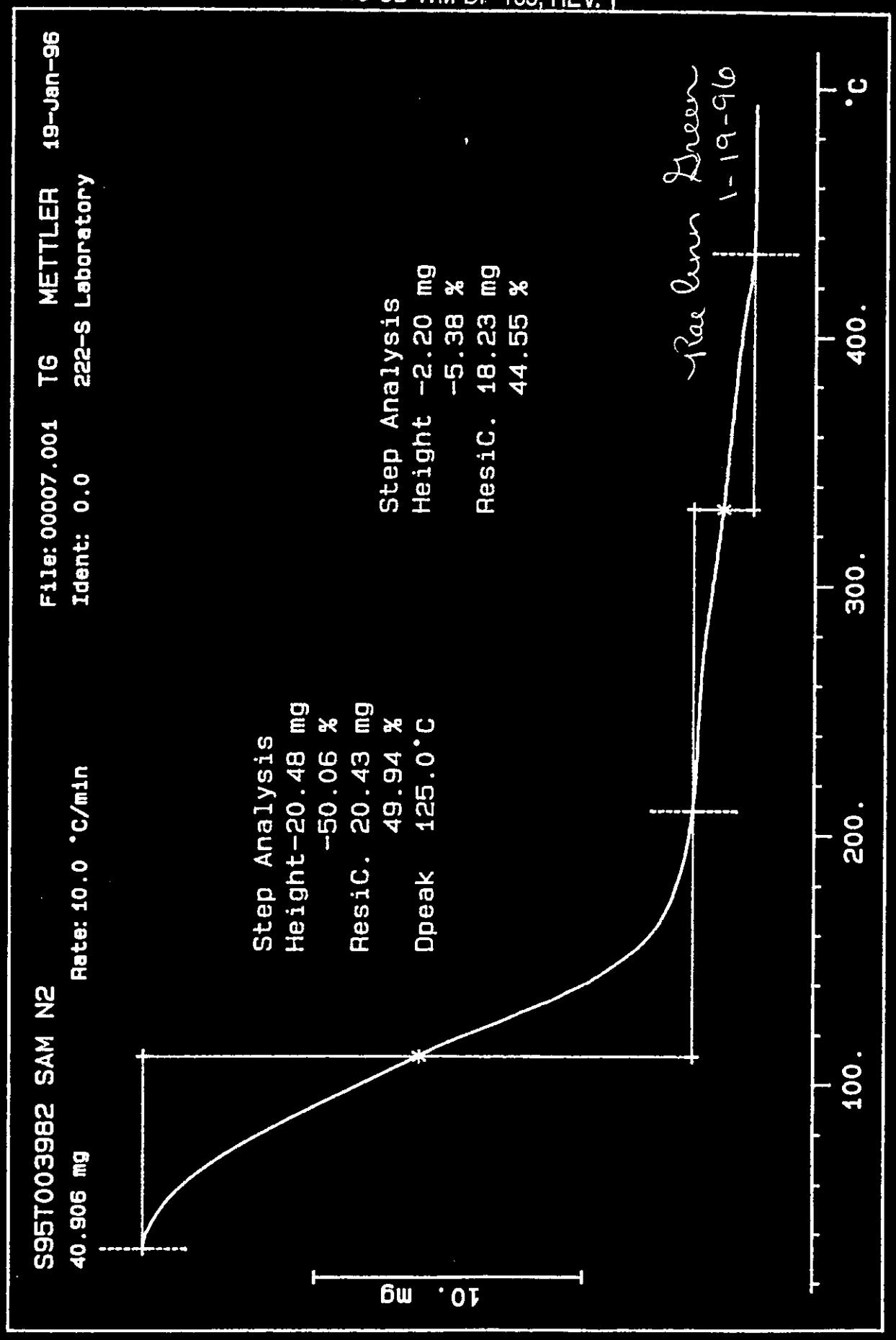
Data Entry Comments: S95T003982 produced a second weight loss step of 5.38% at approximately 330°C.
S95T003983 produced a second weight loss step of 5.50% at approximately 340°C
S95T003984 produced a second weight loss step at approximately 6.90% ~~of~~ at 320°C

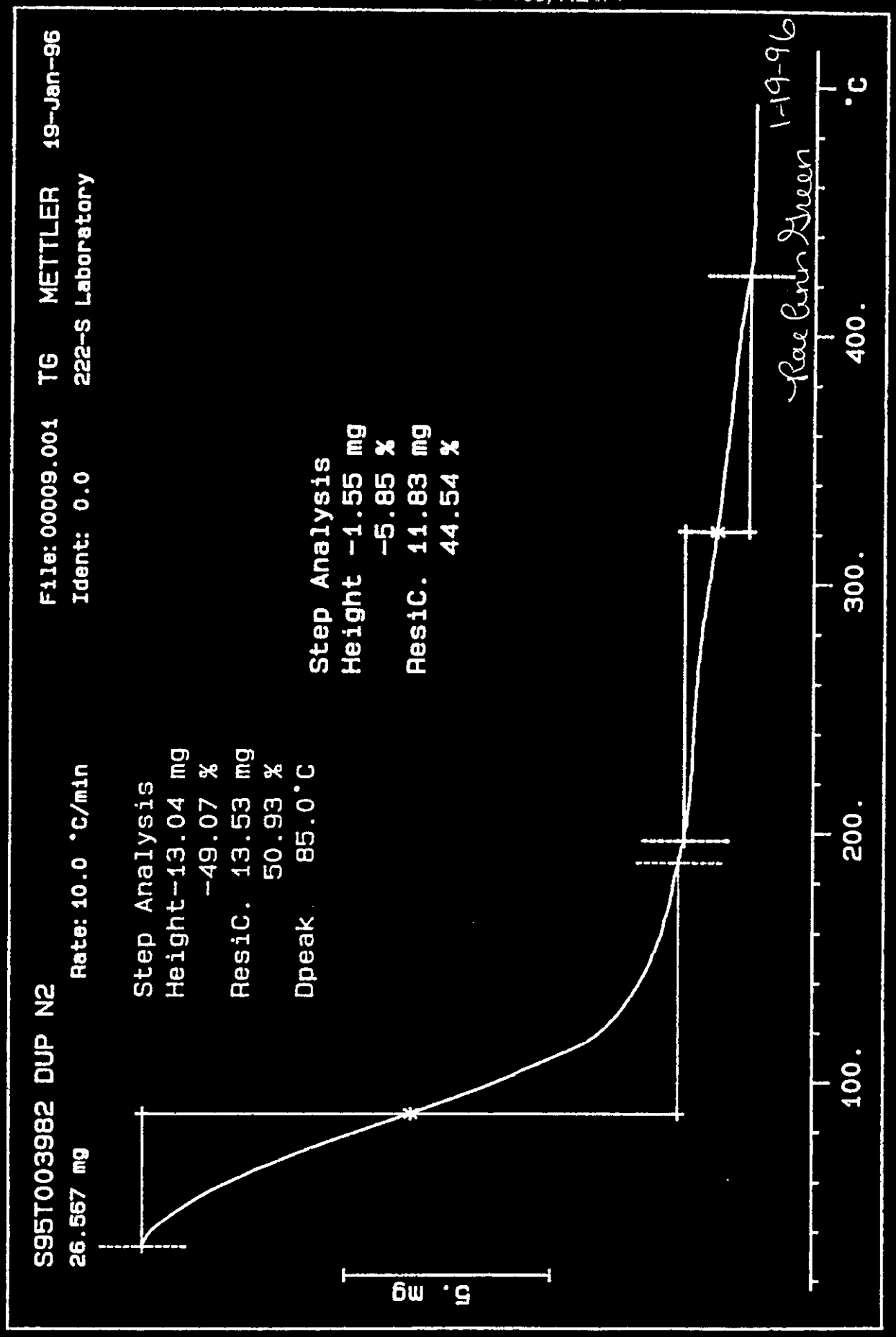
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

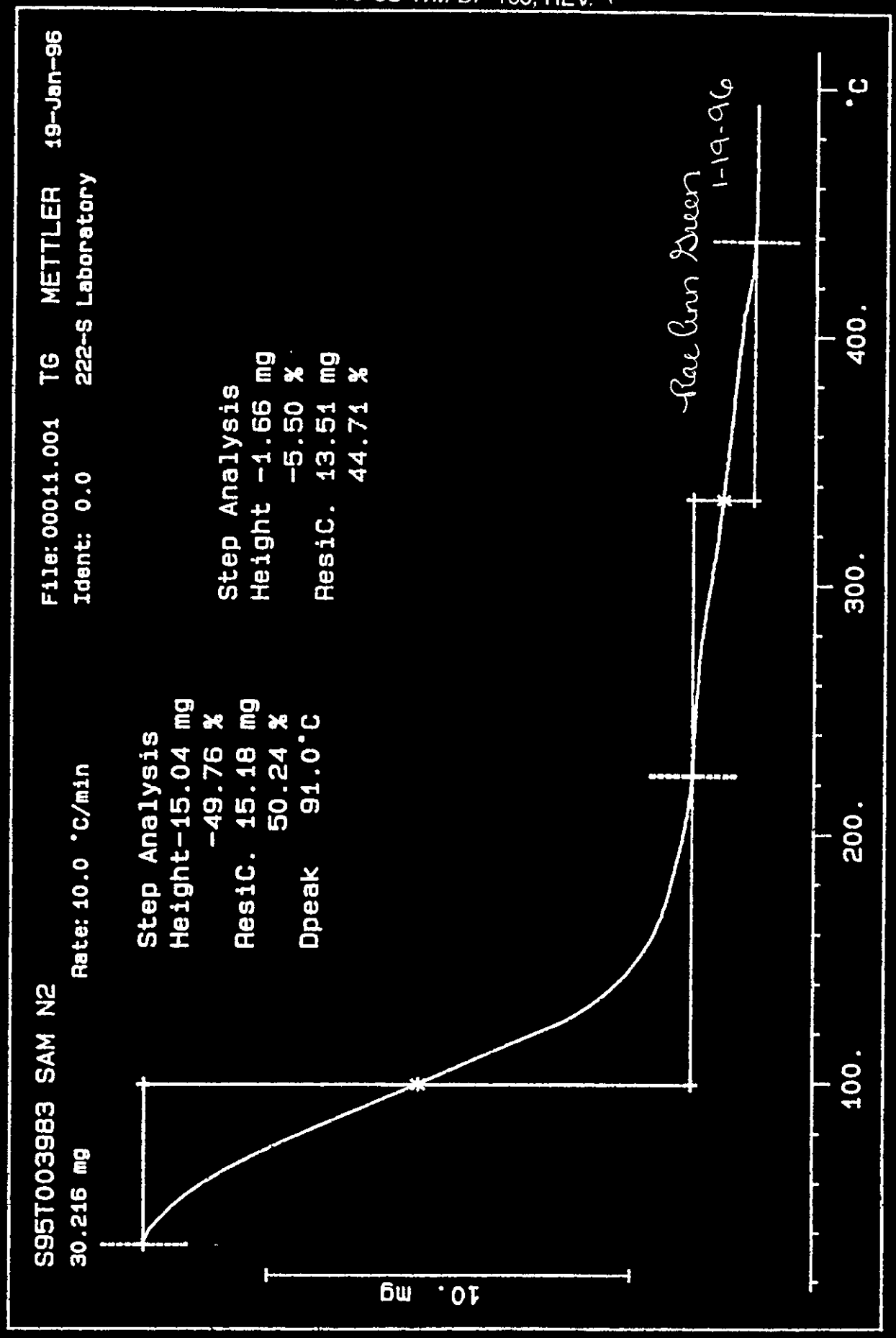
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2111 TO 2117.

