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Tank 241-AP-107, Grab Samples, 7AP-97-1, 7AP-97-2 and 7AP-97-3 Analytical Results for the Final Report

Franciska H. Steen

Waste Management of Hanford, Inc., Richland, WA 99352
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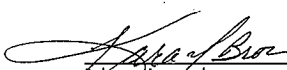
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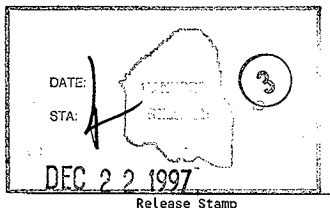
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HNH-SD-WM-DP-276, REV. 0

ANALYTICAL SERVICES

**TANK 241-AP-107, GRAB SAMPLES,
7AP-97-1, 7AP-97-2 AND 7AP-97-3
ANALYTICAL RESULTS FOR THE FINAL REPORT**

Project Coordinator: Franciska H. Steen

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

by

**222-S Laboratory
Waste Management of Hanford, Inc.
P.O. Box 700
Richland, Washington**

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NARRATIVE

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222-S ANALYTICAL SERVICES

**TANK 241-AP-107, GRAB SAMPLES,
7AP-97-1, 7AP-97-2 and 7AP-97-3
ANALYTICAL RESULTS FOR THE FINAL REPORT**

This document is the final report for tank 241-AP-107 grab samples. Three grab samples were collected from riser 1 on September 11, 1997. Analyses were performed on samples 7AP-97-1, 7AP-97-2 and 7AP-97-3 in accordance with the *Compatibility Grab Sampling and Analysis Plan* (TSAP) (Sasaki, 1997) and the *Data Quality Objectives for Tank Farms Waste Compatibility Program* (DQO) (Rev. 1: Fowler, 1995; Rev. 2: Mulkey and Miller, 1997). The analytical results are presented in the data summary report (Table 1). A notification was made to East Tank Farms Operations concerning low hydroxide in the tank and a hydroxide (caustic) demand analysis was requested.

Appearance and Sample Handling

The request for sample analysis (RSA) (Attachment 2) received for AP-107 indicated that the samples were polychlorinated biphenyl (PCB) suspects. Therefore, prior to performing the requested analyses, aliquots were made to perform PCB analysis in accordance with the 222-S Laboratory administrative procedure, LAP-101-100. The results of this analysis indicated that no PCBs were present at 50 ppm and analysis proceeded as non-PCB samples. The results and raw data for the PCB analysis will be included in a revision to this document.

The sample breakdown diagrams (Attachment 1) are 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. Table 2 provides the appearance information.

7AP-97-1

This sample was collected at a depth of 644 inches. Visual observation indicated that the sample was a clear yellow liquid with a trace amount of solids. No organic layer was observed.

Four 20 mL subsamples were submitted to the laboratory for analysis of PCBs, inorganic analytes and radionuclides.

7AP-97-2

This sample was collected at a depth of 644 inches. Visual observation indicated that the sample was a clear yellow liquid with a trace amount of solids. No organic layer was observed.

Three 20 mL subsamples were submitted to the laboratory for analysis of PCBs, inorganic analytes and radionuclides.

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7AP-97-3

This sample was collected at a depth of 644 inches. Visual observation indicated that the sample was a clear yellow liquid with a trace amount of solids. No organic layer was observed.

Three 20 mL subsamples were submitted to the laboratory for analysis of PCBs, inorganic analytes and radionuclides.

Table 2: Appearance Information for Tank 241-AP-107 Grab Samples

Sample Number	Date Sampled	Date Received	Sampling Depth (in.)*	% Settled Solids	Sample Description
7AP-97-1	9/11/97	9/11/97	644	<1%	Clear yellow liquid; trace solids; no organic layer observed.
7AP-97-2	9/11/97	9/11/97	644	<1%	Clear yellow liquid; trace solids; no organic layer observed.
7AP-97-3	9/11/97	9/11/97	644	<1%	Clear yellow liquid; trace solids; no organic layer observed.

*Sample elevation is measured from tank bottom to mouth of the sample bottle

Analytical Results Summary

The data summary report (Table 1) included in this report compiles the analytical results that comply with the applicable DQO.

Differential Scanning Calorimetry (DSC)

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

TGA - Thermogravimetric Analysis

The TGA analysis was performed in duplicate on direct subsamples. The TGA results were determined by summing the weight loss steps which occurred below 250°C. More information may be obtained by examining the raw data. The standard recoveries and RPDs for this analysis were within the required limits.

Specific Gravity (Sp.G.)

Specific gravity analysis was performed in duplicate on direct subsamples. The results ranged from 1.041 g/mL to 1.065 g/mL. There were no quality control (QC) parameters stated in the TSAP (Sasaki, 1997) for these samples.

pH

The pH analysis was performed on direct subsamples as indicated by a blank in the aliquot class (A#) column in Table 1. The results ranged from 9.99 to 10.04. There were no quality control (QC) parameters stated in the TSAP (Sasaki, 1997) for these samples.

OH

The OH analysis was performed on direct subsamples of liquid samples as indicated by a blank in the A# column in Table 1. The results for the OH analysis were reported as the pH of the resulting solution formed after the reagents were added to the samples. The results indicate that there was a buffering effect from the sample matrix of the AP-107 grab samples which interfered with the analysis for free hydroxide. A notification was made to East Tank Farms concerning potential low hydroxide levels in the tank and a hydroxide (caustic) demand analysis was performed. Further discussion can be found in the Compatibility Program Concerns section of this document.

Caustic Demand

The OH⁻ (caustic) demand analysis was performed on direct sample aliquots to determine the buffering capacity in order to calculate the amount of caustic required to bring the hydroxide concentration above 0.01 M. This calculation is provided below. The results ranged from 4.65 e-2 to 5.25 e-2 moles OH⁻ consumed/L of waste material. There were no QC parameters stated in the TSAP (Sasaki, 1997) for these samples.

The volume of caustic needed to adjust the OH⁻ concentration in the tank can be calculated using the equation:

$$V_{sp} = \frac{C_b + C_t}{C_{sp} - C_t}$$

Where:

- V_{sp} = Volume of spiking solution to add per unit volume of waste
- C_b = Buffering capacity (caustic demand result from summary report)
- C_t = Target hydroxide concentration (e.g. 0.01 M)
- C_{sp} = Concentration of spiking solution (e.g. 19 M sodium hydroxide)

IC - Ion Chromatography

The IC analyses were performed on direct subsamples of liquid samples as indicated by a blank in the aliquot class (A#) column in Table 1.

The required analytes were fluoride (F⁻), chloride (Cl⁻), nitrate (NO₃⁻), nitrite (NO₂⁻), phosphate (PO₄⁻³) and sulfate (SO₄⁻²). The results for bromide (Br⁻) and oxalate are considered "opportunistic" and are provided in Appendix A. There are no customer defined QC parameters for Br⁻ and oxalate and any anomalies in those results are not discussed.

A spike recovery outside of the required range (75% to 125%) was reported for F⁻. The spike failure was attributed to the high concentration of this analyte in the sample with respect to the amount of spike standard added. The standard recoveries and RPDs were within the required limits.

ICP - Inductively Coupled Plasma Spectrophotometry

The liquid subsamples were prepared for analysis by an acid adjustment of the direct subsample. This is indicated by a "D" in the A# column in Table 1. The results for the ICP analytes are included in Table 1. However, the QC review discussed in this report is limited to Aluminum (Al), iron (Fe) and sodium (Na). All other analyte results are presented in Appendix A. These results are considered "opportunistic" and do not have customer defined QC parameters. Therefore, any anomalies in those results are not discussed in this report. The standard recoveries and RPDs were within the required limits.

Matrix spike recoveries outside of the 75% to 125% control limits as set by the TSAP (Sasaki, 1997) were reported for Na. This was attributed to the high concentration of this analyte in the samples with respect to the amount of spike standard added. A post digestion spike analysis was performed as an additional instrument performance check. The post digestion spike recoveries were all within the 75% to 125% control limits. These recoveries are presented in the raw data.

The Na results were more than four times the concentration of the spike added. Typically, with analyte concentrations higher than 1000 $\mu\text{g/mL}$ it is difficult to add sufficient spike to perform a meaningful analysis. Therefore, the assessment of the accuracy of the measurement for these analytes were also made by comparison of the sample results to those of a serial dilution of the sample. The serial dilution was performed by preparing and analyzing an additional five-fold dilution of the sample. The result obtained from this analysis should be within $\pm 10\%$ of the undiluted sample result. The results of this comparison are presented in Table 3 and indicate the accuracy of this analysis was acceptable.

Table 3: ICP Serial Dilution Results for Tank 241-AP-107 GRAB SAMPLES

Sample ID	Analyte	Undiluted Sample Result (µg/mL)	Serial Dilution Result (µg/mL)	Percent Difference (%)
S97T002267	Na	1.33E+04	1.40E+04	5.5
S97T002268	Na	1.38E+04	1.43E+04	3.5
S97T002269	Na	1.33E+04	1.41E+04	6.2

$$\text{Percent Difference} = [\text{ABS}(\text{Sample} - \text{Serial Dilution}) / \text{Sample}] \times 100$$

TIC/TOC - Total Inorganic/Organic Carbon

The TIC/TOC analysis was performed on direct sample aliquots using the persulfate oxidation method. None of the subsamples submitted for the TOC analysis exceeded the notification limit of 30,000 μ gC/mL.

For the TIC/TOC analysis, an Analysis Report worksheet is included for each sample as raw data. Due to programming limitations with the instrument software, the sample size listed on the worksheet is incorrect. This value is not used in the final calculations and has no bearing on the results in Table 1.

The blank is considered a reagent blank. The value was within the acceptance limits and all results were corrected for the concentration found in the blank. The standard recoveries, spike recoveries and RPDs for these analyses were within the required limits.

U - Total Uranium

The uranium analysis was performed in duplicate on direct subsamples of liquid samples as indicated by a blank in the aliquot class (A#) column in Table 1. The result listed as Count Err% in Table 1 is actually the percent instrument uncertainty. The standard recoveries, spike recoveries and RPDs for this analysis were within the required limits.

Radionuclide Analyses

GEA - Gamma Energy Analysis

The gamma energy (GEA) analyses were performed in duplicate on direct subsamples for the liquids as indicated by a blank in the A# column in Table 1. The results for the GEA analytes are included in Table 1. However, the QC review discussed in this report is limited to ¹³⁷Cs. All other analyte results are presented in Appendix A. These results are considered "opportunistic" and do not have customer defined QC parameters. Therefore, any anomalies in those results are not discussed in this report.

Actual detection limits for GEA analytes are not currently available. The latest GEA software does not report a minimum detectable activity (MDA). If an analyte is reported as "less than", the value reported is the detection limit. The standard recoveries and RPDs for this analysis were within the required limits.

For the GEA analysis some radionuclides have peak energies that are very close together and cannot always be separated. When this occurs most software will report all isotopes with an energy near the found peak energy. The chemist eliminates the data from the radionuclides that are not present by crossing-out the unused peaks.

⁹⁰Sr - Strontium 90

⁹⁰Sr analysis was performed in duplicate on direct subsamples as indicated by a blank in the A# column in Table 1. The preparation blanks showed a small amount of ⁹⁰Sr contamination. The levels in the preparation blanks are inconsequential when compared to the results for the samples. These contaminants do not impact sample data quality. The standard recoveries and RPDs for this analysis were within the required limits.

²⁴¹Am - Americium 241

²⁴¹Am analysis was performed in duplicate on direct subsamples as indicated by a blank in the A# column in Table 1. The standard recoveries and RPDs for this analysis were within the required limits.

^{239/240}Pu - Plutonium 239/240

^{239/240}Pu analysis was performed in duplicate on direct subsamples as indicated by a blank in the A# column in Table 1. The standard recoveries and RPDs for this analysis were within the required limits.

Compatibility Program Concerns

DSC - Differential Scanning Calorimetry - Energetics Decision Rule

For waste compatibility energetics decision concerns, the exotherm/endotherm ratio of the liquid samples is evaluated. This ratio must be less than one (1). The 241-AP-107 grab samples did not exhibit any exotherms (the results were zero), therefore, the calculated ratio will also be zero (less than one).

Nitrate (NO₃⁻), Hydroxide (OH⁻) and Nitrite (NO₂⁻) - Corrosion Decision Rule

The results with respect to the waste compatibility corrosion rules are presented in Table 4. The NO₃⁻, OH⁻, and NO₂⁻ results are reported in µg/mL and molarity (M) units. For calculation purposes, to indicate potentially low OH⁻, the detection limit was used for the OH⁻ results in Table 4. As discussed previously, actual OH⁻ results were not available due to difficulties in performing the analysis. The spreadsheet compares the results to the concentration ranges specified in the waste compatibility DQO. Since a "NO" appears in the space under the OH⁻, a notification is required.

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

$^{239/240}\text{Pu}$ analysis was performed to evaluate criticality safety for waste transfers. This analysis was performed in duplicate on direct subsamples of the drainable liquids. The results for the subsamples were below the lower criticality prevention limit of $6.2 \text{ E-}2 \mu\text{Ci/mL}$ (0.001 g/L) stated in the compatibility DQO.

Uranium (U) - Criticality Decision Rule

U analysis was performed in duplicate on direct subsamples to evaluate criticality safety for waste transfers. No attempt was made to reconcile the U concentration with the ^{239}Pu equivalents.

Table 4 (1 of 3)

Waste Compatibility Corrosion Rules for 241-AP-107

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO ₃ ⁻]	[OH ⁻]	[NO ₃ ⁻]	[OH ⁻]/[NO ₃ ⁻]
S97T002267 Sample 7AP-97-1	NO ₃	6.46E+03	0.104	<1.0 M? YES	0.010 M <= [OH ⁻] <= 8.0 M? NO	0.011 M <= [NO ₃ ⁻] <= 5.5 M YES	[NO ₃ ⁻]/([OH ⁻] + [NO ₃ ⁻]) < 2.5? YES = 2.03
	OH	1.25E+02	0.007				
	NO ₂	2.02E+03	0.044	1.0 M < [NO ₃ ⁻] <= 3.0 M? 0.1 M * [NO ₃ ⁻] = [OH ⁻] < 10 M?			>= 0.4 * [NO ₃ ⁻]? => 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO ₃ ⁻]	[OH ⁻]	[NO ₃ ⁻]	[OH ⁻]	[OH ⁻]/[NO ₃ ⁻]
S97T002267 Duplicate 7AP-97-1	NO ₃	6.51E+03	0.105	$\leq 1.0 \text{ M?}$ YES	$0.010 \text{ M} \leq [\text{OH}^-] \leq 8.0 \text{ M?}$ NO	$0.011 \text{ M} \leq [\text{NO}_3^-] \leq 5.5 \text{ M}$ YES		$[\text{NO}_3^-]/([\text{OH}^-] + [\text{NO}_3^-]) < 2.5?$ YES = 2.00
	OH	1.25E+02	0.007					
	NO ₂	2.08E+03	0.045	$1.0 \text{ M} < [\text{NO}_3^-] \leq 3.0 \text{ M?}$ 0.1 M	$[\text{NO}_3^-] \leq [\text{OH}^-] < 10 \text{ M?}$			$> 0.4 * [\text{NO}_3^-]?$
				$3.0 \text{ M} < [\text{NO}_3^-] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}^-] < 10 \text{ M?}$			$> 1.2 \text{ M?}$

Table 4 (2 of 3)

Waste Compatibility Corrosion Rules for 241-AP-107

Sample ID	Analyte	Result (ug/mL)	Result (M)	$1.5 \text{ [NO}_3^-]$	1 [OH]^-	$0.011 \text{ M} \Leftarrow [\text{NO}_3^-] \Leftarrow 5.5 \text{ M}$	$[\text{OH}^-]/([\text{OH}] + [\text{NO}_3^-]) < 2.5?$
S97T002268 Sample 7AP-97-2	NO ₃	6.86E+03	0.111	$\Leftarrow 1.0 \text{ M?}$ YES	NO	YES	YES = 2.07
	OH	1.25E+02	0.007				
	NO ₂	2.12E+03	0.046	$1.0 \text{ M} < [\text{NO}_3^-] \Leftarrow 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO}_3^-] \Leftarrow [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO}_3^-]$
				$3.0 \text{ M} < [\text{NO}_3^-] \Leftarrow 5.5 \text{ M?}$	$0.3 \Leftarrow [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$

Sample ID	Analyte	Result (ug/mL)	Result (M)	$1.5 \text{ [NO}_3^-]$	1 [OH]^-	$0.011 \text{ M} \Leftarrow [\text{NO}_3^-] \Leftarrow 5.5 \text{ M}$	$[\text{OH}^-]/([\text{OH}] + [\text{NO}_3^-]) < 2.5?$
S97T002268 Duplicate 7AP-97-2	NO ₃	6.92E+03	0.112	$\Leftarrow 1.0 \text{ M?}$ YES	NO	YES	YES = 2.09
	OH	1.25E+02	0.007				
	NO ₂	2.12E+03	0.046	$1.0 \text{ M} < [\text{NO}_3^-] \Leftarrow 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO}_3^-] \Leftarrow [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO}_3^-]$
				$3.0 \text{ M} < [\text{NO}_3^-] \Leftarrow 5.5 \text{ M?}$	$0.3 \Leftarrow [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$

Table 4 (3 of 3)

Waste Compatibility Corrosion Rules for 241-AP-107

Sample ID	Analyte	Result (ug/mL)	Result (M)	$[F_2][NO_2]$	$[F_2][OH]$	$[F_2][NO_2]$	$[F_2][OH][NO_2]$
S97T002269 Sample 7AP-97-3				≤ 1.0 M?	0.010 M $\leq [OH] \leq 8.0$ M?	0.011 M $\leq [NO_2] \leq 5.5$ M	$[NO_2]/([OH] + [NO_2]) < 2.5?$
	NO ₃	6.46E+03	0.104	YES	NO	YES	YES = 2.00
	OH	1.25E+02	0.007				
	NO ₂	2.06E+03	0.045				
				1.0 M $\leq [NO_3] \leq 3.0$ M?	0.1 M $\leq [NO_2] \leq [OH] < 10$ M?		$\geq 0.4 * [NO_3]?$
				3.0 M $\leq [NO_3] \leq 5.5$ M?	$0.3 \leq [OH] < 10$ M?		≥ 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	$[F_2][NO_2]$	$[F_2][OH]$	$[F_2][NO_2]$	$[F_2][OH][NO_2]$
S97T002269 Duplicate 7AP-97-3				≤ 1.0 M?	0.010 M $\leq [OH] \leq 8.0$ M?	0.011 M $\leq [NO_2] \leq 5.5$ M	$[NO_2]/([OH] + [NO_2]) < 2.5?$
	NO ₃	6.24E+03	0.101	YES	NO	YES	YES = 1.95
	OH	1.25E+02	0.007				
	NO ₂	2.03E+03	0.044				
				1.0 M $\leq [NO_3] \leq 3.0$ M?	0.1 M $\leq [NO_2] \leq [OH] < 10$ M?		$\geq 0.4 * [NO_3]?$
				3.0 M $\leq [NO_3] \leq 5.5$ M?	$0.3 \leq [OH] < 10$ M?		≥ 1.2 M?

Procedures

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

Table 5. Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
DSC	Liquid	N/A	LA-514-114 Rev. D-1
TGA	Liquid	N/A	LA-514-114 Rev. D-1
Sp.G.	Liquid	N/A	LA-510-112 Rev. D-1
IC	Liquid	N/A	LA-533-105 Rev. E-1
ICP	Liquid	LA-504-101 Rev. E-0	LA-505-161 Rev. C-2
TICTOC	Liquid	N/A	LA-342-100 Rev. F-0
pH	Liquid	N/A	LA-212-106 Rev. C-0
OH	Liquid	N/A	LA-211-102 Rev. D-0
OH Demand	Liquid	N/A	LA-211-104 Rev. B-0
GEA	Liquid	N/A	LA-548-121 Rev. F-0
²³⁹ Pu	Liquid	N/A	LA-953-104 Rev. B-0
²⁴¹ Am	Liquid	N/A	LA-953-104 Rev. B-0

HNF-SD-WM-DP-276, REV. 0

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
⁹⁰ Sr	Liquid	N/A	LA-220-101 Rev. E-3
U	Liquid	N/A	LA-925-009 Rev. B-0

Abbreviations:

N/A = not applicable (these are direct samples)
 DSC = differential scanning calorimetry
 TGA = thermogravimetric analysis
 Sp.G. = specific gravity
 IC = ion chromatography
 ICP = inductively coupled plasma
 TOC = total organic carbon
 TIC = total inorganic carbon
 AT = total alpha
 GEA = gamma energy analysis
⁹⁰Sr = strontium 90
 U = uranium
²³⁹Pu = plutonium 239
²⁴¹Am = americium 241

References

- Mulkey, C. H. and M. S. Miller, 1997, *Data Quality Objectives for the Waste Compatibility Program*, HNF-SD-WM-DQO-001, Rev. 2, Lockheed Martin Hanford Corporation, Richland, WA 99352.
- Fowler, K. D., 1995, *Data Quality Objectives for the Waste Compatibility Program*, WHF-SD-WM-DQO-001, Rev. 1, Westinghouse Hanford Company, Richland, WA 99352.
- Sasaki, L. M., 1997, *Compatibility Grab Sampling and Analysis Plan for Fiscal Year 1997*, HNF-SD-WM-DQO-001, Rev. 0-K Lockheed Martin Hanford Corporation, Richland, WA 99352.

HNF-SD-WM-DP-276, REV. 0

ATTACHMENT 1

AP-107 SAMPLE BREAKDOWN

HNF-SD-WM-DP-276, REV. 0

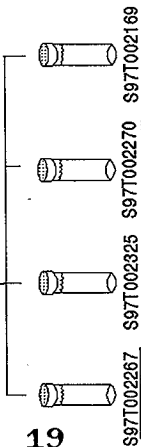
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AP-107 GRAB SAMPLE BREAKDOWN

Riser 1

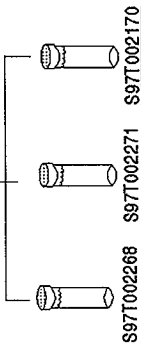
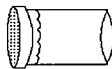
7AP-97-1

S97T002039



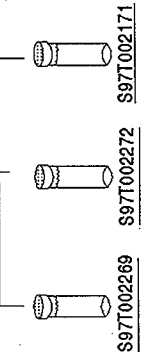
7AP-97-2

S97T002046



7AP-97-3

S97T002047



HNF-SD-WM-DP-276, REV. 0

ATTACHMENT 2
REQUEST FOR SPECIAL ANALYSIS

HNF-SD-WM-DP-276, REV. 0

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HNF-SD-WM-DP-276, REV. 0

SAMPLE DATA SUMMARY

HNF-SD-WM-DP-276, REV. 0

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12-dec-1997 10:40:27
A-0002-1

Table 1. Data Summary Report
AP-107 GRAB

RISER: 1
SEGMENT #: 7AP-97-1

SEGMENT PORTION: Supernate

Sample#	R. A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T002039		Volume % Settled Solids	%	n/a	n/a	< 1.000	n/a	n/a	n/a	n/a	1.00e-01	n/a
S97T002267		DSC Exotherm DRY Calculated	Joules/g DRY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S97T002267		DSC Exotherm on Perkin Elmer	Joules/g	100.2	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T002267		OH- by Pot. Titration	ug/mL	n/a	n/a	ph=7.15	n/a	n/a	n/a	n/a	125.0	n/a
S97T002267		pH Direct	pH	99.75	n/a	10.04	10.02	10.03	0.20	n/a	1.00e-02	n/a
S97T002267		Specific Gravity	Sp.G.	100.4	n/a	1.049	1.041	1.045	0.77	n/a	1.00e-03	n/a
S97T002267		% Water by TGA on Perkin Elmer	%	99.90	n/a	85.94	94.00	93.97	0.06	n/a	n/a	n/a
S97T002267		TIC by Acid/Coulometry	ug/mL	99.83	< 5.00	3.22e+03	3.22e+03	3.22e+03	0.00	100.8	5.000	n/a
S97T002267		TOC by Persulfate/Coulometry	ug/mL	99.33	1.000	2.69e+02	253.0	261.0	6.13	95.00	40.00	n/a
S97T002267	D	Aluminum-ICP-Acid Dil.	ug/mL	99.40	< 5.00e-02	< 2.050	< 2.050	n/a	n/a	96.30	2.050	n/a
S97T002267	D	Iron-ICP-Acid Dil.	ug/mL	100.2	< 5.00e-02	< 2.050	< 2.050	n/a	n/a	97.10	2.050	n/a
S97T002267	D	Sodium-ICP-Acid Dil.	ug/mL	104.6	< 1.00e-01	1.33e+04	1.34e+04	1.34e+04	0.75	-2.320e2	4.100	n/a
S97T002267		Fluoride-IC-Bioxex 4000/4500	ug/mL	100.7	< 1.20e-02	5.00e+03	5.01e+03	5.01e+03	0.20	65.93	61.81	n/a
S97T002267		Chloride-IC-Bioxex 4000/4500	ug/mL	98.38	< 1.70e-02	2.53e+02	255.0	253.9	0.79	94.00	87.57	n/a
S97T002267		Nitrate-IC - Bioex 4000/4500	ug/mL	97.97	< 1.08e-01	2.02e+03	2.08e+03	2.05e+03	2.93	93.36	556.3	n/a
S97T002267		Nitrate by IC-Bioxex 4000/4500	ug/mL	98.32	< 1.39e-01	6.44e+03	6.51e+03	6.48e+03	0.77	95.79	716.0	n/a
S97T002267		Phosphate-IC-Bioxex 4000/4500	ug/mL	95.05	< 1.20e-01	< 6.18e+02	< 6.18e2	n/a	n/a	96.15	618.1	n/a
S97T002267		Sulfate by IC-Bioxex 4000/4500	ug/mL	98.58	< 1.38e-01	7.52e+02	< 7.11e2	n/a	n/a	96.04	710.8	n/a
S97T002267		Uranium by Phosphorescence	ug/mL	92.33	< 3.70e-03	6.210	6.330	6.270	1.91	86.59	4.00e-03	3.17e+00
S97T002270		Strontium-89/90 High Level	uCi/mL	103.8	1.84e-04	5.79e-04	5.64e-03	5.71e-03	2.62	n/a	2.02e-04	6.43e+00
S97T002270		Pu-239/240 by TRU-SPEC Resin	uCi/mL	96.33	< 3.20e-06	9.79e-05	9.49e-05	9.62e-05	2.70	n/a	8.96e-06	1.97e+00
S97T002270		Cesium-137 by GEA	uCi/mL	105.5	< 8.43e-05	11.70	11.60	11.65	0.86	n/a	n/a	0.190
S97T002270		Am-241 by Extraction	uCi/mL	99.03	< 6.87e-06	< 7.93e-06	< 5.90E-6	n/a	n/a	n/a	7.93e-06	9.67e+00
S97T002325		Caustic Demand	moles OH-/L	103.0	n/a	4.73e-02	5.25e-02	4.99e-02	10.4	n/a	5.00e-03	n/a

Table 1. Data Summary Report
AP-107 GRAB

RISER: 1

SEGMENT #: 7AP-97-2

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec	Det Limit	Count Err%
S97T002046		Volume % Settled Solids	%	n/a		< 1.000	n/a	n/a	n/a	n/a	1.00e-01	n/a
S97T002268		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S97T002268		DSC Exotherm on Perkin Elmer	Joules/g	100.2	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T002268		OH- by Pot. Titration	ug/mL	n/a	n/a	ph=7.19	n/a	n/a	n/a	n/a	125.0	n/a
S97T002268		Caustic Demand	moles OH-/L	96.91	n/a	4.65e-02	4.98e-02	4.81e-02	6.85	n/a	5.00e-03	n/a
S97T002268		pH Direct	pH	99.75	n/a	10.00	10.00	10.00	0.00	n/a	1.00e-02	n/a
S97T002268		Specific Gravity	Sp.G.	100.4	n/a	1.041	1.041	1.041	0.00	n/a	1.00e-03	n/a
S97T002268		% Water by TGA on Perkin Elmer	%	99.90	n/a	94.00	95.91	95.95	0.10	n/a	n/a	n/a
S97T002268		TIC by Acid/Coulometry	ug/mL	99.83	1.00e-01	3.21e+03	3.27e+03	3.24e+03	1.85	97.20	5.000	n/a
S97T002268		TOC by Persulfate/Coulometry	ug/mL	94.33	4.900	1.09e+02	103.0	106.0	5.66	97.70	40.00	n/a
S97T002268	D	Aluminum-ICP-Acid Dil.	ug/mL	99.40	< 5.00e-02	< 2.050	< 2.050	n/a	n/a	95.90	2.050	n/a
S97T002268	D	Iron-ICP-Acid Dil.	ug/mL	100.2	< 5.00e-02	< 2.050	< 2.050	n/a	n/a	97.10	2.050	n/a
S97T002268	D	Sodium-ICP-Acid Dil.	ug/mL	104.6	< 1.00e-01	1.38e+04	1.32e+04	1.35e+04	4.44	-1.250e3	4.100	n/a
S97T002268		Fluoride-IC-Bionex 4000/4500	ug/mL	102.2	< 1.20e-02	5.29e+03	5.31e+03	5.30e+03	0.38	99.15	61.81	n/a
S97T002268		Chloride-IC-Bionex 4000/4500	ug/mL	105.5	< 1.70e-02	3.07e+02	298.0	302.4	2.98	97.50	87.57	n/a
S97T002268		Nitrate by IC-Bionex 4000/4500	ug/mL	98.34	< 1.08e-01	2.12e+03	2.12e+03	2.12e+03	0.00	94.83	556.3	n/a
S97T002268		Nitrate by IC-Bionex 4000/4500	ug/mL	101.3	< 1.39e-01	6.86e+03	6.92e+03	6.89e+03	0.87	98.48	716.0	n/a
S97T002268		Phosphate-IC-Bionex 4000/4500	ug/mL	97.25	< 1.20e-01	< 6.18e+02	< 6.18e+02	n/a	n/a	98.17	618.1	n/a
S97T002268		Sulfate by IC-Bionex 4000/4500	ug/mL	98.73	< 1.38e-01	< 7.11e+02	< 7.11e+02	n/a	n/a	100.3	710.8	n/a
S97T002271		Uranium by Phosphorescence	ug/mL	92.33	< 3.70e-03	6.130	6.450	6.290	5.09	89.84	4.00e-03	3.21E+00
S97T002271		Strontium-89/90 High Level	uCi/mL	103.8	1.84e-04	3.97e-03	3.57e-03	3.64e-03	14.8	n/a	1.94e-04	7.91E+00
S97T002271		Pu-239/240 by TRU-SPEC Resin	uCi/mL	96.33	< 3.20e-06	9.57e-05	9.73e-05	9.65e-05	1.66	n/a	8.97e-06	1.99E+00
S97T002271		Cesium-137 by GEA	uCi/mL	105.5	< 8.43e-05	11.40	11.40	11.40	0.00	n/a	n/a	0.190
S97T002271		Am-241 by Extraction	uCi/mL	99.03	< 6.87e-06	< 9.81e-06	< 6.84E-6	n/a	n/a	n/a	9.81e-06	1.00E+02

Table 1. Data Summary Report
AP-107 GRAB

RISER: 1

SEGMENT #: 7AP-97-3

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T002047		Volume % Settled Solids	%	n/a	n/a	< 1.000	n/a	n/a	n/a	n/a	1.00e-01	n/a
S97T002269		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S97T002269		DSC Exotherm on Perkin Elmer	Joules/g	100.2	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T002269		Oil- by Pot. Titration	ug/mL	n/a	n/a	pl#7.12	n/a	n/a	n/a	n/a	125.0	n/a
S97T002269		Caustic Demand	moles OH-/L	96.91	n/a	5.02e-02	4.89e-02	4.95e-02	2.62	n/a	5.00e-03	n/a
S97T002269		pH Direct	pH	99.75	n/a	9.990	9.990	9.990	0.00	n/a	1.00e-02	n/a
S97T002269		Specific Gravity	Sp.G.	100.4	n/a	1.065	1.060	1.062	0.47	n/a	1.00e-03	n/a
S97T002269		% Water by TGA on Perkin Elmer	%	99.90	n/a	93.94	94.07	94.00	0.14	n/a	n/a	n/a
S97T002269		TIC by Acid/Coulometry	ug/mL	99.34	3.300	3.32e+03	3.09e+03	3.20e+03	7.18	89.20	5.000	n/a
S97T002269		TOC by Persulfate/Coulometry	ug/mL	100.3	13.10	2.81e+02	251.0	266.0	11.3	88.50	40.00	n/a
S97T002269	D	Aluminium-ICP-Acid Dil.	ug/mL	99.40	< 5.00e-02	< 2.050	< 2.050	n/a	n/a	92.90	2.050	n/a
S97T002269	D	Iron-ICP-Acid Dil.	ug/mL	100.2	< 5.00e-02	< 2.050	< 2.050	n/a	n/a	95.00	2.050	n/a
S97T002269	D	Sodium-ICP-Acid Dil.	ug/mL	104.6	< 1.00e-01	1.33e+04	1.34e+04	1.34e+04	0.75	-4.580e2	4.100	n/a
S97T002269		Fluoride-IC-Dionex 4000/4500	ug/mL	102.2	< 1.20e-02	5.07e+03	5.07e+03	5.04e+03	1.19	107.6	61.81	n/a
S97T002269		Chloride-IC-Dionex 4000/4500	ug/mL	102.2	< 1.70e-02	2.83e+02	289.0	286.1	2.10	90.75	87.57	n/a
S97T002269		Nitrite-IC - Dionex 4000/4500	ug/mL	98.34	< 1.08e-01	2.06e+03	2.03e+03	2.04e+03	1.47	97.60	556.3	n/a
S97T002269		Nitrate by IC-Dionex 4000/4500	ug/mL	101.3	< 1.39e-01	6.46e+03	6.24e+03	6.35e+03	3.46	97.14	716.0	n/a
S97T002269		Phosphate-IC-Dionex 4000/4500	ug/mL	97.25	< 1.20e-01	< 6.18e+02	732.0	n/a	n/a	96.51	618.1	n/a
S97T002269		Sulfate by IC-Dionex 4000/4500	ug/mL	98.73	< 1.38e-01	7.15e+02	< 7.11e2	n/a	n/a	96.36	710.1	n/a
S97T002272		Uranium by Phosphorescence	ug/mL	92.33	< 3.70e-03	6.050	6.480	6.265	6.86	92.89	4.00e-03	3.27E+00
S97T002272		Strontium-89/90 High Level	uCi/mL	103.8	1.84e-04	4.18e-03	4.04e-03	4.11e-03	3.41	n/a	1.94e-04	7.50E+00
S97T002272		Pu-239/240 by TRU-SPEC Resin	uCi/mL	96.33	< 3.20e-06	9.32e-05	9.43e-05	9.38e-05	1.17	n/a	8.64e-06	2.00E+00
S97T002272		Cesium-137 by GEA	uCi/mL	105.5	< 8.43e-05	11.50	11.50	11.50	0.00	n/a	n/a	0.190
S97T002272		Am-241 by Extraction	uCi/mL	99.03	< 6.87e-06	< 6.77E-6	n/a	n/a	n/a	n/a	6.73e-06	1.07E+01

HNF-SD-WM-DP-276, REV. 0

CHAIN OF CUSTODY FORMS

HNF-SD-WM-DP-276, REV. 0

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CHAIN-OF-CUSTODY RECORD FOR CPO

HNF-SD-WM-DP-276, REV. 0

Sample Number 7AP97-1 (2) Supervisor/Sampler A.J. HANZLIK (9) Seal Intact Upon Release? ☒ Yes ☐ No

Task AP107 (4) Riser 1090°E (6) Case/Seal No. TF-7 (10) Seal Intact Upon Receipt? ☒ Yes ☐ No

Shipment Description: (11) Seal Number AND Case/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No

(12) Laboratory Comments: SUSPECT P.C.B.

S97T002039

1-20-97 Wk 16

(7) Sampling Data Y N

- Lithium Bromide ☐ Y ☒ N

Amount NA

Concentration NA

- X-Ray ☐ Y ☒ N

- Perial Sample ☐ Y ☒ N

- Retrieved Perial Sample Stroke Length NA

A. Work Package Number ES-97-004776

B. Case/Pig Seal Number 2000

C. Date Sample Collected 9-11-97

D. Time Sample Collected 1050hrs

Field Comments:

(14) Received By (Sign and PRINT) <u>James Dickel</u>	(15) Date/Time <u>9-11-97</u>	(17) Receiver Comments <u>1-20-97 Wk 16</u>
(18) Relinquished By (Sign and PRINT) <u>James Dickel</u>	(19) Date/Time <u>9-11-97</u>	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT) <u>James Dickel</u>	(23) Date/Time <u>9-11-97</u>	(24) Receiver Comments
(20) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

CHAIN-OF-CUSTODY RECORD FOR CPO

Sample Number 7AP-97-2		(2) Supervisor/Sampler R.J. Horzvik		(9) Seal Intact Upon Release? ☒ Yes ☐ No	
Tank AP0107	(4) Riser 10 210°SW	(6) Cask/Rig Seal No. TF-9		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No	
Shipment Description: ES-97-004776				(11) Seal Number AND Cask/Rig SERIAL Number consistent with this record? (Block 6 & 9b) ☒ Yes ☐ No	
A. Work Package Number 1997				(12) Laboratory Comments: suspect PCB	
B. Cask/Rig Seal Number 9-11-97				5977002046	
C. Date Sample Collected 111346					
D. Time Sample Collected					
Field Comments:					
(14) Received By (Sign and PRINT) James Sickels		(16) Date/Time 9-11-97 12:20		(17) Receiver Comments 7-30-97 LMR	
(18) Received By (Sign and PRINT) James Sickels		(19) Date/Time 9-11-97 13:23		(20) Receiver Comments	
(21) Relinquished By (Sign and PRINT) James Sickels		(22) Date/Time 9-11-97		(23) Receiver Comments	
(24) Relinquished By (Sign and PRINT)		(25) Date/Time		(26) Receiver Comments	
(27) Relinquished By (Sign and PRINT)		(28) Date/Time		(29) Receiver Comments	

CHAIN-OF-CUSTODY RECORD FOR CPO

Sample Number 7AP-97-3		(2) Supervisor/Sampler K.J. Harwick		(9) Seal Intact Upon Release? ☒ Yes ☐ No	
Tank AP107		(4) Riser 10330° NW		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No	
Shipment Description: ES-97-004776		(5) Cask/Pig Serial No. G-6		(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) Yes 91197	
A. Work Package Number 4093		(7) Sampling Data - Lithium Bromide NA		(12) Laboratory Comments: suspect PCB'S	
B. Cask/Pig Serial Number 9-11-97		Amount NA		597J002097	
C. Date Sample Collected 1132hrs		Concentration NA			
D. Time Sample Collected		X-Ray ☒			
		Partial Sample ☒			
		Retrieved Partial Sample Stroke Length NA			
Field Comments:					
7-10-97 NA					

HNF-SD-WM-DP-276, REV. 0

(15) Date/Time 9-11-97	(16) Receiver Comments 16
(19) Date/Time 13:40	(20) Receiver Comments
(23) Date/Time 9-11-97	(24) Receiver Comments
(27) Date/Time	(28) Receiver Comments

HNF-SD-WM-DP-276, REV. 0

SAMPLE HANDLING

HNF-SD-WM-DP-276, REV. 0

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LABCORE Data Entry Template for Worklist# 20307

Analyst: KRM

Instrument: BA002

Book #

Method: LO-160-103 Rev/Mod

Worklist Comment: AP-107 SUSPECT PCB'S

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>Completed</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>Completed</u>	<u>N/A</u>	
97000649	AP-107 GRAB	3 SAMPLE	S97T002039	0	@BRKDOWN1 DOSERATE	LIQUID	<u>N/A</u>	<u>250</u>		mrad/hour
97000649	AP-107 GRAB	3 SAMPLE	S97T002039	0	@BRKDOWN1 SEALNUM	LIQUID	<u>N/A</u>	<u>2000</u>		
97000649	AP-107 GRAB	3 SAMPLE	S97T002039	0	@BRKDOWN1 ETCHNUM	LIQUID	<u>N/A</u>	<u>7AP-97-1</u>		
97000649	AP-107 GRAB	3 SAMPLE	S97T002039	0	@BRKDOWN1 APPEAR02	LIQUID	<u>N/A</u>	<u>clear</u>		
97000649	AP-107 GRAB	3 SAMPLE	S97T002039	0	@BRKDOWN1 SAMPAMT2	LIQUID	<u>N/A</u>	<u>125</u>		mL
97000649	AP-107 GRAB	3 SAMPLE	S97T002039	0	@BRKDOWN1 STLSLD01	LIQUID	<u>N/A</u>	<u><1%</u>		%
97000649	AP-107 GRAB	3 SAMPLE	S97T002039	0	@BRKDOWN1 COLOR-01	LIQUID	<u>N/A</u>	<u>light yellow</u>		
97000649	AP-107 GRAB	3 SAMPLE	S97T002039	0	@BRKDOWN1 ORGVOL02	LIQUID	<u>N/A</u>	<u>2</u>		mL
97000649	AP-107 GRAB	4 SAMPLE	S97T002046	0	@BRKDOWN1 DOSERATE	LIQUID	<u>N/A</u>	<u>45-250</u>		mrad/hour
97000649	AP-107 GRAB	4 SAMPLE	S97T002046	0	@BRKDOWN1 SEALNUM	LIQUID	<u>N/A</u>	<u>1997</u>		
97000649	AP-107 GRAB	4 SAMPLE	S97T002046	0	@BRKDOWN1 ETCHNUM	LIQUID	<u>N/A</u>	<u>7AP-97-2</u>		
97000649	AP-107 GRAB	4 SAMPLE	S97T002046	0	@BRKDOWN1 APPEAR02	LIQUID	<u>N/A</u>	<u>clear</u>		
97000649	AP-107 GRAB	4 SAMPLE	S97T002046	0	@BRKDOWN1 SAMPAMT2	LIQUID	<u>N/A</u>	<u>125</u>		mL
97000649	AP-107 GRAB	4 SAMPLE	S97T002046	0	@BRKDOWN1 STLSLD01	LIQUID	<u>N/A</u>	<u><1%</u>		%
97000649	AP-107 GRAB	4 SAMPLE	S97T002046	0	@BRKDOWN1 COLOR-01	LIQUID	<u>N/A</u>	<u>light yellow</u>		
97000649	AP-107 GRAB	4 SAMPLE	S97T002046	0	@BRKDOWN1 ORGVOL02	LIQUID	<u>N/A</u>	<u>2</u>		mL

Data Entry Comments:

Kathy S. Tellefson 9/17/97
manage in accordance with
stdng order 97-008 + LAP 101-100

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
09/16/97 15:17

LABCORE Data Entry Template for Worklist# 20307

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
97000649	AP-107 GRAB	5 SAMPLE	S97T002047	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	250		mrad/hour
97000649	AP-107 GRAB	5 SAMPLE	S97T002047	0	@BRKDOWN1 SEALNUM	LIQUID	N/A	4039		
97000649	AP-107 GRAB	5 SAMPLE	S97T002047	0	@BRKDOWN1 ETCHNUM	LIQUID	N/A	7#97-3		
97000649	AP-107 GRAB	5 SAMPLE	S97T002047	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	clear		
97000649	AP-107 GRAB	5 SAMPLE	S97T002047	0	@BRKDOWN1 SAMPANT2	LIQUID	N/A	125		ml
97000649	AP-107 GRAB	5 SAMPLE	S97T002047	0	@BRKDOWN1 STLSD01	LIQUID	N/A	<1%		%
97000649	AP-107 GRAB	5 SAMPLE	S97T002047	0	@BRKDOWN1 COLOR-01	LIQUID	N/A	light yellow		
97000649	AP-107 GRAB	5 SAMPLE	S97T002047	0	@BRKDOWN1 ORGVOL02	LIQUID	N/A	0		ml

Final page for worklist # 20307

[Signature]
Analyst Signature

10-1-97

Date

[Signature]
Analyst Signature

10-1-97

Date

Validated
10/6/97
AK Miller

Data Entry Comments:

Aathy Tollefson 9/17/97
manage in accordance with

Stdg Crdr 97-1084 AP 101-100.

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.

HNF-SD-WM-DP-276, REV. 0

INORGANIC ANALYSIS

HNF-SD-WM-DP-276, REV. 0

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LABCORE Data Entry Template for Worklist# 21173

Analyst: SMF Instrument: DSC0 3 Book # 12 N14-B

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

Worklist Comment: AP-107 GRAB, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>28.52</u>	<u>N/A</u>	Joules/g
97000649	AP-107 GRAB	2 SAMPLE	S97T002267	0	DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000649	AP-107 GRAB	3 DUP	S97T002267	0	DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g
97000649	AP-107 GRAB	4 SAMPLE	S97T002268	0	DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000649	AP-107 GRAB	5 DUP	S97T002268	0	DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 21173

Lusie M. Dutton 11-15-97
Analyst Signature Date

LS Jones 11-17-97
Analyst Signature Date

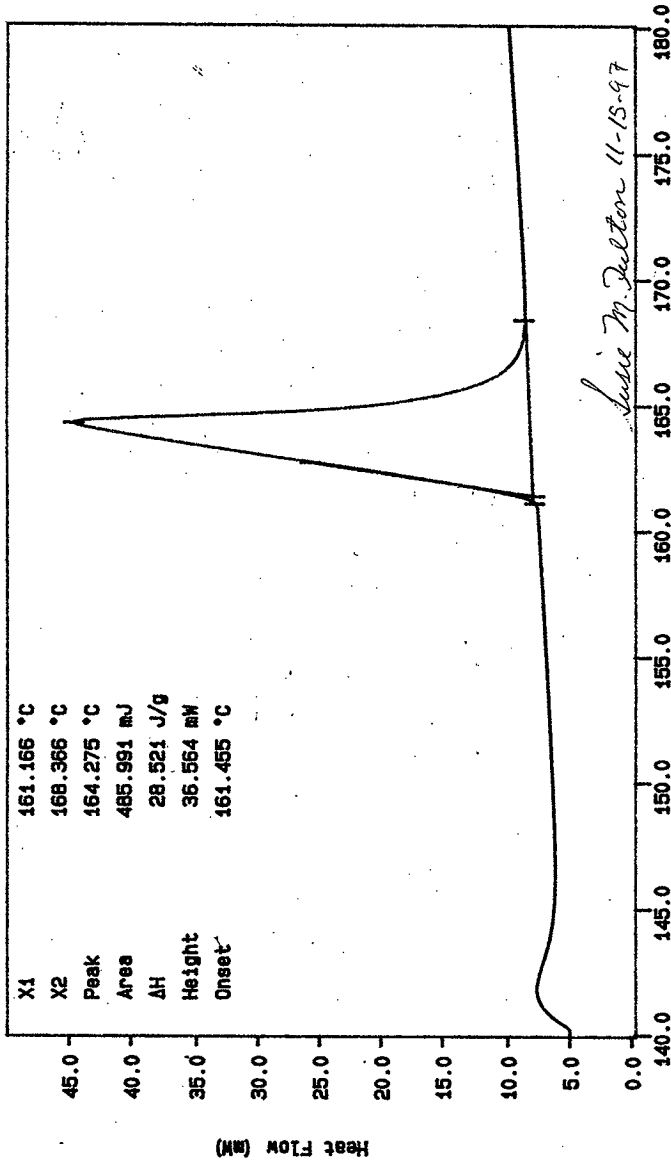
Validated 11/17/97 Smachels

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.

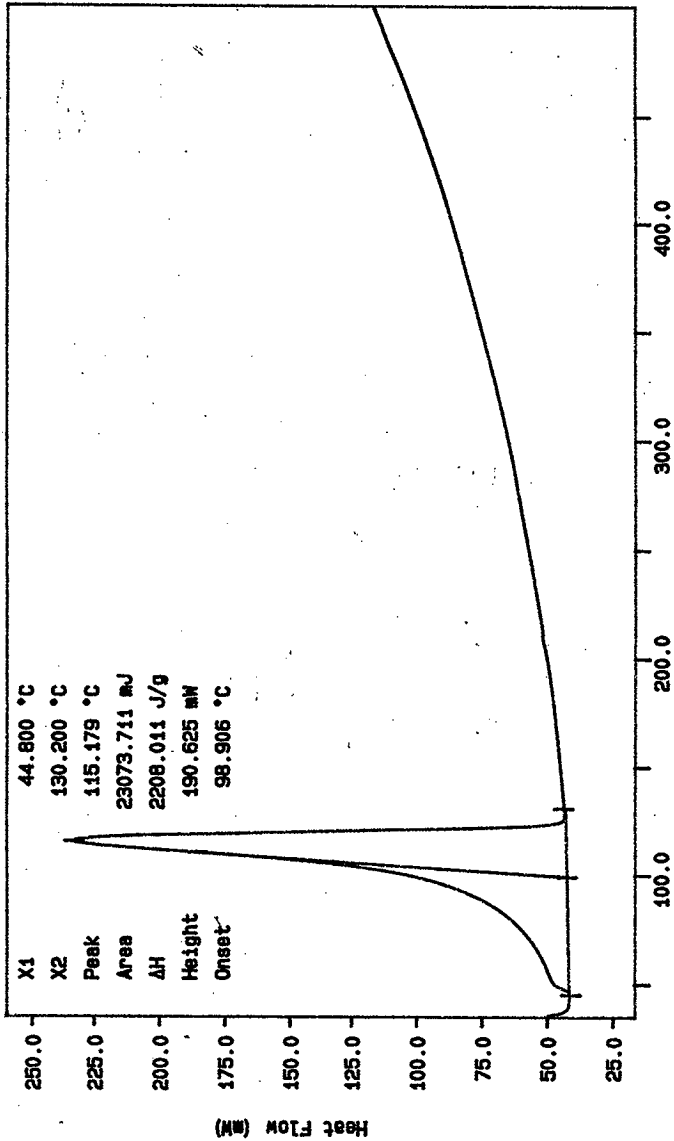
Curve 1: DSC
 File info: IND111501 Sat Nov 15 06:35:17 1997
 Sample Weight: 17.040 mg
 STD 12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 40 TO 44



N2, EXOTHERM DOWN
 168.8 g TIME: 0.0 min RATE: 10.0 C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 06:39:13 1997

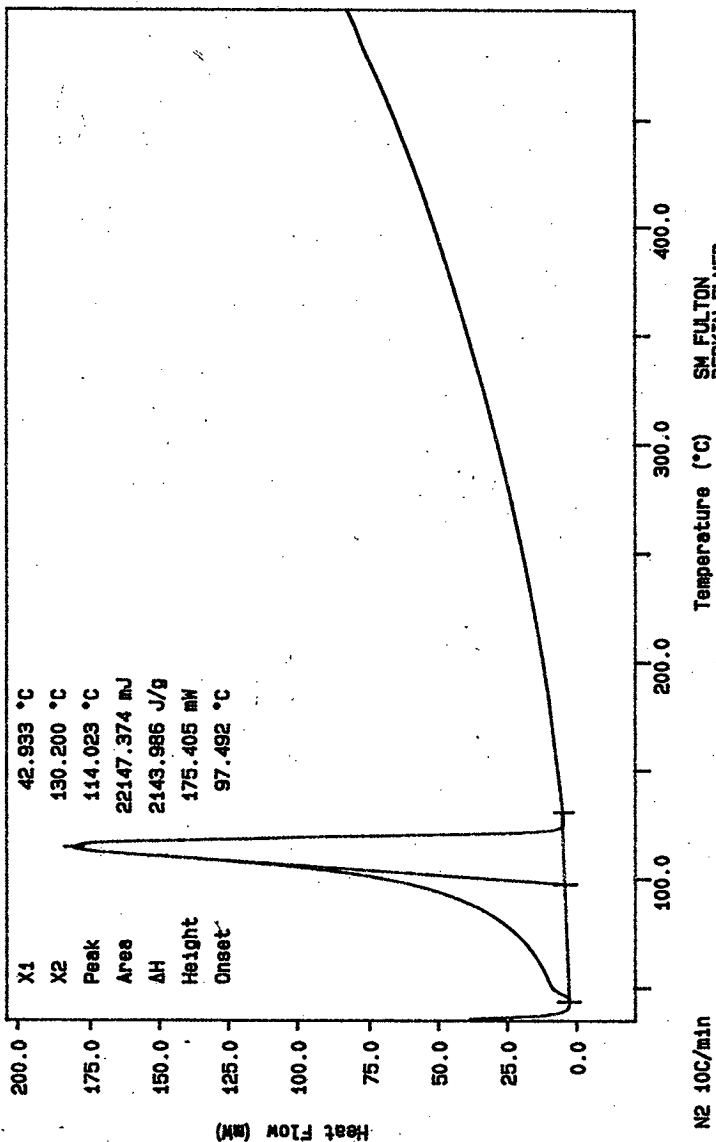
Curve 1: DSC
 File Info: SAM111501 Set Nov 15 07:34:16 1997
 Sample Weight: 10.450 mg
 S97T002267



SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Set Nov 15 09:12:41 1997

N2 10C/min
 TAPES 35.8 g
 TIMES: 0.0 min RATES: 10.0 C/min

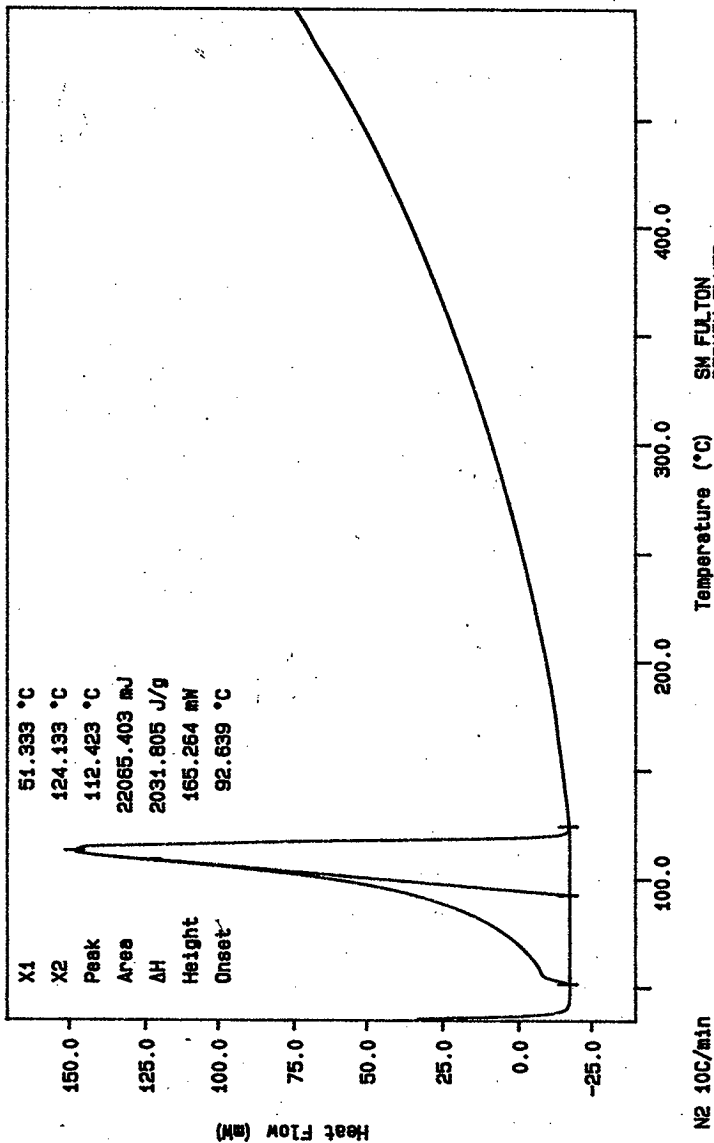
Curve 1: DSC
 File Info: SAM11502 Sat Nov 15 10: 01: 32 1997
 Sample Weight: 10.330 mg
 S97T002267 DUP



SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 10: 04: 33 1997

N2 10C/min
 TIME: 88.8 s
 RATE: 0.0 min RATE: 10.0 C/min

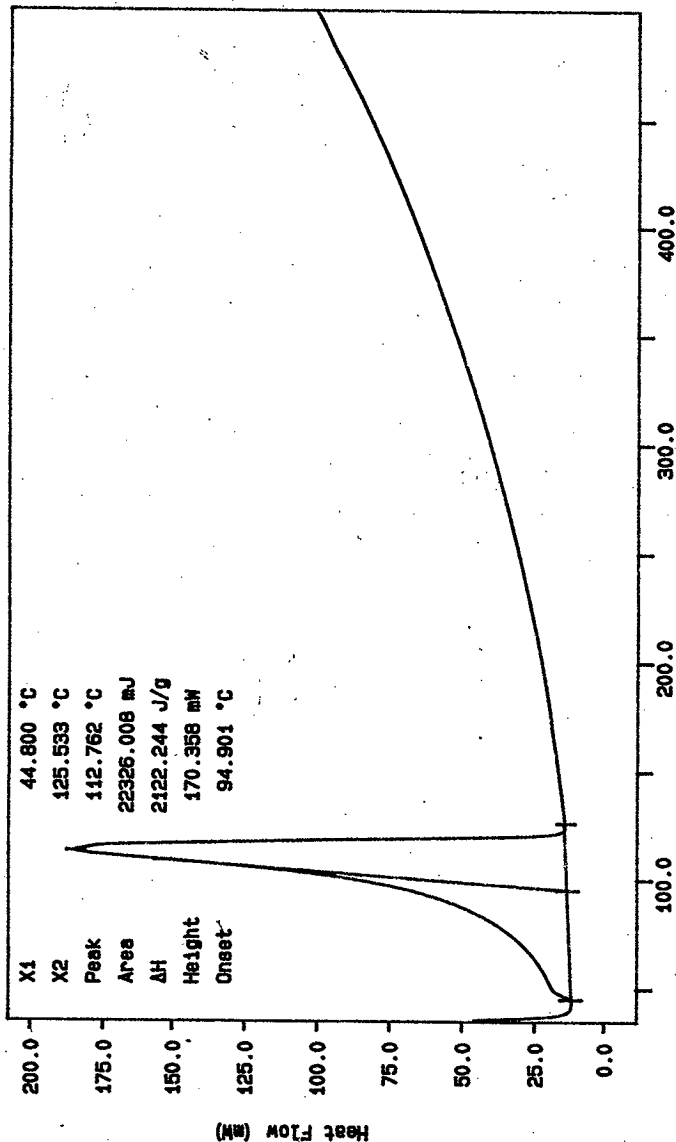
Curve 4: DSC
 File Info: SAN11503 Sat Nov 15 10:53:31 1997
 Sample Weight: 10.860 mg
 S97T002268



SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 12:28:13 1997

N2 10C/min
 TIME: 255.8 S
 RATE: 0.0 min RATE: 10.0 C/min

Curve 1: DSC
 File info: SAM111504 Sat Nov 15 13:17:13 1997
 Sample Weight: 10.520 mg
 S977002268 DLP



N2 10C/min
 TIME: 58.8 s
 RATE: 0.0 min RATE: 10.0 C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 13:32:00 1997

LABCORE Data Entry Template for Worklist# 21174

Analyst: SME Instrument: DSC0 3 Book # 12014-13

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

Worklist Comment: AP-107 GRAB, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>28.52*</u>	<u>N/A</u>	Joules/g
97000649	AP-107 GRAB	2 SAMPLE	S97T002269	0	DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000649	AP-107 GRAB	3 DUP	S97T002269	0	DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 21174

Susie M. Dulton 11-15-97
Analyst Signature Date

RCJ 11-17-97
Analyst Signature Date

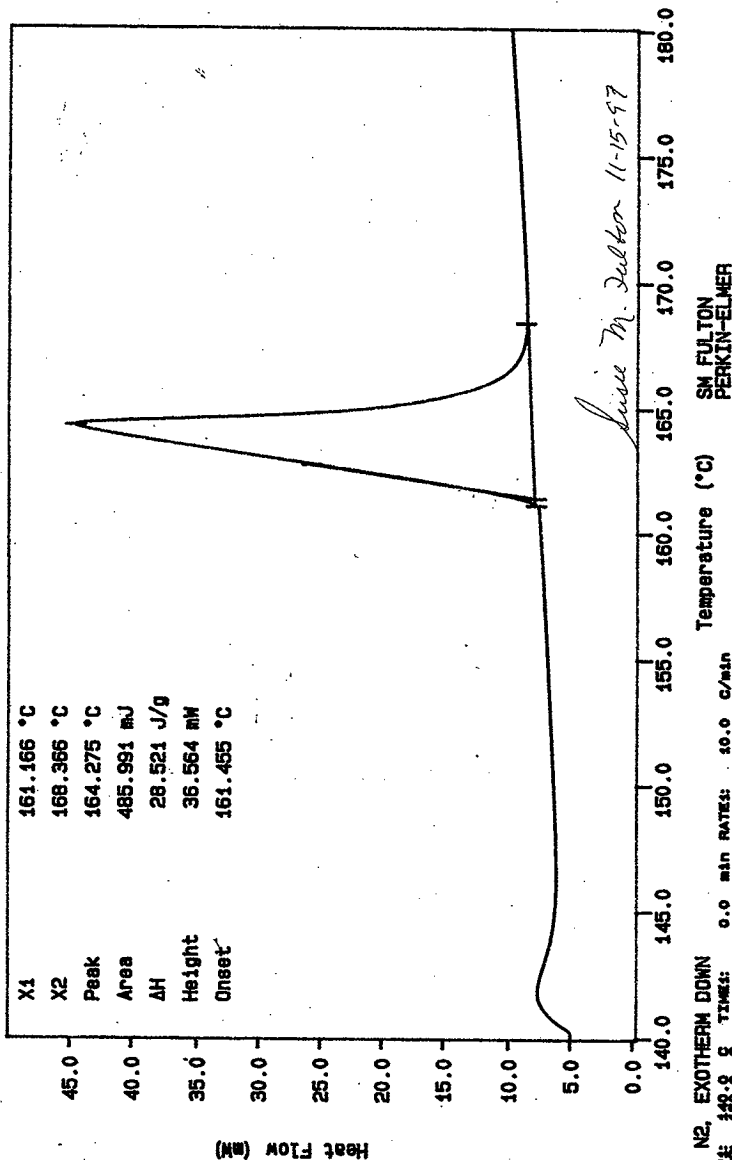
Validated 11/17/97 Machelor

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.

