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Page 1 of 1

1. EDT 623169

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Waste Management Laboratory	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: Tank 241 AN-101 Grab/Waste Management/WML	6. Design Authority/ Design Agent/Cog. Engr.: Keith Fuller	7. Purchase Order No.: N/A
8. Originator Remarks: This document is being released into the supporting document system for retrievability purposes.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 241-AN-101
11. Receiver Remarks: For release.	11A. Design Baseline Document? [] Yes [X] No	12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 10/22/98

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	HNF-1640	N/A	0	Tank 241-AN-101, Grab Samples 6AN-98-1,2,3 Analytical Results for the Final Report	Q	2	1	1

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved w/comment 6. Receipt acknowledge

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BD-7400-172-2 (05/96) GEF097

Tank 241-AN-101, Grab Samples, 1AN-98-1, 1AN-98-2 and 1AN-98-3 Analytical Results for the Final Report

Keith Fuller
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U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: EDT-623169 UC: 2070
Org Code: 7576B Charge Code: MD378
B&R Code: EW 3120074 Total Pages: 334

Key Words: Tank 241-AN-106, 241-AN-101, AN-101, AN Farm, Grab, Liquid Grab, Analytical Results, Final Report

Abstract: N/A

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10/21/98

Release Approval Date

DATE HANFORD RELEASE ID: 58
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Release Stamp

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HNF-1640 REV. 0

WASTE MANAGEMENT LABORATORY

TANK 241-AN-101 LIQUID GRAB SAMPLES

ANALYTICAL RESULTS FOR THE FINAL REPORT

Project Coordinator: Keith Fuller

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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WASTE MANAGEMENT LABORATORY

TANK 241-AN-101 GRAB SAMPLES, 1AN-98-1, 1AN-98-2 and 1AN-98-3 ANALYTICAL RESULTS FOR THE FINAL REPORT

This document is the final report for tank 241-AN-101 grab samples. Three grab samples 1AN-98-1, 1AN-98-2 and 1AN-98-3 were taken from riser 16 of tank 241-AN-101 on April 8, 1998 and received by the 222-S Laboratory on April 9, 1998. Analyses were performed in accordance with the *Compatibility Grab Sampling and Analysis Plan* (TSAP) (Sasaki, 1998) and the *Data Quality Objectives for Tank Farms Waste Compatibility Program* (DQO) (Mulkey and Miller, 1997). The analytical results are presented in the data summary report (Table 1). No notification limits were exceeded.

Appearance and Sample Handling

The sample breakdown diagrams (Attachment 1) are provided as a cross-reference for relating the tank farm customer identification numbers with the 222-S Laboratory sample numbers and the portion of sample analyzed. Table 2 provides the appearance information.

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

Sample Number	Date Sampled	Date Received	% Settled Solids	Sample Description
1AN-98-1	4/08/98	4/09/98	<1 %	Clear light-yellow liquid; no organic layer was observed.
1AN-98-2	4/08/98	4/09/98	<1 %	Clear light-yellow liquid; no organic layer was observed.
1AN-98-3	4/08/98	4/09/98	<1 %	Clear light-yellow liquid; no organic layer was observed.

Analytical Results Summary

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

Compatibility Program Concerns

Differential Scanning Calorimetry (DSC)

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. No exotherms were observed. The standard recoveries for this analysis were within the required limits. Since the results were all reported as 0.00 Joules/g, the relative percent difference (RPD) calculation was not applicable. However, the RPDs were reported as "0" in Table 1 because of software limitations. For waste compatibility energetics decision concerns for safe waste transfers, the ratio of exothermic energy to endotherm energy must be less than one (1). Since the results were all reported as 0.00 Joules/g, the ratio of exotherm/endotherm was also 0.0 and the requirement was satisfied for all samples.

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

The results with respect to the waste compatibility corrosion rules are presented in Table 3. The NO_3^-, OH^-, and NO_2^- 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 NO_2^- based on the range that the NO_3^- concentration falls in. If "NO" appears in the space under a condition, that condition is not met and a notification is required. All results for the three samples analyzed were within the acceptable concentration ranges required for corrosion control.

$^{239/240}$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 for this analysis was within the required limits. The highest reported result was 6.62e-05 µCi/mL, which is well below both the immediate notification limit of 61.5 µCi/mL and the criticality prevention concern level of 0.001g/L (6.2e-02 µCi/mL) stated in the TSAP (Sasaki, 1997) and the Compatibility DQO (Mulkey and Miller, 1997).

Uranium (U) – Criticality Decision Rule

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

Inorganic Analyses

TGA - Thermogravimetric Analysis

The TGA analysis was performed in duplicate on direct subsamples. The standard recoveries and RPDs for this analysis were within the required limits. Typically the TGA results are determined by summing the weight loss steps which occurred below 250°C. More information may be obtained by examining the thermograms. The results ranged from 71.33 to 94.84% moisture.

Specific Gravity (Sp.G.)

Specific gravity analysis was performed in duplicate on direct liquid subsamples. The results ranged from 1.033 g/mL to 1.251 g/mL. The RPDs were within the quality control (QC) parameters stated in the TSAP (Sasaki, 1998). The standard recoveries were within the control limits of the laboratory.

pH

The pH analysis was performed on direct sample aliqouts. The results ranged from 13.06 to 13.50. Results for pH that are greater than 12.5 are suspect and should be considered estimates because the highest calibration buffer available is 12.5 and pH electrode performance degrades at high pH. The standard value measured and RPDs for this analysis were within the required limits.

OH

The OH analysis was performed on direct sample aliquots. The standard recoveries and RPDs for this analysis were within the required limits.

IC - Ion Chromatography

The ion chromatography (IC) analysis was performed on direct sample aliquots. The required analytes were fluoride (F^-), chloride (Cl^-), nitrate (NO_3^-), nitrite (NO_2^-), phosphate (PO_4^{-3}) and sulfate (SO_4^{-2}). The results for bromide (Br^-) and oxalate are considered "opportunistic" and are provided in Appendix A.

The standard and spike recoveries were within the required limits. The RPDs were within required limits. With the exception of SO_4^{-2} for sample S98T001365 which was not applicable

(n/a) because the results were near the detection limit.

ICP - Inductively Coupled Plasma Spectrophotometry

The liquid subsamples were prepared for analysis by an acid adjustment of the direct subsample. This is indicated by a "D" in the A# column in Table 1. The results for the ICP analytes are included in Table 1. However, the QC review discussed in this report is limited to aluminum (Al), chromium (Cr), iron (Fe), manganese (Mn), sodium (Na), nickel (Ni) and zirconium (Zr). All other analyte results are presented in Appendix A. These results are considered "opportunistic" and do not have customer defined QC parameters. Therefore, any anomalies in those results are not discussed in this report. The standard recoveries, spike recoveries and RPD's met the requested criteria, with the exception noted below.

The Na results were more than four times the concentration of the spike added resulting in spike recoveries outside of the 75% to 125% recovery range requested. Typically, with high analyte concentrations it is difficult to add sufficient spike to perform a meaningful analysis. A post digestion spike analysis was performed as an additional instrument performance check. The post digestion spike recovery was 101.9%. 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 result obtained from this analysis should be within ±10% of the undiluted sample result. Table 3 presents the results of the original undiluted sample, the serial dilution and the percent difference between the two results.

Table 3. ICP Serial Dilution Results for Tank 241-AN-101 Grab Samples

Sample ID	Analyte	Undiluted Sample Results (mg/mL)	Serial Dilution Result	Percent Difference (%)
S98T001362	Na	1.94E+4	1.97E+4	1.54

Percent Difference = [(ABS(Sample - Serial Dilution))/Sample] X 100

Inductively Coupled Plasma/Mass Spectroscopy (ICP/MS) - Uranium

The liquid subsamples were prepared for analysis by an acid adjustment of the direct subsample. The results for the ICP/MS isotopic uranium are included in Table 1. The standard recoveries for Uranium 238 were within the required limits. RPDs and spike recoveries for this analysis were also within the required limits.

TIC/TOC - Total Inorganic/Organic Carbon

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

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

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

TOC by furnace was also performed on each sample. The results can be found in the opportunistic analysis table in Appendix A

Ammonia (NH_3)

NH_3 analysis was performed on each sample. The results can be found in the opportunistic analysis table in Appendix A.

Radionuclide Analyses

GEA - Gamma Energy Analysis

GEA analysis was performed for ^{137}Cs on direct sample aliquots. The standard recoveries and RPDs for ^{137}Cs were within the required limits

^{90}Sr - Strontium 90

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

^{241}Am - Americium 241

^{241}Am analysis was performed on direct sample aliquots. The standard recoveries and RPDs for this analysis were within the required limits.

Procedures

Table 4 lists the analytical procedures used for performing the analyses.

Table 4: Analytical Procedures

Analysis	Preparation Procedure	Analysis Procedure
Inorganic Analyses		
% Settled Solids	Direct Analysis	LA-519-151 Rev. F-0
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. C-1
OH^-	Direct Analysis	LA-211-102 Rev. D-0
IC	Direct Analysis	LA-533-105 Rev. E-0
ICP	Acid Dilution	LA-505-161 Rev. C-2
ICP-MS	Direct Analysis	LA-506-101 Rev. A-0
TIC/TOC	Direct Analysis	LA-342-100 Rev. F-1
Radionuclide Analyses		
GEA	Direct Analysis	LA-548-121 Rev. F-0
^{90}Sr	Direct Analysis	LA-220-101 Rev. E-3
^{241}Am	Direct Analysis	LA-953-104 Rev. B-0
$^{239/240}Pu$	Direct Analysis	LA-953-104 Rev. B-0

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
ICP-MS = inductively coupled plasma-mass spectrometer
TIC = total inorganic carbon
GEA = gamma energy analysis
^{90}Sr = strontium 90
^{241}Am = americium 241
$^{239/240}Pu$ = plutonium 239/240

References

Mulkey, C. H. and M. S. Miller, 1997, *Data Quality Objectives for the Waste Compatibility Program,* HNF-SD-WM-DQO-001, Rev. 2, Lockheed Martin Hanford Corporation, Richland, WA 99352.

Sasaki, L. M., 1998, *Compatibility Grab Sampling and Analysis Plan for Fiscal Year 1998,* HNF-SD-WM-TSAP-150, Rev. 0-B, Lockheed Martin Hanford Corporation, Richland, WA 99352.

