

18

STA 22

JUN 25 1996

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT No 614795

2. To: (Receiving Organization) DISTRIBUTION		3. From: (Originating Organization) Production, Planning and Control		4. Related EDT No.: NA	
5. Proj./Prog./Dept./Div.: 241-A-101/Waste Management/PP&C/Analytical Services		6. Cog. Engr.: Franciska H. Steen		7. Purchase Order No.: NA	
8. Originator Remarks: This document is being released into the supporting document system for retrievability purposes				9. Equip./Component No.: NA	
				10. System/Bldg./Facility: NA	
11. Receiver Remarks: For Release				12. Major Assm. Dwg. No.: NA	
				13. Permit/Permit Application No.: NA	
				14. Required Response Date: 06/07/96	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Original Disposition	Receiver Disposition
1	WHC-SD-WM-DP-186	NA	0	Waste Compatibility and Final Report for Tank 241-A-101, Grab Samples 1A-96-1, 1A-96-2, and 1A-96-3	Q	2	1	1

16. KEY			
Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)	
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 4. Review 2. Release 5. Post-Review 3. Information6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved w/comment6. Receipt acknowledged	

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)										(G)	(H)
Reason	Disposition	(J) Name	(K) Signature (M) MSIN	(L) Date	(J) Name	(K) Signature (M) MSIN	(L) Date	Reason	Disposition		
2	1	Cog.Eng. F. H. Steen	<i>[Signature]</i>	6/25/96							
2	1	Cog. Mgr. J. G. Kristofzski	<i>[Signature]</i>	6/25/96							
2	1	QA T.L. Tung	<i>[Signature]</i>	6/25/96							
2	1	Peer Review R.A. Esch	<i>[Signature]</i>	6/25/96							
2	1	Production Planning & Control A. D. Rice	<i>[Signature]</i>	6-25-96							

18. L. B. Webb Signature of EDT Date Originator 6/25/96		19. Authorized Representative Date for Receiving Organization		20. J. G. Kristofzski Cognizant Manager Date 6/25/96		21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
---	--	---	--	--	--	--	--

BD-7400-172-2 (04/94) GEF097

BD-7400-172-1

"WASTE COMPATIBILITY AND FINAL REPORT FOR TANK 241-A-101, GRAB SAMPLES 1A-96-1, 1A-96-2 AND 1A-96-3.."

Franciska H. Steen

Westinghouse Hanford Company, Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: EDT-614795

UC: 2070

Org Code: 75725

Charge Code: MD378

B&R Code: EW 3120074

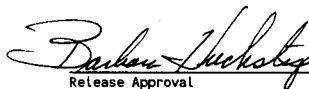
Total Pages: 339

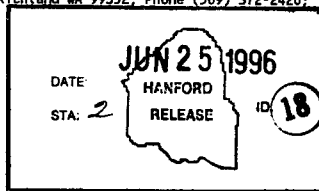
Key Words: Waste Compatibility and Final Report for Tank
241-A-101, Grab Samples 1A-96-1, 1A-96-2, and
1A-96-3, Final Report for Tank 241-A-101

Abstract: N/A

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact: WHC/BCS Document Control Services, P.O. Box 1970, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.

 6/25/96
Release Approval Date



Approved for Public Release



**Westinghouse
Hanford Company**

P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-186, REV. 0

ANALYTICAL SERVICES

**WASTE COMPATIBILITY AND FINAL
REPORT FOR TANK 241-A-101, GRAB SAMPLES
1A-96-1, 1A-96-2, AND 1A-96-3**

Project Coordinator: FRANCISKA H. STEEN

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

by

**Westinghouse Hanford Company
Box 1970
Richland, Washington**

WHC-SD-WM-DP-186, REV. 0

THIS PAGE WAS INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

Narrative	1
Sample Data Summary	8.1
A-101 Grab Sample Breakdown (Attachment 1)	8.12
A-101 Heating/Cooling Tests (Attachment 2)	8.15
Chain of Custody Forms	9
Photographs	14
Sample Preparations	19
Water Digestion Worklist # 8286 (2240)	21
Acid Digestion Worklist # 8285 (2239)	22
Inorganic Analyses	23
Differential Scanning Calorimetry (DSC)	
DSC Worklist # 8228 (2014)	25
DSC Worklist # 8379 (2012, 2013)	30
DSC Worklist # 9186 (2012, 2013, 2014)	36
Thermogravimetric Analysis (TGA)	
TGA Worklist # 8225 (2014)	38
TGA Worklist # 8358 (2012, 2013)	43
Specific Gravity Analysis (SpG)	
SpG Worklist # 8387 (2012, 2013)	48
pH Analysis Worklist # 8371 (2012, 2013)	54
OH Analysis Worklist # 8369 (2012, 2013, 2014)	55
Ammonia Analysis (NH ₃)	
NH ₃ Worklist # 9282 (2012, 2013)	68
Ion Chromatographic Analysis (IC)	
IC Worklist # 8325 (2014)	87
IC Worklist # 8388 (2012, 2013)	95
IC Worklist # 8619 (2014)	106
IC Worklist # 8982 (2240)	114
Inductively Coupled Plasma Spectrographic Analysis (ICP)	
ICP Worklist # 8074 (2012, 2013)	123
ICP Worklist # 9023 (2239)	129

TABLE OF CONTENTS (Continued)

Total Organic Carbon Analysis (TOC)	
TOC Worklist # 8281 (2014)	135
TOC Worklist # 8382 (2012, 2013)	145
Total Inorganic Carbon Analysis (TIC)	
TIC Worklist # 9266 (2012, 2013)	164
Radiochemical Analyses	180
Gamma Energy Analysis (GEA)	
GEA Worklist # 8343 (2015, 2016)	182
Strontium-90 Analysis (Sr-90)	
Sr-90 Worklist # 8618 (2015, 2016)	208
Americium-241 Analysis (Am-241)	
Am-241 Worklist # 8342 (2015, 2016)	225
Plutonium-239 Analysis (Pu-239)	
Pu-239 Worklist # 8344 (2015, 2016)	251
Pu-239 Worklist # 8514 (2014)	277

This document consists of pages 1 through 314, plus pages 8.0 - 8.20 and pages ii, 2, 8.2, 8.13, 10, 15, 20, 24, and 181 were intentionally left blank.

TRADEMARKS:

Perkin-Elmer is a Registered Trademark of Research and Manufacturing Company, Inc. Mettler is a Registered Trademark of Mettler Electronics

WHC-SD-WM-DP-186, REV. 0

NARRATIVE

WHC-SD-WM-DP-186, REV. 0

THIS PAGE WAS INTENTIONALLY LEFT BLANK

**FINAL REPORT FOR TANK 241-A-101
GRAB SAMPLES 1A-96-1, 1A-96-2, AND 1A-96-3**

This document is the final report deliverable for tank 241-A-101 grab samples. Three grab samples (1A-96-1, 1A-96-2 and 1A-96-3) were taken from riser 4 of tank 241-A-101. Samples were collected on April 3, 1996 and received by the 222-S Laboratory on April 4, 1996. Analyses were performed in accordance with the *Compatibility Grab Sampling and Analysis Plan* (TSAP) (Field, 1996) and the *Data Quality Objectives for Tank Farms Waste Compatibility Program* (DQO) (Fowler, 1995). The samples were subsampled and analyzed in accordance with the TSAP. Two of the three grab samples contained a significant amount of solids and special analyses were requested.

None of the samples exceeded notification limits. No similarities in sample appearance were noted; this could be an explanation for the varying analytical results. Quality control issues are discussed in each analytical subheading. The raw data for all analyses are included in this report.

Appearance and Sample Handling

Attachment 1 is provided as a cross-reference for relating the tank farm customer identification numbers with the 222-S Laboratory Labcore numbers and the portion of sample to be analyzed.

1A-96-1

This sample was collected at a depth of 204 inches. Visual observation indicated that the sample was a slightly opaque yellow liquid with less than five percent solids. There was no organic layer present.

Two 20 mL subsamples were created for analysis of inorganic analytes and radionuclides. A 40 mL liquid sample was archived and later submitted to the 222-S Process Chemistry and Statistics group for the Determination of Boiling Pressures and Temperatures as a Function of Percent Waste Volume Reduction (%WVR). Attachment 2 provides the test results for the three samples. The sample was depleted.

1A-96-2

This sample was collected at a depth of 458 inches. Visual observation indicated that the sample was an opaque yellow liquid with suspended gray-white solids and dark gray solids on the bottom of the sample jar. A portion of the sample was centrifuged. The volume percent settled solids was approximately 30% and there was no organic layer present.

Two 20 mL subsamples of centrifuged supernate were created for analysis of inorganic analytes and radionuclides. A 40 mL representative sample (both supernate and solids) was archived and later submitted to the 222-S Process Chemistry and Statistics group for the Determination of Boiling Pressures and Temperatures as a Function of %WVR. The sample was depleted.

1A-96-3

This sample was collected at a depth of 546 inches. Visual observation indicated that the sample was mostly solids with a small top layer of an opaque yellow liquid. The sample was centrifuged. The volume percent settled solids was approximately 90% and there was no organic layer present.

One 16 mL centrifuged supernate was created for analysis of inorganic analytes and radionuclides. It should be noted that only priority analyses were performed due to insufficient sample volume. A solid sample of approximately 10 grams was created for ICP and IC analyses. 60 mL of the solid sample was archived and the remaining sample was submitted to the 222-S Process Chemistry and Statistics group for the Determination of Boiling Pressures and Temperatures as a Function of %WVR.

Analytical Results Summary

The data summary Table 1 (pages 8.1-8.6) included in this report compiles the analytical results associated with each sample.

Compatibility Program Concerns

Differential Scanning Calorimetry (DSC) - Energetics Decision Rule

The DSC analyses were performed in duplicate on direct subsamples. The exothermic energy based on the dry weight of the subsample was calculated for all subsamples. The average of the thermogravimetric analysis (TGA) results for each subsample was used in the dry weight correction for that subsample. The standard recovery and relative percent difference (RPDs) for this analysis were within the required limits.

For waste compatibility energetics decision concerns, the exotherm/endothrm 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 2 (page 8.7).

Thermogravimetric Analysis (TGA)

The TGA analyses were performed in duplicate on direct subsamples. The results for samples 1A-96-2 and 1A-96-3 were determined by summing weight loss steps below 200°C; weight loss steps above this were not used to determine the result. The result for sample 1A-96-1 was based on one weight loss step. This sample produced a second weight loss step of 14.89% at 139°C and the slope of the curve was so drastic the chemist questioned whether it was still percent moisture. There is a possibility that the second weight loss step was due to waters of hydration tightly bound to salts. The DSC thermograms showed a separate endotherm other than the evaporation of water which corroborates the weight loss step shown in the TGA results. More information may be obtained by examining the raw data. The standard recovery and RPDs for this analysis were within the required limits.

WHC-SD-WM-DP-186, REV. 0

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

The results with respect to the waste compatibility corrosion rules are presented in Table 3 (pages 8.8-8.10). This table presents the NO_3^- , OH^- , and NO_2^- results in $\mu\text{g/mL}$ 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 $1.40\text{e}+04$ to $5.97\text{e}+04$ $\mu\text{g/mL}$ (0.824 to 3.512 M). The hydroxide results for the three samples analyzed were all within the acceptable concentration ranges required for corrosion control. The standard recovery and RPDs for these analyses were within the required limits.

Specific Gravity (Sp.G.) - Flammable Gas Accumulation Decision Rule

The Sp.G. of the waste is currently used for determination 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. Two of the supernate samples were submitted for Sp.G. analysis. The results ranged from 1.34 to 1.35. The mean Sp.G. = 1.34. This result does not exceed the 1.41 limit to allow waste transfer. The standard recovery and RPDs for this analysis were within the required limits.

Plutonium ($^{239/240}\text{Pu}$) - Criticality Decision Rule

$^{239/240}\text{Pu}$ concentration was measured for supernate samples 1A-96-1, 1A-96-2, and 1A-96-3 to evaluate criticality safety for waste transfers. The results for the supernates were less than the detection limit of $3.10\text{e}-4$ $\mu\text{Ci/mL}$. These results are below the criticality prevention limit of 0.80 $\mu\text{Ci/mL}$ stated in the compatibility DQO. The standard recovery and RPDs for this analysis were within the required limits.

Americium (^{241}Am) - Criticality Decision Rule

^{241}Am analysis was performed on two of the supernate samples 1A-96-1 and 1A-96-2. The results for the supernates were less than the detection limit of $3.74\text{e}-7$ $\mu\text{Ci/mL}$. The standard recovery and RPDs for this analysis were within the required limits.

Inorganic Analyses

pH

The pH analysis was performed on two of the samples 1A-96-1 and 1A-96-2. The results ranged from 13.21 to 13.51. 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.

Ion Chromatography (IC)

In the ion chromatography (IC) analysis there was an organic acid in the supernate from sample 1A-96-3 that gave a response which interfered with the fluoride results. The spike recovery of 45.1% for this sample was believed to be due to the interferant therefore no rerun was requested.

Samples 1A-96-1 and 1A-96-2 had a detectable level of nitrate in the method blank. Chloride was detected in the method blank for the supernate from sample 1A-96-3. The concentrations of these analytes were considered insignificant with respect to the sample results (several orders of magnitude lower) and no rerun was performed. The standard recovery for this analysis was within the required limits.

Inductively Coupled Plasma Spectrophotometry (ICP)

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 RPD between the serial dilution and the undiluted results must be $\leq 10\%$. The results provided in Table 4 (page 8.11) indicate that the accuracy of the analyses was acceptable. The standard recovery for this analysis was within the required limits.

Ammonia (NH₃)

Ammonia was requested as an additional analysis and was performed on two of the supernate samples 1A-96-1 and 1A-96-2. The original and rerun analyses produced poor spike recoveries and inconsistent results. The high pH of the samples (approximate pH 13.5) interfered with this method. The caustic concentration in the sample caused evolution of ammonia which would be lost each time the container was opened. In addition, high caustic caused slow electrode response resulting in inaccurate measurement of ammonia concentration in the sample. The standard recovery for this analysis was within the required limits.

Total Organic Carbon (TOC)

TOC analysis was performed on the three supernate samples 1A-96-1, 1A-96-2 and 1A-96-3. None of the results exceeded the notification limit of 30,000 $\mu\text{gC/mL}$ (dry weight basis). The standard recovery, spike recovery and RPDs for this analysis were within the required limits.

Total Inorganic Carbon (TIC)

TIC analysis was performed on two of the supernate samples 1A-96-1 and 1A-96-2. The standard recovery, spike recovery and RPDs for this analysis were within the required limits.

Radionuclide Analyses

Strontium 90 (^{90}Sr)

^{90}Sr analysis was performed on two of the supernate samples 1A-96-1 and 1A-96-2 .
The standard recovery and RPDs for this analysis were within the required limits.

Gamma Energy Analysis (GEA)

GEA analysis was performed on two of the supernate samples 1A-96-1 and 1A-96-2 .
The standard recovery and RPDs for this analysis were within the required limits.

WHC-SD-WM-DP-186, REV. 0

Procedures

Table 5 lists the analytical procedures used for performing the sample analyses. Abbreviations for analyses are defined in the table notes.

Table 5: Analytical Procedures

Analysis	Compatibility	State	Notes	Reference
DSC	Compatibility	Liquid	N/A	LA-514-113 Rev. C-1 LA-514-114 Rev. C-1
TGA	Compatibility	Liquid	N/A	LA-560-112 Rev. B-1
Sp.G.	Compatibility	Liquid	N/A	LA-510-112 Rev. C-3
pH	Compatibility	Liquid	N/A	LA-212-106 Rev. A-0
NH ₃	Special Request	Liquid	N/A	LA-631-001 Rev. B-2
OH ⁻	Compatibility	Liquid	N/A	LA-211-102 Rev. C-0
IC: Cl ⁻ , F ⁻ , PO ₄ ³⁻ , SO ₄ ²⁻ , NO ₃ ⁻ , NO ₂ ⁻ , oxalate	Compatibility Special Request	Liquid Solid	N/A +LA-504-101 Rev. E-0	LA-533-105 Rev. D-1
ICP: Al, Cr, Fe, Mn, Na, Ni, Si, U	Compatibility Special Request	Liquid Solid	N/A ++LA-505-159 Rev D-0	LA-505-161 Rev. B-0
TOC	Compatibility	Liquid	N/A	LA-344-105 Rev. C-0
TIC	Compatibility	Liquid	N/A	LA-622-102 Rev. C-0

WHC-SD-WM-DP-186, REV. 0

Table 5: Analytical Procedures

Isotope	Compatibility	Physical State	Digestion Procedure	Analytical Procedure
GEA: ¹³⁷ Cs	Compatibility	Liquid	N/A	LA-548-121 Rev. E-0
⁹⁰ Sr	Compatibility	Liquid	N/A	LA-220-101 Rev. D-1
²⁴¹ Am	Compatibility	Liquid	N/A	LA-953-103 Rev. A-5
^{239/240} Pu	Compatibility	Liquid	N/A	LA-943-128 Rev. B-0

Notes:

- + Water digest procedure
- ++ Acid digest procedure

Abbreviations:

- N/A = not applicable (these are direct samples)
- DSC = differential scanning calorimetry
- TGA = thermogravimetric analysis
- Sp.G. = specific gravity
- NH₄ = ammonia (by ion selective electrode (ISE))
- OH = hydroxide
- IC = ion chromatography
- ICP = inductively coupled plasma
- TOC = total organic carbon
- TIC = total inorganic carbon
- AT = total alpha
- GEA = gamma energy analysis
- ¹³⁷Cs = cesium 137
- ⁹⁰Sr = strontium 90
- ²⁴¹Am = americium 241
- ^{239/240}Pu = plutonium 239/240

REFERENCES

- Field, J.G., 1996, *Compatibility Grab Sampling and Analysis Plan*, WHC-SD-TSAP-037, Rev. 2, Westinghouse Hanford Company, Richland, WA 99352
- Fowler, K.D., 1995, *Data Quality Objectives for Tank Waste Compatibility Program*, WHC-SD-WM-DQO-001, Rev. 1, Westinghouse Hanford Company, Richland, WA 99352

WHC-SD-WM-DP-186, REV. 0

SAMPLE DATA SUMMARY

WHC-SD-WM-DP-186, REV. 0

THIS PAGE WAS INTENTIONALLY LEFT BLANK

Compatibility Results Final Report
A-101 GRAB

RISER: 4
SEGMENT #: 1A-96-1

SEGMENT PORTION: Supernate

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD, %	Spk Rec, %	Det Limit	Count	Err%
S96T001831		Volume % Solids	%	n/a		Trace		n/a	n/a	n/a	n/a		n/a
S96T002012		DSC Exotherm using Mettler	Joules/g	111.1	n/a	85.90	78.90	82.40	8.50	n/a	n/a		n/a
S96T002012		DSC Exotherm DRY Calculated	Joules/g DRY	n/a	n/a	1.53e+02	140.3	146.5	8.53	n/a	n/a		n/a
S96T002012		Ammonia by ISE-Std Additions	ug/mL	104.1	4.40e-02	1.34e+02	122.0	128.0	9.38	60.00	n/a		n/a
S96T002012		OH- by Pot. Titration	ug/mL	98.56	<42.00	1.45e+04	1.40e+04	1.42e+04	3.51	n/a	2.50e+03		n/a
S96T002012		pH Direct	pH	n/a	n/a	13.51	13.48	13.49	0.07	n/a	1.50e-02		n/a
S96T002012		Specific Gravity	Sp. G.	98.07	n/a	1.355	1.354	1.355	0.07	n/a	1.00e-03		n/a
S96T002012		% Water by TGA using Mettler	%	99.38	n/a	42.77	44.78	43.78	4.50	n/a	1.00e-03		n/a
S96T002012		Tot. Inorg. Carbon by Coul.	ug/mL	95.18	1.300	5.33e+02	549.0	546.0	1.10	n/a	15.00		n/a
S96T002012		Tot. Organic Carbon by Coul.	ug/mL	101.7	4.00e-01	2.12e+03	2.04e+03	2.08e+03	3.85	92.60	55.00		n/a
S96T002012		Aluminum-ICP-Acid Dill.	ug/mL	96.00	<5.00e-02	1.49e+04	1.47e+04	1.48e+04	1.33	72.50	20.10		n/a
S96T002012		Iron-ICP-Acid Dill.	ug/mL	99.80	<5.00e-02	< 20.10	<2.01e1		1.33	97.80	20.10		n/a
S96T002012		Sodium-ICP-Acid Dill.	ug/mL	97.80	<1.00e-01	1.68e+05	1.65e+05	1.66e+05	1.80	n/a	40.10		n/a
S96T002012		Fluoride-IC-Dionex 4000i/4500	ug/mL	94.41	<1.30e-02	<1.33e+02	<1.33e2		n/a	n/a	132.6		n/a
S96T002012		Chloride-IC-Dionex 4000i/4500	ug/mL	91.39	<1.70e-02	2.44e+03	2.40e+03	2.43e+03	2.47	86.33	175.4		n/a
S96T002012		Nitrite-IC - Dionex 4000i/4500	ug/mL	95.62	<1.07e-01	4.57e+04	4.47e+04	4.51e+04	1.53	98.18	1.09e+03		n/a
S96T002012		Bromide by Ion Chromatograph	ug/mL	94.76	<1.24e-01	<1.28e+03	<1.29e3		n/a	n/a	1.28e+03		n/a
S96T002012		Nitrate-IC - Dionex 4000i/4500	ug/mL	98.21	2.01e-01	2.99e+05	2.99e5	2.99e+05	0.00	95.77	1.43e+03		n/a
S96T002012		Phosphate-IC-Dionex 4000i/4500	ug/mL	96.34	<1.19e-01	2.95e+03	2.80e+03	2.88e+03	5.22	94.69	1.21e+03		n/a
S96T002012		Sulfate by IC - Dionex 4000i/4500	ug/mL	97.31	<1.34e-01	<1.35e+03	<1.35e3		n/a	n/a	1.35e+03		n/a
S96T002012		Oxalate by IC - Dionex 4000i	ug/mL	98.64	<1.05e-01	<1.07e+03	<1.07e3		n/a	96.67	1.39e+03		n/a
S96T002015		Strontium-89/90 High Level	uCi/mL	97.54	1.00e-03	1.32e+02	1.29e2	1.30e+02	2.30	n/a	3.04e-05	1.83E+00	n/a
S96T002015		Pu-239/240 by TRU-SPEC Resin	uCi/mL	98.95	<2.90e-02	<1.10e+04	<1.05e4		n/a	n/a	3.10e-04	1.00E+02	n/a
S96T002015		Cesium-137 by GEA	uCi/mL	91.98	<6.38e-03	1.25e+02	<1.25e2		n/a	n/a	3.74e-05	1.00E+02	n/a
S96T002015		Am-241 by Extraction	uCi/mL	99.23	<3.92e-03	<3.74e+05	<4.00E+5		n/a	n/a	3.74e-05	1.00E+02	n/a

WHC-SD-WM-DP-186, REV. 0

RISER: 4
 SEGMENT #: 1A-96-2

SEGMENT PORTION: Supernate

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S561001832		Volume % Solids	%	n/a	n/a	39.00	n/a	n/a	n/a	n/a	n/a		
S561002013		DSC Exotherm using Mettler	Joules/g	11.1	n/a	99.40	n/a	n/a	n/a	n/a	n/a		
S561002013		DSC Exotherm Dry	Joules/g	n/a	n/a	99.40	108.2	103.9	8.28	n/a	n/a		
S561002013		Ammonia by ISE-Std Additions	ug/mL	104.4	4.40e-02	1.88e+02	204.0	195.9	8.27	n/a	n/a		
S561002013		OH- by Pot. Titration	ug/mL	98.56	<42.00	5.85e+02	531.0	508.5	8.65	n/a	5.000		
S561002013		Cl- Direct	ug/mL	98.56	<42.00	5.40e+04	5.40e+04	5.50e+04	0.55	n/a	5.00e-03		
S561002013		Specific Gravity	Sp. G.	98.96	n/a	13.24	15.21	13.23	0.23	n/a	1.00e-02		
S561002013		% Water by TOA using Mettler	%	99.98	n/a	1.358	1.358	1.346	1.19	n/a	1.00e-03		
S561002013		Tot. Inorg. Carbon by Coul.	ug/mL	95.18	1.500	46.72	47.22	46.97	1.06	n/a	n/a		
S561002013		Tot. Inorg. Carbon by Coul.	ug/mL	101.7	4.00e-01	1.500	1.77e+03	1.76e+03	0.57	103.5	15.00		
S561002013		D Iron-TOA ICP-AES DIL.	ug/mL	96.00	<5.00e-01	5.23e+03	5.43e+03	5.34e+03	4.12	n/a	105.0		
S561002013		D Iron-TOA ICP-AES DIL.	ug/mL	97.80	<5.00e-02	5.86e+04	5.86e+04	6.14e+04	9.28	n/a	30.10		
S561002013		D Iron-TOA ICP-AES DIL.	ug/mL	97.80	<5.00e-01	< 30.10	<3.01e1			100.6	30.10		
S561002013		Fluoride by Ion Chromatograph	ug/mL	94.41	<1.30e-02	2.92e+05	2.65e+05	2.78e+05	9.69	n/a	60.10		
S561002013		Fluoride by IC-Dioxex 40001/4500	ug/mL	94.41	<1.30e-02	9.22e+03	<1.33e2			n/a	132.6		
S561002013		Chloride by IC-Dioxex 40001/4500	ug/mL	91.39	<1.70e-02	1.84e+05	9.06e+03	9.14e+03	0.73	n/a	173.4		
S561002013		Bromide by IC-Dioxex 40001/4500	ug/mL	95.62	<1.07e-01	1.64e+05	1.59e+05	1.61e+05	3.10	n/a	1.09e-03		
S561002013		Nitrate by IC-Dioxex 40001/4500	ug/mL	98.21	<1.19e-01	1.44e+05	<1.29e3	n/a	n/a	n/a	1.28e-03		
S561002013		Phosphate by IC-Dioxex 40001/4500	ug/mL	96.34	<1.19e-01	3.51e+05	3.40e+03	3.46e+03	0.08	n/a	1.43e-03		
S561002013		Sulfate by IC-Dioxex40001/4500	ug/mL	97.31	<1.35e-01	2.12e+03	2.21e+03	2.17e+03	4.16	n/a	1.21e-03		
S561002013		Oxalate by IC-Dioxex40001/4500	ug/mL	98.64	<1.05e-01	<1.07e+03	<1.07e3			n/a	1.39e-03		
S561002016		Strontium-89/90 High Level	uCi/mL	97.56	1.00e-03	8.40e-02	7.66e-02	8.08e-02	7.92	n/a	1.07e-03		
S561002016		Pu-239/240 by PU-SPEC Resin	uCi/mL	98.95	<2.90e-04	<3.01e-04	<3.00E-4			n/a	3.11e-05	7.30E-01	
S561002016		Cesium-137 by GEA	uCi/mL	91.98	<6.38e-03	5.31e+02	488.0	n/a	n/a	n/a	3.01e-04	1.00E-02	
S561002016		Am-241 by Extraction	uCi/mL	99.22	<3.92e-05	1.12e-04	1.12e-04	509.5	8.44	n/a	4.41e-05	5.38E+00	

Compatibility Results Final Report
A-101 GRAB

RISE: 4
SEGMENT #: 1A-96-3

SEGMENT PORTION: Centrifuged Solids (Grab Sample)

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S96T002239	A	Silver - ICP-Acid Digest	ug/g	91.00	<1.00e-02	19.20	19.70	19.45	19.45	92.25	5.460	n/a	n/a
S96T002239	A	Aluminum - ICP-Acid Digest	ug/g	92.80	5.40e-01	2.28e+04	2.25e+04	2.26e+04	1.32	93.30	27.30	n/a	n/a
S96T002239	A	Arsenic - ICP-Acid Digest	ug/g	94.80	<1.00e-02	54.60	55.99e1	n/a	n/a	93.40	54.60	n/a	n/a
S96T002239	A	Boron - ICP-Acid Digest	ug/g	99.60	4.74e-01	70.70	81.50	76.10	14.2	93.41	27.30	n/a	n/a
S96T002239	A	Barium - ICP-Acid Digest	ug/g	95.50	<5.00e-02	27.30	<3.00e1	n/a	n/a	93.70	27.30	n/a	n/a
S96T002239	A	Beryllium - ICP-Acid Digest	ug/g	105.0	<5.00e-03	2.730	<3.00e0	n/a	n/a	93.70	27.30	n/a	n/a
S96T002239	A	Bismuth - ICP-Acid Digest	ug/g	91.80	<1.00e-01	54.60	<5.99e1	n/a	n/a	94.80	54.60	n/a	n/a
S96T002239	A	Calcium - ICP-Acid Digest	ug/g	90.00	3.24e-01	5.37e+02	555.0	546.2	3.43	94.99	54.60	n/a	n/a
S96T002239	A	Cadmium - ICP-Acid Digest	ug/g	88.80	<5.00e-03	15.20	19.80	17.50	26.3	90.26	27.30	n/a	n/a
S96T002239	A	Cerium - ICP-Acid Digest	ug/g	98.30	<1.00e-01	54.60	<5.99e1	n/a	n/a	97.90	54.60	n/a	n/a
S96T002239	A	Cobalt - ICP-Acid Digest	ug/g	91.80	<2.00e-02	10.90	<1.20e1	n/a	n/a	92.80	10.90	n/a	n/a
S96T002239	A	Chromium - ICP-Acid Digest	ug/g	94.50	<1.00e-02	2.38e+03	3.17e+03	2.97e+03	37.3	92.00	5.460	n/a	n/a
S96T002239	A	Copper - ICP-Acid Digest	ug/g	90.60	2.50e-02	19.60	18.00	18.80	8.51	92.42	5.460	n/a	n/a
S96T002239	A	Iron - ICP-Acid Digest	ug/g	91.60	<5.00e-02	1.41e+03	1.78e+03	1.60e+03	25.2	108.5	27.30	n/a	n/a
S96T002239	A	Lanthanum - ICP-Acid Digest	ug/g	95.90	<5.00e-01	2.97e+03	2.78e+03	2.88e+03	8.42	80.79	27.30	n/a	n/a
S96T002239	A	Lithium - ICP-Acid Digest	ug/g	99.40	<1.00e-02	27.30	<3.00e1	n/a	n/a	95.40	27.30	n/a	n/a
S96T002239	A	Manganese - ICP-Acid Digest	ug/g	88.30	1.37e-01	1.12e+02	205.0	158.5	58.7	95.80	5.460	n/a	n/a
S96T002239	A	Magnesium - ICP-Acid Digest	ug/g	90.30	<1.00e-02	44.00	68.40	56.30	45.7	88.78	5.460	n/a	n/a
S96T002239	A	Molybdenum - ICP-Acid Digest	ug/g	91.00	<5.00e-02	53.00	68.00	60.00	7.79	91.24	27.30	n/a	n/a
S96T002239	A	Sodium - ICP-Acid Digest	ug/g	104.0	1.210	2.32e+05	2.15e+05	2.14e+05	1.41	n/a	54.60	n/a	n/a
S96T002239	A	Neodymium - ICP-Acid Digest	ug/g	95.90	<1.00e-01	54.60	<5.99e1	n/a	n/a	95.10	54.60	n/a	n/a
S96T002239	A	Nickel - ICP-Acid Digest	ug/g	91.40	<2.00e-02	1.03e+02	34.00	116.5	26.2	92.13	10.90	n/a	n/a
S96T002239	A	Phosphorus - ICP-Acid Digest	ug/g	101.0	<2.00e-01	1.74e+02	1.64e+03	1.69e+03	5.92	96.10	109.0	n/a	n/a
S96T002239	A	Lead - ICP-Acid Digest	ug/g	86.00	<1.00e-01	1.03e+02	10.00	106.5	6.57	88.91	54.60	n/a	n/a
S96T002239	A	Sulfur - ICP-Acid Digest	ug/g	92.40	3.94e-01	6.58e+02	8.07e+03	7.28e+03	21.9	26.66	54.60	n/a	n/a
S96T002239	A	Antimony - ICP-Acid Digest	ug/g	94.20	<5.00e-02	32.80	<3.00e1	n/a	n/a	96.10	32.80	n/a	n/a
S96T002239	A	Selenium - ICP-Acid Digest	ug/g	89.40	<1.00e-01	54.60	<5.99e1	n/a	n/a	89.40	54.60	n/a	n/a
S96T002239	A	Silicon - ICP-Acid Digest	ug/g	123.0	1.80e-01	1.77e+03	2.88e+03	2.30e+03	51.0	132.2	27.30	n/a	n/a
S96T002239	A	Strontium - ICP-Acid Digest	ug/g	94.30	<1.00e-02	54.60	<5.99e1	n/a	n/a	92.60	54.60	n/a	n/a
S96T002239	A	Titanium - ICP-Acid Digest	ug/g	94.30	<1.00e-02	1.24e+02	96.60	110.3	24.8	n/a	5.460	n/a	n/a
S96T002239	A	Thallium - ICP-Acid Digest	ug/g	87.40	<2.00e-01	4.09e+02	<1.20e2	n/a	n/a	86.70	109.0	n/a	n/a
S96T002239	A	Uranium - ICP-Acid Digest	ug/g	93.00	<5.00e-01	4.06e+02	<1.20e2	n/a	n/a	91.36	27.30	n/a	n/a
S96T002239	A	Vanadium - ICP-Acid Digest	ug/g	91.40	<5.00e-02	27.30	<3.00e1	n/a	n/a	91.10	27.30	n/a	n/a
S96T002239	A	Zinc - ICP-Acid Digest	ug/g	87.40	<2.00e-02	21.60	23.40	22.50	8.00	89.92	5.460	n/a	n/a
S96T002239	A	Zinc - ICP-Acid Digest	ug/g	99.40	<1.00e-02	<2.35e+02	<2.56e2	n/a	n/a	107.3	234.8	n/a	n/a
S96T002240	W	Fluoride - IC-Dioxex 4000/14500	ug/g	97.40	<1.00e-02	3.90e+03	3.72e+03	3.81e+03	4.72	80.25	307.0	n/a	n/a
S96T002240	W	Chloride - IC-Dioxex 4000/14500	ug/g	93.42	<1.00e-01	6.37e+04	6.88e+04	6.62e+04	7.70	76.09	1.93e+03	n/a	n/a
S96T002240	W	Nitrite - IC - Dioxex 4000/14500	ug/g	96.90	<1.07e-01	<2.28e+03	<2.49e3	n/a	n/a	96.87	2.28e+03	n/a	n/a
S96T002240	W	Bromide by Ion Chromatograph	ug/g	96.52	<1.28e-01	1.28e+03	<2.49e3	n/a	n/a	96.87	2.28e+03	n/a	n/a
S96T002240	W	Nitrate by IC-Dioxex4000/14500	ug/g	99.84	<1.40e-01	4.45e+03	4.78e+03	4.62e+03	7.15	96.52	2.15e+03	n/a	n/a
S96T002240	W	Phosphate - IC-Dioxex 4000/14500	ug/g	98.35	<1.19e-01	4.45e+03	4.78e+03	4.62e+03	7.15	96.52	2.15e+03	n/a	n/a

WHO-SD-WM-DP-186, REV. 0

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T002240	W	Sulfate by IC-Dionex4000/4500	ug/g	98.89	<1.36e-01	2.00e+04	1.99e+04	2.00e+04	0.50	91.13	2.45e+03	N/A
S96T002240	W	Oxalate by IC - Dionex 4000i	ug/g	100.6	<1.05e-01	1.90e+04	1.68e+04	1.79e+04	12.3	91.07	1.90e+03	N/A

Supernate: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T001833		Volume % Solids	%	N/A	N/A	90.00	N/A	N/A	N/A	N/A	N/A	N/A
S96T002014		DSC Exotherm DRY Calculated	Joules/g DRY	N/A	N/A	89.94	84.99	87.47	5.66	N/A	N/A	N/A
S96T002014		DSC Exotherm on Perkin Elmer	Joules/g	103.8	N/A	47.45	45.03	46.34	5.63	N/A	N/A	N/A
S96T002014		Oil- by Pot. Titration	ug/ml	98.56	<42.00	5.97e+04	5.58e+04	5.78e+04	6.73	N/A	5.00e+03	N/A
S96T002014		% Water by IGA using Mettler	%	100.3	N/A	47.15	46.08	47.02	0.57	N/A	55.00	N/A
S96T002014		Tot. Organic Carbon by Coul.	ug/ml	97.70	3.00e-03	4.58e+03	4.84e+03	4.77e+03	7.97	N/A	3.09e-04	1.17E+01
S96T002014		Pu-239/240 by TRU-SPEC Resin	uCi/ml	98.69	<3.04e-02	3.59e-04	<3.08e-04	N/A	N/A	45.08	53.83	N/A
S96T002014		Fluoride-IC-Dionex 4000i/4500	ug/ml	97.80	<1.30e-02	<5.81	<5.86e-1	1.07e+04	1.87	98.73	70.40	N/A
S96T002014		Chloride-IC-Dionex 4000i/4500	ug/ml	93.54	3.10e-02	1.02e+04	1.08e+04	1.07e+04	1.20	129.2	1.09e+03	N/A
S96T002014		Nitrite-IC - Dionex 4000i/4500	ug/ml	101.3	<1.07e-01	1.56e+03	<5.22e2	N/A	N/A	94.43	521.8	N/A
S96T002014		Bromide by Ion Chromatograph	ug/ml	96.87	<1.26e-01	3.22e+02	1.70e+03	1.70e+03	0.59	96.58	579.7	N/A
S96T002014		Nitrate-IC - Dionex 4000i/4500	ug/ml	95.93	<1.26e-01	1.69e+03	4.22e+03	4.23e+03	0.24	95.80	492.4	N/A
S96T002014		Phosphate-IC-Dionex 4000i/4500	ug/ml	100.4	<1.17e-01	4.23e+03	4.22e+03	4.23e+03	0.24	95.80	492.4	N/A
S96T002014		Sulfate by IC-Dionex4000i/4500	ug/ml	97.15	<1.36e-01	1.92e+03	1.59e+03	1.61e+03	1.87	95.56	562.8	N/A
S96T002014		Oxalate by IC - Dionex 4000i	ug/ml	97.84	<1.09e-01	<4.35e+02	<4.35e2	N/A	N/A	97.25	434.8	N/A

WHC-SD-WM-DP-186, REV. 0

Table 2

DSC Results for Tank 241-A-101
Waste Compatibility Study

Riser 4 April 3, 1996 Sampling Event

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S96T002012						
(1A-96-1)	Samp	85.90	264.4	700.7	107.3	0.12
Supernate	Dup	78.9	258.4	475.1	113.3	0.17
S96T002013						
(1A-96-2)	Samp	99.6	252.9	785.3	119.3	0.13
Supernate	Dup	108.2	257.0	738.9	129.3	0.15
S96T002014						
(1A-96-3)	Samp	47.7	240.2	1285.0	131.7	0.04
Supernate	Dup	45.0	258.2	1343.4	148.1	0.03

Energy Ratio = Exothermic Energy / Endothermic Energy

* - This ratio must be < 1 for Compatibility Energetics

Table 3 (1 of 3)

WASTE COMPATIBILITY CORROSION RULES
Tank 241-A-101

Sample ID	Analyte	Result (ug/mL)	Result (M)		
S96T002012	NO3	2.99E+05	4.823	$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 6.0 \text{ M?}$
	OH	1.45E+04	0.853		
	NO2	4.54E+04	0.987	$1.0 \text{ M} < [\text{NO3}] \leq 3.0 \text{ M?}$	$0.1 \text{ M} \cdot [\text{NO3}] \leq [\text{OH}] \leq 10 \text{ M?}$
				$3.0 \text{ M} \leq [\text{NO3}] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$
				YES	YES
					$\geq 1.2 \text{ M?}$
					YES

Sample ID	Analyte	Result (ug/mL)	Result (M)		
S96T002012D	NO3	2.99E+05	4.823	$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 6.0 \text{ M?}$
	OH	1.40E+04	0.824		
	NO2	4.47E+04	0.972	$1.0 \text{ M} < [\text{NO3}] \leq 3.0 \text{ M?}$	$0.1 \text{ M} \cdot [\text{NO3}] \leq [\text{OH}] \leq 10 \text{ M?}$
				$3.0 \text{ M} \leq [\text{NO3}] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$
				YES	YES
					$\geq 1.2 \text{ M?}$
					YES

WHC-SD-WM-DP-186, REV. 0

WASTE COMPATIBILITY CORROSION RULES
Tank 241-A-101

Sample ID	Analyte	Result (ug/mL)	Result (M)	<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M
S96T002013	NO3	1.44E+05	2.323			
	OH	5.51E+04	3.241			
	NO2	1.84E+05	3.565			
				1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?	>= 0.4 * [NO3]? YES
				YES	YES	
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?	>= 1.2 M?

[illegible]

WHC-SD-WM-DP-186, REV. 0

Table 4

ICP Serial Dilution Results for Tank 241-A-101
Waste Compatibility Study

Riser 4, April 3, 1996 Sampling Event

Sample ID	Analyte	Sample Result (µg/mL) Undiluted	Serial Dilution Result (µg/mL)	RPD
S95T002012				
(1A-96-1)	Al	1.49E+04	1.51E+04	1.3
Supernate				
	Na	1.68E+05	1.71E+05	2.2
S96T002013				
(1A-96-2)	Al	6.44E+04	6.43E+04	0.1
Supernate				
	Na	2.92E+05	2.94E+05	0.8
S96T002239				
(1A-96-3)	Al	1.25E+02	1.29E+02	3.1
Centrifuged Solids				
	Na	1.16E+03	1.21E+03	3.9

RPD (Relative Percent Difference) = $(ABS(\text{Sample} - \text{Serial Dilution})) / ((\text{Sample} + \text{Serial Dilution}) / 2) \times 100$

WHC-SD-WM-DP-186, REV. 0

ATTACHMENT 1

A-101 GRAB SAMPLE BREAKDOWN

WHC-SD-WM-DP-186, REV. 0

THIS PAGE WAS INTENTIONALLY LEFT BLANK

Attachment 1

A-101 GRAB SAMPLE BREAKDOWN

Riser 4

WHC-SD-WM-DP-186, REV. 0

204 in.

1A-96-1

S96T001831



BREAKDOWN:
APPEARANCE
VOL. % SOLIDS

S96T002012
DSC
TGA
TOC
TIC
ICP: Al, Fe, Na
IC: anions
pH
CH
Sp.G
NH3
DOSE-01



S96T002015
GEA: Ca137
Pu-239/240
Sr-90
Am-241
DOSE-01

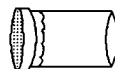


S96T002018
ARCHIVE

458 in.

1A-96-2

S96T001832



BREAKDOWN:
APPEARANCE
VOL. % SOLIDS

S96T002013
DSC
TGA
TOC
TIC
ICP: Al, Fe, Na
IC: anions
pH
CH
Sp.G
NH3
DOSE-01



S96T002016
GEA: Ca137
Pu-239/240
Sr-90
Am-241
DOSE-01

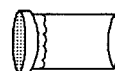


S96T002019
ARCHIVE

546 in.

1A-96-3

S96T001833



BREAKDOWN:
APPEARANCE
VOL. % SOLIDS

S96T002014
DSC
TGA
TOC
IC: anions
CH
Pu-239/240
DOSE-01



S96T002020
ARCHIVE



DOSE-01

S96T002238



ACID DIGEST
ICP: Al, Fe, Na
DOSE-02



H2O DIGEST
IC: Anions
DOSE-02

S96T002239

S96T002240

WHC-SD-WM-DP-186, REV. 0

ATTACHMENT 2

HEATING/COOLING TESTS OF 241-A-101 GRAB SAMPLES

**Westinghouse
Hanford Company**

WHC-SD-WM-DP-186, REV. 0

**Internal
Memo**

From: Process Chemistry and Statistics 75764-PCS96-051
Phone: 376-3753 R2-12
Date: May 29, 1996
Subject: HEATING/COOLING TESTS OF 241-A-101 GRAB SAMPLES

To: J. G. Field R2-12

cc: T. M. Blaak S5-13 J. W. Hunt R2-12
J. R. Jewett T6-09 J. M. Jones S5-13
J. G. Kristof R2-12 F. H. Steen T6-06
T. C. Tribble S7-07
MAB/LB

- 1) Internal Memo, J. G. Field to M.A. Beck, LETTER OF INSTRUCTION FOR NON-ROUTINE ANALYSIS OF SINGLE-SHELL TANK 241-A-101 GRAB SAMPLES, May 16, 1996, 79200-96-008.
- 2) Controlled Laboratory Notebook, WHC-N-120-6, M. A. Beck, 1993, pp 123-126
- 3) Controlled Laboratory Notebook, WHC-N-120-6, M. A. Beck, 1993, pg 111 and 117.

INTRODUCTION:

This report answers a request (Reference 1) for non-routine analysis for three grab samples taken from tank 241-A-101 (A-101). The analyses were requested by the Compatibility Program due to the indication of the formation of solids in the A-101 grab samples after sampling. As communicated to the author, the samples were originally described (as taken at the tank farm) as "supernate", while observations at 222-S indicated significant solids. This test was intended to discover if the difference was due to temperature differences between the tank and ambient laboratory temperature.

Analyses were conducted separately on sample numbers 1A-96-1, 1A-96-2, 1A-96-3. The analyses consisted of observing the visual characteristics of the sample while heating the samples to boiling. Temperature and time were recorded for each observation. The observations were recorded in a controlled laboratory notebook (Reference 2). Temperature and pressure calibrations were done previously for another project and are documented in Reference 3.

J. G. Field
Page 2
May 16, 1996

OBSERVATIONS:

The following observations are near verbatim quotes from Reference 2. Note that at no time did the opaque samples become clear.

Sample 1A-96-1

Jar# 9767, 40 mL thin archive jar

Temperature (°C)	Time (PST)	Observations:
		Ambient: 25.8 °C Initial sample condition: full 40 mL vial clear solution except ~2 mL or less fine gray precipitate packed in one "corner" of the bottom of the vial. After shaking sample solution is slightly turbid but still transparent.
27.8	1305 5/20/96	746 torr ambient pressure, heater on "low"
31.9	1322	changed heater setting to 1.5
43.0	1342	beginning of clearing
49.1	1405	can see lettering on back of flask, dimly, heater setting to 2
60.8 =153 °F	1422	not much change
74.3	1442	no change - heater to setting 3
94.6	1452	no change
104.2	1505	745 torr - heater set to 4, no boiling evident, some small dark particles floating on surface of liquid, some evaporation and condensation
109.7	1510	Boiling, removed heat ~ 1511
89.7	1520	no change
72.9	1526	no change
60.5	1532	no change
46.5	1545	perhaps slightly cloudier than previous observations.
39.7	1555	no change stirrer left on overnight
27.9	0800 5/21/96	perhaps even clearer than the start returned sample to jar 9767

This sample was clear enough at the start that determining any dissolution or precipitation would have been quite difficult.

J. G. Field
Page 3
May 16, 1996

79200-96-008

Sample 1A-96-2
Jar# 9768 40 mL thin archive vial.

Temperature (°C)	Time (PST)	Observations:
		Ambient: Initial sample condition: In vial prior to shaking the sample is 1/2 clear liquid and 1/2 grey solids with darker salt grain sized particles embedded within it. After shaking: all grey suspension, with some non-suspendable solids at bottom. Used small 70 ml thin flask.
25.3	0900 5/21/96	Start 1/2 dark suspension, 1/2 lighter solids at bottom, stirrer working, but crowded to one side of flask. Heater at 2, stirrer at 3.5 40 mL total volume, ~15 mL solids.
56.6	0912	stir bar not visible, no change otherwise.
70.8	0916	Localized boiling at bottom of flask, no change otherwise.
89.2	0920	stirrer at setting 6 (of 7), stirring (blending) seen.
107*	0927	solids 10 mL volume, the dark particles retain their shape, size.
125*	0940	stirring seen at bottom only, heat to 2.5
127*	0945	even boiling on bottom
119	0950	stirring active from bottom to 20 mL mark
121	1000	stirring active to 35 mL mark, still milkshake consistency, slight froth on top (5mL volume)
123.8	1010	boiling lightly, foam is dense, looks like Guinness Extra Stout(tm), but gray. 739 torr.
125.0	1030	heater off, 30mL homogenous "milkshake".
110	1040	10 mL foam, 10mL dark liquid, ~15 mL light liquid
82.9	1048	10 mL foam, 20mL dark liquid, 20 mL light liquid
71.9	1055	same, stir bar not obstructed.
56.6		Same.
29.5		Same layer look, light colored solid interspersed with dark layer. Returned sample to jar 9768. On cleanup, residue washed away easily with cold water.
	5/22/96	Upper portion of material in jar 9768 clearing, but still quite turbid.

* Temperatures suspect due to low stirring efficiency.

Sample 1A-96-3

Original sampling jar 125 mL wide mouth, white plastic top with ID#

Temperature (°C)	Time (PST)	Observations:
		Ambient:28.0 Initial sample condition: Thick, firm, moist, granular, homogenous gray sludge. Holds shape well but does liquify enough to drip off a shaken spatula. Using 100 mL flask for this run due to the stiffness of the sample and the consequent need for a large stir bar.
28.2	0835	start, stir bar at setting 4 and is moving, but moving erratically over obstacles. Heater on low.
33.3	0844	stir bar has liquified 1/2 of sample. The rest is out of the range of the stirrer. Color grey, opaque.
44.1		no change
50.9		no change
55.8	0924	Moved spinning stir bar around in the flask. It removed clumps remaining on sides of flask, now essentially whole sample is a fluid slurry.
62.3	0947	heater to 1.5, no change
66.1	0953	no change, still very fluid
83.2	1010	no change, heater to 2
94.5	1025	no change- some condensate above sample
102.3	1035	no change, no boiling, heater to 2.5
126.4	1040	Boiling lightly, 742 torr, turned heat off. light colored solids moving with liquid.
78.9	1052	no change, still very fluid.
72.2	1055	no change
53.3	1105	no change, still very fluid.
42.2	1120	no change
35.6	1140	no change
29.7	1420	some solids packed on side away from stir bar. Solids darker than still-liquid portion.

J. G. Field
Page 5
May 16, 1996

WHC-SD-WM-DP-186, REV. 0

79200-96-008

RESULTS:

It is clear that the samples do not show a strong correlation between solubility and temperature. At no time did the samples become significantly less opaque, or show a dissolution of solids. A small amount of dissolution of the solids may not have been observed due to the opacity of samples 1A-96-2 and -3. However, no change in the turbidity of sample 1A-96-1 was seen, so even the small amount of solids in this sample did not dissolve. The solid portion of the samples did show a tendency to become suspended on shaking or stirring. The very high boiling temperatures observed indicates concentrated solution. Even at boiling, the samples showed some macroscopic solids, and microscopic solids (as evidenced by the visual opacity).

CONCLUSIONS:

The project coordinator described the question posed by these samples as a discrepancy between the sampling report and the laboratory observations of the samples. The two hypothesis that fit the data at hand are: 1) there is a misunderstanding on the descriptive terminology used, 2) the samples observed in the hot cells are misidentified.

I consider hypothesis 1 the most likely, as it is easy for one person to associate the word "supernate" with "liquid" and another to associate "supernate" with "clear liquid". The author not having seen the various tank sampling and lab receipt reports, this hypothesis seems the most likely. A sample must be at least somewhat fluid for the grab sampling technique to work correctly.

Hypothesis 2 is repudiated at least for 1A-96-3 by the jar containing it (an original sampling jar).

If there are any questions about this report, please call me at 373-2182.



Mark A. Beck
Senior Chemist
Process Chemistry and Statistics

mab

WHC-SD-WM-DP-186, REV. 0

CHAIN OF CUSTODY FORMS

WMC-SD-WM-DP-186, REV. 0

THIS PAGE WAS INTENTIONALLY LEFT BLANK

COPY

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

Shipment Number 200E-07-TF (2) Sample Number 1A-96-1 (3) Supervisor James Sackels

Tank A-101 (5) Riser 4 (6) Cask/PIG Shipping Container Serial Number _____

Lab Survey Data For Cask/PIG:

(7) FIELD	(8) SHIPMENT DESCRIPTION
Over Top Dose Rate <u>0.5 m/s/hr</u>	A. Work Package Number <u>E5-95-20646</u>
Side Dose Rate <u>1 m/s/hr</u>	B. Cask/PIG Seal Number <u>1964</u>
Bottom Dose Rate <u>0 m/s/hr</u>	C. Date and Time Sample <u>4-3-96 1155-</u>
Seizable Contamination <u>20.0</u> (Alpha)	D. Expected Liquid Content <u>100%</u>
<u>21K</u> (Beta-Gamma)	E. Expected Solid Content <u>0%</u>
RCF* <u>R. Guder</u> (Signature)	F. Dose Rate Through Drill String (Auger/On Contant (ORAB)) <u>500 c/hr (Auger): 700 c/hr</u>
RCF* <u>J. Guder</u> (Signature)	G. Expected Sample Length (Auger/) Volume (ORAB) <u>125 m</u>

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

WHC-SD-WM-DP-186, REV. 0

Field Comments

(52) Laboratory Comments

Point of Origin <u>A-101</u>	(12) Destination <u>2225</u>	(14) Sender Name (Sign and PRINT) <u>James Sackels</u>	(16) Sender Comments <u>4-4-96</u>
Received By (Sign and PRINT) <u>James Sackels</u>	(18) Date/Time <u>4-4-96</u>	(20) Receiver Comments	(22) Receiver Comments
Received By (Sign and PRINT) <u>James Sackels</u>	(20) Date/Time <u>4-4-96</u>	(24) Receiver Comments	(26) Receiver Comments
Received By (Sign and PRINT) <u>James Sackels</u>	(24) Date/Time <u>4-4-96</u>	(28) Receiver Comments	

(28) Seal Date Consistent with the Received?

Sample No.

Yes ☒ No ☐

INSTRUCTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldens - Tank Farm Operations.

9C-0001-328 (01/88)

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

COPY

Shipment Number: 200E-07-TF (12) Sample Number: 1A-96-2 (13) Supervisor: JAMES SICKEL

Tank: 4-101 (5) Riser: 4 (6) Cast/PTG Shipping Container Serial Number: _____

(16) Field Survey Data for Cast/PTG:		(17) FIELD		(18) LABORATORY		(19) Shipment Description	
Over Top Dose Rate	<u>1</u>			A. Work Package Number	<u>ES-95-00646</u>		
Side Dose Rate	<u>3</u>			B. Cast/PTG Seal Number	<u>1965</u>		
Bottom Dose Rate	<u>1.5</u>			C. Date and Time Sample	<u>4-3-96 1235</u>		
Smearable Contamination	<u>2.00</u>			Removed from Tank	<u>80%</u>		
	<u>2.1K</u>			D. Expected Liquid Content	<u>20%</u>		
				E. Expected Solid Content	<u>2.5 g/m³</u>		
				F. Dose Rate Through Drill String (Auger/On Contact (RPA))	<u>2.5 g/m³</u>		
				G. Expected Sample Length (Auger/Volume (RPA))	<u>120 M L</u>		

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

12

WHC-SD-WM-DP-186, REV. 0

(20) Field Comments		(21) Laboratory Comments	
CHUNK SEEN IN BOTTLE LIQUID LIGHT GREEN COLOR			

(11) Point of Origin	(12) Destination	(13) Transfer Name (Sign and PRINT)	(14) Date/Time	(15) Transfer Comments
A-101	2225	James Sickel	4-4-96	
Relinquished By (Sign and PRINT)		Christie S Parker	4-4-96	
Relinquished By (Sign and PRINT)		Christie S Parker	4-4-96	
Relinquished By (Sign and PRINT)		N L APIERS	4-4-96	
Relinquished By (Sign and PRINT)				

(16) Seal Intact Upon Release?	(17) Seal Intact Upon Receipt?	(18) Seal Data Consistent with the Receipt?
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

Shipment No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No

TRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Waste Tank Sampling Goldened - Tank Farm Operations.

BC-0001-326 (01/86)

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(3) Supervisor

(b) Cook/PIG Shipping Container Serial Number

311 LABORATORY

02

25

215

130 Dem

11. 1000 (1000)

<K> Open

DD Brasil
(Beta-Gamma)

(Signature)

1

INFORMATION (Include statement of laboratory tests to be performed)

13

Field Comments		(32) Laboratory Comments	
Point of Origin A-101	(12) Destination 222S	(24) Sender Name (Given and Surname) Franklin James Sackett	(14) Date 4-4-56
(30) Remarks (Refer to Remarks) Sample Looks Muddy		(16) Sender Comments	

Field Comments	(32) Laboratory Comments

Sample Looks Muddy.

Point of Origin	(12) Description	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
A-101	Z Z S	George Lloyd James Sackels	1948 Dec 20 4-4-96	
		Not received by (SIGN and PRINT)	1948 Dec 20 4-4-96	
	James Sackels	Muriel Sackels Christine Parker	1948 Dec 20 4-4-96	
		Not received by (SIGN and PRINT)		
	James Sackels	Christine Parker	1948 Dec 20 4-4-96	
		Not received by (SIGN and PRINT)		
	Christine Parker	Christine Parker	1948 Dec 20 4-4-96	
		Not received by (SIGN and PRINT)		

(1d) Seal Intact Upon Release?	(2g) Seal Intact Upon Receipt?
--------------------------------	--------------------------------

(30) Said Data Consistent with this Demand?

Yes	No	Yes	No
☒	☐	☒	☐

Shipment No.

Send No. _____

Sample No.

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Warts Tank Sampling Goldenrod - Tank Farm Operations.

Goldenrod - Tent Farm Operations.