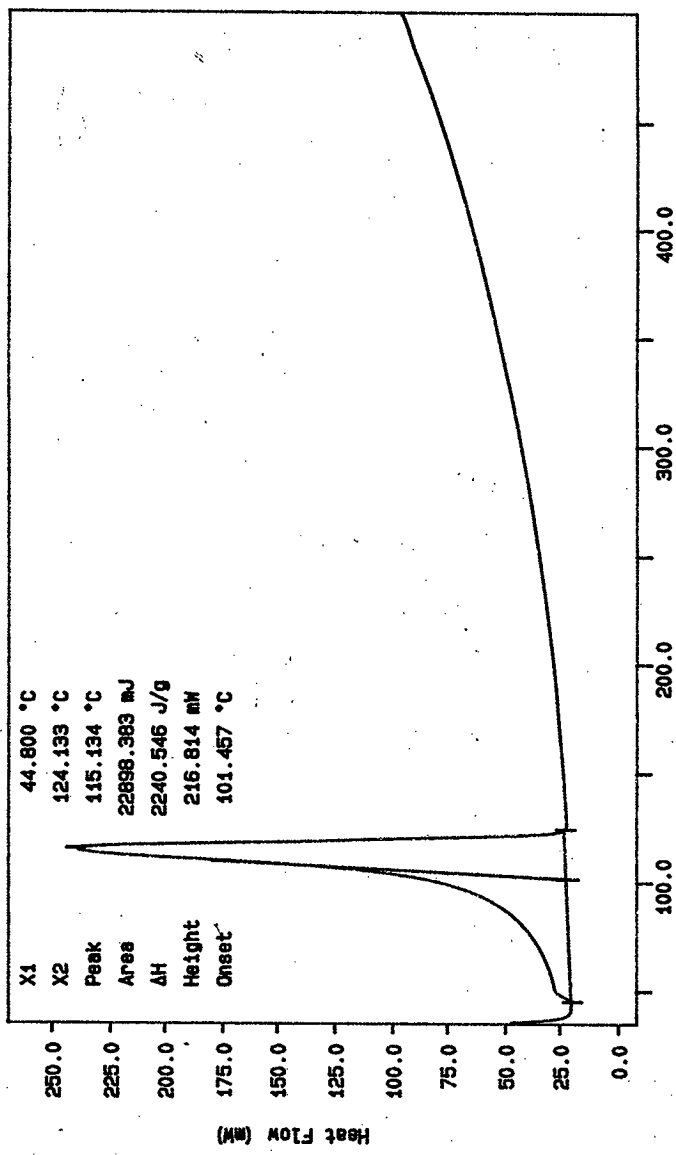
Curve 1: DSC
 File Info: IND111501 Sat Nov 15 06:35:17 1997
 Sample Weight: 17.040 mg
 STD 12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 46 TO 48.



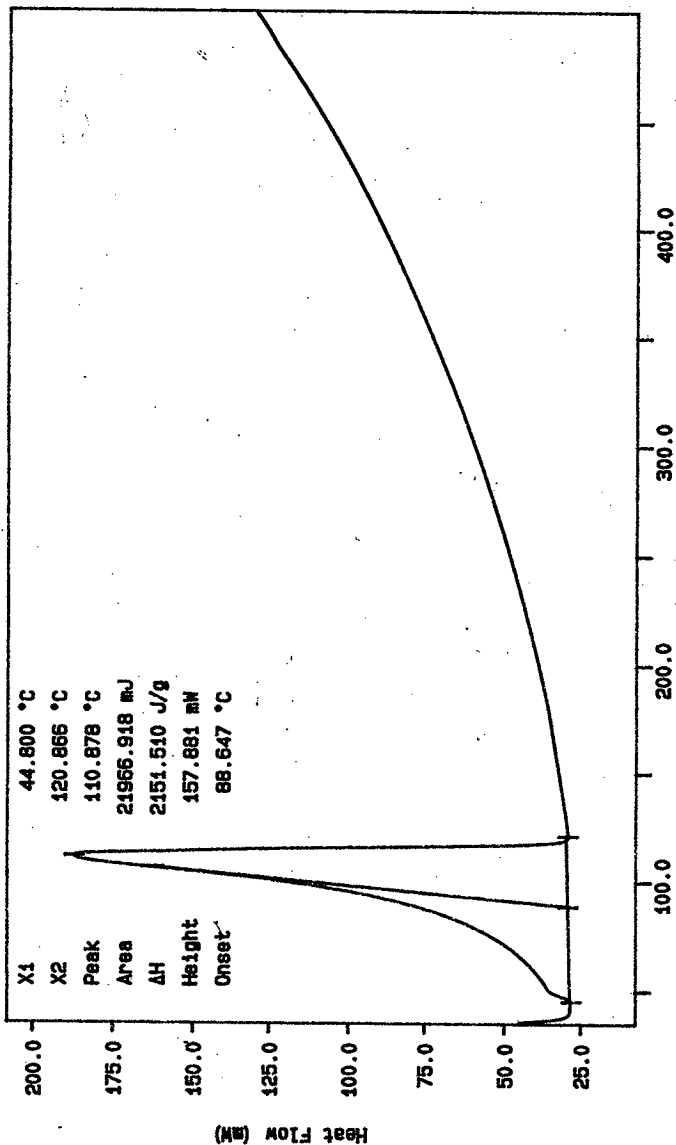
N2, EXOTHERM DOWN
 TEMPERATURE 160.8 °C
 0.0 min RATE: 10.0 °C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 06:48:57 1997

Curve 1: DSC
 File Info: SAM111505 Set Nov 15 14:24:26 1997
 Sample Weight: 10.220 mg
 S97T002269



N2 10C/min
 TOWER: 35.8 g
 THERM: 35.8 g
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 14:31:22 1997

Curve 1: DSC
 File Info: SAM111506 Sat Nov 15 15:24:50 1997
 Sample Weight: 10.210 mg
 S977002269 DUP



SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 16:20 1997

N2 10C/min
 TIME: 55.8 s
 TIMES: 0.0 min RATE: 10.0 C/min

LABCORE Data Entry Template for Worklist# 21199Analyst: ppb Instrument: DSC0 2 Book # N/AMethod: LA-514-113 Rev/Mod 23 11/17/97

Worklist Comment: AP-107 Grab liquid DSC-02. -ppb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
97000649	AP-107 GRAB	1 SAMPLE	S97T002267	0	DSC-02	LIQUID	<u>N/A</u>	<u>N/A</u>		Joules/g Dry
97000649	AP-107 GRAB	2 DUP	S97T002267	0	DSC-02	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	Joules/g Dry
97000649	AP-107 GRAB	3 SAMPLE	S97T002268	0	DSC-02	LIQUID	<u>N/A</u>	<u>N/A</u>		Joules/g Dry
97000649	AP-107 GRAB	4 DUP	S97T002268	0	DSC-02	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	Joules/g Dry
97000649	AP-107 GRAB	5 SAMPLE	S97T002269	0	DSC-02	LIQUID	<u>N/A</u>	<u>N/A</u>		Joules/g Dry
97000649	AP-107 GRAB	6 DUP	S97T002269	0	DSC-02	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	Joules/g Dry

Final page for worklist # 21199

Stachelor 11/17/97
 Analyst Signature Date

 Analyst Signature Date

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 21179

Analyst: BMF Instrument: TGA0 3 Book # 103 N8-A

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

Worklist Comment: AP-107 GRAB, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.0</u>	<u>58.94</u>	<u>N/A</u>	%
97000649	AP-107 GRAB	2 SAMPLE	S97T002267	0	TGA-03	LIQUID	<u>N/A</u>	<u>93.94</u>		%
97000649	AP-107 GRAB	3 DUP	S97T002267	0	TGA-03	LIQUID	<u>93.94</u>	<u>93.00</u> ^{403 11/17/97}	<u>N/A</u>	%
97000649	AP-107 GRAB	4 SAMPLE	S97T002268	0	TGA-03	LIQUID	<u>N/A</u>	<u>94.00</u>		%
97000649	AP-107 GRAB	5 DUP	S97T002268	0	TGA-03	LIQUID	<u>94.00</u>	<u>93.91</u>	<u>N/A</u>	%

Final page for worklist # 21179

Lucie M. Daulton 11-15-97
Analyst Signature Date

RS Jones 11-17-97
Analyst Signature Date

Validated 11/17/97 SPrachsel

Data Entry Comments:

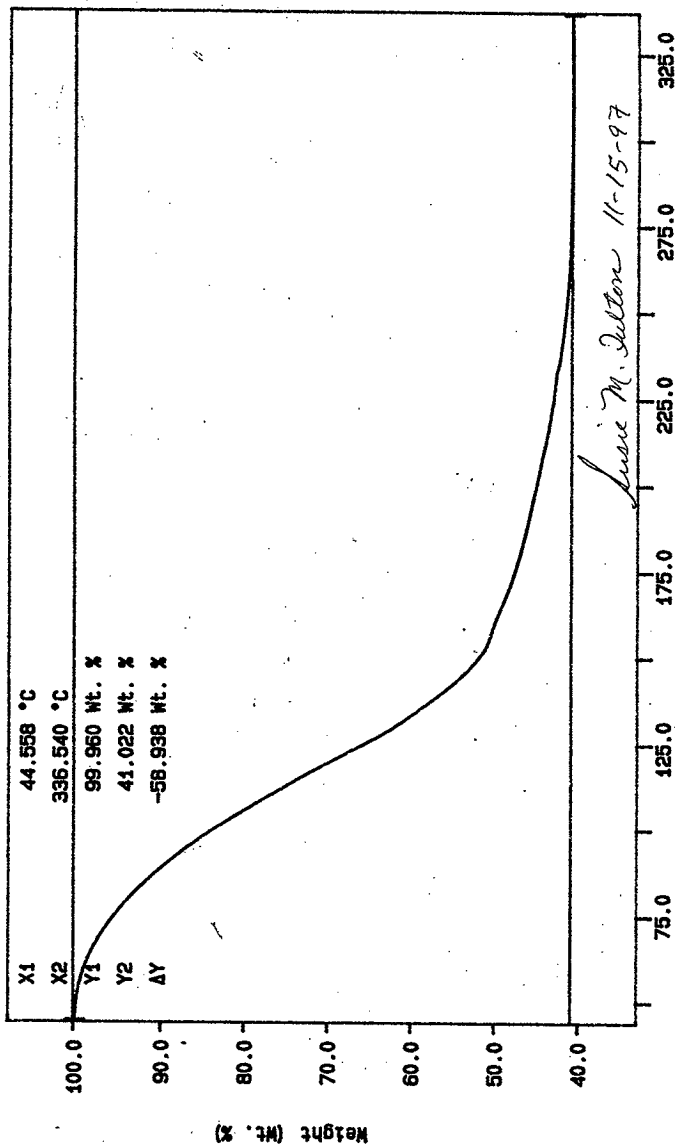
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: TGA

File info: TER111501 Sat Nov 15 06:53:10 1997

Sample Weight: 15.227 mg

STD 103NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 51 TO 52.

10C/MIN N2

TEMP: 355.8 °C

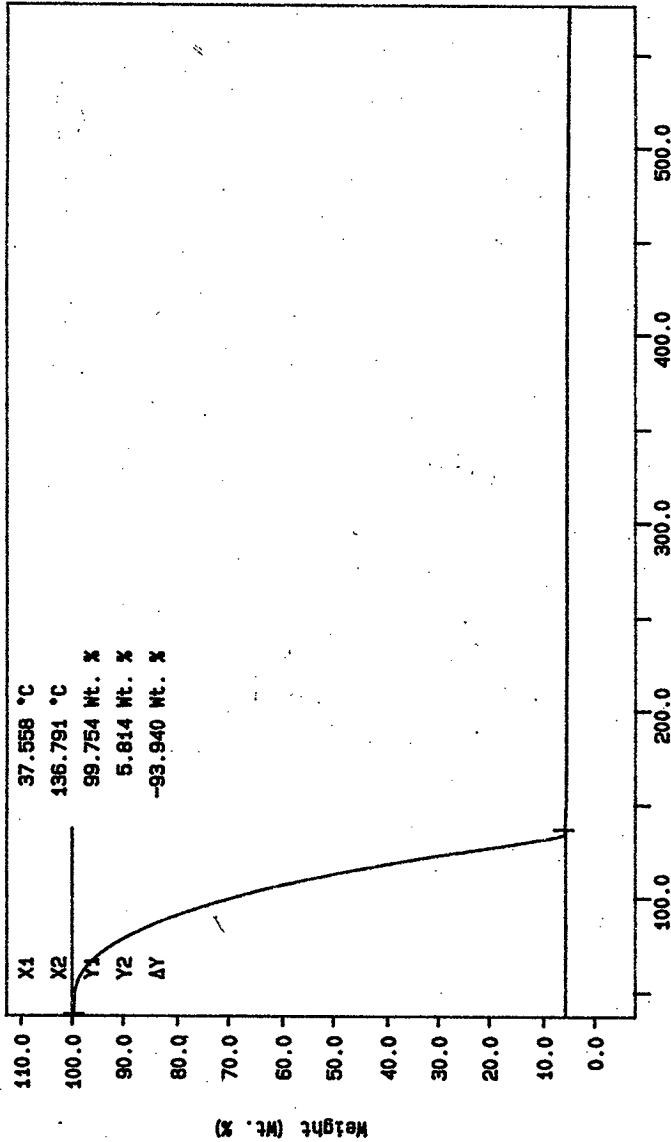
TIME: 8

0.0 min RATE: 10.0 C/min

Temperature (°C)

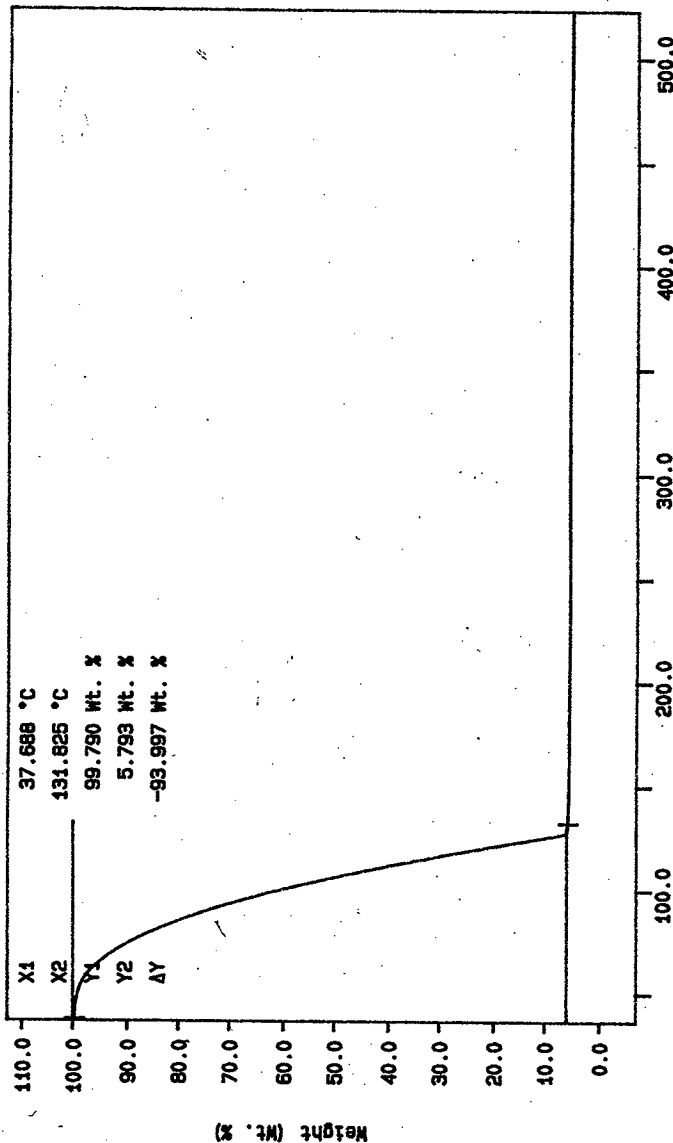
SM FLATON
PERKIN-ELMER7 Series Thermal Analysis System
Sat Nov 15 06:54:28 1997

Curve 1: TGA
 File Info: SAM111501 Sat Nov 15 07:59:39 1997
 Sample Weight: 11.224 mg
 S97T002267



10C/MIN N2
 TEMPERATURE 360.8 °C
 TIME: 0.0 min RATE: 10.0 C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 09:16:20 1997

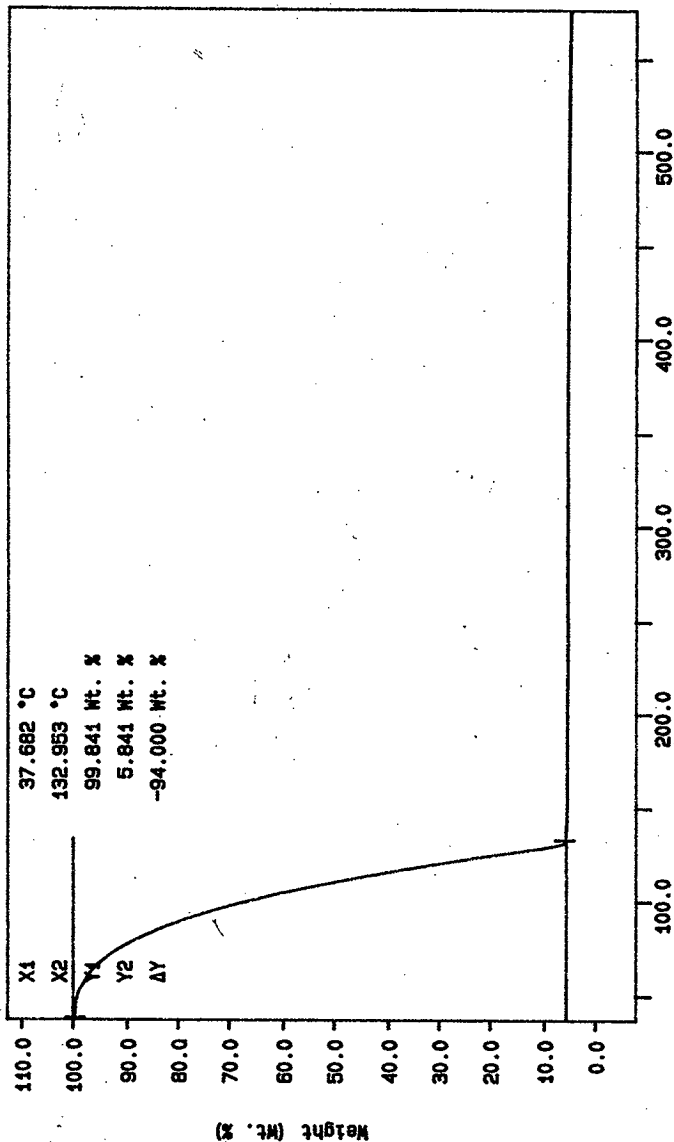
Curve 4: TGA
 File Info: SAM11502 Sat Nov 15 09: 54: 16 1997
 Sample Weight: 10.371 mg
 S97T002267 DUP



SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 09: 54: 30 1997

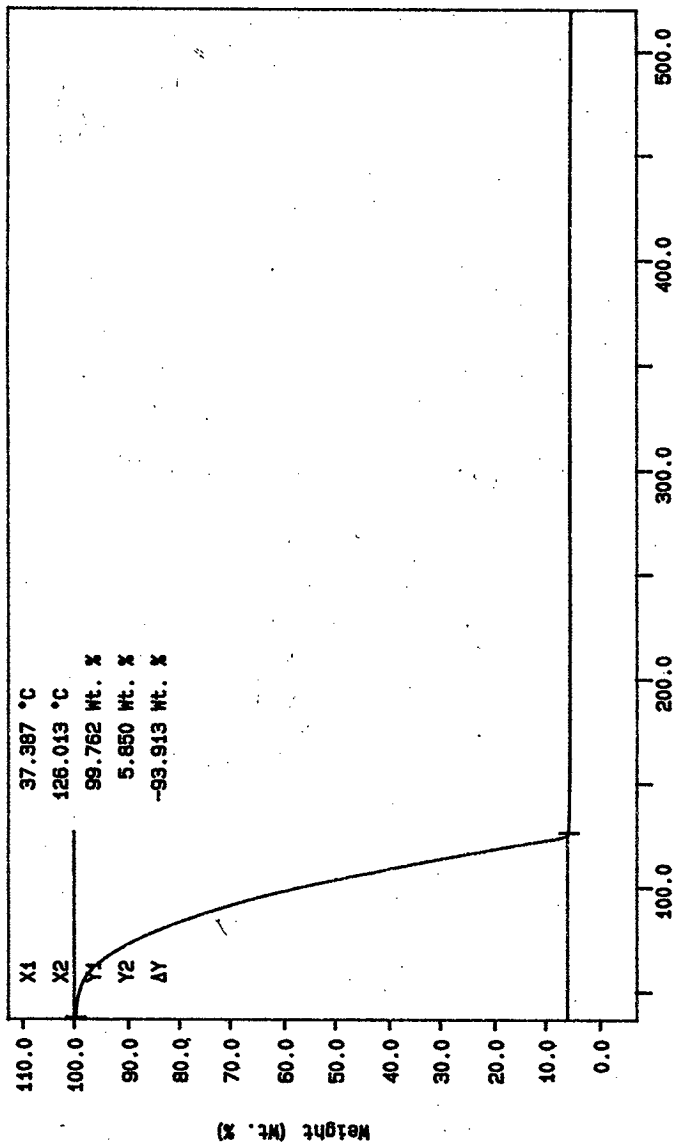
10C/MIN N2
 TIME: 55.8 S
 RATE: 0.0 MIN RATE: 10.0 C/MIN

Curve 1: TGA
 File Info: SAM111503 Sat Nov 15 10:59:20 1997
 Sample Weight: 10.705 mg
 S977002268



10C/MIN N2
 TIME: 55.8 S
 0.0 min RATE: 10.0 C/min
 SM FLUION
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 12:26:23 1997

Curve 1: TGA
 File info: SAM111504 Sat Nov 15 13: 14: 14 1997
 Sample Weight: 9.204 mg
 S97T002268 DUP



10C/MIN N2
 TIME: 8: 8
 888.8
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 13: 14: 29 1997

LABCORE Data Entry Template for Worklist# 21180

Analyst: S7F Instrument: TGA0 3 Book # 10308-A

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

Worklist Comment: AP-107 GRAB, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.0</u>	<u>58.94</u>	<u>N/A</u>	%
97000649	AP-107 GRAB	2 SAMPLE	S97T002269	0	TGA-03	LIQUID	<u>N/A</u>	<u>93.94</u>		%
97000649	AP-107 GRAB	3 DUP	S97T002269	0	TGA-03	LIQUID	<u>93.94</u>	<u>94.07</u>	<u>N/A</u>	%

Final page for worklist # 21180

Susie M. Julton 11-15-97
Analyst Signature Date

[Signature] 11-17-97
Analyst Signature Date

Validated 11/17/97 [Signature]

Data Entry Comments:

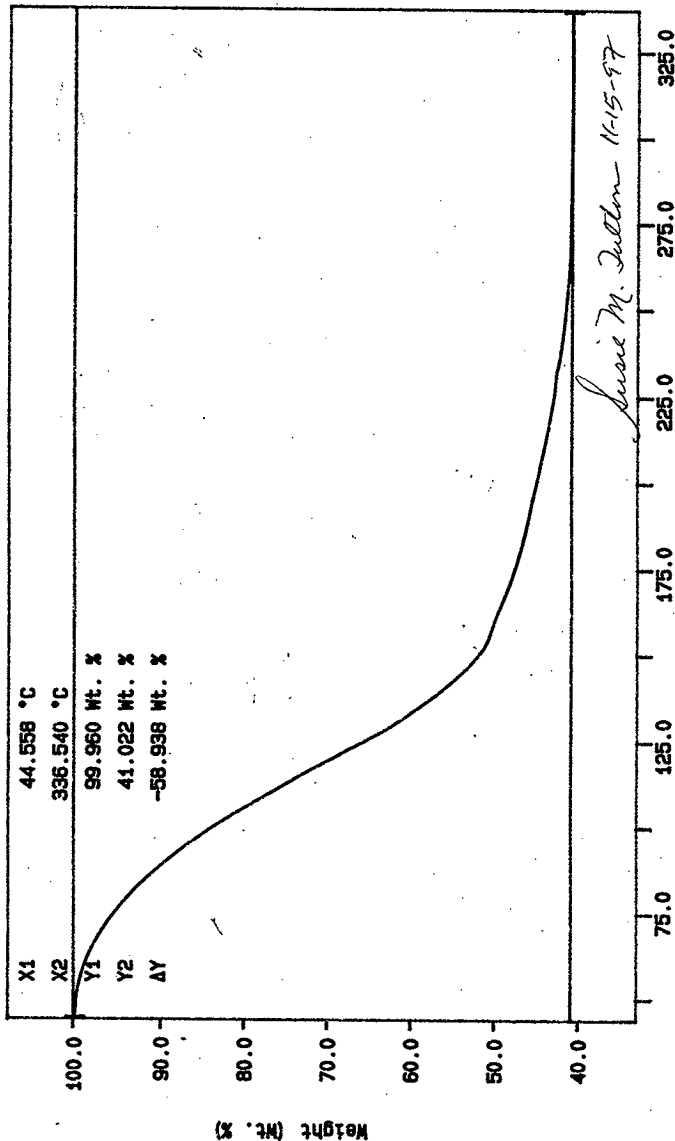
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: TGA

File Info: TER11501 Sat Nov 15 06:53:10 1997

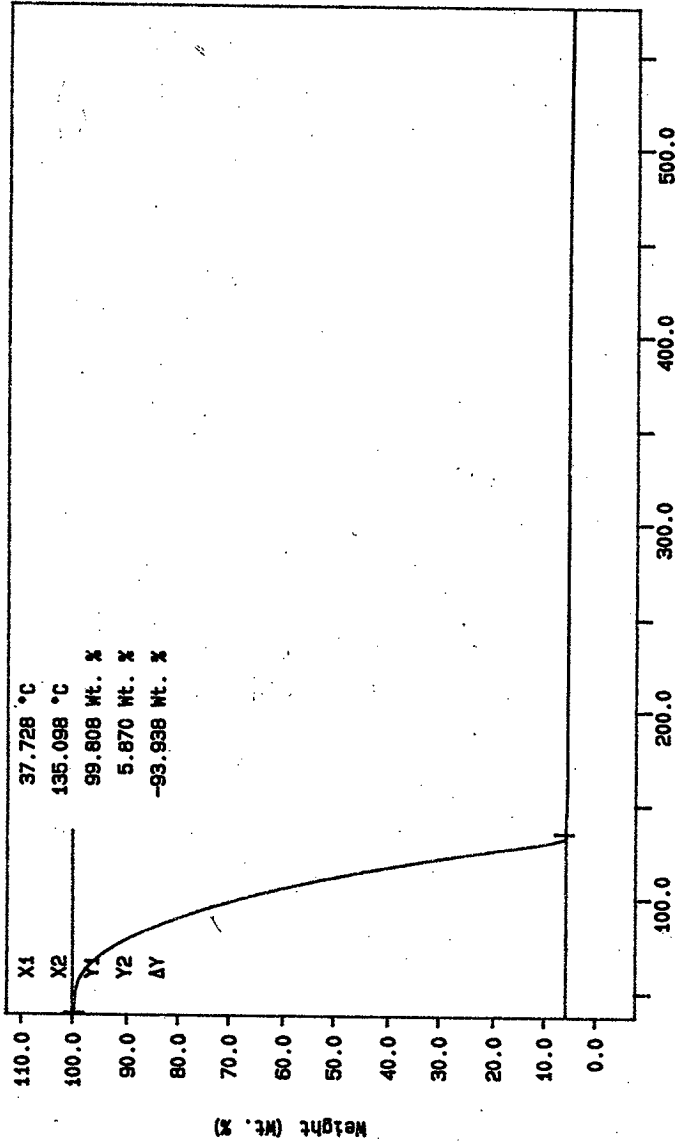
Sample Weight: 15.227 mg

STD 103NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 21 TO 29.

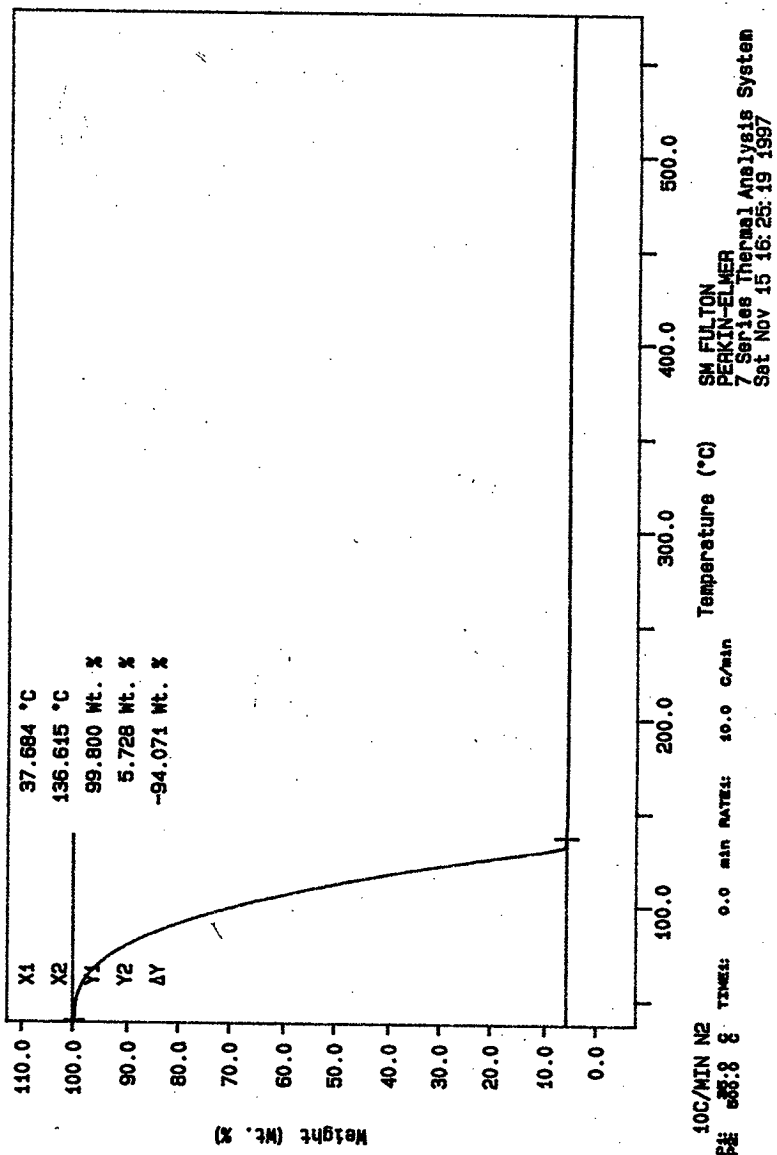
10C/MIN N2
TIME: 35.8 s
RATES: 0.0 min RATE: 10.0 C/min

Curve 1: TGA
 File info: SAM11505 Sat Nov 15 14:21:00 1997
 Sample Weight: 10.993 mg
 5977002269



10C/MIN N2
 TIME: 00:08
 10C/MIN RATE: 10.0 C/min
 SM FULTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sat Nov 15 14:22:13 1997

Curve 4: TGA
File Info: SAM11506 Sat Nov 15 15:34:37 1997
Sample Weight: 10.703 mg
S97T002269 DUP



LABCORE Data Entry Template for Worklist# 21175

Analyst: ADD Instrument: BA001 Book # 133N16-A

Method: LA-510-112 Rev/Mod D-1

Worklist Comment: AP-107 GRAB SPG, USE CALIBRATED PIPETTE. RCI

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.39755</u>	<u>1.403</u>	<u>N/A</u>	Sp.G.
97000649	AP-107 GRAB	2 SAMPLE	S97T002267	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.049</u>	<u>0.01</u>	Sp.G.
97000649	AP-107 GRAB	3 DUP	S97T002267	0	SPG-01	LIQUID	<u>1.049</u>	<u>1.041</u>	<u>N/A</u>	Sp.G.
97000649	AP-107 GRAB	4 SAMPLE	S97T002268	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.041</u>	<u>0.01</u>	Sp.G.
97000649	AP-107 GRAB	5 DUP	S97T002268	0	SPG-01	LIQUID	<u>1.041</u>	<u>1.041</u>	<u>N/A</u>	Sp.G.
97000649	AP-107 GRAB	6 SAMPLE	S97T002269	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.065</u>	<u>0.01</u>	Sp.G.
97000649	AP-107 GRAB	7 DUP	S97T002269	0	SPG-01	LIQUID	<u>1.065</u>	<u>1.060</u>	<u>N/A</u>	Sp.G.

Final page for worklist # 21175

Anthony Perreth 11-15-97
Analyst Signature Date

[Signature] 11-16-97
Analyst Signature Date

Approved [Signature] 11/18/97

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

Type		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	1.9186	1.9941
Work List	Tare Weight (W1)	1.8131	1.8881
21175	Weight of Solution (W2-W1)	0.1055	0.106
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.3996	1.4062
Matrix	Specific Gravity (Average)	1.4029	
LIQUID			
Sample #			
133N16A			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
11/15/97	v RESULT v		
Time	Specific Gravity Average =	1.403	
10:00 PM			

Data Entry by:	<i>PJ</i>	Date:	11/16/97
Approved by:	<i>RW Schneider</i>	Date:	11/18/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

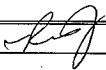
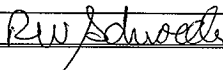
type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9145	
Work List	Tare Weight (W1)	1.8354	
21175	Weight of Solution (W2-W1)	0.0791	0
Test Code	Volume of Solution μ L	75.3800	
SPG-01	Specific Gravity	1.0493	NA
Matrix			
LIQUID			
Sample #			
S97T002267			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
11/15/97	ν RESULT ν		
Time	Specific Gravity =	1.049	
10:00 PM			

Data Entry by:		Date:	11/16/97
Approved by:		Date:	11/18/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

Type		DOPLICATE	REPLICATE
DOPLICATE	Gross Weight (W2)	1.8960	
Work List	Tare Weight (W1)	1.8175	
21175	Weight of Solution (W2-W1)	0.0785	0
Test Code	Volume of Solution μ L	75.3800	
SPG-01	Specific Gravity	1.0414	NA
Matrix			
LIQUID			
Sample #			
S97T002267			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
11/15/97	∇ RESULT ∇		
Time	Specific Gravity =	1.041	
10:00 PM			

Data Entry by:		Date:	11/16/97
Approved by:		Date:	11/18/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9548	
Work List	Tare Weight (W1)	1.8763	
21175	Weight of Solution (W2-W1)	0.0785	0
Test Code	Volume of Solution μ L	75.3800	
SPG-01	Specific Gravity	1.0414	NA
Matrix			
LIQUID			
Sample #			
S97T002268			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
11/15/97	ν RESULT ν		
Time	Specific Gravity =	1.041	
10:00 PM			

Data Entry by:	<i>Rif</i>	Date:	11/16/97
Approved by:	<i>Rw. Schneider</i>	Date:	11/18/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.9453	
Work List	Tare Weight (W1)	1.8668	
21175	Weight of Solution (W2-W1)	0.0785	0
Test Code	Volume of Solution μ L	75.3800	
SPG-01	Specific Gravity	1.0414	NA
Matrix			
LIQUID			
Sample #			
S97T002268			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
11/15/97	∇ RESULT ∇		
Time	Specific Gravity =	1.041	
10:00 PM			

Data Entry by:	<i>lsj</i>	Date:	11/16/97
Approved by:	<i>RW Schroeder</i>	Date:	11/18/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9619	
Work List	Tare Weight (W1)	1.8816	
21175	Weight of Solution (W2-W1)	0.0803	0
Test Code	Volume of Solution μ L	75.3800	
SPG-01	Specific Gravity	1.0653	NA
Matrix			
LIQUID			
Sample #			
S97T002269			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
11/15/97	∇ RESULT ∇		
Time	Specific Gravity =	1.065	
10:00 PM			

Data Entry by:

Date:

11/16/97

Approved by:

Date:

11/18/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (D-1)

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.9857	
Work List	Tare Weight (W1)	1.9058	
21175	Weight of Solution (W2-W1)	0.0799	0
Test Code	Volume of Solution μ L	75.3800	
SPG-01	Specific Gravity	1.0600	NA
Matrix			
LIQUID			
Sample #			
S97T002269			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
11/15/97	∇ RESULT ∇		
Time	Specific Gravity =	1.060	
10:00 PM			

Data Entry by:	<i>RG</i>	Date:	11/16/97
Approved by:	<i>RW Schroeder</i>	Date:	11/18/97

LABCORE Data Entry Template for Worklist# 21178

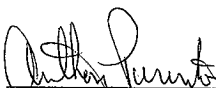
Analyst: ADP Instrument: PH01 Book # 18N19-D

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

Worklist Comment: AP-107 GRAB PH, RUN DIRECT. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH			PH-01	LIQUID	<u>8.00</u>	<u>7.98</u>	<u>N/A</u>	pH
97000649	AP-107 GRAB	2 SAMPLE	S97T002267	0	PH-01	LIQUID	<u>N/A</u>	<u>10.04</u>	<u>0.01</u>	pH
97000649	AP-107 GRAB	3 DUP	S97T002267	0	PH-01	LIQUID	<u>10.04</u>	<u>10.02</u>	<u>N/A</u>	pH
97000649	AP-107 GRAB	4 SAMPLE	S97T002268	0	PH-01	LIQUID	<u>N/A</u>	<u>10.00</u>	<u>0.01</u>	pH
97000649	AP-107 GRAB	5 DUP	S97T002268	0	PH-01	LIQUID	<u>10.00</u>	<u>10.00</u>	<u>N/A</u>	pH
97000649	AP-107 GRAB	6 SAMPLE	S97T002269	0	PH-01	LIQUID	<u>N/A</u>	<u>9.99</u>	<u>0.01</u>	pH
97000649	AP-107 GRAB	7 DUP	S97T002269	0	PH-01	LIQUID	<u>9.99</u>	<u>9.99</u>	<u>N/A</u>	pH

Final page for worklist # 21178


Analyst Signature Date 11-16-97


Analyst Signature Date 11-16-97

approved RW Schueller 11/17/97

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# 21177

Analyst: RWS Instrument: PH01 Book # _____

Method: LA-211-102 Rev/Mod _____

Worklist Comment: AP-107 OH, STD SS=0.050ML. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			OH-01	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	ug/mL
		2 BLNK			OH-01	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	ug/mL
97000649	AP-107 GRAB	3 SAMPLE	S97T002267	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=7.15</u>		ug/mL
97000649	AP-107 GRAB	4 DUP	S97T002267	0	OH-01	LIQUID	<u> </u>	<u>N/A</u>		ug/mL
97000649	AP-107 GRAB	5 SAMPLE	S97T002268	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=7.19</u>		ug/mL
97000649	AP-107 GRAB	6 DUP	S97T002268	0	OH-01	LIQUID	<u> </u>	<u>N/A</u>		ug/mL
97000649	AP-107 GRAB	7 SAMPLE	S97T002269	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=7.12</u>		ug/mL
97000649	AP-107 GRAB	8 DUP	S97T002269	0	OH-01	LIQUID	<u> </u>	<u>N/A</u>		ug/mL

Final page for worklist # 21177

Analyst Signature _____ Date _____

[Signature] 11-18-97
Analyst Signature Date

All samples initial pH approximately 10.5, after BaCl₂ pH approximately 7.15. Samples are likely to be buffered.

RW Schneider 11/18/97

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.

RH	10.26
RH	7.19
RH	7.15
RH	10.50
RH	7.12

LABCORE Completed Worklist Report for Worklist# 21349

Analyst: pjm

Instrument: PH01

Book# 139N16B

Method: LA21104 Rev/Mod B0

Worklist Comment: AP 107 OHDEMAND *Rerun* use <= 1.0mL sample size

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	OHDEMAND	LIQUID	1	OK		Ratio
2 STD	0	OHDEMAND	LIQUID	3.302e-1	3.20e-01	96.911 % Recovery	
3 SAMPLE	S97T002267 0	OHDEMAND	LIQUID	N/A	9.32e-02	4.90e-003 moles OH-/L	
4 DUP	S97T002267 0	OHDEMAND	LIQUID	9.32e-02	IS	RPD	
5 SAMPLE	S97T002268 0	OHDEMAND	LIQUID	N/A	4.65e-02	4.90e-003 moles OH-/L	
6 DUP	S97T002268 0	OHDEMAND	LIQUID	4.65e-02	4.98e-02	6.854 RPD	
7 SAMPLE	S97T002269 0	OHDEMAND	LIQUID	N/A	5.02e-02	4.90e-003 moles OH-/L	
8 DUP	S97T002269 0	OHDEMAND	LIQUID	5.02e-02	4.89e-02	2.624 RPD	

Final page for worklist# 21349

Analyst Signature

Date

Susan B. Bee
Analyst Signature

12/9/97
Date

RW Schoedel
Reviewer Signature

12/9/97
Date

Reported insufficient sample for S97T002267.
Reanalysis requested. RWS 12/9/97

LABCORE Data Entry Template for Worklist# 21349

Analyst: RM Instrument: PH01

Book# 139N16B
SPIKING STD 95N8A

Method: LA-211-104 Rev/Mod B-0

Worklist Comment: AP 107 OHDEMAND *Rerun* use <= 1.0mL sample size

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			OHDEMAND	LIQUID		
2 STD			OHDEMAND	LIQUID		
3 SAMPLE	S97T002267 0		OHDEMAND	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: OHDEMAND					
4 DUP	S97T002267 0		OHDEMAND	LIQUID		
5 SAMPLE	S97T002268 0		OHDEMAND	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: OHDEMAND					
6 DUP	S97T002268 0		OHDEMAND	LIQUID		
7 SAMPLE	S97T002269 0		OHDEMAND	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: OHDEMAND					
8 DUP	S97T002269 0		OHDEMAND	LIQUID		

Final page for worklist # 21349

RL McCaw 12/8/97
Analyst Signature Date

Susan Bee
Analyst Signature Date

Data Entry Comments:

Titrant Molarity - 1994 M HNO₃
Insufficient sample to run S97T002267 Dup.

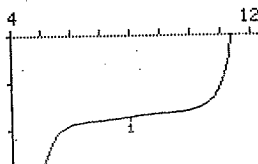
calibration data
date 97-12-08
pH(S) 1 7.00
pH(S) 2 10.00
t.cal. 22.5 °C
slope(rel) .994
U(as) -12.0 mV
electr. input 1
=====

date 97-12-08 time 11:37
GET pH 12 # 173
Id.#1 1
Id.#2 .1994
pH(init) 11.33
V/ml pH
EP1 .172 8.02

stop volt.reached
SPKING =====

STD # 95N8-A
CAUSTIC DEMAND STD# 139N16B
By McLow 12/8/97

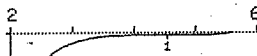
date 97-12-08 time 11:38
GET pH 12 # 173
.10ml/div dPH=1/div
start V .000 ml



date 97-12-08 time 11:53
GET pH 12 # 175
Id.#1 1
Id.#2 .1994
pH(init) 5.62
V/ml pH
EP1 .006 -4.55
stop volt.reached
=====

BLANK
RSM

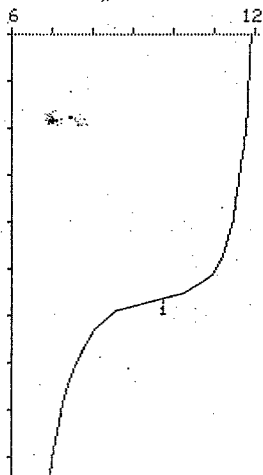
date 97-12-08 time 11:53
GET pH 12 # 175
.10ml/div dPH=1/div
start V .000 ml



date 97-12-08 time 12:49
GET pH 12 # 178
Id.#1 1
Id.#2 .1994
pH(init) 11.88
V/ml pH
EP1 .560 9.73
manual stop
=====

SP77002267 SMPCL 1.5ml
+ 250ml 95N8A

date 97-12-08 time 12:49
GET pH 12 # 178
.10ml/div dPH=1/div
start V .000 ml



594700 2268 smpl

1.5 mL +

.200 mL 95N8A

date 97-12-08 time 15:28
 GET pH 12 # 183
 Id.#1 1
 Id.#2 .1994
 pH(init) 12.03
 V/ml pH
 EP1 .631 10.15
 manual stop

=====

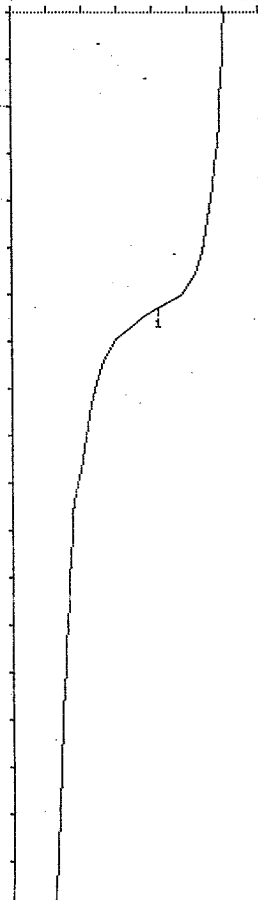
594700 2269 smpl

1.5 mL +

.200 mL 95N8A

date 97-12-08 time 15:29
 GET pH 12 # 183
 .10ml/div Δ pH=1/div
 start V .000 ml

6 13



date 97-12-08 time 15:06
 GET pH 12 # 182
 Id.#1 1
 Id.#2 .1994
 pH(init) 12.04
 V/ml pH
 EP1 .634 9.98
 EP2 .737 8.52
 manual stop

=====

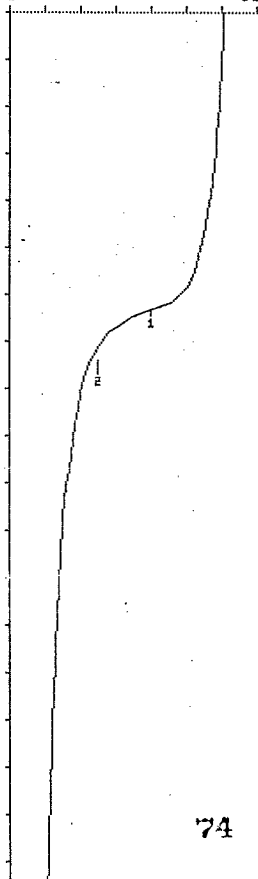
594700 2268 Dup

1.5 mL +

.200 mL 95N8A

date 97-12-08 time 15:06
 GET pH 12 # 182
 .10ml/div Δ pH=1/div
 start V .000 ml

6 13



date 97-12-08 time 13:21
 GET pH 12 # 180
 Id.#1 1
 Id.#2 .1994
 pH(init) 12.03
 V/ml pH
 EP1 .659 9.85
 manual stop

=====

date 97-12-08 time 13:21
 GET pH 12 # 181
 Id.#1 1
 Id.#2 .1994
 pH(init) 6.35
 manual stop

pH

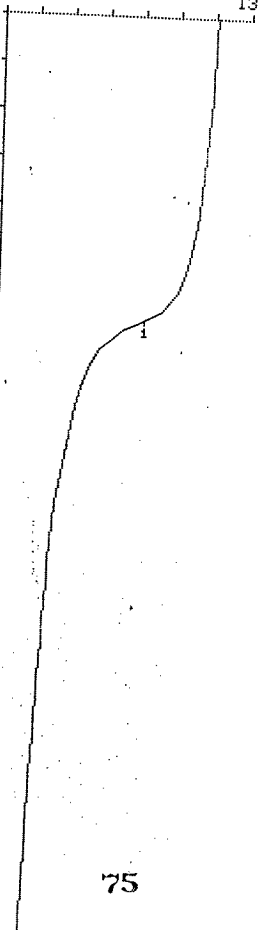
date 97-12-08 time 13:21
 GET pH 12 # 181
 no titration data

date 97-12-08 time 15:44
 GET pH 12 # 184
 Id.#1 1
 Id.#2 .1994
 pH(init) 12.02
 V/ml pH
 EP1 .641 10.15
 manual stop

=====

5947002269 Dup
 1.5 mL +
 .200 mL 95%NSA
 date 97-12-08 time 15:45
 GET pH 12 # 184
 .10ml/div ΔpH=1/div
 start V .000 ml

6 13



LA -211-104 (A-1)

Caustic Demand

		STD	REPLICATE
TYPE	Sample Size in mL (SS)	0.050	
STD	Volume of Hydroxide Spiking Std in mL (V1)	0.050	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
21349	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.172	
OHDEMAND	mol/L	3.20E-01	N/A
MATRIX	Result mol/L =	3.20E-01	
Liquid			
SAMPLE #	Detection Limit =	1.47E-01	
139N16B			
INSTRUMENT CODE	Sample Result =	3.20E-01	
PREPARED BY			
RWS			
CHEMIST			
RWS			
ANALYST			
PJM			
DATE COMPLETED			
12/09/97			
ANALYSIS DATE			
12/08/97			
ANALYSIS TIME			
SAMPLE POINT			
AP-107			

$$\text{mol/L} = ((M1 \cdot V1) - (M2 \cdot V2)) / SS$$

mmol hydroxide spiked = OHsp = Hydroxide Spiking Std. Conc (M) X Vol. Spiking St

mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)

mmol hydroxide consumed = OHcons = OHsp - OHd

Buffering Capacity (M) = OHcons / sample volume (mL)

Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	RWS	Date:	12/09/97
Signature of Chemist:	<i>RWS</i>	Date:	12/9/97

LA -211-104 (A-1)

Caustic Demand

		Sample	REPLICATE
TYPE	Sample Size in mL (SS)	1.500	
Sample	Volume of Hydroxide Spiking Std in mL (V1)	0.200	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
21349	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.659	
OHDEMAND	mol/L	4.65E-02	N/A
MATRIX	Result mol/L =	4.65E-02	
Liquid			
SAMPLE #	Detection Limit =	4.90E-03	
S97T002268			
INSTRUMENT CODE	Sample Result =	4.65E-02	
PREPARED BY			
RWS			
CHEMIST			
RWS			
ANALYST			
PJM			
DATE COMPLETED			
12/09/97			
ANALYSIS DATE			
12/08/97			
ANALYSIS TIME			
SAMPLE POINT			
AP-107			

$$\text{mol/L} = ((M1 \cdot V1) - (M2 \cdot V2)) / SS$$

mmol hydroxide spiked = OHsp = Hydroxide Spiking Std. Conc (M) X Vol. Spiking St

mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)

mmol hydroxide consumed = OHcons = OHsp - OHd

Buffering Capacity (M) = OHcons / sample volume (mL)

Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	RWS	Date:	12/09/97
Signature of Chemist:	<i>Rw Schneider</i>	Date:	12/9/97

LA -211-104 (A-1)

Caustic Demand

		Duplicate	REPLICATE
TYPE	Sample Size in mL (SS)	1.500	
Duplicate	Volume of Hydroxide Spiking Std in mL (V1)	0.200	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
21349	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.634	
OHDEMAND	mol/L	4.98E-02	N/A
MATRIX	Result mol/L =	4.98E-02	
Liquid			
SAMPLE #	Detection Limit =	4.90E-03	
S97T002268			
INSTRUMENT CODE	Sample Result =	4.98E-02	
PREPARED BY			
RWS			
CHEMIST			
RWS			
ANALYST			
PJM			
DATE COMPLETED			
12/09/97			
ANALYSIS DATE			
12/08/97			
ANALYSIS TIME			
SAMPLE POINT			
AP-107			

$$\text{mol/L} = ((M1 \cdot V1) - (M2 \cdot V2)) / SS$$

mmol hydroxide spiked = OHsp = Hydroxide Spiking Std. Conc (M) X Vol. Spiking St

mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)

mmol hydroxide consumed = OHcons = OHsp - OHd

Buffering Capacity (M) = OHcons / sample volume (mL)

Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	RWS	Date:	12/09/97
Signature of Chemist:	<i>R. W. Schneider</i>	Date:	12/9/97

LA -211-104 (A-1)

Caustic Demand

	Sample	REPLICATE
TYPE	Sample Size in mL (SS)	1.500
Sample	Volume of Hydroxide Spiking Std in mL (V1)	0.200
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057
21349	HNO3 Titrant Molarity (M2)	0.1994
TEST CODE	Titrant End Point in mL (V2)	0.631
OHDEMAND	mol/L	5.02E-02
MATRIX	Result mol/L =	5.02E-02
Liquid		
SAMPLE #	Detection Limit =	4.90E-03
S97T002268		
INSTRUMENT CODE	Sample Result =	5.02E-02
PREPARED BY		
RWS		
CHEMIST		
RWS		
ANALYST		
PJM		
DATE COMPLETED		
12/09/97		
ANALYSIS DATE		
12/08/97		
ANALYSIS TIME		
SAMPLE POINT		
AP-107		

$$\text{mol/L} = ((M1 \cdot V1) - (M2 \cdot V2)) / SS$$

mmol hydroxide spiked = OHsp = Hydroxide Spiking Std. Conc (M) X Vol. Spiking St

mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)

mmol hydroxide consumed = OHcons = OHsp - OHd

Buffering Capacity (M) = OHcons / sample volume (mL)

Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	RWS	Date:	12/09/97
Signature of Chemist:	<i>RWS</i>	Date:	12/9/97

HNF-SD-WM-DP-276, REV. 0

LA -211-104 (A-1)

Caustic Demand

		Duplicate	REPLICATE
TYPE	Sample Size in mL (SS)	1.500	
Duplicate	Volume of Hydroxide Spiking Std in mL (V1)	0.200	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
21349	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.641	
OHDEMAND	mol/L	4.89E-02	N/A
MATRIX	Result mol/L =	4.89E-02	
Liquid			
SAMPLE #	Detection Limit =	4.90E-03	
S97T002268			
INSTRUMENT CODE	Sample Result =	4.89E-02	
PREPARED BY			
RWS			
CHEMIST			
RWS			
ANALYST			
PJM			
DATE COMPLETED			
12/09/97			
ANALYSIS DATE			
12/08/97			
ANALYSIS TIME			
SAMPLE POINT			
AP-107			

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydroxide spiked = OHsp = Hydroxide Spiking Std. Conc (M) X Vol. Spiking St

mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)

mmol hydroxide consumed = OHcons = OHsp - OHd

Buffering Capacity (M) = OHcons / sample volume (mL)

Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	RWS	Date:	12/09/97
Signature of Chemist:	<i>RWS</i>	Date:	12/9/97

LABCORE Completed Worklist Report for Worklist# 21362

Analyst: pjm

Instrument: PH01

Book# 139N16B

Method: LA 211-104 Rev/Mod B-0

Worklist Comment: AP-104 & AP-107 OHDEMAND *RERUN* use ~1.5mL sample size

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1. BLANK	0	OHDEMAND	LIQUID	1	OK		Ratio
2 STD	0	OHDEMAND	LIQUID	3.302e-1	3.40E-01	102.968 % Recovery	
3. SAMPLE	S97T002273 0	OHDEMAND	LIQUID	N/A	5.34E-02	4.90e-003 moles OH-/L	
4 DUP	S97T002273 0	OHDEMAND	LIQUID	5.34E-02	5.22E-02	2.273 RPD	
5. SAMPLE	S97T002274 0	OHDEMAND	LIQUID	N/A	5.74E-02	4.90e-003 moles OH-/L	
6 DUP	S97T002274 0	OHDEMAND	LIQUID	5.74E-02	5.73E-02	0.174 RPD	
7. SAMPLE	S97T002275 0	OHDEMAND	LIQUID	N/A	5.78E-02	4.90e-003 moles OH-/L	
8 DUP	S97T002275 0	OHDEMAND	LIQUID	5.78E-02	5.47E-02	5.511 RPD	
9. SAMPLE	S97T002325 0	OHDEMAND	LIQUID	N/A	4.73E-02	4.90e-003 moles OH-/L	
10 DUP	S97T002325 0	OHDEMAND	LIQUID	4.73E-02	5.25E-02	10.421 RPD	

Final page for worklist# 21362

Analyst Signature

Date

Susan Bee 12/10/97
Analyst Signature Date

R.W. Schneider 12/10/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 21362

Analyst: RLM Instrument: PH01 Book# 139N16B
Method: LA-211-104 Rev/Mod B-0 SPK STD # 95N8A
Worklist Comment: AP-104 & AP-107 OHDEMAND *RERUN* use ~1.5mL sample size

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK				OHDEMAND LIQUID		
2 STD				OHDEMAND LIQUID		
3 SAMPLE	S97T002273 0		OHDEMAND LIQUID		97000724	AP-104 GRAB
	Analytes Requested: OHDEMAND					
4 DUP	S97T002273 0		OHDEMAND LIQUID			
5 SAMPLE	S97T002274 0		OHDEMAND LIQUID		97000725	AP-104 GRAB
	Analytes Requested: OHDEMAND					
6 DUP	S97T002274 0		OHDEMAND LIQUID			
7 SAMPLE	S97T002275 0		OHDEMAND LIQUID		97000726	AP-104 GRAB
	Analytes Requested: OHDEMAND					
8 DUP	S97T002275 0		OHDEMAND LIQUID			
9 SAMPLE	S97T002325 0		OHDEMAND LIQUID		97000649	AP-107 GRAB
	Analytes Requested: OHDEMAND					
10 DUP	S97T002325 0		OHDEMAND LIQUID			

Final page for worklist # 21362

RLM 12/9/97
Analyst Signature Date

Analyst Signature Date

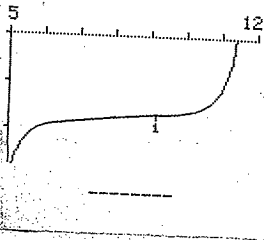
Data Entry Comments:

calibration data
date 97-12-09
pH(S) 1 7.00
pH(S) 2 10.00
t.cal. 23.0 °C
slope(rel) 1.009
U(as) -9.5 mV
electr. input 1
=====

date 97-12-09 time 11:08
GET pH 12 # 185
Id.#1 1
Id.#2 .1994
pH(init) 11.38
V/ml pH
EP1 .167 9.16
stop volt.reached
=====

CAUSTIC DEMAND STD 139N168
SPK STD 95N8A
.050ML STD + .050ML SPK
Re-Measure 12/9/97

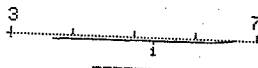
date 97-12-09 time 11:08
GET pH 12 # 185
.10ml/div ΔpH=1/div
start V .000 ml



date 97-12-09 time 11:11
GET pH 12 # 186
Id.#1 1
Id.#2 .1994
pH(init) 6.69
V/ml pH
EP1 .006 5.31
stop volt.reached
=====

BLANK Run

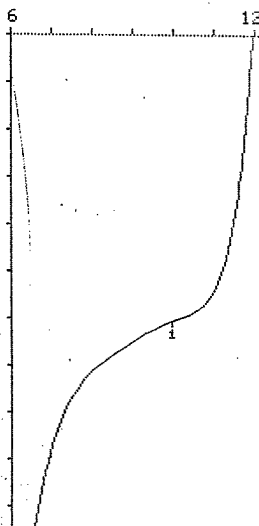
date 97-12-09 time 11:11
GET pH 12 # 186
.10ml/div ΔpH=1/div
start V .000 ml



date 97-12-09 time 11:31
GET pH 12 # 187
Id.#1 1
Id.#2 .1994
pH(init) 11.93
V/ml pH
EP1 .607 9.94
stop volt.reached
=====

