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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

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15. DATA TRANSMITTED

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Tank 241-AP-106, Grab Samples, 6AP-96-1 Through 6AP-96-3 Analytical Results for the Final Report

Ruth A. Esch
Rust Federal Services of Hanford, Inc., Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

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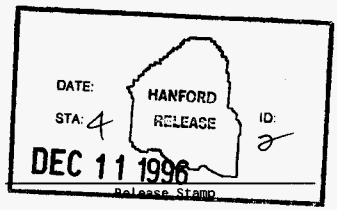

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WHC-SD-WM-DP-217, REV. 0

ANALYTICAL SERVICES

TANK 241-AP-106, GRAB SAMPLES, 6AP-96-1 THROUGH 6AP-96-3 ANALYTICAL RESULTS FOR THE FINAL REPORT

Project Coordinator: RUTH A. ESCH

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

by

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TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

This Document consists of pages 1 through 276. Pages ii, 9, 12, 20, 25, 28, 33, 36 and 150 were intentionally left blank.

TRADEMARKS:

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NARRATIVE

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222-S ANALYTICAL SERVICES

TANK 241-AP-106, GRAB SAMPLES, 6AP-96-1 THROUGH 6AP-96-3 ANALYTICAL RESULTS FOR THE FINAL REPORT

This document is the final report for tank 241-AP-106 grab samples. This document presents the analytical results for three samples (6AP-96-1, 6AP-96-2 and 6AP-96-3) taken from riser 1@150° of tank 241-AP-106 on September 12, 1996. Analyses were performed in accordance with the *Compatibility Grab Sampling and Analysis Plan* (TSAP) (Sasaki, 1996) and the *Data Quality Objectives for Tank Farms Waste Compatibility Program* (DQO) (Fowler, 1995).

No notifications were required for this project.

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 sample numbers and the portion of sample analyzed.

Attachment 2 is provided as additional documentation of changes made to the chain of custody (COC) forms after the samples were recieved and subsampled at the 222-S Laboratory. The sample dose rates and the sample number etched on the original sample bottles did not match the information provided on the COCs for samples 6AP-96-2 and 6AP-96-3. After reviewing the dose rate and appearance information from the laboratory and the field work package (#ES-96-00754) the COCs were changed by a tank farm representative.

Table 1 provides the appearance information for the three samples.

Table 1: Appearance Information for Tank 241-AP-106 Grab Samples

Sample Number	Date Received	Date Received	Sampling Depth*	Solids Present	Sample Description
6AP-96-1	9/12/96	9/13/96	580	Trace	Clear yellow liquid; no organic layer; trace amount of solids
6AP-96-2	9/12/96	9/13/96	610	None	Clear pale yellow; no organic layer; no solids
6AP-96-3	9/12/96	9/13/96	640	Trace	Clear yellow liquid; no organic layer; trace amount of solids

* Sample depth is measured from the top of the riser to the mouth of the sample bottle

Analytical Results Summary

The data summary table (Table 2) included in this report compiles all of the analytical results associated with each sample.

Compatibility Program Concerns

DSC - Differential Scanning Calorimetry - Energetics Decision Rule

The DSC analyses were performed in duplicate on direct subsamples. There was no exothermic energy observed in any of the samples, thus the dry weight basis calculations were not applicable. The standard recovery and relative percent difference (RPD) for this analysis were within the required limits.

For waste compatibility energetics decision concerns, since there was no exothermic energy observed the exotherm/endotherm ratio calculation is not applicable.

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. This table presents the NO_3^-, OH^-, and NO_2^- results in μg/mL and molarity (M) units. The spreadsheet compares the results to the concentration ranges specified in the waste compatibility DQO. A "YES" will appear in the appropriate space for the condition that is met. Only one of three sets of conditions must be met for OH^- and NO_2^- based on the range that the NO_3^- concentration falls in. If "NO" appears in the space under a condition, that condition is not met and a notification is required. No notifications were required.

The standard recoveries, appropriate spike recoveries and RPDs for these analyses were all within the required limits.

Sp.G. - Specific Gravity - 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. The results ranged from 0.987 to 1.207. The weighted mean Sp.G. = 1.07. 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.

$^{239/240}$Pu - Plutonium 239/240 - Criticality Decision Rule

$^{239/240}$Pu concentration is used to evaluate criticality safety for waste transfers. The results ranged from <5.89e-6 to 1.17e-4 μCi/mL. These results are well below the criticality prevention limit of

0.80 μCi/mL stated in the compatibility DQO. The standard recovery and RPDs for this analysis were within the required limits.

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

^{241}Am analysis is also used to evaluate criticality safety for waste transfers. The results ranged from <9.37e-6 to 8.76e-4 μCi/mL. The standard recovery and RPDs for this analysis were within the required limits.

Inorganic Analyses

pH

The pH analysis was performed in duplicate with results that ranged from 13.21 to 13.72. 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. Standard and relative percent difference (RPD) criteria were met for all three subsamples.

IC - Ion Chromatography

The ion chromatography (IC) analysis was performed in duplicate on direct samples. Bromide and oxalate results were included for infomational purposes only as part of the method of analysis. Since these analytes were not requested in the TSAP, the QC results for these analytes were not reviewed. The standard recovery, spike recovery and RPDs for this analysis were all within the required limits.

ICP - Inductively Coupled Plasma Spectrophotometry

The ICP analysis was performed in duplicate on acid diluted aliquots. This dilution is indicated by an "D" in the aliquot class (#A) column in Table 1. Aluminum (Al), iron (Fe) and sodium (Na) were the only analytes requested in the TSAP. Numerous other analyte results were provided as additional information as part of the method of analysis. Since these analytes were not requested in the TSAP, the QC results for these analytes were not reviewed. The standard recoveries, spike recoveries and RPDs for the analytes of interest were all within the required limits.

TOC - Total Organic Carbon

TOC analysis was performed by the furnace oxidation method on duplicate aliquots. None of the results exceeded the notification limit of 30,000 μgC/mL (dry weight basis). The standard recoveries, spike recoveries and RPDs for this analysis were within the required limits.

TIC - Total Inorganic Carbon

TIC analysis was performed on duplicate aliquots. The standard recoveries, spike recoveries and RPDs were within the required limits.

Radionuclide Analyses

^{90}Sr - Strontium 90

^{90}Sr analysis was performed in duplicate on direct aliquots. The standard recovery and RPDs for this analysis were within the required limits.

GEA - Gamma Energy Analysis

GEA analysis was performed in duplicate on direct aliquots. The standard recoveries and RPDs for this analysis were within the required limits.

Procedures

Table 4 lists the analytical procedures used for performing the safety screening analyses. Abbreviations for analyses are defined in the table notes.

Table 4: Analytical Procedures

Analysis	Preparation Method	Analytical Procedure
Inorganic Analyses		
DSC	Direct Analysis	LA-514-113 Rev. C-1 LA-514-114 Rev. D-0
TGA	Direct Analysis	LA-514-114 Rev. D-0 LA-560-112 Rev. C-0
pH	Direct Analysis	LA-212-106 Rev. B-0
Sp.G.	Direct Analyses	LA-510-112 Rev. C-3
OH^-	Direct Analysis	LA-211-102 Rev. C-0
IC	Direct Analysis	LA-533-105 Rev. D-1
ICP	Acid Dilution	LA-505-161 Rev. B-1
TOC	Direct Analysis	LA-344-105 Rev. D-1

Table 4: Analytical Procedures

Analyte	Preparation Procedure	Analysis Procedure
TIC	Direct Analysis	LA-342-100 Rev. E-0 *
Radionuclide Analyses		
GEA	Direct Analysis	LA-548-121 Rev. E-0
^{90}Sr	Direct Analysis	LA-220-101 Rev. D-1
^{241}Am	Direct Analysis	LA-953-103 Rev. B-0
$^{239/240}Pu$	Direct Analysis	LA-943-128 Rev. B-0

Notes: * - The TIC analysis was performed by LA-342-100 rather than LA-622-102, as requested in the TSAP, because the instrumentation was unavailable to perform the requested procedure.

Abbreviations:

DSC = differential scanning calorimetry
TGA = thermogravimetric analysis
Sp.G. = specific gravity
OH = hydroxide
IC = ion chromatography
ICP = inductively coupled plasma
TOC = total organic carbon
TIC = total inorganic carbon
GEA = gamma energy analysis
^{90}Sr = strontium 90
^{241}Am = americium 241
$^{239/240}Pu$ = plutonium 239/240

References

Fowler, K.D., 1995, *Data Quality Objectives for Tank Farms Waste Compatibility Program*, WHC-SD-WM-DQO-001, Rev. 1, Westinghouse Hanford Company, Richland, WA 99352.

Sasaki, L. M., 1996, *Compatibility Grab Sampling and Analysis Plan*, WHC-SD-TSAP-037, Rev. 2E, Westinghouse Hanford Company, Richland, WA 99352

ATTACHMENT 1

AP-106 GRAB SAMPLE BREAKDOWN

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Attachment 1

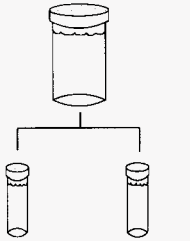
AP-106 GRAB SAMPLE BREAKDOWN

Riser 1@150°

580 in.

6AP-96-1

S96T005178

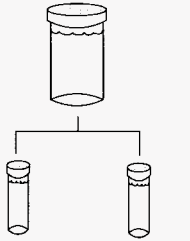


S96T005181	S96T005184
DSC	GEA: Cs-137
TGA	Pu-239/240
TOC	Sr-90
TIC	Am-241
ICP: Al, Fe, Na	
IC: anions	
pH	
OH	
Sp.G	

610 in.

6AP-96-2

S96T005180

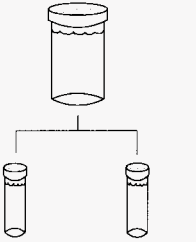


S96T005183	S96T005186
DSC	GEA: Cs-137
TGA	Pu-239/240
TOC	Sr-90
TIC	Am-241
ICP: Al, Fe, Na	
IC: anions	
pH	
OH	
Sp.G	

640 in.

6AP-96-3

S96T005179



S96T005182	S96T005185
DSC	GEA: Cs-137
TGA	Pu-239/240
TOC	Sr-90
TIC	Am-241
ICP: Al, Fe, Na	
IC: anions	
pH	
OH	
Sp.G	

SAMPLE DATA SUMMARY

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Table 2: Data Summary Report
AP-106 GRAB

RISER: 1@150
SEGMENT #: 6AP-96-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T005181			DSC Exotherm on Perkin Elmer	Joules/g	96.73	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005181			OH- by Pot. Titration	ug/mL	100.4	<43.00	2.56e+03	2.83e+03	2.70e+03	10.0	n/a	1.25e+03	n/a
S96T005181			pH Direct	pH	100.4	n/a	13.21	13.27	13.24	0.45	n/a	1.00e-02	n/a
S96T005181			Specific Gravity	Sp.G.	98.39	n/a	9.87e-01	9.94e-01	9.90e-01	0.69	n/a	1.00e-03	n/a
S96T005181			% Water by TGA on Perkin Elmer	%	99.12	n/a	96.05	95.24	95.64	0.85	n/a	n/a	n/a
S96T005181			TIC by Acid/Coulometry	ug/mL	97.51	4.00e-01	5.61e+02	560.0	560.5	0.18	100.0	5.000	n/a
S96T005181			Tot. Organic Carbon by Coul.	ug/mL	97.67	4.00e-01	7.34e+02	685.0	709.5	6.91	80.40	21.70	n/a
S96T005181		D	Silver-ICP-Acid Dil.	ug/mL	100.0	<1.00e-02	6.12e-01	6.00e-01	6.06e-01	1.98	91.20	2.10e-01	n/a
S96T005181		D	Aluminium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	3.51e+02	354.0	352.5	0.85	96.70	1.050	n/a
S96T005181		D	Arsenic-ICP-Acid Dil.	ug/mL	104.4	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	107.0	2.100	n/a
S96T005181		D	Boron-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	1.470	1.490	1.480	1.35	101.0	1.050	n/a
S96T005181		D	Barium-ICP-Acid Dil.	ug/mL	99.60	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	98.70	1.050	n/a
S96T005181		D	Beryllium-ICP-Acid Dil.	ug/mL	104.0	<5.00e-03	<1.05e-01	<1.05e-1	n/a	n/a	104.0	1.05e-01	n/a
S96T005181		D	Bismuth-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	103.0	2.100	n/a
S96T005181		D	Calcium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	108.0	2.100	n/a
S96T005181		D	Cadmium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-03	<1.05e-01	<1.05e-1	n/a	n/a	100.0	1.05e-01	n/a
S96T005181		D	Cerium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	99.00	2.100	n/a
S96T005181		D	Cobalt-ICP-Acid Dil.	ug/mL	101.8	<2.00e-02	<4.20e-01	<4.20e-1	n/a	n/a	100.0	4.20e-01	n/a
S96T005181		D	Chromium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-02	12.90	12.90	12.90	0.00	100.0	2.10e-01	n/a
S96T005181		D	Copper-ICP-Acid Dil.	ug/mL	104.4	<1.00e-02	2.45e-01	2.21e-01	2.33e-01	10.3	105.0	2.10e-01	n/a
S96T005181		D	Iron-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	102.0	1.050	n/a
S96T005181		D	Potassium-ICP-Acid Dil.	ug/mL	93.00	<5.00e-01	1.19e+03	1.19e+03	1.19e+03	0.00	73.80	10.50	n/a
S96T005181		D	Lanthanum-ICP-Acid Dil.	ug/mL	101.2	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	102.0	1.050	n/a
S96T005181		D	Lithium-ICP-Acid Dil.	ug/mL	101.4	<1.00e-02	3.26e-01	3.13e-01	3.20e-01	4.07	104.0	2.10e-01	n/a
S96T005181		D	Magnesium-ICP-Acid Dil.	ug/mL	97.60	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	96.50	2.100	n/a
S96T005181		D	Manganese-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	95.70	2.10e-01	n/a
S96T005181		D	Molybdenum-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	1.860	1.790	1.825	3.84	101.0	1.050	n/a
S96T005181		D	Sodium-ICP-Acid Dil.	ug/mL	98.80	<1.00e-01	8.42e+03	8.49e+03	8.46e+03	0.83	97.30	2.100	n/a
S96T005181		D	Neodymium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	102.0	2.100	n/a
S96T005181		D	Nickel-ICP-Acid Dil.	ug/mL	100.8	<2.00e-02	<4.20e-01	<4.20e-1	n/a	n/a	102.0	4.20e-01	n/a
S96T005181		D	Phosphorus-ICP-Acid Dil.	ug/mL	103.4	<2.00e-01	2.38e+02	240.0	239.0	0.84	131.0	4.200	n/a
S96T005181		D	Lead-ICP-Acid Dil.	ug/mL	100.4	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	105.0	2.100	n/a
S96T005181		D	Sulfur-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	88.40	88.60	88.50	0.23	98.40	2.100	n/a
S96T005181		D	Antimony-ICP-Acid Dil.	ug/mL	97.00	<6.00e-02	< 1.260	<1.26e0	n/a	n/a	95.90	1.260	n/a
S96T005181		D	Selenium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	113.0	2.100	n/a
S96T005181		D	Silicon-ICP-Acid Dil.	ug/mL	100.4	<5.00e-02	15.00	15.00	15.00	0.00	102.0	1.050	n/a
S96T005181		D	Samarium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 2.100	<2.10e0	n/a	n/a	97.20	2.100	n/a
S96T005181		D	Strontium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	99.40	2.10e-01	n/a
S96T005181		D	Titanium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	97.90	2.10e-01	n/a
S96T005181		D	Thallium-ICP-Acid Dil.	ug/mL	97.80	<2.00e-01	< 4.200	<4.20e0	n/a	n/a	98.40	4.200	n/a
S96T005181		D	Uranium-ICP-Acid Dil.	ug/mL	96.40	<5.00e-01	< 10.50	<1.05e1	n/a	n/a	109.0	10.50	n/a
S96T005181		D	Vanadium-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 1.050	<1.05e0	n/a	n/a	101.0	1.050	n/a
S96T005181		D	Zinc-ICP-Acid Dil.	ug/mL	102.0	<1.00e-02	5.41e-01	5.38e-01	5.40e-01	0.56	101.0	2.10e-01	n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T005181		D	Zirconium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	<2.10e-01	<2.10e-1	n/a	n/a	96.70	2.10e-01	n/a
S96T005181			Fluoride-IC-Dionex 4000/4500	ug/mL	92.37	<1.20e-02	1.29e+02	128.0	128.3	0.78	87.46	2.412	n/a
S96T005181			Chloride-IC-Dionex 4000/4500	ug/mL	93.04	<1.70e-02	1.73e+02	180.0	176.6	3.97	87.47	3.417	n/a
S96T005181			Nitrite-IC - Dionex 4000/4500	ug/mL	93.15	<1.08e-01	1.86e+03	1.89e+03	1.87e+03	1.60	95.74	21.71	n/a
S96T005181			Bromide by Ion Chromatograph	ug/mL	95.08	<1.25e-01	< 25.12	<2.51e1	n/a	n/a	92.53	25.12	n/a
S96T005181			Nitrate by IC-Dionex 4000/4500	ug/mL	99.33	<1.39e-01	5.95e+03	5.92e+03	5.94e+03	0.51	98.15	27.94	n/a
S96T005181			Phosphate-IC-Dionex 4000/4500	ug/mL	95.41	<1.20e-01	6.70e+02	675.0	672.5	0.74	99.08	24.12	n/a
S96T005181			Sulfate by IC-Dionex 4000/4500	ug/mL	101.3	<1.38e-01	2.79e+02	291.0	285.1	4.21	101.7	27.74	n/a
S96T005181			Oxalate by IC-Dionex 4000/4500	ug/mL	99.81	<1.05e-01	59.62	64.70	62.16	8.21	100.9	21.11	n/a
S96T005184			Strontium-89/90 High Level	uCi/mL	102.9	2.29e-05	2.77e-02	2.76e-02	2.77e-02	0.36	n/a	2.80e-05	1.23E+00
S96T005184			Pu-239/240 by TRU-SPEC Resin	uCi/mL	90.60	<3.68e-06	<5.89e-06	<5.39E-6	n/a	n/a	n/a	5.89e-06	7.35E+00
S96T005184			Cobalt-60 by GEA	uCi/mL	98.98	<2.25e-04	<3.71e-04	<3.87e-4	n/a	n/a	n/a	3.71e-04	n/a
S96T005184			Cesium-137 by GEA	uCi/mL	99.55	<6.43e-04	10.20	9.360	9.780	8.59	n/a	n/a	0.220
S96T005184			Am-241 by Extraction	uCi/mL	86.56	<6.13e-06	<6.15e-06	<7.06E-6	n/a	n/a	n/a	6.15e-06	1.04E+01

Table 2: Data Summary Report
AP-106 GRAB

RISER: 1@150
SEGMENT #: 6AP-96-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T005183			DSC Exotherm using Mettler	Joules/g	95.25	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005183			OH- by Pot. Titration	ug/mL	100.4	<43.00	6.07e+03	6.41e+03	6.24e+03	5.45	n/a	2.50e+03	n/a
S96T005183			pH Direct	pH	100.4	n/a	13.59	13.56	13.57	0.22	n/a	1.00e-02	n/a
S96T005183			Specific Gravity	Sp.G.	98.39	n/a	1.009	1.016	1.012	0.71	n/a	1.00e-03	n/a
S96T005183			% Water by TGA using Mettler	%	101.1	n/a	94.31	94.33	94.32	0.02	n/a	n/a	n/a
S96T005183			TIC by Acid/Coulometry	ug/mL	97.51	4.00e-01	8.04e+02	772.0	788.0	4.06	n/a	5.000	n/a
S96T005183			Tot. Organic Carbon by Coul.	ug/mL	97.67	4.00e-01	9.14e+02	834.0	874.0	9.15	n/a	21.70	n/a
S96T005183		D	Silver-ICP-Acid Dil.	ug/mL	100.0	<1.00e-02	1.220	1.180	1.200	3.33	n/a	4.10e-01	n/a
S96T005183		D	Aluminium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	9.52e+02	947.0	949.5	0.53	n/a	2.050	n/a
S96T005183		D	Arsenic-ICP-Acid Dil.	ug/mL	104.4	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	n/a	4.100	n/a
S96T005183		D	Boron-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	2.180	2.240	2.210	2.71	n/a	2.050	n/a
S96T005183		D	Barium-ICP-Acid Dil.	ug/mL	99.60	<5.00e-02	< 2.050	<2.05e0	n/a	n/a	n/a	2.050	n/a
S96T005183		D	Beryllium-ICP-Acid Dil.	ug/mL	104.0	<5.00e-03	<2.05e-01	<2.05e-1	n/a	n/a	n/a	2.05e-01	n/a
S96T005183		D	Bismuth-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	n/a	4.100	n/a
S96T005183		D	Calcium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	n/a	4.100	n/a
S96T005183		D	Cadmium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-03	<2.05e-01	<2.05e-1	n/a	n/a	n/a	2.05e-01	n/a
S96T005183		D	Cerium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	n/a	4.100	n/a
S96T005183		D	Cobalt-ICP-Acid Dil.	ug/mL	101.8	<2.00e-02	<8.20e-01	<8.20e-1	n/a	n/a	n/a	8.20e-01	n/a
S96T005183		D	Chromium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-02	24.30	24.30	24.30	0.00	n/a	4.10e-01	n/a
S96T005183		D	Copper-ICP-Acid Dil.	ug/mL	104.4	<1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	n/a	4.10e-01	n/a
S96T005183		D	Iron-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 2.050	<2.05e0	n/a	n/a	n/a	2.050	n/a
S96T005183		D	Potassium-ICP-Acid Dil.	ug/mL	93.00	<5.00e-01	3.47e+03	3.45e+03	3.46e+03	0.58	n/a	20.50	n/a
S96T005183		D	Lanthanum-ICP-Acid Dil.	ug/mL	101.2	<5.00e-02	< 2.050	<2.05e0	n/a	n/a	n/a	2.050	n/a
S96T005183		D	Lithium-ICP-Acid Dil.	ug/mL	101.4	<1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	n/a	4.10e-01	n/a
S96T005183		D	Magnesium-ICP-Acid Dil.	ug/mL	97.60	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	n/a	4.100	n/a
S96T005183		D	Manganese-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	n/a	4.10e-01	n/a
S96T005183		D	Molybdenum-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	2.080	2.130	2.105	2.38	n/a	2.050	n/a
S96T005183		D	Sodium-ICP-Acid Dil.	ug/mL	98.80	<1.00e-01	1.73e+04	1.71e+04	1.72e+04	1.16	n/a	4.100	n/a
S96T005183		D	Neodymium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	n/a	4.100	n/a
S96T005183		D	Nickel-ICP-Acid Dil.	ug/mL	100.8	<2.00e-02	<8.20e-01	<8.20e-1	n/a	n/a	n/a	8.20e-01	n/a
S96T005183		D	Phosphorus-ICP-Acid Dil.	ug/mL	103.4	<2.00e-01	3.26e+02	323.0	324.5	0.92	n/a	8.200	n/a
S96T005183		D	Lead-ICP-Acid Dil.	ug/mL	100.4	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	n/a	4.100	n/a
S96T005183		D	Sulfur-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	1.83e+02	181.0	182.0	1.10	n/a	4.100	n/a
S96T005183		D	Antimony-ICP-Acid Dil.	ug/mL	97.00	<6.00e-02	< 2.460	<2.46e0	n/a	n/a	n/a	2.460	n/a
S96T005183		D	Selenium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	n/a	4.100	n/a
S96T005183		D	Silicon-ICP-Acid Dil.	ug/mL	100.4	<5.00e-02	18.90	19.00	18.95	0.53	n/a	2.050	n/a
S96T005183		D	Samarium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	n/a	4.100	n/a
S96T005183		D	Strontium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	n/a	4.10e-01	n/a
S96T005183		D	Titanium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	n/a	4.10e-01	n/a
S96T005183		D	Thallium-ICP-Acid Dil.	ug/mL	97.80	<2.00e-01	< 8.200	<8.20e0	n/a	n/a	n/a	8.200	n/a
S96T005183		D	Uranium-ICP-Acid Dil.	ug/mL	96.40	<5.00e-01	< 20.50	<2.05e1	n/a	n/a	n/a	20.50	n/a
S96T005183		D	Vanadium-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 2.050	<2.05e0	n/a	n/a	n/a	2.050	n/a
S96T005183		D	Zinc-ICP-Acid Dil.	ug/mL	102.0	<1.00e-02	6.00e-01	5.92e-01	5.96e-01	1.34	n/a	4.10e-01	n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T005183		D	Zirconium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	n/a	4.10e-01	n/a
S96T005183			Fluoride-IC-Dionex 4000/4500	ug/mL	90.68	<1.20e-02	6.56e+02	606.0	631.2	7.92	84.24	49.69	n/a
S96T005183			Chloride-IC-Dionex 4000/4500	ug/mL	92.91	<1.70e-02	6.38e+02	615.0	626.4	3.67	82.78	70.40	n/a
S96T005183			Nitrite-IC - Dionex 4000/4500	ug/mL	92.78	<1.08e-01	7.73e+03	7.58e+03	7.66e+03	1.96	85.74	447.2	n/a
S96T005183			Bromide by Ion Chromatograph	ug/mL	96.44	<1.25e-01	<5.18e+02	<5.18e2	n/a	n/a	89.81	517.6	n/a
S96T005183			Nitrate by IC-Dionex 4000/4500	ug/mL	103.2	<1.39e-01	2.77e+04	2.85e+04	2.81e+04	2.85	96.13	575.6	n/a
S96T005183			Phosphate-IC-Dionex 4000/4500	ug/mL	97.25	<1.20e-01	1.87e+03	1.65e+03	1.76e+03	12.5	89.72	496.9	n/a
S96T005183			Sulfate by IC-Dionex 4000/4500	ug/mL	102.5	<1.38e-01	1.29e+03	1.31e+03	1.30e+03	1.54	94.29	571.5	n/a
S96T005183			Oxalate by IC-Dionex 4000/4500	ug/mL	100.9	<1.05e-01	<4.35e+02	<4.35e2	n/a	n/a	95.26	434.8	n/a
S96T005186			Strontium-89/90 High Level	uCi/mL	102.9	2.29e-05	4.51e-03	4.62e-03	4.56e-03	2.41	n/a	2.94e-05	3.14E+00
S96T005186			Pu-239/240 by TRU-SPEC Resin	uCi/mL	90.60	<3.68e-06	1.84e-05	2.00e-05	1.92e-05	8.33	n/a	4.31e-06	2.73E+00
S96T005186			Cobalt-60 by GEA	uCi/mL	98.98	<2.25e-04	<7.58e-04	<7.59e-4	n/a	n/a	n/a	1.00e-03	n/a
S96T005186			Cesium-137 by GEA	uCi/mL	99.55	<6.43e-04	25.00	24.30	24.65	2.84	n/a	n/a	0.140
S96T005186			Am-241 by Extraction	uCi/mL	86.56	<6.13e-06	<6.72e-06	<9.37E-6	n/a	n/a	n/a	6.72e-06	1.00E+02

Table 2: Data Summary Report
AP-106 GRAB

RISER: 1@150
SEGMENT #: 6AP-96-3

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T005182			DSC Exotherm on Perkin Elmer	Joules/g	96.73	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005182			OH- by Pot. Titration	ug/mL	100.4	<43.00	2.78e+04	2.79e+04	2.78e+04	0.36	n/a	1.25e+03	n/a
S96T005182			pH Direct	pH	100.4	n/a	13.70	13.72	13.71	0.15	n/a	1.00e-02	n/a
S96T005182			Specific Gravity	Sp.G.	98.39	n/a	1.205	1.207	1.206	0.13	n/a	1.00e-03	n/a
S96T005182			% Water by TGA on Perkin Elmer	%	99.12	n/a	70.14	69.67	69.91	0.67	n/a	n/a	n/a
S96T005182			TIC by Acid/Coulometry	ug/mL	97.51	4.00e-01	4.06e+03	4.09e+03	4.08e+03	0.74	n/a	5.000	n/a
S96T005182			Tot. Organic Carbon by Coul.	ug/mL	97.67	4.00e-01	3.40e+03	3.10e+03	3.25e+03	9.52	n/a	25.00	n/a
S96T005182	D		Silver-ICP-Acid Dil.	ug/mL	100.0	<1.00e-02	7.800	8.340	8.070	6.69	n/a	3.010	n/a
S96T005182	D		Aluminium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	8.78e+03	9.00e+03	8.89e+03	2.47	n/a	15.10	n/a
S96T005182	D		Arsenic-ICP-Acid Dil.	ug/mL	104.4	<1.00e-01	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S96T005182	D		Boron-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 15.10	<1.51e1	n/a	n/a	n/a	15.10	n/a
S96T005182	D		Barium-ICP-Acid Dil.	ug/mL	99.60	<5.00e-02	< 15.10	<1.51e1	n/a	n/a	n/a	15.10	n/a
S96T005182	D		Beryllium-ICP-Acid Dil.	ug/mL	104.0	<5.00e-03	< 1.510	<1.51e0	n/a	n/a	n/a	1.510	n/a
S96T005182	D		Bismuth-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S96T005182	D		Calcium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S96T005182	D		Cadmium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-03	2.060	2.160	2.110	4.74	n/a	1.510	n/a
S96T005182	D		Cerium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S96T005182	D		Cobalt-ICP-Acid Dil.	ug/mL	101.8	<2.00e-02	< 6.020	<6.02e0	n/a	n/a	n/a	6.020	n/a
S96T005182	D		Chromium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-02	1.59e+02	163.0	161.0	2.48	n/a	3.010	n/a
S96T005182	D		Copper-ICP-Acid Dil.	ug/mL	104.4	<1.00e-02	< 3.010	<3.01e0	n/a	n/a	n/a	3.010	n/a
S96T005182	D		Iron-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 15.10	<1.51e1	n/a	n/a	n/a	15.10	n/a
S96T005182	D		Potassium-ICP-Acid Dil.	ug/mL	93.00	<5.00e-01	2.23e+04	2.28e+04	2.26e+04	2.22	n/a	150.0	n/a
S96T005182	D		Lanthanum-ICP-Acid Dil.	ug/mL	101.2	<5.00e-02	< 15.10	<1.51e1	n/a	n/a	n/a	15.10	n/a
S96T005182	D		Lithium-ICP-Acid Dil.	ug/mL	101.4	<1.00e-02	< 3.010	<3.01e0	n/a	n/a	n/a	3.010	n/a
S96T005182	D		Magnesium-ICP-Acid Dil.	ug/mL	97.60	<1.00e-01	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S96T005182	D		Manganese-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 3.010	<3.01e0	n/a	n/a	n/a	3.010	n/a
S96T005182	D		Molybdenum-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	17.10	17.70	17.40	3.45	n/a	15.10	n/a
S96T005182	D		Sodium-ICP-Acid Dil.	ug/mL	98.80	<1.00e-01	1.10e+05	1.13e+05	1.12e+05	2.69	n/a	30.10	n/a
S96T005182	D		Neodymium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S96T005182	D		Nickel-ICP-Acid Dil.	ug/mL	100.8	<2.00e-02	6.690	7.250	6.970	8.03	n/a	6.020	n/a
S96T005182	D		Phosphorus-ICP-Acid Dil.	ug/mL	103.4	<2.00e-01	4.55e+02	468.0	461.5	2.82	n/a	60.20	n/a
S96T005182	D		Lead-ICP-Acid Dil.	ug/mL	100.4	<1.00e-01	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S96T005182	D		Sulfur-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	1.15e+03	1.19e+03	1.17e+03	3.42	n/a	30.10	n/a
S96T005182	D		Antimony-ICP-Acid Dil.	ug/mL	97.00	<6.00e-02	< 18.10	<1.81e1	n/a	n/a	n/a	18.10	n/a
S96T005182	D		Selenium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-01	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S96T005182	D		Silicon-ICP-Acid Dil.	ug/mL	100.4	<5.00e-02	40.20	42.30	41.25	5.09	n/a	15.10	n/a
S96T005182	D		Samarium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S96T005182	D		Strontium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	< 3.010	<3.01e0	n/a	n/a	n/a	3.010	n/a
S96T005182	D		Titanium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 3.010	<3.01e0	n/a	n/a	n/a	3.010	n/a
S96T005182	D		Thallium-ICP-Acid Dil.	ug/mL	97.80	<2.00e-01	< 60.20	<6.02e1	n/a	n/a	n/a	60.20	n/a
S96T005182	D		Uranium-ICP-Acid Dil.	ug/mL	96.40	<5.00e-01	<1.50e+02	<1.50e2	n/a	n/a	n/a	150.0	n/a
S96T005182	D		Vanadium-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 15.10	<1.51e1	n/a	n/a	n/a	15.10	n/a
S96T005182	D		Zinc-ICP-Acid Dil.	ug/mL	102.0	<1.00e-02	4.860	4.870	4.865	0.21	n/a	3.010	n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T005182		D	Zirconium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	< 3.010	3.170	n/a	n/a	n/a	3.010	n/a
S96T005182			Fluoride-IC-Dionex 4000/4500	ug/mL	92.37	<1.20e-02	2.47e+03	2.43e+03	2.45e+03	1.63	n/a	49.69	n/a
S96T005182			Chloride-IC-Dionex 4000/4500	ug/mL	93.04	<1.70e-02	1.62e+03	1.61e+03	1.61e+03	0.62	n/a	70.40	n/a
S96T005182			Nitrite-IC - Dionex 4000/4500	ug/mL	93.15	<1.08e-01	3.06e+04	3.10e+04	3.08e+04	1.30	n/a	447.2	n/a
S96T005182			Bromide by Ion Chromatograph	ug/mL	95.08	<1.25e-01	<5.18e+02	<5.18e2	n/a	n/a	n/a	517.6	n/a
S96T005182			Nitrate by IC-Dionex 4000/4500	ug/mL	99.33	<1.39e-01	1.29e+05	1.29e+05	1.29e+05	0.00	n/a	575.6	n/a
S96T005182			Phosphate-IC-Dionex 4000/4500	ug/mL	95.41	<1.20e-01	8.21e+02	699.0	760.0	16.1	n/a	496.9	n/a
S96T005182			Sulfate by IC-Dionex 4000/4500	ug/mL	101.3	<1.38e-01	3.60e+03	3.64e+03	3.62e+03	1.10	n/a	571.5	n/a
S96T005182			Oxalate by IC-Dionex 4000/4500	ug/mL	99.81	<1.05e-01	1.01e+03	976.0	991.0	3.42	n/a	434.8	n/a
S96T005185			Strontium-89/90 High Level	uCi/mL	102.9	2.29e-05	4.96e-01	5.28e-01	5.12e-01	6.25	n/a	3.00e-03	2.94E+00
S96T005185			Pu-239/240 by TRU-SPEC Resin	uCi/mL	90.60	<3.68e-06	1.17e-04	1.17e-04	1.17e-04	0.00	n/a	3.84e-05	3.31E+00
S96T005185			Cobalt-60 by GEA	uCi/mL	98.98	<2.25e-04	<3.06e-02	<2.60e-2	n/a	n/a	n/a	3.10e-02	n/a
S96T005185			Cesium-137 by GEA	uCi/mL	99.55	<6.43e-04	1.39e+02	139.0	139.0	0.00	n/a	n/a	0.580
S96T005185			Am-241 by Extraction	uCi/mL	91.60	<4.02e-05	8.76e-04	9.00e-04	8.88e-04	2.70	n/a	1.55e-04	1.95E+00

WASTE COMPATIBILITY CORROSION RULES

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Table 3 (1 of 3)

WASTE COMPATIBILITY CORROSION RULES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO3]	[OH]	[NO2]	[OH] + [NO2]
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	[NO3]/([OH] + [NO2]) < 2.5?
6AP-96-1 Supernate	NO3	5.95E+03	0.096	YES	YES	YES	YES
	OH	2.56E+03	0.151				
	NO2	1.86E+03	0.040	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		[OH] + [NO2] >= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		[OH] + [NO2] >= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO3]	[OH]	[NO2]	[OH] + [NO2]
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	[NO3]/([OH] + [NO2]) < 2.5?
6AP-96-1 Supernate DUP	NO3	5.92E+03	0.095	YES	YES	YES	YES
	OH	2.83E+03	0.166				
	NO2	1.89E+03	0.041	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		[OH] + [NO2] >= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		[OH] + [NO2] >= 1.2 M?

Table 3 (2 of 3)

WASTE COMPATIBILITY CORROSION RULES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO3]	[OH]	[NO2]	[NO3]/([OH] + [NO2])
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	[NO3]/([OH] + [NO2]) < 2.5?
6AP-96-2 Supernate	NO3	2.77E+04	0.447	YES	YES	YES	YES
	OH	6.07E+03	0.357				
	NO2	7.73E+03	0.168	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		[OH] + [NO2] >= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		[OH] + [NO2] >= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO3]	[OH]	[NO2]	[NO3]/([OH] + [NO2])
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	[NO3]/([OH] + [NO2]) < 2.5?
6AP-96-2 Supernate DUP	NO3	2.85E+04	0.460	YES	YES	YES	YES
	OH	6.41E+03	0.377				
	NO2	7.58E+03	0.165	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		[OH] + [NO2] >= 0.4 * [NO3]?
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		[OH] + [NO2] >= 1.2 M?

Table 3 (3 of 3)

WASTE COMPATIBILITY CORROSION RULES

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO3]	[OH]	[NO2]	[NO3]/([OH] + [NO2])
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	[NO3]/([OH] + [NO2]) < 2.5?
6AP-96-3 Supernate	NO3	1.29E+05	2.081				
	OH	2.78E+04	1.635				
	NO2	3.06E+04	0.665	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		[OH] + [NO2] >= 0.4 * [NO3]?
				YES	YES		YES
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		[OH] + [NO2] >= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO3]	[OH]	[NO2]	[NO3]/([OH] + [NO2])
				<= 1.0 M?	0.010 M <= [OH] <= 5.0 M?	0.011 M <= [NO2] <= 5.5 M	[NO3]/([OH] + [NO2]) < 2.5?
6AP-96-3 Supernate DUP	NO3	1.29E+05	2.081				
	OH	2.79E+04	1.641				
	NO2	3.10E+04	0.674	1.0 M < [NO3] <= 3.0 M?	0.1 M * [NO3] <= [OH] < 10 M?		[OH] + [NO2] >= 0.4 * [NO3]?
				YES	YES		YES
				3.0 M < [NO3] <= 5.5 M?	0.3 <= [OH] < 10 M?		[OH] + [NO2] >= 1.2 M?

ATTACHMENT 2

CORRESPONDENCE

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Author: Roland G Brown at ~WHC128
Date: 10/11/96 11:49 AM
Priority: Normal
TO: Ruth A Esch at ~HANFORD03A
CC: Roland G Brown
Subject: AP-106 Miss- Match Samples
---------- Message Contents ----------

Based on observation on 10/4/96, dose rate measurements, field process memo, and J-5 in work package ES-96-00754, the COC sample number and dose rate were changed on the Chain of Custody. Please analyzed the samples according to the changes made to the Chain of Custody on 10/11/96.

The following is what was noted:

COC Sample #	Seal # COC/PIG	Bottle etched #	Dose Rate COC/Process*
6AP-96-1	1996/1996	6AP-96-1	24/24
6AP-96-2	1998/1998	6AP-96-3	150/700
6AP-96-3	1999/1999	6AP-96-2	700/150

Process* dose rate is based on the etched bottle sample number and dose rate measured in the field recorded on the field process memo. The Lab confirmed the dose rate of the Process*.

After the Chain of Custody changes on 10/11/96, the information on the COC, seal #, etched sample bottles, and dose rate are summarized below:

COC Sample #	Seal # COC/PIG	Bottle etched #	Dose Rate COC/Process*
6AP-96-1	1996/1996	6AP-96-1	24/24
6AP-96-2	1999/1999	6AP-96-2	150/150
6AP-96-3	1998/1998	6AP-96-3	700/700

Thanks,
Roland Brown
373-5694

CHAIN OF CUSTODY FORMS

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CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-08-TF (2) Sample Number 6AP-96-1 (3) Supervisor R.J. Pekznik

(4) Tank AP106 (5) Riser 1 @150° (6) Cask/PIG Shipping Container Serial Number 6003A 16-6

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	<0.5 mR	<0.5 mR
Side Dose Rate	<0.5 mR	<0.5 mR
Bottom Dose Rate	<0.5 mR	<0.5 mR
Smearable Contamination (Alpha)	<20 d/m	<20 dpm
(Beta-Gamma)	<1000 d/m	<1000 dpm
RCT (Signature)		RCT (Signature) Charlie Cooper

(8) Shipment Description

A. Work Package Number	ES-96-00754/0
B. Cask/PIG Seal Number	1996
C. Date and Time Sample Removed from Tank	9-12-96/1026hr
D. Expected Liquid Content	100%
E. Expected Solid Content	0%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	24 mR/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	15ml.

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

29

(9) Field Comments

(32) Laboratory Comments

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
AP106 R/L @150°	222-S	James Sickels JAMES SICKELS	1300 9-13-96	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
James Sickels JAMES SICKELS		[illegible]	1305 9-13-96	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
[illegible]		[illegible] Jim Knight Sr	1410 9/13/96	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

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

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

WHC-6001-326 (01/96)

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-08-TF (2) Sample Number 6AP-96-3-2 (3) Supervisor R.J. Praznik

(4) Tank AP106 (5) Riser 1 @ 150° (6) Cask/PIG Shipping Container Serial Number 6003E / B-21

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	<0.5 mR/hr	<0.5 mR/hr
Side Dose Rate	<0.5 mR/hr	<0.5 mR/hr
Bottom Dose Rate	<0.5 mR/hr	<0.5 mR/hr
Smearable Contamination (Alpha)	<20 d/m	<20 dpm
(Beta-Gamma)	<1000 d/m	<1000 dpm
RCT* (Signature)	Allen Hansen	Charles Cooper

(8) Shipment Description	
A. Work Package Number	ES-96-00754/0
B. Cask/PIG Seal Number	1999
C. Date and Time Sample Removed from Tank	9.12.96 / 1044L
D. Expected Liquid Content	100%
E. Expected Solid Content	0%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	150 700 mR/h
G. Expected Sample Length (Auger)/ Volume (GRAB)	125 ml.

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

30

(10) Field Comments

(32) Laboratory Comments: The above changes were made due to a field error - the wrong sample bottle was placed in the sample pig. RCRA 12/6/96

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
AP106 r/l @150°	222-S	James Sickels JAMES SICKELS	1300 9-13-96	
(17) Relinquished By (Sign and PRINT)	**(18) Received By (Sign and PRINT)**		**(19) Date/Time**	**(20) Receiver Comments**
James Sickels JAMES SICKELS	[illegible]		1335 9-13-96	
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)		(23) Date/Time	(24) Receiver Comments
[illegible]	Jim Knight Jr		1410 9/13/96	
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)		(27) Date/Time	(28) Receiver Comments

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

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

BC-6001-326 (01/96)

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-08-TF (2) Sample Number 6AP-96-[10/11/96 illegible]23 (3) Supervisor R.J. Praznik

(4) Tank AP106 (5) Riser 1@150° (6) Cask/PIG Shipping Container Serial Number 6003B

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	20.5 mR/hr	20.5 mR/hr
Side Dose Rate	0.6 mR/hr	1 mR/hr
Bottom Dose Rate	20.5 mR/hr	0.5 mR/hr
Smearable Contamination (Alpha)	220 d/m	<20 d/m (Alpha)
(Beta-Gamma)	2000 d/m	<100 d/m (Beta-Gamma)
RCT* (Signature)	[signature]	RCT* (Signature) [signature]

(8) Shipment Description

A. Work Package Number	ES-96-00754/0 1998
B. Cask/PIG Seal Number	
C. Date and Time Sample Removed from Tank	9-12-96/1038hr
D. Expected Liquid Content	100%
E. Expected Solid Content	0%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	700 +150 mR/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	125ml

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

31

(10) Field Comments

(32) Laboratory Comments

Shipment # added to seal at time of delivery.

The above changes were made to correct an error in the field. The wrong sample bottle was placed in the sample pig. [signature] 12/6/96

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
AP106 r/l @150°	222-S	[signature] JAMES SICKELS	1300 9-13-96	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
[signature] JAMES SICKELS		[signature] CLEGG	1330 9-13-96	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
[signature] CLEGG		[signature] Sim Knight	13:43 9-13-96	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

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

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

BC-6001-326 (01/96)

SAMPLE HANDLING

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LABCORE Data Entry Template for Worklist# 13687

Analyst: ~~JW~~ JHW JOHN WORRELL 10/4/96 **Instrument:** NONE N/A **Book #** N/A

Method: LA-519-151 Rev/Mod E-2

Worklist Comment: AP-106 @BRKDWN - rae

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
96001337	AP-106 GRAB	1	SAMPLE	S96T005178	0		@BRKDWN1 DOSERATE	LIQUID	N/A	250		~~mrad/hour~~ mR/hour 10/4/96
96001337	AP-106 GRAB	1	SAMPLE	S96T005178	0		@BRKDWN1 APPEAR02	LIQUID	N/A	Clear	Yellow,	~~No~~ ~~Slit~~ Slight dusting of Solids on bottom
96001337	AP-106 GRAB	1	SAMPLE	S96T005178	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	~~200~~ 125	RE 10/4/96	mL
96001337	AP-106 GRAB	2	SAMPLE	S96T005179	0		@BRKDWN1 DOSERATE	LIQUID	N/A	5000		mrad/hour
96001337	AP-106 GRAB	2	SAMPLE	S96T005179	0		@BRKDWN1 APPEAR02	LIQUID	N/A	Clear,	Yellow,	Slight dusting of Solids on bottom
96001337	AP-106 GRAB	2	SAMPLE	S96T005179	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	~~200~~ 125	RDE 10/4/96	mL
96001337	AP-106 GRAB	3	SAMPLE	S96T005180	0		@BRKDWN1 DOSERATE	LIQUID	N/A	750		mrad/hour
96001337	AP-106 GRAB	3	SAMPLE	S96T005180	0		@BRKDWN1 APPEAR02	LIQUID	N/A	Clear	no Solids	, ~~colorless~~ pale yellow RDE 10/6/96
96001337	AP-106 GRAB	3	SAMPLE	S96T005180	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL

Final page for worklist # 13687

John Worrell 10-4-96
Analyst Signature **Date**

[signature] 10-8-96
Analyst Signature **Date**

Reviewed by RK Fuller 10/8/96

Data Entry Comments: Sample S96T005179 tag and seal on pig labelled 6AP-96-2, bottle was etched as 6AP-96-3

Sample S96T005180 tag and seal on pig labelled 6AP-96-3, bottle etched as 6AP-96-2

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.

INORGANIC ANALYSIS

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LABCORE Data Entry Template for Worklist# 13982

Analyst: EAL **Instrument:** DSC0 3 **Book #** 12N14B

Method: LA-514-114 Rev/Mod D-0

Worklist Comment: AP-106 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	LIQUID	28.45	27.52 *	N/A	Joules/g
96001337	AP-106 GRAB	2	SAMPLE	S96T005181	0		DSC-03	LIQUID	N/A	Ø		Joules/g
96001337	AP-106 GRAB	3	DUP	S96T005181	0		DSC-03	LIQUID	Ø	Ø	N/A	Joules/g
96001337	AP-106 GRAB	4	SAMPLE	S96T005182	0		DSC-03	LIQUID	N/A	Ø		Joules/g
96001337	AP-106 GRAB	5	DUP	S96T005182	0		DSC-03	LIQUID	Ø	Ø	N/A	Joules/g

Final page for worklist # 13982

See attached for signatures 10-22-96 BDV
Analyst Signature **Date**

Heidi Mack 10-24-96
Analyst Signature **Date**

Verified/Validated by
Blandina
Valenzuela 10-30-96

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# 13982

Analyst: JA **Instrument:** DSC0 _____ **Book #** 12N14B

Method: LA-514-113 Rev/Mod _____

Worklist Comment: AP-106 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				DSC-01	LIQUID	_____	_____	N/A	Joules/g
96001337	AP-106 GRAB	2 SAMPLE	S96T005181	0		DSC-01	LIQUID	N/A	_____	_____	Joules/g
96001337	AP-106 GRAB	3 DUP	S96T005181	0		DSC-01	LIQUID	_____	_____	N/A	Joules/g
96001337	AP-106 GRAB	4 SAMPLE	S96T005182	0		DSC-01	LIQUID	N/A	_____	_____	Joules/g
96001337	AP-106 GRAB	5 DUP	S96T005182	0		DSC-01	LIQUID	_____	_____	N/A	Joules/g

Final page for worklist # 13982

A. Lambert 10.21.96
Analyst Signature **Date**

_____
Analyst Signature **Date**

DSC-03 instrument
was used.
10.22.96
Blandina
Valenzuela

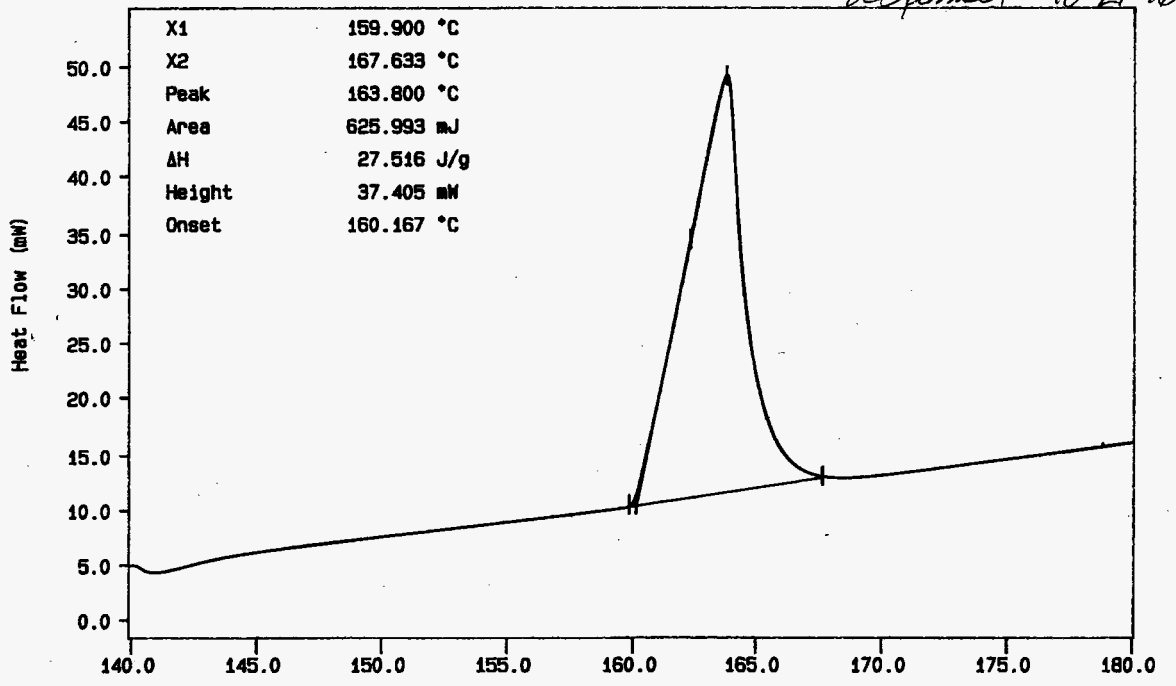
Data Entry Comments:

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: IND102101 Mon Oct 21 05:43:49 1996
Sample Weight: 22.750 mg
12N14-B INDIUM AT 10C/MIN

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 39 TO 42.

