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Tank 241-AX-101, Grab Samples, 1AX-97-1 through 1AX-97-3 Analytical Results for the Final Report

Ruth A. Esch

Waste Management of Hanford, Inc., Richland, WA 99352
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ANALYTICAL SERVICES

**TANK 241-AX-101, GRAB SAMPLES,
1AX-97-1 THROUGH 1AX-97-3
ANALYTICAL RESULTS FOR THE FINAL REPORT**

Project Coordinator: RUTH A. ESCH

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

by

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NARRATIVE

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222-S ANALYTICAL SERVICES

**TANK 241-AX-101, GRAB SAMPLES,
1AX-97-1 THROUGH 1AX-97-4
ANALYTICAL RESULTS FOR THE FINAL REPORT**

This document is the final report for tank 241-AX-101 grab samples. Four grab samples were collected from riser 5B on July 29, 1997. Analyses were performed on samples 1AX-97-1, 1AX-97-2 and 1AX-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 Table 1. No notification limits were exceeded.

All four samples contained settled solids that appeared to be large salt crystals that precipitated upon cooling to ambient temperature. Less than 25% settled solids were present in the first three samples, therefore only the supernate was subsampled and analyzed. Sample 1AX-97-4 contained approximately 25.3% settled solids. Compatibility analyses were not performed on this sample.

Appearance and Sample Handling

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

Table 2 provides the appearance information. All four samples contained settled solids that appeared to be large salt crystals that precipitated upon cooling to ambient temperature. The settled solids in samples 1AX-97-1, 1AX-97-2 and 1AX-97-3 were less than 25% by volume. Therefore, for these three samples, two 15-mL subsamples were pipetted from the surface of the liquid and submitted to the laboratory for analysis. In addition, a portion of the liquid was taken from each of these three samples to perform an acidified ammonia analysis. No analysis was performed on the settled solid portion of the samples.

Sample 1AX-97-4 was reserved for the Process Chemistry group to perform boil down and dissolution testing in accordance with *Letter of Instruction for Non-Routine Analysis of Single-Shell Tank 241-AX-101 Grab Samples* (Field, 1997) (Correspondence 1). However, prior to the analysis, the sample was inadvertently archived and the solid portion was not represented in the archive. More details are available in *Loss of Settled Solids from Tank 241-AX-101 Grab Samples* (Esch, 1997) (Correspondence 2).

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Table 2: Appearance Information for Tank 241-AX-101 Grab Samples

Sample Number	Date Sampled	Date Received	Sampling Depth (in.) ^a	% Settled Solids	Sample Description
1AX-97-1	7/29/97	7/29/97	456	9.6	Clear yellow liquid; no organic layer; solids consisted of gray/white salt crystals.
1AX-97-2	7/29/97	7/29/97	486	10.8	Clear yellow liquid; no organic layer; solids consisted of gray/white salt crystals.
1AX-97-3	7/29/97	7/29/97	570	18.1	Clear yellow liquid; no organic layer; solids consisted of white salt crystals.
1AX-97-4	7/29/97	7/29/97	684	25.3	Clear yellow liquid; no organic layer; solids consisted of white salt crystals.

* Sample depth is measured from the top of the PVC adapter to the top of the sample bottle. The PVC adapter is 30 inches from top to pit cover; data obtained from Process Memo # 2E97-047, work package # ES-97-00094/0.

Analytical Results Summary

The data summary report (Table 1) presents the analytical results that comply with the applicable DQO. Results presented in this table supersede those presented in the 60-day Interim Report (Esch, 1997a). The aliquot class (A#) column indicates the type of preparation performed prior to analysis. A "D" indicates that the analysis was performed on an acid dilution and a blank indicates a direct sample analysis.

Some multi element methods provide results for analytes that are not required by the TSAP or the DQO. These analytes are considered "opportunistic" and the results are provided in Appendix A. There are no customer defined QC parameters for these analytes and the results are not discussed in this document.

Compatibility Program Concerns

DSC - Differential Scanning Calorimetry - Energetics Decision Rule

The DSC analyses were performed in duplicate on direct sample aliquots. The average of the TGA result for each subsample was used in the dry weight correction for that subsample. None of the results exceeded the notification limit of 480 Joules/g stated in the DQO.

The standard recoveries for this analysis were within the required limits. The relative percent differences (RPDs) between sample and duplicate results for two of the three subsamples

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submitted were within the required limits. Sample 1AX-97-2 (S97T001897) had an RPD = 43.7% which was attributed to sample inhomogeneity, possibly due to the precipitated salts. Since the observed exotherm was well below the notification limit, no reanalysis was requested.

For waste compatibility energetics decision concerns for safe waste transfers, the ratio of exothermic energy to endotherm energy must be less than one (1). This requirement was satisfied for all samples. The actual exotherm and endotherm results and the calculated ratios are presented in Table 3.

Table 3: Additional DSC Results for Tank 241-AX-101

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S97T001896						
1AX-97-1	Samp	38.31	247.8	1013.7	120.4	0.04
	Dup	38.65	248.0	1164.0	123.9	0.03
S97T001897						
1AX-97-2	Samp	21.95	253.4	1202.5	132.1	0.02
	Dup	34.22 †	249.7	979.1	123.8	0.03
S97T001898						
1AX-97-3	Samp	0.0	n/a	1219.3	116.0	0.00
	Dup	0.0	n/a	1355.2	134.1	0.00

Energy Ratio = Exothermic Energy /Endothermic Energy

* - This ratio must be < 1 safe waste transfers

† - Sum of two exotherms: 4.42 J/g @ 200.53° C, 29.8 J/g @ 249.74° C

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

The analyses were performed on direct sample aliquots. The standard recoveries, spike recoveries and RPDs for nitrate (NO₃⁻) and nitrite (NO₂⁻) were within the required limits.

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. The spreadsheet compares the results to the concentration ranges specified in the waste compatibility DQO. A "YES" will appear in the appropriate space for the condition that is met. Only one of three sets of conditions must be met for OH⁻ and NO₂⁻ based on the range that the NO₃⁻ concentration falls in. If "NO" appears in the space under a condition, that condition is not met and a notification is required. No notifications were required for corrosion concerns.

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

^{239/240}Pu concentration is used to evaluate criticality safety for waste transfers. The analysis was performed on direct sample aliquots. The standard recovery, spike recovery and RPDs for this analysis were all within the required limits.

The results were below both the immediate notification limit of 61.5 $\mu\text{Ci/mL}$ and the criticality prevention concern level of 0.001g/L (6.2e-02 $\mu\text{Ci/mL}$) stated in the TSAP (Sasaki, 1997) and the Compatibility DQO (Mulkey and Miller, 1997).

Total Uranium (U) - Criticality Decision Rule

Total U was analyzed to provide information for evaluation of criticality safety for waste transfers. The analysis was performed on direct sample aliquots. The results ranged from 0.809 to 0.965 $\mu\text{g/mL}$ total U. The standard recovery, spike recovery and RPDs for this analysis were within the required limits.

Inorganic Analyses

TGA - Thermogravimetric Analysis

TGA analyses were performed on direct sample aliquots. Standard recoveries and RPDs were within the required limits. The percent moisture of the samples was reported as the sum of all weight loss steps that began below 200°C. The weight loss occurred in more than one step for all three samples. More information may be obtained by examining the thermograms. The results ranged from 46.78 to 48.62 % moisture.

pH

The pH analysis was performed on direct sample aliquots. The results ranged from 12.27 to 13.37. There were no precision or accuracy requirements for this analysis.

Specific Gravity (Sp.G.)

The specific gravity (Sp.G.) analysis was performed on direct sample aliquots. The results ranged from 1.343 to 1.455 with a weighted mean of 1.408. The RPDs were within the required limits.

NH₃ - Ammonia

The NH₃ analysis was performed both on a direct aliquot and on an acid dilution of the samples in accordance with the memorandum titled *Scope Increase for all Liquid Samples Taken from Single-Shell or Receiver Tanks* (Hall, 1997) (Correspondence 3). The standard recoveries and spike recoveries were within the required limits. The RPDs were within the required limits with the exception of sample 1AX-97-2 (S97T001969) acidified portion noted below.

The acidification was performed to preserve the ammonia in solution as the ammonium ion. A calculation was performed to determine the theoretical amount of H⁺ that would need to be added (in the form of hydrochloric acid (HCl)) to reduce the pH to approximately 2. The calculation is based on the concentrations of aluminum, hydroxide, carbonate, nitrite and phosphate in the tank.

On the first acid dilution (sample numbers S97T001902, S97T001903 and S97T001904) concentrated HCl was used in an attempt to minimize dilution of the sample. The results were all reported as less than the detection limit (22.80 - 23.80 µg/mL). Since the results of the non-acidified samples indicated that there was at least 1000 µg/mL NH₃ present in the sample, it was believed that the concentrated acid may have caused a loss of ammonia during the acidification.

Another acid dilution of the original samples was prepared using 1M HCl resulting in a 10-fold greater dilution. The results of this analysis (sample numbers S97T001968, S97T001969 and S97T001970) were comparable to the non-acidified sample results. Sample S97T001969 had a high RPD (36.8%). No rerun was performed because the sample result was comparable to that of the other two samples and it was believed that a rerun would not significantly change nor improve the results.

IC - Ion Chromatography

The ion chromatography (IC) analysis was performed on direct sample aliquots. 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.

The results for the NO₃⁻ and NO₂⁻ were discussed previously with respect to the corrosion rules, the standard recovery, spike recovery and RPDs for the remaining required analytes were all within the required limits with the exception of a low spike recovery for F⁻ as discussed below.

Sample 1AX-97-1 (S97T001896) was analyzed two times due to a question about the magnitude of the results compared to those of samples 1AX-97-2 and 1AX-97-3. The original results that were presented in the 60-day Interim Report (Esch, 1997a) were rejected and the sample was reanalyzed with a greater dilution. The rerun results for Cl⁻, NO₂⁻ and NO₃⁻, presented in Table 1,

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are more comparable to those of the other two samples. The results for PO_4^{3-} and SO_4^{2-} were more "scattered" possibly because they were less than five times the detection limit. Both sets of raw data are included in this document. The results for the first analysis of sample S97T001896 are marked "Data Not Used".

It is believed that the original Cl^- , NO_2^- and NO_3^- results for S97T001896 may have been biased low because the analyte concentrations were near the upper limit of the calibration curve. A larger dilution of the sample generates an instrument response in a more linear range of the calibration curve resulting in more accurate concentrations. Further evidence for this theory may be obtained by examining the spike recovery information. For the first analysis, the spike recoveries for Cl^- , NO_2^- and NO_3^- were in the range of 26.09% to 69.37% recovery. Low recoveries are not unusual when the sample concentration is very high with respect to the amount of spike standard added. With the greater sample dilution in the second analysis, the spike recoveries for the three analytes were in the range of 86.19% to 98.62% recovery. It is believed, therefore, that the rerun results presented in Table 1 are acceptable and more accurate than those previously reported.

The spike recovery for F^- for the first analysis was 95.59%. For the rerun analysis the spike recovery was 64.07%. The chromatogram shows that there are two unidentified peaks in the region of the F^- . These interferences may be the cause for the spike failure on the second analysis. No further reruns were requested.

ICP - Inductively Coupled Plasma Spectrophotometry

The ICP analysis was performed on acid diluted sample aliquots. Aluminum (Al), iron (Fe) and sodium (Na) were the only required analytes. The results for all other analytes are considered "opportunistic" and are provided in Appendix A. The standard recoveries, spike recoveries and RPDs met the requested criteria, with the exceptions noted below.

The Al and Na results were more than four times the concentration of the spike added resulting in spike recoveries outside of the 75% - 125% recovery range required. 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 this analyte was 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 results obtained from this analysis were within $\pm 10\%$ of the undiluted sample result and, therefore, are acceptable. Table 5 presents the results of the original undiluted sample, the serial dilution and the percent difference between the two results.

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Table 5: ICP Serial Dilution Results for Tank 241-AX-101

Sample ID	Analyte	Undiluted Sample Result ($\mu\text{g/mL}$)	Serial Dilution Result ($\mu\text{g/mL}$)	Percent Difference (%)
S97T001896				
1AX-97-1	Al	4.49e+04	4.38e+04	2.5
	Na	2.53e+05	2.59e+05	2.3

$$\text{Percent Difference} = \left[\frac{|\text{Sample} - \text{Serial Dilution}|}{\text{Sample}} \right] \times 100$$

TIC/TOC - Total Inorganic/Organic Carbon

The TIC analysis was performed on direct sample aliquots using the persulfate oxidation method. The TOC by persulfate results are considered “opportunistic” and are provided in Appendix A. The standard recovery, spike recovery and RPD criteria were met for this analysis.

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.

TOC - Total Organic Carbon

The TOC analysis was performed on direct sample aliquots using the furnace oxidation method. The standard recovery, spike recovery and RPD criteria were met for this analysis. The results did not exceed the notification limit stated in the TSAP (Sasaki, 1997).

Radionuclide Analyses

GEA - Gamma Energy Analysis

GEA analysis was performed for ^{137}Cs on direct sample aliquots. The ^{60}Co results are considered “opportunistic” and are provided in Appendix A. The standard recoveries and RPDs for ^{137}Cs were within the required limits.

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An average ^{137}Cs result of 770 $\mu\text{Ci/mL}$ was reported for sample 1AX-97-3 in the 60-day Interim Report (Esch, 1997a). Since this result was nearly a factor of two higher than those for the first two samples, a reanalysis was requested. The second analysis had a very high RPD and one additional analysis was requested. The final results, reported in Table 1, correlate more closely with those of the first two samples at approximately 400 $\mu\text{Ci/mL}$. The subsample for 1AX-97-3 contained settled salts and it was believed that they may have affected the analysis. No further analyses were requested.

^{90}Sr - Strontium-90

^{90}Sr analysis was performed on direct sample aliquots. The standard recoveries and RPDs were within the required limits. ^{90}Sr was detected in the method blank for this analysis. However, the level of contamination was below the reported detection limit and insignificant with respect to the sample results and does not affect the useability of these results. No reruns were requested.

^{241}Am - Americium-241

^{241}Am analysis was performed on direct sample aliquots. The standard recoveries, spike recoveries and RPDs were within the required limits. All of the results were reported as less than the detection limit.

Procedures

Table 6 lists the analytical procedures used for performing the analyses.

Table 6: Analytical Procedures

Analysis	Preparation Procedure	Analysis Procedure
Inorganic Analyses		
DSC	Direct Analysis	LA-514-114 Rev. D-1
TGA	Direct Analysis	LA-514-114 Rev. D-1
Sp.G.	Direct Analysis	LA-510-112 Rev. D-1
pH	Direct Analysis	LA-212-106 Rev. B-0
OH ⁻	Direct Analysis	LA-211-102 Rev. C-0
NH ₃	Direct and LA-505-158 Rev. D-0 +	LA-631-001 Rev. C-0
IC	Direct Analysis	LA-533-105 Rev. D-1

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Table 6: Analytical Procedures

Analysis	Preparation Procedure	Analysis Procedure
ICP	Acid Dilution	LA-505-161 Rev. C-2
TIC/TOC	Direct Analysis	LA-342-100 Rev. E-0
TOC: Furnace Ox.	Direct Analysis	LA-344-105 Rev. E-0
Settled % Solids	Direct Analysis	LA-519-151 Rev. F-0
Total U	Direct Analysis	LA-925-009 Rev. B-0
Radionuclide Analyses		
GEA	Direct Analysis	LA-548-121 Rev. F-0
⁹⁰ Sr	Direct Analysis	LA-220-101 Rev. E-2
²⁴¹ Am	Direct Analysis	LA-953-104 Rev. B-0
^{239/240} Pu	Direct Analysis	LA-953-104 Rev. B-0

Notes: + Acid dilution procedure

Abbreviations:

DSC = differential scanning calorimetry
TGA = thermogravimetric analysis
Sp.G. = specific gravity
OH = hydroxide
IC = ion chromatography
ICP = inductively coupled plasma

TOC = total organic carbon
TIC = total inorganic carbon
GEA = gamma energy analysis
⁹⁰Sr = strontium 90
²⁴¹Am = americium 241
^{239/240}Pu = plutonium 239/240

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ATTACHMENT 1

AX-101 SAMPLE BREAKDOWN

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AX-101 Grab Samples

Attachment 1

1AX-97-1
S97T001824

456 in.

Appearance
Vol% Settled Solids = 9.6%

1AX-97-2
S97T001825

486 in.

Appearance
Vol% Settled Solids = 10.8%

AX-101 Grab Samples

Attachment 1

1AX-97-3
S97T001826

570 in.

Appearance
Vol% Settled Solids = 18.1%

S97T001898 S97T001901 S97T001904 S97T001970 S97T001907

DSC
TGA
Sp.G.
OH
IC: Anions
ICP: Al, Fe, Na
TOC: Furnace Ox.
TIC/TOC: Persulfate

NH3
Sr-90
Am-241
Total U
Pu-239/240
GEA: Cs-137

NH3
Acid Dilution

NH3
Acid Dilution

ARCHIVE

1AX-97-4
S97T001827

684 in.

Appearance
Vol% Settled Solids = 25.3%

No sample is available for
this analysis.
Solids were inadvertently
disposed of during archiving
of AX-101 Grab Samples.

HNF-SD-WM-DP-268, REV. 0

SAMPLE DATA SUMMARY

HNF-SD-WM-DP-268, REV. 0

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Table 1: Data Summary Report
AX-101 GRAB

RISER: 5B
SEGMENT #: 1AX-97-1

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001824		Volume % Settled Solids	%	n/a	n/a	9.600	n/a	n/a	n/a	n/a	1.00e-01	n/a
S97T001896		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	74.19	74.85	74.52	0.89	n/a	n/a	n/a
S97T001896		DSC Exotherm on Perkin Elmer	Joules/g	99.40	n/a	38.31	38.65	38.48	0.88	n/a	n/a	n/a
S97T001896		OH- by Pot. Titration	ug/mL	95.78	n/a	3.63e+04	3.52e+04	3.58e+04	3.08	n/a	2.50e+03	n/a
S97T001896		pH Direct	pH	99.12	n/a	13.35	13.37	13.36	0.15	n/a	1.00e-02	n/a
S97T001896		Specific Gravity	Sp.G.	97.96	n/a	1.343	1.407	1.375	4.65	n/a	1.00e-02	n/a
S97T001896		% Water by TGA on Perkin Elmer	%	100.2	n/a	48.09	48.62	48.36	1.10	n/a	n/a	n/a
S97T001896		Tot. Organic Carbon by Coul.	ug/mL	100.7	1.600	3.64e+03	3.53e+03	3.58e+03	3.07	100.0	55.00	n/a
S97T001896		TIC by Acid/Coulometry	ug/mL	101.5	1.100	2.84e+03	3.03e+03	2.94e+03	6.47	109.0	5.000	n/a
S97T001896	D	Aluminium-ICP-Acid Dil.	ug/mL	97.00	<5.00e-02	4.49e+04	4.11e+04	4.30e+04	8.84	-3.220e2	30.10	n/a
S97T001896	D	Iron-ICP-Acid Dil.	ug/mL	92.00	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S97T001896	D	Sodium-ICP-Acid Dil.	ug/mL	101.4	<1.00e-01	2.53e+05	2.38e+05	2.46e+05	6.11	-3.670e3	60.10	n/a
S97T001896		Fluoride-IC-Dionex 4000/4500	ug/mL	100.0	<1.20e-02	< 49.69	<4.97e1	n/a	n/a	n/a	49.69	n/a
S97T001896		Chloride-IC-Dionex 4000/4500	ug/mL	100.5	<1.70e-02	7.66e+03	7.66e+03	7.66e+03	0.00	98.62	70.40	n/a
S97T001896		Nitrite-IC - Dionex 4000/4500	ug/mL	95.76	<1.08e-01	1.54e+05	1.56e+05	1.55e+05	1.29	91.88	447.2	n/a
S97T001896		Nitrate by IC-Dionex 4000/4500	ug/mL	94.78	<1.39e-01	1.86e+05	1.86e+05	1.86e+05	0.00	86.20	575.6	n/a
S97T001896		Phosphate-IC-Dionex 4000/4500	ug/mL	97.80	<1.20e-01	6.58e+03	6.61e+03	6.59e+03	0.45	96.51	496.9	n/a
S97T001896		Sulfate by IC-Dionex 4000/4500	ug/mL	95.41	<1.38e-01	2.92e+03	3.25e+03	3.08e+03	10.7	96.36	571.5	n/a
S97T001899		Ammonia by ISE-Std Additions	ug/mL	102.5	<1.000	1.46e+03	1.55e+03	1.50e+03	5.98	81.09	1.000	n/a
S97T001899		Uranium by Phosphorescence	ug/mL	105.4	2.28e-01	9.65e-01	9.41e-01	9.53e-01	2.52	101.6	4.10e-02	1.48E+00
S97T001899		Strontium-89/90 High Level	uCi/mL	102.5	5.24e-05	3.04e-01	3.17e-01	3.10e-01	4.19	n/a	1.01e-04	7.37E-01
S97T001899		Pu-239/240 by TRU-SPEC Resin	uCi/mL	114.7	<1.83e-04	<1.66e-04	<1.80E-4	n/a	n/a	118.3	1.66e-04	1.31E+01
S97T001899		Cesium-137 by GEA	uCi/mL	103.3	<3.91e-02	3.78e+02	391.0	384.5	3.38	n/a	n/a	0.200
S97T001899		Am-241 by Extraction	uCi/mL	101.0	<3.39e-04	<3.36e-04	<3.15E-4	n/a	n/a	120.4	3.36e-04	1.00E+02
S97T001902	D	Ammonia by ISE-Std Additions	ug/mL	102.7	<23.20	< 23.20	<2.32e1	n/a	n/a	113.9	23.20	n/a
S97T001968	D	Ammonia by ISE-Std Additions	ug/mL	100.2	<2.00e-01	1.67e+03	2.02e+03	1.84e+03	19.0	119.9	338.0	n/a

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Table 1: Data Summary Report
AX-101 GRAB

RISER: 5B
SEGMENT #: 1AX-97-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S97T001825			Volume % Settled Solids	%	n/a	n/a	10.80	n/a	n/a	n/a	n/a	1.00e-01	n/a	n/a
S97T001897			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	41.98	65.44	53.71	43.7	n/a	n/a	n/a	n/a
S97T001897			DSC Exotherm on Perkin Elmer	Joules/g	99.40	n/a	21.95	34.22	28.09	43.7	n/a	n/a	n/a	n/a
S97T001897			OH- by Pot. Titration	ug/mL	95.78	n/a	4.09e+04	3.67e+04	3.88e+04	10.8	n/a	2.50e+03	n/a	n/a
S97T001897			pH Direct	pH	99.12	n/a	12.27	12.28	12.27	0.08	n/a	1.00e-02	n/a	n/a
S97T001897			Specific Gravity	Sp.G.	97.96	n/a	1.411	1.390	1.401	1.50	n/a	1.00e-02	n/a	n/a
S97T001897			% Water by TGA on Perkin Elmer	%	100.2	n/a	47.62	47.80	47.71	0.38	n/a	n/a	n/a	n/a
S97T001897			Tot. Organic Carbon by Coul.	ug/mL	100.7	1.600	3.91e+03	3.87e+03	3.89e+03	1.03	n/a	55.00	n/a	n/a
S97T001897			TIC by Acid/Coulometry	ug/mL	101.5	1.100	2.34e+03	2.40e+03	2.37e+03	2.53	n/a	5.000	n/a	n/a
S97T001897	D		Aluminium-ICP-Acid Dil.	ug/mL	97.00	<5.00e-02	4.18e+04	4.54e+04	4.36e+04	8.26	n/a	30.10	n/a	n/a
S97T001897	D		Iron-ICP-Acid Dil.	ug/mL	92.00	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a	n/a
S97T001897	D		Sodium-ICP-Acid Dil.	ug/mL	101.4	<1.00e-01	2.39e+05	2.51e+05	2.45e+05	4.90	n/a	60.10	n/a	n/a
S97T001897			Fluoride-IC-Dionex 4000/4500	ug/mL	104.9	<1.20e-02	< 61.81	<6.18e1	n/a	n/a	n/a	61.81	n/a	n/a
S97T001897			Chloride-IC-Dionex 4000/4500	ug/mL	102.7	<1.70e-02	7.12e+03	6.96e+03	7.04e+03	2.27	n/a	87.57	n/a	n/a
S97T001897			Nitrite-IC - Dionex 4000/4500	ug/mL	100.6	<1.08e-01	1.49e+05	1.50e+05	1.50e+05	0.67	n/a	556.3	n/a	n/a
S97T001897			Nitrate by IC-Dionex 4000/4500	ug/mL	98.15	<1.39e-01	1.46e+05	1.45e+05	1.45e+05	0.69	n/a	716.0	n/a	n/a
S97T001897			Phosphate-IC-Dionex 4000/4500	ug/mL	105.3	<1.20e-01	2.80e+03	2.89e+03	2.85e+03	3.16	n/a	618.1	n/a	n/a
S97T001897			Sulfate by IC-Dionex 4000/4500	ug/mL	100.0	<1.38e-01	8.14e+02	828.0	820.9	1.71	n/a	710.8	n/a	n/a
S97T001900			Ammonia by ISE-Std Additions	ug/mL	102.5	<1.000	1.73e+03	1.81e+03	1.77e+03	4.52	n/a	1.000	n/a	n/a
S97T001900			Uranium by Phosphorescence	ug/mL	105.4	2.28e-01	9.00e-01	8.20e-01	8.60e-01	9.30	n/a	4.10e-02	1.44e+00	n/a
S97T001900			Strontium-89/90 High Level	uCi/mL	102.5	5.24e-05	2.63e-01	2.16e-01	2.39e-01	19.6	n/a	9.93e-05	7.87e-01	n/a
S97T001900			Pu-239/240 by TRU-SPEC Resin	uCi/mL	114.7	<1.83e-04	<2.58e-04	<2.11E-4	n/a	n/a	n/a	2.58e-04	1.00E+02	n/a
S97T001900			Cesium-137 by GEA	uCi/mL	103.3	<3.91e-02	3.73e+02	367.0	370.0	1.62	n/a	n/a	0.210	n/a
S97T001900			Am-241 by Extraction	uCi/mL	101.0	<3.39e-04	<2.51e-04	<3.17E-4	n/a	n/a	n/a	2.51e-04	8.90E+00	n/a
S97T001903	D		Ammonia by ISE-Std Additions	ug/mL	102.7	<23.20	< 22.80	<2.28e1	n/a	n/a	n/a	22.80	n/a	n/a
S97T001969	D		Ammonia by ISE-Std Additions	ug/mL	100.2	<2.00e-01	1.33e+03	917.0	1.12e+03	36.8	n/a	222.0	n/a	n/a

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Table 1: Data Summary Report
AX-101 GRAB

RISER: 5B
SEGMENT #: 1AX-97-3

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001826		Volume % Settled Solids	%	n/a	n/a	18.10	n/a	n/a	n/a	n/a	1.00e-01	n/a
S97T001898		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001898		DSC Exotherm on Perkin Elmer	Joules/g	101.8	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001898		OH- by Pot. Titration	ug/mL	95.78	n/a	4.22e+04	4.24e+04	4.23e+04	0.47	n/a	2.50e+03	n/a
S97T001898		pH Direct	pH	99.12	n/a	13.16	13.17	13.16	0.08	n/a	1.00e-02	n/a
S97T001898		Specific Gravity	Sp.G.	97.96	n/a	1.399	1.455	1.427	3.92	n/a	1.00e-02	n/a
S97T001898		% Water by TGA on Perkin Elmer	%	100.3	n/a	46.78	46.90	46.84	0.26	n/a	n/a	n/a
S97T001898		Tot. Organic Carbon by Coul.	ug/mL	100.7	1.600	4.19e+03	4.22e+03	4.18e+03	1.67	n/a	55.00	n/a
S97T001898		TIC by Acid/Coulometry	ug/mL	101.5	1.100	1.99e+03	1.78e+03	1.86e+03	9.12	n/a	5.000	n/a
S97T001898	D	Aluminium-ICP-Acid Dil.	ug/mL	97.00	<5.00e-02	4.73e+04	4.92e+04	4.82e+04	3.94	n/a	30.10	n/a
S97T001898	D	Iron-ICP-Acid Dil.	ug/mL	92.00	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S97T001898	D	Sodium-ICP-Acid Dil.	ug/mL	101.4	<1.00e-01	2.49e+05	2.53e+05	2.51e+05	1.59	n/a	60.10	n/a
S97T001898		Fluoride-IC-Dionex 4000/4500	ug/mL	104.9	<1.20e-02	< 61.81	<6.18e1	n/a	n/a	n/a	61.81	n/a
S97T001898		Chloride-IC-Dionex 4000/4500	ug/mL	102.7	<1.70e-02	7.89e+03	7.90e+03	7.89e+03	0.13	n/a	87.57	n/a
S97T001898		Nitrite-IC - Dionex 4000/4500	ug/mL	100.6	<1.08e-01	1.62e+05	1.63e+05	1.63e+05	0.62	n/a	556.3	n/a
S97T001898		Nitrate by IC-Dionex 4000/4500	ug/mL	98.15	<1.39e-01	1.40e+05	1.40e+05	1.40e+05	0.00	n/a	716.0	n/a
S97T001898		Phosphate-IC-Dionex 4000/4500	ug/mL	105.3	<1.20e-01	3.05e+03	3.04e+03	3.05e+03	0.33	n/a	618.1	n/a
S97T001898		Sulfate by IC-Dionex 4000/4500	ug/mL	100.0	<1.38e-01	<7.11e+02	<7.11e2	n/a	n/a	n/a	710.8	n/a
S97T001901		Ammonia by ISE-Std Additions	ug/mL	102.5	<1.000	1.79e+03	1.97e+03	1.88e+03	9.57	n/a	1.000	n/a
S97T001901		Uranium by Phosphorescence	ug/mL	105.4	2.28e-01	8.09e-01	8.31e-01	8.20e-01	2.68	n/a	4.10e-02	1.80E+00
S97T001901		Strontium-89/90 High Level	uCi/mL	102.5	5.24e-05	2.28e-01	2.61e-01	2.44e-01	13.5	n/a	9.87e-05	8.42E-01
S97T001901		Pu-239/240 by TRU-SPEC Resin	uCi/mL	114.7	<1.83e-04	<4.06e-04	<4.16E-4	n/a	n/a	n/a	4.06e-04	1.00E+02
S97T001901		Cesium-137 by GEA	uCi/mL	103.6	<2.79e-02	4.29e+02	430.0	429.5	0.23	n/a	n/a	0.190
S97T001901		Am-241 by Extraction	uCi/mL	101.0	<3.39e-04	<4.88e-04	<6.66E-4	n/a	n/a	n/a	4.88e-04	1.00E+02
S97T001904	D	Ammonia by ISE-Std Additions	ug/mL	102.7	<23.20	< 23.80	<2.38e1	n/a	n/a	n/a	23.80	n/a
S97T001970	D	Ammonia by ISE-Std Additions	ug/mL	100.2	<2.00e-01	1.50e+03	1.36e+03	1.43e+03	9.79	n/a	243.0	n/a

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Table 1: Data Summary Report
AX-101 GRAB

RISER: 58
SEGMENT #: 1AX-97-4

SEGMENT PORTION: Supernate

Sample#	RIA#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001827		Volume % Settled Solids	%	n/a	n/a	25.30	n/a	n/a	n/a	n/a	1.00e-01	n/a

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TABLE 4
WASTE COMPATIBILITY CORROSION RULES

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Table 4: Waste Compatibility Corrosion Rules for 241-AX-101

Sample ID	Analyte	Result (ug/mL)	Result (M)	I ⁻ [NO ₃] ₂ ...	I ⁻ [OH] ₂ ...	I ⁻ [NO ₃] ₂ ...	I ⁻ [OH] + [NO ₃] ₂ ...
				<= 1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= [NO ₂] <= 5.5 M	[NO ₃]/([OH] + [NO ₂]) < 2.5?
S97T001896 Sample 1AX-97-1	NO ₃	1.86E+05	3.000				
	OH	3.63E+04	2.135				
	NO ₂	1.54E+05	3.348	1.0 M <= [NO ₃] <= 3.0 M?	0.1 M * [NO ₃] <= [OH] < 10 M?		>= 0.4 * [NO ₃]?
				YES	YES		YES
				3.0 M < [NO ₃] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	I ⁻ [NO ₃] ₂ ...	I ⁻ [OH] ₂ ...	I ⁻ [NO ₃] ₂ ...	I ⁻ [OH] + [NO ₃] ₂ ...
				<= 1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= [NO ₂] <= 5.5 M	[NO ₃]/([OH] + [NO ₂]) < 2.5?
S97T001896 Duplicate 1AX-97-1	NO ₃	1.86E+05	3.000				
	OH	3.52E+04	2.071				
	NO ₂	1.56E+05	3.391	1.0 M <= [NO ₃] <= 3.0 M?	0.1 M * [NO ₃] <= [OH] < 10 M?		>= 0.4 * [NO ₃]?
				YES	YES		YES
				3.0 M < [NO ₃] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Table 4: Waste Compatibility Corrosion Rules for 241-AX-101

Sample ID	Analyte	Result (ug/mL)	Result (M)	I ₁ [NO ₃] ₁ ...	I ₁ [OH] ₁ ...	I ₂ [NO ₂] ₁ ...	I ₂ [OH] ₁ + [NO ₃] ₁ ...
				<= 1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= [NO ₂] <= 5.5 M	[NO ₂]/([OH] + [NO ₃]) < 2.5?
S97T001897 Sample 1AX-97-2	NO ₃	1.46E+05	2.355				
	OH	4.09E+04	2.406				
	NO ₂	1.49E+05	3.239	1.0 M < [NO ₂] <= 3.0 M?	0.1 M * [NO ₃] <= [OH] < 10 M?		>= 0.4 * [NO ₃]?
				YES	YES		YES
				3.0 M < [NO ₂] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	I ₁ [NO ₃] ₁ ...	I ₁ [OH] ₁ ...	I ₂ [NO ₂] ₁ ...	I ₂ [OH] ₁ + [NO ₃] ₁ ...
				<= 1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= [NO ₂] <= 5.5 M	[NO ₂]/([OH] + [NO ₃]) < 2.5?
S97T001897 Duplicate 1AX-97-2	NO ₃	1.45E+05	2.339				
	OH	3.67E+04	2.159				
	NO ₂	1.50E+05	3.261	1.0 M < [NO ₂] <= 3.0 M?	0.1 M * [NO ₃] <= [OH] < 10 M?		>= 0.4 * [NO ₃]?
				YES	YES		YES
				3.0 M < [NO ₂] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Table 4: Waste Compatibility Corrosion Rules for 241-AX-101

Sample ID	Analyte	Result (ug/mL)	Result (M)	I ₁ [NO ₃] ₁ ...	I ₁ [OH] ₁ ...	I ₁ [NO ₂] ₁ ...	I ₁ [OH] ₁ + [NO ₂] ₁ ...
				<= 1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= [NO ₂] <= 5.5 M	[NO ₃]/([OH] + [NO ₂]) < 2.5?
S97T001898 Sample 1AX-97-3	NO ₃	1.40E+05	2.258				
	OH	4.22E+04	2.482				
	NO ₂	1.62E+05	3.522	1.0 M < [NO ₃] <= 3.0 M?	0.1 M * [NO ₃] <= [OH] < 10 M?		>= 0.4 * [NO ₃]?
				YES	YES		YES
				3.0 M < [NO ₃] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	I ₁ [NO ₃] ₁ ...	I ₁ [OH] ₁ ...	I ₁ [NO ₂] ₁ ...	I ₁ [OH] ₁ + [NO ₂] ₁ ...
				<= 1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= [NO ₂] <= 5.5 M	[NO ₃]/([OH] + [NO ₂]) < 2.5?
S97T001898 Duplicate 1AX-97-3	NO ₃	1.40E+05	2.258				
	OH	4.24E+04	2.494				
	NO ₂	1.63E+05	3.543	1.0 M < [NO ₃] <= 3.0 M?	0.1 M * [NO ₃] <= [OH] < 10 M?		>= 0.4 * [NO ₃]?
				YES	YES		YES
				3.0 M < [NO ₃] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

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CHAIN OF CUSTODY FORMS

HNH-SD-WM-DP-268, REV. 0

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CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

Shipment Number 800E-00-77 (2) Sample Number 1AX-97-1 (3) Supervisor RJ RAZNIK
 (1) Tank AX101 (5) Riser 5B (6) Cask/PIG Shipping Container Serial Number WJT-SHP-60036

Radiation Survey Data For Cask/PIG:		(7) FIELD	(31) LABORATORY	(8) Shipment Description
Over Top Dose Rate	<u>.01 Sv</u>		<u>.01 mSv</u>	A. Work Package Number <u>ES-97-00074/0</u>
Side Dose Rate	<u>.025 Sv</u>		<u>.03 mSv</u>	B. Cask/PIG Seal Number <u>2151</u>
Bottom Dose Rate	<u>.026 Sv</u>		<u>.03 mSv</u>	C. Date and Time Sample <u>7-29-97 / 1122</u>
Smearable Contamination	<u>2.534 bq</u>		<u>2.314 bq</u>	D. Expected Liquid Content <u>100%</u>
	<u>416.7 bq</u>		<u>16.7 bq</u>	E. Expected Solid Content <u>0</u>
	<u>16.7 bq</u>		<u>16.7 bq</u>	F. (Auger/On Contact (GRAB)) <u>1:2 R/h</u>
	<u>16.7 bq</u>		<u>16.7 bq</u>	G. Expected Sample Length (Auger/Volume (GRAB)) <u>125 ml</u>

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

HNF-SD-WM-DP-268, REV. 0

(32) Laboratory Comments

(3) Field Comments

30

(1) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
AX101-513	222-S	James Sackels	7-29-97	
Relinquished By (Sign and PRINT)	Relinquished By (Sign and PRINT)	Relinquished By (Sign and PRINT)	Relinquished By (Sign and PRINT)	(20) Receiver Comments
James Sackels	James Sackels	James Sackels	7-29-97	(24) Receiver Comments
Relinquished By (Sign and PRINT)	Relinquished By (Sign and PRINT)	Relinquished By (Sign and PRINT)	Relinquished By (Sign and PRINT)	(28) Receiver Comments
James Sackels	James Sackels	James Sackels	7-29-97	

(16) Seal Intact Upon Release?	(23) Seal Intact Upon Receipt?	Shipment No.	Seal No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

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

BC-6001-328 (01/96)

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

1) Shipment Number <u>200E-08-TF</u>		2) Sample Number <u>1AX-97-2</u>		3) Supervisor <u>R.J. PRAZNIK</u>	
4) Tank <u>A-X101</u>		5) Riser <u>5B</u>		6) Cask/PIG Shipping Container Serial Number <u>WT-SHP-6003A</u>	
7) FIELD		31) LABORATORY		8) Shipment Description	
Over Top Dose Rate <u>.008 Sv</u>		<u>.01 mSv</u>		A. Work Package Number <u>ES-97-00094/0</u>	
Side Dose Rate <u>.025 Sv</u>		<u>.025 mSv</u>		B. Cask/PIG Seal Number <u>2152</u>	
Bottom Dose Rate <u>.027 Sv</u>		<u>.025 mSv</u>		C. Date and Time Sample <u>7-29-97/1127</u>	
Smearable Contamination <u>5.334 ^{Alpha} bq</u>		<u>5.324 bq</u>		Removed from Tank	
<u>2.16.7 ^{Beta-Gamma} bq</u>		<u>5.16.7 bq</u>		D. Expected Liquid Content <u>100%</u>	
RCT* <u>ASV</u>		RCT* <u>[Signature]</u>		E. Expected Solid Content <u>0%</u>	
(Signature)		(Signature)		F. Dose Rate Through Drill String (Auger/On Contact (GRAB)) <u>1.5 R/h</u>	
				G. Expected Sample Length (Auger/Volume (GRAB)) <u>125 m</u>	

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

10) Field Comments		32) Laboratory Comments	
31			

1) Point of Origin <u>X101 R/5B</u>		12) Destination <u>222-S</u>		13) Sender Name (Sign and PRINT) <u>James Sickels</u>		14) Date/Time <u>7-29-97</u>		15) Sender Comments	
1) Relinquished By (Sign and PRINT) <u>James Sickels</u>		18) Received By (Sign and PRINT) <u>CEC Brad</u>		19) Date/Time <u>7-29-97</u>		20) Receiver Comments			
2) Relinquished By (Sign and PRINT) <u>CEC Brad</u>		22) Received By (Sign and PRINT) <u>Stephen Knight Jr</u>		23) Date/Time <u>7-29-97</u>		24) Receiver Comments			
3) Relinquished By (Sign and PRINT)		26) Received By (Sign and PRINT)		27) Date/Time		28) Receiver Comments			
16) Seal Intact Upon Release? ☒ Yes ☐ No		29) Seal Intact Upon Receipt? ☒ Yes ☐ No		30) Seal Data Consistent with this Record? ☒ Yes ☐ No					
Shipment No. ☒ Yes ☐ No		Seal No. ☒ Yes ☐ No		Sample No. ☒ Yes ☐ No					

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

BC-6001-326 (01/96)

Jul. 29 1997 - 2-10PM - WEC 222S LAB ROOM 2F BACKSIDE

No. 5352 P. 4/4

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

1) Shipment Number 200E-08-TF (2) Sample Number 1AX-97-3 (3) Supervisor R.J. PRAZNIK
 4) Tank AX101 (5) Riser 5B (6) Cask/PIG Shipping Container Serial Number 6003E

1) Survey Data For Cask/PIG:

(7) FIELD		(31) LABORATORY	(8) Shipment Description
Over Top Dose Rate	<u>0.01 Sv</u>	<u>0.05 mSv</u>	A. Work Package Number <u>ES-97-00094/0</u>
Side Dose Rate	<u>0.03 Sv</u>	<u>0.03 mSv</u>	B. Cask/PIG Seal Number <u>2153</u>
Bottom Dose Rate	<u>0.04 Sv</u>	<u>0.03 mSv</u>	C. Date and Time Sample <u>7/11/97 11:46</u>
Smearable Contamination	<u>4.334 Bq</u> (Alpha)	<u>4.334 Bq</u> (Alpha)	Removed from Tank
	<u>4.16.7 Bq</u> (Beta-Gamma)	<u>4.16.7 Bq</u> (Beta-Gamma)	D. Expected Liquid Content <u>100%</u>
RCT*	<u>RJA</u> (Signature)	RCT* <u>Shull</u> (Signature)	E. Expected Solid Content <u>0%</u>
			F. Dose Rate Through Drill String (Auger)/On Contact (GRAB) <u>800 mR/h</u>
			G. Expected Sample Length (Auger)/Volume (GRAB) <u>125 ml</u>

2) INFORMATION (include statement of laboratory tests to be performed.)

3) Field Comments

Bottle broke, NO NUMBER ETCHED
ON BOTTLE

4) Laboratory Comments

(1) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
AX101 R-5B	222-S	James Sickels	7-29-97	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
James Sickels		Jimmy Wallace/Ginny Wallace	7-29-97	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
Jimmy Wallace/Ginny Wallace		Jim Knight	7-29-97	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Date Consistent with this Record?
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

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

BC-6001-326 (01/96)

July 29, 1997 2:08PM WHC 222S LAB ROOM 2F BACKSIDE

No. 5352 P. 2/4

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

Shipment Number 2008-08-TF (2) Sample Number 1AX-97-4 (3) Supervisor R.J. Ruznik
 Tank AX101 (5) Riser 5B (6) Cask/Pig Shipping Container Serial Number 6030

July 29, 1997 2:08PM WHC 222S LAB ROOM 2F BACKSIDE No. 5352 P. 1/4

Identification Survey Data For Cask/Pig:

(7) FIELD	(31) LABORATORY	(8) Shipment Description
Over Top Dose Rate <u>.01 SV</u>	<u>.01 mSV</u>	A. Work Package Number <u>E5-97-00094/0</u>
Side Dose Rate <u>.024 SV</u>	<u>.02 mSV</u>	B. Cask/Pig Seal Number <u>2154</u>
Bottom Dose Rate <u>.034 SV</u>	<u>.035 mSV</u>	C. Date and Time Sample <u>7-29-97/1137</u>
Measurable Contamination <u>2.334 kg</u>	<u>< .334 kg</u> (Alpha)	Removed from Tank <u>08</u>
<u>< 16.7 kg</u> (Beta-Gamma)	<u>< 16.7 kg</u> (Beta-Gamma)	D. Expected Liquid Content <u>1.2 R</u>
RCT* <u>None</u> (Signature)	RCT* <u>[Signature]</u> (Signature)	E. Expected Solid Content <u>125 ml</u>
		F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)
		G. Expected Sample Length (Auger)/ Volume (GRAB)

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

33

(9) Field Comments

(32) Laboratory Comments

HNF-SD-WM-DP-268, REV. 0

(1) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
AX101 R150	222-S	James Sicks	7-29-97	
Relinquished By (Sign and PRINT)		Ginny Wallace	7-29-97	(20) Receiver Comments
Relinquished By (Sign and PRINT)		James Sicks	7-29-97	(24) Receiver Comments
Relinquished By (Sign and PRINT)		Ginny Wallace	7-29-97	(28) Receiver Comments
Relinquished By (Sign and PRINT)		James Sicks	7-29-97	

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

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

(30) Seal Date Consistent with this Record? ☒ Yes ☐ No

Shipment No. ☒ Yes ☐ No

Seal No. ☒ Yes ☐ No

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

BC-6001-326 (01/98)

HNF-SD-WM-DP-268, REV. 0

PHOTOGRAPHS

HNH-SD-WM-DP-268, REV. 0

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8/7/97

Grab

AX-97-3 - AX-97-4

101-43
AX-97-3
10/17/97

HNF-SD-WM-DP-268, REV. 0

CORRESPONDENCE 1
WMH-9758780
LETTER OF INSTRUCTION

HNH-SD-WM-DP-268, REV. 0

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INTEROFFICE MEMO

LOCKHEED MARTIN

From: Data Assessment and Interpretation 74620-97-215
 Phone: 376-3753 R2-12
 Date: September 5, 1997
 Subject: LETTER OF INSTRUCTION FOR NON-ROUTINE ANALYSIS OF SINGLE-SHELL
 TANK 241-AX-101 GRAB SAMPLES

To: J. R. Jewett T6-07

cc: M. A. Beck T6-07
 R. A. Esch T6-06
 K. M. Hall R2-12
 J. W. Hunt R2-12
 N. W. Kirch R2-11
 J. G. Kristofzski R2-12
 D. A. Reynolds R2-11
 D. J. Saueressig S8-05
 D. T. Vladimiroff S8-05
 JGF File/LB

The attached letter of instruction (LOI) transmits a request for non-routine analyses for a grab sample taken from tank 241-AX-101. These analyses are being requested by the Compatibility Program due to the formation of solids in the 241-AX-101 grab samples after receipt by the 222-S Laboratory. Solids formation on cooling or after some time in liquid samples could indicate a problem for Tank Farms operations with the material due to line plugging. The tests described below provide data to ascertain whether or not there is a problem and its likely extent.

If you have any questions on this LOI, please contact Ms. K. M. Hall on 376-5029 or Mr. J. G. Field on 376-3753.

 J. G. Field
 Tank Coordinator

Letter of Instruction for Additional Analyses on
Sample 1AX-97-4 from Tank 241-AX-101

1. Subject

This letter of instruction (LOI) discusses non-routine analyses to be performed on grab sample 1AX-97-4 from tank 241-AX-101.

2. References

- [1] M. A. Beck, 1995, *Determination of Boiling Pressures and Temperatures as a Function of % WVR (Boildown)*, LT-519-183, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- [2] M. A. Beck, 1996, *Heating/Cooling Tests of 241-A-101 Grab Samples*, (internal memorandum 75764-PCS96-051 to J. G. Field, May 29, 1996), Westinghouse Hanford Company, Richland, Washington.
- [3] L. M. Sasaki, 1997, *Compatibility Grab Sampling and Analysis Plan for Fiscal Year 1997*, WHC-SD-WM-TSAP-115, Rev. 0-G, Lockheed Martin Hanford Corporation, Richland, Washington.

3. Task Objective

This LOI will allow the 222-S Laboratory to provide Process Engineering with analytical data to ascertain whether or not there is a problem for Tank Farms operations with pumping tank 241-AX-101 due to line plugging.

4. Introduction and Overall Scope

Four supernate grab samples were obtained from tank 241-AX-101 to provide information for compatibility studies, in support of upcoming stabilization activities. The samples were obtained through the saltwell screen, at four different depths specified in Reference 3. Waste Compatibility analyses were performed on samples 1AX-97-1, 2 and 3 in accordance with the Compatibility Grab Sampling and Analysis Plan (Reference 4).

All four samples were similar and contained settled solids that appeared to be salt crystals that precipitated upon cooling to ambient temperature. Only sample 1AX-97-4 contained slightly more than 25% settled solids. This could indicate a potential problem for Tank Farms operations with the material due to line plugging during saltwell pumping of tank 241-AX-101. The tests described below provide data to ascertain whether or not there is a problem and its likely extent.

5. Functional Requirements

Analyses will include:

- 1) Attempt to measure the temperature at which solids begin to dissolve, the temperature at which there is complete dissolution, and the temperature that crystals again begin to form on cooling. The word "attempt" is used due to a prior experience (Reference 2) in which no clear dissolution temperature could be determined. The analysis is to be performed on the "as found" sample, and with 10 and 25 volume percent additions of water.
- 2) Measure the boiling temperature of the grab sample at ambient hot cell air pressure. This gives an indication of total ionic strength. A boiling point near 100°C (for a sample with solids) would indicate very low solubility solids, as opposed to the expected high solubility solids. The boiling temperature is the upper bound to the test in step 1.

Step 1 may be performed at reduced pressure to ensure good reflux and stirring and to avoid "cooking" the sample.

All observations and data will be recorded in a Controlled Laboratory Notebook.

Analyses will be conducted on sample number 1AX-97-4, and shall be in accordance with procedure LT-519-183 (Reference 1). Differential scanning calorimetry (DSC) analyses required by procedure LT-519-183 will not be conducted because previous data does not indicate any exotherms. Temperature precision and accuracy for all tests will be within $\pm 1^\circ\text{C}$. Store any residual sample material so that it will be available if future analysis is required. The sample portions used may be disposed of according to hot cell cleanup procedures one month after the test report is issued.

6. Schedule

The data shall be reported on or before 1600 hours on September 19, 1997.

7. Cost

The cost for this project will be \$3,430. This cost is from approximately 1.5 man week (\$50.50/hr of unburdened exempt time effort), and about \$400 in non-exempt labor for waste management and cleanup. (The fully burdened costs will be about \$4,400.) Most of the costs would be incurred if only one sample was run (test planning, set-up, calibration, report writing) so the cost to run additional samples is about 2 man-hours each (\$131).

8. Procurement

N/A

9. Permits

N/A

10. Specific Services and Special Instructions

N/A

11. Deliverables

Analyses shall be completed and results documented and submitted in an external letter to R. A. Esch, D. J. Saueressig, and J. G. Field by September 29, 1997. Any observations made during the receipt and analysis of the grab sample should be noted and included in the report. These tasks shall be charged to Work Order E-60168. Please notify Mr. J. G. Field on 376-3753 when you have completed 80% of the work scope or used 80% of the allocated funding.

12. Meetings, Reports, and Activities

N/A

13. Quality Assurance Requirements

Quality assurance requirements shall be in accordance with procedure LT-519-183 (Reference 1).

14. Safety Requirements

No special safety requirements are required to perform the work described herein.

15. Task Management

The list of key personnel is provided in Table 1.

Individual and Phone Number	Organization	Responsibility
D. J. Saueressig; 373-0183	West Tank Farms (FDNW)	Project Manager, Stabilization
M. A. Beck; 373-2182	Chemistry, Analysis, Tech. Support (NHC)	Chemist, Process Chemistry
R. A. Esch; 373-4314	Hanford Analytical Services Program (RFSH)	Project Coordinator, 222-S
J. G. Field; 376-3753	TWRS Process Engineering (LMHC)	Tank Coordinator, Tech Basis and Planning
N. W. Kirch; 373-2380	TWRS Process Engineering (LMHC)	Manager, Process Control
K. M. Hall; 376-5029	TWRS Process Engineering (LMHC)	Manager, Data Assessment and Interpretation

16. Other

N/A

17. Approvals

K. M. Hall 9/5/97
K. M. Hall, Manager

LMHC TWRS Process Engineering: Data Assessment and Interpretation

N. W. Kirch

N. W. Kirch, Manager

LMHC TWRS Process Engineering: Process Control

HNF-SD-WM-DP-268, REV. 0

CORRESPONDENCE 2

LOSS OF SETTLED SOLIDS FROM TANK AX-101 GRAB SAMPLES

HNF-SD-WM-DP-268, REV. 0

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CORRESPONDENCE DISTRIBUTION COVERSHEET

Author

Addressee

Correspondence No.

R. A. Esch

K. M. Hall, LMHC R2-12

WMH-9758780

Subject: LOSS OF SETTLED SOLIDS FROM TANK 241-AX-101 GRAB SAMPLES

DISTRIBUTION

Approval	Date	Name	Location	w/att
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		Correspondence Control	A3-01	
--	--	------------------------	-------	--

Fluor Daniel Northwest

		D. T. Vladimiroff	S5-07	
--	--	-------------------	-------	--

Lockheed Martin Hanford Corp.

		T. M. Blaak	S5-13	
--	--	-------------	-------	--

		J. G. Field	R2-12	
--	--	-------------	-------	--

		T. C. Tribble	S7-07	
--	--	---------------	-------	--

		A. E. Young	R1-10	
--	--	-------------	-------	--

Waste Management of Hanford Inc.

		R. A. Esch	T6-06	
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		L. P. Markel	T6-16	
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		A. D. Rice	T6-06	
--	--	------------	-------	--

		File		
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Waste Management Federal Services of Hanford, Inc.

P.O. Box 700
Richland, WA 99352

September 25, 1997

WMH-9758780

Ms. K. M. Hall, Manager
Data Assessment and Interpretation
Lockheed Martin Hanford Corporation
Post Office Box 1500 R2-12
Richland, Washington 99352-1505

Dear Ms. Hall:

LOSS OF SETTLED SOLIDS FROM TANK 241-AX-101 GRAB SAMPLES

Reference: Field, J. G., 1997, *Letter of Instruction for Non-Routine Analysis of Single-Shell Tank 241-AX-101 Grab Samples*, (interoffice memo 74620-97-215 to J. R. Jewett, dated September 5). (Attachment)

Four samples (1AX-97-1, 1AX-97-2, 1AX-97-3 and 1AX-97-4) were received from Tank 241-AX-101, Riser 5B, on July 29, 1997. All four samples contained settled solids that appeared to be large salt crystals that precipitated upon cooling to ambient temperature. The first three samples contained less than 20% settled solids and only the supernatant liquid was analyzed to support the Waste Compatibility Program. Sample 1AX-97-4 contained a larger amount of settled solids (~25.3%). A Letter of Instruction (LOI) (Reference) was generated requesting the 222-S Laboratory to perform temperature tests on this sample only to assess requirements to prevent solids/crystals from forming during salt well pumping.

The lab is unable to perform the analyses requested in the LOI. Formal instructions were not given prior to the archiving of the samples resulting in improper handling of the solids. During the archiving process, the settled solids were not collected with the liquid in the archive vial and were subsequently disposed of. A critique of this event was performed with the following corrective actions to be taken by the 222-S Laboratory:

- ▶ An area in the 11A hotcell will be designated for "active" grab samples and the status of the inventory will be taken on a monthly basis. Active samples will not be processed without prior instructions from the responsible project coordinator.
- ▶ Improved communication will be provided when samples need to be saved.
- ▶ Appropriate steps will be incorporated into the hotcell procedure to accommodate the archiving of grab samples.

Ms. K. M. Hall
Page 2
September 25, 1997

WMH-9758780

Please inform me of any impact on East Tank Farms' operations that may have occurred because of the lack of the requested analytical data from this sample.

Sincerely,

Ruth A Esch, Project Coordinator
222-S Laboratory
Hanford Analytical Services

mte

Attachment

HNF-SD-WM-DP-268, REV. 0

CORRESPONDENCE 3

SCOPE INCREASE FOR ALL LIQUID GRAB SAMPLES TAKEN
FROM SINGLE-SHELL OR RECEIVER TANKS

HNF-SD-WM-DP-268, REV. 0

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INTEROFFICE MEMO

LOCKHEED MARTIN

From: Data Assessment and Interpretation 74620-97-197
Phone: 376-5029 R2-12
Date: May 19, 1997
Subject: SCOPE INCREASE FOR ALL LIQUID SAMPLES TAKEN FROM SINGLE-SHELL OR RECEIVER TANKS

To: J. W. Hunt R2-12

cc: J. M. Conner R2-12
K. M. Hodgson R2-12
J. G. Kristofzski R2-12
D. J. McCain R2-12
A. D. Rice T6-06
L. M. Sasaki R2-12
R. D. Schreiber R2-12
D. T. Vladimiroff S8-05
KMH File/LB R2-12

- References: (1) HNF-SD-WM-SD-023, Revision 0, "Fiscal Year 1997 Memorandum of Understanding for the TWRS Characterization Project," dated 1997.
- (2) WHC-SD-WM-TSAP-115, Revision 0-F, "Compatibility Grab Sampling and Analysis Plan for Fiscal Year 1997," dated 1997.

This memorandum documents a scope increase for all Tank Sampling and Analysis Plan (TSAPs) that are written for sampling and analysis of single-shell or receiving tanks that have liquid phases of tank wastes. Reference 1 establishes the pathway wherein sampling and analytical requirements are communicated to operations and laboratory organizations through the TSAP. Reference 2 is a TSAP that covers compatibility sampling.

Sample analysis data are needed to address the potential for ammonia to exceed flammability limits in Double-Contained Receiver Tanks (DCRTs). This data is to be taken from all grab samples taken either from a DCRT or a single-shell tank that is a candidate for saltwell pumping. Since ammonia is volatile, an aliquot for analysis should be taken from the sample and acidified as soon as possible. This will stabilize the ammonia in the solution as ammonium ion. It is suggested that a pre-weighted bottle of acid composition be located in the cell where the sample breakdown is effected, in order to minimize the opportunity for ammonia to vaporize during sample preparation. The sample aliquot would go directly into the acidic solution in the hood or hot cell.

Analysis should be performed according to procedure LA-631-001, with the results corrected to represent the concentration in the as-received sample (before acidification). Quality control requirements are presented in the table below.

J. W. Hunt
Page 2
May 19, 1997

74620-97-197

Quality Control Parameter	Frequency Required	Criteria
Duplicate analysis	Each Sample	<20% RPD
Spikes	1 per tank	75-125% Recovery
Standard	1 per batch	80-120% Recovery
Blank	1 per batch	<5% of Sample

Results should be included in Format IV Report (see Reference 1) and uploaded into the Tank Characterization Database (TCD).

Please inform all Tank and Project Coordinators who write the TSAPs so that this data may be gathered as immediately as possible. If you have any questions, please refer them either to me at 376-5029, Mr. J. M. Conner at 373-2711, or Mr. D. J. McCain at 373-1023.

K. M. Hall, Manager
Data Assessment and Interpretation

k1h

~~HNH-SD-WM-DP-268, REV. 0~~
LAD 11/7/97

HNH-SD-WM-DP-268, REV. 0

SAMPLE HANDLING

HNH-SD-WM-DP-268, REV. 0

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LABCORE Data Entry Template for Worklist# 19669

Analyst: Instrument: NONE Book # N/A

Method: LA-519-151 Rev/Mod F-Ø

Worklist Comment: AX101 GRAB, @BRKDWN1 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
97000510	AX-101 GRAB	1 SAMPLE	S97T001824	0	@BRKDWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
97000510	AX-101 GRAB	1 SAMPLE	S97T001824	0	@BRKDWN1 SEALNUM	LIQUID	N/A	N/A		
97000510	AX-101 GRAB	1 SAMPLE	S97T001824	0	@BRKDWN1 ETCHNUM	LIQUID	N/A	1AX-97-1		
97000510	AX-101 GRAB	1 SAMPLE	S97T001824	0	@BRKDWN1 APPEAR02	LIQUID	N/A	Complete		
97000510	AX-101 GRAB	1 SAMPLE	S97T001824	0	@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		ml
97000510	AX-101 GRAB	1 SAMPLE	S97T001824	0	@BRKDWN1 STLSD01	LIQUID	N/A	9.6		% solids gray to white in color
97000510	AX-101 GRAB	1 SAMPLE	S97T001824	0	@BRKDWN1 COLOR-01	LIQUID	N/A	YELLOW-CLEAR		
97000510	AX-101 GRAB	1 SAMPLE	S97T001824	0	@BRKDWN1 ORGVOL02	LIQUID	N/A	NONE		ml
97000510	AX-101 GRAB	2 SAMPLE	S97T001825	0	@BRKDWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
97000510	AX-101 GRAB	2 SAMPLE	S97T001825	0	@BRKDWN1 SEALNUM	LIQUID	N/A	N/A		
97000510	AX-101 GRAB	2 SAMPLE	S97T001825	0	@BRKDWN1 ETCHNUM	LIQUID	N/A	1AX-97-2		
97000510	AX-101 GRAB	2 SAMPLE	S97T001825	0	@BRKDWN1 APPEAR02	LIQUID	N/A	Complete		solids gray/white
97000510	AX-101 GRAB	2 SAMPLE	S97T001825	0	@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		ml
97000510	AX-101 GRAB	2 SAMPLE	S97T001825	0	@BRKDWN1 STLSD01	LIQUID	N/A	10.8		%
97000510	AX-101 GRAB	2 SAMPLE	S97T001825	0	@BRKDWN1 COLOR-01	LIQUID	N/A	YELLOW-CLEAR		
97000510	AX-101 GRAB	2 SAMPLE	S97T001825	0	@BRKDWN1 ORGVOL02	LIQUID	N/A	NONE		ml
97000510	AX-101 GRAB	3 SAMPLE	S97T001827	0	@BRKDWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
97000510	AX-101 GRAB	3 SAMPLE	S97T001827	0	@BRKDWN1 SEALNUM	LIQUID	N/A	N/A		

Data Entry Comments:

(Samples 1,2,3 only)

Used 4ml of each sample for acidification. Used additional 4 ml of sample 3

used 30 ml of each of samples 1,2,3 and 4 for subanalysis. POC 8/7/97

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# 19669

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
97000510	AX-101 GRAB	3 SAMPLE	S97T001827	0	0BRKDOWN1 ETCHNUM	LIQUID	N/A	1AX-97-34	note	9/29/97
97000510	AX-101 GRAB	3 SAMPLE	S97T001827	0	0BRKDOWN1 APPEAR02	LIQUID	N/A	Complete		solids white
97000510	AX-101 GRAB	3 SAMPLE	S97T001827	0	0BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
97000510	AX-101 GRAB	3 SAMPLE	S97T001827	0	0BRKDOWN1 STLSLD01	LIQUID	N/A	18.1	25.3	note % 9/29/97
97000510	AX-101 GRAB	3 SAMPLE	S97T001827	0	0BRKDOWN1 COLOR-01	LIQUID	N/A	YELLOW - CLEAR		
97000510	AX-101 GRAB	3 SAMPLE	S97T001827	0	0BRKDOWN1 ORGVOL02	LIQUID	N/A	NONE		mL
97000510	AX-101 GRAB	4 SAMPLE	S97T001826	0	0BRKDOWN1 DOSERATE	LIQUID	N/A	N/A		mred/hour
97000510	AX-101 GRAB	4 SAMPLE	S97T001826	0	0BRKDOWN1 SEALNUM	LIQUID	N/A	N/A		
97000510	AX-101 GRAB	4 SAMPLE	S97T001826	0	0BRKDOWN1 ETCHNUM	LIQUID	N/A	1AX-97-43	note	9/29/97
97000510	AX-101 GRAB	4 SAMPLE	S97T001826	0	0BRKDOWN1 APPEAR02	LIQUID	N/A	Complete		solids white
97000510	AX-101 GRAB	4 SAMPLE	S97T001826	0	0BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
97000510	AX-101 GRAB	4 SAMPLE	S97T001826	0	0BRKDOWN1 STLSLD01	LIQUID	N/A	25.5	18.1	note % 9/29/97
97000510	AX-101 GRAB	4 SAMPLE	S97T001826	0	0BRKDOWN1 COLOR-01	LIQUID	N/A	YELLOW		
97000510	AX-101 GRAB	4 SAMPLE	S97T001826	0	0BRKDOWN1 ORGVOL02	LIQUID	N/A	NONE		mL

Final page for worklist # 19669

A. Mag
Analyst Signature
8-7-97
Date

SLD
Analyst Signature
8/8/97
Date

$$1AX-97-1$$

$$\frac{8mm \text{ solids}}{83mm \text{ total}} \times 100 = 9.6\% \text{ settled solids}$$

$$1AX-97-3$$

$$\frac{15mm \text{ solids}}{83mm \text{ total}} \times 100 = 18.1\% \text{ settled}$$

$$1AX-97-2$$

$$\frac{9mm \text{ solids}}{83mm \text{ total}} \times 100 = 10.8\% \text{ settled solids}$$

$$1AX-97-4$$

$$\frac{21mm \text{ solids}}{83mm \text{ total}} \times 100 = 25.3\% \text{ settled solids}$$

Data Entry Comments:

*Validated by
AKT
8/21/97*

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-268, REV. 0

SAMPLE PREPARATIONS

HNF-SD-WM-DP-268, REV. 0

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HNF-SD-WM-DP-268, REV. 0

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08/07/97 10:35

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LABCORE Data Entry Template for Worklist# 19690

Analyst: My Instrument: ACD01 Book # N/AMethod: LA-505458 Rev/Mod b-0Worklist Comment: AX103, ACIDIL01 skm
AX101

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			ACIDIL01	LIQUID	<u>1</u>	<u>18</u>	<u>N/A</u>	DF
97000510	AX-101 GRAB	2 SAMPLE	S97T001902	0 D	ACIDIL01	LIQUID	<u>N/A</u>	<u>465</u>		DF
97000510	AX-101 GRAB	3 SAMPLE	S97T001902	0	DOSE-01	LIQUID	<u>N/A</u>	<u>650</u>		mrad/hour
97000510	AX-101 GRAB	4 SAMPLE	S97T001903	0 D	ACIDIL01	LIQUID	<u>N/A</u>	<u>457</u>		DF
97000510	AX-101 GRAB	5 SAMPLE	S97T001903	0	DOSE-01	LIQUID	<u>N/A</u>	<u>750</u>		mrad/hour
97000510	AX-101 GRAB	6 SAMPLE	S97T001904	0 D	ACIDIL01	LIQUID	<u>N/A</u>	<u>477</u>		DF
97000510	AX-101 GRAB	7 SAMPLE	S97T001904	0	DOSE-01	LIQUID	<u>N/A</u>	<u>1000</u>		mrad/hour

Final page for worklist # 19690

Analyst Signature A. J. [Signature] Date 8-7-97Analyst Signature [Signature] Date 8-8-97

Parent
 S97T001824 →
 S97T001825 →
 S97T001826 →

Daughter
 S97T001902 V# 13308
 S97T001903 V# 13320
 S97T001904 V# 13344
 Prep BLNK V# 13345

Validated by
 PK Fuller
 8/8/97

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.