Markel, L. P., 1997, *Quality Assurance Plan for the 222-S Laboratories,* HNF-SD-CP-QAPP-016, Rev. 2, Rust Federal Services of Hanford, Inc., Richland, WA 99352

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AN-101 SAMPLE BREAKDOWN

(ATTACHMENT 1)

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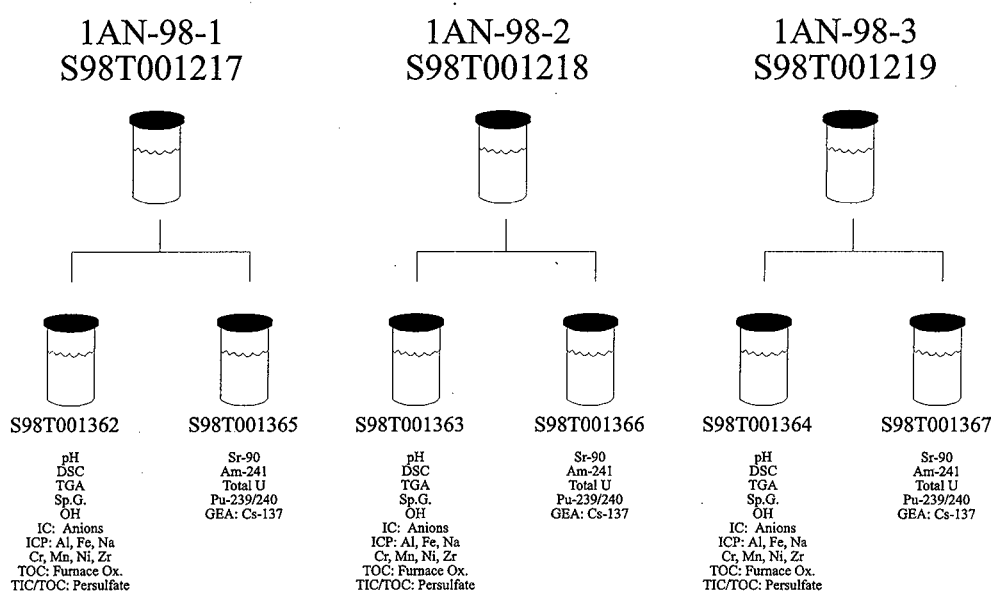
AN-101 Grab Samples



SAMPLE DATA SUMMARY

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Final Report for AN-101 Grab1 Samples
AN-101 GRAB1

CORE NUMBER: n/a
SSEGMENT #: 1AN-98-1

SSEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T001217			Volume % Settled Solids	%	n/a	n/a	< 1.000	n/a	n/a	n/a	n/a	1.00e-01	n/a
S98T001217			Organic Vol Present/sampleprep	mL	n/a	n/a	0.00e+00	n/a	n/a	n/a	n/a	n/a	n/a
S98T001362			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
S98T001362			DSC Exotherm on Perkin Elmer	Joules/g	100.9	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S98T001362			OH- by Pot. Titration	ug/mL	100.0	<2500.0	6.58e+03	6.37e+03	6.48e+03	3.24	n/a	2.50e+03	n/a
S98T001362			pH Direct	pH	99.43	n/a	13.06	13.07	13.07	0.08	n/a	1.00e-02	n/a
S98T001362			Specific Gravity	Sp.G.	99.43	n/a	1.033	1.043	1.038	0.96	n/a	1.00e-03	n/a
S98T001362			% Water by TGA on Perkin Elmer	%	99.95	n/a	94.84	93.85	94.34	1.05	n/a	n/a	n/a
S98T001362			TIC by Acid/Coulometry	ug/mL	95.52	3.300	6.74e+02	686.0	680.0	1.76	101.0	5.000	n/a
S98T001362			TOC by Persulfate/Coulometry	ug/mL	92.33	3.900	2.18e+02	229.0	223.5	4.92	96.70	40.00	n/a
S98T001362		D	Aluminium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	1.28e+03	1.26e+03	1.27e+03	1.57	76.90	2.550	n/a
S98T001362		D	Chromium-ICP-Acid Dil.	ug/mL	96.20	<1.00e-02	23.10	23.10	23.10	0.00	98.20	5.10e-01	n/a
S98T001362		D	Iron-ICP-Acid Dil.	ug/mL	94.60	<5.00e-02	< 2.550	<2.55e0	n/a	n/a	97.30	2.550	n/a
S98T001362		D	Manganese-ICP-Acid Dil.	ug/mL	96.80	<1.00e-02	<5.10e-01	<5.10e-1	n/a	n/a	97.20	5.10e-01	n/a
S98T001362		D	Sodium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-01	1.94e+04	1.89e+04	1.92e+04	2.61	-5.010e2	5.100	n/a
S98T001362		D	Nickel-ICP-Acid Dil.	ug/mL	98.00	<2.00e-02	< 1.020	<1.02e0	n/a	n/a	99.10	1.020	n/a
S98T001362		D	Zirconium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	<5.10e-01	<5.10e-1	n/a	n/a	102.0	5.10e-01	n/a
S98T001362			Fluoride-IC-Dionex 4000/4500	ug/mL	96.10	<1.20e-02	77.82	80.30	79.06	3.16	107.6	13.33	n/a
S98T001362			Chloride-IC-Dionex 4000/4500	ug/mL	92.38	<1.70e-02	4.00e+02	393.0	396.4	1.77	104.2	18.89	n/a
S98T001362			Nitrite-IC - Dionex 4000/4500	ug/mL	89.48	<1.08e-01	6.16e+03	6.04e+03	6.10e+03	1.97	97.23	120.0	n/a
S98T001362			Nitrate by IC-Dionex 4000/4500	ug/mL	97.47	<1.39e-01	1.14e+04	1.16e+04	1.15e+04	1.74	106.1	154.4	n/a
S98T001362			Phosphate-IC-Dionex 4000/4500	ug/mL	92.84	<1.20e-01	2.40e+02	216.0	227.8	10.5	91.01	133.3	n/a
S98T001362			Sulfate by IC-Dionex 4000/4500	ug/mL	98.42	<1.38e-01	1.62e+02	<1.53e2	n/a	n/a	99.68	153.3	n/a
S98T001365			Strontium-89/90 High Level	uCi/mL	101.9	<6.09e-04	9.30e-03	8.87e-03	9.08e-03	4.73	n/a	1.00e-03	1.69E+01
S98T001365			Pu-239/240 by TRU-SPEC Resin	uCi/mL	113.4	<3.41e-06	8.27e-06	8.65e-06	8.46e-06	4.49	n/a	3.98e-06	5.35E+00
S98T001365			Uranium-233 by ICP/MS AcidD159	ug/mL	n/a	<3.22e-06	<1.29e-02	<1.29e-2	n/a	n/a	n/a	1.30e-02	n/a
S98T001365			Uranium-234 by ICP/MS AcidD159	ug/mL	n/a	<5.89e-06	<2.36e-02	<2.36e-2	n/a	n/a	n/a	2.40e-02	n/a
S98T001365			Uranium-235 by ICP/MS AcidD159	ug/mL	n/a	<5.25e-06	<2.10e-02	<2.10e-2	n/a	n/a	n/a	2.10e-02	n/a
S98T001365			Uranium-236 by ICP/MS AcidD159	ug/mL	n/a	<3.25e-06	<1.30e-02	<1.30e-2	n/a	n/a	n/a	1.30e-02	n/a
S98T001365			Uranium-238 by ICP/MS AcidD159	ug/mL	103.5	<6.44e-06	2.498	2.570	2.534	2.76	100.1	2.60e-02	n/a
S98T001365			Cesium-137 by GEA	uCi/mL	104.0	<2.01e-04	21.70	21.70	21.70	0.00	n/a	n/a	0.190
S98T001365			Am-241 by Extraction	uCi/mL	77.53	<1.03e-05	<5.79e-06	<5.73E-6	n/a	n/a	n/a	5.79e-06	1.00E+02

Final Report for AN-101 Grab1 Samples
AN-101 GRAB1

(CORE NUMBER: n/a
(SEGMENT #: 1AN-98-2

(SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T001218			Volume % Settled Solids	%	n/a	n/a	< 1.000	n/a	n/a	n/a	n/a	1.00e-01	n/a
S98T001218			Organic Vol Present/sampleprep	mL	n/a	n/a	0.00e+00	n/a	n/a	n/a	n/a	n/a	n/a
S98T001363			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
S98T001363			DSC Exotherm on Perkin Elmer	Joules/g	100.9	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S98T001363			OH- by Pot. Titration	ug/mL	100.0	<2500.0	2.66e+04	2.68e+04	2.67e+04	0.75	n/a	2.50e+03	n/a
S98T001363			pH Direct	pH	99.43	n/a	13.43	13.33	13.38	0.75	n/a	1.00e-02	n/a
S98T001363			Specific Gravity	Sp.G.	99.43	n/a	1.200	1.208	1.204	0.66	n/a	1.00e-03	n/a
S98T001363			% Water by TGA on Perkin Elmer	%	99.95	n/a	74.37	74.46	74.41	0.12	n/a	n/a	n/a
S98T001363			TIC by Acid/Coulometry	ug/mL	95.52	3.300	2.79e+03	2.79e+03	2.79e+03	0.00	n/a	5.000	n/a
S98T001363			TOC by Persulfate/Coulometry	ug/mL	92.33	3.900	1.32e+03	1.27e+03	1.30e+03	3.86	n/a	40.00	n/a
S98T001363		D	Aluminium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	9.38e+03	9.48e+03	9.43e+03	1.06	n/a	20.10	n/a
S98T001363		D	Chromium-ICP-Acid Dil.	ug/mL	96.20	<1.00e-02	2.00e+02	202.0	201.0	1.00	n/a	4.010	n/a
S98T001363		D	Iron-ICP-Acid Dil.	ug/mL	94.60	<5.00e-02	< 20.10	<2.01e1	n/a	n/a	n/a	20.10	n/a
S98T001363		D	Manganese-ICP-Acid Dil.	ug/mL	96.80	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001363		D	Sodium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-01	1.05e+05	1.06e+05	1.06e+05	0.95	n/a	40.10	n/a
S98T001363		D	Nickel-ICP-Acid Dil.	ug/mL	98.00	<2.00e-02	< 8.020	<8.02e0	n/a	n/a	n/a	8.020	n/a
S98T001363		D	Zirconium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001363			Fluoride-IC-Dionex 4000/4500	ug/mL	96.10	<1.20e-02	5.23e+02	496.0	509.6	5.30	n/a	122.4	n/a
S98T001363			Chloride-IC-Dionex 4000/4500	ug/mL	92.38	<1.70e-02	2.18e+03	2.18e+03	2.18e+03	0.00	n/a	173.4	n/a
S98T001363			Nitrite-IC - Dionex 4000/4500	ug/mL	89.48	<1.08e-01	3.79e+04	3.80e+04	3.80e+04	0.26	n/a	1.10e+03	n/a
S98T001363			Nitrate by IC-Dionex 4000/4500	ug/mL	97.47	<1.39e-01	7.97e+04	8.03e+04	8.00e+04	0.75	n/a	1.42e+03	n/a
S98T001363			Phosphate-IC-Dionex 4000/4500	ug/mL	92.84	<1.20e-01	2.02e+03	2.09e+03	2.05e+03	3.41	n/a	1.22e+03	n/a
S98T001363			Sulfate by IC-Dionex 4000/4500	ug/mL	98.42	<1.38e-01	<1.41e+03	<1.41e3	n/a	n/a	n/a	1.41e+03	n/a
S98T001366			Strontium-89/90 High Level	uCi/mL	101.9	<6.09e-04	5.55e-02	5.77e-02	5.66e-02	3.89	n/a	1.00e-03	5.97E+00
S98T001366			Pu-239/240 by TRU-SPEC Resin	uCi/mL	113.4	<3.41e-06	5.82e-05	5.79e-05	5.81e-05	0.52	n/a	5.67e-06	2.32E+00
S98T001366			Uranium-233 by ICP/MS AcidD159	ug/mL	n/a	<3.22e-06	<5.29e-02	<5.29e-2	n/a	n/a	n/a	5.30e-02	n/a
S98T001366			Uranium-234 by ICP/MS AcidD159	ug/mL	n/a	<5.89e-06	<9.68e-02	<9.68e-2	n/a	n/a	n/a	9.70e-02	n/a
S98T001366			Uranium-235 by ICP/MS AcidD159	ug/mL	n/a	<5.25e-06	<8.63e-02	9.54e-02	n/a	n/a	n/a	8.60e-02	n/a
S98T001366			Uranium-236 by ICP/MS AcidD159	ug/mL	n/a	<3.25e-06	<5.34e-02	<5.34e-2	n/a	n/a	n/a	5.30e-02	n/a
S98T001366			Uranium-238 by ICP/MS AcidD159	ug/mL	103.5	<6.44e-06	13.58	14.80	14.19	8.45	n/a	1.06e-01	n/a
S98T001366			Cesium-137 by GEA	uCi/mL	104.0	<2.01e-04	1.00e+02	99.50	99.75	0.50	n/a	n/a	0.170
S98T001366			Am-241 by Extraction	uCi/mL	77.53	<1.03e-05	1.20e-05	1.23e-05	1.22e-05	2.47	n/a	6.42e-06	4.08E+00