597002273 5MPL
1.5ml + .200ML
95N8A Run

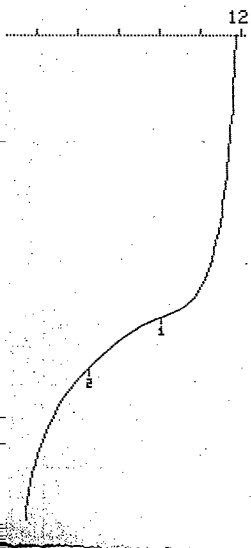
date 97-12-09 time 11:31
GET pH 12 # 187
.10ml/div ΔpH=1/div
start V .000 ml



date 97-12-09 time 12:38
 GET pH 12 # 193
 Id.#1 1
 Id.#2 .1994
 pH(init) 11.85
 V/ml pH
 EP1 .597 9.94
 EP2 .704 8.16
 top volt. reached
 =====

275 Dup
 5ml + .200ml 95N8A

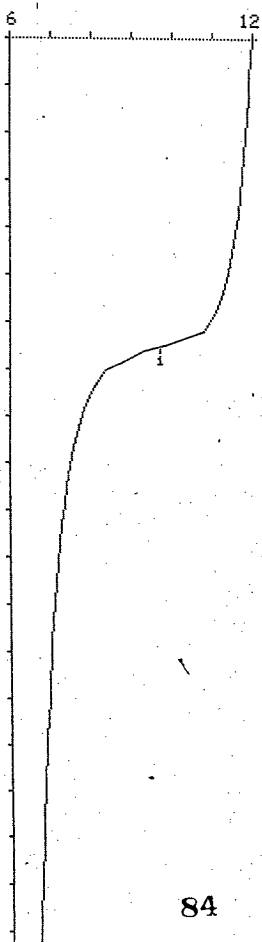
date 97-12-09 time 12:38
 GET pH 12 # 193
 .10ml/div Δ pH=1/div
 start V .000 ml



date 97-12-09 time 12:55
 GET pH 12 # 194
 Id.#1 1
 Id.#2 .1994
 pH(init) 11.97
 V/ml pH
 EP1 .653 9.71
 manual stop
 =====

597T002325
 1.5 ml + .200 ml
 95N8A

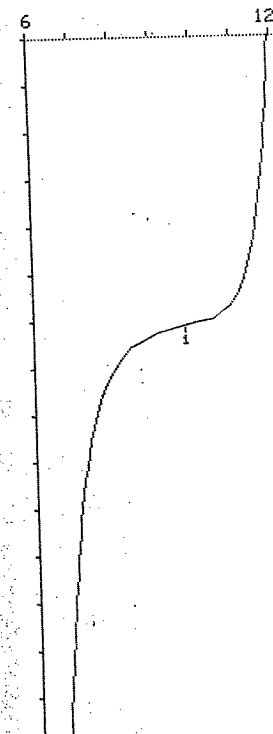
date 97-12-09 time 12:55
 GET pH 12 # 194
 .10ml/div Δ pH=1/div
 start V .000 ml



date 97-12-09 time 13:07
 GET pH 12 # 195
 Id.#1 1
 Id.#2 .1994
 pH(init) 11.93
 V/ml pH
 EP1 .614 9.76
 manual stop
 =====

2325 Dup
 1.5 ml + .200 ml
 95N8A

date 97-12-09 time 13:08
 GET pH 12 # 195
 .10ml/div Δ pH=1/div
 start V .000 ml



HNF-SD-WM-DP-276, REV. 0

LA -211-104 (A-1)

Caustic Demand

		STANDARD	REPLICATE
TYPE	Sample Size in mL (SS)	0.050	
STANDARD	Volume of Hydroxide Spiking Std in mL (V1)	0.050	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
21362	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.167	
OHDEMAND	mol/L	3.40E-01	N/A
MATRIX	Result mol/L =	3.40E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-01	
STANDARD			
INSTRUMENT CODE	Sample Result =	3.40E-01	
PREPARED BY			
SKB			
CHEMIST			
RWS			
ANALYST			
PJM			
DATE COMPLETED			
12/12/97 RWS			
ANALYSIS DATE			
12/09/97			
ANALYSIS TIME			
02:30 PM			
SAMPLE POINT			
AP-104			

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydroxide spiked = OHsp = Hydroxide Spiking Std. Conc (M) X Vol. Spiking St

mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)

mmol hydroxide consumed = OHcons = OHsp - OHd

Buffering Capacity (M) = OHcons / sample volume (mL)

Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	SKB	Date:	12/12/97
Signature of Chemist:	<i>Paul Schmitt</i>	Date:	12/10/97

LA-211-104 (A-1)

Caustic Demand

	SAMPLE	REPLICATE
TYPE	Sample Size in mL (SS)	1.500
SAMPLE	Volume of Hydroxide Spiking Std in mL (V1)	0.200
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057
21362	HNO3 Titrant Molarity (M2)	0.1994
TEST CODE	Titrant End Point in mL (V2)	0.653
OHDEMAND	mol/L	4.73E-02
MATRIX	Result mol/L =	4.73E-02
LIQUID		
SAMPLE #	Detection Limit =	4.90E-03
S97T002325		
INSTRUMENT CODE	Sample Result =	4.73E-02
PREPARED BY		
SKB		
CHEMIST		
RWS		
ANALYST		
PJM		
DATE COMPLETED		
12/12/97 RWS		
ANALYSIS DATE		
12/09/97		
ANALYSIS TIME		
02:30 PM		
SAMPLE POINT		
AP-104		

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydroxide spiked = OHsp = Hydroxide Spiking Std. Conc (M) X Vol. Spiking St

mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)

mmol hydroxide consumed = OHcons = OHsp - OHd

Buffering Capacity (M) = OHcons / sample volume (mL)

Buffering Capacity (moles/kg) = OHcons / Sample mass (g)

Data Entered by: SKB Date: 12/12/97

Signature of Chemist: *RWS* Date: 12/10/97

LA-211-104 (A-1)

Caustic Demand

		DUP	REPLICATE
TYPE	Sample Size in mL (SS)	1.500	
DUP	Volume of Hydroxide Spiking Std in mL (V1)	0.200	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
21362	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.614	
OHDEMAND	mol/L	5.25E-02	N/A
MATRIX	Result mol/L =	5.25E-02	
LIQUID			
SAMPLE #	Detection Limit =	4.90E-03	
S97T002325			
INSTRUMENT CODE	Sample Result =	5.25E-02	
PREPARED BY			
SKB			
CHEMIST			
RWS			
ANALYST			
PJM			
DATE COMPLETED			
12/12/97 RWS			
ANALYSIS DATE			
12/09/97			
ANALYSIS TIME			
02:30 PM			
SAMPLE POINT			
AP-104			

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydroxide spiked = OHsp = Hydroxide Spiking Std. Conc (M) X Vol. Spiking St

mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)

mmol hydroxide consumed = OHcons = OHsp - OHd

Buffering Capacity (M) = OHcons / sample volume (mL)

Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	SKB	Date:	12/12/97
Signature of Chemist:	<i>RWS</i>	Date:	12/10/97

LABCORE Completed Worklist Report for Worklist# 21176

Analyst: adp

Instrument: IC01

Book# 102A20B

Method: 1A-533-105 Rev/Mod E-0

Worklist Comment: AP-107 GRAB, IC. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	0	01C-QC	F	QC	1	<1.20e-2	ug/mL
1 CCB	0	0	01C-QC	CL	QC	1	<1.70e-2	ug/mL
1 CCB	0	0	01C-QC	NO2	QC	1	<1.08e-1	ug/mL
1 CCB	0	0	01C-QC	BR	QC	1	<1.25e-1	ug/mL
1 CCB	0	0	01C-QC	NO3	QC	1	<1.39e-1	ug/mL
1 CCB	0	0	01C-QC	P04	QC	1	<1.20e-1	ug/mL
1 CCB	0	0	01C-QC	S04	QC	1	<1.38e-1	ug/mL
1 CCB	0	0	01C-QC	OXALATE2	QC	1	<1.05e-1	ug/mL
2 CCV	0	0	01C-QC	F	QC	5.30e1	5.94e+01	100.678 % Recovery
2 CCV	0	0	01C-QC	CL	QC	8.00e1	7.87e+01	98.375 % Recovery
2 CCV	0	0	01C-QC	NO2	QC	5.42e2	5.31e+02	97.970 % Recovery
2 CCV	0	0	01C-QC	BR	QC	5.89e2	5.66e+02	96.095 % Recovery
2 CCV	0	0	01C-QC	NO3	QC	5.94e2	5.94e+02	98.316 % Recovery
2 CCV	0	0	01C-QC	P04	QC	5.45e2	5.18e+02	95.046 % Recovery
2 CCV	0	0	01C-QC	S04	QC	6.32e2	6.23e+02	98.576 % Recovery
2 CCV	0	0	01C-QC	OXALATE2	QC	5.34e2	5.10e+02	95.506 % Recovery
3 SAMPLE	S97T002267	0	01C-01	F-02	LIQUID	N/A	5.002e+03	61.810 ug/mL
3 SAMPLE	S97T002267	0	01C-01	CL-02	LIQUID	N/A	2.528e+02	87.570 ug/mL
3 SAMPLE	S97T002267	0	01C-01	NO2-02	LIQUID	N/A	2.025e+03	556.300 ug/mL
3 SAMPLE	S97T002267	0	01C-01	BR-02	LIQUID	N/A	6.439e+02	643.900 ug/mL
3 SAMPLE	S97T002267	0	01C-01	NO3-02	LIQUID	N/A	6.460e+03	716.000 ug/mL
3 SAMPLE	S97T002267	0	01C-01	P04-02	LIQUID	N/A	6.181e+02	618.100 ug/mL
3 SAMPLE	S97T002267	0	01C-01	S04-02	LIQUID	N/A	7.525e+02	710.800 ug/mL
3 SAMPLE	S97T002267	0	01C-01	OXALATE2	LIQUID	N/A	5.409e+02	540.900 ug/mL
4 DUP	S97T002267	0	01C-01	F-02	LIQUID	5.00e+03	5.01e+03	0.200 RPD
4 DUP	S97T002267	0	01C-01	CL-02	LIQUID	2.53e+02	2.55e+02	0.787 RPD
4 DUP	S97T002267	0	01C-01	NO2-02	LIQUID	2.02e+03	2.08e+03	2.927 RPD
4 DUP	S97T002267	0	01C-01	BR-02	LIQUID	<6.44e2	<6.44e2	RPD
4 DUP	S97T002267	0	01C-01	NO3-02	LIQUID	6.46e+03	6.51e+03	0.771 RPD
4 DUP	S97T002267	0	01C-01	P04-02	LIQUID	<6.18e2	<6.18e2	RPD
4 DUP	S97T002267	0	01C-01	S04-02	LIQUID	7.52e+02	<7.11e2	RPD
4 DUP	S97T002267	0	01C-01	OXALATE2	LIQUID	<5.41e2	<5.41e2	RPD
5 SPK	S97T002267	0	01C-01	F-02	LIQUID	5.30e1	3.89e+01	65.932 % Recovery
5 SPK	S97T002267	0	01C-01	CL-02	LIQUID	8.00e1	7.52e+01	94.000 % Recovery
5 SPK	S97T002267	0	01C-01	NO2-02	LIQUID	5.42e2	5.06e+02	93.358 % Recovery
5 SPK	S97T002267	0	01C-01	BR-02	LIQUID	5.89e2	5.72e+02	97.114 % Recovery
5 SPK	S97T002267	0	01C-01	NO3-02	LIQUID	5.94e2	5.69e+02	95.791 % Recovery
5 SPK	S97T002267	0	01C-01	P04-02	LIQUID	5.45e2	5.24e+02	96.147 % Recovery
5 SPK	S97T002267	0	01C-01	S04-02	LIQUID	6.32e2	6.07e+02	96.044 % Recovery
5 SPK	S97T002267	0	01C-01	OXALATE2	LIQUID	5.34e2	5.12e+02	95.880 % Recovery

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

LABCORE Completed Worklist Report for Worklist# 21176

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

Final page for worklist# 21176

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

James M. Faye 11/24/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 21176

Analyst: ADP Instrument: IC0 1 Book# 102N20B

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

Worklist Comment: AP-107 GRAB, IC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S97T002267 0		@IC-01	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02					
4 DUP	S97T002267 0		@IC-01	LIQUID		
5 SPK	S97T002267 0		@IC-01	LIQUID		

Final page for worklist # 21176

See attached original

Analyst Signature Date

Analyst Signature Date

uploaded 11-24-97

John Warrill
21176NOV.CSV

Validated 11/24/97 JMF

Data Entry Comments:

11/14/97 11:31
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 21176

Analyst: ADP Instrument: IC0 _____ Book# 102N20-BMethod: LA-533-105 Rev/Mod EO

Worklist Comment: AP-107 GRAB, IC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S97T002267 0		@IC-01	LIQUID	97000649	AP-107 GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
4 DUP	S97T002267 0		@IC-01	LIQUID		
5 SPK	S97T002267 0		@IC-01	LIQUID		
6 SAMPLE	S97T002268 0		@IC-01	LIQUID	97000649	AP-107 GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
7 DUP	S97T002268 0		@IC-01	LIQUID		
8 SPK	S97T002268 0		@IC-01	LIQUID		
9 SAMPLE	S97T002269 0		@IC-01	LIQUID	97000649	AP-107 GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
10 DUP	S97T002269 0		@IC-01	LIQUID		
11 SPK	S97T002269 0		@IC-01	LIQUID		

Moved to
another
worklist
due to
instrument
problem with
injector valve. JM

Final page for worklist # 21176

Adrian P. Smith 11-16-97
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

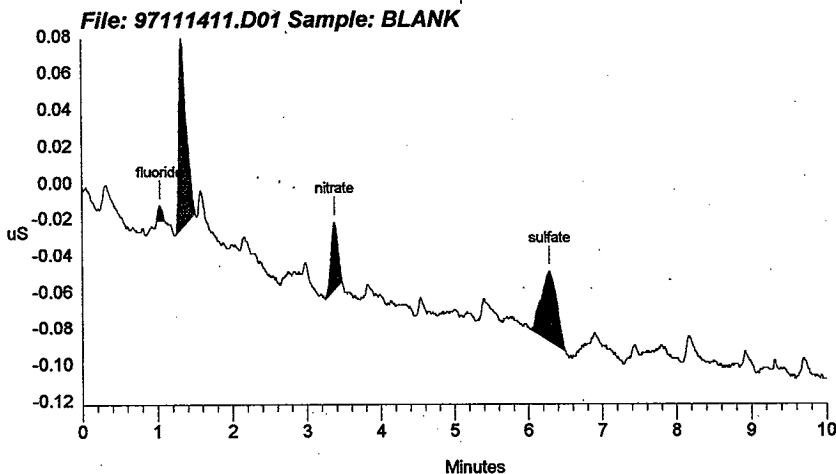
S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Sample Name: BLANK Date: 11/16/1997 01:16:35
 Data File : C:\DX\DATA\97111411.D01
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 1 Detector: CDM-1
 Analyst : *Residing for J.F.* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
external	1	1	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.03	fluoride	0.007	8	32	1	2.31
2	1.33		0.000	102	691	1	
3	3.38	nitrate	0.051	36	233	1	1.50
4	6.29	sulfate	-0.050	39	560	1	0.00
Totals			0.008	185	1515		



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 92 TO 96.

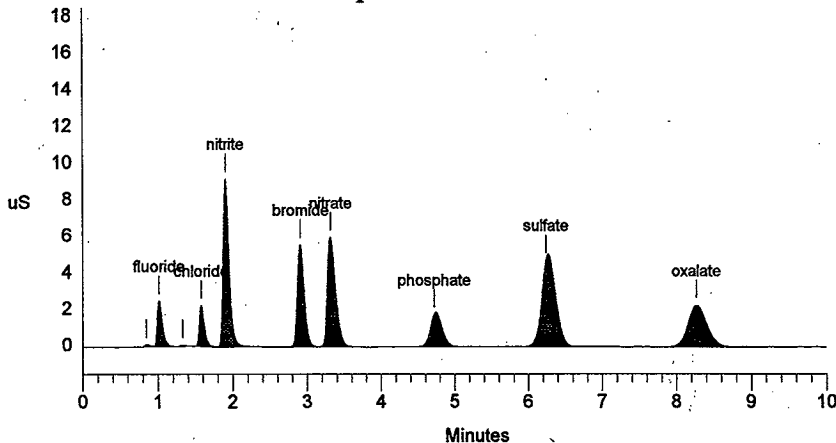
Sample Name: STD 102N20-B Date: 11/16/1997 01:34:46
 Data File : C:\DX\DATA\97111411.D02
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 2 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	103	464	2	
2	1.01	fluoride	59.409	100.69	11868	2	0.33
3	1.33		0.000	85	486	1	
4	1.57	chloride	78.709	98.39	10313	1	-0.42
5	1.90	nitrite	531.345	98.34	49396	1	-1.04
6	2.91	bromide	566.211	96.13	35159	1	-0.46
7	3.31	nitrate	583.976	98.31	45964	1	-0.50
8	4.72	phosphate	517.507	94.96	20811	1	-0.56
9	6.24	sulfate	623.296	98.62	65803	1	-0.85
10	8.27	oxalate	510.239	96.21	40171	1	0.00
Totals			3470.691	34462	280434		

File: 97111411.D02 Sample: STD 102N20-B



SS = 101

=====

Sample Name: S97T002267 SAM	Date: 11/16/1997 02:22:08
Data File : C:\DX\DATA\97111411.D05	
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 5	Detector: CDM-1
Analyst :	Column: AG4A/AS4A anion column

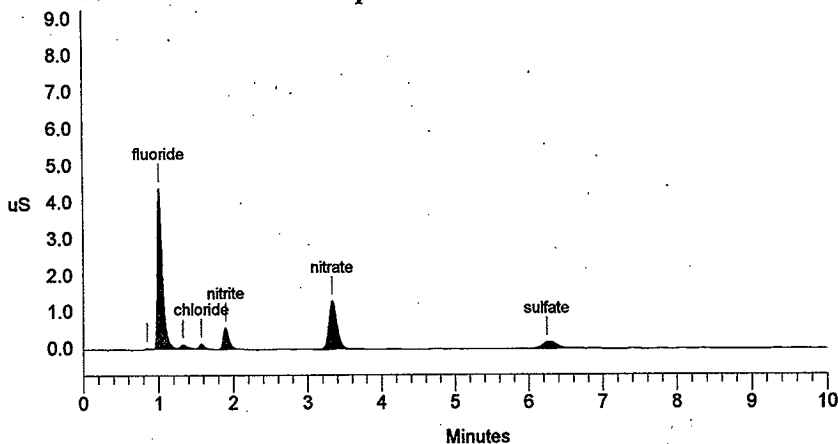
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Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	17	58	1	
2	1.01	fluoride	5001.962	4382	19833	2	0.33
3	1.32		0.000	100	630	2	
4	1.57	chloride	252.762	129	555	1	-0.84
5	1.89	nitrite	2025.019	577	2933	1	-1.39
6	3.33	nitrate	6459.651	1313	9729	1	-0.10
7	6.24	sulfate	752.535	174	2590	1	-0.85
Totals			14491.929	6693	36327		

File: 97111411.D05 Sample: S97T002267 SAM



SS .100-10-.200-10

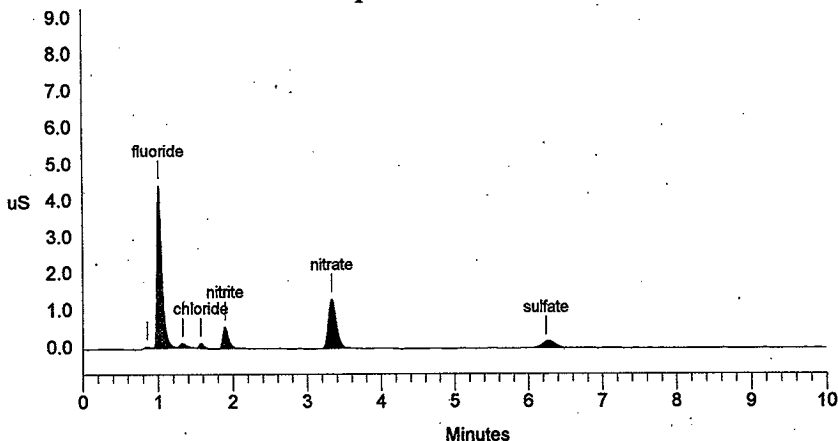
Sample Name: S97T002267 DUP Date: 11/16/1997 02:34:14
 Data File : C:\DX\DATA\97111411.D06
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 6 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	24	102	2	
2	1.01	fluoride	5012.045	4433	19874	2	0.33
3	1.33		0.000	118	687	2	
4	1.57	chloride	255.223	130	562	1	-0.84
5	1.89	nitrite	2079.383	587	3033	1	-1.39
6	3.33	nitrate	6507.215	1331	9802	1	0.10
7	6.24	sulfate	574.263	171	2232	1	-0.85
Totals			14428.129	6794	36292		

File: 97111411.D06 Sample: S97T002267 DUP



SS 100-10-200
 200-10

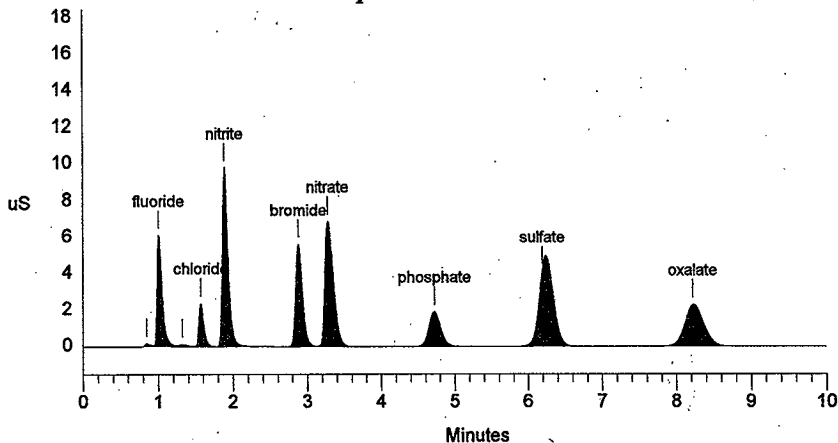
Sample Name: S97T002267 SPK Date: 11/16/1997 02:46:04
 Data File : C:\DX\DATA\97111411.D07
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 7 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	122	534	2	
2	1.01	fluoride	6967.245	6080	27908	2	-0.33
3	1.32		0.000	98	642	2	
4	1.57	chloride	4051.687	2349	10411	1	-0.84
5	1.89	nitrite	27583.219	9775	50297	1	-1.74
6	2.88	bromide	28887.517	5599	35172	1	-1.37
7	3.27	nitrate	35209.604	6836	54510	1	-1.70
8	4.72	phosphate	26463.002	1890	20869	1	-0.56
9	6.19	sulfate	31388.851	4108	64978	1	-1.69
10	8.21	oxalate	25879.218	2268	39946	1	-0.65
Totals			186430.343	39124	305267		

File: 97111411.D07 Sample: S97T002267 SPK



SS 100-10 - 200-10

LABCORE Completed Worklist Report for Worklist# 21231

Analyst: adp

Instrument: IC01

Book# 1022620C

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

Worklist Comment: AP-107 GRAB (USE 5151 DF) \$SLP\$

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	QIC-QC F	QC	1	<1.20e-2		ug/mL
1 CCB	0	QIC-QC CL	QC	1	<1.70e-2		ug/mL
1 CCB	0	QIC-QC NO2	QC	1	<1.08e-1		ug/mL
1 CCB	0	QIC-QC BR	QC	1	<1.25e-1		ug/mL
1 CCB	0	QIC-QC NO3	QC	1	<1.39e-1		ug/mL
1 CCB	0	QIC-QC PO4	QC	1	<1.20e-1		ug/mL
1 CCB	0	QIC-QC SO4	QC	1	<1.38e-1		ug/mL
1 CCB	0	QIC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2 CCV	0	QIC-QC F	QC	5.90e1	6.03e+01	102.203 % Recovery	
2 CCV	0	QIC-QC CL	QC	8.00e1	8.44e+01	105.500 % Recovery	
2 CCV	0	QIC-QC NO2	QC	5.42e2	5.33e+02	98.339 % Recovery	
2 CCV	0	QIC-QC BR	QC	5.89e2	5.79e+02	98.302 % Recovery	
2 CCV	0	QIC-QC NO3	QC	5.94e2	6.02e+02	101.347 % Recovery	
2 CCV	0	QIC-QC PO4	QC	5.45e2	5.30e+02	97.248 % Recovery	
2 CCV	0	QIC-QC SO4	QC	6.12e2	6.24e+02	98.734 % Recovery	
2 CCV	0	QIC-QC OXALATE2	QC	5.34e2	5.33e+02	99.813 % Recovery	
3 SAMPLE	S97T002268 0	QIC-01 F-02	LIQUID	N/A	5.288e+03	61.810	ug/mL
3 SAMPLE	S97T002268 0	QIC-01 CL-02	LIQUID	N/A	3.068e+02	87.570	ug/mL
3 SAMPLE	S97T002268 0	QIC-01 NO2-02	LIQUID	N/A	2.119e+03	556.300	ug/mL
3 SAMPLE	S97T002268 0	QIC-01 BR-02	LIQUID	N/A	< 6.439e+02	643.900	ug/mL
3 SAMPLE	S97T002268 0	QIC-01 NO3-02	LIQUID	N/A	< 6.862e+03	716.000	ug/mL
3 SAMPLE	S97T002268 0	QIC-01 PO4-02	LIQUID	N/A	< 6.181e+02	618.100	ug/mL
3 SAMPLE	S97T002268 0	QIC-01 SO4-02	LIQUID	N/A	< 7.108e+02	710.800	ug/mL
3 SAMPLE	S97T002268 0	QIC-01 OXALATE2	LIQUID	N/A	6.019e+02	540.900	ug/mL
4 DUP	S97T002268 0	QIC-01 F-02	LIQUID	5.29e+03	5.31e+03	0.377	RPD
4 DUP	S97T002268 0	QIC-01 CL-02	LIQUID	3.07e+02	2.98e+02	2.975	RPD
4 DUP	S97T002268 0	QIC-01 NO2-02	LIQUID	2.12e+03	2.12e+03	0.000	RPD
4 DUP	S97T002268 0	QIC-01 BR-02	LIQUID	<6.44e2	<6.44e2		RPD
4 DUP	S97T002268 0	QIC-01 NO3-02	LIQUID	6.86e+03	6.92e+03	0.871	RPD
4 DUP	S97T002268 0	QIC-01 PO4-02	LIQUID	<6.18e2	<6.18e2		RPD
4 DUP	S97T002268 0	QIC-01 SO4-02	LIQUID	<7.11e2	<7.11e2		RPD
4 DUP	S97T002268 0	QIC-01 OXALATE2	LIQUID	6.02e+02	<5.41e2		RPD
5 SPK	S97T002268 0	QIC-01 F-02	LIQUID	5.90e1	5.85e+01	99.153 % Recovery	
5 SPK	S97T002268 0	QIC-01 CL-02	LIQUID	8.00e1	7.80e+01	97.500 % Recovery	
5 SPK	S97T002268 0	QIC-01 NO2-02	LIQUID	5.42e2	5.14e+02	94.834 % Recovery	
5 SPK	S97T002268 0	QIC-01 BR-02	LIQUID	5.89e2	5.82e+02	98.812 % Recovery	
5 SPK	S97T002268 0	QIC-01 NO3-02	LIQUID	5.94e2	5.85e+02	98.485 % Recovery	
5 SPK	S97T002268 0	QIC-01 PO4-02	LIQUID	5.45e2	5.35e+02	98.165 % Recovery	
5 SPK	S97T002268 0	QIC-01 SO4-02	LIQUID	6.32e2	6.34e+02	100.316 % Recovery	
5 SPK	S97T002268 0	QIC-01 OXALATE2	LIQUID	5.34e2	5.01e+02	93.820 % Recovery	
6 SAMPLE	S97T002268 0	QIC-01 F-02	LIQUID	N/A	5.006e+03	61.810	ug/mL

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

LABCORE Completed Worklist Report for Worklist# 21231

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SAMPLE	S97T002269	0	⊗IC-01 NO2-02	LIQUID	N/A	2.058e+03	556.300	ug/mL
6 SAMPLE	S97T002269	0	⊗IC-01 BR-02	LIQUID	N/A <	6.439e+02	643.900	ug/mL
6 SAMPLE	S97T002269	0	⊗IC-01 NO3-02	LIQUID	N/A	6.461e+03	716.000	ug/mL
6 SAMPLE	S97T002269	0	⊗IC-01 PO4-02	LIQUID	N/A <	6.181e+02	618.100	ug/mL
6 SAMPLE	S97T002269	0	⊗IC-01 SO4-02	LIQUID	N/A	7.146e+02	710.800	ug/mL
6 SAMPLE	S97T002269	0	⊗IC-01 OXALATE2	LIQUID	N/A	7.907e+02	540.900	ug/mL
7 DUP	S97T002269	0	⊗IC-01 F-02	LIQUID	5.01e+03	5.07e+03	1.190	RPD
7 DUP	S97T002269	0	⊗IC-01 CL-02	LIQUID	5.44e+02	2.99e+02	58.126	RPD
7 DUP	S97T002269	0	⊗IC-01 NO2-02	LIQUID	2.06e+03	2.03e+03	1.467	RPD
7 DUP	S97T002269	0	⊗IC-01 BR-02	LIQUID	<6.44e2	<6.44e2		RPD
7 DUP	S97T002269	0	⊗IC-01 NO3-02	LIQUID	6.46e+03	6.24e+03	3.465	RPD
7 DUP	S97T002269	0	⊗IC-01 PO4-02	LIQUID	<6.18e2	7.32e+02		RPD
7 DUP	S97T002269	0	⊗IC-01 SO4-02	LIQUID	7.15e+02	<7.11e2		RPD
7 DUP	S97T002269	0	⊗IC-01 OXALATE2	LIQUID	7.91e+02	<5.41e2		RPD
8 SPK	S97T002269	0	⊗IC-01 F-02	LIQUID	5.90e1	5.35e+01	107.627	% Recovery
8 SPK	S97T002269	0	⊗IC-01 CL-02	LIQUID	8.00e1	7.27e+01	90.875	% Recovery
8 SPK	S97T002269	0	⊗IC-01 NO2-02	LIQUID	5.42e2	5.29e+02	97.601	% Recovery
8 SPK	S97T002269	0	⊗IC-01 BR-02	LIQUID	5.89e2	5.64e+02	95.756	% Recovery
8 SPK	S97T002269	0	⊗IC-01 NO3-02	LIQUID	5.94e2	5.77e+02	97.138	% Recovery
8 SPK	S97T002269	0	⊗IC-01 PO4-02	LIQUID	5.45e2	5.26e+02	96.514	% Recovery
8 SPK	S97T002269	0	⊗IC-01 SO4-02	LIQUID	6.32e2	6.09e+02	96.351	% Recovery
8 SPK	S97T002269	0	⊗IC-01 OXALATE2	LIQUID	5.34e2	5.08e+02	95.131	% Recovery

Final page for worklist# 21231

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

[Signature]
Reviewer Signature _____ Date 11/24/97

11/21/97 10:35
A-0004-1

HNF-SD-WM-DP-276, REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 21231

Analyst: ADP Instrument: IC0 1 Book# 102N20C

Method: LA-533-105 Rev/Mod E-0

Worklist Comment: AP-107 GRAB (USE 5151 DF) \$SLP\$

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S97T002268 0		@IC-01	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02					
4 DUP	S97T002268 0		@IC-01	LIQUID		
5 SPK	S97T002268 0		@IC-01	LIQUID		
6 SAMPLE	S97T002269 0		@IC-01	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02					
7 DUP	S97T002269 0		@IC-01	LIQUID		
8 SPK	S97T002269 0		@IC-01	LIQUID		

Final page for worklist # 21231

Anthony Pirelli 11-21-97
Analyst Signature Date

Analyst Signature Date

uploaded 11-24-97

JH Howell

21231NOV.CSV

S97T002269 CI was rejected due to high RPD - rest
was validated. Re run on WKL 21248

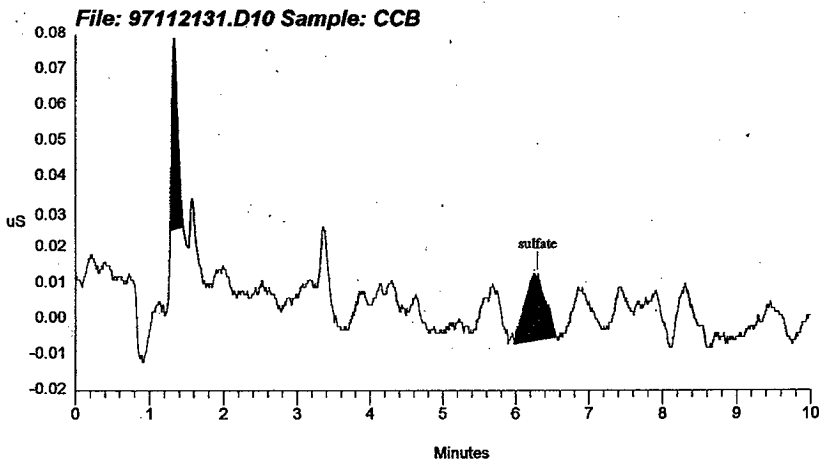
Data Entry Comments:

Sample Name: CCB Date: 11/21/1997 10:29:41
 Data File : C:\DX\DATA\97112131.D10
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 10 Detector: CDM-1
 Analyst *John Doe for JF* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.33		0.000	54	295	1	
2	6.29	sulfate	-0.069	18	364	1	0.00
Totals			-0.069	72	659		



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 100 TO 107

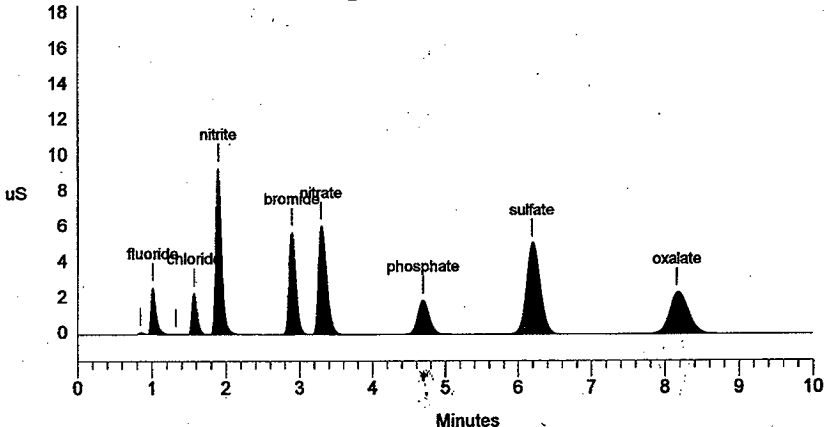
Sample Name: STD 102N20-C Date: 11/21/1997 10:55:06
 Data File : C:\DX\DATA\97112131.D11
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 11 Detector: CDM-1
 Analyst : *Chlorine* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	88	368	2	
2	1.01	fluoride	60.259	2599	12041	2	0.33
3	1.32		0.000	34	171	1	
4	1.57	chloride	84.386	2329	11075	1	-0.84
5	1.89	nitrite	532.814	9347	49535	1	-1.39
6	2.89	bromide	579.175	5704	35993	1	-0.91
7	3.29	nitrate	601.872	6059	47398	1	-1.10
8	4.69	phosphate	529.947	1919	21329	1	-1.12
9	6.19	sulfate	623.951	5056	65872	1	-1.69
10	8.16	oxalate	533.132	2322	42010	1	-1.29
Totals			3545.536	35457	285793		

File: 97112131.D11 Sample: STD 102N20-C



Data Reprocessed On 11/24/1997 14:46:15

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=====
Sample Name: S97T002268 SAM                      Date: 11/21/1997 11:25:15
Data File  : F:\DATA\97112131.D12
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 12              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