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information WorksheetTank/Project: AX-101 GRABDate: 8/7/97 (Date of Breakdown)

I. Preservative for Ammonia analysis:

A. Obtain historical results for the following analytes:

historical Data
Bulk density = 1.54 g/mL

1. Al	<u>1.55</u>	M	$[(\mu\text{g/mL})/26,981]$	$(2.72 \text{ e } 4 \mu\text{g/g})$
2. OH ⁻	<u>8.66</u>	M	$[(\mu\text{g/mL})/17,000]$	$(9.56 \text{ e } 4 \mu\text{g/g})$
3. CO ₃ ²⁻	<u>0.4696</u>	M	$[(\mu\text{g/mL})/60,009]$	$(1.83 \text{ e } 4 \mu\text{g/g})$
4. NO ₃ ⁻	<u>2.26</u>	M	$[(\mu\text{g/mL})/46,006]$	$(6.76 \text{ e } 4 \mu\text{g/g})$
5. PO ₄ ³⁻	<u>0.0855</u>	M	$[(\mu\text{g/mL})/94,971]$	$(5.27 \text{ e } 3 \mu\text{g/g})$

B. Calculate volume of HCl required for 1 mL of sample:

- Density concentrated (37%) HCl = 1.18 g/mL
- Molecular Wgt. HCl = 36.46 g/mole

$$\text{moles (HCl)} = 1 \text{ mL (smp)} [4(\text{M Al}) + \text{M OH}^- + 2(\text{M CO}_3^{2-}) + 2/3(\text{M NO}_3^-) + 3(\text{M PO}_4^{3-})] \times 1\text{E-}03$$

$$3. \quad \text{moles (HCl)} = \underline{0.0176} \text{ moles}$$

$$\text{g (HCl)} = (\text{moles HCl} \times 36.46 \text{ g/mole}) / 0.37 \text{ (for 37\% HCl)}$$

$$4. \quad \text{g (HCl)} = \underline{1.73} \text{ g}$$

$$\text{mL (HCl)} / 1 \text{ mL (smp)} = \text{g (HCl)} / 1.18 \text{ g/mole (HCl)}$$

$$5. \quad \text{mL (HCl)} / 1 \text{ mL (smp)} = \underline{1.47} \text{ mL}$$

C. Determine desired sample volume (min. final vol. 10 mL preferred) 6 mL

$$1. \quad \text{mL (HCl)} \times (\text{desired samp vol}) = \underline{9} \text{ mL (to nearest mL)}$$

D. If volume of HCl required is nearly equal to volume of sample desired, request that an equal volume of water be added to the acid. Adjust sample size to allow for minimal dilution while retaining a final volume of at least 10 mL.

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

E. Record requested volumes:

1.	Volume HCl	<u>9.0</u>	mL
2.	Volume Water	<u>5.0</u>	mL
3.	Volume Sample to add	<u>6.0</u>	mL

F. Prepare a prep blank - requested volumes:

1.	Volume HCl	<u>9.0</u>	mL
2.	Volume Water	<u>5.0</u>	mL
3.	Additional Vol. Water	<u>6.0</u>	mL

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

II. Determine dilution factor for sample:

- A. Before adding the sample to the acid mixture in vial, determine the bulk density of the sample portion indicated by pipeting the requested volume of sample into a centrifuge cone and weighing it.

Sample ID: 1AX-97-1LABCORE #: S977001824 → S977001902 V# 13308

1. Weight cone + sample 13.42 g
2. Tare weight of cone 7.71 g
3. Net weight sample (1 - 2) 5.71 g
4. Volume sample 4.0 mL
5. Bulk Density (3 ÷ 4) 1.43 g/mL

- B. Slowly add sample to acid mixture in vial allowing for any reaction to subside inbetween additions.

- C. Wgt. Samp = (Wgt. vial + HCl + water + samp) - (Wgt. vial + HCl + water)
Wgt. Samp = 5.49 g

- D. Final Vol. Samp = Wgt. Samp/Bulk Density = 3.84 mL

- E. Dilution Factor (DF) = $\frac{\text{Final Vol. Samp} + \text{Vol. HCl} + \text{Vol. Water}}{\text{Final Vol. Samp}}$

Dilution Factor (DF) = 4.65

- F. Report DF in LabCore as ACIDIL01 test results.

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

III. Determine dilution factor for sample:

- A. Before adding the sample to the acid mixture in vial, determine the bulk density of the sample portion indicated by pipeting the requested volume of sample into a centrifuge cone and weighing it.

Sample ID: 1AX-97-2LABCORE #: S97T001825 → S97T001903 v# 13320

1. Weight cone + sample 13.44 g
2. Tare weight of cone 7.74 g
3. Net weight sample (1 - 2) 5.70 g
4. Volume sample 4.0 mL
5. Bulk Density (3 ÷ 4) 1.42 g/mL

- B. Slowly add sample to acid mixture in vial allowing for any reaction to subside inbetween additions.

- C. $\text{Wgt. Samp} = (\text{Wgt. vial} + \text{HCl} + \text{water} + \text{samp}) - (\text{Wgt. vial} + \text{HCl} + \text{water})$
 $\text{Wgt. Samp} = \underline{5.57}$ g

- D. $\text{Final Vol. Samp} = \text{Wgt. Samp} / \text{Bulk Density} = \underline{3.92}$ mL

- E. $\text{Dilution Factor (DF)} = \frac{\text{Final Vol. Samp} + \text{Vol. HCl} + \text{Vol. Water}}{\text{Final Vol. Samp}}$

Dilution Factor (DF) = 4.57

- F. Report DF in LabCore as ACIDIL01 test results.

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

IV. Determine dilution factor for sample:

- A. Before adding the sample to the acid mixture in vial, determine the bulk density of the sample portion indicated by pipeting the requested volume of sample into a centrifuge cone and weighing it.

Sample ID: 1AX-97-3LABCORE #: S97T001826 → S97T001904 v# 13344

1. Weight cone + sample 13.58 g
2. Tare weight of cone 7.63 g
3. Net weight sample (1 - 2) 5.95 g
4. Volume sample 4.0 mL
5. Bulk Density (3 ÷ 4) 1.49 g/mL

- B. Slowly add sample to acid mixture in vial allowing for any reaction to subside inbetween additions.

- C. $\text{Wgt. Samp} = (\text{Wgt. vial} + \text{HCl} + \text{water} + \text{samp}) - (\text{Wgt. vial} + \text{HCl} + \text{water})$
Wgt. Samp = 5.53 g

- D. $\text{Final Vol. Samp} = \text{Wgt. Samp} / \text{Bulk Density} =$ 3.71 mL

- E. $\text{Dilution Factor (DF)} = \frac{\text{Final Vol. Samp} + \text{Vol. HCl} + \text{Vol. Water}}{\text{Final Vol. Samp}}$

Dilution Factor (DF) = 4.77

- F. Report DF in LabCore as ACIDIL01 test results.

HNF-SD-WM-DP-268, REV. 0

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LABCORE Data Entry Template for Worklist# 19797

Analyst: gy Instrument: ACD01 Book # N/AMethod: LA-505-158 Rev/Mod D-0

Worklist Comment: AX101 GRAB, ACIDIL01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			ACIDIL01	LIQUID	<u>1</u>	<u>10.25</u>	<u>N/A</u>	DF
97000510	AX-101 GRAB	2 SAMPLE	S97T001968	0 D	ACIDIL01	LIQUID	<u>N/A</u>	<u>67.67</u>		DF
97000510	AX-101 GRAB	3 SAMPLE	S97T001968	0	DOSE-01	LIQUID	<u>N/A</u>	<u>65</u>		mrad/hour
97000510	AX-101 GRAB	4 DUP	S97T001968	0 D	ACIDIL01	LIQUID	<u>67.67</u>	<u>39.46</u>	<u>N/A</u>	DF *
97000510	AX-101 GRAB	5 DUP	S97T001968	0	DOSE-01	LIQUID	<u>65</u>	<u>45</u>	<u>N/A</u>	mrad/hour
97000510	AX-101 GRAB	6 SAMPLE	S97T001969	0 D	ACIDIL01	LIQUID	<u>N/A</u>	<u>41.48</u>		DF
97000510	AX-101 GRAB	7 SAMPLE	S97T001969	0	DOSE-01	LIQUID	<u>N/A</u>	<u>60</u>		mrad/hour
97000510	AX-101 GRAB	8 DUP	S97T001969	0 D	ACIDIL01	LIQUID	<u>44.48</u>	<u>42.67</u>	<u>N/A</u>	DF
97000510	AX-101 GRAB	9 DUP	S97T001969	0	DOSE-01	LIQUID	<u>60</u>	<u>60</u>	<u>N/A</u>	mrad/hour
97000510	AX-101 GRAB	10 SAMPLE	S97T001970	0 D	ACIDIL01	LIQUID	<u>N/A</u>	<u>48.62</u>		DF
97000510	AX-101 GRAB	11 SAMPLE	S97T001970	0	DOSE-01	LIQUID	<u>N/A</u>	<u>50</u>		mrad/hour
97000510	AX-101 GRAB	12 DUP	S97T001970	0 D	ACIDIL01	LIQUID	<u>48.62</u>	<u>42.67</u>	<u>N/A</u>	DF
97000510	AX-101 GRAB	13 DUP	S97T001970	0	DOSE-01	LIQUID	<u>50</u>	<u>65</u>	<u>N/A</u>	mrad/hour

Final page for worklist # 19797

Analyst Signature [Signature] Date 8/25/97Analyst Signature [Signature] Date 8-23-97Validated [Signature] 8/25/97 * QC exceeds UCL
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.

Parent Daughters
 S97T001824 → S97T001968
 S97T001825 → S97T001969
 S97T001826 → S97T001970

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information WorksheetTank/Project: AX-101 GRABDate: 8/22/97 (Date of Breakdown)

I. Preservative for Ammonia analysis:

A. Obtain historical results for the following analytes:

1. Al	<u>Hist. 1.55</u> M	[($\mu\text{g/mL}$)/26,981]
2. OH ⁻	<u>Act. 2.29</u> M	[($\mu\text{g/mL}$)/17,000]
3. CO ₃ ²⁻	<u>Hist. 0.4696</u> M	[($\mu\text{g/mL}$)/60,009]
4. NO ₃ ⁻	<u>Hist. 2.26</u> M	[($\mu\text{g/mL}$)/46,006]
5. PO ₄ ³⁻	<u>Hist. 0.0855</u> M	[($\mu\text{g/mL}$)/94,971]

B. Calculate volume of HCl required for 1 mL of sample:

NOTE: For dilute samples, perform calculations based on concentrated (37%) HCl. For tank wastes, base calculations on 2 M HCl. A smaller sample size with a larger dilution is desired with tank waste to minimize loss of ammonia due to heat of reaction. Do not exceed 100X dilution.

1. Density concentrated (37%) HCl = 1.18 g/mL
2. Density 1 M HCl ($\approx 4\%$) ≈ 1.02 g/mL
3. Density 2 M HCl ($\approx 7.5\%$) ≈ 1.04 g/mL
4. Molecular Wgt. HCl = 36.46 g/mole

$$\text{moles (HCl)} = 1 \text{ mL (smp)} [4(\text{M Al}) + \text{M OH}^- + 2(\text{M CO}_3^{2-}) + 2/3(\text{M NO}_3^-) + 3(\text{M PO}_4^{3-})] \times 1\text{E-}03$$

$$5. \quad \text{moles (HCl)} = \underline{0.0112} \text{ moles}$$

$$\text{g (HCl)} = (\text{moles HCl} \times 36.46 \text{ g/mole}) / \text{wt. \% HCl} \quad (1\text{M}; 4\%)$$

$$6. \quad \text{g (HCl)} = \underline{10.202} \text{ g}$$

$$\text{mL (HCl)} / 1 \text{ mL (smp)} = \text{g (HCl)} / \text{density HCl (g/mL)} \quad (1.02 \text{ g/mL})$$

$$7. \quad \text{mL (HCl)} / 1 \text{ mL (smp)} = \underline{10.0} \text{ mL}$$

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

C. Determine desired sample volume (min. final vol. 10 mL preferred) 0.25 mL

1. mL (HCl) x (desired samp vol) = N/A mL (This calculation is not applicable for tank samples when a larger dilution is desired.)

D. Record requested volumes:

1.	Volume HCl	<u>10.0</u>	mL	1.0 M
2.	Volume Water	<u>N/A</u>	mL	
3.	Volume Sample to add	<u>0.25</u>	mL	

E. Prepare a prep blank - requested volumes:

1.	Volume HCl	<u>10.0</u>	mL	1 M
2.	Volume Water	<u>N/A</u>	mL	
3.	Additional Vol. Water	<u>0.25</u>	mL	

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

II. Determine dilution factor for sample:

- A. Before adding the sample to the acid mixture in vial, determine the bulk density of the sample portion indicated by pipeting the requested volume of sample into a centrifuge cone and weighing it.

Sample ID: 1AX-97-1
 LABCORE #: S97T001824

V# 13338

→ S97T001968

1. Weight cone + sample _____ g
2. Tare weight of cone _____ g
3. Net weight sample (1 - 2) _____ g
4. Volume sample _____ mL
5. Bulk Density (3 ÷ 4) 1.43 g/mL determined 8/7/97

1AX
 200g
 8/14/97

- B. Slowly add sample to acid mixture in vial allowing for any reaction to subside inbetween additions.

- C. Wgt. Samp = (Wgt. vial + HCl + water + samp) - (Wgt. vial + HCl + water)
 Wgt. Samp = 0.22 g

- D. Final Vol. Samp = Wgt. Samp/Bulk Density = 0.15 mL

- E. Dilution Factor (DF) = $\frac{\text{Final Vol. Samp.} + \text{Vol. HCl} + \text{Vol. Water}}{\text{Final Vol. Samp}}$

Dilution Factor (DF) = 67.67 ACIDIL 01 WL# 19797

- F. Report DF in LabCore as ACIDIL01 test results.

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

II. Determine dilution factor for sample:

- A. Before adding the sample to the acid mixture in vial, determine the bulk density of the sample portion indicated by pipeting the requested volume of sample into a centrifuge cone and weighing it.

DUPLICATE

Sample ID: 1AX-97-1

V# 13339

LABCORE #: S97T001824

→ S97T001968

1. Weight cone + sample

g

2. Tare weight of cone

g

3. Net weight sample (1 - 2)

g

4. Volume sample

mL

5. Bulk Density (3 ÷ 4)

1.43

g/mL

determined 8/7/97

- B. Slowly add sample to acid mixture in vial allowing for any reaction to subside inbetween additions.

C. Wgt. Samp = (Wgt. vial + HCl + water + samp) - (Wgt. vial + HCl + water)

Wgt. Samp = 0.37 gD. Final Vol. Samp = Wgt. Samp/Bulk Density = 0.26 mLE. Dilution Factor (DF) = $\frac{\text{Final Vol. Samp.} + \text{Vol. HCl} + \text{Vol. Water}}{\text{Final Vol. Samp.}}$ Dilution Factor (DF) = 39.46

- F. Report DF in LabCore as ACIDIL01 test results.

ACIDIL01 WL# 19797

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

III. Determine dilution factor for sample:

- A. Before adding the sample to the acid mixture in vial, determine the bulk density of the sample portion indicated by pipeting the requested volume of sample into a centrifuge cone and weighing it.

Sample ID: 1A X 97-2V# 13340LABCORE #: S977001025 → S977001969

1. Weight cone + sample _____ g

2. Tare weight of cone _____ g

3. Net weight sample (1 - 2) _____ g

4. Volume sample _____ mL

5. Bulk Density (3 ÷ 4) 1.42 g/mL determined 8/7/97

- B. Slowly add sample to acid mixture in vial allowing for any reaction to subside inbetween additions.

- C. Wgt. Samp = (Wgt. vial + HCl + water + samp) - (Wgt. vial + HCl + water)
Wgt. Samp = 0.33 g

- D. Final Vol. Samp = Wgt. Samp/Bulk Density = 0.23 mL

- E. Dilution Factor (DF) = $\frac{\text{Final Vol. Samp.} + \text{Vol. HCl} + \text{Vol. Water}}{\text{Final Vol. Samp}}$

Dilution Factor (DF) = 44.48

- F. Report DF in LabCore as ACIDIL01 test results. W# 19797

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

III. Determine dilution factor for sample:

- A. Before adding the sample to the acid mixture in vial, determine the bulk density of the sample portion indicated by pipeting the requested volume of sample into a centrifuge cone and weighing it.

DUPLICATE

Sample ID: 1A-97-2V# 13341LABCORE #: S97T001A25 → S97T001969

1. Weight cone + sample _____ g

2. Tare weight of cone _____ g

3. Net weight sample (1 - 2) _____ g

4. Volume sample _____ mL

5. Bulk Density (3 ÷ 4) _____ g/mL

1.42 g/mL determined 8/7/97

- B. Slowly add sample to acid mixture in vial allowing for any reaction to subside inbetween additions.

C. Wgt. Samp = (Wgt. vial + HCl + water + samp) - (Wgt. vial + HCl + water)
Wgt. Samp = 0.34 g

D. Final Vol. Samp = Wgt. Samp/Bulk Density = 0.24 mL

E. Dilution Factor (DF) = $\frac{\text{Final Vol. Samp.} + \text{Vol. HCl} + \text{Vol. Water}}{\text{Final Vol. Samp}}$

Dilution Factor (DF) = 42.67

- F. Report DF in LabCore as ACIDIL01 test results. Wt# 19797

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

IV. Determine dilution factor for sample:

- A. Before adding the sample to the acid mixture in vial, determine the bulk density of the sample portion indicated by pipeting the requested volume of sample into a centrifuge cone and weighing it.

Sample ID: 1AX-97-3v# 13365LABCORE #: 5977001826 →

5977001970

1. Weight cone + sample _____ g
2. Tare weight of cone _____ g
3. Net weight sample (1 - 2) _____ g
4. Volume sample _____ mL
5. Bulk Density (3 ÷ 4) 1.49 g/mL determined 8/14/97

- B. Slowly add sample to acid mixture in vial allowing for any reaction to subside inbetween additions.

- C. Wgt. Samp = (Wgt. vial + HCl + water + samp) - (Wgt. vial + HCl + water)
Wgt. Samp = 0.32 g

- D. Final Vol. Samp = Wgt. Samp/Bulk Density = 0.21 mL

- E. Dilution Factor (DF) = $\frac{\text{Final Vol. Samp.} + \text{Vol. HCl} + \text{Vol. Water}}{\text{Final Vol. Samp}}$

Dilution Factor (DF) = 48.62

- F. Report DF in LabCore as ACIDIL01 test results. w/ # 19797

HNF-SD-WM-DP-268, REV. 0

Preserved Subsample Information Worksheet

IV. Determine dilution factor for sample:

- A. Before adding the sample to the acid mixture in vial, determine the bulk density of the sample portion indicated by pipeting the requested volume of sample into a centrifuge cone and weighing it.

DUPLICATE

Sample ID: 14X-97-3V# 13368LABCORE #: 5977001826 → 5977001970N/A
date 8/14/97

1. Weight cone + sample _____ g
2. Tare weight of cone _____ g
3. Net weight sample (1 - 2) _____ g
4. Volume sample _____ mL
5. Bulk Density (3 ÷ 4) 1.49 g/mL determined 8/14/97

- B. Slowly add sample to acid mixture in vial allowing for any reaction to subside inbetween additions.

- C. Wgt. Samp = (Wgt. vial + HCl + water + samp) - (Wgt. vial + HCl + water)
Wgt. Samp = 0.36 g

- D. Final Vol. Samp = Wgt. Samp/Bulk Density = 0.24 mL

- E. Dilution Factor (DF) = $\frac{\text{Final Vol. Samp} + \text{Vol. HCl} + \text{Vol. Water}}{\text{Final Vol. Samp}}$

$$\text{Dilution Factor (DF)} = \underline{42.67}$$

- F. Report DF in LabCore as ACIDIL01 test results. W# 19797

PRESERVED SUBSAMPLE WORKSHEET

Date: 8/22/97

Project: AX-101 GRAB

P.C. R. Esch

Phone# 373-4314

Add Preservative to vial
BEFORE loading into hotcell

Type of Preservative:*

1 M HCL

Vol. of Preservative:*

10 mL

Vol. of Water:*

N/A

Check weights $20g = 19.996g$
 $500g = 499.99g$

Jar#: 13338

Jar/Vial Size: 20 mL

Wgt Jar + P + W: 44.84 g

Initial Weight Jar: 34.62 g

Net Wgt P + W: 10.22 g

bulk density = $1.02 \frac{g}{mL}$

Vol. Sample 0.25 mL

LABCORE # 597T001824

Jar#: 1AX-97-1

Jar/Vial Size: 125 mL

Initial Weight: 270.6 g

Final Weight: 269.8 g

Net Weight: 0.8 g transferred

(after final subsample taken
after sample and
duplicate removed)

Start Time: _____
End Time: _____

Tests:

ACIDIL-B1 } WL# 19797
DOSE-B1

LABCORE # 597T001968

Jar#: 13338

Wgt J + P + W + Samp: 45.06 g

Wgt J + P + W 44.84 g

Net Wgt Samp: 0.22 g

HNF-SD-WM-DP-268, REV. 0

* Attached Preserved Subsample Information Worksheet provides data used for determining type of preservative and volumes of preservative and water.

PRESERVED SUBSAMPLE WORKSHEET

Date: 8/22/97

Project: AX-101 GRAB

P.C. R. Esch

Phone# 373-4314

Add Preservative to vial
BEFORE loading into hotcell

Type of Preservative:*

1 M HCL

Vol. of Preservative:*

10 mL

Vol. of Water:*

N/A

LABCORE # 5977001824

Jar#: 1AX-97-1

Jar/Vial Size: 125 mL

Initial Weight: _____ g

Final Weight: _____ g

Net Weight: _____ g

(after final subsample taken)

Vol. Sample 0.25 mL

Start Time: _____
End Time: _____

Tests:

ACIDIL01 } Wt# 19797
DOSE-01

LABCORE # 5977001968 DUPLICATE

Jar#: 13339

Wgt J + P + W + Samp: 45.27 g

Wgt J + P + W 44.90 g

Net Wgt Samp: 0.37 g

* Attached Preserved Subsample Information Worksheet provides data used for determining type of preservative and volumes of preservative and water.

PRESERVED SUBSAMPLE WORKSHEET

Date: 8/22/97

Project: AX-101 GRAB

P.C. R. Esch

Phone# 313-373-4314
MC
8/14/97

Add Preservative to vial
 BEFORE loading into hotcell

Type of Preservative:*

LM HCL

Vol. of Preservative:*

10 mL

Vol. of Water:*

N/A

LABCORE # 5977001825

Jar#: 1AX-97-2

Jar/Vial Size: 125 mL

Initial Weight: 294.5 g

Final Weight: 293.8 g

Net Weight: 0.7 g transferred

(after final subsample taken)
 after sample and
 duplicate removal

Vol. Sample _____ mL

Start Time: _____
 End Time: _____

Tests:

ACIBL 012 w/ 19797

DOSE - 01

LABCORE # 5977001969

Jar#: 13340

Wgt J + P + W + Samp: 44.86 g

Wgt J + P + W 44.53 g

Net Wgt Samp: 0.33 g

Jar#: 13340

Jar/Vial Size: 20 mL

Wgt Jar + P + W: 44.53 g

Initial Weight Jar: 34.31 g

Net Wgt P + W: 10.22 g

* Attached Preserved Subsample Information Worksheet provides data used for determining type of preservative and volumes of preservative and water.

PRESERVED SUBSAMPLE WORKSHEET

Date: 8/22/97

Project: AX-101 GRAB

P.C. R. Esch

Phone# 373-373-4314

RE
8/14/97

Add Preservative to vial
BEFORE loading into hotcell

Type of Preservative:*

LM HCL

Vol. of Preservative:*

10 mL

Vol. of Water:*

N/A

Vol. Sample _____ mL

LABCORE # S977001825

Jar#: 1AX-97-2

Jar/Vial Size: 125 mL

Initial Weight: _____ g

Final Weight: _____ g

Net Weight: _____ g

(after final subsample taken)

Start Time: _____
End Time: _____

Tests:
ACIDILIT 2 mL # 19797
DOSE - B1

LABCORE # S977001969 DUPLICATE

Jar#: 13341

Wgt J + P + W + Samp: 44.83 g

Wgt J + P + W 44.49 g

Net Wgt Samp: 0.34 g

Jar#: 13341

Jar/Vial Size: 20 mL

Wgt Jar + P + W: 44.49 g

Initial Weight Jar: 34.27 g

Net Wgt P + W: 10.22 g

* Attached Preserved Subsample Information Worksheet provides data used for determining type of preservative and volumes of preservative and water.

PRESERVED SUBSAMPLE WORKSHEET

Date: 8/22/97

Project: AX-101 GRAB

P.C. B. Esch

Phone# 373-4314

Add Preservative to vial
BEFORE loading into hotcell

Type of Preservative:*

1M HCl

Vol. of Preservative:*

10 mL

Vol. of Water:*

N/A

LABCORE # S97T001826

Jar#: 1AX-97-3

Jar/Vial Size: 125 mL

Initial Weight: 283.8 g

Final Weight: 283.0 g

Net Weight: 0.8 g transferred
(after final subsample taken)

Vol. Sample 0.25 mL after sample and
duplicates removed

Start Time: _____
End Time: _____

Tests:

ACIDIC 01? uc# 19797

DOSE - PL2

LABCORE # S97T001970

Jar#: 13365

Wgt J + P + W + Samp: 44.39 g

Wgt J + P + W 44.07 g

Net Wgt Samp: 0.32 g

Jar#: 13365

Jar/Vial Size: 20 mL

Wgt Jar + P + W: 44.07 g

Initial Weight Jar: 33.85 g

Net Wgt P + W: 10.22 g

* Attached Preserved Subsample Information Worksheet provides data used for
determining type of preservative and volumes of preservative and water.

PRESERVED SUBSAMPLE WORKSHEET

Date: 8/22/97

Project: AX-101 GRAB

P.C. R. Esch

Phone# 373-4314

Add Preservative to vial
BEFORE loading into hotcell

Type of Preservative:*

1M HCl

Vol. of Preservative:*

10 mL

Vol. of Water:*

N/A

LABCORE # 5977001826

Jar#: 1AK-97-3

Jar/Vial Size: 125 mL

Initial Weight: g

Final Weight: g

Net Weight: g

(after final subsample taken)

Vol. Sample 0.25 mL

Start Time:
End Time:

Tests:
ACIDIL 01? wt# 19797
DOSE-B12

LABCORE # 5977001970 DUPLICATE

Jar#: 13368

Wgt J + P + W + Samp: 45.70 g

Wgt J + P + W 45.34 g

Net Wgt Samp: 0.36 g

Jar#: 13368

Jar/Vial Size: 20 mL

Wgt Jar + P + W: 45.34 g

Initial Weight Jar: 35.14 g

Net Wgt P + W: 10.20 g

* Attached Preserved Subsample Information Worksheet provides data used for determining type of preservative and volumes of preservative and water.

PRESERVED PREP BLANK WORKSHEET

Date: 8/22/97

Project: AX-101 GRAB

P.C. B. Esch

Phone# 373-4314

Add Preservative to vial
BEFORE loading into hotcell

Type of Preservative:*

1M HCl

81 Vol. of Preservative:*

10 ml

Vol. of Water:*

n/A

Jar#: 13371

Jar/Vial Size: 20 mL

Wgt Jar + P + W: 45.43 g

Initial Weight Jar: 35.21 g

Net Wgt P + W: 10.22 g

Demineralized Water

Vol. Water 0.25 mL

Start Time: _____
End Time: _____

Tests:

ACID/N/A
NL# 19797

Label vial as PREP BLANK

Jar#: 13371

Wgt J + P + W + Samp: 45.64 g

Wgt J + P + W 45.43 g

Net Wgt Samp: 0.21 g

* Attached Preserved Subsample Information Worksheet provides data used for determining type of preservative and volumes of preservative and water.

HNF-SD-WM-DP-268, REV. 0

INORGANIC ANALYSIS

HNF-SD-WM-DP-268, REV. 0

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LABCORE Data Entry Template for Worklist# 19744

Analyst: SMF Instrument: DSC0 3 Book # 12 N14-13

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

Worklist Comment: AX-101 DSC, 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>28.28</u>	<u>N/A</u>	Joules/g
97000510	AX-101 GRAB	2 SAMPLE	S97T001896	0	DSC-03	LIQUID	<u>N/A</u>	<u>38.31</u>		Joules/g
97000510	AX-101 GRAB	3 DUP	S97T001896	0	DSC-03	LIQUID	<u>38.31</u>	<u>38.65</u>	<u>9/4/97</u>	Joules/g
97000510	AX-101 GRAB	4 SAMPLE	S97T001897	0	DSC-03	LIQUID	<u>N/A</u>	<u>21.95</u>		Joules/g
97000510	AX-101 GRAB	5 DUP	S97T001897	0	DSC-03	LIQUID	<u>21.95</u>	<u>34.22</u>	<u>N/A</u>	Joules/g

Final page for worklist # 19744

Susie M. Dutton 8-27-97
Analyst Signature Date

[Signature] 8-27-97
Analyst Signature Date

Validated 9/4/97 [Signature]

Data Entry Comments:

High RPD S97T001897 due to sample inhomogeneities. Rerun only at customer request. Q/S 8/28/97

Curve 1: DSC

File info: IND082701 Wed Aug 27 08:28:22 1997

Sample Weight: 21.070 mg

12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 85 TO 89.

N2, EXOTHERM DOWN

TEMP: 140.0 °C TIME: 0.0 min RATE: 10.0 °C/min

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Aug 27 18:56:10 1997

HNF-SD-WM-DF-268, REV. 0

Curve 1: DSC

File info: SAM082711 Wed Aug 27 23:54:58 1997

Sample Weight: 15.010 mg

S97T001896

N2 10C/min

TEMP: 35.0 °C
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Aug 28 01:12:59 1997

HNF-SD-WM-DP-268, REV. 0

Curve 1: DSC

File info: SAM082712 Thu Aug 28 02:05:14 1997

Sample Weight: 14.070 mg

S97T001896 DUP

N2 10C/min

TEMP: 25.0 °C
TEMP2: 500.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Aug 28 02:06:31 1997

HNF-SD-WM-DP-268, REV. 0

Curve 1: DSC

File info: SAM082713 Thu Aug 28 02:58:39 1997

Sample Weight: 28.810 mg

S97T001897

N2 10C/min

TEMP: 35.0 °C
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Aug 28 04:27:20 1997

HNF-SD-WM-DP-268, REV. 0

Curve 1: DSC

File info: SAM082714 Thu Aug 28 05:33:08 1997

Sample Weight: 17.950 mg

S97T001897 DUP

N2 10C/min

TEMP: 25.0 °C
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Aug 28 13:45:20 1997

HN-SD-WM-DP-268, REV. 0

LABCORE Data Entry Template for Worklist# 19745

Analyst: ADP Instrument: DSC0 3 Book # 12N14B

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

Worklist Comment: AX-101 DSC, RUN UNDER N2. RCI

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>28.95</u>	<u>N/A</u>	Joules/g
97000510	AX-101 GRAB	2 SAMPLE	S97T001898 0		DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000510	AX-101 GRAB	3 DUP	S97T001898 0		DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 19745

Anthony Piretti 8-24-97
Analyst Signature Date

Anthony Piretti 8-26-97
Analyst Signature Date

Data Entry Comments:

Curve 1: DSC

File info: IND082401 Sun Aug 24 06:42:56 1997

Sample Weight: 21.070 mg

12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 91 TO 94.

HNF-SD-WM-DP-268, REV. 0

Curve 1: DSC

File info: SAM082415 Mon Aug 25 03:00:15 1997

Sample Weight: 28.850 mg

S97T001898 SAM

N2 10C/min

TEMP: 25.0 °C TIME: 0.0 min RATE: 10.0 °C/min

TEMP: 500.0 °C

Temperature (°C)

AD PURINTON
PERKIN-ELMER

7 Series Thermal Analysis System
Mon Aug 25 03:33:54 1997

HNF-SD-WM-DP-268, REV. 0

Curve 1: DSC
 File Info: SAM082416 Mon Aug 25 04:26:09 1997
 Sample Weight: 27.210 mg
 S97T001898 DUP

LABCORE Data Entry Template for Worklist# 20083

Analyst: ppb Instrument: DSC0 2 Book # NA

Method: LA-514-113 Rev/Mod 9/4/97

Worklist Comment:

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
97000510	AX-101 GRAB	1 SAMPLE	S97T001896	0	DSC-02	LIQUID	N/A	<u>74.19</u> 73.26 <u>98</u>	<u>11/12/97</u>	Joules/g Dry
97000510	AX-101 GRAB	2 DUP	S97T001896	0	DSC-02	LIQUID	<u>74.19</u> 73.26	<u>74.85</u> 73.41 <u>98</u>	<u>11/12/97</u> N/A	Joules/g Dry
97000510	AX-101 GRAB	3 SAMPLE	S97T001897	0	DSC-02	LIQUID	N/A	<u>41.98</u> 42.50 <u>98</u>	<u>11/12/97</u>	Joules/g Dry
97000510	AX-101 GRAB	4 DUP	S97T001897	0	DSC-02	LIQUID	<u>41.98</u> 42.50	<u>65.44</u> 66.26 <u>98</u>	<u>11/12/97</u> N/A	Joules/g Dry
97000510	AX-101 GRAB	5 SAMPLE	S97T001898	0	DSC-02	LIQUID	N/A	<u>0</u>		Joules/g Dry
97000510	AX-101 GRAB	6 DUP	S97T001898	0	DSC-02	LIQUID	<u>0</u>	<u>0</u>	N/A	Joules/g Dry

Final page for worklist # 20083

ppb 9/4/97
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# 19741

Analyst: SMF Instrument: TGA0 3 Book # 103N8-4

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

Worklist Comment: AX-101 TGA, 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>59.11*</u>	N/A	%
							<u>48.09</u>			
97000510	AX-101 GRAB	2 SAMPLE	S97T001896	0	TGA-03	LIQUID	N/A	<u>47.62</u>	rec 9/11/97	
							<u>48.09</u>	<u>48.62</u>		
97000510	AX-101 GRAB	3 DUP	S97T001896	0	TGA-03	LIQUID	<u>47.62</u>	<u>47.80</u>	rec 9/11/97	
							<u>48.09</u>	<u>48.62</u>	N/A	%
97000510	AX-101 GRAB	4 SAMPLE	S97T001897	0	TGA-03	LIQUID	N/A	<u>48.09</u>	rec 9/11/97	
							<u>47.62</u>	<u>47.80</u>		
97000510	AX-101 GRAB	5 DUP	S97T001897	0	TGA-03	LIQUID	<u>48.09</u>	<u>48.62</u>	rec 9/11/97	
							<u>48.09</u>	<u>48.62</u>	N/A	%

Final page for worklist # 19741

Susie M. Fulton 8-27-97
Analyst Signature Date
Validated 9/3/97 Drachelor

John J. Hannon 8-28-97
Analyst Signature Date

Data Entry Comments:

Curve 1: TGA

File info: TER082701 Wed Aug 27 09:31:15 1997

Sample Weight: 20.623 mg

STD 103NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 96 TO 100.

96

Weight (Wt. %)

10C/MIN N2

TEMP: 35.0 °C
TEMP: 300.0 °C

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Aug 27 19:04:23 1997

HNF-SD-WM-DP-268, REV. 0

Curve 1: TGA

File info: SAM082711 Thu Aug 28 00:06:54 1997

Sample Weight: 15.198 mg

S97T001897

10C/MIN N2

TEMP: 25.0 C TIME: 0.0 min RATE: 10.0 C/min

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Aug 28 01:11:14 1997

HNF-SD-WM-DP-268, REV. 0

Curve 1: TGA

File info: SAM082712 Thu Aug 28 02:02:40 1997

Sample Weight: 15.065 mg

S97T001897 DUP

10C/MIN N2

TEMP: 25.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP: 500.0 C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Aug 28 02:04:24 1997

HNF-SD-WM-DP-268, REV. 0

Curve 1: TGA

File info: SAM082713 Thu Aug 28 03:08:31 1997

Sample Weight: 13.234 mg

S97T001896

10C/MIN N2

TEMP: 25.0 °C TIMES: 0.0 min RATE: 10.0 C/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Aug 28 04:25:16 1997

HNF-SD-WM-DP-268, REV. 0

Curve 1: TGA

File info: SAM082714 Thu Aug 28 05:27:29 1997

Sample Weight: 14.146 mg

S97T001896 DUP

10C/MIN N2

TEMP: 35.0 °C TIME: 0.0 min RATE: 10.0 C/min

TEMP: 500.0 °C

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Aug 28 06:54:08 1997

HNF-SD-WM-DP-268, REV. 0

LABCORE Data Entry Template for Worklist# 19742

Analyst: ADP Instrument: TGA0 3 Book # 103N 8-A

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

Worklist Comment: AX-101 TGA, 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>59.18X</u>	<u>N/A</u>	%
97000510	AX-101 GRAB	2 SAMPLE	S97T001898	0	TGA-03	LIQUID	<u>N/A</u>	<u>46.78</u>		%
97000510	AX-101 GRAB	3 DUP	S97T001898	0	TGA-03	LIQUID	<u>46.78</u>	<u>46.90</u>	<u>N/A</u>	%

Final page for worklist # 19742

Anthony Purno 8-24-97
Analyst Signature Date

Dan J. Hammett 8-26-97
Analyst Signature Date

Data Entry Comments:

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

Curve 1: TGA

File info: TER082401 Sun Aug 24 07:01:42 1997

Sample Weight: 45.453 mg

STD 103NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 102 TO 104. SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Aug 24 09:41:16 1997

Curve 1: TGA

File Info: SAM082415 Mon Aug 25 03:01:36 1997

Sample Weight: 26.053 mg

S97T00189B SAM

10C/MIN N2

TEMP: 35.0 C TIME: 0.0 min RATE: 10.0 C/min

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Aug 25 03:38:29 1997

HNF-SD-WM-DP-268, REV. 0

Curve 1: TGA
 File info: SAM082416 Mon Aug 25 04:27:37 1997
 Sample Weight: 19.270 mg
 S97T001898 DUP

AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Aug 25 04:29:25 1997

100/MIN N2
 TEMPERATURE 550.0 °C
 TIME 11: 0.0 min RATE: 10.0 °C/min

LABCORE Completed Worklist Report for Worklist# 19712

Analyst: rdm

Instrument: BA001

Book# 133N16AMethod: LA510-112 Rev/Mod D-1

Worklist Comment: SPG-01 FOR AX-101

RTS

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	SPG-01	LIQUID	1.39755	1.369	97.957 % Recovery	
2 SAMPLE	S97T001896 0	SPG-01	LIQUID	N/A	1.343	1.00e-002	Sp.G.
3 DUP	S97T001896 0	SPG-01	LIQUID	1.343	1.407	4.655 RPD	
4 SAMPLE	S97T001897 0	SPG-01	LIQUID	N/A	1.411	1.00e-002	Sp.G.
5 DUP	S97T001897 0	SPG-01	LIQUID	1.411	1.390	1.499 RPD	
6 SAMPLE	S97T001898 0	SPG-01	LIQUID	N/A	1.399	1.00e-002	Sp.G.
7 DUP	S97T001898 0	SPG-01	LIQUID	1.399	1.455	3.924 RPD	

Final page for worklist# 19712

Analyst Signature

Date

Analyst Signature

Date

RW Schroeder 8/11/97
 Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 19712

Analyst: 8/08/97 Instrument: BA001 Book # 1011104 8/08/97
133N16A

Method: LA-510-112 Rev/Mod _____

Worklist Comment: SPG-01 FOR AX-101

RTS

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.39755</u>	<u>1.369</u>	<u>N/A</u>	Sp.G.
97000510	AX-101 GRAB	2 SAMPLE	S97T001896	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.397</u>		Sp.G.
97000510	AX-101 GRAB	3 DUP	S97T001896	0	SPG-01	LIQUID	<u>1.397</u>	<u>1.403</u>	<u>N/A</u>	Sp.G.
97000510	AX-101 GRAB	4 SAMPLE	S97T001897	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.411</u>		Sp.G.
97000510	AX-101 GRAB	5 DUP	S97T001897	0	SPG-01	LIQUID	<u>1.411</u>	<u>1.417</u>	<u>N/A</u>	Sp.G.
97000510	AX-101 GRAB	6 SAMPLE	S97T001898	0	SPG-01	LIQUID	<u>N/A</u>	<u>1.432</u>		Sp.G.
97000510	AX-101 GRAB	7 DUP	S97T001898	0	SPG-01	LIQUID	<u>1.432</u>	<u>1.511</u>	<u>N/A</u>	Sp.G.

Final page for worklist # 19712

Replicates
Not included
RWS 8/11/97Analyst Signature 8/9/97
DateAnalyst Signature 8/09/97
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.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		STD	REPLICATE
STD	Gross Weight (W2)	2.0215	1.9950
Work List	Tare Weight (W1)	1.9179	1.8922
19712	Weight of Solution (W2-W1)	0.1036	0.10279
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.3744	1.3636
Matrix	Specific Gravity (Average)	1.3690	
LIQUID			
Sample #			
STD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
08/09/97	ν RESULT ν		
Time	Specific Gravity Average =	1.369	
03:25 AM			

Data Entry by:	Date:	08/09/97
Approved by:	Date:	8/11/97
Form 510112L1 Rev. 1.1		

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0113	1.8894
Work List	Tare Weight (W1)	1.9080	1.7923
19712	Weight of Solution (W2-W1)	0.10534	0.0971
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.3975	1.2881
Matrix	Specific Gravity (Average)	1.3428	
LIQUID			
Sample #			
S971001896			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
08/09/97	v RESULT v		
Time	Specific Gravity Average =	1.343	
03:25 AM			

Data Entry by:	Date:	08/11/97
Approved by:	Date:	8/11/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.9548	1.9161
Work List	Tare Weight (W1)	1.8491	1.8097
19712	Weight of Solution (W2-W1)	0.1057	0.1064
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.4022	1.4115
Matrix	Specific Gravity (Average)	1.4069	
LIQUID			
Sample #			
S97T001896			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
08/09/97	v RESULT v		
Time	Specific Gravity Average =	1.407	
03:25 AM			

Data Entry by: _____ Date: 08/11/97

Approved by: *RW Schroeder* Date: 8/11/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.0408	2.0303
Work List	Tare Weight (W1)	1.9344	1.9240
19712	Weight of Solution (W2-W1)	0.1064	0.1063
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.4115	1.4102
Matrix	Specific Gravity (Average)	1.4109	
LIQUID			
Sample #			
S97T001897			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
08/09/97	v RESULT v		
Time	Specific Gravity Average =	1.411	
03:25 AM			

Data Entry by:	Date:	08/11/97
Approved by:	Date:	8/11/97

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.9704	1.9072
Work List	Tare Weight (W1)	1.8636	1.8044
19712	Weight of Solution (W2-W1)	0.1068	0.1028
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.4168	1.3638
Matrix	Specific Gravity (Average)	1.3903	
LIQUID			
Sample #			
S97T001897			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) \cdot 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \cdot 1.000 \text{ g/mL}]$		
Date			
08/09/97	v RESULT v		
Time	Specific Gravity Average =	1.390	
03:25 AM			

Data Entry by:	Date:	08/11/97
Approved by:	Date:	8/11/97
Form 510112L1 Rev. 1.1		

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9745	1.9263
Work List	Tare Weight (W1)	1.8666	1.8233
19712	Weight of Solution (W2-W1)	0.1079	0.103
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.4314	1.3664
Matrix	Specific Gravity (Average)	1.3989	
LIQUID			
Sample #			
S97T001898			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
08/09/97	∇ RESULT ∇		
Time	Specific Gravity Average =	1.399	
03:25 AM			

Data Entry by:	Date:	08/11/97
Approved by:	Date:	8/11/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.9886	1.9634
Work List	Tare Weight (W1)	1.8748	1.8579
19712	Weight of Solution (W2-W1)	0.1138	0.1055
Test Code	Volume of Solution μ L	75.3800	75.3800
SPG-01	Specific Gravity	1.5097	1.3996
Matrix	Specific Gravity (Average)	1.4546	
LIQUID			
Sample #			
S971001898			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date	∇ RESULT ∇		
08/09/97	Specific Gravity Average =	1.455	
Time			
03:25 AM			

Data Entry by:	Date: 08/11/97
Approved by: <i>RW Schroeder</i>	Date: 8/11/97

worklistrpt Version 2.1 05/15/95
08/08/97 11:38

Page: 1

LABCORE Data Entry Template for Worklist# 19713

Analyst: RM Instrument: PH01 27 Book # 18N19DMethod: LA-212-106 Rev/Mod B-8

Worklist Comment: PH-01 FOR AX-101

RTS

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH			PH-01	LIQUID	<u>8.00</u>	<u>7.93</u>	<u>N/A</u>	pH
97000510	AX-101 GRAB	2 SAMPLE	S97T001896	0	PH-01	LIQUID	<u>N/A</u>	<u>13.35</u>	<u>0.01</u>	pH
97000510	AX-101 GRAB	3 DUP	S97T001896	0	PH-01	LIQUID	<u>13.35</u>	<u>13.37</u>	<u>N/A</u>	pH
97000510	AX-101 GRAB	4 SAMPLE	S97T001897	0	PH-01	LIQUID	<u>N/A</u>	<u>12.27</u>	<u>0.01</u>	pH
97000510	AX-101 GRAB	5 DUP	S97T001897	0	PH-01	LIQUID	<u>12.27</u>	<u>12.28</u>	<u>N/A</u>	pH
97000510	AX-101 GRAB	6 SAMPLE	S97T001898	0	PH-01	LIQUID	<u>N/A</u>	<u>13.16</u>	<u>0.01</u>	pH
97000510	AX-101 GRAB	7 DUP	S97T001898	0	PH-01	LIQUID	<u>13.16</u>	<u>13.17</u>	<u>N/A</u>	pH

Final page for worklist # 19713

RM 8/8/97
Analyst Signature Date

John Hammett 8-8-97
Analyst Signature Date

approved Rev. Schoen 8/11/97

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# 19714

Analyst: RM Instrument: PH01 Book # 101N8A

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

Worklist Comment: OH-01 FOR AX-101

RTS

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			OH-01	LIQUID	<u>1.66e⁴</u>	<u>1.59e⁴</u>	<u>N/A</u>	ug/mL
97000510	AX-101 GRAB	2 SAMPLE	S97T001896	0	OH-01	LIQUID	<u>N/A</u>	<u>3.63e⁴</u>	<u>2.50e³</u>	ug/mL
97000510	AX-101 GRAB	3 DUP	S97T001896	0	OH-01	LIQUID	<u>3.63e⁴</u>	<u>3.52e⁴</u>	<u>N/A</u>	ug/mL
97000510	AX-101 GRAB	4 SAMPLE	S97T001897	0	OH-01	LIQUID	<u>N/A</u>	<u>4.09e⁴</u>	<u>2.50e³</u>	ug/mL
97000510	AX-101 GRAB	5 DUP	S97T001897	0	OH-01	LIQUID	<u>4.09e⁴</u>	<u>3.67e⁴</u>	<u>N/A</u>	ug/mL
97000510	AX-101 GRAB	6 SAMPLE	S97T001898	0	OH-01	LIQUID	<u>N/A</u>	<u>4.22e⁴</u>	<u>2.50e³</u>	ug/mL
97000510	AX-101 GRAB	7 DUP	S97T001898	0	OH-01	LIQUID	<u>4.22e⁴</u>	<u>4.24e⁴</u>	<u>N/A</u>	ug/mL

Final page for worklist # 19714

Analyst Signature RM Date 8/4/97

Analyst Signature Susan Bee Date 8/10/97

approval RW Schoedon 8/11/97

Data Entry Comments:

1994 M Nitric Acid

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.

date 97-08-09 time 07:54
 GET pH 12 # 431
 Id.#1 1184
 Id.#2 .1994 *B/K*
 pH(init) 5.56
 V/ml
 EP1 .008 pH
 4.65
 stop volt.reached
 =====

date 97-08-09 time 07:55
 GET pH 12 # 431
 .10ml/div Δ pH=1/div
 start V .000 ml

date 97-08-09 time 08:01
 GET pH 12 # 432
 Id.#1 1184
 Id.#2 .1994 *SD*
 pH(init) 11.54
 V/ml
 EP1 .235 pH
 9.73
 EP2 .304 pH
 6.68
 stop volt.reached
 =====

date 97-08-09 time 08:01
 GET pH 12 # 432
 .10ml/div Δ pH=1/div
 start V .000 ml

date 97-08-09 time 08:14
 GET pH 12 # 433
 Id.#1 1184
 Id.#2 .1994 *1896*
 pH(init) 11.86
 V/ml
 EP1 .535 pH
 10.52
 stop V reached
 =====

date 97-08-09 time 08:14
 GET pH 12 # 433
 .10ml/div Δ pH=1/div
 start V .000 ml

date 97-08-09 time 08:22
 GET pH 12 # 434
 Id.#1 1184 *1896*
 Id.#2 .1994 *D4P*
 pH(init) 11.80
 V/ml
 EP1 .519 pH
 10.57
 stop V reached
 =====

date

date 97-08-09 time 08:32
 GET pH 12 # 436
 Id.#1 1184
 Id.#2 .1994
 pH(init) 11.88
 V/ml pH
 EP1 .414 10.84
 manual stop
 =====

date 97-08-09 time 08:32
 GET pH 12 # 436
 .10ml/div Δ pH=1/div
 start V .000 ml

date 97-08-09 time 08:41
 GET pH 12 # 437
 Id.#1 1184
 Id.#2 .1994
 pH(init) 11.91
 V/ml pH
 EP1 .603 10.56
 stop V reached
 =====

date 97-08-09 time 08:41
 GET pH 12 # 437
 .10ml/div Δ pH=1/div
 start V .000 ml

date 97-08-09 time 08:49
 GET pH 12 # 438
 Id.#1 1184
 Id.#2 .1994
 pH(init) 11.86
 V/ml pH
 EP1 .542 10.51
 EP2 .949 8.46
 manual stop
 =====

date 97-08-09 time 08:50
 GET pH 12 # 438
 .10ml/div Δ pH=1/div
 start V .000 ml

 date 97-08-09 time 09:04
 GET pH 12 # 440
 Id.#1 1184
 Id.#2 .1994
 pH(init) 11.93
 V/ml pH
 EP1 .626 10.52
 stop V reached
 =====

date 97-08-09 time 10:25
 GET pH 12 # 440
 .10ml/div Δ pH=1/div
 start V .000 ml

date 97-08-09 time 08:58
 GET pH 12 # 439
 Id.#1 1184
 Id.#2 .1994
 pH(init) 11.96
 V/ml pH
 EP1 .623 10.56
 stop V reached
 =====

date 97-08-09 time 08:58
 GET pH 12 # 439
 .10ml/div Δ pH=1/div
 start V .000 ml

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		STD
Type	Sample Size (mL) SS	0.050
STD	Concentration of HNO ₃ (Molarity)	0.1994
Work List	HNO ₃ Titrant at OH end-point in mL	0.235
19714	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.37E-01
OH-01	OH in Sample in µg/mL (PPM)	1.59E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
STD		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH-01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
08/09/97		
Time	STD	
01:55 AM	Concentration of OH in Sample (Molarity)	9.37E-01
	OH in Sample in µg/mL (PPM)	1.59E+04

Data Entry by:	Date: 08/09/97
Approved by: <i>DW Schmidt</i>	Date: 8/11/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE
Type	Sample Size (mL) SS	0.050
SAMPLE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.535
19714	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.13E+00
OH-01	OH in Sample in µg/mL (PPM)	3.63E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T001896		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
08/09/97		
Time		SAMPLE
01:55 AM	Concentration of OH in Sample (Molarity)	2.13E+00
	OH in Sample in µg/mL (PPM)	3.63E+04

Data Entry by:

Date: 08/09/97

Approved by:

Date: 8/11/97

Form 211102_1 Rev. 1.3

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (C-0)		DUP
Type	Sample Size (mL) SS	0.050
DUP	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.519
19714	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.07E+00
OH-01	OH in Sample in µg/mL (PPM)	3.52E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T001896		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
08/09/97		
Time		DUP
01:55 AM	Concentration of OH in Sample (Molarity)	2.07E+00
	OH in Sample in µg/mL (PPM)	3.52E+04

Data Entry by:	Date:	08/09/97
Approved by:	Date:	8/11/97
Form 211102_1 Rev. 1.3		

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE
Type	Sample Size (mL) SS	0.050
SAMPLE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.603
19714	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.40E+00
OH-01	OH in Sample in µg/mL (PPM)	4.09E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T001897		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
08/09/97		
Time		
01:55 AM		
	Concentration of OH in Sample (Molarity)	2.40E+00
	OH in Sample in µg/mL (PPM)	4.09E+04

Data Entry by:	Date: 08/09/97
Approved by: <i>Dw. Schneider</i>	Date: 8/11/97
Form 211102_1 Rev. 1.3	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (C-0)		DUP
Type	Sample Size (mL) SS	0.050
DUP	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.542
19714	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.16E+00
OH-01	OH in Sample in µg/mL (PPM)	3.67E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T001897		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
08/09/97		
Time		DUP
01:55 AM	Concentration of OH in Sample (Molarity)	2.16E+00
	OH in Sample in µg/mL (PPM)	3.67E+04

Data Entry by:	Date: 08/09/97
Approved by: <i>Rw. Schuch</i>	Date: 8/11/97
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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (C-0)		SAMPLE
Type	Sample Size (mL) SS	0.050
SAMPLE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.623
19714	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.48E+00
OH-01	OH in Sample in µg/mL (PPM)	4.22E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T001898		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
08/09/97		
Time		SAMPLE
01:55 AM	Concentration of OH in Sample (Molarity)	2.48E+00
	OH in Sample in µg/mL (PPM)	4.22E+04

Data Entry by:

Date: 08/09/97

Approved by:

Date: 8/11/97

Form 211102_1 Rev. 1.3

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (C-0)		DUP
Type	Sample Size (mL) SS	0.050
DUP	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.626
19714	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.50E+00
OH-01	OH in Sample in µg/mL (PPM)	4.24E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S97T001898		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH-01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
08/09/97		
Time		DUP
01:55 AM	Concentration of OH in Sample (Molarity)	2.50E+00
	OH in Sample in µg/mL (PPM)	4.24E+04

Data Entry by:

Date: 08/09/97

Approved by:

Date: 8/11/97

Form 211102_1 Rev. 1.3

Page 1 of 1

LABCORE Completed Worklist Report for Worklist# 19711

Analyst: dgg

Instrument: NH301

Book# _____

Method: LA63100 Rev/Mod C-0

Worklist Comment: NH3-01 FOR AX-101

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	NH3-01	LIQUID	1	<1.00E+0		ug/mL
2 STD	0	NH3-01	LIQUID	4.02E+02	4.20E+2	104.478 % Recovery	
3 SAMPLE	S97T001899 0	NH3-01	LIQUID	N/A	1.46E+03	1.000	ug/mL
4 DUP	S97T001899 0	NH3-01	LIQUID	1.46E+3	1.55E+3	5.980 RPD	
5 SPK	S97T001899 0	NH3-01	LIQUID	4.02E+02	3.26E2	81.095 % Recovery	
6 SAMPLE	S97T001900 0	NH3-01	LIQUID	N/A	1.73E+03	1.000	ug/mL
7 DUP	S97T001900 0	NH3-01	LIQUID	1.73E+3	1.81E+3	4.520 RPD	
8 SAMPLE	S97T001901 0	NH3-01	LIQUID	N/A	1.79E+03	1.000	ug/mL
9 DUP	S97T001901 0	NH3-01	LIQUID	1.79E+3	1.97E+3	9.574 RPD	
10 STD	0	NH3-01	LIQUID	4.02E+02	4.12E+2	102.488 % Recovery	

Final page for worklist# 19711

Analyst Signature

Date

Analyst Signature

Date

R. W. Schneider 8/13/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 19711

Analyst: RSB Instrument: NH301 Book# 3/W19-E

Method: LA-631-001 Rev/Mod _____

Worklist Comment: NH3-01 FOR AX-101

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			NH3-01	LIQUID		
2 STD			NH3-01	LIQUID		
3 SAMPLE	S97T001899 0		NH3-01	LIQUID	97000510	AX-101 GRAB
Analytes Requested: NH3-01						
4 DUP	S97T001899 0		NH3-01	LIQUID		
5 SPK	S97T001899 0		NH3-01	LIQUID		
6 SAMPLE	S97T001900 0		NH3-01	LIQUID	97000510	AX-101 GRAB
Analytes Requested: NH3-01						
7 DUP	S97T001900 0		NH3-01	LIQUID		
8 SAMPLE	S97T001901 0		NH3-01	LIQUID	97000510	AX-101 GRAB
Analytes Requested: NH3-01						
9 DUP	S97T001901 0		NH3-01	LIQUID		
10 STD			NH3-01	LIQUID		

Final page for worklist # 19711

RSB 8-9-97
Analyst Signature Date

[Signature] 8-12-97
Analyst Signature Date

1000 PPM used for all samples.

Data Entry Comments:

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

SAMPLE VOL= 25.000 AT 07:02, 08-09-94
ENTERED

EMF= 286.4 mV AT 07:03, 08-09-94

EMF= 286.3 mV AT 07:03, 08-09-94

EMF= 286.2 mV AT 07:03, 08-09-94
ENTERED

STD CONC= 1000 AT 07:04, 08-09-94
ENTERED

STD VOL= .25000 AT 07:04, 08-09-94
ENTERED

EMF= 61.9 mV AT 07:06, 08-09-94

EMF= 61.2 mV AT 07:07, 08-09-94
ENTERED

STD VOL= 2.5000 AT 07:07, 08-09-94
ENTERED

EMF= 2.2 mV AT 07:09, 08-09-94

EMF= 2.1 mV AT 07:09, 08-09-94
ENTERED

1:NH3 SLOPE=-59.1 mV/DEC
AT 07:09, 08-09-94

1:NH3 CONC= .00154

Blank

WL 19711

SS = 25ml Q #20

Tot Vol = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 07:13, 08-09-94

SAMPLE VOL= 25.000 AT 07:14, 08-09-94
ENTERED

EMF= 49.3 mV AT 07:16, 08-09-94

EMF= 49.2 mV AT 07:16, 08-09-94
ENTERED

STD CONCN= 1000 AT 07:16, 08-09-94
ENTERED

STD VOL= .25000 AT 07:16, 08-09-94
ENTERED

EMF= 37.4 mV AT 07:18, 08-09-94

EMF= 37.3 mV AT 07:18, 08-09-94
ENTERED

STD VOL= 2.5000 AT 07:18, 08-09-94
ENTERED

EMF=-0.5 mV AT 07:20, 08-09-94

EMF=-0.7 mV AT 07:21, 08-09-94
ENTERED

1:NH3 SLOPE=-59.9 mV/DEC
AT 07:21, 08-09-94

1:NH3 CONCN= 16.8

Beginning

Std 3/N19-E

S.S. = 1.0 ml

Tot Vol = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 07:31, 08-09-94

SAMPLE VOL= 25.000 AT 07:31, 08-09-94
ENTERED

EMF= 37.5 mV AT 07:33, 08-09-94

EMF= 36.8 mV AT 07:34, 08-09-94
ENTERED

STD CONC= 1000 AT 07:34, 08-09-94
ENTERED

STD VOL= .25000 AT 07:34, 08-09-94
ENTERED

EMF= 29.8 mV AT 07:35, 08-09-94

EMF= 29.4 mV AT 07:36, 08-09-94

EMF= 29.5 mV AT 07:36, 08-09-94
ENTERED

STD VOL= 2.5000 AT 07:36, 08-09-94
ENTERED

EMF= 0.6 mV AT 07:38, 08-09-94

EMF=-0.4 mV AT 07:39, 08-09-94

EMF=-0.6 mV AT 07:39, 08-09-94
ENTERED

1:NH3 SLOPE=-59.1 mV/DEC
AT 07:39, 08-09-94

1:NH3 CONC= 29.2

S97T001899

S.S. $\approx$ 0.500 ml

Tot Vol. $\approx$ 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 07:45, 08-09-94