Final Report for AN-101 Grab1 Samples
AN-101 GRAB1

CCORE NUMBER: n/a
SSEGMENT #: 1AN-98-3

SSEGMENT PORTION: Supernate

Sample# R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T001219		Volume % Settled Solids	%	n/a	n/a	< 1.000	n/a	n/a	n/a	n/a	1.00e-01	n/a
S98T001219		Organic Vol Present/sampleprep	mL	n/a	n/a	0.00e+00	n/a	n/a	n/a	n/a	n/a	n/a
S98T001364		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
S98T001364		DSC Exotherm on Perkin Elmer	Joules/g	100.4	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S98T001364		OH- by Pot. Titration	ug/mL	100.0	<2500.0	3.41e+04	3.21e+04	3.31e+04	6.04	n/a	2.50e+03	n/a
S98T001364		pH Direct	pH	99.43	n/a	13.49	13.50	13.50	0.07	n/a	1.00e-02	n/a
S98T001364		Specific Gravity	Sp.G.	99.43	n/a	1.251	1.250	1.250	0.08	n/a	1.00e-03	n/a
S98T001364		% Water by TGA on Perkin Elmer	%	99.95	n/a	71.42	71.33	71.38	0.13	n/a	n/a	n/a
S98T001364		TIC by Acid/Coulometry	ug/mL	95.52	3.300	3.01e+03	3.08e+03	3.04e+03	2.30	n/a	5.000	n/a
S98T001364		TOC by Persulfate/Coulometry	ug/mL	92.33	3.900	1.58e+03	1.51e+03	1.54e+03	4.53	n/a	40.00	n/a
S98T001364	D	Aluminium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	1.00e+04	9.97e+03	9.98e+03	0.30	n/a	20.10	n/a
S98T001364	D	Chromium-ICP-Acid Dil.	ug/mL	96.20	<1.00e-02	2.30e+02	230.0	230.0	0.00	n/a	4.010	n/a
S98T001364	D	Iron-ICP-Acid Dil.	ug/mL	94.60	<5.00e-02	< 20.10	<2.01e1	n/a	n/a	n/a	20.10	n/a
S98T001364	D	Manganese-ICP-Acid Dil.	ug/mL	96.80	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001364	D	Sodium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-01	1.24e+05	1.23e+05	1.24e+05	0.81	n/a	40.10	n/a
S98T001364	D	Nickel-ICP-Acid Dil.	ug/mL	98.00	<2.00e-02	< 8.020	<8.02e0	n/a	n/a	n/a	8.020	n/a
S98T001364	D	Zirconium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001364		Fluoride-IC-Dionex 4000/4500	ug/mL	100.2	<1.20e-02	4.48e+02	476.0	461.9	6.06	n/a	25.45	n/a
S98T001364		Chloride-IC-Dionex 4000/4500	ug/mL	92.50	<1.70e-02	2.81e+03	2.72e+03	2.77e+03	3.25	n/a	36.06	n/a
S98T001364		Nitrite-IC - Dionex 4000/4500	ug/mL	90.41	<1.08e-01	4.54e+04	4.54e+04	4.54e+04	0.00	n/a	229.1	n/a
S98T001364		Nitrate by IC-Dionex 4000/4500	ug/mL	97.64	<1.39e-01	9.14e+04	9.10e+04	9.12e+04	0.44	n/a	294.8	n/a
S98T001364		Phosphate-IC-Dionex 4000/4500	ug/mL	94.31	<1.20e-01	1.50e+03	1.40e+03	1.45e+03	6.90	n/a	254.5	n/a
S98T001364		Sulfate by IC-Dionex 4000/4500	ug/mL	98.58	<1.38e-01	2.12e+03	2.07e+03	2.10e+03	2.39	n/a	292.7	n/a
S98T001367		Strontium-89/90 High Level	uCi/mL	101.9	<6.09e-04	5.37e-02	5.58e-02	5.48e-02	3.84	n/a	1.00e-03	6.02E+00
S98T001367		Pu-239/240 by TRU-SPEC Resin	uCi/mL	113.4	<3.41e-06	6.54e-05	6.62e-05	6.58e-05	1.22	n/a	6.41e-06	2.26E+00
S98T001367		Uranium-233 by ICP/MS AcidD159	ug/mL	n/a	<3.22e-06	<5.29e-02	<5.29e-2	n/a	n/a	n/a	5.30e-02	n/a
S98T001367		Uranium-234 by ICP/MS AcidD159	ug/mL	n/a	<5.89e-06	<9.68e-02	<9.68e-2	n/a	n/a	n/a	9.70e-02	n/a
S98T001367		Uranium-235 by ICP/MS AcidD159	ug/mL	n/a	<5.25e-06	1.02e-01	9.70e-02	9.95e-02	5.03	n/a	8.60e-02	n/a
S98T001367		Uranium-236 by ICP/MS AcidD159	ug/mL	n/a	<3.25e-06	<5.34e-02	<5.34e-2	n/a	n/a	n/a	5.30e-02	n/a
S98T001367		Uranium-238 by ICP/MS AcidD159	ug/mL	103.5	<6.44e-06	14.95	14.80	14.88	0.67	n/a	1.06e-01	n/a
S98T001367		Cesium-137 by GEA	uCi/mL	104.0	<2.01e-04	1.19e+02	119.0	119.0	0.00	n/a	n/a	0.160
S98T001367		Am-241 by Extraction	uCi/mL	77.53	<1.03e-05	1.37e-05	1.34e-05	1.36e-05	2.21	n/a	6.95e-06	3.90E+00

WASTE COMPATIBILITY CORROSION RULES

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Waste Compatibility Corrosion Rules for 241-AN-101

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO3]	[OH]	[NO2]	[OH] + [NO2]
				<=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?
S98T001362	NO_3	1.14E+04	0.184	YES	YES	YES	YES = 0.35
Sample	OH	6.58E+03	0.387				
1AN-98-1	NO_2	6.16E+03	0.134	1.0 M < [NO_3] <= 3.0 M?	0.1 M * [NO_3] <= [OH] < 10 M?		>= 0.4 * [NO_3]?
				3.0 M < [NO_3] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	[NO3]	[OH]	[NO2]	[OH] + [NO2]
				<= 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?
S98T001362	NO_3	1.16E+04	0.187	YES	YES	YES	YES = 0.37
Duplicate	OH	6.37E+03	0.375				
1AN-98-1	NO_2	6.04E+03	0.131	1.0 M < [NO_3] <= 3.0 M?	0.1 M * [NO_3] <= [OH] < 10 M?		>= 0.4 * [NO_3]?
				3.0 M < [NO_3] <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Waste Compatibility Corrosion Rules for 241-AN-101

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is $[NO_3]$...	Is [OH]...	Is $[NO_2]$...	Is $[OH] + [NO_2]$...
				<=1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= $[NO_2]$ <= 5.5 M	$[NO_3]/([OH] + [NO_2]) < 2.5$?
S98T001363	NO_3	7.97E+04	1.285				
Sample	OH	2.66E+04	1.565				
1AN-98-2	NO_2	3.79E+04	0.824	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)	Is $[NO_3]$...	Is [OH]...	Is $[NO_2]$...	Is $[OH] + [NO_2]$...
				<= 1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= $[NO_2]$ <= 5.5 M	$[NO_3]/([OH] + [NO_2]) < 2.5$?
S98T001363	NO_3	8.03E+04	1.295				
Duplicate	OH	2.68E+04	1.576				
1AN-98-2	NO_2	3.80E+04	0.826	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?

Waste Compatibility Corrosion Rules for 241-AN-101

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is $[NO_3]$...	Is $[OH]$...	Is $[NO_2]$...	Is $[OH] + [NO_2]$...
				<=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?
S98T001364	NO_3	9.14E+04	1.474				
Sample	OH	3.41E+04	2.006				
1AN-98-3	NO_2	4.54E+04	0.987	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)	Is $[NO_3]$...	Is $[OH]$...	Is $[NO_2]$...	Is $[OH] + [NO_2]$...
				<= 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?
S98T001363	NO_3	9.10E+04	1.468				
Duplicate	OH	3.21E+04	1.888				
1AN-98-2	NO_2	4.54E+04	0.987	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?

CHAIN OF CUSTODY

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CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number: 1AN-98-2	(2) Supervisor/Sampler: James Sickels James Sickels		(9) Seal Intact Upon Release? ☑ Yes ☐ No
(3) Tank: 241-AN-101	(4) Riser: 016	(5) ~~Cask~~/Pig Serial No.: G-5	(10) Seal Intact Upon Receipt? ☒ Yes ☐ No
(6) Shipment Description:	(7) Sampling Data	Y N	(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No
A. Work Package Number: ES-98-00033	- Lithium Bromide	☐ ☒	(12) Laboratory Comments:
B. Cask/Pig Seal Number: 12387	Amount: N/A		
C. Date Sample Collected: 4-8-98	Concentration: N/A		
D. Time Sample Collected: 0940	- X-Ray	☐ ☒	
	- Partial Sample	☐ ☒	
	- Retrieved Partial Sample Stroke Length: N/A		

(8) Field Comments:

250 mR/hr on Contact of Bottle (uncorrected)

(13) Relinquished By (Sign and PRINT): James Sickels JAMES SICKELS	(14) Received By (Sign and PRINT): Eustolio Salinas Jr. / EUSTOLIO SALINAS JR.	(15) Date/Time: 0855 4-9-98	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT): Eustolio Salinas / EUSTOLIO SALINAS	(18) Received By (Sign and PRINT): Tim Knight / Tim Knight	(19) Date/Time: 10:05 4-9-98	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT):	(22) Received By (Sign and PRINT):	(23) Date/Time:	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT):	(26) Received By (Sign and PRINT):	(27) Date/Time:	(28) Receiver Comments

HNF-1640 REV. 0

BC-6001-326 (07/97)

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number: 1AN-98-1

(2) Supervisor/Sampler: James Sickels

(3) Tank: 241-AN-101

(4) Riser: 016

(5) Cask/Pig Serial No.: TF-5

(6) Shipment Description:

A. Work Package Number: ES-98-00033

B. Cask/Pig Seal Number: 12386

C. Date Sample Collected: 4-8-98

D. Time Sample Collected: 0933

(7) Sampling Data

	Y	N
- Lithium Bromide	☐	☒
Amount	N/A	
Concentration	N/A	
- X-Ray	☐	☒
- Partial Sample	☐	☒
- Retrieved Partial Sample Stroke Length	N/A	

(8) Field Comments:

80 mR/hr Bottle Contact (uncorrected)

(9) Seal Intact Upon Release? ☑ Yes ☐ No

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

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

(12) Laboratory Comments:

(13) Relinquished By (Sign and PRINT)	(14) Received By (Sign and PRINT)	(15) Date/Time	(16) Receiver Comments
James Sickels / James Sickels	Eustolio Salinas for	0855 4-9-98	
(17) Relinquished By (Sign and PRINT)	(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
Eustolio Salinas	Jim Knightly	10:05 4/9/98	
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

DISTRIBUTION: Original - Laboratory Copy - Sampling Operations

BC-6001-326 (07/97)

HNF-1640 REV. 0

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number: 1AN-98-3	(2) Supervisor/Sampler: James Sickels James Sickels	(9) Seal Intact Upon Release? ☒ Yes ☐ No
(3) Tank: 241-AN-101 / (4) Riser: 016	(5) ~~Cask~~/Pig Serial No.: TF-3	(10) Seal Intact Upon Receipt? ☒ Yes ☐ No
(6) Shipment Description:	(7) Sampling Data (Y / N)	(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No
A. Work Package Number: ES-98-00033	- Lithium Bromide: ☐ ☒	(12) Laboratory Comments:
B. Cask/Pig Seal Number: 12388	Amount: N/A	
C. Date Sample Collected: 4-8-98	Concentration: N/A	
D. Time Sample Collected: 0945	- X-Ray: ☐ ☒	
	- Partial Sample: ☐ ☒	
	- Retrieved Partial Sample Stroke Length: N/A	