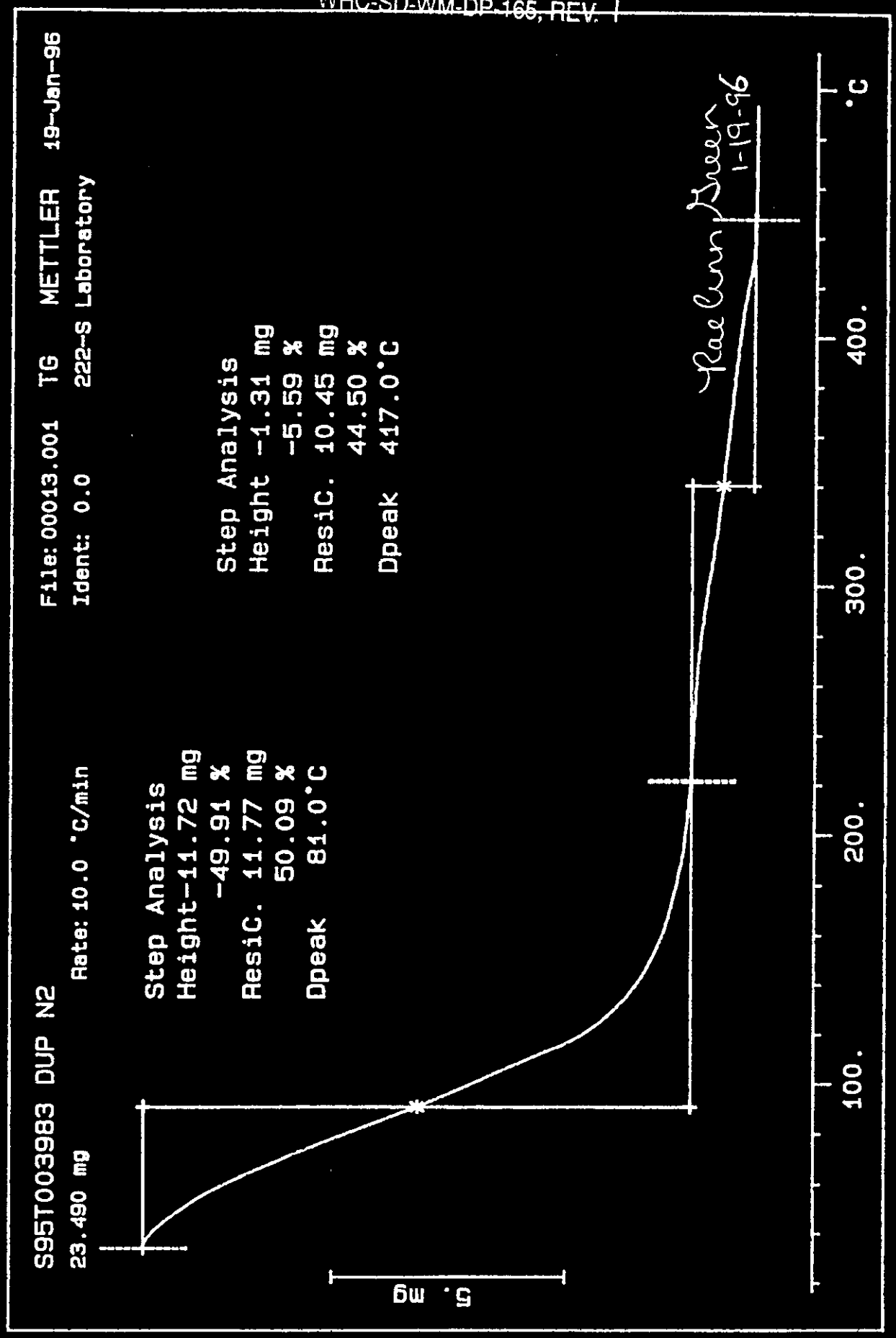


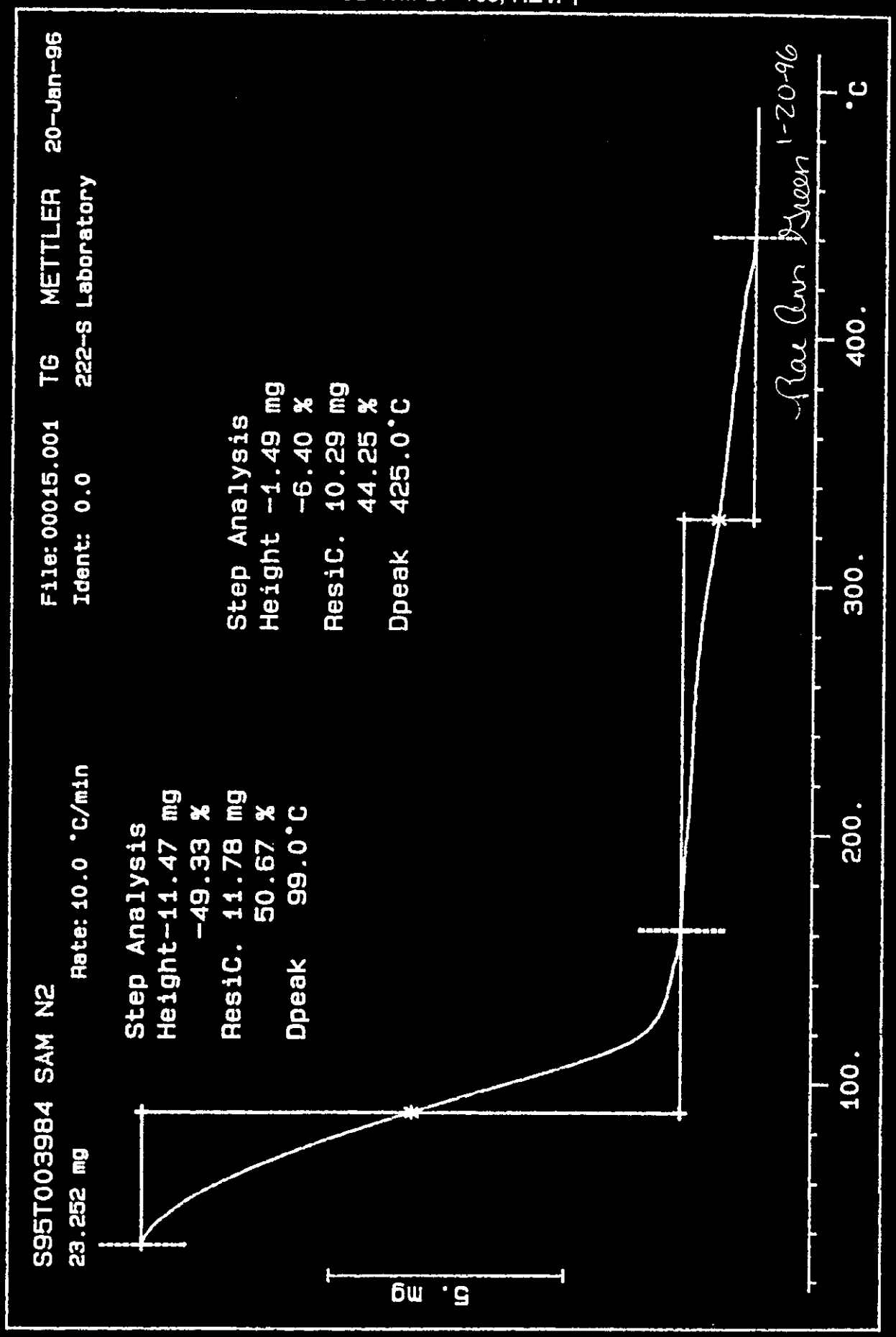
Anthony Purentor 1-19-96

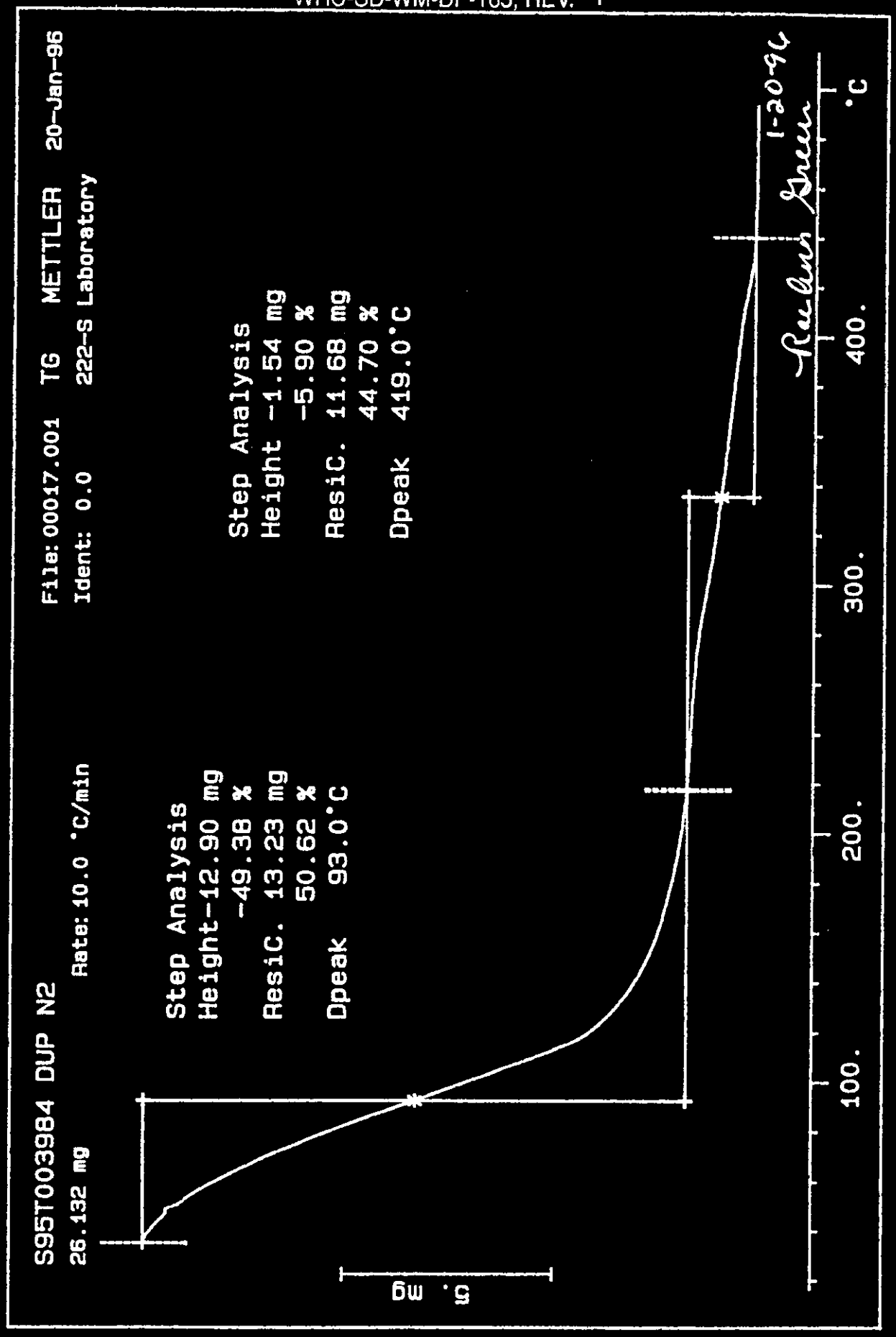

S95T003982 SAM N2
40.906 mg
Rate: 10.0 °C/min
File: 00007.001 TG METTLER 19-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -20.48 mg
-50.06 %
ResiC. 20.43 mg
49.94 %
Dpeak 125.0°C
Step Analysis
Height -2.20 mg
-5.38 %
ResiC. 18.23 mg
44.55 %
10. mg
100.
200.
300.
400.
°C
Rae Ann Green
1-19-96


S95T003982 DUP N2
26.567 mg
Rate: 10.0 °C/min
File: 00009.001
Ident: 0.0
TG
METTLER
19-Jan-96
222-S Laboratory
Step Analysis
Height -13.04 mg
-49.07 %
ResiC. 13.53 mg
50.93 %
Dpeak 85.0°C
Step Analysis
Height -1.55 mg
-5.85 %
ResiC. 11.83 mg
44.54 %
5. mg
100.
200.
300.
400.
°C
Rae Ann Green 1-19-96


S95T003983 SAM N2
30.216 mg
Rate: 10.0 °C/min
File: 00011.001 TG METTLER 19-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -15.04 mg
-49.76 %
Resic. 15.18 mg
50.24 %
Dpeak 91.0°C
Step Analysis
Height -1.66 mg
-5.50 %
Resic. 13.51 mg
44.71 %
10. mg
100.
200.
300.
400.
°C
Rae Ann Green
1-19-96


S95T003983 DUP N2
23.490 mg
Rate: 10.0 °C/min
File: 00013.001 TG METTLER 19-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -11.72 mg
-49.91 %
ResiC. 11.77 mg
50.09 %
Dpeak 81.0°C
Step Analysis
Height -1.31 mg
-5.59 %
ResiC. 10.45 mg
44.50 %
Dpeak 417.0°C
5. mg
100.
200.
300.
400.
°C
Rae Ann Green 1-19-96


S95T003984 SAM N2
23.252 mg
Rate: 10.0 °C/min
File: 00015.001 TG METTLER 20-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -11.47 mg
-49.33 %
ResiC. 11.78 mg
50.67 %
Dpeak 99.0°C
Step Analysis
Height -1.49 mg
-6.40 %
ResiC. 10.29 mg
44.25 %
Dpeak 425.0°C
5. mg
100.
200.
300.
400.
°C
Rae Ann Green 1-20-96


S95T003984 DUP N2
26.132 mg
Rate: 10.0 °C/min
File: 00017.001 TG METTLER 20-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height-12.90 mg
-49.38 %
Resic. 13.23 mg
50.62 %
Dpeak 93.0°C
Step Analysis
Height -1.54 mg
-5.90 %
Resic. 11.68 mg
44.70 %
Dpeak 419.0°C
5. mg
100.
200.
300.
400.
°C
Rachel Green
1-20-96

worklistrpt Version 2.1 05/15/95
01/12/96 06:52

LABCORE Data Entry Template for Worklist# 4848

Analyst: RS **Instrument:** TGA0 1 **Book #** 95N8-A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	LIQUID	59.2	60.22	N/A	%
95000227	AN-102 GRAB	2	SAMPLE	S96T000005	0		TGA-01	LIQUID	N/A	49.09		%
95000227	AN-102 GRAB	3	DUP	S96T000005	0		TGA-01	LIQUID	49.09	49.10	N/A	%
95000227	AN-102 GRAB	4	SAMPLE	S96T000006	0		TGA-01	LIQUID	N/A	47.61		%
95000227	AN-102 GRAB	5	DUP	S96T000006	0		TGA-01	LIQUID	47.61	47.17	N/A	%

Final page for worklist # 4848

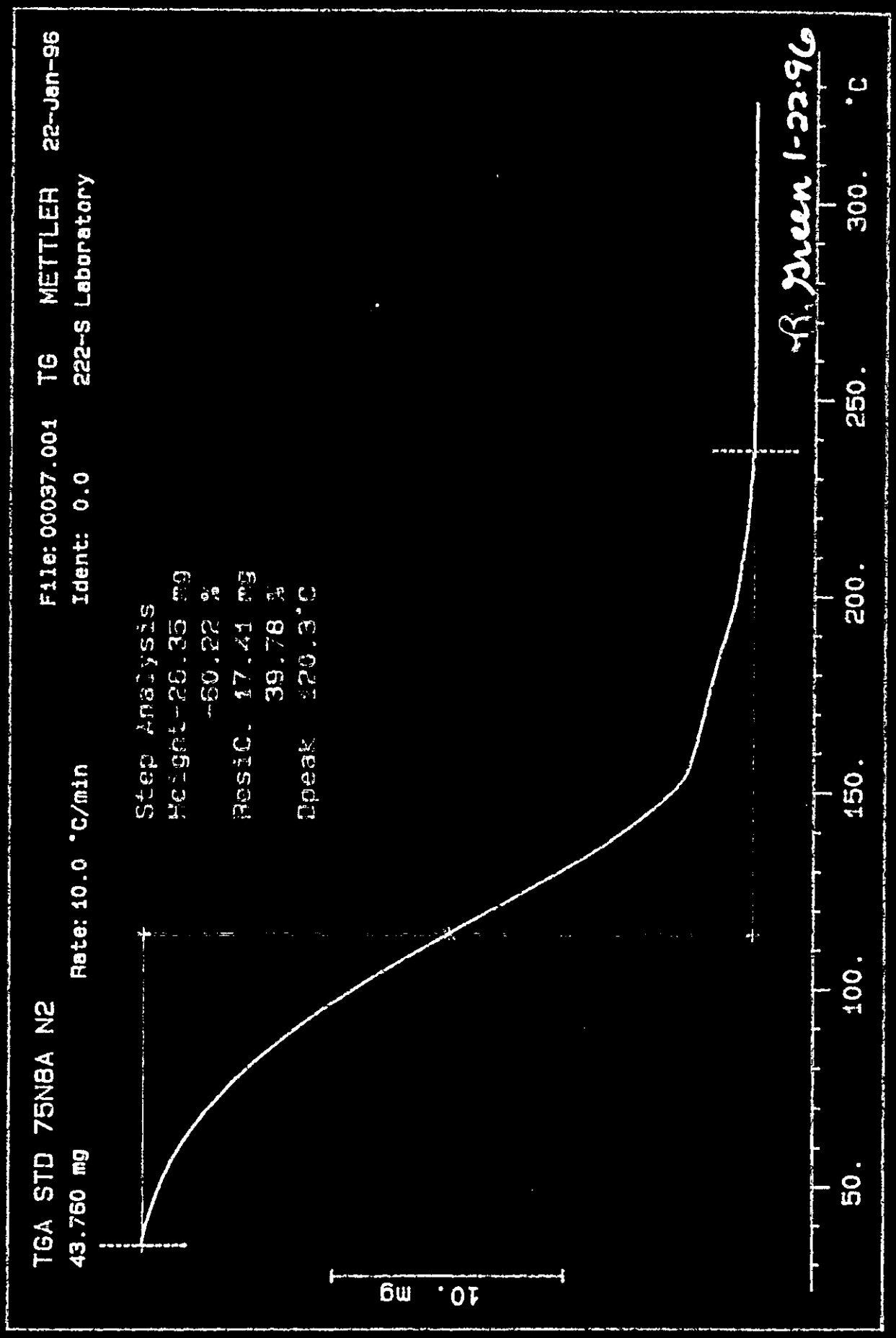
Rae Ann Sean 1-22-96
Analyst Signature Date

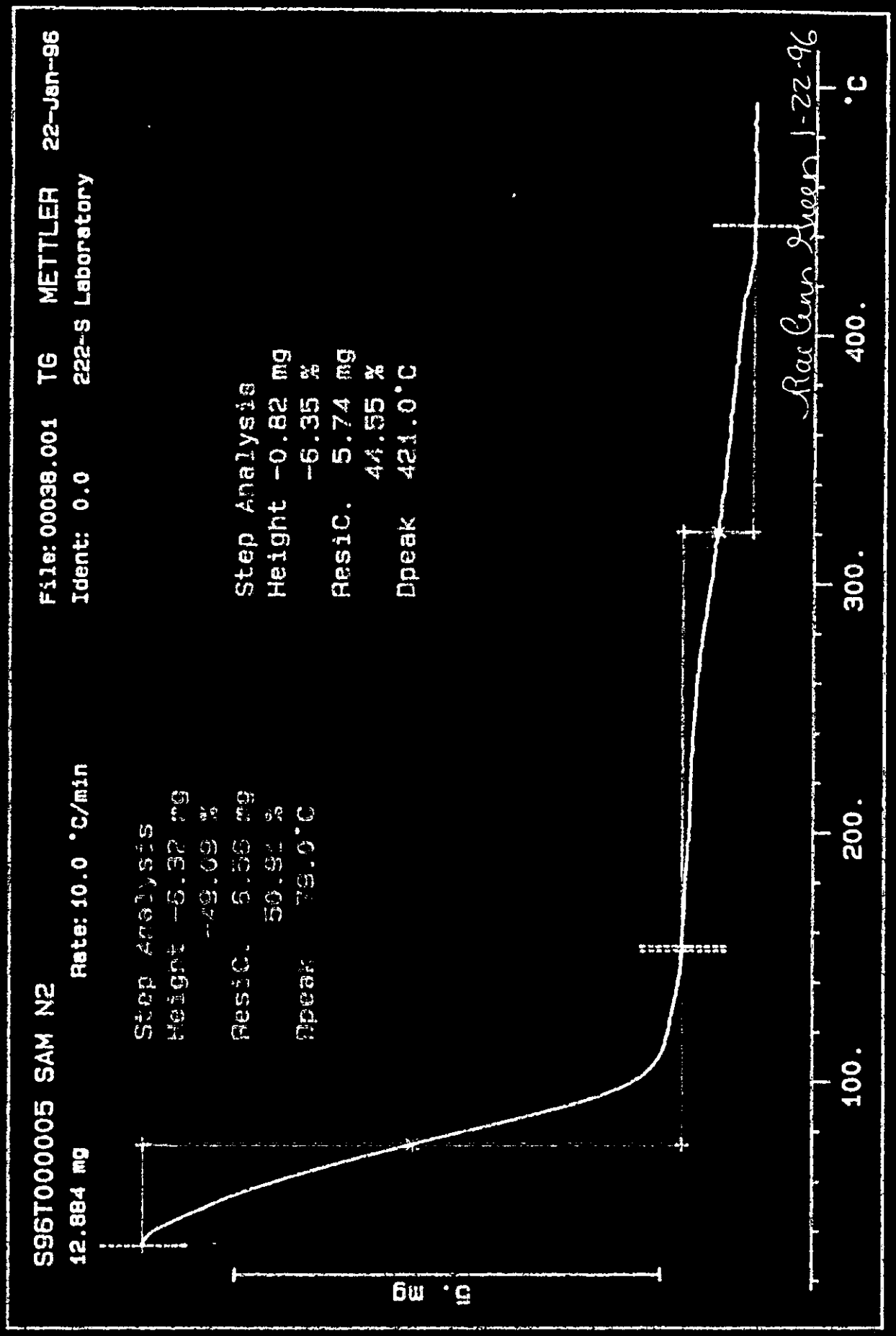
1-24-96
Analyst Signature Date

Verified by Blandina Valenzuela 1-26-96

Data Entry Comments: S96T000005 produced a second weight loss step of 6.35%.
S96T000006 produced a second weight loss step of 6.50%

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.