SAMPLE VOL= 25.000 AT 07:45, 08-09-94
ENTERED

EMF= 36.7 mV AT 07:47, 08-09-94

EMF= 36.5 mV AT 07:47, 08-09-94

EMF= 36.5 mV AT 07:48, 08-09-94
ENTERED

STD CONC= 1000 AT 07:48, 08-09-94
ENTERED

STD VOL= .25000 AT 07:48, 08-09-94
ENTERED

EMF= 29.7 mV AT 07:49, 08-09-94

EMF= 29.5 mV AT 07:50, 08-09-94
ENTERED

STD VOL= 2.5000 AT 07:50, 08-09-94
ENTERED

EMF= 0.1 mV AT 07:52, 08-09-94

EMF=-0.1 mV AT 07:52, 08-09-94
ENTERED

1:NH3 SLOPE=-59.7 mV/DEC
AT 07:52, 08-09-94

1:NH3 CONC= 31.0

597T001899-Dup

S.S. = 0.500 ml

Total Vol. = 25. ml

DOUBLE KNOWN ADDITION SELECTED
AT 07:58, 08-09-94

SAMPLE VOL= 25.000 AT 07:58, 08-09-94
ENTERED

EMF= 33.3 mV AT 08:00, 08-09-94

EMF= 33.1 mV AT 08:01, 08-09-94
ENTERED

STD CONCN= 1000 AT 08:01, 08-09-94
ENTERED

STD VOL= .25000 AT 08:01, 08-09-94
ENTERED

EMF= 28.8 mV AT 08:02, 08-09-94

EMF= 27.5 mV AT 08:03, 08-09-94

EMF= 27.2 mV AT 08:03, 08-09-94
ENTERED

STD VOL= 2.5000 AT 08:03, 08-09-94
ENTERED

EMF= 0.9 mV AT 08:05, 08-09-94

EMF= 0.7 mV AT 08:05, 08-09-94
ENTERED

1:NH3 SLOPE=-57.3 mV/DEC
AT 08:05, 08-09-94

1:NH3 CONCN= 35.7

5977001899 ~Spk

S.S. = 0.500 ml

Spk# = 31N19-E

Spk Vol. = 0.500 ml

Tot Vol = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 09:33, 08-09-94

SAMPLE VOL= 25.000 AT 09:33, 08-09-94
ENTERED

EMF= 38.1 mV AT 09:35, 08-09-94

EMF= 37.6 mV AT 09:35, 08-09-94

EMF= 37.5 mV AT 09:36, 08-09-94
ENTERED

STD CONC= 1000 AT 09:36, 08-09-94
ENTERED

STD VOL= .25000 AT 09:36, 08-09-94
ENTERED

EMF= 31.1 mV AT 09:38, 08-09-94

EMF= 31.1 mV AT 09:38, 08-09-94
ENTERED

STD VOL= 2.5000 AT 09:38, 08-09-94
ENTERED

EMF= 2.7 mV AT 09:40, 08-09-94

EMF= 2.7 mV AT 09:40, 08-09-94
ENTERED

1:NH3 SLOPE=-60.5 mV/DEC
AT 09:40, 08-09-94

1:NH3 CONC= 34.6

S977001900

S.S. = 0.500 ml

Tot Vol = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 09:49, 08-09-94

SAMPLE VOL= 25.000 AT 09:49, 08-09-94
ENTERED

EMF= 38.2 mV AT 09:51, 08-09-94

EMF= 38.1 mV AT 09:52, 08-09-94

EMF= 38.2 mV AT 09:52, 08-09-94
ENTERED

STD CONC= 1000 AT 09:52, 08-09-94
ENTERED

STD VOL= .25000 AT 09:52, 08-09-94
ENTERED

EMF= 32.2 mV AT 09:54, 08-09-94

EMF= 31.9 mV AT 09:54, 08-09-94
ENTERED

STD VOL= 2.5000 AT 09:54, 08-09-94
ENTERED

EMF= 3.7 mV AT 09:56, 08-09-94

EMF= 3.5 mV AT 09:57, 08-09-94

EMF= 3.4 mV AT 09:57, 08-09-94
ENTERED

1:NH3 SLOPE=-62.1 mV/DEC
AT 09:57, 08-09-94

1:NH3 CONC= 36.3

5 977001900~Dup

S.S. = 0.500ml

Tot. Vol. = 25ml

DOUBLE KNOWN ADDITION SELECTED
AT 10:05, 08-09-94

SAMPLE VOL= 25.000 AT 10:05, 08-09-94
ENTERED

EMF= 55.7 mV AT 10:07, 08-09-94

EMF= 55.7 mV AT 10:07, 08-09-94
ENTERED

STD CONC= 1000 AT 10:08, 08-09-94
ENTERED

STD VOL= .25000 AT 10:08, 08-09-94
ENTERED

EMF= 45.2 mV AT 10:09, 08-09-94

EMF= 44.9 mV AT 10:09, 08-09-94

EMF= 44.6 mV AT 10:10, 08-09-94

EMF= 44.6 mV AT 10:10, 08-09-94
ENTERED

STD VOL= 2.5000 AT 10:10, 08-09-94
ENTERED

EMF= 8.3 mV AT 10:12, 08-09-94

EMF= 8.1 mV AT 10:13, 08-09-94
ENTERED

1:NH3 SLOPE=-58.8 mV/DEC
AT 10:13, 08-09-94

1:NH3 CONC= 17.9

597T001901

S.S. = 0.250 ml

Tot Vol. = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 10:34, 08-09-94

SAMPLE VOL= 25.000 AT 10:35, 08-09-94
ENTERED

EMF= 56.3 mV AT 10:37, 08-09-94

EMF= 56.0 mV AT 10:37, 08-09-94

EMF= 56.0 mV AT 10:37, 08-09-94
ENTERED

STD CONC= 1000 AT 10:37, 08-09-94
ENTERED

STD VOL= .25000 AT 10:38, 08-09-94
ENTERED

EMF= 45.8 mV AT 10:39, 08-09-94

EMF= 45.6 mV AT 10:39, 08-09-94
ENTERED

STD VOL= 2.5000 AT 10:40, 08-09-94
ENTERED

EMF= 9.9 mV AT 10:42, 08-09-94

EMF= 9.8 mV AT 10:42, 08-09-94
ENTERED

1:NH3 SLOPE=-59.7 mV/DEC
AT 10:42, 08-09-94

1:NH3 CONC= 19.7

S977001901-Dup

S.S. = 0.250 ml

Tot. Vol = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 10:48, 08-09-94

SAMPLE VOL= 25.000 AT 10:48, 08-09-94
ENTERED

EMF= 60.3 mV AT 10:49, 08-09-94

EMF= 60.1 mV AT 10:50, 08-09-94

EMF= 60.0 mV AT 10:50, 08-09-94
ENTERED

STD CONC= 1000 AT 10:50, 08-09-94
ENTERED

STD VOL= .25000 AT 10:50, 08-09-94
ENTERED

EMF= 48.8 mV AT 10:52, 08-09-94

EMF= 48.4 mV AT 10:52, 08-09-94

EMF= 48.3 mV AT 10:53, 08-09-94

EMF= 48.3 mV AT 10:53, 08-09-94
ENTERED

STD VOL= 2.5000 AT 10:53, 08-09-94
ENTERED

EMF= 11.2 mV AT 10:55, 08-09-94

EMF= 11.2 mV AT 10:56, 08-09-94
ENTERED

1:NH3 SLOPE=-58.2 mV/DEC
AT 10:56, 08-09-94

1:NH3 CONC= 16.5

Ending Std

Std # 31N19-E

S.S. = 1.0 ml

Tot Vol = 2.5 ml

WORKBOOK PAGE: BLANK1

AMMONIA (NH3) : LA-631-001 (C-0)**LIQUIDS/SOLIDS**

Type	Instrument Data (µg/mL)	ID	BLNK
BLNK	Blank Result from the Instrument (µg/mL)	BR	0.002
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.0015
19711	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			25.0
NH3-01			
Matrix			
LIQUID			
Batch Number			
97003852			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	< 1.00E+00
Sample #			
STD	Method Detection Limit (µg/mL)		1.00
Instrument Code			
NH301			
Prepared By			
GJH	NH3 Concentration (µg/mL) = (BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
08/12/97			
Analysis Date			
08/09/97			
Analysis Time			
11:30 AM			
Sample Point	NH3 Concentration (µg/mL)		< 1.00E+00
AX-101 GRAB			

Analyst:	DGG	Date: 08/12/97
Signature of Chemist:	<i>RWS</i>	Date: 8/13/97
SAMPLE.WB1 REV XX	37810NML	

WORKBOOK PAGE: STD2

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

Type	Instrument Data (µg/mL)	ID	STD
STD	Blank Result from the Instrument (µg/mL)	BR	16.800
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.0015
19711	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	1.0
Test Code	LCS Standard Book Number	LCS	25.0
NH301	LCS Standard Concentration (µg/mL)	STD VAL	31N19E
Matrix			4.02E+02
LIQUID			
Batch Number			
97003852			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	4.20E+02
Sample #			
STD	Method Detection Limit (µg/mL)		1.00
Instrument Code			
NH301			
Prepared By			
GJH	$\text{NH}_3 \text{ Concentration } (\mu\text{g/mL}) = (\text{ID}-\text{BR}) * (\text{FVOL} / \text{VSAM})$		
Chemist			
RWS			
Analyst			
DGG	$\text{LCS Standard \% Recovery} = (\text{NH}_3 \text{ CONC} / \text{STD VAL}) * 100$		
Date Complete			
08/12/97			
Analysis Date			
08/09/97			
Analysis Time	LCS Standard % Recovery		104%
11:30 AM			
Sample Point	NH3 Concentration (µg/mL)		4.20E+02
AX-101 GRAB			

Analyst:

DGG Date: 08/12/97

Signature of Chemist:

Rw Schroeder

RWS Date: 8/13/97

SAMPLE:WB1 REV XX

37810NML

WORKBOOK PAGE: SAM3

AMMONIA (NH3) : LA-631-001 (C-0)**LIQUIDS/SOLIDS**

Type	Instrument Data (µg/mL)	ID	SAMPLE
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	29.200
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.5
19711	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
Matrix			
LIQUID			
Batch Number			
97003852			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	1.46E+03
Sample #			
S97T001899	Method Detection Limit (µg/mL)	1.00	
Instrument Code			
NH301			
Prepared By			
GJH	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
08/12/97			
Analysis Date			
08/09/97			
Analysis Time			
11:30 AM			
Sample Point	NH3 Concentration (µg/mL)		1.46E+03
AX-101 GRAB			

Analyst:	DGG	Date:	08/12/97
Signature of Chemist:	<i>RWS</i>	RWS	Date: 8/13/97
SAMPLE.WB1 REV XX	37810NML		

WORKBOOK PAGE: DUP4

AMMONIA (NH3) : LA-631-001 (C-0)**LIQUIDS/SOLIDS**

Type	Instrument Data (µg/mL)	ID	DUP
DUP	Blank Result from the Instrument (µg/mL)	BR	0.0015
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.5
19711	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
Matrix			
LIQUID			
Batch Number	Sample Concentration (µg/mL)	SAM CONC	1.46E+03
97003852			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	1.55E+03
Sample #			
S97T001899	Method Detection Limit (µg/mL)	1.00	
Instrument Code			
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 10		
Prepared By			
GJH	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
08/12/97			
Analysis Date			
08/09/97			
Analysis Time			
11:30 AM	RPD (DUP & SAM)		6%
Sample Point	NH3 Concentration (µg/mL)		1.55E+03
AX-101 GRAB			

Analyst:	DGG Date: 08/12/97
Signature of Chemist: <i>RWS</i>	RWS Date: 8/12/97
SAMPLE.WB1 REV XX	37810NML

WORKBOOK PAGE: SPIKE5

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		SPK
Type	Instrument Data (µg/mL)	ID 35.700
SPK	Blank Result from the Instrument (µg/mL)	BR 0.0015
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.5
19711	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	Spike Book Number	SPK 31N19E
	Spike Value (µg/mL)	SPK VAL 4.02E+02
Matrix	Vol of Spike Standard Used (mL)	VOL SPK 0.500
LIQUID		
Batch Number		
97003852		
Rerun	Sample Instrument Data (µg/mL)	SAM ID 29.2
0	Sample Volume of Sample (mL)	SAM VSAM 0.5
Sample Prep	Sample Final Volume (mL)	SAM FVOL 25.0
N/A	NH3 Concentration (µg/mL)	NH3 CONC 1.78E+03
Sample #		
S97T001899	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
GJH	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS	QC ACTUAL = SPK VAL	
Analyst	QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / Vol SPK	
DGG	Spike % Recovery =	
Date Complete	(((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / (SPK VAL * VOL SPK) * 100	
08/12/97		
Analysis Date	QC ACTUAL (µg)	4.02E+02
08/09/97	QC FOUND (µg)	326 4.63E+02
Analysis Time	Spike % Recovery	81%
11:30 AM		
Sample Point	NH3 Concentration (µg/mL)	1.78E+03
AX-101 GRAB		

Analyst:	DGG Date: 08/12/97
Signature of Chemist:	RWS Date: 8/13/97
SAMPLE:WB1 REV XX	
37810NML	

WORKBOOK PAGE: SAM6

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

Type	Instrument Data (µg/mL)	ID	SAMPLE
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	34.600
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.5
19711	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
Matrix			
LIQUID			
Batch Number			
97003852			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	1.73E+03
Sample #			
S97T001900	Method Detection Limit (µg/mL)	1.00	
Instrument Code			
NH301			
Prepared By			
GJH	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
08/12/97			
Analysis Date			
08/09/97			
Analysis Time			
11:30 AM			
Sample Point	NH3 Concentration (µg/mL)		1.73E+03
AX-101 GRAB			

Analyst:

DGG Date: 08/12/97

Signature of Chemist:

RWS Date: 8/13/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: DUP7

AMMONIA (NH3) : LA-631-001 (C-0)**LIQUIDS/SOLIDS**

		DUP
Type	Instrument Data (µg/mL)	ID 36.300
DUP	Blank Result from the Instrument (µg/mL)	BR 0.0015
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.5
19711	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
Matrix		
LIQUID		
Batch Number	Sample Concentration (µg/mL)	SAM CONC 1.73E+03
97003852		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 1.81E+03
Sample #		
S97T001900	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 10	
Prepared By		
GJH	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/12/97		
Analysis Date		
08/09/97		
Analysis Time		
11:30 AM	RPD (DUP & SAM)	5%
Sample Point	NH3 Concentration (µg/mL)	1.81E+03
AX-101 GRAB		

Analyst:

DGG Date: 08/12/97

Signature of Chemist:

RW Schroeder

RWS Date: 8/13/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: SAM8

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

			SAMPLE
Type	Instrument Data (µg/mL)	ID	17.900
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.0015
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.250 ^(2.5) 0.3 _{8/13/97}
19711	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
Matrix			
LIQUID			
Batch Number			
97003852			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	1.79E+03
Sample #			
S97T001901	Method Detection Limit (µg/mL)	1.00	
Instrument Code			
NH301			
Prepared By			
GJH	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
08/12/97			
Analysis Date			
08/09/97			
Analysis Time			
11:30 AM			
Sample Point	NH3 Concentration (µg/mL)	1.79E+03	
AX-101 GRAB			

Analyst:	DGG	Date:	08/12/97
Signature of Chemist:	<i>RWS</i>	Date:	8/13/97
SAMPLE.WB1 REV XX			
37810NML			

WORKBOOK PAGE: DUP9

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		DUP
Type	Instrument Data (µg/mL)	ID 19.700
DUP	Blank Result from the Instrument (µg/mL)	BR 0.0015
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.250 0.3
19711	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
Matrix		
LIQUID		
Batch Number	Sample Concentration (µg/mL)	SAM CONC 1.79E+03
97003852		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 1.97E+03
Sample #		
S97T001901	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 10	
Prepared By		
GJH	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/12/97		
Analysis Date		
08/09/97		
Analysis Time		
11:30 AM	RPD (DUP & SAM)	10%
Sample Point	NH3 Concentration (µg/mL)	1.97E+03
AX-101 GRAB		

Analyst:	DGG Date: 08/12/97
Signature of Chemist:	RWS Date: 8/13/97
SAMPLE.WB1 REV XX	
37810NML	

WORKBOOK PAGE: ST_END10

AMMONIA (NH3) : LA-631-001 (C-0)**LIQUIDS/SOLIDS**

		STD
Type	Instrument Data (µg/mL)	ID 16.500
STD	Blank Result from the Instrument (µg/mL)	BR 0.0015
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19711	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 31N19E
	LCS Standard Concentration (µg/mL)	STD VAL 4.02E+02
Matrix		
Batch Number		
97003852		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 4.12E+02
Sample #		
	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
GJH	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
DGG	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100	
Date Complete		
08/12/97		
Analysis Date		
08/09/97		
Analysis Time	LCS Standard % Recovery	103%
11:30 AM		
Sample Point	NH3 Concentration (µg/mL)	4.12E+02
AX-101 GRAB		

Analyst:

Signature of Chemist:

DGG Date: 08/12/97

RWS Date: 8/13/97

SAMPLE.WB1 REV XX

37810NML

LABCORE Completed Worklist Report for Worklist# 19718

Analyst: dgg

Instrument: NH301

Book# 31N19E

Method: LA 631-001 Rev/Mod C-0

Worklist Comment: NH3-01 FOR AX-101 (PIPET SAM,DUP,& SPK FROM SAME VIAL) RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		NH3-01	LIQUID	4.02E+02	4.33E+2	107.711	% Recovery
2 BLNK-PREP	0		NH3-01	LIQUID	1	<2.32E1		ug/mL
3 SAMPLE	S97T001902	0 D	NH3-01	LIQUID	N/A	<2.32E1	23.200	ug/mL
4 DUP	S97T001902	0 D	NH3-01	LIQUID	<2.32E1	<2.32E1		RPD
5 SPK	S97T001902	0 D	NH3-01	LIQUID	4.02E+02	4.58E+02	113.930	% Recovery
6 SAMPLE	S97T001903	0 D	NH3-01	LIQUID	N/A	<2.28E1	22.800	ug/mL
7 DUP	S97T001903	0 D	NH3-01	LIQUID	<2.28E1	<2.28E1		RPD
8 SAMPLE	S97T001904	0 D	NH3-01	LIQUID	N/A	<2.38E1	23.800	ug/mL
9 DUP	S97T001904	0 D	NH3-01	LIQUID	<2.38E1	<2.38E1		RPD
10 STD	0		NH3-01	LIQUID	4.02E+02	4.13E+2	102.736	% Recovery

Final page for worklist# 19718

Analyst Signature

Date

Analyst Signature

Date

Robert W. Schroeder 8/14/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 19718

Analyst: DBB Instrument: NH301 Book# 3/21/9-E

Method: LA-631-001 Rev/Mod _____

Worklist Comment: NH3-01 FOR AX-101 (PIPET SAM,DUP,& SPK FROM SAME VIAL) RTS

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				NH3-01	LIQUID		
2	BLNK-PREP				NH3-01	LIQUID		
3	SAMPLE	S97T001902	0	D	NH3-01	LIQUID	97000510	AX-101 GRAB
		Analytes Requested: NH3-01						
4	^{Rep} DUP	S97T001902	0	D	NH3-01	LIQUID		
5	SPK	S97T001902	0	D	NH3-01	LIQUID		
6	SAMPLE	S97T001903	0	D	NH3-01	LIQUID	97000510	AX-101 GRAB
		Analytes Requested: NH3-01						
7	^{Rep} DUP	S97T001903	0	D	NH3-01	LIQUID		
8	SAMPLE	S97T001904	0	D	NH3-01	LIQUID	97000510	AX-101 GRAB
		Analytes Requested: NH3-01						
9	^{Rep} DUP	S97T001904	0	D	NH3-01	LIQUID		
10	STD				NH3-01	LIQUID		

Final page for worklist # 19718

DBB
Analyst Signature

8-9-97
Date

DBB
8/1/97

[Signature]
Analyst Signature

8-10-97
Date

Data Entry Comments:

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

DOUBLE KNOWN ADDITION SELECTED
AT 11:09, 08-09-94

SAMPLE VOL= 25.000 AT 11:09, 08-09-94
ENTERED

EMF= 59.6 mV AT 11:10, 08-09-94

EMF= 59.3 mV AT 11:11, 08-09-94

EMF= 59.3 mV AT 11:11, 08-09-94
ENTERED

STD CONC= 1000 AT 11:11, 08-09-94
ENTERED

STD VOL= .25000 AT 11:11, 08-09-94
ENTERED

EMF= 48.0 mV AT 11:13, 08-09-94

EMF= 47.8 mV AT 11:13, 08-09-94

EMF= 47.8 mV AT 11:13, 08-09-94
ENTERED

STD VOL= 2.5000 AT 11:14, 08-09-94
ENTERED

EMF= 10.6 mV AT 11:16, 08-09-94

EMF= 10.4 mV AT 11:17, 08-09-94

EMF= 10.4 mV AT 11:17, 08-09-94
ENTERED

1:NH3 SLOPE=-59.8 mV/DEC
AT 11:17, 08-09-94

1:NH3 CONC= 17.5

Beginning Std

Std # 31019-E

S.S. = 1.0 ml

Tot Vol. = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 14:02, 08-09-94

SAMPLE VOL= 25.000 AT 14:02, 08-09-94
ENTERED

EMF= 166.2 mV AT 14:09, 08-09-94

EMF= 166.3 mV AT 14:09, 08-09-94
ENTERED

Prep Blank

STD CONC= 1000 AT 14:09, 08-09-94
ENTERED

STD VOL= .25000 AT 14:09, 08-09-94
ENTERED

EMF= 65.1 mV AT 14:11, 08-09-94

EMF= 64.8 mV AT 14:11, 08-09-94

EMF= 63.6 mV AT 14:12, 08-09-94

EMF= 63.4 mV AT 14:12, 08-09-94

EMF= 63.3 mV AT 14:12, 08-09-94
ENTERED

STD VOL= 2.5000 AT 14:13, 08-09-94
ENTERED

EMF= 4.8 mV AT 14:15, 08-09-94

EMF= 4.6 mV AT 14:15, 08-09-94

EMF= 4.5 mV AT 14:15, 08-09-94

EMF= 4.6 mV AT 14:16, 08-09-94
ENTERED

1:NH3 SLOPE=-59.1 mV/DEC
AT 14:16, 08-09-94

1:NH3 CONC= .182

DOUBLE KNOWN ADDITION SELECTED
AT 14:20, 08-09-94

SAMPLE VOL= 25.000 AT 14:20, 08-09-94
ENTERED

EMF= 168.4 mV AT 14:25, 08-09-94

EMF= 168.6 mV AT 14:25, 08-09-94
ENTERED

STD CONC= 1000 AT 14:26, 08-09-94
ENTERED

STD VOL= .25000 AT 14:26, 08-09-94
ENTERED

EMF= 65.1 mV AT 14:28, 08-09-94

EMF= 64.9 mV AT 14:29, 08-09-94

EMF= 64.8 mV AT 14:29, 08-09-94
ENTERED

STD VOL= 2.5000 AT 14:29, 08-09-94
ENTERED

EMF= 6.4 mV AT 14:32, 08-09-94

EMF= 6.0 mV AT 14:32, 08-09-94

EMF= 6.0 mV AT 14:32, 08-09-94
ENTERED

1:NH3 SLOPE=-59.2 mV/DEC
AT 14:32, 08-09-94

1:NH3 CONC= .178

S977801902

SS. = 1.0 ml

Total Vol = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 14:36, 08-09-94

SAMPLE VOL= 25.000 AT 14:36, 08-09-94
ENTERED

EMF= 178.7 mV AT 14:41, 08-09-94

EMF= 178.9 mV AT 14:41, 08-09-94
ENTERED

STD CONC= 1000 AT 14:41, 08-09-94
ENTERED

STD VOL= .25000 AT 14:42, 08-09-94
ENTERED

EMF= 67.5 mV AT 14:44, 08-09-94

EMF= 66.9 mV AT 14:44, 08-09-94
ENTERED

STD VOL= 2.5000 AT 14:44, 08-09-94
ENTERED

EMF= 7.8 mV AT 14:46, 08-09-94

EMF= 7.6 mV AT 14:47, 08-09-94

EMF= 7.6 mV AT 14:47, 08-09-94
ENTERED

1:NH3 SLOPE=-59.6 mV/DEC
AT 14:47, 08-09-94

1:NH3 CONC= .132

5977001902-Dup

S.S. = 1.0 ml

Wt. H₂O = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 14:53, 08-09-94

SAMPLE VOL= 25.000 AT 14:53, 08-09-94
ENTERED

EMF= 110.9 mV AT 14:54, 08-09-94

EMF= 111.0 mV AT 14:55, 08-09-94

EMF= 111.1 mV AT 14:55, 08-09-94
ENTERED

STD CONC= 1000 AT 14:55, 08-09-94
ENTERED

STD VOL= .25000 AT 14:55, 08-09-94
ENTERED

EMF= 65.4 mV AT 14:57, 08-09-94

EMF= 64.9 mV AT 14:58, 08-09-94

EMF= 64.9 mV AT 14:58, 08-09-94
ENTERED

STD VOL= 2.5000 AT 14:58, 08-09-94
ENTERED

EMF= 9.7 mV AT 15:00, 08-09-94

EMF= 9.4 mV AT 15:01, 08-09-94

EMF= 9.3 mV AT 15:01, 08-09-94
ENTERED

1:NH3 SLOPE=-59.9 mV/DEC
AT 15:01, 08-09-94

1:NH3 CONC= 2.01

397T001902 Spk

S.S. = 1.0 ml

Spk # = 3/11/9-E

Spk Vol. = 0.100 ml

Tot Vol. = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 15:10, 08-09-94

SAMPLE VOL= 25.000 AT 15:10, 08-09-94
ENTERED

EMF= 178.0 mV AT 15:13, 08-09-94

EMF= 180.9 mV AT 15:15, 08-09-94

EMF= 181.5 mV AT 15:15, 08-09-94

EMF= 181.6 mV AT 15:15, 08-09-94
ENTERED

STD CONCN= 1000 AT 15:16, 08-09-94
ENTERED

STD VOL= .25000 AT 15:16, 08-09-94
ENTERED

EMF= 69.9 mV AT 15:18, 08-09-94

EMF= 69.8 mV AT 15:18, 08-09-94

EMF= 69.4 mV AT 15:19, 08-09-94

EMF= 69.4 mV AT 15:19, 08-09-94

EMF= 68.5 mV AT 15:19, 08-09-94
ENTERED

STD VOL= 2.5000 AT 15:20, 08-09-94
ENTERED

EMF= 10.8 mV AT 15:22, 08-09-94

EMF= 10.6 mV AT 15:22, 08-09-94

EMF= 10.5 mV AT 15:22, 08-09-94
ENTERED

1:NH3 SLOPE=-58.2 mV/DEC
AT 15:22, 08-09-94

1:NH3 CONCN= .114

5977001903

S.S. = 1.0 ml

Tot Vol = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 15:26, 08-09-94

SAMPLE VOL= 25.000 AT 15:27, 08-09-94
ENTERED

EMF= 169.3 mV AT 15:31, 08-09-94

EMF= 170.4 mV AT 15:32, 08-09-94

EMF= 170.6 mV AT 15:32, 08-09-94

EMF= 171.3 mV AT 15:32, 08-09-94

EMF= 170.6 mV AT 15:33, 08-09-94

EMF= 172.1 mV AT 15:33, 08-09-94

EMF= 171.9 mV AT 15:34, 08-09-94

EMF= 171.8 mV AT 15:34, 08-09-94
ENTERED

STD CONC= 1000 AT 15:34, 08-09-94
ENTERED

STD VOL= .25000 AT 15:34, 08-09-94
ENTERED

EMF= 70.4 mV AT 15:37, 08-09-94

EMF= 70.2 mV AT 15:37, 08-09-94

EMF= 70.1 mV AT 15:37, 08-09-94
ENTERED

STD VOL= 2.5000 AT 15:38, 08-09-94
ENTERED

EMF= 11.4 mV AT 15:40, 08-09-94

EMF= 11.3 mV AT 15:40, 08-09-94
ENTERED

1:NH3 SLOPE=-59.2 mV/DEC
AT 15:40, 08-09-94

1:NH3 CONC= .194

5977001903-Dup

S.S. = 1.0 ml

Tot. Vol. = ~~2.0~~ 2.5 ml
0.05

DOUBLE KNOWN ADDITION SELECTED
AT 15:45, 08-09-94

SAMPLE VOL= 25.000 AT 15:45, 08-09-94
ENTERED

EMF= 153.6 mV AT 15:45, 08-09-94

EMF= 164.9 mV AT 15:50, 08-09-94
ENTERED

STD CONC= 1000 AT 15:51, 08-09-94
ENTERED

STD VOL= .25000 AT 15:51, 08-09-94
ENTERED

EMF= 71.4 mV AT 15:53, 08-09-94

EMF= 71.2 mV AT 15:53, 08-09-94

EMF= 71.1 mV AT 15:54, 08-09-94
ENTERED

STD VOL= 2.5000 AT 15:54, 08-09-94
ENTERED

EMF= 12.6 mV AT 15:56, 08-09-94

EMF= 12.4 mV AT 15:57, 08-09-94

EMF= 12.3 mV AT 15:57, 08-09-94
ENTERED

1:NH3 SLOPE=-59.4 mV/DEC
AT 15:57, 08-09-94

1:NH3 CONC= .268

S97700/1904

S.S. = 1.0 mV

Tot. Vol. = 25 mV

DOUBLE KNOWN ADDITION SELECTED
AT 16:16, 08-09-94

SAMPLE VOL= 25.000 AT 16:16, 08-09-94
ENTERED

EMF= 158.6 mV AT 16:20, 08-09-94

EMF= 159.5 mV AT 16:21, 08-09-94

EMF= 159.5 mV AT 16:21, 08-09-94
ENTERED

STD CONC= 1000 AT 16:21, 08-09-94
ENTERED

STD VOL= .25000 AT 16:21, 08-09-94
ENTERED

EMF= 70.8 mV AT 16:24, 08-09-94

EMF= 70.6 mV AT 16:24, 08-09-94

EMF= 70.4 mV AT 16:24, 08-09-94
ENTERED

STD VOL= 2.5000 AT 16:25, 08-09-94
ENTERED

EMF= 12.0 mV AT 16:27, 08-09-94

EMF= 11.8 mV AT 16:27, 08-09-94

EMF= 11.8 mV AT 16:28, 08-09-94
ENTERED

1:NH3 SLOPE=-59.3 mV/DEC
AT 16:28, 08-09-94

1:NH3 CONC= .322

5977001904- Day

S.S. = 1.0 ml

Tot. Vol. = 25 ml

DOUBLE KNOWN ADDITION SELECTED
AT 16:42, 08-09-94

SAMPLE VOL= 25.000 AT 16:42, 08-09-94
ENTERED

EMF= 60.1 mV AT 16:43, 08-09-94

EMF= 59.7 mV AT 16:44, 08-09-94

EMF= 59.5 mV AT 16:44, 08-09-94

EMF= 59.5 mV AT 16:45, 08-09-94

EMF= 59.4 mV AT 16:45, 08-09-94
ENTERED

STD CONC= 1000 AT 16:45, 08-09-94
ENTERED

STD VOL= .25000 AT 16:45, 08-09-94
ENTERED

EMF= 47.5 mV AT 16:47, 08-09-94

EMF= 47.3 mV AT 16:47, 08-09-94

EMF= 47.2 mV AT 16:47, 08-09-94
ENTERED

STD VOL= 2.5000 AT 16:47, 08-09-94
ENTERED

EMF= 8.6 mV AT 16:50, 08-09-94

EMF= 8.4 mV AT 16:50, 08-09-94

EMF= 8.3 mV AT 16:50, 08-09-94
ENTERED

1:NH3 SLOPE=-61.3 mV/DEC
AT 16:50, 08-09-94

1:NH3 CONC= 16.7

Ending std
std # = 3/W19-E
S.S. = 1.0 ml
wt vol = 25 ml

WORKBOOK PAGE: STD1

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	ID 17.500
STD	Blank Result from the Instrument (µg/mL)	BR 0.1820
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19718	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 31N19E
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL 4.02E+02
Matrix		
LIQUID		
Batch Number		
97003855		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 4.33E+02
Sample #		
STANDARD	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
DGG	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100	
Date Complete		
08/12/97		
Analysis Date		
08/09/97		
Analysis Time	LCS Standard % Recovery	108%
12:00 PM		
Sample Point	NH3 Concentration (µg/mL)	4.33E+02
AX-101		

Analyst:	DGG Date: 08/12/97
Signature of Chemist:	RWS Date: 8/13/97
SAMPLE WB1 REV XX	37810NML

WORKBOOK PAGE: BLANK2

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

BLNK-PREP

Type	Instrument Data (µg/mL)	ID	0.182
BLNK-PREP	Blank Result from the Instrument (µg/mL)	BR	0.1820
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
19718	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID			
Batch Number			
97003855			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	< 1.00E+00
Sample #	23.25		
BLANK	Method Detection Limit (µg/mL)	5.0 x 4.65 DF = 4.00 23.25	
Instrument Code			
NH301			
Prepared By			
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
08/12/97			
Analysis Date			
08/09/97			
Analysis Time			
12:00 PM			
Sample Point	NH3 Concentration (µg/mL)	< 23.25	< 1.00E+00
AX-101			

Analyst:	DGG Date: 08/12/97
Signature of Chemist:	RWS Date: 8/13/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: SAM3

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID
SAMPLE	Blank Result from the Instrument (µg/mL)	BR
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM
19718	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL
Test Code		
NH3-01		
Matrix		
LIQUID		
Batch Number		
97003855		
Rerun		
0		
Sample Prep		
ACIDIL01	NH3 Concentration (µg/mL)	NH3 CONC
Sample #		< 4.00E+00
S97T001902	Method Detection Limit (µg/mL)	5.0 x 4.65 DF = 1.00
Instrument Code		23.25 8/13/97
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/12/97		
Analysis Date		
08/09/97		
Analysis Time		
12:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 23.25
AX-101		< 4.00E+00

Analyst:	DGG Date: 08/12/97
Signature of Chemist:	RWS Date: 8/13/97

SAMPLE.WB1 REV XX

37810NML

AMMONIA (NH₃) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		REPLICATE
Type	Instrument Data (µg/mL)	ID 0.132
REPLICATE	Blank Result from the Instrument (µg/mL)	BR 0.1820
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19718	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID		
Batch Number		
Rerun		
Sample Prep		
	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+00
Sample #	< 23.25	
S97T001902	Method Detection Limit (µg/mL) $5.0 \times 4.65 = 1.00$	RWS 8/13/97
Instrument Code	23.25	
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/12/97		
Analysis Date		
08/09/97		
Analysis Time		
12:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 23.25 < 1.00E+00
AX-101	RWS 8/13/97	

Analyst:

DGG Date: 08/12/97

Signature of Chemist:

RWS

RWS Date: 8/13/97

SAMPLE.WB1 REV.XX

37810NML

WORKBOOK PAGE: SPIKE4

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		SPK
Type	Instrument Data (µg/mL)	ID 2.010
SPK	Blank Result from the Instrument (µg/mL)	BR 0.1820
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19718	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	Spike Book Number	SPK 31N19E
NH3-01	Spike Value (µg/mL)	SPK VAL 4.02E+02
Matrix	Vol of Spike Standard Used (mL)	VOL SPK 0.100
LIQUID		
Batch Number		
97003855		
Rerun	Sample Instrument Data (µg/mL)	SAM ID 0.178
0	Sample Volume of Sample (mL)	SAM VSAM 1.0
Sample Prep	Sample Final Volume (mL)	SAM FVOL 25.0
ACIDIL01	NH3 Concentration (µg/mL)	NH3 CONC 4.57E+01
Sample #		
S97T001902	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RCJ	$\text{NH}_3 \text{ Concentration } (\mu\text{g/mL}) = (\text{ID}-\text{BR}) * (\text{FVOL} / \text{VSAM})$	
Chemist		
RWS	QC ACTUAL = SPK VAL	
Analyst	QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / Vol SPK	
DGG	Spike % Recovery =	
Date Complete	((((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / (SPK VAL * VOL SPK)) * 100	
08/12/97		
Analysis Date	QC ACTUAL (µg)	4.02E+02
08/09/97	QC FOUND (µg)	4.58E+01
Analysis Time	Spike % Recovery	114%
12:00 PM		
Sample Point	NH3 Concentration (µg/mL)	4.57E+01
AX-101		

Analyst:	DGG Date: 08/12/97
Signature of Chemist:	RWS Date: 8/13/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: SAM5

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID 0.114
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 0.1820
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19718	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID		
Batch Number		
97003855		
Rerun		
0		
Sample Prep		
ACIDIL01	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+00
Sample #		
S97T001903	Method Detection Limit (µg/mL)	5.0 x 4.57 D.F. = 1.00
Instrument Code		
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/12/97		
Analysis Date		
08/09/97		
Analysis Time		
12:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 22.85 < 1.00E+00
AX-101		

RWS
8/13/97

RWS
8/13/97

Analyst:	DGG Date: 08/12/97
Signature of Chemist:	RWS Date: 8/13/97
SAMPLE.WB1 REV XX	
37810NML	

AMMONIA (NH₃) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		REPLICATE
Type	Instrument Data (µg/mL)	ID 0.194
REPLICATE	Blank Result from the Instrument (µg/mL)	BR 0.1820
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19718	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID		
Batch Number		
Rerun		
Sample Prep		
	NH3 Concentration (µg/mL)	NH3 CONC 1.00E+00
Sample #		
S97T001903	Method Detection Limit (µg/mL)	$5.0 \times 4.57 = 22.85$ 1.00
Instrument Code		
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/12/97		
Analysis Date		
08/09/97		
Analysis Time		
12:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+00
AX-101		

< 22.85
RWS 8/13/97

Analyst:	DGG Date: 08/12/97
Signature of Chemist: <i>RWS</i>	RWS Date: 8/12/97
SAMPLE.WB1 REV XX	37810NML

WORKBOOK PAGE: SAM6

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

SAMPLE	
Type	Instrument Data (µg/mL) ID 0.268
SAMPLE	Blank Result from the Instrument (µg/mL) BR 0.1820
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL) VSAM 1.0
19718	Final Vol of Dilution (mL) or Vol of Sample Direct (mL) FVOL 25.0
Test Code	
NH3-01	
Matrix	
LIQUID	
Batch Number	
97003855	
Rerun	
0	
Sample Prep	
ACIDIL01	NH3 Concentration (µg/mL) NH3 CONC -2.46E+00
Sample #	
S97T001904	Method Detection Limit (µg/mL) $5.0 \times 4.77 = 23.85$ -1.00 RWS 8/13/97 +0.25 <23.85
Instrument Code	
NH301	
Prepared By	
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)
Chemist	
RWS	
Analyst	
DGG	
Date Complete	
08/12/97	
Analysis Date	
08/09/97	
Analysis Time	
12:00 PM	
Sample Point	NH3 Concentration (µg/mL) <23.85 10.26 -2.15E+00 RWS 8/13/97 RWS 8/13/97
AX-101	

Analyst:	DGG Date: 08/12/97
Signature of Chemist:	RWS Date: 8/13/97
SAMPLE.WB1 REV XX	

37810NML

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		REPLICATE
Type	Instrument Data (µg/mL)	ID 0.322
REPLICATE	Blank Result from the Instrument (µg/mL)	BR 0.1820
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19718	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID		
Batch Number		
Rerun		
Sample Prep		
	NH3 Concentration (µg/mL)	NH3 CONC <23.85 3.50E+00
Sample #	46.7	
S97T001904	Method Detection Limit (µg/mL)	5.0 x 4.77 = 1.00
Instrument Code	23.85 RWS 8/13/97	
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/12/97		
Analysis Date		
08/09/97		
Analysis Time		
12:00 PM		
Sample Point	NH3 Concentration (µg/mL)	23.85 46.7 3.50E+00
AX-101	RWS 8/13/97	

Analyst:

DGG Date: 08/12/97

Signature of Chemist:

RWS Date: 8/13/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: ST_END7

AMMONIA (NH3) : LA-631-001 (C-0)**LIQUIDS/SOLIDS**

		STD
Type	Instrument Data (µg/mL)	ID 16.700
STD	Blank Result from the Instrument (µg/mL)	BR 0.1820
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19718	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 31N19E
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL 4.02E+02
Matrix		
LIQUID		
Batch Number		
97003855		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 4.13E+02
Sample #		
STANDARD	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
DGG	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100	
Date Complete		
08/12/97		
Analysis Date		
08/09/97		
Analysis Time	LCS Standard % Recovery	103%
12:00 PM		
Sample Point	NH3 Concentration (µg/mL)	4.13E+02
AX-101		

Analyst:

DGG Date: 08/12/97

Signature of Chemist:

RWS Date: 8/13/97

SAMPLE.WB1 REV XX

37810NML

LABCORE Completed Worklist Report for Worklist# 19969

Analyst: slh

Instrument: NH301

Book# 3119E

Method: LA 631-001 Rev/Mod C-0

Worklist Comment: AX-101 AMMONIA, TAKE DUP, SPK ALIQUOTS FROM SAMPLE VIALS. RAE

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		NH3-01	LIQUID	4.02E+02	4.06E+2	100.995 % Recovery	
2 BLNK	0		NH3-01	LIQUID	1	<2.00E-12	9/14/97	ug/mL
3 SAMPLE	S97T001968	0 D	NH3-01	LIQUID	N/A	1.69e3	1.67e3 338.000	ug/mL
4 DUP	S97T001968	0 D	NH3-01	LIQUID	1.67e3	2.02e3	18.970 RPD	
5 SPK	S97T001968	0 D	NH3-01	LIQUID	4.02E+02	4.82e2	119.900 % Recovery	
6 SAMPLE	S97T001969	0 D	NH3-01	LIQUID	N/A	1.33e3	222.000	ug/mL
7 DUP	S97T001969	0 D	NH3-01	LIQUID	1.33e3	9.17e2	36.760 RPD	
8 SAMPLE	S97T001970	0 D	NH3-01	LIQUID	N/A	1.50e3	243.000	ug/mL
9 DUP	S97T001970	0 D	NH3-01	LIQUID	1.50e3	1.36e3	9.790 RPD	
10 STD	0		NH3-01	LIQUID	4.02E+02	4.03E+2	100.249 % Recovery	

Final page for worklist# 19969

Analyst Signature

Date

Analyst Signature

Date

RW Schreder 9/9/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 19969

Analyst: SLH Instrument: NH301 Book# 31N19-E

Method: LA-631-001 Rev/Mod _____

Worklist Comment: AX-101 AMMONIA TAKE DUP, SPK ALIQUOTS FROM SAMPLE VIALS, RAE

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			NH3-01	LIQUID		
2 BLNK			NH3-01	LIQUID		
3 SAMPLE	S97T001968	0 D	NH3-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: NH3-01					
4 DUP	S97T001968	0 D	NH3-01	LIQUID		
5 SPK	S97T001968	0 D	NH3-01	LIQUID		
6 SAMPLE	S97T001969	0 D	NH3-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: NH3-01					
7 DUP	S97T001969	0 D	NH3-01	LIQUID		
8 SAMPLE	S97T001970	0 D	NH3-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: NH3-01					
9 DUP	S97T001970	0 D	NH3-01	LIQUID		
10 STD			NH3-01	LIQUID		

Final page for worklist # 19969

Sandra Hood Boatright
Analyst Signature Date
9-3-97

Analyst Signature Date

Data Entry Comments:

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

HNF-SD-WM-DP-268, REV. 0

SAMPLE VOL= 25.000 AT 12:20, 01-14-00
ENTERED

EMF= 151.8 mV AT 12:26, 01-14-00

EMF= 151.8 mV AT 12:26, 01-14-00
ENTERED

STD CONC= 1000 AT 12:27, 01-14-00
ENTERED

STD VOL= .25000 AT 12:27, 01-14-00
ENTERED

EMF= 52.1 mV AT 12:30, 01-14-00

EMF= 52.0 mV AT 12:30, 01-14-00
ENTERED

STD VOL= 2.5000 AT 12:30, 01-14-00
ENTERED

~~EMF=-6.6 mV AT 12:33, 01-14-00~~

EMF=-6.9 mV AT 12:34, 01-14-00

EMF=-6.9 mV AT 12:35, 01-14-00
ENTERED

1:NH3 SLOPE=-59.4 mV/DEC
AT 12:35, 01-14-00

1:NH3 CONC= .211

DOUBLE KNOWN ADDITION SELECTED
AT 14:25, 01-14-00

BLK

SAMPLE VOL= 25.000 AT 14:25, 01-14-00
ENTERED

HNF-SD-WM-DP-268, REV. 0

EMF= 38.3 mV AT 14:26, 01-14-00

EMF= 38.0 mV AT 14:27, 01-14-00

EMF= 37.9 mV AT 14:27, 01-14-00
ENTERED

STD CONC= 1000 AT 14:27, 01-14-00
ENTERED

STD VOL= .25000 AT 14:27, 01-14-00
ENTERED

EMF= 26.2 mV AT 14:30, 01-14-00

EMF= 26.1 mV AT 14:30, 01-14-00
ENTERED

STD VOL= 2.5000 AT 14:30, 01-14-00
ENTERED

EMF=-11.1 mV AT 14:33, 01-14-00

EMF=-11.2 mV AT 14:33, 01-14-00
ENTERED

1:NH3 SLOPE=-58.4 mV/DEC
AT 14:33, 01-14-00

1:NH3 CONC= 16.4

DOUBLE KNOWN ADDITION SELECTED
AT 14:33, 01-14-00

Std

SAMPLE VOL= 25.000 AT 14:40, 01-14-00
ENTERED

HN-SD-WM-DP-268, REV. 0

EMF= 153.5 mV AT 14:51, 01-14-00
EMF= 153.7 mV AT 14:51, 01-14-00
EMF= 154.1 mV AT 14:52, 01-14-00
EMF= 155.4 mV AT 14:53, 01-14-00
EMF= 155.8 mV AT 14:53, 01-14-00
EMF= 155.8 mV AT 14:54, 01-14-00
EMF= 156.5 mV AT 14:54, 01-14-00
EMF= 156.4 mV AT 14:54, 01-14-00
EMF= 156.0 mV AT 14:55, 01-14-00
EMF= 157.6 mV AT 14:56, 01-14-00
EMF= 157.7 mV AT 14:56, 01-14-00
EMF= 157.5 mV AT 14:56, 01-14-00
EMF= 156.8 mV AT 14:57, 01-14-00
EMF= 157.1 mV AT 14:57, 01-14-00

EMF= 156.6 mV AT 14:57, 01-14-00
ENTERED

STD CONC= 1000 AT 14:58, 01-14-00
ENTERED

STD VOL= .25000 AT 14:58, 01-14-00
ENTERED

EMF= 51.4 mV AT 15:00, 01-14-00

EMF= 51.2 mV AT 15:01, 01-14-00

EMF= 51.1 mV AT 15:01, 01-14-00
ENTERED

STD VOL= 2.5000 AT 15:01, 01-14-00
ENTERED

EMF= -7.4 mV AT 15:04, 01-14-00

EMF= -7.5 mV AT 15:04, 01-14-00
ENTERED

1: NH3 SLOPE= -59.0 mV/DEC
AT 15:04, 01-14-00

1: NH3 CONC= .163

174

B/K Rm

SAMPLE VOL= 25.000 AT 15:11, 01-14-00
ENTERED

EMF= 106.0 mV AT 15:21, 01-14-00

HNF-SD-WM-DP-268, REV. 0

EMF= 106.2 mV AT 15:21, 01-14-00

EMF= 106.6 mV AT 15:21, 01-14-00

EMF= 106.8 mV AT 15:22, 01-14-00

EMF= 107.1 mV AT 15:22, 01-14-00

EMF= 107.3 mV AT 15:22, 01-14-00

EMF= 107.5 mV AT 15:23, 01-14-00

EMF= 107.9 mV AT 15:24, 01-14-00

EMF= 108.1 mV AT 15:24, 01-14-00
ENTERED

STD CONC= 1000 AT 15:24, 01-14-00
ENTERED

STD VOL= .25000 AT 15:24, 01-14-00
ENTERED

EMF= 50.5 mV AT 15:28, 01-14-00

EMF= 50.2 mV AT 15:28, 01-14-00

EMF= 50.2 mV AT 15:28, 01-14-00
ENTERED

STD VOL= 2.5000 AT 15:29, 01-14-00
ENTERED

EMF=-6.2 mV AT 15:32, 01-14-00

EMF=-6.3 mV AT 15:32, 01-14-00
ENTERED

1:NH3 SLOPE=-59.0 mV/DEC
AT 15:32, 01-14-00

1:NH3 CONC= 1.15

DOUBLE KNOWN ADDITION SELECTED
AT 15:36, 01-14-00

1968 sum

HNF-SD-WM-DP-268, REV. 0

SAMPLE VOL= 25.000 AT 15:38, 01-14-00
ENTERED

EMF= 104.5 mV AT 15:45, 01-14-00

EMF= 104.6 mV AT 15:45, 01-14-00
ENTERED

STD CONC= 1000 AT 15:45, 01-14-00
ENTERED

STD VOL= .25000 AT 15:45, 01-14-00
ENTERED

EMF= 50.7 mV AT 15:49, 01-14-00

EMF= 50.4 mV AT 15:49, 01-14-00

~~EMF= 50.2 mV AT 15:50, 01-14-00~~
ENTERED

STD VOL= 2.5000 AT 15:51, 01-14-00
ENTERED

EMF=-6.1 mV AT 15:54, 01-14-00

EMF=-6.2 mV AT 15:54, 01-14-00
ENTERED

1:NH3 SLOPE=-59.4 mV/DEC
AT 15:54, 01-14-00

1:NH3 CONC= 1.36

DOUBLE KNOWN ADDITION SELECTED
AT 15:56, 01-14-00

SAMPLE VOL= 25.000 AT 16:03, 01-14-00
ENTERED

1968 dup

EMF= 52.1 mV AT 16:10, 01-14-00

EMF= 53.1 mV AT 16:11, 01-14-00

EMF= 53.5 mV AT 16:11, 01-14-00

EMF= 53.8 mV AT 16:12, 01-14-00

EMF= 54.1 mV AT 16:13, 01-14-00

EMF= 54.3 mV AT 16:13, 01-14-00

EMF= 54.8 mV AT 16:14, 01-14-00

EMF= 54.9 mV AT 16:14, 01-14-00

EMF= 55.0 mV AT 16:14, 01-14-00

ENTERED

STD CONC= 1000 AT 16:15, 01-14-00

ENTERED

STD VOL= .25000 AT 16:15, 01-14-00

ENTERED

EMF= 37.7 mV AT 16:18, 01-14-00

EMF= 37.6 mV AT 16:18, 01-14-00

ENTERED

STD VOL= 2.5000 AT 16:19, 01-14-00

ENTERED

EMF=-6.7 mV AT 16:22, 01-14-00

EMF=-7.1 mV AT 16:23, 01-14-00

EMF=-7.2 mV AT 16:23, 01-14-00

ENTERED

1:NH3 SLOPE=-61.9-mV/DEC-----

AT 16:23, 01-14-00

1:NH3 CONC= 10.8

DOUBLE KNOWN ADDITION SELECTED

AT 16:23, 01-14-00

HNF-SD-WM-DP-268, REV. 0

1968 SPK

SAMPLE VOL= 25.000 AT 16:25, 01-14-00
ENTERED

HNF-SD-WM-DP-268, REV. 0

EMF= 105.9 mV AT 16:35, 01-14-00

EMF= 106.0 mV AT 16:35, 01-14-00
ENTERED

STD CONC= 1000 AT 16:36, 01-14-00
ENTERED

STD VOL= .25000 AT 16:36, 01-14-00
ENTERED

EMF= 51.6 mV AT 16:40, 01-14-00

EMF= 51.5 mV AT 16:40, 01-14-00
ENTERED

STD VOL= 2.5000 AT 16:41, 01-14-00
ENTERED

EMF=-4.9 mV AT 16:44, 01-14-00

EMF=-5.0 mV AT 16:44, 01-14-00
ENTERED

1:NH3 SLOPE=-59.5 mV/DEC
AT 16:44, 01-14-00

1:NH3 CONC= 1.36

DOUBLE KNOWN ADDITION SELECTED
AT 16:46, 01-14-00

1969 sum

SAMPLE VOL= 25.000 AT 18:13, 01-14-00
ENTERED

EMF= 110.7 mV AT 18:16, 01-14-00

EMF= 110.1 mV AT 18:17, 01-14-00

EMF= 109.9 mV AT 18:17, 01-14-00

EMF= 109.4 mV AT 18:18, 01-14-00
ENTERED

STD CONC= 1000 AT 18:19, 01-14-00
ENTERED

STD VOL= .25000 AT 18:19, 01-14-00
ENTERED

EMF= 49.3 mV AT 18:22, 01-14-00

EMF= 49.0 mV AT 18:22, 01-14-00

EMF= 48.8 mV AT 18:23, 01-14-00

EMF= 48.4 mV AT 18:23, 01-14-00
ENTERED

STD VOL= 2.5000 AT 18:24, 01-14-00
ENTERED

EMF=-7.4 mV AT 18:27, 01-14-00

EMF=-7.8 mV AT 18:27, 01-14-00

EMF=-8.0 mV AT 18:27, 01-14-00
ENTERED

1:NH3 SLOPE=-58.5 mV/DEC
AT 18:27, 01-14-00

1:NH3 CONC= .988

DOUBLE KNOWN ADDITION SELECTED
AT 18:31, 01-14-00

HNF-SD-WM-DP-268, REV. 0

1969 dup

SAMPLE VOL= 25.000 AT 18:31, 01-14-00
ENTERED

HNF-SD-WM-DP-268, REV. 0

EMF= 102.3 mV AT 18:39, 01-14-00

EMF= 102.3 mV AT 18:39, 01-14-00
ENTERED

STD CONC= 1000 AT 18:39, 01-14-00
ENTERED

STD VOL= .25000 AT 18:39, 01-14-00
ENTERED

EMF= 49.1 mV AT 18:43, 01-14-00

EMF= 48.8 mV AT 18:43, 01-14-00

EMF= 48.8 mV AT 18:43, 01-14-00
ENTERED

STD VOL= 2.5000 AT 18:44, 01-14-00
ENTERED

EMF=-7.1 mV AT 18:47, 01-14-00

EMF=-7.2 mV AT 18:47, 01-14-00
ENTERED

1:NH3 SLOPE=-59.0 mV/DEC
AT 18:47, 01-14-00

1:NH3 CONC= 1.40

DOUBLE KNOWN ADDITION SELECTED
AT 18:50, 01-14-00

1970 sam

HNF-SD-WM-DP-268, REV. 0

STD VOL= .25000 AT 19:00, 01-14-00
ENTERED

EMF= 49.8 mV AT 19:03, 01-14-00

EMF= 49.4 mV AT 19:03, 01-14-00

EMF= 49.2 mV AT 19:03, 01-14-00

EMF= 49.0 mV AT 19:04, 01-14-00

EMF= 49.0 mV AT 19:04, 01-14-00
ENTERED

STD VOL= 2.5000 AT 19:05, 01-14-00
ENTERED

EMF=-6.5 mV AT 19:08, 01-14-00

EMF=-6.8 mV AT 19:08, 01-14-00

EMF=-7.0 mV AT 19:08, 01-14-00

EMF=-7.3 mV AT 19:10, 01-14-00
ENTERED

1:NH3 SLOPE=-59.1 mV/DEC
AT 19:10, 01-14-00

1:NH3 CONCN= 1.28

DOUBLE KNOWN ADDITION SELECTED
AT 19:10, 01-14-00

1970 dup

SAMPLE VOL= 25.000 AT 19:13, 01-14-00
ENTERED

HNF-SD-WM-DP-268, REV. 0

EMF= 37.2 mV AT 19:19, 01-14-00

EMF= 37.6 mV AT 19:19, 01-14-00

EMF= 37.9 mV AT 19:19, 01-14-00

EMF= 38.1 mV AT 19:20, 01-14-00

EMF= 38.3 mV AT 19:20, 01-14-00
ENTERED

STD CONC= 1000 AT 19:20, 01-14-00
ENTERED

STD VOL= .25000 AT 19:20, 01-14-00
ENTERED

EMF= 28.8 mV AT 19:23, 01-14-00

EMF= 28.4 mV AT 19:23, 01-14-00

EMF= 28.3 mV AT 19:24, 01-14-00
ENTERED

STD VOL= 2.5000 AT 19:24, 01-14-00
ENTERED

EMF=-9.4 mV AT 19:28, 01-14-00

EMF=-9.8 mV AT 19:29, 01-14-00

EMF=-10.0 mV AT 19:29, 01-14-00
ENTERED

1:NH3 SLOPE=-70.0 mV/DEC
AT 19:29, 01-14-00

1:NH3 CONC= 24.8

DOUBLE KNOWN ADDITION SELECTED
AT 21:24, 01-14-00

SAMPLE VOL= 25.000 AT 21:24, 01-14-00
ENTERED

EMF= 37.5 mV AT 21:28, 01-14-00

EMF= 37.3 mV AT 21:29, 01-14-00

EMF= 37.2 mV AT 21:29, 01-14-00
ENTERED

STD CONC= 1000 AT 21:29, 01-14-00
ENTERED

STD VOL= .25000 AT 21:29, 01-14-00
ENTERED

EMF= 25.9 mV AT 21:32, 01-14-00

EMF= 25.7 mV AT 21:32, 01-14-00

EMF= 25.5 mV AT 21:32, 01-14-00
ENTERED

STD VOL= 2.5000 AT 21:33, 01-14-00
ENTERED

EMF=-11.3 mV AT 21:37, 01-14-00

EMF=-11.3 mV AT 21:37, 01-14-00
ENTERED

1:NH3 SLOPE=-57.4 mV/DEC
AT 21:37, 01-14-00

1:NH3 CONC= 16.3

DOUBLE KNOWN ADDITION SELECTED
AT 21:37, 01-14-00

HNF-SD-WM-DP-268, REV. 0

STD

WORKBOOK PAGE: STD1

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	ID 16.400
STD	Blank Result from the Instrument (µg/mL)	BR 0.1630
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19969	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 31N19E
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL 4.02E+02
Matrix		
LIQUID		
Batch Number		
97004114		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 4.06E+02
Sample #		
STANDARD	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
SLH	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100	
Date Complete		
09/04/97		
Analysis Date		
09/03/97		
Analysis Time	LCS Standard % Recovery	101%
05:10 AM		
Sample Point	NH3 Concentration (µg/mL)	4.06E+02
AX-101		

Analyst:	SLH Date: 09/04/97
Signature of Chemist:	RWS Date: 9/9/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: BLANK2

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		BLNK
Type	Instrument Data (µg/mL)	ID 0.163
BLNK	Blank Result from the Instrument (µg/mL)	BR 0.1630
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19969	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID		
Batch Number		
97004114		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+00
Sample #		0.200
BLANK	Method Detection Limit (µg/mL)	0.200
Instrument Code		
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
09/03/97		
Analysis Time		
05:10 AM		
Sample Point	NH3 Concentration (µg/mL)	< 0.200
AX-101		1.00E+00

Analyst:

SLH Date: 09/04/97

Signature of Chemist:

RWS

RWS Date: 9/9/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: SAM3

AMMONIA (NH₃) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID 1.150
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 0.1630
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19969	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		67.67
LIQUID		
Batch Number		
97004114		
Rerun		
0		
Sample Prep		
ACIDIL01	NH3 Concentration (µg/mL)	NH3 CONC 2.47E+01
Sample #		1.67e3
S97T001968	Method Detection Limit (µg/mL)	4.00
Instrument Code		330 RWS 9/9/97
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
09/03/97		
Analysis Time		
05:10 AM		
Sample Point	NH3 Concentration (µg/mL)	1.67e3 2.47E+01
AX-101		

Analyst:

SLH Date: 09/04/97

Signature of Chemist:

RWS

RWS Date: 9/9/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: DUP4

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		DUP
Type	Instrument Data (µg/mL)	ID 1.360
DUP	Blank Result from the Instrument (µg/mL)	BR 0.1630
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19969	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		67.67
LIQUID		
Batch Number	Sample Concentration (µg/mL)	SAM CONC 1.67E3 -2.47E+01
97004114		
Rerun		
0		
Sample Prep		
ACIDIL01	NH3 Concentration (µg/mL)	NH3 CONC -2.99E+01
Sample #		
S97T001968	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 1	
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
09/03/97		
Analysis Time		
05:10 AM	RPD (DUP & SAM)	19%
Sample Point	NH3 Concentration (µg/mL)	2.02E3 -2.99E+01
AX-101		

Analyst:

SLH Date: 09/04/97

Signature of Chemist:

RWS Date:

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: SPIKE5

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

Type	Instrument Data (µg/mL)	ID	SPK
SPK	Blank Result from the Instrument (µg/mL)	BR	10.800
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.1630
19969	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	1.0
Test Code	Spike Book Number	SPK	25.0
NH3-01	Spike Value (µg/mL)	SPK VAL	31N19E
Matrix	Vol of Spike Standard Used (mL)	VOL SPK	4.02E+02
LIQUID			0.500
Batch Number			
97004114			
Rerun	Sample Instrument Data (µg/mL)	SAM ID	1.15
0	Sample Volume of Sample (mL)	SAM VSAM	1.0
Sample Prep	Sample Final Volume (mL)	SAM FVOL	25.0
ACIDIL01	NH3 Concentration (µg/mL)	NH3 CONC	2.66E+02
Sample #			
S97T001968	Method Detection Limit (µg/mL)		1.00
Instrument Code			
NH301			
Prepared By			
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS	QC ACTUAL = SPK VAL		
Analyst	QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / 500		
SLH	Spike % Recovery =		
Date Complete	(((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / (SPK VAL * VOL SPK) * 100		
09/04/97			
Analysis Date	QC ACTUAL (µg)		4.02E+02
09/03/97	QC FOUND (µg)	4.82E2	2.44E+02
Analysis Time	Spike % Recovery		120%
05:10 AM			
Sample Point	NH3 Concentration (µg/mL)		2.66E+02
AX-101			

Analyst:

Signature of Chemist:

SAMPLE.WB1 REV XX

SLH Date: 09/04/97

RWS Date: 9/9/97

37810NML

WORKBOOK PAGE: SAM6

AMMONIA (NH₃) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

Type	Instrument Data (ug/mL)	ID	SAMPLE
SAMPLE	Blank Result from the Instrument (ug/mL)	BR	1.360 0.1630
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
19969	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			44.48
LIQUID			
Batch Number			
97004114			
Rerun			
0			
Sample Prep			
ACIDIL01	NH3 Concentration (ug/mL)	NH3 CONC	2.99E+01
Sample #			1.33E3
S97T001969	Method Detection Limit (ug/mL)	100	222 RWS 9/9/97
Instrument Code			
NH301			
Prepared By			
RCJ	NH3 Concentration (ug/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
09/04/97			
Analysis Date			
09/03/97			
Analysis Time			
05:10 AM			
Sample Point	NH3 Concentration (ug/mL)		1.33E3 2.99E+01
AX-101			RWS 9/9/97

Analyst:

SLH Date: 09/04/97

Signature of Chemist:

RWS Date: 9/9/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: DUP7

AMMONIA (NH₃) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		DUP
Type	Instrument Data (µg/mL)	ID 0.988
DUP	Blank Result from the Instrument (µg/mL)	BR 0.1630
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19969	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		44.48
LIQUID		
Batch Number	Sample Concentration (µg/mL)	SAM CONC 1.33e3 2.99E+01
97004114		
Rerun		
0		
Sample Prep		
ACIDIL01	NH3 Concentration (µg/mL)	NH3 CONC 2.06E+01
Sample #		9.17e2
S97T001969	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 1	
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
09/03/97		
Analysis Time		
05:10 AM	RPD (DUP & SAM)	37%
Sample Point	NH3 Concentration (µg/mL)	9.17e2 2.06E+01
AX-101		

Analyst:

SLH Date: 09/04/97

Signature of Chemist:

RWS Date: 9/9/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: SAM8

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID 1.400
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 0.1630
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19969	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		48.62
LIQUID		
Batch Number		
97004114		
Rerun		
0		
Sample Prep		
ACIDIL01	NH3 Concentration (µg/mL)	NH3 CONC -3.09E+01
Sample #		
S97T001970	Method Detection Limit (µg/mL)	1.50e3
Instrument Code		243
NH301		7.00
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
09/03/97		
Analysis Time		
05:10 AM		
Sample Point	NH3 Concentration (µg/mL)	1.50e3 -3.09E+01
AX-101		

Analyst:	SLH Date: 09/04/97
Signature of Chemist:	RWS Date: 9/9/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: DUP9

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		DUP
Type	Instrument Data (µg/mL)	ID 1.280
DUP	Blank Result from the Instrument (µg/mL)	BR 0.1630
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19969	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		48.62
LIQUID		
Batch Number	Sample Concentration (µg/mL)	SAM CONC 1.50e3 3.09E+01
97004114		
Rerun		
0		
Sample Prep		
ACIDIL01	NH3 Concentration (µg/mL)	NH3 CONC 2.79E+01
Sample #		1.36e3
S97T001970	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 1	
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
SLH		
Date Complete		
09/04/97		
Analysis Date		
09/03/97		
Analysis Time		
05:10 AM	RPD (DUP & SAM)	10%
Sample Point	NH3 Concentration (µg/mL)	1.36e3 2.79E+01
AX-101		

Analyst:

Signature of Chemist:

SAMPLE.WB1 REV XX

SLH Date: 09/04/97

RWS Date: 9/9/97

37819/NML

WORKBOOK PAGE: ST_END10

AMMONIA (NH3) : LA-631-001 (C-0)

LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	ID 16.300
STD	Blank Result from the Instrument (µg/mL)	BR 0.1630
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.0
19969	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 31N19E
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL 4.02E+02
Matrix		
LIQUID		
Batch Number		
97004114		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 4.03E+02
Sample #		
END STANDARD	Method Detection Limit (µg/mL)	1.00
Instrument Code		
NH301		
Prepared By		
RCJ	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)	
Chemist		
RWS		
Analyst		
SLH	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100	
Date Complete		
09/04/97		
Analysis Date		
09/03/97		
Analysis Time	LCS Standard % Recovery	100%
05:10 AM		
Sample Point	NH3 Concentration (µg/mL)	4.03E+02
AX-101		

Analyst:

SLH Date: 09/04/97

Signature of Chemist:

RWS Date: 9/9/97

SAMPLE.WB1 REV XX

37810NML

LABCORE Completed Worklist Report for Worklist# 19738

Analyst: dpb

Instrument: IC01

Book# 83N20B

Method: 1A-533705 Rev/Mod D-1

Worklist Comment: AX-101 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	<1.09e-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	5.90e01	6.19e+01	104.915 % Recovery	
2 CCV	0	0	01C-QC CL	QC	7.90e01	8.11e+01	102.658 % Recovery	
2 CCV	0	0	01C-QC NO2	QC	5.44e02	5.47e+02	100.551 % Recovery	
2 CCV	0	0	01C-QC BR	QC	5.89e02	5.99e+02	101.698 % Recovery	
2 CCV	0	0	01C-QC NO3	QC	5.94e02	5.83e+02	98.148 % Recovery	
2 CCV	0	0	01C-QC P04	QC	5.45e02	5.74e+02	105.321 % Recovery	
2 CCV	0	0	01C-QC S04	QC	6.32e02	6.32e+02	100.000 % Recovery	
2 CCV	0	0	01C-QC OXALATE2	QC	5.33e02	5.28e+02	99.062 % Recovery	
3 SAMPLE	S97T001896	0	01C-01 F-02	LIQUID	N/A	1.333e+01	13.330	ug/mL
3 SAMPLE	S97T001896	0	01C-01 CL-02	LIQUID	N/A	1.345e+03	18.890	ug/mL
3 SAMPLE	S97T001896	0	01C-01 NO2-02	LIQUID	N/A	2.804e+04	120.000	ug/mL
3 SAMPLE	S97T001896	0	01C-01 BR-02	LIQUID	N/A	1.389e+02	138.900	ug/mL
3 SAMPLE	S97T001896	0	01C-01 NO3-02	LIQUID	N/A	3.050e+04	154.400	ug/mL
3 SAMPLE	S97T001896	0	01C-01 P04-02	LIQUID	N/A	7.398e+02	133.300	ug/mL
3 SAMPLE	S97T001896	0	01C-01 S04-02	LIQUID	N/A	3.216e+02	153.300	ug/mL
3 SAMPLE	S97T001896	0	01C-01 OXALATE2	LIQUID	N/A	1.167e+02	116.700	ug/mL
4 DUP	S97T001896	0	01C-01 F-02	LIQUID	<1.33e1	<1.33e1		RPD
4 DUP	S97T001896	0	01C-01 CL-02	LIQUID	1.34e+03	1.24e+03	7.752	RPD
4 DUP	S97T001896	0	01C-01 NO2-02	LIQUID	2.80e+04	2.59e+04	7.732	RPD
4 DUP	S97T001896	0	01C-01 BR-02	LIQUID	<1.39e2	<1.39e2		RPD
4 DUP	S97T001896	0	01C-01 NO3-02	LIQUID	3.05e+04	2.85e+04	6.780	RPD
4 DUP	S97T001896	0	01C-01 P04-02	LIQUID	7.40e+02	6.61e+02	11.278	RPD
4 DUP	S97T001896	0	01C-01 S04-02	LIQUID	3.22e+02	2.90e+02	10.458	RPD
4 DUP	S97T001896	0	01C-01 OXALATE2	LIQUID	<1.17e2	<1.17e2		RPD
5 SPK	S97T001896	0	01C-01 F-02	LIQUID	5.90e01	5.64e+01	95.593 % Recovery	
5 SPK	S97T001896	0	01C-01 CL-02	LIQUID	7.90e01	5.48e+01	69.367 % Recovery	
5 SPK	S97T001896	0	01C-01 NO2-02	LIQUID	5.44e02	1.94e+02	35.662 % Recovery	
5 SPK	S97T001896	0	01C-01 BR-02	LIQUID	5.89e02	5.79e+02	98.302 % Recovery	
5 SPK	S97T001896	0	01C-01 NO3-02	LIQUID	5.94e02	1.55e+02	26.094 % Recovery	
5 SPK	S97T001896	0	01C-01 P04-02	LIQUID	5.45e02	5.62e+02	103.119 % Recovery	
5 SPK	S97T001896	0	01C-01 S04-02	LIQUID	6.32e02	6.42e+02	101.582 % Recovery	
5 SPK	S97T001896	0	01C-01 OXALATE2	LIQUID	5.33e02	5.34e+02	100.188 % Recovery	
6 SAMPLE	S97T001897	0	01C-01 F-02	LIQUID	N/A	6.181e+01	61.810	ug/mL

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

LABCORE Completed Worklist Report for Worklist# 19738

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SAMPLE	S97T001897	0	③IC-01 CL-02	LIQUID	N/A	7.117e+03	87.570	ug/mL
6 SAMPLE	S97T001897	0	③IC-01 NO2-02	LIQUID	N/A	1.490e+05	556.300	ug/mL
6 SAMPLE	S97T001897	0	③IC-01 BR-02	LIQUID	N/A	6.439e+02	643.900	ug/mL
6 SAMPLE	S97T001897	0	③IC-01 NO3-02	LIQUID	N/A	1.459e+05	716.000	ug/mL
6 SAMPLE	S97T001897	0	③IC-01 PO4-02	LIQUID	N/A	2.801e+03	618.100	ug/mL
6 SAMPLE	S97T001897	0	③IC-01 SO4-02	LIQUID	N/A	8.138e+02	710.800	ug/mL
6 SAMPLE	S97T001897	0	③IC-01 OXALATE2	LIQUID	N/A	5.409e+02	540.900	ug/mL
7 DUP	S97T001897	0	③IC-01 F-02	LIQUID	<6.18e1	<6.18e1		RPD
7 DUP	S97T001897	0	③IC-01 CL-02	LIQUID	7.12e+03	6.96e+03	2.273	RPD
7 DUP	S97T001897	0	③IC-01 NO2-02	LIQUID	1.49e+05	1.50e+05	0.669	RPD
7 DUP	S97T001897	0	③IC-01 BR-02	LIQUID	<6.44e2	<6.44e2		RPD
7 DUP	S97T001897	0	③IC-01 NO3-02	LIQUID	1.46e+05	1.45e+05	0.687	RPD
7 DUP	S97T001897	0	③IC-01 PO4-02	LIQUID	2.80e+03	2.89e+03	3.163	RPD
7 DUP	S97T001897	0	③IC-01 SO4-02	LIQUID	8.14e+02	8.28e+02	1.705	RPD
7 DUP	S97T001897	0	③IC-01 OXALATE2	LIQUID	<5.41e2	<5.41e2		RPD
8 SAMPLE	S97T001898	0	③IC-01 F-02	LIQUID	N/A	6.181e+01	61.810	ug/mL
8 SAMPLE	S97T001898	0	③IC-01 CL-02	LIQUID	N/A	7.897e+03	87.570	ug/mL
8 SAMPLE	S97T001898	0	③IC-01 NO2-02	LIQUID	N/A	1.622e+05	556.300	ug/mL
8 SAMPLE	S97T001898	0	③IC-01 BR-02	LIQUID	N/A	6.439e+02	643.900	ug/mL
8 SAMPLE	S97T001898	0	③IC-01 NO3-02	LIQUID	N/A	1.404e+05	716.000	ug/mL
8 SAMPLE	S97T001898	0	③IC-01 PO4-02	LIQUID	N/A	3.054e+03	618.100	ug/mL
8 SAMPLE	S97T001898	0	③IC-01 SO4-02	LIQUID	N/A	7.108e+02	710.800	ug/mL
8 SAMPLE	S97T001898	0	③IC-01 OXALATE2	LIQUID	N/A	5.409e+02	540.900	ug/mL
9 DUP	S97T001898	0	③IC-01 F-02	LIQUID	<6.18e1	<6.18e1		RPD
9 DUP	S97T001898	0	③IC-01 CL-02	LIQUID	7.89e+03	7.90e+03	0.127	RPD
9 DUP	S97T001898	0	③IC-01 NO2-02	LIQUID	1.62e+05	1.63e+05	0.615	RPD
9 DUP	S97T001898	0	③IC-01 BR-02	LIQUID	<6.44e2	<6.44e2		RPD
9 DUP	S97T001898	0	③IC-01 NO3-02	LIQUID	1.40e+05	1.40e+05	0.000	RPD
9 DUP	S97T001898	0	③IC-01 PO4-02	LIQUID	3.05e+03	3.04e+03	0.328	RPD
9 DUP	S97T001898	0	③IC-01 SO4-02	LIQUID	<7.11e2	<7.11e2		RPD
9 DUP	S97T001898	0	③IC-01 OXALATE2	LIQUID	<5.41e2	<5.41e2		RPD

Final page for worklist# 19738

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Lyle
Reviewer Signature _____ Date 8/27/97

LABCORE Data Entry Template for Worklist# 19738

Analyst: DPB Instrument: IC0 1 Book# 83N20-B

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

Worklist Comment: AX-101 IC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S97T001896 0		@IC-01	LIQUID	97000510	AX-101 GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
4 DUP	S97T001896 0		@IC-01	LIQUID		
5 SPK	S97T001896 0		@IC-01	LIQUID		
6 SAMPLE	S97T001897 0		@IC-01	LIQUID	97000510	AX-101 GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
7 DUP	S97T001897 0		@IC-01	LIQUID		
8 SAMPLE	S97T001898 0		@IC-01	LIQUID	97000510	AX-101 GRAB
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
9 DUP	S97T001898 0		@IC-01	LIQUID		

Final page for worklist # 19738

Daniel P. Bronley
Analyst Signature Date 8/19/97 0430

Analyst Signature Date

uploaded 8-26-97
John Wouell
19738 AUG. CSV

Validated 8/27/97 gmd/xyz

Data Entry Comments:

Sample Name: ELUENT BLANK

Date: 08/18/1997 19:06:54

Data File : C:\DX\DATA\97081821.D01

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

ACI Address: 1 System: 1 Inject#: 1

Detector: CDM-1

Analyst *Jan 2 Jue* 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	1.31		0.000	58	232	1	
2	1.79		0.000	47	224	1	
3	3.83		0.000	23	162	1	
4	6.93	sulfate	-0.191	67	1057	1	8.33
Totals			-0.191	196	1675		

File: 97081821.D01 Sample: ELUENT BLANK

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 19 TO 205.

```

=====
Sample Name: STD 83N20-B                      Date: 08/18/1997 19:19:07
Data File  : C:\DX\DATA\97081821.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	0.90		0.000	94	430	2	
2	1.07	fluoride	61.929	2641	12488	2	1.59
3	1.65	chloride	81.091	2312	11230	1	1.65
4	1.99	nitrite	547.149	9151	49945	1	1.36
5	3.03	bromide	598.707	5324	35692	1	0.55
6	3.45	nitrate	583.496	5676	46511	1	0.39
7	4.93	phosphate	574.081	1849	21402	1	0.00
8	6.40	sulfate	631.745	4748	66132	1	0.00
9	8.43	oxalate	528.214	2255	41482	1	-0.63
Totals			3606.413	34050	285312		

File: 97081821.D02 Sample: STD 83N20-B

Data Reprocessed On 08/26/1997 08:59:39

```

=====
Sample Name: S97T001896 SAM                               Date: 08/18/1997 21:36:28
Data File  : F:\DATA\97081821.D05
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 5                      Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1111 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	0.96		0.000	412	2786	2	
2	1.27		0.000	1031	7237	2	
3	1.76	chloride	1345.355	3098	16850	1	0.00
4	2.13	nitrite	28042.949	38011	231708	1	0.16
5	3.60	nitrate	30500.489	23051	230276	1	0.00
6	5.28	phosphate	739.837	186	2388	1	7.03
7	6.83	sulfate	321.564	390	5781	1	6.67
Totals			60950.194	66179	497026		

File: 97081821.D05 Sample: S97T001896 SAM

Sample Name: S97T001896 DUP Date: 08/18/1997 21:50:28
 Data File : C:\DX\DATA\97081821.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	1111	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	0.89		0.000	416	2524	2	
2	1.17		0.000	1003	6421	2	
3	1.62	chloride	1239.800	3091	15534	1	0.00
4	1.97	nitrite	25864.270	37675	213901	1	0.34
5	3.33	nitrate	28514.429	22727	214370	1	-3.10
6	4.88	phosphate	660.909	172	2125	1	-1.08
7	6.35	sulfate	290.245	336	5503	1	-0.83
Totals			56569.653	65420	460378		

File: 97081821.D06 Sample: S97T001896 DUP

Data Reprocessed On 08/26/1997 09:02:35

```

=====
Sample Name: S97T001896 SPK                      Date: 08/18/1997 22:22:30
Data File  : F:\DATA\97081821.D08
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 8              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1111    3000  5Hz   0.00 10.00          30
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	420	2193	2	
2	1.03	fluoride	570.081	2330	10402	2	-1.59
3	1.15		0.000	977	5241	2	
4	1.59	chloride	1898.865	5049	23827	1	-1.65
5	1.94	nitrite	30004.778	42680	247710	1	-1.02
6	2.94	bromide	5850.757	5237	31617	1	-2.33
7	3.27	nitrate	32070.212	25730	242954	1	-0.10
8	4.80	phosphate	6415.080	1862	21752	1	-2.70
9	6.24	sulfate	6807.865	4171	64811	1	-2.50
10	8.27	oxalate	5398.510	2081	38501	1	-2.52
Totals			89016.147	90535	689008		

File: 97081821.D08 Sample: S97T001896 SPK

Data Reprocessed On 08/26/1997 09:03:54

```

=====
Sample Name: S97T001897 SAM                      Date: 08/18/1997 23:18:57
Data File  : F:\DATA\97081821.D12
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 12              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          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	0.87		0.000	488	2942	2	
2	1.15		0.000	1261	7903	2	
3	1.59	chloride	7116.656	3915	19226	1	-2.06
4	1.93	nitrite	148979.516	45837	265035	1	-1.70
5	3.25	nitrate	145897.211	25127	238079	1	-0.10
6	4.80	phosphate	2800.806	169	1935	1	-2.70
7	6.24	sulfate	813.752	290	4486	1	-2.50
Totals			305607.940	77087	539605		

File: 97081821.D12 Sample: S97T001897 SAM

```

=====
Sample Name: S97T001897 DUP                      Date: 08/18/1997 23:29:52
Data File  : F:\DATA\97081821.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	0.87		0.000	488	2978	2	
2	1.15		0.000	1246	7743	2	
3	1.59	chloride	6956.126	3961	18791	1	-2.06
4	1.93	nitrite	149858.099	46232	266576	1	-1.70
5	3.25	nitrate	144507.495	25326	235658	1	-0.10
6	4.11		0.000	17	112	1	
7	4.80	phosphate	2892.976	173	2001	1	-2.70
8	6.24	sulfate	828.140	293	4513	1	-2.50
Totals			305042.836	77735	538371		

File: 97081821.D13 Sample: S97T001897 DUP

Data Reprocessed On 08/26/1997 09:06:46

```

=====
Sample Name: S97T001898 SAM                      Date: 08/18/1997 23:40:39
Data File  : F:\DATA\97081821.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	0.87		0.000	521	3208	2	
2	1.15		0.000	1412	9300	2	
3	1.59	chloride	7886.674	4399	21319	1	-2.06
4	1.93	nitrite	162221.283	49355	288231	1	-1.36
5	3.25	nitrate	140439.334	24344	228590	1	0.10
6	4.11		0.000	21	152	1	
7	4.80	phosphate	3054.345	179	2118	1	-2.70
8	6.24	sulfate	588.780	259	4056	1	-2.50
9	8.27	oxalate	173.385	21	478	1	-2.52
Totals			314363.801	80510	557451		

File: 97081821.D14 Sample: S97T001898 SAM

Data Reprocessed On 08/26/1997 09:08:09

```

=====
Sample Name: S97T001898 DUP                      Date: 08/18/1997 23:52:47
Data File  : F:\DATA\97081821.D15
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 15              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	0.87		0.000	533	3260	2	
2	1.15		0.000	1404	8931	2	
3	1.59	chloride	7898.266	4459	21351	1	-2.06
4	1.93	nitrite	163257.712	49672	290044	1	-1.70
5	3.25	nitrate	140010.518	24642	227847	1	-0.10
6	4.09		0.000	25	168	1	
7	4.77	phosphate	3037.390	175	2105	1	-3.24
8	6.24	sulfate	472.207	270	3833	1	-2.50
Totals			314676.093	81180	557538		

File: 97081821.D15 Sample: S97T001898 DUP

LABCORE Completed Worklist Report for Worklist# 20604

Analyst: eal

Instrument: IC02

Book# 95N20D

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

Worklist Comment: Rerun AX101 grab IC. Use 5151df.jmf

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	CCB	0	@IC-QC	F	QC	1	<1.20e-2	ug/mL
1	CCB	0	@IC-QC	CL	QC	1	<1.70e-2	ug/mL
1	CCB	0	@IC-QC	NO2	QC	1	<1.08e-1	ug/mL
1	CCB	0	@IC-QC	BR	QC	1	<1.25e-1	ug/mL
1	CCB	0	@IC-QC	NO3	QC	1	<1.39e-1	ug/mL
1	CCB	0	@IC-QC	PO4	QC	1	<1.20e-1	ug/mL
1	CCB	0	@IC-QC	SO4	QC	1	<1.38e-1	ug/mL
1	CCB	0	@IC-QC	OxALATE2	QC	1	<1.05e-1	ug/mL
2	CCV	0	@IC-QC	F	QC	5.90e01	5.90e+01	100.000 % Recovery
2	CCV	0	@IC-QC	CL	QC	8.00e01	8.04e+01	100.500 % Recovery
2	CCV	0	@IC-QC	NO2	QC	5.42e02	5.19e+02	95.756 % Recovery
2	CCV	0	@IC-QC	BR	QC	5.89e02	5.63e+02	95.586 % Recovery
2	CCV	0	@IC-QC	NO3	QC	5.94e02	5.63e+02	94.781 % Recovery
2	CCV	0	@IC-QC	PO4	QC	5.45e02	5.33e+02	97.798 % Recovery
2	CCV	0	@IC-QC	SO4	QC	6.32e02	6.03e+02	95.411 % Recovery
2	CCV	0	@IC-QC	OxALATE2	QC	5.29e02	5.02e+02	94.896 % Recovery
3	SAMPLE	S97T001896	0	@IC-01	F-02	LIQUID	N/A	< 4.969e+01
3	SAMPLE	S97T001896	0	@IC-01	CL-02	LIQUID	N/A	7.656e+03
3	SAMPLE	S97T001896	0	@IC-01	NO2-02	LIQUID	N/A	1.544e+05
3	SAMPLE	S97T001896	0	@IC-01	BR-02	LIQUID	N/A	< 5.176e+02
3	SAMPLE	S97T001896	0	@IC-01	NO3-02	LIQUID	N/A	1.862e+05
3	SAMPLE	S97T001896	0	@IC-01	PO4-02	LIQUID	N/A	6.578e+03
3	SAMPLE	S97T001896	0	@IC-01	SO4-02	LIQUID	N/A	2.918e+03
3	SAMPLE	S97T001896	0	@IC-01	OxALATE2	LIQUID	N/A	< 4.348e+02
4	DUP	S97T001896	0	@IC-01	F-02	LIQUID	<4.97e1	<4.97e1
4	DUP	S97T001896	0	@IC-01	CL-02	LIQUID	7.66e+03	7.66e+03
4	DUP	S97T001896	0	@IC-01	NO2-02	LIQUID	1.54e+05	1.56e+05
4	DUP	S97T001896	0	@IC-01	BR-02	LIQUID	<5.18e2	<5.18e2
4	DUP	S97T001896	0	@IC-01	NO3-02	LIQUID	1.86e+05	1.86e+05
4	DUP	S97T001896	0	@IC-01	PO4-02	LIQUID	6.58e+03	6.61e+03
4	DUP	S97T001896	0	@IC-01	SO4-02	LIQUID	2.92e+03	3.25e+03
4	DUP	S97T001896	0	@IC-01	OxALATE2	LIQUID	<4.35e2	<4.35e2
5	SPK	S97T001896	0	@IC-01	F-02	LIQUID	5.90e01	3.78e+01
5	SPK	S97T001896	0	@IC-01	CL-02	LIQUID	8.00e01	7.89e+01
5	SPK	S97T001896	0	@IC-01	NO2-02	LIQUID	5.42e02	4.98e+02
5	SPK	S97T001896	0	@IC-01	BR-02	LIQUID	5.89e02	5.43e+02
5	SPK	S97T001896	0	@IC-01	NO3-02	LIQUID	5.94e02	5.12e+02
5	SPK	S97T001896	0	@IC-01	PO4-02	LIQUID	5.45e02	5.26e+02
5	SPK	S97T001896	0	@IC-01	SO4-02	LIQUID	6.32e02	6.09e+02
5	SPK	S97T001896	0	@IC-01	OxALATE2	LIQUID	5.29e02	5.22e+02

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

LABCORE Completed Worklist Report for Worklist# 20604

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

Final page for worklist# 20604

Analyst Signature	Date
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Analyst Signature	Date
-------------------	------

<u>James M. Lye</u>	<u>10/2/97</u>
Reviewer Signature	Date

09/29/97 14:59
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 20604

Analyst: EAL Instrument: IC0 2 Book# 95N20-DMethod: LA-533-105 Rev/Mod D-1

Worklist Comment: Rerun AX101 grab IC. Use 5151df.jmf

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S97T001896 0		@IC-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02					
4 DUP	S97T001896 0		@IC-01	LIQUID		
5 SPK	S97T001896 0		@IC-01	LIQUID		

Final page for worklist # 20604

Analyst Signature

09-30-97
Date

Analyst Signature

Date

uploaded 10-2-97

~~202~~ 10-2-97

206045EP.CSV

Validated 10/2/97 JMW

Data Entry Comments:

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

Data Reprocessed On 10/02/1997 09:46:29

Sample Name: INST. BLANK Date: 09/30/1997 22:11:21
 Data File : E:\DATA\97093001.D01
 Method : C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 1 Detector: CDM-1
 Analyst : *John T. [Signature]* Column: AG4A/AS4A anion column

Calibration Volume *10.2 AL* Dilution Points Rate Start Stop Area Reject
 External 1 1 3300 5Hz 0.00 11.00 50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.34		0.000	25	161	1	
2	1.40		0.000	70	467	1	
3	1.64	chloride	0.007	19	77	1	3.80
4	7.52		0.000	47	773	1	
Totals			0.007	161	1479

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 209 TO 213.

Data Reprocessed On 10/01/1997 13:14:12

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=====
Sample Name: 95N20-D STD                      Date: 09/30/1997 22:24:03
Data File  : E:\DATA\97093001.D02
Method     : C:\DX\METHOD\ANIONS.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    3300   5Hz   0.00 11.00          50
=====

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.36		0.000	25	176	1	
2	0.89		0.000	70	293	2	
3	1.05	fluoride	58.992	2144	11189	2	2.27
4	1.39		0.000	63	411	2	
5	1.62	chloride	80.355	2455	11210	1	2.53
6	1.95	nitrite	519.349	9113	51023	1	1.74
7	2.99	bromide	562.846	5545	37105	1	-0.11
8	3.40	nitrate	563.058	5883	48192	1	3.98
9	4.85	phosphate	532.820	1771	23101	1	6.43
10	6.40	sulfate	603.469	4049	69765	1	0.00
11	7.47		0.000	43	555	1	
12	8.48	oxalate	502.286	2037	42983	1	0.00
Totals			3423.173	33198	296002		

File: 97093001.D02 Sample: 95N20-D STD

Data Reprocessed On 10/01/1997 13:16:01

```

=====
Sample Name: S97T001896                      Date: 09/30/1997 22:44:52
Data File  : E:\DATA\97093001.D03
Method     : C:\DX\METHOD\ANIONS.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          4141    3300  5Hz   0.00 11.00          50
=====

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	647	4076	2	
2	1.18		0.000	1513	10228	2	
3	1.62	chloride	7656.174	5165	26694	1	2.53
4	1.98	nitrite	154401.385	61566	393648	1	3.13
5	3.26	nitrate	186167.011	44092	453001	1	-0.31
6	4.22		0.000	24	174	1	
7	4.88	phosphate	6578.273	495	6662	1	0.00
8	6.45	sulfate	2917.649	503	8752	1	0.05
9	7.52		0.000	50	966	1	
Totals			357720.492	114055	904200		

File: 97093001.D03 Sample: S97T001896

Data Reprocessed On 10/01/1997 13:29:32

```

=====
Sample Name: S97T001896 DUP                      Date: 09/30/1997 22:57:45
Data File  : E:\DATA\97093001.D04
Method     : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 1 Inject#: 4                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 4141 3300 5Hz 0.00 11.00 50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.35		0.000	24	284	1	
2	0.90		0.000	651	4074	2	
3	1.18		0.000	1508	10257	2	
4	1.62	chloride	7664.036	5207	26723	1	2.53
5	1.99	nitrite	156007.777	61760	397976	1	3.47
6	3.27	nitrate	185828.862	44017	452023	1	-0.10
7	4.21		0.000	26	214	1	
8	4.88	phosphate	6610.624	491	6696	1	0.00
9	6.45	sulfate	3249.056	510	9664	1	0.05
10	7.57		0.000	41	741	1	
Totals			359360.355	114236	908652		

File: 97093001.D04 Sample: S97T001896 DUP

Data Reprocessed On 10/01/1997 13:34:01

```

=====
Sample Name: S97T001896 SPIKE           Date: 09/30/1997 23:14:08
Data File  : E:\DATA\97093001.D05
Method     : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 1 Inject#: 5      Detector: CDM-1
Analyst    :                          Column: AG4A/AS4A anion column
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1         4141   3300  5Hz   0.00 11.00          50
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	658	3642	2	
2	1.06	fluoride	1523.860	1454	6883	2	2.91
3	1.17		0.000	1624	9944	2	
4	1.61	chloride	10837.242	7425	38489	1	2.11
5	1.97	nitrite	174497.739	68449	448161	1	2.78
6	2.96	bromide	21912.475	5940	35166	1	0.00
7	3.23	nitrate	206815.999	49045	514237	1	-1.12
8	4.19		0.000	20	156	1	
9	4.85	phosphate	27795.904	2313	29623	1	6.43
10	6.40	sulfate	27470.031	4876	77530	1	0.00
11	8.48	oxalate	21068.042	2053	43975	1	0.00
Totals			491921.292	143857	1207805		

File: 97093001.D05 Sample: S97T001896 SPIKE

08/21/97 11:36
A-0004-1

File # 0970826A.YKT

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LABCORE Data Entry Template for Worklist# 19935

Analyst: B. GELBRE Instrument: ICP^{OL}01 Book# 6848AMethod: LA-505-¹¹151/161 Rev/Mod C-2
¹¹P-26-91

Worklist Comment: ICP AX-101 (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	S97T001896 0 D	@ICP-D01	LIQUID		
7	SAMPLE	S97T001896 0 D	@ICP-D01	LIQUID	97000510 AX-101	GRAB
Analytes Requested: AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01						
8	DUP	S97T001896 0 D	@ICP-D01	LIQUID		
9	SPK	S97T001896 0 D	@ICP-D01	LIQUID		
10	CCV- ^{Sample X} ^{SPK} -AX		@ICP-QC	QC		
11	CCB		@ICP-QC	QC		
12	SAMPLE	S97T001897 0 D	@ICP-D01	LIQUID	97000510 AX-101	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						

Data Entry Comments:

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

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LABCORE Data Entry Template for Worklist# 19935

S Type	Sample#	R	A	Test	Matrix	Group#	Project
13 DUP	S97T001897	0	D	@ICP-D01	LIQUID		
14 SAMPLE	S97T001898	0	D	@ICP-D01	LIQUID	97000510	AX-101 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							
15 DUP	S97T001898	0	D	@ICP-D01	LIQUID		
16 ICSA				@ICP-QC	QC		
17 IC SAB				@ICP-QC	QC		
18 CCV				@ICP-QC	QC		
19 CCB				@ICP-QC	QC		

Final page for worklist # 19935

[Signature] 8-26-97
Analyst Signature Date

Revised & Validated by:
[Signature] 9/3/97
Analyst Signature Date

S97T001896-C .025-15-2-8

1896

1896-D .025-15

1896-D .025-15

1896-A

.025-3(3375)-12

1896-X

.025-15-1-2

1896-AX

.025-15-1-(1-1cm XWHC 2848)-7

S97T001897

.025-15

1897-D

.025-15

S97T001898

.025-15

1898-D

.025-15

Data Entry Comments:

DF

3005

601

601

601

6010

6010

601

601

601

601

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

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Analysis Report

Summary

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#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	970826A	ICP2	08/26/97	13:25	BJG	Q	CONC
2	ICB	970826A	ICP2	08/26/97	13:42	BJG	Q	CONC
3	LLS	970826A	ICP2	08/26/97	13:46	BJG	Q	CONC
4	ICSA	970826A	ICP2	08/26/97	13:51	BJG	Q	CONC
5	ICSAB	970826A	ICP2	08/26/97	13:54	BJG	Q	CONC
6	S97T001896 L	970826A	ICP2	08/26/97	13:58	BJG	S	CONC
7	S97T001896	970826A	ICP2	08/26/97	14:01	BJG	S	CONC
8	S97T001896 D	970826A	ICP2	08/26/97	14:05	BJG	S	CONC
9	S97T001896 A	970826A	ICP2	08/26/97	14:08	BJG	S	CONC
10	S97T001896 X	970826A	ICP2	08/26/97	14:12	BJG	S	CONC
11	S97T001896 AX	970826A	ICP2	08/26/97	14:16	BJG	S	CONC
12	CCV	970826A	ICP2	08/26/97	14:20	BJG	Q	CONC
13	CCB	970826A	ICP2	08/26/97	14:24	BJG	Q	CONC
14	S97T001897	970826A	ICP2	08/26/97	14:27	BJG	S	CONC
15	S97T001897 D	970826A	ICP2	08/26/97	14:30	BJG	S	CONC
16	S97T001898	970826A	ICP2	08/26/97	14:34	BJG	S	CONC
17	S97T001898 D	970826A	ICP2	08/26/97	14:37	BJG	S	CONC
18	ICSA	970826A	ICP2	08/26/97	14:42	BJG	Q	CONC
19	ICSAB	970826A	ICP2	08/26/97	14:45	BJG	Q	CONC
20	CCV	970826A	ICP2	08/26/97	14:48	BJG	Q	CONC
21	CCB	970826A	ICP2	08/26/97	14:51	BJG	Q	CONC

Blank
8-26-97

AX-101.025-15ml

S97T001896-SF

File #0870826A.TXT

Spike:

$$Fe = \frac{\left(\frac{547.4}{601}\right) - 0}{1} \times 100 = 91.1\%$$

Post Spike:

$$Al = \frac{\left(\frac{102100}{6010}\right) - \left(\frac{45760}{6010}\right)}{10} \times 100 = 93.7\%$$

$$Na = \frac{\left(\frac{316500}{6010}\right) - \left(\frac{260500}{6010}\right)}{10} \times 100 = 93.2\%$$

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 216 TO 220.

Analysis Report

Averages

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.835	4.845	5.098	5.039	4.871	5.042
2	ICB	.0000	.0160	-.0054	-.0010	.0000	.0003
3	LLS	.0220	.1198	.2226	.1032	.0987	.0112
4	ICSA	.0021	239.3	-.0053	-.0067	.0003	.0003
5	ICSAB	.9637	241.2	.0057	-.0105	.4649	.4812
6	S97T001896_L	20.98	43830.	-130.1	46.01	.1108	1.947
7	S97T001896_	18.07	44940.	-130.0	44.81	-.0227	.8872
8	S97T001896_D	17.29	41050.	-108.0	43.04	.0490	.7047
9	S97T001896_A	174.4	43010.	501.2	629.3	563.0	595.6
10	S97T001896_X	24.52	45760.	-111.0	41.56	.0412	2.596
11	S97T001896_AX	58630.	102100.	60178.	59080.	59040.	59350.
12	CCV	4.909	4.838	5.130	5.000	4.917	5.058
13	CCB	.0011	.0351	.0074	.0040	.0000	.0009
14	S97T001897	16.97	41820.	-116.9	42.74	.0874	.6271
15	S97T001897_D	17.56	45380.	-117.5	46.60	.0884	.7568
16	S97T001898_	17.15	47280.	-126.4	47.49	.1907	.8616
17	S97T001898_D	18.26	49170.	-121.4	47.78	.2142	.9656
18	ICSA	.0025	237.1	-.0377	-.0032	.0002	.0008
19	ICSAB	.9608	236.7	-.0003	.0012	.4625	.4762
20	CCV	4.911	4.783	5.076	4.975	4.874	4.997
21	CCB	-.0010	.0127	-.0185	.0054	.0000	.0004

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.080	4.849	4.939	4.871	5.075	4.902
2	ICB	-.0372	-.0004	-.0007	.0016	-.0008	.0001
3	LLS	.1500	.1960	.0112	.1976	.0419	.0207
4	ICSA	-.0200	251.9	.0020	.0065	-.0007	-.0031
5	ICSAB	.0032	253.9	.9412	.0007	.4692	.4689
6	S97T001896_L	-51.63	-28.38	.6778	19.64	-4.992	87.07
7	S97T001896_	7.247	13.03	1.183	.7787	-.4985	87.93
8	S97T001896_D	-10.99	1.374	1.063	2.988	-.0749	83.42
9	S97T001896_A	610.3	610.2	593.8	570.6	607.2	674.9
10	S97T001896_X	-102.1	-117.7	-1.041	-1.856	2.545	89.73
11	S97T001896_AX	61850.	61210.	59720.	59140.	59690.	59900.
12	CCV	5.194	5.051	5.039	4.864	5.174	5.005
13	CCB	-.0278	-.0028	.0007	.0016	.0000	-.0013
14	S97T001897	-8.555	-2.328	.9975	2.381	.0047	80.37
15	S97T001897_D	3.124	-1.734	1.219	4.541	.0861	88.21
16	S97T001898_	3.602	-4.777	1.129	1.389	-.4163	80.19
17	S97T001898_D	10.73	-5.955	1.315	1.589	1.663	83.55
18	ICSA	-.0400	255.9	.0030	.0133	-.0002	-.0027
19	ICSAB	-.0151	255.7	.9388	.0044	.4669	.4699
20	CCV	5.123	5.103	5.006	4.815	5.152	5.009
21	CCB	.0041	-.0001	-.0011	-.0033	-.0025	-.0013

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Analysis Report

Averages

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#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.060	.0042	4.597	4.777	4.944	4.889
2	ICB	.0013	-.0005	-.0003	-.0075	-.0004	-.0002
3	LLS	.0181	.0004	.0930	.4837	.1001	.0205
4	ICSA	-.0089	-.0082	92.08	.1125	-.0031	.0025
5	ICSAB	.4505	-.0067	92.44	.0191	-.0051	.9860
6	S97T001896 L	3.632	-.0784	-1.714	6696.	1.869	-.3186
7	S97T001896	2.886	-.1029	1.141	7248.	-.8393	-.1274
8	S97T001896 D	2.850	.3734	1.031	6843.	-.0440	.3794
9	S97T001896 A	584.8	.9282	547.4	7235.	584.9	563.7
10	S97T001896 X	1.865	-.1459	9.939	6917.	-3.911	1.265
11	S97T001896 AX	54700.	56.03	55670.	65310.	59160.	57670.
12	CCV	5.001	.0047	4.671	4.685	4.954	4.733
13	CCB	.0002	-.0003	-.0009	-.0248	-.0010	.0001
14	S97T001897	3.107	.1763	.9248	.7119.	.0972	.1895
15	S97T001897 D	3.440	.1769	1.971	.7483.	.0945	.3165
16	S97T001898	3.617	.1657	.4953	.7716.	-.6180	.1263
17	S97T001898 D	4.083	-.0075	1.045	.7836.	-.2751	.0628
18	ICSA	-.0073	-.0154	92.36	.1131	-.0041	.0028
19	ICSAB	.4410	-.0132	91.91	.0415	-.0049	.9729
20	CCV	4.932	.0057	4.643	4.782	4.914	4.658
21	CCB	-.0001	-.0002	-.0008	-.1702	-.0011	-.0004

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.958	4.830	5.042	5.065	4.935	4.923
2	ICB	.0067	-.0001	-.0027	.0049	.0050	-.0036
3	LLS	.2129	.0203	.1008	Q.1253	.1969	.0305
4	ICSA	247.2	-.0048	-.0105	192.7	-.0016	-.0024
5	ICSAB	248.3	.4461	-.0080	194.5	-.0044	.9082
6	S97T001896 L	34.95	.7108	117.9	259000.	-2.793	24.49
7	S97T001896	3.917	.2740	126.2	253200.	-1.280	1.869
8	S97T001896 D	7.431	.4814	115.0	238400.	1.645	3.337
9	S97T001896 A	568.8	568.5	721.5	231100.	578.7	588.8
10	S97T001896 X	20.82	2.192	126.1	260500.	-2.921	-18.86
11	S97T001896 AX	61100.	59320.	59740.	316500.	57280.	59180.
12	CCV	4.939	4.934	5.116	4.908	4.909	4.951
13	CCB	.0019	.0004	.0008	.0018	-.0022	-.0012
14	S97T001897	6.273	.4059	117.5	238800.	.4617	.8521
15	S97T001897 D	5.112	.4663	128.3	250600.	-.6921	6.849
16	S97T001898	4.020	.4242	132.6	248600.	.6511	5.914
17	S97T001898 D	8.357	.4203	134.3	253300.	1.339	4.437
18	ICSA	244.5	-.0045	-.0117	187.5	-.0021	-.0034
19	ICSAB	243.6	.4452	-.0097	187.5	-.0017	.9223
20	CCV	4.880	4.898	5.089	4.849	4.864	4.948
21	CCB	-.0026	.0003	.0008	.0275	-.0025	-.0084

Analysis Report

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#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.117	4.888	4.954	4.806	4.691	5.165
2	ICB	.0032	-.0263	-.0092	-.0083	.0155	-.0014
3	LLS	.4091	.2102	.1999	.1085	.2227	Q.1426
4	ICSA	.0352	.0249	-.0435	.0007	.0297	.0195
5	ICSAB	.0363	1.025	-.0275	.0013	.0499	.0163
6	S97T001896 L	1095.	129.2	937.2	7.778	89.10	59.10
7	S97T001896-	1043.	125.6	915.6	-9.496	44.09	45.32
8	S97T001896 D	980.6	115.4	737.2	-1.401	34.91	47.51
9	S97T001896-A	1640.	705.1	1623.	588.7	611.1	677.1
10	S97T001896 X	1058.	111.2	1047.	-75.04	92.38	74.19
11	S97T001896-AX	60830.	60430.	59920.	60440.	58960.	63010.
12	CCV	5.044	4.996	4.985	4.863	4.699	5.244
13	CCB	.0072	.0061	-.0206	.0033	.0212	.0067
14	S97T001897	964.3	112.3	417.0	-2.799	41.63	42.13
15	S97T001897 D	1014.	131.4	408.9	-3.288	41.79	45.70
16	S97T001898	1027.	141.6	378.2	-10.41	36.87	40.61
17	S97T001898 D	1078.	136.2	405.8	-2.287	49.02	41.23
18	ICSA	.0328	.0104	-.0340	-.0030	.0370	.0173
19	ICSAB	.0297	1.005	-.0415	-.0083	.0234	.0156
20	CCV	5.004	4.964	4.971	4.830	4.638	5.217
21	CCB	.0270	-.0171	.0057	-.0020	.0188	.0039

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.852	4.886	1.538	4.917	4.749	9.607
2	ICB	-.0033	-.0001	.0029	.0012	.0131	-.0128
3	LLS	.2003	.0202	.0083	.0205	.4397	.4947
4	ICSA	-.0083	.0017	-.0070	.0014	.0823	-.0446
5	ICSAB	-.0158	.0016	-.0056	.0012	.0809	-.0712
6	S97T001896 L	2.962	-.0004	11.41	.7446	41.82	16.15
7	S97T001896-	-.9947	-.0011	1.303	-.4232	-3.409	6.899
8	S97T001896 D	4.343	.0501	2.425	.2808	3.634	32.86
9	S97T001896-A	573.1	574.8	15.07	580.3	553.1	1139.
10	S97T001896 X	27.96	-.0054	9.372	1.431	211.7	108.6
11	S97T001896-AX	57390.	58770.	1882.	59420.	57890.	112100.
12	CCV	4.851	4.876	.1575	4.935	4.759	9.556
13	CCB	.0014	-.0000	.0055	.0003	.0226	.0030
14	S97T001897	1.565	.0248	-1.247	.1279	-2.111	20.90
15	S97T001897 D	2.194	-.0019	-2.772	.1225	-4.753	21.99
16	S97T001898	-.5820	-.0010	-2.142	.1250	-1.323	13.73
17	S97T001898 D	.9364	-.0009	1.164	.5635	-3.171	12.64
18	ICSA	-.0051	.0015	-.0004	.0019	.0693	-.0855
19	ICSAB	-.0066	.0016	-.0027	.0017	.0665	-.0733
20	CCV	4.793	4.849	.1497	4.892	4.821	9.447
21	CCB	.0007	.0000	.0014	-.0002	.0074	.0075

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Analysis Report

Averages

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#	Sample Name	V	Y	Zn	Zr
1	ICV	5.041	.0061	4.887	4.918
2	ICB	-.0011	-.0002	-.0008	-.0015
3	LLS	.1023	.0005	.0237	.0200
4	ICSA	.0008	.0071	.0072	-.0021
5	ICSAB	.4656	.0068	.9523	-.0027
6	S97T001896_L	-.7708	-.2423	5.207	-.9366
7	S97T001896	-.7378	-.1442	4.235	-.3827
8	S97T001896_D	.6729	.0331	5.107	.7212
9	S97T001896_A	601.4	.9282	605.8	590.8
10	S97T001896_X	1.846	.4247	3.955	3.155
11	S97T001896_AX	59180.	76.65	56700.	58950.
12	CCV	5.099	.0068	4.994	4.967
13	CCB	.0002	-.0001	.0021	.0006
14	S97T001897	.3665	.1324	11.50	1.208
15	S97T001897_D	.4651	.0377	12.48	1.112
16	S97T001898	.2511	-.0058	3.770	1.071
17	S97T001898_D	.0195	-.0525	3.575	.8243
18	ICSA	.0021	.0073	.0065	-.0019
19	ICSAB	.4652	.0074	.9460	-.0015
20	CCV	5.076	.0071	5.006	4.934
21	CCB	.0002	.0000	.0016	.0002

LABCORE Completed Worklist Report for Worklist# 19710

Analyst: pjm

Instrument: CARB1

Book# TIC 25N12B
TOC 26N12C

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

Worklist Comment: AX-101 FOR @TICTOCI

RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOCI TIC-02	LIQUID	1	1.10E+0	1.100	ug/mL
1 BLNK	0		@TICTOCI TOC-02	LIQUID	1	1.31E+1	13.100	ug/mL
2 STD	0		@TICTOCI TIC-02	LIQUID	6.02E+02	6.11E+2	101.495 % Recovery	
2 STD	0		@TICTOCI TOC-02	LIQUID	3.00E+03	2.77E+3	92.333 % Recovery	
3 SAMPLE	S97T001896	0	@TICTOCI TIC-02	LIQUID	N/A	2.84E+03	5.000	ug/mL
3 SAMPLE	S97T001896	0	@TICTOCI TOC-02	LIQUID	N/A	4.24E+03	40.000	ug/mL
4 DUP	S97T001896	0	@TICTOCI TIC-02	LIQUID	2.84E+3	3.03E+3	6.474 RPD	
4 DUP	S97T001896	0	@TICTOCI TOC-02	LIQUID	4.24E+3	3.85E+3	9.642 RPD	
5 SPK	S97T001896	0	@TICTOCI TIC-02	LIQUID	1.00E+02	1.09E+02	109.000 % Recovery	
5 SPK	S97T001896	0	@TICTOCI TOC-02	LIQUID	1.00E+02	1.49E+02	149.000 % Recovery	
6 SAMPLE	S97T001897	0	@TICTOCI TIC-02	LIQUID	N/A	2.34E+03	5.000	ug/mL
6 SAMPLE	S97T001897	0	@TICTOCI TOC-02	LIQUID	N/A	3.73E+03	40.000	ug/mL
7 DUP	S97T001897	0	@TICTOCI TIC-02	LIQUID	2.34E+3	2.40E+3	2.532 RPD	
7 DUP	S97T001897	0	@TICTOCI TOC-02	LIQUID	3.73E+3	3.62E+3	2.993 RPD	
8 SAMPLE	S97T001898	0	@TICTOCI TIC-02	LIQUID	N/A	1.95E+03	5.000	ug/mL
8 SAMPLE	S97T001898	0	@TICTOCI TOC-02	LIQUID	N/A	3.79E+03	40.000	ug/mL
9 DUP	S97T001898	0	@TICTOCI TIC-02	LIQUID	1.95E+3	1.78E+3	9.115 RPD	
9 DUP	S97T001898	0	@TICTOCI TOC-02	LIQUID	3.79E+3	4.53E+3	17.788 RPD	

Final page for worklist# 19710

Analyst Signature _____ Date _____

8-13-97
 Analyst Signature _____ Date _____

8/13/97
 Reviewer Signature _____ Date _____

Spike duplicate provided with 104.7% Tic and 70.3%
 spike recovery. No reanalysis requested.
 RW Schroeder 8/13/97

08/08/97 11:26
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 19710

Analyst: RLM Instrument: CARB2 _____ Book# TIC 25N12B
 Method: LA-342-100 Rev/Mod E-0 TOC 26N12C
 Worklist Comment: AX-101 FOR @TICTOC1 RTS

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	LIQUID		
2	STD				@TICTOC1	LIQUID		
3	SAMPLE	S97T001896 0			@TICTOC1	LIQUID	97000510	AX-101 GRAB
		Analytes Requested: TIC-02 , TOC-02						
4	DUP	S97T001896 0			@TICTOC1	LIQUID		
5	SPK	S97T001896 0			@TICTOC1	LIQUID		
6	SAMPLE	S97T001897 0			@TICTOC1	LIQUID	97000510	AX-101 GRAB
		Analytes Requested: TIC-02 , TOC-02						
7	DUP	S97T001897 0			@TICTOC1	LIQUID		
8	SAMPLE	S97T001898 0			@TICTOC1	LIQUID	97000510	AX-101 GRAB
		Analytes Requested: TIC-02 , TOC-02						
9	DUP	S97T001898 0			@TICTOC1	LIQUID		

Final page for worklist # 19710

RLM 8/13/97
 Analyst Signature Date

 Analyst Signature Date

Data Entry Comments:

Renan S97T001896 - spike. last two print outs.

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

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD-1

Date: 08/12/97

Time: 22:10:17

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = .61 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.51	0.20	100.00
4	2.01	5.10	96.08
5	2.50	56.90	91.04
6	3.00	184.50	69.16
7	3.50	338.90	45.56
8	4.00	461.30	26.53
9	4.50	539.30	14.46
10	5.00	580.60	7.11
11	5.50	599.40	3.14
12	6.00	607.90	1.40
13	6.50	611.50	0.59
14	7.00	613.10	0.26
15	7.50	614.10	0.16
16	8.00	614.90	0.13
17	8.50	615.40	0.08
18	9.00	615.80	0.06
19	9.50	616.20	0.06
20	10.00	616.50	0.05
21	10.50	616.90	0.06
22	11.00	617.20	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 6.708735 micrograms carbon

BLANK FACTOR = 6.708735 / 10.99792 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(617.2 - 6.708735) (1) / (1000) = +6.105E-01 g/L Carbon
 (617.2 - 6.708735) (1) / (1000) (12) = +5.087E-02 Molar Carbon

Sample Run By:

PJ McCown 8/12/97

PJ MCCOWN

00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 1.0 mL 250015 VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 223 TO 254

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD-1

Date: 08/12/97

Time: 22:23:27

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.28 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.50	0.00	0.00
4	2.00	2.80	100.00
5	2.50	32.60	91.41
6	3.00	149.50	78.19
7	3.50	327.90	54.41
8	4.00	456.70	28.20
9	4.50	526.00	13.17
10	5.00	560.50	6.16
11	5.50	575.70	2.64
12	6.00	582.30	1.13
13	6.50	585.00	0.46
14	7.00	586.60	0.27
15	7.50	587.50	0.15
16	8.00	588.30	0.14
17	8.50	588.80	0.08
18	9.00	589.30	0.08
19	9.50	589.70	0.07
20	10.00	590.10	0.07
21	10.50	590.40	0.05
22	11.00	590.80	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 36.07319 micrograms carbon

BLANK FACTOR = 36.07319 / 10.99792 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(590.8 - 36.07319) (1)/(200) = +2.774E+00 g/L Carbon
 (590.8 - 36.07319) (1)/(200) (12) = +2.311E-01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

PJ MCCOWN 8/12/97

00000

.200mL 26V12C

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

Sample: BASE-1

Date: 08/12/97

Time: 21:14:26

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

Analyst : PJ MCCOWN
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.50	60.00
3	1.51	0.90	44.44
4	2.00	1.20	25.00
5	2.50	1.40	14.29
6	3.00	1.80	22.22
7	3.50	2.00	10.00
8	4.00	2.30	13.04
9	4.50	2.70	14.81
10	5.00	3.00	10.00
11	5.50	3.30	9.09
12	6.00	3.50	5.71
13	6.50	3.90	10.26
14	7.00	4.20	7.14
15	7.50	4.50	6.67
16	8.00	4.80	6.25
17	8.50	5.20	7.69
18	9.00	5.40	3.70
19	9.50	5.70	5.26
20	10.00	6.00	5.00
21	10.50	6.40	6.25
22	11.00	6.70	4.48

BLANK VALUE = 6.7 micrograms carbon

BLANK FACTOR = 6.7 / 10.99805 =

+6.1E-01

ug/min Carbon

Sample Run By:

PJ MCCOWN

00000

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

Sample: BASE-1

Date: 08/12/97

Time: 21:29:47

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE-1
Blank Value = N/AAnalyst : PJ MCCOWN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	1.00	0.00
2	1.01	1.80	44.44
3	1.51	3.40	47.06
4	2.00	7.50	54.67
5	2.50	15.70	52.23
6	3.00	22.20	29.28
7	3.50	24.40	9.02
8	4.00	26.00	6.15
9	4.50	27.40	5.11
10	5.00	28.50	3.86
11	5.50	29.60	3.72
12	6.00	30.40	2.63
13	6.50	31.30	2.88
14	7.00	32.10	2.49
15	7.50	32.80	2.13
16	8.00	33.50	2.09
17	8.50	34.00	1.47
18	9.00	34.60	1.73
19	9.50	35.00	1.14
20	10.00	35.40	1.13
21	10.50	35.80	1.12
22	11.00	36.10	0.83

BLANK VALUE = 36.1 micrograms carbon

BLANK FACTOR = 36.1 / 10.99792 = +3.28E+00 ug/min. Carbon

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

Sample Run By:

PJ MCCOWN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLNK-1

Date: 08/12/97

Time: 22:39:05

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .61 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	1.10	36.36
3	1.50	1.50	26.67
4	2.00	1.80	16.67
5	2.50	2.10	14.29
6	3.00	2.40	12.50
7	3.50	2.60	7.69
8	4.00	2.80	7.14
9	4.50	3.00	6.67
10	5.00	3.30	9.09
11	5.50	3.50	5.71
12	6.00	3.70	5.41
13	6.50	3.90	5.13
14	7.00	4.10	4.88
15	7.50	4.30	4.65
16	8.00	4.40	2.27
17	8.50	4.70	6.38
18	9.00	4.90	4.08
19	9.50	5.10	3.92
20	10.00	5.30	3.77
21	10.50	5.50	3.64
22	11.00	5.60	1.79

USER INPUT BLANK VALUE

BLANK VALUE = 6.708735 micrograms carbon

BLANK FACTOR = 6.708735 / 10.99792 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(5.6 - 6.708138) (1)/(1) = < 5.00 E-3 g/L Carbon
 (5.6 - 6.708138) (1)/(1) (12) = < 4.17 E-4 Molar Carbon

Sample Run By:

 PJ MCCOWN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLNK-1

Date: 08/12/97

Time: 22:55:54

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.28 ug/minute C

Analyst : PJ MCCOWN

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	0.60	33.33
4	2.00	0.80	25.00
5	2.50	1.30	38.46
6	3.00	3.40	61.76
7	3.50	6.90	50.72
8	4.00	10.80	36.11
9	4.50	14.30	24.48
10	5.00	16.70	14.37
11	5.50	18.30	8.74
12	6.04	19.40	5.67
13	6.54	20.00	3.00
14	7.04	20.80	3.85
15	7.53	21.20	1.89
16	8.03	21.60	1.85
17	8.53	21.70	0.46
18	9.03	22.00	1.36
19	9.53	22.30	1.35
20	10.03	22.50	0.89
21	10.53	22.80	1.32
22	11.03	23.00	0.87

USER INPUT BLANK VALUE

BLANK VALUE = 36.07319 micrograms carbon

BLANK FACTOR = 36.07319 / 10.99792 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(23 - 36.18731) (1)/(1) = < 5.00 E-3 g/L Carbon
 (23 - 36.18731) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
 <<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By:

 PJ MCCOWN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001896-1

Date: 08/12/97

Time: 23:15:13

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .61 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.51	0.00	0.00
4	2.01	1.60	100.00
5	2.50	28.10	94.31
6	3.00	132.20	78.74
7	3.50	223.90	40.96
8	4.00	264.20	15.25
9	4.50	278.50	5.13
10	5.00	283.20	1.66
11	5.50	285.10	0.67
12	6.00	286.10	0.35
13	6.50	287.00	0.31
14	7.00	287.50	0.17
15	7.50	288.00	0.17
16	8.00	288.60	0.21
17	8.50	289.10	0.17
18	9.00	289.50	0.14
19	9.50	290.00	0.17
20	10.00	290.30	0.10
21	10.50	290.60	0.10
22	11.00	291.00	0.14

USER INPUT BLANK VALUE

BLANK VALUE = 6.708735 micrograms carbon

BLANK FACTOR = 6.708735 / 10.99792 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(291 - 6.70933) (1)/(1) = +2.843E+02 g/L Carbon
 (291 - 6.70933) (1)/(1)(12) = +2.369E+01 Molar Carbon

Sample Run By: *PJM*

PJ MCCOWN

00000

• 100mL

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001896-1

Date: 08/12/97

Time: 23:29:10

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.28 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.51	4.80	100.00
4	2.00	45.70	89.50
5	2.50	149.30	69.39
6	3.00	245.30	39.14
7	3.50	298.00	17.68
8	4.00	319.20	6.64
9	4.50	328.20	2.74
10	5.00	340.90	3.73
11	5.50	370.20	7.91
12	6.00	400.60	7.59
13	6.50	422.80	5.25
14	7.00	437.00	3.25
15	7.50	446.30	2.08
16	8.00	451.70	1.20
17	8.50	454.60	0.64
18	9.00	456.40	0.39
19	9.50	458.00	0.35
20	10.00	459.00	0.22
21	10.50	459.50	0.11
22	11.00	460.10	0.13

USER INPUT BLANK VALUE

BLANK VALUE = 36.07319 micrograms carbon

BLANK FACTOR = 36.07319 / 10.99792 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(460.1 - 36.07319) (1)/(1) = +4.240E+02 g/L Carbon
 (460.1 - 36.07319) (1)/(1) (12) = +3.534E+01 Molar Carbon

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

Sample Run By: PJ McCown

PJ MCCOWN

00000

• 100mL

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1896 DUP-1

Date: 08/12/97

Time: 23:46:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .61 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.80	50.00
3	1.50	2.10	61.90
4	2.00	17.60	88.07
5	2.50	96.20	81.70
6	3.00	199.40	51.76
7	3.50	262.40	24.01
8	4.00	289.00	9.20
9	4.50	298.60	3.22
10	5.00	301.90	1.09
11	5.50	303.60	0.56
12	6.00	304.40	0.26
13	6.50	305.30	0.29
14	7.00	305.90	0.20
15	7.50	306.50	0.20
16	8.00	306.80	0.10
17	8.50	307.30	0.16
18	9.00	307.80	0.16
19	9.50	308.20	0.13
20	10.00	308.60	0.13
21	10.50	309.00	0.13
22	11.00	309.30	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 6.708735 micrograms carbon

BLANK FACTOR = 6.708735 / 10.99792 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(309.3 - 6.70866) (1)/(1)	=	+3.026E+02	g/L Carbon
(309.3 - 6.70866) (1)/(1) (12)	=	+2.522E+01	Molar Carbon

Sample Run By: PJ

PJ MCCOWN

00000

.100ML

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1896 DUP-1

Date: 08/12/97

Time: 23:59:35

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.28 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.51	2.50	100.00
4	2.01	27.40	90.88
5	2.50	126.80	78.39
6	3.00	254.70	50.22
7	3.50	323.10	21.17
8	4.00	353.00	8.47
9	4.50	363.90	3.00
10	5.00	371.60	2.07
11	5.50	385.60	3.63
12	6.00	398.20	3.16
13	6.50	407.20	2.21
14	7.00	412.50	1.28
15	7.50	415.60	0.75
16	8.00	417.30	0.41
17	8.50	418.40	0.26
18	9.00	419.20	0.19
19	9.50	419.80	0.14
20	10.00	420.30	0.12
21	10.50	420.80	0.12
22	11.00	421.10	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 36.07319 micrograms carbon

BLANK FACTOR = 36.07319 / 10.99792 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(421.1 - 36.0768) (1)/(1) = +3.850E+02 g/L Carbon
 (421.1 - 36.0768) (1)/(1) (12) = +3.209E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

 PJ MCCOWN

00000

•100ML

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1896 SPIKE-1

Date: 08/13/97

Time: 01:31:59

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .61 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.50	1.30	100.00
4	2.00	58.20	97.77
5	2.50	230.30	74.73
6	3.00	410.80	43.94
7	3.50	518.20	20.73
8	4.00	574.40	9.78
9	4.50	598.10	3.96
10	5.00	607.00	1.47
11	5.50	610.50	0.57
12	6.00	612.20	0.28
13	6.50	613.20	0.16
14	7.00	614.00	0.13
15	7.50	614.60	0.10
16	8.00	615.20	0.10
17	8.50	615.60	0.06
18	9.00	616.10	0.08
19	9.50	616.60	0.08
20	10.00	617.00	0.06
21	10.50	617.40	0.06
22	11.00	617.80	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 6.708735 micrograms carbon

BLANK FACTOR = 6.708735 / 10.99792 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(617.8 - 6.708678) (1)/(1) = +6.111E+02 g/L Carbon
 (617.8 - 6.708678) (1)/(1) (12) = +5.092E+01 Molar Carbon

Sample Run By: *PJm*

PJ MCCOWN

00000

.100mL
 + .500mL 25N128

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1896 SPK-1

Date: 08/13/97

Time: 01:45:32

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.28 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.50	1.40	100.00
4	2.00	31.80	95.60
5	2.50	172.30	81.54
6	3.00	456.80	62.28
7	3.50	648.50	29.56
8	4.00	735.90	11.88
9	4.50	777.80	5.39
10	5.00	809.60	3.93
11	5.50	844.30	4.11
12	6.00	870.20	2.98
13	6.50	885.30	1.71
14	7.00	894.40	1.02
15	7.50	899.50	0.57
16	8.00	902.60	0.34
17	8.50	904.60	0.22
18	9.00	905.80	0.13
19	9.50	906.70	0.10
20	10.00	907.50	0.09
21	10.50	908.00	0.06
22	11.00	908.40	0.04

USER INPUT BLANK VALUE

BLANK VALUE = 36.07319 micrograms carbon

BLANK FACTOR = 36.07319 / 10.99792 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(908.4 - 36.07342) (1) / (1) = +8.723E+02 g/L Carbon
 (908.4 - 36.07342) (1) / (1) (12) = +7.269E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By: *PJ McCown*

PJ MCCOWN

00000

.100ML
 + .100ML 26N12C

234

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1896 SPK-1 (200 Run) Date: 08/13/97 Time: 04:00:49

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.28 ug/minute C

Analyst : PJ MCCOWN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.50	0.00	0.00
4	2.00	16.20	100.00
5	2.50	110.70	85.37
6	3.00	322.00	65.62
7	3.50	492.00	34.55
8	4.00	573.10	14.15
9	4.50	617.90	7.25
10	5.00	641.00	3.60
11	5.50	652.90	1.82
12	6.00	659.40	0.99
13	6.50	662.90	0.53
14	7.00	665.30	0.36
15	7.50	666.50	0.18
16	8.00	667.70	0.18
17	8.50	668.50	0.12
18	9.00	669.20	0.10
19	9.50	669.70	0.07
20	10.00	670.20	0.07
21	10.50	670.70	0.07
22	11.00	671.10	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 36.07319 micrograms carbon

BLANK FACTOR = 36.07319 / 10.99792 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(671.1 - 36.07289) (1)/(1) = +6.350E+02 g/L Carbon
(671.1 - 36.07289) (1)/(1) (12) = +5.292E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By: *PJ McCown*

PJ MCCOWN

00000

.100mL

+ .100mL 26N12C

235

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1896 SPK-1 (2nd) Date: 08/13/97

Time: 03:48:04

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .61 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.51	0.30	0.00
2	1.01	0.90	66.67
3	1.50	3.20	71.88
4	2.00	97.10	96.70
5	2.50	332.80	70.82
6	3.00	480.90	30.80
7	3.50	548.40	12.31
8	4.00	581.10	5.63
9	4.50	593.70	2.12
10	5.00	598.00	0.72
11	5.50	599.90	0.32
12	6.00	600.90	0.17
13	6.50	601.70	0.13
14	7.00	602.40	0.12
15	7.50	603.00	0.10
16	8.00	603.50	0.08
17	8.50	604.10	0.10
18	9.00	604.60	0.08
19	9.50	605.00	0.07
20	10.00	605.40	0.07
21	10.50	605.90	0.08
22	11.00	606.20	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 6.708735 micrograms carbon

BLANK FACTOR = 6.708735 / 10.99792 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(606.2 - 6.708669) (1)/(1)	=	+5.995E+02	g/L Carbon
(606.2 - 6.708669) (1)/(1) (12)	=	+4.996E+01	Molar Carbon

Sample Run By:

PJ MCCOWN

00000

.100mL

+ .500mL 25N12B

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001897-1

Date: 08/13/97

Time: 02:00:07

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .61 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	1.00	60.00
4	2.00	2.90	65.52
5	2.50	15.10	80.79
6	3.00	54.10	72.09
7	3.50	124.40	56.51
8	4.00	183.30	32.13
9	4.50	215.10	14.78
10	5.00	228.30	5.78
11	5.50	233.30	2.14
12	6.00	235.50	0.93
13	6.50	236.60	0.46
14	7.00	237.40	0.34
15	7.50	238.20	0.34
16	8.00	238.70	0.21
17	8.50	239.00	0.13
18	9.00	239.50	0.21
19	9.50	240.00	0.21
20	10.00	240.40	0.17
21	10.50	240.80	0.17
22	11.00	241.10	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 6.708735 micrograms carbon

BLANK FACTOR = 6.708735 / 10.99792 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(241.1 - 6.708678) (1)/(1)	=	+2.344E+02	g/L Carbon
(241.1 - 6.708678) (1)/(1) (12)	=	+1.953E+01	Molar Carbon

Sample Run By: *PJM*

PJ MCCOWN

00000

.100mL

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001897-1

Date: 08/13/97

Time: 02:12:37

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.28 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.50	0.40	100.00
4	2.00	10.10	96.04
5	2.50	60.40	83.28
6	3.00	182.40	66.89
7	3.50	284.70	35.93
8	4.00	340.00	16.26
9	4.50	366.90	7.33
10	5.00	379.30	3.27
11	5.50	385.60	1.63
12	6.00	390.50	1.25
13	6.50	395.30	1.21
14	7.00	399.40	1.03
15	7.50	402.50	0.77
16	8.00	404.40	0.47
17	8.50	405.80	0.34
18	9.00	406.80	0.25
19	9.50	407.60	0.20
20	10.00	408.30	0.17
21	10.50	408.80	0.12
22	11.00	409.30	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 36.07319 micrograms carbon

BLANK FACTOR = 36.07319 / 10.99792 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(409.3 - 36.07615) (1)/(1) = +3.732E+02 g/L Carbon
 (409.3 - 36.07615) (1)/(1) (12) = +3.110E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

PJ

PJ MCCOWN

00000

100ML

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1897 DUP-1

Date: 08/13/97

Time: 02:24:47

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .61 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.80	50.00
3	1.51	1.20	33.33
4	2.04	3.00	60.00
5	2.54	16.20	81.48
6	3.04	57.30	71.73
7	3.54	130.10	55.96
8	4.04	188.40	30.94
9	4.54	220.80	14.67
10	5.04	234.40	5.80
11	5.54	239.10	1.97
12	6.04	241.30	0.91
13	6.54	242.50	0.49
14	7.04	243.20	0.29
15	7.54	244.00	0.33
16	8.04	244.40	0.16
17	8.54	244.80	0.16
18	9.04	245.40	0.24
19	9.54	245.70	0.12
20	10.04	246.10	0.16
21	10.54	246.50	0.16
22	11.04	246.80	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 6.708735 micrograms carbon

BLANK FACTOR = 6.708735 / 10.99792 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(246.8 - 6.732683) (1)/(1)	=	+2.401E+02	g/L Carbon
(246.8 - 6.732683) (1)/(1) (12)	=	+2.001E+01	Molar Carbon