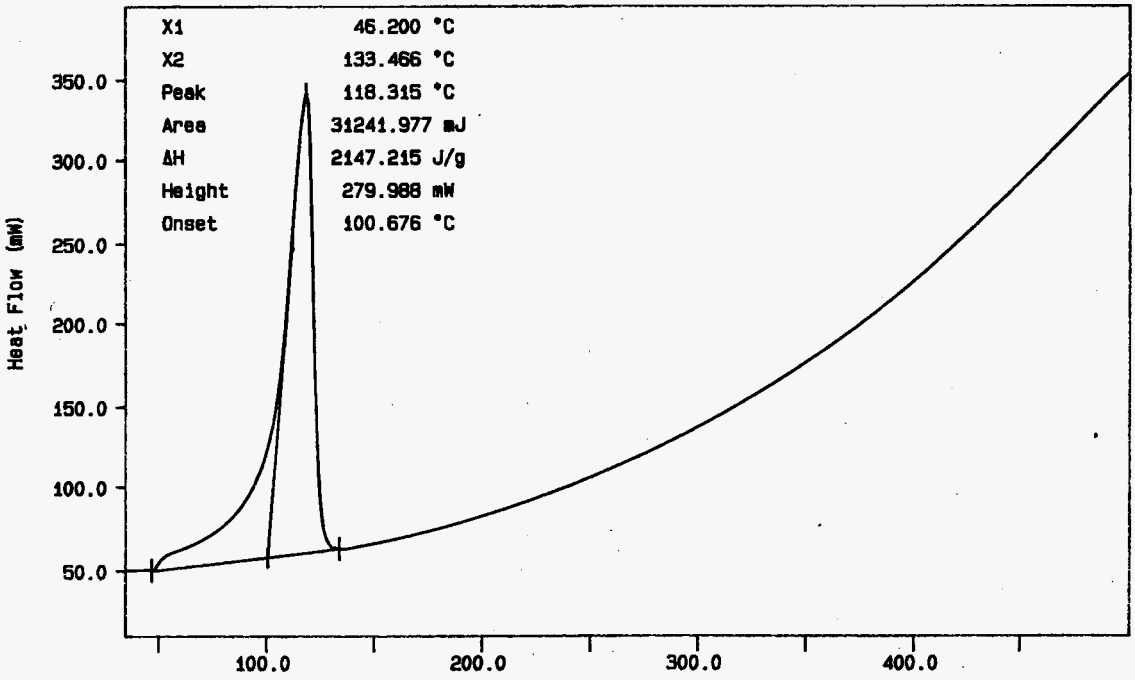
A Lambert 10.21.96



N2, EXOTHERM DOWN
TEMP1: 140.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 180.0 C

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Oct 22 02:51:27 1996

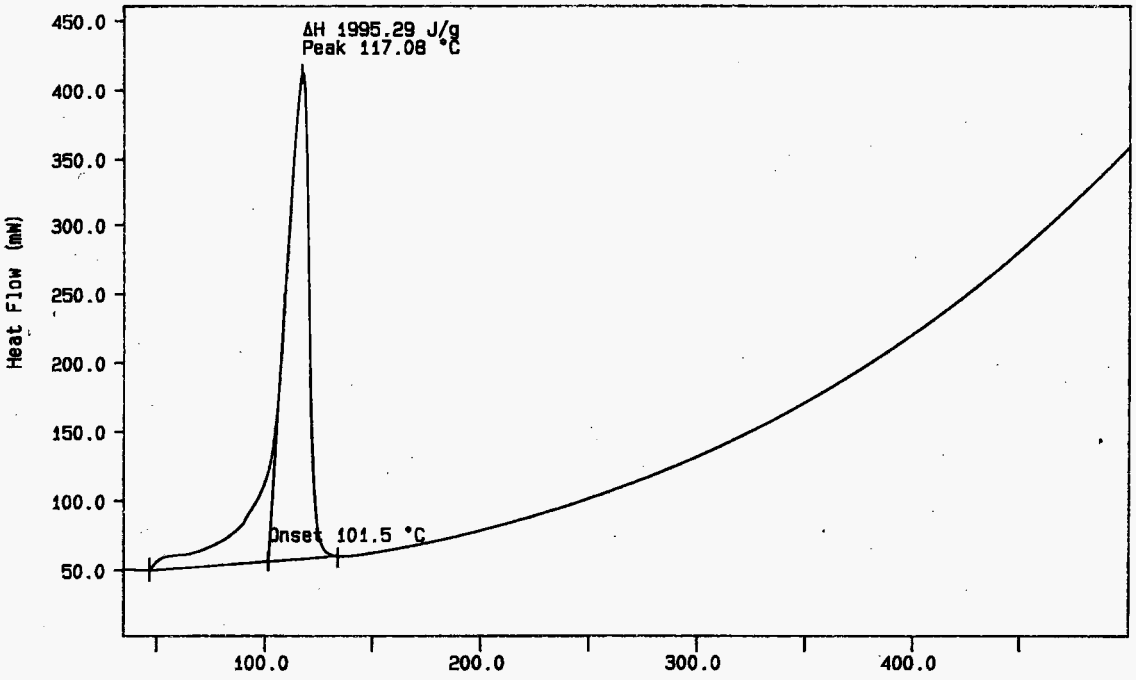
Curve 1: DSC
File info: SAMI02105 Mon Oct 21 18:21:45 1996
Sample Weight: 14.550 mg
S96T005181



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

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Oct 22 02:59:42 1996

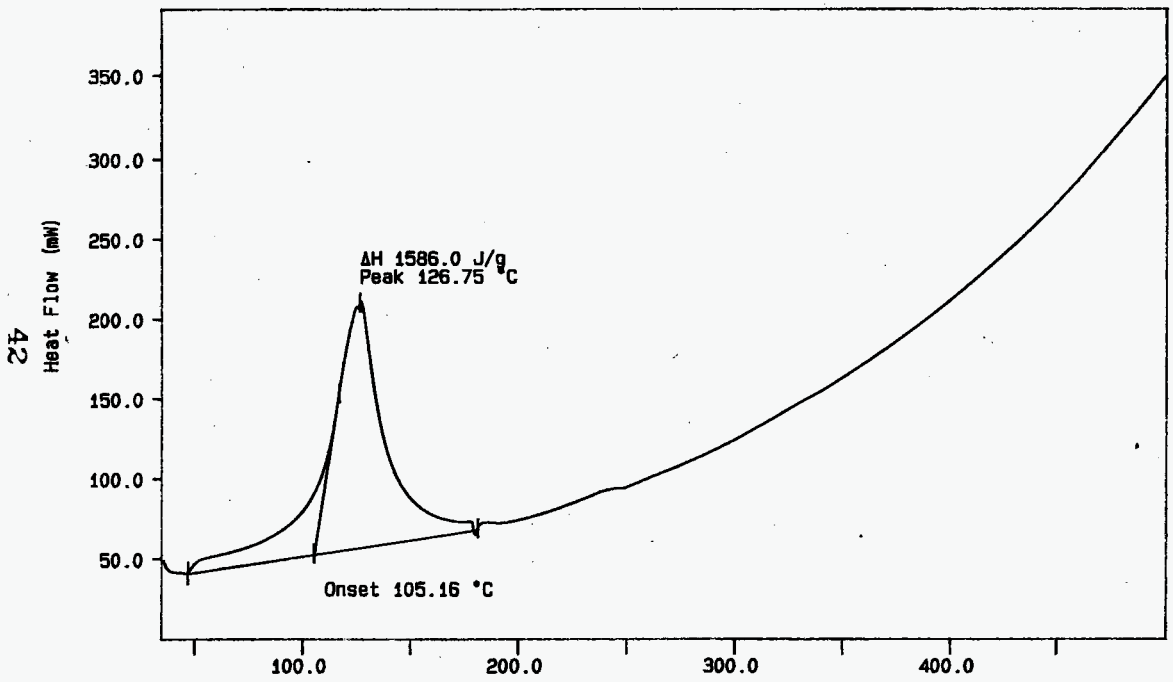
Curve 1: DSC
File info: SAM1021006 Mon Oct 21 19:55:51 1996
Sample Weight: 16.710 mg
S96T005181 DUP



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

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Oct 21 20:44:01 1996

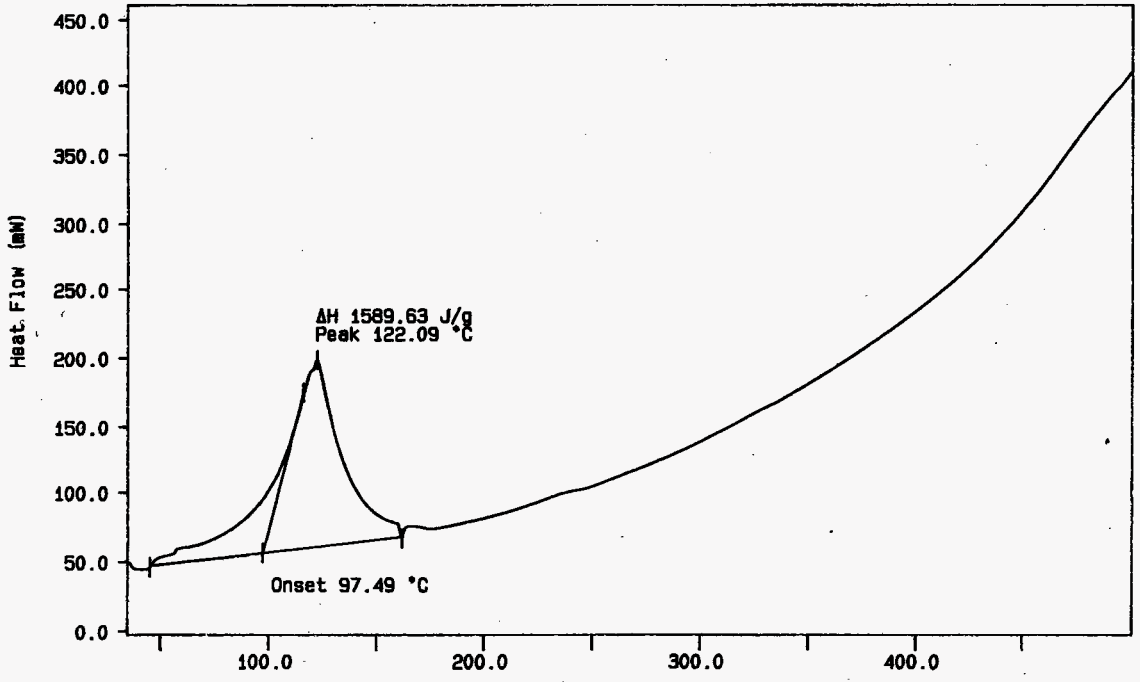
Curve 1: DSC
File info: SAM102107 Mon Oct 21 21:44:33 1996
Sample Weight: 18.310 mg
S96T005182 SAM



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

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Oct 21 22:06:49 1996

Curve 1: DSC
File info: SAM102108 Mon Oct 21 23:01:37 1996
Sample Weight: 18.500 mg
S96T005182 DUP



N2 10C/min
TEMP1: 30.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Oct 22 00:14:04 1996

worklistrpt Version 2.1 05/15/95
10/14/96 11:38

LABCORE Data Entry Template for Worklist# 13983

Analyst: Ell **Instrument:** DSC0 1 **Book #** 12N/14B

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

Worklist Comment: AP-106 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				DSC-01	LIQUID	28.45	27.1*	N/A	Joules/g
96001337	AP-106 GRAB	2 SAMPLE	S96T005183	0		DSC-01	LIQUID	N/A	Ø		Joules/g
96001337	AP-106 GRAB	3 DUP	S96T005183	0		DSC-01	LIQUID	Ø	Ø	N/A	Joules/g

Final page for worklist # 13983

A. Lambel 10.21.96
Analyst Signature **Date**

Linda Mack 10-24-96
Analyst Signature **Date**

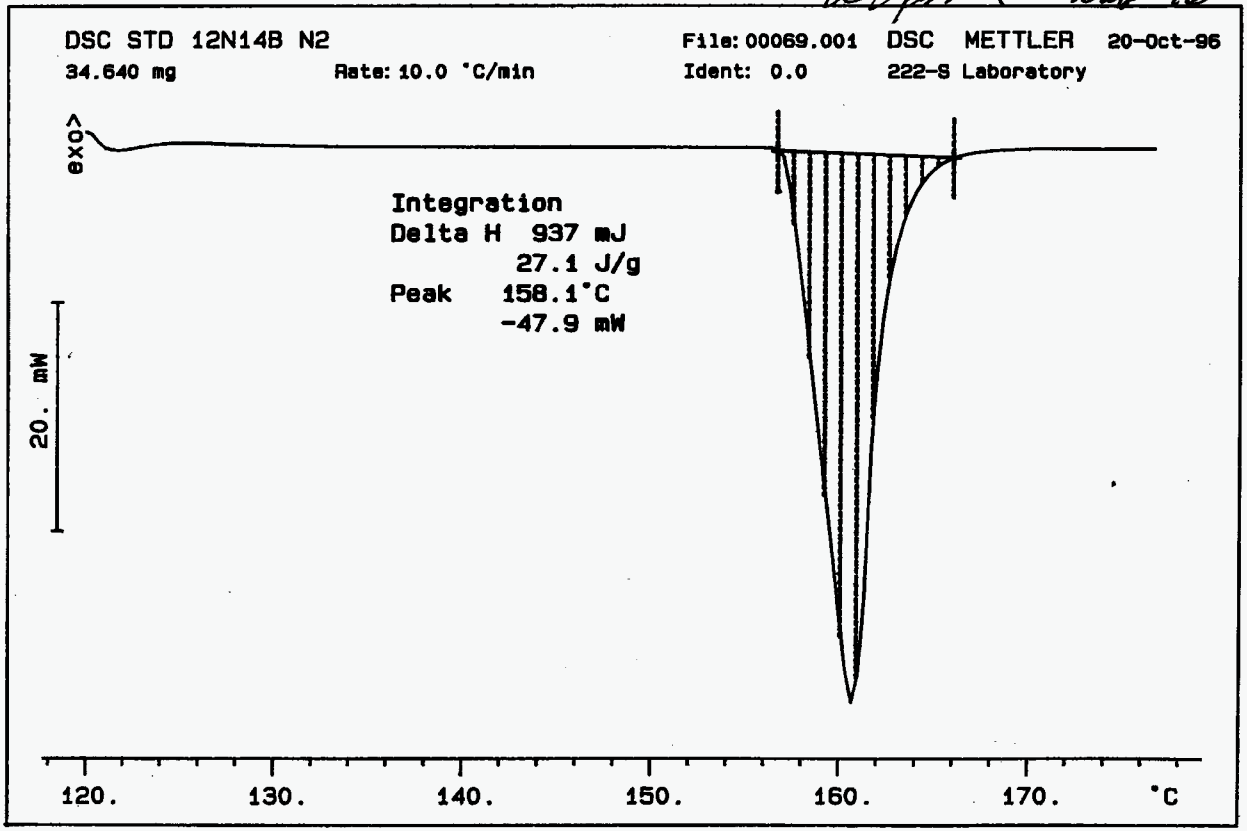
Verified/Validated by
Blandina
Valenzuela 10.30.96

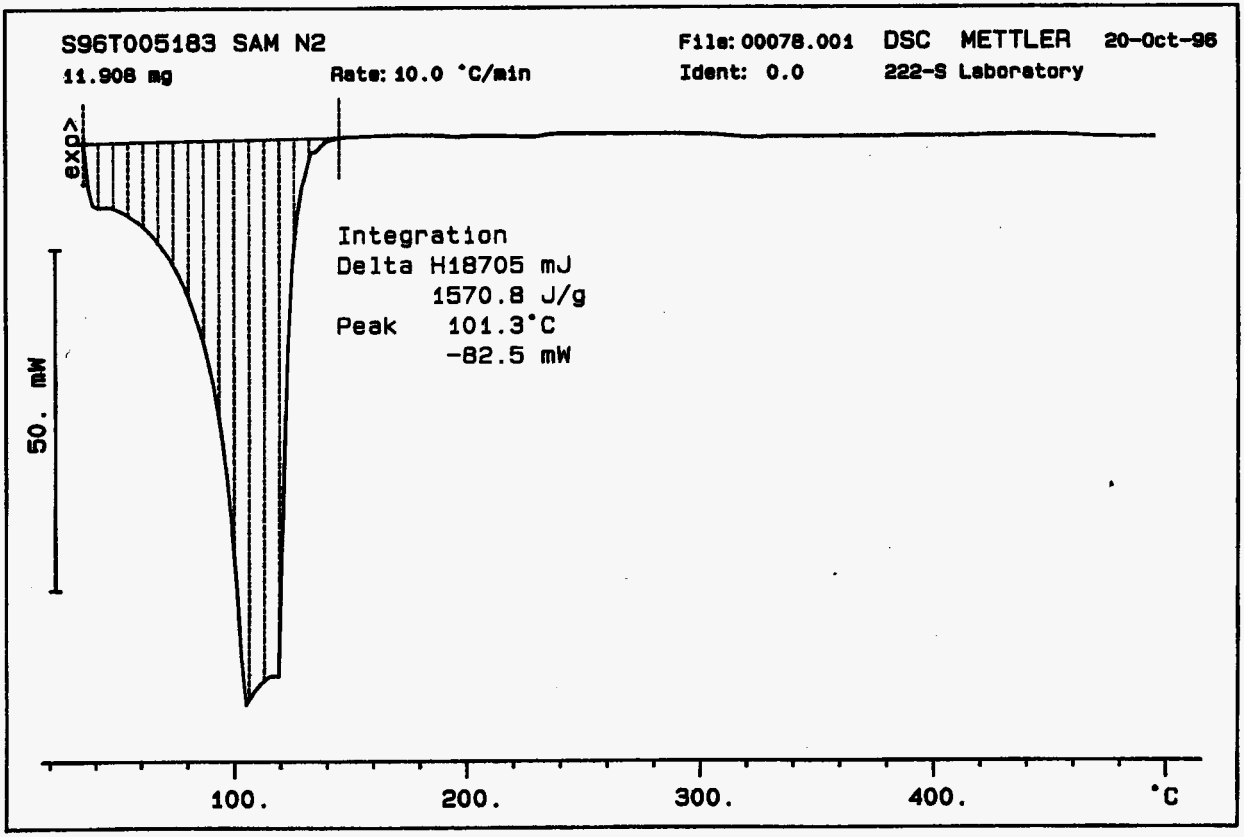
Data Entry Comments:

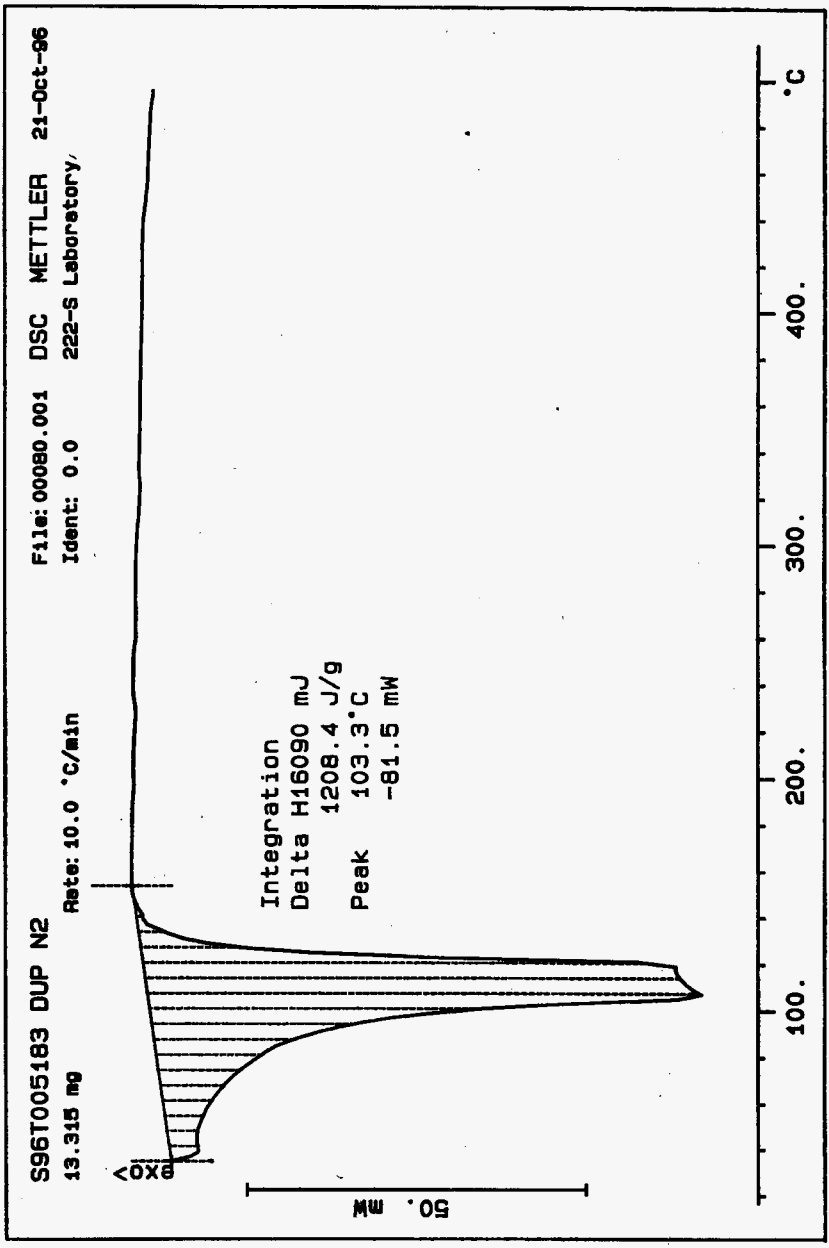
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 45 TO 47.

21 10-20-96




S96T005183 SAM N2
11.908 mg
Rate: 10.0 °C/min
File: 00078.001
Ident: 0.0
DSC METTLER
222-S Laboratory
20-Oct-96
exo
Integration
Delta H18705 mJ
1570.8 J/g
Peak 101.3°C
-82.5 mW
50. mW
100.
200.
300.
400.
°C


S96T005183 DUP N2
13.315 mg
Rate: 10.0 °C/min
File: 00080.001 DSC METTLER 21-Oct-96
Ident: 0.0 222-S Laboratory
Integration
Delta H16090 mJ
1208.4 J/g
Peak 103.3°C
-81.5 mW
<exo
50. mW
100.
200.
300.
400.
°C

LABCORE Data Entry Template for Worklist# 13980

Analyst: EAL **Instrument:** TGA0 3 **Book #** 82N8A

Method: LA-514-114 Rev/Mod D-0

Worklist Comment: AP-106 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				TGA-03	LIQUID	59.2	58.68 * 96.05	N/A	%
96001337	AP-106 GRAB	2 SAMPLE	S96T005181	0		TGA-03	LIQUID	N/A	96.24	10-22-96 BOR	%
96001337	AP-106 GRAB	3 DUP	S96T005181	0		TGA-03	LIQUID	96.05	96.24	N/A	%
96001337	AP-106 GRAB	4 SAMPLE	S96T005182	0		TGA-03	LIQUID	N/A	70.14		%
96001337	AP-106 GRAB	5 DUP	S96T005182	0		TGA-03	LIQUID	70.14	69.67	N/A	%

Final page for worklist # 13980

See attached for signatures 10-22-96 BOR
Analyst Signature **Date**

Florida Mack 10-24-96 10-25-96
Analyst Signature **Date**

Verified/Validated by
Blandina Valenzuela 10-30-96

Data Entry Comments: S96T005181 sample + duplicate results are the sum of several weight loss steps.
S96T005182 sample + duplicate results are the sum of several weight loss steps.

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

LABCORE Data Entry Template for Worklist# 13980

Analyst: RAL **Instrument:** TGA0 _____ **Book #** 82184

Method: LA-560-112 Rev/Mod _____

Worklist Comment: AP-106 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	LIQUID			N/A	%
96001337	AP-106 GRAB	2	SAMPLE	S96T005181	0		TGA-01	LIQUID	N/A			%
96001337	AP-106 GRAB	3	DUP	S96T005181	0		TGA-01	LIQUID			N/A	%
96001337	AP-106 GRAB	4	SAMPLE	S96T005182	0		TGA-01	LIQUID	N/A			%
96001337	AP-106 GRAB	5	DUP	S96T005182	0		TGA-01	LIQUID			N/A	%

Final page for worklist # 13980

A. Lambel 10.21.96
Analyst Signature **Date**

Analyst Signature **Date**

TGA-03 instrument
Was used.
10-22-96
Blandina
Valenzuela

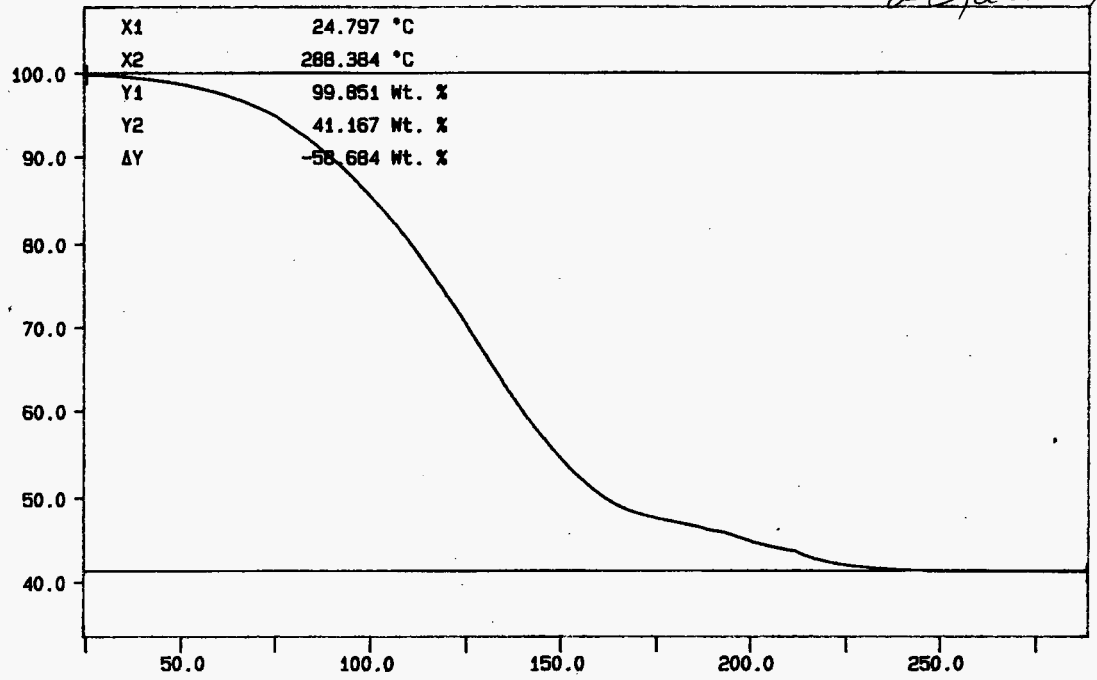
Data Entry Comments:

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

Curve 1: TGA
File info: TER102101 Mon Oct 21 06:06:07 1996
Sample Weight: 18.778 mg
TGA STD 82N8-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 50 TO 54.

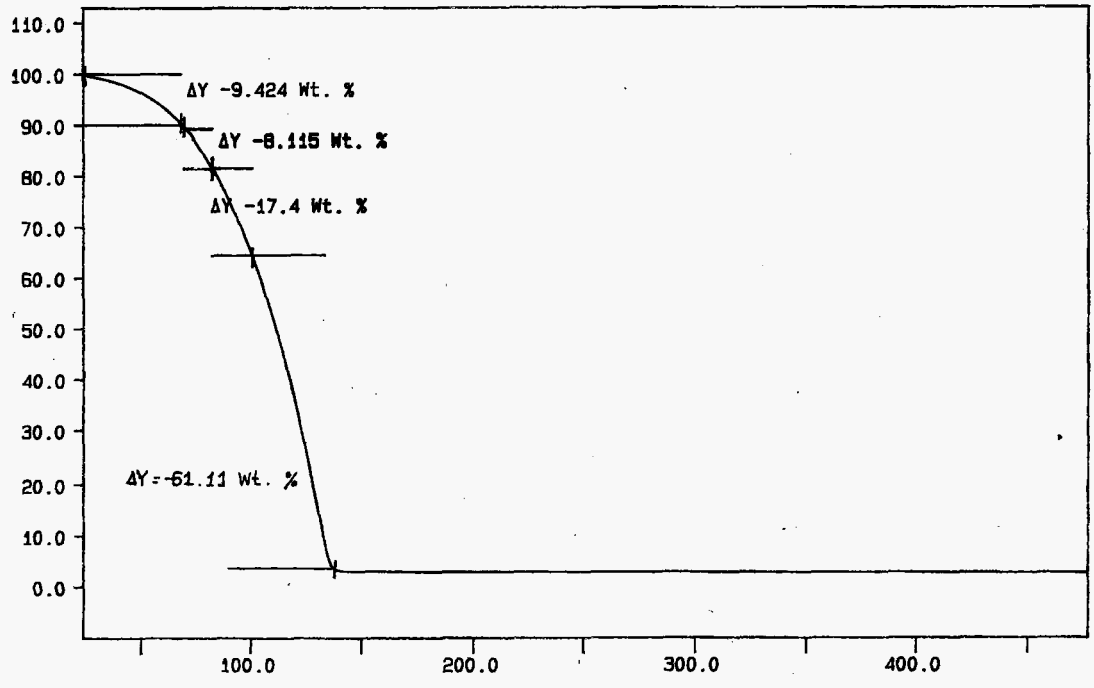
10.21.96
A Lambert



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

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Oct 22 02:14:34 1996

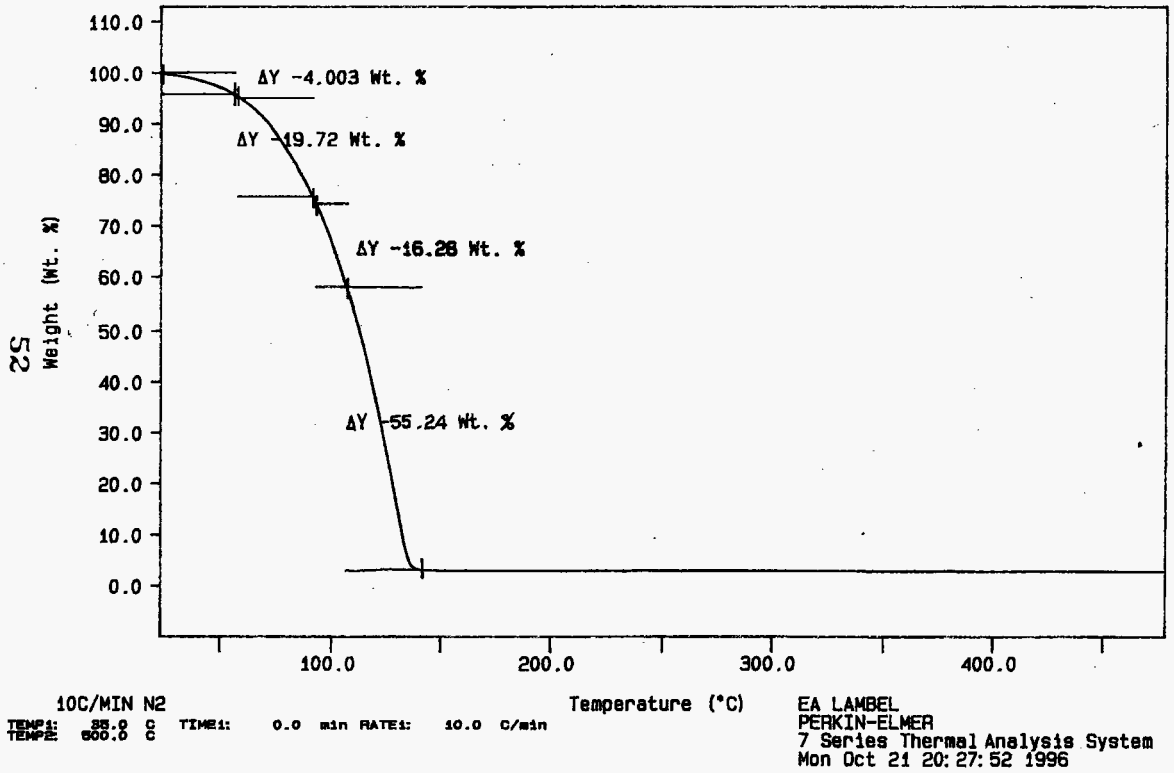
Curve 1: TGA
File info: qsav1 Mon Oct 21 18:26:33 1996
Sample Weight: 13.770 mg
S96T005181 SAM



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

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Oct 21 19:14:21 1996

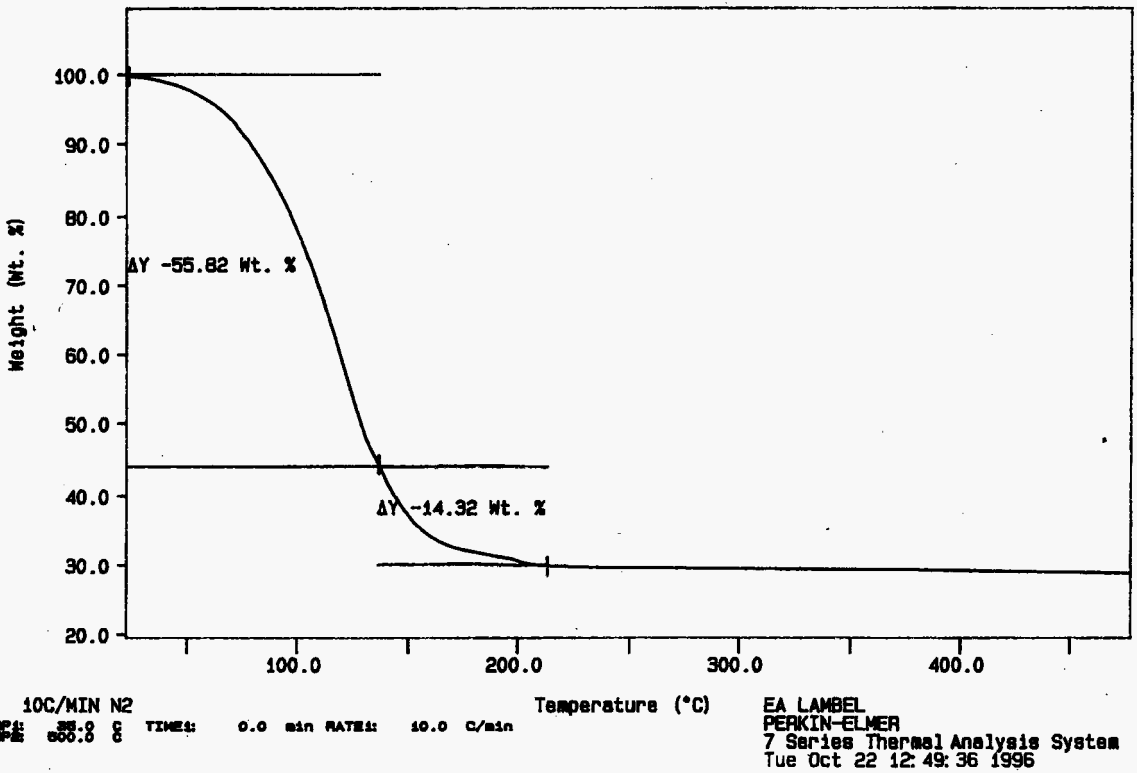
Curve 1: TGA
File info: SAM102106 Mon Oct 21 20:08:59 1996
Sample Weight: 13.062 mg
S96T005181 DUP



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

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Oct 21 20:27:52 1996

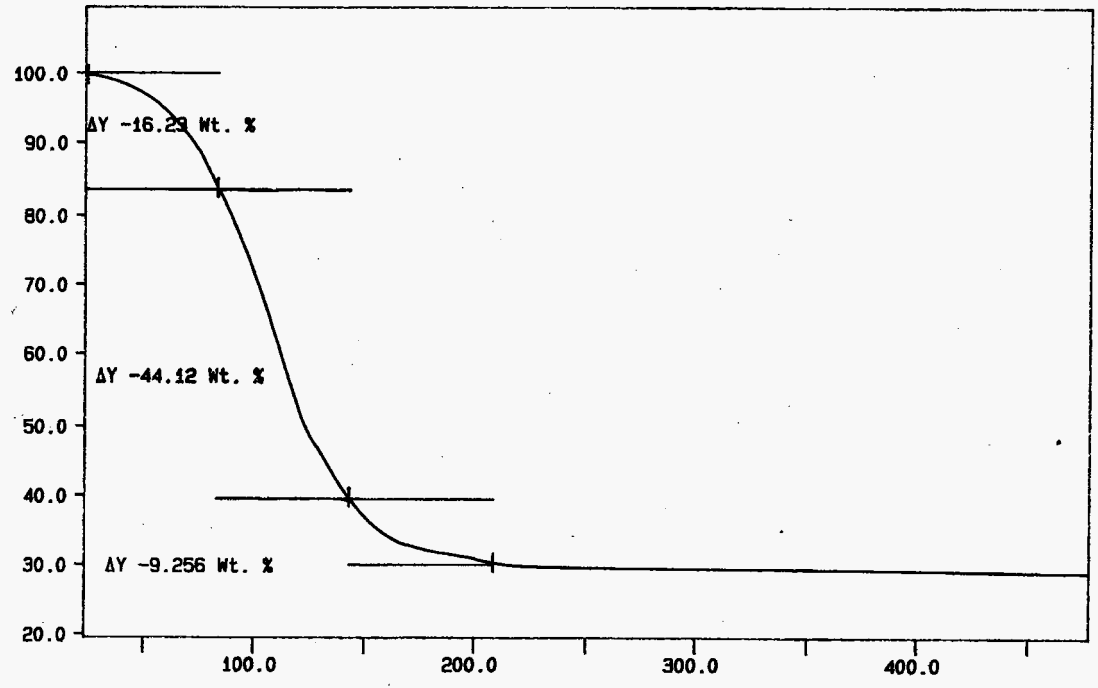
Curve 1: TGA
File info: SAM102107 Mon Oct 21 21:27:23 1996
Sample Weight: 15.931 mg
S96T005282 SAM



10C/MIN N2
TEMP1: 25.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 650.0 C

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Oct 22 12:49:36 1996

Curve 1: TGA
File info: SAM102108 Mon Oct 21 23:11:57 1996
Sample Weight: 14.748 mg
S96T0052 82 DUP



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

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Oct 22 00:06:22 1996

54

LABCORE Data Entry Template for Worklist# 13981

Analyst: Ed **Instrument:** TGA0 1 **Book #** 82N8

Method: LA-560-112 Rev/Mod C-D

Worklist Comment: AP-106 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				TGA-01	LIQUID	59.2	59.84	* N/A	%
96001337	AP-106 GRAB	2 SAMPLE	S96T005183	0		TGA-01	LIQUID	N/A	94.31		%
96001337	AP-106 GRAB	3 DUP	S96T005183	0		TGA-01	LIQUID	94.31	94.33	N/A	%

Final page for worklist # 13981

10-24-96 LCM

A. Lambel 10-21-96
Analyst Signature **Date**

Linda Marek ~~10-25-96~~
Analyst Signature **Date**

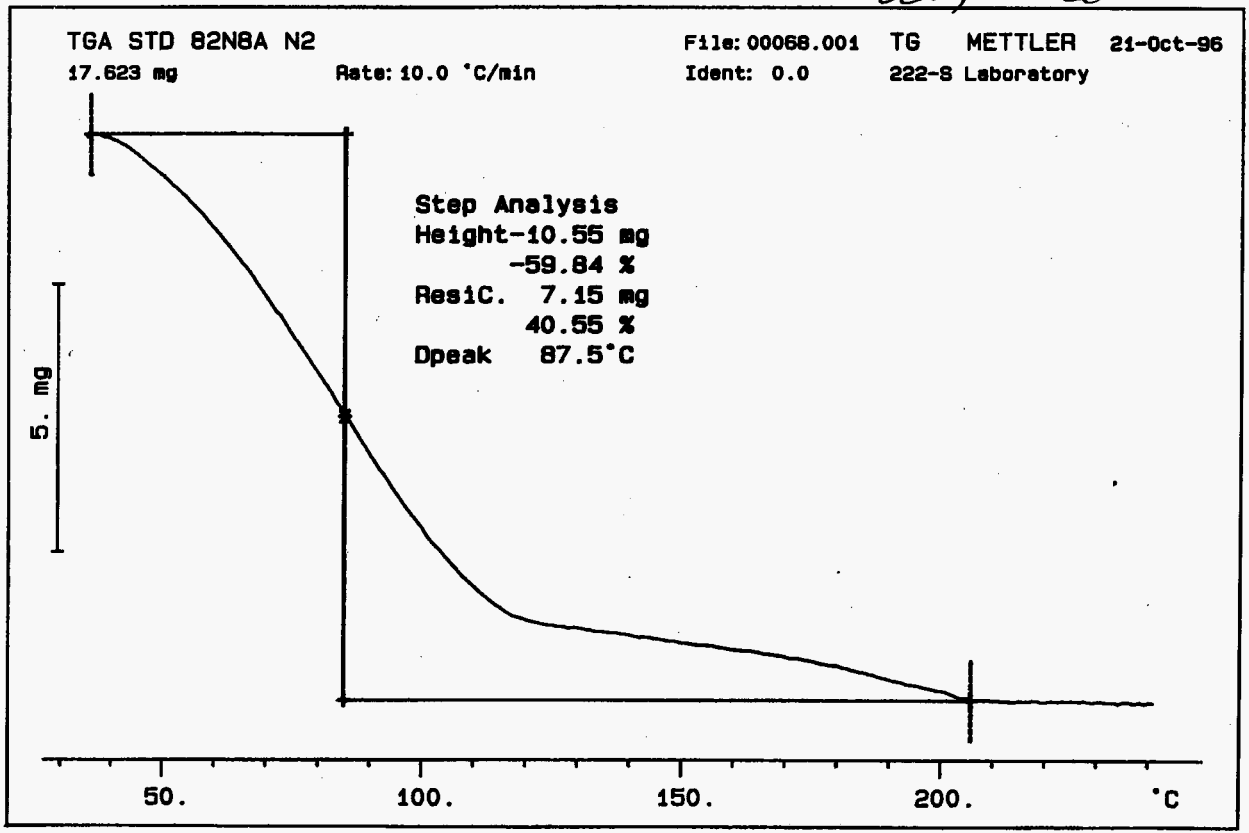
Verified/Validated by
Blandina Valenzuela 10-30-96

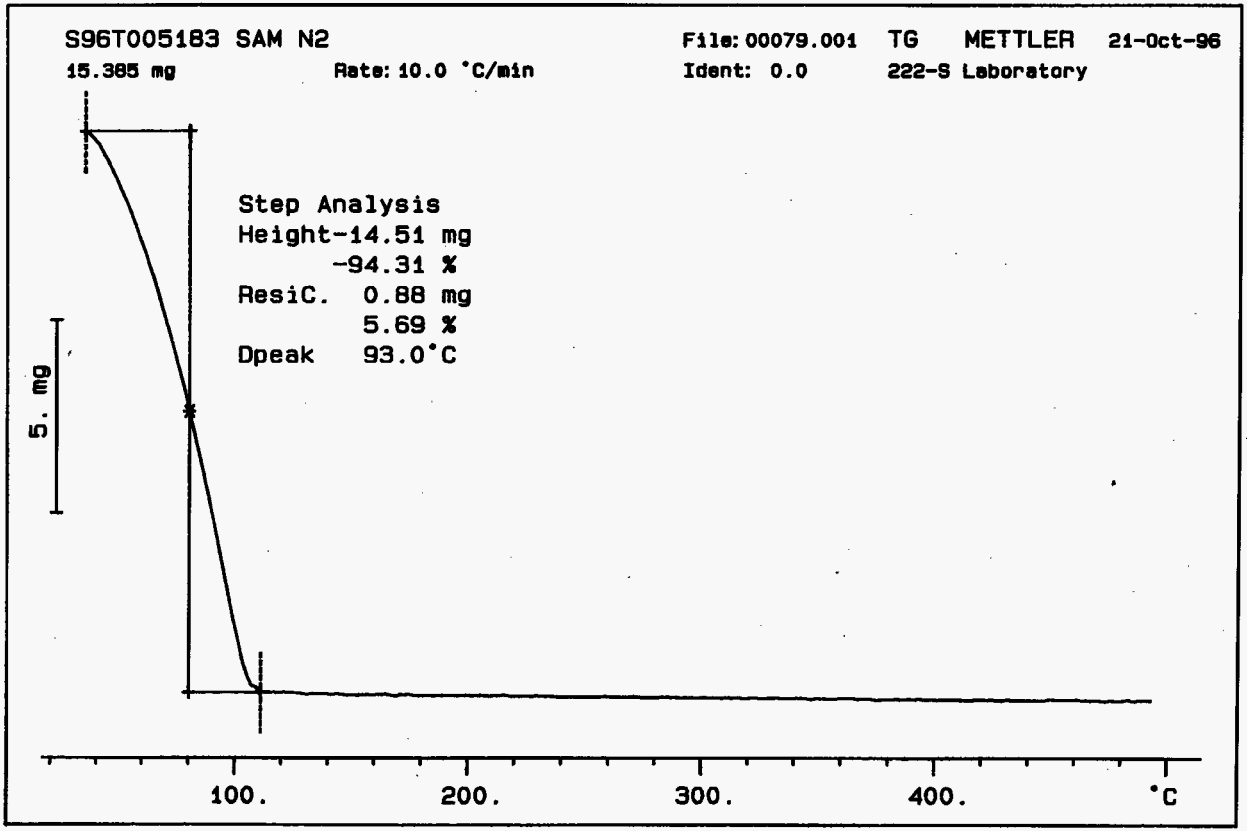
Data Entry Comments:

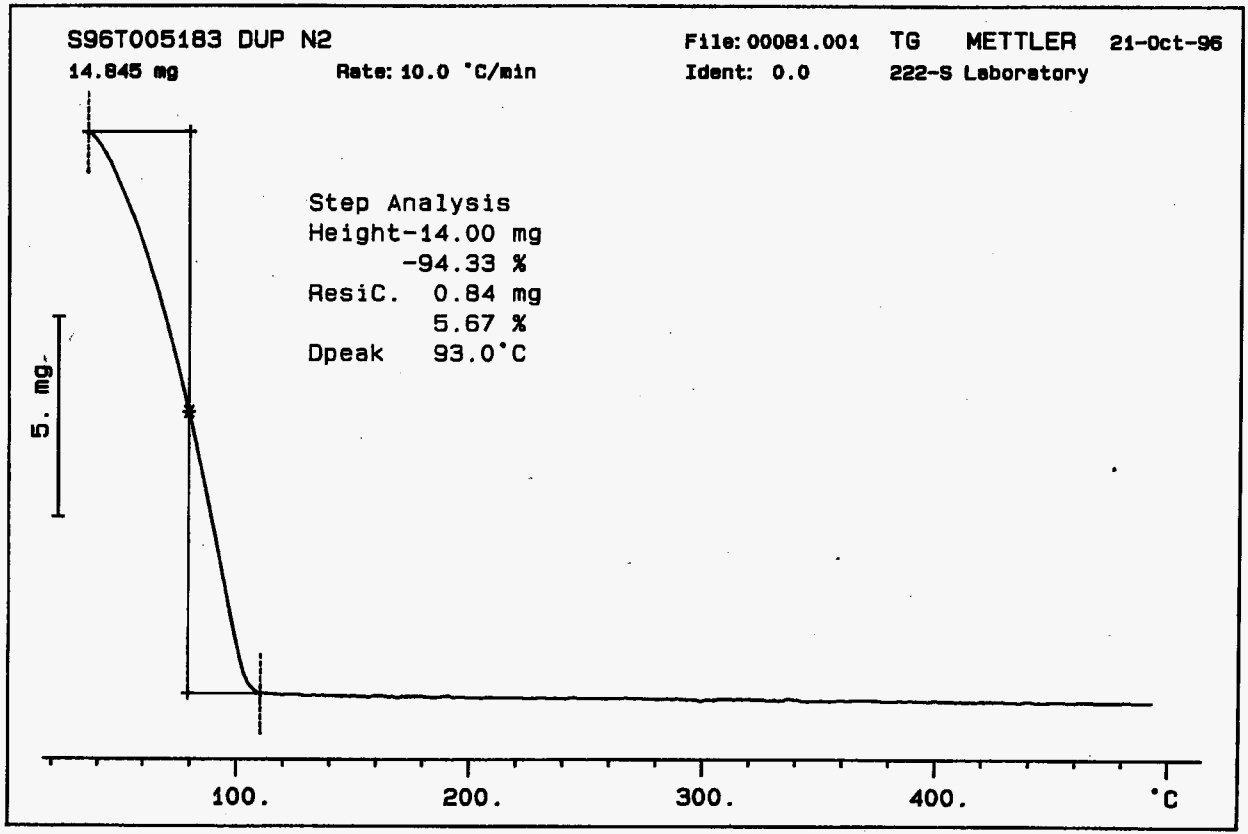
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 56 TO 58.

A Lambert 10-21-96




S96T005183 SAM N2
15.385 mg
Rate: 10.0 °C/min
File: 00079.001 TG METTLER 21-Oct-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height-14.51 mg
-94.31 %
ResiC. 0.88 mg
5.69 %
Dpeak 93.0°C
5. mg
100.
200.
300.
400.
°C


S96T005183 DUP N2
14.845 mg
Rate: 10.0 °C/min
File: 00081.001 TG METTLER 21-Oct-96
Ident: 0.0 222-S Laboratory
Step Analysis
Height -14.00 mg
-94.33 %
ResiC. 0.84 mg
5.67 %
Dpeak 93.0°C
5. mg
100.
200.
300.
400.
°C

LABCORE Completed Worklist Report for Worklist# 13984

Analyst: rag **Instrument:** BA001 **Book#** 133 NH6-A

Method: LA-510-112 Rev/Mod C-3

Worklist Comment: AP-106 SPG. RCJ

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	SPG-01	LIQUID	1.39755	1.375	98.386	% Recovery
2	SAMPLE	S96T005181		0	SPG-01	LIQUID	N/A	0.9869	1.00e-003	Sp.G.
3	DUP	S96T005181		0	SPG-01	LIQUID	0.9869	0.9937	0.687	RPD
4	SAMPLE	S96T005182		0	SPG-01	LIQUID	N/A	1.2054	1.00e-003	Sp.G.
5	DUP	S96T005182		0	SPG-01	LIQUID	1.2054	1.2070	0.133	RPD
6	SAMPLE	S96T005183		0	SPG-01	LIQUID	N/A	1.0089	1.00e-003	Sp.G.
7	DUP	S96T005183		0	SPG-01	LIQUID	1.0089	1.0161	0.711	RPD

Final page for worklist# 13984

See attached
Analyst Signature **Date**

See attached
Analyst Signature **Date**

Verified into Labcore, John McClusken 11/04/96
Reviewer Signature **Date**

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

worklistrpt Version 2.1 05/15/95
10/14/96 11:38

LABCORE Data Entry Template for Worklist# 13984

Analyst: RJG **Instrument:** BA001 **Book #** 133N16-A

Method: LA-510-112 Rev/Mod ~~133N16-A~~ RJG 11-2-96

Worklist Comment: AP-106 SPG. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				SPG-01	LIQUID	1.39755	1.375	N/A	Sp.G.
96001337	AP-106 GRAB	2 SAMPLE	S96T005181	0		SPG-01	LIQUID	N/A	0.9861		Sp.G.
96001337	AP-106 GRAB	3 DUP	S96T005181	0		SPG-01	LIQUID	0.9869	0.9937	N/A	Sp.G.
96001337	AP-106 GRAB	4 SAMPLE	S96T005182	0		SPG-01	LIQUID	N/A	1.2054		Sp.G.
96001337	AP-106 GRAB	5 DUP	S96T005182	0		SPG-01	LIQUID	1.2054	1.2070	N/A	Sp.G.
96001337	AP-106 GRAB	6 SAMPLE	S96T005183	0		SPG-01	LIQUID	N/A	1.0089		Sp.G.
96001337	AP-106 GRAB	7 DUP	S96T005183	0		SPG-01	LIQUID	1.0089	1.0161	N/A	Sp.G.

Final page for worklist # 13984

Rae Ann Green 11-2-96
Analyst Signature **Date**

11-2-96
Analyst Signature **Date**

Data Entry Comments:

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

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

WORKLIST #	ANALYST INITIALS	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
13984	R.L	11-2-96	15:00	

250 280 ml calib pipette

☐ SAMPLE ☒ STANDARD ☐ DUPLICATE

SAMPLE # = STD # =

	REPLICATE
TARE WEIGHT (g) 1.3524 g	1.3580 g
GROSS WEIGHT (g) 1.6978 g	1.7007 g
VOL. of SOLUTION (mL) .3454 g	.3427 g

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE

SAMPLE # = STD # =

	REPLICATE
TARE WEIGHT (g)	
GROSS WEIGHT (g)	
VOL. of SOLUTION (mL)	

☒ SAMPLE ☐ STANDARD ☒ DUPLICATE

SAMPLE # = S96T005181 STD # =

	REPLICATE
TARE WEIGHT (g) 1.4073 g	1.3883 g
GROSS WEIGHT (g) 1.6543 g	1.6310 g
VOL. of SOLUTION (mL) .2470 g	.2487 g

61

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE

SAMPLE # = STD # =

	REPLICATE
TARE WEIGHT (g)	
GROSS WEIGHT (g)	
VOL. of SOLUTION (mL)	

☒ SAMPLE ☐ STANDARD ☒ DUPLICATE

SAMPLE # = S96T005182 STD # =

	REPLICATE
TARE WEIGHT (g) 1.3266 g	1.4112
GROSS WEIGHT (g) 1.6283 g	1.7133
VOL. of SOLUTION (mL) .3017 g	.3021 g

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE

SAMPLE # = STD # =

	REPLICATE
TARE WEIGHT (g)	
GROSS WEIGHT (g)	
VOL. of SOLUTION (mL)	

☒ SAMPLE ☐ STANDARD ☒ DUPLICATE

SAMPLE # = S96T005183 STD # =

	REPLICATE
TARE WEIGHT (g) 1.3419 g	1.3281 g
GROSS WEIGHT (g) 1.5944 g	1.5824 g
VOL. of SOLUTION (mL) .3525 g	.2543 g

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE

SAMPLE # = STD # =

	REPLICATE
TARE WEIGHT (g)	
GROSS WEIGHT (g)	
VOL. of SOLUTION (mL)	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	1.6978	1.7007
	Tare Weight (W1)	1.3524	1.3580
13984	Weight of Solution (W2-W1)	0.3454	0.3427
	Volume of Solution µL	250.2800	250.2800
SPG-01	Specific Gravity	1.3801	1.3693
	Specific Gravity (Average)	1.3747	
LIQUID			
STD			
	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
RAG	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
11/02/96	v RESULT v		
	Specific Gravity Average =	1.375	
03:00 PM			

Data Entry by: Gary Hammond Date: 11/02/96

Approved by: John M. Conaway Date: 11/04/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.6543	1.6370
	Tare Weight (W1)	1.4073	1.3883
13984	Weight of Solution (W2-W1)	0.247	0.2487
	Volume of Solution µL	250.2800	250.2800
SPG-01	Specific Gravity	0.9869	0.9937
	Specific Gravity (Average)	0.9903	
LIQUID			
S96T005181			
	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
RAG	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
11/02/96	v RESULT v		
	Specific Gravity Average =	0.990	
03:00 PM			

Data Entry by: [signature] Date: 11/02/96

Approved by: John McCluskey Date: 11/04/96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.6283	1.7133
	Tare Weight (W1)	1.3266	1.4112
13984	Weight of Solution (W2-W1)	0.3017	0.3021
	Volume of Solution µL	250.2800	250.2800
SPG-01	Specific Gravity	1.2054	1.2070
	Specific Gravity (Average)	1.2062	
LIQUID			
S96T005182			
	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
RAG	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
11/02/96	v RESULT v		
	Specific Gravity Average =	1.206	
03:00 PM			

Data Entry by:		Date:	11/02/96
Approved by:		Date:	11/04/96

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.5944	1.5824
	Tare Weight (W1)	1.3419	1.3281
13984	Weight of Solution (W2-W1)	0.2525	0.2543
	Volume of Solution µL	250.2800	250.2800
SPG-01	Specific Gravity	1.0089	1.0161
	Specific Gravity (Average)	1.0125	
LIQUID			
S96T005183			
	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
RAG	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
11/02/96	v RESULT v		
	Specific Gravity Average =	1.012	
03:00 PM			

Data Entry by:	Date:	11/02/96
Approved by:	Date:	11/04/96

Form 510112L1 Rev. 1.1

worklistrpt Version 2.1 05/15/95
10/14/96 11:33

LABCORE Data Entry Template for Worklist# 13975

Analyst: RCJ **Instrument:** PH01 **Book #** 18N19 D

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

Worklist Comment: AP-106 PH. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH	18N19P			PH-01	LIQUID	8.00	8.03	N/A	pH
96001337	AP-106 GRAB	2 SAMPLE	S96T005181	0		PH-01	LIQUID	N/A	13.21	0.01	pH
96001337	AP-106 GRAB	3 DUP	S96T005181	0		PH-01	LIQUID	13.21	13.23	N/A	pH
96001337	AP-106 GRAB	4 SAMPLE	S96T005182	0		PH-01	LIQUID	N/A	13.70	0.01	pH
96001337	AP-106 GRAB	5 DUP	S96T005182	0		PH-01	LIQUID	13.70	13.72	N/A	pH
96001337	AP-106 GRAB	6 SAMPLE	S96T005183	0		PH-01	LIQUID	N/A	13.54	0.01	pH
96001337	AP-106 GRAB	7 DUP	S96T005183	0		PH-01	LIQUID	13.59	13.56	N/A	pH

Final page for worklist # 13975

RCJ 11/3/96
Analyst Signature **Date**

John McClusky 11/05/96
Analyst Signature **Date**

Approved RW Schreiber 11/5/96

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.

worklistrpt Version 2.1 05/15/95
10/14/96 11:27

LABCORE Data Entry Template for Worklist# 13974

Analyst: RDM **Instrument:** PH01 _____ **Book #** 19N8

Method: LA-211-102 Rev/Mod C-Ø

Worklist Comment: AP-106 OH. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				OH-01	LIQUID	1.664e4	1.67e4	N/A	ug/mL
										<43	RDM 11/5/96	
		2	BLNK				OH-01	LIQUID	1	~~<2500~~	N/A	ug/mL
96001337	AP-106 GRAB	3	SAMPLE	S96T005181	0		OH-01	LIQUID	N/A	2.56e3	1.25e3	ug/mL
96001337	AP-106 GRAB	4	DUP	S96T005181	0		OH-01	LIQUID	2.56e3	2.83e3	N/A	ug/mL
96001337	AP-106 GRAB	5	SAMPLE	S96T005182	0		OH-01	LIQUID	N/A	2.78e3	1.25e3	ug/mL
96001337	AP-106 GRAB	6	DUP	S96T005182	0		OH-01	LIQUID	2.78e4	2.74e4	N/A	ug/mL
96001337	AP-106 GRAB	7	SAMPLE	S96T005183	0		OH-01	LIQUID	N/A	6.07e3	2.50e3	ug/mL
96001337	AP-106 GRAB	8	DUP	S96T005183	0		OH-01	LIQUID	6.07e3	6.41e3	N/A	ug/mL

Final page for worklist # 13974

RDM 11/4/96
Analyst Signature **Date**

Gary Hammett 11-4-96
Analyst Signature **Date**

Approved RW Schreeck
11/5/96

Data Entry Comments: .2005 M HNO3

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.