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=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
=====
External          1          5151    3000  5Hz   0.00 10.00          30
=====

```

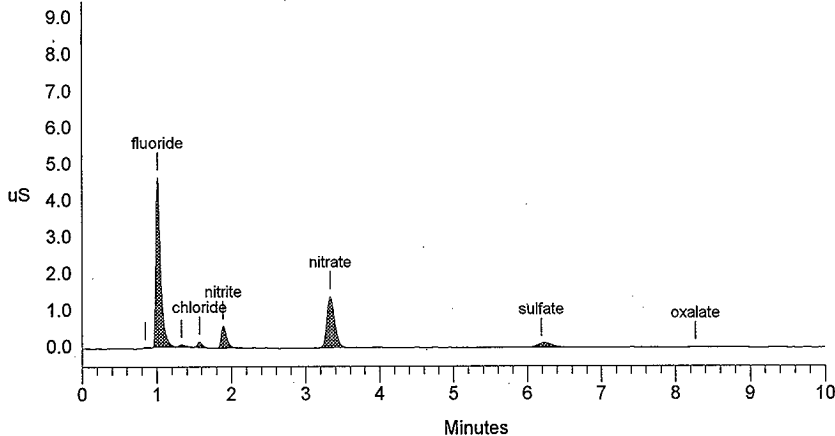
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***** Peak Report: All Peaks *****
=====

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Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	12	32	1	
2	1.01	fluoride	5288.284	4639	21001	2	0.33
3	1.33		0.000	65	408	2	
4	1.57	chloride	306.772	154	694	1	-0.84
5	1.89	nitrite	2118.855	593	3106	1	-1.74
6	3.33	nitrate	6862.481	1397	10348	1	0.10
7	6.19	sulfate	331.242	106	1744	1	-1.69
8	8.27	oxalate	601.926	13	269	1	0.00
Totals			15509.561	6979	37602		

File: 97112131.D12 Sample: S97T002268 SAM



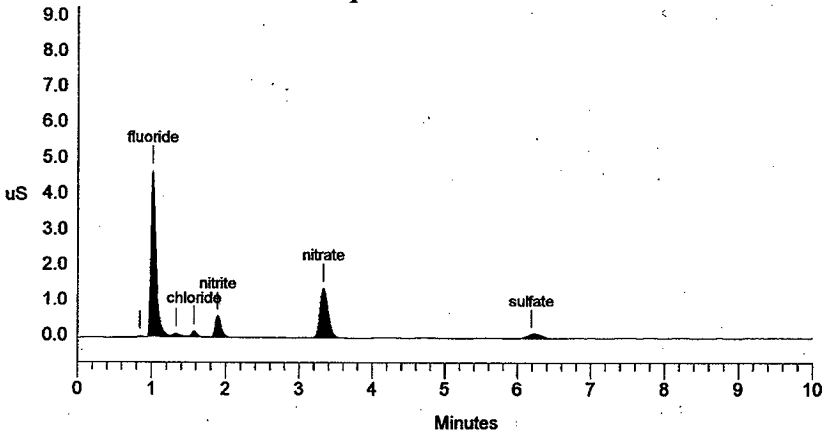
Sample Name: S97T002268 DUP Date: 11/21/1997 11:38:53
 Data File : C:\DX\DATA\97112131.D13
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 13 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration Volume Dilution Points Rate Start Stop Area Reject
 External 1 5151 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.84		0.000	29	114	1	
2	1.01	fluoride	5306.913	4659	21077	2	0.33
3	1.33		0.000	80	505	2	
4	1.57	chloride	298.065	154	671	1	-0.84
5	1.89	nitrite	2116.365	593	3102	1	-1.74
6	3.33	nitrate	6924.271	1407	10443	1	-0.10
7	6.19	sulfate	326.808	111	1735	1	-1.69
Totals			14972.421	7033	37647		

File: 97112131.D13 Sample: S97T002268 DUP



.100-10-.200-10

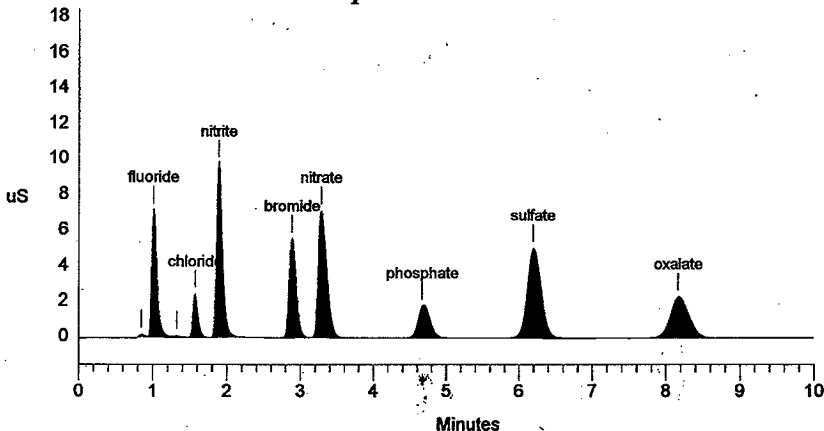
Sample Name: S97T002268 SPK Date: 11/21/1997 11:50:18
 Data File : C:\DX\DATA\97112131.D14
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 14 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration Volume Dilution Points Rate Start Stop Area Reject
 External 1 5151 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	122	549	2	
2	1.01	fluoride	8244.979	7105	33235	3	-0.33
3	1.32		0.000	66	413	4	
4	1.57	chloride	4245.876	2406	10922	1	-0.84
5	1.89	nitrite	28101.473	9733	51261	1	-1.74
6	2.88	bromide	29390.979	5537	35808	1	-1.37
7	3.28	nitrate	36396.075	7125	56385	1	-1.50
8	4.67	phosphate	26997.403	1778	21304	1	-1.69
9	6.19	sulfate	32018.272	5030	66279	1	-1.69
10	8.16	oxalate	26362.675	2302	40707	1	-1.29
Totals			191757.733	41204	316862		

File: 97112131.D14 Sample: S97T002268 SPK



100-10-200-10 104

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=====
Sample Name: S97T002269 SAM                      Date: 11/21/1997 12:01:35
Data File  : C:\DX\DATA\97112131.D15
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 15              Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

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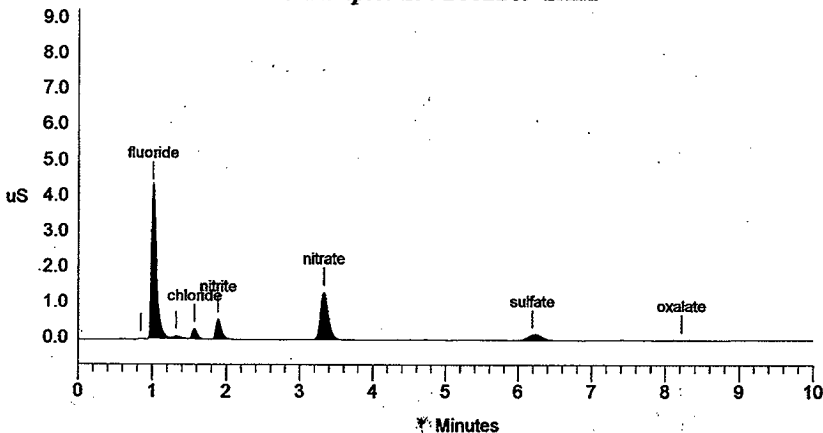
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Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          5151  3000  5Hz  0.00 10.00          30
=====

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	24	94	1	
2	1.01	fluoride	5005.955	4274	19849	2	-0.33
3	1.32		0.000	68	425	2	
4	1.57	chloride	543.976	285	1302	1	-0.84
5	1.89	nitrite	2058.157	570	2994	1	-1.74
6	3.33	nitrate	6461.408	1341	9731	1	-0.10
7	6.19	sulfate	714.631	155	2514	1	-1.69
8	8.21	oxalate	790.652	25	564	1	-0.65
Totals			15574.780	6741	37473		

File: 97112131.D15 Sample: S97T002269 SAM



100-10-200-10

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=====
Sample Name: S97T002269 DUP                      Date: 11/21/1997 12:19:21
Data File  : C:\DX\DATA\97112131.D16
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 16              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

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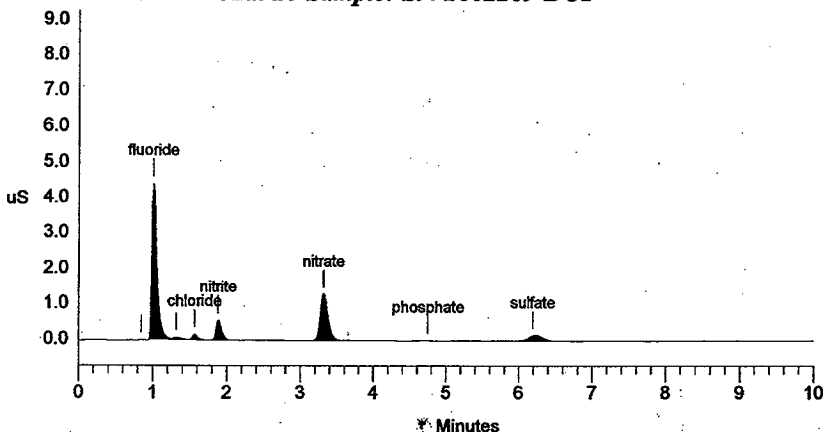
Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 5151 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	18	60	1	
2	1.01	fluoride	5073.688	4392	20125	2	-0.33
3	1.31		0.000	63	411	2	
4	1.56	chloride	298.729	150	673	1	-1.27
5	1.88	nitrite	2027.022	559	2937	1	-2.08
6	3.31	nitrate	6241.780	1304	9394	1	-0.50
7	4.75	phosphate	732.364	15	184	1	0.00
8	6.19	sulfate	604.550	143	2293	1	-1.69
Totals			14978.133	6645	36076		

File: 97112131.D16 Sample: S97T002269 DUP



,100-10-200-16

=====

Sample Name: S97T002269 SPK	Date: 11/21/1997 12:30:27
Data File : C:\DX\DATA\97112131.D17	
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 17	Detector: CDM-1
Analyst :	Column: AG4A/AS4A anion column

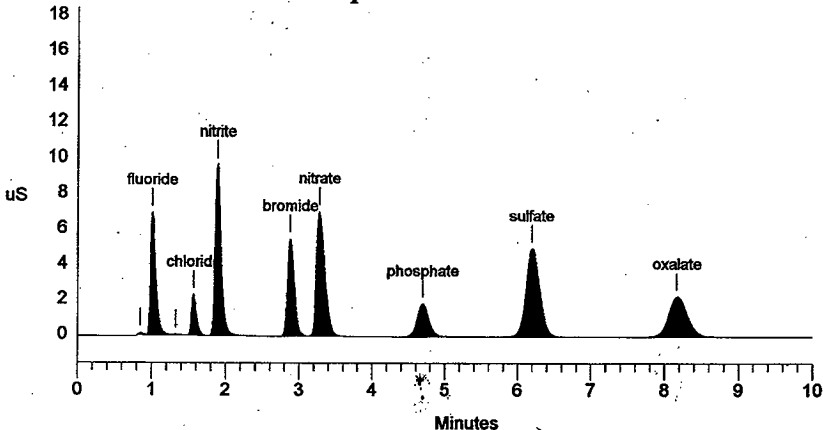
=====

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	112	489	2	
2	1.01	fluoride	8211.925	6905	33096	3	-0.33
3	1.32		0.000	59	372	4	
4	1.56	chloride	4214.239	2303	10839	1	-1.27
5	1.89	nitrite	28753.354	9643	52473	1	-1.74
6	2.87	bromide	28509.195	5491	34695	1	-1.60
7	3.27	nitrate	35617.506	7027	55155	1	-1.70
8	4.69	phosphate	26553.031	1868	20942	1	-1.12
9	6.19	sulfate	31452.745	4961	65110	1	-1.69
10	8.16	oxalate	26429.704	2275	40813	1	-1.29
Totals			189741.698	40645	313983		

File: 97112131.D17 Sample: S97T002269 SPK



LABCORE Completed Worklist Report for Worklist# 21248

Analyst: dpb

Instrument: IC01

Book# 103A200

Method: 14-533-105 Rev/Mod E-0

Worklist Comment: RERun AP-107 Grab for Cl only. Use 5151 df. jmf

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	0	01C-QC	F	QC	1	1.40e-02	0.014 ug/mL
1 CCB	0	0	01C-QC	CL	QC	1	<1.70e-2	ug/mL
1 CCB	0	0	01C-QC	NO2	QC	1	<1.08e-1	ug/mL
1 CCB	0	0	01C-QC	BR	QC	1	<1.25e-1	ug/mL
1 CCB	0	0	01C-QC	NO3	QC	1	<1.39e-1	ug/mL
1 CCB	0	0	01C-QC	PO4	QC	1	<1.20e-1	ug/mL
1 CCB	0	0	01C-QC	SO4	QC	1	<1.38e-1	ug/mL
1 CCB	0	0	01C-QC	OXALATE2	QC	1	<1.05e-1	ug/mL
2 CCV	0	0	01C-QC	F	QC	5.90e1	5.19e+01	104.915 % Recovery
2 CCV	0	0	01C-QC	CL	QC	8.00e1	8.18e+01	102.250 % Recovery
2 CCV	0	0	01C-QC	NO2	QC	5.42e2	5.58e+02	102.952 % Recovery
2 CCV	0	0	01C-QC	BR	QC	5.89e2	5.94e+02	100.849 % Recovery
2 CCV	0	0	01C-QC	NO3	QC	5.94e2	5.12e+02	103.030 % Recovery
2 CCV	0	0	01C-QC	PO4	QC	5.45e2	5.35e+02	98.165 % Recovery
2 CCV	0	0	01C-QC	SO4	QC	6.32e2	6.41e+02	101.424 % Recovery
2 CCV	0	0	01C-QC	OXALATE2	QC	5.94e2	5.42e+02	101.498 % Recovery
3 SAMPLE	S97T002269	0	01C-01	CL-02	LIQUID	N/A	2.931e+02	87.570 ug/mL
4 DUP	S97T002269	0	01C-01	F-02	LIQUID	?	5.31e+03	RPD
4 DUP	S97T002269	0	01C-01	CL-02	LIQUID	2.83e+02	2.89e+02	2.098 RPD
4 DUP	S97T002269	0	01C-01	NO2-02	LIQUID	?	2.19e+03	RPD
4 DUP	S97T002269	0	01C-01	BR-02	LIQUID	?	<6.44e2	RPD
4 DUP	S97T002269	0	01C-01	NO3-02	LIQUID	?	6.89e+03	RPD
4 DUP	S97T002269	0	01C-01	PO4-02	LIQUID	?	7.77e+02	RPD
4 DUP	S97T002269	0	01C-01	SO4-02	LIQUID	?	<7.11e2	RPD
4 DUP	S97T002269	0	01C-01	OXALATE2	LIQUID	?	<5.41e2	RPD
5 SPK	S97T002269	0	01C-01	F-02	LIQUID	5.90e1	0.00e+00	0.000 % Recovery
5 SPK	S97T002269	0	01C-01	CL-02	LIQUID	6.00e1	7.26e+01	90.750 % Recovery
5 SPK	S97T002269	0	01C-01	NO2-02	LIQUID	5.42e2	0.00e+00	0.000 % Recovery
5 SPK	S97T002269	0	01C-01	BR-02	LIQUID	5.89e2	0.00e+00	0.000 % Recovery
5 SPK	S97T002269	0	01C-01	NO3-02	LIQUID	5.94e2	0.00e+00	0.000 % Recovery
5 SPK	S97T002269	0	01C-01	PO4-02	LIQUID	5.45e2	0.00e+00	0.000 % Recovery
5 SPK	S97T002269	0	01C-01	SO4-02	LIQUID	6.32e2	0.00e+00	0.000 % Recovery
5 SPK	S97T002269	0	01C-01	OXALATE2	LIQUID	5.94e2	0.00e+00	0.000 % Recovery

Final page for worklist# 21248

Analyst Signature

Date



Analyst Signature

Date

HNF-SD-WM-DP-276, REV. 0

Page: 1

11/24/97 14:54
A-0004-1**LABCORE Data Entry Template for Worklist# 21248**Analyst: DPB Instrument: IC0 1 Book# 102N20-CMethod: LA-533-105 Rev/Mod EQ

Worklist Comment: RERun AP-107 Grab for CI only. Use 5151 df. jmf

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S97T002269 0		@IC-01	LIQUID	97000649	AP-107 GRAB
Analytes Requested: CL-02						
4 DUP	S97T002269 0		@IC-01	LIQUID		
5 SPK	S97T002269 0		@IC-01	LIQUID		

Final page for worklist # 21248

Samuel P. Bowly 11/25/97 1130

Analyst Signature Date

Analyst Signature Date

uploaded 11-26-97
JL Warell
21248 NOV. CSV
Validated 11/26/97 *JJ Machior*

Data Entry Comments:

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

=====

Sample Name: ELUENT BLANK Date: 11/25/1997 09:52:46

Data File : C:\DX\DATA\97112141.D01

Method : C:\DX\METHOD\KIT.MET

ACI Address: 1 System: 1 Inject#: 1 Detector: CDM-1

Analyst : *Timothy J. F.* Column: AG4A/AS4A anion column

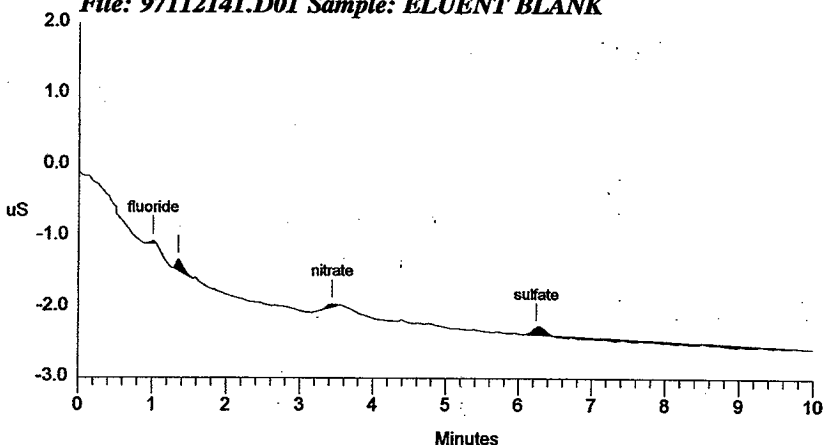
=====

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		30

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

PK. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.01	fluoride	0.014	38	164	1	-0.33
2	1.35		0.000	159	1037	1	
3	3.43	nitrate	0.064	42	333	1	3.10
4	6.24	sulfate	0.112	108	2239	1	-0.85
Totals			0.190	348	3773		

File: 97112141.D01 Sample: ELUENT BLANK



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 110 TO 114.

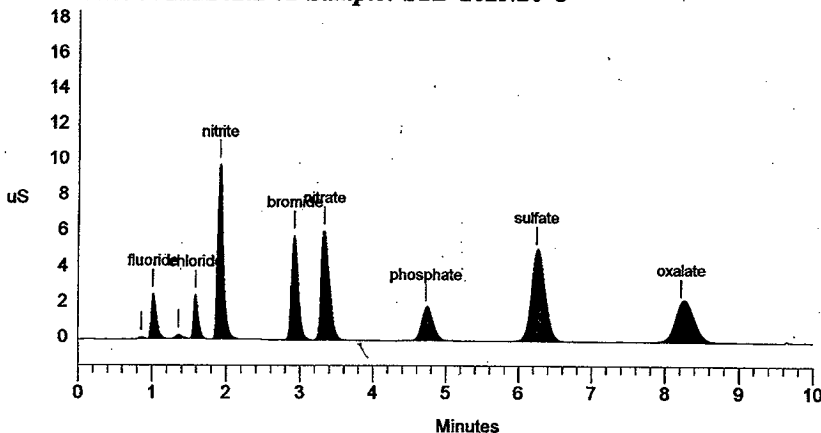
Sample Name: STD 102N20-C Date: 11/25/1997 10:06:43
 Data File : C:\DX\DATA\97112141.D02
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 2 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	120	559	2	
2	1.01	fluoride	61.891	2522	12375	2	0.33
3	1.35		0.000	239	1570	1	
4	1.59	chloride	81.754	2475	10721	1	0.42
5	1.91	nitrite	557.636	9793	51889	1	-0.69
6	2.92	bromide	593.684	5834	36928	1	0.00
7	3.33	nitrate	612.353	6092	48239	1	-0.10
8	4.72	phosphate	534.552	1837	21520	1	-0.56
9	6.24	sulfate	640.780	5034	67647	1	-0.85
10	8.21	oxalate	542.106	2179	42732	1	-0.65
Totals			3624.757	36126	294180		

File: 97112141.D02 Sample: STD 102N20-C



Daniel P. Beaulieu 11/28

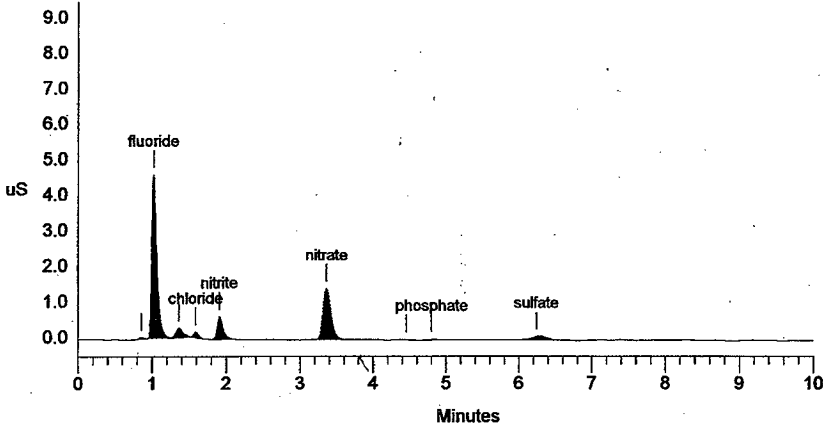
Sample Name: S97T002269 SAM Date: 11/25/1997 10:26:32
 Data File : C:\DX\DATA\97112141.D03
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 3 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3000	5H*	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	36	137	1	
2	1.02	fluoride	5256.907	4586	20872	1	0.99
3	1.36		0.000	259	1662	1	
4	1.59	chloride	283.070	157	633	1	0.42
5	1.91	nitrite	2214.638	628	3283	1	-0.69
6	3.36	nitrate	7016.105	1425	10584	1	0.90
7	4.45		0.000	22	237	1	
8	4.80	phosphate	845.868	22	274	1	1.12
9	6.24	sulfate	476.224	103	2035	1	-0.85
Totals			16092.813	7238	39719		

File: 97112141.D03 Sample: S97T002269 SAM



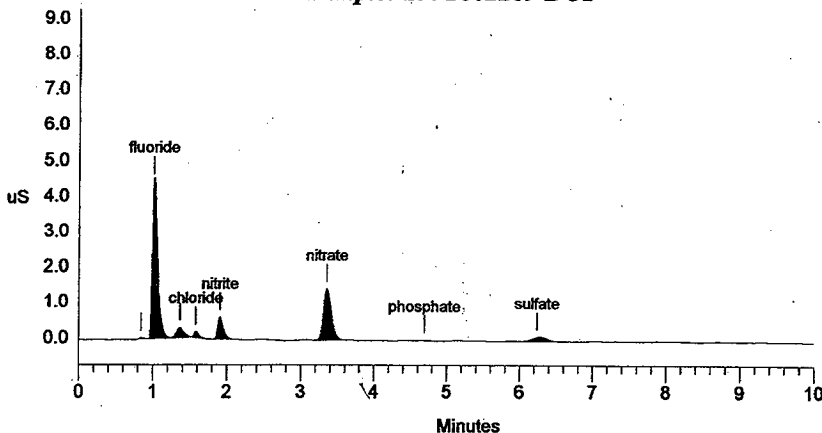
Sample Name: S97T002269 DUP Date: 11/25/1997 10:37:23
 Data File : C:\DX\DATA\97112141.D04
 Method : C:\DX\METHOD\KIT.MET
 ACT Address: 1 System: 1 Inject#: 4 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
external	1	5151	3000	5H	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	37	150	1	
2	1.01	fluoride	5308.328	4450	21082	2	0.33
3	1.37		0.000	271	1835	2	
4	1.58	chloride	289.357	159	649	1	0.00
5	1.91	nitrite	2187.458	618	3233	1	-0.69
6	3.35	nitrate	6893.181	1439	10395	1	0.70
7	4.69	phosphate	777.011	17	219	1	-1.12
8	6.24	sulfate	459.884	112	2003	1	-0.85
Totals			15915.218	7103	39566		

File: 97112141.D04 Sample: S97T002269 DUP



HNF-SD-WM-DP-276, REV. 0

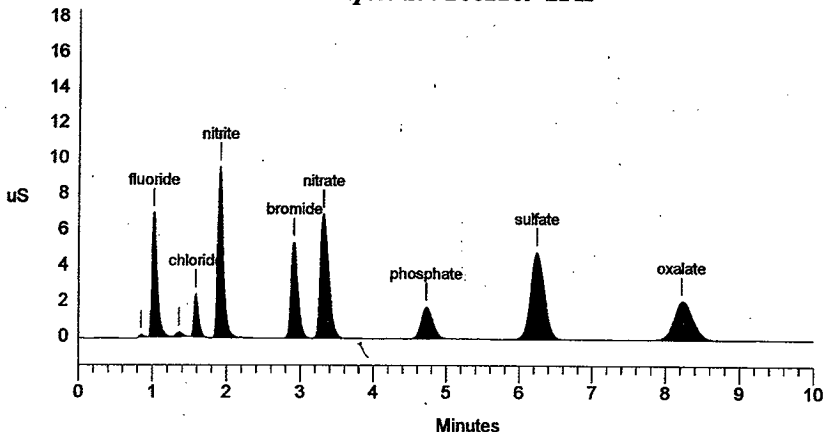
Sample Name: S97T002269 SPK Date: 11/25/1997 10:48:04
 Data File : C:\DX\DATA\97112141.D05
 Method : C:\DX\METHOD\KIT.MET
 ACT Address: 1 System: 1 Inject#: 5 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	115	473	1	
2	1.01	fluoride	8052.503	6909	32428	2	0.33
3	1.35		0.000	245	1527	2	
4	1.58	chloride	3949.200	2379	10142	1	0.00
5	1.91	nitrite	26881.648	9564	48992	1	-0.69
6	2.91	bromide	27976.646	5351	34023	1	-0.46
7	3.31	nitrate	35565.277	6926	55072	1	-0.70
8	4.72	phosphate	25404.911	1764	20007	1	-0.56
9	6.24	sulfate	30627.687	4864	63406	1	-0.85
10	8.21	oxalate	25111.747	2148	38737	1	-0.65
Totals			183569.619	40265	304808		

File: 97112141.D05 Sample: S97T002269 SPK



LABCORE Data Entry Template for Worklist# 21203

Analyst: JK Seib Instrument: ICP01-2 11-18-97 Book# 69648Q

Method: LA-505-154/161 Rev/Mod C-2

Worklist Comment: 11-18-97
ICP AP-107 (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	S97T002267	0 D	@ICP-D01	LIQUID	
7	SAMPLE	S97T002267	0 D	@ICP-D01	LIQUID	97000649 AP-107 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 , 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	S97T002267	0 D	@ICP-D01	LIQUID	
9	SPK (1ppm)	S97T002267	0 D	@ICP-D01	LIQUID	
10	CCV (10ppm)	<u>11-18-97</u>		@ICP-QC	QC	
11	CCB			@ICP-QC	QC	
12	SERDIL	S97T002268	0 D	@ICP-D01	LIQUID	
13	SAMPLE	S97T002268	0 D	@ICP-D01	LIQUID	97000649 AP-107 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 , SE-D-01 , SI-D-01 ,						

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 21203

S Type	Sample#	R A	Test	Matrix	Group#	Project
			SM-D-01 , SR-D-01 , ZN-D-01 , ZR-D-01	TI-D-01 , TL-D-01 , U-D-01 , V-D-01 ,		
14 DUP	S97T002268	0 D	@ICP-D01	LIQUID		
15 SPK (1 ppn) Sample X Spike 6X (10 ppn) JK 11-18-97	S97T002268	0 D	@ICP-D01	LIQUID		
16 CCV			@ICP-QC	QC		
17 CCB			@ICP-QC	QC		
18 SERDIL	S97T002269	0 D	@ICP-D01	LIQUID		
19 SAMPLE	S97T002269	0 D	@ICP-D01	LIQUID	97000649	AP-107 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					
20 DUP	S97T002269	0 D	@ICP-D01	LIQUID		
21 SPK (10 ppn) Sample X Spike 6X (10 ppn) JK 11-18-97	S97T002269	0 D	@ICP-D01	LIQUID		
22 ICSA			@ICP-QC	QC		
23 ICSAB			@ICP-QC	QC		
24 CCV			@ICP-QC	QC		
25 CCB			@ICP-QC	QC		

Final page for worklist # 21203

Revised + Validated by:

JK Dtd
Analyst Signature *11-18-97*
Date

Sam M. Pang
Analyst Signature *11/18/97*
Date

Data Entry Comments:

File #: 971118G.7XT

11-18-97

AP-107

HNF-SD-WM-DP-276, REV. 0

ICV

ECB

LIS

LUSQ

LUSQ8

5977002267-L, 25-10-28, DF 205

5977002267, 25-10 41

5977002267-D, 25-10 41

5977002267-Q, 25-10 41, 25 ml sample + 2.05 ml SST5 + 7.95 ml H₂O₃

5977002267-Y, 25-10-19 410

5977002267-QY, 25-10-19 410, 1 ml sample + 1 ml each XW4C 28+35 + 7 ml H₂O₃CCV, ECB
5977002268-L, 25-10-28, DF 205

5977002268, 25-10 41

5977002268-D, 25-10 41

5977002268-Q, 25-10 41, 25 ml sample + 2.05 ml SST5 + 7.95 ml H₂O₃

5977002268-Y, 25-10-19 410

5977002268-QY, 25-10-19 410, 1 ml sample + 1 ml each XW4C 28+35 + 7 ml H₂O₃CCV, ECB
5977002269-L, 25-10-28, DF 205

5977002269, 25-10 41

5977002269-D, 25-10 41

5977002269-Q, 25-10 41, 25 ml sample + 2.05 ml SST5 + 7.95 ml H₂O₃

5977002269-Y, 25-10-19 410

5977002269-QY, 25-10-19 410, 1 ml sample + 1 ml each XW4C 28+35 + 7 ml H₂O₃

LUSQ

LUSQ8

CCV

CCB

S97T002267

$$Al = \frac{\left(\frac{39.463}{41}\right) - 0}{1} \times 100 = 96.25\%$$

Post Spike:

$$K = \frac{\left(\frac{12749}{410}\right) - \left(\frac{9310.5}{410}\right)}{10} \times 100 = 83.87\%$$

$$Na = \frac{\left(\frac{17472}{410}\right) - \left(\frac{13983}{410}\right)}{10} \times 100 = 85.10\%$$

S97T002268

$$Al = \frac{\left(\frac{39.323}{41}\right) - 0}{1} \times 100 = 95.91\%$$

Post Spike:

$$K = \frac{\left(\frac{13040}{410}\right) - \left(\frac{9345.8}{410}\right)}{10} \times 100 = 90.10\%$$

$$Na = \frac{\left(\frac{17920}{410}\right) - \left(\frac{14359}{410}\right)}{10} \times 100 = 86.85\%$$

S97T002269

$$Al = \frac{\left(\frac{38.089}{41}\right) - 0}{1} \times 100 = 92.91\%$$

Post Spike:

$$K = \frac{\left(\frac{13325}{410}\right) - \left(\frac{9454}{410}\right)}{10} \times 100 = 94.41\%$$

$$Na = \frac{\left(\frac{17631}{410}\right) - \left(\frac{13857}{410}\right)}{10} \times 100 = 92.05\%$$

HNF-SD-WM-DP-276, REV. 0

Analysis Report

Summary

Tue 11-18-97 01:06:16 PM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	971118A	ICP2	11/18/97	09:09	DKS	Q	CONC
2	ICB	971118A	ICP2	11/18/97	09:13	DKS	Q	CONC
3	LLS	971118A	ICP2	11/18/97	09:16	DKS	Q	CONC
4	ICSA	971118A	ICP2	11/18/97	09:22	DKS	Q	CONC
5	ICSAB	971118A	ICP2	11/18/97	09:25	DKS	Q	CONC
6	S97T002267 L	971118A	ICP2	11/18/97	09:30	DKS	S	CONC
7	S97T002267	971118A	ICP2	11/18/97	09:33	DKS	S	CONC
8	S97T002267 D	971118A	ICP2	11/18/97	09:37	DKS	S	CONC
9	S97T002267 A	971118A	ICP2	11/18/97	09:41	DKS	S	CONC
10	S97T002267 X	971118A	ICP2	11/18/97	09:46	DKS	S	CONC
11	S97T002267 AX	971118A	ICP2	11/18/97	09:50	DKS	S	CONC
12	CCV	971118A	ICP2	11/18/97	09:58	DKS	Q	CONC
13	CCB	971118A	ICP2	11/18/97	10:03	DKS	Q	CONC
14	S97T002268 L	971118A	ICP2	11/18/97	10:06	DKS	S	CONC
15	S97T002268	971118A	ICP2	11/18/97	10:10	DKS	S	CONC
16	S97T002268 D	971118A	ICP2	11/18/97	10:14	DKS	S	CONC
17	S97T002268 A	971118A	ICP2	11/18/97	10:18	DKS	S	CONC
18	S97T002268 X	971118A	ICP2	11/18/97	10:24	DKS	S	CONC
19	S97T002268 AX	971118A	ICP2	11/18/97	10:29	DKS	S	CONC
20	CCV	971118A	ICP2	11/18/97	12:07	DKS	Q	CONC
21	CCB	971118A	ICP2	11/18/97	12:11	DKS	Q	CONC
22	S97T002269 L	971118A	ICP2	11/18/97	12:14	DKS	S	CONC
23	S97T002269	971118A	ICP2	11/18/97	12:18	DKS	S	CONC
24	S97T002269 D	971118A	ICP2	11/18/97	12:22	DKS	S	CONC
25	S97T002269 A	971118A	ICP2	11/18/97	12:26	DKS	S	CONC
26	S97T002269 X	971118A	ICP2	11/18/97	12:33	DKS	S	CONC
27	S97T002269 AX	971118A	ICP2	11/18/97	12:36	DKS	S	CONC
28	ICSA	971118A	ICP2	11/18/97	12:50	DKS	Q	CONC
29	ICSAB	971118A	ICP2	11/18/97	12:53	DKS	Q	CONC
30	CCV 2	971118A	ICP2	11/18/97	12:58	DKS	Q	CONC
31	CCB 2	971118A	ICP2	11/18/97	13:03	DKS	Q	CONC

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SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 119 TO 121

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.8785	4.9705	5.0529	5.0709	4.9512	5.0835
2	ICB	.00143	.00973	.00652	-.00165	.00017	.00003
3	LLS	.02090	.10565	.20532	.10443	.09814	.01041
4	ICSA	.00114	245.28	-.04003	-.00543	.00211	.00031
5	ICSAB	.95432	246.12	-.03785	-.00668	.46539	.47997
6	S97T002267 L	1.2353	1.3662	.79202	3.9929	.06913	.01620
7	S97T002267	1.0421	.12056	2.1714	4.4846	.04830	.01468
8	S97T002267 D	1.0842	.44816	3.2215	4.6382	.05148	.01930
9	S97T002267 A	27.852	39.463	45.923	43.771	38.009	40.174
10	S97T002267 X	2.8544	3.3979	4.5728	5.0984	14327	.06476
11	S97T002267 AX	3550.5	3938.6	4051.8	3932.1	3957.0	4013.8
12	CCV	4.8439	4.9544	5.0771	5.0332	4.9644	5.1128
13	CCB	.00455	.01343	.00153	.00083	.00035	.0015
14	S97T002268 L	1.3785	.87475	3.8958	4.7563	.01959	-.00049
15	S97T002268	1.0674	.11437	2.6332	4.3486	.00384	.01635
16	S97T002268 D	1.0574	.19092	2.7980	4.4003	.00520	.01926
17	S97T002268 A	28.585	39.323	45.493	43.652	37.957	39.917
18	S97T002268 X	1.6506	2.4566	-.49283	4.2501	.05463	.04906
19	S97T002268 AX	3591.2	3975.2	4059.6	3973.7	4018.9	4049.6
20	CCV	4.8991	4.8689	5.0477	5.1158	4.9279	5.0285
21	CCB	.00111	.00343	.01004	.00166	.00017	-.00004
22	S97T002269 L	1.3259	1.3886	3.5266	3.9268	.03573	-.01687
23	S97T002269	1.1532	.58280	2.6568	3.8575	.01198	.01124
24	S97T002269 D	1.0830	.03184	3.3954	3.9433	.00581	.00947
25	S97T002269 A	27.973	38.089	45.163	43.109	37.525	39.450
26	S97T002269 X	1.5887	.59372	4.0133	4.2690	.02289	-.01723
27	S97T002269 AX	3659.6	3929.1	4102.2	4001.6	4018.3	4031.0
28	ICSA	.00543	244.96	-.01746	-.00631	.00237	.00012
29	ICSAB	.96937	243.83	-.01009	-.00530	.46977	.48069
30	CCV 2	4.9939	4.8820	5.0799	5.1040	4.9448	5.0498
31	CCB 2	.00149	.00074	.00862	.00083	.00019	-.00012

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.0472	4.9309	5.0277	5.0012	5.0938	4.8922
2	ICB	.01462	.00367	.00122	.01117	.00031	.00172
3	LLS	.19188	.20511	.00962	.19995	.04021	.02054
4	ICSA	.00250	.252.05	.00218	.01007	-.00130	-.01525
5	ICSAB	-.00956	.253.16	.94363	.01837	.46600	.44731
6	S97T002267 L	4.0498	1.6881	.26405	.72366	-.10195	9.0235
7	S97T002267	.00210	1.1192	.13566	.04442	.04296	8.6718
8	S97T002267 D	-.41781	.88660	.13795	.11019	-.01533	8.7183
9	S97T002267 A	39.789	41.522	40.176	39.936	40.795	47.800
10	S97T002267 X	2.0744	2.5440	.56943	6.8251	.63323	9.4848
11	S97T002267 AX	4021.3	4083.6	4019.1	3955.5	4010.3	4029.1
12	CCV	5.0270	4.9672	5.0165	5.0025	5.0850	4.8768
13	CCB	-.01898	.00400	.00110	.01981	.00042	.00176
14	S97T002268 L	-2.8297	.89499	.22317	1.3051	.04130	8.9399
15	S97T002268	-.36925	.37017	.10584	-.27319	-.05800	8.0633
16	S97T002268 D	.40800	.45254	.11308	.28063	.07636	8.6618
17	S97T002268 A	39.395	40.932	40.261	39.373	40.665	47.987
18	S97T002268 X	-13.575	1.5501	.10101	1.5594	-1.3739	8.3621

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#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
19	S97T002268_AX	4040.1	4071.9	4018.4	3996.9	4022.4	4043.0
20	CCV	5.0811	4.9768	4.9934	5.0303	5.0817	4.8661
21	CCB	.03834	.00622	.00109	.01322	.00195	.00028
22	S97T002269_L	.22864	1.5242	.34305	1.9177	-.01844	8.6871
23	S97T002269_-	.75711	1.0319	.22359	.83721	.11878	8.7046
24	S97T002269_D	-.04027	.79366	.15717	.20310	.07270	8.6403
25	S97T002269_A	40.679	41.561	40.560	39.334	40.884	48.211
26	S97T002269_X	13.411	2.4413	.59444	3.7296	1.0142	8.8661
27	S97T002269_AX	4128.0	4144.9	4084.3	4045.2	4059.0	4089.0
28	ICSA	.02626	.258.03	.00370	.02152	.00264	-.01483
29	IGSAB	.00357	.257.22	.95112	.02047	.47498	.45055
30	CCV_2	5.1177	5.1657	5.0981	5.0473	5.1732	4.9656
31	CCB_2	.00893	.00721	.00110	.01647	.00196	-.00008

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.3251	.00585	5.0092	4.9670	5.0030	4.9977
2	ICB	.00029	.00029	.00069	.12961	.00182	.00053
3	LLS	.01824	.00036	.10180	Q.65308	.10056	.02127
4	ICSA	-.01156	.01443	96.157	.19919	-.00414	.00323
5	IGSAB	.47952	.01457	96.284	.27722	-.00332	.95894
6	S97T002267_L	.56309	.13109	.23837	9249.3	.18444	.24344
7	S97T002267_-	.31631	.04864	.16116	8845.5	.01544	.15490
8	S97T002267_D	.28765	-.01171	.14351	8903.7	.03604	.10593
9	S97T002267_A	43.629	.07519	39.806	8754.5	39.202	37.946
10	S97T002267_X	.59694	.40114	1.5361	9310.5	1.0422	.57526
11	S97T002267_AX	3942.7	4.9773	4012.3	12749.9	3953.0	3882.3
12	CCV	5.3358	.00573	5.0112	4.8787	5.0152	5.0342
13	CCB	.00058	.00116	.00101	.40798	.00226	.00118
14	S97T002268_L	.32791	-.03120	.41893	9321.7	.08361	.06627
15	S97T002268_-	.28685	-.00590	.10285	9153.2	-.04596	.11065
16	S97T002268_D	.30804	-.00619	.07968	8739.8	.05106	.12366
17	S97T002268_A	43.558	.09016	39.804	8854.9	39.016	37.773
18	S97T002268_X	.08730	.06158	.44699	9345.8	.09725	.17694
19	S97T002268_AX	3995.4	4.7788	4035.3	13040.1	4000.9	3962.8
20	CCV	5.3339	.00686	4.7832	5.0906	5.0130	5.0463
21	CCB	-.00001	.00073	.00139	.11391	.00207	.00108
22	S97T002269_L	.21683	.08071	.71823	9641.6	.34454	.22158
23	S97T002269_-	.31541	.06137	.16937	9206.6	.14778	.16844
24	S97T002269_D	.24112	.01523	.30696	9261.2	.04522	.13282
25	S97T002269_A	40.723	.12307	38.141	9145.4	38.934	37.015
26	S97T002269_X	.37839	.46863	.26656	9454.0	.59852	.62040
27	S97T002269_AX	3775.6	5.7240	3902.7	13325.	4032.4	3893.2
28	ICSA	-.00965	.00783	.93.492	.26442	-.00202	.00325
29	IGSAB	.45813	.01061	93.007	.28431	-.00157	.96638
30	CCV_2	5.3131	.00806	4.8510	4.9679	5.0294	4.9012
31	CCB_2	.00012	.00128	.00123	.00923	.00259	.00097

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#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.8377	4.9161	5.0893	5.2302	5.1319	5.0248
2	ICB	.00788	.00015	.00357	.00471	.00125	-.00541
3	LLS	.19318	.01919	.10078	.21075	.20252	.03918
4	ICSA	243.44	-.00650	-.01457	190.67	.00251	-.00912
5	ICGSAB	244.00	.44422	.01635	192.03	-.00118	.93409
6	S97T002267 L	-.17959	.06380	.37019	13981.	-.06333	-.69571
7	S97T002267	-.07074	.04373	.74630	13251.	.08053	.20846
8	S97T002267 D	.29253	.02093	.73096	13419.	.02760	.17198
9	S97T002267 A	38.041	38.272	41.612	13186.	39.968	39.516
10	S97T002267 X	3.6546	.18101	.32178	13983.	1.7595	1.2594
11	S97T002267 AX	3962.9	4003.6	4010.2	17472	3943.0	4026.3
12	CCV	4.8353	4.9114	5.0749	5.2302	5.1252	5.0194
13	CCB	.00711	.00044	.00358	-.00112	-.00276	-.00020
14	S97T002268 L	.11252	.02610	.68171	14321.	-.14448	1.2048
15	S97T002268	-.52791	.02542	.72822	13836.	-.15879	.29247
16	S97T002268 D	-.03403	.02204	.77259	13247.	.13126	.35038
17	S97T002268 A	37.539	38.297	41.815	13324.	39.794	39.845
18	S97T002268 X	-1.4053	.16480	-.20046	14359.	-1.9017	-1.9797
19	S97T002268 AX	3997.6	4013.1	4018.2	17920	3997.8	4033.2
20	CCV	5.0440	4.8956	5.0573	5.2196	5.0167	4.9471
21	CCB	.01236	.00017	.00524	-.00987	.00078	.00212
22	S97T002269 L	2.3600	.03559	.99946	14139.	-.41271	.74913
23	S97T002269	1.0373	.03687	.90249	13314.	.18752	.28344
24	S97T002269 D	.44079	.02300	.79420	13412.	-.03072	.14065
25	S97T002269 A	39.630	38.533	42.061	13126.	38.790	40.605
26	S97T002269 X	3.1945	.13599	1.4244	13857.	.62408	1.4999
27	S97T002269 AX	4189.1	4059.9	4059.8	17631.	3926.0	4044.2
28	ICSA	257.47	-.00736	-.01238	193.16	.00228	-.00816
29	ICGSAB	255.95	.44562	-.01405	193.17	.00130	.93885
30	CCV 2	5.0565	4.9751	5.1467	5.0975	5.0099	5.0567
31	CCB 2	.01143	.00036	.00371	-.00694	.00113	.00627

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.0600	4.9035	5.1593	4.8084	4.8205	5.0055
2	ICB	.02811	-.00358	.01461	.00271	.00918	.00777
3	LLS	.37090	.20764	.20328	.09273	.20503	.11673
4	ICSA	70495	.02109	-.04561	.00485	.03937	.00110
5	ICGSAB	56547	.98685	-.03876	.00043	.00430	-.00110
6	S97T002267 L	71.931	.23386	121.44	1.5724	3.1074	19.298
7	S97T002267	56.686	.81486	117.73	.31272	.77648	15.625
8	S97T002267 D	68.523	.71897	117.54	.65083	4.6750	26.024
9	S97T002267 A	110.31	39.471	158.05	38.976	49.511	64.933
10	S97T002267 X	69.902	5.6431	121.88	3.5039	11.081	23.516
11	S97T002267 AX	3267.8	4028.0	3875.1	4019.7	4057.6	4083.4
12	CCV	4.2749	4.8918	4.9550	4.7989	4.8374	4.9856
13	CCB	.08159	.00267	.00412	.00488	.02997	.01566
14	S97T002268 L	64.800	.18804	119.86	1.3593	4.5517	19.916
15	S97T002268	54.887	.20763	118.38	.09394	1.0821	20.098
16	S97T002268 D	65.168	1.0596	115.90	.39290	4.8072	26.367
17	S97T002268 A	107.44	39.769	161.10	39.163	47.575	64.632
18	S97T002268 X	56.416	-3.1571	112.62	1.5666	9.1302	22.074

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#	Sample Name	P	Pb	S	Sb	Se	Si
19	S97T002268_AX	3618.7	4026.4	4038.3	4036.2	4072.6	4095.0
20	CGV	5.4720	4.9063	5.0920	4.7892	4.6788	4.8884
21	CCB	.02560	.01483	-.01354	.00321	-.00128	.00866
22	S97T002269_L	68.411	1.7516	122.75	1.3739	-1.6882	18.952
23	S97T002269	68.007	1.4404	123.16	.33395	.33206	19.797
24	S97T002269_D	78.386	1.1709	123.15	1.5933	2.4442	25.288
25	S97T002269_A	130.17	41.135	167.99	39.312	44.748	64.431
26	S97T002269_X	79.789	6.2790	114.97	2.1993	1.0551	24.039
27	S97T002269_AX	4050.1	4139.9	4105.9	4094.5	3962.3	4147.8
28	ICSA	→ 86584	→ 05212	→ 02133	.00183	→ 02235	.00071
29	ICSA_B	→ 81954	→ 1.0158	→ 02505	.01008	→ 01288	.00214
30	CGV_2	Q5.9385	5.0322	5.3073	4.8857	4.7485	4.9678
31	CCB_2	.00681	.00701	-.01155	.00645	→ .00987	.00876

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	5.0807	5.0440	.20106	4.9814	4.8993	10.152
2	ICB	.00423	.00008	.00505	.00066	→ .00185	.01902
3	LLS	.20155	.02038	.00302	.02002	.40416	.50497
4	ICSA	→ .00716	→ .00240	.01153	.00104	→ .03319	.12201
5	ICSA_B	→ .00918	→ .00240	.02534	.00152	→ .04824	.12183
6	S97T002267_L	.71154	.02574	1.2056	.04556	1.0264	7.9813
7	S97T002267	.43955	.01362	.11598	.03354	.11708	5.3951
8	S97T002267_D	→ .17480	.00801	.06672	.01301	.00519	8.9787
9	S97T002267_A	39.665	39.330	2.1159	39.474	39.620	89.202
10	S97T002267_X	4.8221	.08638	3.1115	.27206	3.4939	21.510
11	S97T002267_AX	3953.8	3964.5	164.66	3983.6	3987.7	7869.8
12	CGV	5.1048	5.0451	.20828	4.9709	4.9065	10.201
13	CCB	.01215	.00021	.00831	.00088	.00526	.04434
14	S97T002268_L	→ .56271	.01726	.90055	.08844	2.9258	4.3136
15	S97T002268	→ .16855	.00673	.03467	→ .01080	→ .44141	3.6811
16	S97T002268_D	→ .16200	.00802	.07627	.03062	→ .26505	9.0799
17	S97T002268_A	39.510	39.176	1.6998	39.262	38.646	87.996
18	S97T002268_X	.11275	.01693	1.5067	→ .17423	→ .3.1741	7.7742
19	S97T002268_AX	4006.6	4015.0	168.58	4023.6	4019.3	7995.3
20	CGV	4.9388	4.9986	.24819	4.9347	4.7772	9.7355
21	CCB	.00906	.00008	.01183	.00025	→ .00927	.02569
22	S97T002269_L	1.1913	.01679	1.2562	→ .08535	1.8001	8.4539
23	S97T002269	.75298	.01704	.71342	.04462	.40279	5.7760
24	S97T002269_D	.25754	.01162	.30787	→ .00230	.06480	7.5133
25	S97T002269_A	38.657	38.649	1.9214	38.897	38.401	84.027
26	S97T002269_X	6.3118	.10329	1.4703	.17741	→ .1.3855	24.412
27	S97T002269_AX	3899.3	3997.4	193.97	4023.0	3992.7	7622.7
28	ICSA	→ .00867	→ .00259	.03560	.00162	→ .05433	→ .01631
29	ICSA_B	→ .01208	→ .00256	.03833	.00185	→ .03660	→ .03326
30	CGV_2	4.9351	5.0096	.25225	4.9763	4.8432	9.6893
31	CCB_2	.01683	.00016	.00815	.00003	→ .00248	.04047

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#	Sample Name	V	Y	Zn	Zr
1	ICV	5.0669	.00767	5.1465	5.0060
2	ICB	.00042	.00022	.00025	.00051
3	LLS	.10052	.00025	.02098	.01986
4	ICSA	.00112	.00786	.00665	-.00232
5	ICSAB	.46937	.00770	.99197	-.00439
6	S97T002267 L	.11350	.06088	.45699	.27703
7	S97T002267	.10073	.02984	.32989	.24791
8	S97T002267 D	-.03706	-.00702	.30359	.16198
9	S97T002267 A	40.534	.07456	42.409	39.656
10	S97T002267 X	.74100	.15154	.29825	.74132
11	S97T002267 AX	3994.0	6.1357	4024.1	3966.9
12	CCV	5.0586	.00757	5.1146	5.0066
13	CCB	.00229	.00076	.00035	.00145
14	S97T002268 L	-.20835	-.01790	.26827	.11692
15	S97T002268	-.03394	-.00477	.32148	.18152
16	S97T002268 D	-.04388	-.01028	.30972	.17349
17	S97T002268 A	40.492	.08472	42.655	39.575
18	S97T002268 X	.04832	.02883	.18836	.25803
19	S97T002268 AX	4023.7	6.1145	4025.6	4003.3
20	CCV	5.0164	.00777	4.9109	4.9583
21	CCB	.00119	.00038	.00016	.00000
22	S97T002269 L	.07792	.04461	.37565	.14642
23	S97T002269	.13017	.02646	.31762	.20131
24	S97T002269 D	.03030	.01287	.28427	.16883
25	S97T002269 A	40.332	.10568	40.601	39.288
26	S97T002269 X	.99523	.21457	.31033	.73099
27	S97T002269 AX	4020.3	6.4977	3858.8	4004.0
28	ICSA	.00087	.00784	.00529	-.00524
29	ICSAB	.46753	.00769	.94028	-.00580
30	CCV 2	5.0794	.00865	5.0328	5.0031
31	CCB 2	.00228	.00076	-.00052	.00115

JK
11-18-97

LABCORE Completed Worklist Report for Worklist# 21171

Analyst: rdm

Instrument: CARB2

Book# TIC 25N12B
TOC 26N12C

Method: LA342-100Rev/Mod F-0

Worklist Comment: AP-107 GRAB, TICTOC. gjh

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	@TICTOC1 TIC-02	LIQUID	1	4.10E+0	4.100	ug/mL
1 BLNK	0	@TICTOC1 TOC-02	LIQUID	1	1.00E+0	1.000	ug/mL
2 STD	0	@TICTOC1 TIC-02	LIQUID	6.02E+02	5.32E+2	88.372 % Recovery	
2 STD	0	@TICTOC1 TOC-02	LIQUID	3.00E+03	2.98E+3	99.333 % Recovery	
3 SAMPLE	S97T002267 0	@TICTOC1 TIC-02	LIQUID	N/A	2.69E+02	40.000	ug/mL
3 SAMPLE	S97T002267 0	@TICTOC1 TOC-02	LIQUID	N/A	2.69E+02	40.000	ug/mL
4 DUP	S97T002267 0	@TICTOC1 TIC-02	LIQUID	2.98E+3	3.20E+3	7.120 RPD	
4 DUP	S97T002267 0	@TICTOC1 TOC-02	LIQUID	2.69E+2	2.53E+2	6.130 RPD	
5 SPK	S97T002267 0	@TICTOC1 TIC-02	LIQUID	1.00E+02	1.09E+02	109.000 % Recovery	
5 SPK	S97T002267 0	@TICTOC1 TOC-02	LIQUID	1.00E+02	9.50E+01	95.000 % Recovery	

RWS 11/18/97

Final page for worklist# 21171

Analyst Signature

Date

Analyst Signature

Date

RW Schneider 11/18/97
Reviewer Signature Date

TIC Result rejected due to TIC
LCS Failure. RWSchneider 11/18/97

LABCORE Data Entry Template for Worklist# 21171

Analyst: RDM Instrument: CARB2 _____ Book# TLC 25N12B
TDC 26N12B

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AP-107 GRAB, TICTOC. gjh

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	LIQUID		
2 STD			@TICTOC1	LIQUID		
3 SAMPLE	S97T002267 0		@TICTOC1	LIQUID	97000649	AP-107 GRAB
Analytes Requested: TIC-02 , TOC-02						
4 DUP	S97T002267 0		@TICTOC1	LIQUID		
5 SPK	S97T002267 0		@TICTOC1	LIQUID		

Final page for worklist # 21171

Analyst Signature

Date

Jay Hornum
Analyst Signature

11-18-97
Date

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 21171

Analyst: Don Instrument: CARB2 Book# 25N128
26N170

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AP-107 GRAB, TICTOC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	LIQUID		
2 STD			@TICTOC1	LIQUID		
3 SAMPLE	S97T002267 0		@TICTOC1	LIQUID	97000649	AP-107 GRAB
Analytes Requested: TIC-02 , TOC-02						
4 DUP	S97T002267 0		@TICTOC1	LIQUID		
5 SPK	S97T002267 0		@TICTOC1	LIQUID		
6 SAMPLE	S97T002268 0		@TICTOC1	LIQUID	97000649	AP-107 GRAB
Analytes Requested: TIC-02 , TOC-02						
7 DUP	S97T002268 0		@TICTOC1	LIQUID		
8 SPK	S97T002268 0		@TICTOC1	LIQUID		

Final page for worklist # 21171

Don 11/14/97
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

S97T002268 needs to be put on another WL

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

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 11/17/97

Time: 08:01:31

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

Analyst : RD MEYERS
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.10	0.00
2	1.01	0.40	75.00
3	1.51	0.70	42.86
4	2.01	1.00	30.00
5	2.50	1.40	28.57
6	3.00	1.70	17.65
7	3.50	2.00	15.00
8	4.00	2.20	9.09
9	4.50	2.50	12.00
10	5.00	2.80	10.71
11	5.50	3.00	6.67
12	6.00	3.20	6.25
13	6.50	3.40	5.88
14	7.00	3.60	5.56
15	7.50	3.90	7.69
16	8.00	4.10	4.88
17	8.50	4.30	4.65
18	9.00	4.60	6.52
19	9.50	4.80	4.17
20	10.00	5.10	5.88
21	10.50	5.30	3.77
22	11.00	5.60	5.36

BLANK VALUE = 5.6 micrograms carbon

BLANK FACTOR = 5.6 / 10.99887 =

+5.1E-01

ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 138 TO 144.

Sample Run By:

RD MEYERS

R. J. Schaefer for RD MEYERS 11/18/97
 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 11/17/97

Time: 10:23:38

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

Analyst : RD MEYERS
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.00	1.10	72.73
3	1.50	4.50	75.56
4	2.00	9.20	51.09
5	2.50	13.50	31.85
6	3.00	16.10	16.15
7	3.50	17.70	9.04
8	4.00	19.20	7.81
9	4.50	20.00	4.00
10	5.00	20.70	3.38
11	5.50	21.20	2.36
12	6.00	21.70	2.30
13	6.50	22.30	2.69
14	7.00	22.50	0.89
15	7.50	22.90	1.75
16	8.00	22.90	0.00
17	8.50	23.20	1.29
18	9.00	23.40	0.85
19	9.50	23.70	1.27
20	10.00	23.90	0.84
21	10.50	24.20	1.24
22	11.00	24.40	0.82

BLANK VALUE = 24.4 micrograms carbon

BLANK FACTOR = 24.4 / 10.99603 = +2.22E+00 ug/min Carbon

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

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: 25N12-B

Date: 11/17/97

Time: 13:24:00

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .51 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.40	0.00
2	1.01	0.70	42.86
3	1.51	15.70	95.54
4	2.00	94.50	83.39
5	2.50	202.80	53.40
6	3.00	300.20	32.45
7	3.50	378.10	20.60
8	4.00	436.30	13.34
9	4.50	476.00	8.34
10	5.00	501.30	5.05
11	5.50	516.80	3.00
12	6.00	525.40	1.64
13	6.50	529.80	0.83
14	7.00	532.30	0.47
15	7.50	533.80	0.28
16	8.00	534.80	0.19
17	8.50	535.60	0.15
18	9.00	536.00	0.07
19	9.50	536.50	0.09
20	10.00	537.00	0.09
21	10.50	537.40	0.07
22	11.00	537.60	0.04

USER INPUT BLANK VALUE

BLANK VALUE = 5.607976 micrograms carbon

BLANK FACTOR = 5.607976 / 10.99603 =

+5.1E-01

ug/min Carbon

SAMPLE RESULTS:

(537.6 - 5.609907) (1)/(1) =

+5.320E+02 g/L Carbon

(537.6 - 5.609907) (1)/(1) (12) =

+4.433E+01 Molar Carbon

Sample Run By:

RD MEYERS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 26N12-B

Date: 11/17/97

Time: 13:36:37

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.22 ug/minute C-

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.40	0.00
2	1.00	0.90	55.56
3	1.50	4.10	78.05
4	2.00	12.40	66.94
5	2.50	36.60	66.12
6	3.00	89.00	58.88
7	3.50	172.70	48.47
8	4.00	276.90	37.63
9	4.50	382.50	27.61
10	5.00	468.30	18.32
11	5.50	528.70	11.42
12	6.00	567.90	6.90
13	6.50	591.10	3.92
14	7.00	604.30	2.18
15	7.50	611.10	1.11
16	8.00	614.80	0.60
17	8.50	617.00	0.36
18	9.00	618.40	0.23
19	9.50	619.40	0.16
20	10.00	620.10	0.11
21	10.50	620.90	0.13
22	11.00	621.40	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 24.41119 micrograms carbon

BLANK FACTOR = 24.41119 / 10.99603 = +2.2E+00 ug/min Carbon

SAMPLE RESULTS:

(621.4 - 24.41323) (1)/(1) = +5.970E+02 g/L Carbon

(621.4 - 24.41323) (1)/(1) (12) = +4.975E+01 Molar Carbon

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

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 11/17/97

Time: 13:50:59

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .51 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.51	1.30	0.00
2	1.01	2.90	55.17
3	1.51	4.00	27.50
4	2.00	4.50	11.11
5	2.51	4.90	8.16
6	3.01	5.40	9.26
7	3.51	5.80	6.90
8	4.00	6.10	4.92
9	4.50	6.50	6.15
10	5.00	6.80	4.41
11	5.50	7.10	4.23
12	6.00	7.30	2.74
13	6.50	7.60	3.95
14	7.00	7.80	2.56
15	7.50	8.00	2.50
16	8.00	8.30	3.61
17	8.50	8.60	3.49
18	9.00	8.80	2.27
19	9.50	9.10	3.30
20	10.00	9.30	2.15
21	10.50	9.50	2.11
22	11.00	9.70	2.06

USER INPUT BLANK VALUE

BLANK VALUE = 5.607976 micrograms carbon

BLANK FACTOR = 5.607976 / 10.99603 =

+5.1E-01

ug/min Carbon

SAMPLE RESULTS:

(9.7 - 5.608973) (1)/(1) =

+4.1E+00

g/L Carbon

(9.7 - 5.608973) (1)/(1) (12) =

+3.4E-01

Molar Carbon

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: BLK

Date: 11/17/97

Time: 14:06:24

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.22 ug/minute C

Analyst : RD MEYERS
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.70	42.86
3	1.51	1.00	30.00
4	2.00	3.30	69.70
5	2.50	6.20	46.77
6	3.00	9.60	35.42
7	3.50	12.80	25.00
8	4.00	15.00	14.67
9	4.50	16.80	10.71
10	5.00	18.30	8.20
11	5.50	19.10	4.19
12	6.00	20.00	4.50
13	6.50	20.40	1.96
14	7.00	20.90	2.39
15	7.50	21.30	1.88
16	8.00	21.70	1.84
17	8.50	22.00	1.36
18	9.00	22.30	1.35
19	9.50	22.60	1.33
20	10.00	22.90	1.31
21	10.50	23.10	0.87
22	11.00	23.40	1.28

USER INPUT BLANK VALUE

BLANK VALUE = 24.41119 micrograms carbon

BLANK FACTOR = 24.41119 / 10.99603 = +2.2E+00 ug/min Carbon

SAMPLE RESULTS:

(23.4 - 24.41106) (1)/(1) = < 5.00 E-3 g/L Carbon
(23.4 - 24.41106) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

RD MEYERS

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002267

Date: 11/17/97

Time: 15:14:49

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .51 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	2.60	0.00
2	1.01	3.00	13.33
3	1.51	3.50	14.29
4	2.00	6.70	47.76
5	2.50	29.10	76.98
6	3.00	77.00	62.21
7	3.50	136.10	43.42
8	4.00	189.10	28.03
9	4.50	230.70	18.03
10	5.00	259.90	11.24
11	5.50	278.00	6.51
12	6.00	288.50	3.64
13	6.50	294.50	2.04
14	7.00	297.90	1.14
15	7.50	299.80	0.63
16	8.00	300.90	0.37
17	8.50	301.60	0.23
18	9.00	302.10	0.17
19	9.50	302.60	0.17
20	10.00	302.90	0.10
21	10.50	303.20	0.10
22	11.00	303.50	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 5.607976 micrograms carbon

BLANK FACTOR = 5.607976 / 10.99603 =

+5.1E-01 ug/min Carbon

SAMPLE RESULTS:

(303.5 - 5.608911) (1)/(1) =

+2.979E+02 g/L Carbon

(303.5 - 5.608911) (1)/(1)(12) =

+2.482E+01 Molar Carbon

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002267

Date: 11/17/97

Time: 15:27:30

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.22 ug/minute C.

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.70	42.86
3	1.51	1.20	41.67
4	2.00	4.20	71.43
5	2.50	10.70	60.75
6	3.00	18.20	41.21
7	3.50	26.00	30.00
8	4.00	31.80	18.24
9	4.50	36.50	12.88
10	5.00	40.20	9.20
11	5.50	42.60	5.63
12	6.00	44.40	4.05
13	6.50	45.70	2.84
14	7.00	46.90	2.56
15	7.50	47.60	1.47
16	8.00	48.30	1.45
17	8.50	48.90	1.23
18	9.00	49.30	0.81
19	9.50	49.90	1.20
20	10.00	50.30	0.80
21	10.50	50.70	0.79
22	11.00	51.30	1.17

USER INPUT BLANK VALUE

BLANK VALUE = 24.41119 micrograms carbon

BLANK FACTOR = 24.41119 / 10.99603 = +2.2E+00 ug/min Carbon

SAMPLE RESULTS:

(51.3 - 24.41743) (1)/(1) = +2.69E+01 g/L Carbon
 (51.3 - 24.41743) (1)/(1) (12) = +2.24E+00 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!!>>>>

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S97T002267DUP Date: 11/17/97 Time: 15:40:55

Sample Size = 1 uL Analyst : RD MEYERS
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .51 ug/minute C % Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	0.80	37.50
3	1.50	1.20	33.33
4	2.00	7.00	82.86
5	2.50	40.40	82.67
6	3.00	99.80	59.52
7	3.50	164.50	39.33
8	4.00	219.00	24.89
9	4.50	259.80	15.70
10	5.00	287.00	9.48
11	5.50	303.50	5.44
12	6.00	312.70	2.94
13	6.50	317.50	1.51
14	7.00	320.30	0.87
15	7.50	321.90	0.50
16	8.00	322.70	0.25
17	8.50	323.20	0.15
18	9.00	323.70	0.15
19	9.50	324.10	0.12
20	10.00	324.40	0.09
21	10.50	324.80	0.12
22	11.00	325.10	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 5.607976 micrograms carbon

BLANK FACTOR = 5.607976 / 10.99603 = +5.1E-01 ug/min Carbon

SAMPLE RESULTS:

(325.1 - 5.609408) (1)/(1) = +3.195E+02 g/L Carbon
(325.1 - 5.609408) (1)/(1) (12) = +2.662E+01 Molar Carbon

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002267DUP

Date: 11/17/97

Time: 15:54:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.22 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	0.70	28.57
3	1.50	1.40	50.00
4	2.00	4.90	71.43
5	2.50	11.20	56.25
6	3.00	17.60	36.36
7	3.50	24.60	28.46
8	4.00	30.20	18.54
9	4.50	34.80	13.22
10	5.00	38.50	9.61
11	5.50	40.80	5.64
12	6.00	42.80	4.67
13	6.50	44.20	3.17
14	7.00	45.20	2.21
15	7.50	46.10	1.95
16	8.00	46.80	1.50
17	8.50	47.40	1.27
18	9.00	47.90	1.04
19	9.50	48.50	1.24
20	10.00	49.00	1.02
21	10.50	49.40	0.81
22	11.00	49.70	0.60

USER INPUT BLANK VALUE

BLANK VALUE = 24.41119 micrograms carbon

BLANK FACTOR = 24.41119 / 10.99603 = +2.2E+00 ug/min Carbon

SAMPLE RESULTS:

(49.7 - 24.41553) (1) / (1) = +2.53E+01 g/L Carbon
 (49.7 - 24.41553) (1) / (1) (12) = +2.11E+00 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV.0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002267SPK Date: 11/17/97 Time: 16:10:01

Sample Size = 1 uL Analyst : RD MEYERS
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .51 ug/minute C % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.50	0.00
2	1.01	0.80	37.50
3	1.50	1.30	38.46
4	2.00	10.30	87.38
5	2.50	71.40	85.57
6	3.00	185.00	61.41
7	3.50	308.60	40.05
8	4.00	415.20	25.67
9	4.50	494.70	16.07
10	5.00	548.50	9.81
11	5.50	583.40	5.98
12	6.00	604.60	3.51
13	6.50	616.30	1.90
14	7.00	622.30	0.96
15	7.50	625.30	0.48
16	8.00	627.20	0.30
17	8.50	628.10	0.14
18	9.00	628.90	0.13
19	9.50	629.50	0.10
20	10.00	630.00	0.08
21	10.50	630.40	0.06
22	11.00	630.80	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 5.607976 micrograms carbon

BLANK FACTOR = 5.607976 / 10.99603 = +5.1E-01 ug/min Carbon

SAMPLE RESULTS:

(630.8 - 5.608444) (1)/(1) = +6.252E+02 g/L Carbon
(630.8 - 5.608444) (1)/(1) (12) = +5.210E+01 Molar Carbon

Sample Run By:

RD MEYERS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002267SPK

Date: 11/17/97

Time: 16:45:24

Sample Size = 1 uL

Analyst : RD MEYERS

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.22 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	1.30	46.15
3	1.51	2.00	35.00
4	2.01	6.60	69.70
5	2.50	20.80	68.27
6	3.00	54.00	61.48
7	3.50	105.50	48.82
8	4.00	167.10	36.86
9	4.50	223.60	25.27
10	5.00	265.90	15.91
11	5.50	294.90	9.83
12	6.00	312.00	5.48
13	6.50	321.20	2.86
14	7.00	326.50	1.62
15	7.50	329.50	0.91
16	8.00	331.50	0.60
17	8.50	332.80	0.39
18	9.00	333.60	0.24
19	9.50	334.40	0.24
20	10.00	335.00	0.18
21	10.50	335.60	0.18
22	11.00	336.20	0.18

USER INPUT BLANK VALUE

BLANK VALUE = 24.41119 micrograms carbon

BLANK FACTOR = 24.41119 / 10.99603 = +2.2E+00 ug/min Carbon

SAMPLE RESULTS:

(336.2 - 24.41553) (1)/(1) = +3.118E+02 g/L Carbon

(336.2 - 24.41553) (1)/(1) (12) = +2.598E+01 Molar Carbon

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

Sample Run By:

RD MEYERS

00000

WORKBOOK PAGE: BLANK1

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	1.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	9.7	23.4
21171	µg of Carbon from Baseline (C2)	5.6	24.4

Test Code	µg of Carbon = C1-C2
@TICTOC1	
Matrix	
LIQUID	
Batch Number	
97005374	
Rerun	
0	
Sample Prep	
N/A	
Sample #	
BLNK	
Instrument Code	
CARB2	
Prepared By	
GJH	
Chemist	
RWS	
Analyst	
RDM	
Date Complete	
11/18/97	
Analysis Date	
11/17/97	
Analysis Time	Method Detection Limit in µg/mL
04:00 PM	
Sample Point	µg of Carbon
AP-107	

TIC	TOC
5	40
4.10E+00	1.00E+00

Data Entered By:

Signature of Chemist:

GJH

Date: 11/18/97

Date: 11/18/97

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in μg (C1)	537.6	621.4
21171	μg of Carbon from Baseline (C2)	5.6	24.4
Test Code	Standard Book Number	25N12B	26N12B
@TICTOC1	Standard Value ($\mu\text{g}/\text{mL}$)	602	3000

Matrix
LIQUID
Batch Number
97005374
Rerun
0
Sample Prep
N/A
Sample #
STD
Instrument Code
CARB2
Prepared By
GJH
Chemist
RWS
Analyst
RDM
Date Complete
11/18/97
Analysis Date
11/17/97
Analysis Time
04:00 PM
Sample Point
AP-107

QC Actual in $\mu\text{g}/\text{mL}$ = Standard Value ($\mu\text{g}/\text{mL}$)QC Found in $\mu\text{g}/\text{mL}$ = (C1 - C2) * DF / SSQC Found in $\mu\text{g}/\text{mL}$ for TIC = 5 if C1 < C2QC Found in $\mu\text{g}/\text{mL}$ for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in $\mu\text{g}/\text{mL}$	5	40
QC Actual in $\mu\text{g}/\text{mL}$	6.02E+02	3.00E+03
QC Found in $\mu\text{g}/\text{mL}$	5.32E+02	2.98E+03
Percent Standard Recovery	88.4	99.5

Data Entered By:	GJH	Date:	11/18/97
Signature of Chemist:	<i>R. Schneider</i>	Date:	11/18/97

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	303.5	51.3
21171	µg of Carbon from Baseline (C2)	5.6	24.4
Test Code			
@TICTOC1			

Matrix
LIQUID
Batch Number
97005374
Rerun
0
Sample Prep
N/A
Sample #
S97T002267
Instrument Code
CARB2
Prepared By
GJH
Chemist
RWS
Analyst
RDM
Date Complete
11/18/97
Analysis Date
11/17/97
Analysis Time
04:00 PM
Sample Point
AP-107

$\mu\text{g of Carbon/mL} = (C1 - C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	2.98E+03	2.69E+02

Data Entered By:	GJH	Date: 11/18/97
Signature of Chemist:	<i>R. J. Schreder</i>	Date: 11/18/97

WORKBOOK PAGE: DUP4

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	325.1	49.7
21171	µg of Carbon from Baseline (C2)	5.6	24.4
Test Code	Known µg of C from Original Sample	2.98E+3	2.69E+2
@TICTOC1			

Matrix
LIQUID
Batch Number
97005374
Rerun
0
Sample Prep
N/A
Sample #
S97T002267
Instrument Code
CARB2
Prepared By
GJH
Chemist
RWS
Analyst
RDM
Date Complete
11/18/97
Analysis Date
11/17/97
Analysis Time
04:00 PM
Sample Point
AP-107

$\mu\text{g of Carbon/mL} = (C1-C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	3.20E+03	2.53E+02

Data Entered By:	GJH	Date: 11/18/97
Signature of Chemist:	<i>RWSchoeder</i>	Date: 11/18/97

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SPIKE5

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	0.1000	0.1000
Work List	Final Coulometer Reading in µg (C1)	303.5	51.3
21171	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	0.1000
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	630.8	336.2
LIQUID	Spike Book Number	25N12B	26N12B
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	3000
97005374			
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) *$		
S97T002267			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB2	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
GJH			
Chemist			
RWS			
Analyst			
RDM			
Date Complete			
11/18/97			
Analysis Date			
11/17/97			
Analysis Time		TIC	TOC
04:00 PM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	6.55E+02	2.85E+03
AP-107	Percent Spike Recovery	108.7	95.0

Data Entered By:

GJH

Date: 11/18/97

Signature of Chemist:

RW Schneider

Date: 11/18/97

LABCORE Completed Worklist Report for Worklist# 21172

Analyst: rdm

Instrument: CARB1

Book# 25N12B
26N12B

Method: LA342-100 Rev/Mod F-0

Worklist Comment: AP-107 GRAB, TICTOC. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	LIQUID	1	3.30E+0	3.300	ug/mL
1 BLNK	0		@TICTOC1 TOC-02	LIQUID	1	1.31E+1	13.100	ug/mL
2 STD	0		@TICTOC1 TIC-02	LIQUID	6.02E+02	5.98E+2	99.33%	Recovery
2 STD	0		@TICTOC1 TOC-02	LIQUID	3.00E+03	3.01E+3	100.33%	Recovery
3 SAMPLE	S97T002269	0	@TICTOC1 TIC-02	LIQUID	N/A	3.32E+03	5.000	ug/mL
3 SAMPLE	S97T002269	0	@TICTOC1 TOC-02	LIQUID	N/A	2.81E+02	40.000	ug/mL
4 DUP	S97T002269	0	@TICTOC1 TIC-02	LIQUID	3.32E+3	3.09E+3	7.17%	RPD
4 DUP	S97T002269	0	@TICTOC1 TOC-02	LIQUID	2.81E+2	2.51E+2	11.27%	RPD
5 SPK	S97T002269	0	@TICTOC1 TIC-02	LIQUID	1.00E+02	8.92E+01	89.20%	Recovery
5 SPK	S97T002269	0	@TICTOC1 TOC-02	LIQUID	1.00E+02	8.85E+01	88.50%	Recovery

Final page for worklist# 21172

Analyst Signature

Date

Analyst Signature

Date

RW Schwed 11/20/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 21172

Analyst: Ron Instrument: CARB2 Book# 25N12B
26N12B

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AP-107 GRAB, TICTOC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	LIQUID		
2 STD			@TICTOC1	LIQUID		
3 SAMPLE	S97T002269 0		@TICTOC1	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: TIC-02 , TOC-02					
4 DUP	S97T002269 0		@TICTOC1	LIQUID		
5 SPK	S97T002269 0		@TICTOC1	LIQUID		

Final page for worklist # 21172

Ron 11/19/97
Analyst Signature Date

Smith Donah 11-19-97
Analyst Signature Date

Data Entry Comments:

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

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 11/19/97

Time: 08:47:59

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.50	0.00
2	1.00	1.10	54.55
3	1.50	1.60	31.25
4	2.00	2.10	23.81
5	2.50	2.60	19.23
6	3.00	3.20	18.75
7	3.50	3.70	13.51
8	4.00	4.20	11.90
9	4.50	4.70	10.64
10	5.00	5.40	12.96
11	5.50	5.80	6.90
12	6.00	6.20	6.45
13	6.50	6.90	10.14
14	7.00	7.40	6.76
15	7.50	8.00	7.50
16	8.00	8.30	3.61
17	8.50	8.90	6.74
18	9.00	9.40	5.32
19	9.50	9.90	5.05
20	10.00	10.60	6.60
21	10.50	11.20	5.36
22	11.00	11.60	3.45

BLANK VALUE = 11.6 micrograms carbon

BLANK FACTOR = 11.6 / 10.9978 =

+1.05E+00 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 147 TO 162

Sample Run By:

11/20/97
R. Schrock for RD Meyers
 RD MEYERS 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TIC/TOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 11/19/97

Time: 09:27:29

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.60	0.00
2	1.01	1.10	45.45
3	1.51	2.00	45.00
4	2.00	5.30	62.26
5	2.50	10.70	50.47
6	3.00	15.50	30.97
7	3.50	19.80	21.72
8	4.00	22.50	12.00
9	4.50	24.50	8.16
10	5.00	26.30	6.84
11	5.50	27.70	5.05
12	6.00	29.00	4.48
13	6.50	30.20	3.97
14	7.00	31.80	5.03
15	7.50	33.20	4.22
16	8.00	34.40	3.49
17	8.50	35.40	2.82
18	9.00	36.50	3.01
19	9.50	37.50	2.67
20	10.00	38.70	3.10
21	10.50	39.90	3.01
22	11.00	40.80	2.21

BLANK VALUE = 40.8 micrograms carbon

BLANK FACTOR = 40.8 / 10.99884 =

+3.71E+00 ug/min Carbon

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

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276 REV.0
TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 25N12B

Date: 11/19/97

Time: 09:45:14

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 1.05 ug/minute C

Analyst : RD MEYERS
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.90	0.00
2	1.01	3.40	44.12
3	1.50	7.00	51.43
4	2.01	52.40	86.64
5	2.50	182.20	71.24
6	3.00	338.70	46.21
7	3.50	459.40	26.27
8	4.00	531.00	13.48
9	4.50	566.40	6.25
10	5.00	583.80	2.98
11	5.50	591.70	1.34
12	6.00	595.40	0.62
13	6.50	598.10	0.45
14	7.00	600.10	0.33
15	7.50	601.80	0.28
16	8.00	603.20	0.23
17	8.50	604.70	0.25
18	9.00	605.90	0.20
19	9.50	606.90	0.16
20	10.00	607.90	0.16
21	10.50	609.00	0.18
22	11.00	609.80	0.13

USER INPUT BLANK VALUE

BLANK VALUE = 11.54878 micrograms carbon
BLANK FACTOR = 11.54878 / 10.99884 =

+1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(609.8 - 11.54878) (1)/(1) =
(609.8 - 11.54878) (1)/(1)(12) =

+5.983E+02 g/L Carbon
+4.985E+01 Molar Carbon

Sample Run By:

RD MEYERS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 26N12B

Date: 11/19/97

Time: 09:59:01

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.71 ug/minute C

Analyst : RD MEYERS
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.70	0.00
2	1.00	2.00	65.00
3	1.50	16.60	87.95
4	2.00	90.10	81.58
5	2.50	253.00	64.39
6	3.00	427.70	40.85
7	3.50	533.80	19.88
8	4.00	584.30	8.64
9	4.50	606.70	3.69
10	5.00	618.20	1.86
11	5.50	624.00	0.93
12	6.00	627.00	0.48
13	6.50	628.90	0.30
14	7.00	630.50	0.25
15	7.50	632.40	0.30
16	8.00	634.80	0.38
17	8.50	636.80	0.31
18	9.00	638.20	0.22
19	9.50	639.40	0.19
20	10.00	640.40	0.16
21	10.50	641.30	0.14
22	11.00	642.10	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 40.8057 micrograms carbon

BLANK FACTOR = 40.8057 / 10.99884 = +3.7E+00 ug/min Carbon

SAMPLE RESULTS:

(642.1 - 40.7989) (1)/(1) = +6.013E+02 g/L Carbon
(642.1 - 40.7989) (1)/(1) (12) = +5.011E+01 Molar Carbon

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

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: BLK

Date: 11/19/97

Time: 10:12:20

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 1.05 ug/minute C

Analyst : RD MEYERS
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.70	0.00
2	1.01	1.80	61.11
3	1.50	3.60	50.00
4	2.00	5.00	28.00
5	2.50	6.10	18.03
6	3.00	6.90	11.59
7	3.50	7.60	9.21
8	4.00	8.30	8.43
9	4.50	8.80	5.68
10	5.00	9.40	6.38
11	5.50	10.00	6.00
12	6.00	10.50	4.76
13	6.50	11.10	5.41
14	7.00	11.60	4.31
15	7.50	12.20	4.92
16	8.00	12.70	3.94
17	8.50	13.30	4.51
18	9.00	13.80	3.62
19	9.50	14.30	3.50
20	10.00	14.60	2.05
21	10.50	14.80	1.35
22	11.00	14.90	0.67

USER INPUT BLANK VALUE

BLANK VALUE = 11.54878 micrograms carbon

BLANK FACTOR = 11.54878 / 10.99884 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(14.9 - 11.54878) (1)/(1) = +3.35E+00 g/L Carbon
(14.9 - 11.54878) (1)/(1)(12) = +2.79E-01 Molar Carbon

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: BLK

Date: 11/19/97

Time: 10:36:36

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.71 ug/minute C

Analyst : RD MEYERS
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.20	50.00
3	1.50	3.20	62.50
4	2.00	7.10	54.93
5	2.50	13.70	48.18
6	3.00	21.80	37.16
7	3.50	23.50	7.23
8	4.00	24.10	2.49
9	4.50	24.50	1.63
10	5.00	24.90	1.61
11	5.50	25.10	0.80
12	6.00	25.20	0.40
13	6.50	25.30	0.40
14	7.00	25.30	0.00
15	7.50	25.30	0.00
16	8.00	25.30	0.00
17	8.50	25.50	0.78
18	9.00	26.00	1.92
19	9.50	26.40	1.52
20	10.00	26.90	1.86
21	10.50	27.30	1.47
22	11.00	27.70	1.44

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+3.7E+00 ug/min Carbon

SAMPLE RESULTS:

(27.7 - 40.80253) (1)/(1) = < 5.00 E-3 g/L Carbon
(27.7 - 40.80253) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S97T002269

Date: 11/19/97

Time: 11:03:00

Sample Size = 1 uL

Analyst : RD MEYERS

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 1.05 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	7.10	0.00
2	1.01	11.50	38.26
3	1.50	14.70	21.77
4	2.00	19.90	26.13
5	2.50	47.30	57.93
6	3.04	110.60	57.23
7	3.54	187.60	41.04
8	4.04	251.50	25.41
9	4.54	293.30	14.25
10	5.04	316.70	7.39
11	5.54	328.60	3.62
12	6.04	334.30	1.71
13	6.54	336.90	0.77
14	7.03	338.40	0.44
15	7.53	339.50	0.32
16	8.03	340.40	0.26
17	8.53	341.20	0.23
18	9.03	341.60	0.12
19	9.53	342.30	0.20
20	10.03	342.90	0.17
21	10.53	343.40	0.15
22	11.03	344.00	0.17

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+1.0E+00

ug/min Carbon

SAMPLE RESULTS:

(344 - 11.58243) (1)/(1) =

+3.324E+02 g/L Carbon

(344 - 11.58243) (1)/(1) (12) =

+2.770E+01 Molar Carbon

Sample Run By:

RD MEYERS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002269

Date: 11/19/97

Time: 11:17:39

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.71 ug/minute C

Analyst : RD MEYERS
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.20	58.33
3	1.51	2.80	57.14
4	2.00	10.40	73.08
5	2.50	23.80	56.30
6	3.00	37.80	37.04
7	3.50	47.00	19.57
8	4.00	52.60	10.65
9	4.50	55.70	5.57
10	5.00	57.60	3.30
11	5.50	59.10	2.54
12	6.00	60.10	1.66
13	6.50	60.90	1.31
14	7.00	61.60	1.14
15	7.50	62.20	0.96
16	8.00	62.90	1.11
17	8.50	64.10	1.87
18	9.00	65.20	1.69
19	9.50	66.40	1.81
20	10.00	67.40	1.48
21	10.50	68.20	1.17
22	11.00	68.90	1.02

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+3.7E+00

ug/min Carbon

SAMPLE RESULTS:

(68.9 - 40.80185) (1)/(1) =

+2.81E+01

g/L Carbon

(68.9 - 40.80185) (1)/(1) (12) =

+2.34E+00

Molar Carbon

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

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S97T002269DUP Date: 11/19/97 Time: 11:38:06

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 1.05 ug/minute C

Analyst : RD MEYERS
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.00	50.00
3	1.51	1.60	37.50
4	2.00	6.00	73.33
5	2.50	35.90	83.29
6	3.00	97.50	63.18
7	3.50	168.60	42.17
8	4.00	229.50	26.54
9	4.50	269.00	14.68
10	5.00	292.50	8.03
11	5.50	304.50	3.94
12	6.00	310.20	1.84
13	6.50	313.30	0.99
14	7.00	314.70	0.44
15	7.50	315.90	0.38
16	8.00	316.60	0.22
17	8.50	317.30	0.22
18	9.00	318.00	0.22
19	9.50	318.60	0.19
20	10.00	319.30	0.22
21	10.50	319.80	0.16
22	11.00	320.30	0.16

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 =

+1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(320.3 - 11.54795) (1)/(1) =
(320.3 - 11.54795) (1)/(1) (12) =

+3.088E+02 g/L Carbon
+2.573E+01 Molar Carbon

Sample Run By:

RD MEYERS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002269DUP Date: 11/19/97 Time: 11:54:15

Sample Size = 1 uL Analyst : RD MEYERS
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 3.71 ug/minute C % Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.20	50.00
3	1.51	2.70	55.56
4	2.00	9.40	71.28
5	2.50	21.80	56.88
6	3.00	35.10	37.89
7	3.50	44.60	21.30
8	4.00	50.30	11.33
9	4.50	53.50	5.98
10	5.00	55.60	3.78
11	5.50	57.10	2.63
12	6.00	58.40	2.23
13	6.50	59.30	1.52
14	7.00	60.30	1.66
15	7.50	61.40	1.79
16	8.00	62.00	0.97
17	8.50	62.80	1.27
18	9.00	63.40	0.95
19	9.50	64.10	1.09
20	10.00	64.70	0.93
21	10.50	65.30	0.92
22	11.00	65.90	0.91

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 = +3.7E+00 ug/min Carbon

SAMPLE RESULTS:

(65.9 - 40.80253) (1)/(1) = +2.51E+01 g/L Carbon
(65.9 - 40.80253) (1)/(1) (12) = +2.09E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0
TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002269SPK Date: 11/19/97 Time: 12:54:51

Sample Size = 1 uL	Analyst : RD MEYERS
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = 1.05 ug/minute C	% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.00	50.00
3	1.50	1.60	37.50
4	2.00	8.60	81.40
5	2.50	68.10	87.37
6	3.00	192.20	64.57
7	3.50	330.70	41.88
8	4.00	444.10	25.53
9	4.50	519.50	14.51
10	5.00	563.20	7.76
11	5.50	586.90	4.04
12	6.00	598.10	1.87
13	6.50	603.10	0.83
14	7.00	605.80	0.45
15	7.50	607.20	0.23
16	8.00	608.30	0.18
17	8.50	609.30	0.16
18	9.00	609.80	0.08
19	9.50	610.70	0.15
20	10.00	611.20	0.08
21	10.50	611.80	0.10
22	11.00	612.40	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 =

+1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(612.4 - 11.54788) (1)/(1) =	+6.009E+02 g/L Carbon
(612.4 - 11.54788) (1)/(1) (12) =	+5.007E+01 Molar Carbon

Sample Run By:

RD MEYERS

00000

HNF-SD-WM-DP-276, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002269SPK Date: 11/19/97 Time: 13:09:59

Sample Size = 1 uL Analyst : RD MEYERS
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 3.71 ug/minute C % Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.80	0.00
2	1.01	1.20	33.33
3	1.51	5.00	76.00
4	2.00	26.40	81.06
5	2.50	87.50	69.83
6	3.00	180.10	51.42
7	3.50	255.10	29.40
8	4.00	295.50	13.67
9	4.50	313.50	5.74
10	5.00	321.60	2.52
11	5.50	325.10	1.08
12	6.00	327.00	0.58
13	6.50	328.30	0.40
14	7.00	329.20	0.27
15	7.50	330.00	0.24
16	8.00	330.80	0.24
17	8.50	331.40	0.18
18	9.00	332.10	0.21
19	9.50	332.70	0.18
20	10.00	333.40	0.21
21	10.50	333.80	0.12
22	11.00	334.40	0.18

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 = +3.7E+00 ug/min Carbon

SAMPLE RESULTS:

(334.4 - 40.8057) (1)/(1) = +2.936E+02 g/L Carbon
(334.4 - 40.8057) (1)/(1) (12) = +2.447E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

RD MEYERS

00000

WORKBOOK PAGE: BLANK1

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	14.9	27.7
21172	µg of Carbon from Baseline (C2)	11.6	40.8
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
97005375			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
Instrument Code			
CARB1			
Prepared By			
LCM			
Chemist			
RWS			
Analyst			
RDM			
Date Complete			
11/19/97			
Analysis Date			
11/19/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
02:00 PM			
Sample Point	µg of Carbon	3.30E+00	1.31E+01
AP-107			

Data Entered By:	LCM	Date:	11/19/97
Signature of Chemist:	<i>RWS</i>	Date:	11/20/97

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in µg (C1)	609.8	642.1
21172	µg of Carbon from Baseline (C2)	11.6	40.8
Test Code	Standard Book Number	25N12B	26N12B
@TICTOC1	Standard Value (µg/ml)	602	3000
Matrix			
LIQUID			
Batch Number			
97005375			
Rerun			
0			
Sample Prep	QC Actual in µg/mL = Standard Value (µg/mL)		
N/A	QC Found in µg/mL = (C1 - C2) * DF / SS		
Sample #	QC Found in µg/mL for TIC = 5 if C1 < C2		
	QC Found in µg/mL for TOC = 40 if C1 < C2		
Instrument Code	% Recovery = QC Found / QC Actual * 100		
CARB1			
Prepared By			
LCM			
Chemist			
RWS			
Analyst			
RDM			
Date Complete			
11/19/97			
Analysis Date			
11/19/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
02:00 PM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.98E+02	3.01E+03
AP-107	Percent Standard Recovery	99.4	100.2

Data Entered By:	LCM	Date:	11/19/97
Signature of Chemist:	<i>R. J. Schwab</i>	Date:	11/20/97

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

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

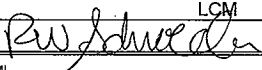
LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	344	68.9
21172	µg of Carbon from Baseline (C2)	11.6	40.8
Test Code			
@TICTOC1			

Matrix
LIQUID
Batch Number
97005375
Rerun
0
Sample Prep
N/A
Sample #
S97T002269
Instrument Code
CARB1
Prepared By
LCM
Chemist
RWS
Analyst
RDM
Date Complete
11/19/97
Analysis Date
11/19/97
Analysis Time
02:00 PM
Sample Point
AP-107

$\mu\text{g of Carbon/mL} = (C1-C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	3.32E+03	2.81E+02

Data Entered By:	LCM	Date:	11/19/97
Signature of Chemist:		Date:	11/20/97

WORKBOOK PAGE: DUP4

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	320.3	65.9
21172	µg of Carbon from Baseline (C2)	11.6	40.8
Test Code	Known µg of C from Original Sample	3.32E+3	2.81E+2
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
97005375			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
0	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T002269			
Instrument Code			
CARB1			
Prepared By			
LCM			
Chemist			
RWS			
Analyst			
RDM			
Date Complete			
11/19/97			
Analysis Date			
11/19/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
02:00 PM		5	40
Sample Point	µg of Carbon/mL	3.09E+03	2.51E+02
AP-107			

Data Entered By:	LCM	Date: 11/19/97
Signature of Chemist:	<i>RWS</i>	Date: 11/20/97

WORKBOOK PAGE: SPIKE5

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	0.1000	0.1000
Work List	Final Coulometer Reading in µg (C1)	344	68.9
21172	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	0.1000
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	612.4	334.4
LIQUID	Spike Book Number	25N12B	26N12B
Batch Number	Spike Standard Value in µg/mL (SPK CONC)	602	3000
97005375			
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) *$		
S97T002269			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB1	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
LCM			
Chemist			
RWS			
Analyst			
RDM			
Date Complete			
11/19/97			
Analysis Date			
11/19/97			
Analysis Time			
02:00 PM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.37E+02	2.65E+03
AP-107	Percent Spike Recovery	89.2	88.5

Data Entered By:

LCM

Date: 11/19/97

Signature of Chemist:

Ben Schroeder

Date: 11/20/97

LABCORE Completed Worklist Report for Worklist# 21201

Analyst: dgg

Instrument: CARB2

Book# TIC 25N12B
TOC 26N12B

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

Worklist Comment: AP-107 GRAB, TICTOC. gjh

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	LIQUID	1	1.00E-1	0.100	ug/mL
1 BLNK	0		@TICTOC1 TOC-02	LIQUID	1	4.90E+0	4.900	ug/mL
2 STD	0		@TICTOC1 TIC-02	LIQUID	6.02E+02	6.01E+2	99.834	% Recovery
2 STD	0		@TICTOC1 TOC-02	LIQUID	3.00E+03	2.83E+3	94.333	% Recovery
3 SAMPLE	S97T002268	0	@TICTOC1 TIC-02	LIQUID	N/A	3.21E+03	5.000	ug/mL
3 SAMPLE	S97T002268	0	@TICTOC1 TOC-02	LIQUID	N/A	1.09E+02	40.000	ug/mL
4 DUP	S97T002268	0	@TICTOC1 TIC-02	LIQUID	3.21E+3	3.27E+3	1.852	RPD
4 DUP	S97T002268	0	@TICTOC1 TOC-02	LIQUID	1.09E+2	1.03E+2	5.660	RPD
5 SPK	S97T002268	0	@TICTOC1 TIC-02	LIQUID	1.00E+02	9.72E+01	97.200	% Recovery
5 SPK	S97T002268	0	@TICTOC1 TOC-02	LIQUID	1.00E+02	97.7	97.700	% Recovery

Final page for worklist# 21201

Analyst Signature

Date

Analyst Signature

Date

R. W. Schneider 11/25/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 21201

Analyst: NBB Instrument: CARB2 _____ Book# TIC - 25N12-B

Method: LA-342-100 Rev/Mod F-Ø TOC - 26N12-B

Worklist Comment: AP-107 GRAB, TICTOC. gjh

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	LIQUID		
2 STD			@TICTOC1	LIQUID		
3 SAMPLE	S97T002268 0		@TICTOC1	LIQUID	97000649	AP-107 GRAB
Analytes Requested: TIC-02 , TOC-02						
4 DUP	S97T002268 0		@TICTOC1	LIQUID		
5 SPK	S97T002268 0		@TICTOC1	LIQUID		

Final page for worklist # 21201

NBB 11-23-97
Analyst Signature Date

Leah Rand 11-24-97
Analyst Signature Date

Data Entry Comments:

HNF-SD-WM-DP-276, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 11/22/97

Time: 20:16:53

Sample Size = 1 uL

Analyst : DG GRIFFIN

Dil Factor = 1

Min Readings = 22

Blank ID # = BASELINE

Max Readings = 22

Blank Value = N/A

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.01	1.00	60.00
4	1.51	1.60	37.50
5	2.00	2.00	20.00
6	2.50	2.60	23.08
7	3.01	3.10	16.13
8	3.50	3.50	11.43
9	4.00	4.00	12.50
10	4.50	4.50	11.11
11	5.00	5.00	10.00
12	5.50	5.70	12.28
13	6.00	6.00	5.00
14	6.50	6.60	9.09
15	7.00	7.00	5.71
16	7.50	7.60	7.89
17	8.00	8.00	5.00
18	8.50	8.50	5.88
19	9.00	9.10	6.59
20	9.50	9.50	4.21
21	10.00	10.00	5.00
22	10.50	10.50	4.76

BLANK VALUE = 10.5 micrograms carbon

BLANK FACTOR = 10.5 / 10.49902 =

+1.00E+00 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 166 TO 182

Sample Run By:

D. B. Griffin
DG GRIFFIN

00000

HNF-SD-WM-DP-276, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 11/22/97

Time: 20:30:29

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

Analyst : DG GRIFFIN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.50	100.00
3	1.01	2.10	76.19
4	1.50	5.70	63.16
5	2.00	10.70	46.73
6	2.50	15.30	30.07
7	3.00	18.50	17.30
8	3.50	20.60	10.19
9	4.00	22.10	6.79
10	4.50	23.20	4.74
11	5.00	24.10	3.73
12	5.50	24.90	3.21
13	6.00	25.60	2.73
14	6.50	26.30	2.66
15	7.00	27.00	2.59
16	7.50	27.60	2.17
17	8.00	28.20	2.13
18	8.50	29.00	2.76
19	9.00	29.60	2.03
20	9.50	30.40	2.63
21	10.00	31.00	1.94
22	10.50	31.90	2.82

BLANK VALUE = 31.9 micrograms carbon

BLANK FACTOR = 31.9 / 10.4989 =

+3.04E+00 ug/min Carbon

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

Sample Run By:

DG Griffin
DG GRIFFIN

00000

HNF-SD-WM-DP-276, REV.0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: STD 25N12B

Date: 11/22/97

Time: 21:14:09

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

Analyst : DG GRIFFIN
Min Readings = 22
Max Readings = 22
% Difference = 10.

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.80	100.00
3	1.01	6.40	87.50
4	1.51	77.50	91.74
5	2.00	213.40	63.68
6	2.50	353.10	39.56
7	3.00	465.60	24.16
8	3.50	534.00	12.81
9	4.00	572.80	6.77
10	4.50	592.10	3.26
11	5.00	599.60	1.25
12	5.50	603.70	0.68
13	6.00	605.40	0.28
14	6.50	606.50	0.18
15	7.00	607.30	0.13
16	7.50	607.80	0.08
17	8.00	608.50	0.12
18	8.50	609.10	0.10
19	9.00	609.60	0.08
20	9.50	610.10	0.08
21	10.00	610.60	0.08
22	10.50	611.10	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 10.4989 micrograms carbon

BLANK FACTOR = 10.4989 / 10.4989 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(611.1 - 10.49915) (1)/(1000) = +6.006E-01 g/L Carbon
(611.1 - 10.49915) (1)/(1000) (12) = +5.005E-02 Molar Carbon

Sample Run By:

DG Griffin
DG GRIFFIN

00000

HNF-SD-WM-DP-276, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 26N12B

Date: 11/22/97

Time: 21:27:41

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.04 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1          0.08          0.00          0.00
  2          0.51          0.00          0.00
  3          1.00          0.80         100.00
  4          1.50          9.40          91.49
  5          2.00         44.90          79.06
  6          2.50        115.00          60.96
  7          3.00        233.50          50.75
  8          3.50        379.60          38.49
  9          4.00        490.00          22.53
 10          4.50        548.00          10.58
 11          5.00        573.60           4.46
 12          5.50        583.70           1.73
 13          6.00        588.70           0.85
 14          6.50        590.70           0.34
 15          7.00        592.20           0.25
 16          7.50        593.40           0.20
 17          8.00        594.20           0.13
 18          8.50        595.10           0.15
 19          9.00        595.80           0.12
 20          9.50        596.70           0.15
 21         10.00        597.10           0.07
 22         10.50        597.70           0.10