Sample Run By: *PJ*

PJ MCCOWN

00000

*100ML

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1897 DUP-1

Date: 08/13/97

Time: 02:37:00

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.28 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.50	0.00	0.00
4	2.00	10.90	100.00
5	2.50	62.20	82.48
6	3.00	176.30	64.72
7	3.50	276.50	36.24
8	4.00	330.90	16.44
9	4.50	360.40	8.19
10	5.00	373.00	3.38
11	5.50	380.10	1.87
12	6.00	384.80	1.22
13	6.50	388.70	1.00
14	7.00	391.20	0.64
15	7.50	393.20	0.51
16	8.00	394.50	0.33
17	8.50	395.70	0.30
18	9.00	396.40	0.18
19	9.50	397.00	0.15
20	10.00	397.60	0.15
21	10.50	397.90	0.08
22	11.00	398.30	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 36.07319 micrograms carbon

BLANK FACTOR = 36.07319 / 10.99792 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(398.3 - 36.07289) (1)/(1) = +3.622E+02 g/L Carbon
 (398.3 - 36.07289) (1)/(1) (12) = +3.019E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

 PJ MCCOWN

00000

100ML

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: S97T001898-1 Date: 08/13/97 Time: 02:49:10

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .61 ug/minute C

Analyst : PJ MCCOWN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.20	100.00
3	1.50	0.60	66.67
4	2.00	2.90	79.31
5	2.50	16.00	81.88
6	3.00	59.10	72.93
7	3.50	123.20	52.03
8	4.00	165.40	25.51
9	4.50	185.20	10.69
10	5.00	192.40	3.74
11	5.50	195.20	1.43
12	6.00	196.50	0.66
13	6.50	197.60	0.56
14	7.00	198.00	0.20
15	7.50	198.60	0.30
16	8.00	199.00	0.20
17	8.50	199.50	0.25
18	9.00	200.10	0.30
19	9.50	200.30	0.10
20	10.00	200.60	0.15
21	10.50	201.00	0.20
22	11.00	201.40	0.20

USER INPUT BLANK VALUE

BLANK VALUE = 6.708735 micrograms carbon

BLANK FACTOR = 6.708735 / 10.99792 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(201.4 - 6.708176) (1)/(1) = +1.947E+02 g/L Carbon
(201.4 - 6.708176) (1)/(1) (12) = +1.622E+01 Molar Carbon

Sample Run By: *PJm*

PJ MCCOWN

00000

.100mL

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001898-1

Date: 08/13/97

Time: 03:01:34

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.28 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.50	0.10	100.00
4	2.00	13.70	99.27
5	2.50	73.50	81.36
6	3.00	204.70	64.09
7	3.50	303.20	32.49
8	4.00	354.70	14.52
9	4.50	380.50	6.78
10	5.00	391.90	2.91
11	5.50	398.30	1.61
12	6.00	403.00	1.17
13	6.50	406.60	0.89
14	7.00	408.70	0.51
15	7.50	410.10	0.34
16	8.00	411.30	0.29
17	8.50	412.20	0.22
18	9.00	412.90	0.17
19	9.50	413.40	0.12
20	10.00	413.90	0.12
21	10.50	414.40	0.12
22	11.00	414.70	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 36.07319 micrograms carbon

BLANK FACTOR = 36.07319 / 10.99792 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(414.7 - 36.07339) (1)/(1) = +3.786E+02 g/L Carbon
 (414.7 - 36.07339) (1)/(1) (12) = +3.155E+01 Molar Carbon
 <<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By: PJ McCown

PJ MCCOWN

00000

100mL

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: 1898 DUP-1

Date: 08/13/97

Time: 03:15:11

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .61 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.50	0.00	0.00
4	2.00	2.10	100.00
5	2.50	13.80	84.78
6	3.00	51.20	73.05
7	3.50	106.50	51.92
8	4.00	146.00	27.05
9	4.50	166.80	12.47
10	5.00	174.90	4.63
11	5.50	177.90	1.69
12	6.00	179.40	0.84
13	6.50	180.10	0.39
14	7.00	180.80	0.39
15	7.50	181.30	0.28
16	8.00	181.90	0.33
17	8.50	182.30	0.22
18	9.00	182.80	0.27
19	9.50	183.20	0.22
20	10.00	183.70	0.27
21	10.50	183.90	0.11
22	11.00	184.30	0.22

USER INPUT BLANK VALUE

BLANK VALUE = 6.708735 micrograms carbon

BLANK FACTOR = 6.708735 / 10.99792 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:

(184.3 - 6.708781) (1)/(1) = +1.776E+02 g/L Carbon
 (184.3 - 6.708781) (1)/(1) (12) = +1.480E+01 Molar Carbon

Sample Run By: *PJ*

PJ MCCOWN

00000

-100ML

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1898 DUP-1

Date: 08/13/97

Time: 03:27:26

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.28 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.51	0.60	100.00
4	2.00	11.00	94.55
5	2.50	73.50	85.03
6	3.00	228.50	67.83
7	3.50	345.90	33.94
8	4.00	402.20	14.00
9	4.50	434.20	7.37
10	5.00	452.70	4.09
11	5.50	465.80	2.81
12	6.00	474.20	1.77
13	6.50	479.30	1.06
14	7.00	482.50	0.66
15	7.50	484.20	0.35
16	8.00	485.40	0.25
17	8.50	486.20	0.16
18	9.00	486.90	0.14
19	9.50	487.50	0.12
20	10.00	488.00	0.10
21	10.50	488.60	0.12
22	11.00	488.90	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 36.07319 micrograms carbon

BLANK FACTOR = 36.07319 / 10.99792 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(488.9 - 36.07344) (1)/(1) = +4.528E+02 g/L Carbon
 (488.9 - 36.07344) (1)/(1) (12) = +3.774E+01 Molar Carbon
 <<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By: PJ

PJ MCCOWN

00000

.100 mL

244

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)	5.6	23
19710	µg of Carbon from Baseline (C2)	6.7	36.1

Test Code
@TICTOC1

Matrix
LIQUID

Batch Number
97003847

Rerun
0

Sample Prep
N/A

Sample #
BLANK

Instrument Code
CARB1

Prepared By
RCJ

Chemist
RWS

Analyst
PJM

Date Complete
08/13/97

Analysis Date
08/13/97

Analysis Time

µg of Carbon = |C1-C2|

Sample Point
AX-101

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon	1.10E+00	1.31E+01

Data Entered By:	RCJ	Date:	08/13/97
Signature of Chemist:	<i>RWS</i>	Date:	8/13/97

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)	617.2	590.8
19710	μg of Carbon from Baseline (C2)	6.7	36.1
Test Code	Standard Book Number	25N12B	26N12C
@TICTOC1	Standard Value ($\mu\text{g}/\text{mL}$)	602	3000

Matrix
LIQUIDBatch Number
97003847Rerun
0Sample Prep
N/ASample #
STANDARDInstrument Code
CARB1Prepared By
RCJChemist
RWSAnalyst
PJMDate Complete
08/13/97Analysis Date
08/13/97

Analysis Time

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
Analysis Time	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
Sample Point	QC Found in $\mu\text{g}/\text{mL}$	6.11E+02	2.77E+03
AX-101	Percent Standard Recovery	101.4	92.5

Data Entered By:	RCJ	Date:	08/13/97
Signature of Chemist:	<i>[Signature]</i>	Date:	8/13/97

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)	291	460.1
19710	µg of Carbon from Baseline	(C2)	6.7	36.1
Test Code				
@TICTOC1				

Matrix
LIQUID

Batch Number
97003847

Rerun
0

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

Sample Prep
N/A

Sample #
S97T001896

Instrument Code
CARB1

Prepared By
RCJ

Chemist
RWS

Analyst
PJM

Date Complete
08/13/97

Analysis Date
08/13/97

Analysis Time

Method Detection Limit in µg/mL

Sample Point
AX-101

µg of Carbon/mL

TIC	TOC
5	40
2.84E+03	4.24E+03

Data Entered By:

RCJ

Date: 08/13/97

Signature of Chemist:

Date: 8/13/97

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)	309.3	421.1
19710	µg of Carbon from Baseline (C2)	6.7	36.1
Test Code	Known µg of C from Original Sample	2.84E+3	4.24E+3
@TICTOC1			

Matrix
LIQUID

Batch Number
97003847

Rerun
0

Sample Prep
N/A

Sample #
S97T001896

Instrument Code
CARB1

Prepared By
RCJ

Chemist
RWS

Analyst
PJM

Date Complete
08/13/97

Analysis Date
08/13/97

Analysis Time

Method Detection Limit in µg/mL

Sample Point

µg of Carbon/mL

AX-101

	TIC	TOC
	5	40
	3.03E+03	3.85E+03

Data Entered By:

RCJ

Date: 08/13/97

Signature of Chemist:

Date: 8/13/97

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)	291	460.1
19710	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	0.1000
@TIC/TOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in μg (C2)	617.8	908.4
LIQUID	Spike Book Number	25N12B	26N12C
Batch Number	Spike Standard Value in $\mu\text{g}/\text{mL}$ (SPK CONC)	602	3000
97003847			
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = $(C2 - C1 * (\text{SPK SS}) / \text{SS}) / ((\text{SPK CONC}) * (\text{SPK VOL})) * 1$		
S97T001896			
Instrument Code	QC Actual in $\mu\text{g}/\text{mL}$ = Spike Value ($\mu\text{g}/\text{mL}$)		
CARB1	QC Found in $\mu\text{g}/\text{mL}$ = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
RCJ			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/13/97			
Analysis Date			
08/13/97			
Analysis Time			
		TIC	TOC
Sample Point	QC Actual in $\mu\text{g}/\text{mL}$	6.02E+02	3.00E+03
	QC Found in $\mu\text{g}/\text{mL}$	6.54E+02	4.48E+03
AX-101	Percent Spike Recovery	108.6	149.4

Data Entered By:	RCJ	Date:	08/13/97
Signature of Chemist:	<i>Rw. Schroeder</i>	Date:	8/13/97

SPIKE.WB1 REV 1.1

342100ML

WORKBOOK PAGE: SPIKE5

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK-DUP	Sample Volume in mL (SS)	0.1000	0.1000
Work List	Final Coulometer Reading in µg (C1)	291	460.1
19710	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)	606.2	671.1
LIQUID	Spike Book Number	25N12B	26N12C
Batch Number	Spike Standard Value in µg/mL (SPK CONC)	602	3000
97003847			
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) *$		
S97T001896			
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			
RCJ			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/13/97			
Analysis Date			
08/13/97			
Analysis Time			
		TIC	TOC
	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	6.30E+02	2.11E+03
AX-101	Percent Spike Recovery	104.7	70.3

Data Entered By:	RCJ	Date: 08/13/97
Signature of Chemist:		Date: 8/13/97

SPIKE.WB1 REV 1.1

342100ML

250

I:\342100\OUT\19710.WB1

08/13/97

09:56:57

WORKBOOK PAGE: SAM6

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)	241.1	409.3
19710	µg of Carbon from Baseline	(C2)	6.7	36.1
Test Code				
@TICTOC1				

Matrix
LIQUID

Batch Number
97003847

Rerun
0

Sample Prep
N/A

Sample #
S97T001897

Instrument Code
CARB1

Prepared By
RCJ

Chemist
RWS

Analyst
PJM

Date Complete
08/13/97

Analysis Date
08/13/97

Analysis Time

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

Sample Point
AX-101

Method Detection Limit in µg/mL

	TIC	TOC
	5	40
Sample Point	2.34E+03	3.73E+03
AX-101		

Data Entered By:

RCJ

Date: 08/13/97

Signature of Chemist:

RWS

Date: 8/13/97

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: DUP7

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)	246.8	398.3
19710	µg of Carbon from Baseline (C2)	6.7	36.1
Test Code	Known µg of C from Original Sample	2.34E+3	3.73E+3
@TIC/TOC1			
Matrix			
LIQUID			
Batch Number			
97003847			
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 #			
S97T001897			
Instrument Code			
CARB1			
Prepared By			
RCJ			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/13/97			
Analysis Date			
08/13/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
		5	40
Sample Point	µg of Carbon/mL	2.40E+03	3.62E+03
AX-101			

Data Entered By:	RCJ	Date:	08/13/97
Signature of Chemist:	<i>R. J. Schneider</i>	Date:	8/13/97

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM8

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)	201.4	414.7
19710	µg of Carbon from Baseline	(C2)	6.7	36.1
Test Code				
@TICTOC1				

Matrix
LIQUID

Batch Number
97003847

Rerun
0

Sample Prep
N/A

Sample #
S97T001898

Instrument Code
CARB1

Prepared By
RCJ

Chemist
RW/S

Analyst
PJM

Date Complete
08/13/97

Analysis Date
08/13/97

Analysis Time

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

Sample Point
AX-101

Method Detection Limit in µg/mL

	TIC	TOC
	5	40
Sample Point	1.95E+03	3.79E+03
AX-101		

Data Entered By:

RCJ

Date: 08/13/97

Signature of Chemist:

Date: 8/13/97

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: DUP9

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)	184.3	488.9
19710	µg of Carbon from Baseline (C2)	6.7	36.1
Test Code	Known µg of C from Original Sample	1.95E+3	3.79E+3
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
97003847			
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 #			
S97T001898			
Instrument Code			
CARB1			
Prepared By			
RCJ			
Chemist			
RWS			
Analyst			
PJM			
Date Complete			
08/13/97			
Analysis Date			
08/13/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
Sample Point	µg of Carbon/mL	1.78E+03	4.53E+03
AX-101			

Data Entered By:	RCJ	Date:	08/13/97
Signature of Chemist:	<i>RWSchneider</i>	Date:	8/13/97

SAMPLE.WB1 REV 1.0

342100ML

LABCORE Completed Worklist Report for Worklist# 19781

Analyst: dgg

Instrument: TOC01

Book# Std 26N12C
SPK 23N12C

Method: LA34A-105Rev/Mod E-0

Worklist Comment: AX101 GRAB, TOC-01 STD: 0.200mL- 2.0mL- 0.200mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLANK	0	TOC-01	LIQUID	1	1.60E+0	1.600 ug/mL	
2 STD	0	TOC-01	LIQUID	3.00E+03	3.02E+3	100.667 % Recovery	
3 SAMPLE	S97T001896 0	TOC-01	LIQUID	N/A	3.64E+03	55.000 ug/mL	
4 DUP	S97T001896 0	TOC-01	LIQUID	3.64E+3	3.53E+3	3.068 RPD	
5 SPK	S97T001896 0	TOC-01	LIQUID	1.00E+02	1.00E+02	100.000 % Recovery	
6 SAMPLE	S97T001897 0	TOC-01	LIQUID	N/A	3.91E+03	55.000 ug/mL	
7 DUP	S97T001897 0	TOC-01	LIQUID	3.91E+3	3.87E+3	1.028 RPD	
8 SAMPLE	S97T001898 0	TOC-01	LIQUID	N/A	4.15E+03	55.000 ug/mL	
9 DUP	S97T001898 0	TOC-01	LIQUID	4.15E+3	4.22E+3	1.673 RPD	

Final page for worklist# 19781

Analyst Signature _____ Date _____

8-14-97
Analyst Signature _____ Date _____

8/15/97
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 19781

Analyst: NBB Instrument: TOC01 Book# Sfd 26N12-C

Method: LA-344-105 Rev/Mod Sph 23N12-C

Worklist Comment: AX101 GRAB, TOC-01 STD: 0.200mL- 2.0mL- 0.200mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			TOC-01	LIQUID		
2 STD			TOC-01	LIQUID		
3 SAMPLE	S97T001896 0		TOC-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: TOC-01					
4 DUP	S97T001896 0		TOC-01	LIQUID		
5 SPK	S97T001896 0		TOC-01	LIQUID		
6 SAMPLE	S97T001897 0		TOC-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: TOC-01					
7 DUP	S97T001897 0		TOC-01	LIQUID		
8 SAMPLE	S97T001898 0		TOC-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: TOC-01					
9 DUP	S97T001898 0		TOC-01	LIQUID		

Final page for worklist # 19781

NBB 8-14-97
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 08/13/97

Time: 21:08:48

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASELINE

Blank Value = N/A

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.30	100.00
3	1.51	0.60	50.00
4	2.01	0.80	25.00
5	2.50	1.10	27.27
6	3.00	1.30	15.38
7	3.50	1.30	0.00
8	4.00	1.40	7.14
9	4.50	1.60	12.50
10	5.00	1.60	0.00
11	5.50	1.60	0.00
12	6.00	1.70	5.88
13	6.50	1.70	0.00
14	7.00	1.80	5.56

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.003906 =

+2.6E-01

ug/min Carbon

Sample Run By:

DG GRIFFIN

00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 257 TO 275

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 26N12-C

Date: 08/13/97

Time: 22:29:51

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASELINE

Blank Value = .2569994 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	4.90	0.00
2	1.01	36.90	86.72
3	1.50	42.90	13.99
4	2.00	45.90	6.54
5	2.50	47.90	4.18
6	3.01	49.40	3.04
7	3.51	50.90	2.95
8	4.00	51.90	1.93
9	4.50	52.60	1.33
10	5.00	53.80	2.23
11	5.50	54.40	1.10
12	6.00	55.30	1.63
13	6.50	55.80	0.90
14	7.00	56.80	1.76

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.003906 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(56.8 - 1.80022) (11)/(200) =

+3.02E+00 g/L Carbon

(56.8 - 1.80022) (11)/(200) (12) =

+2.52E-01 Molar Carbon

Sample Run By:

 DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK

Date: 08/14/97

Time: 00:34:48

Sample Size = 200 uL

Analyst : DG GRIFFIN

Dil Factor = 1

Min Readings = 14

Blank ID # = BASELINE

Max Readings = 14

Blank Value = .2569994 ug/minute C

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	0.60	100.00
3	1.50	0.80	25.00
4	2.01	1.00	20.00
5	2.51	1.20	16.67
6	3.01	1.50	20.00
7	3.50	1.90	21.05
8	4.00	2.10	9.52
9	4.50	2.40	12.50
10	5.00	2.50	4.00
11	5.50	2.80	10.71
12	6.00	3.00	6.67
13	6.50	3.40	11.76
14	7.00	3.40	0.00

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.003906 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(3.4 - 1.799981) (1)/(200) =

+8.0E-03 g/L Carbon

(3.4 - 1.799981) (1)/(200) (12) =

+6.7E-04 Molar Carbon

Sample Run By:

 DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001896

Date: 08/14/97

Time: 00:55:08

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASELINE

Blank Value = .2569994 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	3.90	0.00
2	1.01	44.80	91.29
3	1.51	55.10	18.69
4	2.01	58.70	6.13
5	2.51	61.20	4.08
6	3.01	62.60	2.24
7	3.51	64.10	2.34
8	4.01	64.90	1.23
9	4.51	65.70	1.22
10	5.01	66.20	0.76
11	5.51	66.80	0.90
12	6.01	67.20	0.60
13	6.50	67.60	0.59
14	7.00	68.00	0.59

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.003906 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(68 - 1.800238) (11)/(200) =

+3.64E+00 g/L Carbon

(68 - 1.800238) (11)/(200) (12) =

+3.03E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001896DUP

Date: 08/14/97

Time: 01:03:30

Sample Size = 200 uL

Analyst : DG GRIFFIN

Dil Factor = 11

Min Readings = 14

Blank ID # = BASELINE

Max Readings = 14

Blank Value = .2569994 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	5.50	0.00
2	1.01	45.80	87.99
3	1.51	53.00	13.58
4	2.01	56.40	6.03
5	2.51	58.40	3.42
6	3.01	60.70	3.79
7	3.51	61.50	1.30
8	4.01	62.70	1.91
9	4.51	63.40	1.10
10	5.01	64.00	0.94
11	5.51	64.60	0.93
12	6.01	65.20	0.92
13	6.51	65.50	0.46
14	7.00	65.90	0.61

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.003906 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(65.9 - 1.800238) (11) / (200) =

+3.53E+00 g/L Carbon

(65.9 - 1.800238) (11) / (200) (12) =

+2.94E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001896SPK

Date: 08/14/97

Time: 01:14:05

Sample Size = 200 uL

Dil Factor = 22

Blank ID # = BASELINE

Blank Value = .2569994 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	1.80	0.00
2	1.01	42.30	95.74
3	1.51	85.30	50.41
4	2.01	93.70	8.96
5	2.51	98.50	4.87
6	3.01	101.80	3.24
7	3.51	103.70	1.83
8	4.00	105.80	1.98
9	4.50	106.70	0.84
10	5.00	108.00	1.20
11	5.50	108.60	0.55
12	6.00	109.40	0.73
13	6.50	110.10	0.64
14	7.00	110.40	0.27

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.003906 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(110.4 - 1.800023) (22)/(200) =

+1.195E+01 g/L Carbon

(110.4 - 1.800023) (22)/(200) (12) =

+9.955E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001897

Date: 08/14/97

Time: 01:28:53

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASELINE

Blank Value = .2569994 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.20	0.00
2	1.01	33.00	93.33
3	1.51	55.10	40.11
4	2.00	60.60	9.08
5	2.50	63.50	4.57
6	3.00	65.80	3.50
7	3.50	67.30	2.23
8	4.00	68.70	2.04
9	4.50	69.40	1.01
10	5.00	70.30	1.28
11	5.50	71.10	1.13
12	6.00	71.60	0.70
13	6.50	72.50	1.24
14	7.00	72.90	0.55

BLANK VALUE = 1.8 micrograms carbon
BLANK FACTOR = 1.8 / 7.003906 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(72.9 - 1.800025) (11)/(200) =
(72.9 - 1.800025) (11)/(200) (12) =

+3.91E+00 g/L Carbon
+3.26E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001897DUP

Date: 08/14/97

Time: 01:37:28

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASELINE

Blank Value = .2569994 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	2.50	0.00
2	1.01	41.50	93.98
3	1.51	56.10	26.02
4	2.01	60.40	7.12
5	2.51	63.40	4.73
6	3.01	65.10	2.61
7	3.51	66.70	2.40
8	4.01	68.10	2.06
9	4.50	69.30	1.73
10	5.01	69.70	0.57
11	5.51	70.60	1.27
12	6.01	71.10	0.70
13	6.51	71.60	0.70
14	7.00	72.20	0.83

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.003906 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(72.2 - 1.800237) (11)/(200) =

+3.87E+00 g/L Carbon

(72.2 - 1.800237) (11)/(200) (12) =

+3.23E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001898

Date: 08/14/97

Time: 01:49:34

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASELINE

Blank Value = .2569994 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.51	5.50	0.00
2	1.01	52.40	89.50
3	1.51	61.40	14.66
4	2.01	65.20	5.83
5	2.51	67.80	3.83
6	3.01	70.30	3.56
7	3.51	71.70	1.95
8	4.01	72.90	1.65
9	4.51	73.90	1.35
10	5.01	74.80	1.20
11	5.51	75.30	0.66
12	6.01	76.30	1.31
13	6.50	76.70	0.52
14	7.00	77.20	0.65

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.003906 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(77.2 - 1.800239) (11)/(200) =

+4.15E+00 g/L Carbon

(77.2 - 1.800239) (11)/(200) (12) =

+3.46E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001898DUP

Date: 08/14/97

Time: 01:57:56

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASELINE

Blank Value = .2569994 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	6.50	0.00
2	1.01	53.70	87.90
3	1.51	62.20	13.67
4	2.01	66.00	5.76
5	2.51	68.90	4.21
6	3.01	71.10	3.09
7	3.51	72.50	1.93
8	4.01	73.90	1.89
9	4.51	75.00	1.47
10	5.01	75.90	1.19
11	5.51	77.00	1.43
12	6.01	77.60	0.77
13	6.51	78.10	0.64
14	7.00	78.50	0.51

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.003906 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(78.5 - 1.800237) (11)/(200) =

+4.22E+00 g/L Carbon

(78.5 - 1.800237) (11)/(200) (12) =

+3.52E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: BLANK1

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

LIQUIDS

		BLNK
Type	Sample Volume in mL (SS)	0.200
BLNK	H2SO4 Volume in mL (VR)	0.000
Work List	Volume Injected in mL (VI)	0.200
19781	Dilution Factor (calculated) (DF)	1.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Blank (C1)	3.4
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID		
Batch Number		
97003923	µg of Carbon = [C1-C2]	
Rerun		
0	Method Detection Limit (µg/mL) = $1 \mu\text{g C} \cdot \text{DF} \cdot \text{DDF} / \text{VI}$	
Sample Prep		
N/A		
Sample #		
BLANK		
Instrument Code		
TOC01		
Prepared By		
RCJ		
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/14/97		
Analysis Date		
08/14/97		
Analysis Time	Method Detection Limit in µg/mL	5.00E+00
Sample Point	µg of Carbon	1.60E+00
AX-101		

Data Entered By:	RCJ	Date:	08/14/97
Signature of Chemist:	<i>RW Johnson</i>	Date:	8/15/97

BLANK WB1 REV 2.0

344105ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		STD
Type	Sample Volume in mL (SS)	0.200
STD	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
19781	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon Found (C1)	56.8
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID	Standard Book Number	26N12C
Batch Number	Standard Value (µg/mL)	3000
97003923		
Rerun		
0	$\mu\text{g of Carbon/mL} = (C1-C2) * DF * DDF / VI$	
Sample Prep		
N/A	Method Detection Limit (µg/mL) = $1 \mu\text{g C} * DF * DDF / VI$	
Sample #		
STANDARD		
Instrument Code		
TOC01		
Prepared By		
RCJ		
Chemist		
RWS		
Analyst		
DGC		
Date Complete		
08/14/97		
Analysis Date		
08/14/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
	QC Actual in µg/mL	3.00E+03
Sample Point	QC Found in µg/mL	3.02E+03
AX-101	Percent Standard Recovery	100.8

Data Entered By:	RCJ	Date:	08/14/97
Signature of Chemist:	<i>RW Schneider</i>	Date:	8/15/97

STANDARD.WB1 REV 2.0

344105ML

WORKBOOK PAGE: SAM3

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

LIQUIDS

		SAMPLE
Type	Sample Volume in mL	(SS) 0.200
SAMPLE	H2SO4 Volume in mL	(VR) 2.000
Work List	Volume Injected in mL	(VI) 0.200
19781	Dilution Factor (calculated)	(DF) 11.000
Test Code	Digest Dilution Factor	(DDF) 1
TOC-01	µg of Carbon in Sample	(C1) 68
Matrix	µg of Carbon from Baseline	(C2) 1.8
LIQUID		
Batch Number		
97003923		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T001896		
Instrument Code		
TOC01		
Prepared By		
RCJ		
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/14/97		
Analysis Date		
08/14/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
Sample Point	µg of Carbon/mL	3.64E+03
AX-101		

Data Entered By:

RCJ

Date:

08/14/97

Signature of Chemist:

RW Schneider

Date:

8/15/97

SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: DUP4

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

LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.200
DUP	H2SO4 Volume in mL	(VR)	2.000
Work List	Volume Injected in mL	(VI)	0.200
19781	Dilution Factor (calculated)	(DF)	11.000
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	65.9
Matrix	µg of Carbon from Baseline	(C2)	1.8
LIQUID	Result from Sample Page		3.64E+3
Batch Number			
97003923			
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI		
0			
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S97T001896			
Instrument Code			
TOC01			
Prepared By			
RCJ			
Chemist			
RWS			
Analyst			
DGO			
Date Complete			
08/14/97			
Analysis Date			
08/14/97			
Analysis Time	Method Detection Limit in µg/mL		5.50E+01
Sample Point	µg of Carbon/mL		3.53E+03
AX-101			

Data Entered By:	RCJ	Date:	08/14/97
Signature of Chemist:	<i>RW Schroeder</i>	Date:	8/15/97

SAMPLE WB1 REV 2.0

344105ML

WORKBOOK PAGE: SPIKE5

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

LIQUIDS

LIQUIDS			SPIKE	
Type	Sample Vial Data		Spiked Vial Data	
SPK	Sample Volume in mL (SS)	0.200	Was the sample dilution used? (yes/no)	YES
Work List	H2SO4 Volume in mL (VR)	2.000	Sample Volume in mL (SPK SS)	0.400
19781	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.000
Test Code	µg of Carbon in Sample (C1)	68	Amount of Spike Std. in mL (SPK VOL)	0.400
TOC-01	µg of Carbon from Baseline (C2)	1.8	Volume Injected in mL (SPK VI)	0.200
Matrix			µg C in Sample + Spike (C3)	110.4
LIQUID			Pre-Spike Dilution Factor (PDF)	11.00
Batch Number			Spike Book Number	23N12C
97003923			Spike Value in µg/ml	753
Rerun				
0	Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI			
Sample Prep	Sample Correction Factor (SAM CF) = (SS + VR) / (VI)			
N/A	Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)			
Sample #	QC Actual in µg/mL = Spike Value (µg/mL)			
S97T001896	QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)			
Instrument Code	Percent Spike Recovery = (QC Found) / (QC Actual) * 100			
TOC01				
Prepared By				
RCJ				
Chemist				
RWS				
Analyst				
DGG				
Date Complete				
08/14/97				
Analysis Date				
08/14/97				
Analysis Time				
	QC Actual in µg/mL			7.53E+02
	QC Found in µg/mL			7.55E+02
	Percent Spike Recovery			100.3
Sample Point				
AX-101				

RWS/Schneider 8/15/97

WORKBOOK PAGE: SAM6

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

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
19781	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	72.9
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID		
Batch Number		
97003923		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T001897		
Instrument Code		
TOC01		
Prepared By		
RCJ		
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/14/97		
Analysis Date		
08/14/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
Sample Point	µg of Carbon/mL	3.91E+03
AX-101		

Data Entered By:	RCJ	Date:	08/14/97
Signature of Chemist:	<i>R. Schneider</i>	Date:	8/15/97

SAMPLE WB1 REV 2.0

344105ML

WORKBOOK PAGE: DUP7

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

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	0.200
DUP	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
19781	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	72.2
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID	Result from Sample Page	3.91E+3
Batch Number		
97003923		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T001897		
Instrument Code		
TOC01		
Prepared By		
RCJ		
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/14/97		
Analysis Date		
08/14/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
Sample Point	µg of Carbon/mL	3.87E+03
AX-101		

Data Entered By:	RCJ	Date:	08/14/97
Signature of Chemist:	<i>R. W. Schwab</i>	Date:	8/15/97

SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: SAM8

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

LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.200
SAMPLE	H2SO4 Volume in mL	(VR)	2.000
Work List	Volume Injected in mL	(VI)	0.200
19781	Dilution Factor (calculated)	(DF)	11.000
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	77.2
Matrix	µg of Carbon from Baseline	(C2)	1.8
LIQUID			
Batch Number			
97003923			
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI		
0			
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S97T001898			
Instrument Code			
TOC01			
Prepared By			
RCJ			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
08/14/97			
Analysis Date			
08/14/97			
Analysis Time	Method Detection Limit in µg/mL		5.50E+01
Sample Point	µg of Carbon/mL		4.15E+03
AX-101			

Data Entered By:	RCJ	Date:	08/14/97
Signature of Chemist:	<i>RW Schwedler</i>	Date:	8/15/97

SAMPLE.WB1 REV 2.0

344105ML

WORKBOOK PAGE: DUP9

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

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	0.200
DUP	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
19781	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	78.5
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID	Result from Sample Page	4.15E+3
Batch Number		
97003923		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S97T001898		
Instrument Code		
TOC01		
Prepared By		
RCJ		
Chemist		
RWS		
Analyst		
DGG		
Date Complete		
08/14/97		
Analysis Date		
08/14/97		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
Sample Point	µg of Carbon/mL	4.22E+03
AX-101		

Data Entered By:	RCJ	Date:	08/14/97
Signature of Chemist:	<i>R. W. Schmede</i>	Date:	8/15/97

SAMPLE:WB1 REV 2.0

344105ML

LABCORE Completed Worklist Report for Worklist# 20469

Analyst: dgg

Instrument: U01

Book# 13857

Method: LA925-009 Rev/Mod B-0

Worklist Comment: @U-01 FOR AX101(1-10 SAMPLE PREP).1ML SPK)

RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@U-01	U-02	LIQUID	6.26E-02	6.60E-02	105.431	% Recovery
1 STD	0	@U-01	U-02E	LIQUID	1	3.24E+00	3.240	Ratio
2 BLNK	0	@U-01	U-02	LIQUID	1	2.28E-1	0.228	ug/mL
2 BLNK	0	@U-01	U-02E	LIQUID	1	2.79E+00	2.790	Ratio
3 SAMPLE	S97T001899	0	@U-01	U-02	LIQUID	N/A	9.65E-01	4.07E-002 ug/mL
3 SAMPLE	S97T001899	0	@U-01	U-02E	LIQUID	N/A	1.48E+00	% Inst Error
4 DUP	S97T001899	0	@U-01	U-02	LIQUID	9.65E-1	9.41E-1	2.518 RPD
4 DUP	S97T001899	0	@U-01	U-02E	LIQUID	1	1.67E+00	1.670 Ratio
5 SPK	S97T001899	0	@U-01	U-02	LIQUID	5.49E+01	5.58E+01	101.639 % Recovery
6 SAMPLE	S97T001900	0	@U-01	U-02	LIQUID	N/A	9.00E-01	4.07E-002 ug/mL
6 SAMPLE	S97T001900	0	@U-01	U-02E	LIQUID	N/A	1.44E+00	% Inst Error
7 DUP	S97T001900	0	@U-01	U-02	LIQUID	9.00E-1	8.20E-1	9.302 RPD
7 DUP	S97T001900	0	@U-01	U-02E	LIQUID	1	1.87E+00	1.870 Ratio
8 SAMPLE	S97T001901	0	@U-01	U-02	LIQUID	N/A	8.09E-01	4.07E-002 ug/mL
8 SAMPLE	S97T001901	0	@U-01	U-02E	LIQUID	N/A	1.80E+00	% Inst Error
9 DUP	S97T001901	0	@U-01	U-02	LIQUID	8.09E-1	8.31E-1	2.683 RPD
9 DUP	S97T001901	0	@U-01	U-02E	LIQUID	1	1.59E+00	1.590 Ratio

Final page for worklist# 20469

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

LABCORE Data Entry Template for Worklist# 20469

Analyst: 1088 Instrument: U01 _____ Book# 13857

Method: LA-925-009 Rev/Mod _____

Worklist Comment: @U-01 FOR AX101(.1-10 SAMPLE PREP).1ML SPK) _____ RTS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@U-01	LIQUID		
2 BLNK			@U-01	LIQUID		
3 SAMPLE	S97TC01899 0		@U-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested:	U-02		, U-02E		
4 DUP	S97T001899 0		@U-01	LIQUID		
5 SPK	S97T001899 0		@U-01	LIQUID		
6 SAMPLE	S97T001900 0		@U-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested:	U-02		, U-02E		
7 DUP	S97T001900 0		@U-01	LIQUID		
8 SAMPLE	S97T001901 0		@U-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested:	U-02		, U-02E		
9 DUP	S97T001901 0		@U-01	LIQUID		

Final page for worklist # 20469

1088 9-28-97
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Prob: These samples had a lot of
interference when trying to read. Had to
make 1-10 dilutions & read on LOW scale.

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

Sample ID 13B57
 Description LMCS STD.
 Ref. Ratio 1.043
 Laser Pulses 1000
 Lifetime 222 + .858 us
 R2 .9994
 Integrated 53310
 Range: HIGH

Date/Time 09/28/97/01:24:04
 Cal Y=6.87E+07X-4.05E+02
 Intensity 3419 (t= 39 us)
 Conc 6.60E-05 + 2.14E-06 g/L
 Dilution Factor 1 mL/mL

FINAL RESULT 6.60E-05 + 2.14E-06 g/L

Sample ID BLANK
 Description WL-20469
 Ref. Ratio 1.078
 Laser Pulses 1000
 Lifetime 265 + 4.656 us
 R2 .9869
 Integrated 15672
 Range: LOW

Date/Time 09/28/97/01:33:42
 Cal Y=4.93E+09X0
 Intensity 1017 (t= 39 us)
 Conc 2.07E-07 + 5.78E-09 g/L
 Dilution Factor 1 mL/mL

FINAL RESULT 2.07E-07 + 5.78E-09 g/L

Sample ID S97T001899
 Description AX-101 GRAB
 Ref. Ratio 1.123
 Laser Pulses 1000
 Lifetime 246 + 1.325 us
 R2 .9988
 Integrated 61934
 Range: LOW

Date/Time 09/28/97/02:29:25
 Cal Y=4.93E+09X0
 Intensity 3715 (t= 39 us)
 Conc 8.77E-07 + 1.30E-08 g/L
 Dilution Factor 1 mL/mL

FINAL RESULT 8.77E-07 + 1.30E-08 g/L

Dilution 1-10

Sample ID S97T001899-DUP
 Description AX-101 GRAB
 Ref. Ratio 1.121
 Laser Pulses 1000
 Lifetime 228 + 1.581 us
 R2 .9979
 Integrated 56258
 Range: LOW

Date/Time 09/28/97/02:47:57
 Cal Y=4.93E+09X0
 Intensity 3599 (t= 39 us)
 Conc 8.55E-07 + 1.43E-08 g/L
 Dilution Factor 1 mL/mL

FINAL RESULT 8.55E-07 + 1.43E-08 g/L

Dilution 1-10

Sample ID S97T001899-SPK
 Description AX-101 GRAB
 Ref. Ratio 1.099
 Laser Pulses 1000
 Lifetime 257 + 1.36 us
 R2 .9988
 Integrated 46742
 Range: HIGH

Date/Time 09/28/97/02:56:15
 Cal Y=6.87E+07X-4.05E+02
 Intensity 2737 (t= 39 us)
 Conc 5.16E-05 + 1.69E-06 g/L
 Dilution Factor 1 mL/mL

FINAL RESULT 5.16E-05 + 1.69E-06 g/L

Dilution 1-10

Sample ID S97T001900
 Description AX-101 GRAB
 Ref. Ratio 1.146
 Laser Pulses 1000
 Lifetime 266 + 1.462 us
 R2 .9987
 Integrated 61937
 Range: LOW

Date/Time 09/28/97/03:04:13
 Cal Y=4.93E+09X0
 Intensity 3503 (t= 39 us)
 Conc 8.18E-07 + 1.18E-08 g/L
 Dilution Factor 1 mL/mL

FINAL RESULT 8.18E-07 + 1.18E-08 g/L

Dilution 1-10

Sample ID S97T001900-DUP
 Description AX-101 GRAB
 Ref. Ratio 1.158
 Laser Pulses 1000
 Lifetime 238 + 2.121 us
 R2 .9966
 Integrated 51004
 Range: LOW

Date/Time 09/28/97/03:11:56
 Cal Y=4.93E+09X0
 Intensity 3112 (t= 39 us)
 Conc 7.45E-07 + 1.39E-08 g/L
 Dilution Factor 1 mL/mL

278 FINAL RESULT 7.45E-07 + 1.39E-08 g/L

Dilution 1-10

Sample ID S97T001901
 Description AX-101 GRAB
 Ref. Ratio 1.161
 Laser Pulses 1000
 Lifetime 287 + 2.873 us
 R2 .9957
 Integrated 59597
 Range: LOW

Date/Time 09/28/97/03:18:10
 Cal Y=4.93E+09X0
 Intensity 3363 (t= 39 us)
 Conc 7.35E-07 + 1.32E-08 g/L
 Dilution Factor 1 mL/mL

FINAL RESULT 7.35E-07 + 1.32E-08 g/L

Dilution 1-10

Sample ID S97T001901-DUP
 Description AX-101 GRAB
 Ref. Ratio 1.163
 Laser Pulses 1000
 Lifetime 265 + 1.887 us
 R2 .9978
 Integrated 56889
 Range: LOW

Date/Time 09/28/97/03:22:59
 Cal Y=4.93E+09X0
 Intensity 3329 (t= 39 us)
 Conc 7.55E-07 + 1.20E-08 g/L
 Dilution Factor 1 mL/mL

FINAL RESULT 7.55E-07 + 1.20E-08 g/L

Dilution 1-10

Background Report

Background for LOW Range	First Time Gate Used (sample)	4
Laser Pulses 1000	Date/Time 09/28/97/00:59:17	

Reference	Sample
Intensity 8591	Intensity 516
Lifetime 289.37 + 1.31 us	
R2 .9991	
Intercept 9797.6	

Background Report

Background for HIGH Range	First Time Gate Used (sample)	4
Laser Pulses 1000	Date/Time 09/28/97/01:01:31	

Reference	Sample
Intensity 8645	Intensity 8
Lifetime 286.26 + 1.05 us	
R2 .99943	
Intercept 10047.23	

Standard Report

Standard for HIGH Range - 9.90E-04 g/L	
Laser Pulses 1000	Date/Time 09/28/97/01:02:38

Reference	Standard
Intensity 8853	Intensity 58451
Lifetime 287.53 + 1.53 us	Lifetime 235.3 + .94 us
R2 .99879	R2 .9993
Intercept 10143.39	Intercept 68009.09 + 2.61E+02

Standard Report

Standard for HIGH Range - 4.98E-04 g/L	
Laser Pulses 1000	Date/Time 09/28/97/01:05:10

Reference	Standard
Intensity 8964	Intensity 29372
Lifetime 285.74 + 1.34 us	Lifetime 273.74 + 1.63 us
R2 .99905	R2 .9985
Intercept 10309.2	Intercept 32988.91 + 1.82E+02

Standard Report

Standard for LOW Range - 2.48E-06 g/L	
Laser Pulses 1000	Date/Time 09/28/97/01:06:59

Reference	Standard
Intensity 9119	Intensity 10680
Lifetime 288.8 + 1.12 us	Lifetime 289.77 + 1.55 us
R2 .99937	R2 .9988
Intercept 10328.5	Intercept 12233.92 + 1.11E+02

WORKBOOK PAGE: STD1

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

Type		
STD		STANDARD
Work List	STANDARD BOOK #	13B57
20469	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	222.00
LIQUID	R2 VALUE	0.9994
Batch Number	RANGE (HIGH OR LOW)	HIGH
97004641	INSTRUMENT UNCERTAINTY (IU)	2.14E-06
Rerun	INSTRUMENT RESULT (IR)	6.60E-05
0	DETECTION LEVEL (µg/mL)	3.70E-05
Sample Prep		
N/A	RESULT (µg/mL)	6.60E-02
Sample #	VALUE OF STANDARD	6.26E-02
STD	%RECOVERY	105.43
Instrument Code	RELATIVE % UNCERTAINTY	3.2
U01		
Prepared By		
SKB	Result = DF * PF * IR * 1000	
Chemist		
RWS	Detection Level = 3.70 E-08 * DF * PF * 1000	
Analyst		
DGG	% Recovery = Result / Value of Standard * 100	
Date Complete		
09/28/97	Relative % Uncertainty = IU / IR * 100	
Analysis Date		
09/28/97		
Analysis Time		
04:00 AM		
Sample Point		
AX-101		

Analyst:	DGG	Date:	28-Sep-97
Signature of Chemist:	<i>RWS</i>	Date:	9/29/97
STANDARD.WB1 REV 2.0		925009ML	

WORKBOOK PAGE: BLANK2

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

Type		
BLNK		
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
20469	DILUTION FACTOR OF SAMPLE (DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	265.00
LIQUID	R2 VALUE	0.9869
Batch Number	RANGE (HIGH OR LOW)	LOW
97004641	INSTRUMENT UNCERTAINTY (IU)	5.78E-09
Rerun	INSTRUMENT RESULT (IR)	2.07E-07
0	DETECTION LEVEL (µg/mL)	4.07E-02
Sample Prep		
N/A		
Sample #	RESULT (µg/mL)	2.28E-01
BLANK	RELATIVE % UNCERTAINTY	2.8
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
SKB		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
09/28/97		
Analysis Date		
09/28/97		
Analysis Time		
04:00 AM		
Sample Point		
AX-101		

Analyst:	DGG	Date: 28-Sep-97
Signature of Chemist:	<i>RWS</i>	Date: 9/29/97

BLANK.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SAM3

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

Type		
SAMPLE		SAMPLE
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
20469	DILUTION FACTOR OF SAMPLE (DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	246.00
LIQUID	R2 VALUE	0.9988
Batch Number	RANGE (HIGH OR LOW)	LOW
97004641	INSTRUMENT UNCERTAINTY (IU)	1.30E-08
Rerun	INSTRUMENT RESULT (IR)	8.77E-07
0	DETECTION LEVEL (µg/mL)	4.07E-02
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	9.65E-04
Sample #	RESULT (µg/mL)	9.65E-01
S97T001899	RELATIVE % UNCERTAINTY	1.5
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
SKB		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
09/28/97		
Analysis Date		
09/28/97		
Analysis Time		
04:00 AM		
Sample Point		
AX-101		

Analyst:	DGG	Date: 28-Sep-97
Signature of Chemist:	RWS	Date: 9/29/97

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
20469	DILUTION FACTOR OF SAMPLE	(DF) 11.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF) 100.00
@U-01	DIGEST DILUTION FACTOR	(DDF) 1.0000
Matrix	LIFETIME IN MICROSECONDS	228.00
LIQUID	R2 VALUE	0.9979
Batch Number	RANGE (HIGH OR LOW)	LOW
97004641	INSTRUMENT UNCERTAINTY	(IU) 1.43E-08
Rerun	INSTRUMENT RESULT	(IR) 8.55E-07
0	DETECTION LEVEL (µg/mL)	4.07E-02
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	9.41E-04
Sample #	RESULT (µg/mL)	9.41E-01
S97T001899	RELATIVE % UNCERTAINTY	1.7
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
SKB		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
09/28/97		
Analysis Date		
09/28/97		
Analysis Time		
04:00 AM		
Sample Point		
AX-101		

Analyst:	DGG	Date: 28-Sep-97
Signature of Chemist:	<i>RWS</i>	Date: 9/29/97

SAMPLE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: SPIKE5

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

Type	SPIKE	
SPK	SPIKE BOOK #	
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS) 1.00
20469	DILUTION FACTOR OF SAMPLE + SPIKE	(DF) 11.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF) 100.00
@U-01	DIGEST DILUTION FACTOR OF SAMPLE	(DDF) 1.0000
Matrix	LIFETIME IN MICROSECONDS	257.00
LIQUID	R2 VALUE	0.9988
Batch Number	RANGE (HIGH OR LOW)	HIGH
97004641	INSTRUMENT RESULT	(IR) 5.16E-05
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC) 5.68E-02
0	SPIKE VALUE (g/L)	(SV) 5.49E-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) 9.65E-04
S97T001899		
Instrument Code		
U01	Concentration = IR * DF * PF	
Prepared By		
SKB	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		
09/28/97		
Analysis Date		
09/28/97		
Analysis Time		
04:00 AM		
Sample Point		
AX-101		

QC ACTUAL	=	5.49E+01	µg/mL
QC FOUND	=	5.58E+01	µg/mL
% SPIKE RECOVERY	=	101.6%	

Analyst:	DGG	Date:	28-Sep-97
Signature of Chemist:	<i>RWS</i>	Date:	9/29/97
SPIKE.WB1 REV 2.0 925009ML			

WORKBOOK PAGE: SAM6

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

Type		
SAMPLE		SAMPLE
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
20469	DILUTION FACTOR OF SAMPLE (DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	266.00
LIQUID	R2 VALUE	0.9987
Batch Number	RANGE (HIGH OR LOW)	LOW
97004641	INSTRUMENT UNCERTAINTY (IU)	1.18E-08
Rerun	INSTRUMENT RESULT (IR)	8.18E-07
0	DETECTION LEVEL (µg/mL)	4.07E-02
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	9.00E-04
Sample #	RESULT (µg/mL)	9.00E-01
S97T001900	RELATIVE % UNCERTAINTY	1.4
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
SKB		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
09/28/97		
Analysis Date		
09/28/97		
Analysis Time		
04:00 AM		
Sample Point		
AX-101		

Analyst:	DGG	Date: 28-Sep-97
Signature of Chemist:	RWS	Date: 9/29/97
SAMPLE.WB1 REV 2.0 925009ML		

WORKBOOK PAGE: DUP7

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

Type		
DUP	DUP	
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
20469	DILUTION FACTOR OF SAMPLE (DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	238.00
LIQUID	R2 VALUE	0.9966
Batch Number	RANGE (HIGH OR LOW)	LOW
97004641	INSTRUMENT UNCERTAINTY (IU)	1.39E-08
Rerun	INSTRUMENT RESULT (IR)	7.45E-07
0	DETECTION LEVEL (µg/mL)	4.07E-02
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	8.20E-04
Sample #	RESULT (µg/mL)	8.20E-01
S97T001900	RELATIVE % UNCERTAINTY	1.9
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
SKB		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
09/28/97		
Analysis Date		
09/28/97		
Analysis Time		
04:00 AM		
Sample Point		
AX-101		

Analyst:	DGG	Date: 28-Sep-97
Signature of Chemist:	RWS	Date: 9/29/97
SAMPLE.WB1 REV 2.0 925009ML		

WORKBOOK PAGE: SAM8

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

Type	SAMPLE	
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
20469	DILUTION FACTOR OF SAMPLE (DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	287.00
LIQUID	R2 VALUE	0.9957
Batch Number	RANGE (HIGH OR LOW)	LOW
97004641	INSTRUMENT UNCERTAINTY (IU)	1.32E-08
Rerun	INSTRUMENT RESULT (IR)	7.35E-07
0	DETECTION LEVEL (µg/mL)	4.07E-02
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	8.09E-04
Sample #	RESULT (µg/mL)	8.09E-01
S97T001901	RELATIVE % UNCERTAINTY	1.8
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
SKB		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
09/28/97		
Analysis Date		
09/28/97		
Analysis Time		
04:00 AM		
Sample Point		
AX-101		

Analyst:	DGG	Date: 28-Sep-97
Signature of Chemist:	RWS	Date: 9/29/97

SAMPLE.WB1 REV 2.0

925009ML

WORKBOOK PAGE: DUP9

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

Type		
DUP		
Work List	VOLUME OF SAMPLE (mL) (SS)	1.00
20469	DILUTION FACTOR OF SAMPLE (DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE (PF)	100.00
@U-01	DIGEST DILUTION FACTOR (DDF)	1.0000
Matrix	LIFETIME IN MICROSECONDS	265.00
LIQUID	R2 VALUE	0.9978
Batch Number	RANGE (HIGH OR LOW)	LOW
97004641	INSTRUMENT UNCERTAINTY (IU)	1.20E-08
Rerun	INSTRUMENT RESULT (IR)	7.55E-07
0	DETECTION LEVEL (µg/mL)	4.07E-02
Sample Prep		
N/A	CONCENTRATION IN SOLUTION (g/L)	8.31E-04
Sample #	RESULT (µg/mL)	8.31E-01
S97T001901	RELATIVE % UNCERTAINTY	1.6
Instrument Code		
U01		
Prepared By	Result = DF * PF * DDF * IR * 1000	
SKB		
Chemist	Detection Level = 3.70 E-08 * DF * PF * DDF * 1000	
RWS		
Analyst	Relative % Uncertainty = IU / IR * 100	
DGG		
Date Complete		
09/28/97		
Analysis Date		
09/28/97		
Analysis Time		
04:00 AM		
Sample Point		
AX-101		

Analyst:	DGG	Date: 28-Sep-97
Signature of Chemist:	RWS	Date: 9/29/97

SAMPLE.VB1 REV 2.0

925009ML

HNF-SD-WM-DP-268, REV. 0

RADIOCHEMICAL ANALYSIS

HNF-SD-WM-DP-268, REV. 0

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LABCORE Completed RadChem Report for Worklist#: 19717

Analyst: rdm

Instrument: GEA03

Book# _____

Method: _____ Rev/Mod 6-0

Worklist Comment: @GEA-01 FOR AX-101

RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	@GEA-01 C060-02	LIQUID	6.238e-03	6.26e-03	100.353	% Recovery
1 STD	0	0	@GEA-01 C060-02E	LIQUID	1	2.44	2.440	% Ct Error
1 STD	0	0	@GEA-01 CS13702	LIQUID	5.770e-03	5.82e-03	100.867	% Recovery
1 STD	0	0	@GEA-01 CS13702E	LIQUID	1	3.21	3.210	% Ct Error
2 BLNK	0	0	@GEA-01 C060-02	LIQUID	1	<1.67e-2		uCi/mL
2 BLNK	0	0	@GEA-01 CS13702	LIQUID	1	<1.96e-2		uCi/mL
3 SAMPLE	S97T001899	0	@GEA-01 C060-02	LIQUID	N/A	< 6.392e-02	639.2e-004	uCi/mL
3 SAMPLE	S97T001899	0	@GEA-01 C060-02E	LIQUID	N/A	n/a	0.0e+000	% Ct. Error
3 SAMPLE	S97T001899	0	@GEA-01 CS13702	LIQUID	N/A	1.030e+03	0.0e+000	uCi/mL
3 SAMPLE	S97T001899	0	@GEA-01 CS13702E	LIQUID	N/A	0.240	0.0e+000	% Ct. Error
4 DUP	S97T001899	0	@GEA-01 C060-02	LIQUID	<6.39e-2	<4.98e-2		RPD
4 DUP	S97T001899	0	@GEA-01 C060-02E	LIQUID	1	n/a		% Ct Error
4 DUP	S97T001899	0	@GEA-01 CS13702	LIQUID	1.03e+03	1.77e+02	141.342	RPD
4 DUP	S97T001899	0	@GEA-01 CS13702E	LIQUID	1	0.590	0.590	% Ct Error
5 SAMPLE	S97T001900	0	@GEA-01 C060-02	LIQUID	N/A	< 1.640e-02	164.0e-004	uCi/mL
5 SAMPLE	S97T001900	0	@GEA-01 C060-02E	LIQUID	N/A	n/a	0.0e+000	% Ct. Error
5 SAMPLE	S97T001900	0	@GEA-01 CS13702	LIQUID	N/A	1.380e+02	0.0e+000	uCi/mL
5 SAMPLE	S97T001900	0	@GEA-01 CS13702E	LIQUID	N/A	0.340	0.0e+000	% Ct. Error
6 DUP	S97T001900	0	@GEA-01 C060-02	LIQUID	<1.64e-2	<1.49e-2		RPD
6 DUP	S97T001900	0	@GEA-01 C060-02E	LIQUID	1	n/a		% Ct Error
6 DUP	S97T001900	0	@GEA-01 CS13702	LIQUID	1.38e+02	3.82e+02	93.846	RPD
6 DUP	S97T001900	0	@GEA-01 CS13702E	LIQUID	1	0.200	0.200	% Ct Error
7 SAMPLE	S97T001901	0	@GEA-01 C060-02	LIQUID	N/A	< 1.698e-02	169.8e-004	uCi/mL
7 SAMPLE	S97T001901	0	@GEA-01 C060-02E	LIQUID	N/A	n/a	0.0e+000	% Ct. Error
7 SAMPLE	S97T001901	0	@GEA-01 CS13702	LIQUID	N/A	8.010e+02	0.0e+000	uCi/mL
7 SAMPLE	S97T001901	0	@GEA-01 CS13702E	LIQUID	N/A	0.140	0.0e+000	% Ct. Error
8 DUP	S97T001901	0	@GEA-01 C060-02	LIQUID	<1.70e-2	<1.82e-2		RPD
8 DUP	S97T001901	0	@GEA-01 C060-02E	LIQUID	1	n/a		% Ct Error
8 DUP	S97T001901	0	@GEA-01 CS13702	LIQUID	8.01e+02	7.39e+02	8.052	RPD
8 DUP	S97T001901	0	@GEA-01 CS13702E	LIQUID	1	0.150	0.150	% Ct Error

Comments Section:

Comments for sample# S97T001899 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S97T001900 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S97T001901 and test @GEA-01 .

Data for S97T001901 valid
S97T001899 and 1900
re-run on worklist # 19736

**DATA
NOT USED**

LABCORE Completed RadChem Report for Worklist#: 19717

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
DL=0 => n/a.							

Final page for worklist# 19717

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date _____

Re-run S97T1899 and S97T1900 for high RPD.