(8) Field Comments:

400 mR/hr on contact of Bottle (uncorrected)

(13) Relinquished By (Sign and PRINT)	(14) Received By (Sign and PRINT)	(15) Date/Time	(16) Receiver Comments
James Sickels JAMES Sickels	Eustorio Spalinger	1051 4-9-98	
(17) Relinquished By (Sign and PRINT)	(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
Eustorio Spalinger	Jim Knight	1110 4-9-98	
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

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BC-6001-326 (07/97)

HNF-1640 REV. 0

HNF-1640 REV. 0

REQUEST FOR SAMPLE ANALYSIS (RSA)

Group ID No. (For lab use only)

1. Sample Origin	2. Date Sampled	4. Requestor's Name	6. TPCN	7. Org. Code
241-AN-101	4/98	Leela M. Sasaki	1MDR62	7A120

Customer/Project Code	3. Submitted By	5. Requestor's Phone/MSIN/FAX
	CPO	373-1027 R2-12 373-6955

8. Customer ID No.	9. Laboratory Sample No.	10. Volume of Sample	11. Matrix of Sample	12. Requested Analyses	13. Expected Range
				See TSAP HNF-SD-WM-TSAP-150, Rev. 0B	

14. Does sample have a MSDS?

☐ Yes HEMF assigned MSDS No. _____

☒ No Description of process that produced waste/sample:

See TSAP

15. Is this sample RCRA listed? ☒ Yes ☐ No

Applicable Listed Waste Codes:

☐ Yes ☐ No P Codes: (list) RCRA Permit

☐ Yes ☐ No U Codes: (list) DOE/RL-88-21

☐ Yes ☐ No K Codes: (list) _____

☐ Yes ☐ No F Codes: (list) _____

Applicable Characteristic Codes:

☐ Yes ☐ No D001: (how determined) _____ Ignitable

☐ Yes ☐ No D002: (how determined) _____ Corrosive

☐ Yes ☐ No D003: (how determined) _____ Reactive

☐ Yes ☐ No Toxic: (list codes) _____

PCB: Does this waste/sample contain PCBs?

☐ Yes Over 500 ppm

☐ Yes Over 50 ppm

☐ Yes PCBs are suspected

☒ No PCBs are suspected

If YES, what is the source of the PCBs?

☐ Transformer, capacitor, or ballast

☐ Other, specify _____

☐ Unknown

16. Sample Disposition

☒ Return to Customer

☐ Samples found to contain PCBs will be returned to the customer

☐ Dispose of per facility procedures with applied charges for analyses and disposal

Sample(s) Dose Rate at Contact

HPT Signature

17. QC Required ☐ Per 222-S Laboratory Quality Assurance Plan (HNF-SD-CP-QAPP-016)

☒ Other (list reference document or attach) See TSAP

18. Special Instructions (Special Storage Requirements, Reporting format, holding times, etc.)

See TSAP

19. Requested Turnaround Time

☐ 2 Weeks ☐ 4 Weeks

☐ Other _____

20. Sample Received By: _____ Date _____ Time _____

21. Chain of Custody

☐ No ☒ Yes

Number: 31

SAMPLE HANDLING

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LAD 9/11/98
~~HNF-1640 REV. 0~~

worklistrpt Version 2.1 05/15/95
04/14/98 09:53

LABCORE Data Entry Template for Worklist# 23510

Analyst: RK7 **Instrument:** NONE NA **Book #** NA

Method: LA-519-151 Rev/Mod F-0

Worklist Comment: AN101 GRAB1, @BRKDWN1 skw

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
98000238	AN-101 GRAB1	1	SAMPLE	S98T001217	0		@BRKDWN1 DOSERATE	LIQUID	N/A	225		mrad/hour
98000238	AN-101 GRAB1	1	SAMPLE	S98T001217	0		@BRKDWN1 SEALNUM	LIQUID	N/A	12386		
98000238	AN-101 GRAB1	1	SAMPLE	S98T001217	0		@BRKDWN1 ETCHNUM	LIQUID	N/A	1AN-98-1		
98000238	AN-101 GRAB1	1	SAMPLE	S98T001217	0		@BRKDWN1 APPEAR02	LIQUID	N/A	Clear		
98000238	AN-101 GRAB1	1	SAMPLE	S98T001217	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
98000238	AN-101 GRAB1	1	SAMPLE	S98T001217	0		@BRKDWN1 STLSLD01	LIQUID	N/A	0 or <1		%
98000238	AN-101 GRAB1	1	SAMPLE	S98T001217	0		@BRKDWN1 COLOR-01	LIQUID	N/A	Light Yellow		
98000238	AN-101 GRAB1	1	SAMPLE	S98T001217	0		@BRKDWN1 ORGVOL02	LIQUID	N/A	0 or None		mL
98000238	AN-101 GRAB1	2	SAMPLE	S98T001218	0		@BRKDWN1 DOSERATE	LIQUID	N/A	900		mrad/hour
98000238	AN-101 GRAB1	2	SAMPLE	S98T001218	0		@BRKDWN1 SEALNUM	LIQUID	N/A	12387		
98000238	AN-101 GRAB1	2	SAMPLE	S98T001218	0		@BRKDWN1 ETCHNUM	LIQUID	N/A	1AN-98-2		
98000238	AN-101 GRAB1	2	SAMPLE	S98T001218	0		@BRKDWN1 APPEAR02	LIQUID	N/A	Clear		
98000238	AN-101 GRAB1	2	SAMPLE	S98T001218	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
98000238	AN-101 GRAB1	2	SAMPLE	S98T001218	0		@BRKDWN1 STLSLD01	LIQUID	N/A	0 <1		%
98000238	AN-101 GRAB1	2	SAMPLE	S98T001218	0		@BRKDWN1 COLOR-01	LIQUID	N/A	Light Yellow		
98000238	AN-101 GRAB1	2	SAMPLE	S98T001218	0		@BRKDWN1 ORGVOL02	LIQUID	N/A	0 or None		mL
98000238	AN-101 GRAB1	3	SAMPLE	S98T001219	0		@BRKDWN1 DOSERATE	LIQUID	N/A	1350		mrad/hour
98000238	AN-101 GRAB1	3	SAMPLE	S98T001219	0		@BRKDWN1 SEALNUM	LIQUID	N/A	12388		

Data Entry Comments: All Stored in cell #8 5/6/98

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

worklistrpt Version 2.1 05/15/95
04/14/98 09:53

LABCORE Data Entry Template for Worklist# 23510

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
98000238	AN-101 GRAB1	3	SAMPLE	S98T001219	0		@BRKDWN1 ETCHNUM	LIQUID	N/A	IAN-98-3		
98000238	AN-101 GRAB1	3	SAMPLE	S98T001219	0		@BRKDWN1 APPEAR02	LIQUID	N/A	Clear		
98000238	AN-101 GRAB1	3	SAMPLE	S98T001219	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
98000238	AN-101 GRAB1	3	SAMPLE	S98T001219	0		@BRKDWN1 STLSLD01	LIQUID	N/A	0 or <1		%
98000238	AN-101 GRAB1	3	SAMPLE	S98T001219	0		@BRKDWN1 COLOR-01	LIQUID	N/A	Light Yellow		
98000238	AN-101 GRAB1	3	SAMPLE	S98T001219	0		@BRKDWN1 ORGVOL02	LIQUID	N/A	0 or None		mL

Final page for worklist # 23510

for Roger Chamberlin
Jim Knight

Keith Fuller 5/6/98
Analyst Signature Date

Daniel Wollan 5/6/98
Analyst Signature Date

(1) No visible etch number on S98T001219. Could not see it through the plastic.

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.

INORGANIC ANALYSIS

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worklistrpt Version 2.1 05/15/95
05/21/98 10:21

LABCORE Data Entry Template for Worklist# 24108

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

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

Worklist Comment: AN101 GRAB1, DSC-03 Run under nitrogen. skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	LIQUID	28.45	28.70	N/A	Joules/g
98000238	AN-101 GRAB1	2	SAMPLE	S98T001362	0		DSC-03	LIQUID	N/A	0		Joules/g
98000238	AN-101 GRAB1	3	DUP	S98T001362	0		DSC-03	LIQUID	0	0	N/A	Joules/g
98000238	AN-101 GRAB1	4	SAMPLE	S98T001363	0		DSC-03	LIQUID	N/A	0		Joules/g
98000238	AN-101 GRAB1	5	DUP	S98T001363	0		DSC-03	LIQUID	0	0	N/A	Joules/g

Final page for worklist # 24108

7-19-98

Analyst Signature **Date**

7/21/98

Analyst Signature **Date**

7/21/98

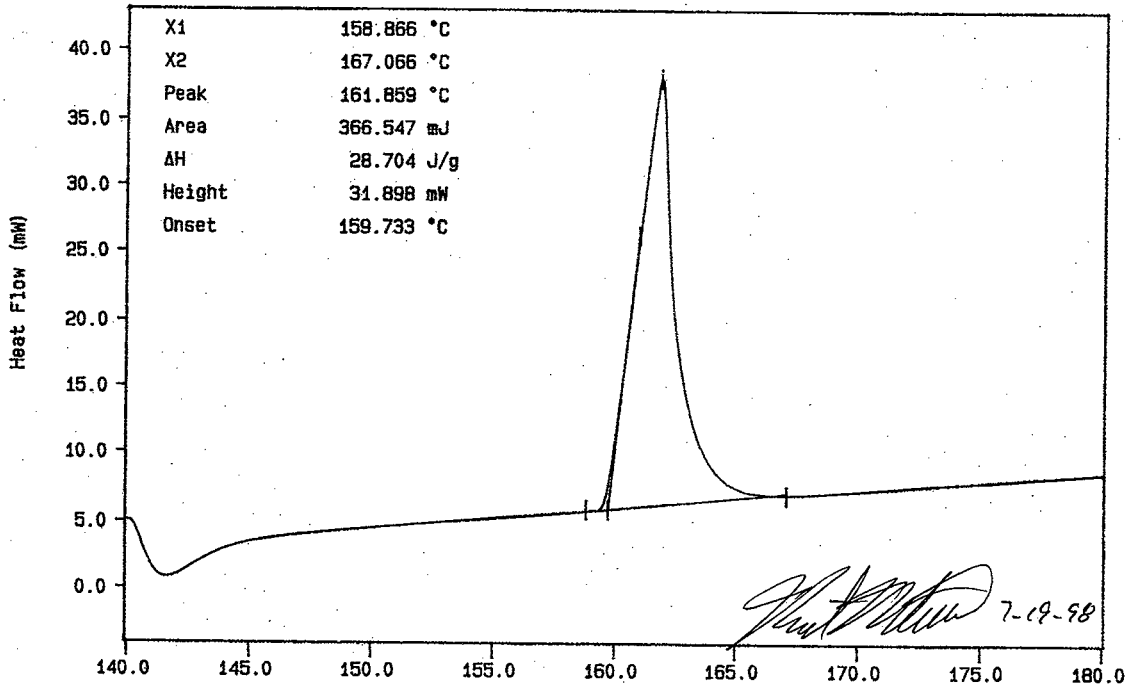
REVIEWER SIGNATURE DATE

Data Entry Comments:

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

Curve 1: DSC
File info: IND071801 Sat Jul 18 18:45:41 1998
Sample Weight: 12.770 mg
STD 12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 39 TO 43.