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

WORKLIST #	ANALYST INITIALS	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
13974	RPM	11/9/11	0205	

☐ SAMPLE ☒ STANDARD ☐ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE/STD # = 7GN8 MATRIX =

SAMPLE SIZE (mL) .050
VOL. H2O ADDED for DILUTION (if necessary) _____
VOL. DILUTED SAMPLE ANALYZED _____

* BaCl2 VOLUME ADDED 1ml
* ATTACH PRINT REPORT #2 & #5

☒ SAMPLE ☐ STANDARD ☐ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE/STD # = S96T005182 MATRIX =

SAMPLE SIZE (mL) .100
VOL. H2O ADDED for DILUTION (if necessary) _____
VOL. DILUTED SAMPLE ANALYZED _____

* BaCl2 VOLUME ADDED 1ml
* ATTACH PRINT REPORT #2 & #5

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE PREP BLANK ☒ SPIKE REAGENT BLANK

SAMPLE/STD # = MATRIX =

SAMPLE SIZE (mL) .050ml
VOL. H2O ADDED for DILUTION (if necessary) _____
VOL. DILUTED SAMPLE ANALYZED _____

* BaCl2 VOLUME ADDED 1ml
* ATTACH PRINT REPORT #2 & #5

☐ SAMPLE ☐ STANDARD ☒ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE/STD # = S96T005187 MATRIX =

SAMPLE SIZE (mL) .100
VOL. H2O ADDED for DILUTION (if necessary) _____
VOL. DILUTED SAMPLE ANALYZED _____

* BaCl2 VOLUME ADDED 1ml
* ATTACH PRINT REPORT #2 & #5

89 ☒ SAMPLE ☐ STANDARD ☐ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE/STD # = S96T005181 MATRIX =

SAMPLE SIZE (mL) ~~.050~~ rpm 11/9/11 .100
VOL. H2O ADDED for DILUTION (if necessary) _____
VOL. DILUTED SAMPLE ANALYZED _____

* BaCl2 VOLUME ADDED 1ml
* ATTACH PRINT REPORT #2 & #5

☐ SAMPLE ☐ STANDARD ☐ DUPLICATE PREP BLANK ☐ SPIKE ☒ REAGENT BLANK

SAMPLE/STD # = S96T005183 MATRIX =

SAMPLE SIZE (mL) .050
VOL. H2O ADDED for DILUTION (if necessary) _____
VOL. DILUTED SAMPLE ANALYZED _____

* BaCl2 VOLUME ADDED 1ml
* ATTACH PRINT REPORT #2 & #5

☐ SAMPLE ☐ STANDARD ☒ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE/STD # = S96T005181 MATRIX =

SAMPLE SIZE (mL) ~~.050~~ rpm 11/9/11 .100
VOL. H2O ADDED for DILUTION (if necessary) _____
VOL. DILUTED SAMPLE ANALYZED _____

* BaCl2 VOLUME ADDED 1ml
* ATTACH PRINT REPORT #2 & #5

☐ SAMPLE ☐ STANDARD ☒ DUPLICATE PREP BLANK ☐ SPIKE REAGENT BLANK

SAMPLE/STD # = S96T005183 MATRIX =

SAMPLE SIZE (mL) .050ml
VOL. H2O ADDED for DILUTION (if necessary) _____
VOL. DILUTED SAMPLE ANALYZED _____

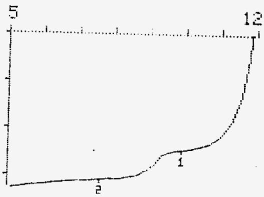
* BaCl2 VOLUME ADDED
* ATTACH PRINT REPORT #2 & #5

```
date                    00:34
GET pH               #  157
Id.#1          0479
Id.#2          .2005   79N8
pH(init)       11.85
              V/ml          pH
EP1            .245      9.
EP2            .310      7.
stop volt.reached
     ========
```

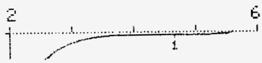
```
date              time 00:26
GET pH          12  #  156
Id.#1          0479
Id.#2          .2005   Blk
pH(init)        5.60
              V/ml          pH
EP1            .006       4.
stop volt.reached
     ========
```

```
date
GET pH          12  #  159
Id.#1          0479
Id.#2          .2005   5181
pH(init)       11.31
              V/ml          pH
EP1            .075       9.
EP2            .098       7.
stop volt.reached
     ========
```

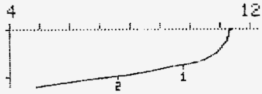
```
date 96-11-04 time 00:3
GET pH          12  #  15
.10ml/div      ΔpH=1/div
start V   .000 ml
```




```
date 96-11-04 time 00:
GET pH          12  #  1
.10ml/div      ΔpH=1/di
start V   .000 ml
```




```
date 96-11-04 time 02:
GET pH          12  #  159
.10ml/div      ΔpH=1/div
start V   .000 ml
```

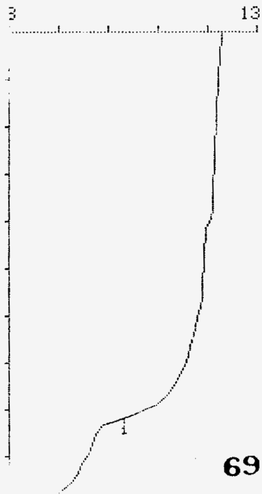



```
date 96-11-04 time 02:40
GET pH          12  #  161
Id.#1          0479
Id.#2          .2005   5182
pH(init)       12.27
              V/ml          pH
EP1            .817      10.31
stop V reached
     ========
```

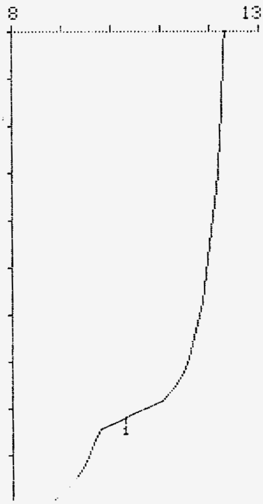
```
date              time 02:48
GET pH          12  #  162
Id.#1          0479
Id.#2          .2005   5182
pH(init)       12.28   DUP
              V/ml          pH
EP1            .818      10.28
stop V reached
     ========
```

```
date 96-11-04 time 02:26
GET pH          12  #  160
Id.#1          0479
Id.#2          .2005   5181
pH(init)       11.24   DUP
              V/ml          pH
EP1            .083       8.24
stop volt.reached
     ========
```

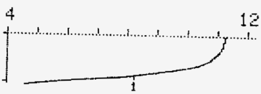
```
date 96-11-04 time 02:40
GET pH          12  #  161
.10ml/div      ΔpH=1/div
start V   .000 ml
```




```
date 96-11-04 time 02:48
GET pH          12  #  162
.10ml/div      ΔpH=1/div
start V   .000 ml
```

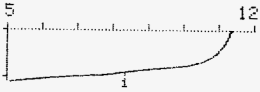



```
date 96-11-04 time 02:26
GET pH          12  #  160
.10ml/div      ΔpH=1/div
start V   .000 ml
```



```
date                 02:53
GET pH          12   #  163
Id.#1          0479
Id.#2         .2005  5183
pH(init)      11.30
             V/ml          pH
EP1          .089        8.34
stop volt.reached
          ========
```

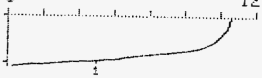
```
date 96-11-04 time 02:53
GET pH          12   #  163
.10ml/div        ΔpH=1/div
start V    .000 ml
```




```
--------
```

```
date                 02:57
GET pH          12   #  164
Id.#1          0479
Id.#2         .2005  5183
pH(init)      11.28  D4P
             V/ml          pH
EP1          .094        7.
stop volt.reached
          ========
```

```
date 96-11-04 time 02:5
GET pH          12   #  16
.10ml/div        ΔpH=1/di
start V    .000 ml
```




```
--------
```

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		STANDARD
	Sample Size (mL) SS	0.050
STANDARD	Concentration of HNO3 (Molarity)	0.2005
	HNO3 Titrant at OH end-point in mL	0.245
13974	Dilution Factor DF	1
	Concentration of OH in Sample (Molarity)	9.82E-01
OH-01	OH in Sample in µg/mL (PPM)	1.67E+04
LIQUID		
STD		
PH01		

OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor

OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))

RDM		
11/02/96		STANDARD
05:05 AM	Concentration of OH in Sample (Molarity)	9.82E-01
	OH in Sample in µg/mL (PPM)	1.67E+04

Data Entry by:		Date:	11/04/96
Approved by:	RW Schwalm	Date:	11/5/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		BLANK
	Sample Size (mL) SS	3 ~~0.050~~ RWS 11/05/96
BLANK	Concentration of HNO3 (Molarity)	0.2005
	HNO3 Titrant at OH end-point in mL	0.006
13974	Dilution Factor DF	1
	Concentration of OH in Sample (Molarity)	2.41E-02
OH-01	OH in Sample in µg/mL (PPM)	4.09E+02
LIQUID		
	Detection Limit = 125µg / SS * DF	
BLANK		
	Detection Limit (µg/mL)	43 ~~2.50E+03~~ RWS 11/05/96
PH01		
	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/02/96		

		BLANK
05:05 AM	Concentration of OH in Sample (Molarity)	2.41E-02
	OH in Sample in µg/mL (PPM)	<43 ~~<2500~~ RWS 11/05/96

The Result is < Detection Limit

Data Entry by:		Date:	11/04/96
Approved by:	RW Schwalen	Date:	10/5/96

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE
	Sample Size (mL) SS	0.100
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
	HNO3 Titrant at OH end-point in mL	0.075
13974	Dilution Factor DF	1
	Concentration of OH in Sample (Molarity)	1.50E-01
OH-01	OH in Sample in µg/mL (PPM)	2.56E+03
LIQUID		
	Detection Limit = 125µg / SS * DF	
S96T005181		
	Detection Limit (µg/mL)	1.25E+03
PH01		
	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/02/96		
		SAMPLE
05:05 AM	Concentration of OH in Sample (Molarity)	1.50E-01
	OH in Sample in µg/mL (PPM)	2.56E+03

Data Entry by:		Date:	11/04/96
Approved by:	R.W. Schrader	Date:	11/5/96

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUPLICATE
	Sample Size (mL) SS	0.100
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
	HNO3 Titrant at OH end-point in mL	0.083
13974	Dilution Factor DF	1
	Concentration of OH in Sample (Molarity)	1.66E-01
OH-01	OH in Sample in µg/mL (PPM)	2.83E+03
LIQUID		
	Detection Limit = 125µg / SS * DF	
S96T005181		
	Detection Limit (µg/mL)	1.25E+03
PH01		
	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/02/96		
		DUPLICATE
05:05 AM	Concentration of OH in Sample (Molarity)	1.66E-01
	OH in Sample in µg/mL (PPM)	2.83E+03

Data Entry by:		Date:	11/04/96
Approved by:	RW Schwalen	Date:	11/5/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE
	Sample Size (mL) SS	0.100
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
	HNO3 Titrant at OH end-point in mL	0.817
13974	Dilution Factor DF	1
	Concentration of OH in Sample (Molarity)	1.64E+00
OH-01	OH in Sample in µg/mL (PPM)	2.78E+04
LIQUID		
	Detection Limit = 125µg / SS * DF	
S96T005182		
	Detection Limit (µg/mL)	1.25E+03
PH01		
	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/02/96		
		SAMPLE
05:05 AM	Concentration of OH in Sample (Molarity)	1.64E+00
	OH in Sample in µg/mL (PPM)	2.78E+04

Data Entry by:		Date:	11/04/96
Approved by:		Date:	11/5/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUPLICATE
	Sample Size (mL) SS	0.100
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
	HNO3 Titrant at OH end-point in mL	0.818
13974	Dilution Factor DF	1
	Concentration of OH in Sample (Molarity)	1.64E+00
OH-01	OH in Sample in µg/mL (PPM)	2.79E+04
LIQUID		
	Detection Limit = 125µg / SS * DF	
S96T005182		
	Detection Limit (µg/mL)	1.25E+03
PH01		
	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/02/96		
		DUPLICATE
05:05 AM	Concentration of OH in Sample (Molarity)	1.64E+00
	OH in Sample in µg/mL (PPM)	2.79E+04

Data Entry by:	[signature]	Date:	11/04/96
Approved by:	[signature]	Date:	11/5/96

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE
	Sample Size (mL) SS	0.050
SAMPLE	Concentration of HNO3 (Molarity)	0.2005
	HNO3 Titrant at OH end-point in mL	0.089
13974	Dilution Factor DF	1
	Concentration of OH in Sample (Molarity)	3.57E-01
OH-01	OH in Sample in µg/mL (PPM)	6.07E+03
LIQUID		
	Detection Limit = 125µg / SS * DF	
S96T005183		
	Detection Limit (µg/mL)	2.50E+03
PH01		
	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/02/96		
		SAMPLE
05:05 AM	Concentration of OH in Sample (Molarity)	3.57E-01
	OH in Sample in µg/mL (PPM)	6.07E+03

Data Entry by:	Date:	11/04/96
Approved by:	Date:	11/5/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUPLICATE
	Sample Size (mL) SS	0.050
DUPLICATE	Concentration of HNO3 (Molarity)	0.2005
	HNO3 Titrant at OH end-point in mL	0.094
13974	Dilution Factor DF	1
	Concentration of OH in Sample (Molarity)	3.77E-01
OH-01	OH in Sample in µg/mL (PPM)	6.41E+03
LIQUID		
	Detection Limit = 125µg / SS * DF	
S96T005183		
	Detection Limit (µg/mL)	2.50E+03
PH01		
	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
11/02/96		
		DUPLICATE
05:05 AM	Concentration of OH in Sample (Molarity)	3.77E-01
	OH in Sample in µg/mL (PPM)	6.41E+03

Data Entry by:	[signature]	Date:	11/04/96
Approved by:	[signature]	Date:	11/5/96

Form 211102_1 Rev. 1.3

worklistdata Version 1.0 05/15/96
10/29/96 13:21

LABCORE Completed Worklist Report for Worklist# 13978

Analyst: eal **Instrument:** IC01 **Book#** 32N20A

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

Worklist Comment: AP-106 IC. RCJ

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	CCB			0	@IC-QC F	QC	1	<1.20e-2		ug/mL
1	CCB			0	@IC-QC CL	QC	1	<1.70e-2		ug/mL
1	CCB			0	@IC-QC NO2	QC	1	<1.08e-1		ug/mL
1	CCB			0	@IC-QC BR	QC	1	<1.25e-1		ug/mL
1	CCB			0	@IC-QC NO3	QC	1	<1.39e-1		ug/mL
1	CCB			0	@IC-QC PO4	QC	1	<1.20e-1		ug/mL
1	CCB			0	@IC-QC SO4	QC	1	<1.38e-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	5.45e+01	92.373	% Recovery
2	CCV			0	@IC-QC CL	QC	7.90e01	7.35e+01	93.038	% Recovery
2	CCV			0	@IC-QC NO2	QC	5.40e02	5.03e+02	93.148	% Recovery
2	CCV			0	@IC-QC BR	QC	5.89e02	5.60e+02	95.076	% Recovery
2	CCV			0	@IC-QC NO3	QC	5.94e02	5.90e+02	99.327	% Recovery
2	CCV			0	@IC-QC PO4	QC	5.45e02	5.20e+02	95.413	% Recovery
2	CCV			0	@IC-QC SO4	QC	6.31e02	6.39e+02	101.268	% Recovery
2	CCV			0	@IC-QC OXALATE2	QC	5.27e02	5.26e+02	99.810	% Recovery
3	SAMPLE	S96T005181		0	@IC-01 F-02	LIQUID	N/A	1.287e+02	2.412	ug/mL
3	SAMPLE	S96T005181		0	@IC-01 CL-02	LIQUID	N/A	1.731e+02	3.417	ug/mL
3	SAMPLE	S96T005181		0	@IC-01 NO2-02	LIQUID	N/A	1.857e+03	21.710	ug/mL
3	SAMPLE	S96T005181		0	@IC-01 BR-02	LIQUID	N/A <	2.512e+01	25.120	ug/mL
3	SAMPLE	S96T005181		0	@IC-01 NO3-02	LIQUID	N/A	5.951e+03	27.940	ug/mL
3	SAMPLE	S96T005181		0	@IC-01 PO4-02	LIQUID	N/A	6.700e+02	24.120	ug/mL
3	SAMPLE	S96T005181		0	@IC-01 SO4-02	LIQUID	N/A	2.791e+02	27.740	ug/mL
3	SAMPLE	S96T005181		0	@IC-01 OXALATE2	LIQUID	N/A	5.962e+01	21.110	ug/mL
4	DUP	S96T005181		0	@IC-01 F-02	LIQUID	1.29e+02	1.28e+02	0.778	RPD
4	DUP	S96T005181		0	@IC-01 CL-02	LIQUID	1.73e+02	1.80e+02	3.966	RPD
4	DUP	S96T005181		0	@IC-01 NO2-02	LIQUID	1.86e+03	1.89e+03	1.600	RPD
4	DUP	S96T005181		0	@IC-01 BR-02	LIQUID	<2.51e1	<2.51e1		RPD
4	DUP	S96T005181		0	@IC-01 NO3-02	LIQUID	5.95e+03	5.92e+03	0.505	RPD
4	DUP	S96T005181		0	@IC-01 PO4-02	LIQUID	6.70e+02	6.75e+02	0.743	RPD
4	DUP	S96T005181		0	@IC-01 SO4-02	LIQUID	2.79e+02	2.91e+02	4.211	RPD
4	DUP	S96T005181		0	@IC-01 OXALATE2	LIQUID	5.96e+01	6.47e+01	8.206	RPD
5	SPK	S96T005181		0	@IC-01 F-02	LIQUID	5.90e01	5.16e+01	87.458	% Recovery
5	SPK	S96T005181		0	@IC-01 CL-02	LIQUID	7.90e01	6.91e+01	87.468	% Recovery
5	SPK	S96T005181		0	@IC-01 NO2-02	LIQUID	5.40e02	5.17e+02	95.741	% Recovery
5	SPK	S96T005181		0	@IC-01 BR-02	LIQUID	5.89e02	5.45e+02	92.530	% Recovery
5	SPK	S96T005181		0	@IC-01 NO3-02	LIQUID	5.94e02	5.83e+02	98.148	% Recovery
5	SPK	S96T005181		0	@IC-01 PO4-02	LIQUID	5.45e02	5.40e+02	99.083	% Recovery
5	SPK	S96T005181		0	@IC-01 SO4-02	LIQUID	6.31e02	6.42e+02	101.743	% Recovery
5	SPK	S96T005181		0	@IC-01 OXALATE2	LIQUID	5.27e02	5.32e+02	100.949	% Recovery
6	SAMPLE	S96T005182		0	@IC-01 F-02	LIQUID	N/A	2.473e+03	49.690	ug/mL

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

LABCORE Completed Worklist Report for Worklist# 13978

Seq	Type	Sample#	R	A	Test		Matrix	Actual		Found	DL or Yield	Unit
6	SAMPLE	S96T005182	0		@IC-01	CL-02	LIQUID	N/A		1.616e+03	70.400	ug/mL
6	SAMPLE	S96T005182	0		@IC-01	NO2-02	LIQUID	N/A		3.058e+04	447.200	ug/mL
6	SAMPLE	S96T005182	0		@IC-01	BR-02	LIQUID	N/A	<	5.176e+02	517.600	ug/mL
6	SAMPLE	S96T005182	0		@IC-01	NO3-02	LIQUID	N/A		1.294e+05	575.600	ug/mL
6	SAMPLE	S96T005182	0		@IC-01	PO4-02	LIQUID	N/A		8.210e+02	496.900	ug/mL
6	SAMPLE	S96T005182	0		@IC-01	SO4-02	LIQUID	N/A		3.605e+03	571.500	ug/mL
6	SAMPLE	S96T005182	0		@IC-01	OXALATE2	LIQUID	N/A		1.006e+03	434.800	ug/mL
7	DUP	S96T005182	0		@IC-01	F-02	LIQUID	2.47e+03		2.43e+03	1.633	RPD
7	DUP	S96T005182	0		@IC-01	CL-02	LIQUID	1.62e+03		1.61e+03	0.619	RPD
7	DUP	S96T005182	0		@IC-01	NO2-02	LIQUID	3.06e+04		3.10e+04	1.299	RPD
7	DUP	S96T005182	0		@IC-01	BR-02	LIQUID	<5.18e2		<5.18e2		RPD
7	DUP	S96T005182	0		@IC-01	NO3-02	LIQUID	1.29e+05		1.29e+05	0.000	RPD
7	DUP	S96T005182	0		@IC-01	PO4-02	LIQUID	8.21e+02		6.99e+02	16.053	RPD
7	DUP	S96T005182	0		@IC-01	SO4-02	LIQUID	3.60e+03		3.64e+03	1.105	RPD
7	DUP	S96T005182	0		@IC-01	OXALATE2	LIQUID	1.01e+03		9.76e+02	3.424	RPD

Final page for worklist# 13978

Analyst Signature **Date**

Analyst Signature **Date**

Dawn M Lege 10/29/96
Reviewer Signature **Date**

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

10/14/96 11:36
A-0004-1

LABCORE Data Entry Template for Worklist# 13978

Analyst: Eac **Instrument:** IC0 IC01 **Book#** 32N20-A

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

Worklist Comment: AP-106 IC. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S96T005181	0		@IC-01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested:				BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
4	DUP	S96T005181	0		@IC-01	LIQUID		
5	SPK	S96T005181	0		@IC-01	LIQUID		
6	SAMPLE	S96T005182	0		@IC-01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested:				BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
7	DUP	S96T005182	0		@IC-01	LIQUID		

Final page for worklist # 13978

A Sanchez 10-27-96

Analyst Signature **Date**

Analyst Signature **Date**

13978oc.csv
Uploaded 10/29/96 JMFuge
Validated 10/29/96 JMF

Data Entry Comments:

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

A-0010-IC DATA FILE/WORKLIST RESOLUTION 29-Oct-96

Worklist#: 13978

		Seq	Type	Sample #
-	=>	1	CCB	
	=>	2	CCV	
	=>	3	SAMPLE	S96T005181
	=>	4	DUP	S96T005181
	=>	5	SPK	S96T005181
	=>	6	SAMPLE	S96T005182
	=>	7	DUP	S96T005182
+				

Data File: 13978OC.CSV

	Seq#	Data File	Sample Name	Dilution
-	1	96102741.d14	INST. BLANK	1.00
	2	96102741.d19	32N20-A STD.	101.00
	3	96102741.d16	S96T005181	201.00
	4	96102741.d17	S96T005181 DUP	201.00
	5	96102741.d18	S96T005181 SPIKE	201.00
		96102741.d20	S96T005182	1111.00
	6	96102741.d22	S96T005182	4141.00
	7	96102741.d23	S96T005182 DUP	4141.00
+				

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

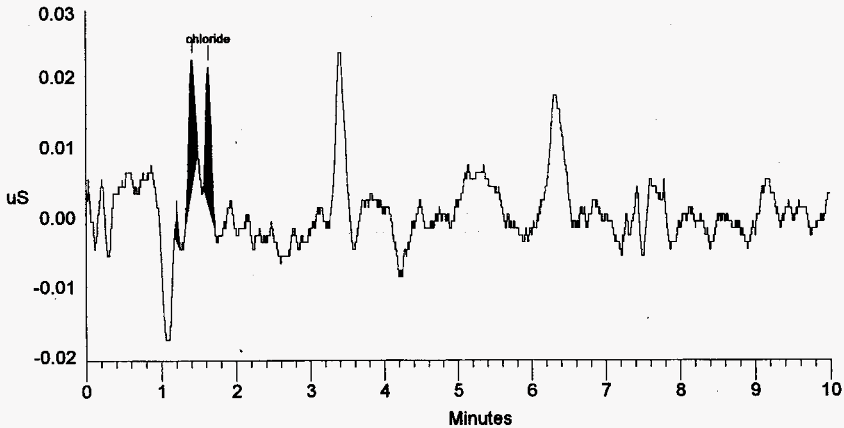
```
Sample Name: INST. BLANK                          Date: 10/27/1996 12:58:35
Data File  : C:\DX\DATA\96102741.D14
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 14                  Detector:CDM-1
Analyst    :                Column: AG4A/AS4A anion column
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.41		0.000	18	95	1	
3	1.63	chloride	0.005	20	90	1	1.24
		Totals	0.005	37	186		

File: 96102741.D14 Sample: INST. BLANK



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 83 TO 90.

Data Reprocessed On 10/29/1996 10:22:41

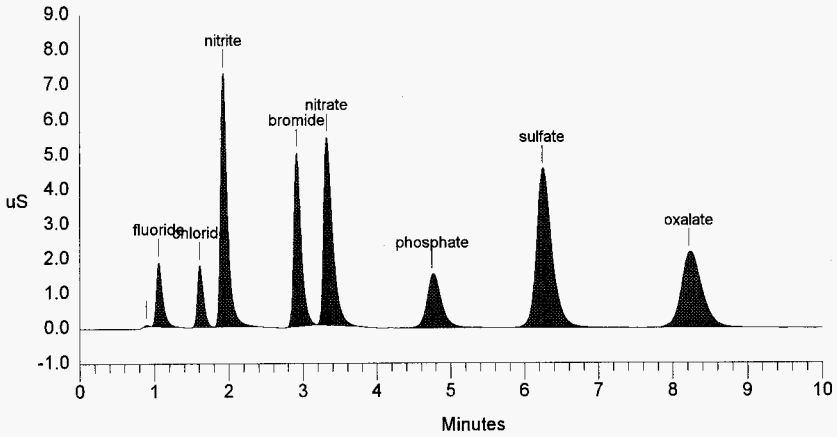
Sample Name: 32N20-A STD. Date: 10/27/1996 14:11:38
Data File : F:\DATA\96102741.D19
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 19 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	101	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	38	143	2	
2	1.06	fluoride	54.490	1836	10729	2	3.92
3	1.61	chloride	73.495	1765	9734	1	-0.41
4	1.93	nitrite	503.125	7271	46396	1	-2.69
5	2.91	bromide	560.317	4993	34365	1	-2.24
6	3.32	nitrate	589.600	5393	45187	1	-2.64
7	4.75	phosphate	519.582	1504	20780	1	-3.72
8	6.24	sulfate	639.132	4554	65347	1	-4.88
9	8.21	oxalate	525.870	2142	41622	1	0.04
		Totals	3465.610	29496	274302		

File: 96102741.D19 Sample: 32N20-A STD.



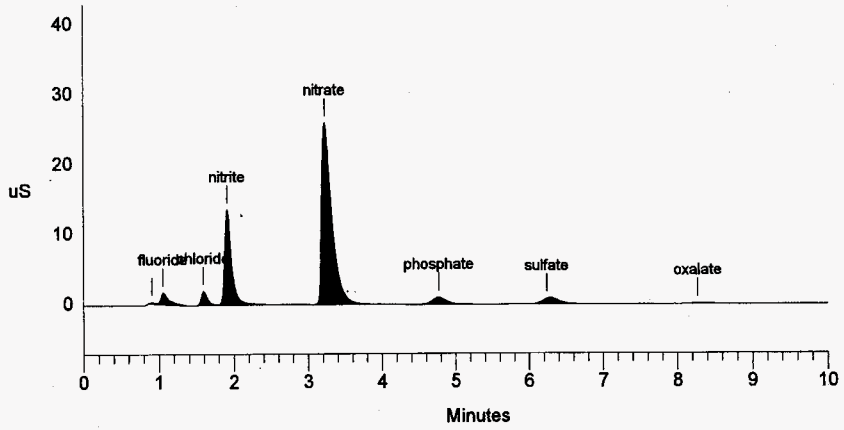
```
Sample Name: S96T005181                    Date: 10/27/1996 13:28:24
Data File  : C:\DX\DATA\96102741.D16
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 16              Detector:CDM-1
Analyst    :               Column: AG4A/AS4A anion column
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	201	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	206	987	2	
2	1.05	fluoride	128.695	1659	12800	2	3.27
3	1.59	chloride	173.130	2001	11544	1	-1.24
4	1.91	nitrite	1857.434	13559	87577	1	-3.37
5	3.23	nitrate	5951.278	26001	251104	1	-5.38
6	4.77	phosphate	669.995	1001	13395	1	-3.18
7	6.24	sulfate	279.091	794	13774	1	-4.88
8	8.27	oxalate	59.622	112	2149	1	-9.85
		Totals	9119.244	45332	393330		

File: 96102741.D16 Sample: S96T005181



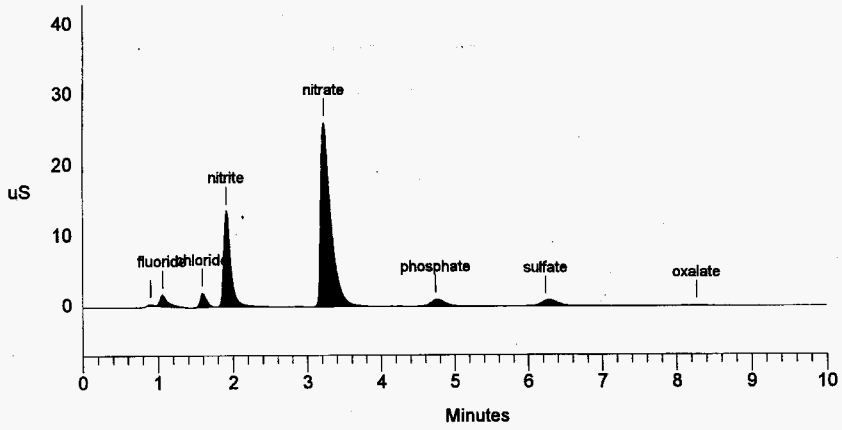
```
Sample Name: S96T005181  DUP                Date: 10/27/1996 13:40:54
Data File  : C:\DX\DATA\96102741.D17
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 17                Detector:CDM-1
Analyst    :               Column: AG4A/AS4A anion column
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	201	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	220	1075	2	
2	1.06	fluoride	128.036	1674	12732	2	3.92
3	1.59	chloride	179.606	2024	11982	1	-1.24
4	1.91	nitrite	1889.446	13592	89130	1	-3.37
5	3.23	nitrate	5915.966	26049	249454	1	-5.38
6	4.75	phosphate	674.852	957	13493	1	-3.72
7	6.24	sulfate	290.680	811	14368	1	-4.88
8	8.27	oxalate	64.716	119	2352	1	-9.85
		Totals	9143.303	45445	394585		

File: 96102741.D17 Sample: S96T005181 DUP



Data Reprocessed On 10/29/1996 10:24:20

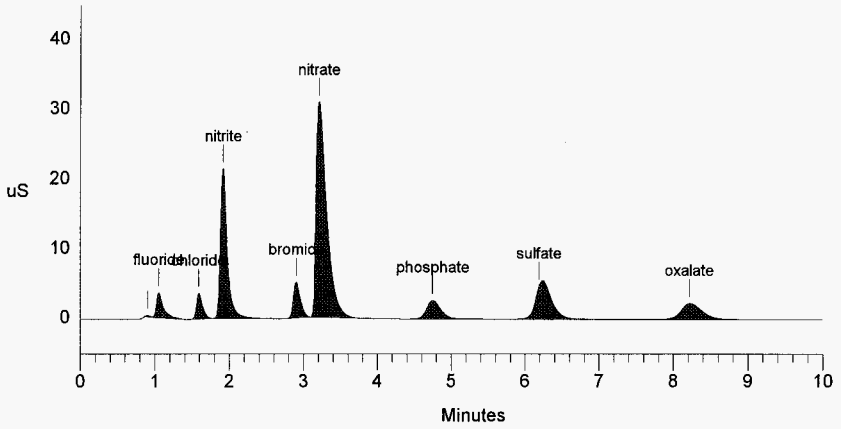
```
Sample Name: S96T005181 SPIKE                Date: 10/27/1996 13:59:15
Data File  : F:\DATA\96102741.D18
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 18                  Detector:CDM-1
Analyst    :                Column: AG4A/AS4A anion column
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	201	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	221	970	2	
2	1.05	fluoride	231.920	3599	23503	2	3.27
3	1.59	chloride	311.306	3708	21003	1	-1.65
4	1.91	nitrite	2890.578	21441	138221	1	-3.37
5	2.90	bromide	1090.624	5142	33584	1	-2.68
6	3.21	nitrate	7117.634	30871	306935	1	-5.96
7	4.75	phosphate	1750.422	2664	35557	1	-3.72
8	6.19	sulfate	1562.245	4698	80712	1	-5.69
9	8.21	oxalate	1123.478	2302	44725	1	0.04
		Totals	16078.206	74647	685211		

File: 96102741.D18 Sample: S96T005181 SPIKE



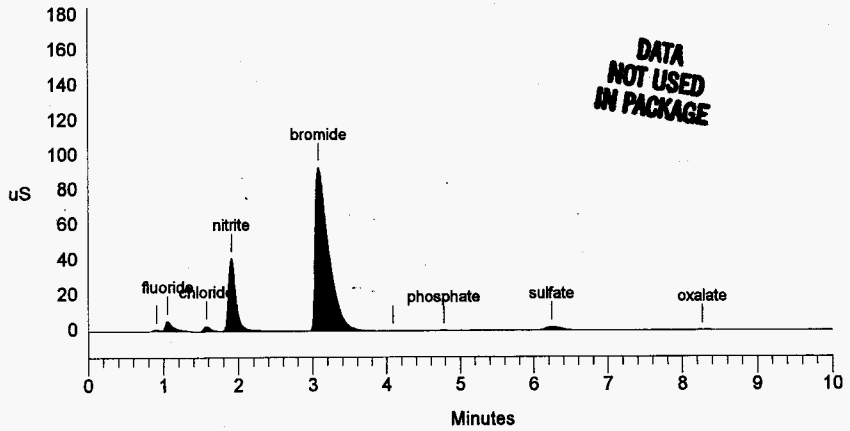
```
Sample Name: S96T005182                    Date: 10/27/1996 14:32:52
Data File  : C:\DX\DATA\96102741.D20
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 20              Detector:CDM-1
Analyst    :               Column: AG4A/AS4A anion column
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1111	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	542	2663	2	
2	1.05	fluoride	2265.733	5802	42584	2	3.27
3	1.57	chloride	1611.152	3133	19631	1	-2.89
4	1.91	nitrite	32284.735	41329	289189	1	-3.70
5	3.08	bromide	96733.340	93349	1172901	1	3.36
6	4.09		0.000	79	756	1	
7	4.77	phosphate	635.549	174	2288	1	-3.18
8	6.24	sulfate	3508.180	2107	32076	1	-4.88
9	8.27	oxalate	958.253	347	6668	1	-9.85
		Totals	137996.942	146862	1568756		

File: 96102741.D20 Sample: S96T005182



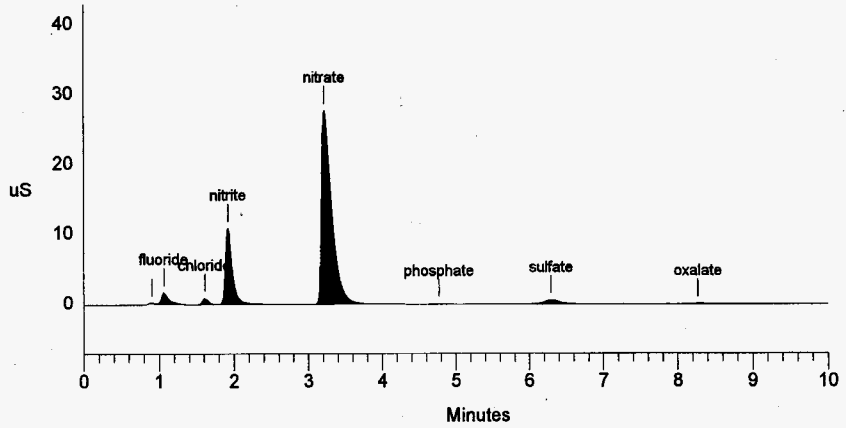
```
Sample Name: S96T005182                    Date: 10/27/1996 15:06:28
Data File  : C:\DX\DATA\96102741.D22
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 22              Detector:CDM-1
Analyst    :               Column: AG4A/AS4A anion column
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	4141	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	145	703	2	
2	1.06	fluoride	2472.551	1655	11911	2	3.92
3	1.61	chloride	1615.518	898	5201	1	-0.41
4	1.92	nitrite	30579.693	10827	69544	1	-3.03
5	3.22	nitrate	129379.402	27722	266573	1	-5.57
6	4.77	phosphate	821.045	47	798	1	-3.18
7	6.29	sulfate	3604.913	564	8450	1	-4.07
8	8.27	oxalate	1006.049	86	1721	1	-9.85
		Totals	169479.171	41945	364902		

File: 96102741.D22 Sample: S96T005182



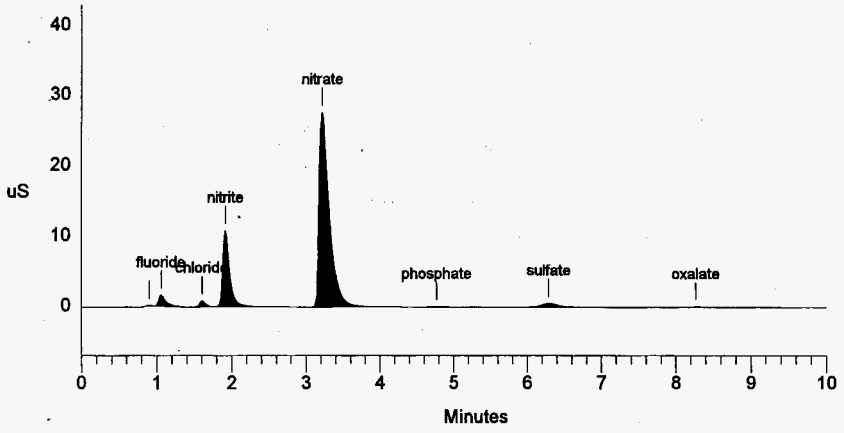
Sample Name: S96T005182 DUP Date: 10/27/1996 15:20:15
Data File : C:\DX\DATA\96102741.D23
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 23 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	4141	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	140	655	2	
2	1.06	fluoride	2429.120	1638	11696	2	3.92
3	1.61	chloride	1612.943	898	5192	1	-0.41
4	1.92	nitrite	30988.665	10855	70500	1	-3.03
5	3.22	nitrate	128920.969	27667	265519	1	-5.57
6	4.77	phosphate	698.930	48	681	1	-3.18
7	6.29	sulfate	3640.902	565	8540	1	-4.07
8	8.27	oxalate	976.094	87	1664	1	-9.85
		Totals	169267.624	41899	364446		

File: 96102741.D23 Sample: S96T005182 DUP



worklistdata Version 1.0 05/15/96
10/29/96 16:28

LABCORE Completed Worklist Report for Worklist# 13979

Analyst: eal **Instrument:** IC01 **Book#** 32N204

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

Worklist Comment: AP-106 IC. RCJ

Seq	Type	Sample#	R	A	Test	Matrix	Actual		Found	DL or Yield	Unit
1	CCB			0	@IC-QC	F	QC	1	<1.20e-2		ug/mL
1	CCB			0	@IC-QC	CL	QC	1	<1.70e-2		ug/mL
1	CCB			0	@IC-QC	NO2	QC	1	<1.08e-1		ug/mL
1	CCB			0	@IC-QC	BR	QC	1	<1.25e-1		ug/mL
1	CCB			0	@IC-QC	NO3	QC	1	<1.39e-1		ug/mL
1	CCB			0	@IC-QC	PO4	QC	1	<1.20e-1		ug/mL
1	CCB			0	@IC-QC	SO4	QC	1	<1.38e-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	5.35e+01	90.678	% Recovery
2	CCV			0	@IC-QC	CL	QC	7.90e01	7.34e+01	92.911	% Recovery
2	CCV			0	@IC-QC	NO2	QC	5.40e02	5.01e+02	92.778	% Recovery
2	CCV			0	@IC-QC	BR	QC	5.89e02	5.68e+02	96.435	% Recovery
2	CCV			0	@IC-QC	NO3	QC	5.94e02	6.13e+02	103.199	% Recovery
2	CCV			0	@IC-QC	PO4	QC	5.45e02	5.30e+02	97.248	% Recovery
2	CCV			0	@IC-QC	SO4	QC	6.31e02	6.47e+02	102.536	% Recovery
2	CCV			0	@IC-QC	OXALATE2	QC	5.27e02	5.32e+02	100.949	% Recovery
3	SAMPLE	S96T005183		0	@IC-01	F-02	LIQUID	N/A	6.565e+02	49.690	ug/mL
3	SAMPLE	S96T005183		0	@IC-01	CL-02	LIQUID	N/A	6.377e+02	70.400	ug/mL
3	SAMPLE	S96T005183		0	@IC-01	NO2-02	LIQUID	N/A	7.734e+03	447.200	ug/mL
3	SAMPLE	S96T005183		0	@IC-01	BR-02	LIQUID	N/A <	5.176e+02	517.600	ug/mL
3	SAMPLE	S96T005183		0	@IC-01	NO3-02	LIQUID	N/A	2.770e+04	575.600	ug/mL
3	SAMPLE	S96T005183		0	@IC-01	PO4-02	LIQUID	N/A	1.872e+03	496.900	ug/mL
3	SAMPLE	S96T005183		0	@IC-01	SO4-02	LIQUID	N/A	1.293e+03	571.500	ug/mL
3	SAMPLE	S96T005183		0	@IC-01	OXALATE2	LIQUID	N/A <	4.348e+02	434.800	ug/mL
4	DUP	S96T005183		0	@IC-01	F-02	LIQUID	6.56e+02	6.06e+02	7.924	RPD
4	DUP	S96T005183		0	@IC-01	CL-02	LIQUID	6.38e+02	6.15e+02	3.671	RPD
4	DUP	S96T005183		0	@IC-01	NO2-02	LIQUID	7.73e+03	7.58e+03	1.960	RPD
4	DUP	S96T005183		0	@IC-01	BR-02	LIQUID	<5.18e2	<5.18e2		RPD
4	DUP	S96T005183		0	@IC-01	NO3-02	LIQUID	2.77e+04	2.85e+04	2.847	RPD
4	DUP	S96T005183		0	@IC-01	PO4-02	LIQUID	1.87e+03	1.65e+03	12.500	RPD
4	DUP	S96T005183		0	@IC-01	SO4-02	LIQUID	1.29e+03	1.31e+03	1.538	RPD
4	DUP	S96T005183		0	@IC-01	OXALATE2	LIQUID	<4.35e2	<4.35e2		RPD
5	SPK	S96T005183		0	@IC-01	F-02	LIQUID	5.90e01	4.97e+01	84.237	% Recovery
5	SPK	S96T005183		0	@IC-01	CL-02	LIQUID	7.90e01	6.54e+01	82.785	% Recovery
5	SPK	S96T005183		0	@IC-01	NO2-02	LIQUID	5.40e02	4.63e+02	85.741	% Recovery
5	SPK	S96T005183		0	@IC-01	BR-02	LIQUID	5.89e02	5.29e+02	89.813	% Recovery
5	SPK	S96T005183		0	@IC-01	NO3-02	LIQUID	5.94e02	5.71e+02	96.128	% Recovery
5	SPK	S96T005183		0	@IC-01	PO4-02	LIQUID	5.45e02	4.89e+02	89.725	% Recovery
5	SPK	S96T005183		0	@IC-01	SO4-02	LIQUID	6.31e02	5.95e+02	94.295	% Recovery
5	SPK	S96T005183		0	@IC-01	OXALATE2	LIQUID	5.27e02	5.02e+02	95.256	% Recovery

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

LABCORE Completed Worklist Report for Worklist# 13979

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

Final page for worklist# 13979

Analyst Signature **Date**

Analyst Signature **Date**

Jason M Luyk 10/29/96
Reviewer Signature **Date**

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

10/14/96 11:36
A-0004-1

LABCORE Data Entry Template for Worklist# 13979

Analyst: [illegible] **Instrument:** IC0 IC01 **Book#** 32N20A

Method: LA-533-105 Rev/Mod D1

Worklist Comment: AP-106 IC. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S96T005183	0		@IC-01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested:				BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
4	DUP	S96T005183	0		@IC-01	LIQUID		
5	SPK	S96T005183	0		@IC-01	LIQUID		

Final page for worklist # 13979

A. Lambert 10-27-96
Analyst Signature **Date**

Analyst Signature **Date**

~~139790C.CSV~~ JMF 10/29/96
In shell
139790C2.CSV
Uploaded 10/29/96 JMLuyc
Validated 10/29/96 JMLuyc

Data Entry Comments:

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

A-0010-IC DATA FILE/WORKLIST RESOLUTION 29-Oct-96

Worklist#: 13979

	Seq	Type	Sample #
=>	1	CCB	
=>	2	CCV	
=>	3	SAMPLE	S96T005183
=>	4	DUP	S96T005183
=>	5	SPK	S96T005183

Data File: 13979OC2.CSV

Seq#	Data File	Sample Name	Dilution
1	96102741.d01	INST. BLANK	1.00
2	96102741.d05	32N20-A STD.	101.00
	96102741.d06	S96T005183	4141.00
	96102741.d08	S96T005183	101.00
	96102741.d07	S96T005183	1111.00
3	96102741.d11	S96T005183	4141.00
4	96102741.d12	S96T005183 DUP	4141.00
5	96102741.d13	S96T005183 SPIKE	4141.00

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

Data Reprocessed On 10/29/1996 15:52:41

```
Sample Name: INST. BLANK                        Date: 10/27/1996 07:16:14
Data File   : F:\DATA\96102741.d01
Method      : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 1                 Detector:CDM-1
Analyst     :                Column: AG4A/AS4A anion column
```

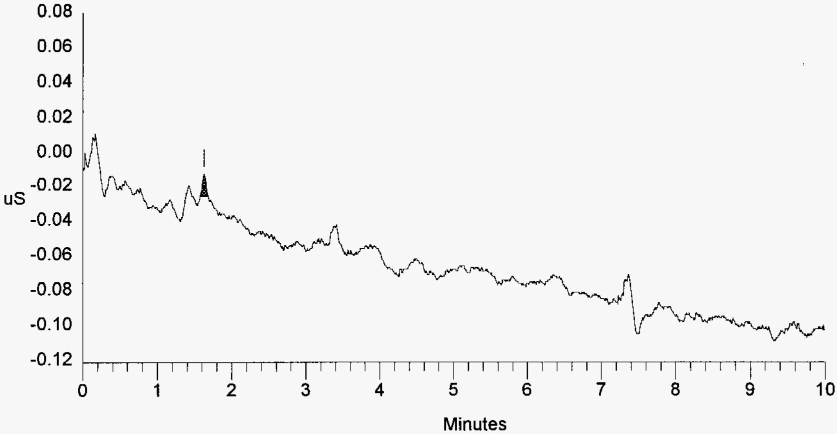
for EAK 10/29/96

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
		Totals	0.000	0	0		

File: 96102741.d01 Sample: INST. BLANK



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 95 TO 99.

Data Reprocessed On 10/29/1996 15:52:41

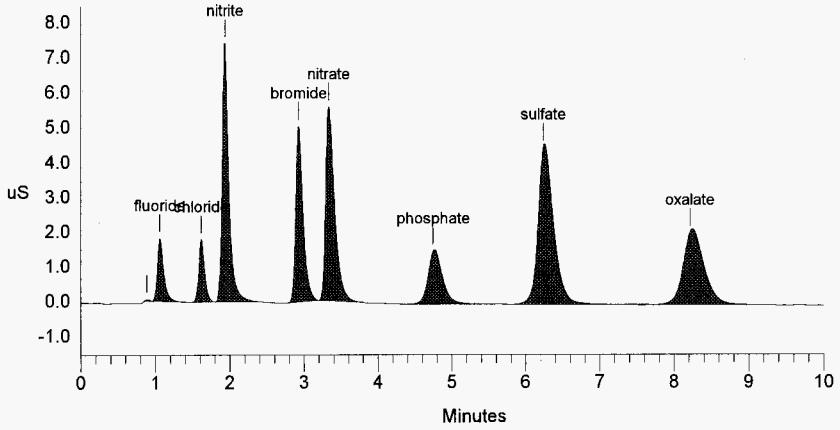
Sample Name: 32N20-A STD. Date: 10/27/1996 10:06:50
Data File : F:\DATA\96102741.d05
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 5 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	101	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	47	186	2	
2	1.06	fluoride	53.535	1801	10535	2	3.92
3	1.61	chloride	73.368	1793	9717	1	0.00
4	1.93	nitrite	500.720	7422	46168	1	-2.36
5	2.93	bromide	567.611	5056	34829	1	-1.79
6	3.33	nitrate	612.751	5576	47030	1	-2.25
7	4.75	phosphate	530.348	1519	21217	1	-3.72
8	6.24	sulfate	647.318	4522	66205	1	-4.88
9	8.21	oxalate	531.803	2083	42098	1	0.04
		Totals	3517.455	29820	277984		

File: 96102741.d05 Sample: 32N20-A STD.