[Signature]
8/12/97

DATA
NOT USED

LABCORE Data Entry Template for Worklist# 19717

Analyst: RM Instrument: GEA00 3 Book# 76856 Com 8/8/97
Method: LA-548-121 Rev/Mod F-0 75B56
Worklist Comment: @GEA-01 FOR AX-101 RTS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-01	LIQUID		
2 ELNK			@GEA-01	LIQUID		
3 SAMPLE	S97T001899 0		@GEA-01	LIQUID	97000510	AX-101 GRAB
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4 DUP	S97T001899 0		@GEA-01	LIQUID		
5 SAMPLE	S97T001900 0		@GEA-01	LIQUID	97000510	AX-101 GRAB
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6 DUP	S97T001900 0		@GEA-01	LIQUID		
7 SAMPLE	S97T001901 0		@GEA-01	LIQUID	97000510	AX-101 GRAB
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
8 DUP	S97T001901 0		@GEA-01	LIQUID		

Final page for worklist # 19717

RM 8/8/97
Analyst Signature Date

MCB 8/11/97
Analyst Signature Date

DATA
NOT USED

Data Entry Comments:

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

 * 222-S Laboratory Counting Room 10-AUG-1997 09:05:09.85 *

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

Worklist #: 19717
 Sample ID: WL#19717-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

NE Wright

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3621.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:02.63 sec
 Dead Time: 0.1%

Verified by:

AKH 11 Aug 97

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

Sample Count Time: 10-AUG-1997 08:14:23.85
 Decayed to: 10-AUG-1997 08:14:23.85
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: NEW
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	662.20*	5150	1.55	1324.57	1316	17	3.2		CS-137	5.82
0	1173.52	3991	1.95	2347.31	2337	20	3.5		CO-60	6.29
0	1332.69	3559	2.00	2665.75	2657	19	3.4		CO-60	6.23
0	1764.91*	9	1.31	3530.66	3526		9116.6			

**DATA
NOT USED**

Total number of lines in spectrum	4	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	4	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.00	6.260E+00	6.260E+00	0.153E+00	2.44	
CS-137	30.00Y	1.00	5.820E+00	5.820E+00	0.187E+00	3.21	

Total Activity :	1.208E+01	1.208E+01
------------------	-----------	-----------

Grand Total Activity :	1.208E+01	1.208E+01
------------------------	-----------	-----------

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

DATA
NOT USED

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	309.	477.59	5.9825E-01
NA-22	23.	1274.53	4.2324E-02
NA-24	9.	1368.55	3.0958E-02
K-40	130.	1460.75	9.8102E-01
CR-51	323.	320.08	4.6004E-01
MN-54	206.	834.83	8.1630E-02
CO-56	211.	846.76	8.3616E-02
CO-57	370.	122.06	3.4301E-02
CO-58	174.	810.78	7.3827E-02
FE-59	182.	1099.25	1.7273E-01
SE-75	400.	264.66	7.6435E-02
SR-85	249.	514.01	6.1608E-02
Y-88	2.	1836.06	2.0936E-02
NB-94	248.	871.09	9.2660E-02
ZRNB-95	186.	724.18	1.5738E-01
RU-103	258.	497.08	6.4356E-02
RURH-106	175.	621.93	1.1823E+00
AG-108m	170.	722.94	7.2542E-02
CD-109	303.	88.03	1.0301E+00
AG-110M	213.	657.76	7.1417E-02
SN-113	310.	391.69	8.2715E-02
TE-123m	387.	159.00	3.6068E-02
SB-124	197.	602.73	6.1895E-02
SB-125	295.	427.89	1.8859E-01
TE-125m	365.	109.27	1.1097E+01
I-129	297.	39.60	0.0000E+00
I-131	316.	364.48	6.2440E-02
CS-134	184.	604.70	6.0211E-02
BA-140	206.	537.31	2.3009E-01
LA-140	12.	1596.21	4.0427E-02
CEPR-144	389.	133.51	5.3158E-01
EU-152	13.	1408.01	1.6934E-01
EU-154	23.	1274.51	1.2268E-01
EU-155	334.	105.31	1.4182E-01
HG-203	362.	279.20	5.4284E-02
TL-208	385.	277.36	7.1874E-01
BI-212	188.	727.18	1.0435E+00
PB-212	437.	238.63	9.9269E-02
BI-214	160.	609.31	1.2334E-01
PB-214	357.	351.92	2.6045E-01
RA-224	453.	240.99	1.1218E+00
RA-226	386.	186.10	9.4714E-01
AC-228	246.	911.21	3.6052E-01
TH-228	312.	84.37	3.2223E+00
TH-229	296.	88.47	1.4769E-01
PA-233	318.	312.17	1.1691E-01
UTH-233	409.	245.34	4.0002E+01
PA-234M	196.	1001.03	1.5800E-01
TH-234	296.	63.29	2.1140E+00
U-235	395.	185.71	5.8236E-02
NP-237	305.	86.48	3.1043E-01

DATA
NOT USED

Minimum Detectable Activity Report (continued)

Sample ID : WL#19717-STD

Acquisition date : 10-AUG-1997 08:14:23

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	334.	106.12	1.3479E-01
PU-239	405.	129.30	4.7178E+02
AM-241	339.	59.54	3.9827E-01
AM-243	342.	74.67	9.4077E-02

DATA
NOT USED

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	1.960E+01	1.960E+01	2.361E+01	120.47	AKS
Total Activity :			1.960E+01	1.960E+01			8/11/97

Grand Total Activity : 1.960E+01 1.960E+01

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

DATA
NOT USED

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	104.	477.59	1.1940E+02
NA-22	27.	1274.53	1.5254E+01
NA-24	22.	1368.55	1.5698E+01
K-40	361.	1460.75	5.3962E+02
CR-51	128.	320.08	9.9521E+01
MN-54	51.	834.83	1.4236E+01
CO-56	46.	846.76	1.3715E+01
CO-57	203.	122.06	8.6504E+00
CO-58	43.	810.78	1.2950E+01
FE-59	30.	1099.25	2.4901E+01
CO-60	31.	1332.50	1.6736E+01
SE-75	182.	264.66	1.7605E+01
SR-85	186.	514.01	1.8024E+01
Y-88	13.	1836.06	1.4622E+01
NB-94	39.	871.09	1.3008E+01
ZRNB-95	45.	724.18	2.7156E+01
RU-103	86.	497.08	1.2868E+01
RURH-106	54.	621.93	2.2900E+02
AG-108m	42.	722.94	1.2641E+01
CD-109	176.	88.03	2.6692E+02
AG-110M	70.	657.76	1.4227E+01
SN-113	114.	391.69	1.7260E+01
TE-123m	206.	159.00	8.9525E+00
SB-124	88.	602.73	1.4207E+01
SB-125	126.	427.89	4.2266E+01
TE-125m	173.	109.27	2.6068E+03
I-129	147.	39.60	0.0000E+00
I-131	132.	364.48	1.3848E+01
CS-134	62.	604.70	1.2128E+01
BA-140	81.	537.31	4.9824E+01
LA-140	9.	1596.21	1.2068E+01
CEPR-144	223.	133.51	1.3663E+02
EU-152	19.	1408.01	6.7113E+01
EU-154	27.	1274.51	4.4257E+01
EU-155	202.	105.31	3.7458E+01
HG-203	182.	279.20	1.3127E+01
TL-208	179.	277.36	1.6736E+02
BI-212	67.	727.18	2.1522E+02
PB-212	271.	238.63	2.6491E+01
BI-214	152.	609.31	4.0572E+01
PB-214	208.	351.92	1.5023E+02
RA-224	247.	240.99	2.8337E+02
RA-226	247.	186.10	2.5709E+02
AC-228	83.	911.21	7.2131E+01
TH-228	204.	84.37	8.8220E+02
TH-229	177.	88.47	3.8874E+01
PA-233	152.	312.17	2.7588E+01
UTH-233	198.	245.34	9.4729E+03
PA-234M	41.	1001.03	2.5579E+01
TH-234	177.	63.29	5.5543E+02
U-235	249.	185.71	1.5669E+01

DATA
NOT USED

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-237	202.	86.48	8.5746E+01
NP-239	200.	106.12	3.5777E+01
PU-239	226.	129.30	1.1966E+05
AM-241	161.	59.54	9.3615E+01
AM-243	214.	74.67	2.5221E+01

DATA
NOT USED

 * 222-S Laboratory Counting Room 11-AUG-1997 07:41:56.36 *

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

Worklist #: 19717
 Sample ID: S97T001901-SAM
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Jim Hogan

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3631.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:34:27.36 sec
 Dead Time: 2.9%

Verified by:

BJL 11 Aug 97

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

Sample Count Time: 11-AUG-1997 05:06:54.04
 Decayed to: 11-AUG-1997 05:06:54.04
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	186.93	1528	1.48	374.29	372	7	58.0		RA-226	5.181E+03
0	662.13*	2104119	1.60	1324.43	1316	17	0.1		CS-137	8.007E+05
0	1322.80	293	2.37	2645.98	2640	19	33.2			

DATA
NOT USED

Summary of Nuclide Activity
Sample ID: S97T001901-SAM

HNF-SD-WM-DP-268, REV. 0 Page: 2
Acquisition date: 11-AUG-1997 05:06:54

Total number of lines in spectrum 3
Number of unidentified lines 1
Number of lines tentatively identified by NID 2 66.67%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	2-Sigma Error	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/L	uCi/L					
CS-137	30.00Y	1.00	8.007E+05	8.007E+05	0.011E+05	0.14			
RA-226	1600.00Y	1.00	5.181E+03	5.181E+03	3.003E+03	57.96			
Total Activity :			8.058E+05	8.059E+05					

8/11/97

Grand Total Activity : 8.058E+05 8.059E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

DATA
NOT USED

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	66323.	477.59	2.8642E+03
NA-22	178.	1274.53	3.6754E+01
NA-24	16.	1368.55	1.3563E+01
K-40	385.	1460.75	5.5637E+02
CR-51	49926.	320.08	1.8715E+03
MN-54	873.	834.83	5.5478E+01
CO-56	820.	846.76	5.4496E+01
CO-57	51856.	122.06	1.3303E+02
CO-58	993.	810.78	5.7938E+01
FE-59	315.	1099.25	7.5737E+01
CO-60	32.	1332.50	1.6979E+01
SE-75	55150.	264.66	2.9444E+02
SR-85	32168.	514.01	2.2826E+02
Y-88	13.	1836.06	1.4685E+01
NB-94	748.	871.09	5.3360E+01
ZRNB-95	1278.	724.18	1.3550E+02
RU-103	39835.	497.08	2.6085E+02
RURH-106	11839.	621.93	3.1560E+03
AG-108m	1288.	722.94	6.5330E+01
CD-109	43041.	88.03	4.0140E+03
AG-110M	25611.	657.76	2.5475E+02
SN-113	55211.	391.69	3.6061E+02
TE-123m	54092.	159.00	1.3979E+02
SB-124	12396.	602.73	1.5955E+02
SB-125	64341.	427.89	9.0845E+02
TE-125m	47875.	109.27	4.1618E+04
I-129	41500.	39.60	0.0000E+00
I-131	51547.	364.48	2.6130E+02
CS-134	12326.	604.70	1.5977E+02
BA-140	23164.	537.31	7.9331E+02
LA-140	13.	1596.21	1.4022E+01
CEPR-144	53154.	133.51	2.0370E+03
EU-152	19.	1408.01	6.7113E+01
EU-154	178.	1274.51	1.0679E+02
EU-155	46716.	105.31	5.4906E+02
HG-203	52871.	279.20	2.1506E+02
TL-208	53376.	277.36	2.7745E+03
BI-212	1262.	727.18	8.8772E+02
PB-212	62375.	238.63	3.8932E+02
BI-214	12263.	609.31	3.4942E+02
PB-214	50824.	351.92	2.3225E+03
RA-224	61312.	240.99	4.3152E+03
AC-228	673.	911.21	1.9782E+02
TH-228	43208.	84.37	1.2386E+04
TH-229	43102.	88.47	5.8216E+02
PA-233	50295.	312.17	4.8120E+02
UTH-233	59769.	245.34	1.5861E+05
PA-234M	430.	1001.03	7.7730E+01
TH-234	41669.	63.29	8.1927E+03
U-235	69218.	185.71	2.5262E+02
NP-237	43143.	86.48	1.2069E+03

DATA
NOT USED

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	46891.	106.12	5.2820E+02
PU-239	52985.	129.30	1.7698E+06
AM-241	40737.	59.54	1.4295E+03
AM-243	42490.	74.67	3.4313E+02

DATA
NOT USED

Mr. Heger

11 Aug 97

[illegible]

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	662.13*	1941369	1.60	1324.44	1316	17	0.1			
0	1322.88	293	2.87	2646.13	2637	19	29.8		CS-137	7.387E+05

**DATA
NOT USED**

Total number of lines in spectrum	2	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	1	50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	7.387E+05	7.387E+05	0.011E+05	0.15	
Total Activity :			7.387E+05	7.387E+05			

Grand Total Activity : 7.387E+05 7.387E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

**DATA
NOT USED**

Minimum Detectable Activity Report
Sample ID : S97T001901-DUP

Acquisition date : 11-AUG-1997 08:31:04

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	60840.	477.59	2.7435E+03
NA-22	144.	1274.53	3.3246E+01
NA-24	25.	1368.55	1.6691E+01
K-40	357.	1460.75	5.3688E+02
CR-51	46419.	320.08	1.8048E+03
MN-54	782.	834.83	5.2561E+01
CO-56	686.	846.76	4.9940E+01
CO-57	47406.	122.06	1.2721E+02
CO-58	763.	810.78	5.0938E+01
FE-59	283.	1099.25	7.1906E+01
CO-60	37.	1332.50	1.8219E+01
SE-75	51057.	264.66	2.8333E+02
SR-85	29565.	514.01	2.1886E+02
Y-88	12.	1836.06	1.4181E+01
NB-94	578.	871.09	4.7028E+01
ZRNB-95	1134.	724.18	1.2778E+02
RU-103	36018.	497.08	2.4808E+02
RURH-106	10914.	621.93	3.0309E+03
AG-108m	1128.	722.94	6.1223E+01
CD-109	39741.	88.03	3.8575E+03
AG-110M	23098.	657.76	2.4197E+02
SN-113	50169.	391.69	3.4379E+02
TE-123m	49746.	159.00	1.3407E+02
SB-124	11245.	602.73	1.5199E+02
SB-125	59306.	427.89	8.7227E+02
TE-125m	43630.	109.27	3.9735E+04
I-129	38375.	39.60	0.0000E+00
I-131	47187.	364.48	2.5003E+02
CS-134	11034.	604.70	1.5121E+02
BA-140	21356.	537.31	7.6183E+02
LA-140	13.	1596.21	1.4021E+01
CEPR-144	48993.	133.51	1.9559E+03
EU-152	22.	1408.01	7.2549E+01
EU-154	144.	1274.51	9.6537E+01
EU-155	43218.	105.31	5.2816E+02
HG-203	48541.	279.20	2.0609E+02
TL-208	48918.	277.36	2.6564E+03
BI-212	1122.	727.18	8.3788E+02
PB-212	57150.	238.63	3.7270E+02
BI-214	11276.	609.31	3.3514E+02
PB-214	46608.	351.92	2.2195E+03
RA-224	56630.	240.99	4.1475E+03
RA-226	64501.	186.10	4.0126E+03
AC-228	551.	911.21	1.7934E+02
TH-228	39895.	84.37	1.1903E+04
TH-229	39814.	88.47	5.5958E+02
PA-233	46103.	312.17	4.6077E+02
UTH-233	55030.	245.34	1.5221E+05
PA-234M	365.	1001.03	7.1804E+01
TH-234	38346.	63.29	7.8602E+03
U-235	63508.	185.71	2.4200E+02

**DATA
NOT USED**

Minimum Detectable Activity Report (continued)

Sample ID : S97T001901-DUP

Acquisition date : 11-AUG-1997 08:31:04

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-237	39416.	86.48	1.1538E+03
NP-239	43289.	106.12	5.0755E+02
PU-239	48647.	129.30	1.6959E+06
AM-241	37664.	59.54	1.3747E+03
AM-243	39524.	74.67	3.3097E+02

**DATA
NOT USED**

LABCORE Data Entry Template for Worklist# 20833

Analyst: S.L Instrument: GEA00 3 Book# 75856

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

Worklist Comment: Use .1-10-.1 mL sample size. Rerun #2. SLF

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-01	LIQUID		
2 BLNK			@GEA-01	LIQUID		
3 SAMPLE	S97T001899 0		@GEA-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E					
4 DUP	S97T001899 0		@GEA-01	LIQUID		
5 SAMPLE	S97T001900 0		@GEA-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E					
6 DUP	S97T001900 0		@GEA-01	LIQUID		
7 SAMPLE	S97T001901 0		@GEA-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E					
8 DUP	S97T001901 0		@GEA-01	LIQUID		

Final page for worklist # 20833

Sue La 10-22-97
Analyst Signature Date

Alex E. Wright 10/27/97
Analyst Signature Date
Sue Hogan 10-30-97

Data Entry Comments:

 * 222-S Laboratory Counting Room 24-OCT-1997 10:47:35.66

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

Worklist #: 20833
 Sample ID: WL20833-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Aue Hogg

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3967.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:02.61 sec
 Dead Time: 0.1%

Verified by:

AK Jones 10/27/97

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

Sample Count Time: 24-OCT-1997 09:56:52.73
 Decayed to: 24-OCT-1997 09:56:52.73
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SEH
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	276.85	50	1.10	554.05	551	7117.0			
0	661.75*	5247	1.60	1323.68	1317	15 3.1		CS-137	5.93
0	1172.71	3982	1.91	2345.69	2336	19 3.4		CO-60	6.28
0	1331.74	3604	2.03	2663.85	2654	19 3.4		CO-60	6.31
0	1459.74*	14	1.76	2919.97	2911	17182.2		K-40	0.251

Total number of lines in spectrum 5
Number of unidentified lines 0
Number of lines tentatively identified by NID 5 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.28E+09Y	1.00	2.515E-01	2.515E-01	4.500E-01	162.16	---
CO-60	5.27Y	1.00	6.294E+00	6.294E+00	0.151E+00	2.40	
CS-137	30.00Y	1.00	5.931E+00	5.931E+00	0.184E+00	3.10	
Total Activity :			1.248E+01	1.248E+01			

Grand Total Activity : 1.248E+01 1.248E+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	303.	477.59	5.9291E-01
NA-22	37.	1274.53	5.2004E-02
NA-24	10.	1368.55	3.1465E-02
CR-51	319.	320.08	4.5701E-01
MN-54	182.	834.83	7.6909E-02
CO-56	206.	846.76	8.2643E-02
CO-57	349.	122.06	3.3323E-02
CO-58	180.	810.78	7.5085E-02
FE-59	197.	1099.25	1.7931E-01
SE-75	370.	264.66	7.3556E-02
SR-85	282.	514.01	6.5417E-02
Y-88	7.	1836.06	3.3858E-02
NB-94	203.	871.09	8.4076E-02
ZRNB-95	149.	724.18	1.4171E-01
RU-103	265.	497.08	6.5181E-02
RURH-106	173.	621.93	1.1753E+00
AG-108m	150.	722.94	6.8204E-02
CD-109	288.	88.03	1.0063E+00
AG-110M	211.	657.76	7.1154E-02
SN-113	288.	391.69	7.9855E-02
TE-123m	373.	159.00	3.5408E-02
SB-124	174.	602.73	5.8299E-02
SB-125	328.	427.89	1.9850E-01
TE-125m	339.	109.27	1.0704E+01
I-131	315.	364.48	6.2334E-02
CS-134	141.	604.70	5.2888E-02
BA-140	200.	537.31	2.2681E-01
LA-140	8.	1596.21	3.3108E-02
CEPR-144	373.	133.51	5.2067E-01
EU-152	17.	1408.01	1.9133E-01
EU-154	36.	1274.51	1.5086E-01
EU-155	311.	105.31	1.3711E-01
HC-203	348.	279.20	5.3299E-02
TL-208	373.	277.36	7.0777E-01
BI-212	185.	727.18	1.0360E+00
PB-212	422.	238.63	9.7607E-02
BI-214	208.	609.31	1.3994E-01
PB-214	354.	351.92	2.5923E-01
RA-224	452.	240.99	1.1201E+00
RA-226	359.	186.10	9.1430E-01
AC-228	238.	911.21	3.5429E-01
TH-228	310.	84.37	3.2118E+00
TH-229	305.	88.47	1.4981E-01
PA-233	330.	312.17	1.1908E-01
UTH-233	419.	245.34	4.0447E+01
PA-234M	207.	1001.03	1.6201E-01
TH-234	304.	63.29	2.1411E+00
U-235	363.	185.71	5.5845E-02
NP-237	335.	86.48	3.2503E-01
NP-239	324.	106.12	1.3275E-01
PU-239	400.	129.30	4.6882E+02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
AM-241	335.	59.54	3.9586E-01
AM-243	332.	74.67	9.2663E-02

Total number of lines in spectrum	3	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	1	33.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	2-Sigma Error	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/L	uCi/L					
CS-137	30.00Y	1.00	3.911E+01	3.911E+01	2.524E+01	64.55			217
Total Activity :			3.911E+01	3.911E+01					

Grand Total Activity : 3.911E+01 3.911E+01

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Sample ID : WL20833-BLK

Acquisition date : 24-OCT-1997 16:53:16

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	99.	477.59	1.1712E+02
NA-22	26.	1274.53	1.5104E+01
NA-24	22.	1368.55	1.5552E+01
K-40	356.	1460.75	5.3561E+02
CR-51	138.	320.08	1.0313E+02
MN-54	43.	834.83	1.3174E+01
CO-56	51.	846.76	1.4343E+01
CO-57	231.	122.06	9.1943E+00
CO-58	47.	810.78	1.3367E+01
FE-59	39.	1099.25	2.8049E+01
CO-60	32.	1332.50	1.7064E+01
SE-75	182.	264.66	1.7602E+01
SR-85	164.	514.01	1.6971E+01
Y-88	10.	1836.06	1.3018E+01
NB-94	43.	871.09	1.3576E+01
ZRNB-95	67.	724.18	3.2795E+01
RU-103	92.	497.08	1.3280E+01
RURH-106	79.	621.93	2.7391E+02
AG-108m	61.	722.94	1.5089E+01
CD-109	175.	88.03	2.6663E+02
AG-110M	68.	657.76	1.4024E+01
SN-113	118.	391.69	1.7501E+01
TE-123m	225.	159.00	9.3369E+00
SB-124	80.	602.73	1.3572E+01
SB-125	106.	427.89	3.8923E+01
TE-125m	217.	109.27	2.9052E+03
I-131	138.	364.48	1.4146E+01
CS-134	83.	604.70	1.3861E+01
BA-140	73.	537.31	4.7278E+01
LA-140	9.	1596.21	1.1953E+01
CEPR-144	213.	133.51	1.3380E+02
EU-152	14.	1408.01	5.8879E+01
EU-154	26.	1274.51	4.3850E+01
EU-155	195.	105.31	3.6846E+01
HG-203	168.	279.20	1.2643E+01
TL-208	177.	277.36	1.6619E+02
BI-212	72.	727.18	2.2290E+02
PB-212	250.	238.63	2.5506E+01
BI-214	144.	609.31	3.9513E+01
PB-214	205.	351.92	1.4911E+02
RA-224	236.	240.99	2.7738E+02
RA-226	250.	186.10	2.5864E+02
AC-228	81.	911.21	7.1655E+01
TH-228	201.	84.37	8.7680E+02
TH-229	171.	88.47	3.8170E+01
PA-233	145.	312.17	2.7000E+01
UTH-233	195.	245.34	9.4141E+03
PA-234M	37.	1001.03	2.4347E+01
TH-234	158.	63.29	5.2685E+02
U-235	253.	185.71	1.5800E+01
NP-237	188.	86.48	8.2907E+01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	209.	106.12	3.6560E+01
PU-239	238.	129.30	1.2285E+05
AM-241	164.	59.54	9.4488E+01
AM-243	221.	74.67	2.5639E+01

 * 222-S Laboratory Counting Room 24-OCT-1997 22:00:35.56

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

Worklist #: 20833
 Sample ID: S97T1899-SAM
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.01000E+02

HNF-SD-WM-DP-268, REV. 0

Removed by:

Shelley

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3972.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:32:04.33 sec
 Dead Time: 1.4%

Verified by:

RA Jones 10/27/97

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

Sample Count Time: 24-OCT-1997 19:27:52.58
 Decayed to: 24-OCT-1997 19:27:52.58
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	476.31	861	1.54	952.85	950	8	69.1		BE-7	2.054E+03
0	661.67*	994029	1.58	1323.52	1315	17	0.2		CS-137	3.783E+05
3	1319.38	34	2.52	2639.12	2635	23	80.6	2.24E+00		
3	1321.59	67	2.56	2643.54	2635	23	60.0			
0	1763.12*	16	2.66	3527.08	3521	13	97.4			

Total number of lines in spectrum 5
Number of unidentified lines 2
Number of lines tentatively identified by NID 3 60.00%

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
BE-7	53.29D	1.00	2.053E+03	2.054E+03	1.420E+03	69.10	rej
CS-137	30.00Y	1.00	3.783E+05	3.783E+05	0.008E+05	0.20	
Total Activity :			3.803E+05	3.803E+05			

Grand Total Activity : 3.803E+05 3.803E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NA-22	55.	1274.53	2.1131E+01
NA-24	12.	1368.55	1.1913E+01
K-40	383.	1460.75	5.5491E+02
CR-51	23662.	320.08	1.2899E+03
MN-54	202.	834.83	2.7216E+01
CO-56	219.	846.76	2.8665E+01
CO-57	24477.	122.06	9.1502E+01
CO-58	261.	810.78	3.0229E+01
FE-59	126.	1099.25	4.8808E+01
CO-60	31.	1332.50	1.6957E+01
SE-75	26487.	264.66	2.0427E+02
SR-85	14963.	514.01	1.5591E+02
Y-88	9.	1836.06	1.2551E+01
NB-94	188.	871.09	2.7293E+01
ZRNB-95	365.	724.18	7.3417E+01
RU-103	18474.	497.08	1.7788E+02
RURH-106	5542.	621.93	2.1646E+03
AG-108m	331.	722.94	3.3629E+01
CD-109	20374.	88.03	2.7652E+03
AG-110M	21831.	657.76	2.3527E+02
SN-113	25957.	391.69	2.4754E+02
TE-123m	25633.	159.00	9.6335E+01
SB-124	5526.	602.73	1.0680E+02
SB-125	30532.	427.89	6.2644E+02
TE-125m	22515.	109.27	2.8575E+04
I-131	24431.	364.48	1.8009E+02
CS-134	5561.	604.70	1.0759E+02
BA-140	10461.	537.31	5.3408E+02
LA-140	12.	1596.21	1.3858E+01
CEPR-144	25113.	133.51	1.4018E+03
EU-152	28.	1408.01	8.0945E+01
EU-154	55.	1274.51	6.1472E+01
EU-155	22264.	105.31	3.7950E+02
HG-203	25257.	279.20	1.4881E+02
TL-208	25073.	277.36	1.9038E+03
BI-212	379.	727.18	4.9284E+02
PB-212	29603.	238.63	2.6849E+02
BI-214	5759.	609.31	2.4003E+02
PB-214	23769.	351.92	1.5675E+03
RA-224	29025.	240.99	2.9717E+03
RA-226	33303.	186.10	2.8859E+03
AC-228	220.	911.21	1.1499E+02
TH-228	20690.	84.37	8.5816E+03
TH-229	20331.	88.47	4.0034E+02
PA-233	23456.	312.17	3.2901E+02
UTH-233	28653.	245.34	1.0994E+05
PA-234M	143.	1001.03	4.5680E+01
TH-234	19524.	63.29	5.6153E+03
U-235	32839.	185.71	1.7418E+02
NP-237	20461.	86.48	8.3223E+02
NP-239	22266.	106.12	3.6433E+02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	25229.	129.30	1.2226E+06
AM-241	19455.	59.54	9.8917E+02
AM-243	20162.	74.67	2.3667E+02

* 222-S Laboratory Counting Room 25-OCT-1997 01:06:12.82 *

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

Worklist #: 20833
Sample ID: S97T1899-DUP
Sample Size: 1.00000E-04 L
Dilution Factor: 1.01000E+02

HNF-SD-WM-DP-268, REV. 0

Removed by:

Sluade

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

Detector ID: GEA3
File Number: dka300:[spec.GEA3]3g3973.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:32:08.47 sec
Dead Time: 1.4%

Verified by:

RA Jones 10/27/97

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

Sample Count Time: 24-OCT-1997 22:33:21.64
Decayed to: 24-OCT-1997 22:33:21.64
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: SLH2
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.67*	1028691	1.59	1323.52	1315	17	0.2		CS-137	3.914E+05
0	1459.76*	30	2.22	2920.01	2913	16	151.4		K-40	175.

Total number of lines in spectrum 2
Number of unidentified lines 0
Number of lines tentatively identified by NID 2 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.28E+09Y	1.00	1.754E+02	1.754E+02	2.657E+02	151.43	rej
CS-137	30.00Y	1.00	3.914E+05	3.914E+05	0.008E+05	0.20	
Total Activity :			3.916E+05	3.916E+05			

Grand Total Activity : 3.916E+05 3.916E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	31357.	477.59	1.9714E+03
NA-22	56.	1274.53	2.1298E+01
NA-24	16.	1368.55	1.3680E+01
CR-51	24542.	320.08	1.3136E+03
MN-54	244.	834.83	2.9823E+01
CO-56	247.	846.76	3.0405E+01
CO-57	25491.	122.06	9.3372E+01
CO-58	259.	810.78	3.0130E+01
FE-59	108.	1099.25	4.5390E+01
CO-60	29.	1332.50	1.6246E+01
SE-75	27195.	264.66	2.0698E+02
SR-85	15503.	514.01	1.5869E+02
Y-88	10.	1836.06	1.3226E+01
NB-94	210.	871.09	2.8797E+01
ZRNB-95	388.	724.18	7.5598E+01
RU-103	19053.	497.08	1.8063E+02
RURH-106	5759.	621.93	2.2062E+03
AG-108m	349.	722.94	3.4513E+01
CD-109	21134.	88.03	2.8161E+03
AG-110M	22821.	657.76	2.4052E+02
SN-113	26636.	391.69	2.5074E+02
TE-123m	26164.	159.00	9.7324E+01
SB-124	5797.	602.73	1.0937E+02
SB-125	30971.	427.89	6.3091E+02
TE-125m	23256.	109.27	2.9040E+04
I-131	25202.	364.48	1.8290E+02
CS-134	5795.	604.70	1.0981E+02
BA-140	10847.	537.31	5.4379E+02
LA-140	15.	1596.21	1.5214E+01
CEPR-144	26268.	133.51	1.4335E+03
EU-152	26.	1408.01	7.7332E+01
EU-154	56.	1274.51	6.1918E+01
EU-155	23004.	105.31	3.8573E+02
HG-203	25712.	279.20	1.5014E+02
TL-208	26080.	277.36	1.9415E+03
BI-212	379.	727.18	4.9319E+02
PB-212	30081.	238.63	2.7064E+02
BI-214	5889.	609.31	2.4270E+02
PB-214	24607.	351.92	1.5955E+03
RA-224	30252.	240.99	3.0337E+03
RA-226	34306.	186.10	2.9289E+03
AC-228	229.	911.21	1.1729E+02
TH-228	21156.	84.37	8.6773E+03
TH-229	21032.	88.47	4.0715E+02
PA-233	24279.	312.17	3.3471E+02
UTH-233	29015.	245.34	1.1062E+05
PA-234M	109.	1001.03	4.0244E+01
TH-234	20269.	63.29	5.7210E+03
U-235	33702.	185.71	1.7644E+02
NP-237	21269.	86.48	8.4845E+02
NP-239	22921.	106.12	3.6963E+02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	26049.	129.30	1.2422E+06
AM-241	20269.	59.54	1.0096E+03
AM-243	20876.	74.67	2.4080E+02

 * 222-S Laboratory Counting Room 25-OCT-1997 07:08:14.65

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

Worklist #: 20833
 Sample ID: S97T1900-SAM
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Lee Hogg

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3977.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:32:02.71 sec
 Dead Time: 1.3%

Verified by:

DA Jones 10/27/97

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

Sample Count Time: 25-OCT-1997 04:35:33.61
 Decayed to: 25-OCT-1997 04:35:33.61
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	186.08	497	1.27	372.58	371	5	92.3		RA-226	1.686E+03
0	661.67*	980882	1.59	1323.53	1315	17	0.2		CS-137	3.733E+05
0	1763.43*	20	2.64	3527.70	3519	17102.4				

Summary of Nuclide Activity
Sample ID : S97T1900-SAM

HNF-SD-WM-DP-268, REV. 0 Page : 2
Acquisition date : 25-OCT-1997 04:35:33

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	3.732E+05	3.733E+05	0.008E+05	0.21	
RA-226	1600.00Y	1.00	1.686E+03	1.686E+03	1.556E+03	92.29	RAJ
Total Activity :			3.749E+05	3.749E+05			

Grand Total Activity : 3.749E+05 3.749E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	30188.	477.59	1.9344E+03
NA-22	48.	1274.53	1.9796E+01
NA-24	21.	1368.55	1.5246E+01
K-40	358.	1460.75	5.3737E+02
CR-51	23341.	320.08	1.2811E+03
MN-54	241.	834.83	2.9641E+01
CO-56	216.	846.76	2.8499E+01
CO-57	24370.	122.06	9.1303E+01
CO-58	254.	810.78	2.9811E+01
FE-59	89.	1099.25	4.1369E+01
CO-60	33.	1332.50	1.7411E+01
SE-75	25558.	264.66	2.0067E+02
SR-85	14919.	514.01	1.5568E+02
Y-88	14.	1836.06	1.5241E+01
NB-94	171.	871.09	2.6059E+01
ZRNB-95	339.	724.18	7.0867E+01
RU-103	18069.	497.08	1.7593E+02
RURH-106	5470.	621.93	2.1506E+03
AG-108m	335.	722.94	3.3827E+01
CD-109	20202.	88.03	2.7536E+03
AG-110M	21461.	657.76	2.3327E+02
SN-113	25460.	391.69	2.4516E+02
TE-123m	25123.	159.00	9.5376E+01
SB-124	5570.	602.73	1.0721E+02
SB-125	29798.	427.89	6.1889E+02
TE-125m	22240.	109.27	2.8401E+04
I-131	23755.	364.48	1.7759E+02
CS-134	5595.	604.70	1.0791E+02
BA-140	10584.	537.31	5.3719E+02
LA-140	8.	1596.21	1.1630E+01
CEPR-144	25050.	133.51	1.4000E+03
EU-152	16.	1408.01	6.1871E+01
EU-154	48.	1274.51	5.7491E+01
EU-155	21828.	105.31	3.7578E+02
HG-203	24796.	279.20	1.4745E+02
TL-208	24820.	277.36	1.8942E+03
BI-212	377.	727.18	4.9177E+02
PB-212	28993.	238.63	2.6572E+02
BI-214	5755.	609.31	2.3996E+02
PB-214	23502.	351.92	1.5584E+03
RA-224	28414.	240.99	2.9404E+03
AC-228	212.	911.21	1.1290E+02
TH-228	20327.	84.37	8.5064E+03
TH-229	20297.	88.47	4.0000E+02
PA-233	23253.	312.17	3.2758E+02
UTH-233	27924.	245.34	1.0853E+05
PA-234M	133.	1001.03	4.4104E+01
TH-234	19523.	63.29	5.6152E+03
U-235	32430.	185.71	1.7309E+02
NP-237	20193.	86.48	8.2679E+02
NP-239	21793.	106.12	3.6045E+02

Minimum Detectable Activity Report (continued)

Sample ID : S97T1900-SAM

Acquisition date : 25-OCT-1997 04:35:33

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	25140.	129.30	1.2204E+06
AM-241	19380.	59.54	9.8728E+02
AM-243	19981.	74.67	2.3561E+02

 * 222-S Laboratory Counting Room 25-OCT-1997 09:59:44.41 *

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

Worklist #: 20833
 Sample ID: S97T001900-DUP
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3978.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:32:00.48 sec
 Dead Time: 1.3%

Verified by:

10/27/97

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

Sample Count Time: 25-OCT-1997 07:27:03.07
 Decayed to: 25-OCT-1997 07:27:03.07
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SEH
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.67*	964643	1.59	1323.52	1315	17	0.2		CS-137	3.671E+05
0	1119.49*	52	1.07	2239.22	2231	14	75.8			
0	1252.07	99	14.63	2504.45	2487	34	51.9			
0	1321.72	63	3.00	2643.81	2638	14	59.4			

Total number of lines in spectrum	4	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	2	50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			uCi/L	uCi/L	2-Sigma Error	%Error	
CS-137	30.00Y	1.00	3.671E+05	3.671E+05	0.008E+05	0.21	
Total Activity :			3.671E+05	3.671E+05			

Grand Total Activity : 3.671E+05 3.671E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	29186.	477.59	1.9021E+03
NA-22	46.	1274.53	1.9527E+01
NA-24	21.	1368.55	1.5184E+01
K-40	385.	1460.75	5.5677E+02
CR-51	22965.	320.08	1.2708E+03
MN-54	220.	834.83	2.8357E+01
CO-56	219.	846.76	2.8675E+01
CO-57	23810.	122.06	9.0252E+01
CO-58	248.	810.78	2.9489E+01
FE-59	90.	1099.25	4.1637E+01
CO-60	24.	1332.50	1.5042E+01
SE-75	25522.	264.66	2.0053E+02
SR-85	14428.	514.01	1.5311E+02
Y-88	13.	1836.06	1.4707E+01
NB-94	185.	871.09	2.7079E+01
ZRNB-95	322.	724.18	6.9085E+01
RU-103	18065.	497.08	1.7591E+02
RURH-106	5250.	621.93	2.1073E+03
AG-108m	342.	722.94	3.4192E+01
CD-109	19912.	88.03	2.7338E+03
AG-110M	21120.	657.76	2.3142E+02
SN-113	25086.	391.69	2.4336E+02
TE-123m	24759.	159.00	9.4685E+01
SB-124	5579.	602.73	1.0731E+02
SB-125	28981.	427.89	6.1038E+02
TE-125m	21567.	109.27	2.7969E+04
I-131	23429.	364.48	1.7637E+02
CS-134	5520.	604.70	1.0719E+02
BA-140	10468.	537.31	5.3425E+02
LA-140	13.	1596.21	1.3908E+01
CEPR-144	24419.	133.51	1.3823E+03
EU-152	29.	1408.01	8.1907E+01
EU-154	46.	1274.51	5.6754E+01
EU-155	21480.	105.31	3.7279E+02
HG-203	24069.	279.20	1.4528E+02
TL-208	24399.	277.36	1.8781E+03
BI-212	340.	727.18	4.6745E+02
PB-212	28828.	238.63	2.6496E+02
BI-214	5552.	609.31	2.3571E+02
PB-214	23120.	351.92	1.5454E+03
RA-224	28352.	240.99	2.9371E+03
RA-226	32145.	186.10	2.8354E+03
AC-228	200.	911.21	1.0980E+02
TH-228	20172.	84.37	8.4739E+03
TH-229	19771.	88.47	3.9481E+02
PA-233	22813.	312.17	3.2448E+02
UTH-233	27578.	245.34	1.0786E+05
PA-234M	108.	1001.03	3.9923E+01
TH-234	19070.	63.29	5.5499E+03
U-235	31838.	185.71	1.7151E+02
NF-237	19981.	86.48	8.2246E+02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	21542.	106.12	3.5838E+02
PU-239	24378.	129.30	1.2019E+06
AM-241	18986.	59.54	9.7722E+02
AM-243	19537.	74.67	2.3299E+02

 * 222-S Laboratory Counting Room 25-OCT-1997 12:47:09.09 *

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

Worklist #: 20833
 Sample ID: S97T001901-SAM
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Lee Hoge

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3979.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:31:58.36 sec
 Dead Time: 1.3%

Verified by:

RA Jones 10/27/97

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

Sample Count Time: 25-OCT-1997 10:14:34.84
 Decayed to: 25-OCT-1997 10:14:34.84
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SEH
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.66*	947341	1.58	1323.50	1315	17	0.2		CS-137	3.605E+05
0	1119.58*	50	2.19	2239.39	2234	11	72.9			
0	1727.91	21	1.66	3456.62	3449	14	43.6			
0	1762.88	37	1.40	3526.59	3521	11	32.9			

**DATA
NOT USED**

Total number of lines in spectrum	4	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	2	50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	3.605E+05	3.605E+05	0.008E+05	0.21	
Total Activity :			3.605E+05	3.605E+05			

Grand Total Activity : 3.605E+05 3.605E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

DATA
NOT USED

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	29107.	477.59	1.8996E+03
NA-22	49.	1274.53	1.9981E+01
NA-24	15.	1368.55	1.3065E+01
K-40	371.	1460.75	5.4663E+02
CR-51	22379.	320.08	1.2546E+03
MN-54	203.	834.83	2.7310E+01
CO-56	198.	846.76	2.7352E+01
CO-57	23294.	122.06	8.9273E+01
CO-58	231.	810.78	2.8496E+01
FE-59	77.	1099.25	3.8537E+01
CO-60	31.	1332.50	1.6871E+01
SE-75	25239.	264.66	1.9942E+02
SR-85	14185.	514.01	1.5182E+02
Y-88	8.	1836.06	1.1814E+01
NB-94	205.	871.09	2.8496E+01
ZRNP-95	312.	724.18	6.8090E+01
RU-103	17547.	497.08	1.7338E+02
RURH-106	5154.	621.93	2.0880E+03
AG-108m	313.	722.94	3.2733E+01
CD-109	19510.	88.03	2.7061E+03
AG-110M	20917.	657.76	2.3031E+02
SN-113	24553.	391.69	2.4077E+02
TE-123m	24379.	159.00	9.3959E+01
SB-124	5348.	602.73	1.0507E+02
SB-125	28617.	427.89	6.0655E+02
TE-125m	21670.	109.27	2.8036E+04
I-131	22696.	364.48	1.7360E+02
CS-134	5247.	604.70	1.0453E+02
BA-140	9856.	537.31	5.1850E+02
LA-140	13.	1596.21	1.4017E+01
CEPR-144	23830.	133.51	1.3656E+03
EU-152	23.	1408.01	7.3390E+01
EU-154	49.	1274.51	5.8007E+01
EU-155	21036.	105.31	3.6893E+02
HG-203	23854.	279.20	1.4463E+02
TL-208	23908.	277.36	1.8592E+03
BI-212	320.	727.18	4.5410E+02
PB-212	27945.	238.63	2.6088E+02
BI-214	5452.	609.31	2.3360E+02
PB-214	22812.	351.92	1.5348E+03
RA-224	27522.	240.99	2.8940E+03
RA-226	31700.	186.10	2.8158E+03
AC-228	177.	911.21	1.0359E+02
TH-228	19587.	84.37	8.3507E+03
TH-229	19603.	88.47	3.9313E+02
PA-233	22615.	312.17	3.2308E+02
UTH-233	27134.	245.34	1.0699E+05
PA-234M	107.	1001.03	3.9755E+01
TH-234	18807.	63.29	5.5117E+03
U-235	31331.	185.71	1.7014E+02
NP-237	19688.	86.48	8.1643E+02

DATA
NOT USED

Minimum Detectable Activity Report (continued)

Sample ID : S97T001901-SAM

Acquisition date : 25-OCT-1997 10:14:34

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	21272.	106.12	3.5614E+02
PU-239	23818.	129.30	1.1880E+06
AM-241	18217.	59.54	9.5731E+02
AM-243	19312.	74.67	2.3164E+02

DATA
NOT USED

 * 222-S Laboratory Counting Room 25-OCT-1997 15:55:30.14

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

Worklist #: 20833
 Sample ID: S97T001901-DUP
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3980.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:34:16.04 sec
 Dead Time: 2.8%

Verified by:

10/27/97

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

Sample Count Time: 25-OCT-1997 13:20:37.17
 Decayed to: 25-OCT-1997 13:20:37.17
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SEH
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.65*	2026865	1.59	1323.48	1315	17	0.1		CS-137	7.713E+05
0	1321.39	353	2.71	2643.15	2636	16	20.7			

DATA
NOT USED

Summary of Nuclide Activity
 Sample ID : S97T001901-DUP

Acquisition date : 25-OCT-1997 13:20:37

Total number of lines in spectrum 2
 Number of unidentified lines 1
 Number of lines tentatively identified by NID 1 50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	7.713E+05	7.713E+05	0.011E+05	0.14	
Total Activity :			7.713E+05	7.713E+05			

Grand Total Activity : 7.713E+05 7.713E+05

Flags: "K" = Keyline not found
 "E" = Manually edited

"M" = Manually accepted
 "A" = Nuclide specific abn. limit

**DATA
NOT USED**

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	62838.	477.59	2.7881E+03
NA-22	134.	1274.53	3.2131E+01
NA-24	29.	1368.55	1.7760E+01
K-40	378.	1460.75	5.5141E+02
CR-51	48087.	320.08	1.8368E+03
MN-54	846.	834.83	5.4631E+01
CO-56	811.	846.76	5.4189E+01
CO-57	49565.	122.06	1.3007E+02
CO-58	848.	810.78	5.3642E+01
FE-59	350.	1099.25	7.9689E+01
CO-60	45.	1332.50	1.9899E+01
SE-75	53392.	264.66	2.8972E+02
SR-85	30642.	514.01	2.2280E+02
Y-88	10.	1836.06	1.3201E+01
NB-94	697.	871.09	5.1560E+01
ZRNB-95	1288.	724.18	1.3603E+02
RU-103	37610.	497.08	2.5348E+02
RURH-106	11295.	621.93	3.0829E+03
AG-108m	1287.	722.94	6.5307E+01
CD-109	41397.	88.03	3.9369E+03
AG-110M	52629.	657.76	3.6478E+02
SN-113	52735.	391.69	3.5245E+02
TE-123m	51601.	159.00	1.3654E+02
SB-124	11814.	602.73	1.5577E+02
SB-125	61924.	427.89	8.9126E+02
TE-125m	45850.	109.27	4.0731E+04
I-131	49832.	364.48	2.5693E+02
CS-134	11883.	604.70	1.5689E+02
BA-140	22168.	537.31	7.7612E+02
LA-140	15.	1596.21	1.5119E+01
CEPR-144	51876.	133.51	2.0124E+03
EU-152	29.	1408.01	8.1061E+01
EU-154	134.	1274.51	9.3415E+01
EU-155	44782.	105.31	5.3761E+02
HG-203	51342.	279.20	2.1194E+02
TL-208	51392.	277.36	2.7226E+03
BI-212	1227.	727.18	8.7568E+02
PB-212	59767.	238.63	3.8111E+02
BI-214	11538.	609.31	3.3899E+02
PB-214	48733.	351.92	2.2718E+03
RA-224	58962.	240.99	4.2318E+03
RA-226	67499.	186.10	4.1046E+03
AC-228	625.	911.21	1.9085E+02
TH-228	41973.	84.37	1.2208E+04
TH-229	41141.	88.47	5.6880E+02
PA-233	48266.	312.17	4.7142E+02
UTH-233	57615.	245.34	1.5573E+05
PA-234M	406.	1001.03	7.5582E+01
TH-234	39978.	63.29	8.0252E+03
U-235	66496.	185.71	2.4761E+02
NP-237	41853.	86.48	1.1888E+03

DATA
NOT USED

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	45080.	106.12	5.1792E+02
PU-239	51250.	129.30	1.7406E+06
AM-241	39762.	59.54	1.4124E+03
AM-243	41062.	74.67	3.3733E+02

DATA
NOT USED

LABCORE Completed RadChem Report for Worklist#: 20971

Analyst: adp

Instrument: GEA03

Book# 75B56

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

Worklist Comment: AX-101 GEA, RERUN #2 USE .1-10-.1ML SAMPLE SIZE. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	@GEA-01	CO60-02	LIQUID	6.056e-03	6.05e-03	99.901 % Recovery
1 STD	0	0	@GEA-01	CO60-02E	LIQUID	1	2.54	2.540 % Ct Error
1 STD	0	0	@GEA-01	CS13702	LIQUID	5.741e-03	5.95e-03	103.640 % Recovery
1 STD	0	0	@GEA-01	CS13702E	LIQUID	1	3.07	3.070 % Ct Error
2 BLNK	0	0	@GEA-01	CO60-02	LIQUID	1	<1.61e-2	uCi/mL
2 BLNK	0	0	@GEA-01	CS13702	LIQUID	1	<2.79e-2	uCi/mL
3 SAMPLE	S97T001901	0	@GEA-01	CO60-02	LIQUID	N/A	1.845e-02	184.5e-004 uCi/mL
3 SAMPLE	S97T001901	0	@GEA-01	CO60-02E	LIQUID	N/A	n/a	0.0e+000 % Ct. Error
3 SAMPLE	S97T001901	0	@GEA-01	CS13702	LIQUID	N/A	4.290e+02	0.0e+000 uCi/mL
3 SAMPLE	S97T001901	0	@GEA-01	CS13702E	LIQUID	N/A	0.190	0.0e+000 % Ct. Error
4 DUP	S97T001901	0	@GEA-01	CO60-02	LIQUID	<1.85e-2	<1.49e-2	RPD
4 DUP	S97T001901	0	@GEA-01	CO60-02E	LIQUID	1	n/a	% Ct Error
4 DUP	S97T001901	0	@GEA-01	CS13702	LIQUID	4.29e+02	4.30e+02	0.233 RPD
4 DUP	S97T001901	0	@GEA-01	CS13702E	LIQUID	1	0.190	0.190 % Ct Error

Comments Section:

Comments for sample# S97T001901 and test @GEA-01 .

DL=0 => n/a.
DL=0 => n/a.
DL=0 => n/a.
DL=0 => n/a.

Final page for worklist# 20971

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

RA Jones
Reviewer Signature

11/4/97
Date

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

LABCORE Data Entry Template for Worklist# 20971

Analyst: ADP Instrument: GEA00 Book# 75B56

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

Worklist Comment: AX-101 GEA, RERUN #2 USE .1-10-.1ML SAMPLE SIZE. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@GEA-01	LIQUID		
2	BLNK				@GEA-01	LIQUID		
3	SAMPLE	S97T001901 0			@GEA-01	LIQUID	97000510	AX-101 GRAB
		Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4	DUP	S97T001901 0			@GEA-01	LIQUID		

Final page for worklist # 20971

[Signature] 10-30-97
Analyst Signature Date

[Signature] 11/6/97
Analyst Signature Date

* Please record the sample appearance (i.e. presence of solids)

Data Entry Comments: Sample is clear yellow with salt like granules
on bottom of 22 mL Vial

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

 * 222-S Laboratory Counting Room 31-OCT-1997 05:33:57.80

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

Worklist #: 20971
 Sample ID: WL20971-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Ag LBLT

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3017.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:02.70 sec
 Dead Time: 0.1%

Verified by:

DLB 11/3/97

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

Sample Count Time: 31-OCT-1997 04:43:20.16
 Decayed to: 31-OCT-1997 04:43:20.16
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	662.19*	5264	1.62	1324.56	1317	16	3.1		CS-137	5.95
0	1173.51	3848	1.90	2347.28	2337	21	3.6		CO-60	6.07
0	1332.67	3442	2.04	2665.71	2657	17	3.6		CO-60	6.02

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			uCi/L	uCi/L	2-Sigma Error	%Error	
CO-60	5.27Y	1.00	6.046E+00	6.046E+00	0.153E+00	2.54	
CS-137	30.00Y	1.00	5.950E+00	5.950E+00	0.182E+00	3.07	
Total Activity :			1.200E+01	1.200E+01			

Grand Total Activity : 1.200E+01 1.200E+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	321.	477.59	6.0929E-01
NA-22	37.	1274.53	5.2521E-02
NA-24	12.	1368.55	3.4042E-02
K-40	143.	1460.75	1.0258E+00
CR-51	299.	320.08	4.4277E-01
MN-54	178.	834.83	7.6034E-02
CO-56	193.	846.76	8.0099E-02
CO-57	386.	122.06	3.5023E-02
CO-58	189.	810.78	7.6739E-02
FE-59	210.	1099.25	1.8483E-01
SE-75	353.	264.66	7.1981E-02
SR-85	264.	514.01	6.3339E-02
Y-88	4.	1836.06	2.6501E-02
NB-94	205.	871.09	8.4634E-02
ZRNB-95	148.	724.18	1.4094E-01
RU-103	252.	497.08	6.3714E-02
RURH-106	185.	621.93	1.2153E+00
AG-108m	144.	722.94	6.6866E-02
CD-109	316.	88.03	1.0523E+00
AG-110M	205.	657.76	7.0132E-02
SN-113	322.	391.69	8.4162E-02
TE-123m	376.	159.00	3.5564E-02
SB-124	175.	602.73	5.8511E-02
SB-125	301.	427.89	1.9032E-01
TE-125m	334.	109.27	1.0629E+01
I-131	284.	364.48	5.9304E-02
CS-134	192.	604.70	6.1331E-02
BA-140	200.	537.31	2.2639E-01
LA-140	10.	1596.21	3.7650E-02
CEPR-144	396.	133.51	5.3592E-01
EU-152	9.	1408.01	1.4452E-01
EU-154	37.	1274.51	1.5244E-01
EU-155	363.	105.31	1.4776E-01
HG-203	369.	279.20	5.4805E-02
TL-208	362.	277.36	6.9740E-01
BI-212	171.	727.18	9.9774E-01
PB-212	458.	238.63	1.0155E-01
BI-214	203.	609.31	1.3813E-01
PB-214	322.	351.92	2.4784E-01
RA-224	447.	240.99	1.1146E+00
RA-226	445.	186.10	1.0154E+00
AC-228	259.	911.21	3.6917E-01
TH-228	327.	84.37	3.2965E+00
TH-229	299.	88.47	1.4835E-01
PA-233	342.	312.17	1.2117E-01
UTH-233	422.	245.34	4.0598E+01
PA-234M	193.	1001.03	1.5686E-01
TH-234	303.	63.29	2.1395E+00
U-235	442.	185.71	6.1482E-02
NP-237	320.	86.48	3.1785E-01
NP-239	380.	106.12	1.4352E-01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	380.	129.30	4.5702E+02
AM-241	328.	59.54	3.9207E-01
AM-243	302.	74.67	8.8526E-02

 * 222-S Laboratory Counting Room 31-OCT-1997 09:07:27.19 *

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

Worklist #: 20971
 Sample ID: WL20971-BLK
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

C. J. Jones

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3018.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:01.53 sec
 Dead Time: 0.0%

Verified by:

SA Carter 11/3/97

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

Sample Count Time: 31-OCT-1997 06:36:51.40
 Decayed to: 31-OCT-1997 06:36:51.40
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	352.32*	65	1.60	704.93	697	15102.8			
0	662.33*	73	1.82	1324.84	1318	15 79.5		CS-137	27.9
0	1764.22*	16	1.85	3529.29	3519	20 97.4			

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	2.793E+01	2.793E+01	2.220E+01	79.48	See
Total Activity :			2.793E+01	2.793E+01			

Grand Total Activity : 2.793E+01 2.793E+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	105.	477.59	1.1994E+02
NA-22	32.	1274.53	1.6565E+01
NA-24	26.	1368.55	1.6694E+01
K-40	376.	1460.75	5.5016E+02
CR-51	169.	320.08	1.1338E+02
MN-54	61.	834.83	1.5442E+01
CO-56	40.	846.76	1.2923E+01
CO-57	207.	122.06	8.7287E+00
CO-58	39.	810.78	1.2271E+01
FE-59	43.	1099.25	2.9523E+01
CO-60	28.	1332.50	1.6142E+01
SE-75	177.	264.66	1.7351E+01
SR-85	169.	514.01	1.7233E+01
Y-88	17.	1836.06	1.6592E+01
NB-94	46.	871.09	1.4039E+01
ZRNB-95	55.	724.18	2.9776E+01
RU-103	83.	497.08	1.2633E+01
RURH-106	57.	621.93	2.3545E+02
AG-108m	55.	722.94	1.4321E+01
CD-109	197.	88.03	2.8199E+02
AG-110M	64.	657.76	1.3646E+01
SN-113	127.	391.69	1.8128E+01
TE-123m	237.	159.00	9.5693E+00
SB-124	77.	602.73	1.3328E+01
SB-125	92.	427.89	3.6263E+01
TE-125m	190.	109.27	2.7283E+03
I-131	144.	364.48	1.4457E+01
CS-134	60.	604.70	1.1963E+01
BA-140	87.	537.31	5.1348E+01
LA-140	22.	1596.21	1.7847E+01
CEPR-144	243.	133.51	1.4245E+02
EU-152	17.	1408.01	6.3854E+01
EU-154	32.	1274.51	4.8017E+01
EU-155	202.	105.31	3.7489E+01
HG-203	167.	279.20	1.2591E+01
TL-208	168.	277.36	1.6204E+02
BI-212	62.	727.18	2.0826E+02
PB-212	228.	238.63	2.4371E+01
BI-214	126.	609.31	3.7025E+01
PB-214	208.	351.92	1.5011E+02
RA-224	237.	240.99	2.7754E+02
RA-226	243.	186.10	2.5499E+02
AC-228	83.	911.21	7.2278E+01
TH-228	194.	84.37	8.6185E+02
TH-229	194.	88.47	4.0543E+01
PA-233	145.	312.17	2.6982E+01
UTH-233	222.	245.34	1.0015E+04
PA-234M	43.	1001.03	2.5978E+01
TH-234	151.	63.29	5.1508E+02
U-235	250.	185.71	1.5718E+01
NP-237	197.	86.48	8.4693E+01

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	189.	106.12	3.4837E+01
PU-239	252.	129.30	1.2628E+05
AM-241	160.	59.54	9.3558E+01
AM-243	218.	74.67	2.5457E+01

 * 222-S Laboratory Counting Room 31-OCT-1997 12:50:01.94 *

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

Worklist #: 20971
 Sample ID: S97T01901-SAM
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

C. J. Quinn

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3819.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:32:22.48 sec
 Dead Time: 1.6%

Verified by:

SLR 11/3/97

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

Sample Count Time: 31-OCT-1997 10:17:06.08
 Decayed to: 31-OCT-1997 10:17:06.08
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: CJO
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	662.19*	1126285	1.57	1324.56	1316	17	0.2		CS-137	4.286E+05
0	1323.25	124	2.67	2646.87	2639	20	43.5			
0	1594.14	19	4.25	3188.91	3176	19104.1				

Total number of lines in spectrum	3	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	1	33.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	4.286E+05	4.286E+05	0.008E+05	0.19	
Total Activity :			4.286E+05	4.286E+05			

Grand Total Activity :	4.286E+05	4.286E+05
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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	35348.	477.59	2.0927E+03
NA-22	73.	1274.53	2.4070E+01
NA-24	20.	1368.55	1.4856E+01
K-40	386.	1460.75	5.5754E+02
CR-51	26887.	320.08	1.3747E+03
MN-54	287.	834.83	3.2262E+01
CO-56	262.	846.76	3.1298E+01
CO-57	27566.	122.06	9.7085E+01
CO-58	332.	810.78	3.3932E+01
FE-59	122.	1099.25	4.8062E+01
CO-60	38.	1332.50	1.8449E+01
SE-75	29400.	264.66	2.1518E+02
SR-85	17088.	514.01	1.6657E+02
Y-88	8.	1836.06	1.1924E+01
NB-94	243.	871.09	3.0878E+01
ZRNB-95	403.	724.18	7.7005E+01
RU-103	20952.	497.08	1.8938E+02
RURH-106	6191.	621.93	2.2868E+03
AG-108m	414.	722.94	3.7474E+01
CD-109	23169.	88.03	2.9480E+03
AG-110M	10903.	657.76	1.6653E+02
SN-113	29275.	391.69	2.6282E+02
TE-123m	28718.	159.00	1.0195E+02
SB-124	6498.	602.73	1.1574E+02
SB-125	34645.	427.89	6.6717E+02
TE-125m	25244.	109.27	3.0251E+04
I-131	27689.	364.48	1.9168E+02
CS-134	6585.	604.70	1.1700E+02
BA-140	12232.	537.31	5.7728E+02
LA-140	19.	1596.21	1.6624E+01
CEPR-144	28672.	133.51	1.4974E+03
EU-152	24.	1408.01	7.5389E+01
EU-154	73.	1274.51	6.9928E+01
EU-155	25098.	105.31	4.0284E+02
HG-203	28518.	279.20	1.5809E+02
TL-208	28722.	277.36	2.0371E+03
BI-212	435.	727.18	5.2721E+02
PB-212	33246.	238.63	2.8447E+02
BI-214	6385.	609.31	2.5264E+02
PB-214	27337.	351.92	1.6837E+03
RA-224	33108.	240.99	3.1732E+03
RA-226	37069.	186.10	3.0442E+03
AC-228	232.	911.21	1.1789E+02
TH-228	23480.	84.37	9.1397E+03
TH-229	23155.	88.47	4.2713E+02
PA-233	26802.	312.17	3.5161E+02
UTH-233	31881.	245.34	1.1594E+05
PA-234M	176.	1001.03	5.0486E+01
TH-234	22057.	63.29	5.9669E+03
U-235	36493.	185.71	1.8358E+02
NP-237	23188.	86.48	8.8575E+02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	25195.	106.12	3.8748E+02
PU-239	28231.	129.30	1.2930E+06
AM-241	22204.	59.54	1.0565E+03
AM-243	23127.	74.67	2.5340E+02

 * 222-S Laboratory Counting Room 31-OCT-1997 15:52:43.23 *

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

Worklist #: 20971
 Sample ID: S97T001901-DUP
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3823.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:32:22.60 sec
 Dead Time: 1.6%

Verified by:

11/3/97

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

Sample Count Time: 31-OCT-1997 13:19:44.64
 Decayed to: 31-OCT-1997 13:19:44.64
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: CJO
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
 Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	662.18*	1130946	1.57	1324.55	1316	17	0.2		CS-137	4.304E+05
0	1322.50	124	2.92	2645.37	2636	18	40.7			

Total number of lines in spectrum	2	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	1	50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	4.304E+05	4.304E+05	0.008E+05	0.19	
Total Activity :			4.304E+05	4.304E+05			

Grand Total Activity : 4.304E+05 4.304E+05

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	35375.	477.59	2.0935E+03
NA-22	55.	1274.53	2.1155E+01
NA-24	21.	1368.55	1.5453E+01
K-40	380.	1460.75	5.5323E+02
CR-51	26857.	320.08	1.3739E+03
MN-54	277.	834.83	3.1712E+01
CO-56	296.	846.76	3.3192E+01
CO-57	27562.	122.06	9.7078E+01
CO-58	292.	810.78	3.1904E+01
FE-59	131.	1099.25	4.9660E+01
CO-60	23.	1332.50	1.4874E+01
SE-75	29688.	264.66	2.1622E+02
SR-85	17206.	514.01	1.6714E+02
Y-88	8.	1836.06	1.2047E+01
NB-94	282.	871.09	3.3166E+01
ZRNB-95	425.	724.18	7.9035E+01
RU-103	20703.	497.08	1.8826E+02
RURH-106	6223.	621.93	2.2927E+03
AG-108m	450.	722.94	3.9062E+01
CD-109	23060.	88.03	2.9411E+03
AG-110M	10974.	657.76	1.6707E+02
SN-113	29547.	391.69	2.6404E+02
TE-123m	28776.	159.00	1.0205E+02
SB-124	6496.	602.73	1.1573E+02
SB-125	34026.	427.89	6.6120E+02
TE-125m	25321.	109.27	3.0297E+04
I-131	27534.	364.48	1.9114E+02
CS-134	6289.	604.70	1.1437E+02
BA-140	12243.	537.31	5.7755E+02
LA-140	14.	1596.21	1.4778E+01
CEPR-144	28655.	133.51	1.4970E+03
EU-152	23.	1408.01	7.3029E+01
EU-154	55.	1274.51	6.1378E+01
EU-155	25203.	105.31	4.0368E+02
HG-203	28346.	279.20	1.5762E+02
TL-208	28652.	277.36	2.0347E+03
BI-212	440.	727.18	5.2978E+02
PB-212	33656.	238.63	2.8622E+02
BI-214	6373.	609.31	2.5240E+02
PB-214	27334.	351.92	1.6836E+03
RA-224	33062.	240.99	3.1711E+03
RA-226	37440.	186.10	3.0593E+03
AC-228	238.	911.21	1.1933E+02
TH-228	23229.	84.37	9.0908E+03
TH-229	23119.	88.47	4.2679E+02
PA-233	26903.	312.17	3.5226E+02
UTH-233	32548.	245.34	1.1714E+05
PA-234M	138.	1001.03	4.4972E+01
TH-234	22108.	63.29	5.9738E+03
U-235	36878.	185.71	1.8454E+02
NP-237	23073.	86.48	8.8354E+02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	25200.	106.12	3.8751E+02
PU-239	28431.	129.30	1.2976E+06
AM-241	22379.	59.54	1.0606E+03
AM-243	22914.	74.67	2.5224E+02

LABCORE Completed RadChem Report for Worklist#: 19822

Analyst: scl

Instrument: AB12

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: RR#1. AX101 Grab. Use 0.500-10-0.500mL sac

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		SR90-01 SR90-01 LIQUID		2.39E-03	2.45E-3	102.510	% Recovery
1 STD	0		SR90-01 SR90-01C LIQUID		100	8.84E+01	88.400	% Recovery
1 STD	0		SR90-01 SR90-01E LIQUID		1.00	1.30E+00	1.300	% Ct. Err
2 BLNK	0		SR90-01 SR90-01 LIQUID		1	5.24E-5	52.400e-006	uCi/mL
2 BLNK	0		SR90-01 SR90-01C LIQUID		100	9.20E+01	92.000	% Recovery
2 BLNK	0		SR90-01 SR90-01E LIQUID		1.00	1.48E+02	148.000	uCi/mL
3 BLNK/BKG	0		SR90-01 SR90-01 LIQUID		1	1.34E+00	1.340	BLNK/BKG
4 SAMPLE	S97T001899	0	SR90-01 SR90-01 LIQUID		N/A	3.04E-01	101.0e-006	uCi/mL
4 SAMPLE	S97T001899	0	SR90-01 SR90-01C LIQUID		N/A	9.32E+01	0.0e+000	% Recovery
4 SAMPLE	S97T001899	0	SR90-01 SR90-01E LIQUID		N/A	7.37E-01	0.0e+000	% Ct. Error
5 DUP	S97T001899	0	SR90-01 SR90-01 LIQUID		3.04E-1	3.17E-1	4.187	RPD
5 DUP	S97T001899	0	SR90-01 SR90-01C LIQUID		100	9.19E+01	91.900	% Recovery
5 DUP	S97T001899	0	SR90-01 SR90-01E LIQUID		1.00	7.26E-01	0.726	% Cnt Err
6 SAMPLE	S97T001900	0	SR90-01 SR90-01 LIQUID		N/A	2.63E-01	993.0e-007	uCi/mL
6 SAMPLE	S97T001900	0	SR90-01 SR90-01C LIQUID		N/A	9.42E+01	0.0e+000	% Recovery
6 SAMPLE	S97T001900	0	SR90-01 SR90-01E LIQUID		N/A	7.87E-01	0.0e+000	% Ct. Error
7 DUP	S97T001900	0	SR90-01 SR90-01 LIQUID		2.63E-1	2.16E-1	19.624	RPD
7 DUP	S97T001900	0	SR90-01 SR90-01C LIQUID		100	9.35E+01	93.500	% Recovery
7 DUP	S97T001900	0	SR90-01 SR90-01E LIQUID		1.00	8.61E-01	0.861	% Cnt Err
8 SAMPLE	S97T001901	0	SR90-01 SR90-01 LIQUID		N/A	2.28E-01	987.0e-007	uCi/mL
8 SAMPLE	S97T001901	0	SR90-01 SR90-01C LIQUID		N/A	9.22E+01	0.0e+000	% Recovery
8 SAMPLE	S97T001901	0	SR90-01 SR90-01E LIQUID		N/A	8.42E-01	0.0e+000	% Ct. Error
9 DUP	S97T001901	0	SR90-01 SR90-01 LIQUID		2.28E-1	2.61E-1	13.497	RPD
9 DUP	S97T001901	0	SR90-01 SR90-01C LIQUID		100	9.08E+01	90.800	% Recovery
9 DUP	S97T001901	0	SR90-01 SR90-01E LIQUID		1.00	7.93E-01	0.793	% Cnt Err

Final page for worklist# 19822

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date 12/29/97

LABCORE Data Entry Template for Worklist# 19822

Analyst: SL Instrument: AB00 #12 Book# 86B56

Method: LA-220-101 Rev/Mod E-2

Worklist Comment: RR#1. AX101 Grab. Use 0.500-10-0.500mL sac

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@SR90-01	LIQUID		
2 BLNK			@SR90-01	LIQUID		
3 BLNK/BKG			@SR90-01	LIQUID		
4 SAMPLE	S97T001899 0		@SR90-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
5 DUP	S97T001899 0		@SR90-01	LIQUID		
6 SAMPLE	S97T001900 0		@SR90-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
7 DUP	S97T001900 0		@SR90-01	LIQUID		
8 SAMPLE	S97T001901 0		@SR90-01	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
9 DUP	S97T001901 0		@SR90-01	LIQUID		

Final page for worklist # 19822

SL
Analyst Signature 8-18-97
Date

Joe Hogan
Analyst Signature 8-19-97
Date
Shirley L. Brown 8/19/97

Data Entry Comments: The primary dilution was heated to assist
the dissolution process. sac

WORKBOOK PAGE: STD1

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

				STANDARD
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000
STD	TOTAL COUNTS (TC)	22682	GROSS WEIGHT (W2)	7.6628
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.5744
19822	BACKGROUND in cpm (BKG)	3.5	NET WEIGHT (W3)	0.0884
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	11.00
@SR90-01	DILUTION FACTOR (DF)	1		
Matrix	DIGEST DILUTION FACTOR (DDF)	1		
LIQUID	SAMPLE COUNT RATE (Rs)	2264.70	Sr-90 EFFICIENCY FACTO (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.13	Y-90 EFFICIENCY FACTOR (C2)	0.4660
97003965	TIME OF SEPARATION (ST)	11:45	Rmax	N/A
Refund	DATE OF SEPARATION (SD)	08/18/97	DETECTION LIMIT (Ld)	2.34
0	TIME OF COUNT (TOC)	22:45	Sr-89/90 CONC. in µCi/L	2.4544E+00
Sample Reps	DATE OF COUNT (DOC)	08/18/97		
N/A	STANDARD BOOK #	86B56		
Sample	STANDARD VALUE in µCi/mL	2.3853E-03		
WL19822				
Instrument Code				
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)			
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0			
SEH	RS*DF*DDF*1000/((C1+C2)*(1-e to the power of ((-natural log 2)/(64.2*DT)))*SS*REC*2220000)			
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))			
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			
SCL	NOTE: Expected weight = CVA * 0.1			
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
08/19/97	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
Analysis Date				
08/18/97	Sr-89/90 CONCENTRATION	2.45E-03	µCi/mL	
Analysis Time				
03:10 PM	RELATIVE COUNTING ERROR	1.3%		
Sample Point				
AX-101 GRAB	PERCENT CARRIER RECOVERY	88.4%		
				DETECTION LEVEL
				2.54E-06 µCi/L

Analyst:	SCL	Date:	19-Aug-97
Signature of Chemist:	SAC	Date:	19 Aug 97

STANDARD.WB1 REV 2.0

22010N/L

WORKBOOK PAGE: BLANK2

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

BLNK				
Detector Number	12	CARRIER ADDED in mL	(CVA)	1.000
BLNK	TOTAL COUNTS (TC)	47	GROSS WEIGHT (W2)	7.6816
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.5896
19822	BACKGROUND in cpm (BKG)	3.5	NET WEIGHT (W3)	0.0920
Test Code	SAMPLE VOLUME in mL (SS)	0.500	DELTA TIME (HOURS) (DT)	11.22
@SR90-01	DILUTION FACTOR (DF)	21		
Matrix	DIGEST DILUTION FACTOR (DDF)	1		
LIQUID	SAMPLE COUNT RATE (Rs)	1.20	SR-90 EFFICIENCY FACTOR (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.13	Y-90 EFFICIENCY FACTOR (C2)	0.4660
97003965	TIME OF SEPARATION (ST)	11:45	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)	08/18/97	DETECTION LIMIT (Ld)	2.34
0	TIME OF COUNT (TOC)	22:58	Sr-89/90 CONC in µCi/L	5.2376E-02
Sample Rep	DATE OF COUNT (DOC)	08/18/97		
N/A				
Sample #				
WL19822				
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)			
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<Lc and RS>=0 or Replace RS with Lc if RS<0			
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)			
SEH	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			
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
Date/Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
08/19/97				
Analysis Date				
08/18/97	Sr-89/90 CONCENTRATION	5.24E-05	µCi/mL	DETECTION LEVEL 1.02E-04 µCi/mL
Analysis Time				
03:10 PM	RELATIVE COUNTING ERROR	147.9%		
Sample Point				
AX-101 GRAB	PERCENT CARRIER RECOVERY	92.0%		