1

NO. 0001-112

BC-0001-328 (01/2009)

WHC-SD-WM-DP-186, REV. 0

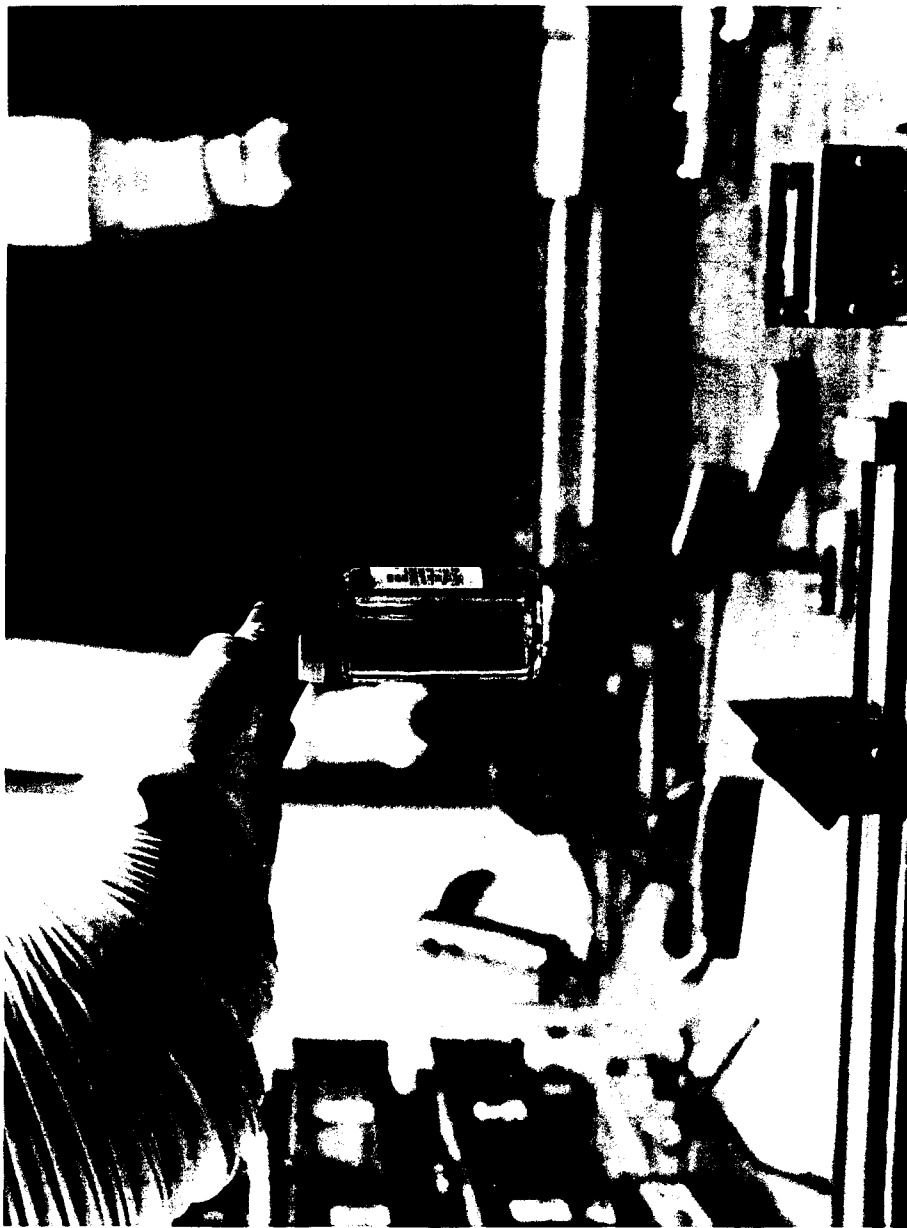
PHOTOGRAPHS

WHC-SD-WM-DP-186, REV. 0

THIS PAGE WAS INTENTIONALLY LEFT BLANK

4-18-96

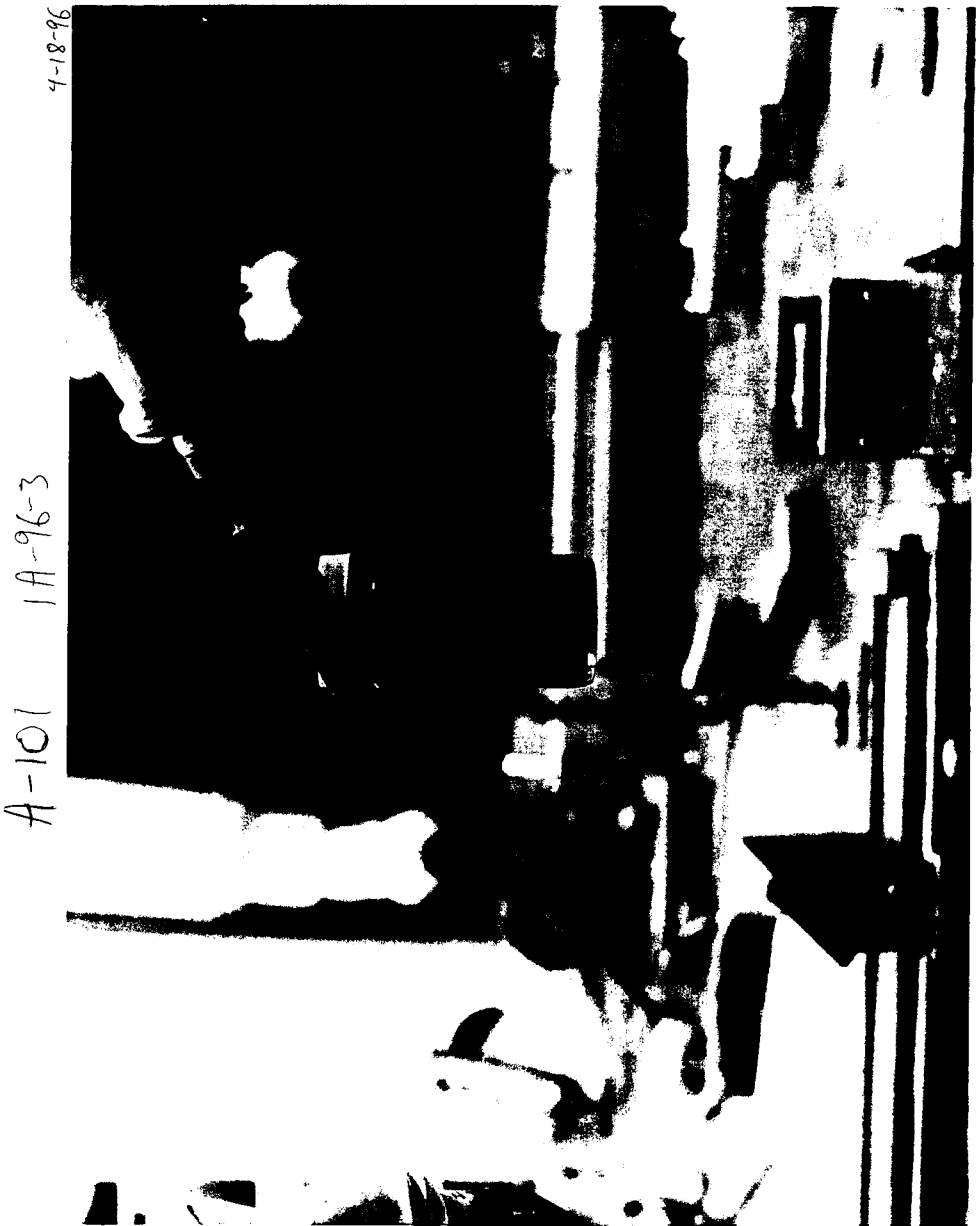
A-101 1A-96-1



4/18/96

A-101 1A-96-2





WHC-SD-WM-DP-186, REV. 0

SAMPLE PREPARATIONS

WHC-SD-WM-DP-186, REV. 0

THIS PAGE WAS INTENTIONALLY LEFT BLANK

LABCORE Data Entry Template for Worklist#

8286

Analyst: QAM Instrument: H2001 SW6355 Book # _____

Method: LA-504-101 Rev/Mod E-0

Worklist Comment: A-101 GRAB 1A-96-3 H2ODIG01 SKB

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			H2001G01	SOLID	<u>1</u>	<u>100</u>	N/A	g/L
96000459	A-101 GRAB	2 SAMPLE	S96T002240 0 W		H2001G01	SOLID	N/A	<u>5.5920</u>		g/L
96000459	A-101 GRAB	3 SAMPLE	S96T002240 0		DOSE-02	SOLID	N/A	<u>25</u>		mrad/hour
96000459	A-101 GRAB	4 DUP	S96T002240 0 W		H2001G01	SOLID	<u>5.5920</u>	<u>5.1190</u>	N/A	g/L
96000459	A-101 GRAB	5 DUP	S96T002240 0		DOSE-02	SOLID	<u>25</u>	<u>25</u>	N/A	mrad/hour

Final page for worklist #

8286

Analyst Signature QAM Date 5-16-96

Analyst Signature Susan Bee Date 5/17/96

596T002238 → 596T002240

Data Entry Comments:

Reviewed by PKH
5/17/96

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#

8285

Analyst: QAM Instrument: ACD01 SN116355 Book # _____Method: LA-505-159 Rev/Mod 0-0

Worklist Comment: A-101 GRAB 1A-96-3 ACIDIG01 SKB

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			ACIDIG01	SOLID	<u>1</u>	<u>.050</u>	N/A	g/L
		2 STD-PREP			ACIDIG01	SOLID	<u>20</u>	<u>20</u>	N/A	g/L
96000459	A-101 GRAB	3 SAMPLE	S96T002239	0 A	ACIDIG01	SOLID	N/A	<u>5.4960</u>		g/L
			<u>-2748g</u>							
			<u>→ .0500</u>							
96000459	A-101 GRAB	4 SAMPLE	S96T002239	0	DOSE-02	SOLID	N/A	<u>40</u>		mrad/hour
96000459	A-101 GRAB	5 DUP	S96T002239	0 A	ACIDIG01	SOLID	<u>5.4960</u>	<u>5.0000</u>	N/A	g/L
			<u>-2503g</u>							
			<u>→ .0500</u>							
96000459	A-101 GRAB	6 DUP	S96T002239	0	DOSE-02	SOLID	<u>40</u>	<u>50</u>	N/A	mrad/hour
96000459	A-101 GRAB	7 SPK	S96T002239	0 A	ACIDIG01	SOLID	<u>20</u>	<u>20</u>	N/A	g/L
			<u>-2606g</u>							
			<u>→ .0500</u>							
96000459	A-101 GRAB	8 SPK	S96T002239	0	DOSE-02	SOLID	<u>NA</u>	<u>35</u>	N/A	mrad/hour

Final page for worklist #

8285

Analyst Signature

Date

Analyst Signature

Date

596T002238 → 596T002239

Data Entry Comments:

~~Samples were not homogenized~~ QAM 5-15-96

<170 solids

Reviewed by PK Fuller
5/17/96Units 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-186, REV. 0

INORGANIC ANALYSES

WHC-SD-WM-DP-186, REV. 0

THIS PAGE WAS INTENTIONALLY LEFT BLANK

LABCORE Data Entry Template for Worklist#

8228

Analyst: PJM Instrument: DSC0 3 Book # 12N14B

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

Worklist Comment: A-101 Grab. Run under nitrogen. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	28.45	29.54	N/A	Joules/g
96000459	A-101 GRAB	2 SAMPLE	S96T002014	0	DSC-03	LIQUID	N/A	45.03	47.65	Joules/g
96000459	A-101 GRAB	3 DUP	S96T002014	0	DSC-03	LIQUID	45.03	47.65	N/A	Joules/g

Final page for worklist #

8228

See Attached for Signatures

Analyst Signature

Date

Analyst Signature

Date

Validated by HAnastn 5-15-96

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.

LABCORE Data Entry Template for Worklist#

8228

Analyst: Pat McCorn Instrument: DSC0 3 Book # 12 N14B

Method: LA-514-¹¹⁴~~115~~ Rev/Mod C-1
Qfm 5/12/96

Worklist Comment: AY-101 Grab. Run under nitrogen. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID			N/A	Joules/g
96000459	A-101 GRAB	2 SAMPLE	S96T002014	0	DSC-01	LIQUID	N/A			Joules/g
96000459	A-101 GRAB	3 DUP	S96T002014	0	DSC-01	LIQUID			N/A	Joules/g

Final page for worklist #

8228

Pat McCorn 5/12/96
Analyst Signature Date

Analyst Signature Date

Other Instrument was used.

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.

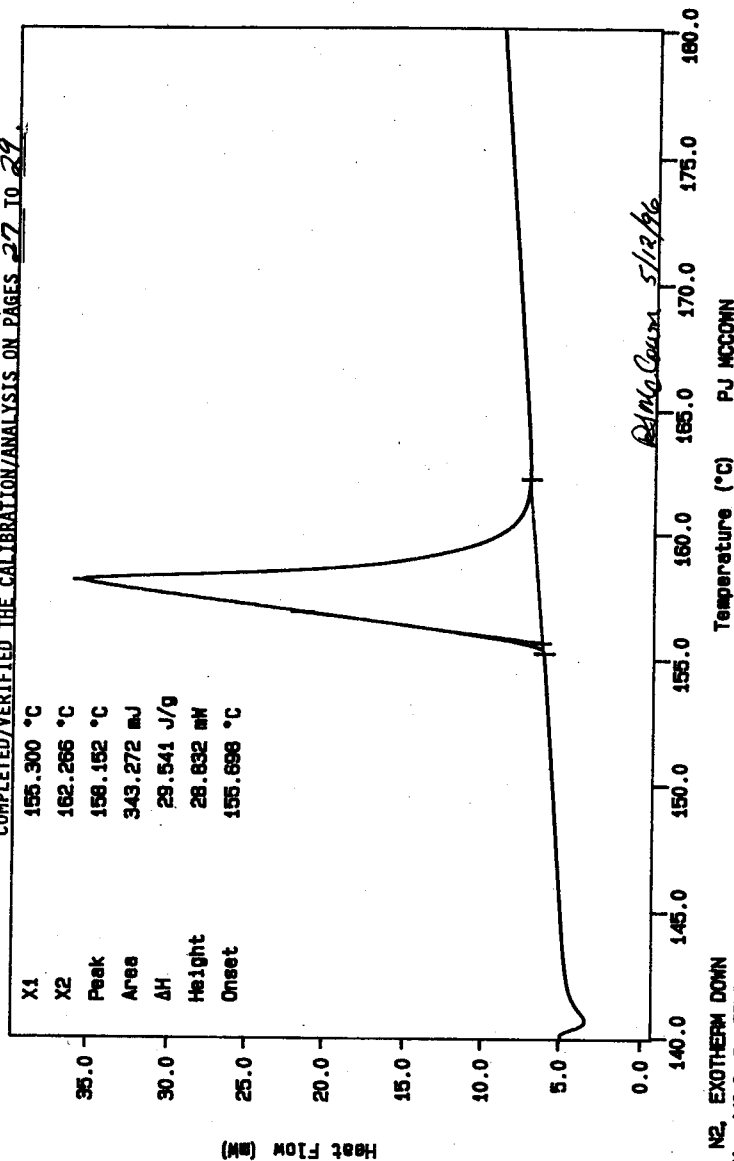
Curve 1: DSC

File Info: IND051202 Sun May 12 21:18:35 1996

Sample Weight: 11.620 mg

12N14-B INDIUM AT 10C/MIN

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 27 TO 29.



N2, EXOTHERM DOWN

TIME: 120.88

0.0 min RATE: 10.0 °/min

Temperature (°C)

PJ MCCOY
PERKIN-ELMER
7 Series Thermal Analysis System
Sun May 12 21:23:14 1996

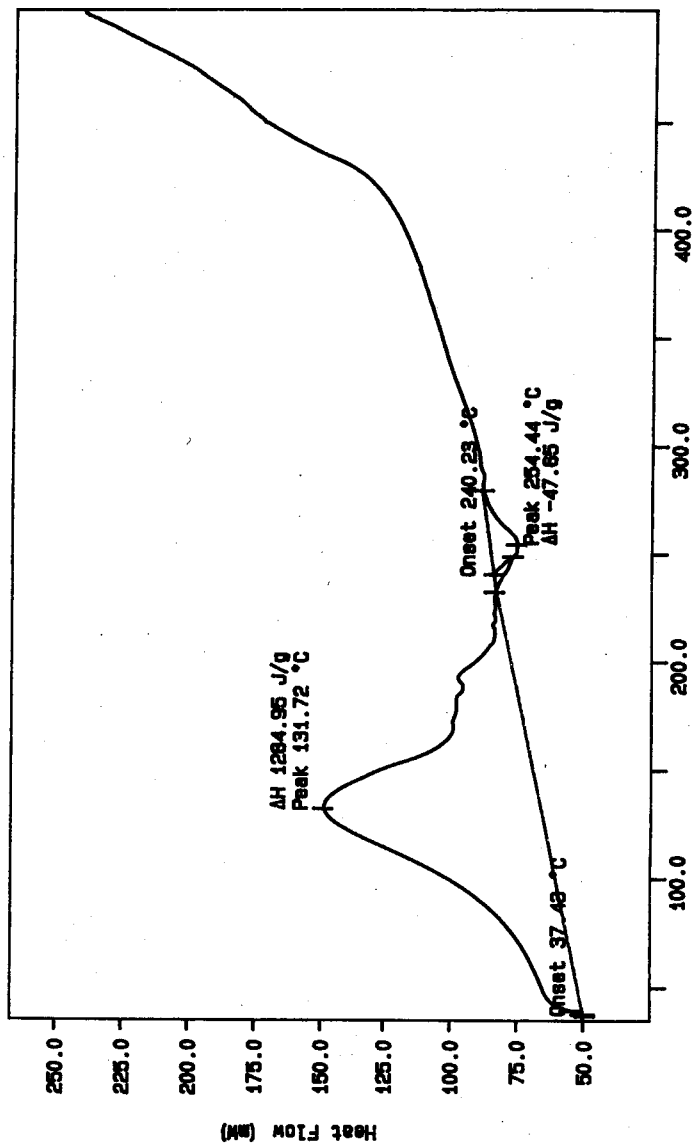
Curve 1: DSC

File Info: SAN051210 Sun May 12 22:24:20 1996

Sample Weight: 28.870 mg

896T002014

WHC-SD-WM-DP-186, REV. 0



exotherm down, N2 purge gas

TIME 33.88 TRIMS 0.0 min RATE 10.0 °C/min

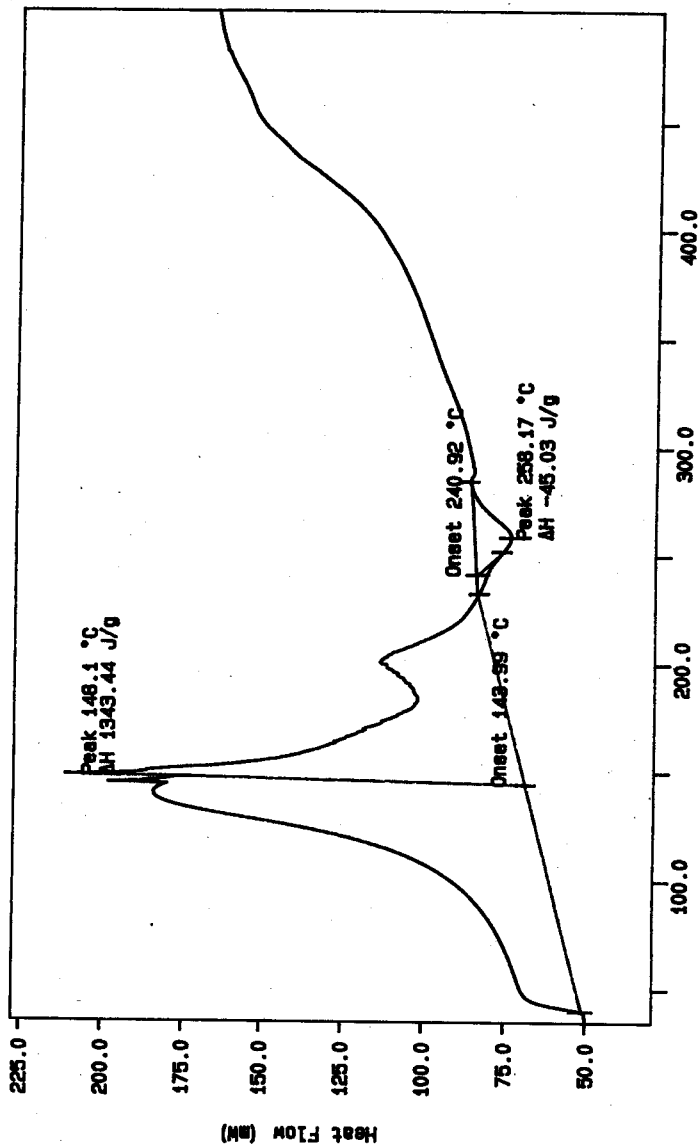
PJ MCCOY
PERKIN-ELMER
7 Series Thermal Analysis System
Sun May 12 22:25:47 1996

Curve 1: DSC

File Info: SAN051211 Sun May 12 23:18:37 1996

Sample Weight: 35.020 mg

S96T002014 DUP



exotherms down, N2 purge gas

TEMP: 55.8 °C TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

PJ MCCOY
PERKIN-ELMER

7 Series Thermal Analysis System
Mon May 13 00:18:08 1996

LABCORE Data Entry Template for Worklist#

8379

Analyst: ABO Instrument: DSCO Book # 12N14-BZ^{ANT}

Method: LA-514-113 Rev/Mod C-1

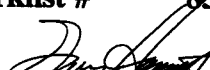
Worklist Comment: A-101. Run under nitrogen. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID	28.45	31.6	N/A	Joules/g
96000459	A-101 GRAB	2 SAMPLE	S96T002012 0		DSC-01	LIQUID	N/A	85.9		Joules/g
96000459	A-101 GRAB	3 DUP	S96T002012 0		DSC-01	LIQUID	85.9	78.9	N/A	Joules/g
96000459	A-101 GRAB	4 SAMPLE	S96T002013 0		DSC-01	LIQUID	N/A	99.6		Joules/g
96000459	A-101 GRAB	5 DUP	S96T002013 0		DSC-01	LIQUID	99.6	108.2	N/A	Joules/g

Final page for worklist #

8379


Analyst Signature Date 5-12-96


Analyst Signature Date 5-13-96

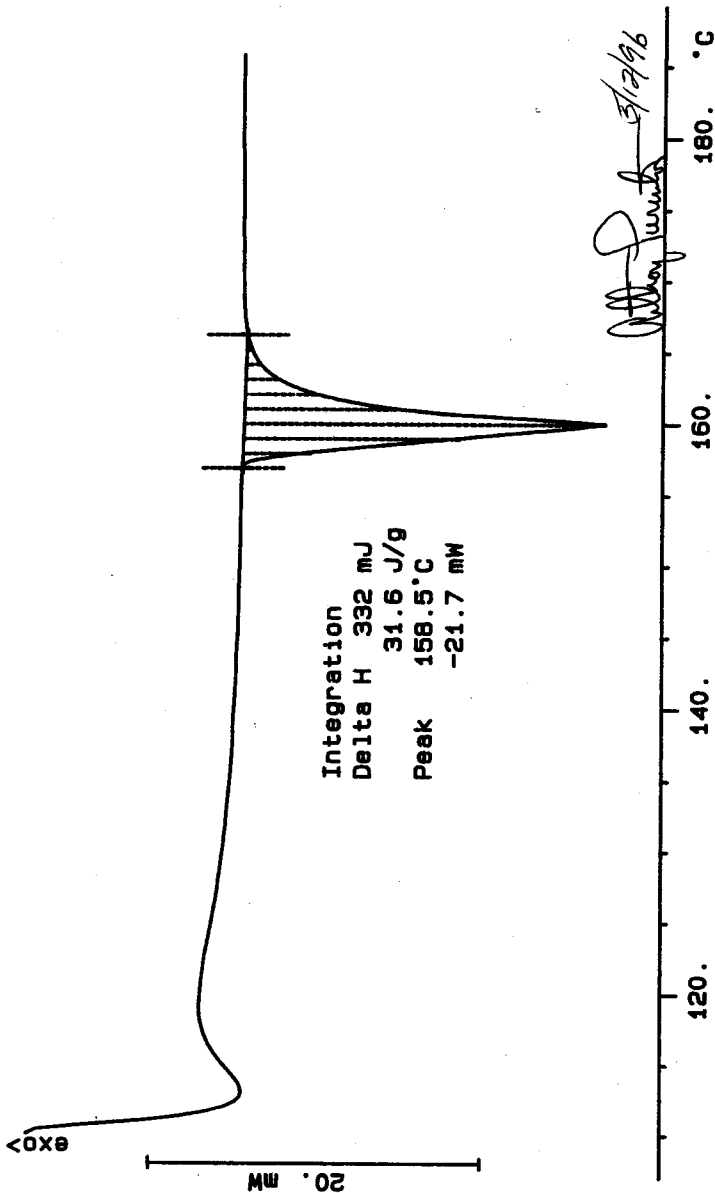
Validated by JAnashin 5-14-96

Data Entry Comments:

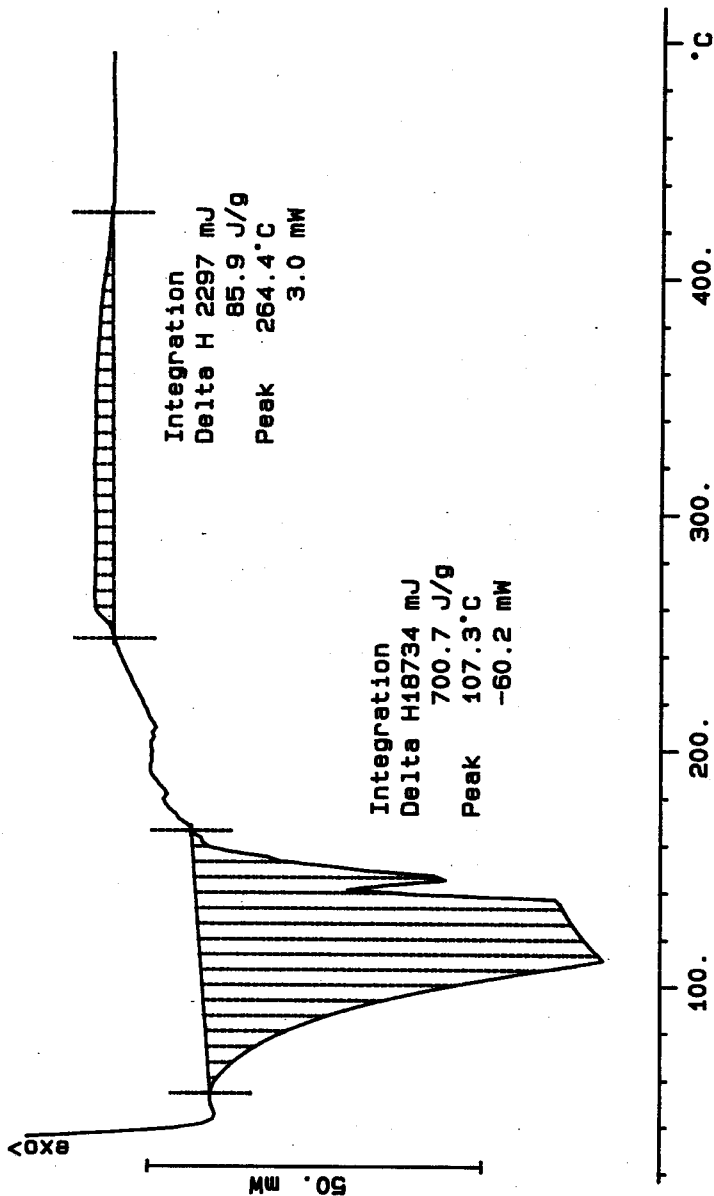
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

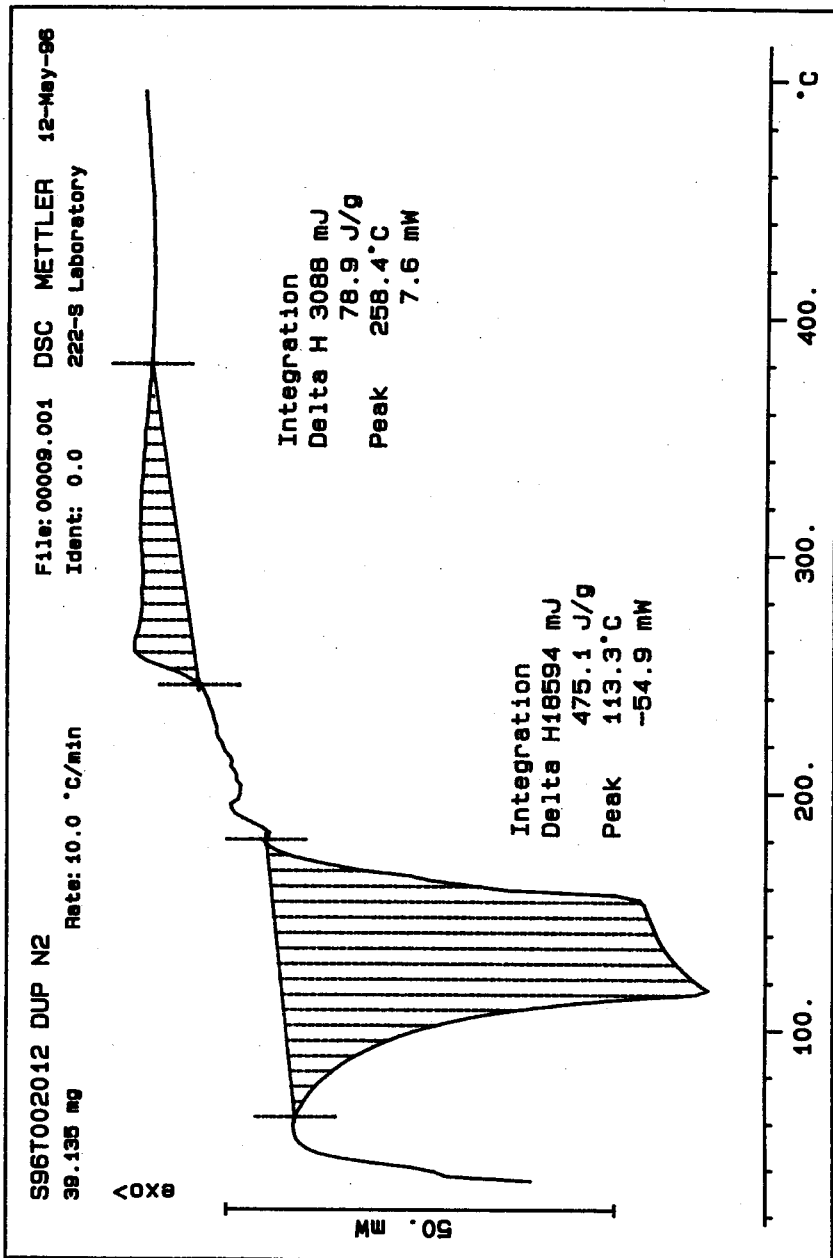
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 31 TO 35.

DSC STD 12N14-B N2 Rate: 10.0 °C/min File: 00007.001 DSC METTLER 12-May-98
10.500 mg Ident: 0.0 222-S Laboratory

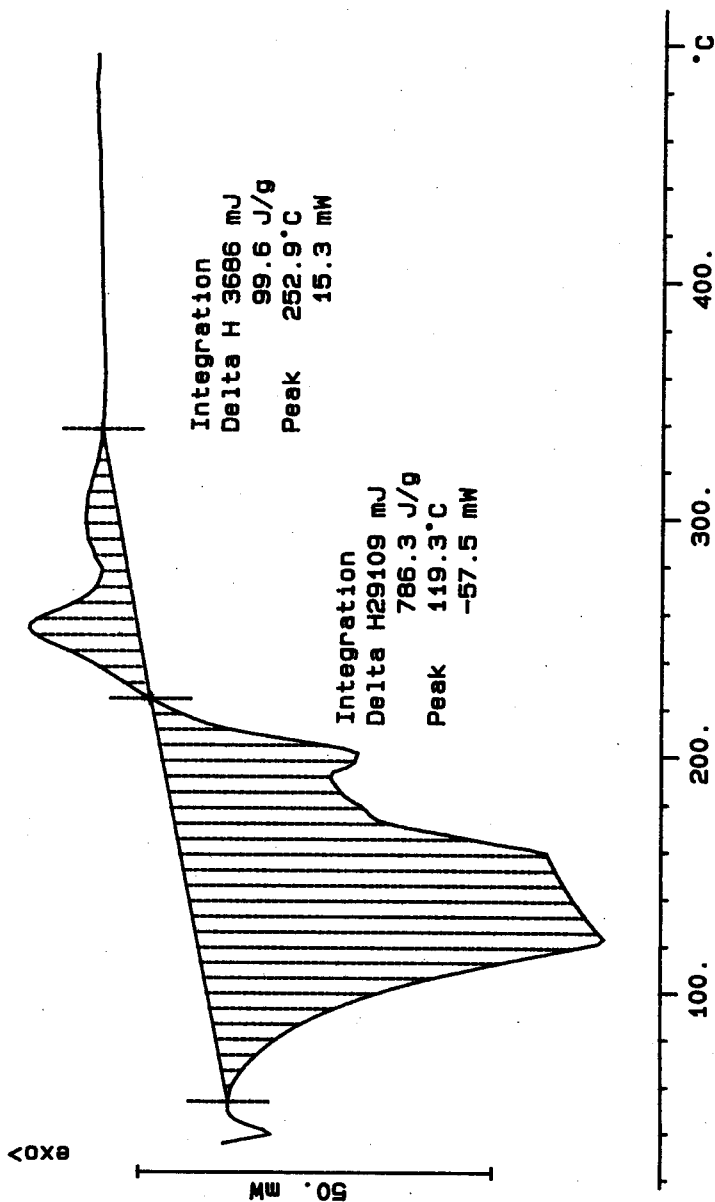


S96T002012 SAM N2
 26.734 mg
 Rate: 10.0 °C/min
 File: 00008.001 DSC METTLER 12-May-86
 Ident: 0.0 222-8 Laboratory



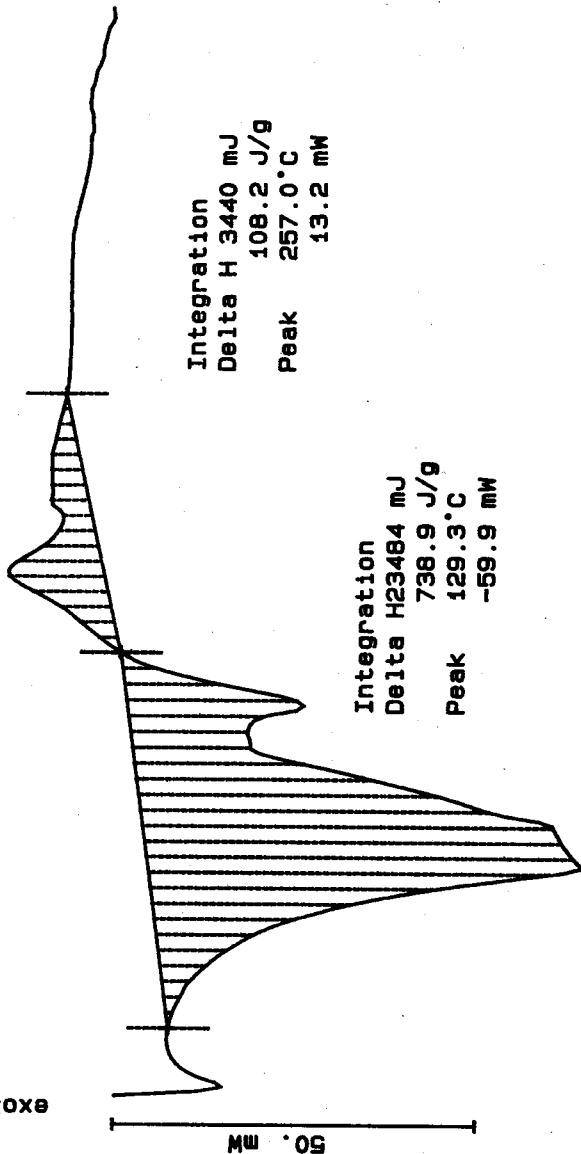


S96T002013 SAM N2
37.020 mg
Rate: 10.0 °C/min
File: 00010.001
Ident: 0.0
DSC METTLER 12-May-86
222-S Laboratory



S96T002013 DUP N2
 31.785 mg
 Rate: 10.0 °C/min
 File: 00011.001 DSC METTLER 12-May-96
 Ident: 0.0 222-S Laboratory

exo



50. mW

100. 200. 300. 400. °C

Analyst: BDV Instrument: DSC01 Book #

Method: LA-514-113 Rev/Mod

Worklist Comment: Dry DSC for A-101. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
96000459	A-101 GRAB	1 SAMPLE	S96T002012	0	DSC-02	LIQUID	<u>N/A</u>	<u>152.8</u>		Joules/g Dry
96000459	A-101 GRAB	2 DUP	S96T002012	0	DSC-02	LIQUID	<u>152.8</u>	<u>140.3</u>	<u>N/A</u>	Joules/g Dry
96000459	A-101 GRAB	3 SAMPLE	S96T002013	0	DSC-02	LIQUID	<u>N/A</u>	<u>187.8</u>		Joules/g Dry
96000459	A-101 GRAB	4 DUP	S96T002013	0	DSC-02	LIQUID	<u>187.8</u>	<u>204.0</u>	<u>N/A</u>	Joules/g Dry
96000459	A-101 GRAB	5 SAMPLE	S96T002014	0	DSC-02	LIQUID	<u>N/A</u>	<u>84.99</u>		Joules/g Dry
96000459	A-101 GRAB	6 DUP	S96T002014	0	DSC-02	LIQUID	<u>84.99</u>	<u>89.94</u>	<u>N/A</u>	Joules/g Dry

Final page for worklist #

9186

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist#

8225

Analyst: SMF Instrument: TGA0 1 Book # 82N8N

Method: LA-560-112 Rev/Mod

B-1

WHC-SD-WM-DP-186, REV. 0

Worklist Comment: AY-101 Grab. Run under nitrogen. new

LAD 6-4-96

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID	<u>59.2</u>	<u>59.37</u>	<u>N/A</u>	<u>x</u>
96000459	A-101 GRAB	2 SAMPLE	S96T002014	0	TGA-01	LIQUID	<u>N/A</u>	<u>47.15</u>		<u>x</u>
96000459	A-101 GRAB	3 DUP	S96T002014	0	TGA-01	LIQUID	<u>47.15</u>	<u>46.88</u>	<u>N/A</u>	<u>x</u>

Final page for worklist #

8225

Analyst Signature

Date

5-4-96

Analyst Signature

Date

5-8-96

Validated by Hanastos 58-96

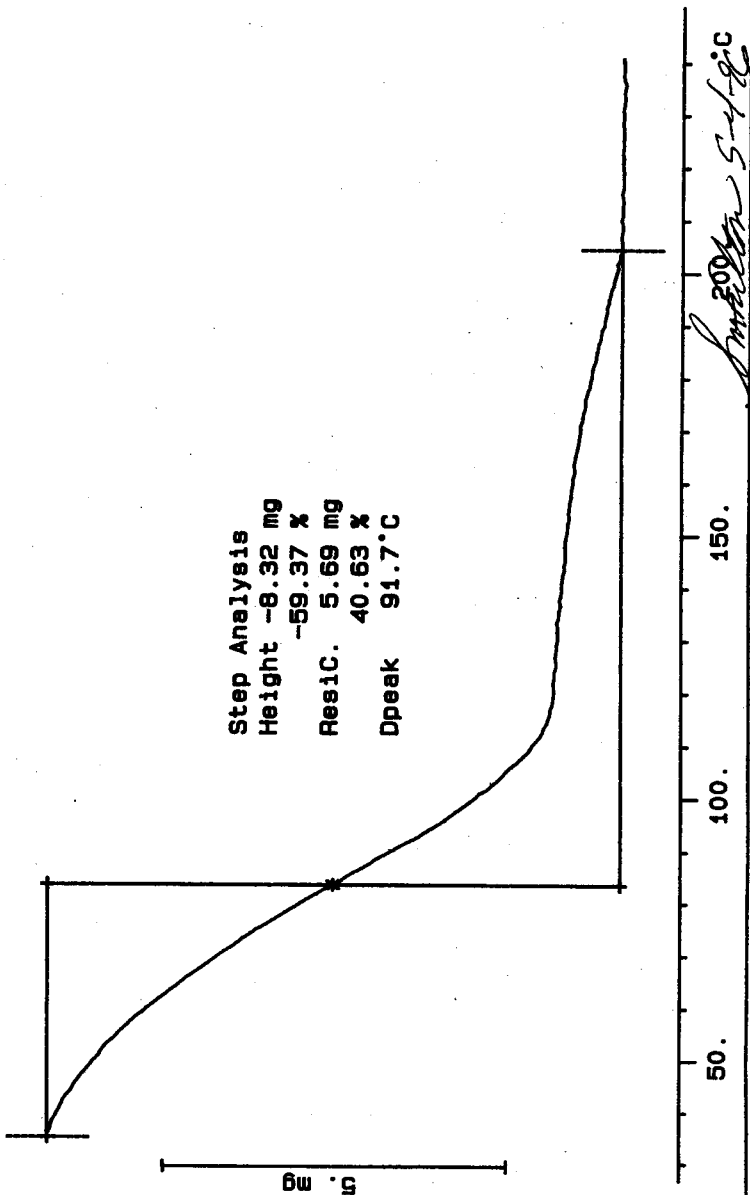
Data Entry Comments:

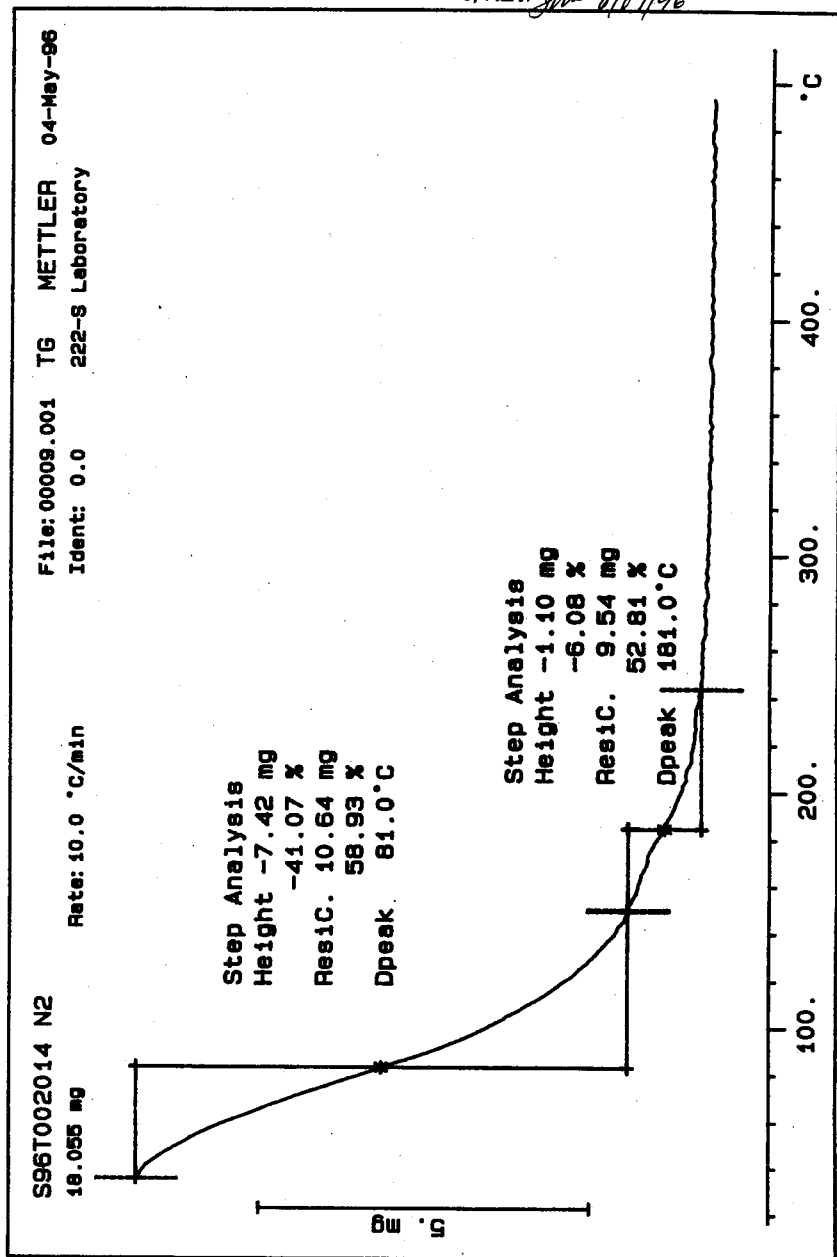
The results are the sum of two weight loss steps.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 39 TO 41

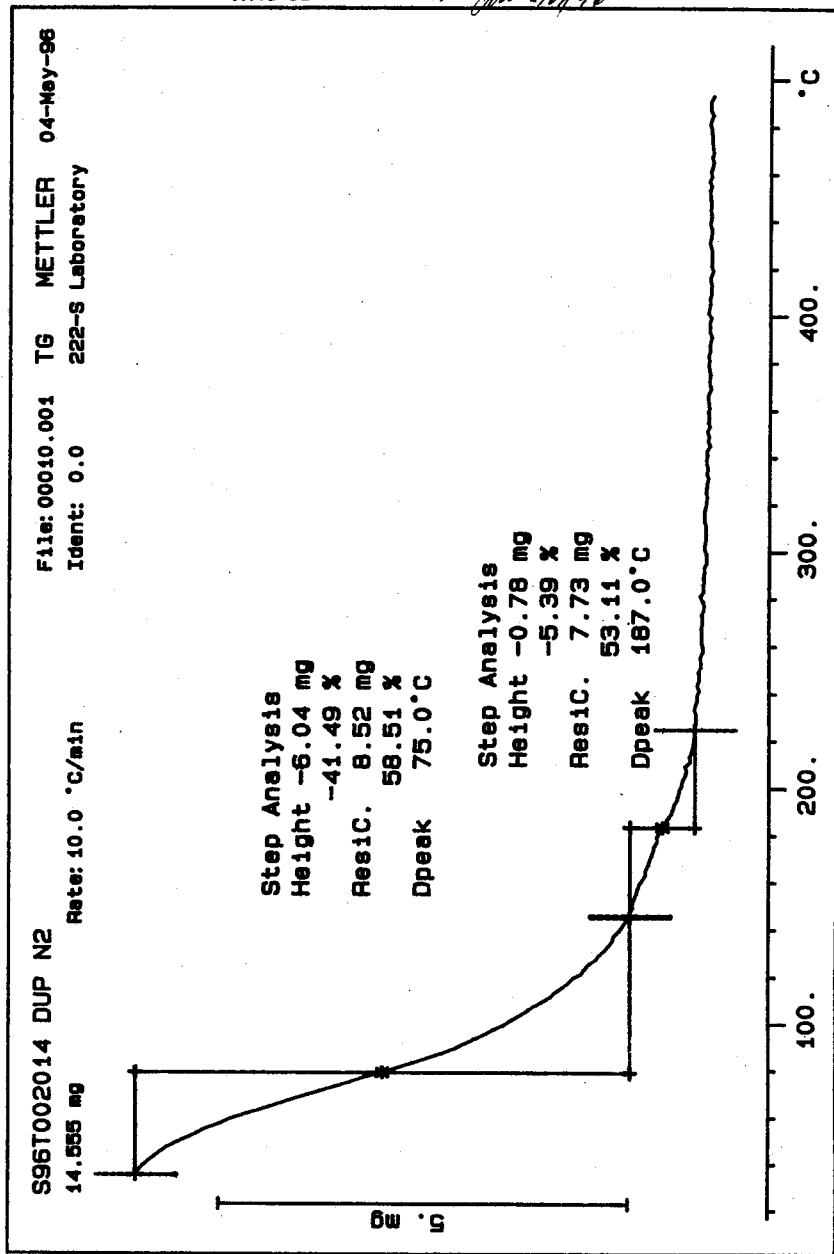
TGA STD 82NB-A Rate: 10.0 °C/min File: 00008.001 TG METTLER 04-May-96
14.014 mg Ident: 0.0 222-S Laboratory

Step Analysis
Height -8.32 mg
-59.37 %
Resid. 5.69 mg
40.63 %
Dpeak 91.7 °C





8/29/96



LABCORE Data Entry Template for Worklist#

8358

Analyst: ADD Instrument: TGA0 1 Book # 82N8A

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

Worklist Comment: A-101. Run under nitrogen. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	LIQUID	<u>59.2</u>	<u>58.83*</u>	N/A	%
96000459	A-101 GRAB	2 SAMPLE	S96T002012 0		TGA-01	LIQUID	<u>N/A</u>	<u>42.77</u>		%
96000459	A-101 GRAB	3 DUP	S96T002012 0		TGA-01	LIQUID	<u>42.77</u>	<u>44.78</u>	N/A	%
96000459	A-101 GRAB	4 SAMPLE	S96T002013 0		TGA-01	LIQUID	<u>N/A</u>	<u>46.72</u>		%
96000459	A-101 GRAB	5 DUP	S96T002013 0		TGA-01	LIQUID	<u>46.72</u>	<u>47.22</u>	N/A	%

Final page for worklist #

8358

Anthony Puro 05-06-96
Analyst Signature Date

John Hammett 5-8-96
Analyst Signature Date

Validated by Alanastor 5-8-96

S96T002012 produced a second weight loss step of 14.89%. The ^{gov} change in slope of the curve was so drastic the chemist did not ^{5.7%} question whether it was still %moisture.

Data Entry Comments: S96T002013 results were the sum of two weight loss steps.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 43 TO 47.

TGA STD 82N8-A

17.510 mg

Rate: 10.0 °C/min

File: 00024.001

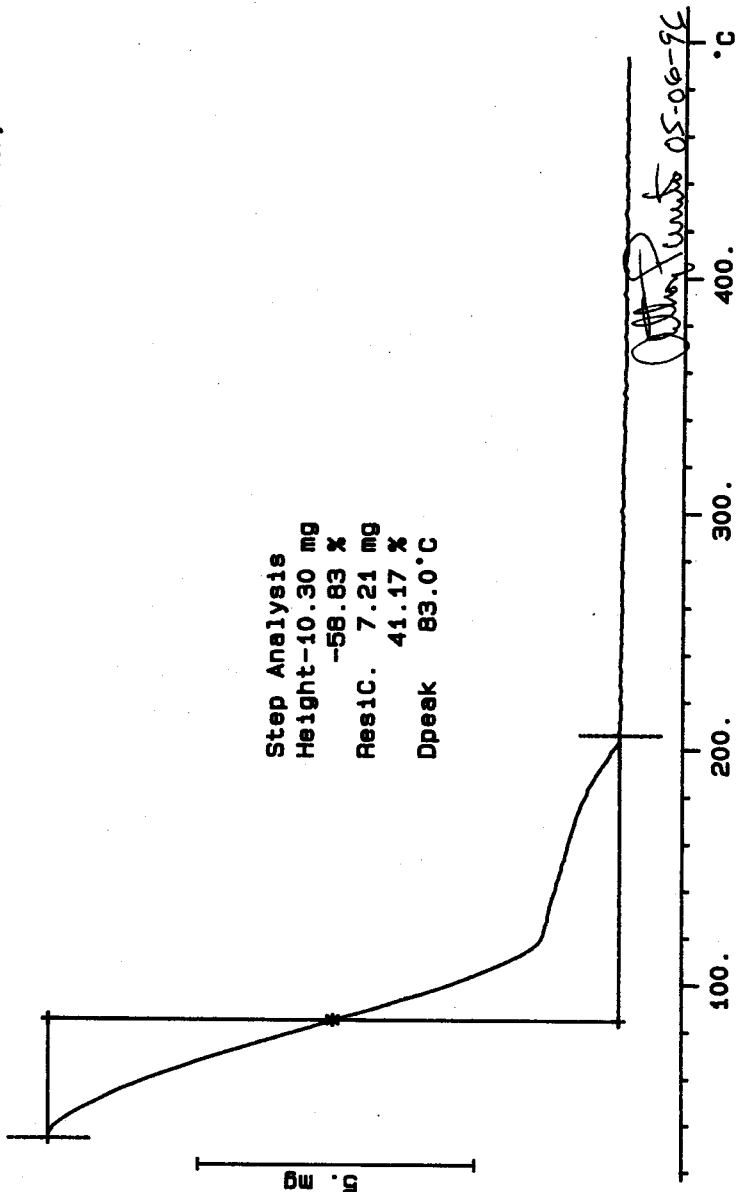
TG

METTLER

06-May-96

Ident: 0.0

222-8 Laboratory



S96T002012 SAM N2

27.571 mg

Rate: 10.0 °C/min

File: 00031.001

Ident: 0.0

TG

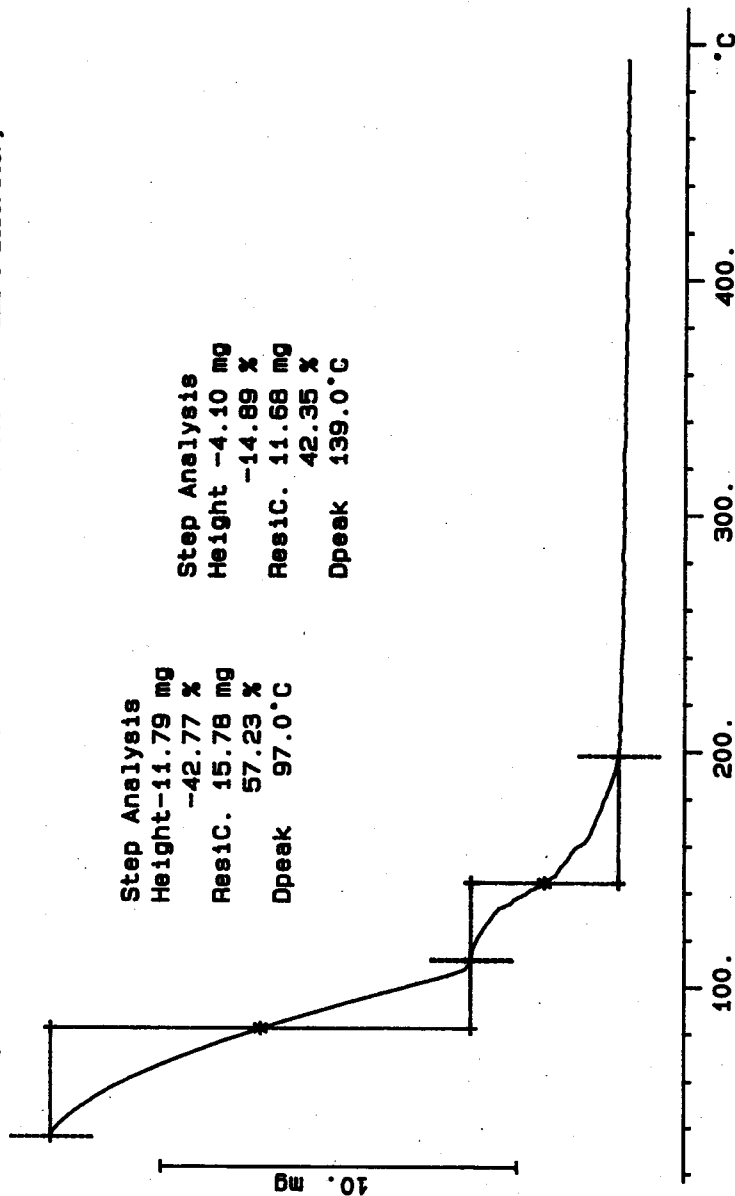
METTLER

06-May-86

222-S Laboratory

Step Analysis
Height-11.79 mg
-42.77 %
ResiC. 15.78 mg
57.23 %
Dpeak 97.0 °C

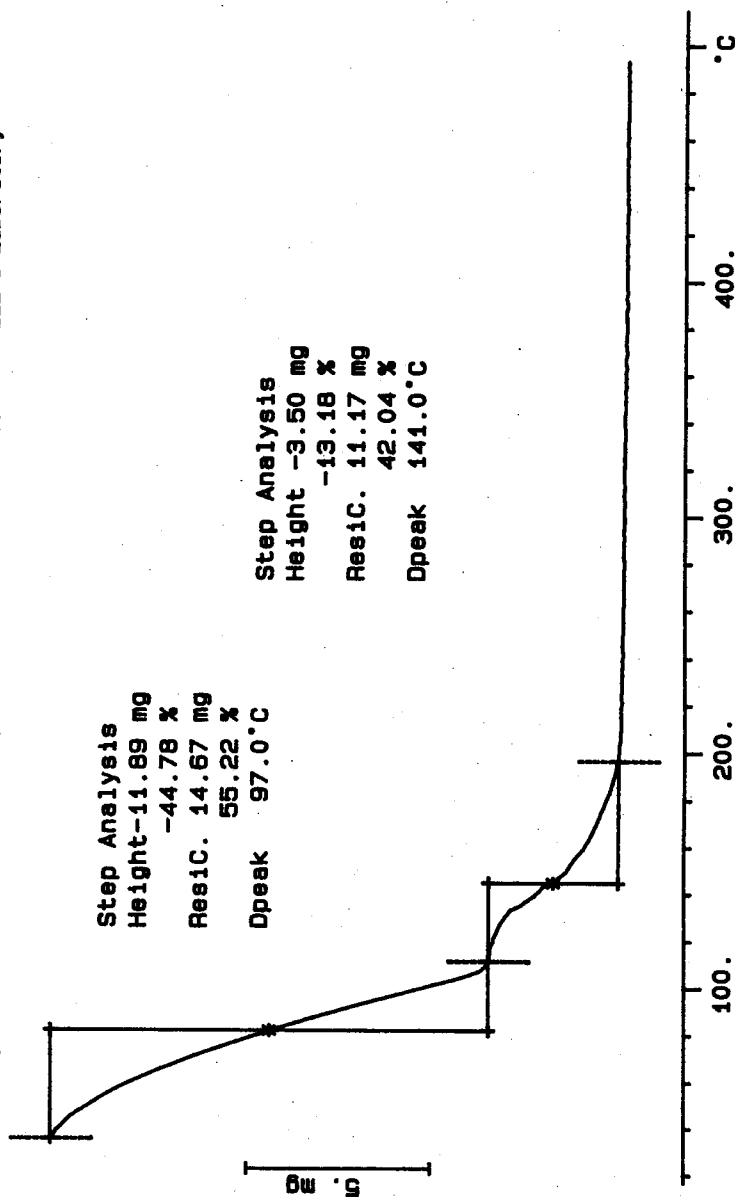
Step Analysis
Height -4.10 mg
-14.89 %
ResiC. 11.68 mg
42.35 %
Dpeak 139.0 °C

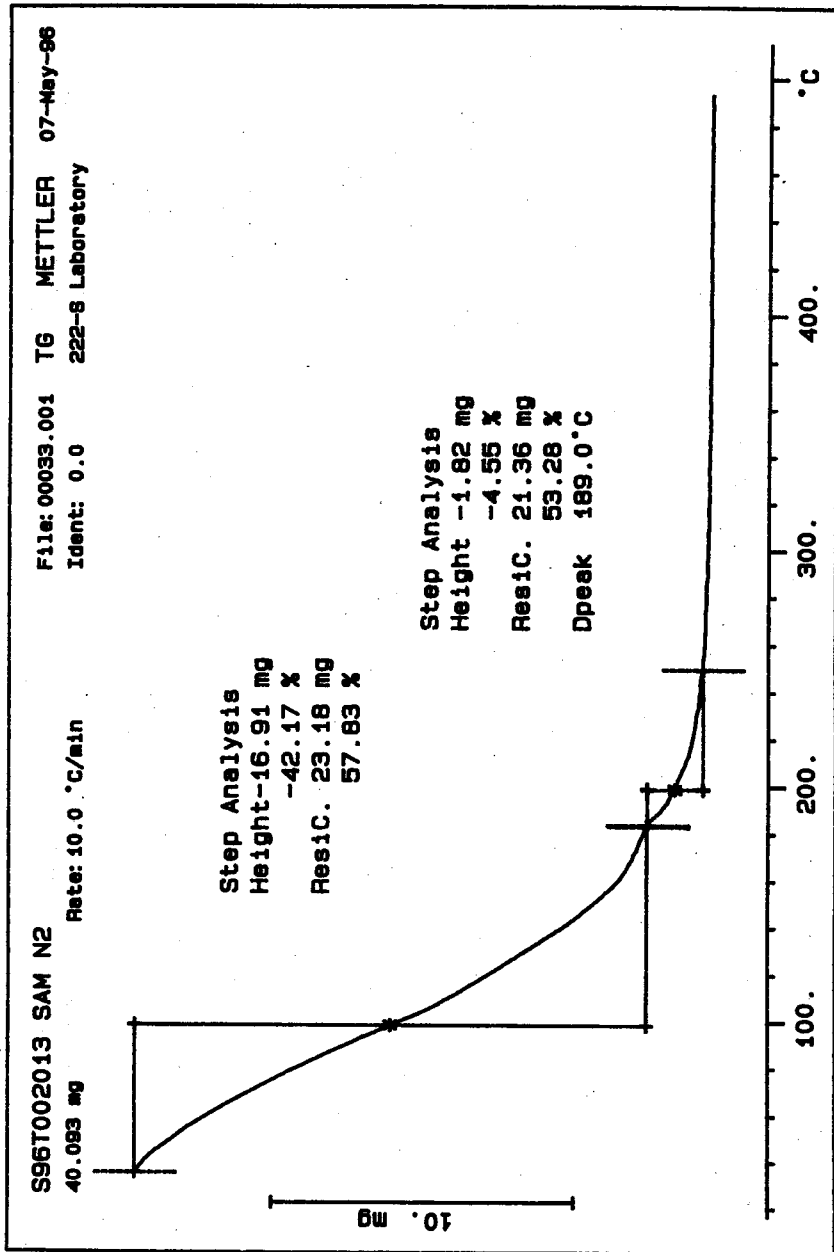


S96T002012 DUP N2
28.560 mg
Rate: 10.0 °C/min
File: 00032.001 TG METTLER 06-May-98
Ident: 0.0 222-S Laboratory

Step Analysis
Height-11.89 mg
-44.78 %
Resid. 14.67 mg
55.22 %
Dpeak 97.0 °C

Step Analysis
Height -3.50 mg
-13.18 %
Resid. 11.17 mg
42.04 %
Dpeak 141.0 °C





S96T002013 DUP N2

32.734 mg

Rate: 10.0 °C/min

File: 00034.001 TG METTLER 07-May-86
Ident: 0.0 222-S Laboratory

Step Analysis

Height-13.59 mg

-41.53 %

Resid. 19.14 mg

58.47 %

Dpeak 99.0 °C

Step Analysis

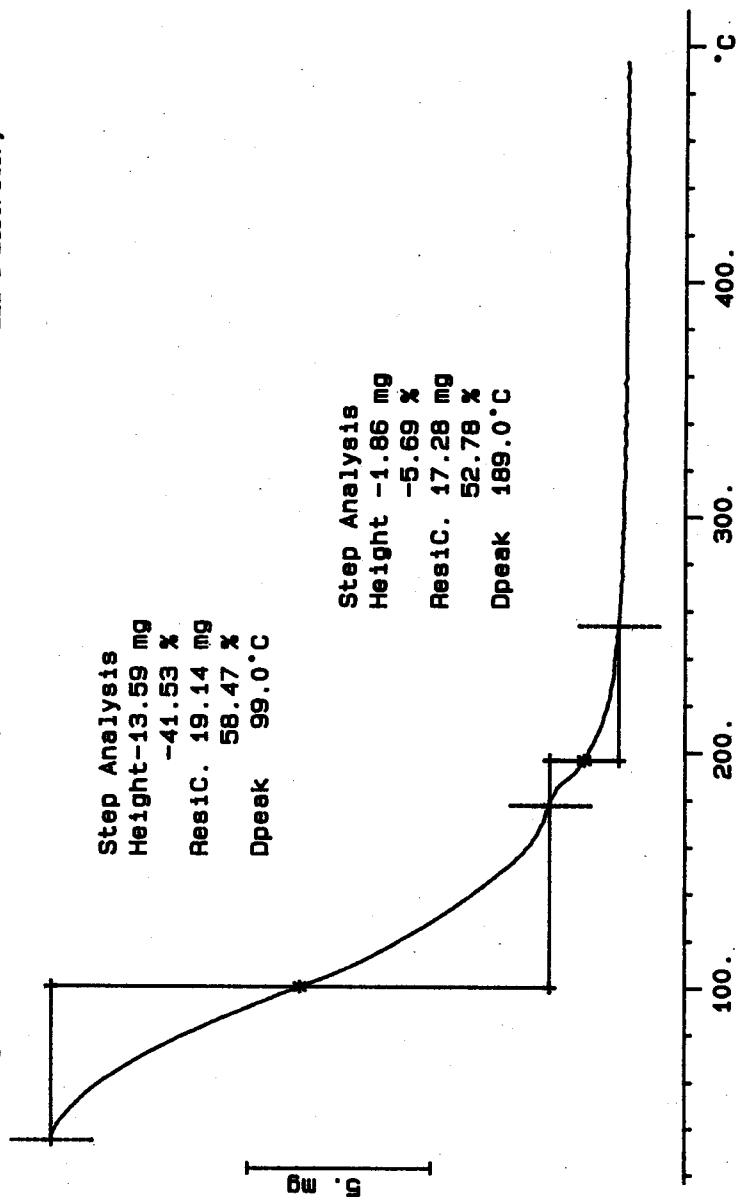
Height -1.86 mg

-5.69 %

Resid. 17.28 mg

52.78 %

Dpeak 189.0 °C



LABCORE Data Entry Template for Worklist#

8387

Analyst: ADP Instrument: BA001 Book # 133N/16 A

Method: LA-510-112 Rev/Mod C3

Worklist Comment: AY-101, S-107, S-101, & A-101. Spg-01. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.40</u>	<u>1.373</u>	<u>N/A</u>	Sp.G.
96000210	AY-101 GRAB	2 SAMPLE	S96T001208	0	SPG-01	LIQUID	<u>N/A</u>	<u>.980</u>	<u>0.001</u>	Sp.G.
96000210	AY-101 GRAB	3 DUP	S96T001208	0	SPG-01	LIQUID	<u>.980</u>	<u>.976</u>	<u>N/A</u>	Sp.G.
96000442	S-107	4 SAMPLE	S96T001795	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.210</u>	<u>0.001</u>	Sp.G.
96000442	S-107	5 DUP	S96T001795	0	SPG-01	LIQUID	<u>1.210</u>	<u>1.28</u>	<u>N/A</u>	Sp.G.
96000394	S-101	6 SAMPLE	S96T001909	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.356</u>	<u>0.001</u>	Sp.G.
96000394	S-101	7 DUP	S96T001909	0	SPG-01	LIQUID	<u>1.356</u>	<u>1.362</u>	<u>N/A</u>	Sp.G.
96000459	A-101 GRAB	8 SAMPLE	S96T002012	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.355</u>	<u>0.001</u>	Sp.G.
96000459	A-101 GRAB	9 DUP	S96T002012	0	SPG-01	LIQUID	<u>1.355</u>	<u>1.354</u>	<u>N/A</u>	Sp.G.
96000459	A-101 GRAB	10 SAMPLE	S96T002013	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.354</u>	<u>0.001</u>	Sp.G.
96000459	A-101 GRAB	11 DUP	S96T002013	0	SPG-01	LIQUID	<u>1.354</u>	<u>1.338</u>	<u>N/A</u>	Sp.G.