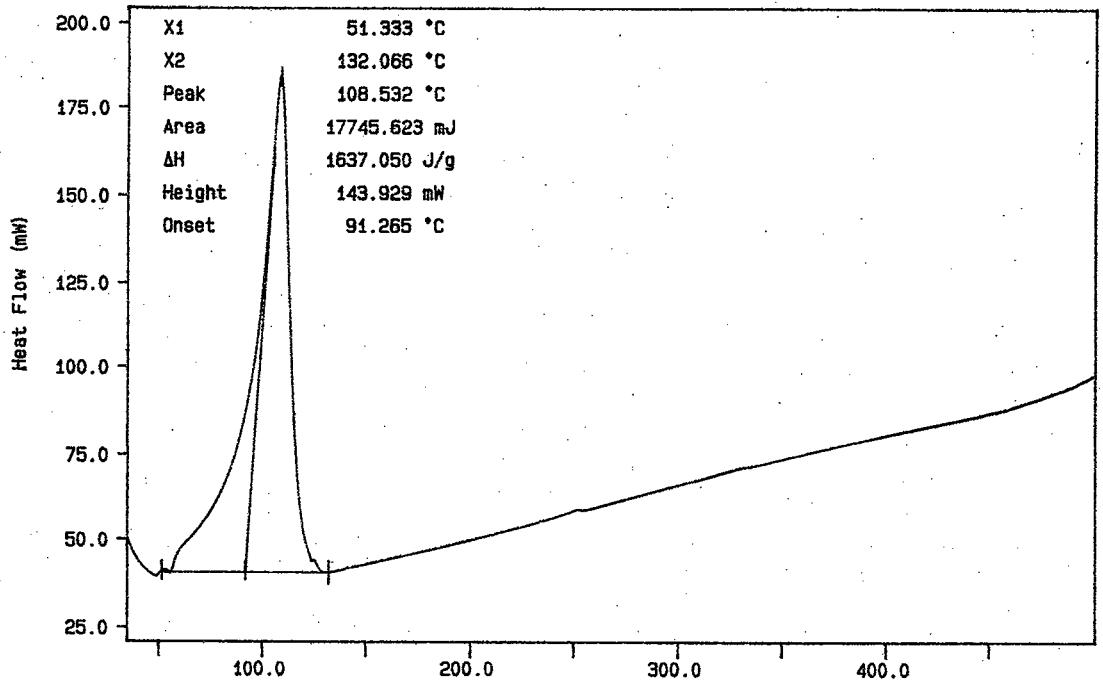
7-19-98

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

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jul 18 21:30:27 1998

HWF-1640 REV. 0

Curve 1: DSC
File info: SAM071805 Sat Jul 18 23:22:18 1998
Sample Weight: 10.840 mg
S98T001362

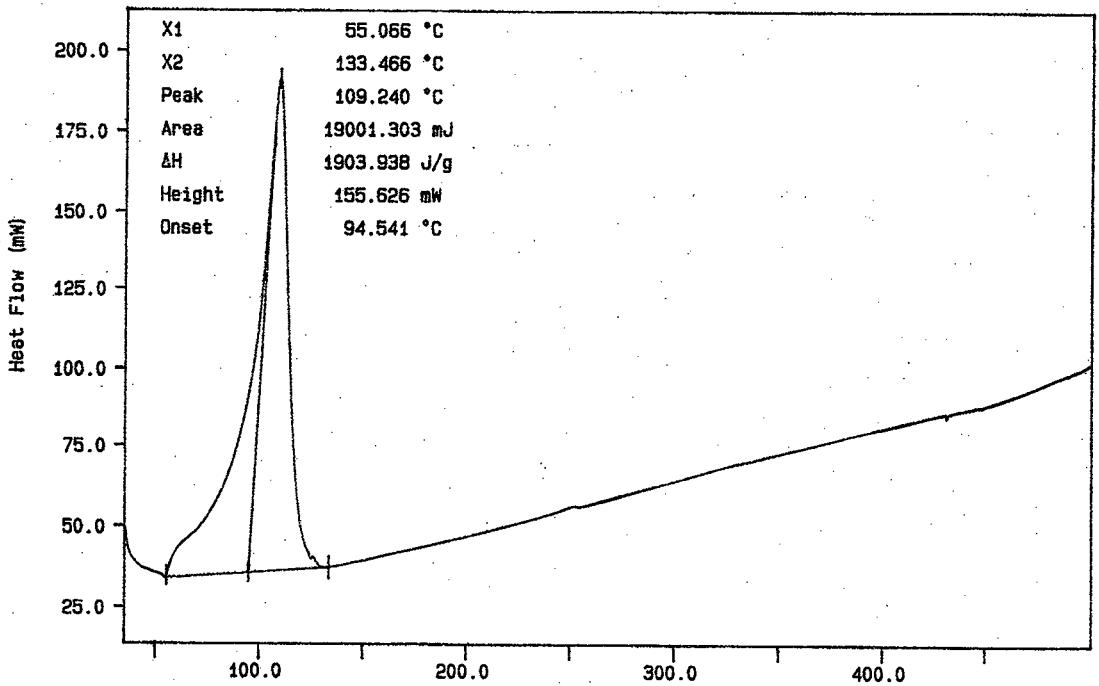


N2 10C/min
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jul 18 23:22:34 1998

NMF-1640 REV. 0

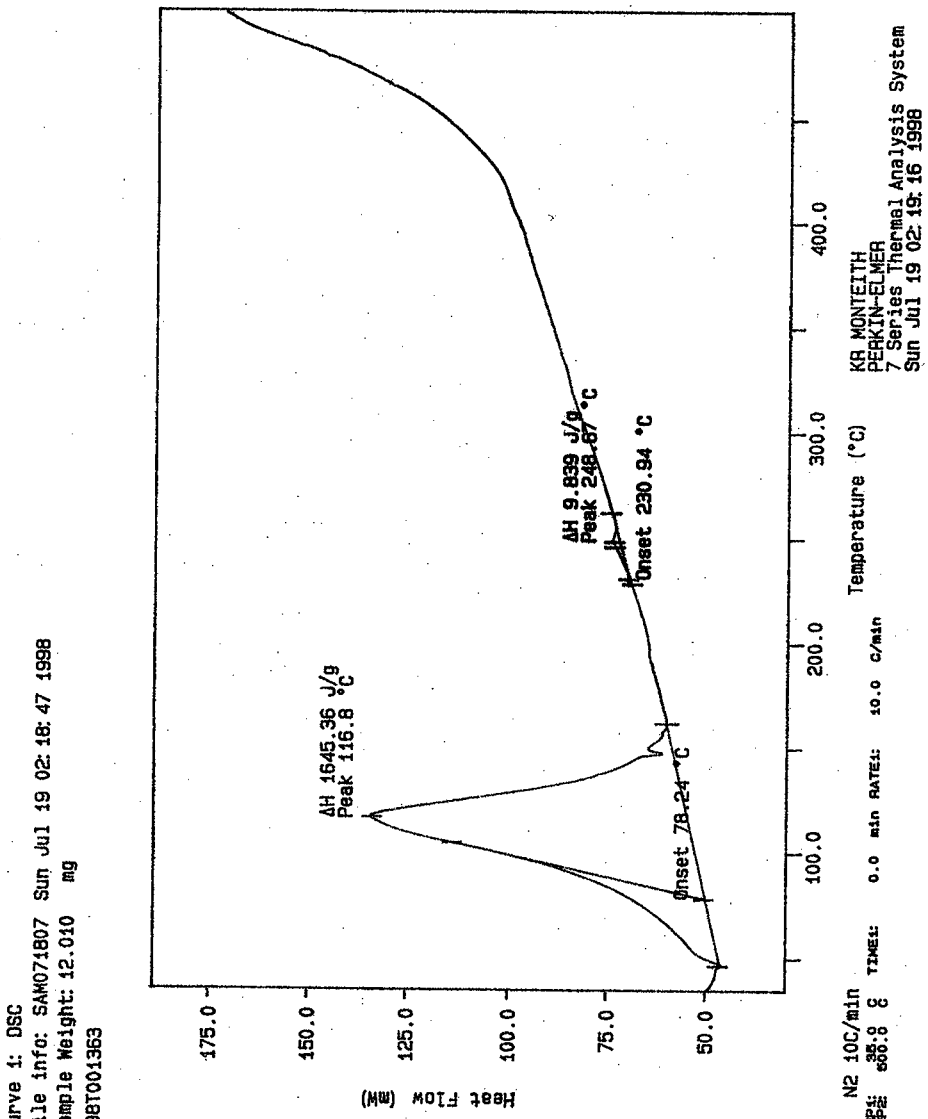
Curve 1: DSC
File info: SAM071806 Sun Jul 19 00:43:20 1998
Sample Weight: 9.980 mg
S98T001362 DUP

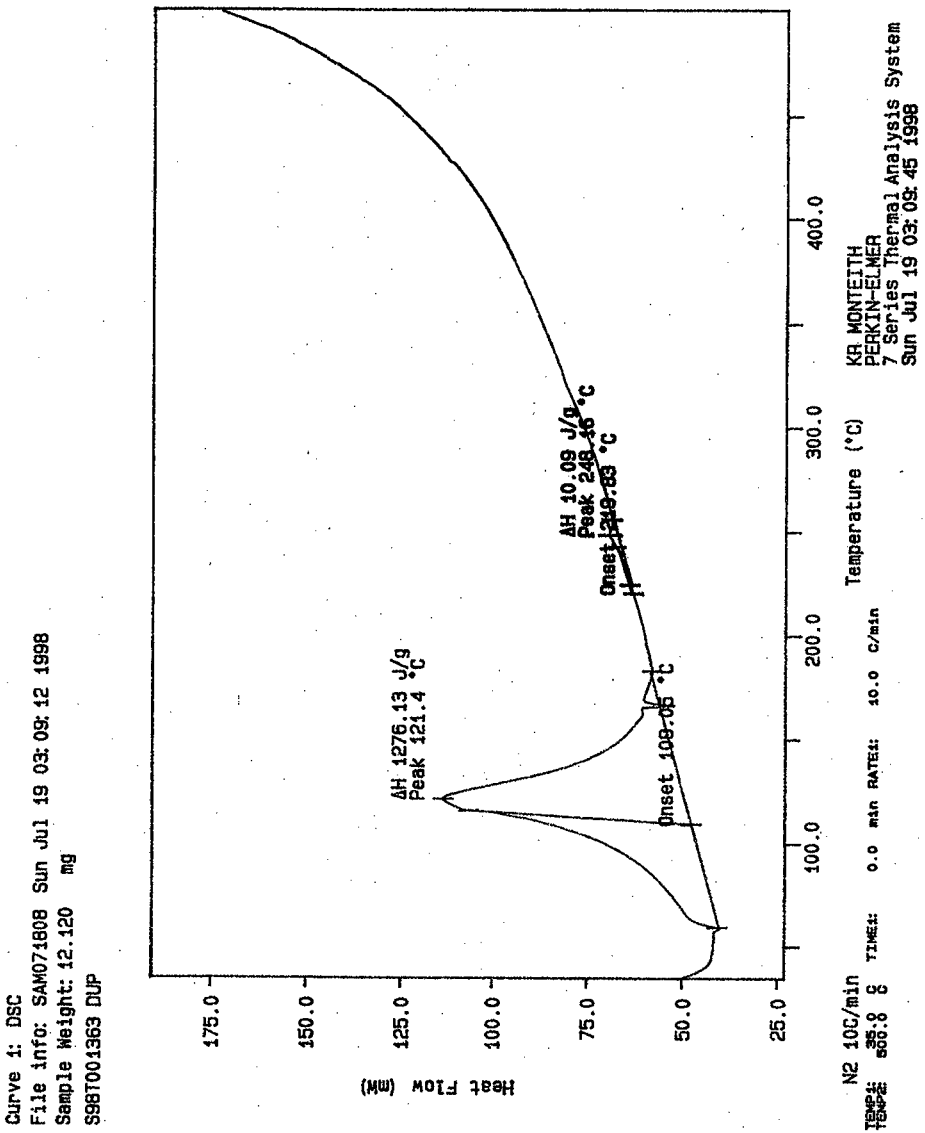


N2 10C/min
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jul 19 01:29:16 1998