Data Reprocessed On 10/29/1996 15:52:44

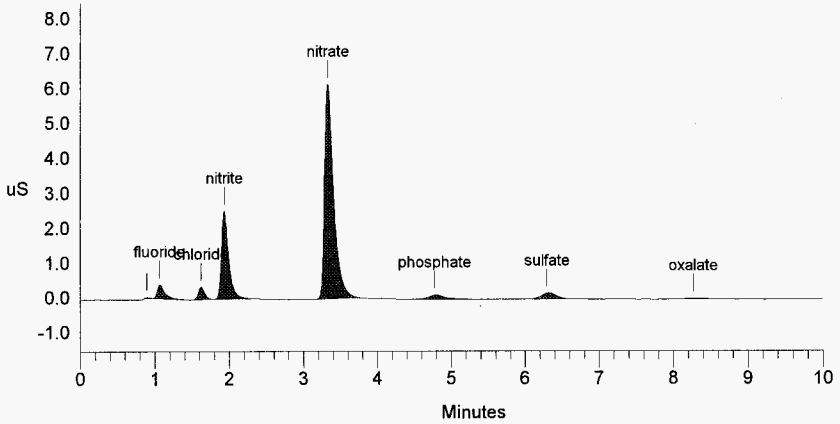
Sample Name: S96T005183 Date: 10/27/1996 12:12:26
Data File : F:\DATA\96102741.d11
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 11 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	4141	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	36	160	2	
2	1.06	fluoride	656.482	401	2981	2	3.92
3	1.62	chloride	637.714	361	2062	1	0.41
4	1.93	nitrite	7734.395	2530	16724	1	-2.36
5	3.33	nitrate	27698.660	6157	52042	1	-2.44
6	4.77	phosphate	1871.783	117	1809	1	-3.18
7	6.29	sulfate	1293.012	173	2729	1	-4.07
8	8.27	oxalate	393.847	26	542	1	-9.85
		Totals	40285.892	9801	79049		

File: 96102741.d11 Sample: S96T005183



Data Reprocessed On 10/29/1996 15:52:44

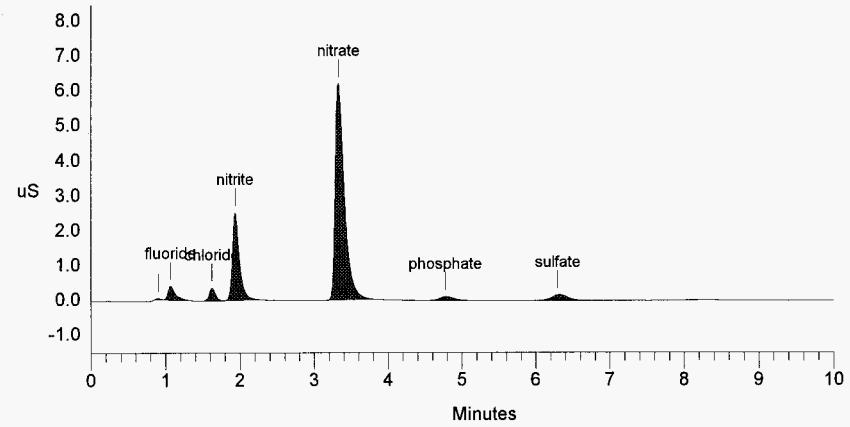
```
Sample Name: S96T005183  DUP                    Date: 10/27/1996 12:28:19
Data File  : F:\DATA\96102741.d12
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 12                    Detector:CDM-1
Analyst    :                Column: AG4A/AS4A anion column
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	4141	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	42	185	2	
2	1.07	fluoride	606.028	400	2735	2	4.58
3	1.62	chloride	615.465	368	1991	1	0.41
4	1.93	nitrite	7575.660	2532	16361	1	-2.36
5	3.33	nitrate	28455.271	6216	53517	1	-2.44
6	4.77	phosphate	1646.591	116	1592	1	-3.18
7	6.29	sulfate	1306.126	170	2762	1	-4.07
		Totals	40205.140	9845	79143		

File: 96102741.d12 Sample: S96T005183 DUP



Data Reprocessed On 10/29/1996 16:06:07

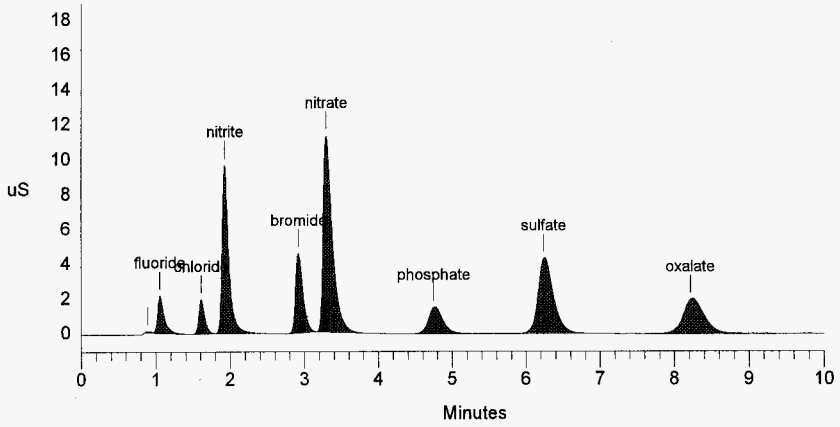
```
Sample Name: S96T005183 SPIKE                Date: 10/27/1996 12:46:37
Data File  : F:\DATA\96102741.D13
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 13                  Detector:CDM-1
Analyst    :               Column: AG4A/AS4A anion column
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	4141	3000	5Hz	0.00	10.00	50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	84	381	2	
2	1.05	fluoride	2662.102	2127	12853	2	3.27
3	1.61	chloride	3273.155	1974	10583	1	-0.41
4	1.93	nitrite	26394.258	9686	59782	1	-2.69
5	2.92	bromide	21319.451	4596	31805	1	-2.01
6	3.29	nitrate	50710.421	11288	97635	1	-3.42
7	4.75	phosphate	21607.209	1509	21081	1	-3.72
8	6.24	sulfate	25265.164	4346	62946	1	-4.88
9	8.21	oxalate	20222.908	1967	39006	1	0.04
		Totals	171454.667	37577	336072		

File: 96102741.D13 Sample: S96T005183 SPIKE



LABCORE Data Entry Template for Worklist# 13590

Analyst: JK Scott **Instrument:** ICP01 JK 10-15-96 **Book#** 63848

Method: LA-505-151/161 Rev/Mod B-1
JK 10-15-96

Worklist Comment: ICP AP-106 (DIRECT)

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	SERDIL	S96T005181	0	D	@ICP-D01	LIQUID		
7	SAMPLE	S96T005181	0	D	@ICP-D01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested:	AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01						
8	DUP	S96T005181	0	D	@ICP-D01	LIQUID		
9	SPK 1 ppm Sample Spike	S96T005181 JK 10-15-96	0	D	@ICP-D01	LIQUID		
10	CCV 10 ppm				@ICP-QC	QC		
11	CCB				@ICP-QC	QC		
~~12~~	~~SERDIL~~	~~S96T005182~~	~~0~~	~~D~~	~~@ICP-D01~~	~~LIQUID~~ JK 10-9-96		
13	SAMPLE	S96T005182	0	D	@ICP-D01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested:	AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 ,						

Data Entry Comments:

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

10/02/96 09:42
A-0004-1

Page: 2

LABCORE Data Entry Template for Worklist# 13590

```
S Type        Sample#      R A  Test       Matrix        Group#    Project
                                SM-D-01  , SR-D-01  , TI-D-01  , TL-D-01  , U-D-01   , V-D-01   ,
                                ZN-D-01  , ZR-D-01

14 DUP        S96T005182   0 D  @ICP-D01 LIQUID
```

~~15 SPK S96T005182 0 D @ICP-D01 LIQUID~~ 10-9-96

~~16 SERDIL S96T005183 0 D @ICP-D01 LIQUID~~ 10-9-96

```
17 SAMPLE     S96T005183   0 D  @ICP-D01 LIQUID        96001337  AP-106 GRAB
           Analytes Requested:  AG-D-01  , AL-D-01  , AS-D-01  , B-D-01   , BA-D-01  ,
                                BE-D-01  , BI-D-01  , CA-D-01  , CD-D-01  , CE-D-01  , CO-D-01  ,
                                CR-D-01  , CU-D-01  , FE-D-01  , K-D-01   , LA-D-01  , LI-D-01  ,
                                MG-D-01  , MN-D-01  , MO-D-01  , NA-D-01  , ND-D-01  , NI-D-01  ,
                                P-D-01   , PB-D-01  , S-D-01   , SB-D-01  , SE-D-01  , SI-D-01  ,
                                SM-D-01  , SR-D-01  , TI-D-01  , TL-D-01  , U-D-01   , V-D-01   ,
                                ZN-D-01  , ZR-D-01

18 DUP        S96T005183   0 D  @ICP-D01 LIQUID
```

~~19 SPK S96T005183 0 D @ICP-D01 LIQUID~~ 10-9-96

```
20 ICSA                         @ICP-QC    QC

21 ICSAB                        @ICP-QC    QC

22 CCV                          @ICP-QC    QC

23 CCB                          @ICP-QC    QC
```

Final page for worklist # 13590

J.K. Lato 10-15-96
Analyst Signature **Date**

S96T005181_L , .5-10-2.8, DF 105
S96T005181 .5-10 21
S96T005181_D .5-10 21
S96T005181_Q .5-10 21, .5ml sample + 2.1 ml STS + 7.9 ml HNO_3
S96T005181_X .05-10, DF 201
S96T005181_QB .05-10 201, .05ml sample + 1.003 ml each ... + 7.99 ml HNO_3
S96T005182 , .05-15, DF 301
S96T005182_D .05-15 301

Reviewed by:
Saul K. ... 10/15/96
Analyst Signature **Date**

S96T005183 , .25-10, DF 41
S96T005183_D , .25-10 41

Data Entry Comments: Spike recovery calculation:

$$Al = \left(\frac{371.6}{21}\right) - \left(\frac{351.3}{21}\right) \times 100 = 96.7\%$$

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

Spike true value is 1.0 ppm for all elements except for U = 2.0 ppm.

Analysis Report Summary Tue 10-15-96 01:13:54 PM page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	961015B	ICP2	10/15/96	11:46	DKS	Q	CONC
2	ICB	961015B	ICP2	10/15/96	11:49	DKS	Q	CONC
3	LLS	961015B	ICP2	10/15/96	11:52	DKS	Q	CONC
4	ICSA	961015B	ICP2	10/15/96	11:55	DKS	Q	CONC
5	ICSAB	961015B	ICP2	10/15/96	11:58	DKS	Q	CONC
6	S96T005181_L	961015B	ICP2	10/15/96	12:04	DKS	S	CONC
7	S96T005181	961015B	ICP2	10/15/96	12:08	DKS	S	CONC
~~8~~	~~S96T005181_A~~	~~961015B~~	~~ICP2~~	~~10/15/96~~	~~12:12~~	~~DKS~~	~~S~~	~~CONC~~
9	S96T005181_D	961015B	ICP2	10/15/96	12:16	DKS	S	CONC
10	S96T005181_A	961015B	ICP2	10/15/96	12:20	DKS	S	CONC
11	S96T005181_X	961015B	ICP2	10/15/96	12:24	DKS	S	CONC
12	S96T005181_AD	961015B	ICP2	10/15/96	12:29	DKS	S	CONC
13	CCV	961015B	ICP2	10/15/96	12:33	DKS	Q	CONC
14	CCB	961015B	ICP2	10/15/96	12:38	DKS	Q	CONC
15	S96T005182	961015B	ICP2	10/15/96	12:42	DKS	S	CONC
16	S96T005182_D	961015B	ICP2	10/15/96	12:45	DKS	S	CONC
17	S96T005183	961015B	ICP2	10/15/96	12:51	DKS	S	CONC
18	S96T005183_D	961015B	ICP2	10/15/96	12:54	DKS	S	CONC
19	ICSA	961015B	ICP2	10/15/96	13:00	DKS	Q	CONC
20	ICSAB	961015B	ICP2	10/15/96	13:04	DKS	Q	CONC
21	CCV_1	961015B	ICP2	10/15/96	13:07	DKS	Q	CONC
22	CCB_1	961015B	ICP2	10/15/96	13:11	DKS	Q	CONC

~~8~~ 10-15-96

DK
10-15-96
ap-106
Work list # 13590

S96T005181
S96T005182
S96T005183

K and P failed in the first post spike. A second post spike with more diluted sample and with higher spike concentration was made and the results are:

$$K = \frac{\left(\frac{3185}{201}\right) - \left(\frac{1129}{201}\right)}{10} \times 100 = 102.3\ \%$$

$$P = \frac{\left(\frac{2345}{201}\right) - \left(\frac{240.7}{201}\right)}{10} \times 100 = 104.7\ \%$$

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 102 TO 106.

Analysis Report *Averages* *Tue 10-15-96 01:13:54 PM* *page 2*

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	5.001	4.916	5.218	5.071	4.981	5.201
2	ICB	-.0004	-.0067	-.0032	.0039	-.0002	.0003
3	LLS	.0203	.0946	.2157	.1011	.0983	.0106
4	ICSA	.0013	244.1	-.0030	.0054	.0015	.0003
5	ICSAB	.9502	243.8	-.0798	-.0096	.4661	.4759
6	S96T005181_L	.6516	357.3	-.8170	1.067	-.0098	.0510
7	S96T005181	.6121	351.3	.2422	1.473	.0060	.0379
~~8~~	~~S96T005181_A~~	~~.6244~~	~~352.1~~	~~-.1090~~	~~1.453~~	~~.0071~~	~~.0378~~
9	S96T005181_D	.6001	353.9	.0654	1.494	.0051	.0369
10	S96T005181_A	19.77	371.6	22.51	22.69	20.73	21.90
11	S96T005181_X	.5449	353.8	-.8087	1.167	-.0358	.0800
12	S96T005181_AD	1983.	2333.	2114.	2019.	2059.	2123.
13	CCV	5.012	4.966	5.273	5.110	5.046	5.247
14	CCB	-.0011	-.0043	-.0012	.0024	-.0002	.0004
15	S96T005182	7.799	8776.	-12.55	10.05	-.0528	1.247
16	S96T005182_D	8.344	8998.	-14.06	9.183	.0242	1.246
17	S96T005183	1.217	952.4	-.6155	2.182	.0013	.1192
18	S96T005183_D	1.183	947.3	-1.228	2.242	-.0052	.1156
19	ICSA	.0025	246.1	-.0366	-.0030	.0017	.0003
20	ICSAB	.9528	244.7	-.0019	-.0041	.4711	.4821
21	CCV_1	4.963	4.857	5.243	5.035	4.912	5.204
22	CCB_1	-.0006	-.0107	-.0024	.0024	-.0002	.0002

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.105	5.077	5.038	4.985	5.091	5.084
2	ICB	-.0067	-.0051	-.0004	-.0170	-.0003	-.0008
3	LLS	.1840	.2197	.0103	.1819	.0414	.0212
4	ICSA	-.0156	250.6	.0002	-.0015	-.0007	.0090
5	ICSAB	-.0081	252.0	.9190	-.0006	.4621	.4708
6	S96T005181_L	.6274	1.785	-.0185	-1.396	.1025	12.95
7	S96T005181	-.0821	1.446	.0084	-.2915	-.0199	12.92
~~8~~	~~S96T005181_A~~	~~.0366~~	~~1.166~~	~~-.0011~~	~~-.1507~~	~~.0061~~	~~12.97~~
9	S96T005181_D	-.0220	1.218	.0213	-.2296	.0083	12.88
10	S96T005181_A	21.63	22.67	21.02	20.79	21.02	33.99
11	S96T005181_X	-1.919	2.797	-.2763	-3.710	-.0249	13.32
12	S96T005181_AD	2064.	2070.	2019.	2020.	3.033	2051.
13	CCV	5.189	5.100	5.057	4.992	5.089	5.091
14	CCB	.0016	-.0038	-.0016	-.0162	-.0012	.0004
15	S96T005182	-1.340	17.63	2.059	-3.627	-.1034	159.0
16	S96T005182_D	-.5648	18.98	2.160	-1.290	-.0650	163.3
17	S96T005183	.8041	1.263	.0316	-.5105	.0557	24.26
18	S96T005183_D	-.0735	1.010	-.0247	-.5843	-.0138	24.32
19	ICSA	-.0095	254.7	.0013	.0036	-.0015	.0085
20	ICSAB	-.0184	253.2	.9240	-.0013	.4644	.4761
21	CCV_1	5.103	5.106	5.020	4.863	5.059	5.052
22	CCB_1	-.0160	-.0056	-.0000	-.0114	-.0016	-.0006

Analysis Report *Averages* *Tue 10-15-96 01:13:54 PM* *page 3*

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.221	-.0017	5.075	4.652	5.058	5.074
2	ICB	-.0013	-.0004	-.0009	-.3216	-.0018	-.0006
3	LLS	.0201	.0001	.1039	Q.3030	.0997	.0206
4	ICSA	-.0109	-.0429	93.99	-.0528	-.0070	.0019
5	ICSAB	.4723	-.0440	93.77	-.0682	-.0053	1.034
6	S96T005181_L	.1334	-.0405	.2375	1184.	-.1678	.2908
7	S96T005181	.2446	-.0133	.2672	1191.	-.0362	.3261
~~8~~	~~S96T005181_A~~	~~.2108~~	~~-.0050~~	~~.2804~~	~~1190.~~	~~-.0046~~	~~.3235~~
9	S96T005181_D	.2211	-.0189	.2727	1192.	-.0265	.3134
10	S96T005181_A	22.19	-.0310	21.33	1207.	21.38	22.18
11	S96T005181_X	.1731	-.0736	-.0867	1129.	-.5020	.2420
12	S96T005181_AD	-.9440	.4713	2037.	3185.	2053.	2071.
13	CCV	5.277	-.0022	5.104	4.798	5.082	5.144
14	CCB	-.0004	-.0002	-.0016	-.3069	-.0021	-.0005
15	S96T005182	2.721	-.1128	4.479	22280.	-.3123	.1055
16	S96T005182_D	2.713	-.0998	5.525	22780.	-.0284	-.1125
17	S96T005183	.2885	-.0234	.2615	3467.	-.0317	.3997
18	S96T005183_D	.2882	-.0126	.1374	3447.	-.0836	.3157
19	ICSA	-.0111	-.0488	94.95	-.0157	-.0050	.0024
20	ICSAB	.4774	-.0448	94.32	-.1341	-.0065	1.046
21	CCV_1	5.164	-.0009	5.043	4.757	4.956	5.027
22	CCB_1	-.0016	.0004	-.0011	-.3449	-.0018	.0000

~~8~~ ~~S96T005181_A~~ ~~.2108~~ ~~-.0050~~ ~~.2804~~ ~~1190.~~ ~~-.0046~~ ~~.3235~~ 10-15-96

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.883	4.917	5.065	4.942	5.078	5.044
2	ICB	-.0111	-.0001	.0017	-.0017	-.0025	-.0082
3	LLS	.1838	.0194	.0993	.2049	.1979	.0347
4	ICSA	256.5	-.0070	-.0063	197.0	.0024	-.0120
5	ICSAB	255.8	.4355	-.0118	196.5	-.0020	.9095
6	S96T005181_L	.1716	-.0064	1.998	8625.	-.2442	.1564
7	S96T005181	.0253	.0397	1.860	8415.	-.0092	.2252
~~8~~	~~S96T005181_A~~	~~.0139~~	~~.0336~~	~~1.807~~	~~8390.~~	~~-.0371~~	~~.3323~~
9	S96T005181_D	.0439	.0328	1.789	8494.	-.0306	.2302
10	S96T005181_A	20.27	20.11	23.14	8436.	21.42	21.40
11	S96T005181_X	-2.024	.0433	1.844	8562.	-.0866	-.4688
12	S96T005181_AD	2074.	2013.	1994.	10560.	2062.	2017.
13	CCV	4.928	4.943	5.080	4.963	5.096	5.074
14	CCB	-.0178	.0001	.0020	.0021	-.0005	-.0056
15	S96T005182	-5.144	.1591	17.10	110400.	-.4969	6.689
16	S96T005182_D	-3.966	.2289	17.67	112800.	-.8506	7.248
17	S96T005183	-.4491	-.0055	2.078	17280.	-.0452	.7308
18	S96T005183_D	-.8143	-.0005	2.134	17120.	-.0767	.5692
19	ICSA	259.3	-.0070	-.0046	197.5	-.0015	-.0133
20	ICSAB	257.4	.4370	-.0099	197.2	.0008	.8998
21	CCV_1	4.848	4.887	5.041	4.865	4.968	5.028
22	CCB_1	-.0118	.0000	.0012	.0059	-.0021	-.0034

~~8~~ ~~S96T005181_A~~ ~~.0139~~ ~~.0336~~ ~~1.807~~ ~~8390.~~ ~~-.0371~~ ~~.3323~~ 10-15-96

Analysis Report *Averages* *Tue 10-15-96 01:13:54 PM* *page 4*

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.173	5.019	5.054	4.846	4.920	5.023
2	ICB	-.0045	.0193	-.0172	.0008	.0344	-.0057
3	LLS	.4124	.2302	.1945	.0899	.2348	.1585
4	ICSA	.0474	.0320	-.0265	.0007	-.0241	-.0012
5	ICSAB	.0194	.9671	-.0423	-.0057	-.0015	-.0010
6	S96T005181_L	238.9	1.800	88.79	-.7704	5.009	14.55
7	S96T005181	237.9	1.601	88.42	-.0200	1.330	14.99
~~8~~	~~S96T005181_A~~	~~239.6~~	~~1.455~~	~~88.87~~	~~.1040~~	~~1.766~~	~~15.07~~
9	S96T005181_D	240.4	1.311	88.59	-.1601	1.107	15.01
10	S96T005181_A	265.4	22.04	109.1	20.15	23.83	36.42
11	S96T005181_X	240.7	4.026	81.89	-1.895	7.178	14.80
12	S96T005181_AD	2345.	2067.	2146.	2028.	2010.	2128.
13	CCV	5.197	5.027	5.059	4.867	4.973	5.054
14	CCB	.0116	.0067	-.0090	-.0030	.0543	-.0015
15	S96T005182	454.9	21.78	1154.	-.5193	22.80	40.22
16	S96T005182_D	468.3	14.16	1188.	.6776	24.94	42.28
17	S96T005183	326.1	2.809	183.3	-.1909	3.087	18.92
18	S96T005183_D	323.4	3.401	181.1	-.2874	3.211	18.97
19	ICSA	.0464	.0305	-.0488	.0021	-.0040	.0007
20	ICSAB	-.0000	.9842	-.0272	.0126	-.0012	-.0015
21	CCV_1	5.310	5.007	5.112	4.813	4.983	5.010
22	CCB_1	.0027	-.0009	-.0106	-.0088	.0501	.0011

~~8~~ 10-15-96

#	Sample Name	Sm	Sr	Th	Tl	Tl	U
1	ICV	4.896	4.955	.0230	4.893	4.885	9.643
2	ICB	-.0080	.0000	-.0066	-.0000	.0147	-.0156
3	LLS	.2014	.0202	-.0057	.0200	.4226	.5031
4	ICSA	-.0018	.0017	-.0051	.0017	-.0008	-.0690
5	ICSAB	.0003	.0018	-.0125	.0014	.0020	-.0608
6	S96T005181_L	-.5995	.0050	-.4049	-.0040	1.738	3.149
7	S96T005181	-.1537	.0070	-.1283	.0020	.5514	4.745
~~8~~	~~S96T005181_A~~	~~-.0511~~	~~.0080~~	~~-.1878~~	~~.0011~~	~~.1270~~	~~6.346~~
9	S96T005181_D	-.1817	.0060	-.1504	-.0033	.2777	4.895
10	S96T005181_A	20.41	20.87	-.0917	20.55	20.67	45.83
11	S96T005181_X	-1.117	.0099	-1.114	-.0072	1.995	2.657
12	S96T005181_AD	1993.	2017.	7.988	1840.	1948.	149.4
13	CCV	4.930	4.976	.0315	4.925	4.822	9.705
14	CCB	-.0011	.0001	-.0045	-.0000	.0024	-.0052
15	S96T005182	-1.112	.1017	-2.677	.0310	8.849	59.82
16	S96T005182_D	-.9031	.1316	-2.519	-.0459	5.981	68.34
17	S96T005183	-.2738	.0035	-.2728	-.0049	.8346	6.854
18	S96T005183_D	-.0115	.0055	-.5949	-.0164	.0112	8.164
19	ICSA	-.0005	.0017	-.0120	.0007	-.0306	-.0694
20	ICSAB	-.0039	.0017	-.0089	.0012	-.0131	-.0783
21	CCV_1	4.810	4.868	.0207	4.826	4.814	9.483
22	CCB_1	.0048	.0002	-.0042	-.0003	.0016	.0256

Analysis Report *Averages* *Tue 10-15-96 01:13:54 PM* *page 5*

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.066	.0065	5.097	4.948
2	ICB	-.0013	-.0002	-.0004	-.0002
3	LLS	.1028	.0006	.0223	.0208
4	ICSA	-.0017	.0068	.0036	-.0032
5	ICSAB	.4619	.0071	.9448	-.0025
6	S96T005181_L	-.0851	-.0096	.4734	-.0477
7	S96T005181	-.0263	-.0020	.5414	-.0043
~~8~~	~~S96T005181_A~~	~~.0022~~	~~.0022~~	~~.5205~~	~~.0056~~
9	S96T005181_D	-.0458	-.0120	.5376	-.0175
10	S96T005181_A	21.16	.0118	21.78	20.31
11	S96T005181_X	-.3021	-.0169	.5124	-.1320
12	S96T005181_AD	1.562	2.867	-6.210	2044.
13	CCV	5.091	.0063	5.102	4.962
14	CCB	-.0004	.0001	-.0011	.0000
15	S96T005182	-.2919	-.0490	4.860	2.874
16	S96T005182_D	-.0856	.0417	4.867	3.170
17	S96T005183	-.0524	-.0158	.6000	-.0318
18	S96T005183_D	-.0007	.0030	.5917	.0337
19	ICSA	-.0005	.0070	.0041	-.0021
20	ICSAB	.4637	.0069	.9486	-.0028
21	CCV_1	5.028	.0067	5.094	4.875
22	CCB_1	.0007	.0004	-.0013	.0006

~~8~~ JK 10-15-96

JK

10-15-96

LABCORE Completed Worklist Report for Worklist# 13977

Analyst: raw **Instrument:** TOC01 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: AP-106 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	3.00E+03	2.93E+3	97.667	% Recovery
3	SAMPLE	S96T005181	0		TOC-01	LIQUID	N/A	7.34E+02	21.700	ug/mL
4	DUP	S96T005181	0		TOC-01	LIQUID	7.34E+2	6.85E+2	6.906	RPD
5	SPK	S96T005181	0		TOC-01	LIQUID	1.00E+02	8.04E+01	80.400	% Recovery
6	SAMPLE	S96T005182	0		TOC-01	LIQUID	N/A	3.40E+03	25.000	ug/mL
7	DUP	S96T005182	0		TOC-01	LIQUID	3.41E+3	3.10E+3	9.524	RPD
8	SAMPLE	S96T005183	0		TOC-01	LIQUID	N/A	9.14E+02	21.700	ug/mL
9	DUP	S96T005183	0		TOC-01	LIQUID	9.14E+2	8.34E+2	9.153	RPD

Final page for worklist# 13977

_____ _____

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

Ralph W Schmidt 11/5/96

Reviewer Signature **Date**

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

LABCORE Data Entry Template for Worklist# 13977

Analyst: RAW **Instrument:** TOC01 HP39937 **Book#** Z4N12-D STD
Z3N12-B SPK

Method: LA-344-105 Rev/Mod D-1

Worklist Comment: AP-106 TOC. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				TOC-01	LIQUID		
2	STD				TOC-01	LIQUID		
3	SAMPLE	S96T005181	0		TOC-01	LIQUID	96001337	AP-106 GRAB
		Analytes Requested: TOC-01						
4	DUP	S96T005181	0		TOC-01	LIQUID		
5	SPK	S96T005181	0		TOC-01	LIQUID		
6	SAMPLE	S96T005182	0		TOC-01	LIQUID	96001337	AP-106 GRAB
		Analytes Requested: TOC-01						
7	DUP	S96T005182	0		TOC-01	LIQUID		
8	SAMPLE	S96T005183	0		TOC-01	LIQUID	96001337	AP-106 GRAB
		Analytes Requested: TOC-01						
9	DUP	S96T005183	0		TOC-01	LIQUID		

Final page for worklist # 13977

R. WENDLAND 11-1-96
Analyst Signature **Date**

Analyst Signature **Date**

STD .200 – 2mL (.5M) – .200(INJ)
81+83 .600 – 2mL (.5M) – .200 (INJ)
82 .500 – 2mL (2M) – .200(INJ)
SPK .500(DILUTE) – .500(SPIKE) – .200 (INJ)

Data Entry Comments:

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

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BASE Date: 11/01/96 Time: 09:21:26

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	0.20	0.00
2	1.01	0.20	0.00
3	1.51	0.50	60.00
4	2.01	0.70	28.57
5	2.51	1.00	30.00
6	3.01	1.10	9.09
7	3.51	1.30	15.38
8	4.01	1.60	18.75
9	4.51	1.70	5.88
10	5.01	2.00	15.00

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +0.0E+00 ug/min Carbon

SAMPLE RESULTS:
(2 - 0)(1)/(200) = +1.0E-02 g/L Carbon
(2 - 0)(1)/(200)(12) = +8.3E-04 Molar Carbon
<<<< WARNING- PERCENT DIFFERENCE EXCEEDS 10 PERCENT >>>>

Sample Run By: RW Schroeder for RA Wendland 12/9/96
RA WENDLAND 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 109 TO 118.

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

Sample: BLK Date: 11/01/96 Time: 09:37:54

Sample Size	= 200 uL	Analyst :	RA WENDLAND
Dil Factor	= 1	Min Readings	= 10
Blank ID #	= BLK	Max Readings	= 10
Blank Value	= N/A	% Difference	= 10

== Reading ====	Analysis Time ====	Coulometer ====	% Difference ==
1	0.51	0.00	0.00
2	1.01	0.30	100.00
3	1.51	0.60	50.00
4	2.01	0.80	25.00
5	2.51	0.90	11.11
6	3.01	1.00	10.00
7	3.51	1.20	16.67
8	4.00	1.30	7.69
9	4.50	1.50	13.33
10	5.00	1.60	6.25

BLANK VALUE = 1.6 micrograms carbon
BLANK FACTOR = 1.6 / 5.004639 = +3.2E-01 ug/min Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 11/01/96 Time: 09:49:22

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3197034 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	32.60	99.39
3	1.51	46.90	30.49
4	2.01	50.80	7.68
5	2.51	52.80	3.79
6	3.01	53.70	1.68
7	3.51	54.30	1.10
8	4.00	54.60	0.55
9	4.50	55.00	0.73
10	5.00	55.20	0.36

BLANK VALUE = 1.6 micrograms carbon
BLANK FACTOR = 1.6 / 5.004639 = +3.2E-01 ug/min Carbon

SAMPLE RESULTS:
(55.2 - 1.6)(11)/(200) = +2.95E+00 g/L Carbon
(55.2 - 1.6)(11)/(200)(12) = +2.46E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5181 Date: 11/01/96 Time: 10:17:48

Sample Size	= 200 uL	Analyst :	RA WENDLAND
Dil Factor	= 1	Min Readings	= 10
Blank ID #	= BLK	Max Readings	= 10
Blank Value	= .3197034 ug/minute C	% Difference	= 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	1.20	0.00
2	1.01	26.10	95.40
3	1.51	30.10	13.29
4	2.01	32.10	6.23
5	2.51	33.20	3.31
6	3.01	34.10	2.64
7	3.51	34.60	1.45
8	4.01	35.10	1.42
9	4.50	35.50	1.13
10	5.00	35.90	1.11

BLANK VALUE = 1.6 micrograms carbon
BLANK FACTOR = 1.6 / 5.004639 = +3.2E-01 ug/min Carbon

SAMPLE RESULTS:
(35.9 - 1.600019)(1)/(200) = +1.71E-01 g/L Carbon
(35.9 - 1.600019)(1)/(200)(12) = +1.43E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5181D Date: 11/01/96 Time: 10:23:31

Sample Size = 200 uL Analyst : RA WENDLAND
Dil Factor = 1 Min Readings = 10
Blank ID # = BLK Max Readings = 10
Blank Value = .3197034 ug/minute C % Difference = 10

== Reading	Analysis Time	Coulometer	% Difference ==
1	0.51	1.60	0.00
2	1.01	24.40	93.44
3	1.51	28.10	13.17
4	2.01	30.00	6.33
5	2.51	30.90	2.91
6	3.01	31.60	2.22
7	3.51	32.30	2.17
8	4.01	32.90	1.82
9	4.51	33.20	0.90
10	5.01	33.60	1.19

BLANK VALUE = 1.6 micrograms carbon
BLANK FACTOR = 1.6 / 5.004639 = +3.2E-01 ug/min Carbon

SAMPLE RESULTS:
(33.6 - 1.600254)(1)/(200) = +1.60E-01 g/L Carbon
(33.6 - 1.600254)(1)/(200)(12) = +1.33E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5181S Date: 11/01/96 Time: 10:29:30

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .3197034 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	56.40	97.70
3	1.50	67.70	16.69
4	2.00	72.00	5.97
5	2.51	74.60	3.49
6	3.01	76.50	2.48
7	3.51	77.50	1.29
8	4.00	78.30	1.02
9	4.50	78.90	0.76
10	5.01	79.50	0.75

BLANK VALUE = 1.6 micrograms carbon
BLANK FACTOR = 1.6 / 5.004639 = +3.2E-01 ug/min Carbon

SAMPLE RESULTS:
(79.5 - 1.600293)(1)/(200) = +3.89E-01 g/L Carbon
(79.5 - 1.600293)(1)/(200)(12) = +3.25E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5182 Date: 11/01/96 Time: 10:58:10

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .3197034 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.40	0.00
2	1.01	98.90	96.56
3	1.51	117.00	15.47
4	2.01	125.10	6.47
5	2.51	129.70	3.55
6	3.01	132.70	2.26
7	3.51	134.80	1.56
8	4.01	136.20	1.03
9	4.51	137.20	0.73
10	5.01	138.20	0.72

BLANK VALUE = 1.6 micrograms carbon
BLANK FACTOR = 1.6 / 5.004639 = +3.2E-01 ug/min Carbon

SAMPLE RESULTS:
(138.2 - 1.600293)(1)/(200) = +6.830E-01 g/L Carbon
(138.2 - 1.600293)(1)/(200)(12) = +5.692E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5182D Date: 11/01/96 Time: 11:15:01

Sample Size = 200 uL Analyst : RA WENDLAND
Dil Factor = 1 Min Readings = 10
Blank ID # = BLK Max Readings = 10
Blank Value = .3197034 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.00	0.00
2	1.01	90.60	96.69
3	1.51	106.10	14.61
4	2.01	113.60	6.60
5	2.51	117.80	3.57
6	3.01	120.70	2.40
7	3.51	122.80	1.71
8	4.01	124.20	1.13
9	4.51	125.20	0.80
10	5.01	126.10	0.71

BLANK VALUE = 1.6 micrograms carbon
BLANK FACTOR = 1.6 / 5.004639 = +3.2E-01 ug/min Carbon

SAMPLE RESULTS:
(126.1 - 1.600273)(1)/(200) = +6.225E-01 g/L Carbon
(126.1 - 1.600273)(1)/(200)(12) = +5.187E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5183 Date: 11/01/96 Time: 10:43:36

Sample Size	= 200 uL	Analyst :	RA WENDLAND
Dil Factor	= 1	Min Readings	= 10
Blank ID #	= BLK	Max Readings	= 10
Blank Value	= .3197034 ug/minute C	% Difference	= 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.00	0.00
2	1.01	31.50	96.83
3	1.51	36.70	14.17
4	2.01	39.20	6.38
5	2.51	40.80	3.92
6	3.01	41.80	2.39
7	3.51	42.70	2.11
8	4.01	43.30	1.39
9	4.51	43.70	0.92
10	5.01	44.20	1.13

BLANK VALUE = 1.6 micrograms carbon
BLANK FACTOR = 1.6 / 5.004639 = +3.2E-01 ug/min Carbon

SAMPLE RESULTS:
(44.2 - 1.600332)(1)/(200) = +2.13E-01 g/L Carbon
(44.2 - 1.600332)(1)/(200)(12) = +1.77E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 5183 DUP Date: 11/01/96 Time: 10:49:08

Sample Size = 200 uL Analyst : RA WENDLAND
Dil Factor = 1 Min Readings = 10
Blank ID # = BLK Max Readings = 10
Blank Value = .3197034 ug/minute C % Difference = 10

== Reading	Analysis Time	Coulometer	% Difference ==
1	0.51	1.40	0.00
2	1.01	29.10	95.19
3	1.51	33.90	14.16
4	2.01	35.80	5.31
5	2.51	37.20	3.76
6	3.01	38.20	2.62
7	3.51	38.90	1.80
8	4.01	39.60	1.77
9	4.51	40.10	1.25
10	5.01	40.50	0.99

BLANK VALUE = 1.6 micrograms carbon
BLANK FACTOR = 1.6 / 5.004639 = +3.2E-01 ug/min Carbon

SAMPLE RESULTS:
(40.5 - 1.600605)(1)/(200) = +1.94E-01 g/L Carbon
(40.5 - 1.600605)(1)/(200)(12) = +1.62E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

WORKBOOK PAGE: BLANK1

TOC : LA-344-105 (D-1) LIQUIDS

			BLNK
	Sample Volume in mL	(SS)	0.200
BLNK	H2SO4 Volume in mL	(VR)	0.000
	Volume Injected in mL	(VI)	0.200
13977	Dilution Factor (calculated)	(DF)	1.000
	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Blank	(C1)	1.6
	µg of Carbon from Baseline	(C2)	2

LIQUID

96010499

µg of Carbon = |C1-C2|

0

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

N/A

BLNK

TOC01

RTS

RWS

RAW

11/04/96

11/02/96

Method Detection Limit in µg/mL	5.00E+00
µg of Carbon	4.00E-01

AP-106

Data Entered By:	RTS	Date:	11/04/96
Signature of Chemist:	DW Schuetter	Date:	11/5/96

BLANK.WB1 REV 2.0 344105ML

WORKBOOK PAGE: STD2

TOC : LA-344-105 (D-1)	LIQUIDS		STD
	Sample Volume in mL	(SS)	0.200
STD	H2SO4 Volume in mL	(VR)	2.000
	Volume Injected in mL	(VI)	0.200
13977	Dilution Factor (calculated)	(DF)	11.000
	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon Found	(C1)	55.2
	µg of Carbon from Baseline	(C2)	2
LIQUID	Standard Book Number		24N12D
	Standard Value (µg/ml)		3000
96010499			
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI		
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
STD			
TOC01			
RTS			
RWS			
RAW			
11/04/96			
11/02/96			
	Method Detection Limit in µg/mL		5.50E+01
	QC Actual in µg/mL		3.00E+03
	QC Found in µg/mL		2.93E+03
AP-106	Percent Standard Recovery		97.5

Data Entered By:	RTS	Date:	11/04/96
Signature of Chemist:	RW Schroeder	Date:	11/5/96

STANDARD.WB1 REV 2.0 344105ML

WORKBOOK PAGE: SAM3

TOC : LA-344-105 (D-1) LIQUIDS

			SAMPLE
	Sample Volume in mL	(SS)	0.600
SAMPLE	H2SO4 Volume in mL	(VR)	2.000
	Volume Injected in mL	(VI)	0.200
13977	Dilution Factor (calculated)	(DF)	4.333
	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	35.9
	µg of Carbon from Baseline	(C2)	2
LIQUID			

96010499

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

0

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

N/A

S96T005181

TOC01

RTS

RWS

RAW

11/04/96

11/01/96

Method Detection Limit in µg/mL	2.17E+01
µg of Carbon/mL	7.34E+02

AP-106

Data Entered By:	RTS	Date:	11/04/96
Signature of Chemist:	RW Schwerdt	Date:	11/5/96

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: DUP4

TOC : LA-344-105 (D-1) LIQUIDS

			DUP
[illegible]	Sample Volume in mL	(SS)	0.600
DUP	H2SO4 Volume in mL	(VR)	2.000
[illegible]	Volume Injected in mL	(VI)	0.200
13977	Dilution Factor (calculated)	(DF)	4.333
[illegible]	Digest Dilution Factor	(DDF)	1
TOC-01	μg of Carbon in Sample	(C1)	33.6
[illegible]	μg of Carbon from Baseline	(C2)	2
LIQUID	Result from Sample Page		7.34E+2
Batch Number			
96010499			

Rerun	μg of Carbon/mL = (C1-C2) * DF * DDF / VI
0	
Sample Prep	Method Detection Limit = 1 μg C * DF * DDF / VI
N/A	
[illegible]	
S96T005181	
[illegible]	
TOC01	
[illegible]	
RTS	
[illegible]	
RWS	
Analyst	
RAW	
Date Complete	
11/04/96	
[illegible]	
11/02/96	
[illegible]	**Method Detection Limit in μg/mL** 2.17E+01
[illegible]	**μg of Carbon/mL** 6.85E+02
AP-106	

Data Entered By:	RTS	Date:	11/04/96
Signature of Chemist:	RW Schmidt	Date:	11/05/96

SAMPLE.WB1 REV 2.0 344105ML

I:\344105\OUT\13977.WB1 11/04/96 11:18:36

WORKBOOK PAGE: SPIKE5

TOC : LA-344-105 (D-1) **LIQUIDS** **SPIKE**

	Sample Vial Data		Spiked Vial Data	
SPK	Sample Volume in mL (SS)	0.600	Was the sample dilution used? (yes/no)	YES
	H2SO4 Volume in mL (VR)	2.000	Sample Volume in mL (SPK SS)	0.500
13977	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.000
	µg of Carbon in Sample (C1)	35.9	Amount of Spike Std. in mL (SPK VOL)	0.500
TOC-01	µg of Carbon from Baseline (C2)	2	Volume Injected in mL (SPK VI)	0.200
			µg C in Sample + Spike (C3)	79.5
LIQUID			Pre-Spike Dilution Factor (PDF)	4.33
			Spike Book Number	23N12B
96010499			Spike Value in µg/ml	753

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)

S96T005181

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)

TOC01

Percent Spike Recovery = (QC Found) / (QC Actual) * 100

RTS

RWS

RAW

11/04/96

11/02/96

QC Actual in µg/mL	7.53E+02
QC Found in µg/mL	6.06E+02
Percent Spike Recovery	80.4

AP-106

RW Schwelle 11/5/96

WORKBOOK PAGE: SAM6

TOC : LA-344-105 (D-1) LIQUIDS

			SAMPLE
	Sample Volume in mL	(SS)	0.500
SAMPLE	H2SO4 Volume in mL	(VR)	2.000
	Volume Injected in mL	(VI)	0.200
13977	Dilution Factor (calculated)	(DF)	5.000
	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	138.2
	µg of Carbon from Baseline	(C2)	2
LIQUID			

96010499

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

0

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

N/A

S96T005182

T0C01

RTS

RWS

RAW

11/04/96

11/02/96

	Method Detection Limit in µg/mL	2.50E+01
	µg of Carbon/mL	3.40E+03

AP-106

Data Entered By:	RTS	Date:	11/04/96
Signature of Chemist:	RWAdmiraal	Date:	11/5/96

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: DUP7

TOC : LA-344-105 (D-1) LIQUIDS

			DUP
	Sample Volume in mL	(SS)	0.500
DUP	H2SO4 Volume in mL	(VR)	2.000
	Volume Injected in mL	(VI)	0.200
13977	Dilution Factor (calculated)	(DF)	5.000
	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	126.1
	µg of Carbon from Baseline	(C2)	2
LIQUID	Result from Sample Page		3.41E+3

96010499

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

0

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

N/A

S96T005182

TOC01

RTS

RWS

RAW

11/04/96

11/02/96

Method Detection Limit in µg/mL	2.50E+01
µg of Carbon/mL	3.10E+03

AP-106

Data Entered By:	RTS	Date:	11/04/96
Signature of Chemist:	RW Edwards	Date:	11/5/96

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: SAM8

TOC : LA-344-105 (D-1) LIQUIDS

			SAMPLE
	Sample Volume in mL	(SS)	0.600
SAMPLE	H2SO4 Volume in mL	(VR)	2.000
	Volume Injected in mL	(VI)	0.200
13977	Dilution Factor (calculated)	(DF)	4.333
	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	44.2
	µg of Carbon from Baseline	(C2)	2
LIQUID			

96010499

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

0

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

N/A

S96T005183

TOC01

RTS

RWS

RAW

11/04/96

11/02/96

	Method Detection Limit in µg/mL	2.17E+01
	µg of Carbon/mL	9.14E+02

AP-106

Data Entered By:	RTS	Date:	11/04/96
Signature of Chemist:	R W Schroeder	Date:	11/5/96

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: DUP9

TOC : LA-344-105 (D-1) LIQUIDS

			DUP
Sample	Sample Volume in mL	(SS)	0.600
DUP	H2SO4 Volume in mL	(VR)	2.000
	Volume Injected in mL	(VI)	0.200
13977	Dilution Factor (calculated)	(DF)	4.333
	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	40.5
	µg of Carbon from Baseline	(C2)	2
LIQUID	Result from Sample Page		9.14E+2
Batch Number			
96010499			
RQ	µg of Carbon/mL = (C1-C2) * DF * DDF / VI		
0			
Sample Type	Method Detection Limit = 1 µg C * DF * DDF / VI		
N/A			
S96T005183			
Instrument			
TOC01			
Sample Set			
RTS			
Chemist			
RWS			
Data Analysis			
RAW			
Date Computed			
11/04/96			
Analysis Date			
11/02/96			
Analysis Time	Method Detection Limit in µg/mL		2.17E+01
Sample Code	µg of Carbon/mL		8.34E+02
AP-106			

Data Entered By:	RTS	Date:	11/04/96
Signature of Chemist:	RW Schwed	Date:	11/5/96

SAMPLE.WB1 REV 2.0 344105ML

worklistrpt Version 2.1 05/15/95
11/07/96 13:53

LABCORE Data Entry Template for Worklist# 13976

Analyst: _____ **Instrument:** TIC01 _____ **Book #** _____

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AP-106 TIC. RTS

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TIC-02	LIQUID	1	4.00 e1	N/A	ug/mL
										5.87 e2 RUS 11/8/96		
		2	STD				TIC-02	LIQUID	6.02 e2	5.78 e2	N/A	ug/mL
96001337	AP-106 GRAB	3	SAMPLE	S96T005181	0		TIC-02	LIQUID	N/A	5.61 e2	5	ug/mL
96001337	AP-106 GRAB	4	DUP	S96T005181	0		TIC-02	LIQUID	5.61 e2	5.60 e2	N/A	ug/mL
96001337	AP-106 GRAB	5	SPK	S96T005181	0		TIC-02	LIQUID	100	100.0	N/A	ug/mL
96001337	AP-106 GRAB	6	SAMPLE	S96T005182	0		TIC-02	LIQUID	N/A	4.06 e3	5	ug/mL
96001337	AP-106 GRAB	7	DUP	S96T005182	0		TIC-02	LIQUID	4.06 e3	4.09 e3	N/A	ug/mL
96001337	AP-106 GRAB	8	SAMPLE	S96T005183	0		TIC-02	LIQUID	N/A	8.04 e2	5	ug/mL
96001337	AP-106 GRAB	9	DUP	S96T005183	0		TIC-02	LIQUID	8.04 e2	7.72 e2	N/A	ug/mL

Final page for worklist # 13976

See Attached
Analyst Signature **Date**

R Fitch 11/7/96
Analyst Signature **Date**

Data Entry Comments:

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

10/14/96 11:33
A-0004-1

LABCORE Data Entry Template for Worklist# 13976

Analyst: SLS2 **Instrument:** TIC01 #1 **Book#** 22N12F

Method: LA-342-100 Rev/Mod 2.0

Worklist Comment: AP-106 TIC. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				TIC-02	LIQUID		
2	STD				TIC-02	LIQUID		
3	SAMPLE	S96T005181	0		TIC-02	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: TIC-02							
4	DUP	S96T005181	0		TIC-02	LIQUID		
5	SPK	S96T005181	0		TIC-02	LIQUID		
6	SAMPLE	S96T005182	0		TIC-02	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: TIC-02							
7	DUP	S96T005182	0		TIC-02	LIQUID		
8	SAMPLE	S96T005183	0		TIC-02	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: TIC-02							
9	DUP	S96T005183	0		TIC-02	LIQUID		

Final page for worklist # 13976

Jeanie Steele 11/6/96

Analyst Signature **Date**

Analyst Signature **Date**

Data Entry Comments:

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

TIC/TOC : LA-342-100 (E-0)	LIQUIDS		TIC	TOC
	Sample Size in mL	(SS)	0.0000	
BLANK	Dilution Factor	(DF)	1	1
	µg of Carbon in Sample	(C1)	5	
13976	µg of Carbon from Baseline	(C2)	5.4	
TIC-02				
LIQUID				
	µg of Carbon = |C1-C2|			
BLNK				
TIC01				
RTS				
RWS				
JLS2				
11/07/96				
11/06/96			TIC	TOC
	Method Detection Limit in µg/mL		5	40
	µg of Carbon		4.00E-01	
AP-106 GRAB				

Data Entered By:	RTS	Date:	11/07/96
Signature of Chemist:	RW Schmidt	Date:	11/8/96

BLANK.WB1 REV 1.0 342100ML

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
	Sample Size in mL	(SS)	1.0000	
STANDARD	Dilution Factor	(DF)	1	1
	Final Coulometer Reading in µg	(C1)	592.1	
13976	µg of Carbon from Baseline	(C2)	5.4	
	Standard Book Number		22N12F	
TIC-02	Standard Value (µg/ml)		602	

LIQUID

QC Actual in µg/mL = Standard Value (µg/mL)
QC Found in µg/mL = (C1 - C2) * DF / SS
QC Found in µg/mL for TIC = 5 if C1 < C2
QC Found in µg/mL for TOC = 40 if C1 < C2

STD

% Recovery = QC Found / QC Actual * 100

TIC01

RTS

RWS

JLS2

11/07/96

NOTE: FOR TOC: The Reported Result is < 40.

11/06/96

			TIC	TOC
	Method Detection Limit in µg/mL		5	40
	QC Actual in µg/mL		6.02E+02	
	QC Found in µg/mL See Note:	<	5.87E+02	
AP-106 GRAB	Percent Standard Recovery		97.5	

Data Entered By:	RTS	Date:	11/07/96
Signature of Chemist:	Raul Schwabe	Date:	11/8/96

STANDARD.WB1 REV 1.0 342100ML

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
	Sample Size in mL	(SS)	0.1000	
SAMPLE	Dilution Factor	(DF)	1	1
	µg of Carbon in Sample	(C1)	61.5	
13976	µg of Carbon from Baseline	(C2)	5.4	
TIC-02				

LIQUID

µg of Carbon/mL = (C1-C2) * DF / SS
µg of Carbon/mL for TIC = 5 if C1 < C2
µg of Carbon/mL for TOC = 40 if C1 < C2

S96T005181

TIC01

RTS

RWS

JLS2

11/07/96

NOTE: FOR TOC: The Reported Result is < 40.

11/06/96

		TIC	TOC
Method Detection Limit in µg/mL		5	40
µg of Carbon/mL	Note: <	5.61E+02	

AP-106 GRAB

Data Entered By:	RTS	Date:	11/07/96
Signature of Chemist:	RW Schwalen	Date:	11/8/96

SAMPLE.WB1 REV 1.0 342100ML

TIC/TOC : LA-342-100 (E-0)	LIQUIDS		TIC	TOC
	Sample Size in mL	(SS)	0.1000	
DUP	Dilution Factor	(DF)	1	1
	µg of Carbon in Sample	(C1)	61.4	
13976	µg of Carbon from Baseline	(C2)	5.4	
	Known µg of C from Original Sample			
TIC-02				
LIQUID				
	µg of Carbon/mL = (C1-C2) * DF / SS			
	µg of Carbon/mL for TIC = 5 if C1 < C2			
	µg of Carbon/mL for TOC = 40 if C1 < C2			
S96T005181				
TIC01				
RTS				
RWS				
JLS2				
11/07/96				
	NOTE: FOR TOC: The Reported Result is	<	40.	
11/06/96			TIC	TOC
	Method Detection Limit in µg/mL		5	40
	µg of Carbon/mL Note:	<	5.60E+02	
AP-106 GRAB				

Data Entered By:	RTS	Date:	11/07/96
Signature of Chemist:		Date:	11/8/96

DUP.WB1 REV 1.0 342100ML

TIC/TOC : LA-342-100 (E-0) LIQUIDS

	Sample Vial Data		TIC	TOC
SPIKE	Sample Volume in mL	(SS)	0.1000	
	Final Coulometer Reading in µg	(C1)	61.5	
13976	Spiked Vial Data			
	Sample Volume in mL	(SPK SS)	0.1000	
TIC-02	Amount of Spike Std. in mL	(SPK VOL)	0.500	
	Final Coulometer Reading in µg	(C2)	362.5	
LIQUID	Spike Book Number		22N12F	
	Spike Standard Value in µg/ml	(SPK CONC)	602	

Percent Spike Recovery = (C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100

S96T005181

QC Actual in µg/mL = Spike Value (µg/mL)

TIC01

QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100

RTS

RWS

JLS2

11/07/96

11/06/96

		TIC	TOC
	QC Actual in µg/mL	6.02E+02	
	QC Found in µg/mL	6.02E+02	
AP-016 GRAB	Percent Spike Recovery	100.0	

Data Entered By:	RTS	Date:	11/07/96
Signature of Chemist:	Rui Schneider	Date:	11/8/96

SPIKE.WB1 REV 1.1 342100ML

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
	Sample Size in mL	(SS)	0.1000	
SAMPLE	Dilution Factor	(DF)	1	1
	µg of Carbon in Sample	(C1)	411.9	
13976	µg of Carbon from Baseline	(C2)	5.4	
TIC-02				

LIQUID

µg of Carbon/mL = (C1-C2) * DF / SS
µg of Carbon/mL for TIC = 5 if C1 < C2
µg of Carbon/mL for TOC = 40 if C1 < C2

S96T005182

TIC01

RTS

RWS

JLS2

11/07/96

NOTE: FOR TOC: The Reported Result is < 40.