Analyst:	SCL	Date:	19-Aug-97
Signature of Chemist:	SAC	Date:	19 Aug 97

BLANK.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM4

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

					SAMPLE
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS (TC)	70861	GROSS WEIGHT	(W2)	7.6059
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT	(W1)	7.5127
19822	BACKGROUND in cpm (BKG)	3.5	NET WEIGHT	(W3)	0.0932
Test Code	SAMPLE VOLUME in mL (SS)	0.500	DELTA TIME (HOURS)	(DT)	11.48
@SR90-01	DILUTION FACTOR (DF)	21			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	7082.60	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.13	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
97003965	TIME OF SEPARATION (ST)	11:45	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)	08/18/97	DETECTION LIMIT	(Ld)	2.34
0	TIME OF COUNT (TOC)	23:14	Sr-89/90 CONC in µCi/L		3.0438E+02
Sample Prep	DATE OF COUNT (DOC)	08/18/97			
N/A					
Sample #					
S97T001899					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*22200000				
SEH	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				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
08/19/97					
Analysis Date					
08/18/97	Sr-89/90 CONCENTRATION	3.04E-01	µCi/mL	DETECTION LEVEL	
Analysis Time					
03:10 PM	RELATIVE COUNTING ERROR	0.7%	1.01E-04 µCi/mL		
Sample Point					
AX-101 GRAB	PERCENT CARRIER RECOVERY	93.2%			

Analyst:	SCL	Date:	19-Aug-97
Signature of Chemist:	SAC	Date:	19-Aug-97

SAMPLE:WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP5

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

					DUP
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS (TC)	72956	GROSS WEIGHT (W2)		7.6495
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)		7.5576
19822	BACKGROUND in cpm (BKG)	3.5	NET WEIGHT (W3)		0.0919
Test Code	SAMPLE VOLUME in mL (SS)	0.500	DELTA TIME (HOURS) (DT)		11.80
@SR90-01	DILUTION FACTOR (DF)	21			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	7292.10	SR-90 EFFICIENCY FACTOR (C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.13	Y-90 EFFICIENCY FACTOR (C2)		0.4660
97003965	TIME OF SEPARATION (ST)	11:45	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)	08/18/97	DETECTION LIMIT (Ld)		2.34
0	TIME OF COUNT (TOC)	23:33	Sr-89/90 CONC in µCi/L		3.1688E+02
Sample Prep	DATE OF COUNT (DOC)	08/18/97			
N/A					
Sample #					
S97T001899					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000				
SEH	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				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
08/19/97					
Analysis Date					DETECTION LEVEL 1.02E-04 µCi/mL
08/18/97	Sr-89/90 CONCENTRATION	3.17E-01	µCi/mL		
Analysis Time					
03:10 PM	RELATIVE COUNTING ERROR	0.7%			
Sample Point					
AX-101 GRAB	PERCENT CARRIER RECOVERY	91.9%			

Analyst:	SCL	Date:	19-Aug-97
Signature of Chemist:	SAC	Date:	19 Aug 97

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM6

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

					SAMPLE
Sample Type	DETECTOR NUMBER	12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS (TC)	62124	GROSS WEIGHT (W2)		7.6067
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)		7.5125
19822	BACKGROUND in cpm (BKG)	3.5	NET WEIGHT (W3)		0.0942
Test Code	SAMPLE VOLUME in mL (SS)	0.500	DELTA TIME (HOURS) (DT)		11.92
@SR90-01	DILUTION FACTOR (DF)	21			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	6208.90	SR-90 EFFICIENCY FACTOR (C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.13	Y-90 EFFICIENCY FACTOR (C2)		0.4660
97003965	TIME OF SEPARATION (ST)	11:50	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)	08/18/97	DETECTION LIMIT (Ld)		2.34
0	TIME OF COUNT (TOC)	23:45	Sr-89/90 CONC in µCi/L		2.6293E+02
Sample Prep	DATE OF COUNT (DOC)	08/18/97			
N/A					
Sample #					
S97T001900					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2)*(1-e to the power of ((-natural log 2)/64.2*DT)))**SS*REC*2220000)				
SEH	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				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
08/19/97					
Analysis Date					DETECTION LEVEL 9.93E-05 µCi/mL
08/18/97	Sr-89/90 CONCENTRATION	2.63E-01	µCi/mL		
Analysis Time					
03:10 PM	RELATIVE COUNTING ERROR	0.8%			
Sample Point					
AX-101 GRAB	PERCENT CARRIER RECOVERY	94.2%			

Analyst:	SCL	Date:	19-Aug-97
Signature of Chemist:	SAC	Date:	19 Aug 97

SAMPLE:WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP7

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

					DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS	(TC)	51966	GROSS WEIGHT	(W2) 7.6040
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.5105
19822	BACKGROUND in cpm	(BKG)	3.5	NET WEIGHT	(W3) 0.0935
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT) 14.63
@SR90-01	DILUTION FACTOR	DF	21		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	5193.10	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.13	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
97003965	TIME OF SEPARATION	(ST)	11:50	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	08/18/97	DETECTION LIMIT	(Ld) 2.34
0	TIME OF COUNT	(TOC)	02:28	Sr-89/90 CONC in $\mu\text{Ci/L}$	2.1616E+02
Sample Prep	DATE OF COUNT	(DOC)	08/19/97		
N/A					
Sample #					
S97T001900					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in $\mu\text{Ci/L}$ Replace RS with RMAX if $RS \leq Lc$ and $RS > 0$ or Replace RS with Lc if $RS < 0$				
Prepared By	$RS * DF * DDF / ((C1 + C2 * (1 - e^{-(\ln(2) / 64.2 * DT)))) * SS * REC * 2220000$				
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery $((W2 - W1) / (CVA * 0.1000))$				
Chemist	Relative Counting Error = $(\text{The Square Root of } (TC + BKG * CT) / (TC - BKG * CT)) * 1.96$				
SAC	Percent Carrier Recovery = $(\text{Net Weight} / \text{Expected weight}) * 100$				
Analyst	NOTE: Expected weight = $CVA * 0.1$				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = $((DOC - SD) * 24) + (TOC - ST) / 100$				
08/19/97					
Analysis Date					DETECTION LEVEL 9.76E-05 $\mu\text{Ci/mL}$
08/18/97	Sr-89/90 CONCENTRATION	2.16E-01	$\mu\text{Ci/mL}$		
Analysis Time					
03:10 PM	RELATIVE COUNTING ERROR	0.9%			
Sample Point					
AX-101 GRAB	PERCENT CARRIER RECOVERY	93.5%			

Analyst:	SCL	Date:	19-Aug-97
Signature of Chemist:	SAC	Date:	19-Aug-97

SAMPLE:WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM8

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

					SAMPLE
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS (TC)	54250	GROSS WEIGHT	(W2)	7.7115
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT	(W1)	7.6193
19822	BACKGROUND in cpm (BKG)	3.5	NET WEIGHT	(W3)	0.0922
Test Code	SAMPLE VOLUME in mL (SS)	0.500	DELTA TIME (HOURS)	(DT)	14.98
@SR90-01	DILUTION FACTOR (DF)	21			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	5421.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.13	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
97003965	TIME OF SEPARATION (ST)	11:50	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)	08/18/97	DETECTION LIMIT	(Ld)	2.34
0	TIME OF COUNT (TOC)	02:49	Sr-89/90 CONC in µCi/L		2.2815E+02
Sample Prep	DATE OF COUNT (DOC)	08/19/97			
N/A					
Sample #					
S97T001901					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000				
SEH	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))*1.95				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
08/19/97					
Analysis Date					DETECTION LEVEL 9.87E-05 µCi/mL
08/18/97	Sr-89/90 CONCENTRATION	2.28E-01	µCi/mL		
Analysis Time					
03:10 PM	RELATIVE COUNTING ERROR	0.8%			
Sample Point					
AX-101 GRAB	PERCENT CARRIER RECOVERY	92.2%			

Analyst:	SCL	Date:	19-Aug-97
Signature of Chemist:		SAC	Date: 19 Aug 97

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP9

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

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	61261	GROSS WEIGHT	(W2)	7.6178
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5270
19822	BACKGROUND in cpm	(BKG)	3.5	NET WEIGHT	(W3)	0.0908
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	15.17
@SR90-01	DILUTION FACTOR	DF	21			
Matrix	DIGEST DILUTION FACTOR (DDF)		1			
LIQUID	SAMPLE COUNT RATE (Rs)		6122.60	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.13	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
97003965	TIME OF SEPARATION	(ST)	11:50	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	08/18/97	DETECTION LIMIT	(Ld)	2.34
0	TIME OF COUNT	(TOC)	03:00	Sr-89/90 CONC in µCi/L		2.6121E+02
Sample Prep	DATE OF COUNT	(DOC)	08/19/97			
N/A						
Sample #						
S97T001901						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
SEH	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					
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
08/19/97						
Analysis Date						DETECTION LEVEL 1.00E-04 µCi/mL
08/18/97	Sr-89/90 CONCENTRATION	2.61E-01		µCi/mL		
Analysis Time						
03:10 PM	RELATIVE COUNTING ERROR	0.8%				
Sample Point						
AX-101 GRAB	PERCENT CARRIER RECOVERY	90.8%				

Analyst:	SCL	Date:	19-Aug-97
Signature of Chemist:	SAC	Date:	19-Aug-97

SAMPLE:WB1 REV 2.0

22010NML

LABCORE Completed RadChem Report for Worklist#: 19716

Analyst: knt

Instrument: AB15

Book# 75B56

Method: LA-953704 Rev/Mod B-2

Worklist Comment: @AM24101 FOR AX-101

RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@AM24101 AM24101 LIQUID		1.03E-04	1.04E-4	100.971	% Recovery
1 STD	0		@AM24101 AM24101T LIQUID		100.	8.62E+01	86.200	% Recovery
1 STD	0		@AM24101 AM24101E LIQUID		1.0	1.85E+00	1.850	% Ct Error
2 BLNK	0		@AM24101 AM24101 LIQUID		1	<3.39E-4		uCi/mL
2 BLNK	0		@AM24101 AM24101T LIQUID		100.0	8.39E+01	83.900	% Recovery
2 BLNK	0		@AM24101 AM24101E LIQUID		1.0	1.00E+02	100.000	% Ct Error
3 SAMPLE	S97T001899	0	@AM24101 AM24101 LIQUID		N/A	<3.36E-04	336.0e-006	uCi/mL
3 SAMPLE	S97T001899	0	@AM24101 AM24101E LIQUID		N/A	1.00E+02	0.0e+000	% Ct Error
3 SAMPLE	S97T001899	0	@AM24101 AM24101T LIQUID		N/A	8.52E+01	0.0e+000	% Recovery
4 DUP	S97T001899	0	@AM24101 AM24101 LIQUID		<3.36E-4	<3.15E-4		RPD
4 DUP	S97T001899	0	@AM24101 AM24101T LIQUID		100.0	8.98E+01	89.800	% Recovery
4 DUP	S97T001899	0	@AM24101 AM24101E LIQUID		1.0	9.26E+00	9.260	% Ct Error
5 SPK	S97T001899	0	@AM24101 AM24101 LIQUID		1.03E-04	1.24E-04	120.388	% Recovery
6 SAMPLE	S97T001900	0	@AM24101 AM24101 LIQUID		N/A	<2.51E-04	251.0e-006	uCi/mL
6 SAMPLE	S97T001900	0	@AM24101 AM24101E LIQUID		N/A	8.90E+00	0.0e+000	% Ct Error
6 SAMPLE	S97T001900	0	@AM24101 AM24101T LIQUID		N/A	1.01E+02	0.0e+000	% Recovery
7 DUP	S97T001900	0	@AM24101 AM24101 LIQUID		<2.51E-4	<3.17E-4		RPD
7 DUP	S97T001900	0	@AM24101 AM24101T LIQUID		100.0	8.40E+01	84.000	% Recovery
7 DUP	S97T001900	0	@AM24101 AM24101E LIQUID		1.0	1.00E+02	100.000	% Ct Error
8 SAMPLE	S97T001901	0	@AM24101 AM24101 LIQUID		N/A	<4.88E-04	488.0e-006	uCi/mL
8 SAMPLE	S97T001901	0	@AM24101 AM24101E LIQUID		N/A	1.00E+02	0.0e+000	% Ct Error
8 SAMPLE	S97T001901	0	@AM24101 AM24101T LIQUID		N/A	9.50E+01	0.0e+000	% Recovery
9 DUP	S97T001901	0	@AM24101 AM24101 LIQUID		<4.88E-4	<6.66E-4		RPD
9 DUP	S97T001901	0	@AM24101 AM24101T LIQUID		100.0	7.40E+01	74.000	% Recovery
9 DUP	S97T001901	0	@AM24101 AM24101E LIQUID		1.0	1.00E+02	100.000	% Ct Error

Final page for worklist# 19716

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

Validated

LABCORE Data Entry Template for Worklist# 19716

Analyst: KNT Instrument: AM01 15 Book# 75B56

Method: LA-953-104 Rev/Mod B-0

Worklist Comment: @AM24101 FOR AX-101

RTS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S97T001899 0		@AM24101	LIQUID	97000510	AX-101 GRAB
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S97T001899 0		@AM24101	LIQUID		
5 SPK	S97T001899 0		@AM24101	LIQUID		
6 SAMPLE	S97T001900 0		@AM24101	LIQUID	97000510	AX-101 GRAB
Analytes Requested: AM24101 , AM24101E, AM24101T						
7 DUP	S97T001900 0		@AM24101	LIQUID		
8 SAMPLE	S97T001901 0		@AM24101	LIQUID	97000510	AX-101 GRAB
Analytes Requested: AM24101 , AM24101E, AM24101T						
9 DUP	S97T001901 0		@AM24101	LIQUID		

Final page for worklist #19716

Kim Thomas 8-11-97
Analyst Signature Date

Lee Hogan 8-12-97
Analyst Signature Date
MCS 8/12/97

Data Entry Comments: S97T001899 SPK had 1ml. of Limbus 75B56 added to it.

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	AUG-11-97	Am 241 AEA Frac. (C241)	0.499
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.47
Worklist	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
19716	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	3627
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.03
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	48.01
LIQUID	Detector Number	15	Am 243 cpm	45.28
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
97003854	Standard Book No	75B56	AEA Count Time (min)	480
Re-run	Standard Value in $\mu\text{Ci/mL}$	1.030E-04	Am 241 $\mu\text{Ci/L}$ =	1.0397E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 1.2088E-02

Sample Prep	N/A
Sample Number	WL 19716
Instrument Code	WB26872
Prepared By	SEH
Chemist	JFR
Analyst	KNT
Date Complete	08/12/97
Analysis Date	08/11/97
Analysis Time	11:05 AM
Sample Point	AX-101 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 $\mu\text{Ci/mL}$ =	1.04E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$
Relative Counting Error =	1.9%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 $\mu\text{Ci/mL}$	< 1.21E-05	1.21E-05
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	86.2%	1.21E-05

Analyst:	KNT	Date:	08/12/97
Signature of Chemist:	JFR	Date:	12 Aug 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	AUG-11-97	Am 241 AEA Frac. (C241)	0
BLNK	Sample Volume in mL (SS)	0.200	Am 243 AEA Frac. (C243)	0.947
Work List	Sample D.F. (DF)	11	Cm 243/244 AEA Frac. (Cm)	0
19716	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1753
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.03
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	15	Am 243 cpm	47.11
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
97003854			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 3.3891E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 3.3891E-01
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))			
WL 19716	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))] * 1.98 * 100			
WB26872	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.			
SEH	Am 241 $\mu\text{Ci/mL}$ =	< 3.39E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Chemist	Relative Counting Error =	100.0%		
JFR				
Analyst	NOTE: Cm-243/244 Result is a LESS THAN Value.			
KNT	Am 241 $\mu\text{Ci/mL}$ =	< 3.39E-04	Am 241	
Date Complete	Cm 243/244 $\mu\text{Ci/mL}$ =	< 3.39E-04	3.39E-04	
08/12/97	Relative Counting Error =	100.0%	Cm 243/244	
Analysis Date	Am 243 Tracer Recovery =	83.9%	3.39E-04	
08/11/97				
Analyst Time				
11:05 AM				
Sample Point				
AX-101 GRAB				

Analyst:	JFR	Date:	08/12/97
Signature of Chemist:	<i>John Relyea</i>	Date:	12 Aug 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

		LIQUID / SOLI		SAMPLE
Type	Date Counted	AUG-11-97	Am 241 AEA Frac. (C241)	0
SAMPLE	Sample Volume in mL (SS)	0.200	Am 243 AEA Frac. (C243)	0.942
Work List	Sample D.F. (DF)	11	Cm 243/244 AEA Frac. (Cm)	0
19716	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1789
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.03
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	15	Am 243 cpm	42.89
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
97003854			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 3.3563E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 3.3563E-01
Sample Prep				
NAI				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S97T001899	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			
WB26872	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.			
SEH	Am 241 $\mu\text{Ci/mL}$ =	< 3.36E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Chemist	Relative Counting Error =	100.0%		
JFR				
Analyst	NOTE: Cm-243/244 Result is a LESS THAN Value.			
KNT	Cm 243/244 $\mu\text{Ci/mL}$	< 3.36E-04	Am 241	
Date Complete	Relative Counting Error =	100.0%	3.36E-04	
08/12/97	Am 243 Tracer Recovery =	85.2%	Cm 243/244	
Analysis Date			3.36E-04	
08/11/97				
Analysis Time				
11:05 AM				
Sample Point				
AX-101 GRAB				

Analyst	KNT	Date:	08/12/97
Signature of Chemist:	JFR	Date:	12 Aug 97
SAMPLE.WB1 REV 1.2	953103ML		

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	AUG-11-97	Am 241 AEA Frac. (C241)	0.017
DUP	Sample Volume in mL (SS)	0.200	Am 243 AEA Frac. (C243)	0.951
Work List	Sample D.F. (DF)	11	Cm 243/244 AEA Frac. (Cm)	0
19716	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1868
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.03
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0.95
LIQUID	Detector Number	15	Am 243 cpm	52.34
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
97003854			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 3.1537E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 3.1537E-01
Sample Prop				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S977001899	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			
WB26872	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.			
SEH	Am 241 $\mu\text{Ci/mL}$ =	< 3.15E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Chemist	Relative Counting Error =	9.3%		
KNT				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
08/12/97	Cm 243/244 $\mu\text{Ci/mL}$	< 3.15E-04	Am 241	3.15E-04
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	3.15E-04
08/11/97	Am 243 Tracer Recovery =	89.8%		
Analysis Time				
11:05 AM				
Sample Point				
AX-101 GRAB				

Analyst:	KNT	Date:	08/12/97
Signature of Chemist:	JFR	Date:	12 Aug 97
SAMPLE.WB1 REV 1.2	953103ML		

Am-241 : LA-953-103(B-0) or LA-953-104(B-0)

Spiked Sample

		SPIKE
Type	Tracer Book Number (Tr BN)	134B43
SPK	Activity of Am243 Tracer in dpm/mL (SPKA)	1087.000
Work List	Tracer Volume in mL (SPKV)	0.200
19716	Volume of Sample in mL (SS)	0.200
Test Code	Sample Dilution Factor (DF)	11.000
@AM24101	Digest Dilution Factor (DDF)	1.000
Matrix	Am-241 AEA FRACTION (C241)	0.548
LIQUID	Am-243 AEA FRACTION (C243)	0.433
Batch Number	Spike Volume in mL (SMSS)	1.000
97003854	Spike Dilution Factor (SMDF)	1.000
Rerun	Spike Book Number (Spk BN)	75B56
0	Spike Value in $\mu\text{Ci/mL}$ (SMV)	0.00010
Sample Prep	Am 241 $\mu\text{Ci/mL}$ in Sample Form (Am1)	<3.36E-4
N/A	Am 241 $\mu\text{Ci/mL}$ in Spiked Sample (Am2)	6.8165E-03
Sample Number	Count Time in Minutes	480.000
S97T001899		
Instrument Code		
WB26872		
Prepared By	Am 241 $\mu\text{Ci/mL}$ = $\frac{C241 * SPKA * SPKV * DF * DDF}{C243 * SS * (2220000 \text{ dpm}/\mu\text{Ci})}$	
SEH	in Spiked Sample	
Chemist		
JFR		
Analyst	QC Actual ($\mu\text{Ci/mL}$) = SMV	
KNT	QC Found ($\mu\text{Ci/mL}$) = $[(\text{Am2}-\text{Am1}) * (\text{SMDF}/\text{SMSS}) * (\text{DF} * \text{DDF}/\text{SS})]$	
Date Complete	Percent Spike Recovery = $(\text{QC Found}/\text{QC Actual}) * 100$	
08/12/97		
Analysis Date		
08/11/97		
Analysis Time		
11:05 AM	QC Actual ($\mu\text{Ci/mL}$) =	1.03E-04
Sample Point	QC Found ($\mu\text{Ci/mL}$) =	1.24E-04
AX-101 GRAB	Percent Spike Recovery =	120.3%

NOTE: The sample dpm was LESS THAN the detection limit (Ld), therefore zero (0) was used for Sample $\mu\text{Ci/mL}$ in the QC Found calculation.

Data Entry by: *John Relyea* KNT Date: 08/12/97
12 Aug 97

WORKBOOK PAGE: SAM6

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

SAMPLE

Type	Date Counted	AUG-11-97	Am 241 AEA Frac. (C241)	0.02
SAMPLE	Sample Volume in mL (SS)	0.200	Am 243 AEA Frac. (C243)	1.075
Work List	Sample D.F. (DF)	11	Cm 243/244 AEA Frac. (Cm)	0
19716	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1865
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.03
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	1.03
LIQUID	Detector Number	15	Am 243 cpm	54.54
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
97003854			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 2.5051E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 2.5051E-01
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))			
S97T001900	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			
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By				
SEH	NOTE: Am-241 Result is a LESS THAN Value.			
Chemist	Am 241 $\mu\text{Ci/mL}$ =	< 2.51E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$	
JFR	Relative Counting Error =	8.9%		
Analyst				
KNT	NOTE: Cm-243/244 Result is a LESS THAN Value.			
Date Complete	Cm 243/244 $\mu\text{Ci/mL}$	< 2.51E-04	Am 241	
08/12/97	Relative Counting Error =	100.0%	2.51E-04	
Analysis Date	Am 243 Tracer Recovery =	101.3%	Cm 243/244	
08/11/97			2.51E-04	
Analysis Time				
11:05 AM				
Sample Point				
AX-101 GRAB				

Analyst:	JFR	KNT	Date:	08/12/97
Signature of Chemist:	<i>John Relyea</i>	JFR	Date:	10 Aug 97

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP7

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0))

LIQUID / SOLI

DUP

Type	Date Counted	AUG-11-97	Am 241 AEA Frac. (C241)	0
DUP	Sample Volume in mL (SS)	0.200	Am 243 AEA Frac. (C243)	1.012
Work List	Sample D.F. (DF)	11	Cm 243/244 AEA Frac. (Cm)	0
19716	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1643
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.03
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	15	Am 243 cpm	46.36
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
97003854			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 3.1666E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 3.1666E-01
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))			
S977001900	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			
WB26872	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.			
SEH	JFR	Am 241 $\mu\text{Ci/mL}$ =	< 3.17E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$
Chemist	KNT	Relative Counting Error =	100.0%	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
08/12/97		Cm 243/244 $\mu\text{Ci/mL}$ =	< 3.17E-04	Am 241 3.17E-04
Analysis Date		Relative Counting Error =	100.0%	Cm 243/244 3.17E-04
08/11/97		Am 243 Tracer Recovery =	84.0%	
Analysis Time				
11:05 AM				
Sample Point				
AX-101 GRAB				

Analyst:	KNT	Date:	08/12/97
Signature of Chemist:	JFR	Date:	12 Aug 97
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: SAM8

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0)

LIQUID / SOLI

SAMPLE

Type	Date Counted	AUG-11-97	Am 241 AEA Frac. (C241)	0	
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	1.066	
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0	
19716	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1763	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.03	
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0	
LIQUID	Detector Number	15	Am 243 cpm	51.98	
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0	
97003854			AEA Count Time (min)	480	
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 4.8839E-01	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 4.8839E-01	
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))				
S97T001901	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				
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SEH					
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 4.88E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	100.0%			
KNT					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
08/12/97	Cm 243/244 $\mu\text{Ci/mL}$	< 4.88E-04	Am 241	4.88E-04	
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244		
08/11/97	Am 243 Tracer Recovery =	95.0%		4.88E-04	
Analysis Time					
11:05 AM					
Sample Point					
AX-101 GRAB					

Analyst:	KNT	Date:	08/12/97
Signature of Chemist:	JFR	Date:	12 Aug 97

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP9

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(B-0))

LIQUID / SOLI

DUP

Type	Date Counted	AUG-11-97	Am 241 AEA Frac. (C241)	0
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	1.004
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	
19716	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1458
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	134B43	Background in cpm (Bkg)	0.03
Matrix	Am-243 Tracer Value (dpm/mL)	1087	Am 241 cpm	0
LIQUID	Detector Number	15	Am 243 cpm	38.24
Batch Number	Detector Efficiency (DetEff)	0.3032	Cm 243/244 cpm	0
97003854			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 6.6581E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 6.6581E-01
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))			
S97T001901	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			
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By				
SEH	NOTE: Am-241 Result is a LESS THAN Value.			
Chemist	NOTE: Am-241 Result is a LESS THAN Value.		DETECTION LEVELS in $\mu\text{Ci/mL}$	
JFR	Am 241 $\mu\text{Ci/mL}$ = < 6.66E-04			
Analyst	Relative Counting Error = 100.0%			
KNT				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241	
08/12/97	Cm 243/244 $\mu\text{Ci/mL}$ < 6.66E-04		6.66E-04	
Analysis Date	Relative Counting Error = 100.0%		Cm 243/244	
08/11/97	Am 243 Tracer Recovery = 74.0%		6.66E-04	
Analysis Time				
11:05 AM				
Sample Point				
AX-101 GRAB				

Analyst:	KNT	Date:	08/12/97
Signature of Chemist:	JFR	Date:	12 Aug 97
SAMPLE.WB1 REV 1.2	953103ML		

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL19716-STD
 File ID: 13a1302.CNF

Counted on: 8/11/97 @19:14
 Detector: AEA13
 Geometry number: 1
 Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	638.4	638.4	299.058	300.919	14.000	7.522	7.000	0.937
2	562.6	562.6	254.055	254.010	12.000	6.903	6.000	0.782
3	13.0	13.0	50.524	49.283	214.000	304.310	107.000	138.876
4?	0.0	0.1	31.432	31.432	0.000	0.100	0.000	0.100

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	Am241	0.499	5.479	5.462	0.017	0.03	48.01	1.3	221.4	0.997E-04
	Pu238		5.487	5.462	0.025				289.0	0.130E-03
2	Am243	0.470	5.266	5.246	0.020	0.03	45.28	1.5	198.3	0.893E-04
3	U 238	0.022	4.184	4.304	-0.120	1.40	2.08	8.4	11.7	0.527E-05
	U 235		4.386	4.304	0.082				15.8	0.712E-05
4	????			4.222			0.00	7492.		
Totals:			0.991	<--invalid peaks only-->			95.37			

DETECTOR CALIBRATION

Energy(MEV) = 4.078 + (0.0046)*Channel
 Energy range (MeV): 4.078 TO 6.433
 Efficiency = 0.2307 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	46224.0	100.000
Smoothed	46225.4	100.003
Composite fit	45786.4	99.053
Residuals	437.6	0.947

Analyzed by:

GL

[illegible]

Row	Data	Dump	for	AEA	Spectrum:	13a1302.CNF				
1	0.	0.	5.	5.	8.	6.	11.	6.	7.	5.
11	9.	10.	4.	7.	7.	6.	8.	6.	12.	13.
21	8.	9.	11.	5.	8.	8.	9.	13.	10.	9.
31	11.	11.	8.	10.	7.	9.	10.	9.	7.	13.
41	7.	6.	9.	13.	8.	14.	14.	9.	18.	16.
51	11.	12.	10.	9.	8.	11.	12.	10.	12.	14.
61	11.	9.	9.	20.	12.	9.	11.	12.	13.	13.
71	9.	10.	9.	18.	17.	21.	15.	15.	13.	10.
81	13.	15.	20.	14.	11.	17.	17.	15.	13.	9.
91	15.	17.	11.	19.	19.	22.	20.	13.	18.	20.
101	23.	11.	14.	26.	17.	23.	18.	17.	16.	29.
111	18.	27.	16.	16.	12.	21.	23.	16.	32.	21.
121	26.	22.	19.	26.	22.	32.	22.	19.	23.	32.
131	33.	38.	19.	14.	22.	29.	36.	47.	33.	26.
141	26.	31.	23.	40.	28.	38.	28.	39.	29.	39.
151	36.	41.	29.	45.	36.	38.	29.	40.	61.	40.
161	44.	51.	43.	42.	61.	39.	53.	61.	53.	60.
171	62.	63.	64.	62.	60.	53.	58.	63.	62.	66.
181	74.	88.	68.	62.	83.	82.	83.	85.	90.	90.
191	95.	101.	84.	116.	111.	116.	118.	121.	108.	122.
201	109.	132.	133.	155.	125.	131.	144.	157.	163.	164.
211	159.	158.	174.	190.	182.	195.	231.	206.	232.	205.
221	235.	229.	238.	254.	250.	254.	279.	288.	272.	329.
231	339.	330.	345.	376.	399.	391.	426.	421.	440.	479.
241	476.	474.	548.	578.	567.	582.	627.	610.	631.	648.
251	662.	704.	707.	686.	718.	734.	677.	588.	417.	325.
261	236.	244.	217.	237.	214.	215.	223.	259.	207.	229.
271	239.	240.	240.	269.	242.	249.	287.	306.	309.	323.
281	311.	336.	416.	385.	420.	419.	506.	456.	494.	497.
291	549.	556.	559.	570.	586.	627.	583.	620.	662.	642.
301	646.	602.	565.	442.	284.	184.	154.	128.	92.	75.
311	55.	43.	29.	23.	19.	12.	5.	2.	0.	0.
321	1.	0.	0.	0.	0.	0.	0.	1.	2.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
341	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
351	2.	0.	1.	1.	0.	0.	1.	1.	0.	1.
361	0.	0.	1.	2.	0.	0.	0.	0.	1.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	1.	0.								

222-S Analytical Laboratory
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Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
WL19716-BLK
File ID: 14a1433.CNF

Counted on: 8/11/97 @19:16
Detector: AEA14
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	572.4	572.4	247.470	247.470	28.000	26.390	14.000	3.765
2	11.3	11.3	143.745	143.123	46.000	132.250	23.000	46.295
3?	2.4	2.4	129.073	128.477	4.000	0.144	2.000	2.687
4	7.6	7.6	103.594	103.142	8.000	18.826	4.000	2.137

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	Pu239	0.947	5.147	5.223	-0.076	47.11	1.3	205.4	0.925E-04
	Am243		5.266	5.223	0.043			207.4	0.934E-04
2	Np237	0.026	4.640	4.743	-0.103	1.29	20.7	93.8	0.423E-04
	Np237		4.769	4.743	0.026			6.5	0.291E-05
3		????		4.676		0.01	862.		
4	Np237	0.013	4.640	4.559	0.081	0.66	15.6	48.1	0.217E-04
Totals:			0.986	<--valid peaks only-->			49.07		

DETECTOR CALIBRATION

Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.2294 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23887.0	100.000
Smoothed	23894.0	100.029
Composite fit	23558.4	98.625
Residuals	328.6	1.375

Analyzed by:

GL

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 4298.1

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Raw Data Dump for AEA Spectrum: 14a1433.CNF					HNF-SD-WM-DP-268, REV.0				
1	0.	0.	9.	4.	5.	3.	0.	3.	2.
11	5.	2.	3.	0.	2.	1.	3.	8.	4.
21	5.	4.	2.	4.	2.	3.	7.	5.	3.
31	6.	5.	5.	2.	9.	5.	6.	5.	1.
41	4.	4.	4.	3.	2.	2.	4.	2.	4.
51	8.	6.	3.	6.	5.	4.	4.	5.	5.
61	4.	5.	10.	1.	3.	7.	4.	5.	7.
71	3.	3.	9.	9.	11.	7.	4.	4.	8.
81	9.	5.	8.	5.	7.	10.	7.	7.	11.
91	7.	5.	7.	6.	13.	7.	6.	9.	11.
101	6.	10.	12.	11.	12.	5.	11.	6.	7.
111	12.	13.	22.	15.	11.	7.	17.	9.	13.
121	4.	13.	17.	12.	14.	16.	10.	17.	25.
131	12.	15.	16.	12.	14.	14.	14.	12.	26.
141	21.	19.	18.	27.	23.	17.	14.	18.	22.
151	23.	25.	26.	34.	22.	22.	30.	29.	36.
161	33.	35.	34.	28.	29.	28.	33.	31.	36.
171	34.	37.	37.	37.	47.	50.	46.	51.	56.
181	52.	53.	48.	48.	49.	52.	62.	56.	59.
191	68.	67.	59.	73.	70.	94.	96.	87.	97.
201	89.	103.	100.	105.	111.	141.	142.	113.	139.
211	163.	137.	162.	142.	152.	186.	189.	201.	207.
221	234.	251.	237.	238.	289.	269.	294.	310.	313.
231	343.	352.	402.	391.	429.	393.	388.	465.	412.
241	539.	519.	586.	520.	564.	548.	613.	605.	539.
251	535.	534.	542.	552.	509.	520.	453.	369.	237.
261	85.	61.	59.	41.	32.	34.	34.	29.	20.
271	15.	15.	11.	6.	2.	1.	1.	5.	4.
281	2.	2.	3.	2.	5.	5.	2.	2.	3.
291	1.	4.	3.	4.	3.	4.	3.	3.	5.
301	4.	8.	2.	5.	0.	0.	2.	2.	1.
311	1.	1.	0.	1.	1.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	1.	0.	1.	0.	0.	0.	0.	0.	0.
341	0.	2.	0.	1.	1.	0.	0.	0.	1.
351	0.	0.	1.	0.	0.	0.	0.	0.	0.
361	0.	0.	0.	0.	0.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	1.	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.	1.	0.	0.	0.
431	0.	0.	0.	1.	0.	0.	0.	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.	0.	0.	0.	0.	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
 S97T001899-SAM
 File ID: 15a1598.CNF

Counted on: 8/11/97 @19:17
 Detector: AEA15
 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	424.1	424.1	246.605	246.605	26.000	23.453	13.000	2.370
2	8.3	8.3	96.689	96.220	70.000	316.633	35.000	101.092
3?	1.2	1.2	88.575	88.000	4.000	0.000	2.000	3.758

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.				
1	Pu239	0.942	5.147	5.232	-.0850.11	42.89	1.4	183.9	0.828E-04
	Am243		5.266	5.232	0.034			185.8	0.837E-04
2	U 235	0.032	4.386	4.526	-.1401.49	1.46	19.9	11.0	0.494E-05
3		????		4.487		0.00	3600.		
Totals:		0.974	<--valid peaks only-->			44.34			

DETECTOR CALIBRATION

Energy(MEV) = 4.073 + (0.0047)*Channel
 Energy range (MeV): 4.073 TO 6.480
 Efficiency = 0.2332 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21866.0	100.000
Smoothed	21868.3	100.010
Composite fit	21288.8	97.360
Residuals	577.2	2.640

Analyzed by: _____
 GL

Display Max.: 3220.8

390

Raw Data Dump for AEA Spectrum: 15a1598.CNF										
1	0.	0.	3.	3.	2.	2.	3.	6.	7.	5.
11	7.	6.	5.	4.	7.	2.	5.	7.	2.	2.
21	6.	5.	4.	7.	3.	4.	5.	6.	5.	4.
31	8.	4.	5.	6.	1.	3.	6.	10.	2.	8.
41	6.	7.	7.	2.	7.	7.	10.	10.	6.	5.
51	8.	9.	7.	5.	7.	8.	6.	8.	7.	4.
61	8.	8.	7.	8.	10.	14.	7.	14.	10.	9.
71	11.	9.	11.	16.	5.	16.	11.	15.	12.	7.
81	10.	16.	13.	12.	14.	10.	5.	18.	16.	9.
91	9.	16.	8.	11.	15.	18.	15.	13.	14.	15.
101	8.	13.	13.	14.	13.	10.	15.	18.	20.	13.
111	21.	22.	15.	17.	13.	23.	19.	18.	21.	20.
121	16.	16.	16.	23.	15.	18.	20.	23.	21.	18.
131	20.	21.	17.	31.	30.	24.	27.	26.	28.	21.
141	30.	32.	28.	23.	28.	33.	38.	45.	32.	36.
151	38.	34.	49.	35.	29.	35.	33.	49.	51.	35.
161	47.	33.	44.	38.	55.	60.	51.	55.	62.	54.
171	50.	54.	55.	72.	57.	77.	58.	67.	94.	59.
181	96.	76.	68.	89.	90.	71.	85.	97.	78.	92.
191	95.	92.	100.	109.	100.	93.	96.	128.	116.	107.
201	133.	132.	141.	133.	139.	149.	172.	149.	155.	142.
211	134.	179.	157.	177.	168.	184.	216.	162.	239.	196.
221	201.	208.	255.	240.	285.	256.	289.	271.	279.	296.
231	288.	314.	319.	304.	348.	368.	372.	329.	401.	419.
241	377.	400.	380.	387.	410.	457.	442.	441.	375.	379.
251	405.	391.	396.	363.	322.	286.	215.	178.	81.	47.
261	39.	35.	32.	34.	21.	32.	19.	17.	20.	16.
271	12.	7.	7.	6.	3.	8.	9.	11.	7.	10.
281	8.	12.	3.	6.	13.	2.	11.	5.	8.	8.
291	5.	8.	11.	6.	15.	6.	8.	9.	7.	10.
301	6.	6.	7.	5.	7.	0.	0.	1.	1.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
321	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
331	1.	0.	0.	0.	1.	0.	0.	0.	1.	1.
341	1.	0.	0.	1.	0.	2.	1.	2.	1.	0.
351	1.	1.	0.	0.	0.	0.	0.	1.	0.	0.
361	0.	0.	1.	0.	1.	1.	0.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T001899-DUP
File ID: 16a1623.CNF

Counted on: 8/11/97 @19:18
Detector: AEA16
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	20.6	20.6	299.841	299.841	14.000	7.769	7.000	1.927
2?	11.5	11.5	285.031	284.302	8.000	0.073	4.000	1.927
3	923.0	923.0	253.145	253.142	14.000	7.441	7.000	1.345
4	9.8	9.8	151.918	150.617	44.000	87.349	22.000	5.724

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	Am241	0.017	5.479	5.462	0.0170.04	0.95	9.2	4.0 0.180E-05	
	Pu238		5.487	5.462	0.025			5.2 0.235E-05	
2		????		5.391		0.03	159.		
3	Am243	0.951	5.266	5.248	0.0180.03	52.34	1.2	208.5 0.939E-04	
4	Np237	0.028	4.640	4.776	-0.1360.40	1.56	13.1	102.9 0.463E-04	
	Np237		4.769	4.776	-0.007			7.1 0.320E-05	
Totals:		0.997	<--valid peaks only-->			54.85			

DETECTOR CALIBRATION

Energy(MEV) = 4.083 + (0.0046)*Channel
Energy range (MeV): 4.083 TO 6.438
Efficiency = 0.2535 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26413.0	100.000
Smoothed	26416.1	100.012
Composite fit	26349.6	99.760
Residuals	63.4	0.240

Analyzed by:

GL

Display Max.: 6949.5

393

Raw Data Dump for AEA Spectrum: 16a1623.CNF

1	0.	0.	3.	3.	2.	1.	2.	1.	1.	2.
11	2.	0.	1.	2.	3.	4.	3.	2.	4.	4.
21	2.	5.	0.	1.	5.	3.	4.	3.	1.	3.
31	2.	1.	4.	2.	4.	1.	5.	5.	3.	0.
41	4.	3.	7.	3.	5.	4.	0.	1.	7.	0.
51	4.	5.	3.	1.	3.	3.	2.	1.	5.	4.
61	2.	4.	4.	2.	2.	0.	3.	5.	3.	2.
71	4.	5.	2.	5.	6.	5.	3.	3.	3.	3.
81	4.	7.	3.	1.	1.	2.	3.	5.	6.	6.
91	1.	5.	9.	3.	6.	6.	5.	2.	3.	1.
101	4.	7.	6.	2.	7.	7.	4.	8.	4.	7.
111	7.	8.	6.	12.	4.	3.	8.	3.	10.	4.
121	8.	9.	7.	2.	9.	9.	7.	9.	7.	7.
131	7.	9.	13.	10.	9.	11.	10.	11.	10.	10.
141	11.	11.	15.	12.	11.	12.	14.	10.	16.	21.
151	11.	17.	17.	15.	15.	10.	11.	15.	18.	22.
161	20.	26.	12.	17.	26.	19.	14.	20.	19.	26.
171	20.	15.	31.	18.	24.	28.	29.	22.	28.	30.
181	27.	35.	35.	39.	26.	31.	31.	36.	42.	50.
191	40.	59.	42.	45.	63.	45.	50.	69.	57.	58.
201	54.	76.	77.	83.	68.	79.	71.	93.	94.	118.
211	98.	93.	121.	113.	125.	118.	131.	134.	133.	168.
221	186.	188.	202.	215.	199.	248.	253.	268.	269.	297.
231	286.	327.	337.	375.	432.	433.	473.	472.	516.	524.
241	550.	602.	617.	670.	703.	718.	787.	804.	848.	889.
251	919.	885.	1033.	913.	929.	850.	749.	481.	288.	190.
261	136.	90.	90.	63.	64.	59.	62.	52.	45.	40.
271	27.	22.	18.	11.	7.	6.	5.	5.	11.	6.
281	4.	11.	7.	13.	16.	15.	8.	8.	6.	10.
291	10.	16.	18.	14.	21.	19.	17.	22.	22.	23.
301	18.	25.	14.	15.	7.	7.	3.	4.	3.	1.
311	6.	1.	2.	0.	2.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	1.	1.	1.	0.	1.
351	1.	0.	2.	1.	0.	1.	1.	0.	2.	3.
361	0.	1.	2.	0.	0.	0.	2.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	1.	0.	0.	0.	1.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T001899-SPK
 File ID: 17a1754.CNF

Counted on: 8/11/97 @19:19
 Detector: AEA17
 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	701.9	701.9	591.377	591.377	40.000	25.598	20.000	3.272
2	568.4	568.4	503.216	500.951	36.000	17.536	18.000	2.178
3	10.9	10.9	259.369	258.194	96.000	187.458	48.000	66.884
4?	9.0	9.0	149.223	148.687	36.000	95.282	18.000	8.698

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	Am241	0.548	5.479	5.446	0.0330.06	55.11	1.2	239.2	0.108E-03
	Pu238		5.487	5.446	0.041			312.3	0.141E-03
2	Am243	0.433	5.266	5.238	0.0280.04	43.55	1.6	179.5	0.808E-04
3	Np237	0.011	4.640	4.680	-0.0400.43	1.06	20.5	72.2	0.325E-04
	Np237		4.769	4.680	0.089			5.0	0.224E-05
4	????		4.428			0.96	11.8		

Totals:		0.992	<--valid peaks only-->			99.72			

DETECTOR CALIBRATION

Energy(MEV) = 4.086 + (0.0023)*Channel
 Energy range (MeV): 4.086 TO 6.441
 Efficiency = 0.2451 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48274.0	100.000
Smoothed	48276.8	100.006
Composite fit	48332.6	100.121
Residuals	-58.6	-0.121

Analyzed by:

GL

Spectrum 17a1754.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5481.2

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Raw Data Dump for AEA Spectrum: 17a1754.CNF

1	0.	0.	6.	4.	3.	4.	6.	4.	5.	6.
11	7.	9.	0.	5.	6.	6.	7.	4.	4.	5.
21	4.	2.	6.	2.	7.	5.	5.	3.	2.	10.
31	9.	2.	5.	4.	7.	5.	5.	9.	5.	4.
41	2.	6.	3.	6.	6.	4.	6.	9.	5.	8.
51	8.	7.	5.	10.	6.	3.	4.	9.	6.	7.
61	9.	9.	7.	6.	6.	9.	6.	5.	7.	8.
71	10.	10.	15.	6.	13.	13.	7.	11.	7.	7.
81	6.	10.	6.	8.	3.	15.	10.	10.	7.	20.
91	6.	11.	7.	3.	14.	9.	14.	8.	8.	8.
101	8.	10.	7.	10.	13.	13.	12.	21.	18.	9.
111	14.	12.	19.	16.	18.	16.	18.	16.	17.	14.
121	14.	20.	22.	16.	15.	12.	17.	24.	26.	26.
131	17.	24.	17.	16.	21.	18.	32.	21.	27.	31.
141	25.	30.	23.	28.	22.	21.	41.	29.	29.	28.
151	37.	23.	25.	28.	33.	39.	22.	38.	32.	30.
161	28.	34.	38.	42.	43.	31.	38.	57.	38.	39.
171	51.	39.	37.	52.	50.	58.	54.	53.	50.	62.
181	68.	70.	68.	56.	74.	61.	68.	77.	71.	86.
191	74.	70.	82.	104.	105.	108.	91.	112.	102.	92.
201	122.	122.	111.	106.	145.	121.	148.	135.	139.	151.
211	157.	188.	165.	178.	170.	205.	216.	214.	217.	234.
221	255.	242.	270.	285.	297.	298.	291.	335.	355.	404.
231	384.	438.	403.	467.	433.	509.	475.	507.	591.	539.
241	611.	628.	657.	666.	663.	765.	706.	653.	713.	753.
251	704.	715.	744.	729.	683.	578.	395.	300.	249.	206.
261	218.	234.	248.	247.	245.	254.	258.	246.	269.	245.
271	306.	276.	311.	307.	354.	368.	395.	384.	449.	447.
281	489.	469.	495.	517.	513.	581.	570.	599.	654.	645.
291	683.	678.	698.	703.	731.	720.	711.	687.	661.	647.
301	572.	402.	303.	186.	169.	126.	97.	84.	65.	38.
311	37.	26.	16.	6.	6.	0.	1.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
331	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
351	0.	0.	1.	0.	0.	0.	1.	0.	0.	1.
361	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T001900-SAM
File ID: 18a1854.CNF

Counted on: 8/11/97 @19:20
Detector: AEA18
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	13.4	13.4	590.952	590.952	28.000	16.448	14.000	2.024
2?	1.6	1.6	584.880	581.069	8.000	0.477	4.000	5.381
3	701.1	701.1	498.719	498.702	36.000	19.155	18.000	2.363

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	Th228	0.020	5.400	5.445	-.0450.04	1.03	8.8	5.9	0.268E-05
	Am241		5.479	5.445	0.034			4.5	0.202E-05
2		????		5.422		0.01	1037.		
3	Pu239	1.075	5.147	5.233	-.0860.04	54.54	1.2	224.3	0.101E-03
	Am243		5.266	5.233	0.033			226.5	0.102E-03
Totals:			1.095	<--valid peaks only-->			55.56		

DETECTOR CALIBRATION

Energy(MEV) = $4.086 + (0.0023) \cdot \text{Channel}$
 Energy range (MeV): 4.086 TO 6.441
 Efficiency = 0.2432 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	24357.0	100.000
Smoothed	24357.1	100.001
Composite fit	26676.1	109.521
Residuals	-2319.1	-9.521

Analyzed by:

GL

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Raw Data Dump for AEA Spectrum: 18a1854.CNF

1	0.	0.	1.	1.	0.	3.	0.	1.	2.
11	0.	0.	1.	0.	1.	0.	1.	2.	0.
21	1.	1.	2.	1.	1.	1.	1.	3.	1.
31	0.	6.	0.	3.	1.	1.	3.	1.	3.
41	4.	2.	1.	0.	1.	0.	1.	2.	1.
51	2.	2.	4.	1.	1.	3.	1.	2.	2.
61	4.	0.	4.	2.	4.	4.	1.	0.	5.
71	5.	2.	0.	2.	1.	2.	1.	0.	3.
81	1.	3.	1.	3.	1.	3.	0.	2.	2.
91	2.	2.	3.	6.	2.	2.	3.	1.	3.
101	4.	4.	5.	2.	3.	4.	5.	6.	2.
111	8.	3.	3.	9.	4.	0.	1.	6.	5.
121	5.	3.	3.	2.	2.	6.	4.	4.	5.
131	6.	3.	4.	3.	4.	5.	4.	8.	8.
141	12.	10.	13.	6.	10.	8.	7.	14.	10.
151	8.	14.	10.	8.	5.	18.	10.	9.	20.
161	15.	12.	15.	13.	21.	11.	18.	18.	17.
171	18.	21.	25.	24.	25.	18.	21.	29.	24.
181	25.	27.	40.	35.	48.	39.	41.	38.	52.
191	63.	45.	60.	70.	58.	72.	67.	66.	65.
201	83.	86.	87.	113.	103.	79.	128.	123.	149.
211	163.	154.	176.	179.	180.	189.	230.	235.	241.
221	250.	261.	246.	335.	323.	345.	389.	371.	371.
231	411.	429.	461.	460.	482.	520.	527.	563.	628.
241	587.	597.	642.	665.	648.	654.	688.	668.	763.
251	696.	684.	620.	475.	377.	288.	188.	127.	88.
261	47.	47.	52.	36.	34.	25.	25.	16.	8.
271	13.	8.	11.	4.	7.	10.	6.	8.	6.
281	8.	9.	10.	11.	14.	9.	6.	9.	14.
291	18.	12.	12.	15.	10.	13.	17.	13.	7.
301	6.	8.	3.	2.	1.	3.	1.	1.	1.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	1.	0.	0.	0.	0.	0.	1.
351	0.	2.	0.	1.	0.	0.	0.	0.	0.
361	1.	1.	0.	0.	0.	1.	0.	0.	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.	0.	0.	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.	0.	0.	0.	0.	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
S97T001900-DUP
File ID: 19a1956.CNF

Counted on: 8/11/97 @19:21
Detector: AEA19
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	516.6	516.6	506.169	506.169	24.000	15.080	12.000	1.510
2?	2.4	2.4	281.604	279.358	8.000	0.000	4.000	7.517
3	4.8	4.8	224.478	221.314	40.000	5.041	20.000	0.192

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Am243	1.012	5.266	5.241	0.025	0.03	46.36	1.3	192.3	0.866E-04
2		????		4.719			0.00	1000.		
3		0.015		4.585	0.01		0.69	16.8	2.8	0.127E-05
Totals:		1.027	<--valid peaks only-->				47.05			

DETECTOR CALIBRATION

Energy(MEV) = 4.076 + (0.0023)*Channel
Energy range (MeV): 4.076 TO 6.432
Efficiency = 0.2435 CPM/CPM
(Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21995.0	100.000
Smoothed	22000.7	100.026
Composite fit	22584.3	102.679
Residuals	-589.3	-2.679

Analyzed by: _____

GL

[illegible]

Raw Data Dump for AEA Spectrum:	19a1956.CNF								
1	0.	0.	5.	6.	4.	2.	6.	3.	5.
11	4.	4.	6.	5.	2.	2.	7.	6.	3.
21	3.	5.	6.	5.	3.	2.	2.	5.	4.
31	2.	3.	7.	8.	2.	5.	6.	1.	7.
41	6.	9.	4.	7.	4.	8.	7.	4.	3.
51	7.	2.	5.	10.	11.	5.	3.	2.	2.
61	6.	6.	4.	2.	6.	6.	2.	8.	15.
71	7.	5.	2.	9.	4.	7.	9.	8.	8.
81	11.	3.	10.	10.	6.	7.	10.	14.	12.
91	14.	9.	14.	15.	9.	11.	12.	9.	8.
101	8.	11.	8.	13.	9.	20.	13.	9.	17.
111	14.	13.	17.	15.	13.	11.	12.	9.	15.
121	15.	14.	21.	11.	21.	17.	15.	14.	13.
131	18.	21.	16.	15.	12.	12.	23.	21.	35.
141	23.	25.	18.	30.	24.	31.	32.	20.	20.
151	32.	30.	30.	26.	30.	27.	37.	33.	36.
161	39.	29.	43.	46.	46.	48.	47.	38.	40.
171	45.	48.	50.	64.	37.	61.	54.	58.	64.
181	60.	62.	42.	80.	61.	57.	61.	72.	77.
191	54.	65.	84.	78.	90.	91.	94.	118.	87.
201	98.	106.	120.	106.	121.	102.	128.	132.	146.
211	136.	156.	166.	149.	171.	160.	194.	149.	219.
221	211.	218.	199.	213.	197.	255.	240.	255.	276.
231	269.	284.	274.	300.	351.	340.	363.	364.	352.
241	403.	392.	442.	450.	426.	458.	448.	504.	510.
251	519.	524.	518.	546.	515.	501.	413.	316.	85.
261	69.	44.	31.	32.	22.	27.	35.	31.	20.
271	14.	10.	6.	7.	8.	4.	4.	5.	3.
281	6.	4.	6.	0.	4.	8.	6.	9.	5.
291	8.	11.	8.	12.	9.	4.	10.	6.	13.
301	9.	9.	8.	9.	7.	1.	2.	0.	2.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	1.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	1.	0.	1.	0.	2.	1.	0.	0.
351	0.	0.	0.	0.	0.	0.	0.	0.	0.
361	1.	0.	0.	1.	0.	0.	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	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.	1.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	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
S97T001901-SAM
File ID: 20a2056.CNF

Counted on: 8/11/97 @19:23
Detector: AEA20
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	676.6	676.6	501.590	501.590	28.000	18.478	14.000	2.304
2?	0.0	0.1	277.607	277.607	0.000	0.200	0.000	0.200
3?	1.9	1.9	248.934	247.172	16.000	1.427	8.000	0.075

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Am243	1.066	5.266	5.236	0.030	0.04	51.98	1.2	215.2	0.969E-04
2		????		4.720			0.00	9465.		
3		????		4.650			0.23	35.5		
Totals:		1.066	<--valid peaks only-->				51.98			

DETECTOR CALIBRATION

Energy(MEV) = $4.082 + (0.0023) \cdot \text{Channel}$
 Energy range (MeV): 4.082 TO 6.437
 Efficiency = 0.2440 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23407.0	100.000
Smoothed	23407.2	100.001
Composite fit	25064.8	107.082
Residuals	-1657.8	-7.082

Analyzed by: _____

GL

[illegible]

Raw Data Dump for AEA Spectrum: 20a2056.CNF

1	0.	0.	2.	1.	2.	4.	3.	2.	1.	3.
11	2.	4.	1.	3.	1.	2.	1.	0.	2.	5.
21	3.	4.	3.	2.	2.	0.	3.	5.	1.	4.
31	2.	4.	3.	2.	2.	2.	2.	8.	2.	2.
41	4.	5.	1.	6.	4.	1.	3.	2.	3.	3.
51	5.	4.	0.	4.	4.	1.	5.	2.	2.	5.
61	3.	4.	0.	1.	3.	5.	3.	4.	6.	5.
71	5.	5.	7.	8.	7.	4.	2.	2.	1.	5.
81	4.	7.	1.	2.	5.	6.	4.	1.	3.	9.
91	8.	7.	5.	2.	7.	3.	2.	5.	5.	8.
101	5.	8.	12.	8.	5.	6.	6.	6.	12.	8.
111	11.	2.	9.	11.	7.	4.	4.	8.	8.	6.
121	12.	8.	12.	12.	12.	10.	10.	7.	9.	11.
131	12.	3.	8.	12.	10.	12.	14.	10.	15.	16.
141	9.	10.	10.	9.	14.	16.	17.	13.	12.	10.
151	16.	11.	14.	20.	18.	12.	22.	20.	20.	14.
161	28.	22.	14.	30.	20.	25.	26.	35.	24.	23.
171	21.	24.	25.	26.	28.	39.	39.	23.	26.	33.
181	30.	38.	45.	29.	29.	58.	35.	47.	59.	43.
191	49.	60.	61.	57.	55.	54.	61.	63.	53.	85.
201	85.	84.	72.	78.	79.	69.	91.	106.	120.	111.
211	129.	132.	128.	148.	156.	156.	181.	175.	203.	186.
221	209.	205.	214.	225.	261.	294.	302.	301.	327.	328.
231	377.	360.	401.	375.	446.	500.	497.	485.	480.	563.
241	557.	622.	577.	629.	616.	642.	626.	674.	678.	714.
251	668.	706.	688.	613.	571.	440.	304.	170.	89.	68.
261	64.	51.	47.	45.	36.	31.	25.	22.	26.	14.
271	7.	9.	4.	2.	3.	8.	5.	4.	5.	4.
281	6.	6.	4.	9.	16.	7.	7.	11.	9.	8.
291	5.	9.	6.	6.	10.	5.	6.	7.	9.	6.
301	6.	6.	4.	1.	1.	1.	0.	0.	0.	1.
311	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
351	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
361	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T001901-DUP
 File ID: 21a2146.CNF

Counted on: 8/11/97 @19:24
 Detector: AEA21
 Geometry number: 1
 Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	272.8	272.8	492.272	488.352	64.000	62.095	32.000	4.202
2?	1.9	1.9	267.416	264.470	12.000	0.000	6.000	11.275
3?	5.9	5.9	115.823	116.109	16.000	2.205	8.000	0.214
4?	3.5	3.5	54.150	58.821	16.000	0.000	8.000	6.964

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.					
1	Pu239 Am-243	1.004	5.147	5.203	-0.056	0.14	38.24	1.4	156.5 0.705E-04
			5.144	5.203	-0.059				156.5 0.705E-04
2	???		4.688			0.00	1000.		
3	0.010		4.347		0.01	0.39	24.8	1.6	0.712E-06
4	???		4.215			0.00	1000.		
Totals:			1.014	<--valid peaks only-->			38.63		

DETECTOR CALIBRATION

Energy (MEV) = 4.080 + (0.0023)*Channel
 Energy range (MeV): 4.080 TO 6.435
 Efficiency = 0.2443 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18290.0	100.000
Smoothed	18287.2	99.985
Composite fit	18543.3	101.385
Residuals	-253.3	-1.385

Analyzed by:

GL

... 1

Raw Data Dump for AEA Spectrum: 21a2146.CNF										
1	0.	0.	9.	4.	4.	2.	4.	7.	4.	4.
21	6.	8.	10.	4.	4.	9.	10.	6.	9.	7.
31	3.	10.	9.	14.	11.	11.	6.	6.	10.	11.
41	9.	7.	4.	10.	7.	8.	10.	7.	9.	11.
51	10.	9.	14.	12.	8.	16.	13.	8.	11.	18.
61	11.	14.	8.	7.	16.	10.	16.	12.	18.	14.
71	10.	8.	8.	7.	10.	8.	13.	14.	8.	12.
81	11.	15.	13.	13.	10.	12.	12.	9.	12.	25.
91	20.	13.	17.	14.	18.	23.	22.	17.	14.	11.
101	20.	24.	18.	17.	16.	12.	17.	13.	19.	22.
111	17.	25.	22.	28.	20.	23.	24.	20.	28.	18.
121	18.	29.	27.	22.	28.	21.	34.	34.	22.	30.
131	21.	23.	26.	30.	38.	28.	39.	29.	31.	37.
141	30.	38.	40.	44.	21.	29.	30.	37.	35.	28.
151	22.	37.	46.	36.	41.	39.	40.	50.	44.	47.
161	46.	49.	41.	38.	40.	61.	59.	47.	51.	46.
171	54.	44.	62.	71.	63.	64.	60.	53.	71.	61.
181	66.	65.	69.	63.	79.	65.	64.	79.	69.	84.
191	87.	75.	99.	84.	96.	80.	95.	79.	106.	112.
201	89.	123.	107.	123.	125.	104.	116.	114.	152.	127.
211	123.	137.	143.	130.	123.	135.	161.	122.	166.	166.
221	143.	167.	147.	152.	156.	193.	186.	158.	176.	163.
231	187.	185.	185.	181.	206.	205.	203.	214.	233.	219.
241	212.	228.	231.	222.	212.	251.	228.	268.	238.	248.
251	258.	277.	292.	284.	261.	291.	253.	251.	251.	262.
261	250.	256.	239.	228.	181.	140.	85.	36.	30.	28.
271	16.	18.	18.	17.	14.	14.	11.	9.	8.	0.
281	5.	1.	1.	4.	2.	3.	1.	5.	4.	6.
291	3.	3.	7.	0.	1.	2.	5.	1.	1.	3.
301	3.	2.	2.	3.	2.	3.	0.	3.	3.	0.
311	2.	2.	1.	0.	0.	0.	2.	0.	0.	0.
321	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
351	0.	1.	0.	0.	0.	1.	0.	1.	0.	0.
361	0.	0.	0.	1.	1.	1.	2.	1.	0.	0.
371	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

LABCORE Completed RadChem Report for Worklist#: 19715

Analyst: kni ^{202 9/12/97}
LA-953-104
Method: ~~LA-953-103~~ Rev/Mod B-0

Instrument: AB16

Book# 75B56

Worklist Comment: @PU23901 FOR AX-101

RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@PU23901 PU23901	LIQUID	1.09E-04	1.25E-4	114.673	% Recovery
1 STD	0		@PU23901 PU23901E	LIQUID	1.00	1.85E+00	1.850	% Ct Error
1 STD	0		@PU23901 PU23901T	LIQUID	100	8.43E+01	84.300	% Recovery
2 BLNK	0		@PU23901 PU23901	LIQUID	1	<1.83E-4		uCi/mL
2 BLNK	0		@PU23901 PU23901T	LIQUID	100	8.95E+01	89.500	% Recovery
2 BLNK	0		@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S97T001899	0	@PU23901 PU23901	LIQUID	N/A	<1.66E-04	166.0e-006	uCi/mL
3 SAMPLE	S97T001899	0	@PU23901 PU23901T	LIQUID	N/A	9.57E+01	0.0e+000	% Recovery
3 SAMPLE	S97T001899	0	@PU23901 PU23901E	LIQUID	N/A	1.31E+01	0.0e+000	% Ct. Error
4 DUP	S97T001899	0	@PU23901 PU23901	LIQUID	<1.66E-4	<1.80E-4		RPD
4 DUP	S97T001899	0	@PU23901 PU23901T	LIQUID	100	9.27E+01	92.700	% Recovery
4 DUP	S97T001899	0	@PU23901 PU23901E	LIQUID	1.00	1.09E+01	10.900	% Ct Error
5 SPX	S97T001899	0	@PU23901 PU23901	LIQUID	1.09E-04	1.29E-04	118.349	% Recovery
6 SAMPLE	S97T001900	0	@PU23901 PU23901	LIQUID	N/A	<2.58E-4	258.0e-006	uCi/mL
6 SAMPLE	S97T001900	0	@PU23901 PU23901T	LIQUID	N/A	5.98E+01	0.0e+000	% Recovery
6 SAMPLE	S97T001900	0	@PU23901 PU23901E	LIQUID	N/A	1.00E+02	0.0e+000	% Ct. Error
7 DUP	S97T001900	0	@PU23901 PU23901	LIQUID	<2.58E-4	<2.11E-4		RPD
7 DUP	S97T001900	0	@PU23901 PU23901T	LIQUID	100	7.74E+01	77.400	% Recovery
7 DUP	S97T001900	0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error
8 SAMPLE	S97T001901	0	@PU23901 PU23901	LIQUID	N/A	<4.06E-4	406.0e-006	uCi/mL
8 SAMPLE	S97T001901	0	@PU23901 PU23901T	LIQUID	N/A	7.49E+01	0.0e+000	% Recovery
8 SAMPLE	S97T001901	0	@PU23901 PU23901E	LIQUID	N/A	1.00E+02	0.0e+000	% Ct. Error
9 DUP	S97T001901	0	@PU23901 PU23901	LIQUID	<4.06E-4	<4.16E-4		RPD
9 DUP	S97T001901	0	@PU23901 PU23901T	LIQUID	100	7.22E+01	72.200	% Recovery
9 DUP	S97T001901	0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	% Ct. Error

Final page for worklist# 19715

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Relyea 19 Aug 97
 Reviewer Signature _____ Date _____
Validated

LABCORE Data Entry Template for Worklist# 19715

Analyst: KNT Instrument: PU01 16 Book# 75B56

Method: LA-953-104 Rev/Mod B-0

Worklist Comment: @PU23901 FOR AX-101

RTS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S97T001899 0		@PU23901	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T					
4 DUP	S97T001899 0		@PU23901	LIQUID		
5 SPK	S97T001899 0		@PU23901	LIQUID		
6 SAMPLE	S97T001900 0		@PU23901	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T					
7 DUP	S97T001900 0		@PU23901	LIQUID		
8 SAMPLE	S97T001901 0		@PU23901	LIQUID	97000510	AX-101 GRAB
	Analytes Requested: PU23901 , PU23901E, PU23901T					
9 DUP	S97T001901 0		@PU23901	LIQUID		

Final page for worklist # 19715

Kim Thomas 8-11-97
Analyst Signature Date

[Signature] 8/12/97
Analyst Signature Date
Lee Hogan 8/12/97

Data Entry Comments: S97T001899 SPK had 1ml of Tinkles 75B56 added to it.