TGA STD 75N8A N2
43.760 mg
Rate: 10.0 °C/min
File: 00037.001
Ident: 0.0
TG METTLER 22-Jan-96
222-S Laboratory
Step Analysis
Height -26.35 mg
-60.22 %
Basic. 17.41 mg
39.78 %
Peak 220.3°C
10. mg
50.
100.
150.
200.
250.
300.
°C
R. Green 1-22-96


S96T000005 SAM N2
12.884 mg
Rate: 10.0 °C/min
Step Analysis
Height -5.52 mg
-42.99 %
Resid. 5.59 mg
50.94 %
Dpeak 79.0 °C
File: 00038.001 TG METTLER 22-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -0.82 mg
-6.35 %
Resid. 5.74 mg
44.55 %
Dpeak 421.0 °C
5. mg
100.
200.
300.
400.
°C
Rac Comp Sheet 1-22-96

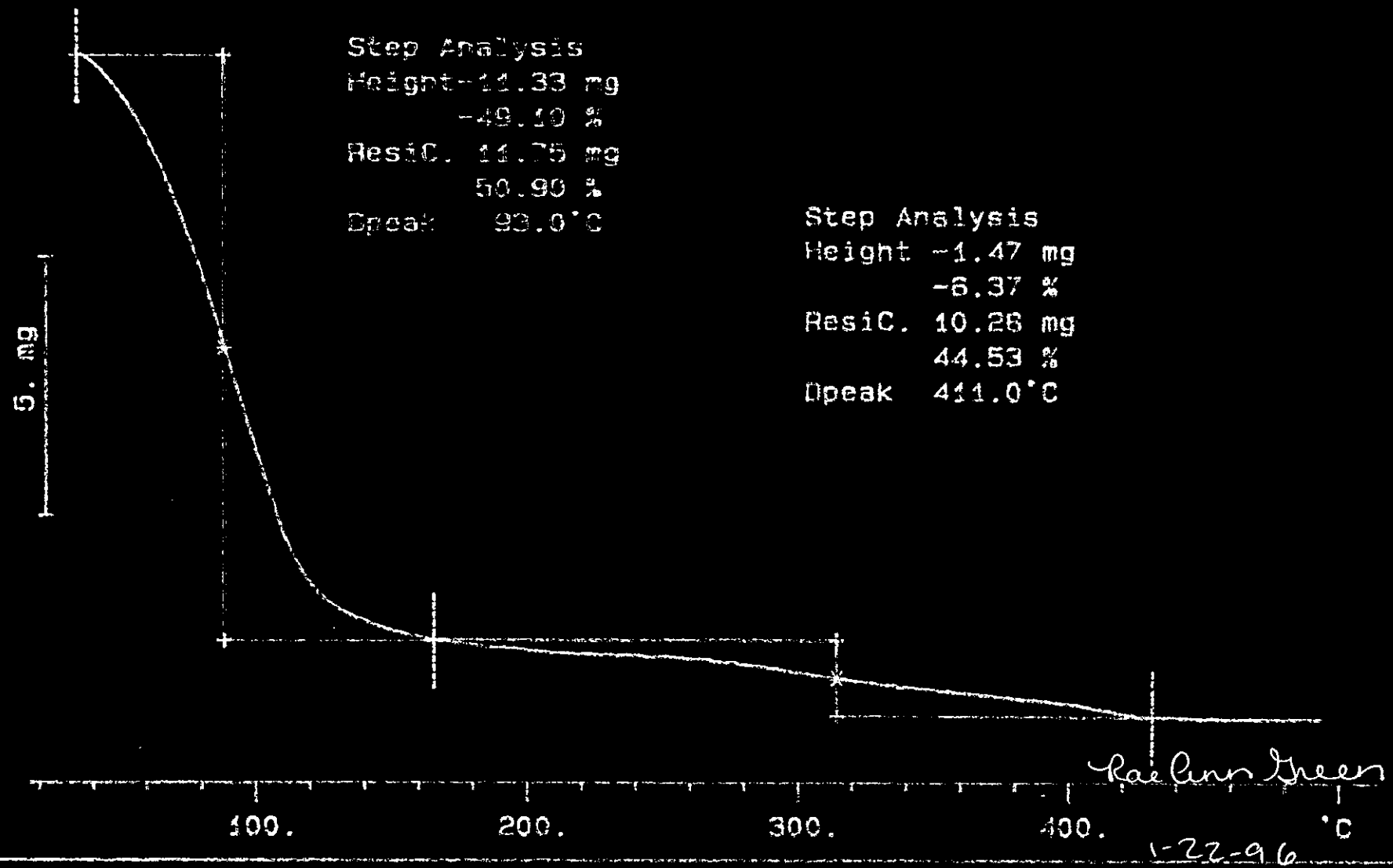
S96T000005 DUP N2

23.082 mg

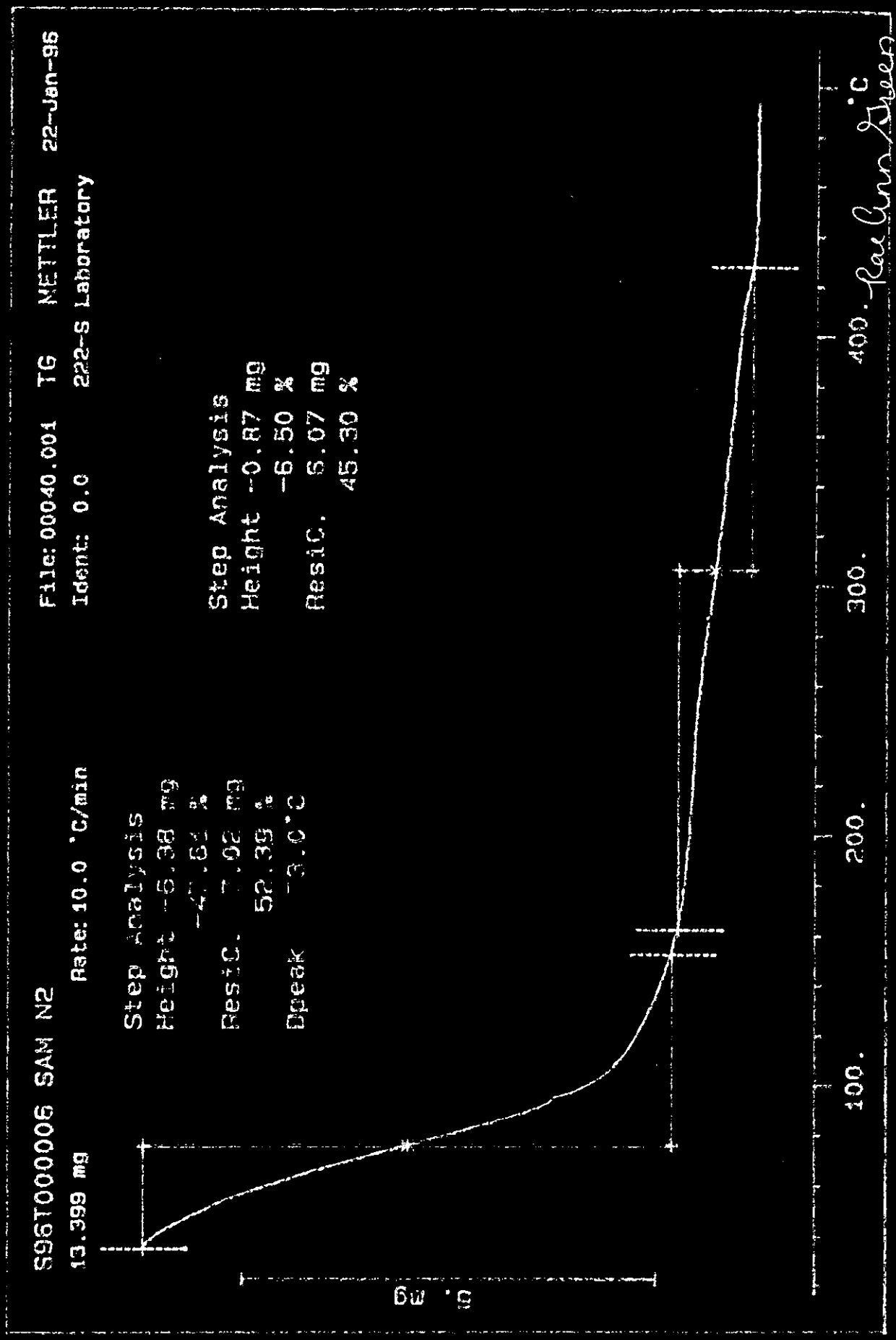
Rate: 10.0 °C/min

File: 00039.001 TG METTLER 22-Jan-96

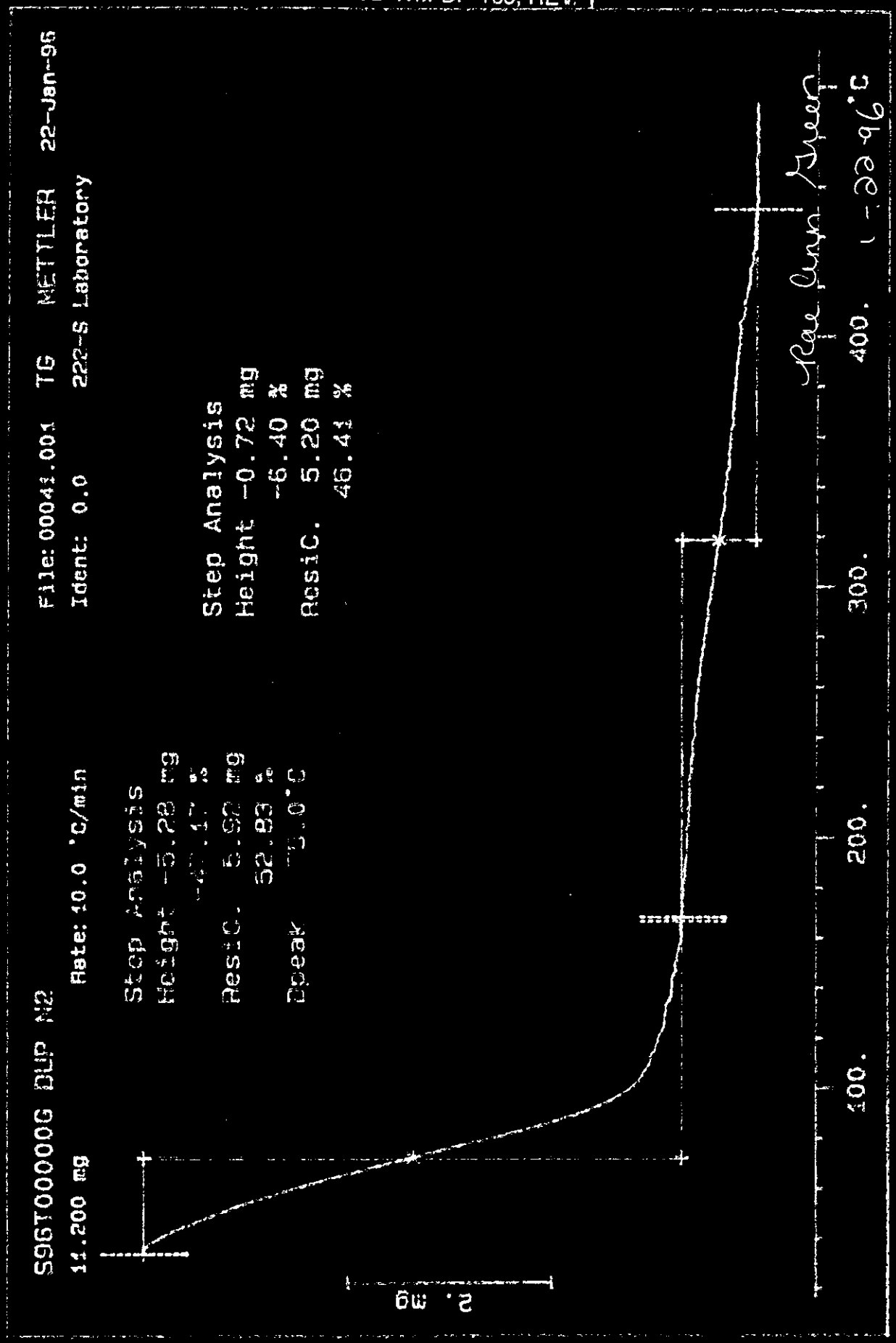
Ident: 0.0 222-S Laboratory



Rae Ann Green
1-22-96



Rae Ann Sheen 1-22-96


S96T00000G DUP N2
11.200 mg
Rate: 10.0 °C/min
File: 00041.001 TG METTLER 22-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -0.72 mg
-6.40 %
Resid. 5.20 mg
46.41 %
Step Analysis
Height -5.28 mg
Resid. 5.92 mg
52.83 %
Peak
2. mg
100.
200.
300.
400.
Rae Ann Green 1-22-96 °C

LABCORE Data Entry Template for Worklist# 4859

Analyst: ADP **Instrument:** TGA0 1 **Book #** 75N8A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	LIQUID	59.2	60.43	N/A	%
95000222	AN-102 GRAB	2	SAMPLE	S95T003868	0		TGA-01	LIQUID	N/A	~~24.29~~ 48.58	1/24/96	%
95000222	AN-102 GRAB	3	DUP	S95T003868	0		TGA-01	LIQUID	~~48.43~~ 48.58	49.35	N/A	%
95000222	AN-102 GRAB	4	TRIPL	S95T003868	0		TGA-01	LIQUID	48.58	48.2	N/A	%

Final page for worklist # 4859

See attached for signatures

Analyst Signature **Date** 1/24/96

Verified by Blandina Valenzuela 1/26/96

Analyst Signature **Date**

Data Entry Comments: Sample produced an additional weight loss step of 7.49% after 200°C. The results reported are the sum of two weight loss steps.

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# 4859

Analyst: AP **Instrument:** TGA0 **Book #** 75N8A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	LIQUID			N/A	%
95000222	AN-102 GRAB	2	SAMPLE	S95T003867	0		TGA-01	LIQUID	N/A			%
95000222	AN-102 GRAB	3	DUP	S95T003867	0		TGA-01	LIQUID			N/A	%
95000222	AN-102 GRAB	4	SAMPLE	S95T003868	0		TGA-01	LIQUID	N/A			%
95000222	AN-102 GRAB	5	DUP	S95T003868	0		TGA-01	LIQUID			N/A	%

Final page for worklist # 4859

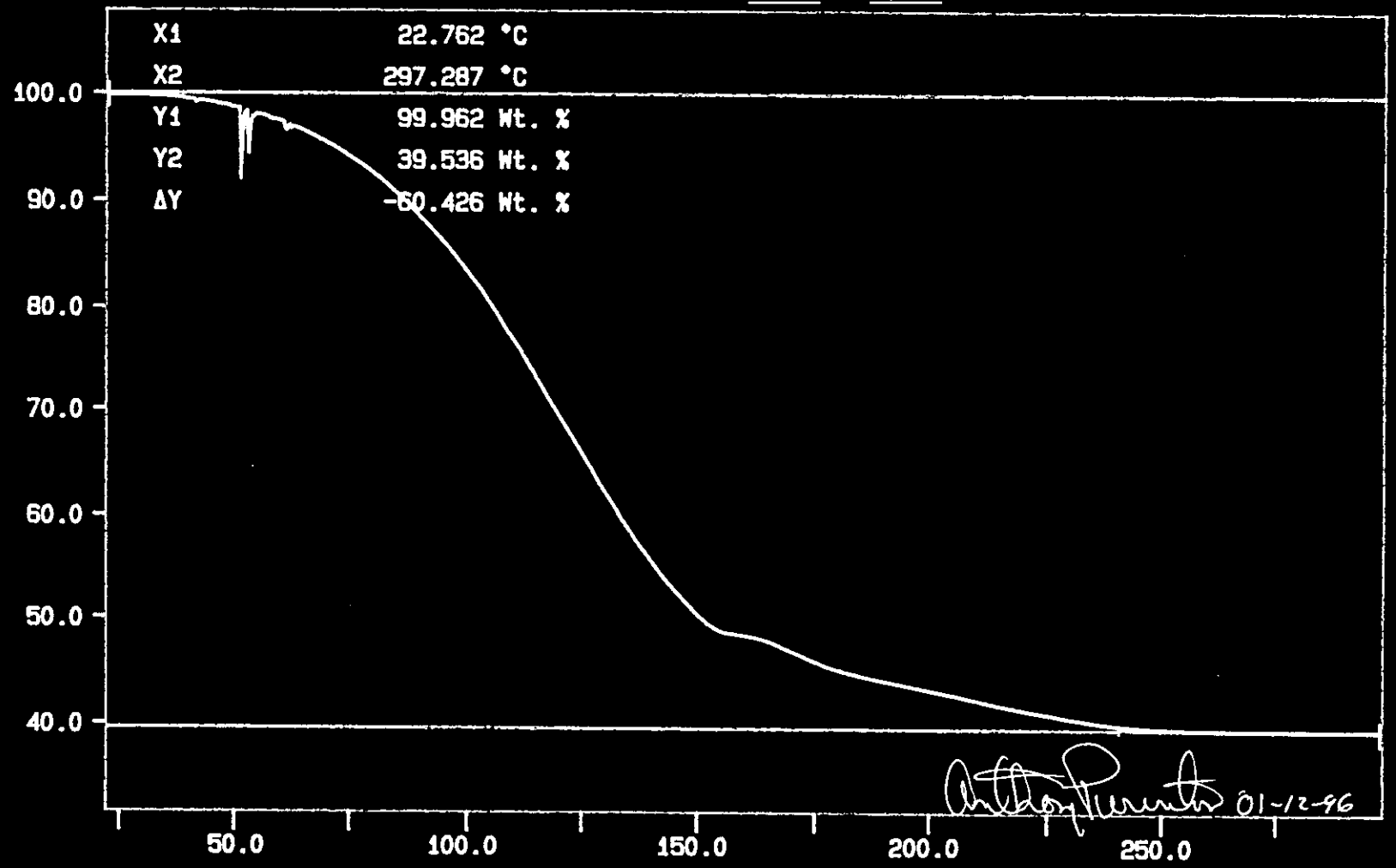
Anthony Punter 1-12-96
Analyst Signature Date

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.