11/06/96

			TIC	TOC
Method Detection Limit in µg/mL			5	40
µg of Carbon/mL	Note:	<	4.06E+03	

AP-106 GRAB

Data Entered By:	RTS	Date:	11/07/96
Signature of Chemist:	RW Schrotter	Date:	11/6/96

SAMPLE.WB1 REV 1.0 342100ML

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
	Sample Size in mL	(SS)	0.1000	
DUP	Dilution Factor	(DF)	1	1
	µg of Carbon in Sample	(C1)	414.2	
13976	µg of Carbon from Baseline	(C2)	5.4	
	Known µg of C from Original Sample			
TIC-02				

LIQUID

µg of Carbon/mL = (C1-C2) * DF / SS
µg of Carbon/mL for TIC = 5 if C1 < C2
µg of Carbon/mL for TOC = 40 if C1 < C2

S96T005182

TIC01

RTS

RWS

JLS2

11/07/96

NOTE: FOR TOC: The Reported Result is < 40.

11/06/96

			TIC	TOC
Method Detection Limit in µg/mL			5	40
µg of Carbon/mL	Note:	<	4.09E+03	

AP-106 GRAB

Data Entered By:	RTS	Date:	11/07/96
Signature of Chemist:	RW Schneider	Date:	11/8/96

DUP.WB1 REV 1.0 342100ML

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
	Sample Size in mL	(SS)	0.1000	
SAMPLE	Dilution Factor	(DF)	1	1
	µg of Carbon in Sample	(C1)	85.8	
13976	µg of Carbon from Baseline	(C2)	5.4	
TIC-02				
LIQUID				
	µg of Carbon/mL = (C1-C2) * DF / SS			
	µg of Carbon/mL for TIC = 5 if C1 < C2			
	µg of Carbon/mL for TOC = 40 if C1 < C2			
S96T005183				
TIC01				
RTS				
RWS				
JLS2				
11/07/96				
	NOTE: FOR TOC: The Reported Result is	<	40.	
11/06/96			TIC	TOC
	Method Detection Limit in µg/mL		5	40
	µg of Carbon/mL Note:	<	8.04E+02	
AP-106 GRAB				

Data Entered By:	RTS	Date:	11/07/96
Signature of Chemist:	RW Schroeder	Date:	11/8/96

SAMPLE.WB1 REV 1.0 342100ML

TIC/TOC : LA-342-100 (E-0) **LIQUIDS**

			TIC	TOC
	Sample Size in mL	(SS)	0.1000	
DUP	Dilution Factor	(DF)	1	1
	µg of Carbon in Sample	(C1)	82.6	
13976	µg of Carbon from Baseline	(C2)	5.4	
	Known µg of C from Original Sample			
TIC-02				

LIQUID

µg of Carbon/mL = (C1-C2) * DF / SS
µg of Carbon/mL for TIC = 5 if C1 < C2
µg of Carbon/mL for TOC = 40 if C1 < C2

S96T005183

TIC01

RTS

RWS

JLS2

11/07/96

NOTE: FOR TOC: The Reported Result is < 40.

11/06/96

		TIC	TOC
Method Detection Limit in µg/mL		5	40
µg of Carbon/mL	Note: <	7.72E+02	

AP-106 GRAB

Data Entered By:	RTS	Date:	11/07/96
Signature of Chemist:	RW Schroeder	Date:	11/8/96

DUP.WB1 REV 1.0 342100ML

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

Sample: 1-BASELINE Date: 11/06/96 Time: 09:34:21

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

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	0.20	100.00
3	1.51	0.60	66.67
4	2.01	1.00	40.00
5	2.51	1.40	28.57
6	3.01	1.70	17.65
7	3.51	2.00	15.00
8	4.01	2.20	9.09
9	4.51	2.50	12.00
10	5.01	2.70	7.41
11	5.50	3.00	10.00
12	6.00	3.20	6.25
13	6.50	3.50	8.57
14	7.00	3.80	7.89
15	7.50	4.00	5.00
16	8.00	4.10	2.44
17	8.50	4.40	6.82
18	9.00	4.60	4.35
19	9.50	4.90	6.12
20	10.00	5.00	2.00
21	10.50	5.20	3.85
22	11.00	5.40	3.70

BLANK VALUE = 5.4 micrograms carbon
BLANK FACTOR = 5.4 / 11.0025 = +4.9E-01 ug/min Carbon

Sample Run By: Jackie Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1-STD 22N12F Date: 11/06/96 Time: 10:41:08

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

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.30	0.00
2	1.01	39.40	94.16
3	1.51	192.00	79.48
4	2.01	331.40	42.06
5	2.51	428.50	22.66
6	3.01	486.90	11.99
7	3.50	517.90	5.99
8	4.00	534.00	3.01
9	4.50	545.00	2.02
10	5.00	552.30	1.32
11	5.50	558.30	1.07
12	6.00	563.30	0.89
13	6.50	567.50	0.74
14	7.00	571.60	0.72
15	7.50	574.90	0.57
16	8.00	578.00	0.54
17	8.50	580.90	0.50
18	9.00	583.50	0.45
19	9.50	585.90	0.41
20	10.00	588.10	0.37
21	10.50	590.30	0.37
22	11.00	592.10	0.30

USER INPUT BLANK VALUE
BLANK VALUE = 5.391226 micrograms carbon
BLANK FACTOR = 5.391226 / 11.0025 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(592.1 - 5.389851)(1)/(1) = +5.867E+02 g/L Carbon
(592.1 - 5.389851)(1)/(1)(12) = +4.889E+01 Molar Carbon

Sample Run By: Jessie Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1-BLANK Date: 11/06/96 Time: 13:48:53

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

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.01	0.50	80.00
3	1.51	0.90	44.44
4	2.01	1.30	30.77
5	2.51	1.60	18.75
6	3.01	1.90	15.79
7	3.51	2.10	9.52
8	4.00	2.30	8.70
9	4.50	2.60	11.54
10	5.00	2.70	3.70
11	5.50	3.00	10.00
12	6.00	3.10	3.23
13	6.50	3.20	3.13
14	7.00	3.60	11.11
15	7.50	3.70	2.70
16	8.00	3.90	5.13
17	8.50	4.10	4.88
18	9.00	4.30	4.65
19	9.50	4.50	4.44
20	10.00	4.60	2.17
21	10.50	4.80	4.17
22	11.00	5.00	4.00

USER INPUT BLANK VALUE
BLANK VALUE = 5.391226 micrograms carbon
BLANK FACTOR = 5.391226 / 11.0025 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(5 - 5.389432)(1)/(1) = < 5.00 E-3 g/L Carbon
(5 - 5.389432)(1)/(1)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: Jackie Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1-S96T005181 Date: 11/06/96 Time: 14:04:38

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

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	2.80	96.43
3	1.51	14.10	80.14
4	2.00	30.20	53.31
5	2.51	43.30	30.25
6	3.01	50.90	14.93
7	3.51	55.10	7.62
8	4.01	56.90	3.16
9	4.50	57.90	1.73
10	5.00	58.40	0.86
11	5.50	58.80	0.68
12	6.00	59.20	0.68
13	6.50	59.50	0.50
14	7.00	59.70	0.34
15	7.50	60.00	0.50
16	8.00	60.30	0.50
17	8.50	60.50	0.33
18	9.00	60.70	0.33
19	9.50	60.90	0.33
20	10.00	61.10	0.33
21	10.50	61.30	0.33
22	11.00	61.50	0.33

USER INPUT BLANK VALUE
BLANK VALUE = 5.391226 micrograms carbon
BLANK FACTOR = 5.391226 / 11.0025 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(61.5 - 5.389881)(1)/(1) = +5.61E+01 g/L Carbon
(61.5 - 5.389881)(1)/(1)(12) = +4.68E+00 Molar Carbon

Sample Run By: Jackie Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1-5181 DUP Date: 11/06/96 Time: 14:18:43

Sample Size = 1 uL ,100ml Analyst : JL STEELE
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .49 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	3.00	90.00
3	1.51	15.70	80.89
4	2.00	32.20	51.24
5	2.50	45.00	28.44
6	3.00	52.00	13.46
7	3.50	55.60	6.47
8	4.00	57.10	2.63
9	4.50	58.00	1.55
10	5.00	58.50	0.85
11	5.50	58.80	0.51
12	6.00	59.10	0.51
13	6.50	59.40	0.51
14	7.00	59.70	0.50
15	7.50	59.90	0.33
16	8.00	60.20	0.50
17	8.50	60.40	0.33
18	9.00	60.60	0.33
19	9.50	60.80	0.33
20	10.00	61.00	0.33
21	10.50	61.20	0.33
22	11.00	61.40	0.33

USER INPUT BLANK VALUE
BLANK VALUE = 5.391226 micrograms carbon
BLANK FACTOR = 5.391226 / 11.0025 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(61.4 - 5.390299)(1)/(1) = +5.60E+01 g/L Carbon
(61.4 - 5.390299)(1)/(1)(12) = +4.67E+00 Molar Carbon

Sample Run By: Jackie Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1-5181 SPIKE Date: 11/06/96 Time: 14:32:44

Sample Size = 1 uL ,100ml + Analyst : JL STEELE
Dil Factor = 1 ,500ml 22N12F Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .49 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	9.50	98.95
3	1.51	80.60	88.21
4	2.00	185.60	56.57
5	2.50	270.50	31.39
6	3.00	318.00	14.94
7	3.50	342.00	7.02
8	4.00	352.10	2.87
9	4.50	356.30	1.18
10	5.00	358.10	0.50
11	5.50	359.20	0.31
12	6.00	359.70	0.14
13	6.50	360.10	0.11
14	7.00	360.40	0.08
15	7.50	360.70	0.08
16	8.00	361.10	0.11
17	8.50	361.40	0.08
18	9.00	361.60	0.06
19	9.50	361.80	0.06
20	10.00	362.00	0.06
21	10.50	362.30	0.08
22	11.00	362.50	0.06

USER INPUT BLANK VALUE
BLANK VALUE = 5.391226 micrograms carbon
BLANK FACTOR = 5.391226 / 11.0025 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(362.5 - 5.38991)(1)/(1) = +3.571E+02 g/L Carbon
(362.5 - 5.38991)(1)/(1)(12) = +2.976E+01 Molar Carbon

Sample Run By: Jackie Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1-S96T005182 Date: 11/06/96 Time: 14:45:45

Sample Size = 1 uL .100ml
Dil Factor = 1
Blank ID # =
Blank Value = .49 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ====	Analysis Time ====	Coulometer ====	% Difference ==
1	0.51	0.20	0.00
2	1.01	7.30	97.26
3	1.51	63.60	88.52
4	2.01	158.70	59.92
5	2.51	254.90	37.74
6	3.01	327.30	22.12
7	3.51	368.90	11.28
8	4.01	389.40	5.26
9	4.50	398.50	2.28
10	5.00	402.80	1.07
11	5.50	404.90	0.52
12	6.00	406.20	0.32
13	6.50	407.20	0.25
14	7.00	407.90	0.17
15	7.50	408.60	0.17
16	8.00	409.10	0.12
17	8.50	409.80	0.17
18	9.00	410.30	0.12
19	9.50	410.70	0.10
20	10.00	411.10	0.10
21	10.50	411.50	0.10
22	11.00	411.90	0.10

USER INPUT BLANK VALUE
BLANK VALUE = 5.391226 micrograms carbon
BLANK FACTOR = 5.391226 / 11.0025 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(411.9 - 5.390329)(1)/(1) = +4.065E+02 g/L Carbon
(411.9 - 5.390329)(1)/(1)(12) = +3.388E+01 Molar Carbon

Sample Run By: Jeanie Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1-5182 DUP Date: 11/06/96 Time: 14:58:52

Sample Size = 1 uL , 100ml
Dil Factor = 1
Blank ID # =
Blank Value = .49 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.00	9.80	96.94
3	1.50	79.30	87.64
4	2.00	187.10	57.62
5	2.50	285.20	34.40
6	3.00	348.50	18.16
7	3.51	381.00	8.53
8	4.00	395.80	3.74
9	4.50	402.30	1.62
10	5.00	405.50	0.79
11	5.50	407.00	0.37
12	6.00	408.20	0.29
13	6.50	409.00	0.20
14	7.00	409.80	0.20
15	7.50	410.50	0.17
16	8.00	411.10	0.15
17	8.50	411.70	0.15
18	9.00	412.30	0.15
19	9.50	412.80	0.12
20	10.00	413.30	0.12
21	10.50	413.70	0.10
22	11.00	414.20	0.12

USER INPUT BLANK VALUE
BLANK VALUE = 5.391226 micrograms carbon
BLANK FACTOR = 5.391226 / 11.0025 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(414.2 - 5.390329)(1)/(1) = +4.088E+02 g/L Carbon
(414.2 - 5.390329)(1)/(1)(12) = +3.407E+01 Molar Carbon

Sample Run By: Jl Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1-S96T005183 Date: 11/06/96 Time: 15:11:09

Sample Size = 1 uL ,100ml
Dil Factor = 1
Blank ID # =
Blank Value = .49 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	3.10	87.10
3	1.51	19.30	83.94
4	2.01	42.30	54.37
5	2.51	61.50	31.22
6	3.01	72.70	15.41
7	3.51	77.90	6.68
8	4.00	80.00	2.62
9	4.50	81.10	1.36
10	5.00	81.80	0.86
11	5.50	82.30	0.61
12	6.00	82.70	0.48
13	6.50	83.00	0.36
14	7.00	83.40	0.48
15	7.50	83.70	0.36
16	8.00	84.10	0.48
17	8.50	84.30	0.24
18	9.00	84.60	0.35
19	9.50	84.90	0.35
20	10.00	85.20	0.35
21	10.50	85.50	0.35
22	11.00	85.80	0.35

USER INPUT BLANK VALUE
BLANK VALUE = 5.391226 micrograms carbon
BLANK FACTOR = 5.391226 / 11.0025 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(85.8 - 5.390718)(1)/(1) = +8.04E+01 g/L Carbon
(85.8 - 5.390718)(1)/(1)(12) = +6.70E+00 Molar Carbon

Sample Run By: Jackie Steele
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1-5183 DUP Date: 11/06/96 Time: 15:26:20

Sample Size = 1 uL ,100mP
Dil Factor = 1
Blank ID # =
Blank Value = .49 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	3.40	91.18
3	1.51	22.00	84.55
4	2.00	46.60	52.79
5	2.50	64.70	27.98
6	3.00	73.30	11.73
7	3.50	76.80	4.56
8	4.00	78.20	1.79
9	4.50	78.90	0.89
10	5.00	79.40	0.63
11	5.50	79.60	0.25
12	6.00	80.00	0.50
13	6.50	80.30	0.37
14	7.00	80.50	0.25
15	7.50	80.90	0.49
16	8.00	81.20	0.37
17	8.50	81.40	0.25
18	9.00	81.70	0.37
19	9.50	81.90	0.24
20	10.00	82.20	0.36
21	10.50	82.40	0.24
22	11.00	82.60	0.24

USER INPUT BLANK VALUE
BLANK VALUE = 5.391226 micrograms carbon
BLANK FACTOR = 5.391226 / 11.0025 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:
(82.6 - 5.389432)(1)/(1) = +7.72E+01 g/L Carbon
(82.6 - 5.389432)(1)/(1)(12) = +6.43E+00 Molar Carbon

Sample Run By: Jackie Steele
JL STEELE 00000

RADIOCHEMICAL ANALYSIS

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LABCORE Completed RadChem Report for Worklist#: 13973

Analyst: slh **Instrument:** GEA03 **Book#** _____

Method: _____Rev/Mod _____

Worklist Comment: AP106, @GEA-01, See traveler for sample sizes. skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual		Found	DL or Yield	Unit
1	STD		0	@GEA-01	CO60-02	LIQUID	7.941e-03		7.86e-03	98.980	% Recovery
1	STD		0	@GEA-01	CO60-02E	LIQUID	1		2.20	2.200	% Ct Error
1	STD		0	@GEA-01	CS13702	LIQUID	7.715e-03		7.68e-03	99.546	% Recovery
1	STD		0	@GEA-01	CS13702E	LIQUID	1		2.92	2.920	% Ct Error
2	BLNK		0	@GEA-01	CO60-02	LIQUID	1		<2.25e-4		uCi/mL
2	BLNK		0	@GEA-01	CS13702	LIQUID	1		<6.43e-4		uCi/mL
3	SAMPLE	S96T005184	0	@GEA-01	CO60-02	LIQUID	N/A	<	3.711e-04	371.1e-006	uCi/mL
3	SAMPLE	S96T005184	0	@GEA-01	CO60-02E	LIQUID	N/A		n/a	0.0e+000	% Ct. Error
3	SAMPLE	S96T005184	0	@GEA-01	CS13702	LIQUID	N/A		1.020e+01	0.0e+000	uCi/mL
3	SAMPLE	S96T005184	0	@GEA-01	CS13702E	LIQUID	N/A		0.220	0.0e+000	% Ct. Error
4	DUP	S96T005184	0	@GEA-01	CO60-02	LIQUID	<3.71e-4		<3.87e-4		RPD
4	DUP	S96T005184	0	@GEA-01	CO60-02E	LIQUID	1		n/a		% Ct Error
4	DUP	S96T005184	0	@GEA-01	CS13702	LIQUID	1.02e+01		9.36e+00	8.589	RPD
4	DUP	S96T005184	0	@GEA-01	CS13702E	LIQUID	1		0.220	0.220	% Ct Error
5	SAMPLE	S96T005185	0	@GEA-01	CO60-02	LIQUID	N/A	<	3.064e-02	306.4e-004	uCi/mL
5	SAMPLE	S96T005185	0	@GEA-01	CO60-02E	LIQUID	N/A		n/a	0.0e+000	% Ct. Error
5	SAMPLE	S96T005185	0	@GEA-01	CS13702	LIQUID	N/A		1.390e+02	0.0e+000	uCi/mL
5	SAMPLE	S96T005185	0	@GEA-01	CS13702E	LIQUID	N/A		0.580	0.0e+000	% Ct. Error
6	DUP	S96T005185	0	@GEA-01	CO60-02	LIQUID	<3.06e-2		<2.60e-2		RPD
6	DUP	S96T005185	0	@GEA-01	CO60-02E	LIQUID	1		n/a		% Ct Error
6	DUP	S96T005185	0	@GEA-01	CS13702	LIQUID	1.39e+02		1.39e+02	0.000	RPD
6	DUP	S96T005185	0	@GEA-01	CS13702E	LIQUID	1		0.580	0.580	% Ct Error
7	SAMPLE	S96T005186	0	@GEA-01	CO60-02	LIQUID	N/A	<	7.579e-04	757.9e-006	uCi/mL
7	SAMPLE	S96T005186	0	@GEA-01	CO60-02E	LIQUID	N/A		n/a	0.0e+000	% Ct. Error
7	SAMPLE	S96T005186	0	@GEA-01	CS13702	LIQUID	N/A		2.500e+01	0.0e+000	uCi/mL
7	SAMPLE	S96T005186	0	@GEA-01	CS13702E	LIQUID	N/A		0.140	0.0e+000	% Ct. Error
8	DUP	S96T005186	0	@GEA-01	CO60-02	LIQUID	<7.58e-4		<7.59e-4		RPD
8	DUP	S96T005186	0	@GEA-01	CO60-02E	LIQUID	1		n/a		% Ct Error
8	DUP	S96T005186	0	@GEA-01	CS13702	LIQUID	2.50e+01		2.43e+01	2.840	RPD
8	DUP	S96T005186	0	@GEA-01	CS13702E	LIQUID	1		0.140	0.140	% Ct Error

Comments Section:

Comments for sample# S96T005184 **and test** @GEA-01 .
DL=0 => n/a.

Comments for sample# S96T005185 **and test** @GEA-01 .
DL=0 => n/a.

Comments for sample# S96T005186 **and test** @GEA-01 .

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

LABCORE Completed RadChem Report for Worklist#: 13973

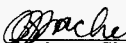
Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit

DL=0 => n/a.

Final page for worklist# 13973

Analyst Signature **Date**

Analyst Signature **Date**



10/31/96

Reviewer Signature **Date**

LABCORE Data Entry Template for Worklist# 13973

Analyst: SLH **Instrument:** GEA00 3 **Book#** 62B56

Method: LA-548-121 Rev/Mod E-0

Worklist Comment: AP106, @GEA-01, See traveler for sample sizes. skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@GEA-01	LIQUID		
2	BLNK				@GEA-01	LIQUID		
3	SAMPLE	S96T005184	0		@GEA-01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E							
4	DUP	S96T005184	0		@GEA-01	LIQUID		
5	SAMPLE	S96T005185	0		@GEA-01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E							
6	DUP	S96T005185	0		@GEA-01	LIQUID		
7	SAMPLE	S96T005186	0		@GEA-01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E							
8	DUP	S96T005186	0		@GEA-01	LIQUID		

Final page for worklist # 13973

Sandra L Hood Boeing WT
Analyst Signature **Date** 10-29-96

Analyst Signature **Date** 10/31/96

Data Entry Comments:

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

```
********************************************************************************
* 222-S Laboratory Counting Room   29-OCT-1996 21:32:58.95                     *
********************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              13973
Sample ID:               WL13973-STD
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             dka300:[spec.GEA3]3g3833.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:06.00 sec
Dead Time:               0.2%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       29-OCT-1996 20:42:13.92
Decayed to:              29-OCT-1996 20:42:13.92
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 AKH
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
********************************************************************************
```

Removed by: C Hudson

Verified by: B Bachelor 10/30/96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	86.77	157	0.88	174.05	171	6	74.6		NP-237	0.580
									EU-155	0.219
									CD-109	1.93
0	105.58	222	2.17	211.66	209	7	54.8		EU-155	0.360
0	122.88	16281	1.27	246.24	239	13	2.0		EU-152	18.3
									CO-57	6.06
									EU-154	12.8
0	247.87	1701	1.22	496.11	489	11	10.6		EU-154	11.1
0	344.21	835	1.40	688.73	683	12	16.5		EU-152	1.78
0	443.79	170	1.58	887.84	882	12	74.1			
0	582.29*	127	1.39	1164.77	1161	9	60.5			
0	591.83	673	1.70	1183.84	1178	12	15.8			
0	661.58*	6798	1.62	1323.34	1317	14	2.9		CS-137	7.68
0	692.17	200	1.62	1384.51	1379	11	42.6		CO-57	123.
0	723.24	2325	1.63	1446.64	1440	13	5.6		EU-154	12.1
0	756.89	574	1.76	1513.95	1509	13	17.3			
0	778.62	245	2.19	1557.41	1550	18	54.2		EU-152	2.09
0	873.06	1159	1.75	1746.30	1741	12	9.4		EU-154	11.7
0	964.03	259	2.15	1928.25	1922	13	36.6		EU-152	2.39
0	996.08	1010	1.80	1992.35	1986	13	10.3		EU-154	13.4
0	1004.67	1722	1.86	2009.53	2003	14	7.0		EU-154	13.3
0	1085.25	129	2.35	2170.73	2165	12	58.2		EU-152	1.91

Post-NID Peak Search Report (continued)
Sample ID : WL13973-STD Acquisition date : 29-OCT-1996 20:42:13

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	1111.64	191	1.55	2223.51	2218	12	37.8		EU-152	2.12
0	1173.07	4978	1.96	2346.41	2339	16	3.1		CO-60	7.85
0	1213.53	52	3.14	2427.35	2424	10	56.5			
0	1245.99	63	0.85	2492.28	2487	15	66.4			
0	1274.21	2637	2.11	2548.76	2540	18	4.3		EU-154	12.9
0	1332.28	4491	2.06	2664.93	2657	17	3.1		CO-60	7.86
0	1396.98	63	1.68	2794.39	2787	14	30.9			
0	1407.83	217	1.98	2816.09	2809	18	18.8		EU-152	1.90
0	1493.17	61	1.89	2986.86	2978	19	35.1			
0	1596.78	138	2.07	3194.20	3183	22	22.8			

Summary of Nuclide Activity
Sample ID : WL13973-STD Acquisition date : 29-OCT-1996 20:42:13

Total number of lines in spectrum 28
Number of unidentified lines 7
Number of lines tentatively identified by NID 21 75.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~CO-57~~	~~271.80D~~	~~1.000~~	~~1.234E+02~~	~~1.234E+02~~	~~0.526E+02~~	~~42.62~~	~~ISYE~~
CO-60	5.27Y	1.000	7.855E+00	7.855E+00	0.173E+00	2.20	
~~CD-109~~	~~462.90D~~	~~1.000~~	~~1.930E+00~~	~~1.930E+00~~	~~1.441E+00~~	~~74.64~~	~~BLG~~
CS-137	30.00Y	1.000	7.683E+00	7.683E+00	0.224E+00	2.92	
EU-152	13.54Y	1.000	1.890E+00	1.890E+00	0.204E+00	10.81	
EU-154	8.59Y	1.000	1.252E+01	1.252E+01	0.034E+01	2.71	
~~EU-155~~	~~4.68Y~~	~~1.000~~	~~3.599E-01~~	~~3.599E-01~~	~~1.974E-01~~	~~54.84~~	~~BLG~~
~~NP-237~~	~~2.14E+06Y~~	~~1.000~~	~~5.798E-01~~	~~5.798E-01~~	~~4.327E-01~~	~~74.64~~	~~BLG~~
	Total Activity :		1.562E+02	1.562E+02			
	Grand Total Activity :		1.562E+02	1.562E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : WL13973-STD Acquisition date : 29-OCT-1996 20:42:13

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	651.	477.59	8.4062E-01
NA-22	2681.	1274.53	4.0644E-01
NA-24	26.	1368.55	4.3417E-02
K-40	135.	1460.75	9.4990E-01
CR-51	658.	320.08	6.3596E-01
MN-54	384.	834.83	1.0709E-01
CO-56	513.	846.76	1.2540E-01
CO-58	428.	810.78	1.1088E-01
FE-59	318.	1099.25	2.1883E-01
SE-75	835.	264.66	1.0732E-01
SR-85	572.	514.01	9.0074E-02
Y-88	3.	1836.06	1.7641E-02
NB-94	1276.	871.09	2.0269E-01
ZRNB-95	2593.	724.18	5.6390E-01
RU-103	559.	497.08	9.1445E-02
RURH-106	410.	621.93	1.7341E+00
AG-108m	2649.	722.94	2.7390E-01
AG-110M	573.	657.76	1.1280E-01
SN-113	633.	391.69	1.1440E-01
TE-123m	849.	159.00	5.1887E-02
SB-124	436.	602.73	8.8330E-02
SB-125	616.	427.89	2.6352E-01
TE-125m	1287.	109.27	2.0217E+01
I-131	644.	364.48	8.6243E-02
CS-134	434.	604.70	8.8629E-02
BA-140	500.	537.31	3.4405E-01
LA-140	143.	1596.21	1.1800E-01
CEPR-144	847.	133.51	7.6194E-01
HG-203	770.	279.20	7.6872E-02
TL-208	782.	277.36	9.9523E-01
BI-212	407.	727.18	1.4729E+00
PB-212	1007.	238.63	1.4657E-01
BI-214	473.	609.31	2.0275E-01
PB-214	627.	351.92	3.3494E-01
RA-224	935.	240.99	1.5681E+00
RA-226	969.	186.10	1.4575E+00
AC-228	420.	911.21	4.5391E-01
TH-228	1358.	84.37	6.5041E+00
TH-229	1334.	88.47	3.0340E-01
PA-233	682.	312.17	1.6592E-01
UTH-233	1413.	245.34	7.2275E+01
PA-234M	520.	1001.03	2.4707E-01
TH-234	751.	63.29	3.2571E+00
U-235	957.	185.71	8.8029E-02
NP-239	1371.	106.12	2.6476E-01
PU-239	862.	129.30	6.6867E+02
AM-241	792.	59.54	5.9049E-01
AM-243	902.	74.67	1.4808E-01

```
********************************************************************************
* 222-S Laboratory Counting Room   29-OCT-1996 22:34:39.58                     *
********************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:             13973
Sample ID:              WL13973-BLK
Sample Size:            1.00000E-04 L
Dilution Factor:        1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:            GEA3
File Number:            dka300:[spec.GEA3]3g3834.cnf
Geometry:               42
Count Time:             0 00:50:00.00 sec
Real Time:              0 00:50:00.43 sec
Dead Time:              0.0%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:      29-OCT-1996 21:44:02.80
Decayed to:             29-OCT-1996 21:44:02.80
Standard Deviations:    2
Analysis Library:       ENVGEA
Analyst:                AKH
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
***** No peaks found *****
```

Removed by:

Verified by: 10/30/96

WHC-SD-WM-DP-217, REV. 0

Summary of Nuclide Activity
Sample ID : WL13973-BLK

Acquisition date : 29-OCT-1996 21:44:02

**** There are no nuclides meeting summary criteria ****

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	30.	477.59	1.7900E+00
NA-22	10.	1274.53	2.5297E-01
NA-24	7.	1368.55	2.2123E-01
K-40	105.	1460.75	8.3819E+00
CR-51	64.	320.08	1.9782E+00
MN-54	20.	834.83	2.4512E-01
CO-56	19.	846.76	2.3997E-01
CO-57	80.	122.06	1.5439E-01
CO-58	16.	810.78	2.1255E-01
FE-59	11.	1099.25	4.0834E-01
CO-60	8.	1332.50	2.2510E-01
SE-75	74.	264.66	3.1939E-01
SR-85	43.	514.01	2.4575E-01
Y-88	2.	1836.06	1.4753E-01
NB-94	20.	871.09	2.5283E-01
ZRNB-95	29.	724.18	5.9264E-01
RU-103	32.	497.08	2.1981E-01
RURH-106	21.	621.93	3.9367E+00
AG-108m	24.	722.94	2.5828E-01
CD-109	60.	88.03	4.4474E+00
AG-110M	22.	657.76	2.2187E-01
SN-113	34.	391.69	2.6604E-01
TE-123m	76.	159.00	1.5482E-01
SB-124	14.	602.73	1.5719E-01
SB-125	52.	427.89	7.6706E-01
TE-125m	66.	109.27	4.5850E+01
I-131	34.	364.48	1.9931E-01
CS-134	15.	604.70	1.6223E-01
CS-137	150.	661.66	6.4268E-01
BA-140	29.	537.31	8.2871E-01
LA-140	3.	1596.21	1.7457E-01
CEPR-144	75.	133.51	2.2736E+00
EU-152	9.	1408.01	1.2143E+00
EU-154	10.	1274.51	7.3496E-01
EU-155	62.	105.31	5.9151E-01
HG-203	60.	279.20	2.1492E-01
TL-208	55.	277.36	2.6296E+00
BI-212	34.	727.18	4.2436E+00
PB-212	85.	238.63	4.2468E-01
BI-214	52.	609.31	6.7037E-01
PB-214	75.	351.92	1.1599E+00
RA-224	82.	240.99	4.6518E+00
RA-226	80.	186.10	4.1970E+00
AC-228	28.	911.21	1.1783E+00
TH-228	65.	84.37	1.4209E+01
TH-229	67.	88.47	6.7760E-01
PA-233	52.	312.17	4.5711E-01
UTH-233	70.	245.34	1.6117E+02
PA-234M	14.	1001.03	4.0591E-01
TH-234	60.	63.29	9.1961E+00
U-235	85.	185.71	2.6257E-01

Minimum Detectable Activity Report (continued)
Sample ID : WL13973-BLK Acquisition date : 29-OCT-1996 21:44:02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-237	65.	86.48	1.3878E+00
NP-239	69.	106.12	5.9248E-01
PU-239	75.	129.30	1.9755E+03
AM-241	44.	59.54	1.3878E+00
AM-243	71.	74.67	4.1586E-01

****
* 222-S Laboratory Counting Room   29-OCT-1996 23:33:18.57 *
****

>>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<

Worklist #: 13973
Sample ID: S96T005184-SAM
Sample Size: 1.00000E-04 L
Dilution Factor: 1.00000E+00

Removed by: A Hurson

>>>>>>>>>> COUNT INFORMATION <<<<<<<<<<

Detector ID: GEA3
File Number: dka300:[spec.GEA3]3g3835.cnf
Geometry: 42
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:51:53.52 sec
Dead Time: 3.6%

Verified by: Bracheboy 10/30/96

WHC-SD-WM-DP-217, REV. 0

>>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<

Sample Count Time: 29-OCT-1996 22:40:41.32
Decayed to: 29-OCT-1996 22:40:41.32
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: AKH
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	604.75	772	1.40	1209.69	1206	8	30.8		CS-134	7.06
0	661.56*	903988	1.62	1323.30	1315	17	0.2		CS-137	1.022E+04
0	795.74	493	1.74	1591.63	1586	12	22.0		CS-134	6.51
0	1321.95	226	3.53	2644.26	2637	20	29.8			

Summary of Nuclide Activity
Sample ID : S96T005184-SAM Acquisition date : 29-OCT-1996 22:40:41

Total number of lines in spectrum 4
Number of unidentified lines 1
Number of lines tentatively identified by NID 3 75.00%

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-134	2.06Y	1.000	6.676E+00	6.676E+00	1.195E+00	17.90	
CS-137	30.00Y	1.000	1.022E+04	1.022E+04	0.002E+04	0.22	
	Total Activity :		1.022E+04	1.022E+04			
Grand Total Activity :			1.022E+04	1.022E+04			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	27417.	477.59	5.4550E+01
NA-22	93.	1274.53	7.5797E-01
NA-24	7.	1368.55	2.2575E-01
K-40	133.	1460.75	9.4537E+00
CR-51	21628.	320.08	3.6461E+01
MN-54	523.	834.83	1.2502E+00
CO-56	438.	846.76	1.1594E+00
CO-57	22181.	122.06	2.5775E+00
CO-58	518.	810.78	1.2207E+00
FE-59	155.	1099.25	1.5247E+00
CO-60	21.	1332.50	3.7110E-01
SE-75	23618.	264.66	5.7080E+00
SR-85	13864.	514.01	4.4350E+00
Y-88	1.	1836.06	1.0492E-01
NB-94	409.	871.09	1.1476E+00
ZRNB-95	718.	724.18	2.9678E+00
RU-103	16937.	497.08	5.0344E+00
RURH-106	4973.	621.93	6.0428E+01
AG-108m	723.	722.94	1.4313E+00
CD-109	19244.	88.03	7.9496E+01
AG-110M	22194.	657.76	7.0178E+00
SN-113	23562.	391.69	6.9784E+00
TE-123m	22926.	159.00	2.6958E+00
SB-124	5759.	602.73	3.2121E+00
SB-125	27500.	427.89	1.7600E+01
TE-125m	20438.	109.27	8.0553E+02
I-131	22119.	364.48	5.0558E+00
BA-140	9622.	537.31	1.5100E+01
LA-140	5.	1596.21	2.1089E-01
CEPR-144	22951.	133.51	3.9655E+01
EU-152	8.	1408.01	1.1321E+00
EU-154	93.	1274.51	2.1998E+00
EU-155	20073.	105.31	1.0661E+01
HG-203	22764.	279.20	4.1789E+00
TL-208	22871.	277.36	5.3809E+01
BI-212	784.	727.18	2.0444E+01
PB-212	26388.	238.63	7.5038E+00
BI-214	5196.	609.31	6.7206E+00
PB-214	21734.	351.92	2.0087E+01
RA-224	25862.	240.99	8.2487E+01
RA-226	30804.	186.10	8.2178E+01
AC-228	340.	911.21	4.0821E+00
TH-228	19182.	84.37	2.4444E+02
TH-229	19235.	88.47	1.1519E+01
PA-233	21738.	312.17	9.3640E+00
UTH-233	25671.	245.34	3.0803E+03
PA-234M	213.	1001.03	1.5790E+00
TH-234	17813.	63.29	1.5865E+02
U-235	30468.	185.71	4.9673E+00
NP-237	19113.	86.48	2.3795E+01
NP-239	20018.	106.12	1.0117E+01

Minimum Detectable Activity Report (continued)
Sample ID : S96T005184-SAM Acquisition date : 29-OCT-1996 22:40:41

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	22586.	129.30	3.4234E+04
AM-241	17925.	59.54	2.8085E+01
AM-243	18645.	74.67	6.7325E+00

****
* 222-S Laboratory Counting Room 30-OCT-1996 00:31:22.98 *
****

>>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<

Worklist #:	13973
Sample ID:	S96T005184-DUP
Sample Size:	1.00000E-04 L
Dilution Factor:	1.00000E+00

Removed by: G Hudson

>>>>>>>>>> COUNT INFORMATION <<<<<<<<<<

Detector ID:	GEA3
File Number:	dka300:[spec.GEA3]3g3836.cnf
Geometry:	42
Count Time:	0 00:50:00.00 sec
Real Time:	0 00:51:44.13 sec
Dead Time:	3.4%

Verified by: Machelon 10/30/96

>>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<

Sample Count Time:	29-OCT-1996 23:38:59.80
Decayed to:	29-OCT-1996 23:38:59.80
Standard Deviations:	2
Analysis Library:	ENVGEA
Analyst:	AKH
Background Subtract:	DKA300:[SPEC.GEA3]3GBACK

WHC-SD-WM-DP-217, REV. 0

>>>>>>>>>> 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	604.48	621	1.86	1209.14	1205	10	44.0		CS-134	5.68
0	661.56*	828347	1.61	1323.30	1315	17	0.2		CS-137	9.363E+03
0	795.97	391	1.85	1592.10	1587	15	32.1		CS-134	5.16
0	1321.83	176	3.18	2644.03	2636	15	30.1			

Summary of Nuclide Activity
Sample ID : S96T005184-DUP Acquisition date : 29-OCT-1996 23:38:59

Total number of lines in spectrum 4
Number of unidentified lines 1
Number of lines tentatively identified by NID 3 75.00%

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-134	2.06Y	1.000	5.321E+00	5.321E+00	1.382E+00	25.98	
CS-137	30.00Y	1.000	9.363E+03	9.363E+03	0.021E+03	0.22	
	Total Activity :		9.368E+03	9.368E+03			
	Grand Total Activity :		9.368E+03	9.368E+03			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : S96T005184-DUP Acquisition date : 29-OCT-1996 23:38:59

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	25218.	477.59	5.2316E+01
NA-22	76.	1274.53	6.8577E-01
NA-24	11.	1368.55	2.8457E-01
K-40	124.	1460.75	9.1042E+00
CR-51	19862.	320.08	3.4941E+01
MN-54	462.	834.83	1.1751E+00
CO-56	416.	846.76	1.1296E+00
CO-57	20295.	122.06	2.4655E+00
CO-58	416.	810.78	1.0941E+00
FE-59	136.	1099.25	1.4285E+00
CO-60	23.	1332.50	3.8677E-01
SE-75	21775.	264.66	5.4807E+00
SR-85	12685.	514.01	4.2423E+00
Y-88	0.	1836.06	0.0000E+00
NB-94	337.	871.09	1.0419E+00
ZRNB-95	592.	724.18	2.6937E+00
RU-103	15303.	497.08	4.7854E+00
RURH-106	4679.	621.93	5.8615E+01
AG-108m	590.	722.94	1.2928E+00
CD-109	17757.	88.03	7.6364E+01
AG-110M	20331.	657.76	6.7168E+00
SN-113	21922.	391.69	6.7313E+00
TE-123m	21161.	159.00	2.5900E+00
SB-124	5143.	602.73	3.0352E+00
SB-125	25148.	427.89	1.6831E+01
TE-125m	18693.	109.27	7.7037E+02
I-131	20372.	364.48	4.8520E+00
BA-140	8980.	537.31	1.4588E+01
LA-140	3.	1596.21	1.7096E-01
CEPR-144	20904.	133.51	3.7845E+01
EU-152	10.	1408.01	1.2754E+00
EU-154	76.	1274.51	1.9913E+00
EU-155	18402.	105.31	1.0208E+01
HG-203	20687.	279.20	3.9837E+00
TL-208	21040.	277.36	5.1610E+01
BI-212	580.	727.18	1.7592E+01
PB-212	24423.	238.63	7.2190E+00
BI-214	4723.	609.31	6.4074E+00
PB-214	20183.	351.92	1.9327E+01
RA-224	24079.	240.99	7.9592E+01
RA-226	28224.	186.10	7.8661E+01
AC-228	265.	911.21	3.6035E+00
TH-228	17501.	84.37	2.3348E+02
TH-229	17898.	88.47	1.1112E+01
PA-233	19966.	312.17	8.9741E+00
UTH-233	23883.	245.34	2.9710E+03
PA-234M	205.	1001.03	1.5511E+00
TH-234	16258.	63.29	1.5157E+02
U-235	28028.	185.71	4.7643E+00
NP-237	17513.	86.48	2.2777E+01
NP-239	18600.	106.12	9.7523E+00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	20900.	129.30	3.2932E+04
AM-241	16385.	59.54	2.6852E+01
AM-243	16914.	74.67	6.4123E+00

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********************************************************************************
* 222-S Laboratory Counting Room   30-OCT-1996 01:45:51.00                     *
********************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              13973
Sample ID:               S96T005185-SAM
Sample Size:             1.00000E-04 L
Dilution Factor:         1.01000E+02

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             dka300:[spec.GEA3]3g3837.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:15.15 sec
Dead Time:               0.5%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       30-OCT-1996 00:54:53.95
Decayed to:              30-OCT-1996 00:54:53.95
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 AKH
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
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Removed by: A Hansen

Verified by: B Machelor 10/30/96

WHC-SD-WM-DP-217, REV. 0

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	479.37	195	1.45	958.97	955	10	116.1			
0	604.70	159	1.98	1209.58	1207	7	47.8		CS-134	147.
0	661.57*	122124	1.63	1323.32	1315	17	0.6		CS-137	1.394E+05
0	795.79	58	2.17	1591.74	1584	15	41.8		CS-134	77.2
0	969.41*	16	1.84	1939.02	1935	9	91.3			

Summary of Nuclide Activity
Sample ID : S96T005185-SAM

Acquisition date : 30-OCT-1996 00:54:53

Total number of lines in spectrum	5	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	4	80.00%

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-134	2.06Y	1.000	8.935E+01	8.936E+01	2.933E+01	32.83	
CS-137	30.00Y	1.000	1.394E+05	1.394E+05	0.008E+05	0.58	
Total Activity :			1.395E+05	1.395E+05			
Grand Total Activity :			1.395E+05	1.395E+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	3653.	477.59	2.0111E+03
NA-22	15.	1274.53	3.0294E+01
NA-24	6.	1368.55	2.0951E+01
K-40	121.	1460.75	9.1088E+02
CR-51	2834.	320.08	1.3329E+03
MN-54	19.	834.83	2.4356E+01
CO-56	26.	846.76	2.8397E+01
CO-57	3014.	122.06	9.5964E+01
CO-58	22.	810.78	2.5346E+01
FE-59	18.	1099.25	5.1895E+01
CO-60	14.	1332.50	3.0642E+01
SE-75	3217.	264.66	2.1277E+02
SR-85	1843.	514.01	1.6331E+02
Y-88	0.	1836.06	0.0000E+00
NB-94	21.	871.09	2.6314E+01
ZRNB-95	35.	724.18	6.5840E+01
RU-103	2190.	497.08	1.8283E+02
RURH-106	651.	621.93	2.2082E+03
AG-108m	34.	722.94	3.1342E+01
CD-109	2583.	88.03	2.9417E+03
AG-110M	2950.	657.76	2.5840E+02
SN-113	3147.	391.69	2.5760E+02
TE-123m	3229.	159.00	1.0219E+02
SB-124	740.	602.73	1.1631E+02
SB-125	3789.	427.89	6.5987E+02
TE-125m	2787.	109.27	3.0043E+04
I-131	3013.	364.48	1.8846E+02
BA-140	1301.	537.31	5.6084E+02
LA-140	5.	1596.21	2.2286E+01
CEPR-144	3206.	133.51	1.4969E+03
EU-152	8.	1408.01	1.1619E+02
EU-154	15.	1274.51	8.8254E+01
EU-155	2660.	105.31	3.9201E+02
HG-203	3024.	279.20	1.5383E+02
TL-208	3062.	277.36	1.9884E+03
BI-212	32.	727.18	4.1964E+02
PB-212	3605.	238.63	2.8011E+02
BI-214	703.	609.31	2.4974E+02
PB-214	2928.	351.92	7.3233E+02
RA-224	3562.	240.99	3.0914E+03
RA-226	4211.	186.10	3.0690E+03
AC-228	37.	911.21	1.3588E+02
TH-228	2629.	84.37	9.1400E+03
TH-229	2592.	88.47	4.2711E+02
PA-233	2938.	312.17	3.4771E+02
UTH-233	3461.	245.34	1.1423E+05
PA-234M	22.	1001.03	5.0927E+01
TH-234	2460.	63.29	5.9545E+03
U-235	4159.	185.71	1.8537E+02
NP-237	2616.	86.48	8.8909E+02
NP-239	2704.	106.12	3.7549E+02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	3070.	129.30	1.2748E+06
AM-241	2456.	59.54	1.0501E+03
AM-243	2614.	74.67	2.5462E+02

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********************************************************************************
* 222-S Laboratory Counting Room   30-OCT-1996 02:57:07.05                     *
********************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:             13973
Sample ID:              S96T005185-DUP
Sample Size:            1.00000E-04 L
Dilution Factor:        1.01000E+02

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:            GEA3
File Number:            dka300:[spec.GEA3]3g3838.cnf
Geometry:               42
Count Time:             0 00:50:00.00 sec
Real Time:              0 00:50:15.14 sec
Dead Time:              0.5%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:      30-OCT-1996 02:05:47.89
Decayed to:             30-OCT-1996 02:05:47.89
Standard Deviations:    2
Analysis Library:       ENVGEA
Analyst:                AKH
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
********************************************************************************
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Removed by:

Verified by: 10/30/96

WHC-SD-WM-DP-217, REV.

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.57*	121902	1.60	1323.32	1315	17	0.6		CS-137	1.392E+05
0	795.86	83	1.86	1591.88	1587	14	29.4			
0	912.15*	20	0.60	1824.47	1820	13	99.0			

Summary of Nuclide Activity
Sample ID : S96T005185-DUP Acquisition date : 30-OCT-1996 02:05:47

Total number of lines in spectrum 3
Number of unidentified lines 0
Number of lines tentatively identified by NID 3 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.000	1.392E+05	1.392E+05	0.008E+05	0.58	
Total Activity :			1.392E+05	1.392E+05			
Grand Total Activity :			1.392E+05	1.392E+05			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	3716.	477.59	2.0284E+03
NA-22	12.	1274.53	2.7462E+01
NA-24	12.	1368.55	2.9629E+01
K-40	124.	1460.75	9.2174E+02
CR-51	2914.	320.08	1.3517E+03
MN-54	29.	834.83	2.9950E+01
CO-56	17.	846.76	2.3271E+01
CO-57	3037.	122.06	9.6321E+01
CO-58	29.	810.78	2.8923E+01
FE-59	9.	1099.25	3.7579E+01
CO-60	10.	1332.50	2.5993E+01
SE-75	3239.	264.66	2.1349E+02
SR-85	1869.	514.01	1.6446E+02
Y-88	5.	1836.06	2.3695E+01
NB-94	27.	871.09	2.9958E+01
ZRNB-95	38.	724.18	6.8622E+01
RU-103	2245.	497.08	1.8512E+02
RURH-106	659.	621.93	2.2213E+03
AG-108m	32.	722.94	3.0448E+01
CD-109	2621.	88.03	2.9634E+03
AG-110M	2949.	657.76	2.5836E+02
SN-113	3197.	391.69	2.5963E+02
TE-123m	3148.	159.00	1.0090E+02
SB-124	811.	602.73	1.2172E+02
SB-125	3671.	427.89	6.4947E+02
TE-125m	2793.	109.27	3.0075E+04
I-131	3058.	364.48	1.8986E+02
CS-134	813.	604.70	1.2247E+02
BA-140	1309.	537.31	5.6258E+02
LA-140	6.	1596.21	2.4413E+01
CEPR-144	3218.	133.51	1.4997E+03
EU-152	6.	1408.01	1.0062E+02
EU-154	12.	1274.51	7.9785E+01
EU-155	2661.	105.31	3.9203E+02
HG-203	3018.	279.20	1.5369E+02
TL-208	3044.	277.36	1.9827E+03
BI-212	35.	727.18	4.3842E+02
PB-212	3686.	238.63	2.8325E+02
BI-214	705.	609.31	2.4996E+02
PB-214	3053.	351.92	7.4783E+02
RA-224	3609.	240.99	3.1117E+03
RA-226	4114.	186.10	3.0333E+03
AC-228	38.	911.21	1.3759E+02
TH-228	2674.	84.37	9.2177E+03
TH-229	2630.	88.47	4.3020E+02
PA-233	2933.	312.17	3.4740E+02
UTH-233	3435.	245.34	1.1379E+05
PA-234M	20.	1001.03	4.9204E+01
TH-234	2491.	63.29	5.9926E+03
U-235	4067.	185.71	1.8331E+02
NP-237	2622.	86.48	8.9018E+02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	2707.	106.12	3.7574E+02
PU-239	3031.	129.30	1.2666E+06
AM-241	2475.	59.54	1.0540E+03
AM-243	2552.	74.67	2.5158E+02

****
* 222-S Laboratory Counting Room   30-OCT-1996 05:15:35.24 *
****

>>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<

Worklist #: 13973
Sample ID: S96T005186-SAM
Sample Size: 1.00000E-04 L
Dilution Factor: 1.00000E+00

Removed by: C.J. Opinen

>>>>>>>>>> COUNT INFORMATION <<<<<<<<<<

Detector ID: GEA3
File Number: dka300:[spec.GEA3]3g3841.cnf
Geometry: 42
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:54:57.56 sec
Dead Time: 9.0%

Verified by: B Batchelor 10/30/96

>>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<

Sample Count Time: 30-OCT-1996 04:19:58.52
Decayed to: 30-OCT-1996 04:19:58.52
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: AKH
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

WHC-SD-WM-DP-217, REV. 0

>>>>>>>>>> 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

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Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	604.77	1652	1.77	1209.74	1206	10	28.6		CS-134	15.1
0	661.58*	2215166	1.64	1323.34	1315	17	0.1		CS-137	2.504E+04
0	795.64	1321	1.75	1591.45	1585	12	20.0		CS-134	17.5
0	1321.76	1386	2.27	2643.88	2635	18	11.2			
0	1332.15	53	1.46	2664.68	2658	14	60.8			

Total number of lines in spectrum 5
Number of unidentified lines 1
Number of lines tentatively identified by NID 4 80.00%

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-134	2.06Y	1.000	1.653E+01	1.653E+01	0.271E+01	16.40	
CS-137	30.00Y	1.000	2.504E+04	2.504E+04	0.003E+04	0.14	
	Total Activity :		2.505E+04	2.505E+04			
	Grand Total Activity :		2.505E+04	2.505E+04			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	69682.	477.59	8.6966E+01
NA-22	468.	1274.53	1.6976E+00
NA-24	59.	1368.55	6.5071E-01
K-40	172.	1460.75	1.0739E+01
CR-51	53876.	320.08	5.7547E+01
MN-54	2941.	834.83	2.9654E+00
CO-56	2848.	846.76	2.9553E+00
CO-57	54664.	122.06	4.0463E+00
CO-58	3159.	810.78	3.0134E+00
FE-59	1107.	1099.25	4.0793E+00
CO-60	87.	1332.50	7.5793E-01
SE-75	58977.	264.66	9.0200E+00
SR-85	35415.	514.01	7.0884E+00
Y-88	3.	1836.06	1.8104E-01
NB-94	2490.	871.09	2.8316E+00
ZRNB-95	4609.	724.18	7.5189E+00
RU-103	43419.	497.08	8.0608E+00
RURH-106	13588.	621.93	9.9885E+01
AG-108m	4593.	722.94	3.6062E+00
CD-109	47051.	88.03	1.2430E+02
AG-110M	56844.	657.76	1.1231E+01
SN-113	59380.	391.69	1.1078E+01
TE-123m	56823.	159.00	4.2441E+00
SB-124	15608.	602.73	5.2878E+00
SB-125	69002.	427.89	2.7879E+01
TE-125m	50114.	109.27	1.2614E+03
I-131	55740.	364.48	8.0265E+00
BA-140	25751.	537.31	2.4704E+01
LA-140	17.	1596.21	4.0744E-01
CEPR-144	56385.	133.51	6.2155E+01
EU-152	41.	1408.01	2.6147E+00
EU-154	467.	1274.51	4.9305E+00
EU-155	49016.	105.31	1.6660E+01
HG-203	56941.	279.20	6.6093E+00
TL-208	57112.	277.36	8.5030E+01
BI-212	4590.	727.18	4.9475E+01
PB-212	66144.	238.63	1.1880E+01
BI-214	14042.	609.31	1.1048E+01
PB-214	54892.	351.92	3.2922E+01
RA-224	64970.	240.99	1.3077E+02
RA-226	75581.	186.10	1.2872E+02
AC-228	2076.	911.21	1.0092E+01
TH-228	46696.	84.37	3.8138E+02
TH-229	47307.	88.47	1.8065E+01
PA-233	53605.	312.17	1.4705E+01
UTH-233	63530.	245.34	4.8456E+03
PA-234M	1477.	1001.03	4.1616E+00
TH-234	43616.	63.29	2.4826E+02
U-235	74733.	185.71	7.7796E+00
NP-237	46889.	86.48	3.7270E+01
NP-239	49279.	106.12	1.5879E+01

Minimum Detectable Activity Report (continued)
Sample ID : S96T005186-SAM Acquisition date : 30-OCT-1996 04:19:58

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	55852.	129.30	5.3835E+04
AM-241	43573.	59.54	4.3789E+01
AM-243	45636.	74.67	1.0533E+01

****
* 222-S Laboratory Counting Room 30-OCT-1996 10:10:29.50 *
****

>>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #: 13973
Sample ID: S96T005186-DUP
Sample Size: 1.00000E-04 L
Dilution Factor: 1.00000E+00

Removed by:

>>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID: GEA3
File Number: dka300:[spec.GEA3]3g3842.cnf
Geometry: 42
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:54:47.44 sec
Dead Time: 8.7%

Verified by:

>>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time: 30-OCT-1996 09:15:04.78
Decayed to: 30-OCT-1996 09:15:04.78
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: CJO
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	604.78	1813	1.64	1209.75	1206	9	23.3		CS-134	16.6
0	661.57*	2146072	1.63	1323.32	1315	17	0.1		CS-137	2.426E+04
0	795.77	1086	1.83	1591.70	1588	9	18.7		CS-134	14.4
0	1322.07	1252	2.93	2644.51	2637	17	11.7			
0	1460.49*	41	1.86	2921.47	2913	17	69.0		K-40	7.13

Summary of Nuclide Activity
Sample ID : S96T005186-DUP Acquisition date : 30-OCT-1996 09:15:04

Total number of lines in spectrum	5	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	4	80.00%

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
K-40	1.28E+09Y	1.000	7.131E+00	7.131E+00	4.919E+00	68.99	QG,B
CS-134	2.06Y	1.000	1.507E+01	1.508E+01	0.221E+01	14.64	
CS-137	30.00Y	1.000	2.426E+04	2.426E+04	0.003E+04	0.14	
			---------	---------			
	Total Activity :		2.428E+04	2.428E+04			
Grand Total Activity :			2.428E+04	2.428E+04			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	67381.	477.59	8.5518E+01
NA-22	464.	1274.53	1.6916E+00
NA-24	58.	1368.55	6.4685E-01
CR-51	52061.	320.08	5.6570E+01
MN-54	2701.	834.83	2.8418E+00
CO-56	2645.	846.76	2.8478E+00
CO-57	52688.	122.06	3.9725E+00
CO-58	2964.	810.78	2.9187E+00
FE-59	947.	1099.25	3.7742E+00
CO-60	87.	1332.50	7.5860E-01
SE-75	57658.	264.66	8.9186E+00
SR-85	34567.	514.01	7.0030E+00
Y-88	4.	1836.06	2.0464E-01
NB-94	2370.	871.09	2.7627E+00
ZRNB-95	4333.	724.18	7.2900E+00
RU-103	41785.	497.08	7.9076E+00
RURH-106	12888.	621.93	9.7281E+01
AG-108m	4352.	722.94	3.5104E+00
CD-109	45934.	88.03	1.2282E+02
AG-110M	54556.	657.76	1.1003E+01
SN-113	57392.	391.69	1.0891E+01
TE-123m	55304.	159.00	4.1870E+00
SB-124	14861.	602.73	5.1597E+00
SB-125	67262.	427.89	2.7526E+01
TE-125m	48594.	109.27	1.2421E+03
I-131	53928.	364.48	7.8949E+00
BA-140	25331.	537.31	2.4501E+01
LA-140	14.	1596.21	3.7249E-01
CEPR-144	54781.	133.51	6.1265E+01
EU-152	40.	1408.01	2.5587E+00
EU-154	464.	1274.51	4.9140E+00
EU-155	47566.	105.31	1.6412E+01
HG-203	54882.	279.20	6.4887E+00
TL-208	54947.	277.36	8.3403E+01
BI-212	4267.	727.18	4.7700E+01
PB-212	63583.	238.63	1.1648E+01
BI-214	13427.	609.31	1.0804E+01
PB-214	52564.	351.92	3.2162E+01
RA-224	63059.	240.99	1.2883E+02
RA-226	73073.	186.10	1.2657E+02
AC-228	1946.	911.21	9.7708E+00
TH-228	45573.	84.37	3.7677E+02
TH-229	45805.	88.47	1.7776E+01
PA-233	52382.	312.17	1.4536E+01
UTH-233	62157.	245.34	4.7930E+03
PA-234M	1420.	1001.03	4.0813E+00
TH-234	42350.	63.29	2.4463E+02
U-235	72292.	185.71	7.6514E+00
NP-237	45722.	86.48	3.6803E+01
NP-239	47698.	106.12	1.5622E+01
PU-239	53875.	129.30	5.2873E+04

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
AM-241	42026.	59.54	4.3004E+01
AM-243	43945.	74.67	1.0336E+01

LABCORE Completed RadChem Report for Worklist#: 15260

Analyst: rga **Instrument:** AB12 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Use 0.1mL for 5184 & 5186. Use 0.1-10-0.1mL for 5185. sac

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01 SR90-01	LIQUID	1.40E-03	1.44E-3	102.857	% Recovery
1	STD		0		@SR90-01 SR90-01C	LIQUID	100	6.01E+01	60.100	% Recovery
1	STD		0		@SR90-01 SR90-01E	LIQUID	1.00	2.13E+00	2.130	% Ct. Erro
2	BLNK		0		@SR90-01 SR90-01	LIQUID	1	2.29E-5	22.900e-006	uCi/mL
2	BLNK		0		@SR90-01 SR90-01C	LIQUID	100	9.21E+01	92.100	% Recovery
2	BLNK		0		@SR90-01 SR90-01E	LIQUID	1.00	9.65E+01	96.500	uCi/mL
3	BLNK/BKG		0		@SR90-01 SR90-01	LIQUID	1	1.49E+00	1.490	BLNK/BKG
4	SAMPLE	S96T005184	0		@SR90-01 SR90-01	LIQUID	N/A	2.77E-02	280.0e-007	uCi/mL
4	SAMPLE	S96T005184	0		@SR90-01 SR90-01C	LIQUID	N/A	9.26E+01	0.0e+000	% Recovery
4	SAMPLE	S96T005184	0		@SR90-01 SR90-01E	LIQUID	N/A	1.23E+00	0.0e+000	% Ct. Error
5	DUP	S96T005184	0		@SR90-01 SR90-01	LIQUID	2.77E-2	2.76E-2	0.362	RPD
5	DUP	S96T005184	0		@SR90-01 SR90-01C	LIQUID	100	9.29E+01	92.900	% Recovery
5	DUP	S96T005184	0		@SR90-01 SR90-01E	LIQUID	1.00	1.23E+00	1.230	% Cnt Err
6	SAMPLE	S96T005185	0		@SR90-01 SR90-01	LIQUID	N/A	4.96E-01	284.0e-005	uCi/mL
6	SAMPLE	S96T005185	0		@SR90-01 SR90-01C	LIQUID	N/A	9.20E+01	0.0e+000	% Recovery
6	SAMPLE	S96T005185	0		@SR90-01 SR90-01E	LIQUID	N/A	2.94E+00	0.0e+000	% Ct. Error
7	DUP	S96T005185	0		@SR90-01 SR90-01	LIQUID	4.96E-1	5.28E-1	6.250	RPD
7	DUP	S96T005185	0		@SR90-01 SR90-01C	LIQUID	100	9.09E+01	90.900	% Recovery
7	DUP	S96T005185	0		@SR90-01 SR90-01E	LIQUID	1.00	2.87E+00	2.870	% Cnt Err
8	SAMPLE	S96T005186	0		@SR90-01 SR90-01	LIQUID	N/A	4.51E-03	294.0e-007	uCi/mL
8	SAMPLE	S96T005186	0		@SR90-01 SR90-01C	LIQUID	N/A	8.77E+01	0.0e+000	% Recovery
8	SAMPLE	S96T005186	0		@SR90-01 SR90-01E	LIQUID	N/A	3.14E+00	0.0e+000	% Ct. Error
9	DUP	S96T005186	0		@SR90-01 SR90-01	LIQUID	4.51E-3	4.62E-3	2.410	RPD
9	DUP	S96T005186	0		@SR90-01 SR90-01C	LIQUID	100	9.21E+01	92.100	% Recovery
9	DUP	S96T005186	0		@SR90-01 SR90-01E	LIQUID	1.00	3.02E+00	3.020	% Cnt Err

Final page for worklist# 15260

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

11/27/96

Reviewer Signature **Date**

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

LABCORE Data Entry Template for Worklist# 15260

Analyst: RCA **Instrument:** AB00 12 **Book#** 62B56

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: Use 0.1mL for 5184 & 5186. Use 0.1-10-0.1mL for 5185. sac

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	S96T005184	0		@SR90-01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
5	DUP	S96T005184	0		@SR90-01	LIQUID		
6	SAMPLE	S96T005185	0		@SR90-01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
7	DUP	S96T005185	0		@SR90-01	LIQUID		
8	SAMPLE	S96T005186	0		@SR90-01	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
9	DUP	S96T005186	0		@SR90-01	LIQUID		

Final page for worklist # 15260

11-27-96

Analyst Signature **Date**

11/27/96

Analyst Signature **Date**

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

						STANDARD
	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
STD	TOTAL COUNTS	(TC)	8611	GROSS WEIGHT	(W2)	7.6920
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6319
15260	BACKGROUND in cpm	(BKG)	4.3	NET WEIGHT	(W3)	0.0601
	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	6.00
@SR90-01	DILUTION FACTOR	(DF)	1			
	DIGEST DILUTION FACTOR	DDF	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	856.80	SR-90 EFFICIENCY FACTO	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.25	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011870	TIME OF SEPARATION	(ST)	04:00	Rmax		N/A
	DATE OF SEPARATION	(SD)	11/27/96	DETECTION LIMIT	(Ld)	2.59
0	TIME OF COUNT	(TOC)	10:00	Sr-89/90 CONC. in µCi/L		1.4359E+00
	DATE OF COUNT	(DOC)	11/27/96			
N/A	STANDARD BOOK #		62B56			
	STANDARD VALUE in µCi/mL		1.3960E-03			

WL15260

WB27811

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

MCB

RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

SLF

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

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

RGA

NOTE: Expected weight = CVA * 0.1

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

11/27/96

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

				DETECTION LEVEL
11/27/96	Sr-89/90 CONCENTRATION	1.44E-03	µCi/mL	
08:45 AM	RELATIVE COUNTING ERROR	2.1%		4.34E-06 µCi/L
AP-106 GRAB	PERCENT CARRIER RECOVERY	60.1%		

Analyst:		RGA	Date:	27-Nov-96
Signature of Chemist:		SLF	Date:	11/27/96

STANDARD.WB1 REV 2.0 22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						BLNK
	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLNK	TOTAL COUNTS	(TC)	64	GROSS WEIGHT	(W2)	7.7211
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6290
15260	BACKGROUND in cpm	(BKG)	4.3	NET WEIGHT	(W3)	0.0921
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	6.17
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	2.10	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.25	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011870	TIME OF SEPARATION	(ST)	04:00	Rmax		N/A
	DATE OF SEPARATION	(SD)	11/27/96	DETECTION LIMIT	(Ld)	2.59
0	TIME OF COUNT	(TOC)	10:10	Sr-89/90 CONC in µCi/L		2.2925E-02
	DATE OF COUNT	(DOC)	11/27/96			
N/A						
WL15260						

	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
	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))
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
	NOTE: Expected weight = CVA * 0.1
RGA	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
11/27/96	

				DETECTION LEVEL
11/27/96	Sr-89/90 CONCENTRATION	2.29E-05	µCi/mL	
08:45 AM	RELATIVE COUNTING ERROR	96.5%		2.83E-05 µCi/mL
AP-106 GRAB	PERCENT CARRIER RECOVERY	92.1%		

Analyst:		RGA	Date:	27-Nov-96
Signature of Chemist:		SLF	Date:	11/27/96

BLANK.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM4

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)	25594	GROSS WEIGHT	(W2)	7.9313
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8387
15260	BACKGROUND in cpm	(BKG)	4.3	NET WEIGHT	(W3)	0.0926
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	6.42
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	2555.10	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.25	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011870	TIME OF SEPARATION	(ST)	04:00	Rmax		N/A
	DATE OF SEPARATION	(SD)	11/27/96	DETECTION LIMIT	(Ld)	2.59
0	TIME OF COUNT	(TOC)	10:25	Sr-89/90 CONC in µCi/L		2.7670E+01
	DATE OF COUNT	(DOC)	11/27/96			
N/A						
S96T005184						

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

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))

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

SLF Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

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

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

11/27/96

				DETECTION LEVEL
11/27/96	Sr-89/90 CONCENTRATION	2.77E-02	µCi/mL	
08:45 AM	RELATIVE COUNTING ERROR	1.2%		2.80E-05 µCi/mL
AP-106 GRAB	PERCENT CARRIER RECOVERY	92.6%		

Analyst:		RGA	Date:	27-Nov-96
Signature of Chemist:		SLF	Date:	11/27/96

SAMPLE.WB1 REV 2.0 22010NML

						DUP
	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	25625	GROSS WEIGHT	(W2)	7.7221
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6292
15260	BACKGROUND in cpm	(BKG)	4.3	NET WEIGHT	(W3)	0.0929
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	6.58
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	2558.20	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.25	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011870	TIME OF SEPARATION	(ST)	04:00	Rmax		N/A
	DATE OF SEPARATION	(SD)	11/27/96	DETECTION LIMIT	(Ld)	2.59
0	TIME OF COUNT	(TOC)	10:35	Sr-89/90 CONC in µCi/L		2.7566E+01
	DATE OF COUNT	(DOC)	11/27/96			
N/A						
S96T005184						

	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
	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))
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
	NOTE: Expected weight = CVA * 0.1
RGA	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
11/27/96	

				DETECTION LEVEL
11/27/96	Sr-89/90 CONCENTRATION	2.76E-02	µCi/mL	
08:45 AM	RELATIVE COUNTING ERROR	1.2%		2.79E-05 µCi/mL
AP-106 GRAB	PERCENT CARRIER RECOVERY	92.9%		

Analyst:	RGA	Date:	27-Nov-96
Signature of Chemist:	SLF	Date:	11/27/96

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM6

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)	4561	GROSS WEIGHT	(W2)	7.7060
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6140
15260	BACKGROUND in cpm	(BKG)	4.3	NET WEIGHT	(W3)	0.0920
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	6.75
@SR90-01	DILUTION FACTOR	DF	101			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	451.80	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.25	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011870	TIME OF SEPARATION	(ST)	04:00	Rmax		N/A
	DATE OF SEPARATION	(SD)	11/27/96	DETECTION LIMIT	(Ld)	2.59
0	TIME OF COUNT	(TOC)	10:45	Sr-89/90 CONC in µCi/L		4.9566E+02
	DATE OF COUNT	(DOC)	11/27/96			
N/A						
S96T005185						

	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
	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))
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
	NOTE: Expected weight = CVA * 0.1
RGA	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
11/27/96	

				DETECTION LEVEL
11/27/96	Sr-89/90 CONCENTRATION	4.96E-01	µCi/mL	
08:45 AM	RELATIVE COUNTING ERROR	2.9%		2.84E-03 µCi/mL
AP-106 GRAB	PERCENT CARRIER RECOVERY	92.0%		

Analyst:		RGA	Date:	27-Nov-96
Signature of Chemist:		SLF	Date:	11/27/96

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: DUP7

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)	4802	GROSS WEIGHT	(W2)	7.9295
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8386
15260	BACKGROUND in cpm	(BKG)	4.3	NET WEIGHT	(W3)	0.0909
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	6.92
@SR90-01	DILUTION FACTOR	DF	101			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	475.90	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.25	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011870	TIME OF SEPARATION	(ST)	04:00	Rmax		N/A
	DATE OF SEPARATION	(SD)	11/27/96	DETECTION LIMIT	(Ld)	2.59
0	TIME OF COUNT	(TOC)	10:55	Sr-89/90 CONC in µCi/L		5.2751E+02
	DATE OF COUNT	(DOC)	11/27/96			
N/A						

S96T005185

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

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))

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

SLF Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

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

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

11/27/96

				DETECTION LEVEL
11/27/96	Sr-89/90 CONCENTRATION	5.28E-01	µCi/mL	
08:45 AM	RELATIVE COUNTING ERROR	2.9%		2.87E-03 µCi/mL
AP-106 GRAB	PERCENT CARRIER RECOVERY	90.9%		

Analyst:		RGA	Date:	27-Nov-96
Signature of Chemist:		SLF	Date:	11/27/96

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM8

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)	4016	GROSS WEIGHT	(W2)	7.9117
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8240
15260	BACKGROUND in cpm	(BKG)	4.3	NET WEIGHT	(W3)	0.0877
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	7.17
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	397.30	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.25	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011870	TIME OF SEPARATION	(ST)	04:00	Rmax		N/A
	DATE OF SEPARATION	(SD)	11/27/96	DETECTION LIMIT	(Ld)	2.59
0	TIME OF COUNT	(TOC)	11:10	Sr-89/90 CONC in µCi/L		4.5077E+00
	DATE OF COUNT	(DOC)	11/27/96			
N/A						
S96T005186						

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

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))

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

SLF — Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

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

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

11/27/96

				DETECTION LEVEL
11/27/96	Sr-89/90 CONCENTRATION	4.51E-03	µCi/mL	
08:45 AM	RELATIVE COUNTING ERROR	3.1%		2.94E-05 µCi/mL
AP-106 GRAB	PERCENT CARRIER RECOVERY	87.7%		

Analyst:		RGA	Date:	27-Nov-96
Signature of Chemist:		SLF	Date:	11/27/96

SAMPLE.WB1 REV 2.0 22010NML

LABCORE Completed RadChem Report for Worklist#: 13954

Analyst: slh **Instrument:** AB13 **Book#** 62856

Method: LA-953-103 Rev/Mod B-0

Worklist Comment: AP106, @AM24101, Determine sample size using Ludlum. skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual		Found	DL or Yield	Unit
1	STD		0		@AM24101 AM24101	LIQUID	1.19E-04		1.03E-4	86.555	% Recovery
1	STD		0		@AM24101 AM24101T	LIQUID	100.		8.90E+01	89.000	% Recovery
1	STD		0		@AM24101 AM24101E	LIQUID	1.0		1.62E+00	1.620	% Ct Error
2	BLNK		0		@AM24101 AM24101	LIQUID	1		<6.13E-6		uCi/mL
2	BLNK		0		@AM24101 AM24101T	LIQUID	100.0		8.34E+01	83.400	% Recovery
2	BLNK		0		@AM24101 AM24101E	LIQUID	1.0		1.00E+02	100.000	% Ct Error
3	SAMPLE	S96T005184	0		@AM24101 AM24101	LIQUID	N/A	<	6.15E-06	615.0e-008	uCi/mL
3	SAMPLE	S96T005184	0		@AM24101 AM24101E	LIQUID	N/A		1.04E+01	0.0e+000	% Ct. Error
3	SAMPLE	S96T005184	0		@AM24101 AM24101T	LIQUID	N/A		8.53E+01	0.0e+000	% Recovery
4	DUP	S96T005184	0		@AM24101 AM24101	LIQUID	<6.15E-6		<7.06E-6	RPD	
4	DUP	S96T005184	0		@AM24101 AM24101T	LIQUID	100.0		7.97E+01	79.700	% Recovery
4	DUP	S96T005184	0		@AM24101 AM24101E	LIQUID	1.0		5.50E+00	5.500	% Ct Error
5	SAMPLE	S96T005185	0		@AM24101 AM24101	LIQUID	N/A		3.39E-04	227.0e-007	uCi/mL
5	SAMPLE	S96T005185	0		@AM24101 AM24101E	LIQUID	N/A		8.11E-01	0.0e+000	% Ct. Error
5	SAMPLE	S96T005185	0		@AM24101 AM24101T	LIQUID	N/A		2.40E+02	0.0e+000	% Recovery
6	DUP	S96T005185	0		@AM24101 AM24101	LIQUID	3.39E-4		4.69E-4	32.178	RPD
6	DUP	S96T005185	0		@AM24101 AM24101T	LIQUID	100.0		1.86E+02	186.000	% Recovery
6	DUP	S96T005185	0		@AM24101 AM24101E	LIQUID	1.0		9.30E-01	0.930	% Ct Error
7	SAMPLE	S96T005186	0		@AM24101 AM24101	LIQUID	N/A	<	6.72E-06	672.0e-008	uCi/mL
7	SAMPLE	S96T005186	0		@AM24101 AM24101E	LIQUID	N/A		1.00E+02	0.0e+000	% Ct. Error
7	SAMPLE	S96T005186	0		@AM24101 AM24101T	LIQUID	N/A		8.05E+01	0.0e+000	% Recovery
8	DUP	S96T005186	0		@AM24101 AM24101	LIQUID	<6.72E-6		<9.37E-6	RPD	
8	DUP	S96T005186	0		@AM24101 AM24101T	LIQUID	100.0		6.49E+01	64.900	% Recovery
8	DUP	S96T005186	0		@AM24101 AM24101E	LIQUID	1.0		1.00E+02	100.000	% Ct Error

Final page for worklist# 13954

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

John Relyea 23oct96
Reviewer Signature **Date**

S96T005184 +-5186 validated

S96T005185 rerun on WL14281

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

10/14/96 08:42
A 0004-1

LABCORE Data Entry Template for Worklist# 13954

Analyst: SLH **Instrument:** AM01 AB13 **Book#:** 62856

Method: LA-953-103 Rev/Mod B-0

Worklist Comment: AP106, @AM24101, Determine sample size using Ludlum. skm use 1 mL

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	LIQUID		
2	BLNK				@AM24101	LIQUID		
3	SAMPLE	S96T005184	0		@AM24101	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
4	DUP	S96T005184	0		@AM24101	LIQUID		
5	SAMPLE	S96T005185	0		@AM24101	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
6	DUP	S96T005185	0		@AM24101	LIQUID		
7	SAMPLE	S96T005186	0		@AM24101	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
8	DUP	S96T005186	0		@AM24101	LIQUID		

Final page for worklist # 13954

Sandra L Hood Boatright
Analyst Signature **Date** 10-20-96

Sue Hogan 10/22/96
Analyst Signature **Date** C.J. Quinn 10/22/96

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID

Type							STD
STD	Date Counted		OCT-21-96	Am 241 AEA Frac.	(C241)		0.472
Work List	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.423
13954	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
Test Code	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			4107
@AM24101	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
Matrix	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
LIQUID	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			64.16
Batch Number	Detector Number		13	Am 243 cpm			57.5
96010476	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm			0
Rerun	Standard Book No		62B56	AEA Count Time	(min)		480
0	Standard Value in µCi/mL		1.186E-04	Am 241 µCi/L =			1.0324E-01
Sample Prep				Cm 243/244 µCi/L =		<	1.2281E-02
N/A							

Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
WL13954	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Instrument Code	
WB27810	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	
Analyst	
SLH	
Date Complete	
10/22/96	
Analysis Date	
10/20/96	
Analysis Time	
03:00 AM	
Sample Point	
AP-106 GRAB	

Am 241 µCi/mL	=	1.03E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	1.6%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/mL		< 1.23E-05	1.23E-05
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	89.0%	1.23E-05

Analyst:		SLH	Date:	10/22/96
Signature of Chemist:	John Ratzer	JFR	Date:	23 Oct 96

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

Type	Date Counted		OCT-21-96	Am 241 AEA Frac.	(C241)	BLNK 0
BLNK	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.905
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
13954	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		1800
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		0
LIQUID	Detector Number		13	Am 243 cpm		54.64
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96010476				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	6.1293E-03
0				Cm 243/244 µCi/L =	<	6.1293E-03
Sample Prep						
N/A						
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
WL13954	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
Instrument Code						
WB27810	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	NOTE: Am-241 Result is a LESS THAN Value.					
JFR	Am 241 µCi/mL =		< 6.13E-06	DETECTION LEVELS in µCi/mL		
Analyst	Relative Counting Error =		100.0%			
SLH						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241		
10/22/96	Cm 243/244 µCi/mL		< 6.13E-06	6.13E-06		
Analysis Date	Relative Counting Error =		100.0%	Cm 243/244		
10/20/96	Am 243 Tracer Recovery =		83.4%	6.13E-06		
Analysis Time						
03:00 AM						
Sample Point						
AP-106 GRAB						

Analyst:	SLH	Date:	10/22/96
Signature of Chemist:	JFR	Date:	23 Oct 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

Type	Date Counted		OCT-21-96	Am 241 AEA Frac.	(C241)	SAMPLE	0.013
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.882
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
13954	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			1889
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			0.75
LIQUID	Detector Number		13	Am 243 cpm			50.25
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm			0
96010476				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =	<		6.1485E-03
0				Cm 243/244 µCi/L =	<		6.1485E-03
Sample Prep							
N/A							
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))						
S96T005184	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))						
Instrument Code							
WB27810	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	NOTE: Am-241 Result is a LESS THAN Value.						
JFR	Am 241 µCi/mL =		< 6.15E-06	DETECTION LEVELS in µCi/mL			
Analyst	Relative Counting Error =		10.4%				
SLH							
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241			
10/22/96	Cm 243/244 µCi/mL		< 6.15E-06	6.15E-06			
Analysis Date	Relative Counting Error =		100.0%	Cm 243/244			
10/20/96	Am 243 Tracer Recovery =		85.3%	6.15E-06			
Analysis Time							
03:00 AM							
Sample Point							
AP-106 GRAB							

Analyst:		SLH	Date:	10/22/96
Signature of Chemist:	John Relyea	JFR	Date:	23 Oct 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

Type	Date Counted		OCT-21-96	Am 241 AEA Frac.	(C241)	DUP 0.046
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.822
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
13954	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		1893
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		2.79
LIQUID	Detector Number		13	Am 243 cpm		49.69
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96010476				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	7.0638E-03
0				Cm 243/244 µCi/L =	<	7.0638E-03
Sample Prep						
N/A						
Sample Number						
S96T005184						
Instrument Code						
WB27810						
Prepared By						
SEH						
Chemist						
JFR						
Analyst						
SLH						
Date Complete						
10/22/96						
Analysis Date						
10/20/96						
Analysis Time						
03:00 AM						
Sample Point						
AP-106 GRAB						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL	=	< 7.06E-06	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	5.5%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/mL		< 7.06E-06	7.06E-06
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	79.7%	7.06E-06

Analyst:		SLH	Date:	10/22/96
Signature of Chemist:	Josh Rolyson	JFR	Date:	23 Oct 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM7

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

Type	Date Counted		OCT-21-96	Am 241 AEA Frac.	(C241)	SAMPLE	0
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.855
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
13954	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			1840
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.13
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			0
LIQUID	Detector Number		13	Am 243 cpm			53.16
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm			0
96010476				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =	<		6.7175E-03
0				Cm 243/244 µCi/L =	<		6.7175E-03
Sample Prep							
N/A							
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))						
S96T005186	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))						
Instrument Code							
WB27810	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	NOTE: Am-241 Result is a LESS THAN Value.						
JFR	Am 241 µCi/mL =		< 6.72E-06	DETECTION			
Analyst	Relative Counting Error =		100.0%	LEVELS			
SLH				in µCi/mL			
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241			
10/22/96	Cm 243/244 µCi/mL		< 6.72E-06	6.72E-06			
Analysis Date	Relative Counting Error =		100.0%	Cm 243/244			
10/20/96	Am 243 Tracer Recovery =		80.5%	6.72E-06			
Analysis Time							
03:00 AM							
Sample Point							
AP-106 GRAB							

Analyst:		SLH	Date:	10/22/96
Signature of Chemist:	John Relyea	JFR	Date:	23 Oct 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP8

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

Type	Date Counted		OCT-21-96	Am 241 AEA Frac.	(C241)	DUP 0
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.761
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
13954	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		1666
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.13
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		0
LIQUID	Detector Number		13	Am 243 cpm		43.33
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96010476				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	9.3672E-03
0				Cm 243/244 µCi/L =	<	9.3672E-03
Sample Prep						
N/A						
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
S96T005186	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))					
Instrument Code						
WB27810	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	NOTE: Am-241 Result Is a LESS THAN Value.					
JFR	Am 241 µCi/mL =		< 9.37E-06	DETECTION LEVELS in µCi/mL		
Analyst	Relative Counting Error =		100.0%			
SLH						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241		
10/22/96	Cm 243/244 µCi/mL		< 9.37E-06	9.37E-06		
Analysis Date	Relative Counting Error =		100.0%	Cm 243/244		
10/20/96	Am 243 Tracer Recovery =		64.9%	9.37E-06		
Analysis Time						
03:00 AM						
Sample Point						
AP-108 GRAB						

Analyst:	SLH	Date:	10/22/96
Signature of Chemist:	JFR	Date:	23 Oct 96

SAMPLE.WB1 REV 1.2 953103ML

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL13954-STD
File ID: 5a5613.CNF

Counted on: 10/21/96 @ 2:35
Detector: AEA5
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1076.2	1076.2	300.696	300.696	20.000	11.854	10.000	2.224
2	956.4	956.4	255.486	255.277	14.000	8.693	7.000	1.494
3	45.7	45.7	153.729	153.429	138.000	1.000	69.000	0.100
4?	16.5	16.5	121.544	120.620	16.000	35.840	8.000	12.728
5?	10.6	10.6	108.227	106.707	22.000	3.440	11.000	10.983
6?	15.1	15.1	92.460	91.444	18.000	11.519	9.000	5.506
7	17.3	17.3	51.049	50.691	60.000	134.957	30.000	48.437

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	Am241	0.472	5.479	5.457	0.0220.05		64.16	1.1	788.2	0.355E-03
	Pu238		5.487	5.457	0.030				1029.0	0.464E-03
2	Am243	0.423	5.270	5.248	0.0220.04		57.50	1.3	670.7	0.302E-03
3	Np237	0.027	4.769	4.779	-.0100.00		3.63	5.0	48.2	0.217E-04
4		????		4.628			1.04	19.4		
5		????		4.564			0.19	65.1		
6		????		4.494			0.57	23.0		
7	U 238	0.014	4.184	4.307	-.1230.62		1.97	9.7	29.5	0.133E-04
	U 235		4.386	4.307	0.079				39.9	0.180E-04
Totals:		0.936	<--valid peaks only-->				127.26			

DETECTOR CALIBRATION
Energy(MEV) = 4.073 + (0.0046)*Channel
Energy range (MeV): 4.073 TO 6.429
Efficiency = 0.0866 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	65283.0	100.000
Smoothed	65283.0	100.000
Composite fit	61963.1	94.915
Residuals	3319.9	5.085

WORKBOOK PAGE: DUP9

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)	4331	GROSS WEIGHT	(W2)	7.2071
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.1150
15260	BACKGROUND in cpm	(BKG)	4.3	NET WEIGHT	(W3)	0.0921
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	7.33
@SR90-01	DILUTION FACTOR	DF	1			
	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	428.80	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
	CRITICAL LEVEL	(Lc)	1.25	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96011870	TIME OF SEPARATION	(ST)	04:00	Rmax		N/A
	DATE OF SEPARATION	(SD)	11/27/96	DETECTION LIMIT	(Ld)	2.59
0	TIME OF COUNT	(TOC)	11:20	Sr-89/90 CONC in µCi/L		4.6248E+00
	DATE OF COUNT	(DOC)	11/27/96			
N/A						
S96T005186						

	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
	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))
	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
	NOTE: Expected weight = CVA * 0.1
RGA	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
11/27/96	

				DETECTION LEVEL
11/27/96	Sr-89/90 CONCENTRATION	4.62E-03	µCi/mL	
08:45 AM	RELATIVE COUNTING ERROR	3.0%		2.79E-05 µCi/mL
AP-106 GRAB	PERCENT CARRIER RECOVERY	92.1%		

Analyst:	RGA	Date:	27-Nov-96
Signature of Chemist:	SLF	Date:	11/27/96

SAMPLE.WB1 REV 2.0 22010NML

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL13954-BLK
File ID: 6a6715.CNF

Counted on: 10/21/96 @ 2:37
Detector: AEA6
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	885.8	885.8	254.013	254.013	16.000	12.950	8.000	2.363
2	12.8	12.8	101.694	101.653	202.000	1.000	101.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu239	0.905	5.147	5.250	-.103	0.06	54.64	1.2	114.1	0.514E-04
	Am243		5.270	5.250	0.020				115.3	0.519E-04
2		0.016		4.549		0.00	0.97	9.2	2.0	0.911E-06
Totals:		0.921	<--valid peaks only-->				55.61			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0046)*Channel
Energy range (MeV): 4.081 TO 6.436
Efficiency = 0.4787 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28980.0	100.000
Smoothed	28981.4	100.005
Composite fit	26695.7	92.118
Residuals	2284.3	7.882

Analyzed by: _____
AKH

Spectrum 6a6715.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6741.5

2
2
2
2
2
2
2
2

WHC-SD-WM-DP-217, REV. 0

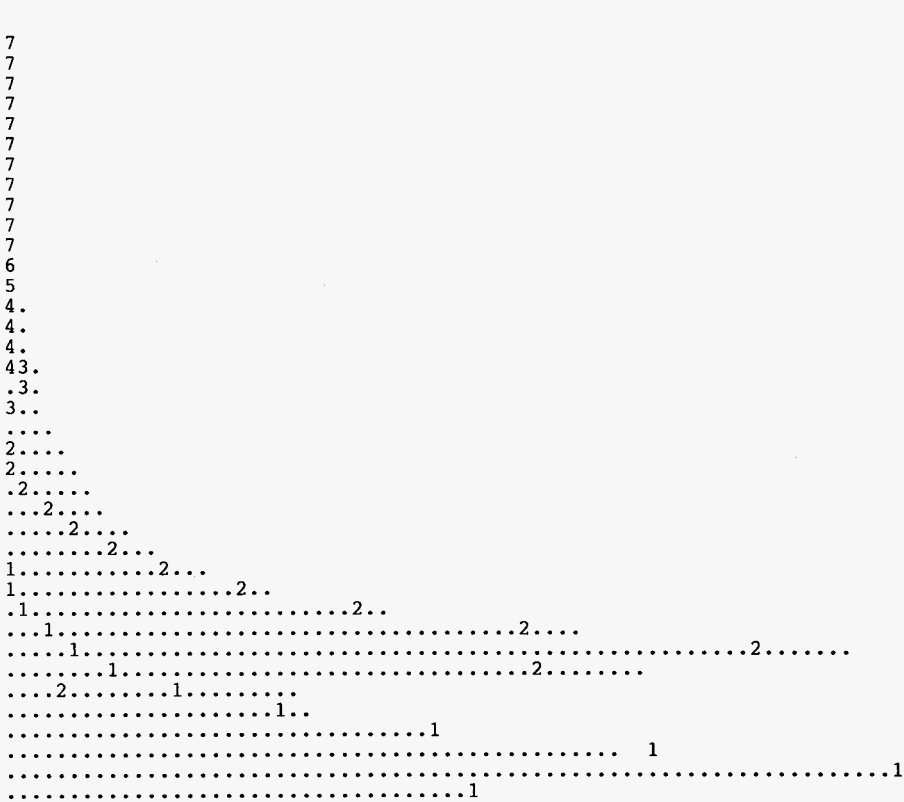
Raw Data Dump for AEA Spectrum: 5a5613.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
11	10.	14.	10.	16.	12.	6.	14.	9.	9.	8.
21	12.	8.	14.	9.	8.	13.	10.	10.	9.	18.
31	13.	11.	12.	13.	13.	15.	9.	7.	21.	13.
41	20.	11.	15.	15.	18.	13.	22.	22.	20.	20.
51	18.	24.	18.	21.	11.	14.	14.	11.	21.	15.
61	18.	17.	17.	20.	15.	14.	16.	24.	26.	23.
71	21.	20.	19.	26.	22.	18.	15.	17.	20.	32.
81	19.	18.	22.	17.	29.	22.	20.	28.	23.	22.
91	23.	30.	26.	24.	23.	25.	20.	22.	30.	23.
101	21.	30.	33.	20.	22.	28.	25.	40.	26.	34.
111	21.	20.	20.	33.	31.	29.	28.	33.	39.	43.
121	33.	40.	42.	31.	30.	42.	28.	28.	30.	45.
131	29.	44.	39.	44.	42.	40.	37.	49.	56.	40.
141	32.	37.	60.	42.	47.	38.	43.	50.	47.	52.
151	50.	52.	51.	60.	61.	43.	45.	52.	42.	52.
161	63.	65.	51.	70.	78.	64.	80.	77.	64.	61.
171	89.	70.	55.	83.	81.	82.	97.	70.	86.	79.
181	101.	93.	100.	102.	105.	120.	115.	91.	96.	99.
191	110.	112.	93.	111.	136.	144.	120.	136.	104.	126.
201	131.	141.	168.	139.	163.	135.	163.	150.	175.	182.
211	191.	205.	204.	182.	197.	215.	225.	207.	231.	251.
221	253.	224.	270.	299.	265.	307.	291.	350.	306.	352.
231	357.	374.	390.	415.	419.	453.	486.	482.	500.	551.
241	551.	606.	649.	696.	681.	735.	743.	876.	809.	864.
251	951.	1014.	1045.	1070.	1092.	1161.	1107.	982.	850.	728.
261	544.	434.	415.	362.	313.	294.	317.	286.	318.	307.
271	292.	325.	339.	328.	327.	332.	349.	368.	372.	389.
281	433.	433.	456.	501.	512.	548.	571.	600.	564.	678.
291	664.	743.	707.	788.	833.	887.	934.	1075.	1113.	1184.
301	1160.	1067.	1047.	959.	833.	674.	555.	417.	322.	311.
311	227.	167.	129.	112.	99.	60.	51.	27.	16.	9.
321	4.	1.	0.	1.	3.	0.	0.	0.	2.	0.
331	1.	0.	0.	0.	2.	1.	0.	0.	1.	1.
341	0.	0.	1.	0.	2.	0.	4.	2.	4.	2.
351	2.	0.	0.	2.	0.	0.	0.	1.	1.	0.
361	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
431	0.	1.	1.	0.	0.	1.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	1.	0.	3.	3.
481	2.	1.	1.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Analyzed by: AKH

Spectrum 5a5613.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8115.6



Raw Data Dump for AEA Spectrum: 6a6715.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	1.	1.	0.	1.	3.	6.	2.	4.	5.	1.
21	2.	4.	2.	5.	5.	4.	6.	3.	4.	5.
31	7.	8.	8.	5.	5.	8.	5.	6.	5.	4.
41	1.	3.	5.	4.	5.	7.	7.	6.	3.	3.
51	7.	12.	6.	8.	12.	2.	7.	3.	8.	6.
61	6.	10.	4.	4.	10.	3.	8.	13.	7.	5.
71	6.	13.	8.	8.	0.	1.	8.	9.	12.	12.
81	12.	8.	3.	8.	7.	9.	11.	8.	7.	7.
91	7.	7.	11.	4.	9.	12.	17.	9.	9.	14.
101	12.	14.	15.	11.	9.	6.	15.	8.	11.	10.
111	19.	13.	12.	3.	17.	15.	19.	13.	14.	8.
121	13.	15.	9.	16.	15.	16.	16.	18.	15.	13.
131	18.	17.	21.	16.	13.	24.	12.	23.	11.	24.
141	11.	17.	20.	22.	15.	13.	25.	19.	19.	23.
151	29.	27.	29.	29.	24.	33.	28.	23.	36.	22.
161	19.	34.	28.	32.	38.	29.	34.	24.	41.	38.
171	35.	40.	26.	47.	33.	38.	46.	34.	43.	40.
181	57.	48.	60.	43.	74.	45.	52.	47.	58.	44.
191	60.	62.	69.	72.	74.	72.	69.	60.	79.	83.
201	78.	90.	81.	83.	104.	93.	104.	105.	111.	121.
211	116.	122.	111.	135.	154.	154.	141.	139.	173.	187.
221	193.	206.	200.	216.	223.	230.	243.	238.	269.	290.
231	269.	324.	363.	341.	342.	402.	386.	462.	439.	460.
241	545.	553.	603.	635.	652.	657.	766.	732.	723.	865.
251	868.	919.	927.	902.	940.	865.	854.	727.	657.	536.
261	438.	348.	254.	169.	146.	115.	112.	74.	66.	50.
271	44.	43.	21.	24.	16.	6.	8.	4.	1.	0.
281	4.	1.	0.	1.	1.	0.	3.	1.	2.	0.
291	1.	4.	2.	2.	3.	2.	3.	3.	2.	0.
301	4.	0.	2.	0.	1.	1.	0.	0.	0.	0.
311	0.	2.	1.	0.	0.	0.	0.	0.	0.	1.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	1.	0.	0.	1.	0.	2.	0.	0.	1.	4.
351	1.	1.	0.	1.	1.	2.	1.	0.	0.	0.
361	3.	4.	0.	0.	1.	0.	0.	0.	1.	0.
371	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	2.	0.								

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5184-SAM
File ID: 7a7483.CNF

Counted on: 10/21/96 @ 2:38
Detector: AEA7
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	19.2	19.2	302.075	302.075	18.000	14.399	9.000	9.213
2?	18.2	18.2	290.522	289.411	10.000	0.398	5.000	9.213
3	852.8	852.8	255.730	255.730	20.000	14.452	10.000	2.947
4	14.9	14.9	129.542	129.495	166.000	1.000	83.000	0.100
5	7.2	7.2	123.243	123.243	182.000	1.000	91.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

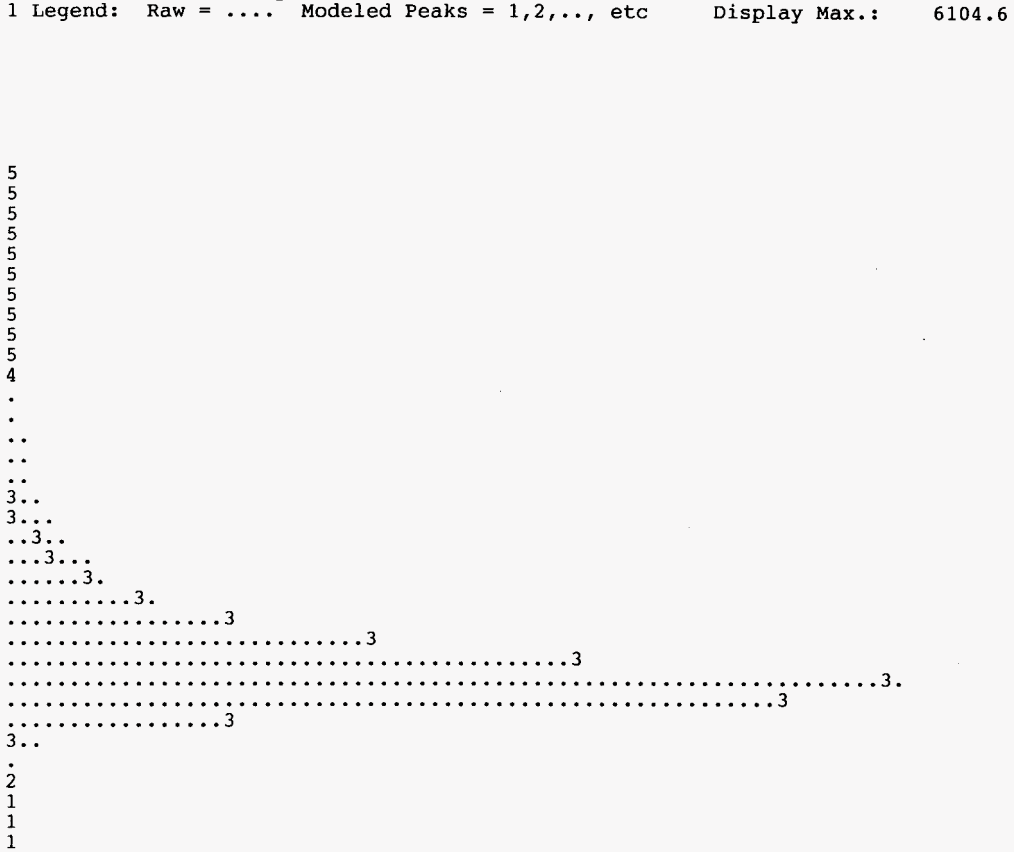
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.013	5.479	5.461	0.018	0.07	0.75	10.3	3.5	0.157E-05
	Pu238		5.487	5.461	0.026				4.5	0.204E-05
2		????		5.403			0.11	39.0		
3	Pu239	0.882	5.147	5.248	-.101	0.07	50.25	1.3	218.1	0.983E-04
	Am243		5.270	5.248	0.022				220.3	0.992E-04
4	Np237	0.020	4.640	4.667	-.027	0.00	1.16	8.4	84.1	0.379E-04
5		????		4.638			0.56	21.0		
Totals:		0.915	<--valid peaks only-->				52.17			

DETECTOR CALIBRATION
Energy(MEV) = 4.071 + (0.0046)*Channel
Energy range (MeV): 4.071 TO 6.427
Efficiency = 0.2304 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27367.0	100.000
Smoothed	27366.8	99.999
Composite fit	25367.0	92.692
Residuals	2000.0	7.308

Analyzed by: AKH


Spectrum 7a7483.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 6104.6

Raw Data Dump for AEA Spectrum: 7a7483.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	0.	3.	2.	4.	4.	4.	2.	3.	1.	2.
21	4.	1.	5.	2.	1.	7.	4.	10.	2.	4.
31	2.	4.	6.	1.	1.	5.	4.	7.	4.	4.
41	6.	2.	7.	3.	1.	8.	2.	4.	5.	6.
51	2.	5.	7.	5.	10.	5.	9.	8.	4.	7.
61	6.	3.	5.	7.	3.	6.	5.	4.	10.	3.
71	3.	8.	5.	4.	7.	5.	8.	11.	5.	11.
81	4.	11.	4.	7.	4.	6.	6.	6.	5.	9.
91	1.	2.	3.	10.	8.	10.	14.	6.	7.	5.
101	10.	5.	9.	8.	9.	5.	7.	6.	6.	7.
111	6.	11.	9.	10.	9.	10.	4.	15.	11.	10.
121	10.	13.	14.	17.	8.	13.	9.	9.	18.	16.
131	16.	8.	7.	14.	7.	13.	20.	18.	19.	16.
141	13.	10.	17.	11.	13.	18.	18.	12.	17.	26.
151	21.	20.	26.	19.	19.	18.	26.	29.	22.	29.
161	21.	22.	29.	22.	29.	23.	24.	32.	29.	37.
171	29.	32.	31.	33.	34.	42.	36.	34.	40.	35.
181	41.	47.	41.	41.	44.	48.	38.	51.	42.	46.
191	47.	42.	52.	52.	65.	50.	65.	54.	72.	82.
201	92.	85.	68.	59.	86.	83.	84.	88.	78.	96.
211	82.	98.	105.	99.	116.	114.	132.	113.	141.	140.
221	134.	160.	154.	161.	167.	187.	209.	211.	210.	213.
231	239.	248.	234.	293.	313.	310.	302.	331.	385.	425.
241	397.	445.	482.	506.	517.	533.	623.	653.	663.	710.
251	728.	810.	804.	899.	933.	878.	868.	839.	750.	761.
261	662.	521.	426.	321.	266.	211.	156.	140.	100.	89.
271	69.	69.	48.	30.	36.	27.	19.	11.	14.	17.
281	9.	8.	12.	6.	7.	6.	5.	15.	11.	13.
291	21.	13.	6.	13.	6.	9.	17.	14.	13.	23.
301	24.	19.	21.	19.	16.	21.	18.	12.	8.	8.
311	9.	3.	8.	4.	2.	2.	2.	2.	1.	1.
321	1.	3.	1.	1.	1.	1.	1.	2.	1.	0.
331	0.	0.	0.	0.	0.	1.	0.	0.	1.	6.
341	2.	3.	1.	1.	1.	3.	1.	3.	2.	2.
351	1.	2.	0.	2.	5.	3.	1.	6.	3.	4.
361	4.	7.	5.	7.	2.	5.	2.	4.	4.	4.
371	3.	2.	4.	6.	1.	6.	1.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	1.	1.	0.	0.	0.	3.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	2.	0.	1.	0.	1.	1.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5184DUP
File ID: 8a8683.CNF

Counted on: 10/21/96 @ 2:40
Detector: AEA8
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	15.7	15.7	301.943	299.422	28.000	31.693	14.000	1.585
2	683.2	683.2	256.424	255.727	20.000	14.871	10.000	2.188
3	10.8	10.8	25.125	27.609	392.000	42.584	196.000	199.411

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	Am241	0.046	5.479	5.480	-.001	0.15	2.79	5.4	7.9	0.355E-05
	Pu238		5.487	5.480	0.007				10.3	0.464E-05
2	Pu239	0.822	5.147	5.275	-.128	0.07	49.69	1.3	131.9	0.594E-04
	Am243		5.270	5.275	-.005				133.2	0.600E-04
3	U 238	0.011	4.184	4.203	-.019	0.20	0.69	11.3	2.4	0.107E-05
Totals:		0.880	<--valid peaks only-->				53.17			

DETECTOR CALIBRATION
Energy(MEV) = 4.073 + (0.0047)*Channel
Energy range (MeV): 4.073 TO 6.480
Efficiency = 0.3768 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29000.0	100.000
Smoothed	29000.0	100.000
Composite fit	25521.4	88.005
Residuals	3478.6	11.995

Analyzed by: AKH

Spectrum 8a8683.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5061.8

Raw Data Dump for AEA Spectrum: 8a8683.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	4.
11	7.	1.	5.	5.	4.	6.	9.	13.	7.	10.
21	14.	5.	13.	17.	5.	5.	10.	11.	8.	7.
31	10.	8.	9.	6.	12.	7.	14.	9.	5.	12.
41	12.	13.	11.	9.	9.	11.	8.	10.	9.	8.
51	11.	13.	13.	9.	10.	19.	8.	12.	11.	13.
61	9.	11.	8.	11.	13.	13.	8.	15.	10.	13.
71	12.	14.	11.	14.	13.	14.	7.	14.	16.	15.
81	15.	15.	18.	15.	14.	19.	18.	16.	14.	20.
91	12.	11.	20.	18.	17.	19.	24.	17.	22.	19.
101	14.	22.	16.	13.	15.	28.	23.	29.	17.	7.
111	25.	18.	23.	16.	15.	21.	20.	26.	21.	32.
121	21.	24.	28.	17.	19.	21.	29.	33.	31.	29.
131	24.	33.	35.	30.	32.	32.	28.	37.	27.	38.
141	33.	28.	37.	40.	36.	38.	34.	33.	39.	26.
151	43.	51.	38.	34.	39.	41.	60.	51.	45.	44.
161	41.	43.	42.	44.	46.	49.	61.	51.	55.	43.
171	63.	41.	48.	51.	53.	73.	65.	50.	53.	97.
181	65.	75.	67.	78.	78.	78.	73.	76.	79.	70.
191	83.	75.	87.	84.	97.	83.	92.	90.	108.	102.
201	125.	103.	108.	133.	92.	128.	143.	147.	130.	146.
211	150.	159.	137.	148.	155.	176.	162.	161.	177.	173.
221	179.	199.	212.	198.	224.	238.	238.	239.	245.	265.
231	261.	278.	284.	321.	318.	337.	355.	337.	360.	398.
241	443.	417.	458.	446.	524.	529.	552.	583.	530.	597.
251	625.	651.	659.	732.	713.	719.	719.	663.	639.	601.
261	495.	454.	404.	297.	219.	191.	154.	117.	88.	53.
271	65.	67.	46.	38.	40.	24.	21.	19.	14.	17.
281	15.	6.	14.	8.	9.	10.	8.	6.	18.	5.
291	15.	17.	13.	17.	19.	5.	14.	19.	10.	20.
301	15.	8.	16.	19.	13.	12.	12.	17.	11.	11.
311	7.	4.	7.	2.	3.	0.	0.	0.	0.	1.
321	2.	1.	0.	1.	0.	0.	0.	0.	0.	0.
331	1.	1.	1.	1.	0.	0.	1.	1.	0.	2.
341	2.	1.	3.	4.	0.	1.	3.	0.	3.	4.
351	1.	2.	3.	2.	5.	2.	1.	3.	3.	4.
361	3.	4.	1.	3.	2.	3.	0.	0.	1.	1.
371	1.	1.	2.	6.	1.	2.	1.	0.	1.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
481	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5186-SAM
File ID: 11a1104.CNF

Counted on: 10/21/96 @ 2:44
Detector: AEA11
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	866.4	866.4	256.883	256.883	14.000	7.398	7.000	1.198
2	28.1	28.1	154.370	150.129	148.000	1.000	74.000	0.100
3	9.2	9.2	86.033	85.726	54.000	171.630	27.000	53.486

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.855	5.270	5.254	0.0160	3.00	53.16	1.2	132.7	0.598E-04
2	Np237	0.036	4.769	4.763	0.0060	0.00	2.23	6.6	6.3	0.285E-05
3	U 235	0.019	4.386	4.466	-.080	0.79	1.20	15.0	5.2	0.234E-05
Totals:		0.910	<--valid peaks only-->				56.59			

DETECTOR CALIBRATION
Energy(MEV) = 4.072 + (0.0046)*Channel
Energy range (MeV): 4.072 TO 6.427
Efficiency = 0.4046 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29861.0	100.000
Smoothed	29866.4	100.018
Composite fit	27165.5	90.973
Residuals	2695.5	9.027