Final page for worklist #

8387

Anthony Purnetto ^{APD} 5-10-96
Analyst Signature Date

RLS 5-14-96
Analyst Signature Date

Edited and Approved
RW Schreder
5/14/96

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-186, REV. 0

SPECIFIC GRAVITY : LA-510-112 (C-3)

Type		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	2.0173	1.9845
Work List	Tare Weight (W1)	1.8792	1.8476
8387	Weight of Solution (W2-W1)	0.1381	0.1369
Test Code	Volume of Solution μ L	100.1200	100.1200
SPG-01	Specific Gravity	1.3793	1.3674
Matrix	Specific Gravity (Average)	1.3734	
LIQUID			
Sample #			
STD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
05/11/96	$\checkmark$ RESULT $\checkmark$		
Time	Specific Gravity Average =	1.373	
02:00 PM			

Data Entry by: <i>Donna</i>	Date: 05/14/96
Approved by: <i>Robert W. Schroeder</i>	Date: 5/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-186, REV. 0

SPECIFIC GRAVITY : LA-510-112 (C-3)

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9608	
	Tare Weight (W1)	1.8251	
	8387 Weight of Solution (W2-W1)	0.1357	0
	Volume of Solution μ L	100.1200	
	SPG-01 Specific Gravity	1.3554	NA
LIQUID			
S9T002012			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution Tare Weight (W1) = Wt. of vial + cap + cotton		
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
05/11/96	-v RESULT v		
02:00 PM	Specific Gravity =	1.355	

Data Entry by: <i>Ray</i>	Date: 05/14/96
Approved by: <i>Robert W. Schroeder</i>	Date: 5/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-186, REV. 0

SPECIFIC GRAVITY : LA-510-112 (C-3)

		DUPLICATE	REPLICATE
8387	Gross Weight (W2)	2.0094	
	Tare Weight (W1)	1.8738	
	Weight of Solution (W2-W1)	0.1356	0
	Volume of Solution μ L	100.1200	
	Specific Gravity	1.3544	NA
SPG-01			
LIQUID			
S9T002012 DUP			
BA001		Gross Weight (W2) = Wt. of vial + cap + cotton + solution	
ADP		Tare Weight (W1) = Wt. of vial + cap + cotton	
05/11/96		Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$	
02:00 PM		v RESULT v	
		Specific Gravity =	1.354

Data Entry by: <i>Dany Hernandez</i>	Date: 05/14/96
Approved by: <i>Rahit A. Schneider</i>	Date: 5/29/96

Form 510112L1 Rev. 1.1 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-186, REV. 0

SPECIFIC GRAVITY : LA-510-112 (C-3)

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0094	
	Tare Weight (W1)	1.8738	
8387	Weight of Solution (W2-W1)	0.1356	0
	Volume of Solution μ L	100.1200	
SPG-01	Specific Gravity	1.3544	NA
LIQUID			
S9T002013			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
05/11/96	$\checkmark$ RESULT $\checkmark$		
02:00 PM	Specific Gravity =	1.354	

Data Entry by: <i>Ray H. Hansen</i>	Date: 05/14/96
Approved by: <i>Ralph W. Schneider</i>	Date: 5/29/96
Form 510112L1 Rev. 1.1	Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-186, REV. 0

SPECIFIC GRAVITY : LA-510-112 (C-3)

		DUPLICATE	REPLICATE
8387	Gross Weight (W2)	1.9983	
	Tare Weight (W1)	1.8643	
	Weight of Solution (W2-W1)	0.134	0
	Volume of Solution μ L	100.1200	
	SPG-01	Specific Gravity	1.3384
LIQUID			
S9T002013 DUP			
BA001		Gross Weight (W2) = Wt. of vial + cap + cotton + solution	
ADP		Tare Weight (W1) = Wt. of vial + cap + cotton	
05/11/96		Specific Gravity = [(W2-W1) * 1000 μ L/mL] / [Vol. of Solution μ L * 1.000 g/mL]	
02:00 PM		v RESULT v	
		Specific Gravity =	1.338

Data Entry by: <i>Dan L...</i>	Date: 05/14/96
Approved by: <i>Ralph W. Schroeder</i>	Date: 5/29/96
Form 510112L1 Rev. 1.1	Page 1 of 1

LABCORE Data Entry Template for Worklist#

8371

Analyst: ADP Instrument: PH01 Book # 144N16D

Method: LA-212-106 Rev/Mod A-0

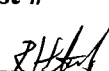
Worklist Comment: A-101 PH'S. RCJ

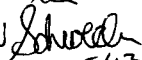
GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH			PH-01	LIQUID	<u>8.00</u>	<u>7.95</u>	<u>N/A</u>	pH
96000459	A-101 GRAB	2 SAMPLE	S96T002012	0	PH-01	LIQUID	<u>N/A</u>	<u>13.51</u>	<u>0.01</u>	pH
96000459	A-101 GRAB	3 DUP	S96T002012	0	PH-01	LIQUID	<u>13.51</u>	<u>13.46</u>	<u>N/A</u>	pH
96000459	A-101 GRAB	4 SAMPLE	S96T002013	0	PH-01	LIQUID	<u>N/A</u>	<u>13.24</u>	<u>0.01</u>	pH
96000459	A-101 GRAB	5 DUP	S96T002013	0	PH-01	LIQUID	<u>13.46</u>	<u>13.21</u>	<u>N/A</u>	pH

Final page for worklist #

8371


Analyst Signature Date 5-11-96


Analyst Signature Date 5-13-96

Approved 
5/13/96

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.

LABCORE Data Entry Template for Worklist#

8369

Analyst: MBB Instrument: PH01 Book # 79N8

Method: LA-211-102 Rev/Mod C-0

Worklist Comment: AY-101 AND A-101 OH'S. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID	1	1.42	N/A	ug/mL
		2 STD			OH-01	LIQUID	1.64 ^{EH}	1.64 ^{EH}	N/A	ug/mL
96000210	AY-101 GRAB	3 SAMPLE	S96T001208	0	OH-01	LIQUID	N/A	PH=6.09 1.15 ^{EH}	1.15 ^{EH}	ug/mL
96000210	AY-101 GRAB	4 DUP	S96T001208	0	OH-01	LIQUID	N/A	1.15 ^{EH}	1.15 ^{EH}	ug/mL
96000459	A-101 GRAB	5 SAMPLE	S96T002012	0	OH-01	LIQUID	N/A	1.45 ^{EH}	2.50 ^{EH}	ug/mL
96000459	A-101 GRAB	6 DUP	S96T002012	0	OH-01	LIQUID	1.45 ^{EH}	1.40 ^{EH}	N/A	ug/mL
96000459	A-101 GRAB	7 SAMPLE	S96T002013	0	OH-01	LIQUID	N/A	5.51 ^{EH}	5.00 ^{EH}	ug/mL
96000459	A-101 GRAB	8 DUP	S96T002013	0	OH-01	LIQUID	5.51 ^{EH}	5.48 ^{EH}	N/A	ug/mL
96000459	A-101 GRAB	9 SAMPLE	S96T002014	0	OH-01	LIQUID	N/A	5.97 ^{EH}	5.00 ^{EH}	ug/mL
96000459	A-101 GRAB	10 DUP	S96T002014	0	OH-01	LIQUID	5.97 ^{EH}	5.51 ^{EH}	N/A	ug/mL

Final page for worklist #

8369

MBB 5-15-96
Analyst Signature Date

R. Jones 5-16-96
Analyst Signature Date

O. 2005M HNO3

Approved R. Jones
5/16/96

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.

WHC-SD-WM-DP-186, REV. 0

OH (AUTO) : LA-211-102 (C-0)

OH (AUTO) : LA-211-102 (C-0)		BLANK
Type	Sample Size (mL) SS	3.000
BLANK	Concentration of HNO ₃ (Molarity)	0.2005
Worklist	HNO ₃ Titrant at OH end-point in mL	0.006
8369	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	4.01E-04
OH-01	OH in Sample in µg/mL (PPM)	6.82E+00
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
BLNK		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
PH-01		
Analyst	OH Molarity = ((mL HNO ₃) * (M HNO ₃)) / Sample Size in mL * Dilution Factor	
DGG		
Date	OH in µg/mL = (OH MOLARITY) * (17.0g/mole) * ((1000000µg/g) / (1000mL/L))	
05/15/96		
Time		BLANK
07:00 PM	Concentration of OH in Sample (Molarity)	4.01E-04
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:	<i>Li Jones</i>	Date:	05/16/96
Approved by:	<i>DW Schuch</i>	Date:	5/16/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-186, REV. 0

OH (AUTO) : LA-211-102 (C-0)

		STANDARD
Type	Sample Size (mL) SS	0.050
STANDARD	Concentration of HNO3 (Molarity)	0.2005
Worklist	HNO3 Titrant at OH end-point in mL	0.241
8369	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.66E-01
OH-01	OH in Sample in µg/mL (PPM)	1.64E+04
Matrix		
LIQUID		
Sample #		
79N8		
Instrument Code		
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DGG		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/15/96		
Time		
07:00 PM		
		STANDARD
Concentration of OH in Sample (Molarity)		9.66E-01
OH in Sample in µg/mL (PPM)		1.64E+04

Data Entry by: <i>[Signature]</i>	Date: 05/16/96
Approved by: <i>[Signature]</i>	Date: 5/16/96

Form 211102_1 Rev. 1.3

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-186, REV. 0

OH (AUTO) : LA-211-102 (C-0)

OH (AUTO) : LA-211-102 (C-0)		SAMPLE
Type	Sample Size (mL) SS	0.050
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Worklist	HNO3 Titrant at OH end-point in mL	0.213
8369	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	8.54E-01
OH-01	OH in Sample in µg/mL (PPM)	1.45E+04
Matrix		
LIQUID		
Sample	Detection Limit = 125µg / SS * DF	
S96T002012		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DGG		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/15/96		
Time		SAMPLE
07:00 PM	Concentration of OH In Sample (Molarity)	8.54E-01
	OH in Sample in µg/mL (PPM)	1.45E+04

Data Entry by:	<i>[Signature]</i>	Date:	05/16/96
Approved by:	<i>[Signature]</i>	Date:	5/16/96
Form 211102_1 Rev. 1.3		Page 1 of 1	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-186, REV. 0

OH (AUTO) : LA-211-102 (C-0)

		DUPLICATE
Type	Sample Size (mL) SS	0.050
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.206
8369	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	8.26E-01
OH-01	OH in Sample in µg/mL (PPM)	1.40E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S96T002012DUP		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DGG		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/15/96		
Time		
07:00 PM		
		DUPLICATE
Concentration of OH in Sample (Molarity)		8.26E-01
OH in Sample in µg/mL (PPM)		1.40E+04

Data Entry by: <i>[Signature]</i>	Date: 05/16/96
Approved by: <i>[Signature]</i>	Date: 5/16/96

Form 211102_1 Rev. 1.3

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-186, REV. 0

OH (AUTO) : LA-211-102 (C-0)

OH (AUTO) : LA-211-102 (C-0)		SAMPLE
Sample Size (mL) SS		0.025
Concentration of HNO3 (Molarity)		0.2005
HNO3 Titrant at OH end-point in mL		0.404
Dilution Factor DF		1
Concentration of OH in Sample (Molarity)		3.24E+00
OH in Sample in µg/mL (PPM)		5.51E+04
Matrix		
LIQUID		
Sample	Detection Limit = 125µg / SS * DF	
S96T002013		
Detection Limit (µg/mL)		5.00E+03
PH-01		
OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor		
DGG		
OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))		
05/15/96		
07:00 PM		
Concentration of OH in Sample (Molarity)		3.24E+00
OH in Sample in µg/mL (PPM)		5.51E+04

Data Entry by: <i>[Signature]</i>	Date: 05/16/96
Approved by: <i>[Signature]</i>	Date: 5/16/96

Form 211102_1 Rev. 1.3

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-186, REV. 0

OH (AUTO) : LA-211-102 (C-0)

		DUPLICATE
Type	Sample Size (mL) SS	0.025
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
Worklist	HNO3 Titrant at OH end-point in mL	0.402
8369	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	3.22E+00
OH-01	OH in Sample in µg/mL (PPM)	5.48E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S96T002013DUP		
Instrument Code	Detection Limit (µg/mL)	5.00E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DGG		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/15/96		
Time		
07:00 PM	Concentration of OH in Sample (Molarity)	3.22E+00
	OH in Sample in µg/mL (PPM)	5.48E+04

Data Entry by: <i>PSJ</i>	Date: 05/16/96
Approved by: <i>DAN SCHNEPPEN</i>	Date: 5/16/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-186, REV. 0

OH (AUTO) : LA-211-102 (C-0)

		SAMPLE
Type	Sample Size (mL) SS	0.025
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.438
8369	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	3.51E+00
OH-01	OH in Sample in µg/mL (PPM)	5.97E+04
Matrix		
LIQUID		
Sample	Detection Limit = 125µg / SS * DF	
S96T002014		
Installation Code	Detection Limit (µg/mL)	5.00E+03
PH-01		
Analysis	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DGG		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/15/96		
Time		
07:00 PM		
		SAMPLE
Concentration of OH in Sample (Molarity)		3.51E+00
OH in Sample in µg/mL (PPM)		5.97E+04

Data Entry by:	<i>[Signature]</i>	Date:	05/16/96
Approved by:	<i>[Signature]</i>	Date:	5/16/96
Form 211102_1 Rev. 1.3		Page 1 of 1	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

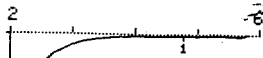
WHC-SD-WM-DP-186, REV. 0

OH (AUTO) : LA-211-102 (C-0)

		DUPLICATE
Type	Sample Size (mL) SS	0.025
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.409
8369	Dilution Factor DF	1
Est Code	Concentration of OH in Sample (Molarity)	3.28E+00
OH-01	OH in Sample in µg/mL (PPM)	5.58E+04
Matrix		
LIQUID		
Sample	Detection Limit = 125µg / SS * DF	
S96T002014DUP		
Instrument Code	Detection Limit (µg/mL)	5.00E+03
PH-01		
Analyst	OH Molarity = ((M HNO3)/(Sample Size in mL * Dilution Factor	
DGG		
Date	OH in µg/mL = (OH MOLARITY) * (17.0g/mole) / ((1000000µg/g) / (1000mL/L))	
05/15/96		
Time		
07:00 PM	Concentration of OH in Sample (Molarity)	3.28E+00
	OH in Sample in µg/mL (PPM)	5.58E+04

Data Entry by:	<i>[Signature]</i>	Date:	05/16/96
Approved by:	<i>[Signature]</i>	Date:	5/16/96

date 96-05-15 time 21:17
 GET pH 12 # 9
 .10ml/div Δ pH=1/div
 start V .000 ml



C00= .050ml

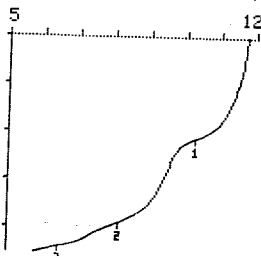
date 96-05-15 time 21:41
 GET pH 12 # 11
 Id.#1 2012
 Id.#2 .2005
 pH(init) 11.73

	V/ml	pH
EP1	.213	10.31
EP2	.393	8.18
EP3	.443	6.43

manual stop

=====

date 96-05-15 time 21:41
 GET pH 12 # 11
 .10ml/div Δ pH=1/div
 start V .000 ml



C00= .050ml

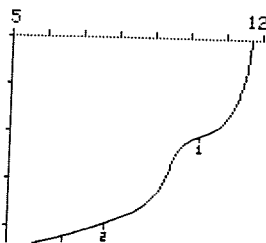
date 96-05-15 time 21:50
 GET pH 12 # 12
 Id.#1 2012 -Dup
 Id.#2 .2005
 pH(init) 11.68

	V/ml	pH
EP1	.206	10.30
EP2	.391	7.72
EP3	.421	6.54

manual stop

=====

date 96-05-15 time 21:50
 GET pH 12 # 12
 .10ml/div Δ pH=1/div
 start V .000 ml



C00= .025ml

date 96-05-15 time 22:15
 GET pH 12 # 14
 Id.#1 2013
 Id.#2 .2005
 pH(init) 11.99

	V/ml	pH
EP1	.404	10.51
EP2	.770	7.74
EP3	.822	6.79

manual stop

=====

BEST AVAILABLE COPY

BLANK

Sample Size = 3.0 ml A+20
+ 1 ml B+C/2

C00= 3.0ml

date 96-05-15 time 19:03

GET pH 12 # 3

Id.#1 0000

Id.#2 .2005

pH(init) 5.39

V/ml pH

EP1 .006 4.33

stop volt. reached

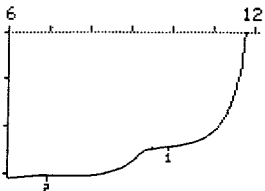
=====

date 96-05-15 time 19:32

GET pH 12 # 7

.10ml/div dPH=1/div

start V .000 ml

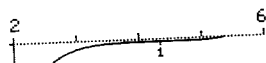


date 96-05-15 time 19:03

GET pH 12 # 3

.10ml/div dPH=1/div

start V .000 ml



Std.

Sample Size = .050 ml

C00= .050ml

date 96-05-15 time 19:32

GET pH 12 # 7

Id.#1 0000

Id.#2 .2005

pH(init) 11.75

V/ml pH

EP1 .241 9.90

EP2 .307 6.98

manual stop

=====

C00= 1.00ml

date 96-05-15 time 21:12

GET pH 12 # 8

Id.#1 1208

Id.#2 .2005

pH(init) 6.09

V/ml pH

EP1 .007 4.63

stop volt. reached

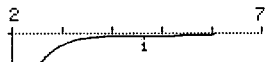
=====

date 96-05-15 time 21:12

GET pH 12 # 8

.10ml/div dPH=1/div

start V .000 ml



Sample Size = 1.0 ml

C00= 1.00ml

date 96-05-15 time 21:16

GET pH 12 # 9

Id.#1 1208 -Dup

Id.#2 .2005

pH(init) 5.80

V/ml pH

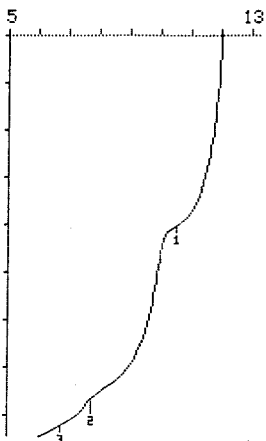
EP1 .005 4.77

stop volt. reached

=====

BEST AVAILABLE COPY

date 96-05-15 time 22:16
GET pH 12 # 14
.10ml/div Δ pH=1/div
start V .000 ml



C00= .025ml

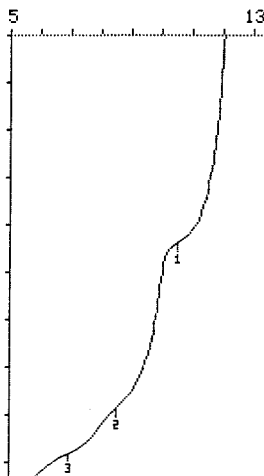
date 96-05-15 time 22:49
GET pH 12 # 17
Id.#1 2014
Id.#2 .2005
pH(init) 12.02

	V/ml	pH
EP1	.438	10.55
EP2	.785	8.55
EP3	.883	6.92

manual stop

=====

date 96-05-15 time 22:49
GET pH 12 # 17
.10ml/div Δ pH=1/div
start V .000 ml



C00= .025ml

date 96-05-15 time 23:01
GET pH 12 # 18
Id.#1 2014-Dip
Id.#2 .2005
pH(init) 11.97

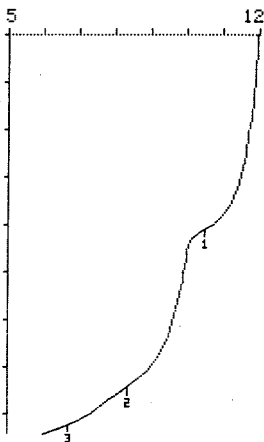
	V/ml	pH
EP1	.409	10.50
EP2	.744	8.33
EP3	.824	6.69

manual stop

=====

BEST AVAILABLE COPY

date 96-05-15 time 23:01
 GET pH 12 # 18
 .10ml/div Δ pH=1/div
 start V .000 ml



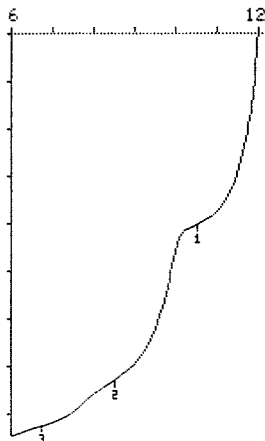
C00= .025ml

date 96-05-15 time 22:27
 GET pH 12 # 15
 Id.#1 2013-Dup
 Id.#2 .2005
 pH(init) 11.97

	V/ml	pH
EP1	.402	10.51
EP2	.729	8.51
EP3	.825	6.74

 manual stop
 =====

date 96-05-15 time 22:28
 GET pH 12 # 15
 .10ml/div Δ pH=1/div
 start V .000 ml



BEST AVAILABLE COPY

LABCORE Data Entry Template for Worklist#

9282

Analyst: RJM Instrument: NH301 Book # 145N16F

Method: LA-631-001 Rev/Mod B-2

Worklist Comment: A-101 NH3 Rerun - (see recommended sample sizes)

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				NH3-01	LIQUID	<u>1</u>	<u>0.0438</u>	<u>N/A</u>	ug/ml
		2	STD				NH3-01	LIQUID	<u>4.12e2</u>	<u>4.41e2</u>	<u>N/A</u>	ug/ml
96000459	A-101 GRAB	3	SAMPLE	S96T002012	0		NH3-01	LIQUID	<u>N/A</u>	<u>1.34e2</u>	<u>5.00</u>	ug/ml
96000459	A-101 GRAB	4	DUP	S96T002012	0		NH3-01	LIQUID	<u>1.34e2</u>	<u>1.22e2</u>	<u>N/A</u>	ug/ml
96000459	A-101 GRAB	5	SPK	S96T002012	0		NH3-01	LIQUID	<u>100</u>	<u>59.95</u>	<u>N/A</u>	ug/ml
96000459	A-101 GRAB	6	SAMPLE	S96T002013	0		NH3-01	LIQUID	<u>N/A</u>	<u>4.86e2</u>	<u>5.00</u>	ug/ml
96000459	A-101 GRAB	7	DUP	S96T002013	0		NH3-01	LIQUID	<u>4.86e2</u>	<u>5.31e2</u>	<u>N/A</u>	ug/ml
		8	STD				NH3-01	LIQUID	<u>4.12e2</u>	<u>4.29e2</u>	<u>N/A</u>	ug/ml

Final page for worklist #

9282

RJM 5/29/96
Analyst Signature Date

Entered and Approved
Analyst Signature Date

Robert W. Schuech
5/30/96

Recommended sample sizes

STD = 1.0 ml

Blank = 25 ml H₂O

S96T2012 = 1.0 ml

S96T2012 Spike = 1.0 ml sample + 0.250 ml std

S96T2013 = 0.500 ml

Data Entry Comments:

Spk is very low. No sample S96T002012
remaining. This is already a retest, I do not recommend
further rerun. Possible reason's are analyst error, incorrect volume
used.

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.

Robert W. Schuech
5/30/96

DOUBLE KNOWN ADDITION SELECTED
AT 08:07, 05-29-96

BLANK
25 mL

SAMPLE VOL= 25.000 AT 08:07, 05-29-96
ENTERED

EMF= 39.9 mV AT 08:07, 05-29-96

EMF= 40.1 mV AT 08:07, 05-29-96
ENTERED

STD CONC= 1000 AT 08:08, 05-29-96
ENTERED

STD VOL= .25000 AT 08:08, 05-29-96
ENTERED

EMF=-98.5 mV AT 08:10, 05-29-96

EMF=-98.6 mV AT 08:11, 05-29-96
ENTERED

STD VOL= 2.5000 AT 08:11, 05-29-96
ENTERED

EMF=-157.4 mV AT 08:12, 05-29-96

EMF=-157.4 mV AT 08:12, 05-29-96
ENTERED

1:NH3 SLOPE=-58.9 mV/DEC
AT 08:12, 05-29-96

1:NH3 CONC= .0438

DOUBLE KNOWN ADDITION SELECTED
AT 08:13, 05-29-96

BEST AVAILABLE COPY

R. McCown 5/29/96

SAMPLE VOL= 25.000 AT 09:25, 05-29-96
ENTERED

STANDARD Bock # 145 N/6 F

EMF=-107.1 mV AT 09:27, 05-29-96 *1mL*

WHC-SD-WM-DP-186, REV. 0

EMF=-107.2 mV AT 09:27, 05-29-96
ENTERED

STD CONC= 1000 AT 09:27, 05-29-96
ENTERED

STD VOL= .25000 AT 09:27, 05-29-96
ENTERED

EMF=-118.5 mV AT 09:28, 05-29-96

EMF=-118.5 mV AT 09:28, 05-29-96
ENTERED

STD VOL= 2.5000 AT 09:29, 05-29-96
ENTERED

EMF=-155.4 mV AT 09:30, 05-29-96

EMF=-155.5 mV AT 09:30, 05-29-96
ENTERED

1:NH3 SLOPE=-59.4 mV/DEC
AT 09:30, 05-29-96

1:NH3 CONC= $(17.7 - 0.0438) \times 25 = 441.4$

DOUBLE KNOWN ADDITION SELECTED
AT 09:30, 05-29-96

BEST AVAILABLE COPY

596T002012 SAMPLE 1ML

WHC-SD-WM-DP-186, REV. 0

SAMPLE VOL= 25.000 AT 11:41, 05-29-96
ENTERED

EMF=-73.9 mV AT 11:42, 05-29-96

EMF=-74.0 mV AT 11:42, 05-29-96
ENTERED

STD CONC= 1000 AT 11:43, 05-29-96
ENTERED

STD VOL= .25000 AT 11:43, 05-29-96
ENTERED

EMF=-100.6 mV AT 11:44, 05-29-96

EMF=-100.8 mV AT 11:44, 05-29-96
ENTERED

STD VOL= 2.5000 AT 11:44, 05-29-96
ENTERED

EMF=-150.4 mV AT 11:46, 05-29-96

EMF=-150.4 mV AT 11:46, 05-29-96
ENTERED

1:NH3 SLOPE=-59.5 mV/DEC
AT 11:46, 05-29-96

1:NH3 CONC= $(5.41 - 0.0438) \times 25 = 134.2$

BEST AVAILABLE COPY

5967002012 Dup IML

DOUBLE KNOWN ADDITION SELECTED
AT 11:51, 05-29-96

WHC-SD-WM-DP-186, REV. 0

SAMPLE VOL= 25.000 AT 11:51, 05-29-96
ENTERED

EMF=-79.4 mV AT 11:52, 05-29-96

EMF=-79.4 mV AT 11:52, 05-29-96
ENTERED

STD CONC= 1000 AT 11:52, 05-29-96
ENTERED

STD VOL= .25000 AT 11:53, 05-29-96
ENTERED

EMF=-106.8 mV AT 11:53, 05-29-96

EMF=-106.9 mV AT 11:54, 05-29-96
ENTERED

STD VOL= 2.5000 AT 11:54, 05-29-96
ENTERED

EMF=-155.5 mV AT 11:55, 05-29-96

EMF=-155.6 mV AT 11:55, 05-29-96
ENTERED

1:NH3 SLOPE=-57.6 mV/DEC
AT 11:55, 05-29-96

1:NH3 CONC= $(4.92 - 0.0438) \times 25 = 121.9$

BEST AVAILABLE COPY

1mL 596T002012 + .250mL STD # 145N16F

DOUBLE KNOWN ADDITION SELECTED
AT 11:57, 05-29-96

SAMPLE VOL= 25.000 AT 12:01, 05-29-96
ENTERED

WHC-SD-WM-DP-186, REV. 0

EMF=-89.5 mV AT 12:02, 05-29-96

EMF=-89.5 mV AT 12:02, 05-29-96
ENTERED

STD CONC= 1000 AT 12:02, 05-29-96
ENTERED

STD VOL= .25000 AT 12:02, 05-29-96
ENTERED

EMF=-108.7 mV AT 12:03, 05-29-96

EMF=-108.7 mV AT 12:03, 05-29-96
ENTERED

STD VOL= 2.5000 AT 12:03, 05-29-96
ENTERED

EMF=-151.2 mV AT 12:04, 05-29-96

EMF=-151.2 mV AT 12:05, 05-29-96
ENTERED

NH3 SLOPE=-54.6 mV/DEC
AT 12:05, 05-29-96

NH3 CONC= $(7.88 - 5.41) = 2.47 \times 25 = 61.75$
 $\times 100 = 59.95\% \text{ rec}$
 $.250 \times 412$

BEST AVAILABLE COPY

596Y002013 SAMPLE 1 mL

SAMPLE VOL= 25.000 AT 12:10, 05-29-96
ENTERED

WHC-SD-WM-DP-186, REV. 0

EMF=-105.2 mV AT 12:11, 05-29-96

EMF=-105.2 mV AT 12:11, 05-29-96
ENTERED

STD CONC= 1000 AT 12:11, 05-29-96
ENTERED

STD VOL= .25000 AT 12:11, 05-29-96
ENTERED

EMF=-115.4 mV AT 12:12, 05-29-96

EMF=-115.4 mV AT 12:12, 05-29-96
ENTERED

STD VOL= 2.5000 AT 12:12, 05-29-96
ENTERED

EMF=-150.3 mV AT 12:14, 05-29-96

EMF=-150.4 mV AT 12:14, 05-29-96
ENTERED

1:NH3 SLOPE=-58.2 mV/DEC
AT 12:14, 05-29-96

1:NH3 CONC= 19.5 - 0.0438 x 25 = 4.862

BEST AVAILABLE COPY

5967002013 DUP. IML

SAMPLE VOL= 25.000 AT 12:19, 05-29-96
ENTERED

EMF=-108.7 mV AT 12:20, 05-29-96

EMF=-108.7 mV AT 12:20, 05-29-96
ENTERED

STD CONC= 1000 AT 12:20, 05-29-96
ENTERED

STD VOL= .25000 AT 12:20, 05-29-96
ENTERED

EMF=-118.3 mV AT 12:21, 05-29-96

EMF=-118.3 mV AT 12:21, 05-29-96
ENTERED

STD VOL= 2.5000 AT 12:21, 05-29-96
ENTERED

EMF=-152.6 mV AT 12:22, 05-29-96

EMF=-152.6 mV AT 12:22, 05-29-96
ENTERED

1:NH3 SLOPE=-59.0 mV/DEC
AT 12:22, 05-29-96

1:NH3 CONC= $(21.3 - 0.0438) \times 25 = 5.31e2$

WHC-SD-WM-DP-186, REV. 0

BEST AVAILABLE COPY

Bl McCown
STANDARD IML

Book # 145N16F

DOUBLE KNOWN ADDITION SELECTED
AT 14:08, 05-29-96

SAMPLE VOL= 25.000 AT 14:08, 05-29-96
ENTERED

EMF=-107.5 mV AT 14:09, 05-29-96

EMF=-107.6 mV AT 14:10, 05-29-96
ENTERED

STD CONC= 1000 AT 14:10, 05-29-96
ENTERED

STD VOL= .25000 AT 14:10, 05-29-96
ENTERED

EMF=-119.1 mV AT 14:11, 05-29-96

EMF=-119.1 mV AT 14:11, 05-29-96
ENTERED

STD VOL= 2.5000 AT 14:11, 05-29-96
ENTERED

EMF=-156.2 mV AT 14:12, 05-29-96

EMF=-156.2 mV AT 14:12, 05-29-96
ENTERED

1:NHS SLOPE=-58.9 mV/DEC
AT 14:13, 05-29-96

1:NHS CONC= $(17.2 - 0.0438) \times 25 = 4.29e2$

BEST AVAILABLE COPY

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#

8839

Analyst: EAL Instrument: NH301 Book # 145N16-F

Method: LA-631-001 Rev/Mod B.2

Worklist Comment: A-101 GRAB FOR NH3-01 RTS!

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				NH3-01	LIQUID	<u>1</u>	<u>6.2</u>	N/A	ug/mL
		2	STD				NH3-01	LIQUID		<u>4.47^{ee}</u>	N/A	ug/mL
96000459	A-101 GRAB	3	SAMPLE	S96T002012	0		NH3-01	LIQUID	N/A	<u>1.26^{ee}</u>		ug/mL
96000459	A-101 GRAB	4	DUP	S96T002012	0		NH3-01	LIQUID	<u>1.26^{ee}</u>	<u>1.67^{ee}</u>	N/A	ug/mL
96000459	A-101 GRAB	5	SPK	S96T002012	0		NH3-01	LIQUID	<u>100</u>	<u>158.98</u>	N/A	ug/mL
96000459	A-101 GRAB	6	SAMPLE	S96T002013	0		NH3-01	LIQUID	N/A	<u>1.18^{ee}</u>		ug/mL
96000459	A-101 GRAB	7	DUP	S96T002013	0		NH3-01	LIQUID	<u>1.18^{ee}</u>	<u>9.17^{ee}</u>	N/A	ug/mL
		8	STD				NH3-01	LIQUID		<u>3.69^{ee}</u>	N/A	ug/mL

Final page for worklist #

8839

Ann Sambel 05:27:96
Analyst Signature Date

RT Std
Analyst Signature Date
14662
14663
14664

Worklist Rejected due to
Poor batch QC.

Robita Schreder
5/29/96

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.

WHC-SD-WM-DP-186, REV. 0

DOUBLE KNOWN ADDITION SELECTED
AT 22:32, 05-27-96

SAMPLE VOL= 25.000 AT 22:33, 05-27-96
ENTERED

EMF=-108.0 mV AT 22:34, 05-27-96

EMF=-108.1 mV AT 22:34, 05-27-96
ENTERED

STD CONC= 1000 AT 22:34, 05-27-96
ENTERED

STD VOL= .25000 AT 22:35, 05-27-96
ENTERED

EMF=-119.3 mV AT 22:35, 05-27-96

EMF=-119.4 mV AT 22:36, 05-27-96

EMF=-119.3 mV AT 22:36, 05-27-96
ENTERED

STD VOL= 2.5000 AT 22:36, 05-27-96
ENTERED

EMF=-156.2 mV AT 22:39, 05-27-96

EMF=-156.2 mV AT 22:39, 05-27-96
ENTERED

NH3 SLOPE=-59.5 mV/DEC
AT 22:39, 05-27-96

NH3 CONC= 17.9

A Lambert
05.27.96

STANDARD 145N16-F

$$(17.9 - .0399)(25) = 4.47e^{+2} \text{ ug/n}$$

BEST AVAILABLE COPY

WHC-SD-WM-DP-186, REV. 0

SAMPLE VOL= 25.000 AT 22:15, 05-27-96
ENTERED

EMF= 38.7 mV AT 22:21, 05-27-96

EMF= 39.5 mV AT 22:22, 05-27-96

EMF= 39.7 mV AT 22:22, 05-27-96
ENTERED

STD CONC= 1000 AT 22:23, 05-27-96
ENTERED

STD VOL= .25000 AT 22:23, 05-27-96
ENTERED

EMF=-99.0 mV AT 22:24, 05-27-96

EMF=-99.2 mV AT 22:24, 05-27-96

EMF=-99.2 mV AT 22:25, 05-27-96
ENTERED

STD VOL= 2.5000 AT 22:26, 05-27-96
ENTERED

EMF=-157.0 mV AT 22:27, 05-27-96

EMF=-157.1 mV AT 22:27, 05-27-96
ENTERED

1:NH3 SLOPE=-58.0 mV/DEC
AT 22:27, 05-27-96

1:NH3 CONC= .0399 = < .2 ug/ml

AdLambel
05.27.96
BLANK

BEST AVAILABLE COPY

SAMPLE VOL= 25.000 AT 23:37, 05-27-96
ENTERED

WHC-SD-WM-DP-186, REV. 0

EMF=-69.6 mV AT 23:38, 05-27-96

EMF=-69.6 mV AT 23:38, 05-27-96
ENTERED

STD CONCN= 1000 AT 23:39, 05-27-96
ENTERED

STD VOL= .25000 AT 23:39, 05-27-96
ENTERED

EMF=-96.8 mV AT 23:40, 05-27-96

EMF=-96.9 mV AT 23:40, 05-27-96
ENTERED

STD VOL= 2.5000 AT 23:41, 05-27-96
ENTERED

5967002012

EMF=-145.8 mV AT 23:42, 05-27-96

EMF=-145.9 mV AT 23:42, 05-27-96
ENTERED

1:NH3 SLOPE=-58.2 mV/DEC
AT 23:42, 05-27-96

$$(5.06 - .0399)(25) = 1.26 e^{+2} \mu\text{g}/\text{ml}$$

1:NH3 CONCN= 5.06

BEST AVAILABLE COPY

DOUBLE KNOWN ADDITION SELECTED
AT 23:42, 05-27-96

SAMPLE VOL= 25.000 AT 23:45, 05-27-96
ENTERED

EMF=-78.6 mV AT 23:48, 05-27-96

EMF=-78.5 mV AT 23:48, 05-27-96
ENTERED

STD CONC= 1000 AT 23:48, 05-27-96
ENTERED

STD VOL= .25000 AT 23:48, 05-27-96
ENTERED

EMF=-101.2 mV AT 23:49, 05-27-96

EMF=-101.2 mV AT 23:49, 05-27-96
ENTERED

STD VOL= 2.5000 AT 23:50, 05-27-96
ENTERED

EMF=-147.7 mV AT 23:51, 05-27-96

EMF=-147.7 mV AT 23:51, 05-27-96

EMF=-147.7 mV AT 23:51, 05-27-96
ENTERED

1:NH3 SLOPE=-57.9 mV/DEC
AT 23:51, 05-27-96

1:NH3 CONC= 6.71

S96T002012 Dup

$$(16.71 - .0399)(25) = 1.67 e^{+2} \mu g/n$$

BEST AVAILABLE COPY

DOUBLE KNOWN ADDITION SELECTED
AT 23:56, 05-27-96

WHC-SD-WM-DP-186, REV. 0

SAMPLE VOL= 25.000 AT 23:56, 05-27-96
ENTERED

EMF=-84.5 mV AT 23:57, 05-27-96

EMF=-83.6 mV AT 23:58, 05-27-96

EMF=-83.3 mV AT 23:58, 05-27-96

EMF=-83.2 mV AT 23:58, 05-27-96
ENTERED

STD CONC= 1000 AT 23:59, 05-27-96
ENTERED

STD VOL= .25000 AT 23:59, 05-27-96
ENTERED

S96T002012 Spike

EMF=-104.1 mV AT 00:00, 05-28-96

EMF=-104.1 mV AT 00:00, 05-28-96
ENTERED

STD VOL= 2.5000 AT 00:01, 05-28-96
ENTERED

EMF=-149.7 mV AT 00:02, 05-28-96

EMF=-149.8 mV AT 00:02, 05-28-96
ENTERED

1:NH3 SLOPE=-58.4 mV/DEC
AT 00:02, 05-28-96

1:NH3 CONC= 7.68

$$\begin{aligned} & \cancel{(7.68 - 0.299)} - 5.06 (.1) (25) \\ \text{spike} \quad & \text{sample} \\ & \frac{7.68 - 5.06 (25)}{.1} = \frac{6.55 \text{ e2}}{4.12 \text{ e2}} = 158. \end{aligned}$$

BEST AVAILABLE COPY

DOUBLE KNOWN ADDITION SELECTED
AT 00:07, 05-28-96

WHC-SD-WM-DP-186, REV. 0

SAMPLE VOL= 25.000 AT 00:07, 05-28-96
ENTERED

EMF=-123.8 mV AT 00:08, 05-28-96

EMF=-123.6 mV AT 00:08, 05-28-96
ENTERED

STD CONC= 1000 AT 00:08, 05-28-96
ENTERED

STD VOL= .25000 AT 00:08, 05-28-96
ENTERED

EMF=-129.4 mV AT 00:09, 05-28-96

EMF=-129.3 mV AT 00:10, 05-28-96

EMF=-129.2 mV AT 00:10, 05-28-96
ENTERED

STD VOL= 2.5000 AT 00:10, 05-28-96
ENTERED

S96T002013

EMF=-157.3 mV AT 00:12, 05-28-96

EMF=-157.4 mV AT 00:12, 05-28-96
ENTERED

1:NH3 SLOPE=-71.0 mV/DEC
AT 00:12, 05-28-96

$$(47.3 - .0399)(25) = 1.18 \frac{\text{mg}}{\text{m}^3}$$

1:NH3 CONC= 47.3

BEST AVAILABLE COPY

DOUBLE KNOWN ADDITION SELECTED
AT 00:12, 05-28-96

WHC-SD-WM-DP-186, REV. 0

SAMPLE VOL= 25.000 AT 00:13, 05-28-96
ENTERED

EMF=-120.4 mV AT 00:14, 05-28-96

EMF=-120.2 mV AT 00:15, 05-28-96
ENTERED

STD CONC= 1000 AT 00:15, 05-28-96
ENTERED

STD VOL= .25000 AT 00:15, 05-28-96
ENTERED

EMF=-126.9 mV AT 00:16, 05-28-96

EMF=-126.8 mV AT 00:16, 05-28-96
ENTERED

STD VOL= 2.5000 AT 00:17, 05-28-96
ENTERED

EMF=-156.7 mV AT 00:18, 05-28-96

EMF=-156.8 mV AT 00:18, 05-28-96
ENTERED

1:NH3 SLOPE=-65.8 mV/DEC
AT 00:18, 05-28-96

1:NH3 CONC= 36.7

S96T002013 Dup

$$(36.7 - .0399)(25) = 9.17 \frac{\mu\text{g}}{\text{ml}}$$

BEST AVAILABLE COPY

DOUBLE KNOWN ADDITION SELECTED
AT 00:36, 05-28-96

WHC-SD-WM-DP-186, REV. 0

SAMPLE VOL= 25.000 AT 00:37, 05-28-96
ENTERED

EMF=-110.2 mV AT 00:37, 05-28-96

EMF=-110.3 mV AT 00:37, 05-28-96
ENTERED

STD CONC= 1000 AT 00:38, 05-28-96
ENTERED

STD VOL= .25000 AT 00:38, 05-28-96
ENTERED

EMF=-121.5 mV AT 00:39, 05-28-96

EMF=-121.5 mV AT 00:39, 05-28-96
ENTERED

STD VOL= 2.5000 AT 00:39, 05-28-96
ENTERED

EMF=-155.1 mV AT 00:40, 05-28-96

EMF=-155.2 mV AT 00:40, 05-28-96
ENTERED

1:NH3 SLOPE=-51.0 mV/DEC
AT 00:40, 05-28-96

1:NH3 CONC= 14.8

5.28.96

STD
145N16F

$$(14.8 - .0399)(25) = 3.69 \text{ } \mu\text{g}/\text{ml}$$

BEST AVAILABLE COPY

LABCORE Completed Worklist Report for Worklist# 8325

Analyst: krq

Instrument: IC01

Book# 133N9F

Method: LA533105 Rev/Mod D-1

WHC-SD-WM-DP-178, REV.

Worklist Comment: A-101 IC. RCJ

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	④IC-QC F	QC	1	<1.30e-2		ug/mL
1 CCB	0	④IC-QC CL	QC	1	3.10e-02	0.031	ug/mL
1 CCB	0	④IC-QC NO2	QC	1	<1.07e-1		ug/mL
1 CCB	0	④IC-QC BR	QC	1	<1.26e-1		ug/mL
1 CCB	0	④IC-QC NO3	QC	1	<1.40e-1		ug/mL
1 CCB	0	④IC-QC PO4	QC	1	<1.19e-1		ug/mL
1 CCB	0	④IC-QC SO4	QC	1	<1.36e-1		ug/mL
1 CCB	0	④IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2 CCV	0	④IC-QC F	QC	5.90e01	5.77e+01	97.797 % Recovery	
2 CCV	0	④IC-QC CL	QC	7.90e01	7.39e+01	93.544 % Recovery	
2 CCV	0	④IC-QC NO2	QC	5.37e02	5.38e+02	100.186 % Recovery	
2 CCV	0	④IC-QC BR	QC	5.75e02	5.57e+02	96.870 % Recovery	
2 CCV	0	④IC-QC NO3	QC	6.14e02	5.89e+02	95.928 % Recovery	
2 CCV	0	④IC-QC PO4	QC	5.46e02	5.48e+02	100.366 % Recovery	
2 CCV	0	④IC-QC SO4	QC	6.31e02	6.13e+02	97.147 % Recovery	
2 CCV	0	④IC-QC OXALATE2	QC	5.09e02	4.98e+02	97.839 % Recovery	
3 SAMPLE	S96T002014 0	④IC-01 F-02	LIQUID	N/A	< 5.383e+01	53.830	ug/mL
3 SAMPLE	S96T002014 0	④IC-01 CL-02	LIQUID	N/A	1.064e+04	70.400	ug/mL
3 SAMPLE	S96T002014 0	④IC-01 BR-02	LIQUID	N/A	< 5.218e+02	521.800	ug/mL
3 SAMPLE	S96T002014 0	④IC-01 NO3-02	LIQUID	N/A	1.694e+05	579.700	ug/mL
3 SAMPLE	S96T002014 0	④IC-01 PO4-02	LIQUID	N/A	4.234e+03	492.400	ug/mL
3 SAMPLE	S96T002014 0	④IC-01 SO4-02	LIQUID	N/A	1.625e+03	562.800	ug/mL
3 SAMPLE	S96T002014 0	④IC-01 OXALATE2	LIQUID	N/A	< 4.346e+02	434.800	ug/mL
4 DUP	S96T002014 0	④IC-01 F-02	LIQUID	<5.38e1	<5.38e1		RPD
4 DUP	S96T002014 0	④IC-01 CL-02	LIQUID	1.06e+04	1.08e+04	1.869	RPD
4 DUP	S96T002014 0	④IC-01 NO2-02	LIQUID	1.78e+05	1.79e+05	0.560	RPD
4 DUP	S96T002014 0	④IC-01 BR-02	LIQUID	<5.22e2	<5.22e2		RPD
4 DUP	S96T002014 0	④IC-01 NO3-02	LIQUID	1.69e+05	1.70e+05	0.590	RPD
4 DUP	S96T002014 0	④IC-01 PO4-02	LIQUID	4.23e+03	4.22e+03	0.237	RPD
4 DUP	S96T002014 0	④IC-01 SO4-02	LIQUID	1.62e+03	1.59e+03	1.869	RPD
4 DUP	S96T002014 0	④IC-01 OXALATE2	LIQUID	<4.35e2	<4.35e2		RPD
5 SPK	S96T002014 0	④IC-01 F-02	LIQUID	5.90e01	2.66e+01	45.085 % Recovery	
5 SPK	S96T002014 0	④IC-01 CL-02	LIQUID	7.90e01	7.80e+01	98.734 % Recovery	
5 SPK	S96T002014 0	④IC-01 NO2-02	LIQUID	5.37e02	4.41e+02	82.123 % Recovery	
5 SPK	S96T002014 0	④IC-01 BR-02	LIQUID	5.75e02	5.43e+02	94.435 % Recovery	
5 SPK	S96T002014 0	④IC-01 NO3-02	LIQUID	6.14e02	5.93e+02	96.580 % Recovery	
5 SPK	S96T002014 0	④IC-01 PO4-02	LIQUID	5.46e02	5.22e+02	95.604 % Recovery	
5 SPK	S96T002014 0	④IC-01 SO4-02	LIQUID	6.31e02	6.03e+02	95.563 % Recovery	
5 SPK	S96T002014 0	④IC-01 OXALATE2	LIQUID	5.09e02	4.95e+02	97.250 % Recovery	

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

LABCORE Completed Worklist Report for Worklist# 8325

Seq	Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
-----	------	---------	-----	------	--------	--------	-------	-------------	------

Comments Section:**WHC-SD-WM-DP-186, REV. 0**Comments for sample# S96T002014 and test @IC-01
Matrix interference with F. jmf**Final page for worklist# 8325**_____
Analyst Signature_____
Date_____
Analyst Signature_____
Date*H. Anastos* *5.21.96*

Reviewer Signature Date

05/03/96 10:08
A-0004-1

WHC-SD-WM-DP-178, REV 1/19/96

Page: 1

LABCORE Data Entry Template for Worklist# 8325

Analyst: SBC Instrument: IC00 IC01 Book# 133119-F

Method: LA-533-105 Rev/Mod P-1

Worklist Comment: A-101 IC. RCJ

WHC-SD-WM-DP-186, REV. 0

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S96T002014 0		@IC-01	LIQUID	96000459	A-101 GRAB
	Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02					
4 DUP	S96T002014 0		@IC-01	LIQUID		
5 SPK	S96T002014 0		@IC-01	LIQUID		

Final page for worklist # 8325

Analyst Signature [Signature] Date 5/5/96

Analyst Signature _____ Date _____

Exported 8325/may.csv

Uploaded 5/13/96 JMF
not printed yet

Validated 5/13/96, NO₂ rejected + will be run on WKL # 8619
JMF

Data Entry Comments:

NO₂ above curve, reject & re-run.
96050511. D01, D02, D04-D06

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

Sample Name: BLANK Date: 05/05/1996 16:41:54
 Data File : C:\DX\DATA\96050511.d01
 Method : C:\DX\METHOD\AUTOMEL.met
 ACI Address: 1 System: 1 Inject#: 1 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

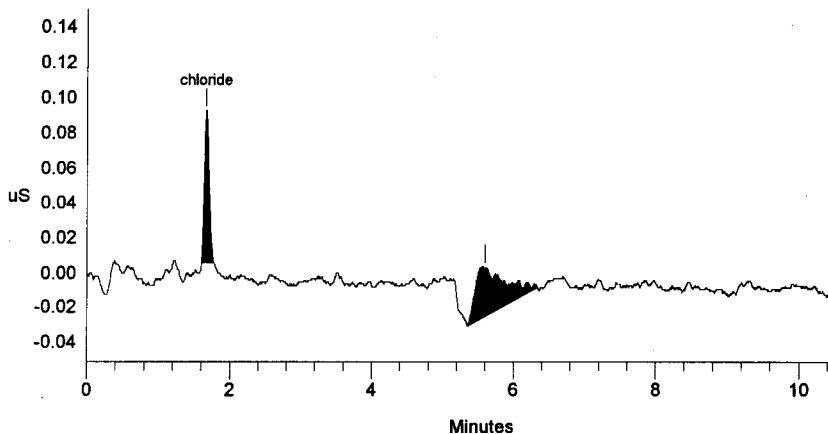
WHC-SD-WM-DP-178, REV. 11/10/96

Calibration Volume Dilution Points Rate Start Stop Area Reject
 External 1 1 3150 5Hz 0.00 10.50 100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.67	chloride	0.031	85	405	1	0.81
2	5.60		0.000	27	791	1	
Totals			0.031	112	1196		

File: 96050511.d01 Sample: BLANK



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 90 TO 95.