```

USER INPUT BLANK VALUE

BLANK VALUE = 31.91666 micrograms carbon

BLANK FACTOR = 31.91666 / 10.4989 = +3.0E+00 ug/min Carbon

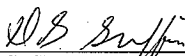
SAMPLE RESULTS:

```

( 597.7 - 31.91666 ) (1) / (200) = +2.829E+00 g/L Carbon
( 597.7 - 31.91666 ) (1) / (200) (12) = +2.357E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

```

Sample Run By:


 DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK

Date: 11/22/97

Time: 20:45:34

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

Analyst : DG GRIFFIN
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.90	100.00
3	1.01	1.90	52.63
4	1.50	2.40	20.83
5	2.00	2.80	14.29
6	2.50	3.30	15.15
7	3.00	3.90	15.38
8	3.50	4.40	11.36
9	4.00	4.80	8.33
10	4.50	5.30	9.43
11	5.00	5.70	7.02
12	5.50	6.20	8.06
13	6.00	6.60	6.06
14	6.50	7.10	7.04
15	7.00	7.50	5.33
16	7.50	8.00	6.25
17	8.00	8.40	4.76
18	8.50	8.90	5.62
19	9.00	9.30	4.30
20	9.50	9.70	4.12
21	10.00	10.20	4.90
22	10.50	10.60	3.77

USER INPUT BLANK VALUE

BLANK VALUE = 10.4989 micrograms carbon

BLANK FACTOR = 10.4989 / 10.4989 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(10.6 - 10.49829) (1)/(1) = +1.02E-01 g/L Carbon
 (10.6 - 10.49829) (1)/(1)(12) = +8.48E-03 Molar Carbon

Sample Run By:


 DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
 HNF-SD-WM-DP-276, REV. 0
 TICTOC REV 2.0

Sample: BLANK

Date: 11/22/97

Time: 20:58:43

Sample Size = 1 uL
 Dil Factor = 1
 Blank ID # =
 Blank Value = 3.04 ug/minute C

Analyst : DG GRIFFIN
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.20	100.00
3	1.01	0.70	71.43
4	1.50	3.90	82.05
5	2.00	8.70	55.17
6	2.50	13.00	33.08
7	3.00	16.30	20.25
8	3.50	18.60	12.37
9	4.00	19.70	5.58
10	4.50	20.60	4.37
11	5.00	21.40	3.74
12	5.50	22.10	3.17
13	6.00	22.80	3.07
14	6.50	23.20	1.72
15	7.00	23.70	2.11
16	7.50	24.20	2.07
17	8.00	24.70	2.02
18	8.50	25.20	1.98
19	9.00	25.70	1.95
20	9.50	26.10	1.53
21	10.00	26.50	1.51
22	10.50	27.00	1.85

USER INPUT BLANK VALUE

BLANK VALUE = 31.91666 micrograms carbon

BLANK FACTOR = 31.91666 / 10.4989 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:

(27 - 31.91443) (1)/(1) = < 5.00 E-3 g/L Carbon
 (27 - 31.91443) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:



DG GRIFFIN

00000

HNF-SD-WM-DP-276, REV. 0
TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002268

Date: 11/23/97

Time: 00:29:05

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

Analyst : DG GRIFFIN
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.01	1.70	76.47
4	1.50	14.40	88.19
5	2.00	76.00	81.05
6	2.50	159.40	52.32
7	3.00	229.80	30.64
8	3.50	277.70	17.25
9	4.00	304.70	8.86
10	4.50	317.70	4.09
11	5.00	323.10	1.67
12	5.50	325.70	0.80
13	6.00	327.00	0.40
14	6.50	327.80	0.24
15	7.00	328.30	0.15
16	7.50	328.80	0.15
17	8.00	329.30	0.15
18	8.50	329.70	0.12
19	9.00	330.20	0.15
20	9.50	330.50	0.09
21	10.00	331.00	0.15
22	10.50	331.40	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 10.4989 micrograms carbon

BLANK FACTOR = 10.4989 / 10.4989 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(331.4 - 10.49817) (1)/(100) = +3.209E+00 g/L Carbon
 (331.4 - 10.49817) (1)/(100) (12) = +2.674E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

HNF-SD-WM-DP-276, REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002268

Date: 11/23/97

Time: 00:43:01

Sample Size = 100 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.04 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.01	1.30	69.23
4	1.51	6.10	78.69
5	2.00	12.80	52.34
6	2.50	20.10	36.32
7	3.00	26.50	24.15
8	3.50	30.60	13.40
9	4.00	34.10	10.26
10	4.50	35.80	4.75
11	5.00	37.10	3.50
12	5.50	38.00	2.37
13	6.00	38.70	1.81
14	6.50	39.30	1.53
15	7.00	39.80	1.26
16	7.50	40.30	1.24
17	8.00	40.70	0.98
18	8.50	41.10	0.97
19	9.00	41.60	1.20
20	9.50	41.90	0.72
21	10.00	42.40	1.18
22	10.50	42.80	0.93

USER INPUT BLANK VALUE

BLANK VALUE = 31.91666 micrograms carbon

BLANK FACTOR = 31.91666 / 10.4989 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:

(42.8 - 31.91696) (1)/(100) = +1.09E-01 g/L Carbon
 (42.8 - 31.91696) (1)/(100) (12) = +9.07E-03 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002268DUP

Date: 11/23/97

Time: 00:55:57

Sample Size = 100 uL

Analyst : DG GRIFFIN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 1 ug/minute C.

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.30	100.00
3	1.01	0.90	66.67
4	1.50	12.40	92.74
5	2.04	72.00	82.78
6	2.54	156.20	53.91
7	3.04	228.50	31.64
8	3.54	278.60	17.98
9	4.04	307.30	9.34
10	4.54	321.80	4.51
11	5.04	328.70	2.10
12	5.54	331.20	0.75
13	6.04	332.90	0.51
14	6.54	333.70	0.24
15	7.04	334.30	0.18
16	7.54	334.80	0.15
17	8.04	335.30	0.15
18	8.54	335.70	0.12
19	9.04	336.10	0.12
20	9.54	336.60	0.15
21	10.04	337.00	0.12
22	10.54	337.40	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 10.4989 micrograms carbon

BLANK FACTOR = 10.4989 / 10.4989 =

+1.0E+00

ug/min Carbon

SAMPLE RESULTS:

(337.4 - 10.53567) (1)/(100) =

+3.269E+00 g/L Carbon

(337.4 - 10.53567) (1)/(100) (12) =

+2.724E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002268DUP Date: 11/23/97 Time: 01:09:01

Sample Size = 100 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.04 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.30	100.00
3	1.01	1.20	75.00
4	1.51	5.40	77.78
5	2.00	12.90	58.14
6	2.50	19.30	33.16
7	3.00	25.50	24.31
8	3.50	30.00	15.00
9	4.00	33.30	9.91
10	4.50	35.60	6.46
11	5.00	36.60	2.73
12	5.50	37.60	2.66
13	6.00	38.30	1.83
14	6.50	38.90	1.54
15	7.00	39.30	1.02
16	7.50	39.80	1.26
17	8.00	40.20	1.00
18	8.50	40.70	1.23
19	9.00	41.10	0.97
20	9.50	41.50	0.96
21	10.00	41.80	0.72
22	10.50	42.20	0.95

USER INPUT BLANK VALUE

BLANK VALUE = 31.91666 micrograms carbon

BLANK FACTOR = 31.91666 / 10.4989 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:

(42.2 - 31.91443) (1)/(100) = +1.03E-01 g/L Carbon
(42.2 - 31.91443) (1)/(100) (12) = +8.57E-03 Molar Carbon
<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By:

DG GRIFFIN

00000

HNF-SD-WM-DP-276, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002268SPK

Date: 11/23/97

Time: 02:58:13

Sample Size = 100 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.30	100.00
3	1.01	0.80	62.50
4	1.50	28.90	97.23
5	2.00	155.00	81.35
6	2.50	319.90	51.55
7	3.00	450.90	29.05
8	3.50	533.10	15.42
9	4.00	580.20	8.12
10	4.50	603.10	3.80
11	5.00	612.30	1.50
12	5.50	616.80	0.73
13	6.00	618.70	0.31
14	6.50	619.70	0.16
15	7.00	620.60	0.15
16	7.50	621.10	0.08
17	8.00	621.70	0.10
18	8.50	622.30	0.10
19	9.00	622.90	0.10
20	9.50	623.20	0.05
21	10.00	623.70	0.08
22	10.50	624.10	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 10.4989 micrograms carbon

BLANK FACTOR = 10.4989 / 10.4989 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(624.1 - 10.49899) (1)/(100) = +6.136E+00 g/L Carbon
(624.1 - 10.49899) (1)/(100) (12) = +5.113E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

HNF-SD-WM-DP-276, REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S97T002268SPK

Date: 11/23/97

Time: 03:11:28

Sample Size = 100 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.04 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.01	2.40	83.33
4	1.50	23.60	89.83
5	2.00	74.60	68.36
6	2.50	151.50	50.76
7	3.00	229.20	33.90
8	3.50	282.30	18.81
9	4.00	309.90	8.91
10	4.50	322.00	3.76
11	5.00	326.80	1.47
12	5.50	329.20	0.73
13	6.00	330.70	0.45
14	6.50	331.60	0.27
15	7.00	332.30	0.21
16	7.50	333.00	0.21
17	8.00	333.50	0.15
18	8.50	334.00	0.15
19	9.00	334.50	0.15
20	9.50	335.00	0.15
21	10.00	335.40	0.12
22	10.50	335.80	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 31.91666 micrograms carbon

BLANK FACTOR = 31.91666 / 10.4989 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:

(335.8 - 31.91694) (1) / (100) = +3.039E+00 g/L Carbon
 (335.8 - 31.91694) (1) / (100) (12) = +2.532E-01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: BLANK1

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

LIQUIDS

Type	Sample Size in mL	(SS)	TIC	TOC
BLNK	Dilution Factor	(DF)	0.0000	0.0000
Work List	µg of Carbon in Sample	(C1)	1	1
21201	µg of Carbon from Baseline	(C2)	10.6	27
Test Code			10.5	31.9
@TICTOC1				
Matrix				
LIQUID				
Batch Number				
97005406				
Rerun	µg of Carbon = C1-C2			
0				
Sample Prep				
N/A				
Sample #				
Instrument Code				
CARB2				
Prepared By				
LCM				
Chemist				
RWS				
Analyst				
DGG				
Date Complete				
11/24/97				
Analysis Date				
11/23/97				
Analysis Time	Method Detection Limit in µg/mL		TIC	TOC
02:30 AM			5	40
Sample Point	µg of Carbon			
AP-107			1.00E-01	4.90E+00

Data Entered By:	LCM	Date:	11/24/97
Signature of Chemist:	<i>Law Schmollen</i>	Date:	11/25/97

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in µg (C1)	611.1	597.7
21201	µg of Carbon from Baseline (C2)	10.5	31.9
Test Code	Standard Book Number	25N12B	26N12B
@TICTOC1	Standard Value (µg/ml)	602	3000

Matrix
LIQUID
Batch Number
97005406
Rerun
0
Sample Prep
N/A
Sample #
Instrument Code
CARB2
Prepared By
LCM
Chemist
RWS
Analyst
DGC
Date Complete
11/24/97
Analysis Date
11/23/97
Analysis Time
02:30 AM
Sample Point
AP-107

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

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in µg/mL	5	40
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	6.01E+02	2.83E+03
Percent Standard Recovery	99.8	94.3

Data Entered By:

Signature of Chemist:

LCM

Date: 11/24/97

Date: 11/25/97

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	331.4	42.8
21201	µg of Carbon from Baseline (C2)	10.5	31.9
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
97005406			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S97T002268			
Instrument Code			
CARB2			
Prepared By			
LCM			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
11/24/97			
Analysis Date			
11/23/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
02:30 AM		5	40
Sample Point	µg of Carbon/mL	3.21E+03	1.09E+02
AP-107			

$\mu\text{g of Carbon/mL} = (C1 - C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

Data Entered By:

LCM

Date: 11/24/97

Signature of Chemist:

Date: 11/25/97

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: DUP4

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	337.4	42.2
21201	µg of Carbon from Baseline (C2)	10.5	31.9
Test Code	Known µg of C from Original Sample	3.21E+3	1.09E+2
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
97005406			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
0	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T002268			
Instrument Code			
CARB2			
Prepared By			
LCM			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
11/24/97			
Analysis Date			
11/23/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
02:30 AM		5	40
Sample Point	µg of Carbon/mL	3.27E+03	1.03E+02
AP-107			

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

Data Entered By:

LCM

Date: 11/24/97

Signature of Chemist:

RW Schneider

Date: 11/25/97

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SPIKE5

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	0.1000	0.1000
Work List	Final Coulometer Reading in µg (C1)	331.4	42.8
21201	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	0.1000
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	624.1	335.8
LIQUID	Spike Book Number	25N12B	26N12B
Batch Number	Spike Standard Value in µg/mL (SPK CONC)	602	3000
97005406			
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = (C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) *		
S97T002268			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB2	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
LCM			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
11/24/97			
Analysis Date			
11/23/97			
Analysis Time			
02:30 AM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.85E+02	2.93E+03
AP-107	Percent Spike Recovery	97.2	97.7

Data Entered By:

LCM

Date: 11/24/97

Signature of Chemist:

RW Schneider

Date: 11/25/97

LABCORE Data Entry Template for Worklist# 21214

Analyst: dgg Instrument: CARB2 Book # 25N12B

Method: LA-342-100 Rev/Mod F-Ø

Worklist Comment: AP-107 TIC Only. gjh

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			@TICTOC1 TIC-02	LIQUID	<u>1</u>	<u><5</u>	<u>N/A</u>	ug/mL
		1 BLNK			@TICTOC1 TOC-02	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	ug/mL
		2 STD			@TICTOC1 TIC-02	LIQUID		<u>6.01e⁺²</u>	<u>N/A</u>	ug/mL
		2 STD			@TICTOC1 TOC-02	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	ug/mL
97000649	AP-107 GRAB	3 SAMPLE	S97T002267	0	@TICTOC1 TIC-02	LIQUID	<u>N/A</u>	<u>3.22e⁺³</u>	<u>5.00</u>	ug/mL
97000649	AP-107 GRAB	4 DUP	S97T002267	0	@TICTOC1 TIC-02	LIQUID	<u>3.22e⁺³</u>	<u>3.22e⁺³</u>	<u>N/A</u>	ug/mL
97000649	AP-107 GRAB	4 DUP	S97T002267	0	@TICTOC1 TOC-02	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	ug/mL
97000649	AP-107 GRAB	5 SPK	S97T002267	0	@TICTOC1 TIC-02	LIQUID	<u>160.0</u>	<u>100.8</u>	<u>N/A</u>	ug/mL
97000649	AP-107 GRAB	5 SPK	S97T002267	0	@TICTOC1 TOC-02	LIQUID	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	ug/mL

Final page for worklist # 21214

See attached for signature
Analyst Signature _____ Date _____

Shirley Mah 11-24-97
Analyst Signature Date
Approved R. Schroeder 11/25/97

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# 21214

Analyst: DBB Instrument: CARB2 Book# TIC-25N12-B
Method: LA-342-100 Rev/Mod F-0 TOC-26N12-B
Worklist Comment: AP-107 TIC Only. gjh

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	LIQUID		
2 STD			@TICTOC1	LIQUID		
3 SAMPLE	S97T002267 0		@TICTOC1	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: TIC-02					
4 DUP	S97T002267 0		@TICTOC1	LIQUID		
5 SPK	S97T002267 0		@TICTOC1	LIQUID		

Final page for worklist # 21214

DBB 11-22-97
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

HNF-SD-WM-DP-276, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 11/22/97

Time: 20:16:12

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASELINE

Blank Value = N/A

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis	Time	Coulometer	% Difference
1	0.08		0.00	0.00
2	0.51		0.40	100.00
3	1.01		1.00	60.00
4	1.51		1.60	37.50
5	2.00		2.00	20.00
6	2.50		2.60	23.08
7	3.01		3.10	16.13
8	3.50		3.50	11.43
9	4.00		4.00	12.50
10	4.50		4.50	11.11
11	5.00		5.00	10.00
12	5.50		5.70	12.28
13	6.00		6.00	5.00
14	6.50		6.60	9.09
15	7.00		7.00	5.71
16	7.50		7.60	7.89
17	8.00		8.00	5.00
18	8.50		8.50	5.88
19	9.00		9.10	6.59
20	9.50		9.50	4.21
21	10.00		10.00	5.00
22	10.50		10.50	4.76

BLANK VALUE = 10.5 micrograms carbon

BLANK FACTOR = 10.5 / 10.49902 =

+1.00E+00 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 185 TO 195

Sample Run By:

DG Griffin
DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 25N12B

Date: 11/22/97

Time: 21:13:43

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.80	100.00
3	1.01	6.40	87.50
4	1.51	77.50	91.74
5	2.00	213.40	63.68
6	2.50	353.10	39.56
7	3.00	465.60	24.16
8	3.50	534.00	12.81
9	4.00	572.80	6.77
10	4.50	592.10	3.26
11	5.00	599.60	1.25
12	5.50	603.70	0.68
13	6.00	605.40	0.28
14	6.50	606.50	0.18
15	7.00	607.30	0.13
16	7.50	607.80	0.08
17	8.00	608.50	0.12
18	8.50	609.10	0.10
19	9.00	609.60	0.08
20	9.50	610.10	0.08
21	10.00	610.60	0.08
22	10.50	611.10	0.08

USER INPUT BLANK VALUE

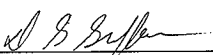
BLANK VALUE = 10.4989 micrograms carbon

BLANK FACTOR = 10.4989 / 10.4989 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(611.1 - 10.49915) (1)/(1000)	=	+6.006E-01	g/L Carbon
(611.1 - 10.49915) (1)/(1000) (12)	=	+5.005E-02	Molar Carbon

Sample Run By:


 DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK

Date: 11/22/97

Time: 20:45:02

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.90	100.00
3	1.01	1.90	52.63
4	1.50	2.40	20.83
5	2.00	2.80	14.29
6	2.50	3.30	15.15
7	3.00	3.90	15.38
8	3.50	4.40	11.36
9	4.00	4.80	8.33
10	4.50	5.30	9.43
11	5.00	5.70	7.02
12	5.50	6.20	8.06
13	6.00	6.60	6.06
14	6.50	7.10	7.04
15	7.00	7.50	5.33
16	7.50	8.00	6.25
17	8.00	8.40	4.76
18	8.50	8.90	5.62
19	9.00	9.30	4.30
20	9.50	9.70	4.12
21	10.00	10.20	4.90
22	10.50	10.60	3.77

USER INPUT BLANK VALUE

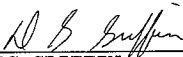
BLANK VALUE = 10.4989 micrograms carbon

BLANK FACTOR = 10.4989 / 10.4989 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(10.6 - 10.49829) (1)/(1)	=	+1.02E-01	g/L Carbon
(10.6 - 10.49829) (1)/(1)(12)	=	+8.48E-03	Molar Carbon

Sample Run By:


 DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002267

Date: 11/22/97

Time: 23:28:51

Sample Size = 100 uL

Analyst : DG GRIFFIN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 1 ug/minute C

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.20	100.00
3	1.00	15.30	98.69
4	1.50	76.00	79.87
5	2.00	146.00	47.95
6	2.50	216.80	32.66
7	3.00	267.00	18.80
8	3.50	299.50	10.85
9	4.00	315.30	5.01
10	4.50	323.10	2.41
11	5.00	326.10	0.92
12	5.50	327.80	0.52
13	6.00	328.70	0.27
14	6.50	329.30	0.18
15	7.00	329.80	0.15
16	7.50	330.30	0.15
17	8.00	330.70	0.12
18	8.50	331.20	0.15
19	9.00	331.60	0.12
20	9.50	332.00	0.12
21	10.00	332.40	0.12
22	10.50	332.80	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 10.4989 micrograms carbon

BLANK FACTOR = 10.4989 / 10.4989 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(332.8 - 10.49792) (1)/(100) = +3.223E+00 g/L Carbon
 (332.8 - 10.49792) (1)/(100) (12) = +2.686E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

HNF-SD-WM-DP-276, REV.0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S97T002267DUP Date: 11/22/97 Time: 23:57:05

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

Analyst : DG GRIFFIN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	2.50	100.00
3	1.00	6.40	60.94
4	1.50	18.60	65.59
5	2.00	79.70	76.66
6	2.50	165.20	51.76
7	3.00	234.10	29.43
8	3.50	281.10	16.72
9	4.00	306.30	8.23
10	4.50	318.70	3.89
11	5.00	324.10	1.67
12	5.50	326.40	0.70
13	6.00	327.60	0.37
14	6.50	328.60	0.30
15	7.00	329.00	0.12
16	7.50	329.50	0.15
17	8.00	330.00	0.15
18	8.50	330.60	0.18
19	9.00	330.90	0.09
20	9.50	331.30	0.12
21	10.00	331.70	0.12
22	10.50	332.10	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 10.4989 micrograms carbon

BLANK FACTOR = 10.4989 / 10.4989 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(332.1 - 10.49805) (1)/(100) = +3.216E+00 g/L Carbon
(332.1 - 10.49805) (1)/(100) (12) = +2.680E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

HNF-SD-WM-DP-276, REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T002267SPK Date: 11/23/97 Time: 00:11:15

Sample Size = 100 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.50	100.00
3	1.01	1.20	58.33
4	1.51	17.90	93.30
5	2.00	128.20	86.04
6	2.50	289.60	55.73
7	3.00	430.60	32.75
8	3.51	524.30	17.87
9	4.00	579.50	9.53
10	4.50	608.30	4.73
11	5.00	621.50	2.12
12	5.50	627.50	0.96
13	6.00	630.00	0.40
14	6.50	631.60	0.25
15	7.00	632.50	0.14
16	7.50	633.30	0.13
17	8.00	633.90	0.09
18	8.50	634.40	0.08
19	9.00	634.90	0.08
20	9.50	635.40	0.08
21	10.00	635.80	0.06
22	10.50	636.30	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 10.4989 micrograms carbon

BLANK FACTOR = 10.4989 / 10.4989 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(636.3 - 10.499) (1)/(100) = +6.258E+00 g/L Carbon
(636.3 - 10.499) (1)/(100) (12) = +5.215E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.0000	
BLANK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	10.6	
21214	µg of Carbon from Baseline (C2)	10.5	
Test Code			
TIC			

Matrix
LIQUID
Batch Number
Rerun
Sample Prep
Sample #
Instrument Code
CARB2
Prepared By
LCM
Chemist
RWS
Analyst
DGG
Date Complete
11/24/97
Analysis Date
11/22/97
Analysis Time
11:15 PM
Sample Point
AP-107 GRAB

$\mu\text{g of Carbon/mL} = (C1-C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

NOTE: FOR TIC: The Reported Result is < 5.
 NOTE: FOR TOC: The Reported Result is < 40.

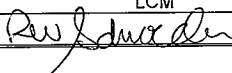
	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL Note: <		

Data Entered By:

LCM

Date: 11/24/97

Signature of Chemist:



Date: 11/25/97

HNF-SD-WM-DP-276, REV. 0
LIQUIDS

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

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	
STD	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	611.1	
21214	µg of Carbon from Baseline (C2)	10.5	
Test Code			
TIC			

Matrix
LIQUID
Batch Number
Rerun
Sample Prep
Sample #
STD# 25N12B
Instrument Code
CARB2
Prepared By
LCM
Chemist
RWS
Analyst
DGG
Date Complete
11/24/97
Analysis Date
11/22/97
Analysis Time
11:15 PM
Sample Point
AP-107 GRAB

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

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL Note: <	6.01E+02	

Data Entered By:	LCM	Date: 11/24/97
Signature of Chemist:	<i>Rw Schroeder</i>	Date: 11/25/97

SAMPLE.WB1 REV 1.0

342100ML

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	332.8	
21214	µg of Carbon from Baseline (C2)	10.5	
Test Code			
TIC			

Matrix
LIQUID
Batch Number
Rerun
Sample Prep
Sample #
S97T002267
Instrument Code
CARB2
Prepared By
LCM
Chemist
RWS
Analyst
DGG
Date Complete
11/24/97
Analysis Date
11/22/97
Analysis Time
11:15 PM
Sample Point
AP-107 GRAB

$\mu\text{g of Carbon/mL} = (C1-C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

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

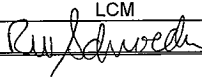
		TIC	TOC
Method Detection Limit in µg/mL		5	40
µg of Carbon/mL	Note: <	3.22E+03	

Data Entered By:

LCM

Date: 11/24/97

Signature of Chemist:



Date: 11/25/97

SAMPLE.WB1 REV 1.0

342100ML

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

LIQUIDS

Type	Sample Size in mL (SS)	TIC	TOC
SAMPLE-DUP	Dilution Factor (DF)	0.1000	1
Work List	µg of Carbon in Sample (C1)	332.1	
21214	µg of Carbon from Baseline (C2)	10.5	
Test Code			
TIC			
Matrix			
LIQUID			
Batch Number			
Rerun			
Sample Prep			
Sample #			
S97T002267			
Instrument Code			
CARB2			
Prepared By			
LCM			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
11/24/97			
Analysis Date			
11/22/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
11:15 PM		5	40
Sample Point	µg of Carbon/mL Note: <	3.22E+03	
AP-107 GRAB			

$\mu\text{g of Carbon/mL} = (C1 - C2) * DF / SS$
 $\mu\text{g of Carbon/mL for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/mL for TOC} = 40 \text{ if } C1 < C2$

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

Data Entered By:	LCM	Date: 11/24/97
Signature of Chemist:	<i>RWS</i>	Date: 11/25/97

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPIKE	Sample Volume in mL (SS)	0.1000	
Work List	Final Coulometer Reading in µg (C1)	332.8	
21214	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	
TIC	Amount of Spike Std. in mL (SPK VOL)	0.500	
Matrix	Final Coulometer Reading in µg (C2)	636.3	
LIQUID	Spike Book Number	25N12B	
Batch Number	Spike Standard Value in µg/mL (SPK CONC)	602	
Rerun			
Sample Prep			
Sample #	Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 1$		
S97T002267			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB2	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
LCM			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
11/24/97			
Analysis Date			
11/22/97			
Analysis Time			
11:15 PM	QC Actual in µg/mL	6.02E+02	
Sample Point	QC Found in µg/mL	6.07E+02	
AP-107 GRAB	Percent Spike Recovery	100.8	

Data Entered By:	LCM	Date:	11/24/97
Signature of Chemist:	<i>R. W. Schroeder</i>	Date:	11/25/97

SPIKE.WB1 REV 1.1

342100ML

LABCORE Completed Worklist Report for Worklist# 21181

Analyst: dgg

Instrument: U01

Book# 13857

Method: LA925-009 Rev/Mod B-0

Worklist Comment: AP-107 GRAB, .1-10ML PREP, STD SS=10ML, SPK 0.1ML. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0U-01	U-02	LIQUID	6.26E-02	5.78E-02	92.332 %	Recovery
1 STD	0	0U-01	U-02E	LIQUID	1	3.22E+00	3.220	Ratio
2 BLNK	0	0U-01	U-02	LIQUID	1	<3.70E-3		ug/mL
2 BLNK	0	0U-01	U-02E	LIQUID	1	N/A		Ratio
3 SAMPLE	S97T002270	0	0U-01	U-02	N/A	6.21E+00	3.70e-003	ug/mL
3 SAMPLE	S97T002270	0	0U-01	U-02E	N/A	3.17E+00		% Inst Error
4 DUP	S97T002270	0	0U-01	U-02	LIQUID	6.21E+0	6.33E+0	1.914 RPD
4 DUP	S97T002270	0	0U-01	U-02E	LIQUID	1	3.21E+00	3.210 Ratio
5 SPK	S97T002270	0	0U-01	U-02	LIQUID	4.92E+01	4.26E+01	86.585 % Recovery
6 SAMPLE	S97T002271	0	0U-01	U-02	LIQUID	N/A	6.13E+00	3.70e-003 ug/mL
6 SAMPLE	S97T002271	0	0U-01	U-02E	LIQUID	N/A	3.21E+00	% Inst Error
7 DUP	S97T002271	0	0U-01	U-02	LIQUID	6.13E+0	6.45E+0	5.087 RPD
7 DUP	S97T002271	0	0U-01	U-02E	LIQUID	1	3.24E+00	3.240 Ratio
8 SPK	S97T002271	0	0U-01	U-02	LIQUID	4.92E+01	4.42E+01	89.837 % Recovery
9 SAMPLE	S97T002272	0	0U-01	U-02	LIQUID	N/A	6.05E+00	3.70e-003 ug/mL
9 SAMPLE	S97T002272	0	0U-01	U-02E	LIQUID	N/A	3.27E+00	% Inst Error
10 DUP	S97T002272	0	0U-01	U-02	LIQUID	6.05E+0	6.48E+0	6.864 RPD
10 DUP	S97T002272	0	0U-01	U-02E	LIQUID	1	3.23E+00	3.230 Ratio
11 SPK	S97T002272	0	0U-01	U-02	LIQUID	4.92E+01	4.57E+01	92.886 % Recovery

Final page for worklist# 21181

Analyst Signature

Date

Analyst Signature

Date

RW Schneider 11/19/97

Reviewer Signature

Date

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

LABCORE Data Entry Template for Worklist# 21181

Analyst: AB Instrument: U01 Book# 13B57

Method: LA-925-009 Rev/Mod B-0

Worklist Comment: AP-107 GRAB, .1-10ML PREP, STD SS=10ML, SPK 0.1ML. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@U-01	LIQUID		
2 BLNK			@U-01	LIQUID		
3 SAMPLE	S97T002270 0		@U-01	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: U-02			, U-02E		
4 DUP	S97T002270 0		@U-01	LIQUID		
5 SPK	S97T002270 0		@U-01	LIQUID		
6 SAMPLE	S97T002271 0		@U-01	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: U-02			, U-02E		
7 DUP	S97T002271 0		@U-01	LIQUID		
8 SPK	S97T002271 0		@U-01	LIQUID		
9 SAMPLE	S97T002272 0		@U-01	LIQUID	97000649	AP-107 GRAB
	Analytes Requested: U-02			, U-02E		
10 DUP	S97T002272 0		@U-01	LIQUID		
11 SPK	S97T002272 0		@U-01	LIQUID		

Final page for worklist # 21181

AB Buffin 11-15-97
Analyst Signature Date

Lee Hooper 11-17-97
Analyst Signature Date
CJ. Oprien 11-17-97

Data Entry Comments:

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

URANIUM ANALYSIS

Sample ID 13B57 Date/Time 11/15/97/14:05:08
Description LMCS STD Cal Y=7.81E+07X-1.95E+01
Ref. Ratio 1.051 Intensity 3984 (t= 39 us)
Laser Pulses 1000 Conc 5.78E-05 + 1.86E-06 g/L
Lifetime 310 + 1.779 us Dilution Factor 1 mL/mL
R2 .9986
Integrated 78500 FINAL RESULT 5.78E-05 + 1.86E-06 g/L
Range: HIGH

Sample ID BLANK Date/Time 11/15/97/14:11:14
Description AP-107 GRAB Cal Y=5.14E+09X0
Ref. Ratio 1.069 Intensity 86 (t= 39 us)
Laser Pulses 1000 Conc + g/L
Lifetime + us Dilution Factor 1 mL/mL
R2
Integrated 142 FINAL RESULT
Range: LOW
Sample <= Blank

Sample ID S97T002270 Date/Time 11/15/97/14:16:36
Description AP-107 GRAB Cal Y=7.81E+07X-1.95E+01
Ref. Ratio 1.05 Intensity 4181 (t= 39 us)
Laser Pulses 1000 Conc 6.21E-05 + 1.97E-06 g/L
Lifetime 282 + .917 us Dilution Factor 1 mL/mL
R2 .9995
Integrated 78013 FINAL RESULT 6.21E-05 + 1.97E-06 g/L
Range: HIGH

Sample ID S97T002270-DUP Date/Time 11/15/97/14:19:19
Description AP-107 GRAB Cal Y=7.81E+07X-1.95E+01
Ref. Ratio 1.046 Intensity 4245 (t= 39 us)
Laser Pulses 1000 Conc 6.33E-05 + 2.03E-06 g/L
Lifetime 271 + 1.214 us Dilution Factor 1 mL/mL
R2 .9991
Integrated 76594 FINAL RESULT 6.33E-05 + 2.03E-06 g/L
Range: HIGH

Sample ID S97T002270-SPK Date/Time 11/15/97/14:23:34
Description AP-107 GRAB Cal Y=7.81E+07X-1.95E+01
Ref. Ratio 1.048 Intensity 33239 (t= 39 us)
Laser Pulses 1000 Conc 4.88E-04 + 1.56E-05 g/L
Lifetime 287 + 1.314 us Dilution Factor 1 mL/mL
R2 .9991
Integrated 623625 FINAL RESULT 4.88E-04 + 1.56E-05 g/L
Range: HIGH

URANIUM ANALYSIS

Sample ID S97T002271 Date/Time 11/15/97/14:26:46
Description AP-107 GRAB Cal Y=7.81E+07X-1.95E+01
Ref. Ratio 1.059 Intensity 4153 (t= 39 us)
Laser Pulses 1000 Conc 6.13E-05 + 1.97E-06 g/L
Lifetime 290 + 1.493 us Dilution Factor 1 mL/mL
R2 .9989
Integrated 78901 FINAL RESULT 6.13E-05 + 1.97E-06 g/L
Range: HIGH

Sample ID S97T002271-DUP Date/Time 11/15/97/14:31:33
Description AP-107 GRAB Cal Y=7.81E+07X-1.95E+01
Ref. Ratio 1.059 Intensity 4376 (t= 39 us)
Laser Pulses 1000 Conc 6.45E-05 + 2.09E-06 g/L
Lifetime 301 + 1.927 us Dilution Factor 1 mL/mL
R2 .9983
Integrated 85709 FINAL RESULT 6.45E-05 + 2.09E-06 g/L
Range: HIGH

Sample ID S97T002272-DUP Date/Time 11/15/97/14:43:45
Description AP-107 GRAB Cal Y=7.81E+07X-1.95E+01
Ref. Ratio 1.059 Intensity 4288 (t= 39 us)
Laser Pulses 1000 Conc 6.48E-05 + 2.09E-06 g/L
Lifetime 257 + 1.239 us Dilution Factor 1 mL/mL
R2 .999
Integrated 74794 FINAL RESULT 6.48E-05 + 2.09E-06 g/L
Range: HIGH

Sample ID S97T002272 Description AP-107 GRAB Date/Time 11/15/97/14:40:38
Ref. Ratio 1.055 Cal Y=7.81E+07X-1.95E+01
Laser Pulses 1000 Intensity 4091 (t= 39 us)
Lifetime 296 + 2.113 us Conc 6.05E-05 + 1.98E-06 g/L
R2 .9978 Dilution Factor 1 mL/mL
Integrated 79231 FINAL RESULT 6.05E-05 + 1.98E-06 g/L
Range: HIGH

URANIUM ANALYSIS

Sample ID S97T002272-SPK
Description AP-107 GRAB
Ref. Ratio 1.066
Laser Pulses 1000
Lifetime 276 + 1.051 us
R2 .9994
Integrated 639781
Range: HIGH

Date/Time 11/15/97/14:47:37
Cal Y=7.81E+07X-1.95E+01
Intensity 34421 (t= 39 us)
Conc 5.17E-04 + 1.65E-05 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.17E-04 + 1.65E-05 g/L

Sample ID S97T002271-SPK
Description AP-107 GRAB
Ref. Ratio 1.063
Laser Pulses 1000
Lifetime 286 + 1.175 us
R2 .9993
Integrated 641905
Range: HIGH

Date/Time 11/15/97/14:35:35
Cal Y=7.81E+07X-1.95E+01
Intensity 34016 (t= 39 us)
Conc 5.03E-04 + 1.61E-05 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.03E-04 + 1.61E-05 g/L

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type		
STD	STANDARD	
Work List	STANDARD BOOK #	13B57
21181	VOLUME OF SAMPLE (mL) (SS)	1.00
Test Code	DILUTION FACTOR OF SAMPLE (DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE (PF)	1.00
Matrix	LIFETIME IN MICROSECONDS	310.00
LIQUID	R2 VALUE	0.9988
Batch Number	RANGE (HIGH OR LOW)	HIGH
97005384	INSTRUMENT UNCERTAINTY (IU)	1.86E-06
IR Scan	INSTRUMENT RESULT (IR)	6.78E-06
0	DETECTION LEVEL (µg/mL)	3.70E-06
Sample Prep		
N/A	RESULT (µg/mL)	5.78E-02
Sample	VALUE OF STANDARD	6.26E-02
WL21181	%RECOVERY	92.33
Instrument Code	RELATIVE % UNCERTAINTY	3.2
U01		
Prepared By	Result = DF * PF * IR * 1000	
SEH		
Chemist	Detection Level = 3.70 E-06 * DF * PF * 1000	
RWS		
Analyst	% Recovery = Result / Value of Standard * 100	
DGG		
Date Complete	Relative % Uncertainty = IU / IR * 100	
11/17/97		
Analysis Date		
11/15/97		
Analysis Time		
03:00 PM		
Sample Point		
AP-107 GRAB		

Analyst:	DGG	Date: 17-Nov-97
Signature of Chemist:	RWS	Date: 11/19/97

STANDARD.WB1 REV 2.0

925009ML

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type	BLNK	BLANK
Working	VOLUME OF SAMPLE (mL) (SS)	1.00
21181	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	0.00
LIQUID	R2 VALUE	0.0000
Batch Number	RANGE (HIGH OR LOW)	LOW
97005384	INSTRUMENT UNCERTAINTY (IU)	0.00E+00
ReRun	INSTRUMENT RESULT (IR)	0.00E+00
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A		
Sample	RESULT (µg/mL)	< 3.70E-03
WL21181	RELATIVE % UNCERTAINTY	N/A
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
SEH		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
11/17/97		
Analysis Date		
11/15/97		
Analysis Time		
03:00 PM		
Sample Point		
AP-107 GRAB		

Analyst:	DGG	Date:	17-Nov-97
Signature of Chemist:	<i>RWS</i>	Date:	11/19/97

BLANK.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

SAMPLE		SAMPLE
Work/Et	VOLUME OF SAMPLE (mL) (SS)	1.00
21181	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	282.00
LIQUID	R2 VALUE	0.9995
Batch Number	RANGE (HIGH OR LOW)	HIGH
97005384	INSTRUMENT UNCERTAINTY (IU)	1.97E-06
Recon	INSTRUMENT RESULT (IR)	6.21E-05
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	6.21E-03
Sample	RESULT (µg/mL)	6.21E+00
S97T002270	RELATIVE % UNCERTAINTY	3.2
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
SEH		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
11/17/97		
Analysis Date		
11/15/97		
Analysis Time		
03:00 PM		
Sample Point		
AP-107 GRAB		

Analyst:	DGG	Date:	17-Nov-97
Signature of Chemist:	<i>RWS</i>	Date:	11/19/97

SAMPLE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type	DUP	DUP
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
21181	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	271.00
LIQUID	R2 VALUE	0.9991
Batch Number	RANGE (HIGH OR LOW)	HIGH
97005384	INSTRUMENT UNCERTAINTY (IU)	2.03E-08
Returns	INSTRUMENT RESULT (IR)	6.33E-05
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prop		
N/A	CONCENTRATION IN SOLUTION (g/L)	6.33E-03
Sample	RESULT (µg/mL)	6.33E+00
S97T002270	RELATIVE % UNCERTAINTY	3.2
Instrument Code		
U01		
Prepared By	Result = $DF * PF * DDF * IR * 1000$	
SEH		
Chemist	Detection Level = $3.70 E-08 * DF * PF * DDF * 1000$	
RWS		
Analyst	Relative % Uncertainty = $IU / IR * 100$	
DGG		
Date Complete		
11/17/97		
Analysis Date		
11/16/97		
Analysis Time		
03:00 PM		
Sample Point		
AP-107 GRAB		

Analyst:	DGG	Date: 17-Nov-97
Signature of Chemist:	<i>RWS</i>	Date: 11/19/97
SAMPLE.WB1 REV 2.0 925009ML		

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type	SPIKE
SPK	SPIKE BOOK #
	32B55
Work List	VOLUME OF SAMPLE + SPIKE (mL) (SS)
	1.00
21181	DILUTION FACTOR OF SAMPLE + SPIKE (DF)
	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE (PF)
	100.00
@U-01	DIGEST DILUTION FACTOR OF SAMPLE (DDF)
	1.0000
Matrix	LIFETIME IN MICROSECONDS
	287.00
LIQUID	R2 VALUE
	0.9991
Batch Number	RANGE (HIGH OR LOW)
	HIGH
97006384	INSTRUMENT RESULT (IR)
	4.88E-04
Re-run	CONCENTRATION IN SOLUTION (g/L) (CONC)
	4.88E-02
0	SPIKE VALUE (g/L) (SV)
	4.92E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL) (IV)
	0.10
N/A	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL) (OSV)
	0.10
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM (SR)
	6.21E-03
S97T002270	
Instrument Code	
U01	Concentration = IR * DF * PF
Prepared By	
SEH	QC Actual (µg/mL) = SV (g/L) * 1000
Chemist	
RWS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000
Analyst	
DGG	% Recovery = QC FOUND / QC ACTUAL
Date Complete	
11/17/97	
Analysis Date	
11/15/97	QC ACTUAL = 4.92E+01 µg/mL
Analysis Time	QC FOUND = 4.26E+01 µg/mL
03:00 PM	% SPIKE RECOVERY = 86.6%
Sample Point	
AP-107 GRAB	

Analyst:

DGG

Date:

17-Nov-97

Signature of Chemist:

RWS

Date:

11/19/97

SPIKE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

type	SAMPLE	
Work List	VOLUME OF SAMPLE (mL)	(SS) 1.00
21181	DILUTION FACTOR OF SAMPLE	(DF) 1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF) 100.00
@U-01	DIGEST DILUTION FACTOR	(DDF) 1.0000
Matrix	LIFETIME IN MICROSECONDS	290.00
LIQUID	R2 VALUE	0.9989
Batch Number	RANGE (HIGH OR LOW)	HIGH
97005384	INSTRUMENT UNCERTAINTY	(IU) 1.97E-06
ReRun	INSTRUMENT RESULT	(IR) 6.13E-05
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	6.13E-03
Sample	RESULT (µg/mL)	6.13E+00
S97T002271	RELATIVE % UNCERTAINTY	3.2
Instrument Code		
U01		
Prepared By		
SEH		
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
11/17/97		
Analyst Date		
11/15/97		
Analysis Time		
03:00 PM		
Sample Point		
AP-107 GRAB		

$$\text{Result} = \text{DF} * \text{PF} * \text{DDF} * \text{IR} * 1000$$

$$\text{Detection Level} = 3.70 \text{ E-08} * \text{DF} * \text{PF} * \text{DDF} * 1000$$

$$\text{Relative \% Uncertainty} = \text{IU} / \text{IR} * 100$$

Analyst:	DGG	Date:	17-Nov-97
Signature of Chemist:	<i>RWS</i>	Date:	11/19/97
SAMPLE.WB1 REV 2.0	925009ML		

WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

type		DUP
DUP		DUP
Work Dis	VOLUME OF SAMPLE (mL) (SS)	1.00
21181	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	301.00
LIQUID	R2 VALUE	0.9983
Batch Number	RANGE (HIGH OR LOW)	HIGH
97005384	INSTRUMENT UNCERTAINTY (IU)	2.09E-06
ReRun	INSTRUMENT RESULT (IR)	6.45E-05
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prop		
N/A	CONCENTRATION IN SOLUTION (g/L)	6.45E-03
Sample #	RESULT (µg/mL)	6.45E+00
S97T002271	RELATIVE % UNCERTAINTY	3.2
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
SEH		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
11/17/97		
Analysis Date		
11/15/97		
Analysis Time		
03:00 PM		
Sample Point		
AP-107 GRAB		

Analyst:	DGG	Date:	17-Nov-97
Signature of Chemist:	<i>RWS</i>	Date:	11/19/97
SAMPLE.WB1 REV 2.0	925009ML		

WORKBOOK PAGE: SPIKES

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type	SPIKE	
SPK	32B55	
Work List	SPIKE BOOK #	
21181	VOLUME OF SAMPLE + SPIKE (mL)	(SS) 1.00
Test Code	DILUTION FACTOR OF SAMPLE + SPIKE	(DF) 1.00
@U-01	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF) 100.00
Matrix	DIGEST DILUTION FACTOR OF SAMPLE	(DDF) 1.0000
LIQUID	LIFETIME IN MICROSECONDS	286.00
Batch Number	R2 VALUE	0.9993
97005384	RANGE (HIGH OR LOW)	HIGH
IR	INSTRUMENT RESULT	(IR) 5.03E-04
0	CONCENTRATION IN SOLUTION (g/L)	(CONC) 5.03E-02
Sample Prop	SPIKE VALUE (g/L)	(SV) 4.92E-02
N/A	INITIAL VOLUME OF SPIKE (mL)	(IV) 0.10
Sample Number	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV) 0.10
S97T002271	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR) 6.13E-03
Instrument Code		
U01	Concentration = IR * DF * PF	
Prepared By		
SEH	QC Actual (µg/mL) = SV (g/L) * 1000	
Chemist		
RWS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000	
Analyst		
DGG	% Recovery = QC FOUND / QC ACTUAL	
Date Complete		
11/17/97		
Analysis Date		
11/15/97	QC ACTUAL	= 4.92E+01 µg/mL
Analysis Time	QC FOUND	= 4.42E+01 µg/mL
03:00 PM	% SPIKE RECOVERY	= 89.8%
Sample Point		
AP-107 GRAB		

Analyst:	DGG	Date:	17-Nov-97
Signature of Chemist:	RWS	Date:	11/19/97
SPIKE.WB1 REV 2.0 925009ML			

WORKBOOK PAGE: SAM9

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Sample	SAMPLE
Work List	VOLUME OF SAMPLE (mL) (SS) 1.00
21181	DILUTION FACTOR OF SAMPLE (DF) 1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF) 100.00
@U-01	DIGEST DILUTION FACTOR (DDF) 1.0000
Matrix	LIFETIME IN MICROSECONDS 296.00
LIQUID	R2 VALUE 0.9978
Batch Number	RANGE (HIGH OR LOW) HIGH
97005384	INSTRUMENT UNCERTAINTY (IU) 1.98E-06
ReRun	INSTRUMENT RESULT (IR) 6.05E-05
0	DETECTION LEVEL (µg/mL) 3.70E-03
Sample Prop	
N/A	CONCENTRATION IN SOLUTION (g/L) 6.05E-03
Sample	RESULT (µg/mL) 6.05E+00
S97T002272	RELATIVE % UNCERTAINTY 3.3
Instrument Code	
U01	
Prepared By	Result = DF * PF * DDF * IR * 1000
SEH	
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000
RWS	
Analyst	Relative % Uncertainty = IU / IR * 100
DGG	
Date Complete	
11/17/97	
Analysis Date	
11/16/97	
Analysis Time	
03:00 PM	
Sample Point	
AP-107 GRAB	

Analyst:	DGG	Date: 17-Nov-97
Signature of Chemist:	<i>RWS</i>	Date: 11/19/97
SAMPLE.WB1 REV 2.0 925009ML		

WORKBOOK PAGE: DUP10

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type	DUP	
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
21181	DILUTION FACTOR OF SAMPLE (DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	257.00
LIQUID	R2 VALUE	0.9990
Batch Number	RANGE (HIGH OR LOW)	HIGH
97005384	INSTRUMENT UNCERTAINTY (IU)	2.09E-06
Run	INSTRUMENT RESULT (IR)	6.48E-05
0	DETECTION LEVEL (µg/mL)	3.70E-03
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	6.48E-03
Sample Name	RESULT (µg/mL)	6.48E+00
S97T002272	RELATIVE % UNCERTAINTY	3.2
Instrument Code		
U01		
Prepared by	Result = DF * PF * DDF * IR * 1000	
SEH		
Chemist	Detection Level = 3.70 E-03 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
11/17/97		
Analysis Date		
11/15/97		
Analysis Time		
03:00 PM		
Sample Point		
AP-107 GRAB		

Analyst:	DGG	Date:	17-Nov-97
Signature of Chemist:	<i>RWS</i>	Date:	11/19/97

SAMPLE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SPIKE11

Uranium by Phosphorescence: LA-925-009 (B-0) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		32B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
21181	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	100.00
@U-01	DIGEST DILUTION FACTOR OF SAMPLE	(DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS		276.00
LIQUID	R2 VALUE		0.9994
Batch Number	RANGE (HIGH OR LOW)		HIGH
97005384	INSTRUMENT RESULT	(IR)	5.17E-04
Forum	CONCENTRATION IN SOLUTION (g/L)	(CONC)	5.17E-02
0	SPIKE VALUE (g/L)	(SV)	4.92E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
N/A	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	0.10
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	6.05E-03
S97T002272			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
SEH	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
RWS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
DGG	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
11/17/97			
Analysis Date			
11/15/97	QC ACTUAL	=	4.92E+01 µg/mL
Analysis Time	QC FOUND	=	4.57E+01 µg/mL
03:00 PM	% SPIKE RECOVERY	=	92.8%
Sample Point			
AP-107 GRAB			

Analyst:	DGG	Date:	17-Nov-97
Signature of Chemist:	<i>R. Schneider</i>	RWS	Date: 11/19/97
SPIKE.WB1 REV 2.0	925009ML		

HNF-SD-WM-DP-276, REV. 0

RADIOCHEMICAL ANALYSIS

HNF-SD-WM-DP-276, REV. 0

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LABCORE Completed RadChem Report for Worklist#: 21183

Analyst: jmv

Instrument: GEA01

Book# 75B56

Method: LA-548121 Rev/Mod F-0

Worklist Comment: AP107,GEA, 0.5ml sample size for all.tdm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	0GEA-01	CO60-02	LIQUID	6.019e-03	6.22e-03	103.339 % Recovery
1 STD	0	0	0GEA-01	CO60-02E	LIQUID	1	2.70	2.700 % Ct Error
1 STD	0	0	0GEA-01	CS13702	LIQUID	5.734e-03	6.05e-03	105.511 % Recovery
1 STD	0	0	0GEA-01	CS13702E	LIQUID	1	3.42	3.420 % Ct Error
2 BLNK	0	0	0GEA-01	CO60-02	LIQUID	1	<5.25e-5	uCi/mL
2 BLNK	0	0	0GEA-01	CS13702	LIQUID	1	<8.43e-5	uCi/mL
3 SAMPLE	S97T002270	0	0GEA-01	CO60-02	LIQUID	N/A	8.062e-04	806.2e-006 uCi/mL
3 SAMPLE	S97T002270	0	0GEA-01	CO60-02E	LIQUID	N/A	n/a	0.0e+000 % Ct. Error
3 SAMPLE	S97T002270	0	0GEA-01	CS13702	LIQUID	N/A	1.170e+01	0.0e+000 uCi/mL
3 SAMPLE	S97T002270	0	0GEA-01	CS13702E	LIQUID	N/A	0.190	0.0e+000 % Ct. Error
4 DUP	S97T002270	0	0GEA-01	CO60-02	LIQUID	<8.06e-4	<7.68e-4	RPD
4 DUP	S97T002270	0	0GEA-01	CO60-02E	LIQUID	1	n/a	% Ct Error
4 DUP	S97T002270	0	0GEA-01	CS13702	LIQUID	1.17e+01	1.16e+01	0.853 RPD
4 DUP	S97T002270	0	0GEA-01	CS13702E	LIQUID	1	0.190	0.190 % Ct Error
5 SAMPLE	S97T002271	0	0GEA-01	CO60-02	LIQUID	N/A	1.090e-03	0.0e+000 uCi/mL
5 SAMPLE	S97T002271	0	0GEA-01	CO60-02E	LIQUID	N/A	36.4	0.0e+000 % Ct. Error
5 SAMPLE	S97T002271	0	0GEA-01	CS13702	LIQUID	N/A	1.140e+01	0.0e+000 uCi/mL
5 SAMPLE	S97T002271	0	0GEA-01	CS13702E	LIQUID	N/A	0.190	0.0e+000 % Ct. Error
6 DUP	S97T002271	0	0GEA-01	CO60-02	LIQUID	1.09e-03	1.11e-03	1.818 RPD
6 DUP	S97T002271	0	0GEA-01	CO60-02E	LIQUID	1	29.5	29.500 % Ct Error
6 DUP	S97T002271	0	0GEA-01	CS13702	LIQUID	1.14e+01	1.14e+01	0.000 RPD
6 DUP	S97T002271	0	0GEA-01	CS13702E	LIQUID	1	0.190	0.190 % Ct Error
7 SAMPLE	S97T002272	0	0GEA-01	CO60-02	LIQUID	N/A	1.160e-03	0.0e+000 uCi/mL
7 SAMPLE	S97T002272	0	0GEA-01	CO60-02E	LIQUID	N/A	35.1	0.0e+000 % Ct. Error
7 SAMPLE	S97T002272	0	0GEA-01	CS13702	LIQUID	N/A	1.150e+01	0.0e+000 uCi/mL
7 SAMPLE	S97T002272	0	0GEA-01	CS13702E	LIQUID	N/A	0.190	0.0e+000 % Ct. Error
8 DUP	S97T002272	0	0GEA-01	CO60-02	LIQUID	1.16e-03	8.22e-4	RPD
8 DUP	S97T002272	0	0GEA-01	CO60-02E	LIQUID	1	n/a	% Ct Error
8 DUP	S97T002272	0	0GEA-01	CS13702	LIQUID	1.15e+01	1.15e+01	0.000 RPD
8 DUP	S97T002272	0	0GEA-01	CS13702E	LIQUID	1	0.190	0.190 % Ct Error

Comments Section:

Comments for sample# S97T002270 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S97T002271 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S97T002272 and test @GEA-01 .