Analyzed by: _____
AKH

Spectrum 11a1104.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5932.6

Raw Data Dump for AEA Spectrum: 11a1104.CNF

1	0.	0.	4.	6.	5.	4.	6.	5.	3.	8.
11	8.	3.	6.	7.	5.	4.	8.	3.	5.	2.
21	5.	3.	8.	9.	6.	6.	7.	4.	3.	9.
31	6.	9.	5.	5.	8.	14.	13.	6.	5.	7.
41	10.	7.	6.	7.	4.	8.	8.	4.	8.	15.
51	6.	6.	11.	8.	9.	8.	8.	8.	5.	7.
61	10.	12.	12.	9.	9.	13.	7.	5.	8.	9.
71	13.	6.	11.	13.	13.	9.	5.	10.	12.	19.
81	11.	11.	12.	12.	17.	11.	20.	12.	8.	17.
91	9.	13.	12.	13.	10.	10.	13.	18.	9.	16.
101	15.	12.	14.	13.	17.	15.	13.	23.	12.	18.
111	15.	19.	13.	14.	17.	13.	21.	17.	16.	16.
121	20.	14.	19.	10.	22.	14.	25.	25.	24.	20.
131	10.	16.	26.	16.	20.	22.	27.	22.	27.	27.
141	24.	33.	29.	26.	27.	31.	37.	27.	34.	39.
151	40.	36.	34.	38.	32.	40.	30.	36.	46.	28.
161	33.	29.	33.	40.	50.	47.	42.	36.	31.	45.
171	55.	52.	48.	55.	43.	55.	56.	40.	51.	71.
181	73.	59.	65.	79.	58.	62.	57.	68.	61.	79.
191	85.	90.	104.	89.	86.	79.	88.	99.	89.	100.
201	132.	94.	113.	96.	96.	140.	121.	140.	144.	154.
211	170.	153.	166.	171.	174.	159.	164.	177.	187.	206.
221	211.	217.	225.	208.	226.	258.	253.	235.	267.	266.
231	279.	311.	324.	341.	340.	356.	414.	398.	384.	439.
241	479.	446.	491.	529.	486.	576.	611.	631.	657.	687.
251	706.	814.	742.	831.	855.	882.	934.	905.	846.	768.
261	568.	385.	231.	185.	123.	102.	84.	72.	68.	68.
271	55.	52.	45.	31.	26.	11.	4.	5.	6.	2.
281	2.	7.	2.	3.	4.	3.	6.	4.	5.	6.
291	4.	5.	5.	7.	8.	9.	9.	6.	2.	6.
301	4.	11.	10.	8.	8.	8.	4.	5.	8.	3.
311	4.	2.	1.	3.	0.	1.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	1.	2.	1.
331	1.	0.	1.	1.	0.	0.	2.	0.	0.	0.
341	1.	1.	0.	0.	1.	1.	0.	0.	3.	3.
351	0.	3.	2.	2.	0.	1.	1.	0.	2.	2.
361	0.	0.	1.	0.	1.	2.	3.	1.	0.	1.
371	3.	1.	0.	2.	1.	0.	2.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
481	1.	0.	1.	0.	0.	1.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T5186-DUP
File ID: 12a1276.CNF

Counted on: 10/21/96 @ 2:45
Detector: AEA12
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	527.1	527.1	249.599	249.651	18.000	11.955	9.000	1.419

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu239	0.761	5.147	5.254	-.107	0.05	43.33	1.4	113.7	0.512E-04
	Am243		5.270	5.254	0.016				114.9	0.517E-04
Totals:		0.761	<--valid peaks only-->				43.33			

DETECTOR CALIBRATION
Energy(MEV) = 4.105 + (0.0046)*Channel
Energy range (MeV): 4.105 TO 6.461
Efficiency = 0.3811 CPM/DPM

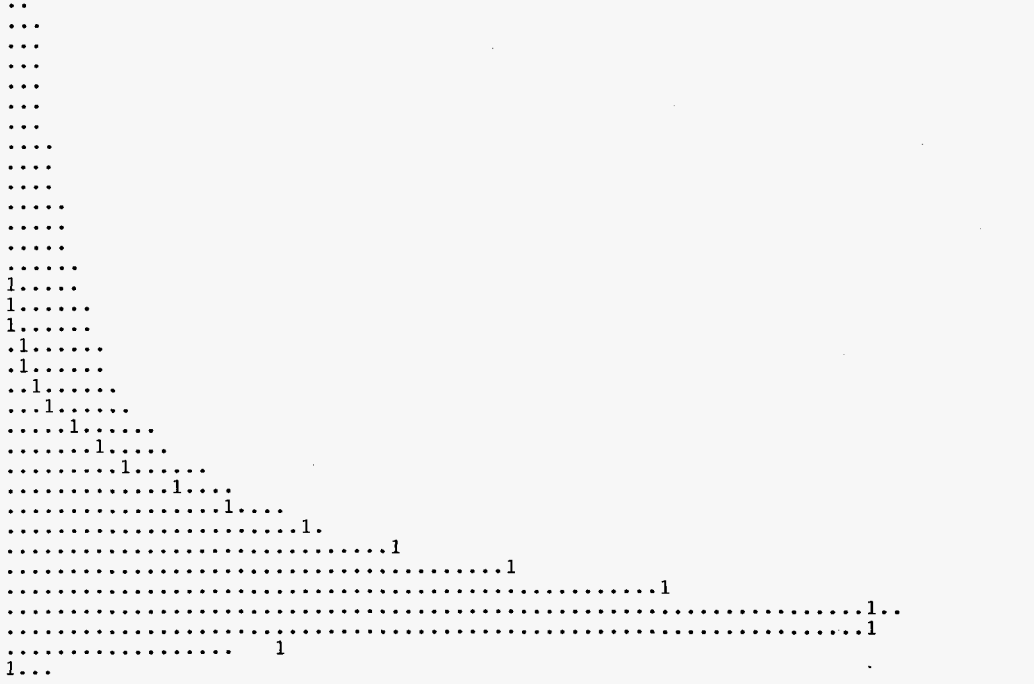
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27329.0	100.000
Smoothed	27323.5	99.980
Composite fit	20801.9	76.117
Residuals	6527.1	23.883

Analyzed by: _____
AKH

Spectrum 12a1276.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 3723.7



Raw Data Dump for AEA Spectrum: 12a1276.CNF

1	0.	0.	22.	15.	18.	18.	20.	17.	22.	18.
11	21.	29.	15.	24.	24.	26.	15.	22.	25.	23.
21	26.	15.	20.	22.	22.	27.	27.	21.	26.	27.
31	16.	29.	25.	20.	24.	16.	20.	25.	17.	24.
41	22.	29.	27.	14.	24.	27.	36.	21.	21.	29.
51	24.	19.	28.	31.	26.	30.	19.	30.	28.	27.
61	28.	40.	32.	29.	24.	28.	29.	28.	32.	24.
71	36.	31.	29.	37.	32.	30.	23.	35.	32.	39.
81	36.	30.	33.	30.	37.	33.	36.	35.	32.	25.
91	46.	34.	41.	40.	36.	40.	48.	36.	33.	35.
101	35.	45.	33.	53.	44.	38.	42.	36.	42.	38.
111	48.	50.	41.	43.	51.	48.	53.	41.	39.	41.
121	39.	54.	37.	45.	50.	38.	63.	61.	52.	43.
131	50.	62.	54.	48.	54.	63.	39.	50.	60.	45.
141	62.	56.	73.	56.	48.	39.	62.	61.	67.	47.
151	72.	63.	61.	69.	62.	61.	46.	65.	60.	65.
161	78.	73.	71.	54.	53.	70.	85.	86.	68.	87.
171	86.	80.	69.	85.	110.	96.	95.	91.	92.	74.
181	100.	94.	105.	96.	105.	100.	95.	108.	100.	122.
191	134.	111.	125.	111.	135.	124.	124.	138.	124.	131.
201	152.	178.	153.	140.	138.	147.	135.	148.	153.	189.
211	176.	179.	179.	181.	173.	173.	209.	173.	200.	242.
221	213.	208.	230.	239.	250.	264.	262.	276.	257.	298.
231	266.	310.	337.	341.	322.	326.	370.	393.	386.	399.
241	432.	467.	442.	453.	521.	477.	542.	530.	533.	545.
251	542.	533.	451.	418.	312.	238.	177.	94.	102.	64.
261	50.	51.	47.	40.	44.	24.	30.	16.	16.	8.
271	5.	6.	3.	2.	1.	1.	0.	0.	2.	4.
281	4.	1.	3.	2.	4.	5.	1.	3.	9.	4.
291	4.	4.	2.	6.	4.	4.	4.	4.	4.	3.
301	3.	0.	2.	3.	1.	2.	1.	0.	0.	1.
311	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	1.	0.	0.	1.	0.	1.
341	1.	1.	2.	0.	0.	2.	0.	1.	0.	1.
351	1.	1.	0.	1.	0.	2.	0.	1.	0.	2.
361	0.	1.	1.	0.	0.	1.	1.	0.	0.	0.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
431	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed RadChem Report for Worklist#: 14315

Analyst: jmv **Instrument:** AB13 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Rerun of WL13954 and 13834. See Traveler for sample size-jfr

Seq	Type	Sample#	R	A	Test	Matrix	Actual		Found	DL or Yield	Unit
1	STD		0	@AM24101	AM24101	LIQUID	1.19E-04		1.09E-4	91.597	% Recovery
1	STD		0	@AM24101	AM24101T	LIQUID	100.		8.02E+01	80.200	% Recovery
1	STD		0	@AM24101	AM24101E	LIQUID	1.0		1.72E+00	1.720	% Ct Error
2	BLNK		0	@AM24101	AM24101	LIQUID	1		<4.02E-5		uCi/mL
2	BLNK		0	@AM24101	AM24101T	LIQUID	100.0		6.90E+01	69.000	% Recovery
2	BLNK		0	@AM24101	AM24101E	LIQUID	1.0		1.00E+02	100.000	% Ct Error
3	SAMPLE	S96T005081	0	@AM24101	AM24101	LIQUID	N/A	<	3.33E-05	333.0e-007	uCi/mL
3	SAMPLE	S96T005081	0	@AM24101	AM24101E	LIQUID	N/A		5.76E+00	0.0e+000	% Ct. Error
3	SAMPLE	S96T005081	0	@AM24101	AM24101T	LIQUID	N/A		7.98E+01	0.0e+000	% Recovery
4	DUP	S96T005081	0	@AM24101	AM24101	LIQUID	<3.33E-5		<3.66E-5	RPD	
4	DUP	S96T005081	0	@AM24101	AM24101T	LIQUID	100.0		7.40E+01	74.000	% Recovery
4	DUP	S96T005081	0	@AM24101	AM24101E	LIQUID	1.0		6.49E+00	6.490	% Ct Error
5	SAMPLE	S96T005082	0	@AM24101	AM24101	LIQUID	N/A	<	4.13E-05	413.0e-007	uCi/mL
5	SAMPLE	S96T005082	0	@AM24101	AM24101E	LIQUID	N/A		7.24E+00	0.0e+000	% Ct. Error
5	SAMPLE	S96T005082	0	@AM24101	AM24101T	LIQUID	N/A		6.99E+01	0.0e+000	% Recovery
6	DUP	S96T005082	0	@AM24101	AM24101	LIQUID	<4.13E-5		<4.49E-5	RPD	
6	DUP	S96T005082	0	@AM24101	AM24101T	LIQUID	100.0		6.50E+01	65.000	% Recovery
6	DUP	S96T005082	0	@AM24101	AM24101E	LIQUID	1.0		9.75E+00	9.750	% Ct Error
7	SAMPLE	S96T005185	0	@AM24101	AM24101	LIQUID	N/A		8.76E-04	155.0e-006	uCi/mL
7	SAMPLE	S96T005185	0	@AM24101	AM24101E	LIQUID	N/A		1.95E+00	0.0e+000	% Ct. Error
7	SAMPLE	S96T005185	0	@AM24101	AM24101T	LIQUID	N/A		6.94E+01	0.0e+000	% Recovery
8	DUP	S96T005185	0	@AM24101	AM24101	LIQUID	8.76E-4		9.00E-4	2.703	RPD
8	DUP	S96T005185	0	@AM24101	AM24101T	LIQUID	100.0		8.10E+01	81.000	% Recovery
8	DUP	S96T005185	0	@AM24101	AM24101E	LIQUID	1.0		1.75E+00	1.750	% Ct Error

Final page for worklist# 14315

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date

4 Nov 96

Validated

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

LABCORE Data Entry Template for Worklist# 14315

Analyst: JMV **Instrument:** AM01 13 **Book#** 62856

Method: LA-953-103 Rev/Mod B-0

Worklist Comment: Rerun of WL13954 and 13834. See Traveler for sample size-jfr

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	LIQUID		
2	BLNK				@AM24101	LIQUID		
3	SAMPLE	S96T005081	0		@AM24101	LIQUID	96001215	AW-105 GRAB 20
	Analytes Requested: AM24101 , AM24101E, AM24101T							
4	DUP	S96T005081	0		@AM24101	LIQUID		
5	SAMPLE	S96T005082	0		@AM24101	LIQUID 19	96001215	AW-105 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
6	DUP	S96T005082	0		@AM24101	LIQUID		
7	SAMPLE	S96T005185	0		@AM24101	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: AM24101 , AM24101E, AM24101T							
8	DUP	S96T005185	0		@AM24101	LIQUID 13		

Final page for worklist # 14315

Analyst Signature Date: 10-29-96

Analyst Signature Date: 11-1-96

Sandra L Hood Backup 10-30-96

11/1/96

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID

Type	Work Station	Test Code	Matrix	Batch Number	Form	Sample Prep	Sample Number	Instrument Code	Prepared By	Chemist	Analyst	Date Completed	Analyst's Date	Analyst's Time	Sample Point
STD	14315	@AM24101	LIQUID	96010857	0	N/A	WL14315	WB27810	VAR	JFR	JMV	11/01/96	10/30/96	08:00 PM	AW-105 GRAB

			STD
Date Counted		OCT-31-96	
Sample Volume in mL	(SS)	1.000	
Sample D.F.	(DF)	1	
Tracer Volume in mL	(SPKV)	0.200	
Digest D.F.	(DDF)	1.000	
Tracer Book No.		125B43	
Am-243 Tracer Value	(dpm/mL)	1027	
Detector Number		13	
Detector Efficiency	(DetEff)	0.3163	
Standard Book No		62B56	
Standard Value in µCi/mL		1.186E-04	
Am 241 AEA Frac.	(C241)		0.507
Am 243 AEA Frac.	(C243)		0.431
Cm 243/244 AEA Frac.	(Cm)		0
Total AT Counts			3626
AT Count Time (min)	(TC)		30
Background in cpm	(Bkg)		0.03
Am 241 cpm			58.98
Am 243 cpm			50.15
Cm 243/244 cpm			0
AEA Count Time	(min)		480
Am 241 µCi/L =			1.0884E-01
Cm 243/244 µCi/L =		<	1.3389E-02

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	1.09E-04
Relative Counting Error	=	1.7%
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL		< 1.34E-05
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	80.2%

DETECTION LEVELS in µCi/mL	
Am 241	1.34E-05
Cm 243/244	1.34E-05

Analyst:		JMV	Date:	11/01/96
Signature of Chemist:	Joshua Rodriguez	JFR	Date:	4 Nov 96

STANDARD.WB1 REV 1.2 // 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

Type	Date Counted		OCT-31-96	Am 241 AEA Frac.	(C241)	BLNK
BLNK	Sample Volume in mL	(SS)	0.200	Am 243 AEA Frac.	(C243)	0.835
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
14315	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		1611
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.03
Matrix	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		0
LIQUID	Detector Number		13	Am 243 cpm		45.59
Batch Number	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96010857				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	4.0159E-02
0				Cm 243/244 µCi/L =	<	4.0159E-02
Sample Prep						
N/A						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Sample Number	NOTE: Am-241 Result is a LESS THAN Value.		
WL14315			
Instrument Code			
WB27810			
Prepared By			
VAR			
Chemist			
JFR	Am 241 µCi/mL =	< 4.02E-05	DETECTION LEVELS in µCi/mL
Analyst	Relative Counting Error =	100.0%	
JMV			
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
11/01/96	Cm 243/244 µCi/mL	< 4.02E-05	4.02E-05
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244
10/30/96	Am 243 Tracer Recovery =	69.0%	4.02E-05
Analysis Time			
08:00 PM			
Sample Point			
AW-105 GRAB			

Analyst:		JMV	Date:	11/01/96
Signature of Chemist:	John Reigan	JFR	Date:	4 Nov 96

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM7

Am 241 and Cm 243/244: LA-953-103 (B-0) — LIQUID / SOLID

						SAMPLE
	Date Counted		OCT-31-96	Am 241 AEA Frac.	(C241)	0.406
SAMPLE	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)	0.429
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
14315	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		3154
	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)	0.03
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm		40.97
LIQUID	Detector Number		13	Am 243 cpm		43.28
	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm		0
96010857				AEA Count Time	(min)	480
				Am 241 µCi/L =		8.7562E-01
0				Cm 243/244 µCi/L =	<	1.5538E-01
N/A						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

S96T005185 Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

WB27810 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

VAR

			DETECTION LEVELS in µCi/mL
JFR	Am 241 µCi/mL =	8.76E-04	
	Relative Counting Error =	2.0%	
JMV			
	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
11/01/96	Cm 243/244 µCi/mL	< 1.55E-04	1.55E-04
	Relative Counting Error =	100.0%	Cm 243/244
10/30/96	Am 243 Tracer Recovery =	69.4%	1.55E-04

08:00 PM

AW-105 GRAB

Analyst:		JMV	Date:	11/01/96
Signature of Chemist:	John Reilly	JFR	Date:	7 Nov 96

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP8

Am 241 and Cm 243/244: LA-953-103 (B-0) LIQUID / SOLID

							DUP
	Date Counted		OCT-31-96	Am 241 AEA Frac.	(C241)		0.46
DUP	Sample Volume in mL	(SS)	0.100	Am 243 AEA Frac.	(C243)		0.473
	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
14315	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			3338
	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		125B43	Background in cpm	(Bkg)		0.03
	Am-243 Tracer Value	(dpm/mL)	1027	Am 241 cpm			51.58
LIQUID	Detector Number		13	Am 243 cpm			53.01
	Detector Efficiency	(DetEff)	0.3163	Cm 243/244 cpm			0
96010857				AEA Count Time	(min)		480
				Am 241 µCi/L =			8.9980E-01
0				Cm 243/244 µCi/L =		<	1.2077E-01
N/A							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

S96T005185 Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

WB27810 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

VAR

JFR	Am 241 µCi/mL =	9.00E-04	DETECTION LEVELS in µCi/mL
	Relative Counting Error =	1.7%	
JMV			
	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
11/01/96	Cm 243/244 µCi/mL	< 1.21E-04	1.21E-04
	Relative Counting Error =	100.0%	Cm 243/244
10/30/96	Am 243 Tracer Recovery =	81.0%	1.21E-04

08:00 PM

AW-105 GRAB

Analyst:		JMV	Date:	11/01/96
Signature of Chemist:	John Relyea	JFR	Date:	11/01/96

SAMPLE.WB1 REV 1.2 953103ML

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL14315-STD
File ID: 5a5629.CNF

Counted on: 10/31/96 @22:28
Detector: AEA5
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	993.7	993.7	301.350	301.350	22.000	20.064	11.000	4.683
2	831.9	831.9	255.260	255.056	22.000	18.066	11.000	3.873
3	25.3	25.3	142.957	142.877	164.000	1.000	82.000	0.100
4?	4.1	4.1	116.138	115.648	6.000	0.329	3.000	0.155
5?	3.7	3.7	95.326	94.257	20.000	2.524	10.000	2.203

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	Am241	0.507	5.479	5.472	0.007	0.09	58.98	1.2	131.1	0.590E-04
	Pu238		5.487	5.472	0.015				171.1	0.771E-04
2	Pu239	0.431	5.147	5.259	-.112	0.08	50.15	1.4	104.8	0.472E-04
	Am243		5.270	5.259	0.011				105.8	0.477E-04
3		0.017		4.743	0.00		2.00	6.4	4.2	0.188E-05
4		????		4.618			0.08	119.		
5		????		4.520			0.07	109.		
Totals:		0.956	<--valid peaks only-->				111.13			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.441
Efficiency = 0.4787 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	55800.0	100.000
Smoothed	55800.0	100.000
Composite fit	53421.3	95.737
Residuals	2378.7	4.263

Analyzed by: AKH

Spectrum 5a5629.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7553.7

Raw Data Dump for AEA Spectrum: 5a5629.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	1.	1.	3.	1.	4.	3.	4.	1.	4.	1.
21	4.	4.	4.	1.	4.	3.	3.	1.	2.	4.
31	2.	2.	2.	1.	3.	2.	9.	8.	6.	5.
41	5.	9.	2.	5.	4.	1.	5.	3.	4.	0.
51	5.	6.	3.	6.	6.	9.	6.	5.	3.	8.
61	7.	5.	9.	8.	2.	6.	7.	10.	5.	9.
71	8.	7.	9.	8.	11.	3.	7.	11.	11.	7.
81	9.	4.	11.	10.	6.	8.	6.	11.	9.	14.
91	6.	8.	12.	11.	10.	12.	11.	10.	8.	8.
101	7.	10.	7.	14.	10.	9.	13.	11.	13.	14.
111	18.	11.	12.	13.	9.	23.	18.	13.	8.	12.
121	11.	9.	13.	16.	15.	17.	17.	12.	22.	22.
131	25.	14.	24.	18.	21.	19.	31.	16.	21.	19.
141	28.	30.	23.	34.	21.	24.	23.	26.	19.	22.
151	32.	30.	18.	20.	29.	29.	33.	32.	29.	31.
161	33.	23.	31.	46.	39.	42.	41.	54.	46.	37.
171	44.	48.	48.	44.	54.	50.	42.	62.	48.	59.
181	53.	49.	52.	64.	58.	55.	63.	58.	83.	67.
191	56.	75.	71.	67.	67.	91.	87.	74.	86.	86.
201	88.	77.	78.	93.	83.	85.	97.	101.	98.	100.
211	120.	139.	131.	113.	127.	149.	137.	145.	152.	164.
221	163.	166.	180.	168.	191.	176.	193.	221.	220.	204.
231	217.	249.	272.	260.	292.	322.	301.	357.	366.	398.
241	402.	415.	463.	549.	560.	655.	663.	687.	712.	809.
251	845.	876.	896.	896.	949.	898.	955.	758.	771.	705.
261	684.	639.	555.	471.	435.	409.	362.	307.	289.	288.
271	251.	274.	246.	251.	237.	296.	281.	259.	276.	284.
281	323.	331.	344.	357.	409.	402.	486.	484.	521.	538.
291	622.	634.	728.	771.	788.	811.	926.	928.	1031.	1022.
301	1038.	1069.	988.	900.	911.	821.	733.	681.	615.	544.
311	457.	377.	318.	264.	214.	181.	126.	105.	73.	70.
321	50.	40.	29.	19.	7.	8.	7.	3.	2.	1.
331	1.	1.	0.	0.	1.	0.	1.	0.	0.	0.
341	0.	0.	1.	0.	2.	0.	1.	1.	0.	0.
351	0.	1.	1.	0.	1.	1.	2.	1.	0.	0.
361	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
371	0.	0.	0.	1.	1.	0.	1.	0.	0.	1.
381	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
391	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
481	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL14315-BLK
File ID: 6a6734.CNF

Counted on: 10/31/96 @22:29
Detector: AEA6
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	790.1	790.1	253.918	253.918	18.000	12.913	9.000	2.624
2	37.6	37.6	171.564	171.119	86.000	1.000	43.000	0.100
3	7.7	7.7	119.531	119.127	12.000	30.959	6.000	7.954
4	6.5	6.5	95.253	93.531	28.000	6.194	14.000	0.206

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	Am243	0.835	5.270	5.269	0.001	0.06	45.59	1.3	173.6	0.782E-04
2	Pu242	0.055	4.891	4.880	0.011	0.00	3.01	5.5	11.3	0.510E-05
3		????		4.635			0.50	26.9		
4		0.017		4.515		0.03	0.92	12.1	3.5	0.156E-05
Totals:		0.906	<--valid peaks only-->				49.51			

DETECTOR CALIBRATION
Energy(MEV) = 4.076 + (0.0047)*Channel
Energy range (MeV): 4.076 TO 6.482
Efficiency = 0.2653 CPM/DPM

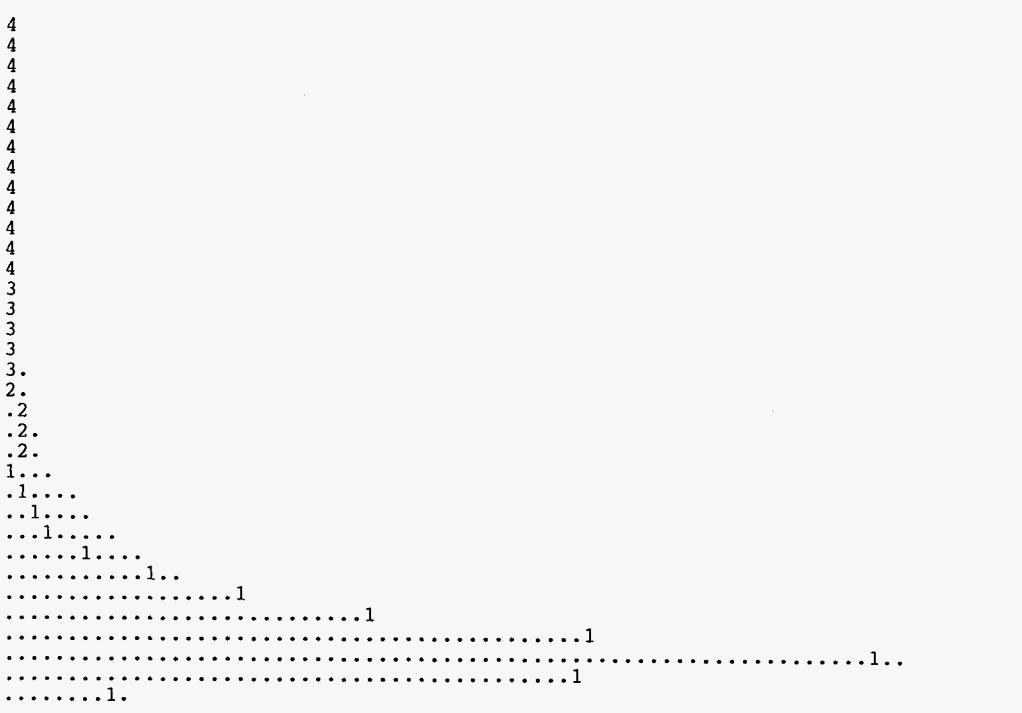
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26223.0	100.000
Smoothed	26224.2	100.005
Composite fit	24007.9	91.553
Residuals	2215.1	8.447

Analyzed by: _____
AKH

Spectrum 6a6734.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6036.7



Raw Data Dump for AEA Spectrum: 6a6734.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.
11	3.	2.	2.	5.	4.	3.	4.	3.	4.	4.
21	5.	5.	1.	5.	2.	6.	3.	8.	1.	4.
31	7.	9.	5.	5.	5.	2.	5.	2.	4.	3.
41	6.	7.	4.	2.	5.	6.	10.	4.	8.	9.
51	3.	6.	8.	6.	6.	11.	5.	3.	10.	5.
61	6.	5.	8.	6.	6.	8.	10.	10.	7.	12.
71	6.	13.	5.	8.	4.	6.	11.	5.	9.	6.
81	9.	9.	12.	13.	10.	15.	8.	7.	14.	10.
91	9.	11.	9.	12.	15.	8.	11.	15.	5.	9.
101	11.	12.	5.	20.	14.	11.	12.	11.	9.	13.
111	12.	15.	15.	18.	20.	10.	12.	17.	20.	18.
121	18.	14.	13.	15.	11.	14.	17.	17.	14.	23.
131	20.	21.	21.	22.	21.	13.	22.	21.	23.	22.
141	24.	19.	31.	18.	20.	21.	27.	23.	27.	25.
151	21.	27.	35.	28.	32.	35.	37.	37.	24.	23.
161	37.	46.	29.	45.	38.	40.	37.	42.	35.	57.
171	34.	46.	50.	43.	30.	32.	50.	43.	41.	49.
181	58.	54.	63.	70.	62.	69.	84.	62.	65.	77.
191	71.	88.	69.	75.	86.	64.	73.	69.	78.	97.
201	91.	108.	112.	90.	100.	93.	114.	111.	121.	123.
211	119.	114.	129.	122.	135.	127.	127.	142.	137.	158.
221	167.	194.	170.	172.	154.	192.	232.	216.	213.	228.
231	228.	229.	247.	275.	302.	291.	325.	355.	361.	385.
241	422.	424.	487.	503.	553.	578.	643.	635.	716.	753.
251	801.	814.	848.	817.	791.	826.	718.	635.	551.	459.
261	375.	273.	221.	187.	128.	109.	96.	75.	68.	48.
271	48.	41.	26.	24.	23.	11.	8.	4.	6.	3.
281	3.	2.	0.	4.	2.	1.	2.	1.	2.	3.
291	1.	4.	2.	0.	2.	3.	2.	5.	7.	1.
301	3.	4.	4.	6.	0.	4.	4.	4.	2.	1.
311	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
321	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
331	0.	0.	0.	0.	0.	1.	1.	0.	1.	2.
341	0.	0.	1.	1.	1.	0.	0.	1.	1.	1.
351	0.	1.	1.	1.	2.	0.	0.	1.	0.	1.
361	1.	1.	1.	3.	2.	0.	2.	0.	1.	0.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
481	1.	1.	0.	1.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T005185-SAM
File ID: 11a1124.CNF

Counted on: 10/31/96 @22:35
Detector: AEA11
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	13.7	13.7	371.280	371.280	10.000	3.341	5.000	0.744
2	971.5	971.5	303.148	303.147	16.000	8.929	8.000	2.750
3	991.1	991.1	257.442	257.391	12.000	7.707	6.000	2.099
4	57.4	57.4	170.810	170.698	136.000	1.000	68.000	0.100
5?	7.2	7.2	143.814	142.351	8.000	0.659	4.000	0.222
6	6.3	6.3	126.152	124.083	14.000	2.793	7.000	0.036
7?	4.6	4.6	65.222	63.779	10.000	2.503	5.000	4.918

PEAK RESULTS
Peak Error Limit: 30%

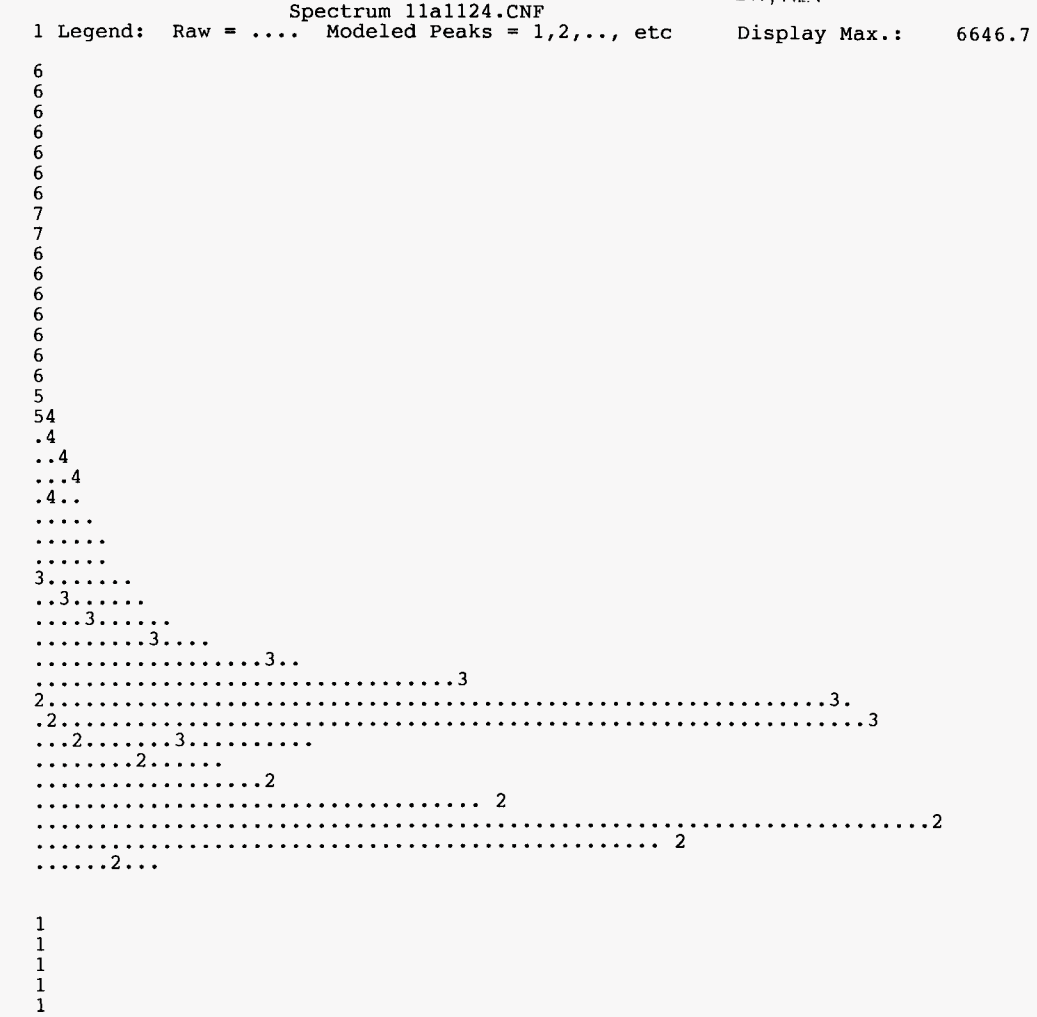
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.779			0.60	11.5		
2	Am241	0.406	5.479	5.466	0.0130	0.04	40.97	1.4	100.6	0.453E-04
	Pu238		5.487	5.466	0.021				131.4	0.592E-04
3	Am243	0.429	5.270	5.255	0.0150	0.04	43.28	1.4	100.9	0.455E-04
4		0.045		4.856	0.00		4.58	4.2	10.6	0.476E-05
5		????		4.726			0.19	74.1		
6	Np237	0.013	4.640	4.642	-.0020	.01	1.35	11.4	52.0	0.234E-04
7		????		4.364			0.07	124.		
Totals:		0.894	<--valid peaks only-->				90.18			

DETECTOR CALIBRATION
Energy(MEV) = 4.071 + (0.0046)*Channel
Energy range (MeV): 4.071 TO 6.426
Efficiency = 0.4331 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48411.0	100.000
Smoothed	48410.7	99.999
Composite fit	43704.3	90.278
Residuals	4706.7	9.722

Analyzed by: AKH


Spectrum 11a1124.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 6646.7

Raw Data Dump for AEA Spectrum: 11a1124.CNF

1	0.	0.	5.	1.	2.	5.	6.	2.	7.	2.
11	5.	1.	6.	5.	4.	5.	4.	4.	8.	8.
21	8.	4.	5.	7.	5.	5.	5.	4.	4.	7.
31	5.	6.	4.	10.	6.	11.	1.	6.	6.	8.
41	5.	3.	13.	6.	12.	8.	7.	15.	7.	8.
51	9.	12.	5.	5.	3.	1.	9.	8.	6.	9.
61	9.	17.	16.	9.	16.	10.	15.	11.	8.	9.
71	6.	14.	7.	11.	15.	18.	13.	9.	9.	13.
81	9.	11.	4.	15.	12.	12.	11.	13.	7.	11.
91	12.	16.	14.	17.	12.	12.	10.	11.	16.	16.
101	13.	17.	11.	20.	14.	14.	17.	16.	16.	21.
111	21.	21.	22.	15.	28.	13.	18.	18.	18.	20.
121	21.	19.	26.	26.	23.	23.	28.	24.	19.	23.
131	18.	17.	23.	22.	25.	43.	22.	31.	30.	22.
141	28.	41.	21.	34.	38.	30.	19.	33.	25.	36.
151	28.	35.	36.	36.	51.	40.	38.	43.	50.	39.
161	40.	54.	45.	41.	50.	55.	46.	54.	65.	67.
171	55.	65.	54.	55.	64.	51.	46.	62.	59.	50.
181	60.	62.	72.	72.	62.	87.	60.	77.	51.	80.
191	73.	104.	84.	71.	64.	76.	82.	91.	73.	100.
201	93.	95.	103.	121.	86.	121.	107.	106.	100.	125.
211	122.	126.	127.	117.	128.	118.	124.	131.	139.	153.
221	163.	139.	143.	178.	163.	150.	174.	178.	182.	182.
231	205.	200.	230.	216.	247.	269.	267.	286.	305.	344.
241	306.	348.	331.	369.	417.	492.	489.	560.	587.	633.
251	726.	763.	883.	957.	950.	1033.	1082.	1125.	1051.	918.
261	729.	471.	373.	299.	242.	240.	207.	223.	221.	212.
271	191.	189.	189.	187.	174.	164.	177.	192.	183.	199.
281	196.	209.	214.	223.	238.	258.	270.	319.	300.	345.
291	377.	394.	465.	486.	574.	603.	667.	698.	833.	901.
301	954.	1036.	1107.	996.	962.	871.	659.	517.	409.	300.
311	260.	238.	182.	135.	107.	89.	47.	34.	12.	6.
321	8.	2.	0.	1.	0.	2.	1.	0.	0.	2.
331	1.	0.	0.	4.	1.	2.	3.	3.	0.	2.
341	1.	5.	1.	3.	7.	1.	5.	6.	2.	3.
351	5.	3.	6.	1.	8.	4.	4.	9.	7.	12.
361	5.	6.	12.	9.	13.	9.	13.	10.	11.	16.
371	12.	15.	18.	9.	4.	1.	2.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
391	0.	2.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	2.	1.	1.	1.	0.	0.	0.	0.	0.
421	0.	0.	2.	1.	1.	0.	0.	0.	0.	1.
431	0.	1.	1.	4.	1.	2.	1.	3.	3.	2.
441	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	1.	0.	0.	1.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

Sue Hogan

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T005185-DUP
File ID: 12a1297.CNF

Counted on: 10/31/96 @22:36
Detector: AEA12
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	16.6	16.6	370.064	370.064	18.000	8.606	9.000	2.127
2	1378.4	1378.4	302.847	302.847	16.000	10.535	8.000	4.816
3	1474.1	1474.1	256.964	256.948	14.000	8.307	7.000	3.454
4	19.5	19.5	178.260	178.230	98.000	1.000	49.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.782			0.79	10.1		
2	Am241	0.460	5.479	5.473	0.0060.05		51.58	1.2	142.3	0.641E-04
	Pu238		5.487	5.473	0.014				185.8	0.837E-04
3	Am243	0.473	5.270	5.262	0.0080.04		53.01	1.2	138.9	0.626E-04
4	Pu242	0.014	4.891	4.900	-.0090.00		1.56	7.2	4.0	0.182E-05
Totals:		0.947	<--valid peaks only-->				106.14			

DETECTOR CALIBRATION
Energy(MEV) = 4.080 + (0.0046)*Channel
Energy range (MeV): 4.080 TO 6.435
Efficiency = 0.3855 CPM/DPM

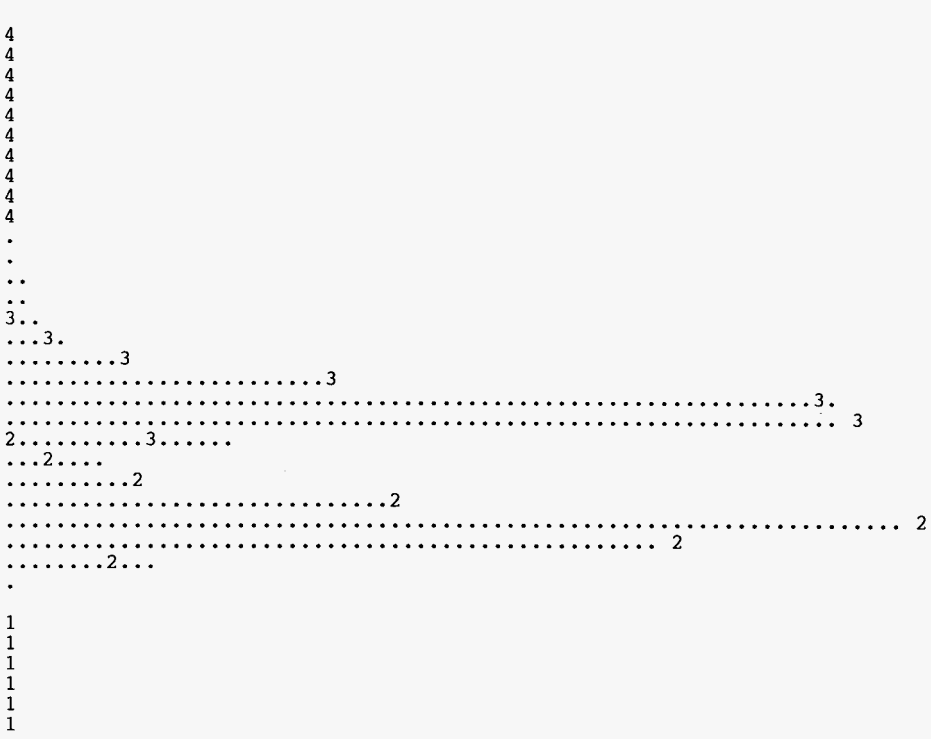
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	53812.0	100.000
Smoothed	53812.1	100.000
Composite fit	51328.3	95.385
Residuals	2483.7	4.615

Analyzed by: AKH

Spectrum 12a1297.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9418.9



Raw Data Dump for AEA Spectrum: 12a1297.CNF

1	0.	0.	1.	0.	1.	1.	0.	3.	1.	2.
11	2.	1.	1.	0.	3.	2.	3.	8.	2.	2.
21	2.	4.	5.	3.	4.	2.	3.	0.	3.	0.
31	3.	1.	0.	2.	1.	2.	5.	5.	1.	3.
41	2.	1.	3.	5.	7.	2.	2.	5.	2.	1.
51	3.	4.	1.	1.	5.	2.	0.	1.	5.	4.
61	2.	3.	7.	4.	3.	2.	2.	1.	2.	6.
71	4.	2.	3.	3.	3.	2.	4.	2.	5.	2.
81	4.	3.	5.	3.	0.	4.	4.	5.	6.	3.
91	5.	6.	4.	3.	3.	7.	4.	4.	3.	8.
101	4.	5.	8.	1.	4.	2.	5.	1.	4.	2.
111	5.	5.	13.	3.	5.	8.	8.	7.	6.	4.
121	9.	4.	5.	1.	4.	8.	4.	8.	7.	7.
131	9.	8.	11.	7.	6.	7.	8.	7.	12.	4.
141	9.	4.	12.	7.	4.	9.	6.	5.	5.	4.
151	10.	14.	12.	9.	12.	17.	7.	4.	15.	10.
161	10.	16.	7.	12.	12.	14.	6.	12.	11.	16.
171	19.	8.	17.	13.	8.	13.	18.	22.	13.	20.
181	11.	11.	10.	17.	19.	16.	11.	29.	18.	20.
191	25.	22.	25.	33.	23.	22.	23.	32.	30.	27.
201	23.	40.	33.	25.	44.	40.	39.	27.	51.	40.
211	51.	42.	52.	42.	54.	46.	65.	49.	63.	54.
221	79.	70.	72.	68.	65.	81.	83.	92.	99.	135.
231	124.	137.	122.	150.	177.	179.	206.	211.	235.	254.
241	250.	299.	363.	444.	462.	528.	594.	751.	795.	877.
251	1041.	1186.	1236.	1427.	1464.	1689.	1604.	1571.	1458.	1253.
261	960.	678.	529.	378.	306.	273.	215.	226.	191.	193.
271	190.	159.	146.	142.	115.	104.	128.	124.	103.	139.
281	128.	170.	146.	206.	205.	246.	264.	292.	355.	407.
291	428.	546.	576.	621.	743.	797.	896.	1017.	1176.	1266.
301	1480.	1517.	1540.	1422.	1329.	1127.	952.	770.	686.	524.
311	439.	345.	302.	243.	204.	131.	121.	81.	50.	21.
321	17.	19.	12.	8.	5.	12.	6.	6.	7.	5.
331	4.	5.	4.	5.	7.	6.	3.	6.	4.	4.
341	4.	5.	5.	4.	7.	1.	0.	8.	5.	6.
351	5.	5.	3.	4.	3.	8.	5.	4.	7.	8.
361	9.	10.	11.	8.	16.	11.	14.	19.	21.	16.
371	15.	21.	12.	13.	11.	8.	5.	3.	5.	1.
381	0.	2.	0.	0.	0.	0.	1.	1.	2.	3.
391	1.	0.	0.	0.	1.	1.	1.	1.	2.	0.
401	1.	1.	1.	1.	0.	1.	1.	2.	0.	2.
411	1.	1.	1.	1.	3.	0.	0.	0.	1.	1.
421	1.	0.	2.	2.	0.	1.	1.	0.	1.	0.
431	2.	0.	1.	3.	0.	0.	2.	3.	3.	3.
441	2.	1.	1.	0.	0.	0.	0.	0.	0.	1.
451	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	1.	1.	0.	1.
481	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed RadChem Report for Worklist#: 13992

Analyst: jmv **Instrument:** AB18 **Book#** 62856

Method: LA-943-128 Rev/Mod B-0

Worklist Comment: AP-106 Grab. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@PU23901 PU23901	LIQUID	1.49E-04	1.35E-4	90.604	% Recovery
1	STD		0		@PU23901 PU23901E	LIQUID	1.00	1.48E+00	1.480	% Ct Error
1	STD		0		@PU23901 PU23901T	LIQUID	100	1.05E+02	105.000	% Recovery
2	BLNK		0		@PU23901 PU23901	LIQUID	1	<3.68E-6		uCi/mL
2	BLNK		0		@PU23901 PU23901T	LIQUID	100	9.01E+01	90.100	% Recovery
2	BLNK		0		@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3	SAMPLE	S96T005184	0		@PU23901 PU23901	LIQUID	N/A	< 5.89E-06	589.0e-008	uCi/mL
3	SAMPLE	S96T005184	0		@PU23901 PU23901T	LIQUID	N/A	6.04E+01	0.0e+000	% Recovery
3	SAMPLE	S96T005184	0		@PU23901 PU23901E	LIQUID	N/A	7.35E+00	0.0e+000	% Ct. Error
4	DUP	S96T005184	0		@PU23901 PU23901	LIQUID	<5.89E-6	<5.39E-6	RPD	
4	DUP	S96T005184	0		@PU23901 PU23901T	LIQUID	100	6.45E+01	64.500	% Recovery
4	DUP	S96T005184	0		@PU23901 PU23901E	LIQUID	1.00	7.35E+00	7.350	% Ct Error
5	SAMPLE	S96T005185	0		@PU23901 PU23901	LIQUID	N/A	1.17E-04	384.0e-007	uCi/mL
5	SAMPLE	S96T005185	0		@PU23901 PU23901T	LIQUID	N/A	1.09E+02	0.0e+000	% Recovery
5	SAMPLE	S96T005185	0		@PU23901 PU23901E	LIQUID	N/A	3.31E+00	0.0e+000	% Ct. Error
6	DUP	S96T005185	0		@PU23901 PU23901	LIQUID	1.17E-4	1.17E-4	0.000	RPD
6	DUP	S96T005185	0		@PU23901 PU23901T	LIQUID	100	1.14E+02	114.000	% Recovery
6	DUP	S96T005185	0		@PU23901 PU23901E	LIQUID	1.00	3.22E+00	3.220	% Ct Error
7	SAMPLE	S96T005186	0		@PU23901 PU23901	LIQUID	N/A	1.84E-05	431.0e-008	uCi/mL
7	SAMPLE	S96T005186	0		@PU23901 PU23901T	LIQUID	N/A	1.03E+02	0.0e+000	% Recovery
7	SAMPLE	S96T005186	0		@PU23901 PU23901E	LIQUID	N/A	2.73E+00	0.0e+000	% Ct. Error
8	DUP	S96T005186	0		@PU23901 PU23901	LIQUID	1.84E-5	2.00E-5	8.333	RPD
8	DUP	S96T005186	0		@PU23901 PU23901T	LIQUID	100	1.07E+02	107.000	% Recovery
8	DUP	S96T005186	0		@PU23901 PU23901E	LIQUID	1.00	2.64E+00	2.640	% Ct Error

Final page for worklist# 13992

Analyst Signature **Date**

Analyst Signature **Date**

John Relyea 24 Oct 96
Reviewer Signature **Date**

Validated

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

LABCORE Data Entry Template for Worklist# 13992

Analyst: JmV **Instrument:** PU01 18 **Book#** 62856

Method: LA-943-128 Rev/Mod B-0

Worklist Comment: AP-106 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	S96T005184	0		@PU23901	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
4	DUP	S96T005184	0		@PU23901	LIQUID		
5	SAMPLE	S96T005185	0		@PU23901	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
6	DUP	S96T005185	0		@PU23901	LIQUID		
7	SAMPLE	S96T005186	0		@PU23901	LIQUID	96001337	AP-106 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T							
8	DUP	S96T005186	0		@PU23901	LIQUID		

Final page for worklist # 13992

Joseph Jaramillo 10-21-96
Analyst Signature **Date**

Sue Hogan 10/23/96
Analyst Signature **Date**

MG Brown 10/23/96

Data Entry Comments: I did everything except for the prep. work. Kim Thomas 10-22-96

JmV OJT up to co-precip

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID

Type	DATE COUNTED		OCT-23-96	PU 236 AEA FRAC (C236)	STD 0.412
STD	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.018
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.537
13992	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	4749
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		126B43	BACKGROUND in cpm (Bkg)	0.270
Matrix	DETECTOR NUMBER		18	PU 236 cpm	64.590
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm	2.830
Batch Number	TRACER PREPARATION DATE		07/12/96	PU 239 cpm	84.160
96010514	TRACER PREPARATION VALUE (dpm/mL)		2464.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2300.670	Pu 239/240 µCi/L	1.3508E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000		
Sample Prep	STANDARD BOOK NO		62B56		
N/A	STANDARD VALUE in µCi/mL		1.485E-04		

Sample #	
WL13992	
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 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JMV	
Date Complete	

10/23/96	Pu 239/240 µCi/mL		1.35E-04	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	1.5%	
10/22/96				Pu 239/240
Analysis Time				7.55E-06
04:05 PM				
Sample Point				
AP-106 GRAB	Pu 236 Tracer Recovery	=	105.4%	

Analyst:		JMV	Date:	23-Oct-96
Signature of Chemist:	John Rolyer	JFR	Date:	24 Oct 96

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

Type	DATE COUNTED		OCT-23-96	PU 236 AEA FRAC (C236)	BLNK
BLNK	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.938
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.000
13992	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	0.000
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	1788
@PU23901	TRACER BOOK NO		126B43	BACKGROUND in cp (Bkg)	30
Matrix	DETECTOR NUMBER		18	PU 236 cpm	0.270
LIQUID	EFFICIENCY FACTOR	EFF	0.2686	PU 238 cpm	57.520
Batch Number	TRACER PREPARATION DATE		07/12/96	PU 239 cpm	0.000
96010514	TRACER PREPARATION VALUE (dpm/mL)		2464.00	AEA COUNT TIME	0.000
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2300.67	Pu 239/240 µCi/L = <	480
0	PU-238 TRACER VALUE (dpm/mL)		0.00		3.680E-03

Sample Prep
N/A
Sample #
WL13992
Instrument Code
WB27809
Prepared By
SEH
Chemist
JFR
Analyst
JMV
Date Complete
10/23/96
Analysis Date
10/22/96
Analysis Time
04:06 PM
Sample Point
AP-106 GRAB

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)

Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 d

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery /

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL		<	3.68E-06	DETECTION LEVELS in µCi/mL
Relative Counting Error	=		100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 3.68E-06
Pu 238 µCimL		<	3.68E-06	Pu 238 3.68E-06
Relative Counting Error	=		100.0%	
Pu 236 Tracer Recovery	=		90.1%	

Analyst:		JMV	Date:	23-Oct-96
Signature of Chemist:	John Relyea	JFR	Date:	24 Oct 96

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		OCT-23-96	PU 236 AEA FRAC	(C236)		0.874
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)		0.073
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.035
13992	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			1289
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		126B43	BACKGROUND in cpm	(Bkg)		0.270
Matrix	DETECTOR NUMBER		18	PU 236 cpm			38.770
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			3.250
Batch Number	TRACER PREPARATION DATE		07/12/96	PU 239 cpm			1.540
96010514	TRACER PREPARATION VALUE (dpm/mL)		2464.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2300.670	Pu 239/240 µCi/L =		<	5.8907E-03
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S96T005184	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	
10/23/96	
Analysis Date	
10/22/96	
Analysis Time	
04:05 PM	
Sample Point	
AP-106 GRAB	

Pu 239/240 µCi/mL		< 5.89E-06	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	7.4%	
			Pu 239/240
Pu 238 µCimL		8.66E-06	5.89E-06
Relative Counting Error	=	5.2%	Pu 238
Pu 236 Tracer Recovery	=	60.4%	5.89E-06

Analyst:	JMV	Date:	23-Oct-96
Signature of Chemist: John Relyea	JFR	Date:	24 Oct 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

Type						DUP
DUP	DATE COUNTED		OCT-23-96	PU 236 AEA FRAC	(C236)	0.895
Work List	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.048
13992	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.034
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1344
@PU23901	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
Matrix	TRACER BOOK NO		126B43	BACKGROUND in cpm	(Bkg)	0.270
LIQUID	DETECTOR NUMBER		18	PU 236 cpm		40.240
Batch Number	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		2.140
96010514	TRACER PREPARATION DATE		07/12/96	PU 239 cpm		1.540
Rerun	TRACER PREPARATION VALUE (dpm/mL)		2464.000	AEA COUNT TIME		480
0	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2300.670	Pu 239/240 µCi/L =	<	5.3862E-03
Sample Prep	PU-238 TRACER VALUE	(dpm/mL)	0.000			
N/A						

Sample #	Decay Time = Date Counted - Tracer Preparation Date
S96T005184	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	
10/23/96	
Analysis Date	
10/22/96	
Analysis Time	
04:05 PM	
Sample Point	
AP-106 GRAB	

Pu 239/240 µCi/mL		< 5.39E-06	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	7.3%	
			Pu 239/240
Pu 238 µCimL		5.56E-06	5.39E-06
Relative Counting Error	=	6.3%	Pu 238
Pu 236 Tracer Recovery	=	64.5%	5.39E-06

Analyst:		JMV	Date:	23-Oct-96
Signature of Chemist:	John Relyea	JFR	Date:	24 Oct 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