HNF-1640 REV. 0


Curve 1: DSC
File info: SAM071807 Sun Jul 19 02:18:47 1998
Sample Weight: 12.010 mg
S98T001363
ΔH 1645.36 J/g
Peak 116.8 °C
Onset 78.24 °C
ΔH 9.839 J/g
Peak 248.87 °C
Onset 230.94 °C
175.0
150.0
125.0
100.0
75.0
50.0
Heat Flow (mW)
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMP1: 35.0 C
TEMP2: 600.0 C
TIME1: 0.0 min RATE1: 10.0 C/min
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jul 19 02:19:16 1998


Curve 1: DSC
File info: SAM071808 Sun Jul 19 03:09:12 1998
Sample Weight: 12.120 mg
S98T001363 DUP
ΔH 1276.13 J/g
Peak 121.4 °C
Onset 108.05 °C
ΔH 10.09 J/g
Peak 248.16 °C
Onset 249.83 °C
Heat Flow (mW)
175.0
150.0
125.0
100.0
75.0
50.0
25.0
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMP1: 35.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP2: 500.0 C
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jul 19 03:09:45 1998

HNF-1640 REV. 0

worklistrpt Version 2.1 05/15/95
05/21/98 10:22

LABCORE Data Entry Template for Worklist# 24109

Analyst: KRM **Instrument:** DSC0 3 **Book #** 12N148

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

Worklist Comment: AN101 GRAB1, DSC-03 Run under nitrogen. skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	LIQUID	28.45	28.57	N/A	Joules/g
98000238	AN-101 GRAB1	2	SAMPLE	S98T001364	0		DSC-03	LIQUID	N/A	0		Joules/g
98000238	AN-101 GRAB1	3	DUP	S98T001364	0		DSC-03	LIQUID	0	0	N/A	Joules/g

Final page for worklist # 24109

7-19-98

Analyst Signature **Date**

7/21/98

Analyst Signature **Date**

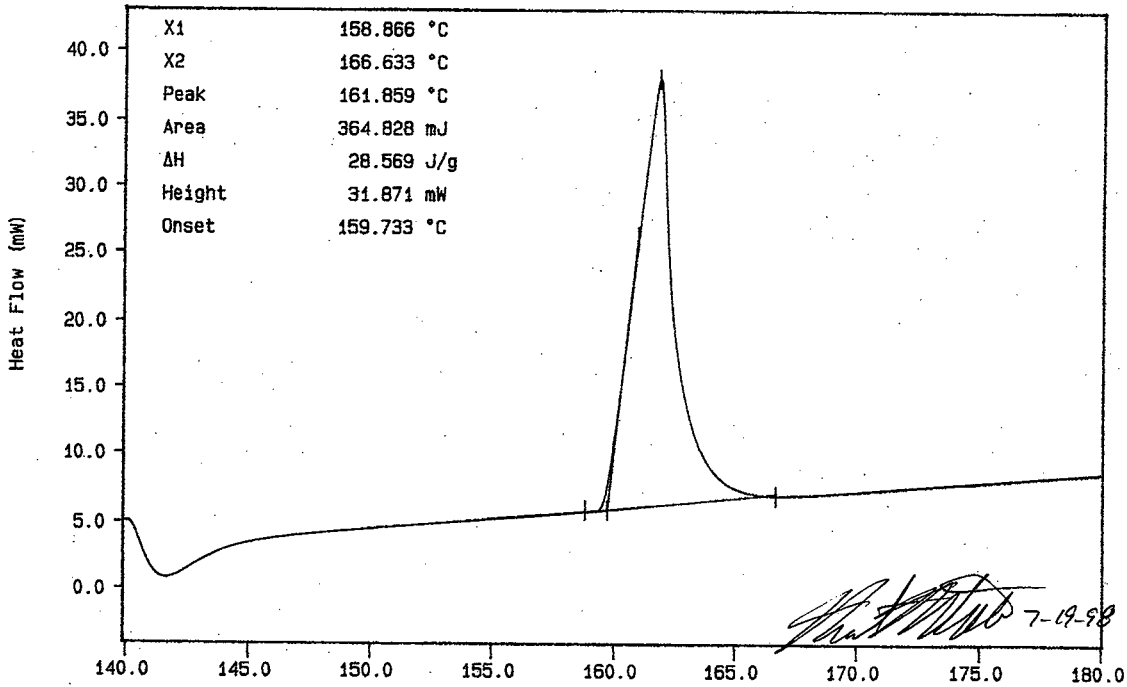
REVIEWER SIGNATURE 7/21/98 DATE

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.

HNF-1840 REV. 0

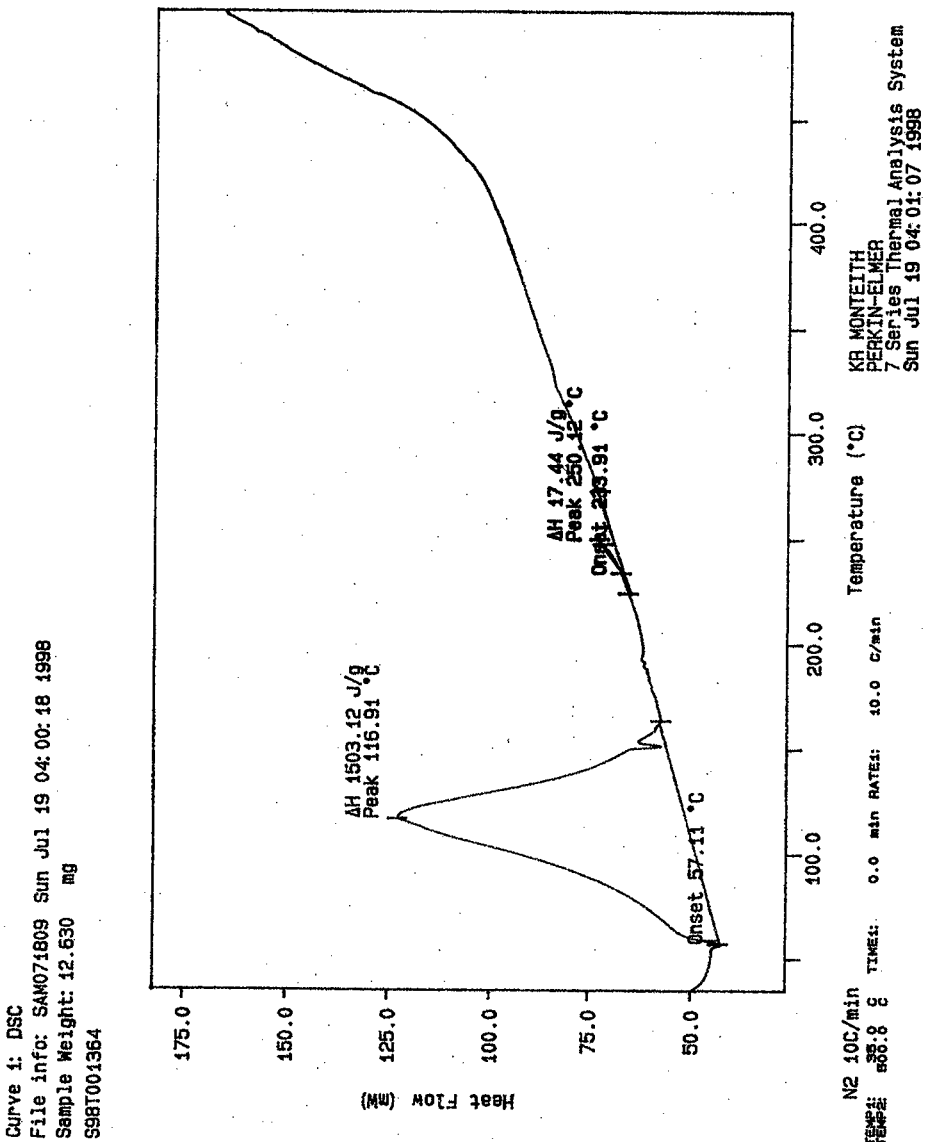
Curve 1: DSC
File info: IND071801 Sat Jul 18 18:45:41 1998
Sample Weight: 12.770 mg
STD 12N14-B

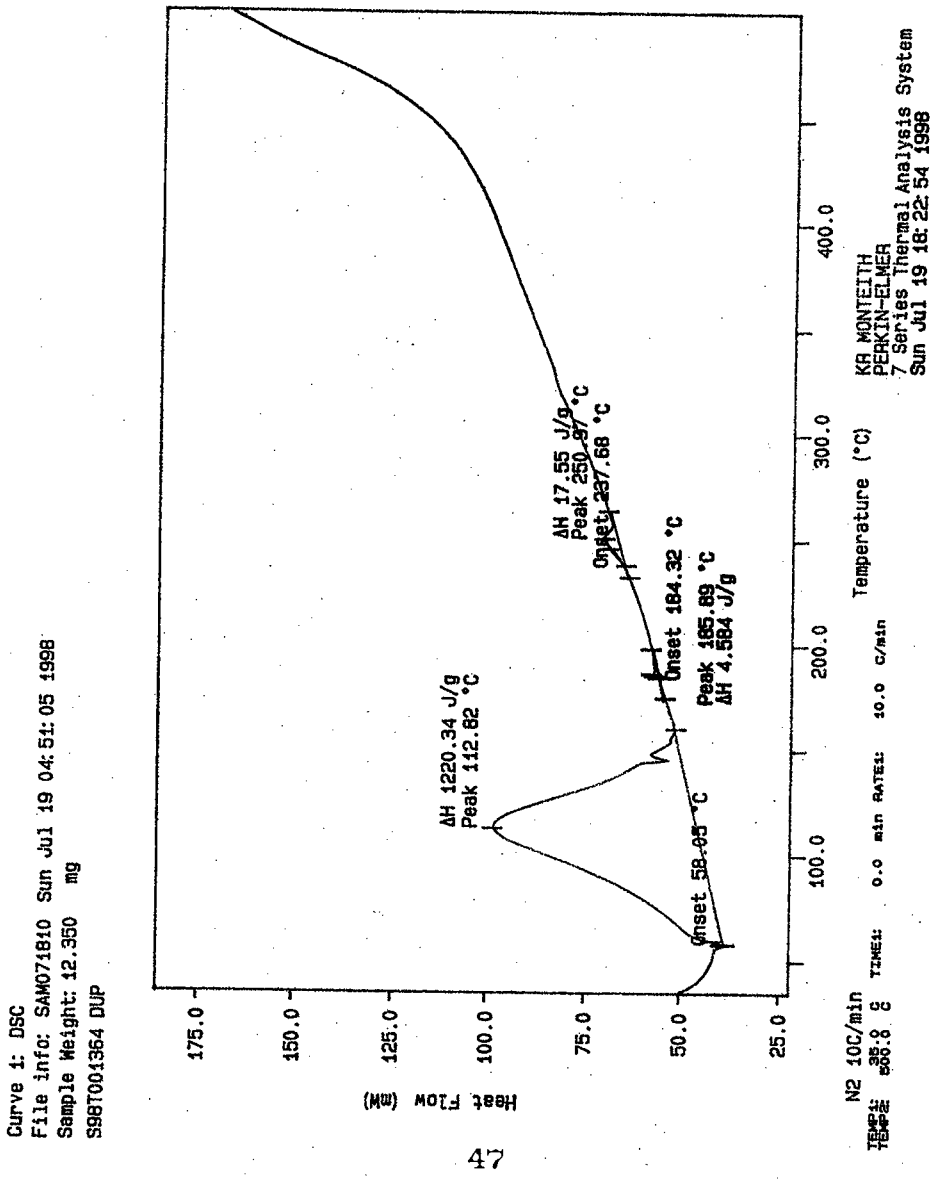


7-19-98

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

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jul 18 18:53:13 1998


Curve 1: DSC
File info: SAM071809 Sun Jul 19 04:00:18 1998
Sample Weight: 12.630 mg
S98T001364
ΔH 1503.12 J/g
Peak 116.91 °C
Onset 57.11 °C
ΔH 17.44 J/g
Peak 250.12 °C
Onset 233.91 °C
Heat Flow (mW)
175.0
150.0
125.0
100.0
75.0
50.0
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMP1: 35.0 C
TEMP2: 500.0 C
TIME1: 0.0 min RATE1: 10.0 C/min
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jul 19 04:01:07 1998