LABCORE Completed RadChem Report for Worklist#: 21183

Seq	Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
DL=0 => n/a.									

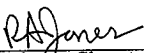
Final page for worklist# 21183

Analyst Signature

Date

Analyst Signature

Date


Reviewer Signature

11/20/97
Date

11/14/97 13:12
A-0004-1**LABCORE Data Entry Template for Worklist# 21183**Analyst: DMV Instrument: GEA00 _____ Book# 75856

Method: LA-548-121 Rev/Mod _____

Worklist Comment: AP107,GEA, 0.5ml sample size for all.tdm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-01	LIQUID		
2 BLNK			@GEA-01	LIQUID		
3 SAMPLE	S97T002270 0		@GEA-01	LIQUID	97000649	AP-107 GRAB
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4 DUP	S97T002270 0		@GEA-01	LIQUID		
5 SAMPLE	S97T002271 0		@GEA-01	LIQUID	97000649	AP-107 GRAB
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6 DUP	S97T002271 0		@GEA-01	LIQUID		
7 SAMPLE	S97T002272 0		@GEA-01	LIQUID	97000649	AP-107 GRAB
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
8 DUP	S97T002272 0		@GEA-01	LIQUID		

Final page for worklist # 21183

Analyst Signature

Date

11-17-97

Analyst Signature

Date

Sue Hogan 11-18-97

Data Entry Comments:

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

Total number of lines in spectrum 7
Number of unidentified lines 2
Number of lines tentatively identified by NID 5 71.43%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	2-Sigma	Flags
			Uncorrected	Decay Corr				
			uCi/L	uCi/L	2-Sigma Error	%Error		
K-40	1.28E+09Y	1.00	7.506E-01	7.506E-01	10.46E-01	139.35	see	
CO-60	5.27Y	1.00	6.225E+00	6.225E+00	0.168E+00	2.70	11/18/97	
CS-137	30.00Y	1.00	6.052E+00	6.052E+00	0.207E+00	3.42	see	
AM-241	432.20Y	1.00	9.436E-02	9.436E-02	6.408E-02	67.91	see	
Total Activity :			1.312E+01	1.312E+01				

Grand Total Activity : 1.312E+01 1.312E+01

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	383.	477.59	6.8972E-01
NA-22	49.	1274.53	6.4877E-02
NA-24	26.	1368.55	5.2253E-02
CR-51	447.	320.08	5.3411E-01
MN-54	223.	834.83	9.2281E-02
CO-56	231.	846.76	9.5058E-02
CO-57	689.	122.06	4.0455E-02
CO-58	225.	810.78	9.0630E-02
FE-59	196.	1099.25	1.9560E-01
SE-75	524.	264.66	8.4824E-02
SR-85	324.	514.01	7.3472E-02
Y-88	9.	1836.06	4.0480E-02
NB-94	269.	871.09	1.0501E-01
ZRNB-95	242.	724.18	1.9269E-01
RU-103	322.	497.08	7.4854E-02
CRURH-106	214.	621.93	1.3881E+00
AG-108m	248.	722.94	9.3619E-02
CD-109	658.	88.03	8.4998E-01
AG-110M	375.	657.76	1.0054E-01
SN-113	402.	391.69	9.5334E-02
TE-123m	675.	159.00	4.6814E-02
SB-124	213.	602.73	6.8319E-02
SB-125	426.	427.89	2.3112E-01
TE-125m	655.	109.27	1.1519E+01
I-131	411.	364.48	7.1309E-02
CS-134	220.	604.70	6.9622E-02
BA-140	261.	537.31	2.7165E-01
LA-140	15.	1596.21	4.8212E-02
CEPR-144	762.	133.51	6.8514E-01
EU-152	30.	1408.01	2.7054E-01
EU-154	49.	1274.51	1.8866E-01
EU-155	660.	105.31	1.4766E-01
HG-203	497.	279.20	6.2006E-02
TL-208	505.	277.36	8.0287E-01
BI-212	222.	727.18	1.2188E+00
PB-212	676.	238.63	1.1885E-01
BI-214	378.	609.31	1.9865E-01
PB-214	538.	351.92	3.1911E-01
RA-224	621.	240.99	1.2665E+00
RA-226	739.	186.10	1.2948E+00
AC-228	377.	911.21	4.8284E-01
TH-228	666.	84.37	2.4211E+00
TH-229	666.	88.47	1.2513E-01
PA-233	502.	312.17	1.4438E-01
UTH-233	566.	245.34	4.5391E+01
PA-234M	223.	1001.03	1.8374E-01
TH-234	590.	63.29	6.3504E-01
U-235	753.	185.71	7.9421E-02
NP-237	618.	86.48	2.3916E-01
NP-239	655.	106.12	1.4110E-01
PU-239	699.	129.30	5.6002E+02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
AM-243	651.	74.67	4.9849E-02

 * 222-S Laboratory Counting Room 17-NOV-1997 15:01:44.49 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
 Worklist #: 21183
 Sample ID: WL21183-BLK
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

Joe Heger

>>>>>>> COUNT INFORMATION <<<<<<<<<<
 Detector ID: GEAL
 File Number: dka300:[spec.GEAL]lg1304.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:34.74 sec
 Dead Time: 0.4%

Verified by:

AN Cath 10/18/97

HNF-SD-WM-DP-276, REV. 0

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
 Sample Count Time: 17-NOV-1997 12:30:34.75
 Decayed to: 17-NOV-1997 12:30:34.75
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SEH
 Background Subtract: DKA300:[SPEC.GEAL]1GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.59	148	1.38	25.84	23	6	70.3			
0	15.96	331	1.35	32.56	29	8	38.8			
0	661.39*	104	1.25	1323.42	1317	13	71.4		CS-137	8.425E-02
0	726.91*	70	1.55	1454.47	1450	13	98.0			
0	1630.74	34	2.60	3262.81	3255	14	52.5			

Total number of lines in spectrum 5
Number of unidentified lines 3
Number of lines tentatively identified by NID 2 40.00%

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	1.00	8.425E-02	8.425E-02	6.012E-02	71.36	see
Total Activity :			8.425E-02	8.425E-02			11/18/97

Grand Total Activity : 8.425E-02 8.425E-02

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	352.	477.59	4.4169E-01
NA-22	92.	1274.53	5.8131E-02
NA-24	75.	1368.55	5.9169E-02
K-40	1739.	1460.75	2.5158E+00
CR-51	600.	320.08	4.1131E-01
MN-54	161.	834.83	5.2586E-02
CO-56	140.	846.76	4.9895E-02
CO-57	1497.	122.06	3.9479E-02
CO-58	166.	810.78	5.2180E-02
FE-59	127.	1099.25	1.0604E-01
CO-60	70.	1332.50	5.2909E-02
SE-75	804.	264.66	6.9757E-02
SR-85	341.	514.01	5.0175E-02
Y-88	20.	1836.06	3.8444E-02
NB-94	139.	871.09	5.1046E-02
ZRNB-95	164.	724.18	1.0673E-01
RU-103	337.	497.08	5.1041E-02
RURH-106	191.	621.93	8.7665E-01
AG-108m	159.	722.94	5.0436E-02
CD-109	1286.	88.03	7.8743E-01
AG-110M	222.	657.76	5.2035E-02
SN-113	431.	391.69	6.5795E-02
TE-123m	1397.	159.00	4.4607E-02
SB-124	235.	602.73	4.7723E-02
SB-125	390.	427.89	1.4776E-01
TE-125m	1339.	109.27	1.0903E+01
I-131	528.	364.48	5.3866E-02
CS-134	236.	604.70	4.8061E-02
BA-140	294.	537.31	1.9210E-01
LA-140	33.	1596.21	4.6022E-02
CEPR-144	1400.	133.51	6.1565E-01
EU-152	77.	1408.01	2.7736E-01
EU-154	92.	1274.51	1.6875E-01
EU-155	1384.	105.31	1.4160E-01
HG-203	693.	279.20	4.8683E-02
TL-208	731.	277.36	6.4102E-01
BI-212	280.	727.18	9.0923E-01
PB-212	1286.	238.63	1.0868E-01
BI-214	643.	609.31	1.7147E-01
PB-214	834.	351.92	5.8653E-01
RA-224	986.	240.99	1.0656E+00
RA-226	1293.	186.10	1.1361E+00
AC-228	377.	911.21	3.2212E-01
TH-228	1341.	84.37	2.2745E+00
TH-229	1266.	88.47	1.1427E-01
PA-233	667.	312.17	1.1072E-01
UTH-233	856.	245.34	3.7032E+01
PA-234M	140.	1001.03	9.7885E-02
TH-234	1098.	63.29	5.7394E-01
U-235	1310.	185.71	6.9518E-02
NP-237	1311.	86.48	2.3058E-01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	1362.	106.12	1.3614E-01
PU-239	1502.	129.30	5.4352E+02
AM-241	1066.	59.54	7.1408E-02
AM-243	1320.	74.67	4.7000E-02