Data Reprocessed On 05/12/1996 10 58:09

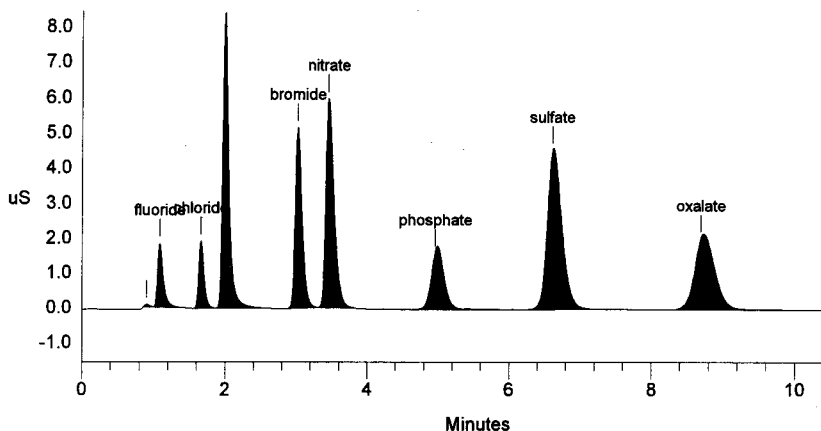
Sample Name: CCV 133N9-F Date: 05/05/1996 16:55:05
 Data File : C:\DX\DATA\96050511.d02
 Method : C:\DX\METHOD\AUTOMEL.mel WHG-SD-WM-DP-178, REV. *220* 6/10/96
 ACI Address: 1 System: 1 Inject#: 2 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3150	5Hz	0.00	10.50		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	80	389	2	
2	1.09	fluoride	57.672	1845	10314	2	1.56
3	1.66	chloride	73.928	1929	9855	1	0.40
4	2.00	nitrite	538.467	8406	50055	1	-0.66
5	3.02	bromide	556.912	5162	34726	1	2.03
6	3.45	nitrate	589.170	5956	48165	1	4.23
7	4.96	phosphate	548.124	1623	22368	1	0.54
8	6.61	sulfate	612.771	4542	65493	1	1.64
9	8.69	oxalate	497.528	2035	41610	1	1.88
Totals			3474.572	31578	282975		

File: 96050511.d02 Sample: CCV 133N9-F



Data Reprocessed On 05/13/1996 10:58:13

Sample Name: S96T002014 SAM Date: 05/05/1996 17:21:31
 Data File : C:\DX\DATA\96050511.d04
 Method : C:\DX\METHOD\AUTOMEL.met ~~WHC-SD-WM-DP-178, REV. 04/10/96~~
 ACI Address: 1 System: 1 Inject#: 4 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

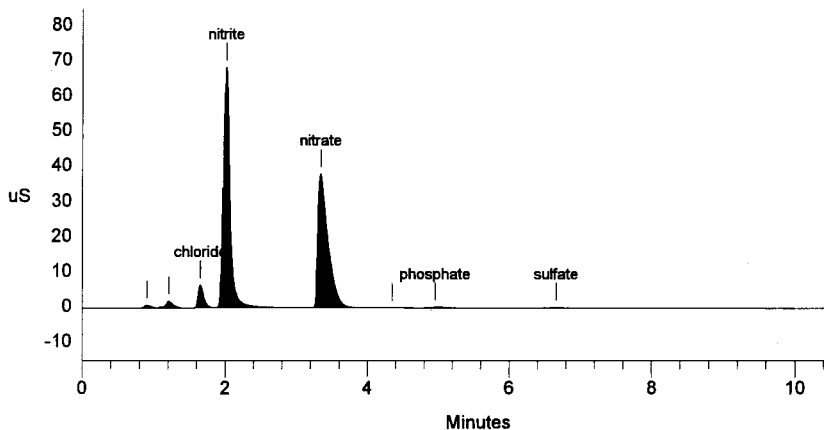
Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	761	4975	2	
2	1.21		0.000	1992	14884	2	
3	1.65	chloride	10642.544	6565	35845	1	0.00
4	2.01	nitrite	178155.185	68326	451158	1	0.00
5	3.34	nitrate	169389.545	38041	382414	1	0.80
6	4.35		0.000	47	523	1	
7	4.96	phosphate	4233.655	276	4052	1	0.54
8	6.67	sulfate	1624.784	207	3546	1	2.46

Totals 364045.714 116214 897397

File: 96050511.d04 Sample: S96T002014 SAM



Data Reprocessed On 05/13/1996 10:58:17

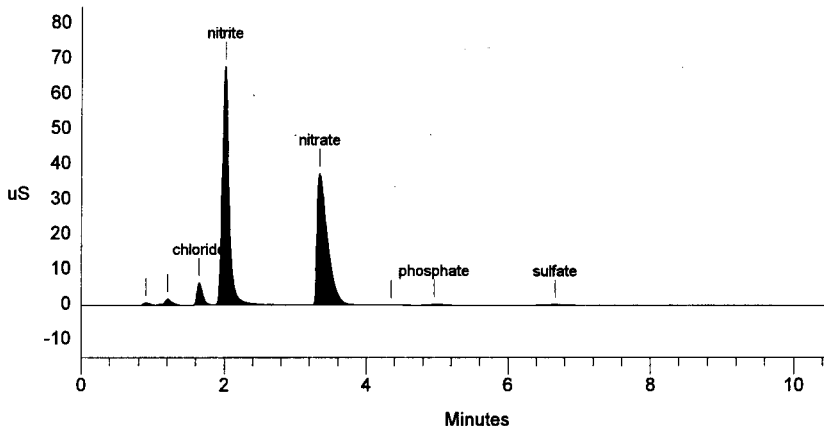
Sample Name: S96T002014 DUP Date: 05/05/1996 17:34:44
 Data File : C:\DX\DATA\96050511.d05
 Method : C:\DX\METHOD\AUTOMEL.met WHC-SD-WM-DP-178, REV. 05/10/96
 ACI Address: 1 System: 1 Inject#: 5 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	754	4852	2	
2	1.21		0.000	1955	14586	2	
3	1.65	chloride	10844.588	6413	36562	1	-0.40
4	2.01	nitrite	179387.136	67926	454681	1	0.00
5	3.34	nitrate	169770.762	37601	383402	1	0.80
6	4.35		0.000	51	522	1	
7	4.96	phosphate	4216.872	288	4036	1	0.54
8	6.67	sulfate	1591.441	214	3459	1	2.46
Totals			365810.799	115202	902100		

File: 96050511.d05 Sample: S96T002014 DUP



Data Reprocessed On 05/13/1996 10:58:21

Sample Name: S96T002014 SPK Date: 05/05/1996 17:47:58
 Data File : C:\DX\DATA\96050511.d06
 Method : C:\DX\METHOD\AUTOMEL.met
 ACI Address: 1 System: 1 Inject#: 6 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

WHC-SD-WM-DP-178, REV. 0 6/12/96

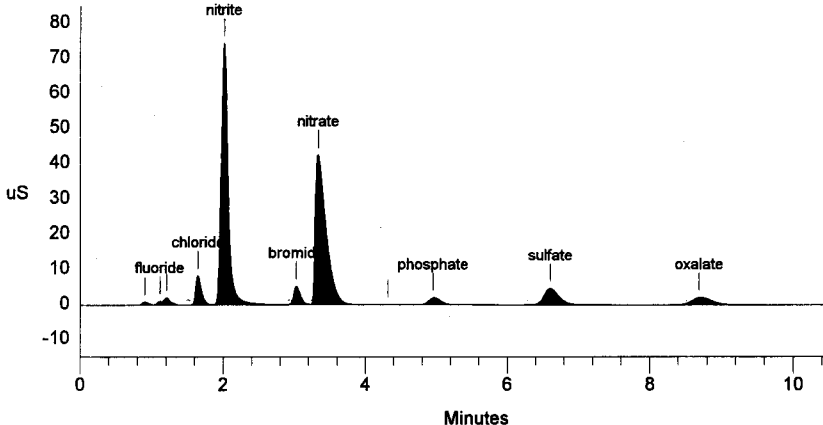
Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3150	5Hz	0.00	10.50		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	814	4999	2	
2	1.11	fluoride	1074.128	1090	4467	2	4.05
3	1.21		0.000	2121	14390	2	
4	1.65	chloride	13792.736	8293	47193	1	-0.40
5	2.01	nitrite	195966.054	74372	502783	1	0.00
6	3.03	bromide	21959.114	5257	33349	1	2.25
7	3.33	nitrate	193368.133	42405	446123	1	0.60
8	4.32		0.000	39	370	1	
9	4.96	phosphate	25339.671	2023	25298	1	0.54
10	6.61	sulfate	25984.661	4648	67805	1	1.64
11	8.69	oxalate	19989.346	2057	40760	1	1.88

Totals 497473.845 143117 1187537

File: 96050511.d06 Sample: S96T002014 SPK



05/06/96 15:09

A-0004-1

WHC-SD-WM-DP-186, REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 8388

Analyst:

Instrument: IC00

IC01

Book# 136109-A

Method: LA-533-105

Rev/Mod

R1

Worklist Comment: A-101 IC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S96T002012 0		@IC-01	LIQUID	96000459 A-101	GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
4 DUP	S96T002012 0		@IC-01	LIQUID		
5 SPK	S96T002012 0		@IC-01	LIQUID		
6 SAMPLE	S96T002013 0		@IC-01	LIQUID	96000459 A-101	GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
7 DUP	S96T002013 0		@IC-01	LIQUID		

Final page for worklist # 8388

Rae Ann Deen 5-28-96

Analyst Signature Date

Analyst Signature

Date

Exported 8388.may.csv

Instell 5/29/96 GME

Uploaded 5/30/96 GME

Validated 5/30/96 GME

Data Entry Comments:

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

WHC-SD-WM-DP-186, REV 0

LABCORE Completed Worklist Report for Worklist# 8388

Analyst: rag

Instrument: IC01

Book# 136A9A

Method: 4A-533-105 Rev/Mod D-1

Worklist Comment: A-101 IC. RCJ

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	2.01e-01	0.201 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	5.90e01	5.57e+01	94.407 % Recovery
2	CCV	0	⊖IC-QC	CL	QC	7.90e01	7.22e+01	91.392 % Recovery
2	CCV	0	⊖IC-QC	NO2	QC	5.48e02	5.24e+02	95.620 % Recovery
2	CCV	0	⊖IC-QC	BR	QC	5.75e02	5.45e+02	94.783 % Recovery
2	CCV	0	⊖IC-QC	NO3	QC	6.14e02	6.03e+02	98.208 % Recovery
2	CCV	0	⊖IC-QC	PO4	QC	5.46e02	5.26e+02	96.337 % Recovery
2	CCV	0	⊖IC-QC	SO4	QC	6.31e02	6.14e+02	97.386 % Recovery
2	CCV	0	⊖IC-QC	OxALATE2	QC	5.15e02	5.08e+02	98.641 % Recovery
3	SAMPLE	S96T002012	⊖IC-01	F-02	LIQUID	N/A	<1.326e+02	132.600 ug/mL
3	SAMPLE	S96T002012	⊖IC-01	CL-02	LIQUID	N/A	2.457e+03	173.400 ug/mL
3	SAMPLE	S96T002012	⊖IC-01	NO2-02	LIQUID	N/A	4.545e+04	1092.000 ug/mL
3	SAMPLE	S96T002012	⊖IC-01	BR-02	LIQUID	N/A	<1.285e+03	1285.000 ug/mL
3	SAMPLE	S96T002012	⊖IC-01	NO3-02	LIQUID	N/A	2.993e+05	1428.000 ug/mL
3	SAMPLE	S96T002012	⊖IC-01	PO4-02	LIQUID	N/A	2.953e+03	1213.000 ug/mL
3	SAMPLE	S96T002012	⊖IC-01	SO4-02	LIQUID	N/A	<1.386e+03	1386.000 ug/mL
3	SAMPLE	S96T002012	⊖IC-01	OxALATE2	LIQUID	N/A	<1.071e+03	1071.000 ug/mL
4	DUP	S96T002012	⊖IC-01	F-02	LIQUID	<1.33e2	<1.33e2	RPD
4	DUP	S96T002012	⊖IC-01	CL-02	LIQUID	2.46e+03	2.40e+03	2.469 RPD
4	DUP	S96T002012	⊖IC-01	NO2-02	LIQUID	4.54e+04	4.47e+04	1.554 RPD
4	DUP	S96T002012	⊖IC-01	BR-02	LIQUID	<1.28e3	<1.29e3	RPD
4	DUP	S96T002012	⊖IC-01	NO3-02	LIQUID	2.99e+05	2.99e+05	0.000 RPD
4	DUP	S96T002012	⊖IC-01	PO4-02	LIQUID	2.95e+03	2.80e+03	5.217 RPD
4	DUP	S96T002012	⊖IC-01	SO4-02	LIQUID	<1.39e3	1.84e+03	RPD
4	DUP	S96T002012	⊖IC-01	OxALATE2	LIQUID	<1.07e3	<1.07e3	RPD
5	SPK	S96T002012	⊖IC-01	F-02	LIQUID	5.90e01	5.77e+01	97.797 % Recovery
5	SPK	S96T002012	⊖IC-01	CL-02	LIQUID	7.90e01	6.82e+01	86.329 % Recovery
5	SPK	S96T002012	⊖IC-01	NO2-02	LIQUID	5.48e02	5.38e+02	98.175 % Recovery
5	SPK	S96T002012	⊖IC-01	BR-02	LIQUID	5.75e02	5.36e+02	93.217 % Recovery
5	SPK	S96T002012	⊖IC-01	NO3-02	LIQUID	6.14e02	5.88e+02	95.765 % Recovery
5	SPK	S96T002012	⊖IC-01	PO4-02	LIQUID	5.46e02	5.17e+02	94.689 % Recovery
5	SPK	S96T002012	⊖IC-01	SO4-02	LIQUID	6.31e02	6.10e+02	96.672 % Recovery
5	SPK	S96T002012	⊖IC-01	OxALATE2	LIQUID	5.15e02	5.04e+02	97.864 % Recovery
6	SAMPLE	S96T002013	⊖IC-01	F-02	LIQUID	N/A	<1.326e+02	132.600 ug/mL

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

WHC-SD-WM-DP-186 REV 0
LABCORE Completed Worklist Report for Worklist# 8388

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
6	SAMPLE	S96T002013	0		•IC-01 CL-02	LIQUID	N/A	9.217e+03	173.400	ug/mL
6	SAMPLE	S96T002013	0		•IC-01 NO2-02	LIQUID	N/A	1.637e+05	1092.000	ug/mL
6	SAMPLE	S96T002013	0		•IC-01 BR-02	LIQUID	N/A	1.285e+03	1285.000	ug/mL
6	SAMPLE	S96T002013	0		•IC-01 NO3-02	LIQUID	N/A	1.435e+05	1428.000	ug/mL
6	SAMPLE	S96T002013	0		•IC-01 PO4-02	LIQUID	N/A	3.512e+03	1213.000	ug/mL
6	SAMPLE	S96T002013	0		•IC-01 SO4-02	LIQUID	N/A	2.124e+03	1386.000	ug/mL
6	SAMPLE	S96T002013	0		•IC-01 OXALATE2	LIQUID	N/A	1.071e+03	1071.000	ug/mL
7	DUP	S96T002013	0		•IC-01 F-02	LIQUID	<1.33e2	<1.33e2		RPD
7	DUP	S96T002013	0		•IC-01 CL-02	LIQUID	9.22e+03	9.06e+03	1.751	RPD
7	DUP	S96T002013	0		•IC-01 NO2-02	LIQUID	1.64e+05	1.59e+05	3.096	RPD
7	DUP	S96T002013	0		•IC-01 BR-02	LIQUID	<1.28e3	<1.28e3		RPD
7	DUP	S96T002013	0		•IC-01 NO3-02	LIQUID	1.44e+05	1.44e+05	0.000	RPD
7	DUP	S96T002013	0		•IC-01 PO4-02	LIQUID	3.51e+03	3.40e+03	3.184	RPD
7	DUP	S96T002013	0		•IC-01 SO4-02	LIQUID	2.12e+03	2.21e+03	4.157	RPD
7	DUP	S96T002013	0		•IC-01 OXALATE2	LIQUID	<1.07e3	<1.07e3		RPD

Final page for worklist# 8388

Analyst Signature

Date

Analyst Signature

Date

Jan Lye 5/30/96
Reviewer Signature Date

Validated 5/30/96 JMF

A-0010-IC				DATA FILE/WORKLIST RESOLUTION				30-May-96			
Worklist#: 8388				Data File: 8388MAY.CSV							
		Seq	Type	Sample #			Seq#	Data File	Sample Name	Dilution	
-	=>	1	CCB		-	1	96052781.d16	BLANK		1.00	
	=>	2	CCV			2	96052781.d17	STD 136N9-A		101.00	
	=>	3	SAMPLE	S96T002012		6	96052781.d18	S96T002013		10201.00	
	=>	4	DUP	S96T002012		7	96052781.d19	S96T002013 DUP		10201.00	
	=>	5	SPK	S96T002012			96052781.d20	S96T002014		10201.00	
	=>	6	SAMPLE	S96T002013		3	96052781.d21	S96T002014 DUP		10201.00	
	=>	7	DUP	S96T002013		4	96052781.d22	S96T002012 DUP		10201.00	
						5	96052781.d23	S96T002012 SPIKE		10201.00	
+					+						

Save (F4) Abort (Shift-F3) ListFiles (Shift-F1) UploadFile (F8)

Sample Name: BLANK Date: 05/28/1996 14:46:18
 Data File : C:\DX\DATA\96052781.D16
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 16
 Analyst : *Rae Ann Green* Column: AG4A/AS4A anion column
 Detector: EDU1

WHC-SD-WM-DP-186-REV.0

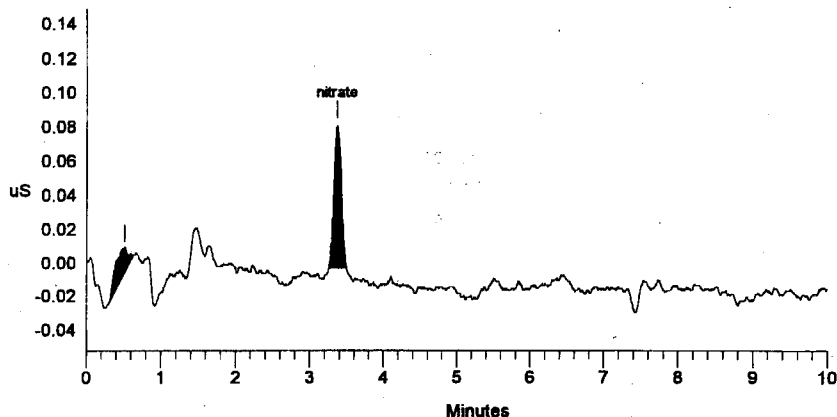
05-28-96

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.51		0.000	15	203	1	
2	3.37	nitrate	0.201	84	590	1	1.81
Totals			0.201	99	793		

File: 96052781.D16 Sample: BLANK



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 99 TO 105.

Sample Name: STD 136N9-A Date: 05/28/1996 14:58:14
 Data File : C:\DK\DATA\96052781.D17 WHC-SD-WM-DP-186, REV. 0
 Method : C:\DK\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 17 Detector: CDM-1
 Analyst : *Rae Ann Queen* Column: AG4A/AS4A anion column

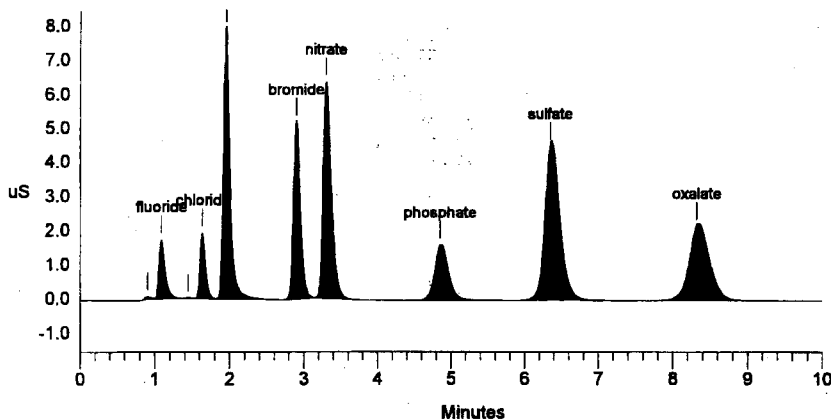
Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 101 3000 5Hz 0.00 10.00 100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	69	338	2	
2	1.09	fluoride	55.680	1734	9941	2	2.50
3	1.45		0.000	24	135	1	
4	1.64	chloride	72.220	1931	9624	1	-0.81
5	1.95	nitrite	524.158	7928	48686	1	-3.31
6	2.89	bromide	544.709	5193	33938	1	-2.25
7	3.30	nitrate	602.946	6352	49334	1	-0.40
8	4.85	phosphate	526.121	1620	21449	1	-1.62
9	6.35	sulfate	614.448	4512	65678	1	-2.46
10	8.32	oxalate	508.391	2182	42536	1	-2.50
Totals			3448.672	31546	281658		

File: 96052781.D17 Sample: STD 136N9-A



2012-02-28

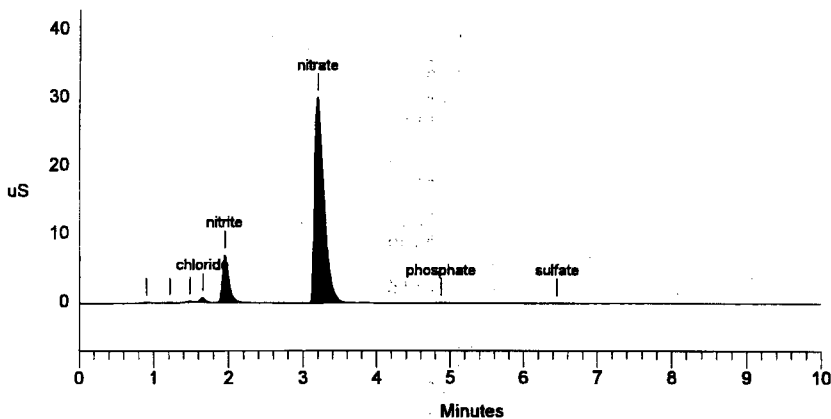
Sample Name: S96T002012-DUM Date: 05/28/1996 15:54:34
 Data File : C:\DX\DATA\96052781.D21
 Method : C:\DX\METHOD\KIT.MET WHC-SD-WM-DP-186, REV.0
 ACI Address: 1 System: 1 Inject#: 21 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	3000	5Hz	0.00	10.00		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	134	842	1	
2	1.21		0.000	148	1094	1	
3	1.48		0.000	217	1278	1	
4	1.65	chloride	2457.049	697	3213	1	0.00
5	1.95	nitrite	45449.450	6982	41600	1	-3.31
6	3.19	nitrate	299342.569	30057	263628	1	-3.62
7	4.88	phosphate	2953.149	75	1058	1	-1.08
8	6.45	sulfate	1184.287	39	584	1	-0.82
Totals			351386.504	38349	313298		

File: 96052781.D21 Sample: S96T002012-DUM



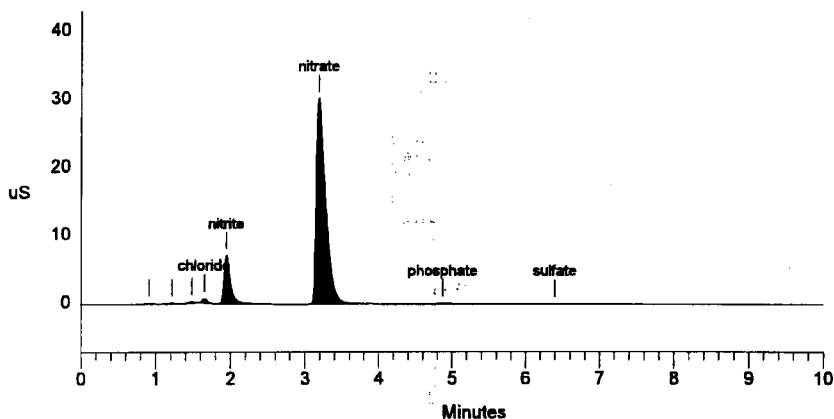
Sample Name: S96T002012 DUP Date: 05/28/1996 16:08:05
 Data File : C:\DX\DATA\96052781.D22 WHC-SD-WM-DP-186, REV. 0
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 22 Detector: CDM-1
 Analyst : *Ru Ben Green* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	3000	5Hz	0.00	10.00		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	139	918	1	
2	1.22		0.000	148	1085	1	
3	1.49		0.000	221	1381	1	
4	1.65	chloride	2403.167	703	3143	1	0.00
5	1.95	nitrite	44664.866	7002	40860	1	-3.31
6	3.19	nitrate	298902.589	30159	263204	1	-3.82
7	4.88	phosphate	2796.465	80	995	1	-1.08
8	6.40	sulfate	1840.993	48	1274	1	-1.64
Totals			350608.080	38499	312858		

File: 96052781.D22 Sample: S96T002012 DUP



Sample Name: S96T002012 SPIKE Date: 05/28/1996 16:21:11
 Data File : C:\DX\DATA\96052781.D23
 Method : C:\DX\METHOD\KIT.MET WHC-SD-WM-DP-186, REV. 0
 ACI Address: 1 System: 1 Inject#: 23 Detector: CDM-1
 Analyst : *Ruben Duenas* Column: AG4A/AS4A anion column

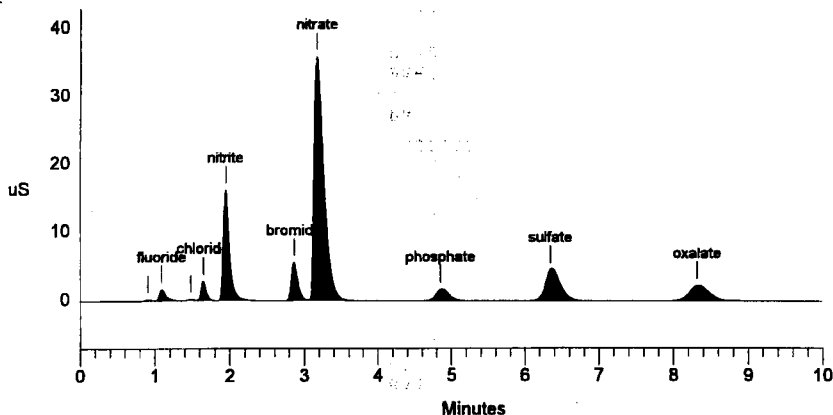
Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	3000	5Hz	0.00	10.00		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	193	1066	2	
2	1.09	fluoride	5832.906	1642	10329	2	2.50
3	1.48		0.000	192	1124	1	
4	1.65	chloride	9343.367	2798	12374	1	-0.40
5	1.95	nitrite	99764.277	16207	93504	1	-3.31
6	2.87	bromide	54129.632	5540	33372	1	-3.15
7	3.17	nitrate	358719.668	35761	322156	1	-4.23
8	4.85	phosphate	55218.216	1680	22309	1	-1.62
9	6.35	sulfate	61662.902	4537	65246	1	-2.46
10	8.32	oxalate	50948.291	2268	42199	1	-2.50

Totals 695619.258 70818 603678

File: 96052781.D23 Sample: S96T002012 SPIKE



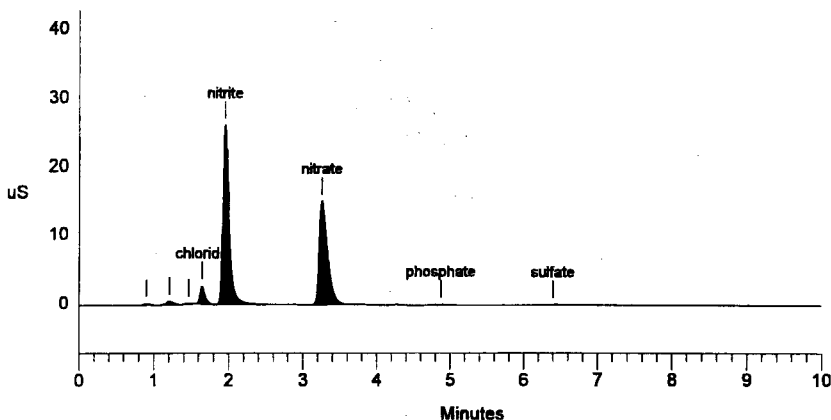
Sample Name: S96T002013 Date: 05/28/1996 15:16:08
 Data File : C:\DX\DATA\96052781.D18
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 18 WHC-SD-WM-DP-186 REV 0
 Analyst : *For Ann Dwyer* Column: AG4A/AS4A anion column Detector: CDM-1

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	3000	5Hz	0.00	10.00		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	238	1493	1	
2	1.21		0.000	572	3945	1	
3	1.47		0.000	174	980	1	
4	1.65	chloride	9217.257	2634	12204	1	-0.40
5	1.95	nitrite	163662.095	26000	156213	1	-2.98
6	3.25	nitrate	143456.281	15007	120243	1	-1.81
7	4.88	phosphate	3512.175	98	1281	1	-1.08
8	6.40	sulfate	2123.858	86	1571	1	-1.64
Totals			321971.666	44810	297929		

File: 96052781.D18 Sample: S96T002013



Sample Name: S96T002013 DUP Date: 05/28/1996 15:30:00
 Data File : C:\DX\DATA\96052781.D19 WHC-SD-WM-DP-186, REV. 0
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 19 Detector: CDM-1
 Analyst : *Res Ben Green* Column: AG4A/AS4A anion column

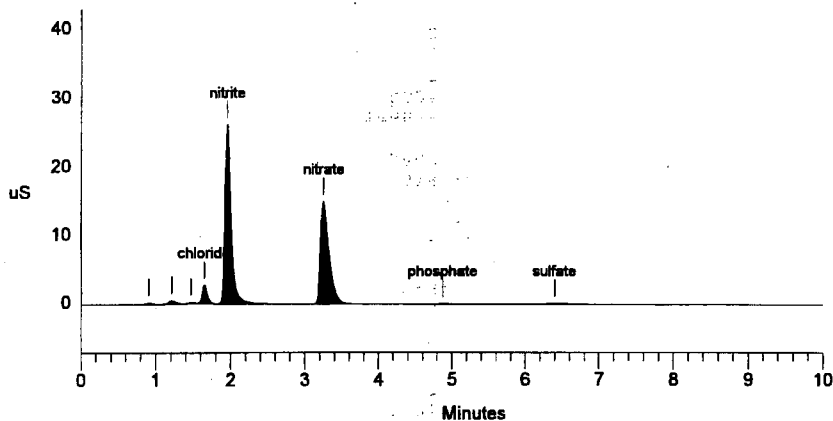
Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 10201 3000 5Hz 0.00 10.00 100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	247	1578	1	
2	1.21		0.000	561	3938	1	
3	1.47		0.000	183	1048	1	
4	1.65	chloride	9057.791	2644	11989	1	-0.40
5	1.95	nitrite	159018.275	26082	151592	1	-2.98
6	3.25	nitrate	143774.656	15008	120522	1	-1.81
7	4.88	phosphate	3400.085	94	1237	1	-1.08
8	6.40	sulfate	2213.505	98	1665	1	-1.64
Totals			317464.312	44916	293569		

File: 96052781.D19 Sample: S96T002013 DUP



05/13/96 12:03
A-0004-1

WHC-SD-WM-DP-186, REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 8619Analyst: R. B Instrument: IC00 _____ Book# 136N9-AMethod: LA-533-105 Rev/Mod D-1

Worklist Comment: Rerun NO2 for A-101, try 10201 df. jmf

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			●IC-QC	QC		
2 CCV			●IC-QC	QC		
3 SAMPLE	S96T002014 0		●IC-01	LIQUID	96000459	A-101 GRAB
	Analytes Requested: NO2-02					
4 DUP	S96T002014 0		●IC-01	LIQUID		
5 SPK	S96T002014 0		●IC-01	LIQUID		

Final page for worklist # 8619Rae Ann Green 5-28-96

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Exported 8/19/96, csv

Installed 5/29/96 gmk

Uploaded 5/30/96 gmf

Val. 5/30/96 gmf

Data Entry Comments:

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

WHC-SD-WM-DP-186, REV. 0
LABCORE Completed Worklist Report for Worklist# 8619

Analyst: rag

Instrument: IC01

Book# 136W9A

Method: LA-533-10SRev/Mod D-1

Worklist Comment: Rerun NO2 for A-101, try 10201 df. jmf

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	2.14e-01	0.214	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	5.90e01	5.86e+01	99.322 % Recovery	
2	CCV	0	@IC-QC CL	QC	7.90e01	7.32e+01	92.658 % Recovery	
2	CCV	0	@IC-QC NO2	QC	5.48e02	5.55e+02	101.277 % Recovery	
2	CCV	0	@IC-QC BR	QC	5.75e02	5.57e+02	96.870 % Recovery	
2	CCV	0	@IC-QC NO3	QC	6.14e02	5.99e+02	97.557 % Recovery	
2	CCV	0	@IC-QC PO4	QC	5.46e02	5.26e+02	96.337 % Recovery	
2	CCV	0	@IC-QC SO4	QC	6.31e02	6.11e+02	96.830 % Recovery	
2	CCV	0	@IC-QC OXALATE2	QC	5.15e02	5.05e+02	98.058 % Recovery	
3	SAMPLE	S96T002014	0	@IC-01 NO2-02	LIQUID	N/A	1.665e+05	1092.000 ug/mL
4	DUP	S96T002014	0	@IC-01 NO2-02	LIQUID	1.66e+05	1.68e+05	1.198 RPD
5	SPK	S96T002014	0	@IC-01 NO2-02	LIQUID	5.48e02	7.08e+02	129.197 % Recovery

Comments Section:

Comments for sample# S96T002014 and test @IC-01 .
Matrix interference with F. jmf

Final page for worklist# 8619

Analyst Signature

Date

Analyst Signature

Date

Jann M. Fyfe 5/30/96
Reviewer Signature Date

Validated 5/31/96 JMF

A-0010-IC

DATA FILE/WORKLIST RESOLUTION

30-May-96

Worklist#: 8619

Data File: 8619MAY.CSV

	Seq	Type	Sample #		Seq#	Data File	Sample Name	Dilution
-	=>	1	CCB		1	96052781.d09	BLANK	1.00
	=>	2	CCV			96052781.d10	STD 136N9-A	101.00
	=>	3	SAMPLE		3	96052781.d11	96T002014	10201.00
	=>	4	DUP		2	96052781.d13	STD 136N9-A	101.00
	=>	5	SPK		4	96052781.d14	S06T002014 DUP	10201.00
			S96T002014		5	96052781.d15	S06T002014 SPIKE	10201.00
			S96T002014					
			S96T002014					
+				+				

Save (F4) Abort (Shift-F3) ListFiles (Shift-F1) UploadFile (F8)

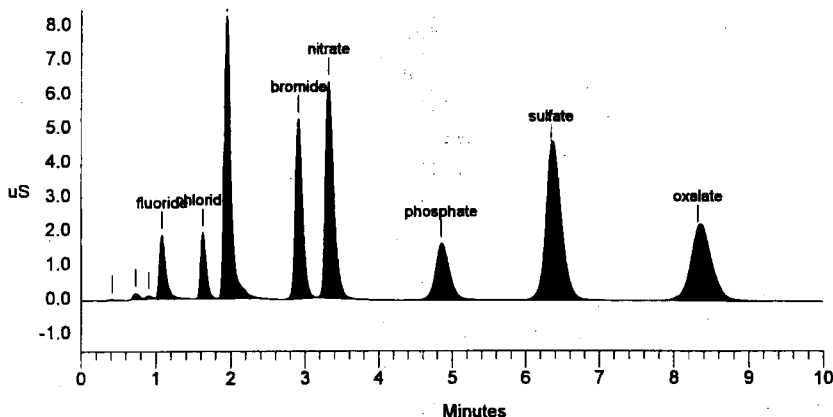
Sample Name: STD 136N9-A Date: 05/28/1996 14:08:01
 Data File : C:\DX\DATA\96052781.D13 WHC-SD-WM-DP-186, REV. 0
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 13 Detector: CDM-1
 Analyst : *Rachna Shrivastava* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3000	5Hz	0.00	10.00		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.42		0.000	25	114	1	
2	0.73		0.000	165	833	2	
3	0.91		0.000	89	472	2	
4	1.09	fluoride	58.620	1843	10493	2	1.88
5	1.63	chloride	73.170	1932	9753	1	-1.21
6	1.95	nitrite	554.990	8203	51638	1	-3.31
7	2.91	bromide	557.063	5244	34735	1	-1.58
8	3.32	nitrate	598.607	6322	48966	1	0.20
9	4.85	phosphate	526.193	1635	21452	1	-1.62
10	6.35	sulfate	611.086	4420	65308	1	-2.46
11	8.32	oxalate	504.805	2094	42230	1	-2.50
Totals			3484.534	31971	285992		

File: 96052781.D13 Sample: STD 136N9-A



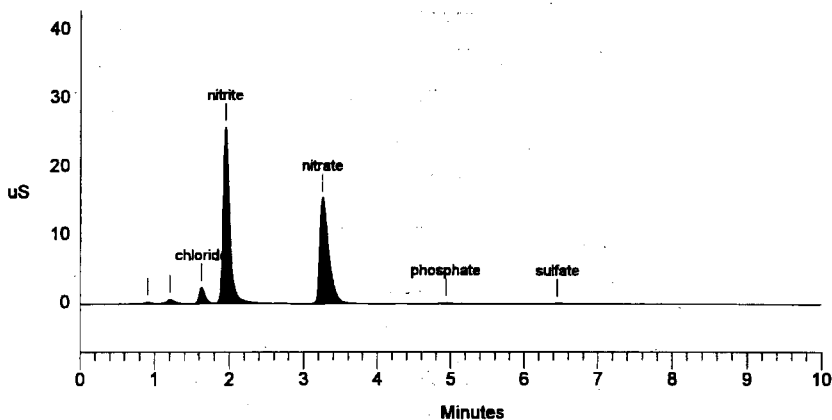
Sample Name: 96T002014 Date: 05/28/1996 10:26:27
 Data File : C:\DX\DATA\96052781.D11
 Method : C:\DX\METHOD\KIT.MET WHC-SD-WM-DP-186, REV. 0
 ACI Address: 1 System: 1 Inject#: 11 Detector: CDM-1
 Analyst : *R. Duen* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	3000	5Hz	0.00	10.00		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration -ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	254	1688	2	
2	1.21		0.000	680	5576	2	
3	1.63	chloride	9745.373	2389	12916	1	-1.61
4	1.95	nitrite	166511.518	25745	159053	1	-3.31
5	3.25	nitrate	151394.009	15448	127228	1	-1.81
6	4.93	phosphate	4005.969	116	1479	1	0.00
7	6.45	sulfate	1871.928	80	1306	1	-0.82
Totals			333528.799	44711	309246		

File: 96052781.D11 Sample: 96T002014



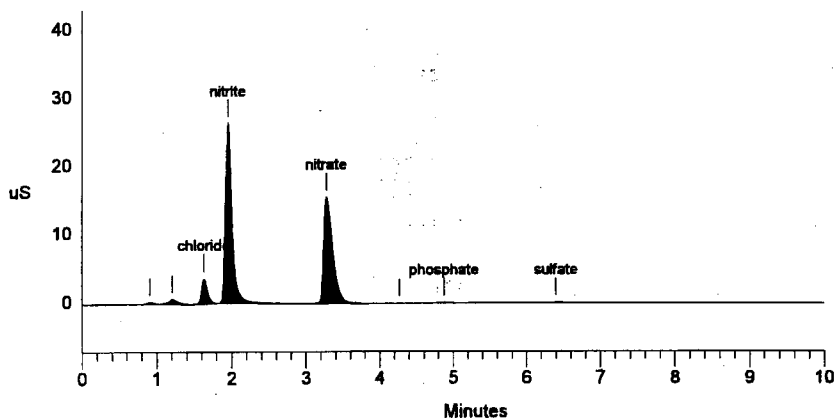
Sample Name: S06T002014 DUP Date: 05/28/1996 14:21:47
 Data File : C:\DX\DATA\96052781.D14 WHC-SD-WM-DP-186, REV. 0
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 14 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	10201	3000	5Hz	0.00	10.00		100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	273	1740	2	
2	1.21		0.000	679	5525	2	
3	1.63	chloride	14525.100	3696	19420	1	-1.21
4	1.95	nitrite	168238.767	26293	160777	1	-2.98
5	3.28	nitrate	153610.478	15512	129185	1	-1.01
6	4.27		0.000	18	151	1	
7	4.88	phosphate	4506.106	116	1679	1	-1.08
8	6.40	sulfate	2521.238	128	1988	1	-1.64
Totals			343401.688	46715	320464		

File: 96052781.D14 Sample: S06T002014 DUP



```

=====
Sample Name: S06T002014 SPIKE                               Date: 05/28/1996 14:33:52
Data File  : C:\DX\DATA\96052781.D15                       WHC-SD-WM-DP-186, REV. 0
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 15                         Detector: CDM-1
Analyst    : Re Ann Green Column: AG4A/AS4A anion column
=====
  
```

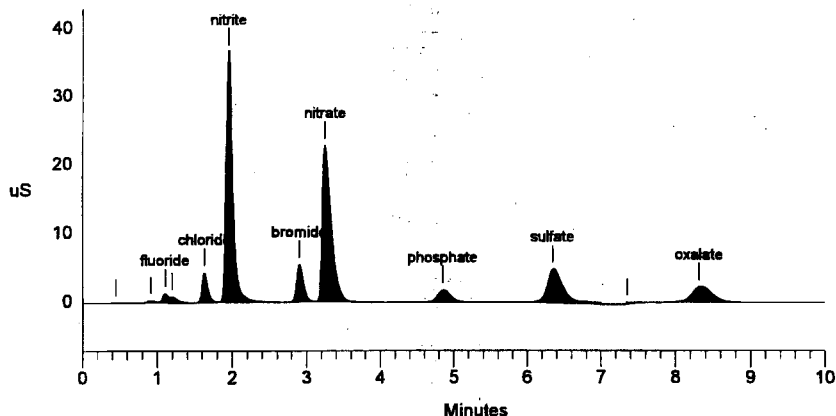
```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
=====
External          1      10201    3000  5Hz   0.00  10.00      100
=====
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.45		0.000	19	260	1	
2	0.91		0.000	355	2080	2	
3	1.11	fluoride	4170.018	1420	7255	2	3.75
4	1.20		0.000	914	6270	2	
5	1.63	chloride	17595.180	4423	23660	1	-1.21
6	1.95	nitrite	237980.652	36513	231603	1	-2.98
7	2.91	bromide	58220.163	5486	35988	1	-1.80
8	3.25	nitrate	225915.611	22768	194390	1	-1.81
9	4.85	phosphate	58685.551	1832	23746	1	-1.62
10	6.35	sulfate	73993.624	4902	78724	1	-2.46
11	7.36		0.000	285	2918	1	
12	8.32	oxalate	53629.238	2283	44463	1	-2.50
Totals			730190.037	81200	651358		

File: 96052781.D15 Sample: S06T002014 SPIKE



05/20/96 14:28
A-0004-1

WHC-SD-WM-DP-186, REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 8982

Analyst: DPB Instrument: IC00 Book# 136N9-A

Method: LA-533-105 Rev/Mod D-1

Worklist Comment: A-101. @IC. SOLID. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 BLNK-PREP			@IC-01	SOLID		
4 SAMPLE	S96T002240 0 W		@IC-01	SOLID	96000459	A-101 GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
5 DUP	S96T002240 0 W		@IC-01	SOLID		
6 SPK	S96T002240 0 W		@IC-01	SOLID		

Final page for worklist # 8982

Daniel P. Bromley / 5/29/96 0500
Analyst Signature Date

Analyst Signature Date

Exported 8982 newy.csv

In shell

uploaded 5.30.96 Hea

Validated 5.30.96 Hea

Data Entry Comments:

96052771.D08 -> 114

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

LABCORE Completed Worklist Report for Worklist# 8982

Analyst: dpb

Instrument: IC01

Book# 136 N9A

Method: UAS33105 Rev/Mod D-1

Worklist Comment: A-101. @IC. SOLID. new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	CCB	0	④IC-QC F	QC	1	<1.30e-2		ug/mL
1	CCB	0	④IC-QC CL	QC	1	1.90e-02	0.019	ug/mL
1	CCB	0	④IC-QC NO2	QC	1	<1.07e-1		ug/mL
1	CCB	0	④IC-QC BR	QC	1	<1.26e-1		ug/mL
1	CCB	0	④IC-QC NO3	QC	1	2.14e-01	0.214	ug/mL
1	CCB	0	④IC-QC PO4	QC	1	<1.19e-1		ug/mL
1	CCB	0	④IC-QC SO4	QC	1	<1.36e-1		ug/mL
1	CCB	0	④IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2	CCV	0	④IC-QC F	QC	5.90e01	5.63e+01	95.424 % Recovery	
2	CCV	0	④IC-QC CL	QC	7.90e01	7.38e+01	93.418 % Recovery	
2	CCV	0	④IC-QC NO2	QC	5.48e02	5.31e+02	96.898 % Recovery	
2	CCV	0	④IC-QC BR	QC	5.75e02	5.55e+02	96.522 % Recovery	
2	CCV	0	④IC-QC NO3	QC	6.14e02	6.13e+02	99.837 % Recovery	
2	CCV	0	④IC-QC PO4	QC	5.46e02	5.37e+02	98.352 % Recovery	
2	CCV	0	④IC-QC SO4	QC	6.31e02	6.24e+02	98.891 % Recovery	
2	CCV	0	④IC-QC OXALATE2	QC	5.15e02	5.18e+02	100.583 % Recovery	
3	BLNK-PREP	0	④IC-01 F-02	SOLID	1	<1.30e-2		ug/g
3	BLNK-PREP	0	④IC-01 CL-02	SOLID	1	<1.70e-2		ug/g
3	BLNK-PREP	0	④IC-01 NO2-02	SOLID	1	<1.07e-1		ug/g
3	BLNK-PREP	0	④IC-01 BR-02	SOLID	1	<1.26e-1		ug/g
3	BLNK-PREP	0	④IC-01 NO3-02	SOLID	1	<1.40e-1		ug/g
3	BLNK-PREP	0	④IC-01 PO4-02	SOLID	1	<1.19e-1		ug/g
3	BLNK-PREP	0	④IC-01 SO4-02	SOLID	1	<1.36e-1		ug/g
3	BLNK-PREP	0	④IC-01 OXALATE2	SOLID	1	<1.05e-1		ug/g
4	SAMPLE	S96T002240	④IC-01 F-02	SOLID	N/A	2.348e+02	234.800	ug/g
4	SAMPLE	S96T002240	④IC-01 CL-02	SOLID	N/A	3.904e+03	307.000	ug/g
4	SAMPLE	S96T002240	④IC-01 NO2-02	SOLID	N/A	6.366e+04	1932.000	ug/g
4	SAMPLE	S96T002240	④IC-01 BR-02	SOLID	N/A	2.276e+05	2276.000	ug/g
4	SAMPLE	S96T002240	④IC-01 NO3-02	SOLID	N/A	1.281e+05	2527.000	ug/g
4	SAMPLE	S96T002240	④IC-01 PO4-02	SOLID	N/A	4.453e+03	2147.000	ug/g
4	SAMPLE	S96T002240	④IC-01 SO4-02	SOLID	N/A	2.000e+04	2454.000	ug/g
4	SAMPLE	S96T002240	④IC-01 OXALATE2	SOLID	N/A	1.905e+04	1897.000	ug/g
5	DUP	S96T002240	④IC-01 F-02	SOLID	<2.35e2	<2.56e2		RPD
5	DUP	S96T002240	④IC-01 CL-02	SOLID	3.90e+03	3.72e+03	4.724	RPD
5	DUP	S96T002240	④IC-01 NO2-02	SOLID	6.37e+04	6.88e+04	7.698	RPD
5	DUP	S96T002240	④IC-01 BR-02	SOLID	<2.28e3	<2.49e3		RPD
5	DUP	S96T002240	④IC-01 NO3-02	SOLID	1.28e+05	1.41e+05	9.665	RPD
5	DUP	S96T002240	④IC-01 PO4-02	SOLID	4.45e+03	4.78e+03	7.151	RPD
5	DUP	S96T002240	④IC-01 SO4-02	SOLID	2.00e+04	1.99e+04	0.501	RPD
5	DUP	S96T002240	④IC-01 OXALATE2	SOLID	1.90e+04	1.68e+04	12.291	RPD
6	SPK	S96T002240	④IC-01 F-02	SOLID	5.90e01	6.33e+01	107.288 % Recovery	

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

LABCORE Completed Worklist Report for Worklist# 8982

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
6	SPK	S96T002240	0	W	@IC-01	CL-02	SOLID	7.90e01	6.34e+01	80.253 % Recovery
6	SPK	S96T002240	0	W	@IC-01	NO2-02	SOLID	5.48e02	4.17e+02	76.095 % Recovery
6	SPK	S96T002240	0	W	@IC-01	BR-02	SOLID	5.75e02	5.57e+02	96.870 % Recovery
6	SPK	S96T002240	0	W	@IC-01	NO3-02	SOLID	6.14e02	3.21e+02	52.280 % Recovery
6	SPK	S96T002240	0	W	@IC-01	PO4-02	SOLID	5.46e02	5.27e+02	96.520 % Recovery
6	SPK	S96T002240	0	W	@IC-01	SO4-02	SOLID	6.31e02	5.75e+02	91.125 % Recovery
6	SPK	S96T002240	0	W	@IC-01	OxALATE2	SOLID	5.15e02	4.69e+02	91.068 % Recovery

Comments Section:

Comments for sample# S96T002240 and test @IC-01 .
Spk failures due to matrix interferences. hla

Final page for worklist# 8982

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

J. Anastor 5-31-96
Reviewer Signature Date

Validated 5-31-96 Hlg

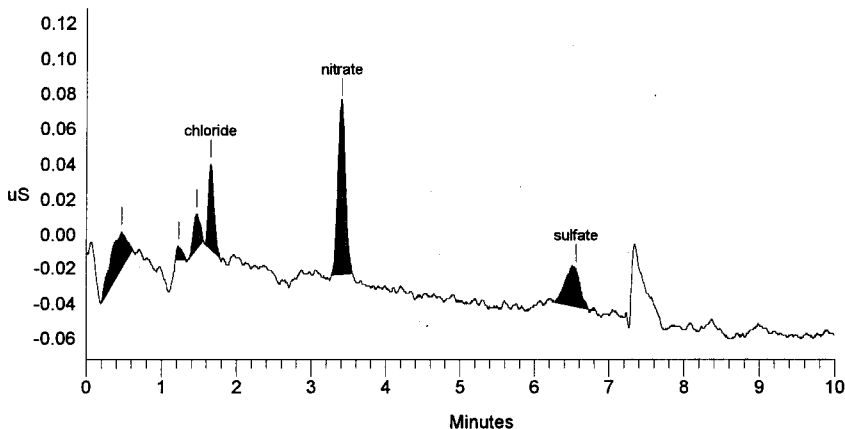
Sample Name: ELUENT BLANK Date: 05/28/1996 01:38:36
 Data File : C:\DX\DATA\96052771.d08
 Method : C:\DX\METHOD\KIT.MET **WHC-SD-WM-DP-186, REV. 0**
 ACI Address: 1 System: 1 Inject#: 8 Detector: CDM-1
 Analyst : *for JWB 6/1/96* Column: AG4A/AS4A anion column

Calibration Volume *for JWB 6/1/96* Dilution Points Rate Start Stop Area Reject
 External 1 1 3000 5Hz 0.00 10.00 100

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.47		0.000	21	339	1	
3	1.47		0.000	20	126	1	
4	1.65	chloride	0.019	48	253	1	0.00
5	3.41	nitrate	0.214	98	704	1	3.02
6	6.56	sulfate	0.091	22	311	1	0.82
Totals			0.324	208	1732		

File: 96052771.d08 Sample: ELUENT BLANK



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 117 TO 122.

```

=====
Sample Name: STD 136N9-A                      Date: 05/28/1996 01:49:39
Data File  : C:\DX\DATA\96052771.d09
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 9           WHC-SD-WM-DP-186 REV.0
Analyst    :                               Detector: CDM-1
Column: AG4A/AS4A anion column
=====

```

```

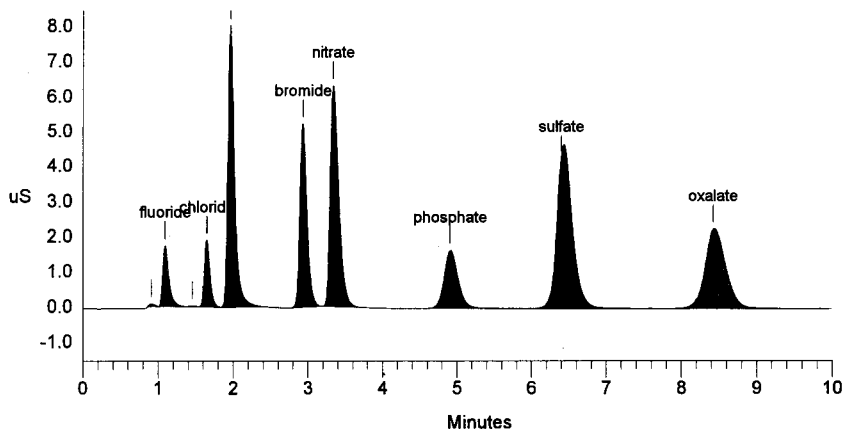
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000  5Hz   0.00 10.00      100
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	80	385	2	
2	1.09	fluoride	56.334	1728	10063	2	2.50
3	1.45		0.000	28	150	2	
4	1.65	chloride	73.839	1892	9843	1	-0.40
5	1.97	nitrite	530.959	8037	49336	1	-2.32
6	2.93	bromide	555.231	5236	34617	1	-0.90
7	3.34	nitrate	612.804	6309	50171	1	0.80
8	4.91	phosphate	536.586	1648	21886	1	-0.54
9	6.40	sulfate	623.723	4238	66698	1	-1.64
10	8.43	oxalate	517.933	2262	43350	1	-1.25
Totals			3507.408	31457	286500		

File: 96052771.d09 Sample: STD 136N9-A



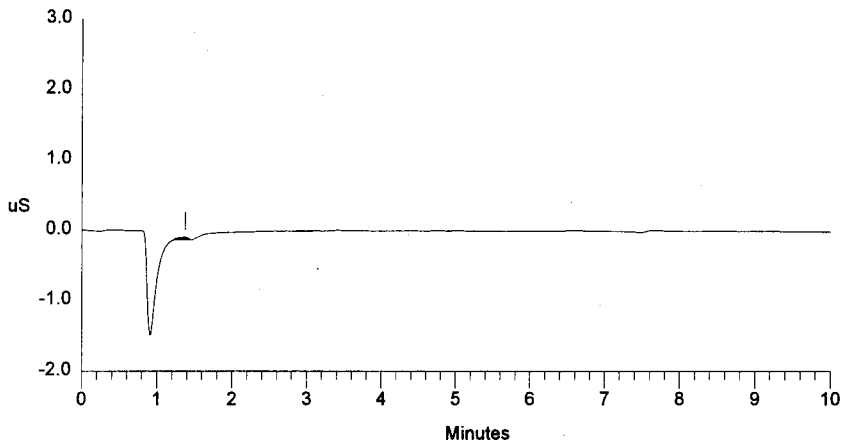
```
=====
Sample Name: BLANK PREP                      Date: 05/28/1996 02:04:47
Data File  : C:\DX\DATA\96052771.d10        WHC-SD-WM-DP-186, REV. 0
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 10         Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====
```

```
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1  3000  5Hz   0.00 10.00      100
-----
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.37		0.000	38	349	1	
Totals			0.000	38	349		

File: 96052771.d10 Sample: BLANK PREP



```

=====
Sample Name: S96T002240 SAM                      Date: 05/28/1996 02:26:55
Data File  : C:\DX\DATA\96052771.d12
Method     : C:\DX\METHOD\KIT.MET                WHC-SD-WM-DP-186, REV. 0
ACI Address: 1 System: 1 Inject#: 12              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

```

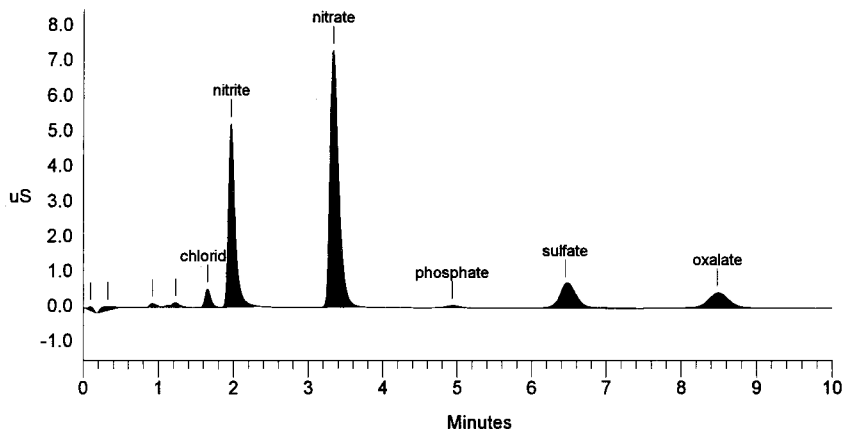
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000  5Hz   0.00 10.00      100
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.10		0.000	114	562	1	
2	0.33		0.000	118	1482	1	
3	0.92		0.000	100	618	2	
4	1.23		0.000	133	1113	2	
5	1.65	chloride	21.829	534	2882	1	0.00
6	1.97	nitrite	355.995	5233	32653	1	-2.32
7	3.33	nitrate	716.214	7318	58977	1	0.60
8	4.93	phosphate	24.902	64	883	1	0.00
9	6.45	sulfate	111.824	690	11232	1	-0.82
10	8.48	oxalate	106.530	433	8501	1	-0.62
Totals			1337.293	14738	118903		

File: 96052771.d12 Sample: S96T002240 SAM



```

=====
Sample Name: S96T002240 DUP                      Date: 05/28/1996 02:45:39
Data File  : C:\DX\DATA\96052771.d13
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 13
Analyst    : Column: AG4A/AS4A anion column
=====

```

WHC-SD-WM-DP-186, REV. 0

Detector: CDM-1

```

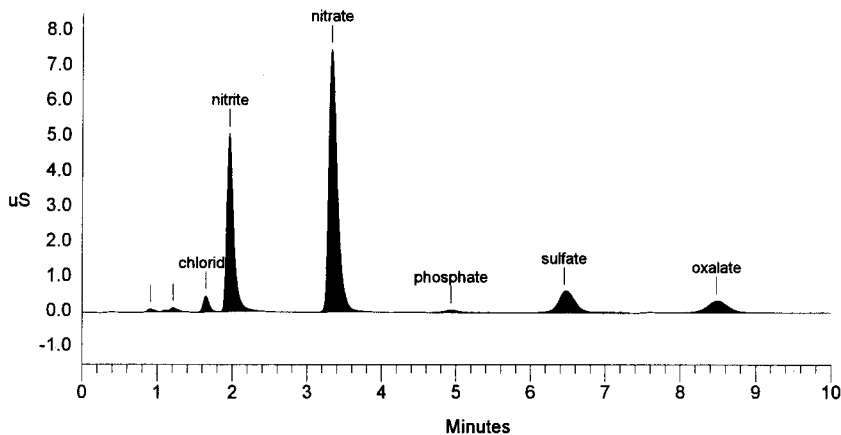
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000  5Hz   0.00  10.00      100
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	82	496	2	
2	1.21		0.000	129	1128	2	
3	1.65	chloride	19.063	458	2515	1	-0.40
4	1.96	nitrite	352.190	5083	32292	1	-2.65
5	3.33	nitrate	721.159	7476	59399	1	0.40
6	4.93	phosphate	24.448	67	865	1	0.00
7	6.45	sulfate	101.805	608	10164	1	-0.82
8	8.48	oxalate	86.091	340	6781	1	-0.62
Totals			1304.756	14243	113641		

File: 96052771.d13 Sample: S96T002240 DUP



```

=====
Sample Name: S96T002240 SPK                      Date: 05/28/1996 02:58:52
Data File  : C:\DX\DATA\96052771.d14
Method     : C:\DX\METHOD\KIT.MET                WHC-SD-WM-DP-186, REV. 0
ACI Address: 1 System: 1 Inject#: 14              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

```

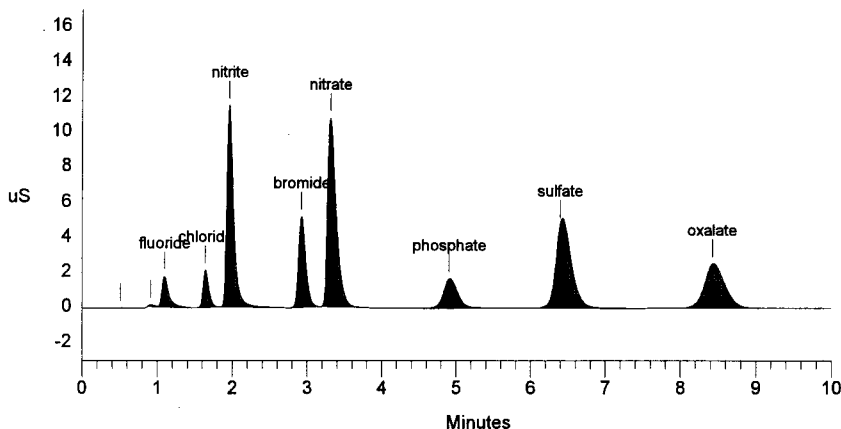
=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000  5Hz   0.00 10.00      100
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.51		0.000	13	198	1	
2	0.91		0.000	126	682	2	
3	1.10	fluoride	63.338	1739	11381	2	3.13
4	1.64	chloride	85.221	2128	11384	1	-0.81
5	1.96	nitrite	773.062	11500	72633	1	-2.65
6	2.93	bromide	556.961	5179	34729	1	-1.13
7	3.31	nitrate	1037.079	10759	86606	1	0.00
8	4.91	phosphate	551.989	1668	22530	1	-0.54
9	6.40	sulfate	687.226	4775	73702	1	-1.64
10	8.43	oxalate	575.689	2535	48280	1	-1.25
Totals			4330.565	40422	362123		

File: 96052771.d14 Sample: S96T002240 SPK



04/25/95 14:25
A-0004-1

File #: 960506a

WHC-SD-WM-DP-186, REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 8074

Analyst: MSG/6 Instrument: ICP01-1 MS-4-4 Book# 53148a

Method: LA-505-154/161 Rev/Mod 6-0

Worklist Comment: ICP A-101 (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	SERDIL	S96T002012 0 D	@ICP-D01	LIQUID		
6	SAMPLE	S96T002012 0 D	@ICP-D01	LIQUID	96000459 A-101	GRAB
Analytes Requested: AL-D-01 , FE-D-01 , NA-D-01						
7	DUP	S96T002012 0 D	@ICP-D01	LIQUID		
8	SPK	S96T002012 0 D	@ICP-D01	LIQUID		
9	CCV		@ICP-QC	QC		
10	CCB		@ICP-QC	QC		
11	SERDIL	S96T002013 0 D	@ICP-D01	LIQUID		
12	SAMPLE	S96T002013 0 D	@ICP-D01	LIQUID	96000459 A-101	GRAB
Analytes Requested: AL-D-01 , FE-D-01 , NA-D-01						
13	DUP	S96T002013 0 D	@ICP-D01	LIQUID		
14	SPK	S96T002013 0 D	@ICP-D01	LIQUID		
15	ICSA		@ICP-QC	QC		
16	ICSAB		@ICP-QC	QC		
17	CCV		@ICP-QC	QC		
18	CCB		@ICP-QC	QC		

Data Entry Comments: Raw data are already multiplied by the ICP dil. factor,
so the final result for sample 556T002012 on Al = 1.49e4 ug/ml

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

LABCORE Data Entry Template for Worklist# 8074

S Type	Sample#	R A Test	Matrix	Group#	Project
--------	---------	----------	--------	--------	---------

Final page for worklist # 8074

JK [Signature]
Analyst Signature Date 05-06-96

Reviewed by: [Signature]
Analyst Signature Date 5/9/93

467001012-L, .025-10-28, JF 2005
467001012, .025-10 401
467001012-D, .025-10 401
467001012-Q, .025-10 401, .025 ml sample + 2 ml 5575 + 8 ml #1103
467001013-L, .025-15-28, JF 3005
467001013, .025-15 601
467001013-D, .025-15 601
467001013-Q, .025-15 601, .025 ml sample + 3 ml 5575 + 12 ml #1103

Note: poor spike recovery for Al and Na is due to the sample is much much greater than the spiking amount.

Data Entry Comments:

ICP dil. factor are listed above. The spiking amount for all elements needed for this worklist is 1.0 ppb.