Type						SAMPLE
SAMPLE	DATE COUNTED		OCT-23-96	PU 236 AEA FRAC	(C236)	0.809
Work List	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.078
13992	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.091
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2495
@PU23901	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
Matrix	TRACER BOOK NO		126B43	BACKGROUND in cpm	(Bkg)	0.270
LIQUID	DETECTOR NUMBER		18	PU 236 cpm		72.090
Batch Number	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		6.950
96010514	TRACER PREPARATION DATE		07/12/96	PU 239 cpm		8.140
Rerun	TRACER PREPARATION VALUE	(dpm/mL)	2464.000	AEA COUNT TIME		480
0	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2300.670	Pu 239/240 µCi/L		1.1657E-01
Sample Prep	PU-238 TRACER VALUE	(dpm/mL)	0.000			
N/A						

Sample #	Decay Time = Date Counted - Tracer Preparation Date
S96T005185	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	

10/23/96	Pu 239/240 µCi/mL		1.17E-04	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	3.3%	
10/22/96				Pu 239/240
Analysis Time				3.84E-05
04:05 PM	Pu 238 µCimL		9.99E-05	Pu 238
Sample Point	Relative Counting Error	=	3.6%	3.84E-05
AP-106 GRAB	Pu 236 Tracer Recovery	=	108.5%	

Analyst:		JMV	Date:	23-Oct-96
Signature of Chemist:	John Relyea	JFR	Date:	24Oct96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

Type						DUP
DUP	DATE COUNTED		OCT-23-96	PU 236 AEA FRAC	(C236)	0.809
Work List	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC	(C238)	0.084
13992	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.091
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2616
@PU23901	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
Matrix	TRACER BOOK NO		126B43	BACKGROUND in cpm	(Bkg)	0.270
LIQUID	DETECTOR NUMBER		18	PU 236 cpm		76.220
Batch Number	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		7.910
96010514	TRACER PREPARATION DATE		07/12/96	PU 239 cpm		8.570
Rerun	TRACER PREPARATION VALUE	(dpm/mL)	2464.000	AEA COUNT TIME		480
0	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2300.670	Pu 239/240 µCi/L		1.1657E-01
Sample Prep	PU-238 TRACER VALUE	(dpm/mL)	0.000			
N/A						

Sample #	Decay Time = Date Counted - Tracer Preparation Date
S96T005185	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				
10/23/96	Pu 239/240 µCi/mL		1.17E-04	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	3.2%	
10/22/96				Pu 239/240
Analysis Time				3.84E-05
04:06 PM	Pu 238 µCimL		1.08E-04	
Sample Point	Relative Counting Error	=	3.3%	Pu 238
AP-106 GRAB	Pu 236 Tracer Recovery	=	113.8%	3.84E-05

Analyst:		JMV	Date:	23-Oct-96
Signature of Chemist:	John Dalyea	JFR	Date:	24 Oct 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM7

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

							SAMPLE
Type	DATE COUNTED		OCT-23-96	PU 236 AEA FRAC	(C236)		0.722
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)		0.122
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.128
13992	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2647
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		126B43	BACKGROUND in cpm	(Bkg)		0.270
Matrix	DETECTOR NUMBER		18	PU 236 cpm			71.250
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			12.060
Batch Number	TRACER PREPARATION DATE		07/12/96	PU 239 cpm			12.680
96010514	TRACER PREPARATION VALUE	(dpm/mL)	2464.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2300.670	Pu 239/240 µCi/L			1.8373E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				

Sample Prep
N/A
Sample #
S96T005186
Instrument Code
WB27809
Prepared By
SEH
Chemist
JFR
Analyst
JMV
Date Complete
10/23/96
Analysis Date
10/22/96
Analysis Time
04:05 PM
Sample Point
AP-106 GRAB

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

			DETECTION LEVELS in µCi/mL
Pu 239/240 µCi/mL		1.84E-05	
Relative Counting Error	=	2.7%	
			Pu 239/240
Pu 238 µCimL		1.75E-05	4.31E-06
Relative Counting Error	=	2.8%	Pu 238
Pu 236 Tracer Recovery	=	102.8%	4.31E-06

Analyst:		JMV	Date:	23-Oct-96
Signature of Chemist:	John Relyea	JFR	Date:	24 Oct 96

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP8

Pu 238 and 239/240 : LA-943-128 (B-0) LIQUID / SOLID

Type						DUP
DUP	DATE COUNTED		OCT-23-96	PU 236 AEA FRAC	(C236)	0.720
Work List	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.122
13992	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.139
Test Code	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2753
@PU23901	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
Matrix	TRACER BOOK NO		126B43	BACKGROUND in cpm	(Bkg)	0.270
LIQUID	DETECTOR NUMBER		18	PU 236 cpm		71.000
Batch Number	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		12.040
96010514	TRACER PREPARATION DATE		07/12/96	PU 239 cpm		13.690
Rerun	TRACER PREPARATION VALUE (dpm/mL)		2464.000	AEA COUNT TIME		480
0	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2300.670	Pu 239/240 µCi/L		2.0007E-02
Sample Prep	PU-238 TRACER VALUE	(dpm/mL)	0.000			
N/A						

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

SEH				
Chemist				
JFR				
Analyst				
JMV				
Date Complete				
10/23/96	Pu 239/240 µCi/mL		2.00E-05	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	2.6%	
10/22/96				Pu 239/240
Analysis Time				4.32E-06
04:05 PM	Pu 238 µCimL		1.76E-05	
Sample Point	Relative Counting Error	=	2.8%	Pu 238
AP-106 GRAB	Pu 236 Tracer Recovery	=	106.6%	4.32E-06

Analyst:		JMV	Date:	23-Oct-96
Signature of Chemist:	John Relyea	JFR	Date:	24 Oct 96

SAMPLE.WB1 REV 1.0 943128ML

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL13992-STD-PU
File ID: 7a7486.CNF

Counted on: 10/23/96 @ 0:57
Detector: AEA7
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Final	Peak center Initial	Final	FWHM Initial	Final	Tau Initial	Final
1	1346.5	1346.5	363.352	363.352	18.000	9.445	9.000	2.355
2	30.5	30.5	292.906	292.224	24.000	24.738	12.000	2.861
3	1917.1	1917.1	230.993	230.990	16.000	9.113	8.000	2.624
4	22.9	22.9	156.020	155.211	104.000	1.000	52.000	0.100
5?	1.2	1.2	124.281	124.000	4.000	0.000	2.000	3.758

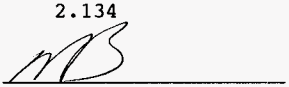
PEAK RESULTS
Peak Error Limit: 30%

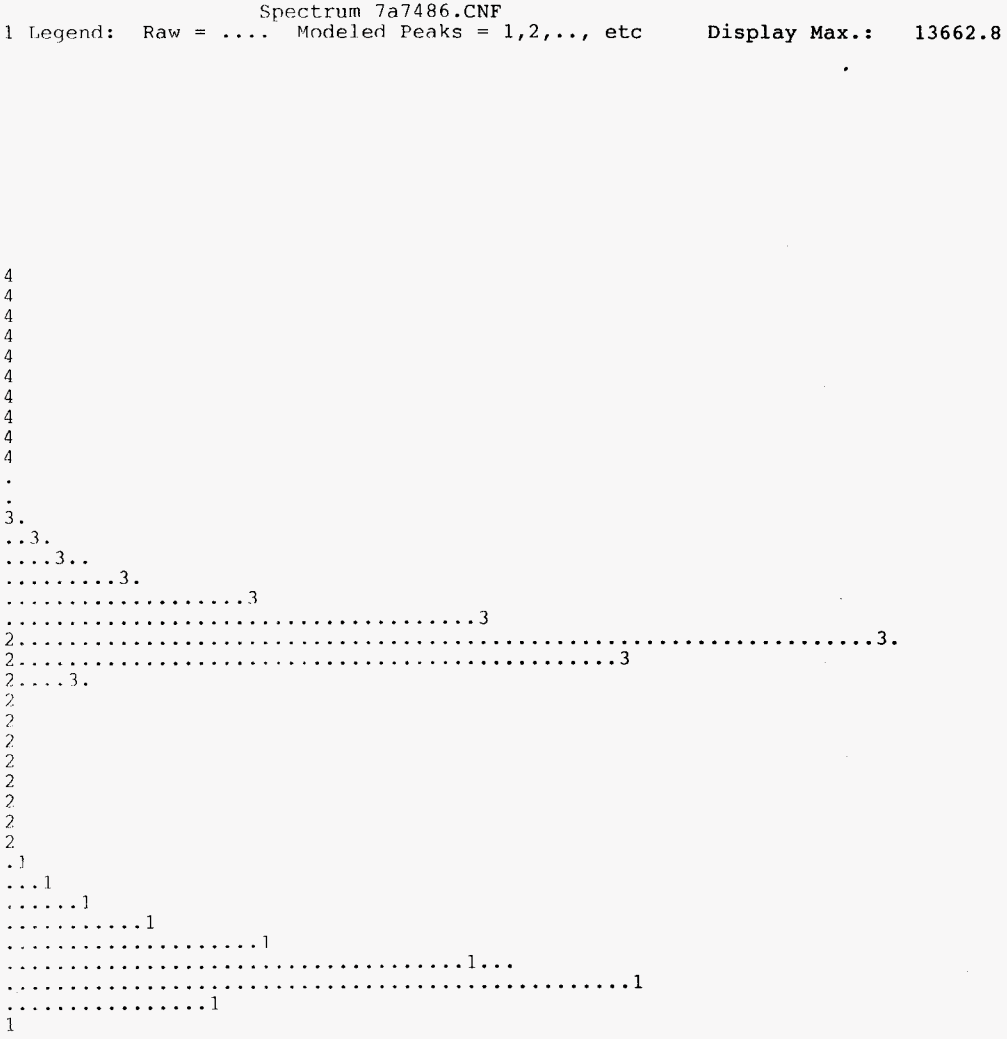
Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.412	5.779	5.744	0.035	0.04	64.59	1.1	383.0	0.173E-03
	Pu236		5.755	5.744	0.011				285.3	0.129E-03
2	Th228	0.018	5.400	5.416	-.016	0.11	2.83	7.3	17.3	0.778E-05
	Am241		5.479	5.416	0.063				13.0	0.588E-05
3	Pu239	0.537	5.147	5.135	0.012	0.04	84.16	1.0	364.3	0.164E-03
	Pu240		5.144	5.135	0.009				364.3	0.164E-03
4	Np237	0.012	4.769	4.786	-.017	0.00	1.82	7.1	9.1	0.409E-05
5		????		4.643			0.00	3122.		
Totals:		0.979	<--valid peaks only-->				153.40			

DETECTOR CALIBRATION
Energy(MEV) = 4.072 + (0.0046)*Channel
Energy range (MeV): 4.072 TO 6.427
Efficiency = 0.2310 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	75246.0	100.000
Smoothed	75246.8	100.001
Composite fit	73640.4	97.866
Residuals	1605.6	2.134

Analyzed by: 


Spectrum 7a7486.CNF
1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc
Display Max.: 13662.8

Raw Data Dump for AEA Spectrum: 7a7486.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	2.	4.	2.	0.	2.	5.	2.	2.	4.	4.
21	2.	1.	2.	5.	2.	1.	1.	5.	2.	2.
31	5.	4.	1.	0.	2.	7.	1.	2.	3.	5.
41	3.	3.	2.	3.	3.	2.	7.	2.	3.	2.
51	4.	1.	2.	5.	3.	3.	1.	2.	3.	4.
61	5.	2.	4.	4.	1.	7.	3.	3.	0.	8.
71	9.	4.	2.	6.	3.	3.	7.	4.	10.	6.
81	3.	5.	4.	1.	8.	7.	4.	8.	6.	6.
91	5.	2.	5.	6.	9.	3.	6.	3.	10.	9.
101	4.	10.	5.	4.	6.	5.	6.	7.	11.	10.
111	4.	7.	8.	6.	9.	5.	9.	8.	8.	14.
121	11.	9.	7.	13.	12.	10.	7.	9.	7.	15.
131	13.	16.	16.	16.	10.	17.	14.	9.	17.	20.
141	19.	18.	14.	19.	16.	19.	15.	16.	23.	21.
151	21.	19.	27.	32.	35.	26.	28.	33.	23.	21.
161	27.	18.	39.	32.	32.	38.	25.	47.	45.	50.
171	31.	49.	40.	50.	48.	60.	56.	64.	77.	62.
181	82.	68.	94.	91.	88.	102.	99.	118.	107.	133.
191	119.	134.	167.	160.	167.	196.	163.	196.	204.	216.
201	233.	255.	226.	299.	314.	321.	326.	362.	412.	405.
211	454.	468.	537.	569.	592.	626.	744.	785.	863.	941.
221	998.	1179.	1181.	1332.	1404.	1553.	1700.	1866.	1966.	2076.
231	2035.	2081.	1841.	1709.	1462.	1244.	979.	676.	474.	307.
241	183.	112.	58.	30.	22.	17.	16.	11.	9.	11.
251	14.	13.	15.	17.	8.	12.	16.	13.	17.	10.
261	11.	10.	12.	14.	12.	16.	12.	26.	14.	27.
271	27.	22.	20.	17.	22.	17.	34.	27.	16.	28.
281	35.	23.	37.	34.	26.	28.	38.	45.	33.	39.
291	32.	47.	45.	44.	38.	28.	39.	43.	33.	35.
301	33.	41.	36.	33.	40.	45.	40.	39.	56.	51.
311	48.	52.	45.	47.	52.	70.	51.	53.	75.	79.
321	76.	86.	82.	92.	109.	119.	103.	135.	113.	145.
331	152.	169.	185.	166.	182.	231.	239.	242.	249.	291.
341	294.	351.	327.	389.	402.	485.	485.	524.	573.	595.
351	673.	763.	813.	930.	956.	1037.	1039.	1141.	1244.	1216.
361	1327.	1319.	1487.	1406.	1375.	1201.	1100.	898.	719.	558.
371	438.	284.	172.	98.	59.	36.	13.	5.	2.	3.
381	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	3.	0.	0.	0.	0.
461	1.	0.	1.	0.	0.	1.	1.	2.	0.	1.
471	0.	3.	2.	3.	2.	0.	1.	3.	5.	1.
481	2.	3.	2.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
WL13992-BLK-PU
File ID: 8a8686.CNF

Counted on: 10/23/96 @ 0:58
Detector: AEA8
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1090.8	1090.8	362.228	362.228	18.000	10.779	9.000	2.396

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.938	5.779	5.765	0.014	0.05	57.52	1.2	208.5	0.939E-04
	Pu236		5.755	5.765	-.010				155.3	0.700E-04
Totals:		0.938	<--valid peaks only-->				57.52			

DETECTOR CALIBRATION
Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.454
Efficiency = 0.3779 CPM/DPM

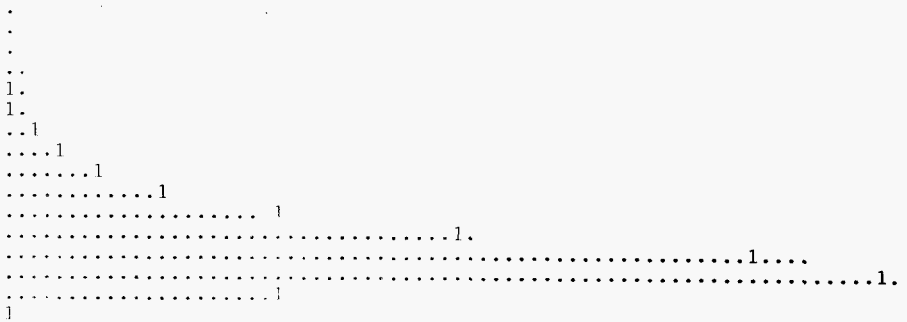
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29445.0	100.000
Smoothed	29445.0	100.000
Composite fit	27615.8	93.788
Residuals	1829.2	6.212

Analyzed by: SLH2

Spectrum 8a8686.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7794.2



Raw Data Dump for AEA Spectrum: 8a8686.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	3.	0.	2.	3.	2.	0.	3.	0.	1.	1.
21	2.	2.	1.	1.	1.	1.	0.	1.	2.	2.
31	1.	3.	2.	3.	0.	1.	3.	2.	0.	4.
41	0.	3.	3.	1.	1.	0.	2.	3.	1.	1.
51	1.	1.	1.	2.	3.	2.	3.	1.	3.	6.
61	2.	0.	3.	2.	0.	4.	2.	1.	1.	2.
71	2.	2.	0.	1.	2.	1.	0.	0.	2.	1.
81	0.	1.	1.	1.	0.	5.	1.	1.	0.	0.
91	3.	1.	1.	0.	3.	1.	1.	2.	1.	1.
101	2.	1.	0.	2.	2.	3.	1.	2.	1.	0.
111	2.	3.	1.	1.	3.	2.	5.	3.	4.	1.
121	0.	3.	2.	1.	1.	1.	3.	0.	4.	0.
131	1.	1.	1.	3.	0.	2.	3.	2.	1.	0.
141	2.	1.	3.	2.	2.	1.	0.	1.	3.	2.
151	4.	2.	2.	5.	1.	0.	3.	2.	1.	2.
161	3.	0.	3.	2.	0.	2.	1.	1.	6.	1.
171	6.	3.	0.	1.	4.	0.	1.	3.	3.	2.
181	5.	2.	3.	5.	4.	6.	3.	1.	3.	4.
191	2.	3.	5.	3.	2.	3.	4.	5.	5.	5.
201	2.	2.	3.	3.	3.	4.	5.	6.	3.	0.
211	5.	7.	4.	3.	5.	7.	7.	5.	5.	8.
221	10.	4.	6.	7.	11.	5.	6.	4.	10.	13.
231	5.	10.	5.	7.	6.	9.	6.	12.	6.	10.
241	11.	8.	5.	11.	3.	9.	9.	13.	9.	9.
251	10.	11.	8.	14.	17.	13.	15.	15.	17.	14.
261	11.	14.	17.	10.	12.	22.	11.	24.	15.	24.
271	20.	26.	18.	25.	21.	26.	22.	18.	23.	28.
281	26.	31.	25.	27.	38.	38.	42.	38.	41.	45.
291	36.	35.	38.	38.	33.	35.	40.	34.	39.	35.
301	44.	59.	39.	38.	49.	43.	55.	46.	57.	56.
311	57.	56.	78.	70.	60.	58.	87.	80.	92.	101.
321	93.	97.	117.	118.	127.	125.	132.	125.	140.	174.
331	154.	176.	184.	189.	209.	211.	238.	242.	254.	292.
341	315.	351.	400.	385.	399.	441.	461.	508.	582.	666.
351	669.	755.	755.	800.	891.	853.	1035.	1011.	1046.	1089.
361	1119.	1141.	1153.	1107.	988.	938.	765.	677.	480.	372.
371	242.	191.	123.	81.	37.	23.	9.	2.	2.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
431	1.	0.	0.	0.	1.	0.	0.	1.	2.	0.
441	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	1.	0.	1.	0.	2.	0.	0.	0.	1.
471	0.	3.	1.	0.	1.	2.	1.	0.	0.	1.
481	0.	0.	2.	2.	0.	3.	1.	1.	1.	2.
491	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
501	0.	0.								

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T005184-SAM-P
File ID: 9a9496.CNF

Counted on: 10/23/96 @ 0:59
Detector: AEA9
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	951.5	951.5	362.716	362.716	12.000	4.748	6.000	1.252
2	39.2	39.2	306.729	305.803	18.000	12.293	9.000	1.452
3	38.3	38.3	231.702	231.595	14.000	7.284	7.000	2.241

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	0.874	5.755	5.740	0.0150	0.02	38.77	1.4	87.6	0.395E-04
2	Am241	0.073	5.479	5.478	0.0010	0.06	3.25	6.4	7.6	0.345E-05
	Pu238		5.487	5.478	0.009				10.0	0.450E-05
3	Pu239	0.035	5.147	5.137	0.0100	0.03	1.54	8.1	3.4	0.154E-05
	Pu240		5.144	5.137	0.007				3.4	0.154E-05
Totals:		0.981	<--valid peaks only-->				43.56			

DETECTOR CALIBRATION
Energy(MEV) = 4.071 + (0.0046)*Channel
Energy range (MeV): 4.071 TO 6.426
Efficiency = 0.4516 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21307.0	100.000
Smoothed	21307.1	100.000
Composite fit	20910.8	98.141
Residuals	396.2	1.859

Analyzed by: SLH2

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc **Display Max.:** 6139.2

Raw Data Dump for AEA Spectrum: 9a9496.CNF

1	0.	0.	1.	1.	0.	1.	0.	2.	2.	0.
11	1.	0.	1.	0.	2.	0.	1.	0.	1.	2.
21	0.	3.	1.	2.	2.	0.	1.	1.	0.	0.
31	1.	0.	0.	0.	1.	2.	4.	2.	0.	0.
41	2.	5.	0.	0.	3.	0.	1.	0.	1.	1.
51	4.	1.	3.	0.	0.	4.	2.	2.	0.	0.
61	3.	2.	1.	2.	0.	4.	1.	2.	1.	0.
71	1.	2.	1.	0.	0.	1.	1.	1.	3.	2.
81	2.	0.	0.	2.	2.	1.	2.	3.	0.	2.
91	1.	0.	3.	1.	2.	0.	2.	1.	0.	1.
101	3.	0.	4.	2.	1.	2.	2.	0.	2.	0.
111	2.	1.	0.	0.	1.	0.	2.	1.	3.	1.
121	2.	2.	2.	0.	1.	2.	0.	0.	4.	5.
131	1.	2.	0.	0.	1.	0.	2.	2.	2.	6.
141	1.	0.	2.	3.	0.	2.	4.	4.	0.	4.
151	2.	1.	2.	2.	2.	3.	0.	2.	4.	2.
161	1.	3.	3.	2.	2.	4.	1.	2.	3.	2.
171	4.	4.	5.	3.	4.	6.	3.	1.	6.	6.
181	3.	1.	0.	4.	1.	3.	3.	7.	2.	4.
191	4.	5.	0.	0.	6.	1.	7.	4.	4.	5.
201	5.	3.	8.	9.	6.	11.	9.	6.	9.	12.
211	15.	8.	7.	17.	16.	13.	18.	17.	22.	11.
221	18.	20.	19.	23.	28.	23.	31.	43.	43.	44.
231	44.	46.	45.	36.	34.	43.	23.	17.	7.	7.
241	9.	5.	4.	10.	1.	8.	11.	4.	7.	6.
251	9.	3.	6.	6.	10.	11.	7.	7.	6.	12.
261	5.	17.	4.	9.	15.	11.	15.	12.	14.	18.
271	13.	11.	7.	11.	19.	14.	17.	22.	16.	15.
281	27.	20.	28.	30.	20.	29.	28.	31.	26.	39.
291	40.	38.	39.	31.	34.	34.	40.	44.	40.	48.
301	36.	37.	54.	42.	62.	65.	57.	49.	55.	55.
311	49.	41.	44.	42.	38.	46.	55.	46.	41.	52.
321	55.	69.	77.	47.	72.	80.	85.	77.	99.	98.
331	98.	103.	99.	143.	125.	148.	157.	154.	182.	187.
341	198.	200.	236.	249.	269.	278.	325.	336.	372.	423.
351	460.	555.	604.	620.	652.	670.	656.	722.	807.	881.
361	932.	991.	1070.	1018.	902.	676.	421.	227.	114.	41.
371	18.	2.	3.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	2.	0.	0.	0.	0.	1.	0.	0.	0.
461	1.	0.	1.	1.	1.	1.	1.	0.	4.	0.
471	0.	0.	4.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
501	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T005184-DUP-P
File ID: 10a1006.CNF

Counted on: 10/23/96 @ 1: 0
Detector: AEA10
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	976.1	976.1	362.859	362.859	12.000	3.815	6.000	0.943
2	33.7	33.7	305.877	304.823	16.000	6.479	8.000	0.978
3?	10.8	10.8	289.562	288.504	6.000	1.426	3.000	0.874
4?	6.8	6.8	272.447	271.255	8.000	1.894	4.000	0.354
5	39.4	39.4	231.253	231.200	10.000	4.574	5.000	1.277

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	0.895	5.755	5.752	0.003	0.02	40.24	1.4	116.7	0.526E-04
2	Pu238	0.048	5.487	5.485	0.002	0.03	2.14	8.2	8.5	0.381E-05
	Am241		5.479	5.485	-.006				6.5	0.292E-05
3		????		5.410			0.21	57.3		
4		????		5.331			0.32	28.9		
5	Pu239	0.034	5.147	5.147	0.000	0.02	1.54	7.7	4.4	0.197E-05
	Pu240		5.144	5.147	-.003				4.4	0.197E-05
Totals:		0.977	<--valid peaks only-->				43.92			

DETECTOR CALIBRATION
Energy(MEV) = 4.083 + (0.0046)*Channel
Energy range (MeV): 4.083 TO 6.439
Efficiency = 0.3517 CPM/DPM

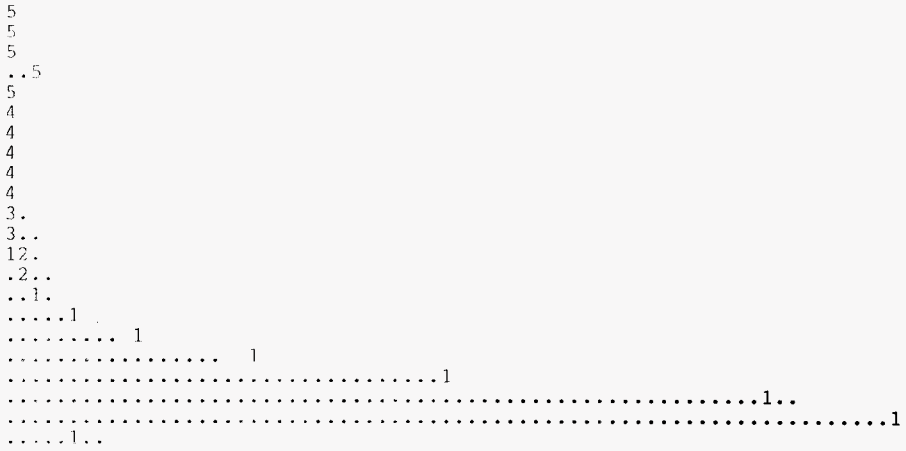
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21576.0	100.000
Smoothed	21575.8	99.999
Composite fit	21336.6	98.891
Residuals	239.4	1.109

Analyzed by: SLH2

Spectrum 10a1006.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc **Display Max.: 6084.3**



Raw Data Dump for AEA Spectrum: 10a1006.CNF

1	0.	0.	3.	1.	0.	1.	2.	1.	1.	2.
11	1.	1.	1.	1.	1.	1.	2.	1.	1.	1.
21	1.	1.	1.	2.	6.	0.	1.	1.	1.	2.
31	2.	1.	0.	1.	1.	2.	3.	1.	1.	1.
41	2.	1.	1.	0.	0.	2.	1.	3.	1.	1.
51	0.	1.	2.	2.	3.	2.	2.	1.	0.	2.
61	2.	2.	3.	1.	2.	2.	0.	1.	5.	4.
71	3.	2.	2.	1.	2.	2.	3.	5.	3.	2.
81	0.	0.	4.	3.	1.	0.	3.	1.	4.	1.
91	2.	0.	1.	1.	2.	2.	0.	1.	1.	1.
101	1.	1.	4.	0.	4.	0.	2.	1.	1.	2.
111	1.	2.	2.	1.	4.	0.	1.	1.	4.	0.
121	3.	2.	1.	5.	3.	0.	0.	6.	4.	2.
131	0.	1.	4.	0.	1.	3.	3.	3.	3.	1.
141	2.	0.	5.	4.	2.	3.	1.	1.	3.	1.
151	3.	3.	1.	3.	0.	2.	2.	4.	5.	6.
161	4.	3.	2.	1.	0.	1.	2.	3.	5.	0.
171	0.	2.	2.	2.	3.	3.	8.	6.	2.	3.
181	5.	2.	6.	8.	3.	3.	4.	4.	3.	6.
191	6.	7.	3.	5.	5.	2.	8.	6.	8.	9.
201	8.	9.	9.	13.	7.	10.	8.	9.	9.	10.
211	8.	12.	19.	12.	11.	13.	17.	17.	21.	29.
221	23.	26.	19.	22.	25.	22.	32.	35.	45.	41.
231	44.	50.	46.	29.	21.	16.	10.	6.	10.	6.
241	6.	6.	6.	9.	3.	7.	5.	5.	3.	7.
251	10.	4.	6.	13.	5.	3.	13.	11.	11.	14.
261	9.	8.	12.	14.	12.	14.	19.	15.	16.	15.
271	17.	22.	19.	18.	15.	15.	14.	14.	18.	14.
281	27.	28.	23.	26.	24.	24.	33.	33.	45.	37.
291	28.	36.	26.	29.	36.	42.	41.	30.	33.	40.
301	45.	49.	48.	60.	54.	58.	57.	50.	49.	45.
311	38.	39.	39.	42.	42.	43.	43.	55.	56.	46.
321	70.	63.	63.	68.	73.	69.	75.	74.	73.	106.
331	105.	107.	102.	128.	132.	138.	165.	157.	175.	173.
341	197.	225.	255.	270.	286.	301.	349.	367.	453.	478.
351	506.	592.	623.	720.	716.	694.	651.	724.	720.	799.
361	919.	1004.	1167.	1004.	967.	657.	363.	115.	39.	6.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	1.	0.	0.	1.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	1.	1.	0.	1.	0.	1.	3.
471	1.	0.	0.	2.	1.	3.	5.	3.	0.	1.
481	1.	0.	0.	3.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
501	0.	0.								

Westinghouse Hanford Co.

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T005185-SAM-P
File ID: 11a1107.CNF

Counted on: 10/23/96 @ 1: 0
Detector: AEA11
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Final	Peak center Initial	Final	FWHM Initial	Final	Tau Initial	Final
1	1841.1	1841.1	363.863	363.863	12.000	4.043	6.000	1.089
2	110.4	110.4	306.057	305.605	14.000	7.393	7.000	1.156
3	217.4	217.4	232.218	232.195	14.000	5.166	7.000	1.590
4?	8.1	8.1	181.724	181.231	24.000	1.000	12.000	0.100
5?	1.9	1.9	174.382	173.927	68.000	1.000	34.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.809	5.755	5.745	0.010	0.02	72.09	1.1	171.3	0.771E-04
2	Pu238	0.078	5.487	5.477	0.010	0.03	6.95	4.0	22.5	0.101E-04
	Am241		5.479	5.477	0.002				17.2	0.776E-05
3	Pu239	0.091	5.147	5.139	0.008	0.02	8.14	3.2	19.0	0.854E-05
	Pu240		5.144	5.139	0.005				19.0	0.854E-05
4		????		4.905			0.65	12.5		
5		????		4.871			0.15	54.0		
Totals:		0.979	<--valid peaks only-->				87.19			

DETECTOR CALIBRATION
Energy(MEV) = 4.071 + (0.0046)*Channel
Energy range (MeV): 4.071 TO 6.427
Efficiency = 0.4295 CPM/DPM

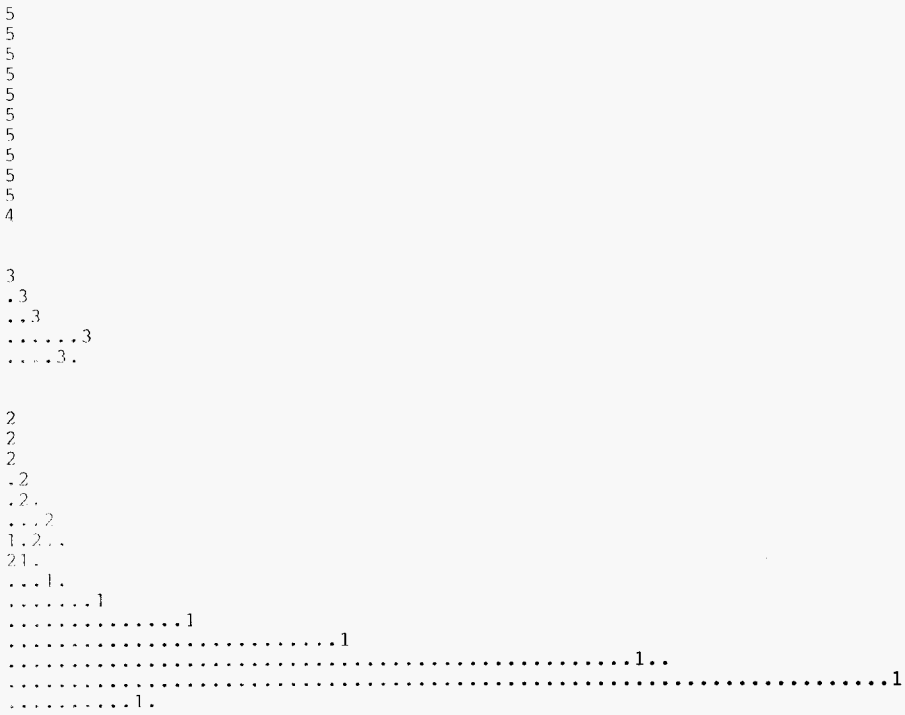
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	42754.0	100.000
Smoothed	42755.1	100.003
Composite fit	42238.3	98.794
Residuals	515.7	1.206

Analyzed by: SLH2

Spectrum 11a1107.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc **Display Max.: 12434.8**



Raw Data Dump for ABA Spectrum: 11a1107.CNF

1	0.	0.	0.	1.	1.	0.	2.	0.	0.	0.
11	1.	0.	0.	0.	1.	0.	1.	0.	0.	3.
21	2.	3.	1.	0.	1.	0.	0.	1.	0.	0.
31	1.	0.	2.	2.	1.	1.	1.	1.	0.	2.
41	1.	0.	0.	5.	1.	1.	2.	1.	1.	0.
51	1.	0.	2.	2.	1.	1.	0.	0.	2.	1.
61	3.	4.	1.	1.	3.	0.	0.	3.	6.	4.
71	6.	3.	3.	2.	3.	2.	3.	3.	3.	1.
81	0.	3.	1.	0.	1.	1.	4.	2.	3.	0.
91	3.	0.	4.	1.	1.	1.	1.	1.	0.	2.
101	2.	0.	1.	4.	2.	1.	2.	2.	2.	4.
111	0.	1.	1.	4.	1.	2.	1.	1.	1.	1.
121	3.	6.	4.	3.	0.	3.	2.	2.	1.	0.
131	2.	1.	1.	3.	4.	2.	7.	2.	2.	0.
141	3.	3.	3.	3.	7.	6.	2.	6.	5.	5.
151	9.	5.	10.	5.	3.	4.	1.	2.	4.	5.
161	8.	9.	6.	2.	5.	5.	8.	5.	4.	6.
171	11.	7.	9.	13.	13.	6.	9.	7.	9.	7.
181	16.	10.	13.	10.	5.	6.	9.	7.	18.	18.
191	14.	25.	14.	26.	19.	17.	17.	16.	19.	23.
201	26.	30.	31.	37.	37.	36.	41.	36.	38.	47.
211	54.	55.	51.	55.	62.	66.	78.	58.	74.	75.
221	89.	98.	101.	131.	136.	145.	171.	163.	179.	253.
231	230.	244.	235.	252.	183.	124.	92.	55.	29.	25.
241	9.	6.	12.	9.	13.	8.	14.	14.	10.	11.
251	9.	15.	15.	10.	13.	15.	22.	28.	13.	21.
261	23.	18.	19.	16.	23.	13.	18.	28.	18.	34.
271	27.	28.	37.	19.	36.	27.	37.	26.	40.	35.
281	42.	36.	48.	51.	58.	67.	60.	78.	75.	90.
291	84.	92.	65.	85.	86.	81.	81.	85.	100.	97.
301	102.	108.	127.	130.	155.	144.	145.	142.	105.	96.
311	67.	71.	63.	68.	80.	77.	78.	84.	88.	90.
321	111.	95.	94.	121.	147.	128.	146.	148.	169.	177.
331	173.	180.	178.	205.	239.	246.	235.	262.	282.	314.
341	342.	406.	408.	421.	404.	490.	514.	605.	665.	681.
351	810.	926.	1011.	1136.	1162.	1251.	1250.	1297.	1330.	1406.
361	1535.	1747.	1949.	2126.	1988.	1796.	1241.	720.	323.	133.
371	24.	6.	3.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
421	1.	0.	0.	0.	0.	1.	1.	0.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	2.	0.	1.
461	0.	0.	0.	1.	1.	1.	0.	1.	0.	1.
471	2.	1.	2.	1.	3.	2.	4.	4.	3.	4.
481	1.	2.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
501	0.	0.								

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T005185-DUP-P
File ID: 12a1280.CNF

Counted on: 10/23/96 @ 1: 1
Detector: AEA12
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Final	Peak center Initial	Final	FWHM Initial	Final	Tau Initial	Final
1	1678.8	1678.8	357.639	357.639	12.000	5.828	6.000	1.375
2	98.3	98.3	300.684	299.326	16.000	9.246	8.000	1.087
3	212.4	212.4	225.749	225.709	14.000	5.807	7.000	1.643

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	0.809	5.755	5.746	0.009	0.03	76.22	1.0	202.6	0.913E-04
2	Am241	0.084	5.479	5.478	0.001	0.04	7.91	3.9	21.9	0.988E-05
	Pu238		5.487	5.478	0.009				28.6	0.129E-04
3	Pu239	0.091	5.147	5.139	0.008	0.03	8.57	3.2	22.3	0.101E-04
	Pu240		5.144	5.139	0.005				22.3	0.101E-04
Totals:		0.984	<--valid peaks only-->				92.70			

DETECTOR CALIBRATION
Energy(MEV) = 4.101 + (0.0046)*Channel
Energy range (MeV): 4.101 TO 6.456
Efficiency = 0.3838 CPM/DPM

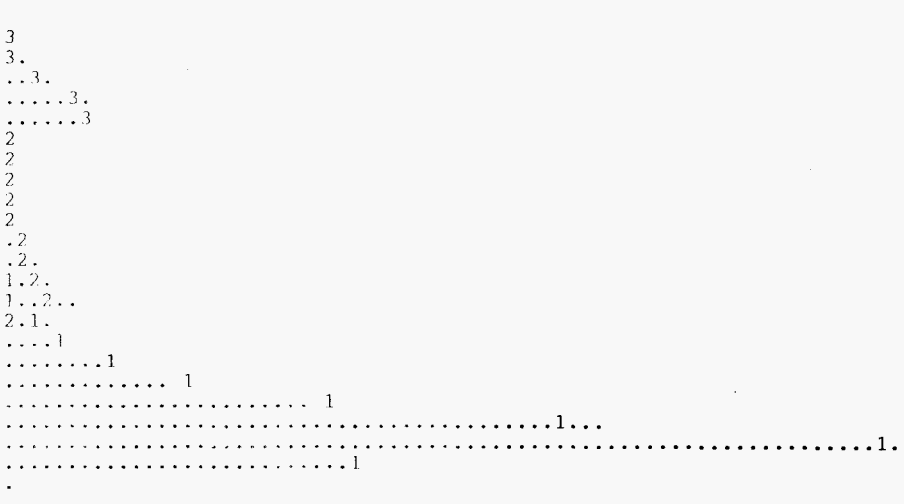
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	45211.0	100.000
Smoothed	45211.2	100.000
Composite fit	44499.4	98.426
Residuals	711.6	1.574

Analyzed by: SLH2

Spectrum 12a1280.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 12309.1



Raw Data Dump for AEA Spectrum: 12a1280.CNF

1	0.	0.	1.	0.	1.	1.	2.	0.	1.	1.
11	1.	1.	0.	3.	0.	2.	2.	2.	3.	0.
21	1.	0.	1.	4.	2.	0.	0.	1.	2.	3.
31	0.	1.	0.	2.	1.	1.	1.	0.	1.	3.
41	1.	0.	0.	3.	1.	1.	0.	3.	2.	1.
51	2.	2.	2.	2.	0.	3.	1.	2.	5.	0.
61	2.	1.	5.	5.	4.	2.	2.	4.	4.	0.
71	3.	4.	1.	2.	0.	4.	1.	1.	0.	1.
81	1.	1.	3.	1.	0.	1.	1.	2.	2.	2.
91	5.	0.	0.	3.	3.	3.	2.	3.	1.	2.
101	1.	1.	3.	0.	0.	1.	0.	3.	2.	1.
111	1.	1.	5.	2.	3.	1.	1.	2.	3.	2.
121	4.	3.	1.	2.	4.	4.	2.	3.	7.	0.
131	4.	4.	4.	3.	2.	4.	8.	6.	3.	3.
141	5.	2.	3.	4.	8.	5.	3.	7.	4.	4.
151	7.	5.	8.	8.	5.	9.	6.	6.	6.	8.
161	9.	7.	12.	5.	8.	6.	7.	7.	10.	8.
171	8.	8.	13.	13.	14.	11.	11.	10.	9.	19.
181	11.	16.	17.	10.	16.	18.	29.	14.	26.	28.
191	21.	27.	20.	31.	38.	41.	28.	37.	37.	43.
201	47.	36.	36.	46.	48.	57.	57.	63.	73.	93.
211	83.	93.	81.	101.	118.	108.	123.	158.	126.	163.
221	179.	177.	203.	225.	236.	254.	227.	213.	163.	133.
231	94.	55.	42.	19.	25.	20.	17.	16.	11.	9.
241	9.	15.	14.	13.	15.	24.	18.	17.	14.	17.
251	16.	33.	22.	24.	26.	24.	26.	31.	22.	26.
261	29.	28.	41.	32.	34.	40.	32.	27.	40.	39.
271	37.	35.	46.	56.	48.	61.	55.	65.	65.	77.
281	72.	80.	71.	87.	106.	96.	112.	95.	113.	98.
291	82.	88.	106.	126.	118.	123.	141.	134.	147.	144.
301	137.	158.	135.	113.	102.	87.	90.	91.	75.	111.
311	111.	116.	94.	136.	117.	110.	122.	130.	146.	173.
321	194.	188.	184.	207.	213.	229.	228.	259.	255.	256.
331	301.	323.	346.	334.	351.	390.	410.	475.	499.	576.
341	613.	627.	675.	768.	837.	902.	998.	1118.	1172.	1236.
351	1299.	1351.	1382.	1438.	1606.	1677.	1739.	1844.	1758.	1607.
361	1269.	941.	556.	342.	174.	71.	30.	14.	1.	0.
371	1.	0.	0.	0.	1.	2.	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.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	1.	1.	0.	1.	2.	0.
451	0.	2.	2.	0.	0.	1.	1.	1.	1.	1.
461	0.	0.	0.	1.	1.	2.	1.	1.	1.	3.
471	2.	1.	3.	4.	0.	1.	1.	1.	1.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
501	0.	0.								

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T005186-SAM-P
File ID: 5a5616.CNF

Counted on: 10/23/96 @ 0:55
Detector: AEA5
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1644.7	1644.7	362.482	362.482	12.000	5.462	6.000	1.361
2	237.0	237.0	304.183	303.924	14.000	6.611	7.000	1.360
3	9.3	9.3	256.733	255.017	6.000	4.699	3.000	0.220
4	316.5	316.5	230.234	230.203	14.000	6.578	7.000	1.964

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff. FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.722	5.755	5.746	0.0090.03	71.25	1.1	853.4	0.384E-03
2	Pu238	0.122	5.487	5.477	0.0100.03	12.06	2.9	196.5	0.885E-04
	Am241		5.479	5.477	0.002			150.5	0.678E-04
3	Am243	0.016	5.270	5.252	0.0180.02	1.54	9.8	18.2	0.821E-05
4	Pu239	0.128	5.147	5.137	0.0100.03	12.68	2.7	148.8	0.670E-04
	Pu240		5.144	5.137	0.007			148.8	0.670E-04
Totals:		0.988	<--valid peaks only-->			97.53			

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0046)*Channel
Energy range (MeV): 4.078 TO 6.434
Efficiency = 0.0852 CPM/DPM

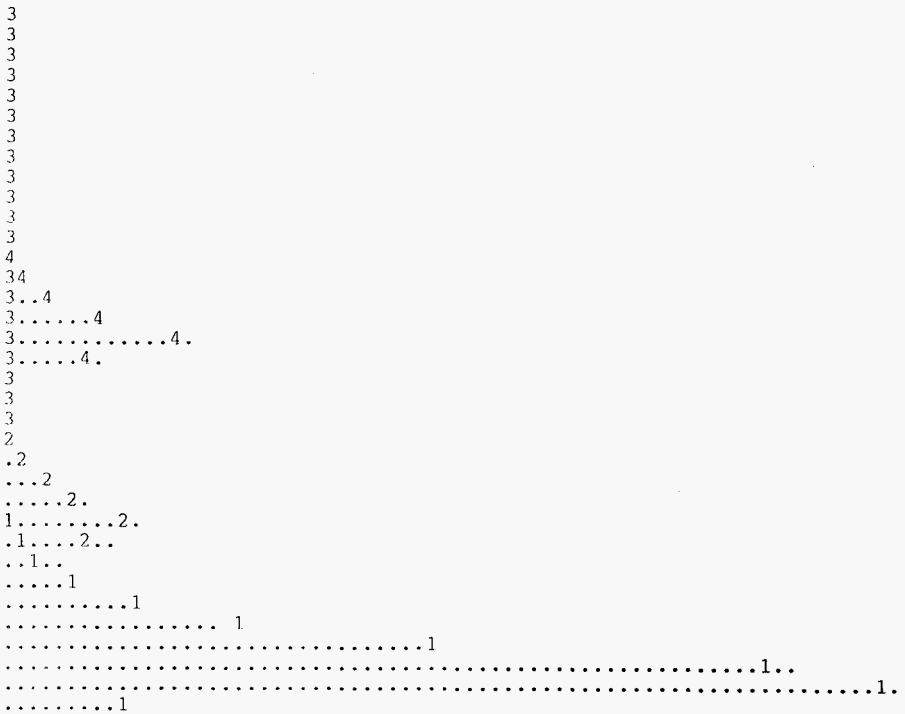
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47365.0	100.000
Smoothed	47365.0	100.000
Composite fit	46813.7	98.836
Residuals	551.3	1.164

Analyzed by: SLH2

Spectrum 5a5616.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc **Display Max.: 10789.1**



Raw Data Dump for AEA Spectrum: 5a5616.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	1.	0.	2.	1.	0.	1.	0.	0.	1.
21	1.	1.	0.	2.	0.	0.	0.	1.	1.	0.
31	0.	0.	0.	3.	1.	1.	0.	0.	2.	0.
41	1.	3.	1.	2.	0.	1.	0.	1.	1.	2.
51	0.	0.	0.	1.	2.	1.	0.	2.	2.	2.
61	1.	3.	0.	0.	0.	0.	3.	2.	3.	0.
71	1.	0.	0.	1.	1.	1.	2.	0.	2.	2.
81	2.	2.	2.	2.	1.	2.	0.	2.	1.	2.
91	0.	1.	0.	2.	1.	0.	2.	1.	2.	2.
101	2.	2.	0.	0.	0.	2.	2.	2.	0.	1.
111	2.	1.	3.	4.	1.	2.	3.	5.	0.	1.
121	6.	2.	4.	3.	2.	3.	4.	4.	1.	2.
131	1.	4.	2.	1.	3.	2.	3.	3.	3.	4.
141	8.	2.	2.	3.	3.	7.	6.	6.	3.	2.
151	1.	4.	4.	5.	6.	2.	7.	7.	6.	10.
161	9.	9.	6.	8.	7.	4.	10.	9.	8.	10.
171	13.	10.	19.	9.	16.	16.	9.	16.	15.	15.
181	19.	19.	20.	28.	22.	23.	28.	25.	23.	14.
191	22.	19.	37.	35.	38.	26.	42.	30.	35.	43.
201	54.	44.	49.	56.	51.	65.	58.	61.	78.	61.
211	64.	73.	100.	106.	113.	120.	130.	133.	156.	174.
221	187.	196.	206.	207.	262.	263.	322.	309.	346.	365.
231	354.	307.	299.	261.	168.	134.	80.	53.	30.	23.
241	9.	11.	15.	12.	21.	13.	19.	8.	9.	18.
251	18.	15.	28.	25.	27.	33.	23.	31.	25.	19.
261	21.	29.	35.	31.	40.	39.	38.	38.	39.	43.
271	40.	39.	44.	40.	49.	58.	59.	65.	62.	73.
281	69.	87.	80.	79.	85.	98.	137.	126.	132.	133.
291	148.	156.	131.	158.	159.	216.	202.	185.	212.	239.
301	238.	262.	276.	297.	280.	273.	231.	192.	162.	117.
311	75.	83.	74.	98.	88.	80.	72.	109.	97.	94.
321	111.	108.	115.	119.	142.	143.	158.	158.	172.	185.
331	184.	210.	228.	244.	248.	277.	272.	289.	319.	337.
341	379.	388.	442.	440.	496.	545.	588.	629.	693.	811.
351	881.	1008.	1065.	1197.	1210.	1275.	1237.	1298.	1363.	1574.
361	1646.	1825.	1814.	1683.	1555.	1156.	805.	470.	223.	103.
371	32.	12.	5.	6.	3.	2.	1.	0.	0.	2.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	3.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	2.	0.	2.
461	1.	0.	1.	1.	0.	0.	0.	1.	0.	1.
471	1.	1.	3.	1.	3.	1.	0.	1.	3.	1.
481	1.	2.	0.	1.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

Westinghouse Hanford Co.
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.02

DATA REDUCTION REPORT

SAMPLE
S96T005186-DUP-P
File ID: 6a6718.CNF

Counted on: 10/23/96 @ 0:56
Detector: AEA6
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1377.6	1377.6	361.228	361.228	16.000	9.985	8.000	2.248
2	204.6	204.6	303.472	302.929	16.000	9.141	8.000	1.638
3	271.0	271.0	229.719	229.617	18.000	10.152	9.000	2.377

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.720	5.779	5.741	0.0380	0.05	71.00	1.1	199.6	0.899E-04
	Pu236		5.755	5.741	0.014				148.7	0.670E-04
2	Am241	0.122	5.479	5.473	0.0060	0.04	12.04	3.0	26.3	0.118E-04
	Pu238		5.487	5.473	0.014				34.3	0.155E-04
3	Pu239	0.139	5.147	5.136	0.0110	0.05	13.69	2.5	28.1	0.127E-04
	Pu240		5.144	5.136	0.008				28.1	0.127E-04
Totals:		0.981	<--valid peaks only-->				96.73			

DETECTOR CALIBRATION
Energy(MEV) = 4.080 + (0.0046)*Channel
Energy range (MeV): 4.080 TO 6.435
Efficiency = 0.4873 CPM/DPM

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47339.0	100.000
Smoothed	47341.9	100.006
Composite fit	46437.0	98.095
Residuals	902.0	1.905

Analyzed by: SLH2

Spectrum 6a6718.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc **Display Max.:** 9429.3

Raw Data Dump for AEA Spectrum: 6a6718.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
11	3.	0.	2.	0.	1.	1.	2.	2.	0.	2.
21	1.	1.	1.	0.	3.	2.	0.	0.	2.	0.
31	0.	0.	0.	2.	3.	0.	2.	0.	0.	1.
41	0.	1.	0.	0.	0.	0.	4.	2.	2.	1.
51	1.	1.	0.	4.	2.	2.	2.	2.	1.	1.
61	0.	1.	2.	2.	0.	1.	2.	1.	0.	1.
71	0.	3.	1.	2.	0.	3.	1.	3.	1.	2.
81	2.	3.	0.	2.	2.	0.	3.	0.	2.	2.
91	3.	3.	2.	2.	0.	1.	4.	2.	0.	1.
101	2.	1.	1.	1.	2.	5.	1.	1.	8.	4.
111	2.	2.	1.	3.	6.	3.	1.	2.	2.	1.
121	4.	3.	2.	2.	0.	2.	1.	6.	2.	1.
131	2.	5.	7.	3.	4.	3.	4.	2.	5.	6.
141	4.	4.	3.	4.	6.	4.	7.	9.	7.	6.
151	4.	11.	8.	7.	7.	13.	9.	8.	12.	13.
161	9.	11.	8.	5.	12.	18.	12.	13.	8.	10.
171	15.	15.	15.	22.	17.	11.	21.	17.	11.	17.
181	17.	15.	18.	24.	27.	22.	17.	27.	30.	30.
191	21.	28.	41.	28.	35.	34.	43.	34.	41.	39.
201	53.	49.	52.	57.	63.	56.	54.	79.	82.	71.
211	90.	103.	114.	102.	121.	156.	135.	144.	182.	167.
221	195.	192.	246.	247.	265.	247.	279.	290.	296.	290.
231	260.	300.	249.	220.	158.	142.	121.	81.	40.	38.
241	18.	13.	20.	22.	15.	15.	22.	22.	26.	13.
251	24.	22.	16.	20.	24.	26.	26.	28.	29.	28.
261	22.	31.	42.	34.	38.	34.	50.	49.	44.	37.
271	51.	49.	55.	65.	54.	65.	68.	69.	69.	76.
281	78.	84.	86.	99.	99.	102.	102.	130.	151.	157.
291	146.	164.	173.	159.	187.	195.	205.	221.	232.	239.
301	235.	248.	253.	265.	244.	233.	220.	174.	135.	150.
311	128.	107.	106.	92.	85.	99.	92.	92.	96.	125.
321	117.	142.	111.	129.	147.	169.	165.	183.	198.	213.
331	191.	210.	264.	261.	270.	310.	314.	337.	351.	381.
341	388.	415.	468.	499.	550.	586.	734.	687.	747.	835.
351	914.	970.	1037.	1064.	1161.	1222.	1312.	1316.	1399.	1465.
361	1392.	1443.	1397.	1320.	1156.	1004.	770.	594.	414.	274.
371	173.	86.	35.	19.	12.	8.	4.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
451	0.	0.	0.	1.	1.	1.	0.	1.	1.	0.
461	1.	0.	1.	1.	0.	1.	0.	0.	1.	1.
471	0.	1.	2.	3.	2.	2.	4.	1.	5.	3.
481	5.	0.	2.	3.	1.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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