Curve 1: DSC
File info: SAM071810 Sun Jul 19 04:51:05 1998
Sample Weight: 12.350 mg
S98T001354 DUP
ΔH 1220.34 J/g
Peak 112.82 °C
Onset 58.05 °C
Onset 184.32 °C
Peak 185.89 °C
ΔH 4.584 J/g
ΔH 17.55 J/g
Peak 250.97 °C
Onset 237.68 °C
Heat Flow (mW)
175.0
150.0
125.0
100.0
75.0
50.0
25.0
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMP1: 35.0 C
TEMP2: 500.0 C
TIME1: 0.0 min RATE1: 10.0 C/min
KA MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jul 19 18:22:54 1998

worklistrpt Version 2.1 05/15/95
07/21/98 11:05

LABCORE Data Entry Template for Worklist# 25002

Analyst: ppb **Instrument:** DSC0 _____ **Book #** _____

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

Worklist Comment: DSC-02 AN-101 cjo

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
98000238	AN-101 GRAB1	1	SAMPLE	S98T001362	0		DSC-02	LIQUID	N/A	0		Joules/g Dry
98000238	AN-101 GRAB1	2	DUP	S98T001362	0		DSC-02	LIQUID	0	0	N/A	Joules/g Dry
98000238	AN-101 GRAB1	3	SAMPLE	S98T001363	0		DSC-02	LIQUID	N/A	0		Joules/g Dry
98000238	AN-101 GRAB1	4	DUP	S98T001363	0		DSC-02	LIQUID	0	0	N/A	Joules/g Dry
98000238	AN-101 GRAB1	5	SAMPLE	S98T001364	0		DSC-02	LIQUID	N/A	0		Joules/g Dry
98000238	AN-101 GRAB1	6	DUP	S98T001364	0		DSC-02	LIQUID	0	0	N/A	Joules/g Dry

Final page for worklist # 25002

Analyst Signature **Date**

C.J. Jensen 7/21/98
Analyst Signature **Date**

R. Greenwalt 7/21/98
REVIEWER 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.

HNF-1640 REV. 0

worklistrpt Version 2.1 05/15/95
05/21/98 10:25

LABCORE Data Entry Template for Worklist# 24110

Analyst: KRM **Instrument:** TGA0 3 **Book #** 103N8A

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

Worklist Comment: AN101 GRAB1, TGA-03 Run under nitrogen. skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-03	LIQUID	59.4	59.37	N/A	%
98000238	AN-101 GRAB1	2	SAMPLE	S98T001362	0		TGA-03	LIQUID	N/A	94.84		%
98000238	AN-101 GRAB1	3	DUP	S98T001362	0		TGA-03	LIQUID	94.84	93.85	N/A	%
98000238	AN-101 GRAB1	4	SAMPLE	S98T001363	0		TGA-03	LIQUID	N/A	74.39	7/20/98	%
98000238	AN-101 GRAB1	5	DUP	S98T001363	0		TGA-03	LIQUID	74.39	74.39	N/A	%

Final page for worklist # 24110

7-19-98

Analyst Signature **Date**

7/21/98

Analyst Signature **Date**

7/21/98

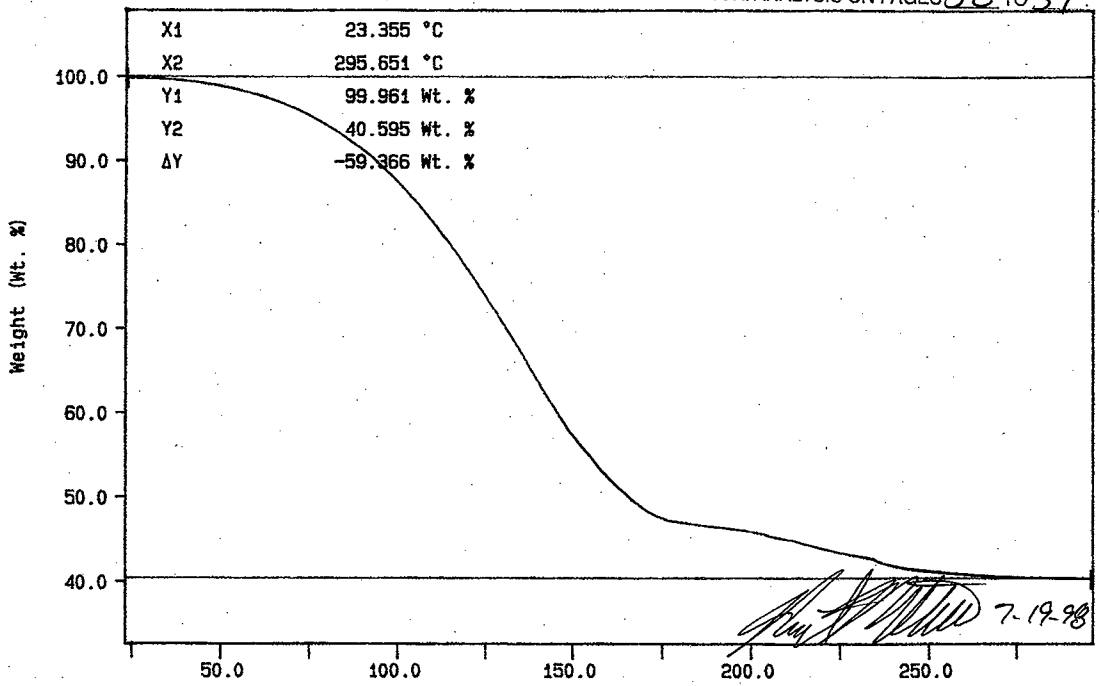
REVIEWER SIGNATURE DATE

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: TER071801 Sat Jul 18 19:05:45 1998
Sample Weight: 18.540 mg
103N8-A STD

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

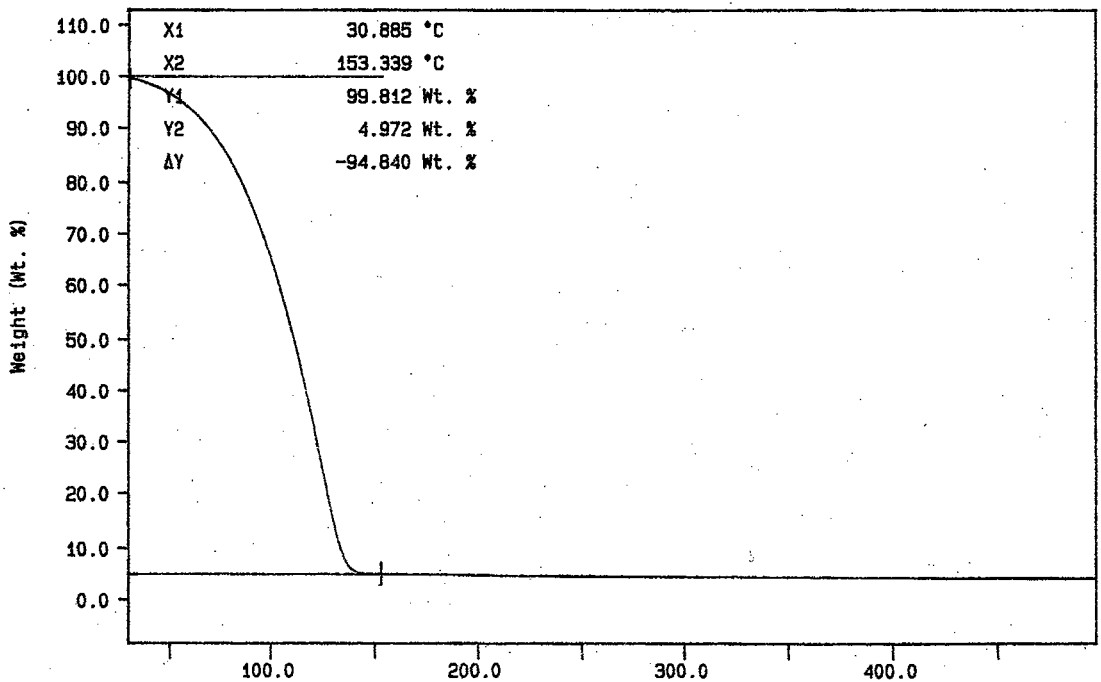


7-19-98

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

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jul 18 21:37:10 1998

Curve 1: TGA
File info: SAM071805 Sun Jul 19 00:38:18 1998
Sample Weight: 10.290 mg
S98T001362

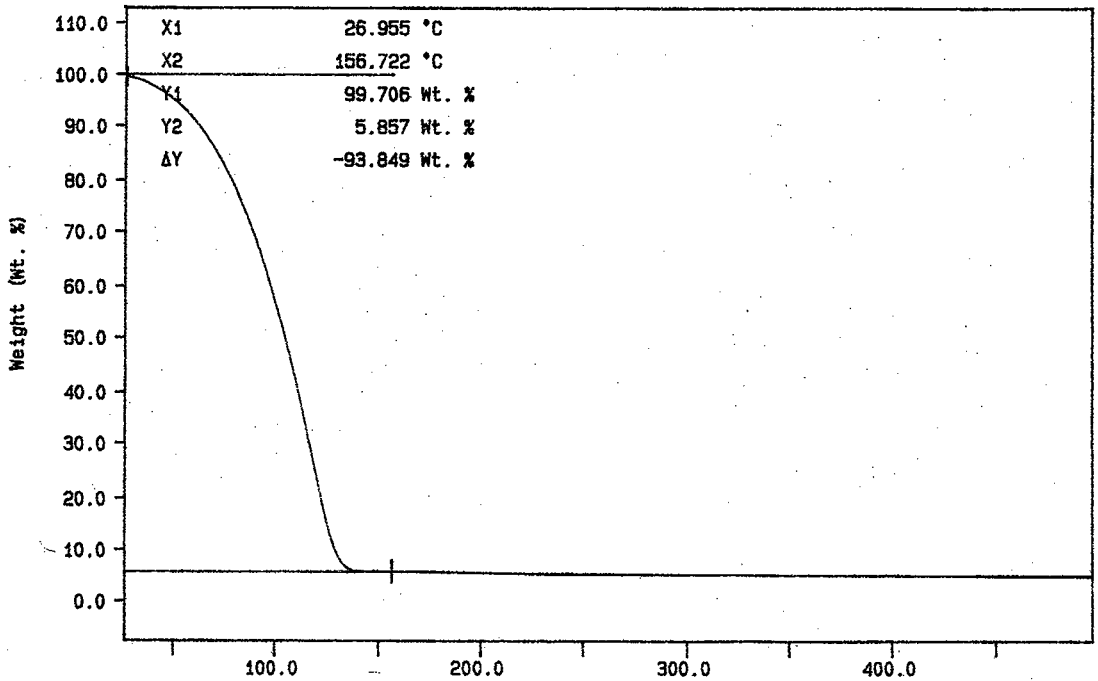


10C/MIN N2
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jul 19 01:32:37 1998