Em Barlow

McCarte 4/18/97

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>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
Sample Count Time: 17-NOV-1997 15:16:46.55
Decayed to: 17-NOV-1997 15:16:46.55
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: SEH
Background Subtract: DKA300:[SPEC.GEAL]1GBACK

```

Summary of Nuclide Activity
Sample ID : S97T002270-SAM

Acquisition date : 17-NOV-1997 15:16:46

Total number of lines in spectrum 17
Number of unidentified lines 8
Number of lines tentatively identified by NID 9 52.94%

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
CD-109	462.90D	1.00	9.536E+01	9.537E+01	4.232E+01	44.38	src
CS-134	2.06Y	1.00	2.592E+01	2.592E+01	0.119E+01	4.58	
CS-137	30.00Y	1.00	1.171E+04	1.171E+04	0.002E+04	0.19	
TH-228	1.91Y	1.00	9.289E+02	8.290E+02	1.232E+02	14.86	src
TH-229	7340.00Y	1.00	1.394E+01	1.394E+01	0.619E+01	44.38	src
NP-237	2.14E+06Y	1.00	2.775E+01	2.775E+01	1.232E+01	44.38	src
AM-243	7380.00Y	1.00	2.540E+01	2.540E+01	0.231E+01	9.09	src
Total Activity :			1.273E+04	1.273E+04			

Grand Total Activity : 1.273E+04 1.273E+04

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
 Sample ID : S97T002270-SAM

Acquisition date : 17-NOV-1997 15:16:46

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	36480.	477.59	5.4208E+01
NA-22	96.	1274.53	6.4593E-01
NA-24	51.	1368.55	5.3413E-01
K-40	1793.	1460.75	2.7393E+01
CR-51	29069.	320.08	3.4061E+01
MN-54	207.	834.83	7.0399E-01
CO-56	181.	846.76	6.6771E-01
CO-57	30552.	122.06	2.4648E+00
CO-58	177.	810.78	6.4370E-01
FE-59	146.	1099.25	1.2679E+00
CO-60	145.	1332.50	8.0619E-01
SE-75	28422.	264.66	4.9306E+00
SR-85	18767.	514.01	4.4971E+00
Y-88	23.	1836.06	4.4990E-01
NB-94	175.	871.09	6.6967E-01
ZRNB-95	219.	724.18	1.4866E+00
RU-103	23116.	497.08	5.1024E+00
RURH-106	5990.	621.93	5.8554E+01
AG-108m	225.	722.94	7.2318E-01
AG-110M	44728.	657.76	8.7580E+00
SN-113	33989.	391.69	6.9960E+00
TE-123m	32693.	159.00	2.7513E+00
SB-124	8799.	602.73	3.4996E+00
SB-125	39791.	427.89	1.7927E+01
TE-125m	28282.	109.27	7.1759E+02
I-131	31246.	364.48	4.9591E+00
BA-140	13558.	537.31	1.5725E+01
LA-140	42.	1596.21	5.4884E-01
CEPR-144	30394.	133.51	3.8488E+01
EU-152	74.	1408.01	2.9204E+00
EU-154	96.	1274.51	1.8747E+00
EU-155	27060.	105.31	9.0723E+00
HG-203	28136.	279.20	3.6811E+00
TL-208	28364.	277.36	4.7417E+01
BI-212	281.	727.18	1.1051E+01
PB-212	32004.	238.63	6.4896E+00
BI-214	6624.	609.31	6.6939E+00
PB-214	30577.	351.92	4.3993E+01
RA-224	31352.	240.99	7.1778E+01
RA-226	50556.	186.10	8.7416E+01
AC-228	372.	911.21	3.7365E+00
PA-233	28677.	312.17	8.6387E+00
UTH-233	30289.	245.34	2.6249E+03
PA-234M	155.	1001.03	1.1754E+00
TH-234	23508.	63.29	3.8820E+01
U-235	49963.	185.71	5.2845E+00
NP-239	27199.	106.12	8.7983E+00
PU-239	30516.	129.30	3.3226E+04
AM-241	23185.	59.54	4.6904E+00

Total number of lines in spectrum 16
Number of unidentified lines 8
Number of lines tentatively identified by NID 8 50.00%

Nuclide Type :

Nuclide	Hliffe	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	2-Sigma Error	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/L	uCi/L					
CD-109	462.90D	1.00	1.107E+02	1.107E+02	6.421E+02	38.07			
CS-134	2.06Y	1.00	2.537E+01	2.537E+01	0.123E+01	4.85			11/18/97
CS-137	30.00Y	1.00	1.164E+04	1.164E+04	0.002E+04	0.19			
TH-228	1.91Y	1.00	8.955E+02	8.955E+02	1.637E+02	18.28			see
TH-229	7340.00Y	1.00	1.618E+01	1.618E+01	6.616E+01	38.07			see
NP-237	2.14E+06Y	1.00	3.222E+01	3.222E+01	1.226E+01	38.07			see
AM-243	7380.00Y	1.00	2.516E+01	2.516E+01	0.230E+01	9.14			see
Total Activity :			1.275E+04	1.275E+04					

Grand Total Activity : 1.275E+04 1.275E+04

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
 Sample ID : S97T2270-DUP

Acquisition date : 17-NOV-1997 18:33:50

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	36245.	477.59	5.4033E+01
NA-22	78.	1274.53	5.8535E-01
NA-24	71.	1368.55	6.2225E-01
K-40	1755.	1460.75	2.7107E+01
CR-51	28408.	320.08	3.3673E+01
MN-54	169.	834.83	6.3861E-01
CO-56	174.	846.76	6.5550E-01
CO-57	30610.	122.06	2.4672E+00
CO-58	186.	810.78	6.5895E-01
FE-59	143.	1099.25	1.2558E+00
CO-60	131.	1332.50	7.6758E-01
SE-75	28211.	264.66	4.9123E+00
SR-85	18626.	514.01	4.4803E+00
Y-88	27.	1836.06	4.8284E-01
NB-94	166.	871.09	6.5350E-01
ZRNB-95	251.	724.18	1.5895E+00
RU-103	23078.	497.08	5.0982E+00
RURH-106	6045.	621.93	5.8822E+01
AG-108m	245.	722.94	7.5477E-01
AG-110M	45246.	657.76	8.8085E+00
SN-113	33749.	391.69	6.9714E+00
TE-123m	32683.	159.00	2.7508E+00
SB-124	8829.	602.73	3.5054E+00
SB-125	39639.	427.89	1.7893E+01
TE-125m	27783.	109.27	7.1126E+02
I-131	30924.	364.48	4.9336E+00
BA-140	13396.	537.31	1.5631E+01
LA-140	38.	1596.21	5.2403E-01
CEPR-144	30469.	133.51	3.8536E+01
EU-152	86.	1408.01	3.1372E+00
EU-154	78.	1274.51	1.6991E+00
EU-155	26528.	105.31	8.9829E+00
HG-203	28226.	279.20	3.6870E+00
TL-208	28170.	277.36	4.7256E+01
BI-212	287.	727.18	1.1174E+01
PB-212	32218.	238.63	6.5112E+00
BI-214	6649.	609.31	6.7066E+00
PB-214	30822.	351.92	4.4152E+01
RA-224	31334.	240.99	7.1758E+01
RA-226	50269.	186.10	8.7168E+01
AC-228	372.	911.21	3.7335E+00
PA-233	28609.	312.17	8.6285E+00
UTH-233	30395.	245.34	2.6295E+03
PA-234M	174.	1001.03	1.2425E+00
TH-234	23589.	63.29	3.8886E+01
U-235	49543.	185.71	5.2623E+00
NP-239	26946.	106.12	8.7574E+00
PU-239	30687.	129.30	3.3319E+04
AM-241	22752.	59.54	4.6465E+00

Summary of Nuclide Activity
Sample ID : S97T2271-SAM

Acquisition date : 17-NOV-1997 21:13:28

Total number of lines in spectrum 18
Number of unidentified lines 9
Number of lines tentatively identified by NID 9 50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma	Flags
			Uncorrected uCi/L	Decay Corr uCi/L				
CO-60	5.27Y	1.00	1.092E+00	1.092E+00	0.398E+00	36.43		
CD-109	462.90D	1.00	1.069E+02	1.069E+02	0.370E+02	34.60	sc	
CS-134	2.06Y	1.00	2.499E+01	2.500E+01	0.114E+01	4.56		
CS-137	30.00Y	1.00	1.137E+04	1.137E+04	0.002E+04	0.19		11/18/97
TH-228	1.91Y	1.00	8.300E+02	8.301E+02	1.084E+02	13.05	sc	
TH-229	7340.00Y	1.00	1.563E+01	1.563E+01	0.541E+01	34.60	sc	
NP-237	2.14E+06Y	1.00	3.112E+01	3.112E+01	1.077E+01	34.60	sc	
AM-243	7380.00Y	1.00	2.515E+01	2.515E+01	0.228E+01	9.06	sc	
Total Activity :			1.241E+04	1.241E+04				

Grand Total Activity : 1.241E+04 1.241E+04

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	35353.	477.59	5.3366E+01
NA-22	99.	1274.53	6.5425E-01
NA-24	67.	1368.55	6.0494E-01
K-40	1827.	1460.75	2.7652E+01
CR-51	28205.	320.08	3.3552E+01
MN-54	202.	834.83	6.9652E-01
CO-56	168.	846.76	6.4388E-01
CO-57	29789.	122.06	2.4340E+00
CO-58	176.	810.78	6.4070E-01
FE-59	140.	1099.25	1.2421E+00
SE-75	27549.	264.66	4.8545E+00
SR-85	18424.	514.01	4.4559E+00
Y-88	21.	1836.06	4.3428E-01
NB-94	171.	871.09	6.6203E-01
ZRNB-95	237.	724.18	1.5444E+00
RU-103	22567.	497.08	5.0417E+00
RURH-106	5951.	621.93	5.8367E+01
AG-108m	242.	722.94	7.5040E-01
AG-110M	43864.	657.76	8.6733E+00
SN-113	33211.	391.69	6.9157E+00
TE-123m	31655.	159.00	2.7074E+00
SB-124	8444.	602.73	3.4288E+00
SB-125	38745.	427.89	1.7691E+01
TE-125m	27196.	109.27	7.0373E+02
I-131	30200.	364.48	4.8757E+00
BA-140	13210.	537.31	1.5523E+01
LA-140	32.	1596.21	4.8612E-01
CEPR-144	29545.	133.51	3.7948E+01
EU-152	74.	1408.01	2.9159E+00
EU-154	99.	1274.51	1.9011E+00
EU-155	26465.	105.31	8.9723E+00
HG-203	27273.	279.20	3.6244E+00
Tl-208	27231.	277.36	4.6465E+01
BI-212	271.	727.18	1.0864E+01
PB-212	31372.	238.63	6.4254E+00
BI-214	6363.	609.31	6.5618E+00
PB-214	29768.	351.92	4.3371E+01
RA-224	30674.	240.99	7.0999E+01
RA-226	49013.	186.10	8.6075E+01
AC-228	382.	911.21	3.7849E+00
PA-233	27979.	312.17	8.5333E+00
UTH-233	29521.	245.34	2.5915E+03
PA-234M	152.	1001.03	1.1666E+00
TH-234	22812.	63.29	3.8243E+01
U-235	48414.	185.71	5.2022E+00
NP-239	26687.	106.12	8.7153E+00
PU-239	29809.	129.30	3.2841E+04
AM-241	22397.	59.54	4.6103E+00

 * 222-S Laboratory Counting Room 18-NOV-1997 05:12:24.77

>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
 Worklist #: 21183
 Sample ID: S97T2271-DUP
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

[Signature]

>>>>>>> COUNT INFORMATION <<<<<<<<<<
 Detector ID: GEAL
 File Number: dka300:[spec.GEAL]lg1311.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:35:44.23 sec
 Dead Time: 3.7%

Verified by:

[Signature] 10/25/97

HNF-SD-WM-DP-276, REV. 0

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
 Sample Count Time: 18-NOV-1997 02:36:04.37
 Decayed to: 18-NOV-1997 02:36:04.37
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEAL]1GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:13:20.37

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.09	548	0.49	24.84	23	4	63.4			
0	21.53	5477	1.09	43.70	40	8	12.1			
8	29.63	27290	1.78	59.90	52	27	4.7	5.60E+02		
8	31.73	171554	1.06	64.11	52	27	0.6			
8	36.06	56866	1.73	72.77	52	27	1.6			
1	72.61*	2904	0.97	145.85	142	13	18.0	2.31E+00		
1	74.72*	5932	0.94	150.07	142	13	9.1		AM-243	25.2
0	84.52*	4000	1.10	169.67	167	6	13.3		TH-228	813.
									TH-229	66.4
0	87.19*	1228	0.76	175.00	173	7	47.9		NP-237	25.5
									CD-109	87.6
									TH-229	12.8
0	568.88	430	1.37	1138.36	1136	8	68.8		CS-134	20.6
0	604.49	2900	1.32	1209.60	1205	10	11.5		CS-134	23.2
0	661.41*	1149006	1.43	1323.46	1315	16	0.2		CS-137	1.138E+04
0	795.59*	2068	1.56	1591.87	1585	14	5.8		CS-134	23.7
0	801.61	237	1.59	1603.91	1598	11	25.3		CS-134	26.7
1	1167.73	61	1.96	2336.36	2331	20	71.9	3.00E+00		
1	1172.87	83	1.97	2346.64	2331	20	46.6		CO-60	1.06
0	1323.20	44	2.03	2647.42	2641	11	88.7			
0	1331.80	83	2.40	2664.61	2660	10	38.0		CO-60	1.14
0	1364.85	47	2.49	2730.75	2726	9	58.7			

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	1407.57	39	1.48	2816.23	2808	14	90.5			
0	1764.14*	21	1.77	3529.77	3522	151	151.4			

Total number of lines in spectrum 21
Number of unidentified lines 9
Number of lines tentatively identified by NID 12 57.14%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr	2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L				
CO-60	5.27Y	1.00	1.106E+00	1.107E+00	0.326E+00	29.46		
CD-109	462.90D	1.00	8.756E+01	8.756E+01	4.194E+01	47.90		
CS-134	2.06Y	1.00	2.364E+01	2.364E+01	0.120E+01	5.06		
CS-137	30.00Y	1.00	1.138E+04	1.138E+04	0.002E+04	0.19		11/18/92
TH-228	1.91Y	1.00	8.125E+02	8.125E+02	1.084E+02	13.34		
TH-229	7340.00Y	1.00	1.280E+01	1.280E+01	0.613E+01	47.90		
NP-237	2.14E+06Y	1.00	2.548E+01	2.548E+01	1.221E+01	47.90		
AM-243	7380.00Y	1.00	2.519E+01	2.519E+01	0.228E+01	9.05		
Total Activity :			1.237E+04	1.237E+04				

Grand Total Activity : 1.237E+04 1.237E+04

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	35676.	477.59	5.3609E+01
NA-22	103.	1274.53	6.6593E-01
NA-24	68.	1368.55	6.0981E-01
K-40	1735.	1460.75	2.6958E+01
CR-51	28397.	320.08	3.3666E+01
MN-54	200.	834.83	6.9222E-01
CO-56	160.	846.76	6.2963E-01
CO-57	29715.	122.06	2.4309E+00
CO-58	170.	810.78	6.3163E-01
FE-59	137.	1099.25	1.2286E+00
SE-75	27849.	264.66	4.8808E+00
SR-85	18641.	514.01	4.4820E+00
Y-88	26.	1836.06	4.7239E-01
NB-94	179.	871.09	6.7818E-01
ZRNB-95	265.	724.18	1.6319E+00
RU-103	22361.	497.08	5.0186E+00
RURH-106	6062.	621.93	5.8904E+01
AG-108m	260.	722.94	7.7574E-01
AG-110M	43597.	657.76	8.6469E+00
SN-113	33150.	391.69	6.9094E+00
TE-123m	31779.	159.00	2.7127E+00
SB-124	8590.	602.73	3.4581E+00
SB-125	38717.	427.89	1.7684E+01
TE-125m	27659.	109.27	7.0966E+02
I-131	30251.	364.48	4.8798E+00
BA-140	13204.	537.31	1.5520E+01
LA-140	37.	1596.21	5.2307E-01
CEPR-144	30013.	133.51	3.8247E+01
EU-152	79.	1408.01	3.0022E+00
EU-154	103.	1274.51	1.9370E+00
EU-155	26098.	105.31	8.9101E+00
HG-203	27146.	279.20	3.6160E+00
TL-208	27122.	277.36	4.6372E+01
BI-212	285.	727.18	1.1128E+01
PB-212	31441.	238.63	6.4325E+00
BI-214	6434.	609.31	6.5977E+00
PB-214	30034.	351.92	4.3558E+01
RA-224	30595.	240.99	7.0908E+01
RA-226	49551.	186.10	8.6545E+01
AC-228	373.	911.21	3.7416E+00
PA-233	28190.	312.17	8.5653E+00
UTH-233	29543.	245.34	2.5925E+03
PA-234M	163.	1001.03	1.2039E+00
TH-234	22968.	63.29	3.8373E+01
U-235	49028.	185.71	5.2350E+00
NP-239	26313.	106.12	8.6542E+00
PU-239	29729.	129.30	3.2797E+04
AM-241	22360.	59.54	4.6065E+00

 * 222-S Laboratory Counting Room 18-NOV-1997 08:12:56.10 *

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

Worklist #: 21183
 Sample ID: S97T2272-SAM
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

Luc Hogan

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

Detector ID: GEAL
 File Number: dka300:[spec.GEAL]lg1312.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:35:47.53 sec
 Dead Time: 3.7%

Verified by:

SLC 10/18/97

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

HNF-SD-WM-DP-276, REV. 0

Sample Count Time: 18-NOV-1997 05:36:28.02
 Decayed to: 18-NOV-1997 05:36:28.02
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEAL]1GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:13:20.37

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	8.71	3081	1.45	18.07	17	5	12.0			
0	12.03	702	0.67	24.70	23	6	67.7			
0	21.55	5414	1.14	43.74	40	8	12.3			
10	29.90	34286	2.16	60.44	52	26	4.0	5.38E+02		
10	31.74	170960	1.06	64.12	52	26	0.6			
10	36.06	57931	1.70	72.76	52	26	1.6			
1	72.59*	3019	0.98	145.81	142	12	17.4	2.75E+00		
1	74.73*	5884	0.94	150.09	142	12	9.1		AM-243	25.0
0	84.44*	3964	1.18	169.51	166	8	16.8		TH-228	805.
0	87.11*	946	0.92	174.85	173	6	55.2		TH-229	65.8
									NP-237	19.6
									CD-109	67.4
									TH-229	9.85
0	185.99*	1140	1.92	372.60	370	7	66.1		RA-226	95.0
0	604.44	2985	1.26	1209.50	1205	10	11.3		CS-134	23.9
0	661.42*	1158940	1.43	1323.46	1315	16	0.2		CS-137	1.148E+04
0	795.57*	2236	1.49	1591.81	1584	15	5.5		CS-134	25.6
0	801.85	196	1.46	1604.38	1600	11	32.7		CS-134	22.1
0	1172.94	93	1.97	2346.78	2341	10	46.6		CO-60	1.18
0	1322.86	65	1.99	2646.74	2640	15	68.3			
0	1331.72	82	1.62	2664.46	2656	16	53.5		CO-60	1.13
0	1460.40*	54	1.95	2921.94	2914	18	187.7		K-40	7.38

Total number of lines in spectrum 19
Number of unidentified lines 8
Number of lines tentatively identified by NID 11 57.89%

Nuclide Type :

Nuclide	Hliffe	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	%Error	Flags
			Uncorrected	Decay Corr				
			uCi/L	uCi/L	2-Sigma Error			
K-40	1.28E+09Y	1.00	7.382E+00	7.382E+00	13.86E+00	187.70	SN	
CO-60	5.27Y	1.00	1.156E+00	1.156E+00	0.406E+00	35.13		
CD-109	462.90D	1.00	6.741E+01	6.742E+01	3.720E+01	55.18	SN	
CS-134	2.06Y	1.00	2.513E+01	2.513E+01	0.123E+01	4.90		11/18/92
CS-137	30.00Y	1.00	1.148E+04	1.148E+04	0.002E+04	0.19		
RA-226	1600.00Y	1.00	9.504E+01	9.504E+01	6.284E+01	66.13		SN
TH-228	1.91Y	1.00	8.050E+02	8.051E+02	1.357E+02	16.85		SN
TH-229	7340.00Y	1.00	9.853E+00	9.853E+00	5.437E+00	55.18		SN
NP-237	2.14E+06Y	1.00	1.962E+01	1.962E+01	1.083E+01	55.18		SN
AM-243	7380.00Y	1.00	2.499E+01	2.499E+01	0.228E+01	9.12		SN
Total Activity :			1.254E+04	1.254E+04				

Grand Total Activity : 1.254E+04 1.254E+04

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	35938.	477.59	5.3805E+01
NA-22	99.	1274.53	6.5494E-01
NA-24	63.	1368.55	5.8918E-01
CR-51	28566.	320.08	3.3765E+01
MN-54	191.	834.83	6.7819E-01
CO-56	169.	846.76	6.4584E-01
CO-57	30007.	122.06	2.4428E+00
CO-58	184.	810.78	6.5568E-01
FE-59	153.	1099.25	1.2980E+00
SE-75	27818.	264.66	4.8781E+00
SR-85	18625.	514.01	4.4801E+00
Y-88	25.	1836.06	4.6996E-01
NB-94	176.	871.09	6.7166E-01
ZRNB-95	256.	724.18	1.6044E+00
RU-103	22529.	497.08	5.0374E+00
RURH-106	6047.	621.93	5.8832E+01
AG-108m	235.	722.94	7.3854E-01
AG-110M	43511.	657.76	8.6384E+00
SN-113	33371.	391.69	6.9323E+00
TE-123m	32339.	159.00	2.7364E+00
SB-124	8874.	602.73	3.5143E+00
SB-125	39075.	427.89	1.7766E+01
TE-125m	27645.	109.27	7.0949E+02
I-131	30610.	364.48	4.9086E+00
BA-140	13213.	537.31	1.5525E+01
LA-140	43.	1596.21	5.5663E-01
CEPR-144	30117.	133.51	3.8313E+01
EU-152	94.	1408.01	3.2601E+00
EU-154	99.	1274.51	1.9012E+00
EU-155	26237.	105.31	8.9337E+00
HG-203	27487.	279.20	3.6386E+00
TL-208	27536.	277.36	4.6723E+01
BI-212	320.	727.18	1.1771E+01
PB-212	31484.	238.63	6.4369E+00
BI-214	6475.	609.31	6.6189E+00
PB-214	29945.	351.92	4.3508E+01
RA-224	30891.	240.99	7.1249E+01
AC-228	367.	911.21	3.7104E+00
PA-233	28146.	312.17	8.5587E+00
UTH-233	29872.	245.34	2.6068E+03
PA-234M	155.	1001.03	1.1744E+00
TH-234	23163.	63.29	3.8535E+01
U-235	49031.	185.71	5.2351E+00
NP-239	26421.	106.12	8.6720E+00
PU-239	30213.	129.30	3.3062E+04
AM-241	22559.	59.54	4.6268E+00

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	1460.28*	122	1.84	2921.71	2912	20	81.2		K-40	16.8

Summary of Nuclide Activity

Sample ID : S97T2272-DUP

Acquisition date : 18-NOV-1997 08:40:48

Total number of lines in spectrum 20
 Number of unidentified lines 10
 Number of lines tentatively identified by NID 10 50.00%

Nuclide Type :

Nuclide	Hlfe	Decay	Wtd Mean		Decay Corr	2-Sigma Error	2-Sigma	%Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L					
K-40	1.28E+09Y	1.00	1.681E+01	1.681E+01	1.366E+01	81.24	src		
CD-109	462.90D	1.00	9.553E+01	9.554E+01	4.186E+01	43.82	src		
CS-134	2.06Y	1.00	2.488E+01	2.488E+01	0.121E+01	4.85		11/18/97	
CS-137	30.00Y	1.00	1.147E+04	1.147E+04	0.002E+04	0.19			
TH-228	1.91Y	1.00	8.608E+02	8.609E+02	1.229E+02	14.27	src		
TH-229	7340.00Y	1.00	1.396E+01	1.396E+01	0.612E+01	43.82	src		
NP-237	2.14E+06Y	1.00	2.780E+01	2.780E+01	1.218E+01	43.82	src		
AM-243	7380.00Y	1.00	2.317E+01	2.317E+01	0.201E+01	8.69	src		
Total Activity :			1.254E+04	1.254E+04					

Grand Total Activity : 1.254E+04 1.254E+04

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	35489.	477.59	5.3469E+01
NA-22	85.	1274.53	6.0863E-01
NA-24	70.	1368.55	6.1758E-01
CR-51	28357.	320.08	3.3642E+01
MN-54	189.	834.83	6.7379E-01
CO-56	177.	846.76	6.6013E-01
CO-57	30222.	122.06	2.4516E+00
CO-58	158.	810.78	6.0875E-01
FE-59	126.	1099.25	1.1808E+00
CO-60	151.	1332.50	8.2168E-01
SE-75	27672.	264.66	4.8653E+00
SR-85	18734.	514.01	4.4931E+00
Y-88	26.	1836.06	4.7480E-01
NB-94	170.	871.09	6.6034E-01
ZRNB-95	248.	724.18	1.5793E+00
RU-103	22609.	497.08	5.0463E+00
RURH-106	6018.	621.93	5.8691E+01
AG-108m	236.	722.94	7.4003E-01
AG-110M	43678.	657.76	8.6549E+00
SN-113	33458.	391.69	6.9414E+00
TE-123m	32163.	159.00	2.7290E+00
SB-124	8814.	602.73	3.5025E+00
SB-125	39279.	427.89	1.7812E+01
TE-125m	27664.	109.27	7.0973E+02
I-131	30675.	364.48	4.9138E+00
BA-140	13062.	537.31	1.5436E+01
LA-140	33.	1596.21	4.9598E-01
CEPR-144	29865.	133.51	3.8153E+01
EU-152	90.	1408.01	3.2053E+00
EU-154	85.	1274.51	1.7693E+00
EU-155	26404.	105.31	8.9620E+00
HG-203	27773.	279.20	3.6574E+00
TL-208	27935.	277.36	4.7059E+01
BI-212	298.	727.18	1.1366E+01
PB-212	31794.	238.63	6.4683E+00
BI-214	6385.	609.31	6.5728E+00
PB-214	30208.	351.92	4.3700E+01
RA-224	30785.	240.99	7.1128E+01
RA-226	49506.	186.10	8.6506E+01
AC-228	388.	911.21	3.8120E+00
PA-233	28235.	312.17	8.5722E+00
UTH-233	30055.	245.34	2.6147E+03
PA-234M	154.	1001.03	1.1708E+00
TH-234	23294.	63.29	3.8643E+01
U-235	48871.	185.71	5.2266E+00
NP-239	26573.	106.12	8.6967E+00
PU-239	30321.	129.30	3.3120E+04
AM-241	22391.	59.54	4.6097E+00

LABCORE Completed Worklist Report for Worklist# 21185

Analyst: smf Instrument: AB10 Book#

Method: Rev/Mod

Worklist Comment: AP107,SR90,TDM

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@SR90-01 SR90-01 LIQUID		2.37E-03	2.46E-3	103.797 % Recovery	
1 STD	0	@SR90-01 SR90-01C LIQUID		100	9.00E+01	90.000 % Recovery	
1 STD	0	@SR90-01 SR90-01E LIQUID		1.00	1.35E+00	1.350 % Ct. Err	
2 BLNK	0	@SR90-01 SR90-01 LIQUID		1	1.84E-4	1.840e-004 uCi/mL	
2 BLNK	0	@SR90-01 SR90-01C LIQUID		100	8.95E+01	89.500 % Recovery	
2 BLNK	0	@SR90-01 SR90-01E LIQUID		1.00	8.18E+01	81.800 uCi/mL	
3 BLNK/BKG	0	@SR90-01 SR90-01 LIQUID		1	1.38E+00	1.380 BLNK/BKG	
4 SAMPLE	S97T002270	0 @SR90-01 SR90-01 LIQUID		N/A	5.79E-03	2.02e-004 uCi/mL	
4 SAMPLE	S97T002270	0 @SR90-01 SR90-01C LIQUID		N/A	8.60E+01	% Recovery	
4 SAMPLE	S97T002270	0 @SR90-01 SR90-01E LIQUID		N/A	6.43E+00	% Ct. Error	
5 DUP	S97T002270	0 @SR90-01 SR90-01 LIQUID		5.79E-3	5.64E-3	2.625 RPD	
5 DUP	S97T002270	0 @SR90-01 SR90-01C LIQUID		100	8.86E+01	88.600 % Recovery	
5 DUP	S97T002270	0 @SR90-01 SR90-01E LIQUID		1.00	6.40E+00	6.400 % Ct. Err	
6 SAMPLE	S97T002271	0 @SR90-01 SR90-01 LIQUID		N/A	3.91E-03	1.94e-004 uCi/mL	
6 SAMPLE	S97T002271	0 @SR90-01 SR90-01C LIQUID		N/A	8.89E+01	% Recovery	
6 SAMPLE	S97T002271	0 @SR90-01 SR90-01E LIQUID		N/A	7.91E+00	% Ct. Error	
7 DUP	S97T002271	0 @SR90-01 SR90-01 LIQUID		3.91E-3	3.37E-3	14.835 RPD	
7 DUP	S97T002271	0 @SR90-01 SR90-01C LIQUID		100	8.89E+01	88.900 % Recovery	
7 DUP	S97T002271	0 @SR90-01 SR90-01E LIQUID		1.00	8.64E+00	8.640 % Ct. Err	
8 SAMPLE	S97T002272	0 @SR90-01 SR90-01 LIQUID		N/A	4.18E-03	1.94e-004 uCi/mL	
8 SAMPLE	S97T002272	0 @SR90-01 SR90-01C LIQUID		N/A	8.86E+01	% Recovery	
8 SAMPLE	S97T002272	0 @SR90-01 SR90-01E LIQUID		N/A	7.60E+00	% Ct. Error	
9 DUP	S97T002272	0 @SR90-01 SR90-01 LIQUID		4.18E-3	4.04E-3	3.406 RPD	
9 DUP	S97T002272	0 @SR90-01 SR90-01C LIQUID		100	8.93E+01	89.300 % Recovery	
9 DUP	S97T002272	0 @SR90-01 SR90-01E LIQUID		1.00	7.72E+00	7.720 % Ct. Err	

Final page for worklist# 21185

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 21185

Analyst: SMF Instrument: AB00 10 Book# 24N19-B ⁸⁶³⁵⁶ ₈₆₃₅₆

Method: LA-220-101 Rev/Mod E-3

Worklist Comment: AP107,SR90,TDM

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	S97T002270 0		@SR90-01	LIQUID	97000649	AP-107 GRAB
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 DUP	S97T002270 0		@SR90-01	LIQUID		
6 SAMPLE	S97T002271 0		@SR90-01	LIQUID	97000649	AP-107 GRAB
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7 DUP	S97T002271 0		@SR90-01	LIQUID		
8 SAMPLE	S97T002272 0		@SR90-01	LIQUID	97000649	AP-107 GRAB
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
9 DUP	S97T002272 0		@SR90-01	LIQUID		

Final page for worklist # 21185

Lucie M. Dalton 11-15-97
Analyst Signature Date

M. C. Brown 11/17/97
Analyst Signature Date
A. J. L. L. L. 11/17/97

Data Entry Comments: 1.0 ml Sr 90 Carrier #29N19-B

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

HNF-SD-WM-DP-276, REV. 0

WORKBOOK PAGE: STD1

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

					STANDARD
Type	DETECTOR NUMBER	10	CARRIER ADDED in mL (CVA)	1.000	
STD	TOTAL COUNTS (TC)	21297	GROSS WEIGHT (W2)	7.6055	
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.5155	
21185	BACKGROUND in cpm (BKG)	9.5	NET WEIGHT (W3)	0.0900	
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	5.73	
@SR90-01	DILUTION FACTOR (DF)	1			
Matrix	DIGEST DILUTION FACTOR DDF	1			
LIQUID	SAMPLE COUNT RATE (Rs)	2120.20	Sr-90 EFFICIENCY FACTO (C1)	0.4051	
Batch Number	CRITICAL LEVEL (Lc)	1.86	Y-90 EFFICIENCY FACTOR (C2)	0.4503	
97005388	TIME OF SEPARATION (ST)	09:45	Rmax	N/A	
Rerun	DATE OF SEPARATION (SD)	11/16/97	DETECTION LIMIT (Ld)	3.80	
0	TIME OF COUNT (TOC)	15:29	Sr-89/90 CONC. in µCi/L	2.4557E+00	
Sample Prep	DATE OF COUNT (DOC)	11/16/97			
N/A	STANDARD BOOK #	86B56			
Sample #	STANDARD VALUE in µCi/mL	2.3713E-03			
WL21185-STD					
Instrument Code					
WB26870	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0				
MCB	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/(64.2*DT))))*SS*REC*2220000)				
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
SAC	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)				
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
SMF	NOTE: Expected weight = CVA * 0.1				
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
11/17/97	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
Analysis Date					DETECTION LEVEL 4.41E-06 µCi/L
11/16/97	Sr-89/90 CONCENTRATION	2.46E-03	µCi/mL		
Analysis Time					
12:00 PM	RELATIVE COUNTING ERROR	1.4%			
Sample Point					
AP-107 GRAB	PERCENT CARRIER RECOVERY	90.0%			

Analyst:	SMF	Date:	17-Nov-97
Signature of Chemist:	SAC	Date:	11/17/97

STANDARD.WB1 REV 2.0

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HNF-SD-WM-DP-276, REV. 0

WORKBOOK PAGE: BLANK2

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

LA-220-101 / D-1				Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)				BLNK	
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000			
BLNK	TOTAL COUNTS	(TC)	131	GROSS WEIGHT	(W2)	7.6086			
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5191			
21185	BACKGROUND in cpm	(BKG)	9.5	NET WEIGHT	(W3)	0.0895			
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	6.18			
@SR90-01	DILUTION FACTOR	DF	11						
Matrix	DIGEST DILUTION FACTOR	(DDF)	1						
LIQUID	SAMPLE COUNT RATE	(Rs)	3.60	SR-90 EFFICIENCY FACTOR	(C1)	0.4051			
Batch Number	CRITICAL LEVEL	(Lc)	1.86	Y-90 EFFICIENCY FACTOR	(C2)	0.4503			
97005388	TIME OF SEPARATION	(ST)	09:45	Rmax		N/A			
Rerun	DATE OF SEPARATION	(SD)	11/16/97	DETECTION LIMIT	(Ld)	3.80			
0	TIME OF COUNT	(TOC)	15:56	Sr-89/90 CONC in µCi/L	1.8362E-01				
Sample Prep	DATE OF COUNT	(DOC)	11/16/97						
N/A									
Sample #									
WL21185-BLNK									
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)								
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0								
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))) * SS*REC*2220000)								
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))								
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96								
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100								
Analyst	NOTE: Expected weight = CVA * 0.1								
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.								
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100								
11/17/97									
Analysis Date									
11/16/97	Sr-89/90 CONCENTRATION		1.84E-04		µCi/mL	DETECTION LEVEL 1.94E-04 µCi/mL			
Analysis Time									
12:00 PM	RELATIVE COUNTING ERROR		81.8%						
Sample Point									
AP-107 GRAB	PERCENT CARRIER RECOVERY		89.5%						

Analyst:	SMF	Date:	17-Nov-97
Signature of Chemist:	SAC	Date:	19 Nov 97

BLANK.WB1 REV 2.0

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WORKBOOK PAGE: SAM4

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-3)						SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	1187	GROSS WEIGHT	(W2)	7.6328
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5468
21185	BACKGROUND in cpm	(BKG)	9.5	NET WEIGHT	(W3)	0.0860
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	6.37
@SR90-01	DILUTION FACTOR	DF	11			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	109.20	Sr-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	1.86	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
97005388	TIME OF SEPARATION	(ST)	09:45	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	11/16/97	DETECTION LIMIT	(Ld)	3.80
0	TIME OF COUNT	(TOC)	16:07	Sr-89/90 CONC in µCi/L 5.7852E+00		
Sample Prep	DATE OF COUNT	(DOC)	11/16/97			
N/A						
Sample #						
S97T002270						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
11/17/97						
Analysis Date						
11/16/97	Sr-89/90 CONCENTRATION		5.79E-03	µCi/mL		DETECTION LEVEL 2.02E-04 µCi/mL
Analysis Time						
12:00 PM	RELATIVE COUNTING ERROR		6.4%			
Sample Point						
AP-107 GRAB	PERCENT CARRIER RECOVERY		86.0%			

Analyst:	SMF	Date:	17-Nov-97
Signature of Chemist:	SAC	Date:	19 Nov 97

SAMPLE.WB1 REV 2.0

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WORKBOOK PAGE: DUP5

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)						DUP	
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000	
DUP	TOTAL COUNTS	(TC)	1194	GROSS WEIGHT	(W2)	7.5915	
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5029	
21185	BACKGROUND in cpm	(BKG)	9.5	NET WEIGHT	(W3)	0.0886	
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	6.57	
@SR90-01	DILUTION FACTOR	DF	11				
Matrix	DIGEST DILUTION FACTOR (DDF)		1				
LIQUID	SAMPLE COUNT RATE	(Rs)	109.90	Sr-90 EFFICIENCY FACTOR	(C1)	0.4051	
Batch Number	CRITICAL LEVEL	(Lc)	1.86	Y-90 EFFICIENCY FACTOR	(C2)	0.4503	
97005388	TIME OF SEPARATION	(ST)	09:45	Rmax		N/A	
Rerun	DATE OF SEPARATION	(SD)	11/16/97	DETECTION LIMIT	(Ld)	3.80	
0	TIME OF COUNT	(TOC)	16:19	Sr-89/90 CONC in µCi/L		5.6397E+00	
Sample Prep	DATE OF COUNT	(DOC)	11/16/97				
N/A							
Sample #							
S97T002270							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96						
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
11/17/97							
Analysis Date						DETECTION LEVEL 1.95E-04 µCi/mL	
11/16/97	Sr-89/90 CONCENTRATION		5.64E-03	µCi/mL			
Analysis Time							
12:00 PM	RELATIVE COUNTING ERROR		6.4%				
Sample Point							
AP-107 GRAB	PERCENT CARRIER RECOVERY		88.6%				

Analyst:	SMF	Date:	17-Nov-97
Signature of Chemist:	SAC	Date:	11/16/97

SAMPLE.WB1 REV 2.0

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WORKBOOK PAGE: SAM6

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)						SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	862	GROSS WEIGHT	(W2)	7.6118
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5229
21185	BACKGROUND in cpm	(BKG)	9.5	NET WEIGHT	(W3)	0.0889
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	6.77
@SR90-01	DILUTION FACTOR	DF	11			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	76.70	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	1.86	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
97005388	TIME OF SEPARATION	(ST)	09:45	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	11/16/97	DETECTION LIMIT	(Ld)	3.80
0	TIME OF COUNT	(TOC)	16:31	Sr-89/90 CONC in µCi/L 3.9146E+00		
Sample Prep	DATE OF COUNT	(DOC)	11/16/97			
N/A						
Sample #						
S97T002271						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/(64.2*DT))))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
11/17/97						
Analysis Date						
11/16/97	Sr-89/90 CONCENTRATION		3.91E-03	µCi/mL	DETECTION LEVEL	
Analysis Time						
12:00 PM	RELATIVE COUNTING ERROR		7.9%	1.94E-04		
Sample Point	µCi/mL					
AP-107 GRAB	PERCENT CARRIER RECOVERY		88.9%			

Analyst:	SMF	Date:	17-Nov-97
Signature of Chemist:	<i>29 Cuth</i> SAC	Date:	17 Nov 97

SAMPLE:WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP7

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)						DUP		
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000		
DUP	TOTAL COUNTS	(TC)	757	GROSS WEIGHT	(W2)	7.6494		
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5605		
21185	BACKGROUND in cpm	(BKG)	9.5	NET WEIGHT	(W3)	0.0889		
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	6.97		
@SR90-01	DILUTION FACTOR	DF	11					
Matrix	DIGEST DILUTION FACTOR	(DDF)	1					
LIQUID	SAMPLE COUNT RATE	(Rs)	66.20	SR-90 EFFICIENCY FACTOR	(C1)	0.4051		
Batch Number	CRITICAL LEVEL	(Lc)	1.86	Y-90 EFFICIENCY FACTOR	(C2)	0.4503		
97005388	TIME OF SEPARATION	(ST)	09:45	Rmax		N/A		
Rerun	DATE OF SEPARATION	(SD)	11/16/97	DETECTION LIMIT	(Ld)	3.80		
0	TIME OF COUNT	(TOC)	16:43	Sr-89/90 CONC in µCi/L		3.3717E+00		
Sample Prep	DATE OF COUNT	(DOC)	11/16/97					
N/A								
Sample #								
S97T002271								
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)							
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0							
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/(64.2*DT)))*SS*REC*2220000)							
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))							
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96							
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100							
Analyst	NOTE: Expected weight = CVA * 0.1							
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.							
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100							
11/17/97								
Analysis Date								
11/16/97	Sr-89/90 CONCENTRATION		3.37E-03	µCi/mL	DETECTION LEVEL 1.94E-04 µCi/mL			
Analysis Time								
12:00 PM	RELATIVE COUNTING ERROR		8.6%					
Sample Point								
AP-107 GRAB	PERCENT CARRIER RECOVERY		88.9%					

Analyst:	SMF	Date:	17-Nov-97
Signature of Chemist:	SAC	Date:	19 Nov 97
SAMPLE.WB1 REV 2.0		22010NML	

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)						SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	914	GROSS WEIGHT	(W2)	7.5829
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.4943
21185	BACKGROUND in cpm	(BKG)	9.5	NET WEIGHT	(W3)	0.0886
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	7.15
@SR90-01	DILUTION FACTOR	DF	11			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	81.90	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	1.86	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
97005388	TIME OF SEPARATION	(ST)	09:45	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	11/16/97	DETECTION LIMIT	(Ld)	3.80
0	TIME OF COUNT	(TOC)	16:54	Sr-89/90 CONC in µCi/L 4.1776E+00		
Sample Prep	DATE OF COUNT	(DOC)	11/16/97			
N/A						
Sample #						
S97T002272						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
11/17/97						
Analysis Date						
11/16/97	Sr-89/90 CONCENTRATION		4.18E-03	µCi/mL	DETECTION LEVEL	
Analysis Time						
12:00 PM	RELATIVE COUNTING ERROR		7.6%	1.94E-04		
Sample Point						
AP-107 GRAB	PERCENT CARRIER RECOVERY		88.6%	µCi/mL		

Analyst:	SMF	Date:	17-Nov-97
Signature of Chemist:	<i>SMF</i>	SAC	1976497
SAMPLE.WB1 REV 2.0		22010NML	

WORKBOOK PAGE: DUP9

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

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)						DUP
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	894	GROSS WEIGHT	(W2)	7.5960
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5067
21185	BACKGROUND in cpm	(BKG)	9.5	NET WEIGHT	(W3)	0.0893
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	7.33
@SR90-01	DILUTION FACTOR	DF	11			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	79.90	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	1.86	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
97005388	TIME OF SEPARATION	(ST)	09:45	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	11/16/97	DETECTION LIMIT	(Ld)	3.80
0	TIME OF COUNT	(TOC)	17:05	Sr-89/90 CONC in µCi/L		4.0361E+00
Sample Prep	DATE OF COUNT	(DOC)	11/16/97			
N/A						
Sample #						
S97T002272						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SMF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
11/17/97						
Analysis Date						
11/16/97	Sr-89/90 CONCENTRATION		4.04E-03	µCi/mL	DETECTION LEVEL	
Analysis Time						
12:00 PM	RELATIVE COUNTING ERROR		7.7%	1.92E-04		
Sample Point						
AP-107 GRAB	PERCENT CARRIER RECOVERY		89.3%	µCi/mL		

Analyst:	SMF	Date:	17-Nov-97
Signature of Chemist:	SAC	Date:	19 Nov 97

SAMPLE: WB1 REV 2.0

22010NML

LABCORE Completed RadChem Report for Worklist#: 21182

Analyst: dpp

Instrument: AB18

Book# 75B5L

Method: LA-963704 Rev/Mod B-0

Worklist Comment: AP107,AM241,tdm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	AM24101 AM24101 LIQUID		1.03E-04	1.02E-4	99.029	% Recovery
1 STD	0	0	AM24101 AM24101 LIQUID		100.	8.43E+01	84.300	% Recovery
1 STD	0	0	AM24101 AM24101 LIQUID		1.0	4.05E+00	4.050	% Ct Error
2 BLNK	0	0	AM24101 AM24101 LIQUID		1	<6.87E-6		uCi/mL
2 BLNK	0	0	AM24101 AM24101 LIQUID		100.0	8.12E+01	81.200	% Recovery
2 BLNK	0	0	AM24101 AM24101 LIQUID		1.0	1.00E+02	100.000	% Ct Error
3 SAMPLE	S97T002270	0	AM24101 AM24101 LIQUID		N/A	7.93E-06	793.0e-008	uCi/mL
3 SAMPLE	S97T002270	0	AM24101 AM24101 LIQUID		N/A	9.67E+00	0.0e+000	% Ct Error
3 SAMPLE	S97T002270	0	AM24101 AM24101 LIQUID		N/A	6.83E+01	0.0e+000	% Recovery
4 DUP	S97T002270	0	AM24101 AM24101 LIQUID		<7.93E-6	<5.90E-6		RPD
4 DUP	S97T002270	0	AM24101 AM24101 LIQUID		100.0	9.03E+01	90.300	% Recovery
4 DUP	S97T002270	0	AM24101 AM24101 LIQUID		1.0	8.03E+00	8.030	% Ct Error
5 SAMPLE	S97T002271	0	AM24101 AM24101 LIQUID		N/A	9.81E-06	981.0e-008	uCi/mL
5 SAMPLE	S97T002271	0	AM24101 AM24101 LIQUID		N/A	1.00E+02	0.0e+000	% Ct Error
5 SAMPLE	S97T002271	0	AM24101 AM24101 LIQUID		N/A	6.58E+01	0.0e+000	% Recovery
6 DUP	S97T002271	0	AM24101 AM24101 LIQUID		<9.81E-6	<6.84E-6		RPD
6 DUP	S97T002271	0	AM24101 AM24101 LIQUID		100.0	8.18E+01	81.800	% Recovery
6 DUP	S97T002271	0	AM24101 AM24101 LIQUID		1.0	1.17E+01	11.700	% Ct Error
7 SAMPLE	S97T002272	0	AM24101 AM24101 LIQUID		N/A	6.73E-06	673.0e-008	uCi/mL
7 SAMPLE	S97T002272	0	AM24101 AM24101 LIQUID		N/A	1.07E+01	0.0e+000	% Ct Error
7 SAMPLE	S97T002272	0	AM24101 AM24101 LIQUID		N/A	8.21E+01	0.0e+000	% Recovery
8 DUP	S97T002272	0	AM24101 AM24101 LIQUID		<6.73E-6	<5.77E-6		RPD
8 DUP	S97T002272	0	AM24101 AM24101 LIQUID		100.0	9.04E+01	90.400	% Recovery
8 DUP	S97T002272	0	AM24101 AM24101 LIQUID		1.0	1.08E+01	10.800	% Ct Error

Final page for worklist# 21182

Analyst Signature

Date

Analyst Signature

Date

John Relyea
Reviewer Signature Date 18 Nov 97
Validated

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

LABCORE Data Entry Template for Worklist# 21182

Analyst: DPB Instrument: AM01 18 Book# 75B56

Method: LA-953-104 Rev/Mod _____

Worklist Comment: AP107,AM241,tdm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S97T002270 0		@AM24101	LIQUID	97000649	AP-107 GRAB
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S97T002270 0		@AM24101	LIQUID		
5 SAMPLE	S97T002271 0		@AM24101	LIQUID	97000649	AP-107 GRAB
Analytes Requested: AM24101 , AM24101E, AM24101T						
6 DUP	S97T002271 0		@AM24101	LIQUID		
7 SAMPLE	S97T002272 0		@AM24101	LIQUID	97000649	AP-107 GRAB
Analytes Requested: AM24101 , AM24101E, AM24101T						
8 DUP	S97T002272 0		@AM24101	LIQUID		

Final page for worklist # 21182

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID

STD

Type	Date Counted	NOV-17-97	Am 241 AEA Frac. (C241)	0.473
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.454
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
21182	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	3255
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	39.82
LIQUID	Detector Number	18	Am 243 cpm	38.25
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97005385	Standard Book No	75B56	AEA Count Time (min)	120
Rerun	Standard Value in $\mu\text{Ci/mL}$	1.030E-04	Am 241 $\mu\text{Ci/L}$ =	1.0203E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 1.2800E-02

Sample Prep
N/A
Sample Number
WL21182
Instrument Code
WB27809
Prepared By
SZC
Chemist
JFR
Analyst
DPB
Date Complete
11/17/97
Analysis Date
11/15/97
Analysis Time
04:30 PM
Sample Point
AP-107 GRAB

Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))

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 $\mu\text{Ci/mL}$	=	1.02E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$
Relative Counting Error	=	4.1%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 $\mu\text{Ci/mL}$	<	1.28E-05	1.28E-05
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	84.3%	1.28E-05

Analyst:	DPB	Date:	11/17/97
Signature of Chemist:	JFR	Date:	18 Nov 97

STANDARD.WB1 REV 1.2

953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

BLNK

Type	Date Counted	NOV-16-97	Am 241 AEA Frac. (C241)	0
BLNK	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.878
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
21182	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1624
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	18	Am 243 cpm	41.13
Batch Number	Detector Efficiency (DetEff)	0.268	Cm 243/244 cpm	0
97005385			AEA Count Time (min)	480
Rerun			Am 241 µCi/L =	< 6.8680E-03
0			Cm 243/244 µCi/L =	< 6.8680E-03

Analyst:	DPB	Date:	11/17/97
Signature of Chemist:	JFR	Date:	18 Nov 97
BLANK.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

SAMPLE

Type	Date Counted	NOV-16-97	Am 241 AEA Frac. (C241)	0.025	
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.904	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
21182	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1327	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.13	
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0.88	
LIQUID	Detector Number	18	Am 243 cpm	31.54	
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0	
97005385			AEA Count Time (min)	480	
Rerun:			Am 241 $\mu\text{Ci/L}$ =	< 7.9329E-03	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.9329E-03	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S97T002270	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB27809					
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
SZC					
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 7.93E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	9.7%			
DPB					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
11/17/97	Cm 243/244 $\mu\text{Ci/mL}$	< 7.93E-06	Am 241		
Analysis Date	Relative Counting Error =	100.0%	7.93E-06		
11/15/97	Am 243 Tracer Recovery =	68.3%	Cm 243/244		
Analysis Time:					
04:30 PM					
Sample Point					
AP-107 GRAB					

Analyst:	DPB	Date:	11/17/97
Signature of Chemist:	JFR	Date:	18 Nov 97
SAMPLE.WB1 REV 1.2 853103ML			

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

DUP

Type	Date Counted	NOV-16-97	Am 241 AEA Frac. (C241)	0.028	
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.919	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
21182	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1726	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.13	
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	1.28	
LIQUID	Detector Number	18	Am 243 cpm	41.62	
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0	
97005385			AEA Count Time (min)	480	
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 5.8976E-03	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 5.8976E-03	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S97T002270	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB27809	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SZC					
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 5.90E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	8.0%			
DPB					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
11/17/97	Cm 243/244 $\mu\text{Ci/mL}$	< 5.90E-06	Am 241		
Analysis Date	Relative Counting Error =	100.0%	5.90E-06		
11/15/97	Am 243 Tracer Recovery =	90.3%	Cm 243/244		
			5.90E-06		
Analysis Time					
04:30 PM					
Sample Point					
AP-107 GRAB					

Analyst:	DPB	Date:	11/17/97
Signature of Chemist:	JFR	Date:	18 Nov 97

SAMPLE:WB1 REV 1.2

953103ML

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

SAMPLE

Type	Date Counted	NOV-16-97	Am 241 AEA Frac. (C241)	0
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.758
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
21182	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1525
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	18	Am 243 cpm	31.59
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97005385			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 9.8145E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 9.8145E-03
Sample Prep				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S97T002271	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
WB27809	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By	NOTE: Am-241 Result is a LESS THAN Value.			
SZC				
Chemist	JFR	Am 241 $\mu\text{Ci/mL}$ =	< 9.81E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$ Am 241 9.81E-06 Cm 243/244 9.81E-06
Analyst	DPB	Relative Counting Error =	100.0%	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
11/17/97	Cm 243/244 $\mu\text{Ci/mL}$ < 9.81E-06			
Analysis Date	Relative Counting Error = 100.0%			
11/15/97	Am 243 Tracer Recovery = 65.8%			
Analysis Time				
04:30 PM				
Sample Point				
AP-107 GRAB				

Analyst:	DPB	Date:	11/17/97
Signature of Chemist:	JFR	Date:	18 Nov 97
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

DUP

Type	Date Counted	NOV-16-97	Am 241 AEA Frac. (C241)	0.013	
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.876	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
21182	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1639	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.13	
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0.59	
LIQUID	Detector Number	18	Am 243 cpm	38.47	
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0	
9705385			AEA Count Time (min)	480	
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 6.8361E-03	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 6.8361E-03	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S97T002271	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB27809	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SZC					
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 6.84E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	11.7%			
DPB					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
11/17/97	Cm 243/244 $\mu\text{Ci/mL}$	< 6.84E-06		Am 241	
Analysis Date	Relative Counting Error =	100.0%		6.84E-06	
11/15/97	Am 243 Tracer Recovery =	81.8%		Cm 243/244	
Analysis Time					
04:30 PM					
Sample Point					
AP-107 GRAB					

Analyst:	DPB	Date:	11/17/97
Signature of Chemist:	JFR	Date:	11/16/97

SAMPLE.WB1 REV 1.2

853103ML

WORKBOOK PAGE: SAM7

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

SAMPLE

Type	Date Counted	NOV-16-97	Am 241 AEA Frac. (C241)	0.015	
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.886	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
21182	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1628	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.13	
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0.71	
LIQUID	Detector Number	18	Am 243 cpm	41.07	
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0	
97005385			AEA Count Time (min)	480	
Re-run:			Am 241 $\mu\text{Ci/L}$ =	< 6.7280E-03	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 6.7280E-03	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S97T002272	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB27809	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SZC					
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 6.73E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	10.7%			
DPB					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
11/17/97	Cm 243/244 $\mu\text{Ci/mL}$	< 6.73E-06	Am 241		
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244		
11/15/97	Am 243 Tracer Recovery =	82.1%	6.73E-06		
Analysis Time					
04:30 PM					
Sample Point					
AP-107 GRAB					

Analyst:	DPB	Date:	11/17/97
Signature of Chemist:	JFR	Date:	18 Nov 97

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP8

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

DUP

Type	Date Counted	NOV-16-97	Am 241 AEA Frac. (C241)	0.015
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.939
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
21182	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1690
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.13
Matrix:	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0.7
LIQUID	Detector Number	18	Am 243 cpm	43.19
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
97005385			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 5.7696E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 5.7696E-03
Sample Prep				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S97T002272	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
WB27809	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By				
SZC				
Chemist	NOTE: Am-241 Result is a LESS THAN Value.			
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 5.77E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$	Am 241 5.77E-06 Cm 243/244 5.77E-06
Analyst	Relative Counting Error =	10.8%		
DPB				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
11/17/97	Cm 243/244 $\mu\text{Ci/mL}$	< 5.77E-06		
Analysis Date	Relative Counting Error =	100.0%		
11/15/97	Am 243 Tracer Recovery =	90.4%		
Analysis Time				
04:30 PM				
Sample Point				
AP-107 GRAB				

Analyst:	DPB	Date:	11/17/97
Signature of Chemist:	JFR	Date:	18 Nov 97
SAMPLE.WB1 REV 1.2	953103ML		

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
WL21182-STD
File ID: 13a1373.CNF

Counted on: 11/17/97 @ 9:35
Detector: AEA13
Geometry number: 1
Count time:

7204. Sec ~~120~~

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	275.6	275.6	302.281	302.281	14.000	6.997	7.000	2.596
2	282.0	282.0	256.198	256.179	12.000	4.947	6.000	1.773

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m	%95	d/m	Activity uCi/ea
1	Pu238	0.473	Exp.	Obs.	Diff.	FWHM				
			5.487	5.480	0.0070	0.03	39.82	2.8	223.2	0.101E-03
2	Am241		5.479	5.480	-0.001				171.0	0.770E-04
2	Am243	0.454	5.266	5.268	-0.0020	0.02	38.25	2.9	155.9	0.702E-04
Totals:			0.927	<--valid peaks only-->			78.08			

DETECTOR CALIBRATION

Energy (MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.445
Efficiency = 0.2478 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	10110.0	100.000
Smoothed	10109.7	99.997
Composite fit	9374.6	92.726
Residuals	735.4	7.274

Analyzed by:

SEH

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Raw Data	Dump for	AEA Spectrum:	13a1373.CNF						
1	0.	0.	0.	0.	0.	1.	2.	0.	0.
11	0.	1.	0.	2.	0.	0.	0.	0.	0.
21	2.	1.	0.	0.	0.	0.	0.	0.	0.
31	1.	0.	1.	0.	1.	0.	1.	1.	1.
41	0.	0.	1.	0.	0.	1.	1.	1.	1.
51	0.	0.	1.	0.	0.	1.	2.	0.	0.
61	0.	1.	0.	2.	1.	0.	1.	2.	1.
71	0.	0.	2.	1.	1.	0.	1.	1.	1.
81	3.	0.	1.	1.	1.	0.	1.	0.	0.
91	3.	1.	1.	0.	1.	0.	1.	0.	0.
101	3.	1.	0.	1.	1.	1.	0.	1.	0.
111	1.	1.	1.	2.	0.	2.	1.	1.	0.
121	2.	1.	3.	1.	0.	0.	0.	3.	2.
131	2.	2.	1.	3.	3.	1.	1.	0.	3.
141	3.	0.	2.	2.	1.	1.	3.	1.	3.
151	0.	4.	1.	4.	1.	1.	3.	4.	2.
161	2.	2.	3.	2.	3.	2.	0.	5.	5.
171	1.	4.	6.	3.	3.	1.	4.	1.	6.
181	5.	5.	7.	2.	6.	4.	12.	6.	4.
191	3.	5.	8.	4.	11.	7.	7.	4.	7.
201	6.	3.	8.	11.	8.	9.	10.	9.	15.
211	9.	12.	13.	13.	17.	9.	9.	14.	11.
221	13.	13.	20.	13.	29.	24.	26.	30.	20.
231	34.	36.	32.	35.	36.	49.	38.	56.	51.
241	61.	77.	100.	100.	110.	130.	146.	142.	191.
251	205.	216.	234.	273.	287.	323.	330.	284.	216.
261	75.	34.	39.	35.	32.	40.	32.	31.	30.
271	28.	31.	36.	29.	24.	27.	27.	32.	43.
281	33.	34.	50.	47.	48.	67.	79.	73.	75.
291	90.	104.	149.	155.	152.	174.	209.	215.	230.
301	300.	311.	290.	296.	233.	186.	121.	78.	60.
311	34.	43.	42.	24.	13.	13.	7.	4.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	0.	2.	0.	0.
351	0.	2.	0.	0.	0.	0.	0.	0.	0.
361	0.	0.	0.	0.	0.	0.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	1.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL21182-BLNK-AM
 File ID: 2a2045.CNF

Counted on: 11/16/97 @10:55
 Detector: AEA2
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1389.0	1389.0	254.073	254.073	12.000	5.091	6.000	2.409
2	19.5	19.5	188.502	188.445	92.000	1.000	46.000	0.100
3?	3.5	3.5	162.082	158.945	10.000	3.271	5.000	5.127
4?	2.5	2.5	160.410	162.000	6.000	0.000	3.000	1.868

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m @95	d/m	Activity uCi/ea
		Exp.	Obs.	Diff.	FWHM				
1	Am243	0.878	5.266	5.264	0.0020.02	41.13	1.4	174.4	0.786E-04
2		0.033	4.962		0.00	1.56	7.2	6.5	0.295E-05
3		????	4.826			0.06	138.		
4		????	4.840			0.01	1551.		
Totals:		0.911	<--valid peaks only-->			42.69			

DETECTOR CALIBRATION

Energy(MEV) = 4.095 + (0.0046)*Channel
 Energy range (MeV): 4.095 TO 6.450
 Efficiency = 0.2382 CPM/DFM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22491.0	100.000
Smoothed	22494.0	100.013
Composite fit	20522.7	91.248
Residuals	1968.3	8.752

Analyzed by:

SLH2

Spectrum 2a2045.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9529.7

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Raw	Data	Dump	for	AEA	Spectrum:	2a2045.CNF				
1	0.	0.	5.	1.	3.	2.	2.	1.	1.	1.
11	1.	1.	1.	2.	2.	1.	1.	4.	1.	3.
21	2.	4.	7.	0.	3.	3.	4.	3.	2.	2.
31	0.	1.	2.	4.	5.	0.	4.	3.	6.	2.
41	2.	3.	1.	2.	5.	1.	4.	2.	5.	4.
51	4.	1.	0.	1.	5.	5.	2.	5.	3.	5.
61	4.	1.	4.	1.	2.	7.	2.	4.	5.	1.
71	3.	3.	4.	1.	4.	0.	7.	5.	4.	3.
81	2.	4.	4.	3.	2.	2.	4.	1.	5.	1.
91	1.	4.	6.	5.	9.	5.	1.	2.	4.	7.
101	5.	2.	5.	3.	3.	5.	5.	3.	2.	4.
111	6.	6.	4.	9.	2.	9.	5.	7.	6.	2.
121	3.	3.	3.	6.	12.	8.	7.	8.	7.	4.
131	10.	6.	5.	10.	9.	9.	6.	12.	7.	7.
141	4.	9.	8.	9.	10.	7.	9.	9.	12.	10.
151	9.	8.	9.	5.	12.	11.	10.	11.	15.	12.
161	11.	15.	7.	15.	12.	8.	7.	13.	3.	10.
171	10.	9.	6.	12.	15.	9.	10.	13.	21.	13.
181	16.	17.	24.	17.	12.	15.	17.	25.	20.	20.
191	14.	15.	24.	15.	16.	19.	22.	17.	20.	26.
201	17.	22.	21.	27.	24.	17.	22.	26.	26.	33.
211	22.	40.	36.	32.	32.	26.	48.	49.	36.	44.
221	46.	49.	45.	57.	48.	66.	70.	64.	87.	96.
231	92.	104.	124.	130.	151.	178.	165.	193.	220.	230.
241	294.	306.	403.	489.	578.	598.	761.	834.	961.	1009.
251	1217.	1402.	1494.	1560.	1593.	1346.	1088.	676.	369.	222.
261	141.	119.	111.	94.	98.	97.	85.	78.	52.	51.
271	41.	26.	12.	5.	1.	0.	2.	0.	2.	3.
281	2.	1.	1.	0.	0.	4.	0.	1.	5.	4.
291	1.	6.	3.	8.	4.	3.	5.	8.	5.	14.
301	11.	6.	8.	5.	3.	0.	5.	1.	0.	2.
311	2.	0.	1.	1.	0.	1.	0.	0.	0.	0.
321	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
331	0.	0.	0.	0.	0.	1.	1.	0.	1.	0.
341	0.	0.	2.	1.	0.	0.	1.	0.	3.	0.
351	0.	0.	0.	0.	1.	0.	1.	0.	1.	0.
361	1.	0.	2.	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.	1.	0.	0.	0.	0.	0.	1.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	1.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	1.	0.	1.	0.	0.	0.	1.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	1.	0.	2.	0.
481	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2270-SAM-AM
 File ID: 3a3048.CNF

Counted on: 11/16/97 @10:55
 Detector: AEA3
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	16.8	16.8	298.552	298.552	18.000	11.762	9.000	2.731
2	878.6	878.6	253.513	253.511	12.000	5.559	6.000	1.886
3	14.1	14.1	200.394	200.018	8.000	14.104	4.000	3.980

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count		%err	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	FWHM	Rate	c/m	@95	
1	Am241	0.025	5.479	5.466	0.013	0.05	0.88	9.5	3.8	0.171E-05
1	Pu238	0.025	5.487	5.466	0.021	0.05	0.88	9.5	3.8	0.223E-05
2	Am243	0.904	5.266	5.259	0.007	0.03	31.54	1.6	129.5	0.583E-04
3	Pu242	0.020	4.891	5.013	-1.220	0.06	0.70	17.6	2.8	0.128E-05
Totals:		0.950	<--valid peaks only-->				33.12			

DETECTOR CALIBRATION

Energy(MEV) = 4.093 + (0.0046)*Channel
 Energy range (MeV): 4.093 TO 6.448
 Efficiency = 0.2460 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16742.0	100.000
Smoothed	16743.4	100.009
Composite fit	15897.8	94.957
Residuals	844.2	5.043

Analyzed by:

SLH2

Spectrum 3a3048.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 6318.2

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Raw	Data	Dump	for	AEA	Spectrum:	3a3048.CNF	HNF-SD-WM-DP-276,	REV. 0	
1	0.	0.	1.	0.	2.	1.	1.	0.	2.
11	1.	1.	1.	2.	0.	2.	0.	0.	0.
21	0.	0.	1.	1.	1.	2.	0.	1.	2.
31	0.	1.	1.	2.	2.	1.	1.	1.	2.
41	0.	0.	1.	1.	1.	1.	2.	1.	0.
51	0.	1.	1.	1.	1.	0.	0.	1.	2.
61	0.	0.	2.	2.	2.	0.	3.	1.	0.
71	0.	0.	0.	2.	0.	1.	2.	1.	2.
81	3.	3.	0.	2.	0.	2.	2.	1.	4.
91	3.	1.	4.	2.	0.	2.	1.	3.	2.
101	0.	1.	2.	1.	3.	3.	2.	1.	3.
111	3.	2.	1.	2.	1.	1.	0.	6.	1.
121	2.	2.	5.	2.	0.	0.	4.	1.	0.
131	2.	2.	0.	0.	1.	3.	4.	5.	0.
141	7.	3.	4.	2.	0.	3.	2.	2.	3.
151	2.	4.	5.	5.	4.	4.	1.	5.	6.
161	3.	8.	5.	7.	5.	4.	4.	2.	4.
171	7.	6.	2.	10.	8.	4.	6.	12.	6.
181	7.	6.	8.	6.	8.	4.	8.	10.	6.
191	18.	14.	16.	16.	14.	12.	17.	7.	14.
201	24.	15.	12.	9.	16.	18.	19.	24.	41.
211	21.	28.	37.	34.	32.	47.	46.	48.	30.
221	47.	62.	68.	76.	65.	90.	77.	85.	115.
231	108.	130.	124.	164.	179.	180.	206.	231.	269.
241	293.	329.	386.	467.	473.	508.	638.	629.	648.
251	863.	877.	965.	982.	910.	837.	583.	322.	226.
261	107.	73.	60.	64.	68.	55.	62.	33.	27.
271	15.	11.	8.	9.	8.	1.	1.	4.	6.
281	4.	1.	6.	5.	3.	2.	5.	13.	12.
291	15.	15.	12.	14.	15.	14.	18.	18.	21.
301	21.	11.	13.	14.	6.	9.	2.	4.	1.
311	2.	3.	0.	2.	0.	0.	0.	0.	0.
321	1.	0.	0.	2.	1.	0.	0.	0.	0.
331	0.	0.	1.	1.	0.	0.	0.	1.	0.
341	0.	0.	2.	1.	0.	2.	0.	1.	0.
351	0.	1.	1.	2.	2.	2.	0.	3.	0.
361	3.	1.	4.	3.	4.	3.	2.	2.	2.
371	3.	3.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	1.	0.	1.	0.	0.	1.
391	0.	1.	1.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	2.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	1.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.
461	0.	0.	0.	0.	1.	0.	1.	0.	0.
471	1.	0.	0.	1.	1.	2.	0.	0.	0.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2270-DUP-AM
 File ID: 4a4043.CNF

Counted on: 11/16/97 @10:56
 Detector: AEA4
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	38.8	38.8	301.416	301.416	14.000	6.513	7.000	2.824
2	1405.5	1405.5	255.172	255.171	12.000	4.835	6.000	2.222

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	FWHM			
1	Pu238	0.028	5.487	5.477	0.010	0.03	1.28	7.9	7.7 0.347E-05
	Am241		5.479	5.477	0.002				5.9 0.266E-05
2	Am243	0.919	5.266	5.265	0.001	0.02	41.62	1.4	182.5 0.822E-04

Totals:		4/18/97 0.948	<--valid peaks only-->				42.90		

DETECTOR CALIBRATION

Energy(MEV) = 4.091 + (0.0046)*Channel
 Energy range (MeV): 4.091 TO 6.446
 Efficiency = 0.2304 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21730.0	100.000
Smoothed	21732.0	100.009
Composite fit	20590.4	94.755
Residuals	1139.6	5.245

Analyzed by:

SLH2

[illegible]

Raw	Data	Dump	for	AEA	Spectrum:	4a4043.CNF					
1	0.	0.	1.	2.	1.	0.	1.	0.	2.	0.	0.
11	1.	0.	1.	1.	0.	0.	0.	2.	0.	1.	1.
21	0.	0.	1.	1.	1.	2.	0.	0.	0.	1.	1.
31	3.	0.	0.	1.	0.	1.	1.	1.	1.	2.	2.
41	0.	1.	0.	0.	0.	1.	1.	2.	0.	0.	0.
51	1.	0.	0.	2.	0.	0.	0.	0.	1.	3.	1.
61	0.	1.	3.	0.	1.	2.	0.	2.	0.	0.	0.
71	2.	0.	0.	0.	0.	0.	0.	2.	0.	1.	1.
81	2.	1.	1.	2.	0.	1.	4.	0.	1.	0.	0.
91	2.	2.	0.	1.	1.	0.	1.	2.	1.	3.	1.
101	2.	0.	0.	1.	2.	0.	2.	3.	1.	2.	2.
111	3.	1.	5.	4.	0.	2.	0.	1.	1.	1.	1.
121	1.	3.	2.	1.	1.	1.	1.	1.	3.	0.	0.
131	2.	1.	0.	2.	3.	2.	1.	0.	3.	4.	4.
141	3.	1.	1.	1.	0.	3.	3.	2.	4.	3.	3.
151	0.	4.	2.	7.	3.	4.	0.	2.	4.	1.	1.
161	2.	5.	1.	0.	5.	3.	4.	2.	3.	1.	1.
171	4.	1.	1.	3.	4.	1.	3.	2.	3.	4.	4.
181	3.	1.	1.	1.	3.	5.	4.	7.	3.	1.	1.
191	4.	1.	2.	4.	1.	5.	4.	1.	11.	7.	7.
201	9.	6.	8.	6.	10.	14.	4.	10.	9.	16.	16.
211	6.	10.	11.	13.	15.	13.	18.	18.	24.	18.	18.
221	25.	39.	35.	32.	39.	46.	37.	60.	54.	70.	70.
231	75.	82.	92.	93.	134.	155.	148.	169.	171.	243.	243.
241	268.	324.	373.	443.	492.	588.	668.	764.	818.	909.	909.
251	1009.	1157.	1375.	1525.	1594.	1611.	1441.	1058.	706.	329.	329.
261	206.	157.	125.	112.	101.	92.	95.	77.	74.	55.	55.
271	45.	39.	19.	10.	8.	2.	0.	3.	3.	2.	2.
281	4.	2.	3.	9.	9.	6.	2.	11.	12.	11.	11.
291	14.	11.	15.	28.	22.	23.	29.	41.	31.	33.	33.
301	50.	39.	43.	27.	21.	20.	14.	6.	9.	6.	6.
311	9.	2.	4.	3.	1.	3.	0.	0.	0.	0.	0.
321	0.	2.	0.	0.	0.	0.	0.	0.	1.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
341	2.	0.	2.	1.	3.	2.	4.	5.	3.	2.	2.
351	1.	3.	2.	0.	4.	2.	2.	8.	7.	8.	8.
361	8.	5.	9.	3.	2.	0.	4.	3.	2.	1.	1.
371	1.	3.	2.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	2.	0.	0.	0.	0.	0.
421	1.	0.	0.	0.	1.	0.	0.	0.	0.	2.	2.
431	0.	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
471	0.	1.	0.	0.	1.	0.	0.	0.	0.	2.	2.
481	0.	0.	1.	1.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.									

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2271-SAM-AM
 File ID: 5a5039.CNF

Counted on: 11/16/97 @10:57
 Detector: AEA5
 Geometry number: 1
 Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	764.8	764.8	254.877	254.877	12.000	4.891	6.000	1.273
2	16.7	16.7	126.766	126.758	210.000	1.000	105.000	0.100
3?	1.7	1.7	111.806	111.245	4.000	0.351	2.000	3.114
4?	4.6	4.6	94.579	94.197	8.000	1.101	4.000	1.041
5?	6.2	6.2	87.452	86.264	6.000	0.565	3.000	0.194

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count Rate	%err	d/m	Activity	
			Exp.	Obs. Diff.	c/m	@95		uCi/ea	
1	Am243	0.758	5.266	5.264	0.0020.02	31.59	1.6	128.8	
2	Np237	0.031	4.640	4.674	0.0340.00	1.30	7.9	87.6	
3		????		4.603		0.01	862.		
4		????		4.524		0.07	110.		
5		????		4.488		0.16	44.0		
Totals:			0.790	<--valid peaks only-->		32.90			

DETECTOR CALIBRATION

Energy(MEV) = 4.091 + (0.0046)*Channel
 Energy range (MeV): 4.091 TO 6.446
 Efficiency = 0.2477 CPM/DFM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19998.0	100.000
Smoothed	20000.6	100.013
Composite fit	15905.3	79.534
Residuals	4092.7	20.466

Analyzed by:

SLH2

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5335.7

[illegible]

Raw	Data	Dump	for	AEA	Spectrum:	5a5039.CNF						
1	0.	0.		5.	4.	2.	2.	5.	1.	6.	2.	
11	2.	2.		0.	2.	2.	3.	2.	1.	3.	1.	
21	4.	0.		3.	3.	1.	4.	3.	3.	4.	4.	
31	1.	1.		2.	4.	5.	3.	5.	8.	5.	2.	
41	3.	5.		5.	4.	1.	4.	6.	1.	3.	5.	
51	8.	2.		3.	6.	6.	4.	6.	2.	4.	6.	
61	4.	5.		7.	2.	7.	7.	7.	5.	11.	7.	
71	5.	5.		15.	8.	6.	7.	5.	8.	6.	5.	
81	8.	16.		16.	7.	4.	8.	14.	8.	12.	5.	
91	11.	6.		7.	13.	13.	9.	6.	11.	7.	11.	
101	12.	7.		10.	8.	9.	7.	11.	11.	7.	16.	
111	9.	17.		12.	11.	11.	6.	12.	8.	11.	14.	
121	16.	13.		11.	15.	10.	19.	17.	19.	10.	11.	
131	13.	21.		18.	18.	10.	11.	22.	16.	20.	15.	
141	20.	14.		20.	18.	24.	21.	20.	24.	26.	22.	
151	20.	25.		25.	19.	16.	20.	26.	24.	26.	20.	
161	23.	29.		22.	24.	26.	26.	33.	33.	34.	32.	
171	28.	33.		35.	39.	35.	28.	32.	41.	39.	36.	
181	35.	52.		47.	49.	43.	48.	59.	63.	51.	48.	
191	49.	53.		46.	49.	43.	54.	59.	68.	61.	56.	
201	77.	58.		68.	80.	72.	82.	79.	78.	83.	89.	
211	81.	78.		86.	88.	86.	85.	107.	102.	107.	129.	
221	128.	113.		129.	141.	129.	138.	145.	148.	139.	174.	
231	179.	178.		207.	194.	206.	215.	250.	238.	214.	254.	
241	287.	310.		341.	380.	432.	465.	471.	513.	569.	622.	
251	628.	697.		768.	787.	843.	827.	773.	579.	314.	158.	
261	84.	80.		61.	43.	50.	51.	53.	45.	36.	25.	
271	24.	18.		12.	9.	4.	2.	3.	3.	4.	1.	
281	3.	3.		3.	3.	5.	4.	8.	3.	6.	5.	
291	5.	10.		4.	9.	11.	15.	8.	6.	9.	8.	
301	9.	11.		9.	10.	3.	0.	5.	1.	1.	1.	
311	4.	0.		3.	0.	0.	0.	0.	1.	0.	1.	
321	0.	0.		0.	0.	0.	0.	0.	0.	0.	1.	
331	1.	0.		0.	0.	0.	0.	2.	0.	0.	1.	
341	2.	1.		4.	3.	2.	0.	2.	3.	3.	0.	
351	3.	0.		2.	1.	2.	0.	0.	1.	0.	1.	
361	0.	0.		0.	2.	2.	1.	1.	2.	1.	1.	
371	2.	0.		1.	0.	0.	0.	0.	0.	0.	1.	
381	0.	0.		0.	0.	0.	0.	0.	1.	0.	0.	
391	0.	0.		0.	0.	0.	0.	0.	0.	1.	0.	
401	0.	0.		0.	0.	0.	1.	0.	0.	0.	0.	
411	0.	0.		1.	0.	1.	0.	1.	0.	1.	1.	
421	1.	0.		0.	1.	0.	1.	0.	0.	0.	1.	
431	0.	3.		1.	0.	0.	0.	1.	0.	0.	0.	
441	0.	0.		0.	0.	0.	0.	0.	0.	0.	0.	
451	0.	0.		0.	0.	0.	0.	0.	1.	1.	0.	
461	0.	0.		0.	0.	0.	1.	0.	1.	1.	0.	
471	0.	0.		1.	0.	0.	0.	0.	0.	0.	1.	
481	2.	2.		0.	0.	0.	0.	0.	0.	1.	0.	
491	1.	0.		0.	1.	0.	0.	0.	0.	0.	1.	
511	0.	0.										

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2271-DUP-AM
 File ID: 6a6021.CNF

Counted on: 11/16/97 @10:57
 Detector: AEA6
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	20.7	20.7	297.636	297.636	10.000	4.439	5.000	2.112
2	1370.1	1370.1	251.986	251.986	12.000	4.611	6.000	2.311

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA		Peak Centroid			Count Rate	%err @95	d/m	Activity uCi/ea
		Frac	Exp.	Obs.	Diff.	FWHM				
1	Am241	0.013	5.479	5.464	0.015	0.02	0.59	11.7	2.6	0.119E-05
2	Am243	0.876	5.266	5.254	0.012	0.02	38.47	1.4	164.1	0.739E-04
Totals:		0.889	<--valid peaks only-->				39.06			

DETECTOR CALIBRATION

Energy(MEV) = $4.095 + (0.0046) \times \text{Channel}$
 Energy range (MeV): 4.095 TO 6.450
 Efficiency = 0.2368 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21077.0	100.000
Smoothed	21079.0	100.009
Composite fit	18747.5	88.948