Curve 1: TGA
File info: TER011201 Fri Jan 12 22:38:29 1996
Sample Weight: 14.491 mg
1/24/96 ~~65N8-A~~ Terliq
75N8-A SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2-126 TO 2-129.

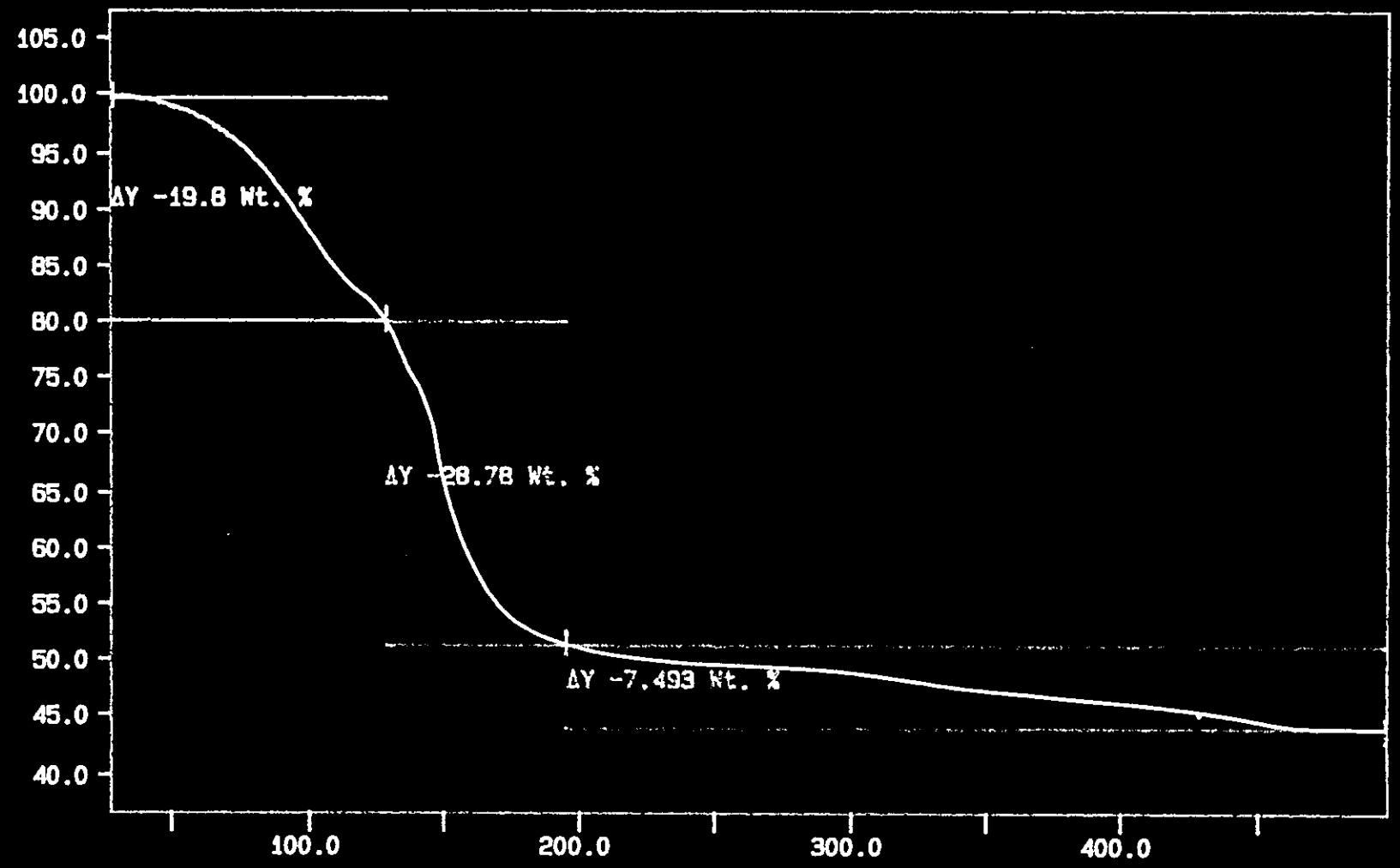


N2 10C/MIN
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 300.0 C

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jan 12 22:57:18 1996

2-126

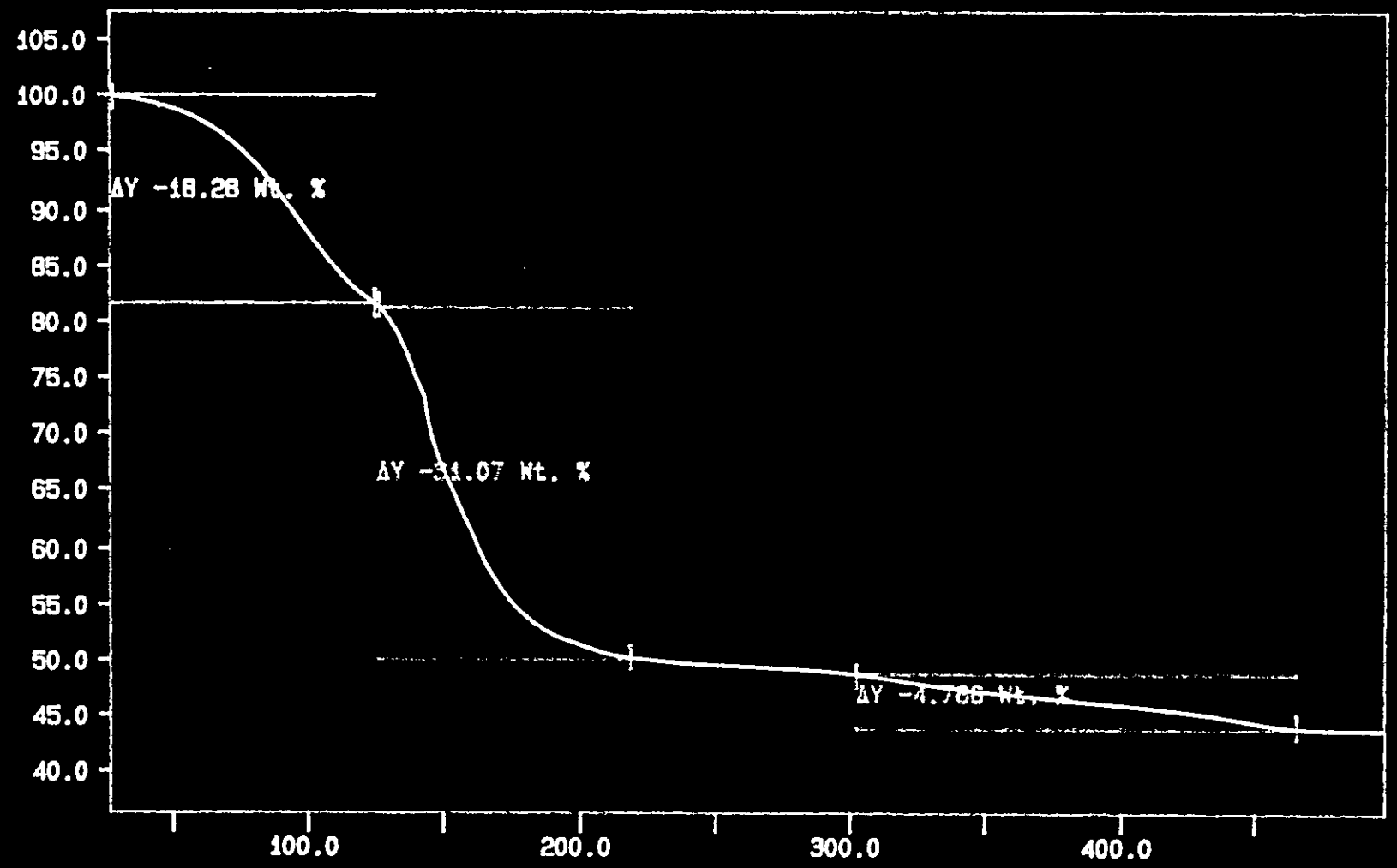
Curve 1: TGA
File info: SAM011294 Sat Jan 13 03:16:11 1996
Sample Weight: 17.921 mg
S95T003868 SAM



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jan 13 03:19:02 1996

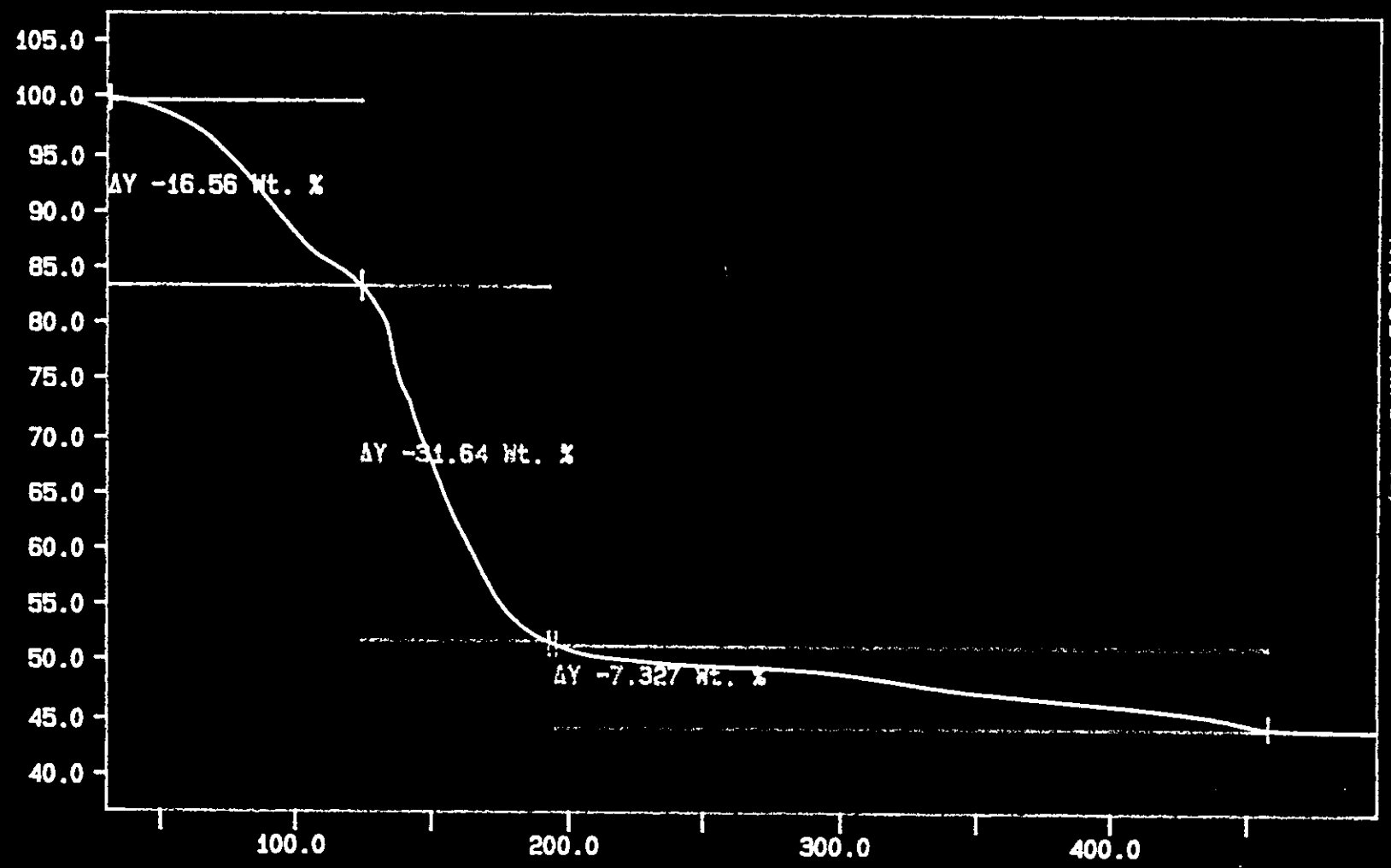
Curve 1: TGA
File info: SAM011206 Sat Jan 13 05:32:27 1996
Sample Weight: 20.596 mg
S95T003868 DUP



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jan 13 06:58:26 1996

Curve 1: TGA
File info: SAM011205 Sat Jan 13 04:22:07 1996
Sample Weight: 19.627 mg
S95T003867 TRP



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jan 13 04:26:29 1996

LABCORE Data Entry Template for Worklist# 4860

Analyst: ADP **Instrument:** TGA0 1 **Book #** 75N8A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	LIQUID	59.2	60.68*	N/A	%
95000222	AN-102 GRAB	2	SAMPLE	S95T003869	0		TGA-01	LIQUID	N/A	50.13		%
95000222	AN-102 GRAB	3	DUP	S95T003869	0		TGA-01	LIQUID	50.13	50.02	N/A	%
95000222	AN-102 GRAB	4	SAMPLE	S95T003962	0		TGA-01	LIQUID	N/A	99.99		%
95000222	AN-102 GRAB	5	DUP	S95T003962	0		TGA-01	LIQUID	99.99	100.09	N/A	%

Final page for worklist # 4860

Anthony Punto 1-12-96
Analyst Signature Date

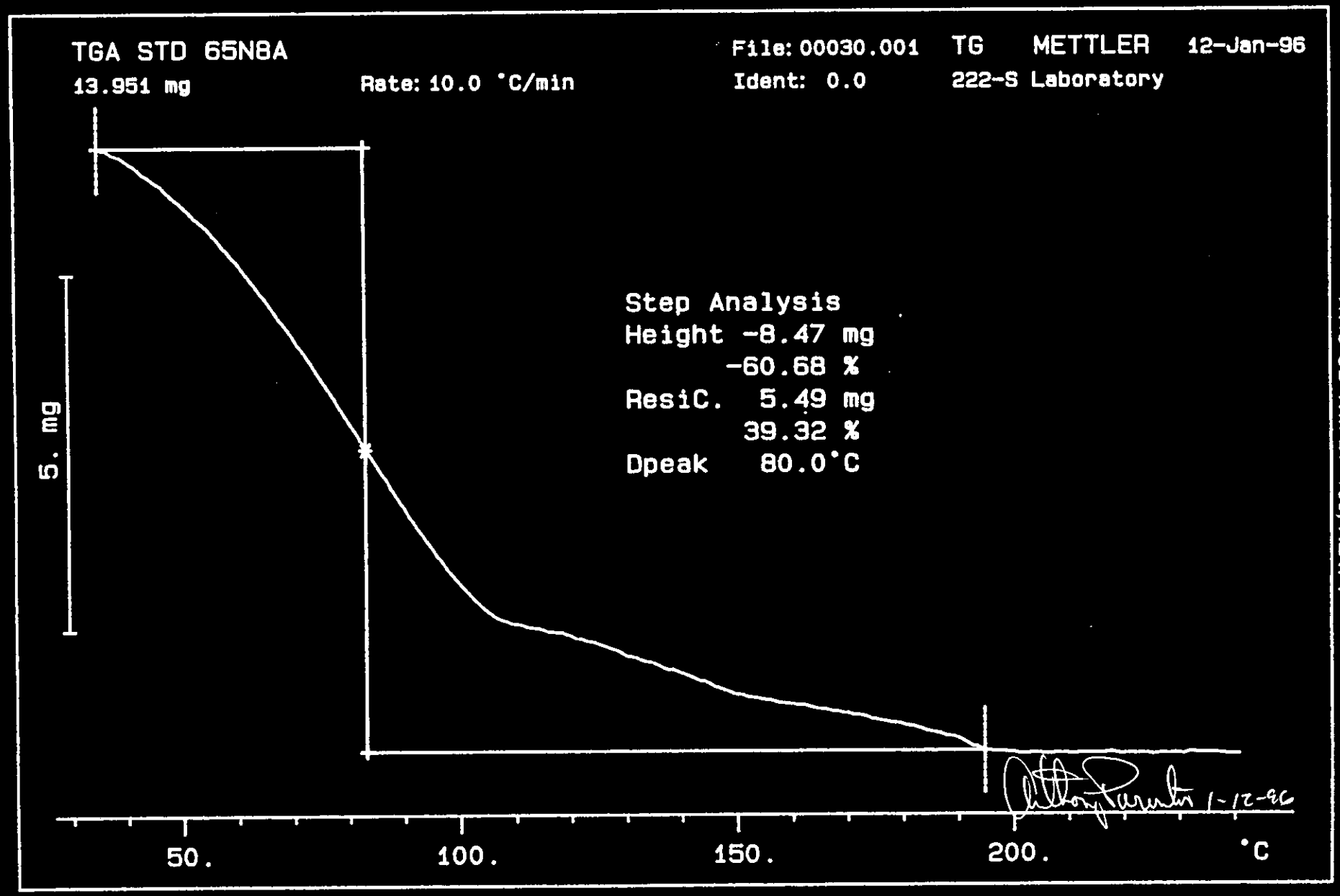
R.T. Slade 1-16-96
Analyst Signature Date