Example calculation of spike recovery:

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

$$5967002012 \quad F_R = \frac{(399.5)}{401} - ND \quad \times 100 = 99.6\%$$

1 124

Analysis Report

Summary

Mon 05-06-96 10:40:54 AM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	960506A	ICP2	05/06/96	09:36	DKS	Q	CONC
2	ICB	960506A	ICP2	05/06/96	09:39	DKS	Q	CONC
3	ICSA	960506A	ICP2	05/06/96	09:43	DKS	Q	CONC
4	ICSAB	960506A	ICP2	05/06/96	09:46	DKS	Q	CONC
5	S96T002012 L	960506A	ICP2	05/06/96	09:49	DKS	S	CONC
6	S96T002012	960506A	ICP2	05/06/96	09:53	DKS	S	CONC
7	S96T002012 D	960506A	ICP2	05/06/96	09:56	DKS	S	CONC
8	S96T002012_A	960506A	ICP2	05/06/96	10:00	DKS	S	CONC
9	CCV	960506A	ICP2	05/06/96	10:05	DKS	Q	CONC
10	CCB	960506A	ICP2	05/06/96	10:09	DKS	Q	CONC
11	S96T002013 L	960506A	ICP2	05/06/96	10:12	DKS	S	CONC
12	S96T002013	960506A	ICP2	05/06/96	10:16	DKS	S	CONC
13	S96T002013 D	960506A	ICP2	05/06/96	10:19	DKS	S	CONC
14	S96T002013_A	960506A	ICP2	05/06/96	10:22	DKS	S	CONC
15	ICSA	960506A	ICP2	05/06/96	10:27	DKS	Q	CONC
16	ICSAB	960506A	ICP2	05/06/96	10:30	DKS	Q	CONC
17	CCV 1	960506A	ICP2	05/06/96	10:34	DKS	Q	CONC
18	CCB 1	960506A	ICP2	05/06/96	10:37	DKS	Q	CONC

WHC-SD-WM-DP-186, REV. 0

MK LD

05-06-96

Q-101 S96T002012

S96T002013

Worklist # 8074

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 125 TO 128

Analysis Report Averages Mon 05-06-96 10:40:54 AM page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.880	4.804	5.104	4.973	4.900	5.078
2	ICB	-.0003	-.0004	-.0008	-.0017	.0000	.0001
3	ICSA	.0018	238.6	-.0518	-.0005	.0030	.0004
4	ICSAB	.9757	240.8	-.0306	.0066	.4857	.4813
5	S96T002012 L	11.35	15100.	-41.53	17.29	.0055	.3030
6	S96T002012	11.90	14910.	-38.66	17.81	.0560	.1531
7	S96T002012 D	11.97	14730.	-35.60	14.70	.0429	.1820
8	S96T002012_A	371.0	15180.	368.1	405.0	389.9	402.6
9	CCV	4.980	4.910	5.193	5.059	5.081	5.216
10	CCB	-.0001	.0028	.0020	.0013	-.0001	.0001
11	S96T002013 L	19.68	64290.	-154.7	57.03	-.3999	.9122
12	S96T002013	20.40	64350.	-185.1	54.95	-.0013	.7749
13	S96T002013 D	18.45	58590.	-143.1	54.43	.0309	.7282
14	S96T002013_A	578.7	63290.	445.4	644.9	592.0	610.0
15	ICSA	.0037	242.6	-.0567	.0035	.0031	.0004
16	ICSAB	.9888	245.2	-.0426	.0008	.4999	.4942
17	CCV_1	4.959	4.911	5.208	5.068	5.046	5.225
18	CCB_1	-.0001	.0018	.0179	.0030	-.0000	.0001

#	Sample Name	Bi	Ca	Gd	Ce	Co	Cr
1	ICV	4.969	5.037	4.958	5.044	5.034	5.020
2	ICB	.0076	.0024	-.0001	-.0094	-.0006	.0002
3	ICSA	-.0321	249.1	-.0003	.0081	.0003	.0004
4	ICSAB	-.0049	252.1	.9542	.0040	.4756	.4877
5	S96T002012 L	-3.034	4.433	.3548	-17.18	.0080	17.25
6	S96T002012	3.930	10.78	.6218	-4.222	-.0001	20.14
7	S96T002012 D	6.653	5.932	.1430	.8070	-.6403	20.03
8	S96T002012_A	412.7	424.7	399.0	406.2	402.6	422.3
9	CCV	5.073	5.223	5.080	5.215	5.155	5.149
10	CCB	.0182	.0014	-.0002	-.0074	.0002	.0008
11	S96T002013 L	53.48	-10.13	.1670	-32.73	-1.009	90.33
12	S96T002013	11.77	11.77	1.143	-6.327	.0682	89.08
13	S96T002013 D	-5.490	3.965	1.570	-2.082	-.4800	82.15
14	S96T002013_A	586.7	628.4	597.0	614.0	602.0	693.1
15	ICSA	.0176	254.9	.0019	.0081	.0008	.0012
16	ICSAB	-.0007	257.4	.9708	-.0008	.4810	.4971
17	CCV_1	5.129	5.187	5.032	5.168	5.111	5.100
18	CCB_1	-.0012	.0020	.0003	-.0106	.0006	.0010

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.110	-.0019	4.988	5.038	4.935	4.911
2	ICB	.0000	-.0000	.0003	.0430	-.0011	.0000
3	ICSA	-.0106	-.0356	92.87	.3577	-.0051	.0044
4	ICSAB	.4897	-.0378	93.77	.1803	-.0060	.9740
5	S96T002012 L	2.296	.2276	.8578	2354.	-1.214	-.0002
6	S96T002012	.9911	.1605	2.405	2304.	-.2816	.0912
7	S96T002012 D	.9803	.2817	2.375	2314.	.0921	.3641
8	S96T002012_A	407.8	.2132	399.5	2746.	398.8	391.4
9	CCV	5.249	-.0025	5.121	5.026	5.112	5.028

Analysis Report

Averages

Mon 05-06-96 10:40:54 AM

page 3

#	Sample Name	Cu	Eu	Fe	K	La	Li
10	CCB	-.0002	.0004	-.0006	.1450	-.0005	.0011
11	S96T002013 L	4.714	1.669	1.051	8877.	-6.015	1.364
12	S96T002013	3.619	.2193	6.539	9160.	-1.002	.2048
13	S96T002013 D	3.480	.2622	5.360	8307.	-.6077	.2039
14	S96T002013_A	617.6	.1288	605.5	9523.	602.6	593.8
15	ICSA	-.0097	-.0423	94.59	.2193	-.0050	.0036
16	ICSAAB	.5033	-.0420	95.66	-.0846	-.0065	1.000
17	CCV 1	5.265	-.0025	5.085	5.039	5.073	5.074
18	CCB_1	.0012	-.0005	.0000	-.0406	-.0015	-.0008

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.779	4.864	5.024	4.890	4.994	4.927
2	ICB	.0038	.0000	-.0014	.0013	-.0021	.0012
3	ICSA	240.8	-.0065	-.0182	197.4	.0056	-.0068
4	ICSAAB	247.4	.4526	-.0135	197.5	.0038	.9171
5	S96T002012 L	3.199	-.1137	25.77	171400.	1.373	-2.864
6	S96T002012	2.136	.0307	38.00	167600.	-.1150	.3481
7	S96T002012 D	1.012	.1041	37.30	165400.	.1989	2.435
8	S96T002012_A	379.9	381.9	442.5	166200.	400.8	392.7
9	CCV	4.873	4.988	5.146	4.989	5.153	5.043
10	CCB	.0022	.0005	.0000	.0055	-.0029	-.0075
11	S96T002013 L	11.85	.4974	150.1	294000.	1.954	-13.73
12	S96T002013	3.662	.2194	164.9	291700.	-.6502	4.364
13	S96T002013 D	1.678	.2758	151.1	265300.	.0191	5.653
14	S96T002013_A	562.6	573.3	768.4	283500.	605.5	598.1
15	ICSA	245.0	-.0067	-.0138	200.6	.0052	-.0054
16	ICSAAB	251.8	.4595	-.0089	201.2	.0018	.9421
17	CCV 1	4.882	4.945	5.103	4.994	5.114	5.002
18	CCB_1	.0121	-.0001	-.0029	-.0073	.0020	.0024

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.059	4.948	4.931	4.799	4.867	5.090
2	ICB	.0025	-.0007	-.0020	.0123	.0123	.0040
3	ICSA	.0172	.0163	.0261	.0178	-.0502	.0245
4	ICSAAB	.0193	1.022	-.0227	.0147	-.0407	.0081
5	S96T002012 L	1061.	6.526	145.8	25.41	27.28	40.21
6	S96T002012	1047.	20.99	164.6	6.656	-1.327	35.78
7	S96T002012 D	1038.	23.49	169.4	5.371	15.78	36.92
8	S96T002012_A	1458.	430.1	575.9	388.0	414.1	453.0
9	CCV	5.178	5.039	4.968	4.867	4.946	5.199
10	CCB	.0098	.0022	-.0096	.0128	.0254	.0102
11	S96T002013 L	1511.	120.0	660.1	20.64	104.4	70.86
12	S96T002013	1551.	158.9	674.7	3.102	18.43	56.66
13	S96T002013 D	1376.	134.9	619.0	9.471	28.56	69.51
14	S96T002013_A	2060.	742.0	1266.	584.1	624.7	697.0
15	ICSA	.0159	.0372	.0426	.0115	-.0545	.0194
16	ICSAAB	.0081	1.019	-.0147	.0257	-.0422	.0055
17	CCV 1	5.132	4.968	5.014	4.881	4.964	5.187
18	CCB_1	-.0040	-.0021	-.0048	.0180	.0123	.0064

WHC-SD-WM-DP-186, REV. 0

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.828	4.870	-.0343	4.848	4.789	9.613
2	ICB	.0001	.0000	-.0015	-.0002	.0075	-.0074
3	ICSA	.0036	-.0024	-.0046	.0021	-.0394	.1474
4	ICSAB	.0054	.0013	-.0056	.0014	-.0183	.1436
5	S96T002012_L	3.737	.1069	-9.260	-1.493	51.77	4.297
6	S96T002012_	1.949	.0641	-2.533	.0870	-.4488	-.1211
7	S96T002012_D	3.902	.1060	-1.291	.0899	-4.973	14.89
8	S96T002012_A	389.1	390.2	-4.579	389.8	383.7	787.4
9	CCV	4.989	5.030	-.0268	4.993	4.865	9.926
10	CCB	.0076	.0001	-.0041	-.0000	.0041	.0378
11	S96T002013_L	12.20	.4781	-18.65	.6370	39.32	62.48
12	S96T002013_	-.8711	.0313	-5.961	-.4657	.2093	5.465
13	S96T002013_D	2.029	.0946	-5.894	-.1781	15.25	21.54
14	S96T002013_A	586.3	590.6	-6.634	587.1	570.1	1192.
15	ICSA	-.0052	-.0024	-.0041	.0016	-.0570	.0777
16	ICSAB	-.0028	.0013	.0002	.0014	.0035	.0748
17	CCV 1	4.959	5.003	-.0273	4.973	4.850	9.875
18	CCB 1	-.0102	-.0001	-.0029	.0007	.0019	-.0345

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.021	.0063	5.024	4.903
2	ICB	-.0005	-.0001	-.0002	-.0006
3	ICSA	-.0002	.0071	-.0034	-.0034
4	ICSAB	.4758	.0071	.9785	-.0028
5	S96T002012_L	-.7494	-.0018	11.08	1.394
6	S96T002012_	.4656	-.0314	11.96	1.735
7	S96T002012_D	.8014	.1194	11.87	2.189
8	S96T002012_A	403.9	.7028	419.0	397.2
9	CCV	5.153	.0061	5.099	5.058
10	CCB	.0016	.0004	.0009	.0010
11	S96T002013_L	3.562	1.151	20.58	2.308
12	S96T002013_	-.2147	-.1437	22.55	2.051
13	S96T002013_D	.6494	.0380	19.19	2.033
14	S96T002013_A	606.8	.8598	625.6	594.8
15	ICSA	-.0008	.0069	-.0018	-.0035
16	ICSAB	.4852	.0069	.9895	-.0044
17	CCV 1	5.124	.0057	5.077	5.013
18	CCB 1	-.0014	-.0005	-.0014	-.0015

DK *[Signature]*
05-06-96

LABCORE Data Entry Template for Worklist# 9203

Analyst: D.K. Sato Instrument: ICPQ12 Book# 53B48B

Method: LA-505-151/161 Rev/Mod B-0 5/10/96

Worklist Comment: ICP A-101 (SOLID ACID DIGEST)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 ICV			@ICP-QC	QC		
2 ICB			@ICP-QC	QC		
3 LLS			@ICP-QC	QC		
4 ICSA			@ICP-QC	QC		
5 ICSAB			@ICP-QC	QC		
6 PREPSTDITJA			@ICP-A01	SOLID		
7 PREPBLKTJA			@ICP-A01	SOLID		
8 SAMPLE	S96T002239 0 A		@ICP-A01	SOLID	96000459	A-101 GRAB
Analytes Requested: AG-A-01 , AL-A-01 , AS-A-01 , B-A-01 , BA-A-01 , BE-A-01 , BI-A-01 , CA-A-01 , CD-A-01 , CE-A-01 , CO-A-01 , CR-A-01 , CU-A-01 , FE-A-01 , K-A-01 , LA-A-01 , LI-A-01 , MG-A-01 , MN-A-01 , MO-A-01 , NA-A-01 , ND-A-01 , NI-A-01 , P-A-01 , PB-A-01 , S-A-01 , SB-A-01 , SE-A-01 , SI-A-01 , SM-A-01 , SR-A-01 , TI-A-01 , TL-A-01 , U-A-01 , V-A-01 , ZN-A-01 , ZR-A-01						
9 DUP	S96T002239 0 A		@ICP-A01	SOLID		
10 SPK-PREDIG	S96T002239 0 A		@ICP-A01	SOLID		
11 ICSA			@ICP-QC	QC		
12 ICSAB			@ICP-QC	QC		
13 CCV			@ICP-QC	QC		
14 CCB			@ICP-QC	QC		

Data Entry Comments: Prep dilution factor can be found in sample prep worklist.

Example for calculation of sample results.

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code. **129**

$$al = 125.1 \frac{\mu g}{ml} \times \frac{1}{(5.496 \frac{g}{L} \times \frac{1L}{1000ml})} = 2.28e+4 \frac{\mu g}{g}$$

LABCORE Data Entry Template for Worklist# 9203

S Type Sample# R A Test Matrix Group# Project

Final page for worklist # 9203

for: Saul H. Pang
D.K. SATO 5/30/96

Analyst Signature Date

Revised by:
Saul H. Pang 5/30/96

Analyst Signature Date

D.F.

S96T00 2239-L	3-6	2-8	15
S96T00 2239	3-6		3
S96T00 2239-D	3-6		3
S96T00 2239-S	3-6		3

Data Entry Comments:

Spike true value is 10.0 ppm for all elements except for
Ag = 2.0 and U = 20.0.

Example for calculation of spike recovery:

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

$$Mg = \frac{1064 - 0.6170}{10} \times 100 = 106.22\% \quad 100.2\%$$

SP 5/30/96

Analysis Report

Summary

Wed 05-29-96 02:53:50 PM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	960529C	ICP2	05/29/96	14:06	DKS	Q	CONC
2	ICB	960529C	ICP2	05/29/96	14:09	DKS	Q	CONC
3	LLS	960529C	ICP2	05/29/96	14:12	DKS	Q	CONC
4	ICSA	960529C	ICP2	05/29/96	14:14	DKS	Q	CONC
5	ICSAB	960529C	ICP2	05/29/96	14:17	DKS	Q	CONC
6	PREPSTD TJJA	960529C	ICP2	05/29/96	14:21	DKS	S	CONC
7	PREPBLKTJJA	960529C	ICP2	05/29/96	14:24	DKS	S	CONC
8	S96T002239 L	960529C	ICP2	05/29/96	14:28	DKS	S	CONC
9	S96T002239	960529C	ICP2	05/29/96	14:31	DKS	S	CONC
10	S96T002239 D	960529C	ICP2	05/29/96	14:34	DKS	S	CONC
11	S96T002239 S	960529C	ICP2	05/29/96	14:37	DKS	S	CONC
12	ICSA	960529C	ICP2	05/29/96	14:41	DKS	Q	CONC
13	ICSAB	960529C	ICP2	05/29/96	14:44	DKS	Q	CONC
14	CCV	960529C	ICP2	05/29/96	14:47	DKS	Q	CONC
15	CCB	960529C	ICP2	05/29/96	14:50	DKS	Q	CONC

JK

05-29-96

Q-101 S96T002239

Worklist # 9203

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 131 TO 134.

Analysis Report

Averages

Wed 05-29-96 02:53:50 PM

page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.938	4.854	5.115	4.989	4.912	5.141
2	ICB	.0003	-.0097	.0044	.0046	.0001	-.0001
3	LLS	.0219	.0954	.2122	.1061	.0979	.0104
4	ICSA	.0031	243.1	-.1106	-.0014	.0018	.0000
5	ICSAB	.9764	242.6	-.0958	-.0063	.4850	.4864
6	PREPSTDTJA	1.818	9.280	9.478	9.963	9.551	10.47
7	PREPBLKTJA	.0012	.0536	.0176	.4732	.0006	.0000
8	S96T002239 L	.1103	129.0	-.3344	.4201	.0555	-.0001
9	S96T002239	.1055	125.1	-.3618	.3885	.0552	.0010
10	S96T002239 D	.0985	112.6	-.2418	.4080	.0694	.0010
11	S96T002239 S	1.954	125.9	9.337	9.825	9.373	9.591
12	ICSA	.0028	244.4	-.0906	.0008	.0018	-.0001
13	ICSAB	.9846	243.9	-.0842	.0014	.4892	.4870
14	CCV	4.946	4.917	5.143	5.058	5.040	5.177
15	CCB	.0009	-.0113	.0041	.0038	.0001	-.0002

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.020	5.090	4.980	5.077	4.999	5.051
2	ICB	.0021	.0015	-.0012	.0023	.0006	.0005
3	LLS	.1915	.2024	.0095	.2050	.0417	.0194
4	ICSA	.0089	245.1	.0014	.0148	.0021	.0087
5	ICSAB	-.0339	247.7	.9449	.0131	.4685	.4858
6	PREPSTDTJA	9.183	8.987	8.884	9.833	9.178	9.048
7	PREPBLKTJA	-.0065	.3244	.0008	.0032	.0033	.0016
8	S96T002239 L	.3122	3.045	.0870	.0460	.0396	13.33
9	S96T002239	.1324	2.951	.0837	.0278	.0239	13.10
10	S96T002239 D	-.0205	2.786	.0989	.0157	.0339	17.39
11	S96T002239 S	9.483	12.36	9.111	9.790	9.279	22.27
12	ICSA	-.0155	251.7	-.0000	.0152	.0011	.0092
13	ICSAB	-.0266	250.4	.9500	.0140	.4711	.4895
14	CCV	5.054	5.034	4.929	5.176	4.962	5.020
15	CCB	-.0035	.0001	-.0003	.0014	.0017	.0003

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.135	-.0018	5.057	4.953	4.989	5.013
2	ICB	-.0007	.0001	-.0002	.0013	.0000	.0002
3	LLS	.0188	-.0003	.1016	.3614	.1010	.0202
4	ICSA	-.0100	-.0277	93.19	.0882	-.0047	.0008
5	ICSAB	.4981	-.0297	93.50	.1703	-.0046	1.008
6	PREPSTDTJA	9.461	-.0053	9.165	9.458	9.590	9.935
7	PREPBLKTJA	.0247	-.0026	.0463	.1022	.0000	-.0015
8	S96T002239 L	.1021	-.0144	8.036	18.32	.0169	-.0084
9	S96T002239	.1079	-.0025	7.747	16.32	.0171	-.0018
10	S96T002239 D	.0900	-.0042	8.913	13.65	.0155	-.0025
11	S96T002239 S	9.346	-.0062	18.64	24.40	9.541	9.575
12	ICSA	-.0098	-.0375	94.42	.2521	-.0045	.0017
13	ICSAB	.5003	-.0334	94.09	.2396	-.0042	1.009
14	CCV	5.252	-.0029	5.041	5.048	5.082	5.184
15	CCB	-.0006	-.0006	-.0011	-.0917	.0010	-.0007

WHC-SD-WM-DP-186, REV. 0

Analysis Report

Averages

Wed 05-29-96 02:53:50 PM

page 3

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.862	4.898	5.013	4.943	5.049	4.993
2	ICB	.0001	.0001	.0021	.0000	.0009	.0046
3	LLS	.1962	.0189	.0932	.2050	.1954	.0414
4	ICSA	250.4	.0070	.0100	202.0	.0052	.0049
5	ICSAB	250.0	.4483	.0096	201.6	.0055	.9194
6	PREPSTDITJA	8.829	9.030	9.100	10.63	9.590	9.137
7	PREPBLKTJA	.1370	.0011	.0233	1.209	.0012	.0068
8	S96T002239 L	.6572	.2430	.2806	1210.	.0908	.5813
9	S96T002239	1.6170	.2416	.2857	1164.	.0660	.5675
10	S96T002239 D	1.026	.3434	.2410	1077.	.0717	.6724
11	S96T002239 S	10.64	9.117	9.408	1052	9.507	9.781
12	ICSA	252.1	.0068	.0048	201.0	.0043	.0011
13	ICSAB	251.4	.4513	.0105	202.1	.0053	.9242
14	CCV	4.917	4.881	5.008	5.066	5.166	4.970
15	CCB	.0016	.0002	.0022	.0083	.0003	.0025

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.261	4.981	5.010	4.782	4.864	4.777
2	ICB	.0073	.0076	.0048	.0042	.0291	.0052
3	LLS	.4307	.1905	.1870	.1024	.2313	.1154
4	ICSA	.0104	.0369	.0353	.0006	.0751	.0127
5	ICSAB	.0195	1.008	.0412	.0069	.0765	.0055
6	PREPSTDITJA	10.15	8.596	9.243	9.418	8.944	12.33
7	PREPBLKTJA	.0029	.0024	.3942	.0051	.0260	.1795
8	S96T002239 L	9.925	.5374	37.03	.0733	.1930	9.626
9	S96T002239	9.590	.5686	35.63	.0119	.0937	9.378
10	S96T002239 D	8.211	.5519	40.40	.0158	.0224	14.40
11	S96T002239 S	19.40	9.459	38.28	9.613	8.945	22.64
12	ICSA	.0033	.0307	.0329	.0039	.0734	.0040
13	ICSAB	.0375	1.014	.0430	.0042	.0662	.0077
14	CCV	5.279	4.916	4.991	4.799	4.911	4.769
15	CCB	.0088	.0098	.0097	.0077	.0166	.0025

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.860	4.916	.0111	4.852	4.803	9.626
2	ICB	.0016	.0001	.0016	.0000	.0409	.0181
3	LLS	.1943	.0200	.0029	.0202	.4394	.4700
4	ICSA	.0165	.0017	.0031	.0012	.0309	.0127
5	ICSAB	.0139	.0017	.0041	.0019	.0117	.0312
6	PREPSTDITJA	9.428	9.428	.0047	8.738	8.572	18.65
7	PREPBLKTJA	.0397	.0009	.0123	.0012	.0172	.1464
8	S96T002239 L	.2743	.0128	.1208	.7032	.3744	1.662
9	S96T002239	.0495	.0169	.0493	.6839	.0602	2.229
10	S96T002239 D	.0671	.0185	.0379	.4837	.0329	2.714
11	S96T002239 S	9.259	9.291	.0457	9.412	8.672	20.55
12	ICSA	.0048	.0017	.0034	.0024	.0407	.0188
13	ICSAB	.0083	.0016	.0108	.0017	.0409	.0259
14	CCV	4.955	5.010	.0094	4.911	4.839	9.829
15	CCB	.0090	.0000	.0037	.0007	.0369	.0307

WHC-SD-WM-DP-186, REV.0

Analysis Report

Averages

Wed 05-29-96 02:53:50 PM

page 4

#	Sample Name	V	Y	Zn	Zr	WHC-SD-WM-DP-186, REV. 0
1	ICV	4.991	.0065	5.038	4.891	
2	ICB	.0010	.0001	.0004	.0001	
3	LLS	.1002	.0002	.0199	.0197	
4	ICSA	-.0043	.0061	-.0005	-.0060	
5	ICSAB	.4698	.0064	.9706	-.0055	
6	PREPSTDITJA	9.142	.0091	8.744	9.942	
7	PREPBLKTJA	-.0057	-.0017	.0230	-.0049	
8	S96T002239 L	-.0297	-.0007	.1163	.0858	
9	S96T002239	.0072	.0075	.1185	.1182	
10	S96T002239 D	.0031	.0083	.1171	.1627	
11	S96T002239 S	9.112	.0193	9.108	9.984	
12	ICSA	-.0018	.0067	-.0011	-.0048	
13	ICSAB	.4722	.0065	.9776	-.0058	
14	CCV	5.001	.0055	4.986	4.930	
15	CCB	-.0015	-.0003	.0001	-.0013	

05-29-96

LABCORE Data Entry Template for Worklist#

8281

Analyst: ABB Instrument: TOC01 Book # 16 N12-E

Method: LA-344-105 Rev/Mod C-0 SPK# 11N12-H

Worklist Comment: TOC-01, AY-101. new WHC-SD-WM-DP-186, REV. 0

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TOC-01	LIQUID	<u>1</u>	<u>0.3</u>	<u>N/A</u>	ug/mL
		2	STD				TOC-01	LIQUID	<u>2.99e3</u>	<u>2.93e3</u>	<u>N/A</u>	ug/mL
96000210	AY-101 GRAB	3	SAMPLE	S96T001208	0		TOC-01	LIQUID	<u>N/A</u>	<u><5.50</u>	<u>5.50</u>	ug/mL
96000210	AY-101 GRAB	4	DUP	S96T001208	0		TOC-01	LIQUID	<u><5.50</u>	<u>7.15</u>	<u>N/A</u>	ug/mL
96000210	AY-101 GRAB	5	SPK	S96T001208	0		TOC-01	LIQUID	<u>100</u>	<u>99.4</u>	<u>N/A</u>	ug/mL
96000459	A-101 GRAB	6	SAMPLE	S96T002014	0		TOC-01	LIQUID	<u>N/A</u>	<u>4.58e3</u>	<u>5.50e1</u>	ug/mL
96000459	A-101 GRAB	7	DUP	S96T002014	0		TOC-01	LIQUID	<u>4.58e3</u>	<u>4.96e3</u>	<u>N/A</u>	ug/mL

Final page for worklist #

8281

AB Briffin 5-3-96
Analyst Signature Date

Rob Schweden for Gary Hammit
Analyst Signature Date 5/10/96

RLH 5-13-96
Approved Rob Schweden 5/13/96

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.

WORKBOOK PAGE: BLANK1

TOC : LA-344-105 (C-0)

LIQUIDS

BLNK

Type	Sample Volume in mL	(SS)	0.200
BLNK	H2SO4 Volume in mL	(VR)	0.000
Work List	Volume Injected in mL	(VI)	0.200
8281	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Blank	(C1)	4
Matrix	µg of Carbon from Baseline	(C2)	4.3
LIQUID			
Batch Number			
96004170	µg of Carbon = C1-C2		
Rerun			
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
Sample Prep			
N/A			
Sample #			
BLNK			
Instrument Code			
TOC01			
Prepared By			
GJH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
05/05/96			
Analysis Date			
05/03/96			
Analysis Time	Method Detection Limit in µg/mL		5.00E+00
08:28 PM			
Sample Point	µg of Carbon		3.00E-01
AY-101			

Data Entered By: <i>[Signature]</i>	GJH	Date:	05/05/96
Signature of Chemist: <i>[Signature]</i>		Date:	5/10/96

BLANK WB1 REV 2.0

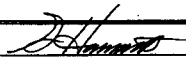
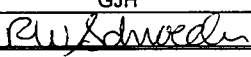
344105ML

WORKBOOK PAGE: STD2

TOC : LA-344-105 (C-0)

LIQUIDS

		STD
Type	Sample Volume in mL (SS)	0.200
STD	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
8281	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon Found (C1)	57.6
Matrix	µg of Carbon from Baseline (C2)	4.3
LIQUID	Standard Book Number	16N12E
Batch Number	Standard Value (µg/ml)	2990
96004170		
Rerun		
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
Instrument Code		
TOC01		
Prepared By		
GJH		
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
05/05/96		
Analysis Date		
05/03/96		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
08:28 PM	QC Actual in µg/mL	2.99E+03
Sample Point	QC Found in µg/mL	2.93E+03
AY-101	Percent Standard Recovery	98.0

Data Entered By: 	GJH	Date: 05/05/96
Signature of Chemist: 		Date: 5/10/96

WORKBOOK PAGE: SAM6

TOC : LA-344-105 (C-0)

LIQUIDS

		SAMPLE
SAMPLE	Sample Volume in mL (SS)	0.200
	H2SO4 Volume in mL (VR)	2.000
8281	Volume Injected in mL (VI)	0.200
	Dilution Factor (calculated) (DF)	11.000
TOC-01	Digest Dilution Factor (DDF)	1
	µg of Carbon in Sample (C1)	87.6
LIQUID	µg of Carbon from Baseline (C2)	433
96004170		
0	$\mu\text{g of Carbon/g} = (C1-C2) * DF * 1000 / (VI * D \text{ g/L})$	
N/A	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
S96T002014		
TOC01		
GJH		
RWS		
DGG		
05/05/96		
05/03/96		
08:28 PM	Method Detection Limit in µg/mL	5.50E+01
AY-101	µg of Carbon/mL	4.58E+03

Data Entered By: *Doug Schmidt*

GJH

Date: 05/05/96

Signature of Chemist: *RW Schroeder*

Date: 5/10/96

SAMPLE.WB1 REV 2.0

344105ML

TOC : LA-344-105 (C-0)

LIQUIDS

DUP

DUP	Sample Volume in mL (SS)	0.200
	H2SO4 Volume in mL (VR)	2.000
	Volume Injected in mL (VI)	0.200
8281	Dilution Factor (calculated) (DF)	11.000
	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	94.5
	µg of Carbon from Baseline (C2)	4.3
LIQUID	Result from Sample Page	1.58E+01
96004170		
0	$\mu\text{g of Carbon/g} = (C1 - C2) * DF * 1000 / (VI * D \text{ g/L})$	
N/A	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
	RPD (of Sample and Dup Results) = $ \text{Difference} / \text{Average}$	
S96T002014		
TOC01		
GJH		
RWS		
DGG		
05/05/96		
05/03/96		
	Method Detection Limit in µg/mL	5.50E+01
08:28 PM	µg of Carbon/mL	4.96E+03
AY-101	RPD (of Sam and Dup Results)	8.0%

Data Entered By: *[Signature]*

GJH

Date: 05/05/96

Signature of Chemist: *[Signature]*

Date: 5/10/96

SAMPLE:WB1 REV 2.0

344105ML

~~WHC-SD-WM-DP-178, REV. 1/11/96~~
TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-186, REV. 0

Sample: S96T002014DUP Date: 05/03/96 Time: 20:28:48

Sample Size = 200 uL	Analyst : DG GRIFFIN
Dil Factor = 11	Min Readings = 14
Blank ID # = BLANK	Max Readings = 14
Blank Value = .6138576 ug/minute C	% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	10.40	0.00
2	1.01	62.00	83.23
3	1.51	72.00	13.89
4	2.01	77.60	7.22
5	2.51	81.60	4.90
6	3.01	84.20	3.09
7	3.51	86.20	2.32
8	4.01	88.00	2.05
9	4.51	89.20	1.35
10	5.01	90.50	1.44
11	5.51	91.60	1.20
12	6.01	92.70	1.19
13	6.51	93.60	0.96
14	7.00	94.50	0.95

BLANK VALUE = 4.3 micrograms carbon

BLANK FACTOR = $4.3 / 7.004883 = +6.1E-01$ ug/min Carbon

SAMPLE RESULTS:

(94.5 - 4.3) (11) / (200) =	+4.96E+00	g/L Carbon
(94.5 - 4.3) (11) / (200) (12) =	+4.13E-01	Molar Carbon

Sample Run By: DG GRIFFIN 00000

WHC-SD-WM-DP-176, REV. 0 *6/27/96*

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-186, REV. 0

Sample: S96T002014

Date: 05/03/96

Time: 20:19:59

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLANK

Blank Value = .6138576 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	4.70	0.00
2	1.01	59.00	92.03
3	1.51	68.60	13.99
4	2.01	74.00	7.30
5	2.51	77.40	4.39
6	3.01	79.60	2.76
7	3.51	81.20	1.97
8	4.01	82.40	1.46
9	4.51	83.60	1.44
10	5.01	84.40	0.95
11	5.51	85.40	1.17
12	6.01	86.10	0.81
13	6.51	86.80	0.81
14	7.00	87.60	0.91

BLANK VALUE = 4.3 micrograms carbon

BLANK FACTOR = 4.3 / 7.004883 =

+6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(87.6 - 4.3) (11) / (200) =

+4.58E+00 g/L Carbon

(87.6 - 4.3) (11) / (200) (12) =

+3.82E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

WHC-SD-WM-DP-186, REV. 0

Sample: BLK

Date: 05/03/96

Time: 18:12:43

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLANK

Blank Value = .6138576 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	0.70	71.43
3	1.51	0.90	22.22
4	2.01	1.20	25.00
5	2.51	1.50	20.00
6	3.01	1.70	11.76
7	3.51	2.00	15.00
8	4.01	2.30	13.04
9	4.51	2.50	8.00
10	5.01	2.80	10.71
11	5.51	3.10	9.68
12	6.01	3.30	6.06
13	6.51	3.60	8.33
14	7.01	4.00	10.00

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 142 TO 144.

BLANK VALUE = 4.3 micrograms carbon

BLANK FACTOR = 4.3 / 7.004883 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(4 - 4.300525) (1)/(200) = < 5.00 E-3 g/L Carbon
 (4 - 4.300525) (1)/(200) (12) = < 4.17 E-4 Molar Carbon

<<<< WARNING- PERCENT DIFFERENCE EXCEEDS 10 PERCENT >>>>

Sample Run By:

DG Griffin
 DG GRIFFIN

5/03/96

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BLANK

Date: 05/03/96

Time: 17:53:13

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	0.30	0.00
2	1.01	0.70	57.14
3	1.51	1.10	36.36
4	2.00	1.40	21.43
5	2.51	1.70	17.65
6	3.01	2.00	15.00
7	3.51	2.30	13.04
8	4.01	2.60	11.54
9	4.50	2.90	10.34
10	5.00	3.20	9.37
11	5.50	3.50	8.57
12	6.00	3.70	5.41
13	6.50	4.20	11.90
14	7.00	4.30	2.33

BLANK VALUE = 4.3 micrograms carbon

BLANK FACTOR = 4.3 / 7.004883 =

+6.1E-01

ug/min Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: LMCS STD.

Date: 05/03/96

Time: 18:04:16

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLANK

Blank Value = .6138576 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	1.00	0.00
2	1.01	31.20	96.79
3	1.51	46.00	32.17
4	2.01	51.00	9.80
5	2.51	53.30	4.32
6	3.01	54.50	2.20
7	3.51	55.20	1.27
8	4.01	55.70	0.90
9	4.50	56.10	0.71
10	5.00	56.50	0.71
11	5.51	56.90	0.70
12	6.01	57.10	0.35
13	6.51	57.40	0.52
14	7.00	57.60	0.35

BLANK VALUE = 4.3 micrograms carbon

BLANK FACTOR = 4.3 / 7.004883 =

+6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(57.6 - 4.299476) (11)/(200) =

+2.93E+00 g/L Carbon

(57.6 - 4.299476) (11)/(200) (12) =

+2.44E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

LABCORE Completed Worklist Report for Worklist# 8382

Analyst: raw

Instrument: TOC01

Book# _____

Method: LA 344 105 Rev/Mod C-O

Worklist Comment: A-101 TOC. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		TOC-01	LIQUID	1	4.00E-1	0.400	ug/mL
2 STD	0		TOC-01	LIQUID	2.99E+03	3.04E+3	101.672 % Recovery	
3 SAMPLE	S96T002012	0	TOC-01	LIQUID	N/A	2.12E+03	55.000	ug/mL
4 DUP	S96T002012	0	TOC-01	LIQUID	2.12E+3	2.04E+3	3.846	RPD
5 SPK	S96T002012	0	TOC-01	LIQUID	1.00E+02	9.96E+01	99.600 % Recovery	
6 SAMPLE	S96T002013	0	TOC-01	LIQUID	N/A	5.23E+03	105.000	ug/mL
7 DUP	S96T002013	0	TOC-01	LIQUID	5.23E+3	5.45E+3	4.120	RPD

Final page for worklist# 8382

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Approved RW Schaefer
Reviewer Signature _____ Date 5/20/96

LABCORE Data Entry Template for Worklist# 8382

Analyst: RAW Instrument: TOC01 w839937 Book# 16N12E

Method: LA-344-105 Rev/Mod _____

11N12H

Worklist Comment: A-101 TOC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			TOC-01	LIQUID		
2 STD			TOC-01	LIQUID		
3 SAMPLE	S96T002012 0		TOC-01	LIQUID	96000459	A-101 GRAB
	Analytes Requested: TOC-01					
4 DUP	S96T002012 0		TOC-01	LIQUID		
5 SPK	S96T002012 0		TOC-01	LIQUID		
6 SAMPLE	S96T002013 0		TOC-01	LIQUID	96000459	A-101 GRAB
	Analytes Requested: TOC-01					
7 DUP	S96T002013 0		TOC-01	LIQUID		

Final page for worklist # 8382

See Attached sheet

Analyst Signature Date

R. D. D. 5-16-96

Analyst Signature Date

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist#

8382

Analyst: RW Instrument: TOC01 WB 39437 Book # 16 N12-E
11 N12-H
Method: LA-344-105 Rev/Mod _____
Worklist Comment: A-101 TOC. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TOC-01	LIQUID			N/A	ug/mL
		2 STD			TOC-01	LIQUID			N/A	ug/mL
96000459	A-101 GRAB	3 SAMPLE	S96T002012	0	TOC-01	LIQUID	N/A			ug/mL
96000459	A-101 GRAB	4 DUP	S96T002012	0	TOC-01	LIQUID			N/A	ug/mL
96000459	A-101 GRAB	5 SPK	S96T002012	0	TOC-01	LIQUID			N/A	ug/mL
96000459	A-101 GRAB	6 SAMPLE	S96T002013	0	TOC-01	LIQUID	N/A			ug/mL
96000459	A-101 GRAB	7 DUP	S96T002013	0	TOC-01	LIQUID			N/A	ug/mL

Final page for worklist #

8382

R. Wenzland 5-14-96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

2012 - .200^{Sam} - 2mL - .200 INT

2013 - .100 - 2mL - .200

SPK - .400 (DILUTE) - .400 (SPK) - .200 INT

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-186, REV. 0

WORKBOOK PAGE: BLANK1

TOC : LA-344-105 (C-0)

LIQUIDS

		BLNK
	Sample Volume in mL (SS)	0.200
BLNK	H2SO4 Volume in mL (VR)	0.000
	Volume Injected in mL (VI)	0.200
8382	Dilution Factor (calculated) (DF)	1.000
	Digest Dilution Factor (DDF)	
TOC-01	µg of Carbon in Blank (C1)	3.5
	µg of Carbon from Baseline (C2)	3.1
LIQUID		
96004273	µg of Carbon = C1-C2	
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
N/A		
BLANK		
WB39937		
RTS		
RWS		
raw		
05/16/96		
05/14/96		
	Method Detection Limit in µg/mL	5.00E+00
	µg of Carbon	4.00E-01
A-101		

Data Entered By:	RTS	Date:	05/16/96
Signature of Chemist:	<i>ew Schwed</i>	Date:	5/20/96

BLANK.WB1 REV 2.0

344105ML

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: STD2

TOC : LA-344-105 (C-0)

LIQUIDS

STD

	Sample Volume in mL	(SS)	0.200
STD	H2SO4 Volume in mL	(VR)	2.000
	Volume Injected in mL	(VI)	10.200
8382	Dilution Factor (calculated)	(DF)	11.000
	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon Found	(C1)	58.3
	µg of Carbon from Baseline	(C2)	3.1
LIQUID	Standard Book Number		16N12E
	Standard Value (µg/ml)		2990

96004273

0

µg of Carbon/mL = (C1-C2) * DF * DDF / VI

N/A

Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI

STANDARD

WB39937

RTS

RWS

RAW

05/16/96

05/14/96

	Method Detection Limit in µg/mL	5.50E+01
	QC Actual in µg/mL	2.99E+03
	QC Found in µg/mL	3.04E+03
A-101	Percent Standard Recovery	101.5

Data Entered By:

RTS

Date:

05/16/96

Signature of Chemist:

RWS

Date:

5/20/96

STANDARD.WB1 REV 2.0

344105ML

0.2

TOC : LA-344-105 (C-0)

LIQUIDS

		SAMPLE
	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
	Volume Injected in mL (VI)	0.200
8382	Dilution Factor (calculated) (DF)	11.000
	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	41.7
	µg of Carbon from Baseline (C2)	3.1
LIQUID		
96004273		
0	$\mu\text{g of Carbon/g} = (C1-C2) * DF * 1000 / (VI * D \text{ g/L})$	
N/A	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
S96T002012		
WB39937		
RTS		
RWS		
raw		
05/16/96		
05/14/96		
	Method Detection Limit in µg/mL	5.50E+01
	µg of Carbon/mL	2.12E+03
A-101		

Data Entered By:	RTS	Date:	05/16/96
Signature of Chemist:	<i>RW Schroeder</i>	Date:	5/20/96

SAMPLE.WB1 REV 2.0

344105ML

TOC : LA-344-105 (C-0)

LIQUIDS

		DUP
	Sample Volume in mL (SS)	0.200
DUP	H2SO4 Volume in mL (VR)	2.000
	Volume Injected in mL (VI)	0.200
8382	Dilution Factor (calculated) (DF)	11.000
	Digest Dilution Factor (DDF)	
TOC-01	ug of Carbon in Sample (C1)	40.2
	ug of Carbon from Baseline (C2)	3.1
LIQUID	Result from Sample Page	2.12E+3

96004273

$$\mu\text{g of Carbon/g} = (C1-C2) * DF * 1000 / (VI * D \text{ g/L})$$

0

$$\text{Method Detection Limit} = 1 \mu\text{g C} * DF * DDF / VI$$

N/A

$$\text{RPD (of Sample and Dup Results)} = | \text{Difference} | / \text{Average}$$

S96T002012

WB38937

RTS

RWS

RAW

05/16/96

05/14/96

Method Detection Limit in $\mu\text{g/mL}$	5.50E+01
--	----------

ug of Carbon/mL	2.04E+03
-----------------	----------

RPD (of Sam and Dup Results)	3.8%
------------------------------	------

Data Entered By:

RTS

Date:

05/16/96

Signature of Chemist:

Pw Schroeder

Date:

5/20/96

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: SPIKE5

TOC : LA-344-105 (C-0)

LIQUIDS

SPIKE

	Sample Vial Data		Spiked Vial Data	
SPK	Sample Volume in mL (SS)	0.200	Was the sample dilution used? (yes/no)	YES
	H2SO4 Volume in mL (VR)	2.000	Sample Volume in mL (SPK SS)	0.400
8382	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.000
	ug of Carbon in Sample (C1)	4177	Amount of Spike Std. in mL (SPK VOL)	0.400
TOC-01	ug of Carbon from Baseline (C2)	31	Volume Injected in mL (SPK VI)	0.200
			ug C in Sample + Spike (C3)	96.9
LIQUID			Pre-Spike Dilution Factor (PDF)	11.00
			Spike Book Number	11N12H
96004273			Spike Value in ug/ml	748
0	Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI			
	Sample Correction Factor (SAM CF) = (SS + VR) / (VI)			
N/A	Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)			
S96T002012	QC Actual in ug/mL = Spike Value (ug/mL)			
	QC Found in ug/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)			
WB39937	Percent Spike Recovery = (QC Found) / (QC Actual) * 100			
RTS				
RWS				
raw				
05/16/96				
05/14/96				
	QC Actual in ug/mL			7.48E+02
	QC Found in ug/mL			7.45E+02
A-101	Percent Spike Recovery			99.6

RW Schroeder 5/16/96
RW Schroeder 5/20/96

WORKBOOK PAGE: SAM6

TOC : LA-344-105 (C-0)

LIQUIDS

		SAMPLE
	Sample Volume in mL (SS)	0.100
SAMPLE	H2SO4 Volume in mL (VR)	2.000
	Volume Injected in mL (VI)	0.200
8382	Dilution Factor (calculated) (DF)	21.000
	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	52.9
	µg of Carbon from Baseline (C2)	3.1
LIQUID		
96004273		
0	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
N/A	Method Detection Limit = 1 µg C * DF * DDF / VI	
S96T002013		
WB39937		
RTS		
RWS		
raw		
05/16/96		
05/14/96		
	Method Detection Limit in µg/mL	1.05E+02
	µg of Carbon/mL	5.23E+03
A-101		

Data Entered By:	RTS	Date:	05/16/96
Signature of Chemist:	<i>PW Schmidt</i>	Date:	5/20/96

SAMPLE.WB1 REV 2.0

344105ML

		DUP
	Sample Volume in mL (SS)	0.100
DUP	H2SO4 Volume in mL (VR)	2.000
	Volume Injected in mL (VI)	0.200
8382	Dilution Factor (calculated) (DF)	21.000
	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	55
	µg of Carbon from Baseline (C2)	3.1
LIQUID	Result from Sample Page	523E+3

96004273

µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)

0

Method Detection Limit = 1 µg C * DF * DDF / VI

N/A

RPD (of Sample and Dup Results) = | Difference | / Average

S96T002013

WB39937

RTS

RWS

raw

05/16/96

05/14/96

Method Detection Limit in µg/mL

1.05E+02

µg of Carbon/mL

5.45E+03

A-101

RPD (of Sam and Dup Results)

4.1%

Data Entered By:	RTS	Date:	05/16/96
Signature of Chemist:	<i>RW Schoeden</i>	Date:	5/20/96

SAMPLE.WB1 REV 2.0

344105ML

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 05/14/96

Time: 06:01:19

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLK

Blank Value = .6993512 ug/minute C

Analyst : RA WENDLAND

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.40	0.00
2	1.01	30.30	98.68
3	1.51	47.40	36.08
4	2.01	52.50	9.71
5	2.51	54.90	4.37
6	3.01	56.10	2.14
7	3.51	57.00	1.58
8	4.01	57.40	0.70
9	4.51	57.90	0.86
10	5.01	58.30	0.69

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 155 TO 162.

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(58.3 - 3.500576) (11)/(200) =

+3.01E+00 g/L Carbon

(58.3 - 3.500576) (11)/(200) (12) =

+2.51E-01 Molar Carbon

Sample Run By:

RA WENDLAND

R. WENDLAND 5/14/96
00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BLK

Date: 05/14/96

Time: 05:46:12

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = N/A

Analyst : RA WENDLAND

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.30	0.00
2	1.01	1.00	70.00
3	1.51	1.30	23.08
4	2.01	1.70	23.53
5	2.51	2.10	19.05
6	3.01	2.40	12.50
7	3.51	2.60	7.69
8	4.00	2.90	10.34
9	4.50	3.20	9.37
10	5.00	3.50	8.57

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = $3.5 / 5.004639 =$

+7.0E-01 ug/min Carbon

Sample Run By:


RA WENDLAND

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BASE

Date: 05/14/96

Time: 05:37:16

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = 0 ug/minute C

Analyst : RA WENDLAND

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.60	50.00
3	1.51	0.90	33.33
4	2.01	1.30	30.77
5	2.51	1.50	13.33
6	3.01	1.90	21.05
7	3.51	2.20	13.64
8	4.01	2.50	12.00
9	4.50	2.80	10.71
10	5.00	3.10	9.68

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+0.0E+00 ug/min Carbon

SAMPLE RESULTS:

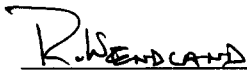
(3.1 - 0) (1) / (200) =

+1.5E-02 g/L Carbon

(3.1 - 0) (1) / (200) (12) =

+1.3E-03 Molar Carbon

Sample Run By:


RA WENDLAND

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2012

Date: 05/14/96

Time: 07:03:19

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLK

Blank Value = .6993512 ug/minute C

Analyst : RA WENDLAND

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.50	0.00
2	1.01	20.50	97.56
3	1.51	28.10	27.05
4	2.00	31.90	11.91
5	2.51	34.50	7.54
6	3.01	36.40	5.22
7	3.51	37.90	3.96
8	4.01	39.40	3.81
9	4.50	40.70	3.19
10	5.00	41.70	2.40

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(41.7 - 3.5) (11) / (200) =

+2.10E+00 g/L Carbon

(41.7 - 3.5) (11) / (200) (12) =

+1.75E-01 Molar Carbon

Sample Run By:


 RA WENDLAND

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2012DUP

Date: 05/14/96

Time: 07:12:50

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BLK

Blank Value = .6993512 ug/minute C

Analyst : RA WENDLAND

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	1.20	0.00
2	1.01	19.10	93.72
3	1.51	25.80	25.97
4	2.01	29.60	12.84
5	2.51	32.20	8.07
6	3.01	34.30	6.12
7	3.51	36.10	4.99
8	4.01	37.40	3.48
9	4.51	38.90	3.86
10	5.01	40.20	3.23

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(40.2 - 3.500598) (11)/(200) =

+2.02E+00 g/L Carbon

(40.2 - 3.500598) (11)/(200) (12) =

+1.68E-01 Molar Carbon

Sample Run By:

R. Wendland

RA WENDLAND

00000

WHC-SD-WM-DP-186, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: 2012SPK

Date: 05/14/96

Time: 07:18:53

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .6993512 ug/minute C

Analyst : RA WENDLAND

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	1.30	0.00
2	1.01	56.10	97.68
3	1.51	74.40	24.60
4	2.01	82.50	9.82
5	2.51	87.30	5.50
6	3.01	90.10	3.11
7	3.51	92.40	2.49
8	4.01	94.20	1.91
9	4.51	95.70	1.57
10	5.01	96.90	1.24

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(96.9 - 3.500598) (1)/(200) =

+4.67E-01 g/L Carbon

(96.9 - 3.500598) (1)/(200) (12) =

+3.89E-02 Molar Carbon

Sample Run By:

R. Wendland
RA WENDLAND

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2013

Date: 05/14/96

Time: 07:47:37

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .6993512 ug/minute C

Analyst : RA WENDLAND

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.90	0.00
2	1.01	29.40	96.94
3	1.51	38.60	23.83
4	2.01	42.60	9.39
5	2.51	45.40	6.17
6	3.01	47.40	4.22
7	3.51	49.00	3.27
8	4.01	50.50	2.97
9	4.51	51.60	2.13
10	5.01	52.90	2.46

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(52.9 - 3.500726) (1)/(200) =

+2.47E-01 g/L Carbon

(52.9 - 3.500726) (1)/(200) (12) =

+2.06E-02 Molar Carbon

Sample Run By:

R. Wendland
RA WENDLAND

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2013DUP

Date: 05/14/96

Time: 07:53:38

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = .6993512 ug/minute C

Analyst : RA WENDLAND

Min Readings = 10

Max Readings = 10

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	2.10	0.00
2	1.01	31.60	93.35
3	1.51	40.00	21.00
4	2.01	44.20	9.50
5	2.51	47.00	5.96
6	3.01	49.10	4.28
7	3.51	50.90	3.54
8	4.01	52.30	2.68
9	4.51	53.70	2.61
10	5.01	55.00	2.36

BLANK VALUE = 3.5 micrograms carbon

BLANK FACTOR = 3.5 / 5.004639 =

+7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(55 - 3.502604) (1)/(200) =

+2.57E-01 g/L Carbon

(55 - 3.502604) (1)/(200) (12) =

+2.15E-02 Molar Carbon

Sample Run By:

R. WENDLAND
RA WENDLAND

00000

LABCORE Completed Worklist Report for Worklist# 9266

Analyst: jds

Instrument: TIC01

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: A-101 TIC RERUN. RCJ

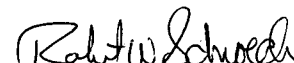
Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	TIC-01	LIQUID	1	1.30E+0	1.300	ug/mL
2 STD	0	TIC-01	LIQUID	6.02E+02	5.73E+2	95.183 % Recovery	
3 SAMPLE	S96T002013 0	TIC-01	LIQUID	N/A	1.76E+03	15.000	ug/mL
4 DUP	S96T002013 0	TIC-01	LIQUID	1.76E+3	1.77E+3	0.567 RPD	
5 SPK	S96T002013 0	TIC-01	LIQUID	6.02E+02	6.23E+02	103.488 % Recovery	
6 SAMPLE	S96T002012 0	TIC-01	LIQUID	N/A	5.43E+02	15.000	ug/mL
7 DUP	S96T002012 0	TIC-01	LIQUID	5.43E+2	5.49E+2	1.099 RPD	

Final page for worklist# 9266

 5-27-96

Analyst Signature Date

Analyst Signature Date

 5/30/96

Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 9266

Analyst: Jds Instrument: TIC01 _____ Book# 22N12B

Method: LA-622-102 Rev/Mod C-0

Worklist Comment: A-101 TIC RERUN. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				TIC-01	LIQUID		
2	STD				TIC-01	LIQUID		
3	SAMPLE	S96T002013 0			TIC-01	LIQUID	96000459	A-101 GRAB
		Analytes Requested: TIC-01						
4	DUP	S96T002013 0			TIC-01	LIQUID		
5	SPK	S96T002013 0			TIC-01	LIQUID		
6	SAMPLE	S96T002012 0			TIC-01	LIQUID	96000459	A-101 GRAB
		Analytes Requested: TIC-01						
7	DUP	S96T002012 0			TIC-01	LIQUID		

Final page for worklist # 9266

Jds 5-29-96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

TIC : LA-622-102 (C-0)

LIQUIDS

		BLNK
	Sample Volume in mL (SS)	0.200
BLNK	H2O Volume in mL (VR)	0.000
	Volume Injected in mL (VI)	0.200
9266	Dilution Factor (calculated) (DF)	1.000
	Digest Dilution Factor (DDF)	1
TIC01	µg of Carbon in Blank (C1)	5.1
	µg of Carbon from Baseline (C2)	3.8
LIQUID		
96005366	µg of Carbon = C1-C2	
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
N/A		
BLNK		
AL10656		
RTS		
RWS		
JDS		
05/29/96		
05/29/96		
	Method Detection Limit in µg/mL	5.00E+00
	µg of Carbon	1.30E+00
A-101		

Data Entered By:

RTS

Date: 05/29/96

Signature of Chemist:

Paul Schneider

Date: 6/11/96

BLANK.WB1 REV 1.0 *

622102ML

WORKBOOK PAGE: STD2

TIC : LA-622-102 (C-0) LIQUIDS

	STD	
STD	Sample Volume in mL (SS)	0.200
	H ₂ O Volume in mL (VR)	0.000
	Volume Injected in mL (VI)	0.200
9266	Dilution Factor (calculated) (DF)	1.000
	Digest Dilution Factor (DDF)	1
	µg of Carbon Found (C1)	118.3
	µg of Carbon from Baseline (C2)	3.8
LIQUID	Standard Book Number	22N12A
	Standard Value (µg/ml)	602
96005366		
0	$\mu\text{g of Carbon/mL} = (C1 - C2) * DF * DDF / VI$	
N/A	Method Detection Limit ($\mu\text{g/mL}$) = $1 \mu\text{g C} * DF * DDF / VI$	
STD		
AL10656		
RTS		
RWS		
JDS		
05/29/96		
05/29/96		
	Method Detection Limit in $\mu\text{g/mL}$	5.00E+00
	QC Actual in $\mu\text{g/mL}$	6.02E+02
	QC Found in $\mu\text{g/mL}$	5.73E+02
A-101	Percent Standard Recovery	95.1

Data Entered By:	RTS	Date:	05/29/96
Signature of Chemist:	<i>EW Schneider</i>	Date:	6/11/96

BLANK.WB1 REV 1.0

622102ML

WORKBOOK PAGE: SAM3

TIC : LA-622-102 (C-0)

LIQUIDS

SAMPLE		SAMPLE
	Sample Volume in mL (SS)	0.500
	H2O Volume in mL (VR)	1.000
	Volume Injected in mL (VI)	0.200
9266	Dilution Factor (calculated) (DF)	3.000
	Digest Dilution Factor (DDF)	1
	µg of Carbon in Sample (C1)	121.4
	µg of Carbon from Baseline (C2)	3.8
LIQUID		
96005366		
0	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
S96T002013		
AL10656		
RTS		
RWS		
JDS		
05/29/96		
05/29/96		
	Method Detection Limit in µg/mL	1.50E+01
	µg of Carbon/mL	1.76E+03
A-101		

Data Entered By:	RTS	Date:	05/29/96
Signature of Chemist:	<i>[Signature]</i>	Date:	6/11/98

SAMPLE.WB1 REV 1.0

622102ML

WORKBOOK PAGE: DUP4

TIC : LA-622-102 (C-0)

LIQUIDS

		DUP
DUP	Sample Volume in mL (SS)	0.500
	H2O Volume in mL (VR)	1.000
9266	Volume Injected in mL (VI)	0.200
	Dilution Factor (calculated) (DF)	3.000
	Digest Dilution Factor (DDF)	1
	µg of Carbon in Sample (C1)	121.7
	µg of Carbon from Baseline (C2)	3.8
LIQUID	Sample Result	1.76E+03
96005366		
0	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
S96T002013	RPD (of Sample and Dup Results) = Difference / Average	
AL10656		
RTS		
RWS		
JDS		
05/29/96		
05/29/96		
	Method Detection Limit in µg/mL	1.50E+01
	µg of Carbon/mL	1.77E+03
A-101	RPD (of Sam and Dup Results)	0.0025

Data Entered By:	RTS	Date:	05/29/96
Signature of Chemist:	<i>RW Schneider</i>	Date:	6/11/96

SAMPLE:WB1 REV 1.0

622102ML

WORKBOOK PAGE: SPIKE5

TIC : LA-622-102 (C-0)

LIQUIDS

	Sample Vial Data		Spiked Vial Data		SPIKE
SPK	Sample Volume in mL (SS)	0.500	Was the sample dilution used? (yes/no)		YES
	H2O Volume in mL (VR)	1.000	Sample Volume in mL (SPK SS)		1.000
9266	Volume Injected in mL (VI)	0.200	H2O Volume in mL (SPK VR)		0.000
	µg of Carbon in Sample (C1)	121.4	Amount of Spike Std. in mL (SPK VOL)		0.500
	µg of Carbon from Baseline (C2)	3.8	Volume Injected in mL (SPK VI)		0.200
LIQUID			µg C in Sample + Spike (C3)		123.7
			Pre-Spike Dilution Factor (PDF)		3
96005366			Spike Book Number		22N12A
			Spike Value in µg/ml		602
0	Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI				
	Sample Correction Factor (SAM CF) = (SS + VR) / (VI)				
N/A	Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)				
S96T002013	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)				
TIC-01	Percent Spike Recovery = (QC Found) / (QC Actual) * 100				
RTS					
RWS					
JDS					
Date Sampled					
05/29/96					
Analysis Date					
05/29/96					
Analysis Time					
	QC Actual in µg/mL				6.02E+02
	QC Found in µg/mL				6.23E+02
A-101	Percent Spike Recovery				103.4

aw schroeder 6/11/96

WORKBOOK PAGE: SAM6

TIC : LA-622-102 (C-0)

LIQUIDS

LIQUIDS		SAMPLE
SAMPLE	Sample Volume in mL (SS)	0.500
9266	H2O Volume in mL (VR)	1.000
	Volume Injected in mL (VI)	0.200
	Dilution Factor (calculated) (DF)	3.000
	Digest Dilution Factor (DDF)	1
	µg of Carbon in Sample (C1)	40
	µg of Carbon from Baseline (C2)	3.8
LIQUID		
96005366		
0	$\mu\text{g of Carbon/g} = (C1-C2) * DF * 1000 / (VI * D \text{ g/L})$	
N/A	Method Detection Limit ($\mu\text{g/mL}$) = $1 \mu\text{g C} * DF * DDF / VI$	
S96T002012		
AL10656		
RTS		
RWS		
JDS		
Date Complete		
06/29/96		
05/29/96		
Method Detection Limit in $\mu\text{g/mL}$	1.50E+01	
µg of Carbon/mL	5.43E+02	
A-101		

Data Entered By:	RTS	Date:	05/29/96
Signature of Chemist:	<i>Quintana</i>	Date:	6/11/96

SAMPLE WB1 REV 1.0

622102ML

WORKBOOK PAGE: DUP7

TIC : LA-622-102 (C-0)

LIQUIDS

		DUP
DUP	Sample Volume in mL (SS)	0.500
	H2O Volume in mL (VR)	1.000
	Volume Injected in mL (VI)	0.200
9266	Dilution Factor (calculated) (DF)	3.000
	Digest Dilution Factor (DDF)	1
	µg of Carbon in Sample (C1)	40.4
	µg of Carbon from Baseline (C2)	3.8
LIQUID	Sample Result	5.43E+02
96005366		
0	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
S96T002012	RPD (of Sample and Dup Results) = Difference / Average	
AL10666		
RTS		
RWS		
JDS		
06/29/96		
05/29/96		
	Method Detection Limit in µg/mL	1.50E+01
	µg of Carbon/mL	5.49E+02
A-101	RPD (of Sam and Dup Results)	0.0110

Data Entered By:	RTS	Date:	05/29/96
Signature of Chemist:	<i>RWSchneider</i>	Date:	6/11/96

SAMPLE.WB1 REV 1.0

622102ML

WHC-SD-WM-DP-186, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 05/29/96

Time: 00:23:55

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : JD SPELLMAN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.40	0.00
3	1.51	0.90	55.56
4	2.01	1.20	25.00
5	2.51	1.60	25.00
6	3.01	1.80	11.11
7	3.51	2.10	14.29
8	4.01	2.40	12.50
9	4.50	2.50	4.00
10	5.00	2.90	13.79
11	5.50	3.10	6.45
12	6.00	3.40	8.82
13	6.50	3.80	10.53
14	7.00	3.80	0.00

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 172 TO 179.