Residuals	2329.5	11.052

Analyzed by:

SLH2

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9249.2

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Raw	Data	Dump	for	AEA	Spectrum:	6a6021.CNF	HNF-SD-WM-DP-276, REV. 0		
1	0.	0.	0.	0.	2.	2.	0.	0.	0.
11	2.	3.	1.	1.	1.	2.	4.	0.	1.
21	0.	0.	0.	1.	0.	1.	3.	1.	1.
31	1.	1.	2.	2.	4.	1.	0.	0.	0.
41	1.	1.	0.	1.	1.	2.	1.	3.	4.
51	3.	1.	4.	5.	3.	4.	1.	0.	1.
61	1.	3.	1.	2.	1.	4.	2.	1.	4.
71	1.	2.	1.	3.	3.	1.	6.	2.	6.
81	2.	1.	3.	0.	3.	2.	1.	0.	5.
91	3.	0.	1.	5.	3.	4.	3.	3.	3.
101	2.	3.	2.	3.	3.	1.	5.	2.	3.
111	5.	4.	2.	4.	8.	8.	1.	4.	3.
121	3.	3.	4.	2.	5.	1.	4.	4.	4.
131	2.	5.	14.	1.	6.	5.	3.	7.	1.
141	9.	5.	6.	4.	9.	4.	4.	7.	5.
151	6.	7.	8.	8.	4.	8.	8.	10.	6.
161	7.	6.	5.	8.	10.	7.	11.	11.	10.
171	8.	9.	11.	13.	13.	12.	7.	9.	18.
181	17.	11.	15.	15.	9.	16.	16.	11.	17.
191	18.	19.	13.	18.	19.	17.	15.	18.	20.
201	16.	28.	17.	26.	28.	30.	28.	17.	28.
211	29.	42.	29.	28.	39.	28.	42.	41.	42.
221	56.	54.	49.	59.	59.	56.	76.	94.	110.
231	119.	110.	124.	146.	145.	165.	205.	204.	322.
241	362.	445.	508.	594.	682.	779.	885.	1029.	1341.
251	1533.	1574.	1540.	1333.	978.	515.	295.	158.	130.
261	88.	104.	96.	90.	85.	69.	50.	34.	23.
271	6.	4.	1.	0.	0.	3.	3.	3.	2.
281	5.	0.	2.	4.	3.	3.	2.	12.	11.
291	16.	7.	14.	14.	20.	21.	23.	23.	18.
301	9.	7.	4.	2.	1.	3.	3.	1.	0.
311	1.	2.	0.	0.	0.	1.	0.	0.	1.
321	1.	0.	0.	0.	0.	2.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	1.
341	0.	0.	1.	2.	1.	0.	1.	0.	0.
351	1.	0.	0.	1.	0.	2.	2.	0.	2.
361	1.	2.	0.	3.	2.	0.	1.	1.	2.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	1.	0.	0.	0.	1.
391	0.	0.	0.	1.	2.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	2.	0.	0.	1.	1.
421	1.	1.	0.	0.	0.	0.	1.	2.	0.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	1.	0.	1.	0.	1.
481	0.	0.	0.	0.	0.	0.	0.	1.	1.
491	0.	0.	0.	1.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2272-SAM-AM
 File ID: 7a7036.CNF

Counted on: 11/16/97 @10:58
 Detector: AEA7
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	21.2	21.2	300.063	300.063	14.000	7.716	7.000	3.609
2	1587.8	1587.8	254.869	254.869	10.000	4.042	5.000	2.243

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
1	Pu238	0.015	5.487	5.484	0.003	0.04	0.71	10.6	4.0	0.182E-05
	Am241		5.479	5.484	-0.005				3.1	0.139E-05
2	Am243	0.886	5.266	5.277	-0.011	0.02	41.07	1.4	169.2	0.762E-04
Totals:			0.901	<--valid peaks only-->			41.78			

DETECTOR CALIBRATION

Energy (MEV) = $4.104 + (0.0046) \times \text{Channel}$
 Energy range (MeV): 4.104 TO 6.459
 Efficiency = 0.2452 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22251.0	100.000
Smoothed	22251.5	100.002
Composite fit	20055.4	90.133
Residuals	2195.6	9.867

Analyzed by: _____

SLH2

[illegible]

1
1
1
1

Raw Data	Dump	for	AEA Spectrum:	7a7036.CNF						
1	0.	0.	3.	0.	0.	0.	0.	1.	2.	
11	2.	3.	2.	0.	2.	3.	1.	3.	0.	1.
21	0.	1.	1.	2.	1.	0.	0.	2.	2.	3.
31	2.	0.	3.	0.	0.	1.	0.	1.	2.	1.
41	2.	0.	1.	1.	2.	1.	0.	3.	0.	1.
51	2.	3.	1.	0.	1.	1.	1.	1.	3.	2.
61	3.	1.	3.	0.	1.	0.	1.	4.	4.	2.
71	2.	5.	2.	5.	4.	1.	2.	0.	1.	1.
81	1.	2.	1.	1.	3.	3.	3.	3.	1.	2.
91	2.	3.	3.	0.	1.	3.	0.	3.	3.	0.
101	2.	5.	3.	2.	4.	4.	0.	0.	5.	2.
111	3.	2.	3.	3.	6.	1.	4.	3.	3.	6.
121	6.	0.	5.	5.	5.	4.	0.	1.	5.	1.
131	7.	1.	2.	3.	2.	1.	6.	2.	2.	1.
141	4.	7.	4.	3.	7.	4.	5.	4.	4.	7.
151	6.	6.	5.	3.	7.	4.	3.	4.	5.	9.
161	9.	5.	7.	6.	12.	2.	5.	5.	8.	4.
171	5.	11.	6.	11.	7.	5.	10.	7.	11.	7.
181	15.	10.	13.	13.	7.	4.	14.	8.	6.	15.
191	18.	14.	11.	8.	14.	8.	10.	15.	10.	13.
201	11.	11.	15.	13.	17.	17.	16.	17.	16.	12.
211	18.	25.	19.	13.	23.	28.	18.	17.	28.	33.
221	27.	37.	38.	32.	39.	37.	43.	49.	50.	55.
231	76.	71.	71.	104.	98.	106.	135.	126.	166.	213.
241	220.	245.	357.	402.	467.	550.	602.	727.	842.	953.
251	1147.	1342.	1544.	1758.	1876.	1800.	1506.	894.	466.	226.
261	160.	145.	126.	120.	110.	123.	114.	84.	70.	69.
271	40.	23.	27.	7.	7.	6.	0.	0.	3.	1.
281	5.	2.	3.	3.	7.	2.	7.	1.	8.	6.
291	5.	5.	6.	7.	9.	18.	28.	28.	19.	20.
301	25.	21.	18.	13.	12.	10.	6.	3.	4.	3.
311	3.	2.	4.	0.	1.	0.	0.	1.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
331	0.	0.	1.	0.	3.	1.	1.	1.	0.	0.
341	0.	1.	0.	3.	1.	1.	3.	2.	1.	3.
351	2.	1.	1.	0.	1.	1.	1.	1.	0.	0.
361	1.	1.	1.	3.	2.	2.	5.	3.	1.	3.
371	3.	4.	2.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
391	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	1.	2.	0.	1.	0.	0.
431	1.	0.	0.	0.	1.	3.	3.	1.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	1.	0.	0.	1.	1.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
471	0.	0.	1.	1.	0.	0.	0.	0.	1.	2.
481	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T2272-DUP-AM
File ID: 8a8036.CNF

Counted on: 11/16/97 @10:59
Detector: AEA8
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	22.1	22.1	303.236	303.236	12.000	5.954	6.000	2.710
2	1518.4	1518.4	257.177	257.177	12.000	4.484	6.000	2.151

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	c/m			
1	Pu238	0.015	5.487	5.471	0.016	0.03	0.70	10.7	4.1 0.185E-05
1	Am241		5.479	5.471	0.008				3.1 0.142E-05
2	Am243	0.939	5.266	5.259	0.007	0.02	43.19	1.4	185.6 0.836E-04
-----			-----			-----			
Totals:			0.954	<--valid peaks only-->			43.89		

DETECTOR CALIBRATION

Energy(MEV) = 4.076 + (0.0046)*Channel
Energy range (MeV): 4.076 TO 6.432
Efficiency = 0.2350 CPM/DPM
(Data reduction compression factor: 1.)

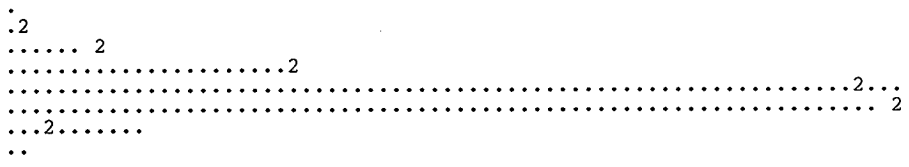
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22086.0	100.000
Smoothed	22086.0	100.000
Composite fit	21065.2	95.378
Residuals	1020.8	4.622

Analyzed by:

SLH2

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 8082.9



1
1
1

Raw Data Dump for AEA Spectrum: 8a8036.CNF										
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
31	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	1.	0.	1.	0.	1.	1.	0.	0.	1.
61	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
71	0.	0.	0.	1.	0.	1.	1.	0.	0.	0.
81	0.	0.	1.	0.	1.	1.	0.	0.	0.	0.
91	0.	1.	0.	0.	0.	0.	0.	1.	1.	1.
101	0.	0.	0.	2.	1.	3.	0.	1.	0.	1.
111	0.	1.	1.	0.	2.	0.	0.	0.	0.	0.
121	0.	1.	1.	1.	1.	0.	1.	0.	0.	2.
131	1.	2.	0.	1.	0.	2.	2.	3.	1.	2.
141	0.	1.	1.	1.	0.	1.	5.	1.	2.	0.
151	1.	2.	3.	0.	1.	1.	1.	1.	0.	1.
161	0.	1.	2.	2.	4.	1.	2.	2.	3.	1.
171	2.	2.	2.	2.	1.	5.	0.	0.	1.	3.
181	3.	5.	3.	4.	2.	2.	3.	4.	3.	4.
191	2.	6.	6.	9.	4.	9.	2.	5.	2.	4.
201	11.	5.	4.	2.	14.	6.	4.	6.	9.	13.
211	7.	12.	15.	9.	14.	16.	17.	16.	15.	20.
221	19.	18.	25.	32.	18.	30.	33.	34.	42.	50.
231	41.	58.	75.	83.	97.	93.	103.	110.	120.	168.
241	182.	203.	248.	300.	327.	472.	530.	617.	677.	827.
251	878.	1017.	1120.	1290.	1437.	1584.	1755.	1725.	1567.	1128.
261	650.	316.	179.	147.	108.	114.	105.	113.	87.	76.
271	59.	65.	52.	26.	30.	13.	5.	2.	1.	3.
281	4.	2.	1.	1.	0.	1.	3.	0.	5.	5.
291	5.	6.	9.	8.	9.	11.	13.	9.	16.	22.
301	32.	17.	22.	25.	26.	15.	14.	5.	9.	3.
311	3.	2.	4.	2.	2.	0.	1.	1.	0.	2.
321	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
331	0.	0.	0.	1.	0.	0.	1.	1.	1.	1.
341	0.	0.	0.	1.	0.	0.	0.	0.	0.	2.
351	1.	4.	1.	1.	2.	1.	1.	1.	2.	3.
361	0.	1.	1.	5.	1.	4.	0.	2.	4.	2.
371	0.	1.	2.	3.	2.	0.	0.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	1.	0.	0.	1.	1.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	1.	0.	3.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	2.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.
481	1.	1.	1.	0.	2.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 21184

Analyst: dpb

Instrument: AB14

Book# 75B56

Method: LA-953-104 Rev/Mod B-P

Worklist Comment: AP107,PU239,tdm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@PU23901 PU23901 LIQUID		1.09E-04	1.05E-4	96.330 %	Recovery
1 STD	0		@PU23901 PU23901E LIQUID		1.00	1.82E+00	1.820 %	Ct Error
1 STD	0		@PU23901 PU23901T LIQUID		100	9.10E+01	91.000 %	Recovery
2 BLNK	0		@PU23901 PU23901 LIQUID		1	<3.20E-6		uCi/mL
2 BLNK	0		@PU23901 PU23901T LIQUID		100	9.35E+01	93.500 %	Recovery
2 BLNK	0		@PU23901 PU23901E LIQUID		1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S97T002270	0	@PU23901 PU23901 LIQUID		N/A	9.75E-05	8.96E-006	uCi/mL
3 SAMPLE	S97T002270	0	@PU23901 PU23901T LIQUID		N/A	7.69E+01		% Recovery
3 SAMPLE	S97T002270	0	@PU23901 PU23901E LIQUID		N/A	1.97E+00		% Ct.. Error
4 DUP	S97T002270	0	@PU23901 PU23901 LIQUID		9.75E-5	9.49E-5	2.703	RPD
4 DUP	S97T002270	0	@PU23901 PU23901T LIQUID		100	8.28E+01	82.800 %	Recovery
4 DUP	S97T002270	0	@PU23901 PU23901E LIQUID		1.00	1.91E+00	1.910 %	Ct Error
5 SAMPLE	S97T002271	0	@PU23901 PU23901 LIQUID		N/A	9.57E-05	8.97E-006	uCi/mL
5 SAMPLE	S97T002271	0	@PU23901 PU23901T LIQUID		N/A	7.66E+01		% Recovery
5 SAMPLE	S97T002271	0	@PU23901 PU23901E LIQUID		N/A	1.99E+00		% Ct.. Error
6 DUP	S97T002271	0	@PU23901 PU23901 LIQUID		9.57E-5	9.73E-5	1.658	RPD
6 DUP	S97T002271	0	@PU23901 PU23901T LIQUID		100	8.34E+01	83.400 %	Recovery
6 DUP	S97T002271	0	@PU23901 PU23901E LIQUID		1.00	1.99E+00	1.990 %	Ct Error
7 SAMPLE	S97T002272	0	@PU23901 PU23901 LIQUID		N/A	9.32E-05	8.64E-006	uCi/mL
7 SAMPLE	S97T002272	0	@PU23901 PU23901T LIQUID		N/A	7.93E+01		% Recovery
7 SAMPLE	S97T002272	0	@PU23901 PU23901E LIQUID		N/A	2.00E+00		% Ct.. Error
8 DUP	S97T002272	0	@PU23901 PU23901 LIQUID		9.32E-5	9.43E-5	1.173	RPD
8 DUP	S97T002272	0	@PU23901 PU23901T LIQUID		100	8.35E+01	83.500 %	Recovery
8 DUP	S97T002272	0	@PU23901 PU23901E LIQUID		1.00	1.90E+00	1.900 %	Ct Error

Final page for worklist# 21184

Analyst Signature

Date

Analyst Signature

Date

John Relea
Reviewer Signature

18 Nov 97
Date

validated

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

LABCORE Data Entry Template for Worklist# 21184

Analyst: DPB Instrument: PU01 _____ Book# 75B56

Method: LA-953-104 Rev/Mod _____

Worklist Comment: AP107,PU239,tdm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S97T002270 0		@PU23901	LIQUID	97000649	AP-107 GRAB
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S97T002270 0		@PU23901	LIQUID		
5 SAMPLE	S97T002271 0		@PU23901	LIQUID	97000649	AP-107 GRAB
Analytes Requested: PU23901 , PU23901E, PU23901T						
6 DUP	S97T002271 0		@PU23901	LIQUID		
7 SAMPLE	S97T002272 0		@PU23901	LIQUID	97000649	AP-107 GRAB
Analytes Requested: PU23901 , PU23901E, PU23901T						
8 DUP	S97T002272 0		@PU23901	LIQUID		

Final page for worklist # 21184

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID

				STD
Type	DATE COUNTED	NOV-16-97	Pu 236 AEA FRAC (C236)	0.437
STD	SAMPLE VOLUME in mL SS	1.000	Pu 238 AEA FRAC (C238)	0.000
Worklist	SAMPLE DILUTION FACTOR DF	1.000	Pu 239 AEA FRAC (C239)	0.499
21184	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	3710
Tracer Code	DIGEST DILUTION FACTOR DDF	1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.130
Math	DETECTOR NUMBER	14	Pu 236 cpm	45.570
LIQUID	EFFICIENCY FACTOR EFF	0.291	Pu 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	51.960
97005387	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Room	PU-236 DECAY CORR'D VALUE (dpm/mL)	2037.655	Pu 239/240 μ Ci/L	1.0481E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep	STANDARD BOOK NO	75B56		
N/A	STANDARD VALUE in μ Ci/mL	1.090E-04		
Sample At				
WL21184				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
WB27807	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]			
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV			
SEH	Pu 239/240 μ Ci/L = (C239) / (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (2220000 dpm/ μ Ci)]			
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
JFR	Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (D g/L) (SS)]			
Analyst	Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
DPB				
Date Complete				
11/17/97	Pu 239/240 μ Ci/mL	1.05E-04	DETECTION LEVELS	
Analysis Date	Relative Counting Error =	1.8%	in μ Ci/mL	
11/15/97			Pu 239/240	
Analysis Time			6.92E-06	
05:00 PM				
Sample Point				
AP-107 GRAB	Pu 236 Tracer Recovery =	91.0%		

Analyst:	DPB	Date:	17-Nov-97
Signature of Chemist:	JFR	Date:	18 Nov 97

STANDARD.WB1 REV 1.0

John Reher
943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQU

			BLNK
Type	DATE COUNTED	NOV-16-97	PU 236 AEA FRAC (C236)
BLNK	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)
WORKLIST	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)
21184	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cp (Bkg)
Matrix	DETECTOR NUMBER	14	PU 236 cpm
LIQUID	EFFICIENCY FACTOR EFF	0.2910	PU 238 cpm
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm
97005387	TRACER PREPARATION VALUE (dpm/mL)	2600.00	AEA COUNT TIME
Return	PU-236 DECAY CORR'D VALUE (dpm/mL)	2037.65	Pu 239/240 μ Ci/L =
0	PU-238 TRACER VALUE (dpm/m)	0.00	< 3.199E-03
Sample Prep			
N/A			
Sample #	Decay Time = Date Counted - Tracer Preparation Date		
WL21184	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value $\times$ [e to the power of $\{-\ln 2 \times \text{Decay Time}/1040.95\}$]		
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) $\times$ C236 $\times$ 100 / (Pu-236 Decay Corr'd Value $\times$ SPKV $\times$ EFF)		
WB27807	Pu 239/240 μ Ci/L = (C239) / (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000		
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg $\times$ 1/EFF $\times$ C238] - (Pu-238 Tracer Value) $\times$ SPKV $\times$ Pu 236 Tracer Recover		
SEH	Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (D g/L) (SS		
Chemist	Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} \times \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} \times \text{min})]\} \times 1.96 \times 100$		
JFR			
Analyst			
DPB			
Date Complete			
11/17/97	Pu 239/240 μ Ci/mL	< 3.20E-06	DETECTION LEVELS in μ Ci/mL
Analysis Date	Relative Counting Error	= 100.0%	
11/15/97	NOTE: Pu 238 Result is a LESS THAN Value.		
Analysis Time	Pu 238 μ Ci/mL	< 3.20E-06	
05:00 PM	Relative Counting Error	= 9.5%	Pu 238
Sample Point	Pu 236 Tracer Recovery	= 93.5%	3.20E-06
AP-107 GRAB			

Analyst:	DPB	Date:	17-Nov-97
Signature of Chemist:	JFR	Date:	18 Nov 97

BLANK.WB1 REV 1.0

9/3/128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)				LIQUID / SOLI	SAMPLE
Type	DATE COUNTED		NOV-16-97	PU 236 AEA FRAC (C236)	0.400
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.139
WORKLIST	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.425
21184	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	3422
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm (Bkg)	0.130
Matrix	DETECTOR NUMBER		14	PU 236 cpm	39.940
LIQUID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm	13.860
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm	42.430
97005387	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME	480
Refun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2037.655	Pu 239/240 μ Ci/L 9.7523E-02	
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep

N/A

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * $\{e \text{ to the power of } [(-\ln 2 * \text{Decay Time}/1040.95)]\}$

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 μ Ci/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) * (1000 mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/ μ Ci)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 μ Ci/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (D g/L) * (SS)]Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$

JFR

Analyst

DPB

Data Complete

11/17/97

Analysis Date

11/15/97

Analysis Time

05:00 PM

Sample Point

AP-107 GRAB

Pu 239/240 μ Ci/mL

9.75E-05

Relative Counting Error =

2.0%

DETECTION

LEVELS

in μ Ci/mL

Pu 239/240

8.96E-06

Pu 238

8.96E-06

Pu 238 μ Ci/mL

3.19E-05

Relative Counting Error =

2.8%

Pu 236 Tracer Recovery =

76.9%

Analyst:

DPB

Date:

17-Nov-97

Signature of Chemist:

JFR

Date:

18 Nov 97

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

DUP

Type	DATE COUNTED	NOV-16-97	PU 236 AEA FRAC (C236)	0.417
DUP	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.141
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.431
21184	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	3537
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.130
Matrix	DETECTOR NUMBER	14	PU 236 cpm	43.210
LIQUID	EFFICIENCY FACTOR EFF	0.291	PU 238 cpm	14.640
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	44.670
97005387	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Return	PU-236 DECAY CORR'D VALUE (dpm/mL)	2037.655	Pu 239/240 $\mu\text{Ci/L}$	9.4868E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Rep				
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 $\mu\text{Ci/L}$ = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000 mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/ μCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 $\mu\text{Ci/L}$ = [(Pu 238 dpm) * (DF) * (DDF) / (1000 mL/L)] / [(Pu-238 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

JFR			
Analyst			
DPB			
Date Complete			
11/17/97	Pu 239/240 $\mu\text{Ci/mL}$	9.49E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$
Analysis Date	Relative Counting Error =	1.9%	
11/15/97			Pu 239/240
Analysis Time			7.97E-06
05:00 PM	Pu 238 $\mu\text{Ci/mL}$	3.10E-05	Pu 238
Sample Point	Relative Counting Error =	2.7%	7.97E-06
AP-107 GRAB	Pu 236 Tracer Recovery =	82.8%	

Analyst:	DPB	Date:	17-Nov-97
Signature of Chemist:	JFR	Date:	18 Nov 97
SAMPLE.WB1 REV 1.0	943128ML		

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

				SAMPLE
DATE COUNTED	NOV-18-97	PU 236 AEA FRAC (C236)		0.401
SAMPLE	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.140
WORK LIST	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.418
21184	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	3401
TEST CODE	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.130
MATRIX	DETECTOR NUMBER	14	PU 236 cpm	39.790
LIQUID	EFFICIENCY FACTOR EFF	0.291	PU 238 cpm	13.870
BATCH NUMBER	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	41.450
97005387	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
REGRUN	PU-236 DECAY CORR'D VALUE (dpm/mL)	2037.655	Pu 239/240 μ Ci/L	9.5677E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

SAMPLE PREP	
N/A	
SAMPLE #	Decay Time = Date Counted - Tracer Preparation Date
S97T002271	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)
WB27807	Pu 239/240 μ Ci/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/ μ Ci)]
PREPARED BY	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
SEH	Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (D g/L) (SS)]
CHEMIST	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
ANALYST	
DPB	
DATE COMPLETE	
11/17/97	Pu 239/240 μ Ci/mL 9.57E-05
ANALYSIS DATE	Relative Counting Error = 2.0%
11/15/97	
ANALYSIS TIME	
05:00 PM	Pu 238 μ Ci/mL 3.20E-05
SAMPLE POINTS	Relative Counting Error = 2.8%
AP-107 GRAB	Pu 236 Tracer Recovery = 76.6%

DETECTION
LEVELS
in μ Ci/mL

Pu 239/240
8.97E-06

Pu 238
8.97E-06

Analyst:	DPB	Date:	17-Nov-97
Signature of Chemist:	JFR	Date:	18 Nov 97

SAMPLE WB1 REV 1.0

John Relyea
943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

DUP

TYPE	DATE COUNTED	NOV-16-97	PU 236 AEA FRAC (C236)	0.400
DUP	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.139
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.424
21184	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	3713
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.130
Matrix	DETECTOR NUMBER	14	PU 236 cpm	39.390
LIQUID	EFFICIENCY FACTOR EFF	0.291	PU 238 cpm	13.670
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	41.770
97005387	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Re-run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2037.655	Pu 239/240 μ Ci/L	9.7293E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
N/A				
Sample	Decay Time = Date Counted - Tracer Preparation Date			
S97T002271	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)			
WB27807	Pu 239/240 μ Ci/L = (C239)/(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/ μ Ci)]			
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
SEH	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(D g/L)(SS)]			
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JFR				
Analyst				
DPB				
Date Complete				
11/17/97	Pu 239/240 μ Ci/mL	9.73E-05	DETECTION LEVELS in μ Ci/mL	
Analysis Date	Relative Counting Error =	2.0%		
11/15/97			Pu 239/240	
Analysis Time			8.25E-06	
05:00 PM	Pu 238 μ Ci/mL	3.19E-05	Pu 238	
Sample Point	Relative Counting Error =	2.8%	8.25E-06	
AP-107 GRAB	Pu 236 Tracer Recovery =	83.4%		

Analyst:	DPB	Date:	17-Nov-97
Signature of Chemist:	JFR	Date:	18 Nov 97

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM7

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

				SAMPLE
TYPE	DATE COUNTED	NOV-16-97	PU 236 AEA FRAC (C236)	0.402
SAMPLE	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.148
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.408
21184	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	3514
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.130
Matrix	DETECTOR NUMBER	14	PU 236 cpm	39.560
LIQUID	EFFICIENCY FACTOR EFF	0.291	PU 238 cpm	14.400
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	40.140
97005387	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Recovery	PU-236 DECAY CORR'D VALUE (dpm/mL)	2037.655	Pu 239/240 μ Ci/L	9.3156E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
N/A				
Sample	Decay Time = Date Counted - Tracer Preparation Date			
S97T002272	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)			
WB27807	Pu 239/240 μ Ci/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/ μ Ci)]			
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
SEH	Pu 238 μ Ci/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (D g/L) * (SS)]			
Chemist	Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JFR				
Analyst				
DPB				
Date Complete				
11/17/97	Pu 239/240 μ Ci/mL	9.32E-05	DETECTION LEVELS in μ Ci/mL	
Analysis Date	Relative Counting Error =	2.0%		
11/15/97				
Analysis Time			Pu 239/240	
05:00 PM	Pu 238 μ Ci/mL	3.33E-05	8.64E-06	
Sample Point	Relative Counting Error =	2.8%	Pu 238	
AP-107 GRAB	Pu 236 Tracer Recovery =	79.3%	8.64E-06	

Analyst:	DPB	Date:	17-Nov-97
Signature of Chemist:	JFR	Date:	18 Nov 97
SAMPLE:WB1 REV 1.0 943128ML			

WORKBOOK PAGE: DUP8

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)**LIQUID / SOLI****DUP**

Type	DATE COUNTED	NOV-16-97	PU 236 AEA FRAC (C236)	0.409
DUP	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.140
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.420
21184	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	3637
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.130
Matrix	DETECTOR NUMBER	14	PU 236 cpm	43.790
LIQUID	EFFICIENCY FACTOR EFF	0.291	PU 238 cpm	15.050
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	44.970
97005387	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Remin	PU-236 DECAY CORR'D VALUE (dpm/mL)	2037.655	Pu 239/240 μ Ci/L	9.4255E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
N/A				

Sample #	Decay Time = Date Counted - Tracer Preparation Date			
S97T002272	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)			
WB27807	Pu 239/240 μ Ci/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/ μ Ci)]			
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
SEH	Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (D g/L) (SS)]			
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JFR				
Analyst				
DPB				
Date Complete				
11/17/97	Pu 239/240 μ Ci/mL	9.43E-05	DETECTION LEVELS in μ Ci/mL	
Analysis Date	Relative Counting Error	= 1.9%		
11/15/97			Pu 239/240	
Analysis Time			8.06E-06	
05:00 PM	Pu 238 μ Ci/mL	3.14E-05	Pu 238	
Sample Point	Relative Counting Error	= 2.7%	8.06E-06	
AP-107 GRAB	Pu 236 Tracer Recovery	= 83.5%		

Analyst:	DPB	Date:	17-Nov-97
Signature of Chemist:	JFR	Date:	18 Nov 97
SAMPLE.WB1 REV 1.0	943128ML		

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL21184-STD
 File ID: 7a7035.CNF

Counted on: 11/16/97 @ 1:21
 Detector: AEA7
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1842.7	1842.7	362.874	362.874	10.000	2.522	5.000	1.222
2?	22.8	22.8	303.393	303.287	34.000	11.394	17.000	17.574
3	59.0	59.0	287.709	287.589	10.000	3.087	5.000	1.954
4?	17.1	17.1	270.064	269.575	10.000	2.918	5.000	0.835
5	2398.9	2398.9	228.490	228.490	10.000	2.839	5.000	1.884

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err @95	d/m	Activity uCi/ea	
			Exp.	Obs.	Diff.	FWHM				
1	Pu236	0.437	5.755	5.773	-0.018	0.01	45.57	1.3	189.6	0.854E-04
2	Cm243	0.013	5.779	5.773	0.006	0.01	0.76	11.3	254.6	0.115E-03
3	Th228	0.013	5.400	5.427	-0.027	0.01	1.34	8.2	7.7	0.346E-05
4	11/18/97	0.013	5.400	5.427	-0.027	0.01	0.61	13.5		
5	Pu239	0.499	5.147	5.155	-0.008	0.01	51.96	1.2	211.9	0.955E-04
	Pu240		5.144	5.155	-0.011				211.9	0.955E-04
Totals:		0.949	<--valid peaks only-->				98.87			

DETECTOR CALIBRATION

Energy(MEV) = 4.104 + (0.0046)*Channel
 Energy range (MeV): 4.104 TO 6.459
 Efficiency = 0.2452 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	50025.0	100.000
Smoothed	50027.5	100.005
Composite fit	48117.3	96.187
Residuals	1907.7	3.813

Analyzed by: _____

Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 15301.4

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Raw Data	Dump	for	AEA	Spectrum:	7a7035.CNF								
1	0.	0.	3.	0.	3.	0.	1.	2.	1.	0.			
11	1.	3.	2.	2.	1.	0.	1.	1.	1.	0.			
21	0.	2.	1.	1.	2.	0.	3.	2.	0.	1.			
31	1.	1.	1.	1.	2.	0.	0.	1.	3.	0.			
41	1.	1.	1.	1.	0.	1.	2.	1.	0.	2.			
51	1.	2.	1.	2.	1.	1.	0.	1.	2.	1.			
61	1.	1.	1.	0.	1.	2.	2.	2.	0.	2.			
71	2.	1.	1.	0.	1.	2.	2.	2.	0.	0.			
81	1.	2.	2.	2.	1.	1.	3.	2.	4.	2.			
91	1.	2.	4.	0.	2.	8.	3.	2.	1.	1.			
101	0.	2.	4.	1.	4.	3.	0.	1.	3.	5.			
111	2.	2.	2.	4.	2.	3.	3.	3.	4.	3.			
121	2.	4.	3.	3.	2.	3.	5.	3.	4.	1.			
131	4.	7.	4.	3.	3.	3.	3.	3.	3.	4.			
141	6.	6.	4.	4.	10.	7.	4.	6.	4.	4.			
151	4.	2.	6.	7.	5.	5.	6.	7.	4.	7.			
161	3.	10.	13.	3.	10.	8.	4.	3.	7.	6.			
171	5.	8.	9.	3.	13.	10.	12.	13.	9.	10.			
181	8.	14.	10.	17.	22.	20.	17.	22.	16.	23.			
191	13.	22.	18.	28.	23.	44.	32.	35.	36.	42.			
201	50.	46.	62.	59.	73.	77.	80.	101.	117.	122.			
211	150.	157.	222.	247.	309.	392.	473.	551.	663.	636.			
221	694.	739.	995.	1209.	1592.	2070.	2497.	2870.	2990.	2639.			
231	1835.	751.	209.	30.	11.	9.	3.	1.	2.	3.			
241	2.	8.	4.	4.	2.	2.	4.	6.	3.	5.			
251	7.	6.	9.	11.	10.	9.	10.	7.	3.	4.			
261	7.	10.	5.	4.	8.	18.	19.	13.	22.	30.			
271	17.	19.	12.	9.	13.	11.	14.	13.	11.	13.			
281	29.	19.	39.	38.	59.	64.	64.	69.	76.	49.			
291	30.	12.	13.	7.	13.	15.	8.	13.	11.	11.			
301	22.	26.	22.	22.	24.	19.	13.	7.	11.	10.			
311	8.	7.	9.	5.	7.	8.	14.	16.	10.	16.			
321	18.	14.	14.	16.	16.	25.	27.	13.	20.	32.			
331	35.	20.	36.	41.	47.	51.	45.	60.	66.	61.			
341	78.	96.	98.	112.	146.	189.	217.	227.	352.	439.			
351	587.	729.	872.	899.	787.	766.	724.	855.	1046.	1275.			
361	1661.	1995.	2328.	2243.	1602.	676.	189.	39.	6.	4.			
371	0.	1.	2.	0.	3.	1.	0.	1.	1.	2.			
381	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.			
391	0.	0.	0.	0.	1.	0.	0.	1.	1.	2.			
401	1.	2.	0.	0.	1.	0.	0.	1.	1.	0.			
411	0.	1.	0.	0.	1.	0.	1.	1.	0.	0.			
421	1.	0.	0.	0.	1.	1.	1.	0.	0.	1.			
431	1.	0.	0.	1.	2.	0.	0.	3.	0.	0.			
441	0.	1.	1.	0.	1.	0.	0.	0.	0.	2.			
451	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.			
461	0.	0.	0.	0.	1.	1.	2.	1.	1.	2.			
471	4.	5.	0.	4.	5.	3.	5.	5.	4.	2.			
481	2.	3.	0.	3.	1.	1.	0.	0.	1.	0.			
491	0.	0.	1.	0.	0.	2.	0.	0.	2.	0.			
511	0.	0.											

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL21184-BLK
 File ID: 8a8035.CNF

Counted on: 11/16/97 @ 1:22
 Detector: AEA8
 Geometry number: 1
 Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1507.6	1507.6	367.830	367.830	10.000	2.561	5.000	0.976
2	29.2	29.2	307.475	307.112	32.000	9.554	16.000	16.952
3	50.3	50.3	293.343	293.162	10.000	2.468	5.000	1.090
4	15.2	15.2	276.093	275.485	8.000	2.703	4.000	0.723

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	FWHM			
1	Pu236	0.921	5.755	5.768	-0.013	0.01	43.38	1.4	188.3 0.848E-04
	Cm243		5.779	5.768	0.011				252.8 0.114E-03
2	Pu238	0.019	5.487	5.489	-0.002	0.04	0.90	11.2	5.3 0.239E-05
	Am241		5.479	5.489	-0.010				4.1 0.183E-05
3	Th228	0.028	5.400	5.425	-0.025	0.01	1.31	8.6	7.8 0.353E-05
4		0.012		5.344		0.01	0.56	15.3	2.4 0.108E-05
Totals:			0.980	<--valid peaks only-->			46.14		

DETECTOR CALIBRATION

Energy(MEV) = 4.076 + (0.0046)*Channel

Energy range (MeV): 4.076 TO 6.432

Efficiency = 0.2350 CPM/DPM

(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22607.0	100.000
Smoothed	22607.9	100.004
Composite fit	22152.7	97.990
Residuals	454.3	2.010

Analyzed by:

EMB

[illegible]

Raw Data Dump for AEA Spectrum:	8a8035.CNF									
1	0.	0.	0.	0.	1.	0.	0.	2.	0.	2.
11	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
21	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
41	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
51	1.	1.	0.	1.	2.	0.	0.	0.	1.	0.
61	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
71	0.	0.	1.	0.	0.	0.	0.	1.	0.	2.
81	0.	0.	1.	0.	0.	1.	0.	1.	0.	1.
91	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
101	1.	2.	0.	0.	1.	0.	1.	0.	0.	0.
111	0.	0.	0.	1.	1.	1.	0.	1.	0.	0.
121	0.	0.	0.	0.	1.	0.	1.	1.	0.	1.
131	0.	0.	2.	1.	0.	0.	0.	1.	1.	1.
141	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
151	2.	0.	0.	1.	0.	0.	1.	1.	0.	0.
161	0.	1.	2.	5.	0.	1.	2.	4.	0.	1.
171	0.	0.	1.	2.	0.	1.	0.	2.	0.	0.
181	1.	0.	0.	0.	1.	0.	1.	0.	0.	1.
191	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
201	1.	2.	0.	1.	2.	2.	0.	2.	1.	2.
211	1.	1.	2.	1.	2.	2.	0.	1.	3.	3.
221	4.	5.	1.	5.	4.	3.	4.	6.	3.	3.
231	2.	2.	6.	6.	8.	5.	4.	2.	1.	2.
241	2.	2.	4.	2.	3.	1.	4.	9.	4.	9.
251	4.	2.	3.	5.	6.	7.	14.	4.	7.	11.
261	10.	16.	10.	3.	8.	10.	11.	11.	8.	9.
271	12.	10.	18.	23.	24.	25.	27.	22.	11.	11.
281	16.	20.	16.	15.	24.	19.	19.	30.	30.	39.
291	38.	55.	69.	58.	58.	30.	23.	14.	9.	17.
301	14.	23.	19.	12.	16.	21.	25.	19.	25.	14.
311	19.	18.	17.	13.	14.	18.	16.	13.	18.	20.
321	29.	36.	25.	23.	28.	25.	35.	37.	40.	38.
331	57.	60.	53.	66.	62.	73.	72.	76.	92.	99.
341	106.	98.	93.	123.	137.	180.	170.	204.	225.	226.
351	276.	276.	335.	396.	448.	584.	754.	862.	860.	785.
361	720.	659.	787.	880.	1116.	1302.	1653.	1850.	1871.	1270.
371	570.	133.	14.	3.	6.	3.	0.	0.	0.	1.
381	2.	0.	0.	1.	0.	2.	0.	0.	0.	3.
391	0.	0.	0.	0.	0.	2.	0.	1.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	1.	1.	1.
411	1.	0.	1.	2.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	1.	1.	0.	0.	0.	1.	0.
431	1.	0.	0.	1.	1.	1.	0.	1.	0.	0.
441	0.	1.	0.	0.	1.	2.	0.	0.	1.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
461	0.	0.	0.	0.	2.	1.	0.	0.	0.	1.
471	0.	0.	0.	2.	0.	0.	2.	5.	3.	4.
481	4.	7.	5.	5.	1.	0.	0.	0.	1.	2.
491	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2270-SAM
 File ID: 9a9031.CNF

Counted on: 11/16/97 @ 1:22
 Detector: AEA9
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1604.2	1604.2	361.152	361.152	10.000	2.731	5.000	1.348
2	545.0	545.0	303.437	303.435	8.000	2.614	4.000	1.223
3	14.1	14.1	255.208	255.061	10.000	9.929	5.000	1.285
4	1812.0	1812.0	228.762	228.760	10.000	3.510	5.000	2.235

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
1	Pu236	0.400	5.755	5.750	0.0050.01	39.94	1.4	168.5	0.759E-04	
2	Pu238	0.139	5.487	5.485	0.0020.01	13.86	2.4	79.6	0.358E-04	
3	Am241	0.011	5.479	5.485	0.006	1.06	9.6	60.9	0.274E-04	
3	Am243	0.011	5.266	5.262	0.0040.05	1.06	9.6	4.4	0.200E-05	
4	Pu239	0.425	5.147	5.141	0.0060.02	42.43	1.4	175.4	0.790E-04	
13/97	Pu240		5.144	5.141	0.003			175.4	0.790E-04	

Totals: 0.974 <--valid peaks only--> 97.29

DETECTOR CALIBRATION

Energy(MEV) = 4.089 + (0.0046)*Channel
 Energy range (MeV): 4.089 TO 6.444
 Efficiency = 0.2419 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47972.0	100.000
Smoothed	47973.0	100.002
Composite fit	46701.6	97.352
Residuals	1270.4	2.648

Analyzed by:

EMB

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Raw	Data	Dump	for	AEA	Spectrum:	9a9031.CNF					
1	0.	0.	0.	0.	2.	0.	0.	2.	0.	0.	0.
11	1.	0.	2.	2.	0.	3.	0.	1.	1.	0.	0.
21	1.	1.	0.	1.	1.	2.	4.	3.	1.	1.	1.
31	0.	0.	2.	1.	0.	0.	1.	1.	0.	1.	1.
41	0.	1.	1.	1.	3.	5.	3.	1.	0.	2.	2.
51	2.	1.	0.	0.	1.	0.	0.	0.	2.	3.	3.
61	0.	0.	2.	0.	2.	1.	1.	4.	1.	0.	0.
71	1.	2.	2.	2.	1.	1.	1.	1.	1.	0.	0.
81	2.	2.	1.	0.	1.	2.	0.	2.	0.	1.	1.
91	2.	0.	4.	2.	2.	1.	1.	2.	1.	1.	1.
101	2.	1.	1.	3.	2.	1.	4.	0.	3.	0.	0.
111	2.	3.	2.	1.	2.	1.	0.	4.	1.	3.	3.
121	0.	4.	4.	5.	3.	3.	6.	4.	1.	3.	3.
131	3.	3.	3.	0.	1.	4.	2.	1.	5.	1.	1.
141	5.	7.	2.	3.	4.	6.	4.	9.	2.	5.	3.
151	5.	5.	5.	6.	5.	6.	5.	7.	8.	3.	3.
161	7.	2.	7.	2.	6.	4.	6.	10.	10.	8.	8.
171	8.	9.	9.	11.	9.	7.	4.	13.	9.	9.	9.
181	12.	12.	11.	12.	13.	9.	9.	9.	19.	23.	23.
191	19.	16.	23.	19.	20.	30.	27.	28.	27.	35.	35.
201	30.	30.	40.	47.	58.	62.	63.	85.	78.	89.	89.
211	115.	123.	175.	182.	236.	305.	379.	436.	454.	527.	527.
221	580.	705.	770.	956.	1152.	1519.	1806.	2090.	2243.	2035.	2035.
231	1528.	968.	575.	275.	83.	18.	8.	3.	2.	4.	4.
241	4.	1.	4.	2.	3.	6.	6.	5.	3.	2.	2.
251	7.	3.	4.	14.	13.	13.	9.	6.	2.	4.	4.
261	7.	10.	8.	8.	12.	12.	22.	23.	22.	20.	20.
271	20.	17.	17.	25.	12.	19.	23.	31.	19.	32.	32.
281	33.	46.	46.	68.	74.	103.	116.	122.	108.	115.	115.
291	109.	148.	192.	239.	252.	231.	244.	226.	321.	332.	332.
301	423.	545.	628.	726.	563.	387.	142.	22.	6.	5.	5.
311	4.	5.	5.	9.	9.	8.	11.	14.	12.	10.	10.
321	11.	11.	11.	19.	12.	21.	18.	22.	26.	29.	29.
331	27.	27.	30.	33.	39.	39.	46.	60.	51.	72.	72.
341	86.	97.	113.	131.	167.	206.	246.	308.	407.	547.	547.
351	710.	827.	782.	690.	695.	653.	843.	1026.	1368.	1750.	1750.
361	1991.	2001.	1535.	931.	326.	76.	17.	2.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	2.	0.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	1.	1.	1.
461	0.	0.	1.	2.	2.	1.	7.	7.	3.	4.	4.
471	4.	2.	2.	2.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.									

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2270-DUP
 File ID: 10a1031.CNF

Counted on: 11/16/97 @ 1:22
 Detector: AEA10
 Geometry number: 1
 Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1721.7	1721.7	362.542	362.542	10.000	2.750	5.000	1.341
2	564.0	564.0	303.632	303.630	10.000	2.783	5.000	1.284
3?	10.2	10.2	269.756	268.539	10.000	1.854	5.000	0.477
4	1813.9	1813.9	228.375	228.375	12.000	3.998	6.000	2.474

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count Rate	%err c/m @95	d/m	Activity uCi/ea		
			Exp.	Obs. Diff.	FWHM					
1	Pu236	0.417	5.755	5.769	-0.014	0.01	43.21	1.4	185.2	0.834E-04
2	Cm243	0.141	5.779	5.769	0.010				248.6	0.112E-03
2	Pu238	0.141	5.487	5.498	-0.011	0.01	14.64	2.3	85.4	0.385E-04
3	Am241	0.141	5.479	5.498	-0.019				65.4	0.295E-04
3		????		5.336			0.37	20.6		
4	Pu239	0.431	5.147	5.152	-0.005	0.02	44.67	1.3	187.6	0.845E-04
	Pu240		5.144	5.152	-0.008				187.6	0.845E-04
Totals:			0.989	<--valid peaks only-->			102.52			

DETECTOR CALIBRATION

Energy(MEV) = 4.101 + (0.0046)*Channel
 Energy range (MeV): 4.101 TO 6.456
 Efficiency = 0.2381 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	49757.0	100.000
Smoothed	49756.8	100.000
Composite fit	49393.9	99.270
Residuals	363.1	0.730

Analyzed by:

EMB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 12287.9

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Raw	Data	Dump	for	AEA	Spectrum:	10a1031.CNF						
1	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.		
11	1.	0.	0.	0.	0.	1.	1.	5.	1.	1.	0.	
21	1.	2.	1.	0.	0.	0.	1.	2.	0.	0.	0.	
31	1.	0.	0.	0.	0.	0.	2.	0.	0.	0.	1.	
41	0.	0.	0.	1.	1.	0.	0.	0.	1.	0.	0.	
51	0.	2.	0.	0.	1.	0.	0.	1.	0.	0.	0.	
61	0.	0.	2.	2.	3.	0.	1.	5.	3.	1.		
71	1.	0.	0.	2.	1.	1.	0.	0.	0.	0.		
81	1.	0.	1.	1.	1.	2.	0.	1.	0.	0.		
91	0.	1.	2.	0.	4.	1.	0.	0.	1.	2.		
101	1.	1.	1.	2.	0.	0.	0.	5.	1.	0.		
111	2.	1.	0.	1.	2.	2.	2.	1.	1.	2.		
121	2.	2.	0.	3.	1.	0.	0.	3.	2.	2.		
131	4.	1.	1.	0.	0.	2.	1.	2.	2.	3.		
141	6.	4.	2.	6.	5.	2.	2.	6.	3.	7.		
151	0.	4.	5.	3.	2.	2.	7.	1.	3.	5.		
161	4.	1.	7.	3.	4.	4.	7.	3.	3.	6.		
171	1.	4.	4.	5.	5.	3.	0.	2.	2.	7.		
181	9.	3.	5.	6.	5.	4.	8.	4.	9.	7.		
191	7.	7.	7.	13.	14.	9.	21.	14.	16.	14.		
201	18.	24.	27.	24.	39.	44.	37.	75.	79.	83.		
211	102.	114.	151.	199.	270.	333.	373.	448.	499.	598.		
221	695.	808.	944.	1134.	1416.	1731.	1956.	2150.	2132.	1896.		
231	1441.	907.	470.	256.	66.	17.	1.	2.	2.	0.		
241	0.	5.	4.	1.	4.	3.	2.	3.	2.	8.		
251	6.	4.	7.	8.	7.	6.	9.	7.	2.	2.		
261	8.	4.	6.	8.	13.	13.	14.	18.	24.	19.		
271	14.	17.	16.	13.	11.	15.	13.	24.	24.	26.		
281	25.	25.	57.	54.	78.	93.	105.	109.	108.	115.		
291	124.	147.	221.	231.	273.	254.	244.	262.	272.	352.		
301	398.	540.	676.	723.	620.	440.	224.	65.	13.	5.		
311	2.	1.	7.	3.	5.	5.	4.	7.	6.	5.		
321	4.	6.	5.	7.	7.	11.	6.	8.	14.	16.		
331	16.	21.	15.	15.	14.	21.	23.	27.	35.	47.		
341	55.	63.	73.	90.	121.	152.	183.	250.	336.	451.		
351	592.	733.	835.	826.	742.	684.	740.	927.	1119.	1318.		
361	1659.	2013.	2190.	1934.	1234.	574.	162.	28.	3.	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.	1.		
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.		
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
431	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.		
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.		
451	0.	0.	0.	1.	0.	0.	0.	2.	0.	0.		
461	0.	0.	0.	0.	2.	0.	0.	0.	1.	2.		
471	1.	1.	0.	4.	6.	4.	4.	1.	4.	5.		
481	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.		
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
511	0.	0.										

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2271-SAM
 File ID: 11a1134.CNF

Counted on: 11/16/97 @ 1:23
 Detector: AEA11
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1447.1	1447.1	363.531	363.531	8.000	2.517	4.000	1.024
2	486.8	486.8	304.908	304.902	10.000	2.574	5.000	0.997
3	1588.0	1588.0	230.030	230.030	12.000	3.629	6.000	1.858

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu236	0.401	5.755	5.768	-0.013	39.79	1.4	167.8	0.756E-04
	Cm243		5.779	5.768	0.011			225.2	0.101E-03
2	Pu238	0.140	5.487	5.498	-0.011	13.87	2.4	79.6	0.359E-04
3	Am241		5.479	5.498	-0.019			61.0	0.275E-04
3	Pu239	0.418	5.147	5.154	-0.007	41.45	1.4	171.3	0.772E-04
11/8/97	Pu240		5.144	5.154	-0.010			171.3	0.772E-04

Totals: 0.958 <--valid peaks only--> 95.11

DETECTOR CALIBRATION

Energy(MEV) = 4.095 + (0.0046)*Channel

Energy range (MeV): 4.095 TO 6.451

Efficiency = 0.2420 CPM/DPM

(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47653.0	100.000
Smoothed	47652.7	99.999
Composite fit	45653.6	95.804
Residuals	1999.4	4.196

Analyzed by:

EMB

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Raw	Data	Dump	for	AEA	Spectrum:	11a1134.CNF	HNF-SD-WM-DP-276, REV. 0				
1	0.	0.	0.	0.	0.	0.	1.	2.	0.	1.	
11	2.	1.	0.	0.	0.	2.	1.	1.	0.	0.	
21	0.	0.	0.	0.	1.	1.	0.	2.	0.	0.	
31	1.	0.	0.	0.	0.	2.	1.	1.	0.	0.	
41	2.	0.	1.	1.	2.	1.	0.	1.	1.	0.	
51	0.	1.	0.	3.	1.	2.	1.	1.	0.	1.	
61	2.	3.	2.	2.	1.	1.	0.	1.	1.	2.	
71	2.	0.	3.	1.	2.	0.	2.	2.	1.	1.	
81	2.	3.	1.	1.	1.	2.	0.	3.	1.	0.	
91	0.	2.	1.	1.	0.	1.	2.	2.	3.	4.	
101	3.	2.	2.	1.	5.	3.	0.	1.	2.	1.	
111	1.	2.	2.	2.	1.	5.	0.	6.	2.	4.	
121	2.	5.	2.	1.	1.	2.	2.	3.	2.	1.	
131	2.	2.	3.	3.	5.	3.	8.	8.	4.	3.	
141	3.	3.	6.	8.	4.	8.	5.	1.	5.	2.	
151	7.	7.	3.	4.	4.	2.	4.	9.	3.	7.	
161	5.	9.	12.	9.	8.	11.	13.	9.	13.	15.	
171	16.	8.	15.	19.	18.	10.	16.	20.	18.	12.	
181	22.	20.	20.	16.	26.	20.	30.	21.	36.	24.	
191	28.	45.	44.	36.	39.	39.	50.	53.	65.	46.	
201	56.	69.	77.	81.	81.	106.	94.	107.	134.	131.	
211	143.	173.	196.	194.	237.	295.	314.	392.	448.	523.	
221	576.	593.	650.	754.	897.	977.	1240.	1551.	1753.	1908.	
231	1827.	1530.	975.	611.	310.	101.	18.	6.	1.	1.	
241	7.	6.	5.	7.	5.	7.	8.	5.	6.	8.	
251	7.	9.	9.	7.	6.	20.	14.	16.	13.	10.	
261	11.	14.	7.	18.	13.	17.	18.	35.	33.	31.	
271	32.	42.	28.	26.	33.	34.	25.	35.	41.	52.	
281	43.	52.	58.	59.	85.	97.	93.	104.	143.	131.	
291	107.	142.	137.	218.	206.	249.	280.	230.	212.	231.	
301	296.	345.	402.	535.	621.	585.	430.	192.	68.	10.	
311	10.	10.	15.	15.	15.	16.	13.	17.	14.	21.	
321	26.	22.	23.	34.	35.	28.	35.	39.	43.	55.	
331	50.	62.	56.	60.	66.	68.	57.	84.	76.	121.	
341	108.	118.	116.	153.	156.	200.	216.	239.	303.	367.	
351	432.	593.	666.	782.	814.	730.	642.	651.	729.	867.	
361	1100.	1362.	1668.	1850.	1668.	1010.	357.	65.	10.	0.	
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	
441	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.	
451	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	
461	1.	0.	0.	0.	0.	0.	0.	1.	1.	1.	
471	2.	2.	1.	2.	1.	3.	4.	6.	5.	5.	
481	2.	0.	1.	0.	1.	0.	0.	1.	0.	1.	
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
511	0.	0.									

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2271-DUP
 File ID: 12a1221.CNF

Counted on: 11/16/97 @ 1:23
 Detector: AEA12
 Geometry number: 1
 Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1421.9	1421.9	361.152	361.152	10.000	2.519	5.000	1.013
2	476.4	476.4	302.668	302.662	8.000	2.544	4.000	0.972
3	1601.2	1601.2	228.116	228.116	12.000	3.546	6.000	1.797

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu236	0.400	5.755	5.750	0.0050.01	39.39	1.4	173.1	0.780E-04
2	Pu238	0.139	5.487	5.481	0.0060.01	13.67	2.4	81.8	0.368E-04
3	Am241		5.479	5.481	-0.002			62.6	0.282E-04
3	Pu239	0.424	5.147	5.139	0.0080.02	41.77	1.4	179.9	0.810E-04
11/18/97	Pu240		5.144	5.139	0.005			179.9	0.810E-04
Totals:			0.962	<--valid peaks only-->			94.83		

DETECTOR CALIBRATION

Energy(MEV) = 4.089 + (0.0046)*Channel
 Energy range (MeV): 4.089 TO 6.444
 Efficiency = 0.2322 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47317.0	100.000
Smoothed	47317.6	100.001
Composite fit	45522.0	96.206
Residuals	1795.0	3.794

Analyzed by:

EMB

Spectrum 12a1221.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 10450.2

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Raw	Data	Dump	for	AEA	Spectrum:	12a1221.CNF						
1	0.	0.	1.	1.	0.	0.	0.	1.	2.	0.		
11	0.	2.	1.	1.	0.	1.	1.	0.	1.	0.		
21	1.	0.	2.	0.	0.	0.	0.	0.	1.	0.		
31	0.	0.	0.	0.	0.	0.	2.	2.	1.	0.		
41	0.	1.	1.	1.	0.	0.	0.	2.	1.	0.		
51	3.	0.	1.	2.	1.	1.	0.	0.	0.	0.		
61	3.	2.	2.	0.	1.	1.	1.	0.	1.	0.		
71	0.	0.	1.	1.	3.	2.	0.	2.	1.	0.		
81	0.	1.	1.	0.	0.	0.	2.	3.	0.	0.		
91	1.	1.	0.	1.	1.	0.	1.	3.	3.	2.		
101	3.	2.	1.	0.	1.	0.	5.	1.	3.	0.		
111	0.	0.	3.	2.	4.	1.	1.	5.	0.	2.		
121	2.	2.	1.	3.	0.	5.	0.	2.	3.	3.		
131	1.	5.	2.	2.	1.	7.	4.	3.	5.	6.		
141	6.	4.	9.	3.	9.	4.	6.	7.	4.	5.		
151	8.	3.	5.	4.	8.	8.	7.	11.	3.	10.		
161	8.	6.	5.	11.	6.	8.	7.	9.	14.	9.		
171	8.	10.	11.	10.	15.	15.	12.	15.	7.	11.		
181	17.	20.	16.	23.	23.	14.	34.	22.	30.	40.		
191	29.	37.	30.	44.	41.	56.	41.	54.	89.	69.		
201	58.	85.	70.	96.	105.	120.	135.	140.	165.	166.		
211	192.	214.	254.	304.	324.	404.	440.	495.	522.	631.		
221	654.	794.	900.	959.	1220.	1455.	1746.	1925.	1938.	1496.		
231	1017.	626.	317.	120.	27.	5.	7.	1.	3.	4.		
241	2.	5.	4.	4.	6.	3.	8.	6.	8.	12.		
251	5.	13.	9.	8.	14.	13.	8.	9.	15.	13.		
261	16.	9.	17.	18.	12.	16.	24.	41.	34.	21.		
271	36.	27.	25.	32.	26.	25.	36.	48.	37.	51.		
281	68.	64.	72.	87.	96.	121.	108.	129.	122.	135.		
291	153.	193.	233.	277.	299.	224.	228.	261.	305.	315.		
301	430.	528.	613.	569.	355.	144.	40.	8.	9.	12.		
311	19.	17.	14.	17.	17.	11.	17.	18.	18.	23.		
321	30.	22.	32.	35.	38.	21.	47.	40.	56.	53.		
331	49.	65.	52.	71.	68.	91.	92.	106.	131.	138.		
341	125.	191.	202.	214.	220.	301.	327.	402.	490.	615.		
351	732.	769.	759.	670.	618.	692.	768.	935.	1215.	1451.		
361	1727.	1822.	1446.	680.	202.	33.	2.	0.	1.	0.		
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
401	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.		
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
431	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.		
451	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.		
461	1.	0.	0.	0.	0.	1.	0.	1.	0.	0.		
471	3.	1.	4.	1.	3.	4.	2.	1.	2.	3.		
481	0.	1.	2.	0.	0.	0.	0.	0.	0.	0.		
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
511	0.	0.										

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2272-SAM
 File ID: 13a1370.CNF

Counted on: 11/16/97 @ 1:24
 Detector: AEA13
 Geometry number: 1
 Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1222.8	1222.8	364.018	364.018	10.000	2.959	5.000	0.980
2	390.2	390.2	305.435	305.414	10.000	3.351	5.000	0.943
3	1315.8	1315.8	230.590	230.589	10.000	4.127	5.000	1.666

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid				Count Rate	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	FWHM	c/m			
1	Pu236	0.402	5.755	5.764	-0.009	0.01	39.56	1.4	162.0	0.730E-04
2	Cm243		5.779	5.764	-0.015				217.5	0.980E-04
2	Pu238	0.146	5.487	5.495	-0.008	0.02	14.40	2.4	80.3	0.362E-04
1/8/92	Am241		5.479	5.495	-0.016				61.5	0.277E-04
3	Pu239	0.408	5.147	5.151	-0.004	0.02	40.14	1.4	161.1	0.726E-04
	Pu240		5.144	5.151	-0.007				161.1	0.726E-04

Totals: 0.956 <--valid peaks only--> 94.10

DETECTOR CALIBRATION

Energy(MEV) = 4.090 + (0.0046)*Channel
 Energy range (MeV): 4.090 TO 6.445
 Efficiency = 0.2492 CPM/DPM
 (Data reduction compression factor: 1.)

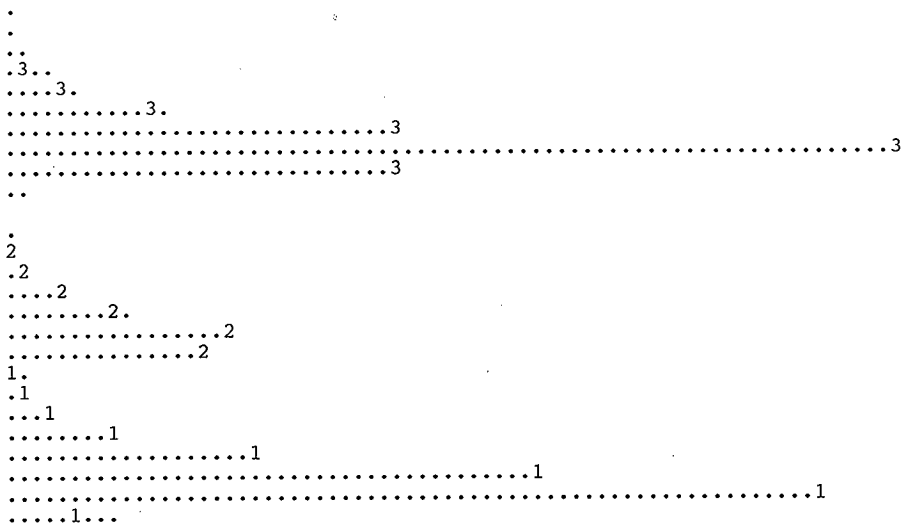
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47259.0	100.000
Smoothed	47260.0	100.002
Composite fit	45172.2	95.584
Residuals	2086.8	4.416

Analyzed by:

EMB

Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 8671.8



Raw	Data	Dump	for	AEA	Spectrum:	13a1370.CNF				
1	0.	0.	3.	0.	1.	1.	0.	0.	3.	2.
11	3.	0.	2.	0.	0.	0.	0.	1.	2.	2.
21	1.	0.	2.	0.	1.	0.	0.	1.	0.	0.
31	1.	0.	0.	1.	3.	0.	0.	2.	1.	1.
41	1.	2.	1.	2.	0.	0.	1.	1.	3.	0.
51	0.	2.	1.	1.	0.	0.	2.	2.	3.	2.
61	1.	3.	2.	4.	0.	1.	5.	3.	3.	1.
71	2.	2.	1.	0.	3.	1.	2.	3.	1.	3.
81	2.	0.	2.	1.	1.	3.	1.	1.	3.	2.
91	3.	3.	2.	3.	1.	2.	1.	3.	2.	1.
101	4.	3.	3.	4.	3.	2.	5.	3.	2.	5.
111	5.	4.	1.	1.	4.	4.	4.	5.	8.	4.
121	6.	0.	1.	5.	1.	5.	4.	8.	2.	7.
131	7.	5.	9.	5.	5.	3.	4.	3.	9.	8.
141	5.	7.	4.	6.	12.	6.	11.	8.	11.	12.
151	6.	8.	17.	19.	8.	11.	10.	13.	17.	8.
161	18.	15.	13.	16.	12.	19.	16.	14.	15.	18.
171	22.	21.	30.	21.	14.	21.	20.	25.	25.	21.
181	29.	25.	34.	33.	32.	42.	43.	26.	32.	47.
191	43.	38.	57.	53.	60.	60.	66.	81.	77.	87.
201	96.	88.	95.	109.	109.	116.	163.	140.	144.	172.
211	185.	214.	216.	243.	269.	321.	336.	388.	444.	519.
221	585.	583.	642.	643.	797.	875.	1021.	1176.	1364.	1462.
231	1527.	1447.	1127.	781.	431.	229.	106.	25.	11.	6.
241	11.	4.	11.	10.	9.	9.	11.	10.	12.	11.
251	13.	14.	11.	13.	17.	21.	14.	9.	28.	25.
261	22.	24.	17.	25.	28.	25.	27.	26.	32.	28.
271	30.	49.	43.	48.	32.	50.	39.	47.	35.	41.
281	56.	56.	86.	74.	78.	95.	92.	133.	136.	143.
291	145.	144.	153.	166.	206.	250.	272.	254.	266.	246.
301	247.	259.	337.	404.	434.	478.	437.	303.	171.	69.
311	23.	20.	29.	17.	25.	26.	19.	22.	44.	31.
321	41.	42.	44.	38.	45.	51.	59.	65.	51.	74.
331	72.	82.	75.	84.	86.	97.	101.	107.	130.	133.
341	153.	164.	152.	186.	239.	208.	244.	298.	322.	384.
351	480.	532.	587.	679.	696.	742.	679.	667.	735.	717.
361	914.	1100.	1311.	1438.	1488.	1155.	728.	250.	55.	6.
371	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
461	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
471	3.	0.	1.	2.	2.	6.	2.	4.	2.	1.
481	3.	0.	2.	1.	2.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 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. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T2272-DUP
 File ID: 14a1403.CNF

Counted on: 11/16/97 @ 1:24
 Detector: AEA14
 Geometry number: 1
 Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1464.2	1464.2	363.000	363.000	10.000	2.870	5.000	1.062
2	481.0	481.0	304.201	304.191	10.000	3.030	5.000	1.062
3	1624.9	1624.9	229.244	229.244	12.000	3.918	6.000	1.854

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea	
			Exp.	Obs. Diff.						
1	Pu236	0.409	5.755	5.766	-0.011	0.01	43.79	1.4	174.7	0.787E-04
	Cm243		5.779	5.766	0.013				234.6	0.106E-03
2	Pu238	0.140	5.487	5.496	-0.009	0.01	15.05	2.3	81.7	0.368E-04
	Am241		5.479	5.496	-0.017				62.6	0.282E-04
3	Pu239	0.420	5.147	5.151	-0.004	0.02	44.97	1.3	175.9	0.792E-04
4/18/97	Pu240		5.144	5.151	-0.007				175.9	0.792E-04

Totals: 0.969 <--valid peaks only--> 103.81

DETECTOR CALIBRATION

Energy(MEV) = 4.097 + (0.0046)*Channel
 Energy range (MeV): 4.097 TO 6.452
 Efficiency = 0.2557 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	51447.0	100.000
Smoothed	51447.9	100.002
Composite fit	49834.6	96.866
Residuals	1612.4	3.134

Analyzed by:

EMB

Spectrum 14a1403.CNF

Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11008.0

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Raw	Data	Dump	for	AEA	Spectrum:	14a1403.CNF				
1	0.	0.	0.	3.	0.	1.	1.	0.	2.	0.
11	0.	0.	0.	1.	2.	2.	1.	1.	4.	1.
21	3.	1.	0.	0.	0.	1.	2.	0.	1.	0.
31	1.	1.	0.	2.	2.	0.	2.	1.	0.	2.
41	1.	1.	2.	1.	2.	1.	4.	0.	0.	4.
51	1.	1.	0.	1.	2.	0.	0.	1.	1.	3.
61	1.	1.	3.	1.	1.	2.	2.	2.	2.	2.
71	2.	0.	3.	1.	0.	4.	1.	3.	1.	3.
81	2.	6.	2.	5.	2.	3.	1.	4.	1.	2.
91	3.	3.	4.	4.	1.	3.	2.	1.	1.	4.
101	2.	3.	4.	0.	1.	3.	3.	3.	1.	1.
111	5.	4.	3.	3.	9.	3.	3.	4.	5.	4.
121	2.	3.	3.	2.	5.	5.	5.	4.	5.	5.
131	3.	4.	4.	3.	4.	6.	6.	4.	12.	6.
141	2.	3.	4.	9.	7.	9.	14.	6.	5.	3.
151	9.	13.	4.	7.	10.	7.	5.	11.	2.	9.
161	9.	11.	5.	12.	7.	9.	12.	10.	11.	12.
171	12.	13.	16.	17.	18.	24.	15.	16.	17.	19.
181	15.	23.	12.	29.	22.	29.	22.	27.	34.	32.
191	43.	33.	31.	46.	39.	42.	40.	46.	52.	67.
201	79.	74.	60.	94.	111.	92.	114.	120.	132.	167.
211	178.	202.	247.	269.	323.	352.	438.	476.	569.	580.
221	659.	709.	859.	989.	1104.	1248.	1484.	1751.	1913.	1926.
231	1600.	1231.	751.	394.	187.	56.	12.	2.	4.	2.
241	6.	8.	7.	5.	10.	5.	4.	5.	10.	7.
251	16.	11.	13.	11.	13.	12.	17.	17.	9.	12.
261	12.	14.	21.	24.	16.	23.	32.	31.	28.	30.
271	38.	36.	21.	29.	27.	48.	26.	46.	41.	48.
281	55.	49.	78.	71.	94.	96.	115.	137.	154.	146.
291	155.	151.	180.	226.	254.	264.	283.	265.	273.	267.
301	369.	396.	508.	583.	593.	478.	321.	130.	43.	26.
311	13.	18.	15.	18.	26.	8.	17.	16.	21.	26.
321	25.	21.	33.	34.	31.	34.	49.	50.	41.	61.
331	49.	51.	63.	76.	75.	81.	100.	100.	112.	93.
341	125.	145.	173.	167.	207.	242.	259.	346.	404.	475.
351	557.	692.	768.	791.	814.	769.	795.	793.	945.	1167.
361	1315.	1589.	1708.	1756.	1457.	778.	243.	47.	6.	0.
371	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	1.	0.	1.
421	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	2.	0.	1.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
461	1.	0.	1.	0.	1.	0.	0.	2.	0.	1.
471	1.	2.	4.	5.	1.	4.	2.	4.	0.	6.
481	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

HNF-SD-WM-DP-276, REV. 0

APPENDIX A
OPPORTUNISTIC ANALYTE RESULTS

HNF--SD--WM--DP--276, REV. 0

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HNF-SD-WM-DP-276, REV. 0

Appendix A. Opportunistic Analyte Results
AP-107 GRAB
 RISER: 1
 SEGMENT #: 7AP-97-1

SEGMENT PORTION: Supernate

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T002267	D	Silver-ICP-Acid Dil.	ug/mL	97.60	<1.00e-02	1.040	1.080	1.060	3.77	65.40	4.10e-01	n/a
S97T002267	D	Arsenic-ICP-Acid Dil.	ug/mL	101.0	<1.00e-02	< 4.100	<4.10e0	n/a	n/a	112.0	4.10e-01	n/a
S97T002267	D	Boron-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 4.880	<4.640	4.560	3.51	95.80	2.050	n/a
S97T002267	D	Barium-ICP-Acid Dil.	ug/mL	99.00	<5.00e-02	< 2.050	<2.05e0	n/a	n/a	92.70	2.050	n/a
S97T002267	D	Beryllium-ICP-Acid Dil.	ug/mL	101.6	<5.00e-03	<2.05e-01	<2.05e-1	n/a	n/a	98.00	2.05e-01	n/a
S97T002267	D	Bismuth-ICP-Acid Dil.	ug/mL	101.0	<5.00e-03	< 4.100	<4.10e0	n/a	n/a	97.00	4.100	n/a
S97T002267	D	Calcium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	101.0	4.100	n/a
S97T002267	D	Cadmium-ICP-Acid Dil.	ug/mL	100.6	<5.00e-03	<2.05e-01	<2.05e-1	n/a	n/a	98.00	2.05e-01	n/a
S97T002267	D	Cerium-ICP-Acid Dil.	ug/mL	100.0	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	97.40	4.100	n/a
S97T002267	D	Cobalt-ICP-Acid Dil.	ug/mL	101.8	<2.00e-02	<8.20e-01	<8.20e-1	n/a	n/a	99.50	8.20e-01	n/a
S97T002267	D	Chromium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	8.670	8.720	8.695	0.58	95.40	4.10e-01	n/a
S97T002267	D	Copper-ICP-Acid Dil.	ug/mL	106.6	<1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	106.0	4.10e-01	n/a
S97T002267	D	Potassium-ICP-Acid Dil.	ug/mL	99.40	<5.00e-01	8.85e+03	8.90e+03	8.88e+03	0.56	-2.220e2	20.501	n/a
S97T002267	D	Lanthanum-ICP-Acid Dil.	ug/mL	100.0	<5.00e-02	< 2.050	<2.05e0	n/a	n/a	95.60	2.050	n/a
S97T002267	D	Lithium-ICP-Acid Dil.	ug/mL	100.0	<1.00e-02	< 4.100	<4.10e-1	n/a	n/a	92.60	4.10e-01	n/a
S97T002267	D	Magnesium-ICP-Acid Dil.	ug/mL	96.80	<1.00e-02	< 4.100	<4.10e0	n/a	n/a	92.80	4.10e-01	n/a
S97T002267	D	Manganese-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	93.30	4.10e-01	n/a
S97T002267	D	Molybdenum-ICP-Acid Dil.	ug/mL	101.8	<5.00e-02	< 2.050	<2.05e0	n/a	n/a	101.0	2.050	n/a
S97T002267	D	Neodymium-ICP-Acid Dil.	ug/mL	102.6	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	97.50	4.100	n/a
S97T002267	D	Nickel-ICP-Acid Dil.	ug/mL	100.4	<2.00e-02	<8.20e-01	<8.20e-1	n/a	n/a	96.40	8.20e-01	n/a
S97T002267	D	Phosphorus-ICP-Acid Dil.	ug/mL	101.2	<1.00e-01	56.70	68.50	62.60	18.8	131.0	8.200	n/a
S97T002267	D	Lead-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 4.100	<4.10e0	n/a	n/a	96.30	4.100	n/a
S97T002267	D	Sulfur-ICP-Acid Dil.	ug/mL	103.2	<1.00e-01	1.18e+02	118.0	118.0	0.00	98.30	4.100	n/a
S97T002267	D	Antimony-ICP-Acid Dil.	ug/mL	96.20	<5.00e-02	< 2.460	<2.46e0	n/a	n/a	95.10	2.460	n/a
S97T002267	D	Selenium-ICP-Acid Dil.	ug/mL	96.40	<1.00e-01	< 4.100	<4.680	n/a	n/a	121.0	4.100	n/a
S97T002267	D	Silicon-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	15.60	26.00	20.80	50.0	120.0	2.050	n/a
S97T002267	D	Samarium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-02	< 4.100	<4.10e0	n/a	n/a	96.70	4.100	n/a
S97T002267	D	Strontium-ICP-Acid Dil.	ug/mL	100.8	<1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	95.90	4.10e-01	n/a
S97T002267	D	Titanium-ICP-Acid Dil.	ug/mL	99.60	<2.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	96.30	8.200	n/a
S97T002267	D	Thallium-ICP-Acid Dil.	ug/mL	98.00	<2.00e-01	< 8.200	<8.20e0	n/a	n/a	109.0	20.50	n/a
S97T002267	D	Uranium-ICP-Acid Dil.	ug/mL	102.0	<5.00e-02	< 2.050	<2.05e1	n/a	n/a	98.90	2.050	n/a
S97T002267	D	Vanadium-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 2.050	<2.05e0	n/a	n/a	103.0	4.10e-01	n/a
S97T002267	D	Zinc-ICP-Acid Dil.	ug/mL	103.0	<1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	96.70	4.10e-01	n/a
S97T002267	D	Zirconium-ICP-Acid Dil.	ug/mL	96.09	<1.25e-01	<6.44e+02	<6.44e+2	n/a	n/a	97.11	643.9	n/a
S97T002267	D	Brontide by Ion Chromatograph	ug/mL	95.51	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	95.88	543.9	n/a
S97T002267	D	Oxalate-IC-Blotex 4000/450	ug/mL	95.51	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	95.88	543.9	n/a
S97T002270	D	Cobalt-60 by GEA	uCi/mL	103.3	<5.29e-05	<8.06e-04	<7.68e-4	n/a	n/a	n/a	1.00e-03	n/a

Appendix A. Opportunistic Analyte Results
AP-107 GRAB

RI SER: 1
SEGMENT #: 7AP-97-2

SEGMENT PORTION: Supernate

Sample#	RI #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec.	Det Limit	Count Err%
S97T002268	D	Silver-ICP-Acid Dil.	ug/mL	97.60	<1.00e-02	1.070	1.060	1.065	0.94	67.10	4.10e-01	n/a
S97T002268	D	Arsenic-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	< 4.100	<4.10e-01	n/a	n/a	111.0	4.100	n/a
S97T002268	D	Boron-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	4.350	4.400	4.375	1.14	95.90	2.050	n/a
S97T002268	D	Barium-ICP-Acid Dil.	ug/mL	99.00	<2.050e-02	< 2.050	<2.05e-01	n/a	n/a	92.60	2.050	n/a
S97T002268	D	Beryllium-ICP-Acid Dil.	ug/mL	101.6	<5.00e-01	<2.05e-01	<2.05e-01	n/a	n/a	97.40	2.05e-01	n/a
S97T002268	D	Bismuth-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	< 4.100	<4.10e-01	n/a	n/a	96.10	4.100	n/a
S97T002268	D	Calcium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-01	< 4.100	<4.10e-01	n/a	n/a	99.80	4.100	n/a
S97T002268	D	Cadmium-ICP-Acid Dil.	ug/mL	100.6	<5.00e-03	<2.05e-01	<2.05e-01	n/a	n/a	98.20	2.05e-01	n/a
S97T002268	D	Cerium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-01	< 4.100	<4.10e-01	n/a	n/a	96.00	4.100	n/a
S97T002268	D	Cobalt-ICP-Acid Dil.	ug/mL	101.8	<2.00e-02	<8.20e-01	<8.20e-01	n/a	n/a	99.20	8.20e-01	n/a
S97T002268	D	Copper-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	8.660	8.660	8.660	0.00	95.90	4.10e-01	n/a
S97T002268	D	Potassium-ICP-Acid Dil.	ug/mL	106.6	<1.00e-02	<4.10e-01	<4.10e-01	n/a	n/a	106.0	4.10e-01	n/a
S97T002268	D	Lanthanum-ICP-Acid Dil.	ug/mL	99.40	<5.00e-01	9.15e+03	8.74e+03	8.94e+03	4.58	-7.270e2	20.50	n/a
S97T002268	D	Lithium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-02	< 2.050	<2.05e-01	n/a	n/a	95.20	2.050	n/a
S97T002268	D	Magnesium-ICP-Acid Dil.	ug/mL	100.0	<1.00e-02	<4.10e-01	<4.10e-01	n/a	n/a	92.10	4.10e-01	n/a
S97T002268	D	Manganese-ICP-Acid Dil.	ug/mL	96.80	<1.00e-01	< 4.100	<4.10e-01	n/a	n/a	91.60	4.100	n/a
S97T002268	D	Molybdenum-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	<4.10e-01	<4.10e-01	n/a	n/a	102.0	4.10e-01	n/a
S97T002268	D	Neodymium-ICP-Acid Dil.	ug/mL	101.8	<5.00e-02	< 2.050	<2.05e-01	n/a	n/a	93.40	2.050	n/a
S97T002268	D	Nickel-ICP-Acid Dil.	ug/mL	102.6	<1.00e-01	< 4.100	<4.10e-01	n/a	n/a	97.10	4.100	n/a
S97T002268	D	Phosphorus-ICP-Acid Dil.	ug/mL	100.4	<2.00e-02	<8.20e-01	<8.20e-01	n/a	n/a	97.20	8.20e-01	n/a
S97T002268	D	Lead-ICP-Acid Dil.	ug/mL	101.2	<2.00e-01	54.90	65.20	60.05	17.2	126.0	8.200	n/a
S97T002268	D	Sulfur-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 4.100	<4.10e-01	n/a	n/a	97.00	4.100	n/a
S97T002268	D	Antimony-ICP-Acid Dil.	ug/mL	103.2	<1.00e-01	1.18e+02	116.0	117.0	1.71	104.0	4.100	n/a
S97T002268	D	Selenium-ICP-Acid Dil.	ug/mL	96.20	<5.00e-02	< 2.460	<2.46e-01	n/a	n/a	95.50	2.460	n/a
S97T002268	D	Silicon-ICP-Acid Dil.	ug/mL	96.40	<1.00e-01	< 4.100	4.810	n/a	n/a	116.0	4.100	n/a
S97T002268	D	Samarium-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	20.10	26.40	23.25	27.1	109.0	2.050	n/a
S97T002268	D	Strontium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 4.100	<4.10e-01	n/a	n/a	96.40	4.100	n/a
S97T002268	D	Titanium-ICP-Acid Dil.	ug/mL	100.8	<1.00e-02	<4.10e-01	<4.10e-01	n/a	n/a	95.80	4.10e-01	n/a
S97T002268	D	Thallium-ICP-Acid Dil.	ug/mL	99.60	<1.00e-01	< 8.200	<8.20e-01	n/a	n/a	94.30	8.200	n/a
S97T002268	D	Uranium-ICP-Acid Dil.	ug/mL	102.0	<5.00e-01	< 20.50	<2.05e-01	n/a	n/a	107.5	20.50	n/a
S97T002268	D	Vanadium-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 2.050	<2.05e-01	n/a	n/a	98.80	2.050	n/a
S97T002268	D	Zinc-ICP-Acid Dil.	ug/mL	103.0	<1.00e-02	<4.10e-01	<4.10e-01	n/a	n/a	104.0	4.10e-01	n/a
S97T002268	D	Zirconium-ICP-Acid Dil.	ug/mL	100.2	<1.00e-02	<4.10e-01	<4.10e-01	n/a	n/a	96.50	4.10e-01	n/a
S97T002268		Bromide by Ion Chromatograph	ug/mL	98.30	<1.25e-01	<6.44e+02	<6.44e+02	n/a	n/a	98.81	643.9	n/a
S97T002268		Oxalate-IC-Dionex 4000/450	ug/mL	99.81	<1.05e-01	6.02e+02	<6.41e2	n/a	n/a	95.82	340.9	n/a
S97T002271		Cobalt-60 by GEA	uCi/mL	103.3	<5.29e-05	1.09e-03	1.11e-03	1.10e-03	1.82	n/a	n/a	36.4

Appendix A. Opportunistic Analyte Results
AP-107 GRABRISER: 1
SEGMENT #: 7AP-97-3

SEGMENT PORTION: Supernate

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T002269	D	Silver-ICP-Acid Dil.	ug/mL	97.60	< 1.00e-02	1.150	1.080	1.115	6.28	65.40	4.10e-01	n/a
S97T002269	D	Arsenic-ICP-Acid Dil.	ug/mL	101.00	< 1.00e-01	< 4.100	<4.10e0	n/a	n/a	110.0	4.100	n/a
S97T002269	D	Boron-ICP-Acid Dil.	ug/mL	101.4	< 5.00e-02	3.860	3.940	3.900	2.05	95.70	2.050	n/a
S97T002269	D	Barium-ICP-Acid Dil.	ug/mL	99.00	< 5.00e-02	< 2.050	<2.05e0	n/a	n/a	91.50	2.050	n/a
S97T002269	D	Beryllium-ICP-Acid Dil.	ug/mL	101.6	< 5.00e-03	<2.05e-01	<2.05e-1	n/a	n/a	96.20	2.05e-01	n/a
S97T002269	D	Bismuth-ICP-Acid Dil.	ug/mL	101.0	< 1.00e-01	< 4.100	<4.10e0	n/a	n/a	99.20	4.100	n/a
S97T002269	D	Calcium-ICP-Acid Dil.	ug/mL	98.60	< 1.00e-01	< 4.100	<4.10e0	n/a	n/a	101.0	4.100	n/a
S97T002269	D	Cadmium-ICP-Acid Dil.	ug/mL	100.6	< 5.00e-03	2.24e-01	<2.05e-1	n/a	n/a	98.40	2.05e-01	n/a
S97T002269	D	Cerium-ICP-Acid Dil.	ug/mL	101.8	< 2.00e-02	<4.100	<4.10e0	n/a	n/a	95.90	4.100	n/a
S97T002269	D	Cobalt-ICP-Acid Dil.	ug/mL	101.8	< 2.00e-02	<8.20e-01	<8.20e-1	n/a	n/a	99.70	8.20e-01	n/a
S97T002269	D	Chromium-ICP-Acid Dil.	ug/mL	97.80	< 1.00e-02	8.700	8.640	8.670	0.69	96.40	4.10e-01	n/a
S97T002269	D	Copper-ICP-Acid Dil.	ug/mL	106.6	< 1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	99.30	4.10e-01	n/a
S97T002269	D	Potassium-ICP-Acid Dil.	ug/mL	99.40	< 5.00e-01	9.21e+03	9.26e+03	9.24e+03	0.54	-1.490e2	20.50	n/a
S97T002269	D	Lanthanum-ICP-Acid Dil.	ug/mL	100.0	< 5.00e-02	< 2.050	<2.05e0	n/a	n/a	95.00	2.050	n/a
S97T002269	D	Lithium-ICP-Acid Dil.	ug/mL	100.0	< 1.00e-02	<4.100	<4.10e-1	n/a	n/a	90.30	4.10e-01	n/a
S97T002269	D	Magnesium-ICP-Acid Dil.	ug/mL	96.80	< 1.00e-01	< 4.100	<4.10e0	n/a	n/a	96.70	4.100	n/a
S97T002269	D	Manganese-ICP-Acid Dil.	ug/mL	98.40	< 1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	94.00	4.10e-01	n/a
S97T002269	D	Molybdenum-ICP-Acid Dil.	ug/mL	101.8	< 5.00e-02	< 2.050	<2.05e0	n/a	n/a	103.0	2.050	n/a
S97T002269	D	Neodymium-ICP-Acid Dil.	ug/mL	102.6	< 1.00e-01	< 4.100	<4.10e0	n/a	n/a	94.60	4.100	n/a
S97T002269	D	Nickel-ICP-Acid Dil.	ug/mL	100.4	< 2.00e-02	<8.20e-01	<8.20e-1	n/a	n/a	99.00	8.20e-01	n/a
S97T002269	D	Phosphorus-ICP-Acid Dil.	ug/mL	101.2	< 2.00e-01	68.00	78.40	73.20	14.2	152.0	8.200	n/a
S97T002269	D	Lead-ICP-Acid Dil.	ug/mL	98.00	< 1.00e-01	< 4.100	<4.10e0	n/a	n/a	100.0	4.100	n/a
S97T002269	D	Sulfur-ICP-Acid Dil.	ug/mL	103.2	< 1.00e-01	1.23e+02	123.0	123.0	0.00	109.0	4.100	n/a
S97T002269	D	Antimony-ICP-Acid Dil.	ug/mL	96.20	< 5.00e-02	< 2.460	<2.46e0	n/a	n/a	95.90	2.460	n/a
S97T002269	D	Selenium-ICP-Acid Dil.	ug/mL	96.40	< 1.00e-01	< 4.100	<4.10e0	n/a	n/a	109.0	4.100	n/a
S97T002269	D	Silicon-ICP-Acid Dil.	ug/mL	100.2	< 5.00e-02	29.30	22.55	24.4	24.4	109.0	2.050	n/a
S97T002269	D	Samarium-ICP-Acid Dil.	ug/mL	101.6	< 1.00e-01	< 4.100	<4.10e0	n/a	n/a	94.30	4.100	n/a
S97T002269	D	Strontium-ICP-Acid Dil.	ug/mL	100.8	< 1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	94.30	4.10e-01	n/a
S97T002269	D	Titanium-ICP-Acid Dil.	ug/mL	99.60	< 2.00e-01	<4.10e-01	<4.10e-1	n/a	n/a	93.70	8.200	n/a
S97T002269	D	Thallium-ICP-Acid Dil.	ug/mL	98.00	< 5.00e-01	< 8.200	<8.20e0	n/a	n/a	94.90	4.10e-01	n/a
S97T002269	D	Uranium-ICP-Acid Dil.	ug/mL	102.0	< 5.00e-01	< 20.50	<2.05e1	n/a	n/a	102.5	20.50	n/a
S97T002269	D	Vanadium-ICP-Acid Dil.	ug/mL	101.4	< 5.00e-02	< 2.050	<2.05e0	n/a	n/a	98.40	2.050	n/a
S97T002269	D	Zinc-ICP-Acid Dil.	ug/mL	103.0	< 1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	95.80	4.10e-01	n/a
S97T002269	D	Zirconium-ICP-Acid Dil.	ug/mL	100.2	< 1.00e-02	<4.10e-01	<4.10e-1	n/a	n/a	95.80	4.10e-01	n/a
S97T002269	D	Bromide by Ion Chromatograph	ug/mL	98.30	< 1.25e-01	<7.44e+02	<7.44e+2	n/a	n/a	95.76	540.9	n/a
S97T002269	D	Oxalate-IC-Bioxac 4000/450	ug/mL	99.81	< 1.05e-01	7.91e+02	<7.91e+2	n/a	n/a	95.13	540.9	n/a
S97T002272	D	Cobalt-60 by GEA	uCi/mL	103.3	< 5.29e-03	1.16e-03	<8.22e-4	n/a	n/a	n/a	n/a	35.1

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