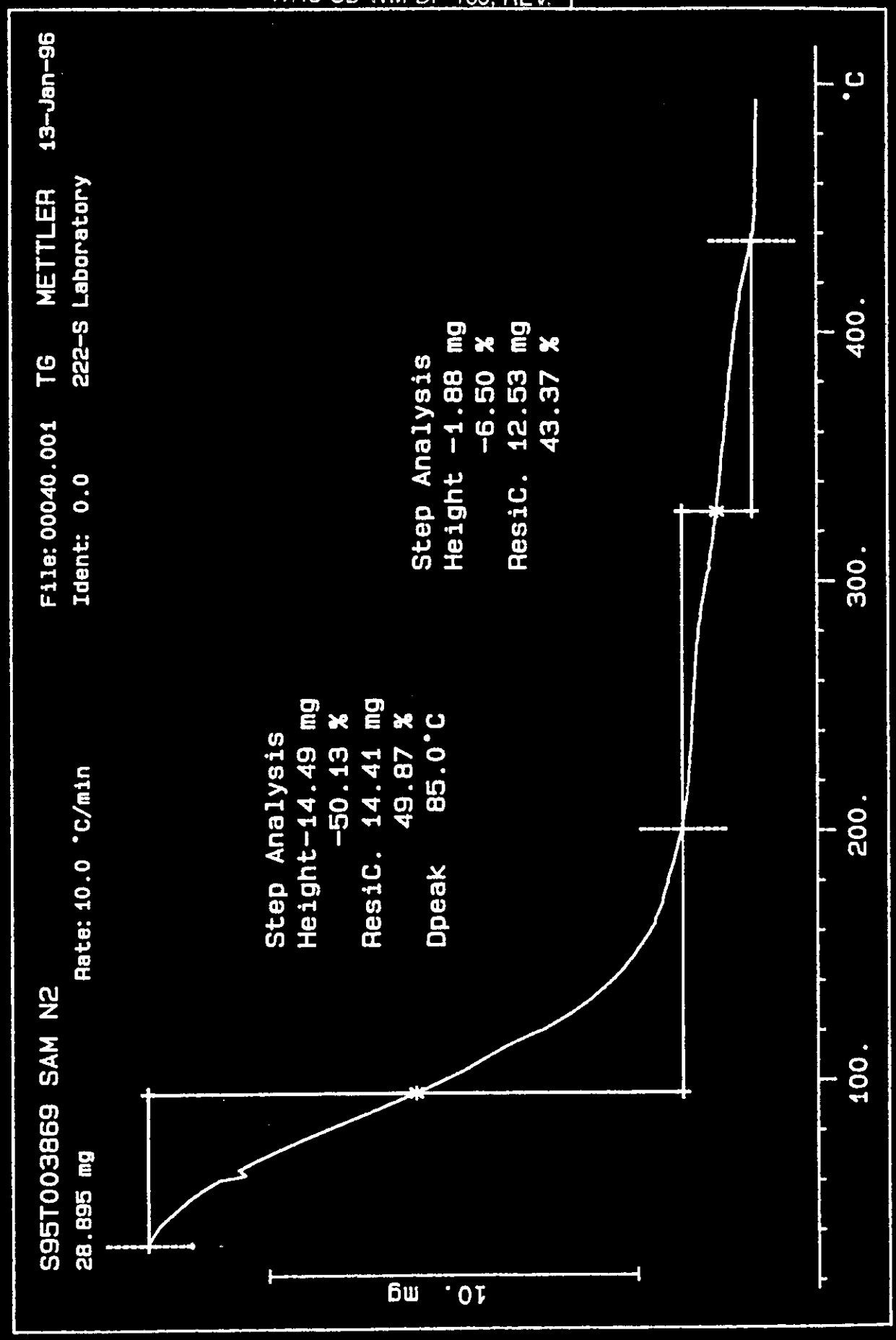
Verified by Blandina Valenzuela 1/17/96

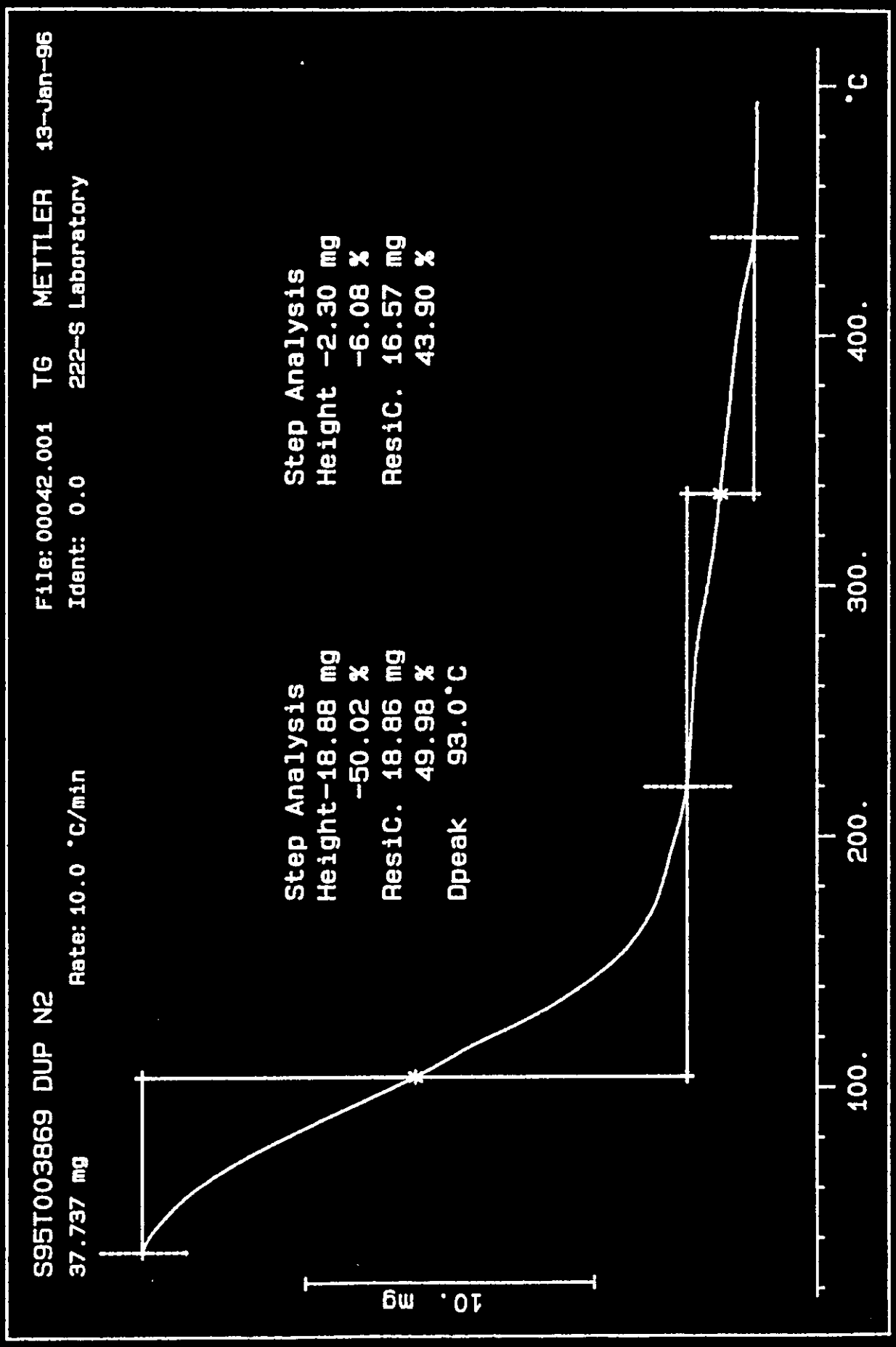
Data Entry Comments:

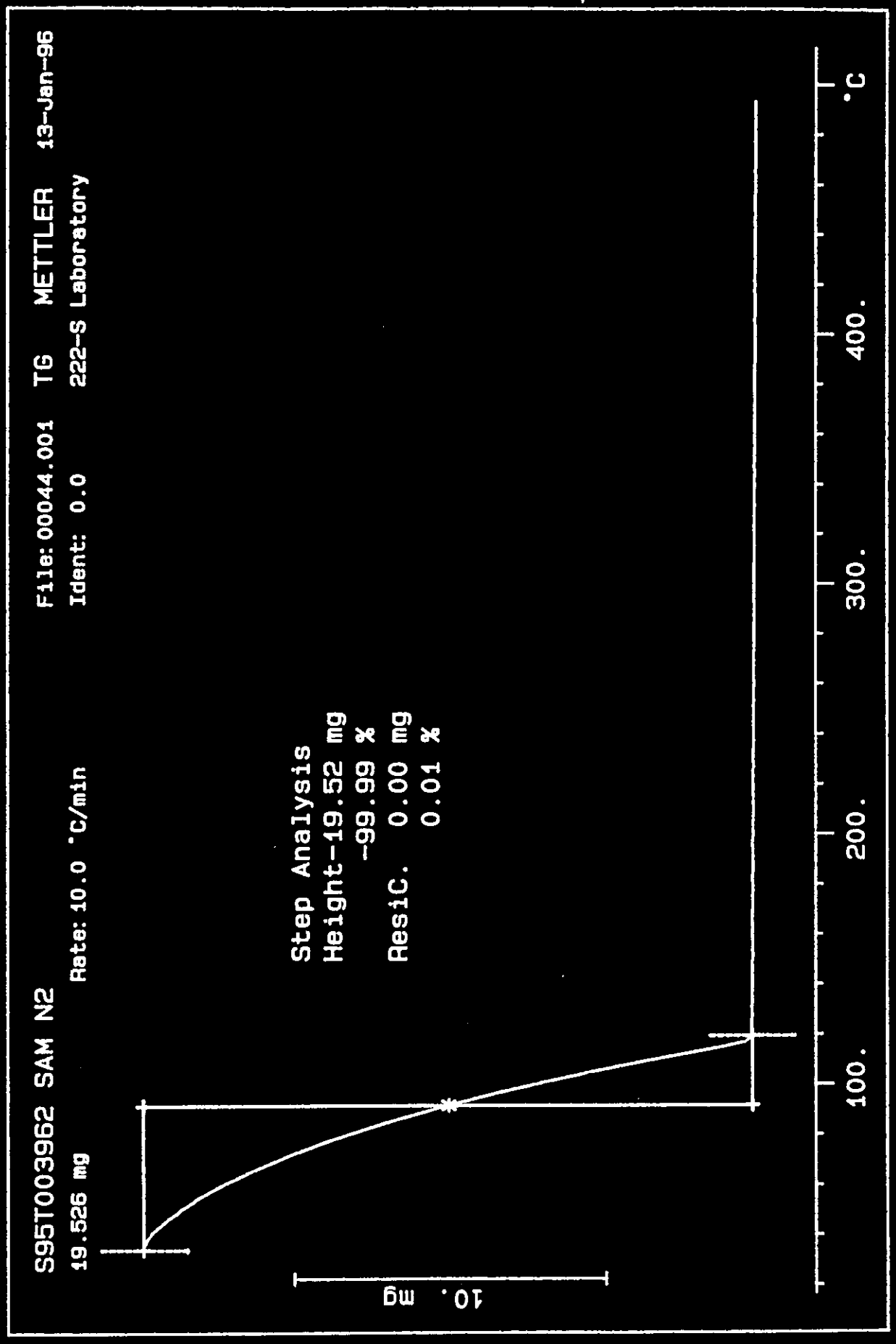
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

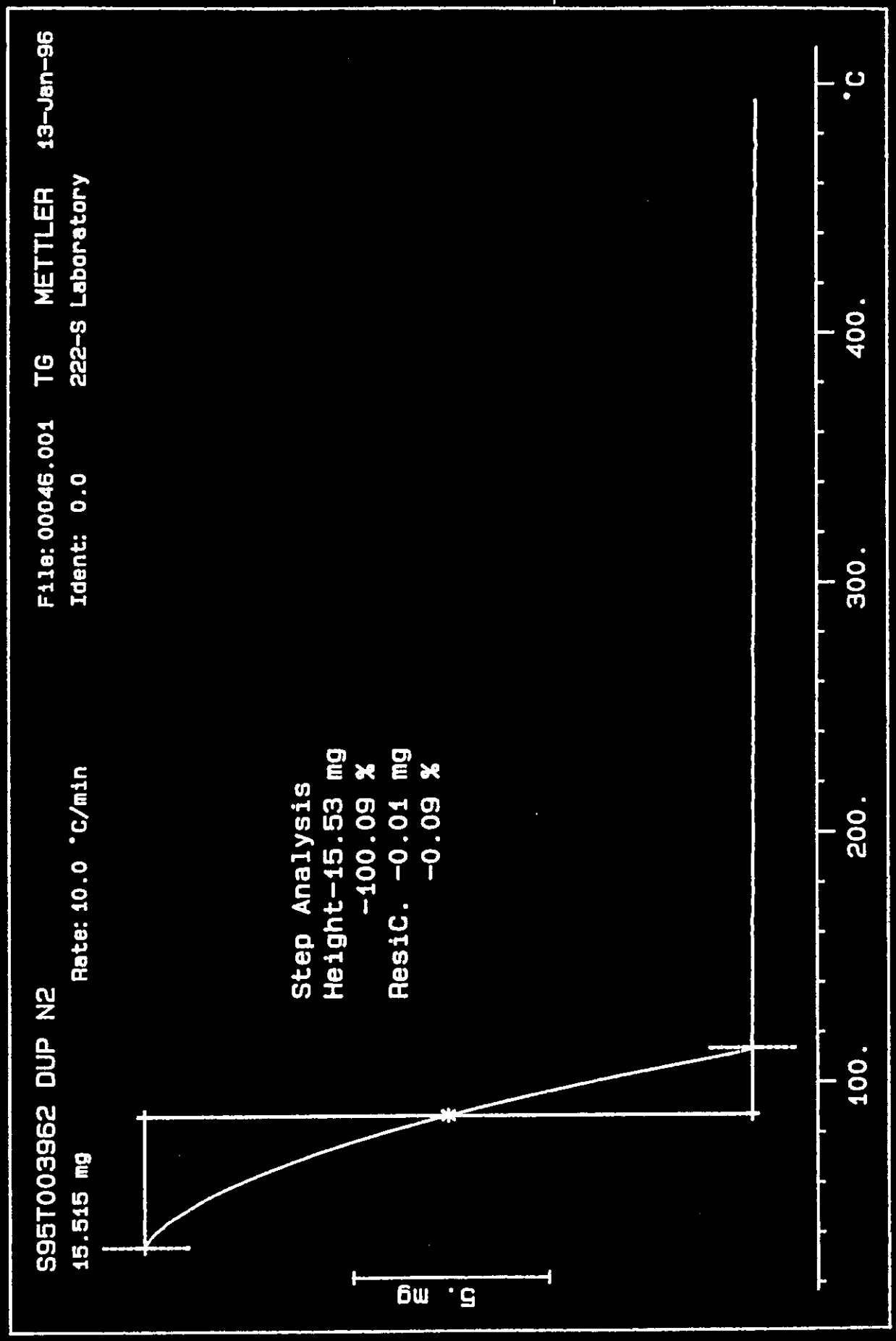
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2-131 TO 2-135 5/09/96




S95T003869 SAM N2
28.895 mg
Rate: 10.0 °C/min
File: 00040.001 TG METTLER 13-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -14.49 mg
-50.13 %
Resic. 14.41 mg
49.87 %
Dpeak 85.0°C
Step Analysis
Height -1.88 mg
-6.50 %
Resic. 12.53 mg
43.37 %
10. mg
100.
200.
300.
400.
°C


S95T003869 DUP N2
37.737 mg
Rate: 10.0 °C/min
File: 00042.001 TG METTLER 13-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height-18.88 mg
-50.02 %
ResiC. 18.86 mg
49.98 %
Dpeak 93.0°C
Step Analysis
Height -2.30 mg
-6.08 %
ResiC. 16.57 mg
43.90 %
10. mg
100.
200.
300.
400.
°C


S95T003962 SAM N2
19.526 mg
Rate: 10.0 °C/min
File: 00044.001 TG METTLER 13-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height-19.52 mg
-99.99 %
ResiC. 0.00 mg
0.01 %
10. mg
100.
200.
300.
400.
°C


S95T003962 DUP N2
15.515 mg
Rate: 10.0 °C/min
File: 00046.001 TG METTLER 13-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height-15.53 mg
-100.09 %
Resic. -0.01 mg
-0.09 %
5. mg
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 5124

Analyst: SMF **Instrument:** TGA0 3 **Book #** 75N8-A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-03	LIQUID	59.2	60.16	N/A	%
95000222	AN-102 GRAB	2	SAMPLE	S95T004133	0		TGA-03	LIQUID	N/A	45.26		%
95000222	AN-102 GRAB	3	DUP	S95T004133	0		TGA-03	LIQUID	45.26	48.80	N/A	%
95000222	AN-102 GRAB	4	SAMPLE	S95T004135	0		TGA-03	LIQUID	N/A	48.45		%
95000222	AN-102 GRAB	5	DUP	S95T004135	0		TGA-03	LIQUID	48.45	51.03	N/A	%