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004 =

+5.4E-01 ug/min Carbon

Sample Run By:

RW Schwed for Jd Spellman
6/1/96
JD SPELLMAN 00000

WHC-SD-WM-DP-186, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: BLK

Date: 05/29/96

Time: 00:38:47

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = .5425471 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis	Time	Coulometer	% Difference
1	0.51		0.30	0.00
2	1.01		0.90	66.67
3	1.51		1.40	35.71
4	2.00		2.00	30.00
5	2.50		2.30	13.04
6	3.00		2.70	14.81
7	3.50		3.00	10.00
8	4.00		3.30	9.09
9	4.50		3.60	8.33
10	5.00		3.80	5.26
11	5.50		4.10	7.32
12	6.00		4.30	4.65
13	6.50		4.60	6.52
14	7.00		5.10	9.80

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(5.1 - 3.8) (1) / (200) =

+6.5E-03 g/L Carbon

(5.1 - 3.8) (1) / (200) (12) =

+5.4E-04 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

WHC-SD-WM-DP-186, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: 22N12B

Date: 05/29/96

Time: 00:52:05

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = .5425471 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.40	0.00
2	1.01	20.60	98.06
3	1.51	60.90	66.17
4	2.01	90.20	32.48
5	2.51	105.20	14.26
6	3.01	111.90	5.99
7	3.51	114.70	2.44
8	4.01	115.70	0.86
9	4.50	116.60	0.77
10	5.00	116.90	0.26
11	5.51	117.20	0.26
12	6.01	117.50	0.26
13	6.51	117.90	0.34
14	7.00	118.30	0.34

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(118.3 - 3.800452) (1) / (200) =

+5.725E-01 g/L Carbon

(118.3 - 3.800452) (1) / (200) (12) =

+4.771E-02 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

WHC-SD-WM-DP-186, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S96T002013

Date: 05/29/96

Time: 01:10:48

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = .5425471 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	21.60	0.00
2	1.01	89.70	75.92
3	1.50	109.00	17.71
4	2.00	114.50	4.80
5	2.50	116.40	1.63
6	3.00	117.40	0.85
7	3.51	117.90	0.42
8	4.00	118.60	0.59
9	4.50	119.00	0.34
10	5.00	119.40	0.34
11	5.50	120.00	0.50
12	6.00	120.60	0.50
13	6.50	121.00	0.33
14	7.00	121.40	0.33

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(121.4 - 3.799908) (1)/(200) =

+5.880E-01 g/L Carbon

(121.4 - 3.799908) (1)/(200) (12) =

+4.900E-02 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

WHC-SD-WM-DP-186, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

Sample: S96T002013DUP

Date: 05/29/96

Time: 02:30:00

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = .5425471 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	61.20	0.00
2	1.01	100.80	39.29
3	1.50	111.80	9.84
4	2.01	114.90	2.70
5	2.51	116.70	1.54
6	3.01	117.30	0.51
7	3.51	118.10	0.68
8	4.00	118.90	0.67
9	4.50	119.30	0.34
10	5.00	119.90	0.50
11	5.50	120.40	0.42
12	6.00	120.80	0.33
13	6.50	121.20	0.33
14	7.00	121.70	0.41

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(121.7 - 3.799908) (1)/(200) =

+5.895E-01 g/L Carbon

(121.7 - 3.799908) (1)/(200) (12) =

+4.913E-02 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T002013SPK

Date: 05/29/96

Time: 02:42:27

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = .5425471 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	26.00	0.00
2	1.01	94.60	72.52
3	1.51	112.70	16.06
4	2.01	118.20	4.65
5	2.51	120.00	1.50
6	3.01	120.90	0.74
7	3.51	121.50	0.49
8	4.00	121.80	0.25
9	4.50	122.20	0.33
10	5.00	122.40	0.16
11	5.50	122.80	0.33
12	6.00	123.00	0.16
13	6.50	123.50	0.40
14	7.00	123.70	0.16

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(123.7 - 3.79999) (1)/(200) =

+5.995E-01 g/L Carbon

(123.7 - 3.79999) (1)/(200) (12) =

+4.996E-02 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

Sample: S96T002012

Date: 05/29/96

Time: 02:50:31

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = .5425471 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	2.50	0.00
2	1.01	25.00	90.00
3	1.51	32.80	23.78
4	2.01	35.90	8.64
5	2.50	37.30	3.75
6	3.01	37.80	1.32
7	3.50	38.10	0.79
8	4.00	38.50	1.04
9	4.50	38.70	0.52
10	5.00	39.00	0.77
11	5.50	39.30	0.76
12	6.00	39.50	0.51
13	6.50	39.70	0.50
14	7.00	40.00	0.75

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(40 - 3.79999) (1) / (200) =

+1.81E-01 g/L Carbon

(40 - 3.79999) (1) / (200) (12) =

+1.51E-02 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T002012DUP Date: 05/29/96 Time: 03:00:08

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = .5425471 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	4.20	0.00
2	1.01	26.10	83.91
3	1.51	33.70	22.55
4	2.01	36.40	7.42
5	2.51	37.60	3.19
6	3.01	38.20	1.57
7	3.51	38.50	0.78
8	4.01	38.90	1.03
9	4.51	39.20	0.77
10	5.01	39.40	0.51
11	5.51	39.60	0.51
12	6.01	40.00	1.00
13	6.50	40.10	0.25
14	7.00	40.40	0.74

BLANK VALUE = 3.8 micrograms carbon

BLANK FACTOR = 3.8 / 7.004 =

+5.4E-01 ug/min Carbon

SAMPLE RESULTS:

(40.4 - 3.800446) (1)/(200) =

+1.83E-01 g/L Carbon

(40.4 - 3.800446) (1)/(200) (12) =

+1.52E-02 Molar Carbon

Sample Run By:

JD SPELLMAN

00000

WHC-SD-WM-DP-186, REV. 0

RADIOCHEMICAL ANALYSES

WHC-SD-WM-DP-186, REV. 0

THIS PAGE WAS INTENTIONALLY LEFT BLANK

WHC-SD-WM-DP-186, REV. 0

LABCORE Completed RadChem Report for Worklist#: 8343

Analyst: kgh

Instrument: GEA03

Book# 12056

Method: LA-548-121 Rev/Mod E-0

Worklist Comment: A-101 Grab. Sample size is on traveler. new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	GEA-01	C060-02	LIQUID	2.548e-02	2.35e-02	\$2.22\$ % Recovery
1 STD	0	0	GEA-01	C060-02E	LIQUID	1	1.27	1.270 % Ct Error
1 STD	0	0	GEA-01	CS13702	LIQUID	2.707e-02	2.49e-02	\$1.984\$ % Recovery
1 STD	0	0	GEA-01	CS13702E	LIQUID	1	1.48	1.480 % Ct Error
2 BLNK	0	0	GEA-01	C060-02	LIQUID	1	<2.81e-3	uCi/mL
2 BLNK	0	0	GEA-01	CS13702	LIQUID	1	<6.38e-3	uCi/mL
3 SAMPLE	S96T002015	0	GEA-01	CS13702	LIQUID	N/A	1.250e+02	0.0e+000 uCi/mL
3 SAMPLE	S96T002015	0	GEA-01	CS13702E	LIQUID	N/A	0.200	0.0e+000 % Ct. Error
4 DUP	S96T002015	0	GEA-01	CS13702	LIQUID	1.25e+02	1.25e+02	0.000 RPD
4 DUP	S96T002015	0	GEA-01	CS13702E	LIQUID	1	0.200	0.200 % Ct Error
5 SAMPLE	S96T002016	0	GEA-01	CS13702	LIQUID	N/A	5.310e+02	0.0e+000 uCi/mL
5 SAMPLE	S96T002016	0	GEA-01	CS13702E	LIQUID	N/A	0.190	0.0e+000 % Ct. Error
6 DUP	S96T002016	0	GEA-01	CS13702	LIQUID	5.31e+02	4.88e+02	8.440 RPD
6 DUP	S96T002016	0	GEA-01	CS13702E	LIQUID	1	0.200	0.200 % Ct Error

Comments Section:

Comments for sample# S96T002015 and test @GEA-01 .

DL=0 => n/a.

Comments for sample# S96T002016 and test @GEA-01 .

DL=0 => n/a.

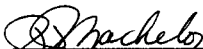
Final page for worklist# 8343

Analyst Signature

Date

Analyst Signature

Date


Reviewer Signature

5/9/96
Date

LABCORE Data Entry Template for Worklist# 8343

Analyst: 1847 Instrument: GEA00 #3 Book# 12556

Method: LA-548-121 Rev/Mod E-0

Worklist Comment: A-101 Grab. Sample size is on traveler. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-01	LIQUID		
2 BLNK			@GEA-01	LIQUID		
3 SAMPLE	S96T002015 0		@GEA-01	LIQUID	96000459	A-101 GRAB
	Analytes Requested: CS13702 , CS13702E					
4 DUP	S96T002015 0		@GEA-01	LIQUID		
5 SAMPLE	S96T002016 0		@GEA-01	LIQUID	96000459	A-101 GRAB
	Analytes Requested: CS13702 , CS13702E					
6 DUP	S96T002016 0		@GEA-01	LIQUID		

Final page for worklist # 8343

Analyst Signature [Signature] Date 5/7/96

Analyst Signature [Signature] Date 5/8/96

Data Entry Comments:

```

*****
* 222-S Laboratory Counting Room      7-MAY-1996 12:23:38.63
*****
>>>>>>>> SAMPLE INFORMATION <<<<<<<<<
Worklist #:      8343
Sample ID:       WL8343-STD
Sample Size:     1.00000E-03 L
Dilution Factor: 1.00000E+00
                                WHC-SD-WM-DP-186, REV. 0
                                Removed by:
                                ALJ 5-4-96 5-7-96

>>>>>>>> COUNT INFORMATION <<<<<<<<<
Detector ID:
File Number:     dka300:[spec.GEA3]3g3366.cnf
Geometry:        42
Count Time:      0 00:50:00.00 sec
Real Time:       0 00:50:08.90 sec
Dead Time:       0.3%
                                Verified by:
                                SP Rachel 5/7/96

>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
Sample Count Time: 7-MAY-1996 11:32:52.06
Decayed to:       7-MAY-1996 11:32:52.06
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst:          ALJ
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
Date of last energy calibration: 11-MAR-1994 11:47:01.11
Date of last efficiency calibration: 15-MAR-1994 10:28:40.20
*****

```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	27.42	490	1.59	55.43	53	7	20.8			
0	661.48*	22003	1.62	1323.14	1316	15	1.5		CS-137	24.9
0	1173.01	14807	1.91	2346.29	2337	18	1.8		CO-60	23.4
0	1332.25	13563	1.98	2664.88	2655	21	1.8		CO-60	23.7
0	1460.35*	40	2.25	2921.19	2912	16	73.4		K-40	0.699

Total number of lines in spectrum 5
Number of unidentified lines 1
Number of lines tentatively identified by NID 4 80.00%
WHC-SD-WM-DP-186, REV. 0

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
K-40	1.28E+09Y	1.000	6.987E-01	6.987E-01	5.128E-01	73.40	OK
CO-60	5.27Y	1.000	2.354E+01	2.354E+01	0.030E+01	1.27	
CS-137	30.00Y	1.000	2.487E+01	2.487E+01	0.037E+01	1.48	
Total Activity :			4.911E+01	4.911E+01			

Grand Total Activity : 4.911E+01 4.911E+01

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bkgdnd Sum	Energy (keV)	MDA
			WHC-SD-WM-DP-186, REV. 0 (uCi/L)
BE-7	1130.	477.59	1.1074E+00
NA-22	91.	1274.53	7.5027E-02
NA-24	23.	1368.55	4.0865E-02
CR-51	1130.	320.08	8.3328E-01
MN-54	699.	834.83	1.4455E-01
CO-56	707.	846.76	1.4724E-01
CO-57	1213.	122.06	6.0264E-02
CO-58	686.	810.78	1.4040E-01
FE-59	662.	1099.25	3.1550E-01
SE-75	1328.	264.66	1.3535E-01
SR-85	799.	514.01	1.0650E-01
Y-88	22.	1836.06	4.8992E-02
NB-94	756.	871.09	1.5600E-01
ZRNB-95	560.	724.18	2.6218E-01
RU-103	831.	497.08	1.1154E-01
RURH-106	591.	621.93	2.0828E+00
AG-108m	560.	722.94	1.2594E-01
CD-109	1057.	88.03	1.8628E+00
AG-110M	1166.	657.76	1.6086E-01
SN-113	1042.	391.69	1.4677E-01
TE-123m	1262.	159.00	6.3251E-02
SB-124	614.	602.73	1.0485E-01
SB-125	1212.	427.89	3.6949E-01
TE-125m	1108.	109.27	1.8758E+01
I-131	1068.	364.48	1.1107E-01
CS-134	601.	604.70	1.0428E-01
BA-140	772.	537.31	4.2758E-01
LA-140	21.	1596.21	4.5140E-02
CEPR-144	1259.	133.51	9.2891E-01
EU-152	26.	1408.01	2.0868E-01
EU-154	92.	1274.51	2.1817E-01
EU-155	1109.	105.31	2.5058E-01
HG-203	1212.	279.20	9.6419E-02
TL-208	1203.	277.36	1.2342E+00
BI-212	589.	727.18	1.7721E+00
PB-212	1480.	238.63	1.7768E-01
BI-214	644.	609.31	2.3669E-01
PB-214	1095.	351.92	4.4289E-01
RA-224	1459.	240.99	1.9590E+00
RA-226	1517.	186.10	1.8236E+00
AC-228	846.	911.21	6.4426E-01
TH-228	1080.	84.37	5.8001E+00
TH-229	1046.	88.47	2.6858E-01
PA-233	1130.	312.17	2.1349E-01
UTH-233	1461.	245.34	7.3481E+01
PA-234M	712.	1001.03	2.8899E-01
TH-234	988.	63.29	3.7366E+00
U-235	1493.	185.71	1.0994E-01
NP-237	1097.	86.48	5.7019E-01
NP-239	1124.	106.12	2.3968E-01
PU-239	1261.	129.30	8.0875E+02

Sample ID : WL8343-STD

Acquisition date : 7-MAY-1996 11:32:52

WHC-SD-WM-DP-188, REV. 0

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
AM-241	949.	59.54	6.4619E-01
AM-243	1019.	74.67	1.5743E-01

* 222-S Laboratory Counting Room 7-MAY-1996 13:47:45.07 *

>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<

Worklist #: 8343
Sample ID: WL8343-BLK
Sample Size: 1.00000E-03 L
Dilution Factor: 1.01000E+02

WHC-SD-WM-DP-186, REV. 0

Removed by:

ADJ 5-7-96

>>>>>>>> COUNT INFORMATION <<<<<<<<<<

Detector ID:
File Number: dka300:[spec.GEA3]3g3367.cnf
Geometry: 42
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:50:00.43 sec
Dead Time: 0.0%

Verified by:

R. Bachelor 5/7/96

>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<

Sample Count Time: 7-MAY-1996 12:57:04.31
Decayed to: 7-MAY-1996 12:57:04.31
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: ALJ
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	1236.95	14	1.69	2474.21	2471	8 53.5			

Summary of Nuclide Activity
Sample ID : WL8343-BLK

Page : 2
Acquisition date : 7-MAY-1996 12:57:04

WHC-SD-WM-DP-186, REV. 0

Total number of lines in spectrum	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
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
 Sample ID : WL8343-BLK

Acquisition date : 7-MAY-1996 12:57:04

Nuclide	Bckgnd Sum	Energy (keV)	MDA
			WHC-SD-WM-DP-186, REV. 0 (uCi/L)
BE-7	33.	477.59	1.8971E+01
NA-22	9.	1274.53	2.3252E+00
NA-24	5.	1368.55	1.9124E+00
K-40	136.	1460.75	9.6387E+01
CR-51	41.	320.08	1.6080E+01
MN-54	15.	834.83	2.1172E+00
CO-56	13.	846.76	2.0346E+00
CO-57	74.	122.06	1.5059E+00
CO-58	16.	810.78	2.1888E+00
FE-59	20.	1099.25	5.5060E+00
CO-60	12.	1332.50	2.8056E+00
SE-75	71.	264.66	3.1581E+00
SR-85	44.	514.01	2.5287E+00
Y-88	3.	1836.06	1.8285E+00
NB-94	20.	871.09	2.5455E+00
ZRNB-95	21.	724.18	5.1782E+00
RU-103	32.	497.08	2.2260E+00
RURH-106	14.	621.93	3.2010E+01
AG-108m	23.	722.94	2.5729E+00
CD-109	68.	88.03	4.7796E+01
AG-110M	23.	657.76	2.2660E+00
SN-113	36.	391.69	2.7407E+00
TE-123m	89.	159.00	1.6981E+00
SB-124	26.	602.73	2.1711E+00
SB-125	37.	427.89	6.5033E+00
TE-125m	74.	109.27	4.8900E+02
I-131	42.	364.48	2.2241E+00
CS-134	26.	604.70	2.1789E+00
CS-137	145.	661.66	6.3815E+00
BA-140	19.	537.31	6.7860E+00
LA-140	9.	1596.21	2.9899E+00
CEPR-144	84.	133.51	2.4176E+01
EU-152	6.	1408.01	1.0062E+01
EU-154	9.	1274.51	6.7867E+00
EU-155	77.	105.31	6.6817E+00
HG-203	65.	279.20	2.2633E+00
TL-208	69.	277.36	2.9837E+01
BI-212	18.	727.18	3.1039E+01
PB-212	76.	238.63	4.0573E+00
BI-214	46.	609.31	6.3979E+00
PB-214	66.	351.92	1.0968E+01
RA-224	83.	240.99	4.7331E+01
RA-226	72.	186.10	4.0099E+01
AC-228	30.	911.21	1.2302E+01
TH-228	74.	84.37	1.5290E+02
TH-229	65.	88.47	6.7574E+00
PA-233	53.	312.17	4.6740E+00
UTH-233	66.	245.34	1.5770E+03
PA-234M	15.	1001.03	4.1703E+00
TH-234	58.	63.29	9.1117E+01
U-235	74.	185.71	2.4699E+00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-237	70.	86.48	1.4502E+01
NP-239	82.	106.12	6.5545E+00
PU-239	77.	129.30	2.0141E+04
AM-241	56.	59.54	1.5901E+01
AM-243	58.	74.67	3.7946E+00

```

*****
* 222-S Laboratory Counting Room      7-MAY-1996 14:45:18.89
*****
>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:      8343
Sample ID:       S96T002015-SAM
Sample Size:     1.00000E-03 L
Dilution Factor: 1.01000E+02
Removed by:      AD 5-7-96

>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:
File Number:     dka300:[spec.GEA3]3g3368.cnf
Geometry:        42
Count Time:      0 00:50:00.00 sec
Real Time:       0 00:52:18.32 sec
Dead Time:       4.4%
Verified by:     B. Brachet 5/8/96

>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time: 7-MAY-1996 13:52:22.60
Decayed to:       7-MAY-1996 13:52:22.60
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst:          ALJ
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
Date of last energy calibration: 11-MAR-1994 11:47:01.11
Date of last efficiency calibration: 15-MAR-1994 10:28:40.20
*****

```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.46*	1094080	1.58	1323.09	1315	17	0.2		CS-137	1.249E+05
0	1321.89	336	2.28	2644.15	2636	18	23.5			

Total number of lines in spectrum 2 WHC-SD-WM-DP-186, REV.0
Number of unidentified lines 1
Number of lines tentatively identified by NID 1 50.00%

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
CS-137	30.00Y	1.000	1.249E+05	1.249E+05	0.002E+05	0.20	
Total Activity :			1.249E+05	1.249E+05			

Grand Total Activity : 1.249E+05 1.249E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	33312.	477.59	6.0730E+02
NA-22	122.	1274.53	8.7390E+00
NA-24	11.	1368.55	2.8164E+00
K-40	133.	1460.75	9.5482E+01
CR-51	26298.	320.08	4.0607E+02
MN-54	643.	834.83	1.4003E+01
CO-56	665.	846.76	1.4428E+01
CO-57	26620.	122.06	2.8519E+01
CO-58	766.	810.78	1.4988E+01
FE-59	266.	1099.25	2.0181E+01
CO-60	12.	1332.50	2.8227E+00
SE-75	28774.	264.66	6.3633E+01
SR-85	16909.	514.01	4.9469E+01
Y-88	3.	1836.06	1.8354E+00
NB-94	562.	871.09	1.3592E+01
ZRNB-95	1112.	724.18	3.7298E+01
RU-103	20506.	497.08	5.5949E+01
RURH-106	6058.	621.93	6.7360E+02
AG-108m	1106.	722.94	1.7873E+01
CD-109	22807.	88.03	8.7409E+02
AG-110M	35383.	657.76	8.9495E+01
SN-113	28782.	391.69	7.7899E+01
TE-123m	27665.	159.00	2.9910E+01
SB-124	6312.	602.73	3.3963E+01
SB-125	33291.	427.89	1.9558E+02
TE-125m	24907.	109.27	8.9815E+03
I-131	26925.	364.48	5.6339E+01
CS-134	6359.	604.70	3.4247E+01
BA-140	11781.	537.31	1.6876E+02
LA-140	6.	1596.21	2.3519E+00
CEPR-144	27580.	133.51	4.3905E+02
EU-152	8.	1408.01	1.1556E+01
EU-154	122.	1274.51	2.5415E+01
EU-155	23791.	105.31	1.1723E+02
HG-203	27405.	279.20	4.6310E+01
TL-208	27594.	277.36	5.9695E+02
BI-212	1103.	727.18	2.4493E+02
PB-212	32163.	238.63	8.3671E+01
BI-214	6508.	609.31	7.5969E+01
PB-214	26278.	351.92	2.2402E+02
RA-224	31888.	240.99	9.2512E+02
RA-226	37104.	186.10	9.1093E+02
AC-228	470.	911.21	4.8483E+01
TH-228	22721.	84.37	2.6869E+03
TH-229	22842.	88.47	1.2678E+02
PA-233	26335.	312.17	1.0410E+02
UTH-233	30922.	245.34	3.4144E+04
PA-234M	320.	1001.03	1.9577E+01
TH-234	21461.	63.29	1.7588E+03
U-235	36791.	185.71	5.5131E+01
NP-237	22762.	86.48	2.6227E+02

Sample ID : S96T002015-SAM

Acquisition date : 7-MAY-1996 13:52:22

WHC-SD-WM-DP-186, REV. 0

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	23928.	106.12	1.1173E+02
PU-239	27292.	129.30	3.8008E+05
AM-241	21250.	59.54	3.0885E+02
AM-243	22269.	74.67	7.4313E+01

 * 222-S Laboratory Counting Room 7-MAY-1996 15:49:49.35

>>>>>>> SAMPLE INFORMATION <<<<<<<<< WHC-SD-WM-DP-186, REV. 0

Worklist #: 8343
 Sample ID: S96T002015-DUP
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

ADJ 5-7-96

>>>>>>> COUNT INFORMATION <<<<<<<<<

Detector ID:
 File Number: dka300:[spec.GEA3]3g3370.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:52:18.31 sec
 Dead Time: 4.4%

Verified by:

AS Rachel 5/8/96

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<

Sample Count Time: 7-MAY-1996 14:56:53.72
 Decayed to: 7-MAY-1996 14:56:53.72
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: ALJ
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.46*	1094680	1.58	1323.09	1315	17	0.2		CS-137	1.250E+05
0	1322.55	207	2.06	2645.46	2641	12	27.4			

Total number of lines in spectrum 2 WHC-SD-WM-DP-186, REV. 0
Number of unidentified lines 1
Number of lines tentatively identified by NID 1 50.00%

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
CS-137	30.00Y	1.000	1.250E+05	1.250E+05	0.002E+05	0.20	
Total Activity :			1.250E+05	1.250E+05			

Grand Total Activity : 1.250E+05 1.250E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Sample ID : S96T002015-DUP

Acquisition date : 7-MAY-1996 14:56:53

WHC-SD-WM-DP-186, REV. 0

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	33377.	477.59	6.0790E+02
NA-22	104.	1274.53	8.0730E+00
NA-24	13.	1368.55	3.1415E+00
K-40	131.	1460.75	9.4599E+01
CR-51	25961.	320.08	4.0346E+02
MN-54	707.	834.83	1.4687E+01
CO-56	663.	846.76	1.4402E+01
CO-57	26871.	122.06	2.8653E+01
CO-58	755.	810.78	1.4882E+01
FE-59	233.	1099.25	1.8906E+01
CO-60	19.	1332.50	3.5783E+00
SE-75	28576.	264.66	6.3414E+01
SR-85	16837.	514.01	4.9364E+01
Y-88	5.	1836.06	2.3588E+00
NB-94	600.	871.09	1.4035E+01
ZRNB-95	1050.	724.18	3.6242E+01
RU-103	20759.	497.08	5.6293E+01
RURH-106	6082.	621.93	6.7497E+02
AG-108m	1054.	722.94	1.7450E+01
CD-109	23335.	88.03	8.8416E+02
AG-110M	35518.	657.76	8.9666E+01
SN-113	28553.	391.69	7.7589E+01
TE-123m	28042.	159.00	3.0113E+01
SB-124	6428.	602.73	3.4273E+01
SB-125	33627.	427.89	1.9657E+02
TE-125m	24689.	109.27	8.9421E+03
I-131	26885.	364.48	5.6297E+01
CS-134	6315.	604.70	3.4129E+01
BA-140	11977.	537.31	1.7015E+02
LA-140	3.	1596.21	1.6275E+00
CEPR-144	27607.	133.51	4.3926E+02
EU-152	16.	1408.01	1.6431E+01
EU-154	104.	1274.51	2.3463E+01
EU-155	24078.	105.31	1.1794E+02
HG-203	27926.	279.20	4.6748E+01
TL-208	27733.	277.36	5.9845E+02
BI-212	1066.	727.18	2.4076E+02
PB-212	31849.	238.63	8.3262E+01
BI-214	6338.	609.31	7.4965E+01
PB-214	26386.	351.92	2.2448E+02
RA-224	31558.	240.99	9.2033E+02
RA-226	37380.	186.10	9.1432E+02
AC-228	510.	911.21	5.0546E+01
TH-228	22994.	84.37	2.7030E+03
TH-229	23405.	88.47	1.2834E+02
PA-233	26102.	312.17	1.0364E+02
UTH-233	30999.	245.34	3.4187E+04
PA-234M	372.	1001.03	2.1107E+01
TH-234	21331.	63.29	1.7535E+03
U-235	37053.	185.71	5.5326E+01
NP-237	23088.	86.48	2.6414E+02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)	WHC-SD-WM-DP-186, REV. 0
NP-239	24127.	106.12	1.1219E+02	
PU-239	27636.	129.30	3.8248E+05	
AM-241	21222.	59.54	3.0865E+02	
AM-243	22067.	74.67	7.3976E+01	

 * 222-S Laboratory Counting Room 7-MAY-1996 19:37:28.48

>>>>>>> SAMPLE INFORMATION <<<<<<<<< WHC-SD-WM-DP-186, REV. 0

Worklist #: 8343
 Sample ID: S96T002016-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

D. H. Garcia

>>>>>>> COUNT INFORMATION <<<<<<<<<

Detector ID:
 File Number: NI3AC:1.cnf Spectrum #3371
 Geometry: 43
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:52:41.02 sec
 Dead Time: 5.1%

Verified by:

D. Bachelor 5/8/96

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<

Sample Count Time: 7-MAY-1996 16:13:51.89
 Decayed to: 7-MAY-1996 16:13:51.89
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: DM
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:11:20.05

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	27.60	6544	2.29	55.78	54	7	8.5			
0	661.46*	1193700	1.58	1323.10	1315	17	0.2		CS-137	5.313E+05
0	1322.31	380	2.49	2644.98	2639	18	25.7			

Total number of lines in spectrum 3 WHC-SD-WM-DP-186, REV. 0
Number of unidentified lines 2
Number of lines tentatively identified by NID 1 33.33%

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
CS-137	30.00Y	1.000	5.313E+05	5.313E+05	0.001E+06	0.19	
Total Activity :			5.313E+05	5.313E+05			

Grand Total Activity : 5.313E+05 5.313E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	36395.	477.59	2.5530E+03
NA-22	164.	1274.53	3.7820E+01
NA-24	24.	1368.55	1.5668E+01
K-40	103.	1460.75	3.1043E+02
CR-51	31520.	320.08	1.7900E+03
MN-54	1076.	834.83	7.0331E+01
CO-56	1017.	846.76	6.9244E+01
CO-57	32757.	122.06	1.2863E+02
CO-58	1125.	810.78	7.0558E+01
FE-59	422.	1099.25	9.5607E+01
CO-60	35.	1332.50	1.8176E+01
SE-75	35070.	264.66	2.8778E+02
SR-85	18963.	514.01	2.1188E+02
Y-88	2.	1836.06	5.3960E+00
NB-94	910.	871.09	6.7115E+01
ZRNB-95	1669.	724.18	1.7789E+02
RU-103	22916.	497.08	2.3892E+02
RURH-106	6770.	621.93	2.7958E+03
AG-108m	1678.	722.94	8.5718E+01
CD-109	27054.	88.03	4.1024E+03
AG-110M	38718.	657.76	3.6516E+02
SN-113	32523.	391.69	3.2483E+02
TE-123m	34296.	159.00	1.4321E+02
SB-124	7245.	602.73	1.4363E+02
SB-125	37783.	427.89	8.2274E+02
TE-125m	29673.	109.27	4.0450E+04
I-131	31185.	364.48	2.3926E+02
CS-134	7205.	604.70	1.4381E+02
BA-140	13754.	537.31	7.3535E+02
LA-140	10.	1596.21	1.1744E+01
CEPR-144	34244.	133.51	2.0027E+03
EU-152	19.	1408.01	6.5448E+01
EU-154	164.	1274.51	1.0984E+02
EU-155	28655.	105.31	5.3508E+02
HG-203	33900.	279.20	2.1048E+02
TL-208	34083.	277.36	2.7121E+03
BI-212	1611.	727.18	1.1526E+03
PB-212	37616.	238.63	3.7424E+02
BI-214	7110.	609.31	3.1280E+02
PB-214	30583.	351.92	9.6214E+02
RA-224	37590.	240.99	4.1482E+03
RA-226	45625.	186.10	4.4304E+03
AC-228	765.	911.21	2.3958E+02
TH-228	26639.	84.37	1.2585E+04
TH-229	27021.	88.47	5.9386E+02
PA-233	31347.	312.17	4.5896E+02
UTH-233	36953.	245.34	1.5379E+05
PA-234M	513.	1001.03	9.4468E+01
TH-234	24499.	63.29	7.5755E+03
U-235	45066.	185.71	2.6766E+02
NP-237	26923.	86.48	1.2315E+03

Sample ID : S96T002016-SAM

Acquisition date : 7-MAY-1996 16:13:51

WHC-SD-WM-DP-186, REV. 0

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	28768.	106.12	5.0863E+02
PU-239	33765.	129.30	1.7230E+06
AM-241	24178.	59.54	1.2421E+03
AM-243	25940.	74.67	3.4528E+02

```

*****
* 222-S Laboratory Counting Room      7-MAY-1996 18:00:23.38
*****
>>>>>>> SAMPLE INFORMATION <<<<<<<<<  WHC-SD-WM-DP-186, REV. 0
Worklist #:      8343
Sample ID:       S96T002016-DUP
Sample Size:     1.00000E-03 L
Dilution Factor: 1.01000E+02

>>>>>>> COUNT INFORMATION <<<<<<<<<
Detector ID:
File Number:    dka300:[spec.GEA3]3g3372.cnf
Geometry:       43
Count Time:     0 00:50:00.00 sec
Real Time:      0 00:52:26.37 sec
Dead Time:      4.7%

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
Sample Count Time: 7-MAY-1996 17:07:17.15
Decayed to:       7-MAY-1996 17:07:17.15
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst:         ALJ
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
Date of last energy calibration: 11-MAR-1994 11:47:01.11
Date of last efficiency calibration: 15-MAR-1994 10:11:20.05
*****

```

Removed by:
D.H. Miller

Verified by:
CB Machelor 5/8/96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.45*	1097124	1.58	1323.07	1315	17	0.2		CS-137	4.883E+05
0	1321.84	312	3.12	2644.05	2636	18	25.0			

Sample ID : S96T002016-DUP

Acquisition date : 7-MAY-1996 17:07:17

WHC-SD-WM-DP-186, REV.0

Total number of lines in spectrum	2
Number of unidentified lines	1
Number of lines tentatively identified by NID	1
	50.00%

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
CS-137	30.00Y	1.000	4.883E+05	4.883E+05	0.001E+06	0.20	
Total Activity :			4.883E+05	4.883E+05			

Grand Total Activity :	4.883E+05	4.883E+05
------------------------	-----------	-----------

Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	33479.	477.59	2.4486E+03
NA-22	125.	1274.53	3.3004E+01
NA-24	16.	1368.55	1.2718E+01
K-40	126.	1460.75	3.4305E+02
CR-51	28990.	320.08	1.7166E+03
MN-54	749.	834.83	5.8678E+01
CO-56	719.	846.76	5.8220E+01
CO-57	30364.	122.06	1.2384E+02
CO-58	832.	810.78	6.0653E+01
FE-59	251.	1099.25	7.3730E+01
CO-60	18.	1332.50	1.2814E+01
SE-75	32790.	264.66	2.7827E+02
SR-85	17058.	514.01	2.0096E+02
Y-88	4.	1836.06	7.6748E+00
NB-94	642.	871.09	5.6392E+01
ZRNB-95	1196.	724.18	1.5059E+02
RU-103	20814.	497.08	2.2769E+02
RURH-106	6247.	621.93	2.6856E+03
AG-108m	1201.	722.94	7.2509E+01
CD-109	25115.	88.03	3.9527E+03
AG-110M	36347.	657.76	3.5381E+02
SN-113	30262.	391.69	3.1334E+02
TE-123m	31944.	159.00	1.3821E+02
SB-124	6505.	602.73	1.3609E+02
SB-125	34594.	427.89	7.8726E+02
TE-125m	27637.	109.27	3.9037E+04
I-131	28876.	364.48	2.3023E+02
CS-134	6561.	604.70	1.3723E+02
BA-140	12306.	537.31	6.9556E+02
LA-140	5.	1596.21	7.8916E+00
CEPR-144	32021.	133.51	1.9366E+03
EU-152	12.	1408.01	5.1963E+01
EU-154	125.	1274.51	9.5810E+01
EU-155	26665.	105.31	5.1617E+02
HG-203	31574.	279.20	2.0313E+02
TL-208	31538.	277.36	2.6089E+03
BI-212	1171.	727.18	9.8274E+02
PB-212	35220.	238.63	3.6213E+02
BI-214	6412.	609.31	2.9706E+02
PB-214	28560.	351.92	9.2748E+02
RA-224	34778.	240.99	3.9900E+03
RA-226	42521.	186.10	4.2770E+03
AC-228	513.	911.21	1.9626E+02
TH-228	24983.	84.37	1.2188E+04
TH-229	25084.	88.47	5.7217E+02
PA-233	29260.	312.17	4.4341E+02
UTH-233	34592.	245.34	1.4879E+05
PA-234M	391.	1001.03	8.2424E+01
TH-234	22520.	63.29	7.2631E+03
U-235	42024.	185.71	2.5847E+02
NP-237	25142.	86.48	1.1901E+03

WHC-SD-WM-DP-186, REV. 0

Nuclide	Bckgnd Sum	Energy (keV)	MDA
			(uCi/L)
NP-239	26860.	106.12	4.9147E+02
PU-239	31796.	129.30	1.6720E+06
AM-241	22262.	59.54	1.1919E+03
AM-243	23878.	74.67	3.3127E+02

WHC-SD-WM-DP-186, REV. 0

LABCORE Completed RadChem Report for Worklist#: 8618

Analyst: dpb

Instrument: AB12

Book# 9654

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: Use .100 mL sample size. Rerun #1. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		SR90-01 SR90-01 LIQUID		1.23E-03	1.20E-3	97.561	% Recovery
1 STD	0		SR90-01 SR90-01C LIQUID		100	8.71E+01	87.100	% Recovery
1 STD	0		SR90-01 SR90-01E LIQUID		1.00	1.89E+00	1.890	% Ct. Err
2 BLNK	0		SR90-01 SR90-01 LIQUID		1	6.42E-4	64.200E-005	uCi/mL
2 BLNK	0		SR90-01 SR90-01C LIQUID		100	5.98E+01	59.800	% Recovery
2 BLNK	0		SR90-01 SR90-01E LIQUID		1.00	1.09E+01	10.900	uCi/mL
3 BLNK/BKG	0		SR90-01 SR90-01 LIQUID		1	9.63E+00	9.630	BLNK/BKG
4 SAMPLE	S96T002015	0	SR90-01 SR90-01 LIQUID		N/A	1.32E-02	304.0E-007	uCi/mL
4 SAMPLE	S96T002015	0	SR90-01 SR90-01C LIQUID		N/A	8.49E+01	0.0E+000	% Recovery
4 SAMPLE	S96T002015	0	SR90-01 SR90-01E LIQUID		N/A	1.83E+00	0.0E+000	% Ct. Error
5 DUP	S96T002015	0	SR90-01 SR90-01 LIQUID		1.32E-2	1.29E-2	2.299	RPD
5 DUP	S96T002015	0	SR90-01 SR90-01C LIQUID		100	8.17E+01	81.700	% Recovery
5 DUP	S96T002015	0	SR90-01 SR90-01E LIQUID		1.00	1.88E+00	1.880	% Cnt Err
6 SAMPLE	S96T002016	0	SR90-01 SR90-01 LIQUID		N/A	8.40E-02	311.0E-007	uCi/mL
6 SAMPLE	S96T002016	0	SR90-01 SR90-01C LIQUID		N/A	8.25E+01	0.0E+000	% Recovery
6 SAMPLE	S96T002016	0	SR90-01 SR90-01E LIQUID		N/A	7.30E-01	0.0E+000	% Ct. Error
7 DUP	S96T002016	0	SR90-01 SR90-01 LIQUID		8.40E-2	7.76E-2	7.921	RPD
7 DUP	S96T002016	0	SR90-01 SR90-01C LIQUID		100	8.07E+01	80.700	% Recovery
7 DUP	S96T002016	0	SR90-01 SR90-01E LIQUID		1.00	7.66E-01	0.766	% Cnt Err

Final page for worklist# 8618

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

 5/16/96
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 8618

Analyst: DPB Instrument: AB00 _____ Book# 9B56

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: Use .100 mL sample size. Rerun #1. 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	S96T002015 0		@SR90-01	LIQUID	96000459	A-101 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
5 DUP	S96T002015 0		@SR90-01	LIQUID		
6 SAMPLE	S96T002016 0		@SR90-01	LIQUID	96000459	A-101 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
7 DUP	S96T002016 0		@SR90-01	LIQUID		

Final page for worklist # 8618

Daniel P. Brandy 5/14/96 1700
Analyst Signature Date

Julie E. Hogan 5/15/96
Analyst Signature Date

Data Entry Comments:

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

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

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)		10851	GROSS WEIGHT (W2)	7.2838	
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT (W1)	7.1967	
8618	BACKGROUND in cpm (BKG)		4.6	NET WEIGHT (W3)	0.0871	
Test Code	SAMPLE VOLUME in mL (SS)		1.000	DELTA TIME (HOURS) (DT)	9.83	
@SR90-01	DILUTION FACTOR (DF)		1			
Matrix	DIGEST DILUTION FACTOR DDF		1			
LIQUID	SAMPLE COUNT RATE (Rs)		1080.50	SR-90 EFFICIENCY FACTO (C1)	0.4180	
Batch Number	CRITICAL LEVEL (Lc)		1.29	Y-90 EFFICIENCY FACTOR (C2)	0.4680	
96004579	TIME OF SEPARATION (ST)		11:50	Rmax	N/A	
Recus	DATE OF SEPARATION (SD)		05/14/96	DETECTION LIMIT (Ld)	2.68	
0	TIME OF COUNT (TOC)		21:40	Sr-89/90 CONC. in µCi/L	1.2019E+00	
Sample Prep	DATE OF COUNT (DOC)		05/14/96			
N/A	STANDARD BOOK #		9B56			
Sample #	STANDARD VALUE in µCi/mL		1.2270E-03			
WL8618						
Instrument Code						
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0					
SEH	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
JLS	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT))*1.96)					
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
DPB	NOTE: Expected weight = CVA * 0.1					
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
05/15/96	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
Analysis Date						
05/14/96	Sr-89/90 CONCENTRATION		1.20E-03	µCi/mL	DETECTION LEVEL 2.98E-06 µCi/L	
Analysis Time						
11:50 AM	RELATIVE COUNTING ERROR		1.9%			
Sample Point						
A-101 GRAB	PERCENT CARRIER RECOVERY		87.1%			

Analyst:	DPB	Date:	15-May-96
Signature of Chemist:	JLS	Date:	5/16/96

STANDARD WB1 REV 1.2

20010NML

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

				BLNK	
BLNK	DETECTOR NUMBER		12	CARRIER ADDED In mL	(CVA) 1.000
	TOTAL COUNTS	(TC)	443	GROSS WEIGHT	(W2) 7.2808
	COUNT TIME In MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.2210
8618	BACKGROUND In cpm	(BKG)	4.8	NET WEIGHT	(W3) 0.0598
	SAMPLE VOLUME In mL	(SS)	0.100	DELTA TIME (HOURS)	(DT) 10.08
@SR90-01	DILUTION FACTOR	(DF)	1		
	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	39.70	Sr-90 EFFICIENCY FACTOR	(C1) 0.4180
	CRITICAL LEVEL	(Lc)	1.29	Y-90 EFFICIENCY FACTOR	(C2) 0.4860
98004579	TIME OF SEPARATION	(ST)	11:50	Rmax	N/A
	DATE OF SEPARATION	(SD)	05/14/96	DETECTION LIMIT	(Ld) 2.68
0	TIME OF COUNT	(TOC)	21:55	Sr-89/90 CONC In µCi/L	6.4163E-01
Sample	DATE OF COUNT	(DOC)	05/14/96		
N/A					
Stamp					
WL8618					
Instructions	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				
Prep	RS*DF*DDF/((C1+C2)*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*22200000				
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Grav	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)				
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
200 g	NOTE: Expected weight = CVA * 0.1				
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
05/15/96					
Analysis					DETECTION LEVEL 4.32E-05 µCi/mL
05/14/96	Sr-89/90 CONCENTRATION	6.42E-04		µCi/mL	
Analysis Time	RELATIVE COUNTING ERROR	10.9%			
11:50 AM					
Sample					
A-101 GRAB	PERCENT CARRIER RECOVERY	59.8%			

Analyst:	DPB	Date:	15-May-96
Signature of Chemist:	JLS	Date:	5/16/96

BLANK.WB1 REV 1.2

22010NML

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

					SAMPLE
	DETECTOR NUMBER		12	CARRIER ADDED In mL	(CVA) 1.000
	TOTAL COUNTS	(TC)	11685	GROSS WEIGHT	(W2) 7.2607
	COUNT TIME In MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.1768
8618	BACKGROUND In cpm	(BKG)	4.6	NET WEIGHT	(W3) 0.0849
	SAMPLE VOLUME In mL	(SS)	0.100	DELTA TIME (HOURS)	(DT) 10.25
SR90-01	DILUTION FACTOR	(DF)	1		
	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	1161.90	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
	CRITICAL LEVEL	(Lc)	1.29	Y-90 EFFICIENCY FACTOR	(C2) 0.4680
96004579	TIME OF SEPARATION	(ST)	11:50	Rmax	N/A
	DATE OF SEPARATION	(SD)	05/14/96	DETECTION LIMIT	(Ld) 2.68
0	TIME OF COUNT	(TOC)	22:05	Sr-89/90 CONC In µCi/L	1.3206E+01
	DATE OF COUNT	(DOC)	05/14/96		
N/A					
S96T002015					
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
SEH	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				
JLS	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000				
DPB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
05/15/96	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)				
05/14/96	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	1.32E-02	µCi/mL	DETECTION LEVEL 3.04E-05 µCi/mL	
11:50 AM	RELATIVE COUNTING ERROR	1.8%			
A-101 GRAB	PERCENT CARRIER RECOVERY	84.9%			

Analyst:	DPB	Date:	15-May-96
Signature of Chemist:	JLS	Date:	5/14/96

SAMPLE.WB1 REV 1.2

22010NML

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

					DUP
	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS	(TC)	11008	GROSS WEIGHT	(W2) 7.4598
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.3782
8618	BACKGROUND in cpm	(BKG)	4.6	NET WEIGHT	(W3) 0.0817
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT) 10.50
@SR90-01	DILUTION FACTOR	(DF)	1		
	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	1095.90	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
	CRITICAL LEVEL	(Lc)	1.29	Y-90 EFFICIENCY FACTOR	(C2) 0.4680
96004579	TIME OF SEPARATION	(ST)	11:50	Rmax	N/A
	DATE OF SEPARATION	(SD)	05/14/96	DETECTION LIMIT	(Ld) 2.68
0	TIME OF COUNT	(TOC)	23:20	Sr-89/90 CONC in µCi/L	1.2912E+01
	DATE OF COUNT	(DOC)	05/14/96		
N/A					
S96T002015					
WB27811	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 $RS * DF * DDF / ((C1 + C2 * (1 - e \text{ to the power of } ((- \text{natural log } 2) / 64.2 * DT))) * SS * REC * 2220000)$				
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
JLS	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT) * 1.96)				
DPB	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
05/15/96	NOTE: Expected weight = CVA * 0.1				
05/14/96	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
11:50 AM	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
	Sr-89/90 CONCENTRATION	1.29E-02	µCi/mL	DETECTION LEVEL 3.15E-05 µCi/mL	
	RELATIVE COUNTING ERROR	1.9%			
A-101 GRAB	PERCENT CARRIER RECOVERY	81.7%			

Analyst:	DPB	Date:	15-May-96
Signature of Chemist:	JLS	Date:	5/16/96

SAMPLE.WB1 REV 1.2

22010NML

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: SAM6

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

				SAMPLE	
	DETECTOR NUMBER		12	CARRIER ADDED In mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS	(TC)	72284	GROSS WEIGHT	(W2) 7.0666
	COUNT TIME In MINUTES	(CT)	10	TARE WEIGHT	(W1) 6.9741
8818	BACKGROUND In cpm	(BKG)	4.6	NET WEIGHT	(W3) 0.0825
	SAMPLE VOLUME In mL	(SS)	0.100	DELTA TIME (HOURS)	(DT) 10.92
@SR90-01	DILUTION FACTOR	(DF)	1		
	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	7224.80	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
	CRITICAL LEVEL	(Lc)	1.29	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
96004579	TIME OF SEPARATION	(ST)	11:50	Rmax	N/A
	DATE OF SEPARATION	(SD)	05/14/96	DETECTION LIMIT	(Ld) 2.68
0	TIME OF COUNT	(TOC)	22:45	Sr-89/90 CONC In µCi/L	8.3964E+01
	DATE OF COUNT	(DOC)	05/14/96		
N/A					
S96T002016					
WB27811	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)				
SEH	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)				
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
	NOTE: Expected weight = CVA * 0.1				
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
05/15/96					
05/14/96	Sr-89/90 CONCENTRATION		8.40E-02	µCi/mL	DETECTION LEVEL 3.11E-05 µCi/mL
11:50 AM	RELATIVE COUNTING ERROR		0.7%		
A-101 GRAB	PERCENT CARRIER RECOVERY		82.5%		

Analyst:	DPB	Date:	15-May-96
Signature of Chemist:	JLS	Date:	5/16/96

SAMPLE.WB1 REV 1.2

22010NML

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

				DUP	
	DETECTOR NUMBER		12	CARRIER ADDED in mL (CVA)	1.000
DUP	TOTAL COUNTS (TC)	65533	GROSS WEIGHT (W2)		7.3088
	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)		7.2282
8618	BACKGROUND in cpm (BKG)	4.8	NET WEIGHT (W3)		0.0807
	SAMPLE VOLUME in mL (SS)	0.100	DELTA TIME (HOURS) (DT)		11.17
@SR90-01	DILUTION FACTOR (DF)	1			
	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	6548.70	Sr-89/90 EFFICIENCY FACTOR (C1)		0.4180
	CRITICAL LEVEL (Lc)	1.29	Y-90 EFFICIENCY FACTOR (C2)		0.4860
96004579	TIME OF SEPARATION (ST)	11:50	Rmax		N/A
	DATE OF SEPARATION (SD)	05/14/96	DETECTION LIMIT (Ld)		2.68
0	TIME OF COUNT (TOC)	23:00	Sr-89/90 CONC in µCi/L 7.7620E+01		
	DATE OF COUNT (DOC)	05/14/96			
N/A					
S96T002016					
WB27811	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				
SEH	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))				
JLS	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				
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
DATE OF COUNT	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
05/15/96					
05/14/96	Sr-89/90 CONCENTRATION	7.76E-02	µCi/mL	DETECTION LEVEL 3.17E-05 µCi/mL	
11:50 AM	RELATIVE COUNTING ERROR	0.8%			
A-101 GRAB	PERCENT CARRIER RECOVERY	80.7%			

Analyst:	DPB	Date:	15-May-96
Signature of Chemist:	JLS	Date:	5/14/96

SAMPLE.WB1 REV 1.2

22010NML

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# 8345

Analyst: DBB Instrument: AB00 12 Book# 9B56

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: A-101 Grab. Determine sample size using ludlum. new

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	S96T002015 0		@SR90-01	LIQUID	96000459	A-101 GRAB
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 DUP	S96T002015 0		@SR90-01	LIQUID		
6 SAMPLE	S96T002016 0		@SR90-01	LIQUID	96000459	A-101 GRAB
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7 DUP	S96T002016 0		@SR90-01	LIQUID		

Final page for worklist # 8345

DBB
Analyst Signature Date 5-7-96

MCB
Analyst Signature Date 5/7/96
Sue E. Hogan 5/7/96

Sample 2015 with 100-10-100, reading 81,006 on Ludlum. before running
Sample 2016 with 100-10-100, reading 313,282 on Ludlum. procedure

**DATA
NOT USED
IN PACKAGE**

Data Entry Comments:

The RPDs for samples 2015 & 2016 are out of limits
batch will be rerun. 5/13/96

LABCORE Completed RadChem Report for Worklist#: 8345

Analyst: seh Instrument: AB12 Book# _____

Method: _____ Rev/Mod _____

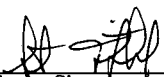
Worklist Comment: A-101 Grab.Determine sample size using ludlum. new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		QSR90-01 SR90-01 LIQUID		1.23E-03	1.18E-3	95.935	% Recovery
1 STD	0		QSR90-01 SR90-01C LIQUID		100	9.15E+01	91.500	% Recovery
1 STD	0		QSR90-01 SR90-01E LIQUID		1.00	1.91E+00	1.910	% Ct. Error
2 BLNK	0		QSR90-01 SR90-01 LIQUID		1	<3.02E-3		uCi/mL
2 BLNK	0		QSR90-01 SR90-01C LIQUID		100	9.12E+01	91.200	% Recovery
2 BLNK	0		QSR90-01 SR90-01E LIQUID		1.00	1.74E+02	174.000	% Ct. Error
3 BLNK/BKG	0		QSR90-01 SR90-01 LIQUID		1	1.24E+00	1.240	uCi/mL
4 SAMPLE	S96T002015	0	QSR90-01 SR90-01 LIQUID		N/A	1.35E-02	314.0e-005	uCi/mL
4 SAMPLE	S96T002015	0	QSR90-01 SR90-01C LIQUID		N/A	9.18E+01	0.0e+000	% Recovery
4 SAMPLE	S96T002015	0	QSR90-01 SR90-01E LIQUID		N/A	2.42E+01	0.0e+000	% Ct. Error
5 DUP	S96T002015	0	QSR90-01 SR90-01 LIQUID		1.35E-2	4.79E-2	112.052	RPD
5 DUP	S96T002015	0	QSR90-01 SR90-01C LIQUID		100	9.12E+01	91.200	% Recovery
5 DUP	S96T002015	0	QSR90-01 SR90-01E LIQUID		1.00	1.05E+01	10.500	% Ct. Error
6 SAMPLE	S96T002016	0	QSR90-01 SR90-01 LIQUID		N/A	8.66E-02	626.0e-005	uCi/mL
6 SAMPLE	S96T002016	0	QSR90-01 SR90-01C LIQUID		N/A	9.14E+01	0.0e+000	% Recovery
6 SAMPLE	S96T002016	0	QSR90-01 SR90-01E LIQUID		N/A	1.12E+01	0.0e+000	% Ct. Error
7 DUP	S96T002016	0	QSR90-01 SR90-01 LIQUID		8.66E-2	1.01E-1	15.352	RPD
7 DUP	S96T002016	0	QSR90-01 SR90-01C LIQUID		100	8.79E+01	87.900	% Recovery
7 DUP	S96T002016	0	QSR90-01 SR90-01E LIQUID		1.00	9.59E+00	9.590	% Ct. Error

Final page for worklist# 8345

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____


Reviewer Signature _____ Date 5/13/96

DATA
NOT USED
IN PACKAGE

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

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)	10640	GROSS WEIGHT (W2)	7.3171	
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.2256	
8345	BACKGROUND in cpm (BKG)	5.1	NET WEIGHT (W3)	0.0915	
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	4.50	
@SR90-01	DILUTION FACTOR (DF)	1			
Matrix	DIGEST DILUTION FACTOR DDF	1			
LIQUID	SAMPLE COUNT RATE (Rs)	1058.90	SR-90 EFFICIENCY FACTO (C1)	0.4180	
Batch Number	CRITICAL LEVEL (Lc)	1.36	Y-90 EFFICIENCY FACTOR (C2)	0.4680	
96004254	TIME OF SEPARATION (ST)	01:30	Rmax	N/A	
Reton	DATE OF SEPARATION (SD)	05/07/96	DETECTION LIMIT (Ld)	2.81	
0	TIME OF COUNT (TOC)	06:00	Sr-89/90 CONC. in µCi/L	1.1845E+00	
Sample Prep	DATE OF COUNT (DOC)	05/07/96			
N/A	STANDARD BOOK #	9B56			
Sample #	STANDARD VALUE in µCi/mL	1.2276E-03			
WL8345					
Instrument Code					
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0				
MCB	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000)				
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
JLS	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)				
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
DGG	NOTE: Expected weight = CVA * 0.1				
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
05/07/96	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
Analysis Date					
05/07/96	Sr-89/90 CONCENTRATION	1.18E-03	µCi/mL	DETECTION LEVEL 3.15E-06 µCi/L	
Analysis Time					
01:30 AM	RELATIVE COUNTING ERROR	1.9%			
Sample Point					
A-101 GRAB	PERCENT CARRIER RECOVERY	91.5%			

Analyst:		DGG	Date:	07-May-96
Signature of Chemist:		JLS	Date:	5/13/96

STANDARD WB1 REV 1.2

22010NML

DATA
NOT USED
IN PACKAGE

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)	63	GROSS WEIGHT	(W2)	7.1492
W2	COUNT TIME In MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0580
8345	BACKGROUND In cpm	(BKG)	5.1	NET WEIGHT	(W3)	0.0912
Test Code	SAMPLE VOLUME In mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	4.75
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	1.20	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.38	Y-90 EFFICIENCY FACTOR	(C2)	0.4880
96004254	TIME OF SEPARATION	(ST)	01:30	Rmax		2.68
Recm	DATE OF SEPARATION	(SD)	05/07/96	DETECTION LIMIT	(Ld)	2.81
0	TIME OF COUNT	(TOC)	06:16	Sr-89/90 CONC In $\mu\text{Ci/L}$	<	3.0248E+00
Sample Prep	DATE OF COUNT	(DOC)	05/07/96			
N/A						
Sample #						
WL8345						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27611	Sr-89/90 CONC In $\mu\text{Ci/L}$ 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)					
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
DGG	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
05/07/96						
Analysis Date	Sr-89/90 CONCENTRATION					DETECTION LEVEL
05/07/96	< 3.02E-03					
Analysis Time	LESS THAN Value was Determined from Rmax.					
01:30 AM	RELATIVE COUNTING ERROR					3.18E-03
Sample Point						$\mu\text{Ci/mL}$
A-101 GRAB	PERCENT CARRIER RECOVERY					91.2%

Analyst:	DGG	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/13/96

BLANKWB1 REV 1.2

22010NML

DATA
NOT USED
IN PACKAGE

WHC-SD-WM-DP-186, REV. 0

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)	172	GROSS WEIGHT	(W2) 7.2955
Work Unit	COUNT TIME In MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.2037
8345	BACKGROUND In cpm	(BKG)	5.1	NET WEIGHT	(W3) 0.0918
Test Code	SAMPLE VOLUME In mL	(SS)	0.100	DELTA TIME (HOURS)	(DT) 5.25
@SR90-01	DILUTION FACTOR	(DF)	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	12.10	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.36	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
96004254	TIME OF SEPARATION	(ST)	01:30	Rmax	N/A
Recon	DATE OF SEPARATION	(SD)	05/07/96	DETECTION LIMIT	(Ld) 2.81
0	TIME OF COUNT	(TOC)	06:45	Sr-89/90 CONC In µCi/L	1.3516E+01
Sample Prep	DATE OF COUNT	(DOC)	05/07/96		
N/A					
Sample #					
S96T002015					
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*22200000				
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)				
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
DGG	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
05/07/96					
Analysis Date					DETECTION LEVEL 3.14E-03 µCi/mL
05/07/96	Sr-89/90 CONCENTRATION	1.35E-02	µCi/mL		
Analysis Time					
01:30 AM	RELATIVE COUNTING ERROR	24.2%			
Sample Point					
A-101 GRAB	PERCENT CARRIER RECOVERY	91.8%			

Analyst:	DGG	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/13/96

SAMPLE.WB1 REV 1.2

22010NML

DATA
NOT USED
IN PACKAGE

WHC-SD-WM-DP-186, REV. 0

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)	479	GROSS WEIGHT	(W2) 7.1699
Work List	COUNT TIME in MINUTES		(CT)	10	TARE WEIGHT	(W1) 7.0787
8345	BACKGROUND in cpm		(BKG)	5.1	NET WEIGHT	(W3) 0.0912
Test Code	SAMPLE VOLUME in mL		(SS)	0.100	DELTA TIME (HOURS)	(DT) 5.67
@SR90-01	DILUTION FACTOR		(DF)	101		
Matrix	DIGEST DILUTION FACTOR		(DDF)	1		
LIQUID	SAMPLE COUNT RATE		(Rs)	42.80	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL		(Lc)	1.36	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
96004254	TIME OF SEPARATION		(ST)	01:30	Rmax	N/A
Recon	DATE OF SEPARATION		(SD)	05/07/96	DETECTION LIMIT	(Ld) 2.81
0	TIME OF COUNT		(TOC)	07:10	Sr-89/90 CONC in µCi/L 4.7909E+01	
Sample Prep	DATE OF COUNT		(DOC)	05/07/96		
N/A						
Sample #						
S96T002015						
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)					
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
DGG	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
05/07/96						
Analysis Date						DETECTION LEVEL 3.15E-03 µCi/mL
05/07/96	Sr-89/90 CONCENTRATION		4.79E-02	µCi/mL		
Analysis Time						
01:30 AM	RELATIVE COUNTING ERROR		10.5%			
Sample Point						
A-101 GRAB	PERCENT CARRIER RECOVERY		91.2%			

Analyst:	DGG	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/13/96
SAMPLE WB1 REV 1.2		22010NML	

DATA
NOT USED
IN PACKAGE

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: SAM6

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

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)	440	GROSS WEIGHT	(W2)	7.4823		
Work List	COUNT TIME In MINUTES		(CT)	10	TARE WEIGHT	(W1)	7.3709		
8345	BACKGROUND In cpm		(BKG)	5.1	NET WEIGHT	(W3)	0.0914		
Test Code	SAMPLE VOLUME In mL		(SS)	0.050	DELTA TIME (HOURS)	(DT)	6.00		
@SR90-01	DILUTION FACTOR		(DF)	101					
Matrix	DIGEST DILUTION FACTOR		(DDF)	1					
LIQUID	SAMPLE COUNT RATE		(Rs)	38.90	SR-90 EFFICIENCY FACTOR	(C1)	0.4180		
Batch Number	CRITICAL LEVEL		(Lc)	1.36	Y-90 EFFICIENCY FACTOR	(C2)	0.4680		
96004254	TIME OF SEPARATION		(ST)	01:30	Rmax		N/A		
Retun	DATE OF SEPARATION		(SD)	05/07/96	DETECTION LIMIT	(Ld)	2.81		
0	TIME OF COUNT		(TOC)	07:30	Sr-89/90 CONC In µCi/L		8.6591E+01		
Sample Prep	DATE OF COUNT		(DOC)	05/07/96					
N/A									
Sample #									
S96T002016									
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)								
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100								
Analyst	NOTE: Expected weight = CVA * 0.1								
DGG	Detection Levels and Less Than Values are determined from Procedure LA-508-002.								
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100								
05/07/96									
Analysis Date									
05/07/96	Sr-89/90 CONCENTRATION				8.66E-02	µCi/mL		DETECTION LEVEL	
Analysis Time									
01:30 AM	RELATIVE COUNTING ERROR				11.2%				
Sample Point									
A-101 GRAB	PERCENT CARRIER RECOVERY				91.4%				
						6.26E-03 µCi/mL			

Analyst:	DGG	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/13/96

SAMPLE.WB1 REV 1.2

22010NMU

DATA
NOT USED
IN PACKAGE

WHC-SD-WM-DP-186, REV. 0

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)	447	GROSS WEIGHT	(W2)	7.4409
WSP-130	COUNT TIME IN MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.3530
8345	BACKGROUND In cpm	(BKG)	1.0	NET WEIGHT	(W3)	0.0879
Test Cxls	SAMPLE VOLUME In mL	(SS)	0.050	DELTA TIME (HOURS)	(DT)	6.25
@SR90-01	DILUTION FACTOR	(DF)	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	43.70	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.60	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96004254	TIME OF SEPARATION	(ST)	01:30	Rmax		N/A
Person	DATE OF SEPARATION	(SD)	05/07/96	DETECTION LIMIT	(Ld)	1.30
0	TIME OF COUNT	(TOC)	07:45	Sr-89/90 CONC In µCi/L		1.0088E+02
Sample Prep	DATE OF COUNT	(DOC)	05/07/96			
N/A						
Sample #						
S96T002016						
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)					
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
DGG	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
05/07/96						
Analysis Date						DETECTION LEVEL 2.99E-03 µCi/mL
05/07/96	Sr-89/90 CONCENTRATION		1.01E-01	µCi/mL		
Analysis Time						
01:30 AM	RELATIVE COUNTING ERROR		9.6%			
Sample Point						
A-101 GRAB	PERCENT CARRIER RECOVERY		87.9%			