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

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQU

BLNK

Type	DATE COUNTED	AUG-12-97	PU 238 AEA FRAC (C238)	0.985
BLNK	SAMPLE VOLUME in mL	SS	0.200 PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	11.000 PU 239 AEA FRAC (C239)	0.000
19715	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	1620
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		128B43 BACKGROUND in cpm (Bkg)	0.370
Matrix	DETECTOR NUMBER		15 PU 238 cpm	44.890
LIQUID	EFFICIENCY FACTOR	EFF	0.2717 PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		11/15/96 PU 239 cpm	0.000
97003853	TRACER PREPARATION VALUE (dpm/mL)		2600.00 AEA COUNT TIME	480
Regrn	PU-238 DECAY CORR'D VALUE (dpm/mL)		2172.16 Pu 239/240 μ Ci/L =	< 1.831E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.00	

Example Prep

N/A

Sample ID

VL19715

Instrument Code

WB27808

Prepared By

MCB

Chemist

JFR

Analyst

KNT

Date Complete

08/12/97

Analysis Date

08/11/97

Analysis Time

11:05 AM

Sample Point

AX-01 GRAB

Decay Time = Date Counted - Tracer Preparation Date

Pu-238 Decay Corr'd Value = Pu-238 Preparation Value * [e to the power of ((-ln2 * Decay Time)/1040.95)]

Pu 238 Tracer Recovery = (Total AT Counts / TC - Bkg) * C238 * 100 / (Pu-238 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 μ Ci/L = (C239) / (Pu 238 Decay Corr'd Value) * (SPKV) / (1000 mL) * (DF) * (DDF) / [(C238) * (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 238 Tracer Recovery / 100)

Pu 238 μ Ci/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000 mL)] / [(Pu-238 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (D g/L) * (SS)]

Relative Counting Error = Square Root of [(1/(Pu 238 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 μ Ci/mL < 1.83E-04

Relative Counting Error = 100.0%

DETECTION

LEVELS

in μ Ci/mL

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 238 μ Ci/mL < 1.83E-04

Relative Counting Error = 100.0%

Pu 238 Tracer Recovery = 89.5%

Pu 239/240

1.83E-04

Pu 238

1.83E-04

Analyst	KNT	Date:	12-Aug-97
Signature of Chemist	JFR	Date:	19 Aug 97

BLANKWB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOL

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)				LIQUID / SOL	SAMPLE
Type	DATE COUNTED		AUG-12-97	Pu 238 AEA FRAC (C238)	1.015
SAMPLE	SAMPLE VOLUME in mL	SS	0.200	Pu 238 AEA FRAC (C238)	0.000
WORK LIST	SAMPLE DILUTION FACTOR	DF	11.000	Pu 239 AEA FRAC (C239)	0.011
19715	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1680
Test Count	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm (Bkg)	0.370
Matrix	DETECTOR NUMBER		16	Pu 238 cpm	44.270
LIQUID	EFFICIENCY FACTOR	EFF	0.272	Pu 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		11/15/96	Pu 239 cpm	0.470
97003953	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME	480
Re-run	PU-238 DECAY CORR'D VALUE (dpm/mL)		2172.164	Pu 239/240 µCi/L =	< 1.6625E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

sample Prep:	
NIA	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S97001899	Pu-238 Decay Corr'd Value = Pu-238 Preparation Value * [e to the power of ((-ln2 * Decay Time)/1040.95)]
Instrument Code	Pu 238 Tracer Recovery = (Total AT Counts / TC - Bkg) * C238 * 100 / (Pu-238 Decay Corr'd Value * SPKV * EFF)
WB27806	Pu 238/240 µCi/mL = (C239) / (Pu 238 Decay Corr'd Value) * (SPKV) / (1000mL) * (DF) / (DDF) / ((C238) * (SS) * (2220000 dpm/µCi))
Prepared by	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 238 Tracer Recovery / 100)
MCB	Pu 238 µCi/mL = [(Pu 238 dpm) * (DF) * (DDF) / (1000mL)] / [(Pu-238 Tracer Recovery / 100) * (2220000 dpm/µCi) * (D g/L) * (SS)]
Chemist	Relative Counting Error = Square Root of [(1 / (Pu 238 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
KNT	
Date Complete	

08/12/97	Pu 239/240 µCi/mL	< 1.66E-04	
Analyst's Date	Relative Counting Error	= 13.1%	DETECTION LEVELS in µCi/mL
08/11/97			
Analyst's Time	NOTE: Pu 238 Result is a LESS THAN Value.		
11:05 AM	Pu 238 µCi/mL	< 1.66E-04	Pu 239/240
Sample Point	Relative Counting Error	= 100.0%	Pu 238
AX-101 GRAB	Pu 238 Tracer Recovery	= 95.7%	1.66E-04

Analyst	KNT	Date:	12-Aug-97
Signature of Chemist	JFR	Date:	19 Aug 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 / SOL

DUP

Type	DATE COUNTED	AUG-12-97		PU 238 AEA FRAC (C238)	0.988
DUP	SAMPLE VOLUME in mL	SS	0.200	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	11.000	PU 239 AEA FRAC (C239)	0.014
19715	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1707
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU2391	TRACER BOOK NO	128843	BACKGROUND in cpm (Bkg)		0.370
Matrix	DETECTOR NUMBER	16	PU 238 cpm		46.200
LIQUID	EFFICIENCY FACTOR	EFF	0.272	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm		0.680
97003853	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME		480
Remis	PU-238 DECAY CORR'D VALUE (dpm/mL)	2172.164	Pu 239/240 μ Ci/L	<	1.7988E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000			

Sample Prep:

N/A

Sample #

Decay Time = Date Counted - Tracer Preparation Date

S97T001859

Pu-238 Decay Corr'd Value = Pu-238 Preparation Value * [e to the power of ((-ln2 * Decay Time/1040.95)]

Instrument Code

Pu 238 Tracer Recovery = (Total AT Counts / TC - Bkg) * C238 * 100 / (Pu-238 Decay Corr'd Value * SPKV * EFF)

WB27806

Pu 239/240 μ Ci/L = (C239) / (Pu 238 Decay Corr'd Value) * (SPKV / (1000 mL)) * (DF) / (DDF) * ((C238) / (SS)) * ((2220000 dpm/ μ Ci))

Prepared By

Pu 238 dpm = ((Total AT Counts / TC) - Bkg * 1/EFF * C238) * (Pu-238 Tracer Value * SPKV * Pu 238 Tracer Recovery / 100)

MCB

Pu 238 μ Ci/L = ((Pu 238 dpm) / (DF) * (DDF) / (1000 mL)) / ((Pu-238 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (D g/L) / (SS))

Chemist

Relative Counting Error = Square Root of [1 / (Pu 238 cpm * min)] + [1 / (Pu 238 or 239/240 cpm * min)] * 1.96 * 100

JFR

Analyst

KNT

Date Complete

08/12/97

Pu 239/240 μ Ci/mL

< 1.80E-04

Analysis Date

Relative Counting Error

= 10.9%

08/11/97

Analysis Time

NOTE: Pu 238 Result is a LESS THAN Value.

11:05 AM

Pu 238 μ Ci/mL

< 1.80E-04

Sample Point

Relative Counting Error

= 100.0%

AX-101 GRAB

Pu 238 Tracer Recovery

= 92.7%

DETECTION

LEVELS

in μ Ci/mL

Pu 239/240

1.80E-04

Pu 238

1.80E-04

Analyst

KNT

Date:

12-Aug-97

Signature of Chemist

JFR

Date:

19 Aug 97

SAMPLE WB1 REV 1.0

943128ML

WORKBOOK PAGE: SPIKES

Pu 239/240 : LA-943-128 (B-0) or LA-953-104(B-0) SPIKED SAMPLE

SPIKED SAMPLE		SPIKE
Type	DATE COUNTED	08/12/97
SPK	SAMPLE VOLUME in mL (SS)	0.200
Work List	SAMPLE DILUTION FACTOR (DF)	11.000
19715	TRACER VOLUME in mL (SPKV)	0.100
Test Code	DIGEST DILUTION FACTOR (DDF)	1.0000
@PU23901	TRACER BOOK NUMBER (Tr BN)	128B43
Matrix	TRACER PREPARATION DATE	11/15/96
LIQUID	Pu-236 PREPARATION VALUE in $\mu\text{Ci/mL}$ (SPKA)	2600.000
Batch Number	Pu-236 DECAY CORR'D VALUE in $\mu\text{Ci/mL}$ (SMSS)	2172.164
97003853	SPIKE VOLUME in mL (SMDF)	1.000
Refun	SPIKE DILUTION FACTOR (Spk BN)	1.000
0	SPIKE BOOK NUMBER (SMV)	75B56
Sample Prep	SPIKE VALUE in $\mu\text{Ci/mL}$ (C236)	1.09E-04
N/A	Pu 236 AEA FRAC. (C239)	0.405
Sample Number	Pu 239 AEA FRAC. (Pu1)	0.536
S97T001899	Pu 239/240 FROM SAMPLE FORM in $\mu\text{Ci/mL}$ (Pu2)	<1.66E-4
Instrument Code	Pu 239/240 FROM SPIKED SAMPLE in $\mu\text{Ci/mL}$	7.1222E-03
WB27805	Count Time (Min)	480.000
Prepared By		
MCB		
Chemist	Pu 239/240 $\mu\text{Ci/mL}$ = $\frac{C239 * SPKA * SPKV * DF * DDF}{C236 * SS * (2220000\text{dpm}/\mu\text{Ci})}$	
JFR	in Spiked Sample	
Analyst	QC Actual ($\mu\text{Ci/mL}$) = SMV	
KNT	QC Found ($\mu\text{Ci/mL}$) = $[(Pu2 - Pu1) * (SMDF/SMSS) / (DF * DDF/SS)]$	
Date Complete	Percent Spike Recovery = $(QC \text{ Found} / QC \text{ Actual}) * 100$	
08/12/97		
Analysis Date	Decay Time = Date Counted - Tracer Preparation Date	
08/11/97	Pu-236 Decay Corr'd Value (SPKA) = Pu 236 Preparation Value * $[e \text{ to the power of } ((-ln2 * \text{Decay Time}) / 1040.95)]$	
Analysis Time		
11:05 AM	QC ACTUAL ($\mu\text{Ci/mL}$) =	1.09E-04
Sample Point	QC FOUND ($\mu\text{Ci/mL}$) =	1.29E-04
AX-101 GRAB	PERCENT SPIKE RECOVERY =	118.8%

Digest Factor (1/

NOTE: The sample dpm was LESS THAN the detection limit (Ld), therefore zero (0) was used for Sample $\mu\text{Ci/mL}$ in the QC Found calculation.

WORKBOOK PAGE: SAM8

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOL

SAMPLE

Type	DATE COUNTED	AUG-12-97	PU 238 AEA FRAC (C238)	1.046
SAMPLE	SAMPLE VOLUME in mL	SS	PU 238 AEA FRAC (C238)	0.000
Wait List	SAMPLE DILUTION FACTOR	DF	PU 238 AEA FRAC (C238)	0.000
19715	TRACER VOLUME in mL	SPKV	TOTAL AT COUNTS	1024
Test Code	DIGEST DILUTION FACTOR	DDF	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.370
Matrix	DETECTOR NUMBER	16	PU 238 cpm	27.690
LIQUID	EFFICIENCY FACTOR	EFF	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 238 cpm	0.000
97003853	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Retun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2172.164	Pu 239/240 μ Ci/L =	< 2.5793E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
NIA				
Sample ID	Decay Time = Date Counted - Tracer Preparation Date			
S97T001980	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time)/1040.95)]			
Instrument Code	Pu 238 Tracer Recovery = (Total AT Counts / TC - Bkg) * C238 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)			
WB27806	Pu 239/240 μ Ci/L = (C238) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000mL/L) * (DF) * (DDF) / [(C238) * (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 238 Tracer Recovery / 100)			
MCB	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 238 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JFR				
Analyst				
KNT				
Date Complete				
08/12/97	Pu 239/240 μ Ci/mL	< 2.58E-04	DETECTION LEVELS in μ Ci/mL	
Analysis Date	Relative Counting Error	= 100.0%		
08/11/97				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240	
11:05 AM	Pu 238 μ Ci/mL	< 2.58E-04	2.58E-04	
Sample Point	Relative Counting Error	= 100.0%	Pu 238	
AX-101 GRAB	Pu 236 Tracer Recovery	= 59.8%	2.58E-04	

Analyst	KNT	Date:	12-Aug-97
Signature of Chemist	JFR	Date:	19 Aug 97

SAMPLEWB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP7

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOL

DUP

Type	DATE COUNTED	AUG-12-97	PU 238 AEA FRAC (C238)	0.990	
DUP	SAMPLE VOLUME in mL	SS	0.200	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	11.000	PU 238 AEA FRAC (C239)	0.000
19715	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1396
Test Code	DIGEST DILUTION FACTOR	DDF	1.9000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	126B43	BACKGROUND in cpm (Bkg)	0.370	
Mixity	DETECTOR NUMBER	16	PU 238 cpm	34.890	
LIQUID	EFFICIENCY FACTOR	EFF	0.272	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 238 cpm	0.000	
97003853	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480	
Return	PU-238 DECAY CORR'D VALUE (dpm/mL)	2172.164	Pu 238/240 μ CIL =	<	2.1059E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000			

Sample Prep

N/A

Sample #

S977001500

Instrument Code

W927806

Prepared By

MCB

Chemist

JFR

Analyst

KNT

Date Complete

08/12/97

Analysis Date

08/11/97

Analysis Time

14:05 AM

Sample Point

AX-101 GRAB

Decay Time = Date Counted - Tracer Preparation Date

Pu-238 Decay Corr'd Value = Pu-238 Preparation Value * [e to the power of ((-ln2 * Decay Time/1040.95))]

Pu 238 Tracer Recovery = (Total AT Counts / TC - Bkg) * C238 * 100 / (Pu-238 Decay Corr'd Value * SPKV * EFF)

Pu 238/240 μ CIL = (C239 / (Pu 238 Decay Corr'd Value) * (SPKV / (1000 mL)) * (DF / (DDF)) / ((C238 / (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 238 Tracer Recovery / 100)

Pu 238 μ CIL = ((Pu 238 dpm) * (DF) * (DDF) / (1000 mL)) / ((Pu-238 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (D g/L) * (SS))

Relative Counting Error = Square Root of (((1 / (Pu 238 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))) * 1.96 * 100

Pu 238/240 μ Ci/mL < 2.11E-04

Relative Counting Error = 100.0%

DETECTION
LEVELS
in μ Ci/mL

NOTE: Pu 238 Result is a LESS THAN Value.

Pu 238 μ Ci/mL < 2.11E-04

Relative Counting Error = 100.0%

Pu 238 Tracer Recovery = 77.4%

Pu 239/240
2.11E-04
Pu 238
2.11E-04

Analyst	KNT	Date:	12-Aug-97
Signature of Chemist	JFR	Date:	17 Aug 97
SAMPLE WB1 REV 1.0	943128ML		

WORKBOOK PAGE: SAM8

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOL

				LIQUID / SOL		SAMPLE
Type	DATE COUNTED		AUG-12-97	Pu 238 AEA FRAC (C238)		0.976
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	Pu 238 AEA FRAC (C238)		0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	Pu 238 AEA FRAC (C239)		0.000
19715	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1389
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm (Bkg)		0.370
Matrix	DETECTOR NUMBER		16	Pu 238 cpm		24.150
LIQUID	EFFICIENCY FACTOR	EFF	0.272	Pu 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		11/15/96	Pu 239 cpm		0.000
97003853	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME		480
Ratio	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.164	Pu 239/240 μ Ci/L =	<	4.0581E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000			
Sample Prep						
N/A						
Sample #	Decay Time = Date Counted - Tracer Preparation Date					
S97T001901	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time/1040.95))]					
Instrument Code	Pu 238 Tracer Recovery = (Total AT Counts / TC - Bkg) * C238 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)					
VB27905	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 238 Tracer Recovery / 100)					
MCB	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 238 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))) * 1.96 * 100					
JFR						
Analyst						
KNT						
Date Sampled						
08/12/97	Pu 239/240 μ Ci/mL	< 4.06E-04		DETECTION LEVELS in μ Ci/mL		
Analysis Date	Relative Counting Error	= 100.0%				
08/11/97	NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240		
Analysis Time	Pu 238 μ Ci/mL	< 4.06E-04		4.06E-04		
11:05 AM	Relative Counting Error	= 100.0%		Pu 238		
Sample Point	Pu 236 Tracer Recovery	= 74.9%		4.06E-04		
AZ-103 GRAB						

Analyst	KNT	Date:	12-Aug-97
Signature of Chemist	JFR	Date:	17 Aug 97

SAMPLE WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP9

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(B-0)

LIQUID / SOL

DUP

Type	DATE COUNTED		AUG-12-97	Pu 238 AEA FRAC (C238)	0.986
DUP	SAMPLE VOLUME in mL	SS	1.000	Pu 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	101.000	Pu 238 AEA FRAC (C239)	0.000
19715	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1298
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm (Bkg)	0.037
Matrix	DETECTOR NUMBER		16	Pu 238 cpm	31.530
LIQUID	EFFICIENCY FACTOR	EFF	0.272	Pu 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		11/15/96	Pu 238 cpm	0.000
97003853	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME	460
Retain	PU-236 DECAY CORR'D VALUE (dpm/mL)		2172.164	Pu 239/240 $\mu\text{Ci/L}$ =	< 4.1632E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep	N/A
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S977001901	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time/1040.85))]
Instrument Code	Pu 238 Tracer Recovery = (Total AT Counts / TC - Bkg) * C238 * 100 / (Pu-238 Decay Corr'd Value * SPKV * EFF)
WB27306	Pu 239/240 $\mu\text{Ci/L}$ = (C239 / (Pu 238 Decay Corr'd Value) * (SPKV / (1000 mL / L)) * (DF / (DDF)) / [(C238) / (D g/L) * (2220000 dpm / μCi)])
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 238 Tracer Recovery / 100)
MCB	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)]
Chemist	Relative Counting Error = Square Root of [(1 / (Pu 238 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
KNT	
Date Complete	
08/12/97	Pu 239/240 $\mu\text{Ci/mL}$ < 4.16E-04
Analysis Date	Relative Counting Error = 100.0%
08/11/97	
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.
11:05 AM	Pu 238 $\mu\text{Ci/mL}$ < 4.16E-04
Sample Point	Relative Counting Error = 100.0%
AX-101 CRAB	Pu 238 Tracer Recovery = 72.2%

DETECTION
LEVELS
in $\mu\text{Ci/mL}$
Pu 239/240
4.16E-04
Pu 238
4.16E-04

Analyst	KNT	Date:	12-Aug-97
Signature of Chemist	JFR	Date:	19 Aug 97

SAMPLE.WB1 REV 1.0

943128ML

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T001901-DUP
 File ID: 21a2147.CNF

Counted on: 8/12/97 @ 4:13
 Detector: AEA21
 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	815.5	815.5	717.337	717.337	20.000	6.991	10.000	1.858
2	20.1	20.1	570.701	570.343	20.000	10.888	10.000	2.565

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	²³⁶ Pu	0.986		5.730		0.02	31.53	1.6	129.0	0.581E-04
2	Th228	0.028	5.400	5.392	0.008	0.03	0.90	10.9	5.2	0.235E-05
Totals:		1.014	<--valid peaks only-->				32.43			

DETECTOR CALIBRATION

Energy(MEV) = 4.080 + (0.0023)*Channel
 Energy range (MeV): 4.080 TO 6.435
 Efficiency = 0.2443 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	15347.0	100.000
Smoothed	15346.8	99.999
Composite fit	15567.2	101.435
Residuals	-220.2	-1.435

Analyzed by:

GL

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Raw Data	Dump	for	AEA	Spectrum:	21a2147.CNF				
1	0.	0.	0.	0.	0.	1.	0.	0.	0.
11	0.	0.	0.	1.	1.	0.	0.	1.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	2.	0.	0.	0.	1.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	1.
51	0.	0.	0.	0.	0.	0.	0.	0.	1.
61	0.	2.	0.	0.	0.	0.	0.	0.	1.
71	1.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	1.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	1.	0.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	1.	0.	0.	0.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	1.	0.
131	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	1.	1.	0.	1.	0.	1.	0.	0.	0.
151	1.	0.	0.	0.	2.	0.	1.	1.	0.
161	0.	0.	0.	0.	0.	0.	2.	1.	1.
171	0.	0.	0.	0.	2.	0.	0.	3.	0.
181	1.	1.	0.	1.	1.	0.	0.	2.	0.
191	1.	1.	0.	4.	0.	0.	0.	0.	2.
201	1.	2.	1.	1.	0.	1.	2.	5.	0.
211	1.	2.	2.	1.	1.	0.	3.	1.	5.
221	7.	5.	5.	2.	1.	4.	5.	9.	8.
231	5.	2.	0.	3.	2.	6.	0.	3.	3.
241	2.	2.	5.	4.	1.	2.	3.	5.	10.
251	6.	7.	8.	11.	7.	4.	3.	2.	7.
261	4.	7.	11.	8.	13.	9.	10.	10.	15.
271	8.	9.	10.	9.	13.	12.	15.	13.	10.
281	18.	18.	16.	30.	30.	21.	29.	21.	8.
291	6.	9.	17.	12.	11.	16.	17.	19.	7.
301	15.	21.	17.	14.	17.	20.	12.	23.	17.
311	19.	25.	27.	23.	32.	34.	29.	33.	37.
321	44.	26.	32.	43.	42.	57.	64.	66.	77.
331	92.	98.	90.	103.	114.	114.	157.	133.	169.
341	209.	250.	274.	276.	346.	397.	421.	441.	486.
351	606.	552.	567.	567.	593.	683.	774.	886.	939.
361	739.	477.	184.	42.	7.	0.	0.	0.	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.	1.	0.
401	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	1.	1.	0.	0.
431	1.	1.	0.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.
451	0.	2.	1.	1.	0.	0.	0.	1.	1.
461	0.	2.	0.	1.	4.	0.	3.	2.	1.
471	6.	4.	4.	3.	2.	1.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	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
WL19715-STD
File ID: 13a1303.CNF

Counted on: 8/12/97 @ 4: 3
Detector: AEA13
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	773.8	773.8	360.505	360.505	14.000	5.334	7.000	0.980
2?	22.6	22.6	287.849	284.926	16.000	6.069	8.000	1.642
3?	3.4	3.4	285.988	285.000	8.000	2.729	4.000	0.511
4	1167.7	1167.7	228.290	228.287	14.000	5.240	7.000	1.205

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Pu236	0.426	5.755	5.736	0.019	0.02	41.47	1.4	183.4	0.826E-04
2		????		5.388			0.95	14.9		
3		????		5.389			0.17	81.4		
4	Pu239	0.546	5.147	5.128	0.019	0.02	53.07	1.2	230.0	0.104E-03
	Pu240		5.144	5.128	0.016				230.0	0.104E-03

Totals: 0.972 <--valid peaks only--> 94.54

DETECTOR CALIBRATION

Energy(MEV) = 4.078 + (0.0046)*Channel
Energy range (MeV): 4.078 TO 6.433
Efficiency = 0.2307 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	46698.0	100.000
Smoothed	46697.9	100.000
Composite fit	45921.8	98.338
Residuals	776.2	1.662

Analyzed by:

GL

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 8592.2

[illegible]

426

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
 WL19715-BLK
 File ID: 14a1434.CNF

Counted on: 8/12/97 @ 4: 4
 Detector: AEA14
 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	929.2	929.2	362.650	362.650	10.000	3.869	5.000	0.774
2	25.7	25.7	289.058	288.579	10.000	2.662	5.000	0.624
3	9.1	9.1	269.864	268.341	12.000	3.314	6.000	0.559

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Pu236	0.985	5.755	5.753	0.002	0.020	44.89	1.3	199.7	0.899E-04
2	Th228	0.023	5.400	5.412	-0.012	0.01	1.05	12.4	6.5	0.292E-05
3		0.011		5.319		0.02	0.49	20.9	2.1	0.966E-06
Totals:		1.019	<--valid peaks only-->				46.44			

DETECTOR CALIBRATION

Energy(MEV) = 4.085 + (0.0046)*Channel
 Energy range (MeV): 4.085 TO 6.440
 Efficiency = 0.2294 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21880.0	100.000
Smoothed	21878.6	99.994
Composite fit	22290.6	101.877
Residuals	-410.6	-1.877

Analyzed by: _____

GL

[illegible]

1	0.	0.	1.	0.	0.	1.	3.	1.	0.	2.
11	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.
21	1.	2.	0.	0.	1.	1.	0.	0.	2.	0.
31	0.	1.	1.	1.	1.	0.	0.	0.	2.	0.
41	0.	1.	1.	1.	0.	0.	0.	0.	2.	1.
51	0.	1.	0.	0.	2.	1.	1.	1.	5.	0.
61	2.	5.	5.	4.	0.	2.	0.	4.	2.	3.
71	3.	3.	3.	1.	4.	0.	2.	2.	3.	0.
81	1.	2.	0.	0.	1.	1.	1.	0.	2.	1.
91	0.	1.	0.	1.	0.	0.	0.	1.	2.	0.
101	2.	1.	1.	0.	1.	1.	1.	0.	1.	0.
111	0.	0.	0.	1.	0.	0.	2.	0.	1.	2.
121	0.	0.	3.	0.	1.	0.	2.	0.	0.	0.
131	1.	1.	0.	0.	0.	1.	1.	0.	4.	1.
141	2.	1.	1.	2.	2.	0.	0.	0.	0.	2.
151	0.	0.	1.	0.	0.	1.	0.	1.	2.	0.
161	3.	0.	0.	1.	1.	0.	0.	1.	2.	2.
171	2.	2.	1.	0.	3.	1.	3.	2.	1.	2.
181	1.	3.	1.	3.	0.	1.	0.	2.	1.	1.
191	1.	2.	2.	5.	2.	4.	3.	1.	3.	5.
201	2.	2.	1.	3.	3.	3.	0.	3.	2.	4.
211	3.	3.	3.	6.	3.	3.	1.	1.	1.	5.
221	2.	2.	4.	2.	4.	2.	6.	8.	7.	10.
231	12.	3.	10.	2.	7.	7.	2.	4.	5.	10.
241	4.	7.	5.	6.	3.	2.	8.	6.	7.	11.
251	9.	13.	13.	11.	15.	12.	12.	9.	9.	10.
261	20.	20.	12.	17.	19.	17.	20.	27.	17.	27.
271	22.	19.	21.	19.	19.	20.	17.	22.	24.	23.
281	40.	32.	19.	42.	31.	34.	42.	42.	43.	54.
291	42.	22.	30.	21.	23.	20.	20.	28.	31.	32.
301	31.	27.	30.	32.	39.	39.	36.	55.	44.	31.
311	37.	37.	58.	34.	53.	48.	54.	57.	58.	73.
321	71.	99.	93.	79.	86.	97.	116.	133.	133.	148.
331	133.	141.	162.	161.	180.	194.	207.	240.	221.	224.
341	265.	248.	319.	318.	330.	362.	390.	428.	516.	535.
351	577.	609.	630.	721.	720.	720.	679.	712.	762.	825.
361	868.	1006.	1017.	1045.	861.	607.	274.	88.	6.	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.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	2.	1.	0.	0.	0.	0.	1.
461	2.	0.	1.	0.	1.	0.	0.	1.	1.	2.
471	3.	2.	2.	3.	1.	2.	5.	3.	2.	6.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
491	0.	0.	0.	1.	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
 S97T001899-SAM
 File ID: 15a1599.CNF

Counted on: 8/12/97 @ 4: 6
 Detector: AEA15
 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	792.9	792.9	359.470	359.470	12.000	4.948	6.000	0.851
2	8.9	8.9	230.033	229.812	14.000	8.435	7.000	1.723

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	1.015	5.755	5.763	-.0080.02	44.27	1.3	193.7	0.873E-04	
	Cm243		5.779	5.763	0.016			260.0	0.117E-03	
2	Pu239	0.011	5.147	5.153	-.0060.04	0.47	15.3	2.0	0.911E-06	
	Pu240		5.144	5.153	-.009			2.0	0.911E-06	
Totals:			1.026	<--valid peaks only-->			44.74			

DETECTOR CALIBRATION

Energy(MEV) = 4.073 + (0.0047)*Channel
 Energy range (MeV): 4.073 TO 6.480
 Efficiency = 0.2332 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20936.0	100.000
Smoothed	20937.0	100.005
Composite fit	21477.9	102.588
Residuals	-541.9	-2.588

Analyzed by: _____

GL

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431

1	0.	0.	0.	0.	1.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	2.	1.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	2.	1.	1.	1.	0.	1.	1.	0.
41	1.	1.	0.	0.	1.	1.	1.	4.	0.
51	1.	1.	2.	0.	1.	4.	0.	0.	1.
61	2.	5.	2.	4.	1.	0.	2.	3.	1.
71	1.	2.	1.	0.	2.	3.	0.	0.	0.
81	0.	1.	0.	0.	1.	0.	0.	0.	1.
91	2.	0.	0.	0.	0.	0.	0.	0.	0.
101	1.	0.	0.	0.	0.	0.	0.	1.	0.
111	2.	2.	1.	1.	0.	0.	1.	1.	0.
121	1.	2.	2.	0.	1.	2.	2.	1.	0.
131	0.	1.	1.	3.	2.	1.	0.	0.	0.
141	0.	0.	0.	3.	1.	1.	1.	0.	0.
151	1.	1.	0.	3.	1.	1.	0.	0.	1.
161	0.	2.	2.	2.	1.	0.	1.	2.	1.
171	2.	4.	1.	0.	0.	2.	2.	1.	3.
181	3.	2.	1.	4.	1.	2.	2.	0.	3.
191	3.	1.	2.	3.	1.	2.	4.	4.	8.
201	6.	3.	3.	7.	2.	4.	0.	2.	4.
211	4.	4.	2.	6.	4.	5.	6.	4.	8.
221	7.	11.	8.	6.	11.	8.	11.	11.	4.
231	16.	6.	8.	3.	8.	6.	7.	6.	2.
241	4.	5.	2.	4.	6.	12.	11.	7.	17.
251	11.	7.	8.	6.	17.	9.	10.	12.	16.
261	7.	14.	14.	15.	12.	22.	8.	15.	25.
271	15.	19.	22.	8.	30.	13.	23.	25.	25.
281	31.	30.	27.	31.	29.	23.	36.	38.	29.
291	34.	29.	30.	29.	25.	28.	23.	34.	31.
301	47.	31.	39.	43.	38.	39.	47.	41.	45.
311	43.	55.	59.	61.	52.	83.	62.	75.	98.
321	80.	99.	116.	116.	108.	135.	114.	151.	180.
331	173.	167.	189.	212.	234.	212.	271.	242.	264.
341	315.	353.	382.	382.	447.	448.	511.	574.	566.
351	669.	693.	688.	710.	676.	756.	718.	792.	829.
361	840.	802.	529.	381.	151.	30.	13.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	1.	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	1.	0.	2.	0.	0.	0.	0.	2.	1.
431	0.	1.	1.	0.	0.	0.	0.	1.	0.
441	0.	1.	1.	0.	1.	1.	0.	1.	0.
451	2.	0.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	1.	2.	0.	2.	4.	2.	2.
471	0.	4.	2.	5.	0.	2.	2.	3.	2.
481	0.	0.	0.	2.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	1.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T001899-DUP
File ID: 16a1624.CNF

Counted on: 8/12/97 @ 4: 7
Detector: AEAl6
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1001.9	1001.9	361.321	361.321	10.000	3.893	5.000	0.829
2	25.5	25.5	287.953	287.234	10.000	3.787	5.000	0.750
3	9.8	9.8	229.630	229.331	14.000	16.441	7.000	2.682
4?	0.6	0.1	225.940	224.000	4.000	0.100	2.000	0.100

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	0.968	5.755	5.745	0.0100.02	46.20	1.3	186.0	0.838E-04
2	Th228	0.026	5.400	5.404	-0.0040.02	1.24	10.7	6.9	0.310E-05
3	Pu239	0.014	5.147	5.138	0.0090.08	0.68	12.5	2.7	0.120E-05
4	Pu240	0.014	5.144	5.138	0.006			2.7	0.120E-05
		????		5.114		0.00	6648.		
Totals:			1.008	<--valid peaks only-->			48.11		

DETECTOR CALIBRATION

Energy(MEV) = 4.083 + (0.0046)*Channel
Energy range (MeV): 4.083 TO 6.438
Efficiency = 0.2535 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	22912.0	100.000
Smoothed	22912.5	100.002
Composite fit	23097.6	100.810
Residuals	-185.6	-0.810

Analyzed by: _____

GL

Spectrum 16a1624.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 6257.1

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Raw Data Dump for AEA Spectrum: 16a1624.CNF

HNF-SD-WM-DP-268, REV. 0

1	0.	0.	0.	1.	0.	0.	0.	0.	0.
11	0.	1.	0.	1.	0.	0.	1.	0.	0.
21	1.	0.	1.	1.	0.	1.	0.	2.	1.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	1.	1.	0.	2.	0.	0.	2.	1.
51	0.	2.	1.	0.	0.	1.	2.	0.	2.
61	1.	0.	0.	1.	1.	1.	0.	0.	8.
71	5.	1.	0.	0.	3.	1.	1.	2.	0.
81	0.	0.	1.	1.	0.	1.	1.	0.	1.
91	0.	0.	0.	0.	0.	0.	0.	0.	3.
101	0.	0.	1.	1.	1.	1.	1.	0.	0.
111	0.	1.	0.	1.	2.	1.	0.	2.	1.
121	0.	0.	0.	1.	0.	0.	0.	1.	0.
131	0.	0.	1.	1.	1.	0.	0.	1.	1.
141	1.	1.	2.	0.	1.	0.	2.	1.	0.
151	2.	0.	1.	1.	1.	0.	2.	2.	0.
161	2.	4.	2.	0.	1.	1.	1.	0.	0.
171	3.	0.	0.	1.	0.	0.	1.	2.	1.
181	0.	2.	1.	2.	2.	1.	2.	2.	2.
191	0.	1.	4.	3.	0.	3.	2.	1.	2.
201	2.	10.	5.	2.	3.	4.	4.	5.	5.
211	6.	3.	6.	12.	6.	3.	6.	4.	7.
221	10.	9.	6.	14.	8.	11.	12.	5.	14.
231	10.	9.	8.	11.	3.	4.	5.	9.	5.
241	6.	8.	11.	8.	5.	6.	8.	2.	10.
251	13.	9.	5.	9.	13.	11.	17.	9.	7.
261	16.	9.	22.	13.	15.	16.	23.	16.	17.
271	16.	21.	17.	13.	22.	20.	19.	23.	19.
281	29.	31.	25.	45.	35.	36.	34.	50.	36.
291	30.	23.	22.	21.	21.	24.	27.	28.	18.
301	28.	32.	25.	44.	40.	34.	40.	33.	40.
311	56.	50.	52.	43.	58.	69.	65.	78.	77.
321	88.	71.	107.	93.	123.	115.	144.	148.	149.
331	174.	157.	180.	211.	189.	194.	223.	230.	248.
341	281.	321.	375.	356.	374.	415.	455.	491.	522.
351	673.	702.	720.	813.	703.	767.	736.	842.	914.
361	1064.	1166.	1017.	884.	544.	205.	58.	5.	0.
371	0.	1.	0.	1.	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.	1.	0.	1.	0.	0.
421	1.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	1.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	1.	0.	0.	1.
461	1.	1.	0.	1.	1.	0.	3.	5.	2.
471	1.	2.	1.	6.	1.	3.	5.	2.	0.
481	1.	0.	1.	0.	0.	0.	1.	0.	0.
491	0.	1.	0.	0.	1.	0.	0.	1.	0.
511	1.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T001899-SPK
 File ID: 17a1755.CNF

Counted on: 8/12/97 @ 4: 8
 Detector: AEA17
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	844.2	844.2	718.912	718.912	20.000	7.082	10.000	1.542
2	16.2	16.2	572.714	570.629	44.000	12.186	22.000	1.270
3	19.3	19.3	502.009	502.009	12.000	0.138	6.000	0.010
4	1375.8	1375.8	454.352	454.344	24.000	7.631	12.000	2.251

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	0.405	5.755	5.740	0.0150	0.02	37.85	1.5	157.6	0.710E-04
2	Th228	0.015	5.400	5.399	0.0010	0.03	1.39	9.7	8.0	0.359E-05
3		0.021		5.241		0.00	1.96	7.2	8.0	0.360E-05
4	Pu239	0.536	5.147	5.131	0.0160	0.02	50.16	1.3	204.6	0.922E-04
	Pu240		5.144	5.131	0.013				204.6	0.922E-04
Totals:			0.977	<--valid peaks only-->			91.35			

DETECTOR CALIBRATION
 Energy(MEV) = 4.086 + (0.0023)*Channel
 Energy range (MeV): 4.086 TO 6.441
 Efficiency = 0.2451 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	44903.0	100.000
Smoothed	44904.9	100.004
Composite fit	43850.0	97.655
Residuals	1053.0	2.345

Analyzed by:

GL

Spectrum 17a1755.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9052.2

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Raw Data	Dump for	AEA Spectrum:	17a1755.CNF						
1	0.	0.	2.	3.	0.	0.	0.	2.	2.
11	1.	0.	2.	1.	0.	0.	1.	1.	0.
21	0.	0.	2.	0.	2.	3.	1.	2.	2.
31	2.	0.	1.	1.	2.	2.	1.	1.	0.
41	5.	2.	0.	1.	2.	0.	0.	0.	0.
51	2.	3.	3.	2.	2.	2.	2.	1.	1.
61	0.	3.	2.	0.	4.	4.	3.	3.	4.
71	4.	3.	0.	2.	0.	2.	4.	3.	2.
81	5.	2.	4.	6.	3.	4.	3.	3.	3.
91	3.	2.	0.	4.	2.	1.	3.	4.	0.
101	6.	4.	0.	4.	1.	4.	3.	3.	7.
111	5.	9.	9.	7.	2.	10.	5.	7.	4.
121	10.	3.	5.	5.	4.	6.	5.	6.	9.
131	7.	11.	11.	2.	10.	12.	9.	14.	12.
141	10.	9.	10.	11.	14.	10.	9.	13.	18.
151	22.	16.	14.	11.	15.	19.	16.	21.	27.
161	20.	23.	32.	29.	23.	27.	36.	32.	36.
171	41.	49.	53.	48.	45.	57.	49.	55.	66.
181	62.	64.	62.	83.	76.	90.	106.	107.	112.
191	126.	126.	143.	143.	152.	170.	154.	179.	201.
201	221.	229.	230.	284.	241.	306.	325.	356.	316.
211	408.	471.	510.	538.	574.	655.	682.	730.	833.
221	870.	876.	1082.	1165.	1306.	1498.	1570.	1557.	1447.
231	638.	297.	93.	18.	7.	1.	4.	4.	4.
241	4.	3.	3.	9.	7.	4.	9.	9.	11.
251	12.	10.	12.	8.	6.	10.	4.	14.	10.
261	10.	10.	14.	17.	16.	16.	7.	15.	15.
271	14.	10.	12.	14.	20.	27.	22.	19.	25.
281	25.	20.	22.	21.	27.	34.	19.	33.	22.
291	14.	19.	20.	15.	25.	29.	22.	22.	28.
301	47.	31.	32.	35.	27.	39.	29.	32.	38.
311	32.	39.	41.	57.	50.	38.	55.	54.	52.
321	66.	82.	64.	84.	97.	108.	97.	114.	128.
331	138.	147.	145.	147.	152.	190.	202.	220.	233.
341	260.	283.	297.	351.	384.	417.	400.	491.	574.
351	633.	644.	576.	658.	588.	668.	720.	829.	885.
361	939.	706.	424.	163.	36.	1.	0.	0.	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	1.	0.	0.	0.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	1.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	3.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	1.	0.	0.	0.	2.	1.	0.
451	1.	0.	0.	0.	0.	0.	2.	0.	2.
461	3.	0.	1.	0.	2.	1.	0.	3.	1.
471	1.	1.	4.	3.	3.	0.	0.	0.	0.
481	0.	0.	0.	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
 S97T001900-SAM
 File ID: 18a1855.CNF

Counted on: 8/12/97 @ 4:10
 Detector: AEA18
 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	457.6	457.6	710.232	710.232	28.000	17.848	14.000	3.055
2?	2.1	2.1	571.295	571.295	8.000	0.000	4.000	3.686

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.					
1	Ra224	1.046	5.686	5.719	-0.033	0.04	27.69	1.7	121.1	0.546E-04
	Pu236		5.755	5.719	0.036				116.2	0.523E-04
2		????		5.400			0.00	1000.		
Totals:		1.046	<--valid peaks only-->				27.69			

DETECTOR CALIBRATION

Energy (MEV) = 4.086 + (0.0023)*Channel
 Energy range (MeV): 4.086 TO 6.441
 Efficiency = 0.2432 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	12705.0	100.000
Smoothed	12705.0	100.000
Composite fit	13294.3	104.638
Residuals	-589.3	-4.638

Analyzed by:

GL

[illegible]

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	1.	0.	0.	1.	1.	0.	0.	0.	0.
21	0.	0.	0.	0.	1.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	2.	0.	0.	0.	2.
51	1.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	1.	0.	1.	0.
71	1.	0.	0.	0.	0.	0.	1.	0.	1.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	1.	2.	1.	0.	0.	0.	0.
101	0.	0.	1.	1.	0.	0.	0.	0.	0.
111	1.	0.	0.	0.	0.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	1.	0.	1.	0.	0.
141	1.	0.	0.	0.	0.	1.	0.	0.	2.
151	2.	1.	0.	0.	1.	1.	2.	0.	0.
161	0.	0.	1.	0.	0.	1.	1.	0.	2.
171	1.	1.	1.	1.	2.	0.	1.	2.	0.
181	2.	0.	0.	0.	2.	2.	1.	1.	1.
191	1.	2.	1.	1.	0.	3.	1.	1.	3.
201	1.	3.	3.	3.	3.	4.	4.	4.	5.
211	2.	7.	6.	3.	2.	6.	7.	6.	10.
221	9.	0.	9.	7.	8.	7.	7.	1.	4.
231	4.	7.	1.	5.	2.	3.	3.	3.	1.
241	5.	8.	4.	4.	6.	5.	5.	5.	6.
251	6.	9.	5.	2.	4.	8.	7.	8.	5.
261	8.	5.	3.	13.	5.	2.	8.	11.	6.
271	6.	12.	12.	12.	11.	12.	19.	11.	17.
281	14.	12.	8.	16.	19.	14.	22.	9.	11.
291	12.	12.	4.	6.	12.	13.	17.	13.	10.
301	15.	14.	20.	16.	21.	20.	16.	23.	20.
311	22.	23.	29.	28.	27.	29.	33.	49.	40.
321	55.	46.	54.	71.	77.	84.	83.	86.	87.
331	125.	115.	144.	143.	177.	181.	199.	190.	246.
341	249.	304.	345.	389.	390.	411.	430.	461.	420.
351	449.	446.	483.	423.	457.	475.	468.	444.	376.
361	241.	167.	76.	56.	23.	8.	4.	1.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	1.	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.	1.	1.	0.	0.	0.
431	0.	0.	0.	1.	1.	0.	0.	0.	0.
441	0.	0.	2.	0.	0.	0.	0.	1.	0.
451	0.	1.	0.	3.	1.	0.	0.	0.	0.
461	0.	1.	1.	2.	3.	1.	2.	1.	3.
471	3.	1.	4.	0.	1.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	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
 S97T001900-DUP
 File ID: 19a1957.CNF

Counted on: 8/12/97 @ 4:11
 Detector: AEA19
 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	698.9	698.9	719.692	719.692	24.000	8.357	12.000	1.623
2	17.1	17.1	574.279	571.533	16.000	7.161	8.000	3.518
3?	8.6	8.6	532.628	531.407	44.000	19.993	22.000	23.046
4?	8.3	8.3	511.110	507.394	16.000	5.588	8.000	1.436

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	Pu-236	0.990	5.732	0.02	34.86	1.5	143.2	0.645E-04
2	Th228	0.013	5.400	5.391	0.0090	0.02	0.45	23.6
3	????	????	5.299		0.27	33.0		
4	????	????	5.243		0.32	22.0		
Totals:			1.003	<--valid peaks only-->		35.32		

DETECTOR CALIBRATION

Energy(MEV) = 4.076 + (0.0023)*Channel
 Energy range (MeV): 4.076 TO 6.432
 Efficiency = 0.2435 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16896.0	100.000
Smoothed	16898.0	100.012
Composite fit	17236.0	102.012
Residuals	-340.0	-2.012

Analyzed by: _____

GL

[illegible]

Raw Data Dump for AEA Spectrum: 19a1957.CNF

HNF-SD-WM-DP-268, REV. 0

1	0.	0.	0.	0.	2.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	1.	1.	0.	0.	0.	1.	0.	0.
31	0.	0.	0.	0.	1.	1.	0.	0.	0.
41	0.	0.	1.	0.	1.	0.	0.	0.	0.
51	1.	1.	0.	1.	0.	0.	1.	0.	0.
61	1.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	1.	0.	0.	1.	0.	0.	1.
81	0.	1.	0.	0.	0.	1.	0.	1.	0.
91	0.	0.	0.	0.	0.	0.	0.	0.	1.
101	0.	0.	1.	0.	0.	1.	0.	0.	1.
111	0.	0.	0.	0.	0.	1.	1.	0.	2.
121	0.	2.	0.	1.	0.	0.	0.	1.	3.
131	1.	0.	0.	0.	0.	0.	2.	0.	2.
141	0.	1.	0.	0.	0.	0.	0.	0.	1.
151	1.	0.	1.	1.	0.	1.	0.	0.	0.
161	0.	1.	0.	0.	0.	0.	2.	3.	4.
171	0.	2.	2.	0.	2.	1.	1.	2.	0.
181	2.	3.	1.	0.	1.	2.	1.	1.	3.
191	1.	2.	0.	2.	2.	1.	3.	5.	3.
201	0.	5.	1.	0.	3.	3.	4.	5.	2.
211	2.	3.	2.	3.	2.	2.	2.	2.	3.
221	5.	5.	7.	4.	6.	10.	5.	4.	6.
231	5.	2.	4.	4.	4.	5.	5.	6.	7.
241	4.	3.	6.	4.	12.	10.	4.	7.	10.
251	10.	13.	11.	6.	21.	11.	8.	12.	12.
261	10.	11.	5.	16.	13.	18.	16.	16.	7.
271	12.	15.	18.	11.	25.	20.	10.	13.	15.
281	25.	20.	28.	37.	31.	27.	38.	29.	35.
291	19.	14.	25.	24.	16.	16.	16.	20.	21.
301	26.	26.	28.	32.	25.	20.	30.	44.	21.
311	35.	41.	50.	35.	55.	40.	58.	65.	70.
321	66.	61.	80.	81.	90.	96.	95.	102.	132.
331	126.	132.	133.	165.	146.	165.	184.	191.	219.
341	245.	274.	300.	325.	313.	382.	434.	442.	490.
351	543.	570.	615.	534.	535.	543.	618.	710.	733.
361	757.	718.	546.	298.	88.	20.	0.	0.	0.
371	1.	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	1.	1.	0.	0.	0.	0.	3.	0.	0.
431	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	1.	0.	1.	1.	0.	1.	0.	1.	3.
471	2.	4.	3.	2.	2.	0.	1.	0.	0.
481	1.	0.	0.	0.	0.	0.	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
S97T001901-SAM
File ID: 20a2057.CNF

Counted on: 8/12/97 @ 4:12
Detector: AEA20
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	728.8	728.8	718.303	718.303	24.000	7.261	12.000	1.497
2	17.1	17.1	574.079	572.484	20.000	8.380	10.000	3.111
3	9.0	9.0	536.534	534.816	24.000	9.953	12.000	1.315
4?	7.4	7.4	455.291	454.932	20.000	5.400	10.000	1.300

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.				
1	<i>Ra-226</i>	0.976		5.734 0.02	34.15	1.5	139.9	0.630E-04
2	Th228	0.016	5.400	5.399 0.0010.02	0.55 19.7		3.2	0.143E-05
3		0.018		5.312 0.02	0.62 15.7		2.5	0.114E-05
4		????		5.128	0.30 21.3			

Totals:		1.009	<--valid peaks only-->			35.31		

DETECTOR CALIBRATION

Energy(MEV) = $4.082 + (0.0023) \cdot \text{Channel}$
 Energy range (MeV): 4.082 TO 6.437
 Efficiency = 0.2440 CPM/DPM
 (Data reduction compression factor: 2.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	16801.0	100.000
Smoothed	16801.0	100.000
Composite fit	17094.4	101.747
Residuals	-293.4	-1.747

Analyzed by: _____

GL

[illegible]

Raw Data Dump for AEA Spectrum: 20a2057.CNF

1	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
21	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
31	1.	1.	2.	0.	1.	1.	0.	1.	1.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	2.	1.
51	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
61	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
71	0.	0.	2.	1.	1.	0.	1.	0.	0.	0.
81	0.	0.	0.	0.	1.	0.	0.	0.	2.	0.
91	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
101	0.	1.	2.	0.	0.	1.	1.	0.	0.	0.
111	2.	0.	2.	0.	0.	0.	0.	0.	0.	1.
121	2.	1.	0.	1.	1.	1.	0.	3.	0.	0.
131	0.	1.	1.	0.	0.	1.	0.	2.	3.	3.
141	1.	0.	1.	0.	3.	1.	2.	0.	0.	0.
151	0.	0.	1.	0.	0.	1.	1.	3.	2.	0.
161	0.	0.	0.	0.	1.	1.	0.	2.	1.	0.
171	0.	2.	1.	1.	1.	0.	0.	1.	0.	0.
181	0.	1.	0.	0.	0.	0.	2.	2.	1.	1.
191	3.	0.	1.	3.	3.	0.	3.	3.	1.	0.
201	1.	2.	4.	1.	4.	5.	2.	2.	5.	2.
211	7.	5.	4.	6.	2.	8.	3.	9.	3.	8.
221	8.	6.	10.	11.	6.	6.	8.	16.	8.	6.
231	7.	3.	5.	4.	4.	3.	4.	4.	6.	6.
241	7.	3.	4.	2.	1.	5.	5.	8.	9.	5.
251	12.	6.	10.	10.	13.	9.	5.	9.	10.	9.
261	17.	9.	8.	10.	12.	14.	19.	19.	14.	18.
271	11.	11.	17.	13.	14.	13.	20.	18.	13.	13.
281	25.	23.	17.	31.	26.	35.	29.	31.	32.	19.
291	16.	17.	24.	19.	27.	22.	28.	20.	30.	24.
301	23.	26.	30.	36.	37.	30.	29.	26.	41.	30.
311	40.	26.	42.	43.	51.	43.	62.	63.	58.	68.
321	74.	67.	77.	83.	88.	96.	89.	95.	115.	127.
331	142.	154.	149.	144.	186.	174.	196.	197.	204.	254.
341	272.	251.	291.	316.	353.	374.	397.	502.	535.	564.
351	583.	557.	543.	540.	570.	595.	663.	730.	801.	840.
361	765.	557.	298.	93.	15.	2.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	2.	0.	0.	0.	0.	1.	0.
461	0.	0.	1.	2.	1.	0.	5.	0.	3.	2.
471	1.	1.	1.	0.	1.	4.	1.	2.	0.	0.
481	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

HNH-SD-WM-DP-268, REV. 0

APPENDIX A
OPPORTUNISTIC ANALYTE RESULTS

HNF-SD-WM-DP-268, REV. 0

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Appendix A: Opportunistic Analyte Results
AX-101 GRAB

RISER: 5B
SEGMENT #: 1AX-97-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk	Rec %	Det Limit	Count	Err%
S97T001896			TOC by Persulfate/Coulometry	ug/mL	92.33	13.10	4.24e+03	3.85e+03	4.04e+03	9.64	149.0	40.00	n/a		
S97T001896	D		Silver-ICP-Acid Dil.	ug/mL	96.60	<1.00e-02	18.10	17.30	17.70	4.52	92.60	6.010	n/a		
S97T001896	D		Arsenic-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	83.40	60.10	n/a		
S97T001896	D		Boron-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	44.80	43.00	43.90	4.10	97.20	30.10	n/a		
S97T001896	D		Barium-ICP-Acid Dil.	ug/mL	97.40	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	93.70	30.10	n/a		
S97T001896	D		Beryllium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-03	< 3.000	<3.00e0	n/a	n/a	99.10	3.000	n/a		
S97T001896	D		Bismuth-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	102.0	60.10	n/a		
S97T001896	D		Calcium-ICP-Acid Dil.	ug/mL	97.00	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	102.0	60.10	n/a		
S97T001896	D		Cadmium-ICP-Acid Dil.	ug/mL	98.80	<5.00e-03	< 3.000	<3.00e0	n/a	n/a	98.80	3.000	n/a		
S97T001896	D		Cerium-ICP-Acid Dil.	ug/mL	97.40	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	94.90	60.10	n/a		
S97T001896	D		Cobalt-ICP-Acid Dil.	ug/mL	101.4	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	101.0	12.00	n/a		
S97T001896	D		Chromium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-02	87.90	83.40	85.65	5.25	97.70	6.010	n/a		
S97T001896	D		Copper-ICP-Acid Dil.	ug/mL	101.2	<1.00e-02	< 60.10	<6.01e0	n/a	n/a	97.30	6.010	n/a		
S97T001896	D		Potassium-ICP-Acid Dil.	ug/mL	95.60	<5.00e-01	7.25e+03	6.84e+03	7.04e+03	5.82	-2.160e0	300.0	n/a		
S97T001896	D		Lanthanum-ICP-Acid Dil.	ug/mL	98.80	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	97.30	30.10	n/a		
S97T001896	D		Lithium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 60.10	<6.01e0	n/a	n/a	93.80	6.010	n/a		
S97T001896	D		Magnesium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	94.60	60.10	n/a		
S97T001896	D		Manganese-ICP-Acid Dil.	ug/mL	96.60	<1.00e-02	< 60.10	<6.01e0	n/a	n/a	94.60	6.010	n/a		
S97T001896	D		Molybdenum-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	1.26e+02	115.0	120.5	9.13	99.10	30.10	n/a		
S97T001896	D		Neodymium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	96.30	60.10	n/a		
S97T001896	D		Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	98.00	12.00	n/a		
S97T001896	D		Phosphorus-ICP-Acid Dil.	ug/mL	102.4	<2.00e-01	1.04e+03	981.0	1.01e+03	5.84	99.30	120.0	n/a		
S97T001896	D		Lead-ICP-Acid Dil.	ug/mL	97.80	<1.00e-01	1.26e+02	115.0	120.5	9.13	96.40	60.10	n/a		
S97T001896	D		Sulfur-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	9.16e+02	737.0	826.5	21.7	118.0	60.10	n/a		
S97T001896	D		Antimony-ICP-Acid Dil.	ug/mL	96.20	<6.00e-02	< 36.10	<3.61e1	n/a	n/a	98.00	36.10	n/a		
S97T001896	D		Selenium-ICP-Acid Dil.	ug/mL	93.80	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	102.0	60.10	n/a		
S97T001896	D		Silicon-ICP-Acid Dil.	ug/mL	103.2	<5.00e-02	45.30	47.50	46.40	4.74	105.0	30.10	n/a		
S97T001896	D		Samarium-ICP-Acid Dil.	ug/mL	97.00	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	95.40	60.10	n/a		
S97T001896	D		Strontium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 60.10	<6.01e0	n/a	n/a	95.60	6.010	n/a		
S97T001896	D		Titanium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 60.10	<6.01e0	n/a	n/a	96.60	6.010	n/a		
S97T001896	D		Thallium-ICP-Acid Dil.	ug/mL	95.00	<2.00e-01	<1.20e+02	<1.20e2	n/a	n/a	92.00	120.0	n/a		
S97T001896	D		Uranium-ICP-Acid Dil.	ug/mL	96.10	<5.00e-01	<3.00e+02	<3.00e2	n/a	n/a	95.00	300.0	n/a		
S97T001896	D		Vanadium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	100.0	30.10	n/a		
S97T001896	D		Zinc-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 60.10	<6.01e0	n/a	n/a	101.0	6.010	n/a		
S97T001896	D		Zirconium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 60.10	<6.01e0	n/a	n/a	98.30	6.010	n/a		
S97T001896			Bromide by Ion Chromatograph	ug/mL	95.59	<1.25e-01	<5.18e+02	<5.18e2	n/a	n/a	92.19	517.6	n/a		
S97T001896			Oxalate-IC-Dioxex 4000/450	ug/mL	94.90	<1.05e-01	<4.35e+02	<4.35e2	n/a	n/a	98.68	434.8	n/a		
S97T001899			Cobalt-60 by GEA	uci/mL	103.6	<1.71e-02	<1.70e-02	<1.62e-2	n/a	n/a	n/a	1.70e-02	n/a		

450

HNF-SD-WM-DP-268, REV. 0

Appendix A: Opportunistic Analyte Results
AX-101 GRAB

RISER: 58
SEGMENT #: 1AX-97-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001897		D	TOC by Persulfate/Coulometry	ug/mL	92.33	13.10	3.73e+03	3.62e+03	3.68e+03	2.99	n/a	40.00	n/a
S97T001897		D	Silver-ICP-Acid Dil.	ug/mL	96.60	<1.00e-02	17.00	17.30	17.30	3.47	n/a	6.010	n/a
S97T001897		D	Arsenic-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001897		D	Boron-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	42.70	44.60	44.65	8.73	n/a	30.10	n/a
S97T001897		D	Barium-ICP-Acid Dil.	ug/mL	97.40	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S97T001897		D	Beryllium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-03	< 3.000	<3.00e0	n/a	n/a	n/a	3.000	n/a
S97T001897		D	Bismuth-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001897		D	Calcium-ICP-Acid Dil.	ug/mL	97.00	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001897		D	Cadmium-ICP-Acid Dil.	ug/mL	98.80	<5.00e-03	< 3.000	<3.00e0	n/a	n/a	n/a	3.000	n/a
S97T001897		D	Cerium-ICP-Acid Dil.	ug/mL	97.40	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001897		D	Cobalt-ICP-Acid Dil.	ug/mL	101.4	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	n/a	12.00	n/a
S97T001897		D	Chromium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-02	80.40	88.20	84.30	9.25	n/a	6.010	n/a
S97T001897		D	Copper-ICP-Acid Dil.	ug/mL	101.2	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001897		D	Potassium-ICP-Acid Dil.	ug/mL	95.60	<5.00e-01	7.12e+03	7.48e+03	7.30e+03	4.93	n/a	300.0	n/a
S97T001897		D	Lanthanum-ICP-Acid Dil.	ug/mL	98.80	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S97T001897		D	Lithium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001897		D	Magnesium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001897		D	Manganese-ICP-Acid Dil.	ug/mL	96.60	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001897		D	Molybdenum-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	1.17e+02	128.0	122.5	8.98	n/a	30.10	n/a
S97T001897		D	Neodymium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001897		D	Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	n/a	12.00	n/a
S97T001897		D	Phosphorus-ICP-Acid Dil.	ug/mL	102.4	<2.00e-01	9.64e+02	1.01e+03	987.0	4.66	n/a	120.0	n/a
S97T001897		D	Lead-ICP-Acid Dil.	ug/mL	97.80	<1.00e-01	1.12e+02	131.0	121.5	15.6	n/a	60.10	n/a
S97T001897		D	Sulfur-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	4.17e+02	409.0	413.0	1.94	n/a	60.10	n/a
S97T001897		D	Antimony-ICP-Acid Dil.	ug/mL	96.20	<6.00e-02	< 36.10	<3.61e1	n/a	n/a	n/a	36.10	n/a
S97T001897		D	Selenium-ICP-Acid Dil.	ug/mL	93.80	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001897		D	Silicon-ICP-Acid Dil.	ug/mL	103.2	<5.00e-02	42.10	45.70	43.90	8.20	n/a	30.10	n/a
S97T001897		D	Samarium-ICP-Acid Dil.	ug/mL	97.00	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001897		D	Strontium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001897		D	Titanium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001897		D	Thallium-ICP-Acid Dil.	ug/mL	95.00	<2.00e-01	<1.20e+02	<1.20e2	n/a	n/a	n/a	120.0	n/a
S97T001897		D	Uranium-ICP-Acid Dil.	ug/mL	96.10	<5.00e-01	<3.00e+02	<3.00e2	n/a	n/a	n/a	300.0	n/a
S97T001897		D	Vanadium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S97T001897		D	Zinc-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	11.50	12.50	12.00	8.33	n/a	6.010	n/a
S97T001897		D	Zirconium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001897		D	Bromide by Ion Chromatograph	ug/mL	101.7	<1.25e-01	<6.44e+02	<6.44e2	n/a	n/a	n/a	643.9	n/a
S97T001897		D	Oxalate-IC-Dionex 4000/450	ug/mL	99.06	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	n/a	540.9	n/a
S97T001900		D	Cobalt-60 by GEA	uCi/mL	103.6	<1.71e-02	<1.74e-02	<1.50e-2	n/a	n/a	n/a	1.70e-02	n/a

HNF-SD-WM-DP-268, REV. 0

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Appendix A: Opportunistic Analyte Results
AX-101 GRAB

RISER: 5B
SEGMENT #: 1AX-97-3

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001898			TOC by Persulfate/Coulometry	ug/mL	92.33	13.10	3.79e+03	4.53e+03	4.16e+03	17.8	n/a	40.00	n/a
S97T001898	D		Silver-ICP-Acid Dil.	ug/mL	96.60	<1.00e-02	17.20	18.30	17.75	6.20	n/a	6.010	n/a
S97T001898	D		Arsenic-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001898	D		Boron-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	47.50	47.80	47.65	0.63	n/a	30.10	n/a
S97T001898	D		Barium-ICP-Acid Dil.	ug/mL	97.40	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S97T001898	D		Beryllium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-03	< 3.000	<3.00e0	n/a	n/a	n/a	3.000	n/a
S97T001898	D		Bismuth-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001898	D		Calcium-ICP-Acid Dil.	ug/mL	97.00	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001898	D		Cadmium-ICP-Acid Dil.	ug/mL	98.80	<5.00e-03	< 3.000	<3.00e0	n/a	n/a	n/a	3.000	n/a
S97T001898	D		Cerium-ICP-Acid Dil.	ug/mL	97.40	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001898	D		Cobalt-ICP-Acid Dil.	ug/mL	101.4	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	n/a	12.00	n/a
S97T001898	D		Chromium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-02	80.20	83.50	81.85	4.03	n/a	6.010	n/a
S97T001898	D		Copper-ICP-Acid Dil.	ug/mL	101.2	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001898	D		Potassium-ICP-Acid Dil.	ug/mL	95.60	<5.00e-01	7.72e+03	7.84e+03	7.78e+03	1.54	n/a	300.0	n/a
S97T001898	D		Lanthanum-ICP-Acid Dil.	ug/mL	98.80	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S97T001898	D		Lithium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001898	D		Magnesium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001898	D		Manganese-ICP-Acid Dil.	ug/mL	96.60	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001898	D		Molybdenum-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	1.33e+02	134.0	133.5	0.75	n/a	30.10	n/a
S97T001898	D		Neodymium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001898	D		Nickel-ICP-Acid Dil.	ug/mL	98.40	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	n/a	12.00	n/a
S97T001898	D		Phosphorus-ICP-Acid Dil.	ug/mL	102.4	<2.00e-01	1.03e+03	1.08e+03	1.06e+03	4.74	n/a	120.0	n/a
S97T001898	D		Lead-ICP-Acid Dil.	ug/mL	97.80	<1.00e-01	1.42e+02	136.0	139.0	4.32	n/a	60.10	n/a
S97T001898	D		Sulfur-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	3.78e+02	406.0	392.0	7.14	n/a	60.10	n/a
S97T001898	D		Antimony-ICP-Acid Dil.	ug/mL	96.20	<6.00e-02	< 36.10	<3.61e1	n/a	n/a	n/a	36.10	n/a
S97T001898	D		Selenium-ICP-Acid Dil.	ug/mL	93.80	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001898	D		Silicon-ICP-Acid Dil.	ug/mL	103.2	<5.00e-02	40.60	41.20	40.90	1.47	n/a	30.10	n/a
S97T001898	D		Samarium-ICP-Acid Dil.	ug/mL	97.00	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S97T001898	D		Strontium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001898	D		Titanium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001898	D		Thallium-ICP-Acid Dil.	ug/mL	95.00	<2.00e-01	<1.20e+02	<1.20e2	n/a	n/a	n/a	120.0	n/a
S97T001898	D		Uranium-ICP-Acid Dil.	ug/mL	96.10	<5.00e-01	<3.00e+02	<3.00e2	n/a	n/a	n/a	300.0	n/a
S97T001898	D		Vanadium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S97T001898	D		Zinc-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001898	D		Zirconium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S97T001898			Bromide by Ion Chromatograph	ug/mL	101.7	<1.25e-01	<6.44e+02	<6.44e2	n/a	n/a	n/a	643.9	n/a
S97T001898			Oxalate-IC-Dionex 4000/450	ug/mL	99.06	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	n/a	540.9	n/a
S97T001901			Cobalt-60 by GEA	uci/mL	99.90	<1.61e-02	<1.85e-02	<1.49e-2	n/a	n/a	n/a	1.80e-02	n/a

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