Final page for worklist # 5124

Blandina Valenzuela for SMF
Analyst Signature **Date** 1/26/96

Verified by Blandina Valenzuela 1/29/96

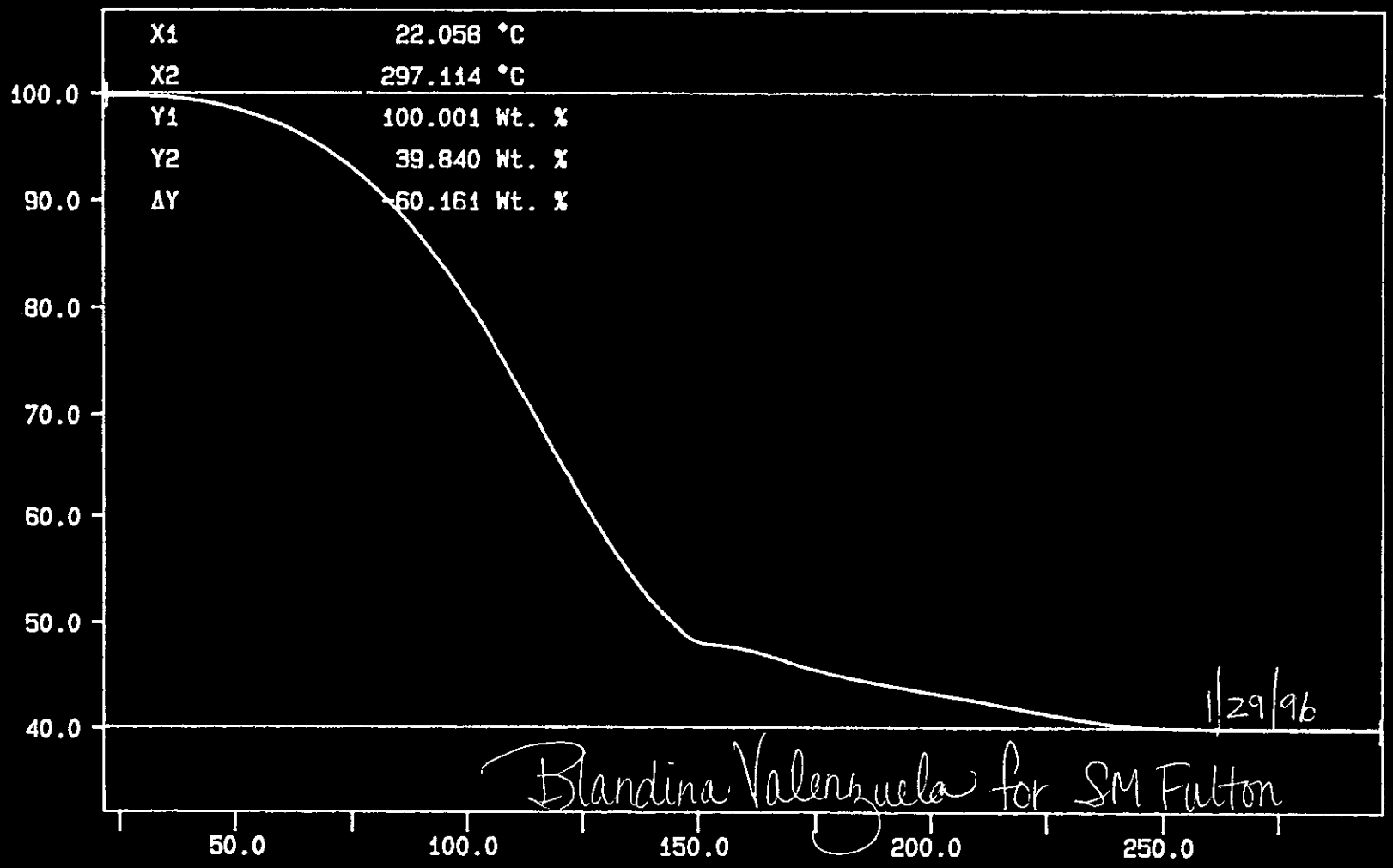
[illegible] 1/26/96
Analyst Signature **Date**

Data Entry Comments: S95T004133 produced a second weight loss step of 10.87%
S95T004135 ~~produced~~ 1/26/96 results were the sum of 3 weight loss steps.

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: TER012501 Thu Jan 25 06:37:00 1996
Sample Weight: 10.981 mg
Terliq 75N8-A

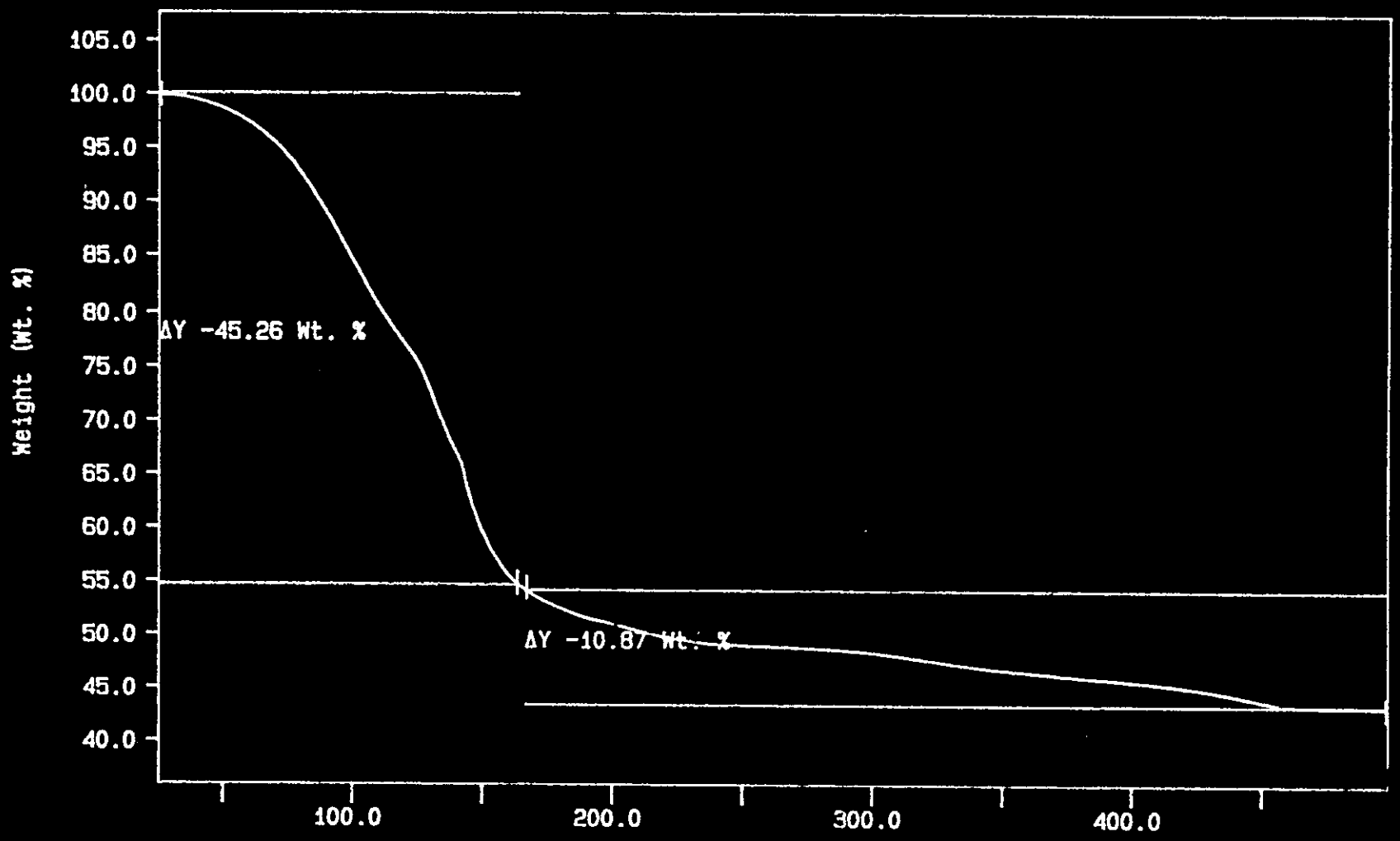
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2-137 TO 2-145



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

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 06:45:22 1996

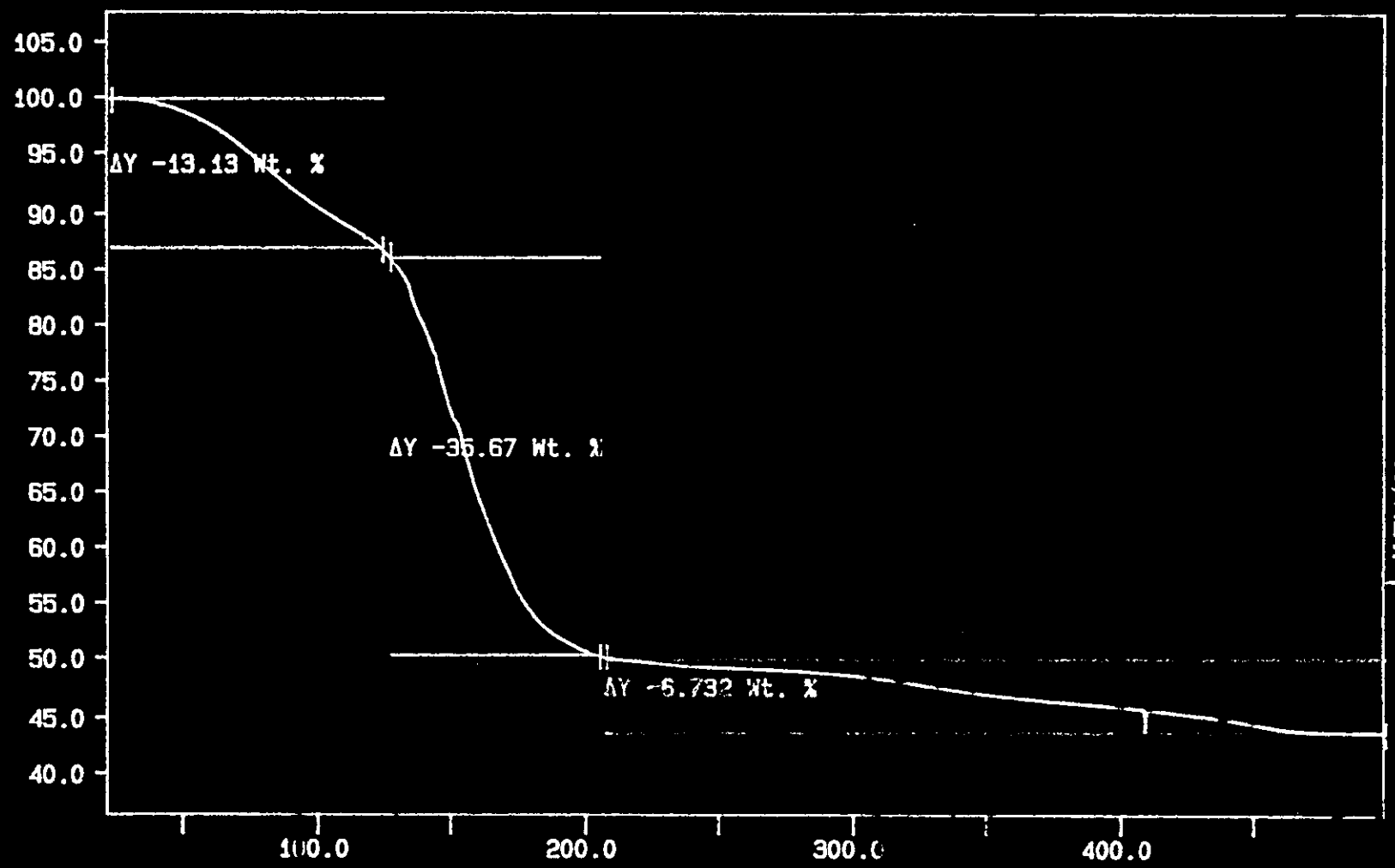
Curve 1: TGA
File info: SAM012503 Thu Jan 25 16:38:36 1996
Sample Weight: 13.406 mg
S95T004133



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
Thu Jan 25 20:50:43 1996

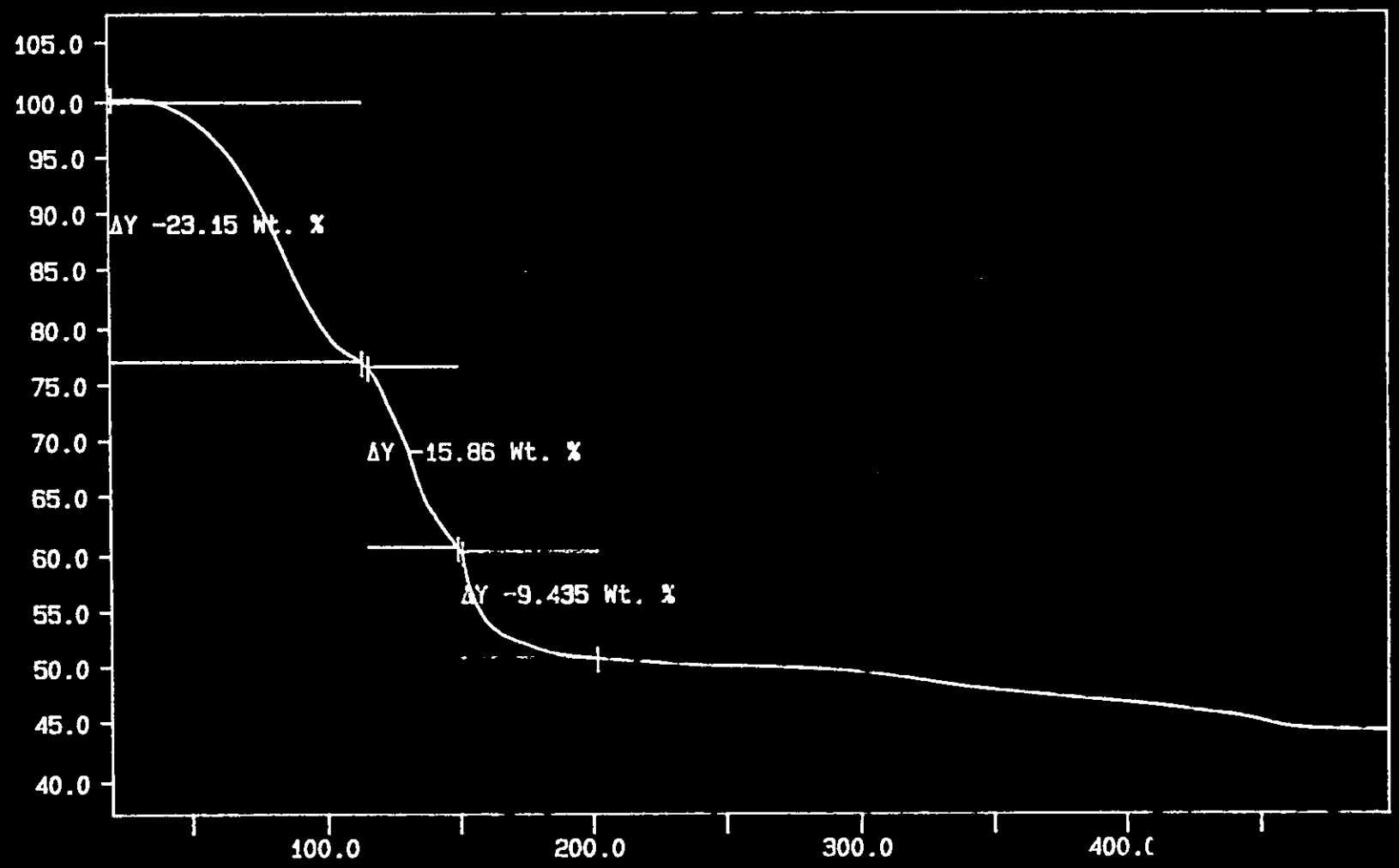
Curve 1: TGA
File info: SAM012504 Thu Jan 25 22:19:37 1996
Sample Weight: 23.238 mg
S95T004133 DUP



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
Thu Jan 25 23:32:29 1996

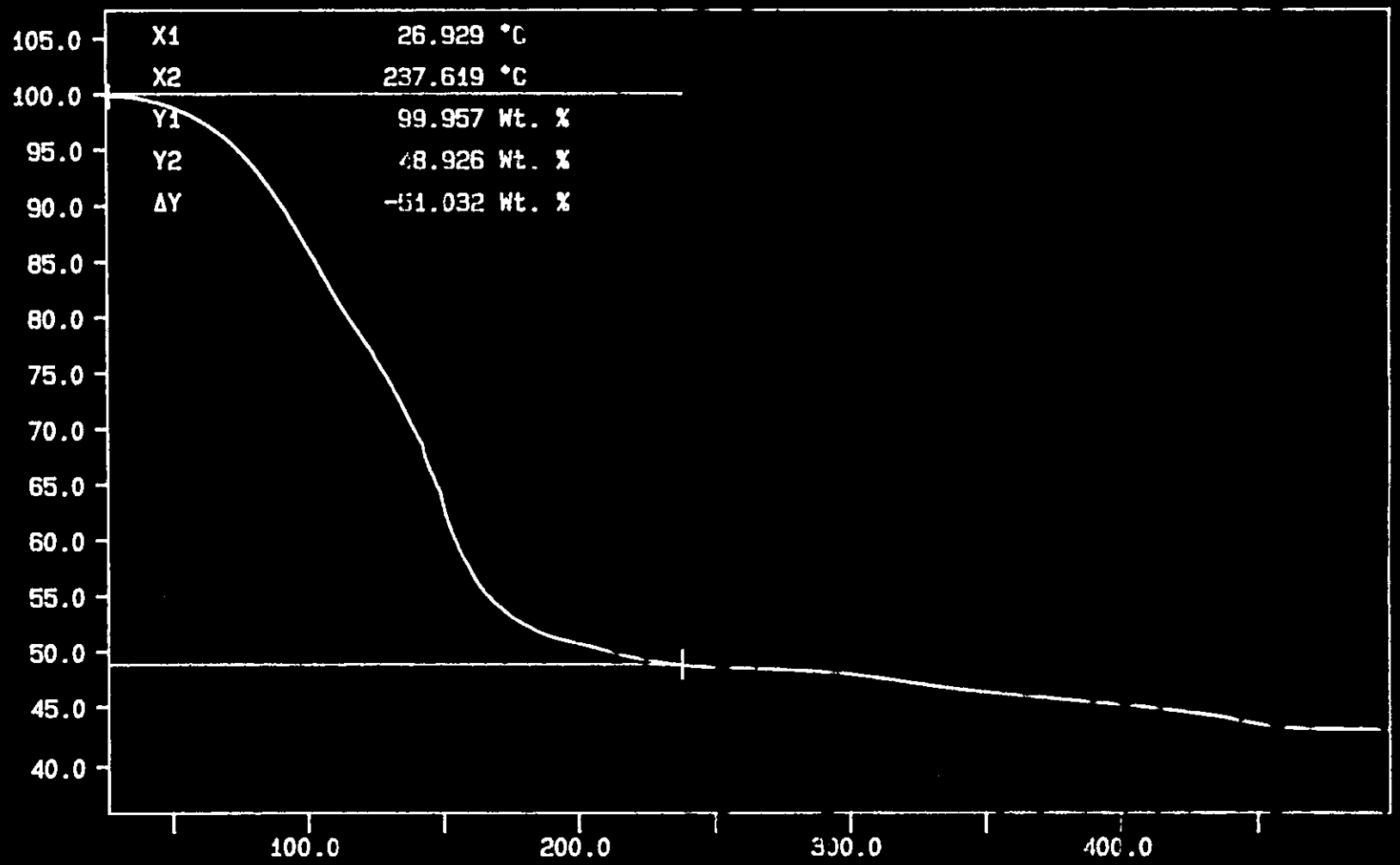
Curve 1: TGA
File info: SAM012501 Thu Jan 25 13:27:51 1996
Sample Weight: 7.865 mg
S95T004135