Analyst:	DGG	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/13/96

SAMPLE.WB1 REV 1.2

22010NML

DATA
NOT USED
IN PACKAGE

WHC-SD-WM-DP-186, REV. 0

LABCORE Completed RadChem Report for Worklist#: 8342

Analyst: ak1

Instrument: AM01 #15

Book# 124B43

Method: LA-963-103 Rev/Mod A-5

Worklist Comment: A-101 Grab. Determine sample size using ludlum. new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		0AM24101 AM24101 LIQUID		3.83E-02	3.80E-2	99.217	% Recovery
1 STD	0		0AM24101 AM24101T LIQUID		100.	7.65E+01	76.500	% Recovery
1 STD	0		0AM24101 AM24101E LIQUID		1.0	3.56E+00	3.560	% Ct Error
2 BLNK	0		0AM24101 AM24101 LIQUID		1	<3.92E-5		uCi/mL
2 BLNK	0		0AM24101 AM24101T LIQUID		100.0	7.25E+01	72.500	% Recovery
2 BLNK	0		0AM24101 AM24101E LIQUID		1.0	1.00E+02	100.000	% Ct Error
3 SAMPLE	S96T002015	0	0AM24101 AM24101 LIQUID		N/A	<3.74E-05	374.0e-007	uCi/mL
3 SAMPLE	S96T002015	0	0AM24101 AM24101E LIQUID		N/A	1.00E+02	0.0e+000	% Ct. Error
3 SAMPLE	S96T002015	0	0AM24101 AM24101T LIQUID		N/A	7.47E+01	0.0e+000	% Recovery
4 DUP	S96T002015	0	0AM24101 AM24101 LIQUID		<3.74E-5	<4.00E-5		RPD
4 DUP	S96T002015	0	0AM24101 AM24101T LIQUID		100.0	7.06E+01	70.600	% Recovery
4 DUP	S96T002015	0	0AM24101 AM24101E LIQUID		1.0	1.00E+02	100.000	% Ct Error
5 SAMPLE	S96T002016	0	0AM24101 AM24101 LIQUID		N/A	1.12E-04	441.0e-007	uCi/mL
5 SAMPLE	S96T002016	0	0AM24101 AM24101E LIQUID		N/A	5.38E+00	0.0e+000	% Ct. Error
5 SAMPLE	S96T002016	0	0AM24101 AM24101T LIQUID		N/A	7.03E+01	0.0e+000	% Recovery
6 DUP	S96T002016	0	0AM24101 AM24101 LIQUID		1.12E-4	1.12E-4	0.000	RPD
6 DUP	S96T002016	0	0AM24101 AM24101T LIQUID		100.0	8.23E+01	82.300	% Recovery
6 DUP	S96T002016	0	0AM24101 AM24101E LIQUID		1.0	5.22E+00	5.220	% Ct Error

Final page for worklist# 8342

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

validated

LABCORE Data Entry Template for Worklist# 8342

Analyst: AKL Instrument: AM01 15 Book# 124643

Method: LA-953-103 Rev/Mod _____

Worklist Comment: A-101 Grab.Determine sample size using ludlum. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S96T002015 0		@AM24101	LIQUID	96000459	A-101 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T					
4 DUP	S96T002015 0		@AM24101	LIQUID		
5 SAMPLE	S96T002016 0		@AM24101	LIQUID	96000459	A-101 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T					
6 DUP	S96T002016 0		@AM24101	LIQUID		

Final page for worklist # 8342

A. Lewis 5/8/96
Analyst Signature Date

Aue E. Hogan 5/9/96
Analyst Signature Date
C.J. Oprian 5/10/96

Data Entry Comments:

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (A-5)

LIQUID

STD

STD	Date Counted	MAY-08-96	Am 241 AEA Frac. (C241)	0.376
	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.462
	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	8
8342	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	1548
	Digest D.F. (DDF)	1506	AT Count Time (min) (TC)	30
AM24101	Tracer Book No.	125B43	Background In cpm (Bkg)	0.07
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	11.47
LIQUID	Detector Number	13	Am 243 cpm	14.08
	Detector Efficiency (DetEm)	0.3032	Cm 243/244 cpm	0
96004251	Standard Book No	124B43	AEA Count Time (min)	480
	Standard Value in $\mu\text{Ci/mL}$	0.03825	Am 241 $\mu\text{Ci/L}$ =	3.8026E+01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 6.6140E+00
N/A				
WL8342	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
WB26872	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min)))] * 1.96 * 100			
SEN	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEm) * C243 * 100 / Am-243 Tracer Value * SPKV			
JFR	Am 241 $\mu\text{Ci/mL}$ =	3.80E-02	DETECTION LEVELS In $\mu\text{Ci/mL}$	
AKL	Relative Counting Error =	3.6%		
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241	
05/09/96	Cm 243/244 $\mu\text{Ci/mL}$	< 6.61E-03	6.61E-03	
	Relative Counting Error =	100.0%	Cm 243/244	
05/08/96	Am 243 Tracer Recovery =	76.5%	6.61E-03	
10:00 AM				
A-101 GRAB				

Analyst:	AKL	Date:	05/09/96
Signature of Chemist: <i>John Relyea</i>	JFR	Date:	15 May 96
STANDARD.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (A-5)

WORKSHEET FOR

Am 241 and Cm 243/244: LA-953-103 (A-5)

LIQUID / SOLID				BLNK		
BLNK	Date Counted	MAY-08-96	Am 241 AEA Frac. (C241)	0		
	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.813		
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0		
8342	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	833		
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30		
AM24101	Tracer Book No.	126843	Background in cpm (Bkg)	0.07		
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	0		
LIQUID	Detector Number	18	Am 243 cpm	13.73		
	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0		
96004251			AEA Count Time (min)	480		
0			Am 241 $\mu\text{Ci/L}$ =	< 3.9250E-02		
			Cm 243/244 $\mu\text{Ci/L}$ =	< 3.9250E-02		
N/A						
WL8342	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
WB26872	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					
SEH	NOTE: Am-241 Result is a LESS THAN Value.					
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 3.92E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$			
	Relative Counting Error =	100.0%				
AKL				Am 241		
05/09/96	NOTE: Cm-243/244 Result is a LESS THAN Value.			3.92E-05		
	Cm 243/244 $\mu\text{Ci/mL}$ =	< 3.92E-05	Cm 243/244			
	Relative Counting Error =	100.0%				
05/08/96	Am 243 Tracer Recovery =	72.5%				
10:00 AM						
243103ML						
A-101 GRAB						

Analyst:	AKL	Date:	05/09/96
Signature of Chemist:	JFR	Date:	15 May 96
BLANK.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (A-5)

LIQUID / SOLID

WORKBOOK PAGE: 3

Am 241 and Cm 243/244: LA-953-103 (A-5)				LIQUID / SOLID		SAMPLE
SAMPLE	Date Counted	MAY-08-96	Am 241 AEA Frac.	(C241)		0
	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac.	(C243)		0.627
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
	8342	Tracer Volume in mL (SPKV)	0.100	Total AT Counts		348
@AM24101	Digest D.F. (DDF)	125843	AT Count Time (min) (TC)			30
	Tracer Book No.	1027	Background In cpm (Bkg)			0.07
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm			0
	LIQUID	Detector Number	18	Am 243 cpm		
96004251	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm			0
			AEA Count Time (min)			480
			Am 241 $\mu\text{Ci/L}$ =	<		3.7437E-02
			Cm 243/244 $\mu\text{Ci/L}$ =	<		3.7437E-02
0						
N/A						
S96T002015	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
WB26872	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))]] * 1.96 * 100					
SEN	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.					
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 3.74E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$			
AKL	Relative Counting Error =	100.0%				
	NOTE: Cm-243/244 Result is a LESS THAN Value.					
05/09/96	Cm 243/244 $\mu\text{Ci/mL}$	< 3.74E-05			Am 241	
05/09/96	Relative Counting Error =	100.0%			3.74E-05	
05/09/96	Am 243 Tracer Recovery =	74.7%			Cm 243/244	
					3.74E-05	
10:00 AM						
A-101 GRAB						

Analyst:	AKL	Date:	05/09/96
Signature of Chemist:	JFR	Date:	15 May 96
SAMPLE.WB1 REV 1.2	953103ML		

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (A-5)

LIQUID / SOLID

WORKBOOK PAGE: 3AMS

Am 241 and Cm 243/244 LA-953-103 (A-5)				LIQUID / SOLID	SAMPLE	
Date Counted		MAY-08-96	Am 241 AEA Frac. (C241)	0.181		
SAMPLE	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.746		
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0		
8342	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	883		
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30		
AM24101	Tracer Book No.	125B43	Background in cpm (Bkg)	0.07		
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	3.44		
LIQUID	Detector Number	18	Am 243 cpm	14.15		
	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0		
96004251	AEA Count Time (min)			480		
Ratio	Am 241 $\mu\text{Ci/L}$ =			1.1224E-01		
0	Cm 243/244 $\mu\text{Ci/L}$ =			< 4.4076E-02		
Sample Prep						
N/A						
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
S96T002016	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
Instrument						
WB26872	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						
JFR	Am 241 $\mu\text{Ci/mL}$ =	1.12E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$			
Analyst	Relative Counting Error =	5.4%				
AKL						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.					
05/09/96	Cm 243/244 $\mu\text{Ci/mL}$	< 4.41E-05	Am 241	4.41E-05		
Analyst	Relative Counting Error =	100.0%	Cm 243/244	4.41E-05		
05/08/96	Am 243 Tracer Recovery =	70.3%				
Analysis Time						
10:00 AM						
Sample Point						
A-101 GRAB						

Analyst:	AKL	Date:	05/09/96
Signature of Chemist:	JFR	Date:	15 May 96
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (A-5)

LIQUID / SOLID

DUP

	Date Counted	MAY-08-96	Am 241 AEA Frac. (C241)	0.178
DUP	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.738
	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
8342	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	1044
	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
AM24101	Tracer Book No.	125843	Background In cpm (Bkg)	0.07
	Am-243 Tracer Value (dpm/mL)	1027	Am 241 cpm	3.65
LIQUID	Detector Number	18	Am 243 cpm	15.15
	Detector Efficiency (DetEm)	0.3032	Cm 243/244 cpm	0
96004251			AEA Count Time (min)	480
			Am 241 $\mu\text{Ci/L}$ =	1.1158E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 3.8078E-02

Sample Prep	N/A
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))
S96T002016	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))
Instrument	WB26872
	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/DetEm) * C243 * 100 / Am-243 Tracer Value * SPKV

JFR	Am 241 $\mu\text{Ci/mL}$ =	1.12E-04	DETECTION LEVELS In $\mu\text{Ci/mL}$
Analyst	Relative Counting Error =	5.2%	
AKL			Am 241
Date Comp	NOTE: Cm-243/244 Result is a LESS THAN Value.		3.81E-05
05/09/96	Cm 243/244 $\mu\text{Ci/mL}$	< 3.81E-05	Am 241
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244
05/08/96	Am 243 Tracer Recovery =	82.3%	3.81E-05

Analysis Time	10:00 AM
Sample Point	A-101 GRAB

Analyst:	AKL	Date:	05/09/96
Signature of Chemist:	<i>John Reizen</i>	Date:	15 May 96
SAMPLE WB1 REV 1.2	953103ML		

D. H. 9: Indica
5-8-96

WHC-SD-WM-DP-186, REV. 0
Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8342-STD
File ID: 17a1731.CNF

Counted on: 5/ 8/96 @14:34
Detector: AEA17
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	231.8	231.8	298.084	298.084	12.000	5.337	6.000	1.093
2	312.9	312.9	252.623	252.557	10.000	4.487	5.000	1.012

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu238	0.376	5.487	5.474	0.0130.02	11.47	2.6	101.5	0.457E-04
	Am241		5.479	5.474	0.005			77.7	0.350E-04
2	Am243	0.462	5.270	5.264	0.0060.02	14.09	2.5	90.7	0.409E-04
Totals:			0.839	<--valid peaks only-->			25.56		

DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.458
Efficiency = 0.1569 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14627.0	100.000
Smoothed	14628.5	100.010
Composite fit	12268.7	83.877
Residuals	2358.3	16.123

Analyzed by: _____

ALJ

WHC-SD-WM-DP-186, REV. 0

[illegible]

Raw	Data	Dump	for	AEA	Spectrum:	17a1731.CNF	WHC-SD-WM-DP-186, REV. 0			
1	0.	0.	2.	2.	2.	2.	2.	4.	2.	7.
11	4.	1.	2.	1.	3.	3.	0.	0.	5.	2.
21	4.	1.	3.	4.	5.	3.	2.	3.	3.	1.
31	2.	4.	2.	1.	1.	6.	3.	1.	2.	4.
41	5.	1.	4.	2.	2.	2.	3.	0.	4.	6.
51	4.	3.	6.	1.	3.	3.	3.	3.	2.	2.
61	2.	6.	5.	1.	1.	4.	7.	4.	5.	5.
71	5.	4.	2.	6.	2.	5.	1.	4.	4.	4.
81	5.	4.	1.	2.	2.	2.	4.	6.	3.	3.
91	5.	3.	3.	4.	11.	1.	0.	1.	7.	4.
101	8.	8.	6.	3.	4.	9.	10.	9.	3.	2.
111	6.	4.	3.	7.	11.	7.	10.	8.	4.	5.
121	7.	4.	5.	8.	3.	7.	5.	5.	7.	9.
131	10.	9.	6.	4.	9.	8.	7.	7.	10.	9.
141	9.	4.	11.	13.	8.	5.	12.	8.	7.	7.
151	6.	13.	5.	11.	8.	10.	20.	10.	8.	13.
161	14.	13.	10.	13.	10.	19.	11.	9.	14.	13.
171	20.	15.	17.	19.	18.	21.	17.	17.	18.	20.
181	18.	21.	22.	29.	21.	19.	18.	20.	24.	20.
191	23.	19.	23.	22.	30.	31.	24.	31.	34.	29.
201	35.	27.	23.	29.	41.	56.	32.	44.	52.	38.
211	48.	48.	62.	61.	43.	55.	54.	45.	58.	71.
221	83.	64.	75.	94.	91.	96.	86.	101.	93.	104.
231	88.	117.	88.	119.	133.	135.	130.	135.	178.	145.
241	164.	184.	203.	221.	206.	259.	242.	255.	279.	285.
251	304.	369.	381.	345.	322.	184.	113.	86.	49.	65.
261	47.	59.	53.	57.	58.	59.	67.	66.	65.	55.
271	79.	53.	59.	68.	72.	88.	81.	85.	75.	91.
281	87.	97.	92.	114.	111.	123.	139.	138.	150.	159.
291	158.	170.	190.	217.	223.	224.	212.	252.	261.	238.
301	180.	107.	61.	44.	33.	31.	29.	18.	19.	7.
311	10.	4.	6.	3.	1.	0.	0.	1.	0.	0.
321	0.	0.	0.	0.	0.	1.	0.	2.	1.	3.
331	0.	1.	1.	1.	0.	0.	0.	0.	0.	2.
341	2.	1.	0.	2.	1.	1.	1.	2.	3.	1.
351	2.	5.	0.	1.	2.	0.	0.	0.	0.	0.
361	0.	3.	1.	1.	2.	0.	0.	1.	0.	1.
371	4.	3.	2.	2.	2.	3.	1.	0.	2.	1.
381	1.	0.	0.	3.	1.	0.	1.	0.	3.	0.
391	1.	0.	0.	1.	4.	0.	3.	1.	1.	1.
401	1.	0.	1.	2.	0.	0.	0.	2.	0.	0.
411	1.	1.	1.	0.	1.	0.	0.	0.	0.	1.
421	5.	1.	1.	0.	1.	0.	1.	0.	1.	1.
431	2.	1.	3.	2.	3.	3.	0.	0.	1.	0.
441	1.	0.	2.	0.	1.	0.	3.	2.	1.	1.
451	2.	2.	0.	2.	0.	7.	1.	4.	0.	3.
461	4.	4.	2.	2.	3.	2.	2.	0.	3.	1.
471	0.	4.	2.	1.	1.	5.	2.	1.	2.	1.
481	0.	4.	1.	2.	1.	1.	1.	0.	1.	5.
491	0.	1.	0.	2.	1.	0.	3.	3.	1.	2.
511	0.	0.								

C. H. 72 Inter
5-8-96

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

WHC-SD-WM-DP-186, REV. 0
DATA REDUCTION REPORT

SAMPLE
WL8342-BLK
File ID: 18a1809.CNF

Counted on: 5/ 8/96 @14:34
Detector: AEA18
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	293.9	293.9	254.829	254.829	12.000	4.991	6.000	1.092

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.813	5.270	5.263	0.007	0.02	13.73	2.4	84.5	0.381E-04
Totals:		0.813	<--valid peaks only-->				13.73			

DETECTOR CALIBRATION
Energy (MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.446
Efficiency = 0.1641 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	8111.0	100.000
Smoothed	8112.7	100.021
Composite fit	6592.6	81.280
Residuals	1518.4	18.720

Analyzed by: _____

ALJ

WHC-SD-WM-DP-186, REV. 0

[illegible]

Raw	Data	Dump	for	AEA	Spectrum:	18a1809.CNF	WHC-SD-WM-DP-186, REV. 0				
1	0.	0.	1.	2.	2.	0.	0.	0.	2.	1.	
11	0.	2.	3.	1.	3.	3.	0.	0.	0.	1.	
21	1.	1.	1.	0.	4.	1.	1.	1.	2.	2.	
31	2.	1.	0.	1.	4.	1.	2.	5.	2.	0.	
41	1.	0.	1.	0.	1.	1.	0.	1.	0.	2.	
51	3.	5.	3.	3.	0.	2.	1.	2.	1.	2.	
61	0.	0.	0.	5.	3.	2.	3.	5.	1.	0.	
71	2.	3.	1.	5.	3.	0.	3.	5.	4.	3.	
81	2.	2.	4.	5.	6.	2.	0.	3.	2.	2.	
91	2.	3.	3.	0.	2.	5.	2.	4.	3.	6.	
101	5.	3.	6.	2.	3.	4.	5.	2.	7.	2.	
111	6.	3.	6.	2.	7.	4.	2.	1.	4.	3.	
121	3.	4.	4.	5.	2.	7.	2.	4.	6.	1.	
131	5.	6.	9.	4.	1.	4.	5.	5.	7.	6.	
141	9.	6.	6.	14.	9.	7.	6.	8.	6.	8.	
151	6.	7.	12.	8.	7.	8.	10.	8.	15.	7.	
161	4.	9.	6.	7.	11.	7.	4.	12.	6.	18.	
171	11.	17.	15.	10.	18.	13.	9.	13.	12.	15.	
181	19.	10.	16.	13.	18.	15.	13.	8.	15.	19.	
191	20.	22.	23.	15.	25.	21.	23.	27.	24.	29.	
201	26.	21.	29.	27.	16.	40.	35.	20.	31.	31.	
211	38.	38.	35.	37.	44.	40.	40.	43.	60.	58.	
221	54.	47.	63.	68.	68.	68.	71.	69.	78.	73.	
231	79.	91.	76.	99.	89.	107.	118.	116.	96.	116.	
241	137.	151.	147.	171.	173.	176.	208.	213.	226.	245.	
251	273.	246.	295.	324.	317.	306.	302.	246.	127.	58.	
261	32.	17.	24.	16.	14.	10.	11.	16.	9.	13.	
271	1.	2.	3.	2.	1.	0.	0.	0.	0.	0.	
281	0.	1.	0.	0.	0.	1.	0.	1.	0.	1.	
291	1.	2.	0.	1.	0.	1.	0.	1.	0.	1.	
301	1.	1.	1.	1.	0.	0.	0.	1.	1.	0.	
311	2.	1.	0.	0.	0.	2.	0.	0.	0.	0.	
321	0.	1.	0.	0.	0.	0.	2.	1.	0.	1.	
331	0.	1.	0.	0.	0.	0.	1.	0.	1.	1.	
341	0.	3.	1.	0.	1.	0.	2.	2.	0.	1.	
351	0.	0.	3.	0.	1.	2.	1.	1.	0.	1.	
361	1.	3.	1.	0.	0.	1.	1.	0.	0.	0.	
371	0.	1.	0.	0.	1.	0.	0.	1.	0.	0.	
381	1.	0.	1.	0.	0.	0.	1.	0.	0.	1.	
391	1.	1.	0.	0.	0.	0.	1.	0.	2.	2.	
401	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.	
411	0.	1.	0.	1.	1.	0.	0.	0.	0.	2.	
421	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.	
431	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	
441	1.	0.	1.	0.	1.	0.	0.	0.	1.	0.	
451	1.	0.	1.	0.	0.	0.	1.	1.	2.	1.	
461	0.	1.	0.	0.	1.	1.	0.	0.	0.	0.	
471	0.	0.	0.	1.	2.	2.	1.	0.	0.	0.	
481	2.	2.	0.	0.	0.	0.	1.	0.	0.	2.	
491	1.	1.	1.	1.	0.	1.	1.	1.	0.	0.	
511	0.	0.									

DATA REDUCTION REPORT

SAMPLE
S96T002015-SAM
File ID: 19a1960.CNF

Counted on: 5/ 8/96 @14:35
Detector: AEA19
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	273.9	273.9	254.425	254.425	10.000	4.739	5.000	0.933

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.827	5.270	5.256	0.014	0.02	13.73	2.4	88.4	0.398E-04
Totals:		0.827	<--valid peaks only-->				13.73			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.441
Efficiency = 0.1570 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	7972.0	100.000
Smoothed	7972.1	100.001
Composite fit	6592.9	82.701
Residuals	1379.1	17.299

Analyzed by:

ALJ

WHC-SD-WM-DP-186, REV. 0

.
.
.
.
.
..
..
..
1..
.1..
..1..
...1..
....1..
.....1.
.....1
.....1
.....1
.....1.
.....1.
.....1
.....1

Raw	Data	Dump	for	AEA	Spectrum:	19a1960.CNF	WHC-SD-WM-DP-186, REV. 0
1	0.	0.	1.	1.	1.	2.	0.
11	0.	2.	2.	1.	3.	2.	0.
21	4.	3.	1.	2.	0.	4.	1.
31	2.	3.	2.	7.	2.	1.	0.
41	0.	3.	1.	2.	5.	1.	4.
51	1.	2.	1.	2.	5.	4.	1.
61	2.	1.	5.	3.	1.	5.	2.
71	2.	2.	2.	2.	1.	1.	4.
81	3.	0.	3.	5.	3.	1.	3.
91	6.	1.	3.	2.	5.	3.	4.
101	5.	7.	6.	1.	3.	1.	2.
111	6.	0.	4.	4.	6.	2.	3.
121	3.	3.	7.	3.	6.	4.	3.
131	11.	5.	7.	3.	2.	7.	7.
141	5.	10.	8.	8.	10.	9.	6.
151	10.	7.	7.	8.	4.	9.	9.
161	6.	6.	9.	9.	10.	10.	14.
171	8.	16.	14.	10.	13.	16.	12.
181	13.	22.	15.	9.	19.	19.	19.
191	18.	22.	21.	29.	22.	25.	18.
201	21.	30.	34.	31.	27.	46.	31.
211	31.	39.	41.	43.	40.	48.	42.
221	37.	52.	63.	59.	57.	64.	60.
231	72.	85.	89.	101.	109.	102.	120.
241	148.	144.	168.	190.	186.	184.	197.
251	249.	270.	272.	270.	294.	312.	238.
261	21.	21.	18.	19.	12.	14.	11.
271	3.	4.	5.	0.	0.	1.	2.
281	1.	1.	2.	1.	1.	3.	1.
291	1.	0.	1.	3.	5.	2.	5.
301	5.	2.	5.	3.	0.	3.	0.
311	1.	0.	0.	0.	0.	1.	0.
321	1.	0.	0.	0.	0.	0.	0.
331	1.	0.	1.	0.	0.	1.	0.
341	1.	0.	1.	1.	2.	0.	0.
351	0.	1.	1.	0.	1.	2.	0.
361	1.	0.	1.	0.	0.	0.	0.
371	2.	1.	0.	0.	0.	1.	0.
381	0.	0.	2.	0.	1.	0.	0.
391	1.	0.	0.	2.	0.	2.	1.
401	1.	0.	0.	1.	0.	0.	0.
411	1.	0.	1.	0.	1.	0.	0.
421	0.	0.	1.	0.	0.	2.	0.
431	1.	0.	0.	0.	2.	0.	1.
441	0.	0.	1.	1.	1.	1.	1.
451	1.	0.	0.	4.	1.	1.	0.
461	0.	1.	0.	0.	1.	1.	0.
471	1.	0.	0.	2.	1.	0.	1.
481	2.	1.	1.	2.	1.	0.	1.
491	0.	0.	1.	3.	1.	0.	2.
511	4.	0.					1.

D. H. M. M. M. M.
5-8-96

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

WHC-SD-WM-DP-186, REV. 0

DATA REDUCTION REPORT

SAMPLE
S96T002015-DUP
File ID: 20a2091.CNF

Counted on: 5/ 8/96 @14:36
Detector: AEA20
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	263.8	263.8	254.948	254.948	12.000	5.015	6.000	0.970
2	11.3	11.3	172.502	172.293	88.000	495.076	44.000	138.074

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Obs.	Peak Centroid Diff.	FWHM	Count Rate	%err c/m	d/m	Activity uCi/ea
1	Am243	0.820	5.270	5.262	0.0080	0.02	13.49	2.4	414.3	0.187E-03
2	Np237	0.152	4.769	4.882	-0.1132	0.28	2.50	14.3	87.2	0.393E-04
	Pu242		4.891	4.882	0.009				75.8	0.342E-04

Totals:		0.971	<--valid peaks only-->				15.99			

DETECTOR CALIBRATION

Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.445
Efficiency = 0.0329 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	7903.0	100.000
Smoothed	7902.0	99.987
Composite fit	7675.0	97.115
Residuals	228.0	2.885

Analyzed by: _____

ALJ

WHC-SD-WM-DP-186, REV. 0

```
2
2
2
2
2
.2
.2
.2
..2
..2
..2
1.2.
.12..
.21...
.2..1...
.2....1...
2.....1...
2.....1.
2.....1
2.....1.
2.....1..
2.....1..
.....1
1...
```

Raw	Data	Dump	for	AEA	Spectrum:	20a2091.CNF	WHC-SD-WM-DP-186, REV. 0
1	0.	0.	1.	1.	0.	1.	0.
11	0.	1.	1.	2.	2.	2.	0.
21	1.	2.	0.	1.	1.	2.	0.
31	2.	2.	4.	0.	0.	2.	2.
41	2.	1.	1.	0.	1.	1.	1.
51	2.	0.	5.	2.	1.	3.	2.
61	4.	4.	3.	8.	1.	0.	1.
71	3.	3.	1.	1.	2.	2.	1.
81	2.	5.	5.	3.	4.	5.	3.
91	4.	6.	2.	3.	2.	4.	1.
101	1.	2.	2.	5.	3.	4.	5.
111	7.	7.	6.	4.	3.	7.	3.
121	2.	5.	5.	6.	4.	4.	2.
131	4.	3.	10.	4.	6.	8.	4.
141	8.	6.	8.	7.	3.	8.	6.
151	5.	7.	8.	8.	10.	8.	14.
161	7.	11.	10.	11.	6.	14.	6.
171	9.	17.	16.	12.	8.	5.	12.
181	14.	21.	17.	23.	12.	24.	20.
191	21.	21.	15.	18.	29.	20.	34.
201	27.	25.	23.	38.	39.	31.	35.
211	33.	30.	45.	45.	45.	47.	42.
221	60.	61.	50.	64.	58.	60.	59.
231	82.	92.	89.	90.	92.	106.	99.
241	133.	143.	162.	153.	152.	189.	203.
251	228.	248.	258.	268.	282.	283.	272.
261	32.	20.	8.	17.	17.	8.	9.
271	10.	8.	6.	1.	3.	1.	2.
281	1.	2.	0.	0.	2.	1.	0.
291	1.	2.	5.	4.	4.	0.	1.
301	4.	0.	3.	1.	2.	1.	1.
311	1.	0.	0.	1.	0.	0.	0.
321	0.	0.	2.	0.	0.	0.	0.
331	0.	1.	1.	0.	1.	0.	0.
341	0.	0.	0.	1.	2.	0.	1.
351	0.	0.	0.	0.	1.	0.	1.
361	0.	0.	0.	1.	0.	0.	1.
371	0.	0.	0.	1.	1.	0.	1.
381	0.	0.	0.	0.	1.	0.	2.
391	0.	0.	0.	0.	0.	0.	2.
401	0.	0.	2.	1.	0.	1.	0.
411	0.	0.	0.	0.	1.	0.	0.
421	1.	0.	0.	0.	1.	1.	1.
431	0.	1.	0.	0.	1.	0.	0.
441	2.	1.	0.	1.	1.	0.	1.
451	1.	3.	0.	1.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	2.	0.	0.
481	1.	1.	1.	1.	1.	1.	0.
491	1.	1.	1.	0.	0.	0.	1.
511	0.	0.					

D. H. Zilkia
5-8-96

WHC-SD-WM-DP-186, REV. 0

```

3
3
3
3
3
3
3
3
3
3.
3.
3..
32.
3.2.
3...2.
.....2.
.....2
.....2
.....2
1.....2...
1.....2...
.1.....2...
..2....
....1
.....1
.....1
.....1
...1.

```

Raw Data	Dump for	AEA Spectrum:	21a2195.CNF						
1	0.	0.	0.	1.	0.	4.	1.	0.	0.
11	2.	1.	0.	3.	1.	0.	0.	1.	0.
21	0.	0.	1.	1.	0.	0.	0.	1.	0.
31	3.	2.	0.	0.	1.	1.	1.	0.	1.
41	0.	1.	0.	0.	1.	1.	0.	1.	0.
51	0.	1.	0.	3.	0.	1.	0.	0.	2.
61	1.	0.	0.	1.	1.	0.	0.	0.	0.
71	1.	1.	0.	2.	1.	1.	1.	1.	3.
81	2.	2.	2.	2.	0.	2.	2.	4.	1.
91	0.	1.	4.	3.	1.	3.	2.	2.	3.
101	5.	2.	2.	0.	0.	1.	7.	3.	2.
111	1.	5.	0.	3.	7.	5.	2.	4.	4.
121	3.	8.	2.	0.	4.	1.	1.	6.	7.
131	4.	2.	3.	5.	3.	4.	3.	1.	4.
141	4.	5.	2.	5.	3.	7.	8.	8.	3.
151	3.	2.	4.	4.	5.	4.	7.	3.	3.
161	4.	9.	12.	7.	5.	12.	15.	10.	7.
171	10.	5.	13.	3.	12.	9.	6.	10.	12.
181	12.	14.	14.	13.	12.	12.	10.	9.	18.
191	9.	18.	20.	17.	12.	17.	22.	23.	19.
201	19.	18.	21.	31.	21.	30.	28.	19.	25.
211	38.	32.	43.	35.	38.	37.	35.	44.	47.
221	63.	40.	56.	61.	47.	59.	70.	57.	74.
231	92.	108.	106.	104.	85.	123.	97.	115.	144.
241	176.	176.	184.	155.	179.	219.	213.	212.	232.
251	277.	299.	252.	261.	282.	225.	226.	161.	152.
261	71.	51.	42.	35.	22.	24.	14.	25.	17.
271	17.	26.	11.	10.	20.	16.	19.	21.	29.
281	27.	25.	25.	27.	25.	35.	44.	45.	41.
291	40.	53.	39.	48.	53.	56.	45.	56.	70.
301	53.	44.	40.	28.	31.	23.	17.	11.	6.
311	6.	5.	6.	1.	1.	2.	0.	2.	1.
321	0.	0.	0.	1.	1.	0.	0.	0.	0.
331	0.	2.	0.	0.	0.	1.	2.	1.	2.
341	1.	1.	2.	0.	1.	1.	1.	1.	0.
351	1.	1.	3.	2.	2.	3.	1.	3.	1.
361	0.	1.	3.	1.	4.	2.	3.	2.	3.
371	1.	3.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	1.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	1.
401	1.	0.	1.	0.	1.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	1.	1.	0.	0.	0.	2.	1.
431	1.	2.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	1.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	0.	0.	1.	1.	2.	1.
481	0.	0.	0.	0.	1.	0.	0.	1.	1.
491	0.	2.	1.	0.	1.	0.	1.	0.	0.
511	0.	0.							

WHC-SD-WM-DP-186, REV. 0

SAMPLE

S96T002016-DUP

File ID: 22a2289.CNF

5/ 8/96 @14:37

Detector: AEA22

Geometry number: 1

28803. Sec

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	FWHM Diff.	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Pu238	0.178	5.487	5.471	0.0160.03	3.65	4.7	171.2	0.771E-04
	Am241		5.479	5.471	0.008			131.1	0.591E-04
2	Am243	0.738	5.270	5.261	0.0090.02	15.15	2.3	516.9	0.233E-03
3	Pu242	0.025	4.891	4.958	-0.0670.07	0.52	24.2	17.5	0.788E-05
Totals:		0.941	<--valid peaks only-->			19.31			

DETECTOR CALIBRATION

$$\text{Energy (MEV)} = 4.098 + (0.0046) * \text{Channel}$$

Energy range (MeV): 4.098 TO 6.454

Efficiency = 0.0296 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	9853.0	100.000
Smoothed	9853.6	100.006
Composite fit	9271.5	94.098
Residuals	581.5	5.902

ALJ

WHC-SD-WM-DP-186, REV. 0

[illegible]

Raw	Data	Dump	for	AEA	Spectrum:	22a2289.CNF	n-0-SD-WV-02-06, REV. 0
1	0.	0.	0.	0.	1.	1.	1.
11	0.	0.	0.	2.	1.	0.	1.
21	0.	1.	1.	1.	0.	2.	0.
31	0.	0.	1.	2.	0.	0.	0.
41	1.	0.	2.	2.	1.	0.	3.
51	1.	0.	0.	0.	3.	0.	2.
61	0.	1.	1.	0.	0.	0.	1.
71	1.	2.	0.	2.	0.	2.	4.
81	0.	3.	1.	0.	0.	2.	1.
91	1.	2.	2.	2.	1.	2.	4.
101	3.	0.	4.	2.	1.	0.	0.
111	0.	3.	7.	3.	0.	1.	4.
121	4.	6.	1.	3.	0.	3.	0.
131	10.	4.	4.	3.	2.	4.	1.
141	5.	2.	4.	2.	3.	5.	5.
151	4.	4.	5.	5.	6.	6.	3.
161	8.	4.	5.	7.	9.	12.	7.
171	12.	5.	10.	14.	7.	17.	9.
181	10.	12.	9.	19.	19.	18.	22.
191	19.	12.	16.	22.	24.	17.	26.
201	34.	29.	29.	26.	30.	26.	39.
211	41.	38.	44.	50.	50.	59.	62.
221	74.	72.	74.	79.	79.	85.	85.
231	118.	110.	106.	100.	131.	116.	138.
241	174.	192.	199.	225.	205.	234.	237.
251	266.	301.	329.	305.	269.	224.	132.
261	43.	26.	28.	41.	29.	29.	20.
271	19.	14.	15.	22.	19.	16.	27.
281	27.	31.	34.	40.	37.	43.	41.
291	46.	61.	50.	68.	50.	51.	61.
301	49.	43.	30.	16.	12.	11.	11.
311	4.	1.	2.	4.	0.	0.	1.
321	0.	0.	2.	2.	1.	1.	0.
331	0.	0.	1.	0.	1.	1.	0.
341	0.	1.	3.	5.	0.	2.	2.
351	3.	1.	0.	0.	2.	4.	1.
361	3.	3.	2.	2.	1.	2.	4.
371	5.	0.	0.	0.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	1.
391	0.	0.	0.	1.	0.	1.	0.
401	1.	0.	0.	0.	0.	0.	2.
411	0.	1.	0.	1.	0.	0.	0.
421	0.	0.	1.	0.	1.	0.	1.
431	2.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	1.	0.	1.	0.
451	0.	1.	0.	0.	0.	1.	0.
461	0.	1.	0.	0.	1.	0.	0.
471	0.	2.	1.	1.	0.	0.	1.
481	0.	0.	0.	0.	0.	0.	1.
491	0.	0.	0.	1.	0.	1.	2.
511	1.	0.					

LABCORE Completed RadChem Report for Worklist#: 8344

Analyst: jmv

Instrument: AB18

Book# 124B43

Method: LA-943-128 Rev/Mod BT

Worklist Comment: A-101 Grab. Determine sample size using ludlum. new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		APU23901 PU23901	LIQUID	3.81E-02	3.77E-2	98.950	% Recovery
1 STD	0		APU23901 PU23901E	LIQUID	1.00	2.86E+00	2.860	% Ct Error
1 STD	0		APU23901 PU23901T	LIQUID	100	1.06E+02	106.000	% Recovery
2 BLNK	0		APU23901 PU23901	LIQUID	1	<2.90E-4		uCi/mL
2 BLNK	0		APU23901 PU23901T	LIQUID	100	1.01E+02	101.000	% Recovery
2 BLNK	0		APU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S96T002015	0	APU23901 PU23901	LIQUID	N/A	< 3.10E-04	310.0E-006	uCi/mL
3 SAMPLE	S96T002015	0	APU23901 PU23901T	LIQUID	N/A	9.72E+01	0.0E+000	% Recovery
3 SAMPLE	S96T002015	0	APU23901 PU23901E	LIQUID	N/A	1.00E+02	0.0E+000	% Ct. Error
4 DUP	S96T002015	0	APU23901 PU23901	LIQUID	<3.10E-4	<3.96E-4		RPD
4 DUP	S96T002015	0	APU23901 PU23901T	LIQUID	100	7.58E+01	75.800	% Recovery
4 DUP	S96T002015	0	APU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct Error
5 SAMPLE	S96T002016	0	APU23901 PU23901	LIQUID	N/A	< 3.01E-04	301.0E-006	uCi/mL
5 SAMPLE	S96T002016	0	APU23901 PU23901T	LIQUID	N/A	1.03E+02	0.0E+000	% Recovery
5 SAMPLE	S96T002016	0	APU23901 PU23901E	LIQUID	N/A	1.00E+02	0.0E+000	% Ct. Error
6 DUP	S96T002016	0	APU23901 PU23901	LIQUID	<3.01E-4	<3.00E-4		RPD
6 DUP	S96T002016	0	APU23901 PU23901T	LIQUID	100	1.05E+02	105.000	% Recovery
6 DUP	S96T002016	0	APU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct Error

Final page for worklist# 8344

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

Validated

LABCORE Data Entry Template for Worklist# 8344

Analyst: mw Instrument: PU01 Book# 124843

Method: LA-943-128 Rev/Mod _____

Worklist Comment: A-101 Grab. Determine sample size using ludlum. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S96T002015 0		@PU23901	LIQUID	96000459	A-101 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T					
4 DUP	S96T002015 0		@PU23901	LIQUID		
5 SAMPLE	S96T002016 0		@PU23901	LIQUID	96000459	A-101 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T					
6 DUP	S96T002016 0		@PU23901	LIQUID		

Final page for worklist # 8344

mw 5-10-96
Analyst Signature Date

Joe E. Hogan 5/13/96
Analyst Signature Date
C.J. Quinn 5/13/96

Data Entry Comments:

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID

Pu 238 and 239/240 : LA-943-128 (A-1)				LIQUID		STD		
	DATE COUNTED		MAY-10-96	Pu 236 AEA FRAC (C236)		0.723		
STD	SAMPLE VOLUME in mL	SS	0.100	Pu 238 AEA FRAC (C238)		0.000		
	SAMPLE DILUTION FACTOR	DF	101.000	Pu 239 AEA FRAC (C239)		0.274		
8344	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2577		
	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30		
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)		0.130		
	DETECTOR NUMBER		18	Pu 236 cpm		35.640		
LIQUID	EFFICIENCY FACTOR	EFF	0.269	Pu 238 cpm		0.000		
	TRACER PREPARATION DATE		12/27/95	Pu 239 cpm		13.480		
96004263	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME		480		
	Pu-236 DECAY CORR'D VALUE (dpm/mL)		2184.528	Pu 239/240 μ Ci/L		3.7665E+01		
0	PU-238 TRACER VALUE (dpm/mL)		0.000					
Sample Prep	STANDARD BOOK NO		124B43					
N/A	STANDARD VALUE in μ Ci/mL		0.038					
Sample #								
WL8344								
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date							
WB27809	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 μ Ci/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (2220000 dpm/ μ Ci)]							
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)							
JFR	Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-238 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (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							
JMV								
Date Complete								
05/13/96	Pu 239/240 μ Ci/mL	3.77E-02	DETECTION LEVELS in μ Ci/mL					
Analysis Date	Relative Counting Error	= 2.9%						
05/10/96								
Analysis Time								
02:00 PM							Pu 239/240 4.12E-03	
Sample Point								
A-101 GRAB	Pu 236 Tracer Recovery	=	105.7%					

Analyst:	JMV	Date:	13-May-96
Signature of Chemist:	JFR	Date:	15 May 96

STANDARD.WB1 REV 1.0

943128ML

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

				BLNK
TYPE	DATE COUNTED	MAY-10-96	PU 236 AEA FRAC (C236)	1.027
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
8344	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	1735
1241 C236	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
QPU23901	TRACER BOOK NO	120B43	BACKGROUND in cpm (Bkg)	0.130
Matrix	DETECTOR NUMBER	18	PU 236 cpm	25.440
LIQUID	EFFICIENCY FACTOR	EFF	0.2686 PU 238 cpm	0.000
Batch No	TRACER PREPARATION DATE	12/27/95	PU 239 cpm	0.000
96004253	TRACER PREPARATION VALUE (dpm/mL)	2390.00	AEA COUNT TIME	480
Recur	PU-236 DECAY CORR'D VALUE (dpm/mL)	2184.53	Pu 239/240 µCi/L =	< 2.903E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.00		
Sample Prep				
N/A				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
WL8344	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)			
WB27809	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			
JFR				
Analyst				
JMV				
Date Complete				
05/13/96	Pu 239/240 µCi/mL	< 2.90E-04	DETECTION LEVELS in µCi/mL	
Analysis Date	Relative Counting Error	= 100.0%		
05/10/96				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			
02:00 PM	Pu 238 µCi/mL	< 2.90E-04	Pu 239/240	
Sample Point	Relative Counting Error	= 100.0%	Pu 238	
A-101 GRAB	Pu 236 Tracer Recovery	= 101.0%	2.90E-04	

Analyst:	JMV	Date:	13-May-96
Signature of Chemist:	<i>John Reizen</i>	JFR	Date: 15 May 96

BLANK.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

WORKBOOK PAGE: 6AM3

Pu 238 and 239/240 : LA-943-128 (A-1)			LIQUID / SOLID		SAMPLE
	DATE COUNTED	MAY-10-98	Pu 236 AEA FRAC (C236)		0.989
SAMPLE	SAMPLE VOLUME in mL	SS	1.900	Pu 238 AEA FRAC (C238)	0.006
	SAMPLE DILUTION FACTOR	DF	101.000	Pu 239 AEA FRAC (C239)	0.000
8344	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1734
	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	120843	BACKGROUND in cpm (Bkg)		0.130
	DETECTOR NUMBER	18	Pu 236 cpm		33.150
LIQUID	EFFICIENCY FACTOR	EFF	0.269	Pu 238 cpm	0.006
Batch Number	TRACER PREPARATION DATE	12/27/95	Pu 239 cpm		0.000
96004263	TRACER PREPARATION VALUE (dpm/mL)	2390.000	AEA COUNT TIME		480
Ratio	Pu-236 DECAY CORR'D VALUE (dpm/mL)	2184.528	Pu 239/240 $\mu\text{Ci/L}$ =	<	3.1015E-01
0	Pu-238 TRACER VALUE (dpm/mL)	0.000			

Sample Prep

N/A

Sample #

S96T002015

Instrument Code

WB27809

Prepared By

SEH

Chemist

JFR

Analyst

JMV

Date Complete

05/13/96

Analysis Date

05/10/96

Analysis Time

02:00 PM

Sample Point

A-101 GRAB

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value $[e^{(-\ln 2 * \text{Decay Time}/1040.95)}]$

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 $\mu\text{Ci/L}$ = (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 $\mu\text{Ci/L}$ = [(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 $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$

05/13/96	Pu 239/240 $\mu\text{Ci/mL}$	< 3.10E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$
Analysis Date	Relative Counting Error =	100.0%	
05/10/96	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240
Analysis Time	Pu 238 $\mu\text{Ci/mL}$	< 3.10E-04	3.10E-04
02:00 PM	Relative Counting Error =	100.0%	Pu 238
Sample Point	Pu 236 Tracer Recovery =	97.2%	3.10E-04
A-101 GRAB			

Analyst:	JMV	Date:	13-May-96
Signature of Chemist:	JFR	Date:	15 May 96

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

PU 238 AND 239/240 : LA-943-128 (A-1)				LIQUID / SOLID		DUP	
TYPE	DATE COUNTED		MAY-10-96		PU 236 AEA FRAC	(C236)	0.993
DUP	SAMPLE VOLUME in mL		SS	1.000	PU 236 AEA FRAC	(C238)	0.000
Work 1-1	SAMPLE DILUTION FACTOR		DF	101.000	PU 239 AEA FRAC	(C239)	0.000
8344	TRACER VOLUME in mL		SPKV	0.100	TOTAL AT COUNTS		1347
Test Code	DIGEST DILUTION FACTOR		DDF	11.9000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		120B43		BACKGROUND in cpm (Bkg)		0.130
	DETECTOR NUMBER		18		PU 236 cpm		27.230
LIQUID	EFFICIENCY FACTOR		EFF 0.269		PU 238 cpm		0.000
Batch	TRACER PREPARATION DATE		12/27/95		PU 239 cpm		0.000
96004263	TRACER PREPARATION VALUE (dpm/mL)		2390.000		AEA COUNT TIME		480
Ratio	PU-236 DECAY CORR'D VALUE (dpm/mL)		2184.528		Pu 239/240 $\mu\text{Ci/L}$ =		< 3.9630E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000				
Sample Prep							
N/A							
Sample #	Decay Time = Date Counted - Tracer Preparation Date						
S96T002015	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)						
WB27809	Pu 239/240 $\mu\text{Ci/L}$ = (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 $\mu\text{Ci/L}$ = [(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						
JFR							
Analyst							
JMV							
Date Complete							
05/13/96	Pu 239/240 $\mu\text{Ci/mL}$		< 3.96E-04		DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analysis Date	Relative Counting Error		= 100.0%				
05/10/96							
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.						
02:00 PM	Pu 238 $\mu\text{Ci/mL}$		< 3.96E-04				
Sample Point	Relative Counting Error		= 100.0%		Pu 238		
A-101 GRAB	Pu 236 Tracer Recovery		= 75.8%		3.96E-04		

Analyst:	JMV	Date:	13-May-96
Signature of Chemist:	JFR	Date:	15 May 96

SAMPLE.WB1 REV 1.0

943128ML

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: SAMS

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

				SAMPLE
	DATE COUNTED	MAY-19-96	PU 236 AEA FRAC (C236)	0.990
SAMPLE	SAMPLE VOLUME in mL	SS	1.000 PU 238 AEA FRAC (C238)	0.000
	SAMPLE DILUTION FACTOR	DF	101.000 PU 239 AEA FRAC (C239)	0.000
8344	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	1844
	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23801	TRACER BOOK NO	120B43	BACKGROUND in cpm (Bkg)	0.136
	DETECTOR NUMBER	18	PU 236 cpm	34.370
LIQUID	EFFICIENCY FACTOR	EFF	0.269 PU 238 cpm	0.000
	TRACER PREPARATION DATE	12/27/95	PU 239 cpm	0.000
96004263	TRACER PREPARATION VALUE (dpm/mL)	2390.000	AEA COUNT TIME	480
	PU-236 DECAY CORR'D VALUE (dpm/mL)	2184.528	Pu 239/240 $\mu\text{Ci/L}$ =	< 3.0117E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep
N/A
Sample #
S96T002016
Instrument Code
WB27809
Prepared By
SEH
Chemist
JFR
Analyst
JMV
Date Complete

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value $\times [e \text{ to the power of } \{(-\ln 2 \times \text{Decay Time})/1040.95\}]$

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) $\times \text{C236} \times 100 / (\text{Pu-236 Decay Corr'd Value} \times \text{SPKV} \times \text{EFF})$

Pu 239/240 $\mu\text{Ci/L}$ = (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 $\times 1/\text{EFF} \times \text{C238}$] - (Pu-238 Tracer Value $\times \text{SPKV} \times \text{Pu 236 Tracer Recovery} / 100$)

Pu 238 $\mu\text{Ci/L}$ = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-238 Tracer Recovery / 100)(2220000 dpm/ μCi)(D g/L)(SS)]

Relative Counting Error = Square Root of $\{[1/(\text{Pu 236 cpm} \times \text{min})] + [1/(\text{Pu 238 or 239/240 cpm} \times \text{min})]\} \times 1.96 \times 100$

06/13/96	Pu 239/240 $\mu\text{Ci/mL}$	< 3.01E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$
Analysis Date	Relative Counting Error	= 100.0%	
05/10/96			Pu 239/240
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		3.01E-04
02:00 PM	Pu 238 $\mu\text{Ci/mL}$	< 3.01E-04	Pu 238
Sample Point	Relative Counting Error	= 100.0%	3.01E-04
A-101 GRAB	Pu 236 Tracer Recovery	= 103.5%	

Analyst:	JMV	Date:	13-May-96
Signature of Chemist:	JFR	Date:	15 May 96

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

WORKBOOK PAGE: D0F3

Pu 238 and 239/240 : LA-943-128 (A-1)				LIQUID / SOLID		DUP
DATE COUNTED	MAY-10-96	PU 236 AEA FRAC (C236)			0.993	
DUP	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.000	
W01	SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC (C239)	0.000	
8344	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1974	
	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30	
@PU23901	TRACER BOOK NO		120843	BACKGROUND in cpm (Bkg)	0.130	
	DETECTOR NUMBER		18	PU 236 cpm	36.470	
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm	0.000	
9412	TRACER PREPARATION DATE		12/27/95	PU 239 cpm	0.000	
96004253	TRACER PREPARATION VALUE (dpm/mL)		2390.000	AEA COUNT TIME	480	
Results	PU-236 DECAY CORR'D VALUE (dpm/mL)		2184.528	Pu 239/240 $\mu\text{Ci/L}$ =	< 3.0026E-01	
0	PU-238 TRACER VALUE (dpm/mL)		0.000			
Sample Prep						
N/A						
Sample Date	Decay Time = Date Counted - Tracer Preparation Date					
S96T002016	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]					
Instrument Count	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)					
WB27809	Pu 239/240 $\mu\text{Ci/L}$ = (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 $\mu\text{Ci/L}$ = [(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					
JFR						
Analyst						
JMV						
Date Complete						
05/13/96	Pu 239/240 $\mu\text{Ci/mL}$	< 3.00E-04	DETECTION LEVELS In $\mu\text{Ci/mL}$			
Analysis Date	Relative Counting Error	= 100.0%				
05/10/96			Pu 239/240			
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.					
02:00 PM	Pu 238 $\mu\text{Ci/mL}$	< 3.00E-04	3.00E-04			
Sample Point	Relative Counting Error	= 100.0%	Pu 238			
A-101 GRAB	Pu 236 Tracer Recovery	= 105.5%	3.00E-04			

Analyst:	JMV	Date:	13-May-96
Signature of Chemist:	JFR	Date:	15 May 96
SAMPLE.WB1 REV 1.0	943128ML		

McFadden
5/10/96

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE WHC-SD-WM-DP-186, REV. C
WL8344-STD
File ID: 19a1966.CNF

Counted on: 5/10/96 @20:56
Detector: AEA19
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1157.6	1157.6	360.709	360.709	10.000	3.057	5.000	1.100
2	14.4	14.4	286.226	286.175	12.000	5.244	6.000	1.879
3	494.6	494.6	228.832	228.832	10.000	3.709	5.000	1.761

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid				Count Rate	%err @95	d/m	Activity uCi/ea	
			Exp.	Obs.	Diff.	FWHM	c/m				
1	Pu236	0.723	5.755	5.747	0.0080	0.01	35.64	1.5	205.0	0.924E-04	
2	Th228	0.010	5.400	5.404	-0.0040	0.02	0.50	13.5	3.9	0.178E-05	
3	Pu239	0.274	5.147	5.140	0.0070	0.02	13.48	2.4	76.0	0.342E-04	
	Pu240		5.144	5.140	0.004				76.0	0.342E-04	
Totals:			1.007	<--valid peaks only-->				49.62			

DETECTOR CALIBRATION

Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.1774 CPM/DEP

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23659.0	100.000
Smoothed	23658.7	99.999
Composite fit	23821.8	100.688
Residuals	-162.8	-0.688

Analyzed by: _____

MB

WHC-SD-WM-DP-186, REV. 0

.3
....3
.....3
.....3
.....3.

2
2
2
2

1
. 1
... 1
..... 1
.....1....
.....1
.....1
.....

Raw	Data	Dump	for	AEA	Spectrum:	19a1966.CNF	WHC-SD-WM-DP-186	REV. 0
1	0.	0.	0.	0.	0.	0.	0.	0.
11	1.	1.	0.	0.	0.	1.	0.	0.
21	0.	0.	0.	1.	1.	0.	0.	1.
31	1.	0.	1.	1.	0.	1.	0.	1.
41	0.	3.	1.	0.	0.	1.	0.	0.
51	0.	0.	0.	1.	0.	0.	0.	1.
61	1.	1.	0.	0.	0.	1.	0.	0.
71	0.	1.	0.	1.	1.	0.	0.	0.
81	0.	0.	0.	0.	1.	0.	0.	1.
91	0.	0.	0.	0.	1.	0.	0.	0.
101	0.	0.	1.	1.	0.	0.	0.	0.
111	2.	0.	1.	1.	1.	0.	1.	0.
121	0.	0.	0.	1.	0.	0.	0.	1.
131	0.	0.	0.	0.	0.	1.	0.	0.
141	0.	3.	1.	2.	1.	1.	0.	0.
151	0.	1.	0.	0.	0.	2.	1.	0.
161	2.	1.	4.	2.	0.	1.	0.	1.
171	1.	2.	2.	3.	3.	4.	5.	1.
181	6.	4.	3.	2.	9.	3.	5.	3.
191	7.	11.	7.	14.	15.	13.	9.	14.
201	15.	21.	22.	21.	22.	18.	25.	46.
211	53.	50.	58.	88.	94.	112.	146.	171.
221	217.	222.	233.	267.	374.	406.	531.	548.
231	486.	289.	163.	59.	27.	3.	0.	1.
241	2.	0.	2.	0.	2.	0.	3.	1.
251	2.	0.	1.	1.	0.	1.	2.	0.
261	2.	3.	2.	4.	6.	6.	6.	9.
271	1.	3.	5.	3.	7.	5.	2.	7.
281	9.	8.	8.	14.	18.	19.	15.	22.
291	4.	6.	4.	5.	1.	7.	9.	8.
301	8.	10.	12.	17.	7.	8.	9.	8.
311	5.	6.	5.	11.	5.	6.	11.	14.
321	10.	9.	20.	19.	18.	26.	29.	31.
331	40.	42.	48.	53.	46.	63.	73.	70.
341	108.	137.	161.	215.	227.	276.	317.	411.
351	679.	760.	681.	642.	588.	662.	766.	917.
361	1347.	1363.	1022.	554.	163.	25.	5.	0.
371	0.	0.	0.	0.	1.	0.	0.	0.
381	0.	0.	0.	1.	0.	0.	0.	1.
391	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	1.	1.	0.	0.	1.	0.
411	1.	1.	1.	1.	0.	0.	0.	0.
421	0.	0.	0.	2.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	1.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	1.	1.	1.	0.	1.
461	0.	0.	0.	0.	0.	1.	2.	0.
471	0.	1.	1.	0.	2.	5.	2.	0.
481	1.	0.	0.	0.	0.	1.	0.	1.
491	0.	0.	0.	1.	0.	0.	1.	0.
511	0.	0.						

En. Burt
7/10/96

WHC-SD-WM-DP-186, REV. 0
Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL8344-BLNK
File ID: 20a2097.CNF

Counted on: 5/10/96 @20:57
Detector: AEA20
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	749.4	749.4	361.816	361.816	10.000	3.175	5.000	0.996

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Pu236	1.027	5.755	5.752	0.003	0.01	25.44	1.8	2163.2	0.974E-03
Totals:		1.027	<--valid peaks only-->				25.44			

DETECTOR CALIBRATION

Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.0120 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11895.0	100.000
Smoothed	11894.9	99.999
Composite fit	12213.1	102.674
Residuals	-318.1	-2.674

Analyzed by: _____

MB

```

1
.1
.. 1
... 1
..... 1
..... 1
..... 1..
..... 1.
..... 1
.1...

```

Raw Data	Dump	for AEA	Spectrum:	20a2097.CNF	WHC-SD-WM-DP-186, REV 0				
1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	0.	1.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.
31	0.	0.	0.	1.	0.	0.	0.	0.	0.
41	0.	1.	1.	0.	1.	0.	0.	0.	0.
51	0.	0.	1.	0.	0.	0.	1.	0.	1.
61	0.	1.	0.	0.	1.	0.	0.	0.	0.
71	0.	0.	1.	0.	0.	0.	0.	0.	1.
81	0.	1.	0.	0.	0.	0.	0.	0.	0.
91	1.	0.	0.	1.	0.	0.	0.	0.	0.
101	0.	0.	1.	0.	0.	1.	0.	0.	0.
111	0.	0.	1.	0.	0.	0.	0.	0.	1.
121	1.	1.	0.	0.	0.	1.	0.	1.	0.
131	0.	0.	0.	0.	1.	0.	1.	1.	0.
141	0.	1.	1.	0.	1.	0.	1.	0.	2.
151	1.	0.	1.	0.	0.	0.	0.	0.	0.
161	1.	1.	0.	1.	0.	0.	0.	0.	0.
171	1.	0.	3.	0.	0.	0.	1.	0.	0.
181	0.	0.	1.	0.	0.	0.	0.	0.	2.
191	1.	0.	0.	1.	0.	0.	0.	1.	0.
201	0.	0.	0.	0.	0.	0.	0.	2.	0.
211	0.	0.	0.	1.	0.	0.	0.	0.	0.
221	0.	0.	1.	2.	1.	1.	1.	0.	1.
231	1.	3.	0.	0.	2.	0.	0.	1.	4.
241	1.	0.	3.	0.	0.	1.	0.	0.	1.
251	1.	2.	2.	1.	0.	1.	2.	3.	0.
261	0.	3.	2.	2.	0.	1.	2.	3.	3.
271	2.	0.	2.	2.	4.	1.	0.	2.	5.
281	5.	3.	4.	5.	10.	13.	9.	9.	12.
291	4.	5.	2.	5.	4.	3.	4.	3.	6.
301	3.	4.	11.	9.	5.	8.	5.	8.	8.
311	7.	7.	8.	4.	7.	8.	10.	2.	8.
321	13.	14.	14.	11.	16.	30.	16.	24.	28.
331	21.	28.	44.	32.	42.	54.	48.	60.	72.
341	93.	87.	122.	119.	148.	185.	196.	255.	288.
351	412.	471.	517.	504.	448.	470.	462.	546.	601.
361	800.	862.	888.	694.	391.	160.	31.	1.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	1.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	1.	0.	0.	0.	0.	0.	1.
471	0.	2.	1.	2.	0.	4.	0.	2.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	1.	0.	0.	0.
511	0.	0.							

In: Bauld
5/10/96

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02 WHC-SD-WM-DP-186, REV. 0

DATA REDUCTION REPORT

SAMPLE
S96T2015-SAM
File ID: 21a2101.CNF

Counted on: 5/10/96 @20:57
Detector: AEA21
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	788.6	788.6	359.693	359.693	14.000	7.319	7.000	2.089
2?	3.1	3.1	304.324	302.724	8.000	0.662	4.000	0.617
3	9.7	9.7	287.966	287.700	8.000	2.259	4.000	0.590

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Ra224	0.989	5.686	5.728	-.042	0.03	33.15	1.6	1679.5	0.757E-03
	Pu236		5.755	5.728	0.027				1610.9	0.726E-03
2		????		5.466			0.04	152.		
3	Th228	0.011	5.400	5.397	0.003	0.01	0.36	18.3	24.0	0.108E-04
Totals:		1.000	<--valid peaks only-->				33.51			

DETECTOR CALIBRATION

Energy(MEV) = 4.074 + (0.0046)*Channel
Energy range (MeV): 4.074 TO 6.429
Efficiency = 0.0210 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16086.0	100.000
Smoothed	16085.7	99.998
Composite fit	16104.6	100.116
Residuals	-18.6	-0.116

Analyzed by: _____

MB

Raw Data Dump for AEA Spectrum: 21a2101.CNF WHC SD-WM-DP-186, REV. C

1	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
11	0.	0.	0.	1.	0.	1.	0.	0.	0.	1.
21	1.	1.	0.	0.	0.	1.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	1.	0.	0.	0.	0.	2.	0.	0.
51	0.	0.	0.	0.	2.	0.	1.	0.	0.	1.
61	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
71	0.	0.	0.	2.	0.	0.	1.	0.	0.	0.
81	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
101	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
111	1.	2.	0.	0.	0.	0.	0.	1.	0.	0.
121	0.	0.	1.	0.	1.	0.	1.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	2.	0.	1.	0.
141	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.
151	0.	1.	0.	0.	1.	0.	0.	1.	0.	0.
161	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
171	1.	0.	1.	0.	1.	1.	1.	0.	0.	0.
181	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
191	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
201	0.	1.	1.	0.	0.	0.	0.	1.	0.	0.
211	0.	0.	0.	0.	0.	1.	1.	1.	2.	2.
221	0.	1.	2.	1.	2.	1.	3.	4.	1.	1.
231	0.	4.	1.	0.	1.	1.	0.	0.	1.	0.
241	1.	1.	0.	0.	1.	2.	0.	3.	1.	0.
251	1.	0.	1.	1.	4.	0.	3.	1.	2.	1.
261	6.	2.	3.	3.	5.	9.	2.	6.	7.	8.
271	6.	7.	6.	5.	4.	3.	4.	9.	8.	5.
281	6.	6.	10.	11.	7.	10.	11.	17.	16.	9.
291	4.	10.	6.	2.	5.	8.	10.	6.	5.	11.
301	8.	16.	14.	15.	14.	12.	12.	11.	13.	12.
311	17.	16.	16.	20.	19.	22.	21.	18.	34.	23.
321	34.	39.	34.	39.	38.	35.	45.	46.	47.	55.
331	65.	66.	69.	74.	94.	113.	96.	116.	130.	140.
341	165.	175.	227.	274.	307.	309.	352.	410.	481.	483.
351	546.	626.	637.	656.	673.	710.	767.	818.	840.	800.
361	880.	749.	660.	518.	385.	226.	141.	100.	37.	11.
371	2.	2.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	1.	2.	0.	0.	0.
461	0.	0.	0.	0.	0.	2.	0.	0.	1.	0.
471	3.	1.	2.	0.	0.	0.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
511	0.	0.								