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
Thu Jan 25 13:29:43 1996

Curve 1: TGA
File info: SAM012502 Thu Jan 25 14:38:14 1996
Sample Weight: 16.941 mg
S95T004135 DUP



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
Thu Jan 25 15:44:20 1996

LABCORE Data Entry Template for Worklist# 5125

Analyst: ADP **Instrument:** TGA0 3 **Book #** 75N8 A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-03	LIQUID	59.2	60.20	N/A	%
95000222	AN-102 GRAB	2	SAMPLE	S95T003867	0		TGA-03	LIQUID	N/A	49.74		%
95000222	AN-102 GRAB	3	DUP	S95T003867	0		TGA-03	LIQUID	49.74	48.54	N/A	%

Final page for worklist # 5125

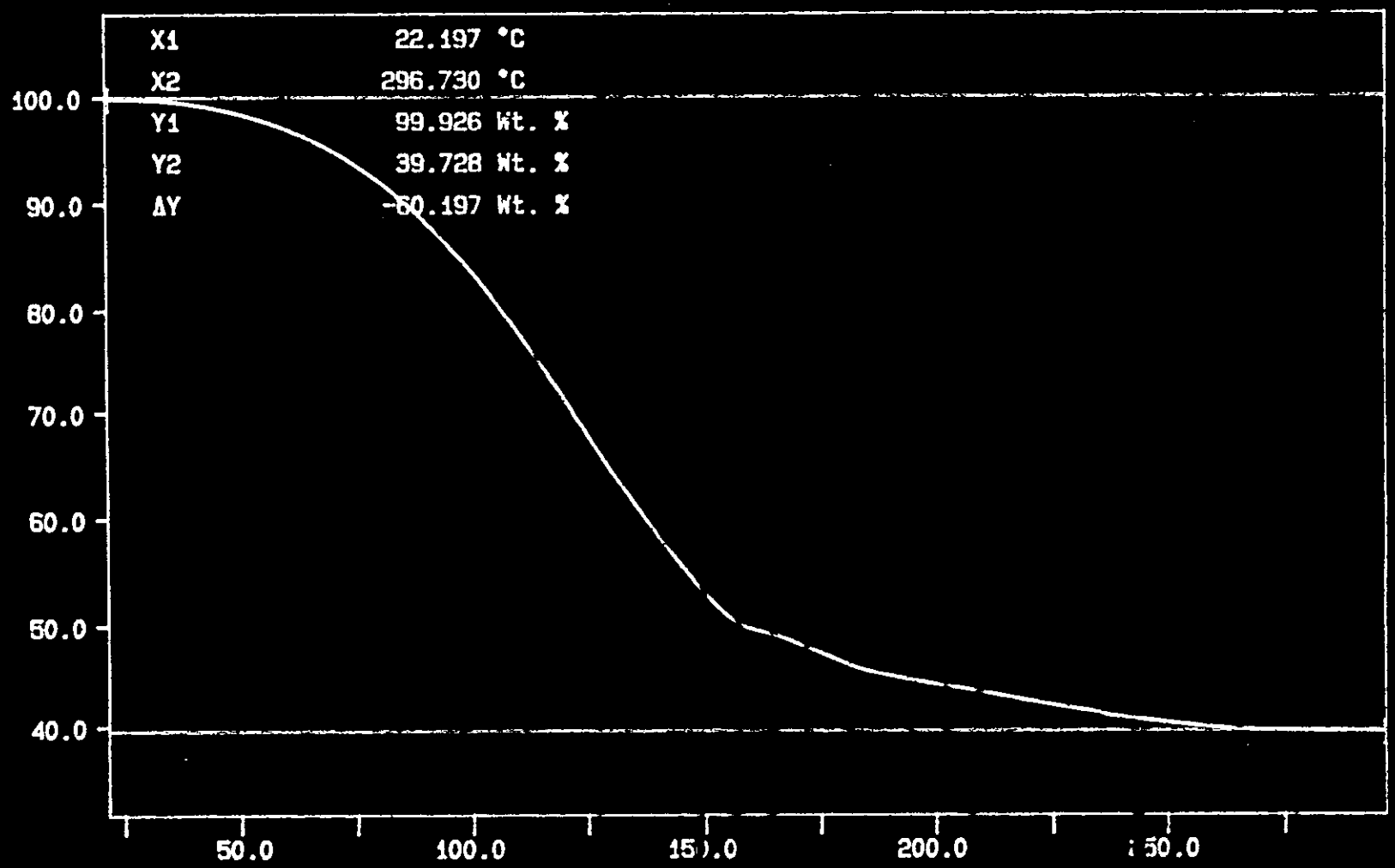
Blandina Valenzuela for ADP
Analyst Signature Date

Analyst Signature Date

Data Entry Comments: The results are the sum of two weight loss steps.

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.

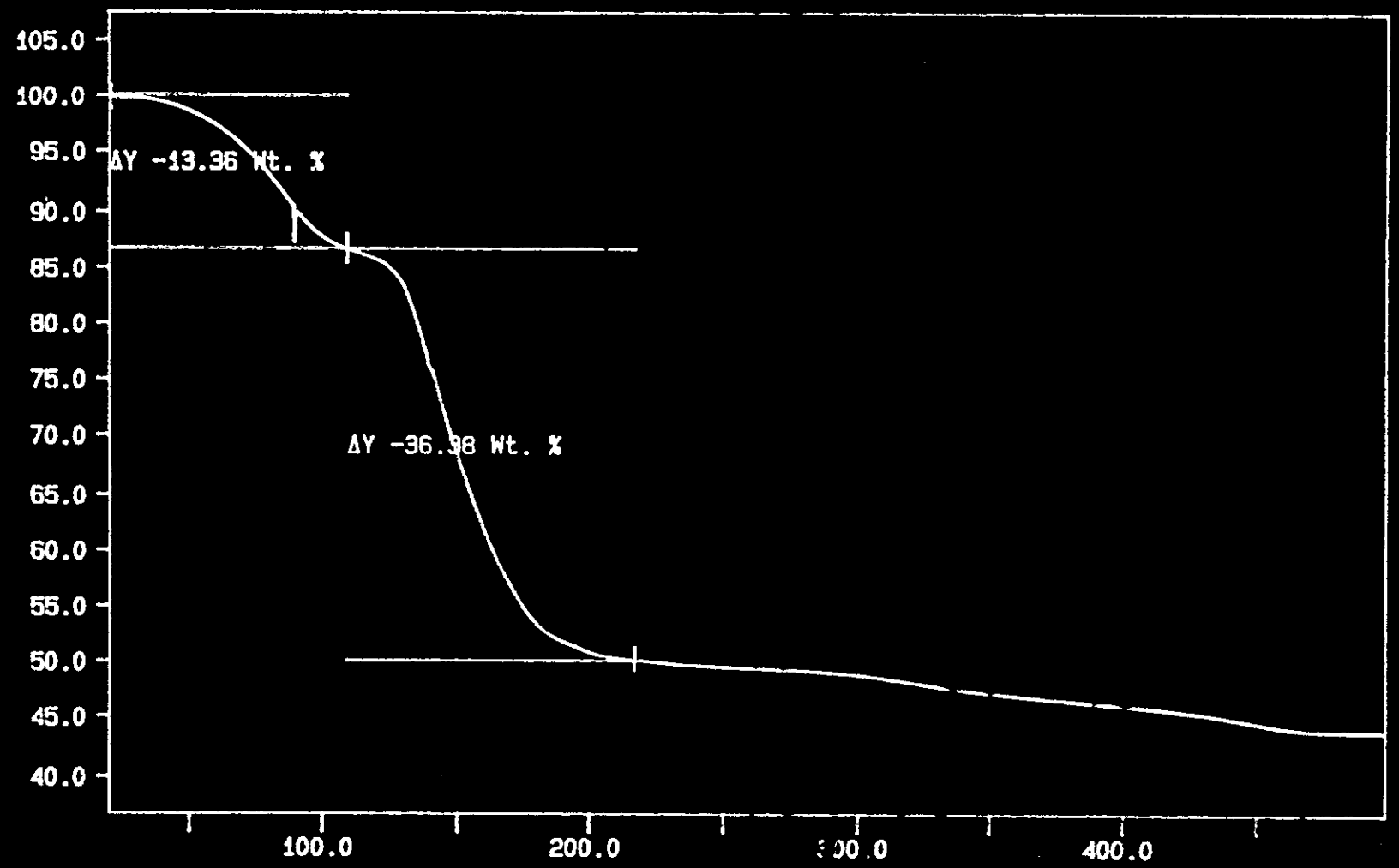
Curve 1: TGA
File info: TER011901 Fri Jan 19 07:43:54 1996
Sample Weight: 17.367 mg
Terliq 75N8-A



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jan 29 09:23:25 1996

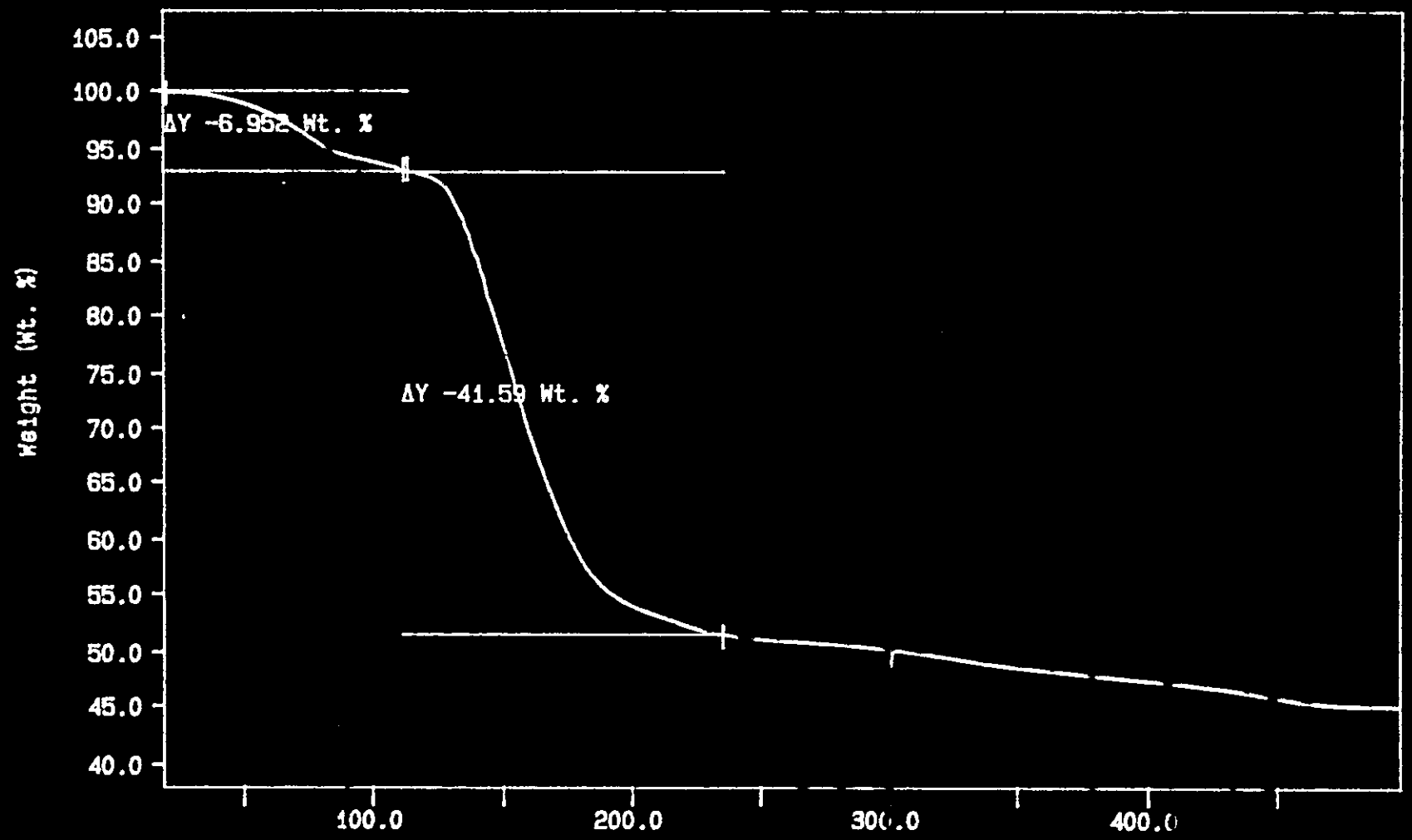
Curve 1: TGA
File info: SAM011901 Fri Jan 19 14:00:43 1996
Sample Weight: 18.617 mg
S95T003867 SAM



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jan 29 09:41:49 1996

Curve 1: TGA
File info: SAM011902 Fri Jan 19 15:5.:24 1996
Sample Weight: 26.500 mg
S95T003867 DUP



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jan 29 09:50:11 1996

LABCORE Data Entry Template for Worklist# 5148

Analyst: ADP **Instrument:** TGA0 3 **Book #** 75N8A

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-03	SOLID	59.2	59.55	N/A	%
95000222	AN-102 GRAB	2	SAMPLE	S95T004137	0		TGA-03	SOLID	N/A	43.35		%
95000222	AN-102 GRAB	3	DUP	S95T004137	0		TGA-03	SOLID	43.35	42.06	N/A	%

Final page for worklist # 5148

See attached for signatures
Analyst Signature **Date** 1-25-96 BDV

Analyst Signature **Date** 1-26-96

Verified by Blandina Valenzuela 1/26/96

Data Entry Comments: Sample produced a second weight loss step of 7.58%

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.

worklistrpt Version 2.1 05/15/95
01/24/96 08:19

LABCORE Data Entry Template for Worklist# 5148

Analyst: ADP **Instrument:** TGA0 _____ **Book #** 1000 N 2

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID			N/A	%
95000222	AN-102 GRAB	2	SAMPLE	S95T004137	0		TGA-01	SOLID	N/A			%
95000222	AN-102 GRAB	3	DUP	S95T004137	0		TGA-01	SOLID			N/A	%
95000222	AN-102 GRAB	4	SAMPLE	S95T004139	0		TGA-01	SOLID	N/A			%
95000222	AN-102 GRAB	5	DUP	S95T004139	0		TGA-01	SOLID			N/A	%

Final page for worklist # 5148

Analyst Signature Date

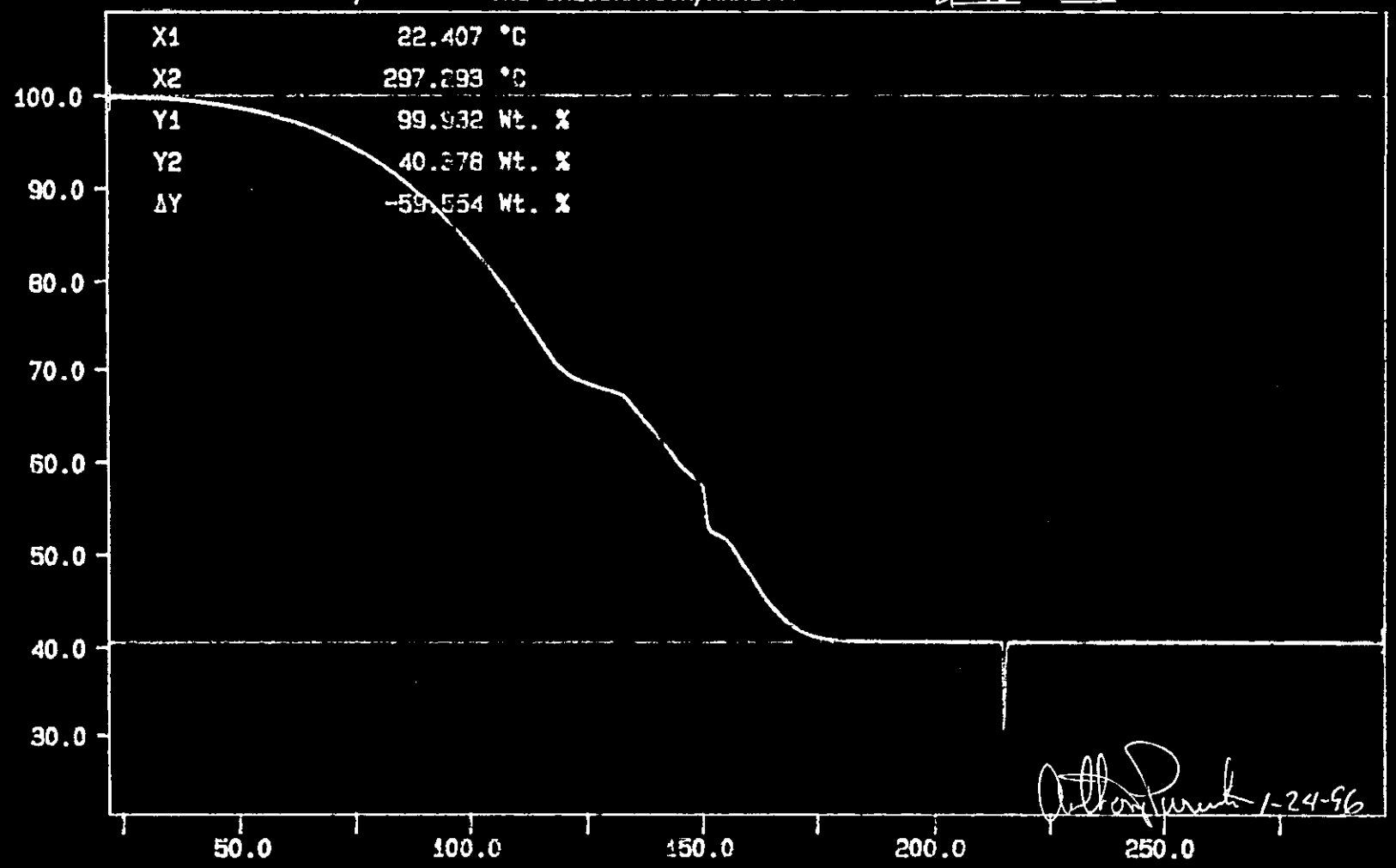
Analyst Signature Date

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.