In. Data
5/10/96

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE WHC-SD-WM-DP-186, REV. C
S96T2015-DUP
File ID: 22a2295.CNF

Counted on: 5/10/96 @20:58
Detector: AEA22
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	891.5	891.5	360.164	360.164	10.000	2.891	5.000	1.038
2	12.0	12.0	284.573	284.510	14.000	8.050	7.000	2.734

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	0.993	5.755	5.756	-0.0010	0.01	27.23	1.7	941.8	0.424E-03
2	Th228	0.017	5.400	5.408	-0.0080	0.04	0.47	13.9	22.4	0.101E-04
Totals:		1.010	<--valid peaks only-->				27.70			

DETECTOR CALIBRATION

Energy(MEV) = 4.100 + (0.0046)*Channel
Energy range (MeV): 4.100 TO 6.455
Efficiency = 0.0295 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13159.0	100.000
Smoothed	13158.7	99.998
Composite fit	13293.8	101.024
Residuals	-134.8	-1.024

Analyzed by: _____

MB

WHC-SD-WM-DP-186, REV. 0

2
2
2
2

1

..1

.... 1

.....

1

.....1.....

..... 1

.....1

..

Raw	Data	Dump	for	AEA	Spectrum:	22a2295.CNF	WHC-SD-WM-DP-186, REV. 0
1	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	1.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.
41	0.	1.	0.	0.	0.	0.	0.
51	0.	1.	0.	0.	0.	1.	0.
61	0.	1.	0.	0.	0.	1.	0.
71	0.	1.	0.	0.	0.	0.	0.
81	0.	2.	1.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	1.	1.
101	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	1.	1.
121	0.	0.	0.	0.	0.	0.	1.
131	0.	0.	0.	1.	0.	1.	1.
141	0.	0.	0.	1.	1.	0.	1.
151	0.	0.	0.	0.	0.	0.	1.
161	0.	0.	0.	2.	0.	0.	1.
171	1.	1.	1.	0.	0.	1.	0.
181	0.	0.	0.	1.	1.	0.	0.
191	0.	0.	0.	0.	0.	1.	2.
201	0.	0.	1.	0.	2.	0.	1.
211	2.	1.	0.	2.	1.	0.	2.
221	0.	1.	0.	1.	1.	1.	0.
231	1.	0.	2.	1.	3.	0.	1.
241	1.	0.	0.	2.	2.	5.	0.
251	3.	3.	1.	3.	1.	1.	2.
261	3.	4.	4.	4.	6.	7.	5.
271	1.	6.	5.	3.	2.	2.	3.
281	7.	11.	15.	15.	14.	15.	9.
291	6.	2.	4.	5.	6.	4.	7.
301	13.	8.	2.	10.	5.	5.	4.
311	3.	8.	4.	8.	13.	11.	14.
321	16.	19.	14.	24.	30.	19.	30.
331	32.	36.	46.	51.	60.	64.	53.
341	96.	116.	151.	167.	195.	257.	322.
351	556.	502.	471.	468.	465.	533.	656.
361	1084.	929.	518.	219.	45.	9.	0.
371	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	1.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	2.
431	0.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	1.	0.	0.
461	0.	0.	0.	1.	0.	0.	1.
471	1.	1.	2.	1.	0.	1.	3.
481	0.	0.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	2.
511	0.	0.					

M. B. Lewis
5-10-96

WHC-SD-WM-DP-186, REV. 0
Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T2016-SAM
File ID: 23a2328.CNF

Counted on: 5/10/96 @20:58
Detector: AEA23
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1126.3	1126.3	361.065	361.065	10.000	2.992	5.000	1.086
2?	7.0	7.0	303.665	302.882	30.000	7.157	15.000	15.693
3	15.0	15.0	286.258	286.163	12.000	5.135	6.000	2.296

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
		Exp.	Obs.	Diff.					
1	Pu236	0.990	5.755	5.758	-0.0030.01	34.37	1.5	218.7	0.985E-04
2		????		5.491		0.19	36.2		
3	Th228	0.013	5.400	5.414	-0.0140.02	0.46	14.8	4.0	0.181E-05
Totals:		1.003	<--valid peaks only-->			34.83			

DETECTOR CALIBRATION

Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.453
Efficiency = 0.1604 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16662.0	100.000
Smoothed	16661.1	99.994
Composite fit	16809.3	100.884
Residuals	-147.3	-0.884

Analyzed by: _____
MB

WHC-SD-WM-DP-186, REV. 0

3
3
3
3
2
2
1
.1
.... 1
..... 1
.....1...
..... 1
.....1
1...

Raw	Data	Dump	for	AEA	Spectrum:	23a2328.CNF	WHC-SD-WM-DP-186, REV. 0			
1	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
11	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
21	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
41	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	1.	0.	2.	0.	0.	0.	0.	1.	0.	1.
61	0.	0.	0.	1.	2.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
81	0.	0.	1.	0.	0.	0.	0.	0.	1.	1.
91	2.	0.	0.	2.	0.	0.	0.	0.	0.	0.
101	0.	1.	0.	0.	0.	1.	1.	1.	0.	0.
111	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
121	0.	0.	1.	0.	0.	0.	0.	0.	0.	2.
131	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
141	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
151	1.	1.	0.	0.	0.	0.	0.	0.	2.	0.
161	0.	0.	1.	0.	2.	0.	1.	0.	0.	1.
171	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
181	3.	1.	3.	1.	1.	0.	1.	1.	0.	0.
191	0.	0.	2.	1.	3.	1.	2.	0.	0.	1.
201	0.	5.	1.	1.	2.	2.	1.	1.	1.	1.
211	1.	2.	1.	3.	0.	1.	2.	5.	2.	3.
221	5.	4.	1.	5.	7.	3.	11.	7.	4.	6.
231	6.	3.	5.	0.	0.	2.	0.	2.	0.	2.
241	0.	1.	1.	0.	1.	0.	0.	1.	3.	1.
251	2.	0.	1.	1.	0.	1.	4.	1.	4.	0.
261	1.	3.	3.	4.	6.	2.	4.	3.	9.	4.
271	4.	6.	3.	2.	3.	4.	5.	4.	5.	5.
281	4.	12.	8.	12.	18.	24.	13.	14.	14.	7.
291	7.	3.	8.	8.	10.	7.	5.	6.	11.	10.
301	6.	10.	8.	16.	8.	9.	6.	8.	7.	5.
311	5.	6.	11.	8.	9.	16.	12.	11.	18.	18.
321	24.	14.	17.	20.	21.	40.	29.	37.	42.	34.
331	34.	41.	54.	53.	58.	58.	76.	77.	96.	89.
341	112.	123.	136.	215.	222.	265.	305.	378.	459.	503.
351	620.	640.	674.	610.	597.	637.	698.	824.	1012.	1216.
361	1337.	1330.	1125.	687.	236.	67.	8.	1.	0.	0.
371	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	1.	1.	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.	1.	0.	1.	0.	0.	1.	0.
421	1.	0.	0.	1.	1.	0.	0.	1.	0.	0.
431	0.	1.	0.	1.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.	1.	0.	1.	1.	1.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
471	1.	1.	2.	1.	0.	1.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
511	0.	0.								

En. L. L. L.
5/10/96

WHC-SD-WM-DP-186, REV. 0
Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T2016-DUP
File ID: 24a2430.CNF

Counted on: 5/10/96 @20:59
Detector: AEA24
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1055.1	1055.1	361.237	361.237	12.000	3.278	6.000	1.009
2?	7.9	7.9	303.015	302.072	6.000	1.553	3.000	0.665
3	13.2	13.2	286.591	286.278	10.000	3.243	5.000	0.866

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid				Count Rate	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	FWHM				
1	Pu236	0.993	5.755	5.752	0.0030	0.02	36.47	1.5	1177.7	0.531E-03
2		????		5.480			0.19	34.3		
3	Th228	0.014	5.400	5.407	-.0070	0.01	0.50	15.0	22.4	0.101E-04
Totals:			1.007	<--valid peaks only-->			36.98			

DETECTOR CALIBRATION

Energy (MEV) = 4.090 + (0.0046)*Channel
Energy range (MeV): 4.090 TO 6.445
Efficiency = 0.0316 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17631.0	100.000
Smoothed	17630.9	99.999
Composite fit	17843.1	101.203
Residuals	-212.1	-1.203

Analyzed by: _____

MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 6029.7

```

3
3
3
3
3
3
2
1
.1
.. 1
... 1
..... 1
..... 1
..... 1...
..... 1
..... 1
..... 1
1...

```

Raw	Data	Dump	for	AEA	Spectrum:	24a	2430.CNF				
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	1.	0.	0.	0.	1.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
41	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
51	0.	1.	0.	1.	0.	0.	0.	0.	0.	1.	0.
61	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
71	0.	0.	0.	0.	0.	0.	2.	0.	0.	2.	0.
81	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
101	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
121	1.	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.	1.
141	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	1.
151	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
161	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
171	0.	1.	0.	1.	0.	1.	0.	0.	0.	1.	1.
181	2.	0.	1.	0.	0.	0.	0.	0.	0.	1.	1.
191	0.	1.	1.	1.	0.	1.	2.	2.	2.	0.	0.
201	0.	0.	0.	0.	3.	0.	1.	0.	2.	0.	0.
211	1.	1.	3.	0.	2.	3.	2.	5.	2.	1.	1.
221	2.	2.	1.	5.	4.	4.	8.	8.	10.	9.	9.
231	1.	8.	0.	7.	0.	1.	2.	0.	1.	0.	0.
241	1.	0.	2.	1.	1.	2.	1.	1.	0.	1.	1.
251	2.	1.	6.	4.	1.	3.	3.	2.	1.	2.	2.
261	3.	3.	6.	1.	2.	6.	7.	6.	10.	5.	5.
271	9.	3.	6.	7.	5.	9.	10.	2.	12.	10.	10.
281	7.	8.	9.	15.	20.	16.	20.	20.	10.	12.	12.
291	9.	7.	7.	5.	6.	10.	8.	11.	9.	16.	16.
301	10.	14.	24.	14.	10.	13.	10.	15.	8.	11.	11.
311	12.	12.	15.	14.	12.	22.	12.	21.	24.	30.	30.
321	22.	37.	25.	31.	34.	30.	39.	56.	39.	54.	54.
331	67.	47.	63.	68.	63.	102.	100.	111.	121.	147.	147.
341	164.	168.	195.	209.	260.	344.	361.	397.	494.	505.	505.
351	659.	634.	699.	711.	684.	684.	681.	844.	924.	1064.	1064.
361	1230.	1208.	1143.	763.	356.	106.	17.	1.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.	1.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	1.	0.	2.	2.
461	0.	2.	1.	1.	0.	0.	0.	0.	1.	0.	0.
471	0.	1.	2.	2.	5.	0.	1.	2.	0.	0.	0.
481	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
511	0.	0.									

WHC-SD-WM-DP-186, REV. 0

LABCORE Completed RadChem Report for Worklist#: 8514

Analyst: akl

Instrument: AB18

Book# 124543

Method: LA-943-108 Rev/Mod PO

Worklist Comment: Rerun of WL#8218; Sample size 1 ml, 9May96 jfr.

Seq Type	Sample#	RA	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@PU23901 PU23901 LIQUID		3.81E-02	3.76E-2	98.688	% Recovery
1 STD	0		@PU23901 PU23901E LIQUID		1.00	2.91E+00	2.910	% Ct Error
1 STD	0		@PU23901 PU23901T LIQUID		100	1.03E+02	103.000	% Recovery
2 BLNK	0		@PU23901 PU23901 LIQUID		1	<3.06E-4		uCi/mL
2 BLNK	0		@PU23901 PU23901T LIQUID		100	1.06E+02	106.000	% Recovery
2 BLNK	0		@PU23901 PU23901E LIQUID		1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S96T002014	0	@PU23901 PU23901 LIQUID		N/A	3.09E-04	309.0e-006	uCi/mL
3 SAMPLE	S96T002014	0	@PU23901 PU23901T LIQUID		N/A	1.09E+02	0.0e+000	% Recovery
3 SAMPLE	S96T002014	0	@PU23901 PU23901E LIQUID		N/A	1.17E+01	0.0e+000	% Ct. Error
4 DUP	S96T002014	0	@PU23901 PU23901 LIQUID		<3.09E-4	<3.08E-4		RPD
4 DUP	S96T002014	0	@PU23901 PU23901T LIQUID		100	1.11E+02	111.000	% Recovery
4 DUP	S96T002014	0	@PU23901 PU23901E LIQUID		1.00	1.24E+01	12.400	% Ct Error

Final page for worklist# 8514

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Rehyer 15 May 96
Reviewer Signature Date

Validated

LABCORE Data Entry Template for Worklist# 8514

Analyst: AKL Instrument: PU01 18 Book# 124B43

Method: LA-943-128 Rev/Mod B-C

Worklist Comment: Rerun of WL#8218; Sample size 1 ml, 9May96 jfr.

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S96T002014 0			@PU23901	LIQUID	96000459	A-101 GRAB
					Analytes Requested: PU23901 , PU23901E, PU23901T			
4	DUP	S96T002014 0			@PU23901	LIQUID		

Final page for worklist # 8514

C. Lewis
Analyst Signature

5/10/96
Date

Sharon L. Hall
Analyst Signature

5/13/96
Date

Joe E. Hogan 5/13/96

Data Entry Comments:

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

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID

				STD
Type	DATE COUNTED	MAY-11-96	PU 236 AEA FRAC (C236)	0.716
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)	0.271
8514	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2542
Test Code	DIGEST DILUTION FACTOR	DDF 1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	120B43	BACKGROUND in cpm (Bkg)	0.130
Matrix	DETECTOR NUMBER	18	PU 236 cpm	34.510
LIQUID	EFFICIENCY FACTOR	EFF 0.269	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	12/27/95	PU 239 cpm	13.040
96004460	TRACER PREPARATION VALUE (dpm/mL)	2390.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2183.074	Pu 239/240 μ Ci/L	3.7592E+01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep	STANDARD BOOK NO	124B43		
N/A	STANDARD VALUE in μ Ci/mL	0.038		
Sample #				
WL8514				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
WB27809	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			
SLH2	Pu 239/240 μ Ci/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) * (1000 mL/L) / (DF) * (DDF) / [(C236) * (SS) * (2220000 dpm/ μ Ci)]			
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
JFR	Pu 238 μ Ci/L = [(Pu 238 dpm) / (DF) * (DDF) * (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (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	Pu 239/240 μ Ci/mL	3.76E-02	DETECTION LEVELS in μ Ci/mL Pu 239/240 4.16E-03	
Analysis Date	Relative Counting Error	= 2.9%		
05/11/96				
Analysis Time				
11:00 PM				
Sample Point	Pu 236 Tracer Recovery	= 103.3%		
A-101 GRAB				

Analyst	AKL	Date	13-May-96
Signature of Chemist	JFR	Date	15 May 96

STANDARD WB1 REV 1.0

943128ML

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

BLNK

Type	DATE COUNTED	MAY-11-96	PU 236 AEA FRAC (C236)	0.975	
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
8514	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1911
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	120B43	BACKGROUND in cpm (Bkg)	0.130	
Matrix	DETECTOR NUMBER	18	PU 236 cpm	33.520	
LIQUID	EFFICIENCY FACTOR	EFF	0.2686	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	12/27/95	PU 239 cpm	0.000	
96004460	TRACER PREPARATION VALUE (dpm/mL)	2390.00	AEA COUNT TIME	480	
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2183.07	Pu 239/240 μ Ci/L =	<	3.056E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.00			
Sample Prep					
N/A					
Sample #	Decay Time = Date Counted - Tracer Preparation Date				
WL8514	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)				
WB27809	Pu 239/240 μ Ci/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/ μ Ci)]				
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)				
SLH2	Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (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				
JFR					
Analyst					
AKL					
Date Complete					
05/13/96	Pu 239/240 μ Ci/mL	< 3.06E-04	DETECTION LEVELS in μ Ci/mL		
Analysis Date	Relative Counting Error	= 100.0%			
05/11/96			Pu 239/240		
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		3.06E-04		
11:00 PM	Pu 238 μ Ci/mL	< 3.06E-04	Pu 238		
Sample Point	Relative Counting Error	= 100.0%	3.06E-04		
A-101 GRAB	Pu 236 Tracer Recovery	= 105.7%			

Analyst	AKL	Date	13-May-96
Signature of Chemist	JFR	Date	15 May 96

BLANK WB1 REV 1.0

943128ML

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

				SAMPLE
Type	DATE COUNTED	MAY-11-96	Pu 236 AEA FRAC (C236)	0.963
SAMPLE	SAMPLE VOLUME in mL	SS 1.000	Pu 238 AEA FRAC (C238)	0.017
Work List	SAMPLE DILUTION FACTOR	DF 101.000	Pu 239 AEA FRAC (C239)	0.017
8514	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	1987
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	120843	BACKGROUND in cpm (Bkg)	0.130
Matrix	DETECTOR NUMBER	18	Pu 236 cpm	33.700
LIQUID	EFFICIENCY FACTOR	EFF 0.269	Pu 238 cpm	0.580
Batch Number	TRACER PREPARATION DATE	12/27/95	Pu 239 cpm	0.590
96004460	TRACER PREPARATION VALUE (dpm/mL)	2390.000	AEA COUNT TIME	480
Resun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2183.074	Pu 239/240 $\mu\text{Ci/L}$ =	< 3.0941E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
N/A				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
S96T002014	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)			
WB27809	Pu 239/240 $\mu\text{Ci/L}$ = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000 mL/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)			
SLH2	Pu 238 $\mu\text{Ci/L}$ = [(Pu 238 dpm) / (DF) / (DDF) / (1000 mL/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			
JFR				
Analyst				
AKL				
Date Complete				
05/13/96	Pu 239/240 $\mu\text{Ci/mL}$	< 3.09E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analysis Date	Relative Counting Error	= 11.7%		
05/11/96			Pu 239/240	
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			
11:00 PM	Pu 238 $\mu\text{Ci/mL}$	< 3.09E-04	3.09E-04	
Sample Point	Relative Counting Error	= 11.8%	Pu 238	
A-101 GRAB	Pu 236 Tracer Recovery	= 108.6%	3.09E-04	

Analyst	AKL	Date	13-May-96
Signature of Chemist	JFR	Date	15 May 96

SAMPLE WB1 REV 1 0

943128ML

WHC-SD-WM-DP-186, REV. 0

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

DUP

Type	DATE COUNTED	MAY-13-96	PU 236 AEA FRAC (C236)	0.967
DUP	SAMPLE VOLUME in mL	SS	1.000 PU 238 AEA FRAC (C238)	0.014
Work List	SAMPLE DILUTION FACTOR	DF	101.000 PU 239 AEA FRAC (C239)	0.013
8514	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	2013
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	120B43	BACKGROUND in cpm (Bkg)	0.130
Matrix	DETECTOR NUMBER	18	PU 236 cpm	37.890
LIQUID	EFFICIENCY FACTOR	EFF	0.269 PU 238 cpm	0.550
Batch Number	TRACER PREPARATION DATE	12/27/95	PU 239 cpm	0.530
96004460	TRACER PREPARATION VALUE (dpm/mL)	2390.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2180.168	Pu 239/240 $\mu\text{Ci/L}$ =	< 3.0772E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
N/A				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
S96T002014	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)			
WB27809	Pu 239/240 $\mu\text{Ci/L}$ = (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)			
SLH2	Pu 238 $\mu\text{Ci/L}$ = [(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			
JFR				
Analyst				
AKL				
Date Complete				
05/13/96	Pu 239/240 $\mu\text{Ci/mL}$	< 3.08E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analysis Date	Relative Counting Error	= 12.4%		
05/11/96				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240	
11:00 PM	Pu 238 $\mu\text{Ci/mL}$	< 3.08E-04	3.08E-04	
Sample Point	Relative Counting Error	= 12.2%	Pu 238	
A-101 GRAB	Pu 236 Tracer Recovery	= 110.6%	3.08E-04	

Analyst	AKL	Date:	13-May-96
Signature of Chemist	JFR	Date:	15 May 96

SAMPLE WB1 REV 1.0

943128ML

McDermott
5/11/96

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE WHC-SD-WM-DP-186, REV. 0
WL8514-STD
File ID: 25a2511.CNF

Counted on: 5/11/96 @ 1:31
Detector: AEA25
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1463.5	1463.5	361.464	361.464	8.000	2.439	4.000	1.267
2?	13.5	13.5	302.414	302.371	10.000	3.235	5.000	1.512
3?	17.7	17.7	287.167	287.028	10.000	2.165	5.000	1.758
4	619.0	619.0	228.489	228.489	10.000	3.048	5.000	2.273

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Pu236 Cm243	0.716	5.755	5.760	-0.0050	0.01	34.51	1.5	1608.0 2158.7	0.724E-03 0.972E-03
2		????		5.488			0.36	15.4		
3		????		5.417			0.32	18.3		
4	Pu239 Pu240	0.271	5.147	5.148	-0.0010	0.01	13.04	2.5	595.6 595.6	0.268E-03 0.268E-03

Totals:		0.986	<--valid peaks only-->				47.56			

DETECTOR CALIBRATION

Energy(MEV) = 4.097 + (0.0046)*Channel
Energy range (MeV): 4.097 TO 6.452
Efficiency = 0.0219 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23144.0	100.000
Smoothed	23143.9	100.000
Composite fit	23158.4	100.062
Residuals	-14.4	-0.062

Analyzed by: _____

MB

WHC-SD-WM-DP-186, REV. 0

.4
.....4
.....4
.....4..

3
3
3
2
2

1
.. 1
.....1....
.....1
.....1.
.....

Final Data
5/11/96

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE WHC-SD-WM-DP-186, REV. 0
WL8514-BLNK
File ID: 26a2612.CNF

Counted on: 5/11/96 @ 1:31
Detector: AEA26
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1236.9	1236.9	358.813	358.813	10.000	2.600	5.000	1.093
2?	9.2	9.2	299.575	299.284	14.000	5.810	7.000	2.139
3?	14.0	14.0	284.612	284.354	8.000	2.521	4.000	1.331

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea	
1	Pu236	0.975	5.755	5.755	0.0000	0.01	33.52	1.5	2552.4	0.115E-02	
2		????		5.481			0.32	19.0			
3		????		5.412			0.33	18.6			
Totals:		0.975	<--valid peaks only-->				33.52				

DETECTOR CALIBRATION

Energy(MEV) = 4.104 + (0.0046)*Channel
Energy range (MeV): 4.104 TO 6.459
Efficiency = 0.0134 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16508.0	100.000
Smoothed	16508.0	100.000
Composite fit	16402.0	99.358
Residuals	106.0	0.642

Analyzed by: _____

MB

WHC-SD-WM-DP-186, REV. 0

3
3
2
2
2
1
...1
..... 1
.....1....
..... 1
.....1.
.

Raw Data	Dump for AEA	Spectrum:	26a2612.CNF	WHC-SD-WM-DP-186, REV. C
1	0.	0.	0.	0.
11	0.	0.	0.	0.
21	0.	0.	0.	0.
31	0.	1.	0.	0.
41	0.	0.	1.	0.
51	0.	0.	1.	0.
61	1.	0.	2.	0.
71	0.	0.	0.	0.
81	0.	0.	0.	0.
91	0.	0.	0.	0.
101	0.	0.	1.	1.
111	0.	0.	0.	2.
121	1.	0.	0.	0.
131	0.	0.	0.	0.
141	0.	1.	0.	0.
151	0.	0.	0.	0.
161	1.	0.	0.	0.
171	0.	1.	0.	1.
181	1.	0.	1.	0.
191	0.	1.	0.	1.
201	0.	0.	1.	0.
211	5.	0.	1.	0.
221	1.	1.	2.	1.
231	1.	1.	3.	1.
241	1.	0.	0.	1.
251	1.	1.	1.	2.
261	6.	4.	4.	3.
271	6.	2.	3.	2.
281	18.	14.	22.	16.
291	1.	6.	3.	8.
301	10.	11.	8.	2.
311	6.	8.	7.	9.
321	8.	21.	21.	28.
331	46.	40.	52.	72.
341	141.	167.	196.	242.
351	629.	545.	572.	543.
361	1062.	456.	139.	14.
371	0.	0.	0.	0.
381	0.	0.	0.	0.
391	0.	0.	0.	0.
401	0.	0.	0.	0.
411	0.	0.	0.	0.
421	0.	0.	0.	0.
431	0.	0.	0.	0.
441	0.	0.	0.	0.
451	0.	0.	0.	0.
461	0.	0.	0.	1.
471	2.	0.	0.	2.
481	0.	0.	0.	0.
491	0.	0.	0.	0.
511	0.	0.	0.	0.

in file
5/11/96

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T2014-SAM
File ID: 27a2799.CNF

Counted on: 5/11/96 @ 1:32
Detector: AEA27
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1134.4	1134.4	359.121	359.121	10.000	2.688	5.000	0.987
2	11.0	11.0	300.818	299.936	12.000	10.195	6.000	2.215
3?	11.0	11.0	285.676	285.385	10.000	1.642	5.000	1.322
4	21.0	21.0	227.011	227.005	12.000	3.608	6.000	1.611

PEAK RESULTS
Peak Error Limit: 30%

Peak		AEA		Peak Centroid			Count		%err	d/m	Activity uCi/ea
ID	Isotope	Frac	Exp.	Obs.	Diff.	FWHM	Rate	c/m			
1	Pu236	0.963	5.755	5.753	0.0020	0.01	33.70	1.5		1210.9	0.545E-03
2	Am241	0.017	5.479	5.481	-0.0020	0.05	0.58	15.5		21.9	0.985E-05
	Pu238		5.487	5.481	0.006					28.6	0.129E-04
3		????		5.414			0.19	33.5			
4	Pu239	0.017	5.147	5.146	0.0010	0.02	0.59	11.8		20.7	0.933E-05
	Pu240		5.144	5.146	-0.002					20.7	0.933E-05

Totals:		0.997	<--invalid peaks only-->				34.87				

DETECTOR CALIBRATION
Energy(MEV) = 4.102 + (0.0046)*Channel
Energy range (MeV): 4.102 TO 6.457
Efficiency = 0.0284 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16797.0	100.000
Smoothed	16797.2	100.001
Composite fit	16832.8	100.213
Residuals	-35.8	-0.213

Analyzed by: _____
MB

WHC-SD-WM-DP-186, REV. 0

4
4
42
3
3
2
2
2
1

..1
.....1
..... 1
.....1....
.....1..... 1
.....1..

Raw Data	Dump for AEA	Spectrum:	27a2799.CNF	WHC-SD-WM-DP-186	REV. 0
1	0.	0.	1.	0.	0.
11	0.	0.	0.	0.	1.
21	0.	0.	0.	0.	0.
31	1.	0.	1.	0.	0.
41	0.	1.	0.	0.	0.
51	0.	0.	0.	0.	0.
61	0.	1.	0.	0.	0.
71	0.	0.	0.	0.	0.
81	2.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	1.
111	1.	0.	0.	0.	0.
121	0.	2.	1.	1.	0.
131	0.	0.	0.	0.	0.
141	0.	4.	2.	0.	1.
151	2.	1.	0.	0.	1.
161	0.	0.	0.	1.	0.
171	0.	0.	1.	1.	1.
181	2.	1.	3.	0.	1.
191	0.	1.	2.	2.	2.
201	1.	2.	3.	2.	6.
211	4.	3.	9.	7.	8.
221	16.	14.	7.	12.	16.
231	7.	2.	2.	2.	0.
241	0.	0.	1.	0.	2.
251	5.	0.	3.	2.	4.
261	4.	2.	3.	2.	7.
271	3.	2.	4.	1.	6.
281	8.	13.	11.	12.	10.
291	4.	7.	8.	15.	14.
301	17.	15.	10.	17.	8.
311	23.	6.	11.	16.	25.
321	29.	25.	19.	30.	50.
331	47.	58.	63.	63.	146.
341	160.	198.	211.	243.	678.
351	689.	554.	551.	583.	1407.
361	1132.	600.	204.	37.	0.
371	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.
471	1.	0.	0.	2.	1.
481	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.

Imperial
5/11/96

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

WHC-SD-WM-DP-186, REV. 0

DATA REDUCTION REPORT

SAMPLE
S96T2014-DUP
File ID: 28a2800.CNF

Counted on: 5/11/96 @ 1:32
Detector: AEA28
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1338.9	1338.9	360.465	360.465	8.000	2.656	4.000	1.049
2	14.2	14.2	302.736	302.474	12.000	6.773	6.000	2.197
3?	10.3	10.3	286.695	286.259	8.000	2.937	4.000	1.187
4	18.1	18.1	227.303	227.300	14.000	4.718	7.000	2.235

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err	d/m	Activity
			Exp.	Obs.	Diff.	c/m	@95		uCi/ea
1	Pu236	0.967	5.755	5.764	-.0090.01	37.89	1.5	220.4	0.993E-04
	Cm243		5.779	5.764	0.015			295.9	0.133E-03
2	Pu238	0.014	5.487	5.498	-.0110.03	0.55	14.9	4.3	0.195E-05
	Am241		5.479	5.498	-.019			3.3	0.149E-05
3		????		5.423		0.29	22.8		
4	Pu239	0.013	5.147	5.152	-.0050.02	0.53	12.4	3.0	0.135E-05
	Pu240		5.144	5.152	-.008			3.0	0.135E-05

Totals:		0.995	<--valid peaks only-->			38.96			

DETECTOR CALIBRATION

Energy(MEV) = 4.106 + (0.0046)*Channel
Energy range (MeV): 4.106 TO 6.461
Efficiency = 0.1754 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18800.0	100.000
Smoothed	18800.0	100.000
Composite fit	18840.9	100.218
Residuals	-40.9	-0.218

Analyzed by: _____

MB

WHC-SD-WM-DP-186, REV. 0

4
4
4
43
3
3
3
2
2
.

.1

....1

..... 1

.....1....

..... 1

.....1.

...

Raw Data Dump for AEA Spectrum: 28a2800.CNF W/C-SD-WM-DP-186, REV. 0

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	2.	0.	0.	1.	1.
31	0.	0.	0.	2.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	1.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	0.	0.	0.	0.	1.
71	1.	0.	0.	1.	1.	1.	0.	0.	0.
81	0.	0.	1.	0.	0.	0.	1.	0.	1.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	1.	0.	3.	1.	1.	0.	0.	0.	0.
111	0.	0.	0.	0.	2.	1.	0.	0.	1.
121	0.	1.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	0.	0.	2.	0.	0.
141	0.	1.	0.	0.	0.	0.	3.	0.	0.
151	1.	0.	1.	0.	0.	0.	0.	0.	0.
161	2.	0.	0.	2.	0.	0.	0.	0.	0.
171	0.	0.	0.	0.	1.	0.	0.	0.	1.
181	0.	1.	0.	1.	1.	1.	1.	2.	2.
191	1.	2.	1.	1.	3.	0.	1.	0.	1.
201	3.	4.	1.	3.	1.	0.	2.	2.	1.
211	2.	2.	6.	2.	4.	3.	12.	6.	6.
221	12.	13.	7.	16.	15.	18.	23.	21.	18.
231	13.	7.	6.	1.	0.	0.	2.	1.	1.
241	1.	0.	0.	4.	2.	2.	2.	1.	1.
251	1.	0.	1.	2.	2.	2.	3.	1.	1.
261	5.	4.	4.	2.	2.	4.	3.	7.	9.
271	2.	3.	7.	2.	6.	4.	4.	5.	6.
281	5.	14.	14.	10.	17.	13.	17.	18.	11.
291	7.	8.	11.	7.	6.	14.	10.	14.	11.
301	13.	22.	19.	17.	16.	7.	7.	6.	11.
311	12.	12.	13.	12.	15.	18.	12.	16.	18.
321	31.	28.	25.	35.	28.	35.	38.	48.	45.
331	48.	58.	69.	69.	80.	93.	81.	104.	97.
341	137.	168.	160.	216.	243.	299.	353.	473.	542.
351	707.	750.	693.	597.	641.	670.	835.	1010.	1329.
361	1682.	1518.	914.	359.	85.	7.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	1.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	1.	1.	0.	0.	0.	1.	1.	0.
481	1.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

WHC-SD-WM-DP-186, REV. 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 RadChem Report for Worklist#: 8218

Analyst: jmv

Instrument: AB16

Book# 124 B43

Method: LA-943-128 Rev/Mod A-1

WHC-SD-WM-DP-186, REV. 0

Worklist Comment: AY-101. Determine sample size using ludlum. new

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	APU23901 PU23901	L IQUID	3.81E-02	4.08E-2	107.087	% Recovery
1 STD	0	APU23901 PU23901E	L IQUID	1.00	2.82E+00	2.820	% Ct Error
1 STD	0	APU23901 PU23901T	L IQUID	100	1.02E+02	102.000	% Recovery
2 BLNK	0	APU23901 PU23901	L IQUID	1	<7.55E-6		uCi/mL
2 BLNK	0	APU23901 PU23901T	L IQUID	100	4.05E+01	40.500	% Recovery
2 BLNK	0	APU23901 PU23901E	L IQUID	1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S96T001208 0	APU23901 PU23901	L IQUID	N/A <	7.59E-06	759.0e-008	uCi/mL
3 SAMPLE	S96T001208 0	APU23901 PU23901T	L IQUID	N/A	4.03E+01	0.0e+000	% Recovery
3 SAMPLE	S96T001208 0	APU23901 PU23901E	L IQUID	N/A	1.00E+02	0.0e+000	% Ct. Error
4 DUP	S96T001208 0	APU23901 PU23901	L IQUID	<7.59E-6	<7.34E-6		RPD
4 DUP	S96T001208 0	APU23901 PU23901T	L IQUID	100	4.09E+01	40.900	% Recovery
4 DUP	S96T001208 0	APU23901 PU23901E	L IQUID	1.00	1.00E+02	100.000	% Ct Error
6 DUP	S96T002014 0	APU23901 PU23901	L IQUID	1.35E-4	<3.30E-6		RPD
6 DUP	S96T002014 0	APU23901 PU23901T	L IQUID	100	9.42E+01	94.200	% Recovery
6 DUP	S96T002014 0	APU23901 PU23901E	L IQUID	1.00	1.05E+01	10.500	% Ct Error

Final page for worklist# 8218

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Relgea 9 May 96
Reviewer Signature _____ Date _____

Sample S96T002014 was rejected and
will be rerun on Worklist 8514.
JFR
5/9/96

WHC-SD-WM-DP-178, REV. 10/10/96

LABCORE Completed Worklist Report for Worklist# 8218

Analyst: set Smv

Instrument: AB16

Book# _____

Method: _____ Rev/Mod _____

WHC-SD-WM-DP-186, REV. 0

Worklist Comment: AY-101. Determine sample size using ludlum. new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		APU23901 PU23901	LIQUID	3.81E-02	4.08E-2	107.087 % Recovery	
1 STD	0		APU23901 PU23901E	LIQUID	1.00	2.82E+00	2.820 % Ct. Error	
1 STD	0		APU23901 PU23901T	LIQUID	100	1.02E+02	102.000 % Recovery	
2 BLNK	0		APU23901 PU23901	LIQUID	1	<7.55E-6	uCi/mL	
2 BLNK	0		APU23901 PU23901T	LIQUID	100	4.05E+01	40.500 % Recovery	
2 BLNK	0		APU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000 % Ct. Error	
3 SAMPLE	S96T001208	0	APU23901 PU23901	LIQUID	N/A	< 7.59E-06	0.000 uCi/mL	
3 SAMPLE	S96T001208	0	APU23901 PU23901T	LIQUID	N/A	4.03E+01	0.000 % Recovery	
3 SAMPLE	S96T001208	0	APU23901 PU23901E	LIQUID	N/A	1.00E+02	0.000 % Ct. Error	
4 DUP	S96T001208	0	APU23901 PU23901	LIQUID	<7.59E-6	<7.34E-6	RPD	
4 DUP	S96T001208	0	APU23901 PU23901T	LIQUID	100	4.09E+01	40.900 % Recovery	
4 DUP	S96T001208	0	APU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000 % Ct. Error	
5 SAMPLE	S96T002014	0	APU23901 PU23901	LIQUID	N/A	1.35E-04	0.000 uCi/mL	
5 SAMPLE	S96T002014	0	APU23901 PU23901T	LIQUID	N/A	6.57E+01	0.000 % Recovery	
5 SAMPLE	S96T002014	0	APU23901 PU23901E	LIQUID	N/A	2.25E+00	0.000 % Ct. Error	
6 DUP	S96T002014	0	APU23901 PU23901	LIQUID	1.35E-4	3.30E-6	RPD	
6 DUP	S96T002014	0	APU23901 PU23901T	LIQUID	100	9.42E+01	94.200 % Recovery	
6-DUP	S96T002014	0	APU23901 PU23901E	LIQUID	1.00	1.05E+01	10.500 % Ct. Error	

Final page for worklist# 8218

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 8218

Analyst: Jim Instrument: PU01 Book# 124843
Method: LA-943-128 Rev/Mod _____ WHC-SD-WM-DP-186, REV. 0

Worklist Comment: AY-101. Determine sample size using ludlum. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S96T001208 0		@PU23901	LIQUID	96000210	AY-101 GRAB
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S96T001208 0		@PU23901	LIQUID		
5 SAMPLE	S96T002014 0		@PU23901	LIQUID	96000459	A-101 GRAB
Analytes Requested: PU23901 , PU23901E, PU23901T						
6 DUP	S96T002014 0		@PU23901	LIQUID		

Final page for worklist # 8218

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID

				STD
Type	DATE COUNTED	MAY-07-96	PU 236 AEA FRAC (C236)	0.551
STD	SAMPLE VOLUME in mL	SS 0.100	PU 238 AEA FRAC (C238)	0.242
Work List	SAMPLE DILUTION FACTOR	DF 101.000	PU 239 AEA FRAC (C239)	0.226
8218	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	3296
Test Code	DIGEST DILUTION FACTOR	DDF 1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	120B43	BACKGROUND in cpm (Bkg)	0.300
Matrix	DETECTOR NUMBER	16	PU 236 cpm	34.660
LIQUID	EFFICIENCY FACTOR	EFF 0.272	PU 238 cpm	15.220
Batch Number	TRACER PREPARATION DATE	12/27/95	PU 239 cpm	14.200
96004092	TRACER PREPARATION VALUE (dpm/mL)	2390.000	AEA COUNT TIME	480
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2188.896	Pu 239/240 μ Ci/L	4.0846E+01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep	STANDARD BOOK NO	124B43		
N/A	STANDARD VALUE in μ Ci/mL	0.038		
Sample #				
WL8218				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
WB27806	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			
SLH2	Pu 239/240 μ Ci/L = (C239)/(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/ μ Ci)]			
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
JFR	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(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			
JMV				
Date Complete				
05/08/96	Pu 239/240 μ Ci/mL	4.08E-02	DETECTION LEVELS in μ Ci/mL Pu 239/240 5.42E-03	
Analysis Date	Relative Counting Error	= 2.8%		
05/07/96				
Analysis Time				
12:00 PM				
Sample Point				
AY-101 GRAB	Pu 236 Tracer Recovery	= 101.5%		

Analyst:	JMV	Date:	08-May-96
Signature of Chemist:	<i>John Relyea</i>	Date:	9 May 96
STANDARD WB1 REV 1.0	943128ML		

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

BLNK

Type	DATE COUNTED		MAY-07-96	PU 236 AEA FRAC (C236)	0.967
BLNK	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.000
8218	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	757
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		120B43	BACKGROUND in cpm (Bkg)	0.300
Matrix	DETECTOR NUMBER		18	PU 236 cpm	14.230
LIQUID	EFFICIENCY FACTOR	EFF	0.2717	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		12/27/95	PU 239 cpm	0.000
96004092	TRACER PREPARATION VALUE (dpm/mL)		2390.00	AEA COUNT TIME	480
Re-run	PU-236 DECAY CORR'D VALUE (dpm/mL)		2188.90	Pu 239/240 μ Ci/L =	< 7.545E-03
0	PU-238 TRACER VALUE (dpm/mL)		0.00		

Sample Prep

N/A

Sample #

WL8218

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)}]

Instrument Code

WB27806

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 μ Ci/L = (C239) * (Pu 236 Decay Corr'd Value) * (SPKV) * (1000 mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/ μ Ci)]

Prepared By

SLH2

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 μ Ci/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (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

JFR

Analyst

JMV

Date Complete

05/08/96

Analysis Date

05/07/96

Analysis Time

12:00 PM

Sample Point

AY-101 GRAB

Pu 239/240 μ Ci/mL < 7.55E-06

Relative Counting Error = 100.0%

DETECTION

LEVELS

in μ Ci/mL

Pu 239/240

7.55E-06

Pu 238

7.55E-06

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 238 μ Ci/mL < 7.55E-06

Relative Counting Error = 100.0%

Pu 236 Tracer Recovery = 40.5%

Analyst

JMV

Date:

08-May-96

Signature of Chemist:

John Reilly

JFR

Date:

9 May 96

BLANK.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

				SAMPLE
Type	DATE COUNTED	MAY-07-96	PU 236 AEA FRAC (C236)	0.221
SAMPLE	SAMPLE VOLUME in mL	SS	1.000 PU 238 AEA FRAC (C238)	0.398
Work List	SAMPLE DILUTION FACTOR	DF	1.000 PU 239 AEA FRAC (C239)	0.302
8218	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	5313
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	120B43	BACKGROUND in cpm (Bkg)	0.300
Matrix	DETECTOR NUMBER	16	PU 236 cpm	27.450
LIQUID	EFFICIENCY FACTOR	EFF	0.272 PU 238 cpm	49.400
Batch Number	TRACER PREPARATION DATE	12/27/95	PU 239 cpm	37.470
96004092	TRACER PREPARATION VALUE (dpm/mL)	2390.000	AEA COUNT TIME	480
Run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2188.896	Pu 239/240 μ Ci/L	1.3474E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
N/A				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
S96T002014	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of $\{(-\ln 2 * \text{Decay Time}/1040.95)\}$]			
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)			
WB27806	Pu 239/240 μ Ci/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000 mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/ μ Ci)]			
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
SLH2	Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (D g/L) (SS)]			
Chemist	Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$			
JFR				
Analyst				
JMV				
Date Complete				
05/08/96	Pu 239/240 μ Ci/mL	1.35E-04	DETECTION LEVELS in μ Ci/mL	
Analysis Date	Relative Counting Error	= 2.2%		
05/07/96			Pu 239/240	
Analysis Time			2.04E-05	
12:00 PM	Pu 238 μ Ci/mL	1.78E-04	Pu 238	
Sample Point	Relative Counting Error	= 2.1%	2.04E-05	
AY-101 GRAB	Pu 236 Tracer Recovery	= 65.7%		

Analyst	JMV	Date:	08-May-96
Signature of Chemist	JFR	Date:	9 May 96

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (A-1)

LIQUID / SOLID

				DUP	
Type	DATE COUNTED	MAY-07-96	Pu 236 AEA FRAC (C236)		0.960
DUP	SAMPLE VOLUME in mL	SS	1.000	Pu 238 AEA FRAC (C238)	0.028
Work List	SAMPLE DILUTION FACTOR	DF	1.000	Pu 239 AEA FRAC (C239)	0.021
8218	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1779
Test Code	OIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	120B43	BACKGROUND in cpm (Bkg)		0.300
Matrix	DETECTOR NUMBER	16	Pu 236 cpm		34.040
LIQUID	EFFICIENCY FACTOR	EFF	0.272	Pu 238 cpm	1.000
Batch Number	TRACER PREPARATION DATE	12/27/95	Pu 239 cpm		0.740
96004092	TRACER PREPARATION VALUE (dpm/mL)	2390.000	AEA COUNT TIME		480
Return	PU-236 DECAY CORR'D VALUE (dpm/mL)	2188.896	Pu 239/240 $\mu\text{Ci/L}$ =	<	3.3038E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.000			
Sample Prep:					
N/A					
Sample #	Decay Time = Date Counted - Tracer Preparation Date				
S96T002014	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)				
WB27806	Pu 239/240 $\mu\text{Ci/L}$ = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV / (1000 mL/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)				
SLH2	Pu 238 $\mu\text{Ci/L}$ = [(Pu 238 dpm) * (DF) * (DDF) / (1000 mL/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				
JFR					
Analyst					
JMV					
Date Complete					
05/08/96	Pu 239/240 $\mu\text{Ci/mL}$	< 3.30E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analysis Date	Relative Counting Error	= 10.5%			
05/07/96			Pu 239/240		
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		3.30E-06		
12:00 PM	Pu 238 $\mu\text{Ci/mL}$	< 3.30E-06	Pu 238		
Sample Point	Relative Counting Error	= 9.1%	3.30E-06		
AY-101 GRAB	Pu 236 Tracer Recovery	= 94.2%			

Analyst:	JMV	Date:	08-May-96
Signature of Chemist:	JFR	Date:	8 May 96

SAMPLE WB1 REV 1.0

943128ML

D. H. 921-1111

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

WHC-SD-WM-DP-186, REV. 0

DATA REDUCTION REPORT

SAMPLE
WL8218-STD
File ID: 19a1959.CNF

Counted on: 5/ 7/96 @18:53
Detector: AEA19
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	579.5	579.5	350.866	350.866	26.000	24.894	13.000	6.622
2	231.3	231.3	298.257	297.986	24.000	7.610	12.000	1.127
3	56.9	56.9	293.053	293.053	18.000	0.189	9.000	0.058
4	214.1	214.1	224.694	224.435	18.000	9.614	9.000	1.469

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count	%err	Activity	
			Exp.	Obs.	Diff.	FWHM	Rate c/m @95	d/m	uCi/ea
1	Ra224	0.551	5.686	5.700	-.0140.11	34.66	1.5	234.8	0.106E-03
	Pu236		5.755	5.700	0.055			225.3	0.101E-03
2	Am241	0.242	5.479	5.457	0.0220.04	15.22	2.4	103.2	0.465E-04
	Pu238		5.487	5.457	0.030			134.7	0.607E-04
3	Th228	0.024	5.400	5.434	-.0340.00	1.52	21.5	13.6	0.612E-05
4	Pu239	0.226	5.147	5.118	0.0290.04	14.20	2.5	90.4	0.407E-04
	Pu240		5.144	5.118	0.026			90.4	0.407E-04

Totals:			1.042	<--valid peaks only-->			65.60		

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.441
Efficiency = 0.1570 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	30206.0	100.000
Smoothed	30206.3	100.001
Composite fit	31487.5	104.243
Residuals	-1281.5	-4.243

Analyzed by: _____

DM

[illegible]

Raw Data	Dump	for AEA Spectrum:	19a1959.CNF	H-C-SD-WV-07-186, REV.0
1	0.	0.	0.	0.
11	1.	0.	0.	1.
21	0.	0.	1.	0.
31	0.	0.	2.	0.
41	0.	0.	0.	1.
51	0.	0.	0.	2.
61	0.	2.	0.	1.
71	0.	0.	0.	2.
81	1.	1.	3.	0.
91	0.	0.	0.	1.
101	0.	1.	0.	2.
111	1.	0.	1.	0.
121	2.	1.	2.	1.
131	1.	3.	2.	1.
141	0.	1.	1.	3.
151	4.	1.	7.	3.
161	8.	5.	5.	4.
171	14.	9.	7.	10.
181	15.	27.	23.	19.
191	33.	36.	45.	49.
201	87.	95.	90.	111.
211	159.	166.	191.	195.
221	215.	220.	214.	240.
231	142.	88.	37.	21.
241	8.	6.	12.	9.
251	16.	16.	20.	21.
261	27.	44.	38.	29.
271	66.	71.	81.	91.
281	168.	166.	163.	221.
291	233.	242.	253.	274.
301	231.	186.	155.	99.
311	31.	33.	41.	42.
321	66.	94.	104.	102.
331	194.	189.	199.	227.
341	391.	430.	453.	425.
351	599.	607.	571.	506.
361	443.	356.	246.	123.
371	0.	0.	0.	0.
381	0.	0.	0.	0.
391	0.	2.	1.	0.
401	0.	0.	0.	0.
411	3.	1.	1.	1.
421	3.	2.	2.	3.
431	1.	1.	2.	0.
441	2.	1.	0.	0.
451	0.	1.	1.	2.
461	2.	3.	3.	7.
471	5.	4.	2.	2.
481	1.	0.	0.	1.
491	0.	0.	1.	0.
511	0.	0.	0.	0.

D.H. Miller

Westinghouse Hanford Co.
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.02

WHC-SD-WM-DP-186, REV. 0

DATA REDUCTION REPORT

SAMPLE _____
WL8218-BLK
File ID: 20a2090.CNF

Counted on: 5/ 7/96 @18:53
Detector: AEA20
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	391.0	391.0	362.235	362.235	8.000	2.923	4.000	0.816
2	9.9	9.9	288.168	288.047	12.000	7.180	6.000	1.563

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err	d/m	Activity	
			Exp.	Obs.	Diff.	c/m	@95		uCi/ea	
1	Pu236	0.967	5.755	5.756	-.0010	10.01	14.23	2.4	441.4	0.199E-03
2	Th228	0.034	5.400	5.414	-.0140	0.03	0.49	14.3	21.1	0.951E-05
Totals:		1.001	<--valid peaks only-->			14.72				

DETECTOR CALIBRATION

Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.445
Efficiency = 0.0329 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	7064.0	100.000
Smoothed	7064.0	100.000
Composite fit	7067.9	100.056
Residuals	-3.9	-0.056

Analyzed by: _____

DM

Raw Data Dump for AEA Spectrum: 20a2090.CNF WHC-SD-WM-DP-186, REV. C

1	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	1.	0.	0.	0.	0.	0.	0.	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	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
111	0.	0.	2.	0.	0.	0.	0.	0.	1.	0.
121	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
131	1.	0.	0.	0.	0.	1.	0.	0.	1.	0.
141	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
151	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
161	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
171	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
181	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
191	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.
201	1.	0.	0.	3.	0.	0.	0.	1.	1.	0.
211	0.	3.	0.	0.	1.	1.	0.	1.	1.	0.
221	1.	1.	1.	0.	2.	2.	1.	3.	3.	0.
231	0.	1.	1.	0.	2.	1.	3.	1.	0.	1.
241	2.	0.	1.	3.	1.	0.	1.	2.	1.	2.
251	1.	1.	0.	2.	1.	0.	2.	5.	1.	6.
261	4.	2.	3.	3.	3.	2.	5.	4.	6.	5.
271	6.	9.	3.	4.	6.	4.	2.	8.	2.	7.
281	11.	10.	7.	6.	3.	10.	13.	13.	15.	11.
291	5.	6.	6.	3.	6.	9.	4.	5.	5.	6.
301	6.	3.	7.	8.	9.	6.	9.	10.	9.	9.
311	11.	7.	5.	18.	10.	16.	17.	21.	23.	19.
321	27.	17.	19.	24.	32.	33.	31.	34.	30.	23.
331	40.	40.	51.	43.	39.	43.	52.	53.	58.	60.
341	67.	55.	76.	79.	111.	97.	104.	132.	149.	195.
351	200.	267.	284.	257.	241.	210.	218.	253.	297.	331.
361	400.	426.	497.	404.	266.	92.	28.	1.	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.	1.	0.
401	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	1.	0.	1.	0.	1.	0.	0.	0.	0.	0.
471	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.02

DATA REDUCTION REPORT

WHC-SD-WM-DP-176, REV. 1
 6/10/96

SAMPLE
 S96T2014-SAM
 File ID: 23a2321.CNF

Counted on: 5/ 7/96 @18:55
 Detector: AEA23
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	740.1	740.1	361.176	361.176	10.000	3.150	5.000	0.869
2	1425.3	1425.3	300.834	300.825	12.000	5.378	6.000	1.918
3	1120.9	1120.9	228.692	228.690	12.000	4.247	6.000	1.479
4	20.7	20.7	148.864	148.745	128.000	1.000	64.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	FWHM			
1	Pu236	0.221	5.755	5.751	0.0040.01	27.45	1.7	2205.8	0.994E-03
2	Pu238	0.398	5.487	5.473	0.0140.02	49.40	1.3	5402.3	0.243E-02
	Am241		5.479	5.473	0.006			4138.0	0.186E-02
3	Pu239	0.302	5.147	5.141	0.0060.02	37.47	1.5	2950.6	0.133E-02
	Pu240		5.144	5.141	0.003			2950.6	0.133E-02
4	Np237	0.013	4.769	4.773	-0.0040.00	1.64	7.0	148.2	0.667E-04
-----						-----			
Totals:			0.935	<--valid peaks only-->		115.96			

DETECTOR CALIBRATION

Energy(MEV) = 4.089 + (0.0046)*Channel
 Energy range (MeV): 4.089 TO 6.444
 Efficiency = 0.0127 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	59551.0	100.000
Smoothed	59551.3	100.001
Composite fit	55663.2	93.472
Residuals	3887.8	6.528

Analyzed by:

DM

Raw Data	Dump	for AEA	Spectrum:	23a2321.CNF	WHC-SD-WM-DP-178-REV. 1	WHC-SD-WM-DP-186, REV. 0
1	0.	0.	3.	0.	1.	0.
11	0.	0.	1.	1.	1.	2.
21	2.	2.	1.	0.	0.	1.
31	0.	0.	1.	3.	0.	3.
41	3.	1.	1.	1.	2.	3.
51	0.	1.	3.	0.	2.	1.
61	1.	1.	0.	2.	2.	5.
71	2.	2.	1.	4.	2.	4.
81	4.	6.	2.	3.	3.	6.
91	1.	6.	4.	0.	4.	6.
101	3.	7.	5.	4.	4.	6.
111	3.	9.	3.	4.	9.	5.
121	6.	12.	9.	8.	7.	10.
131	10.	12.	13.	14.	16.	9.
141	17.	18.	21.	16.	16.	21.
151	18.	20.	16.	22.	15.	18.
161	32.	27.	25.	20.	23.	29.
171	33.	31.	31.	31.	33.	30.
181	54.	37.	44.	52.	63.	70.
191	82.	66.	87.	72.	103.	95.
201	143.	133.	153.	154.	155.	170.
211	247.	262.	280.	289.	330.	373.
221	591.	678.	672.	761.	896.	1039.
231	1003.	663.	400.	217.	106.	47.
241	37.	43.	34.	41.	34.	35.
251	56.	62.	71.	61.	71.	71.
261	92.	92.	96.	84.	111.	103.
271	136.	163.	186.	165.	177.	214.
281	268.	301.	278.	311.	388.	377.
291	647.	652.	805.	814.	894.	940.
301	1663.	1572.	1319.	938.	721.	469.
311	135.	100.	81.	59.	57.	60.
321	37.	51.	46.	54.	73.	45.
331	78.	80.	113.	89.	110.	111.
341	145.	166.	182.	178.	225.	228.
351	488.	464.	487.	494.	431.	445.
361	863.	873.	778.	480.	220.	50.
371	5.	4.	2.	1.	0.	0.
381	0.	2.	0.	0.	0.	0.
391	0.	0.	0.	1.	0.	0.
401	2.	1.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	1.
421	2.	2.	0.	0.	1.	0.
431	1.	4.	0.	3.	2.	1.
441	0.	0.	0.	0.	0.	1.
451	0.	1.	1.	1.	0.	0.
461	0.	3.	0.	1.	0.	2.
471	0.	0.	1.	1.	1.	0.
481	1.	1.	0.	0.	1.	0.
491	0.	0.	1.	0.	3.	0.
511	1.	0.				

~~WHC-SD-WM-DP-178, REV~~

5/10/96

SAMPLE

S96T2014-DUP

File ID: 24a2423.CNF

5/ 7/96 @18:56

AEA24

Geometry number: 1

28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	848.9	848.9	361.685	361.685	10.000	3.083	5.000	0.761
2	36.4	36.4	301.355	301.048	8.000	3.090	4.000	1.345
3	13.5	13.5	287.846	286.407	12.000	2.812	6.000	0.529
4	19.3	19.3	229.450	229.418	14.000	4.878	7.000	1.412

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	AEA Isotope	Frac	Peak Centroid				Count Rate	c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.950	5.755	5.756	-0.0010	0.01	34.04	1.5	183.0	0.824E-04	
2	Pu238	0.028	5.487	5.477	0.0100	0.01	1.00	12.5	7.3	0.329E-05	
	Am241		5.479	5.477	0.002				5.6	0.252E-05	
3	Th228	0.018	5.400	5.410	-0.0100	0.01	0.66	16.3	4.9	0.221E-05	
4	Pu239	0.021	5.147	5.148	-0.0010	0.02	0.74	10.8	3.9	0.177E-05	
	Pu240		5.144	5.148	-0.004				3.9	0.177E-05	

```
Totals:      1.017  <--valid peaks only-->      36.44
```

DETECTOR CALIBRATION

$$\text{Energy (MEV)} = 4.093 + (0.0046) * \text{Channel}$$

Energy range (MeV): 4.093 TO 6.448

Efficiency = 0.1898 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17203.0	100.000
Smoothed	17202.9	99.999
Composite fit	17493.4	101.688
Residuals	-290.4	-1.688

Analyzed by:

DM

WHC-SD-WM-DP-186, REV. 0

~~WHC-SD-WM-DP-178, REV. 1~~M/W
6/10/96

4
4
4
.4
4

3
3
3
3
3.
3..
1.2..
21.
...1
.....1
..... 1
..... 1
.....1...
..... 1
.....1
...1...

Raw Data Dump for AEA Spectrum: 24a2423.CNF	WHC-SD-WM-DP-178, REV. 1	WHC-SD-WM-DP-186, REV. Q
1	0.	0.
11	0.	0.
21	0.	0.
31	0.	0.
41	0.	0.
51	0.	0.
61	0.	0.
71	0.	0.
81	0.	0.
91	0.	0.
101	1.	0.
111	1.	0.
121	1.	0.
131	1.	0.
141	0.	0.
151	0.	0.
161	1.	0.
171	2.	0.
181	0.	0.
191	2.	0.
201	5.	0.
211	2.	0.
221	18.	0.
231	20.	0.
241	1.	0.
251	9.	0.
261	9.	0.
271	10.	0.
281	15.	0.
291	23.	0.
301	50.	0.
311	27.	0.
321	54.	0.
331	109.	0.
341	172.	0.
351	516.	0.
361	904.	0.
371	0.	0.
381	0.	0.
391	0.	0.
401	0.	0.
411	0.	0.
421	0.	0.
431	0.	0.
441	0.	0.
451	0.	0.
461	0.	0.
471	0.	0.
481	1.	0.
491	0.	0.
511	0.	0.

DISTRIBUTION SHEET

To Distribution	From Production Planning & Control	Page 1 of 1
		Date: 06-07-96
Project Title/Work Order WHC-SD-WM-DP-186, REV. 0 "Waste Compatibility and Final Report for Tank 241-A-101, Grab Samples 1AY-96-1, 1AY-96-2, and 1AY-96-3.		EDT NO.: 614795
		ECN NO.: N/A

Name	MSIN	Text With all Attach	EDT/ECN ONLY	
<u>Pacific Northwest Laboratory</u>				
J. R. Gormsen	K7-28		X	
S. J. Harris	K7-22	X		
K. L. Silvers	P7-27		X	
<u>U.S. Department of Energy, RL</u>				
C. A. Babel	S7-54	X		
<u>Westinghouse Hanford Company</u>				
J. N. Appel	G3-21		X	
J. G. Field	G1-11	X		
G. D. Forehand	S7-31		X	
D. C. Hetzer	S6-31		X	
J. E. Hyatt	S3-31	X		
N. W. Kirch	R2-11	X		
M. J. Kupfer	H5-49	X		
J. E. Meacham	S7-15	X		
K. L. Powell	T6-04		X	
J. B. Schaffer (SD COV SHT., DST. SHT, ROR)	R2-12		X*	
L. W. Shelton	H5-49	X		
F. H. Steen	T6-06	X		
M. J. Sutey	T4-07	X		
T. T. Tran (LATA)	B1-44	X		
J. A. Voogd	H5-03		X	
L. R. Webb (SD COV SHT., DST. SHT, ROR)	T6-06		X *	
Central Files	A3-88	2		
EDMC	H6-08	X		
LTIC	T6-03		X	

U. S. Department of Energy

Jim Poppiti
12800 Middlebrook Rd.
Trevion II, EM-36
Germantown, MD 20874

* Needs only releasing paperwork, not a copy of the released document.