Curve 1: TGA
File info: TER012401 Wed Jan 24 21:17:06 1996
Sample Weight: 14.645 mg
Terliq 75NB-A

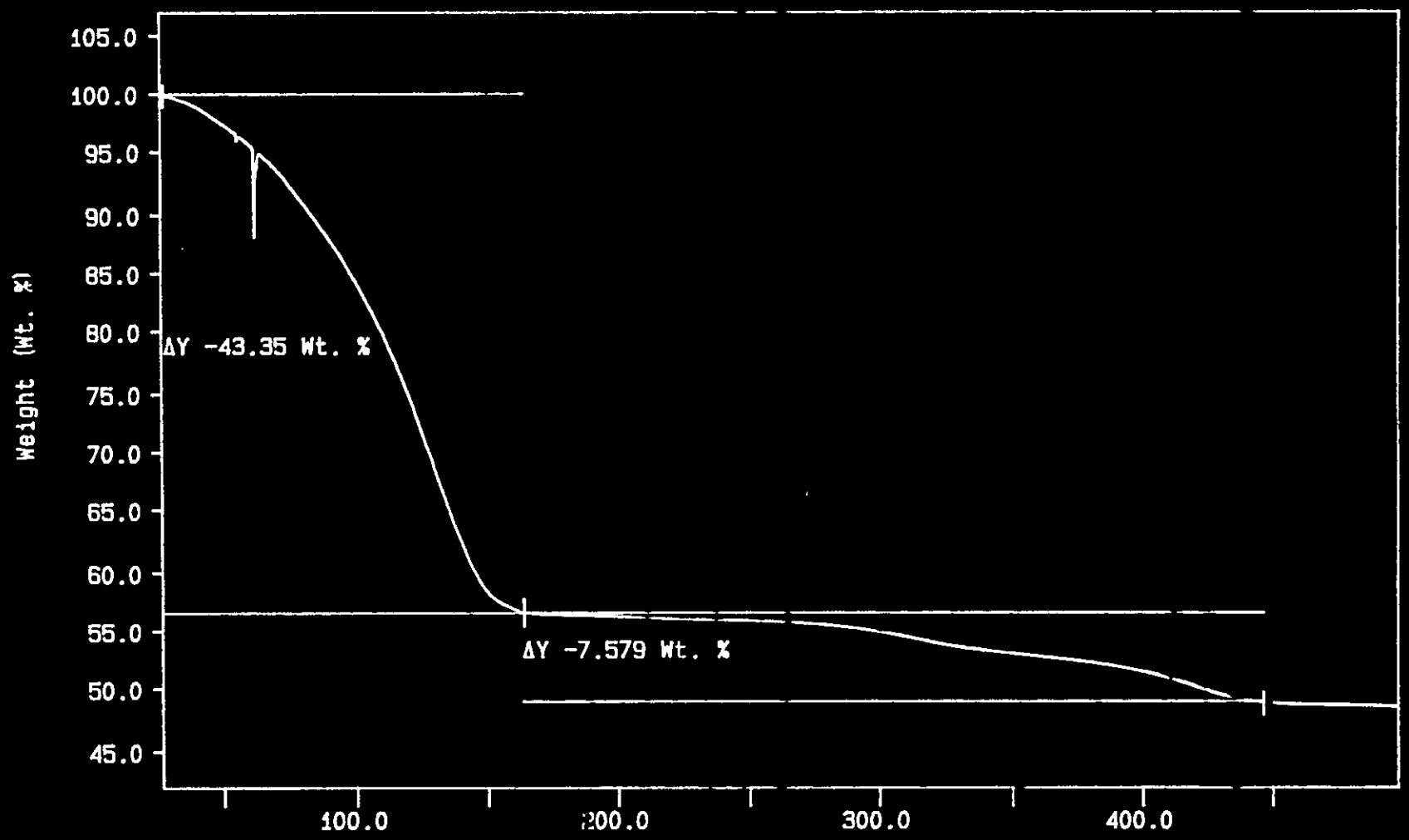
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 2-148 TO 2-150.



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Jan 24 22:18:20 1996

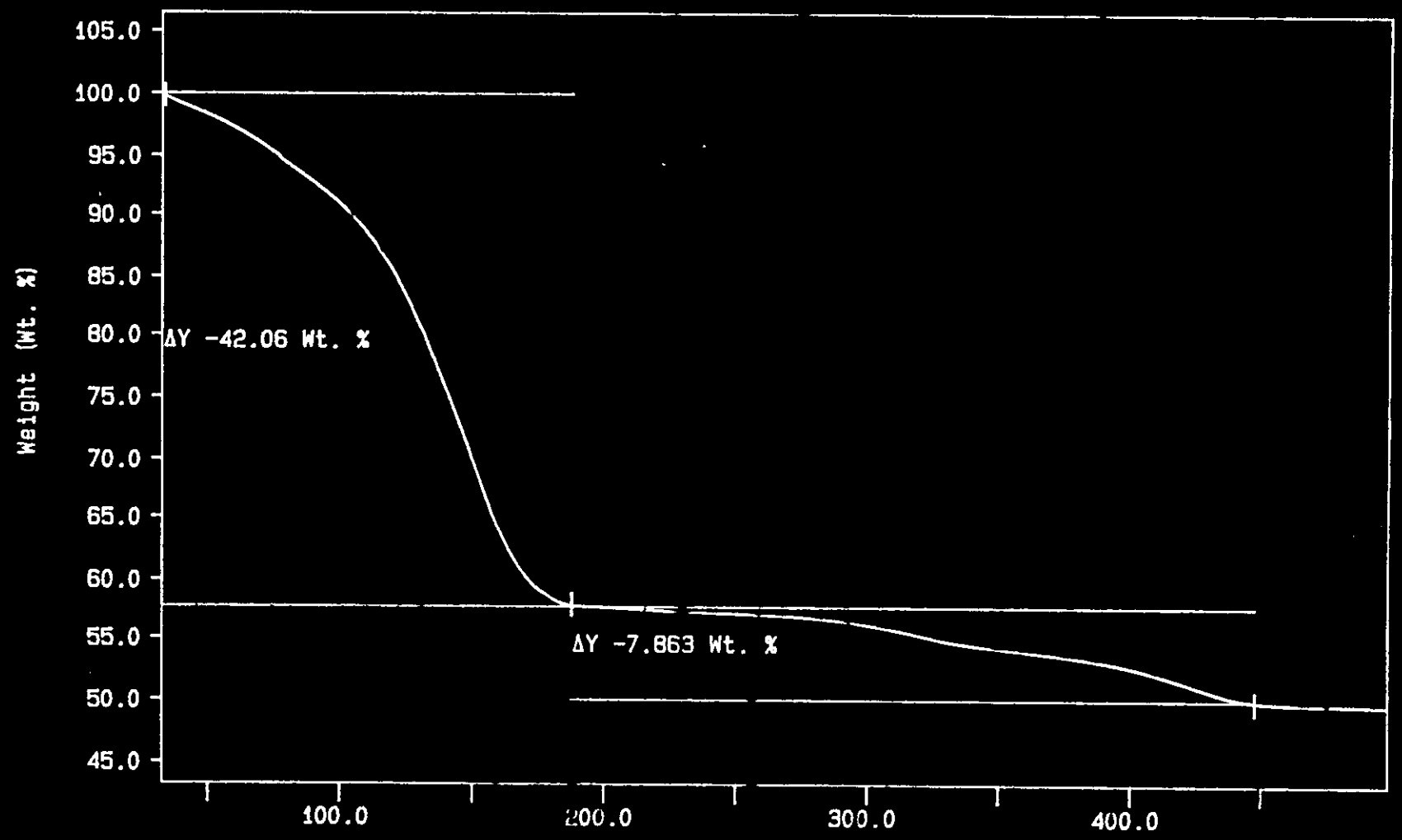
Curve 1: TGA
File info: SAM012402 Thu Jan 25 00:36:35 1996
Sample Weight: 15.096 mg
S95T004137 SAM



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 00:39:16 1996

Curve 1: TGA
File info: SAM012405 Thu Jan 25 01:50:16 1996
Sample Weight: 21.428 mg
S95T004137 DUP



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

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Jan 25 01:59:36 1996

LABCORE Data Entry Template for Worklist# 5196

Analyst: SMF Instrument: TGA01 1 Book # 75N8-17

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

Worklist Comment: Please run AN-102 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID	59.2	60.76	* N/A	%
95000222	AN-102 GRAB	2	SAMPLE	S95T004139	0		TGA-01	SOLID	N/A	43.50		%
95000222	AN-102 GRAB	3	DUP	S95T004139	0		TGA-01	SOLID	43.50	41.39	N/A	%

Final page for worklist # 5196

Susie M. Dutton 1-25-96 1625
Analyst Signature Date

Linda Conlin 1/26/96
Analyst Signature Date

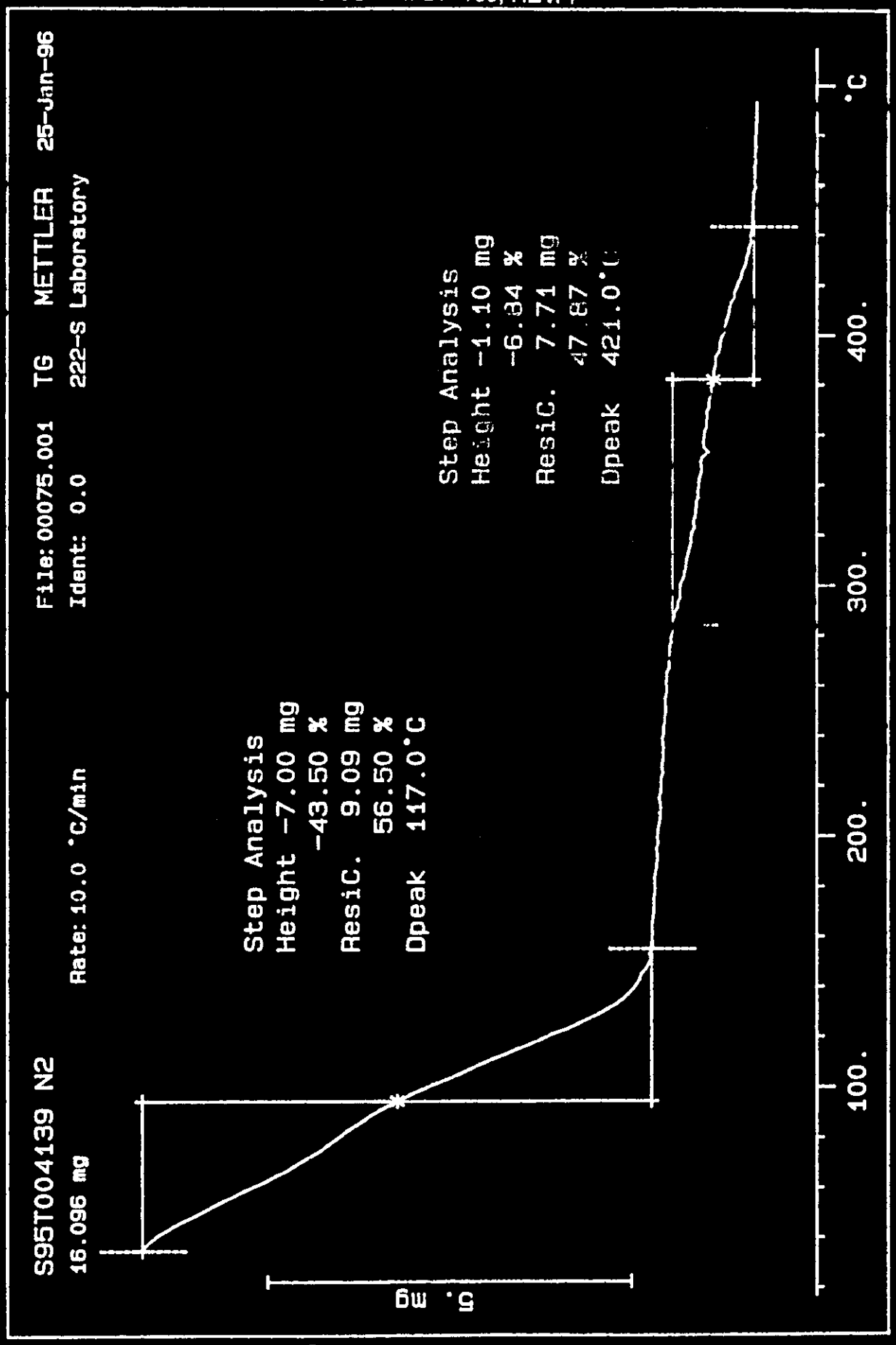
Verified by Blandina Valenzuela 1/29/96

Data Entry Comments: Sample produced a second weight loss step of 6.84% at approximately 380°C.

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 2/52 TO 2/53.

Sue M. Sutton 1-25-96


S95T004139 N2
16.096 mg
Rate: 10.0 °C/min
File: 00075.001 TG METTLER 25-Jan-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -7.00 mg
-43.50 %
Resic. 9.09 mg
56.50 %
Dpeak 117.0°C
Step Analysis
Height -1.10 mg
-6.84 %
Resic. 7.71 mg
47.87 %
Dpeak 421.0°C
5. mg
100.
200.
300.
400.
°C

DISTRIBUTION SHEET

To Distribution	From Production Planning and Control	Page 1 of 1
		Date: 03-07-96
Project Title/Work Order **WHC-SD-WM-DP-165, Rev. 1, "Final Report for Tank 241-AN-102, Grab Samples 2AN-95-1 through 2AN-95-6 and 102-AN-1 through 102-AN-4."**		EDT NO.: 614770 (Ref)
		ECN NO.: 629020

Name	MSIN	Text With all Attach	EDT/ECN ONLY
Pacific Northwest Laboratory			
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S. J. Harris	K7-22	X	
K. L. Silvers	P7-27		X
U.S. Department of Energy, RL			
C. A. Babel	S7-54	X	
Westinghouse Hanford Company			
J. N. Appel	G3-21		X
H. Babad	S7-30	X	
T. M. Blaak	S5-13	X	
R. A. Esch	T6-06	X	
G. D. Forehand	S7-31		X
V. W. Hall	T6-03	X	
D. C. Hetzer	S6-31		X
J. E. Hyatt	S3-31	X	
L. Jensen	R2-12	X	
N. W. Kirch	R2-11	X	
M. J. Kupfer	H5-49	X	
J. E. Meacham	S7-15	X	
J. B. Schaffer (SD COV. Sht., DST. Sht.,ROR)	R2-12		X*
L. W. Shelton	H5-49	X	
L A. Tusler	R2-11	X	
T. T. Tran (LATA)	B1-44	X	
L. R. Webb (SD COV. SHT., DST. SHT., ROR)	T6-06		X*
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
U. S. Department of Energy			
Jim Poppiti 12800 Middlebrook Rd. Trevion II, EM-36 Germantown, MD 20874			X

* Needs only releasing paperwork, as noted, not a copy of the released document.