HNF-1640 REV. 0

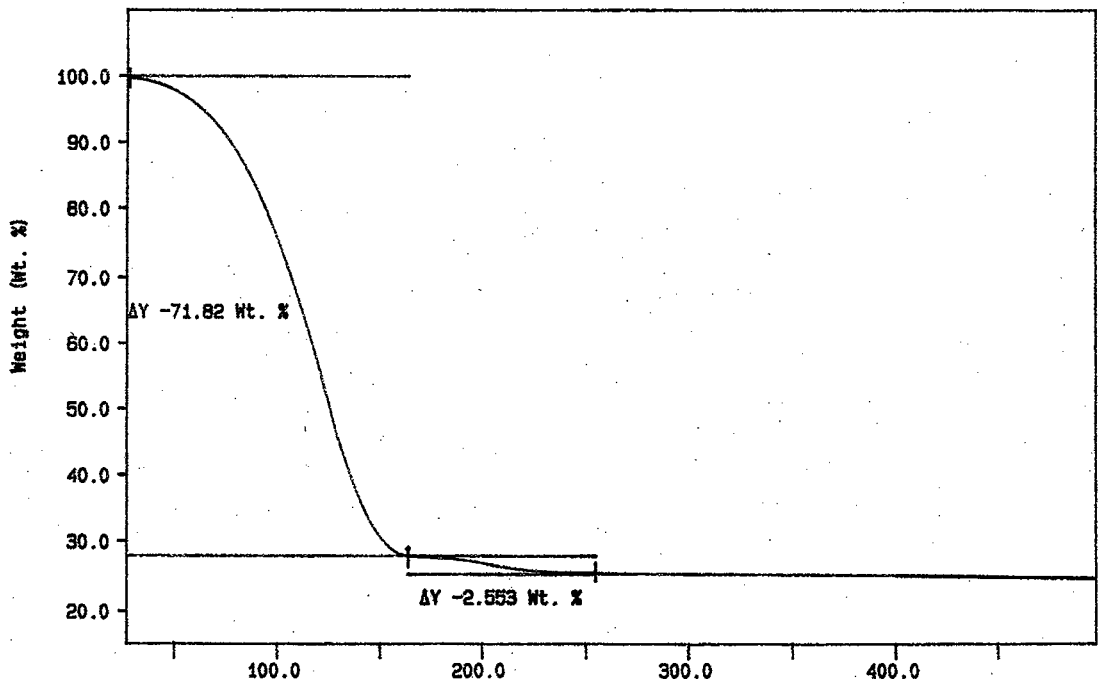
Curve 1: TGA
File info: SAM071806 Sun Jul 19 02:22:36 1998
Sample Weight: 9.941 mg
S98T001362 DUP



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

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jul 19 02:23:03 1998

Curve 1: TGA
File info: SAM071803 Sat Jul 18 22:23:04 1998
Sample Weight: 12.652 mg
S98T001363

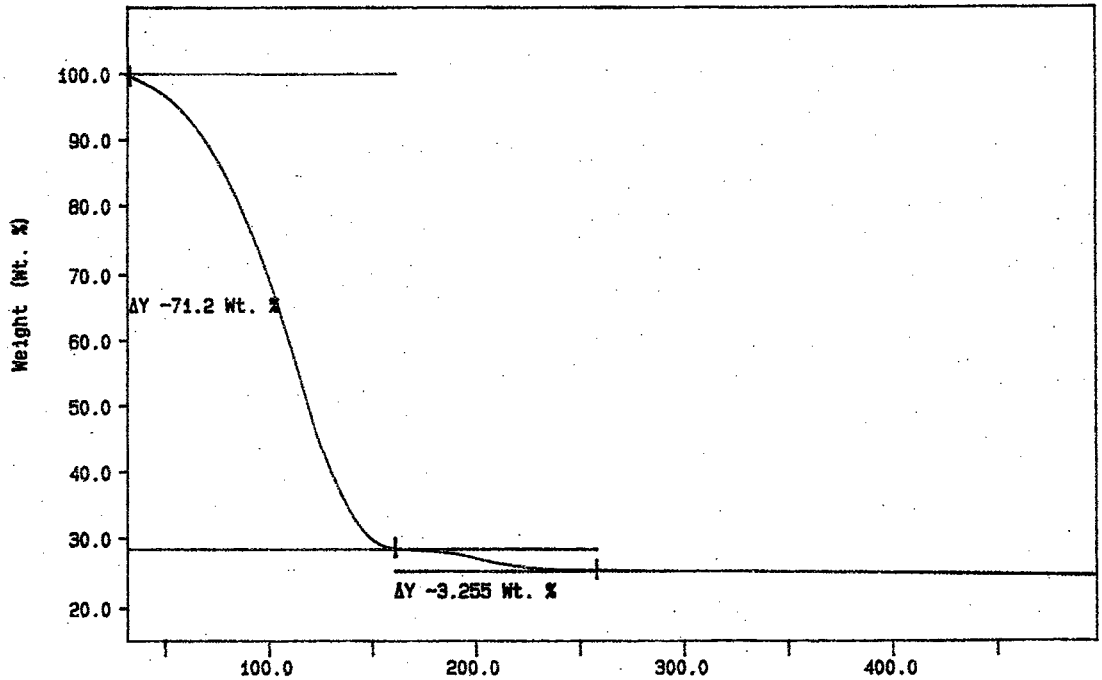


10C/MIN N2
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 800.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jul 20 10:38:31 1998

HNF-1640 REV. 0

Curve 1: TGA
File info: SAM071804 Sat Jul 18 23:28:37 1998
Sample Weight: 12.077 mg
S98T001363 DUP



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

KA MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jul 20 10:40:06 1998

HNF-1640 REV. 0

worklistrpt Version 2.1 05/15/95
05/21/98 11:19

LABCORE Data Entry Template for Worklist# 24112

Analyst: KRM **Instrument:** TGA0 3 **Book #** 103N 8A

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

Worklist Comment: AN101 GRAB1, TGA-03 Run under nitrogen. skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-03	LIQUID	59.4	59.37	N/A	%
98000238	AN-101 GRAB1	2	SAMPLE	S98T001364	0		TGA-03	LIQUID	N/A	71.37 42	7/20/98	%
98000238	AN-101 GRAB1	3	DUP	S98T001364	0		TGA-03	LIQUID	71.37 42	71.33	N/A	%

Final page for worklist # 24112

7-18-98
Analyst Signature **Date**

7/21/98
Analyst Signature **Date**

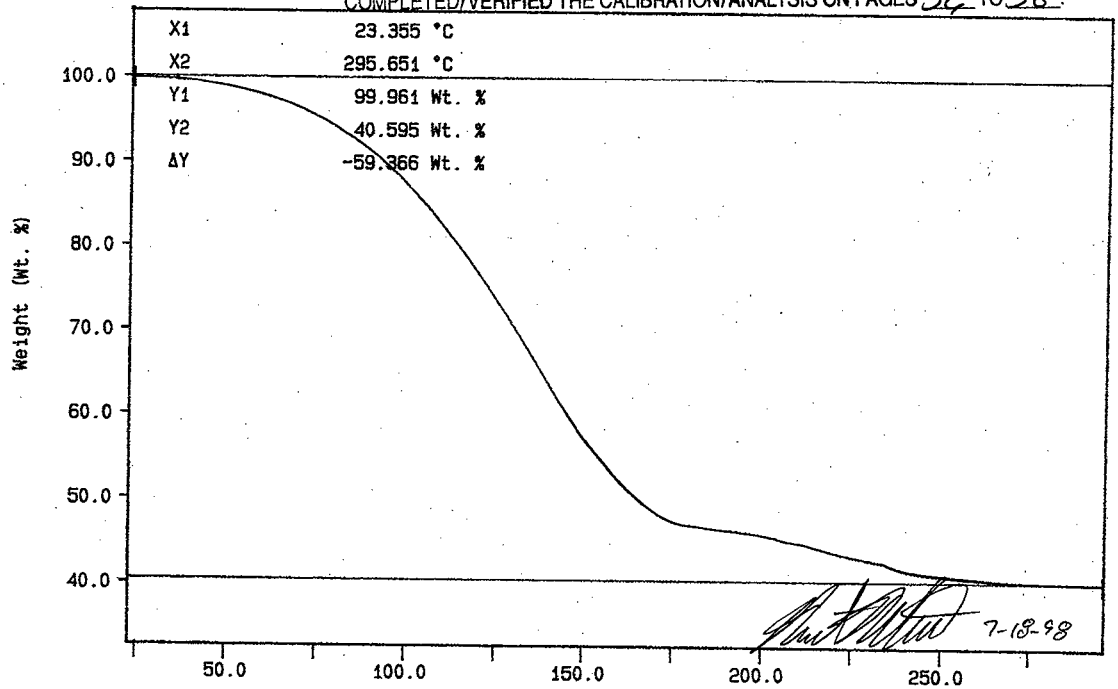
REVIEWER SIGNATURE 7/21/98 DATE

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: TER071801 Sat Jul 18 19:05:45 1998
Sample Weight: 18.540 mg
103N8-A STD

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

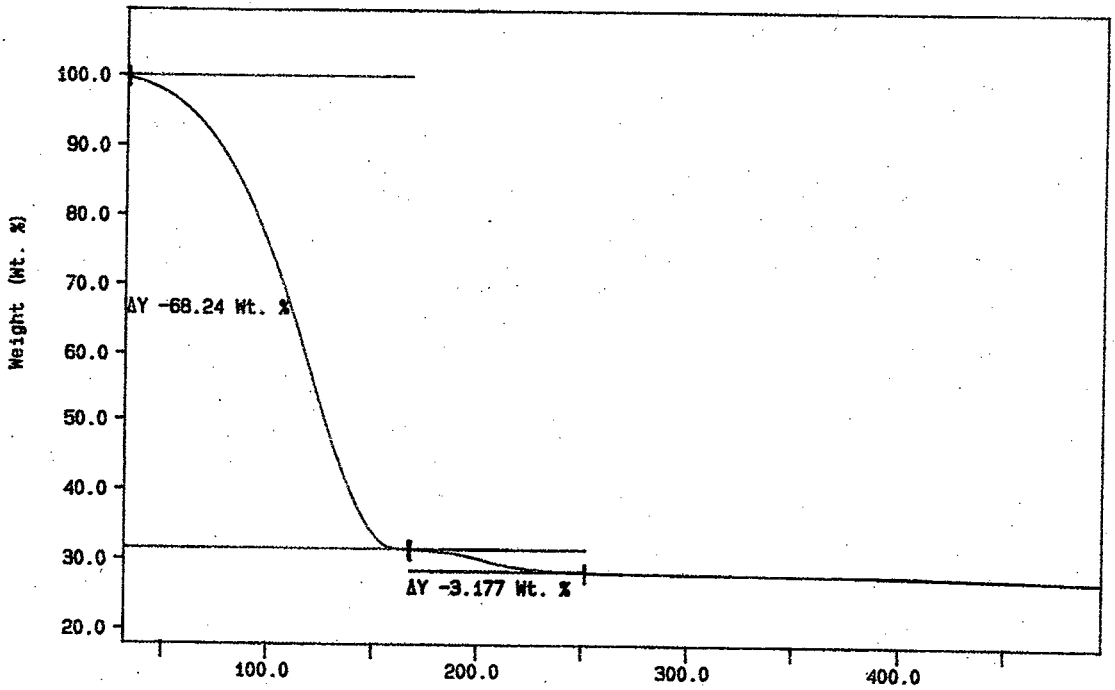


10C/MIN N2
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 300.0 C

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jul 18 19:07:25 1998

NMF-1640 REV. 0

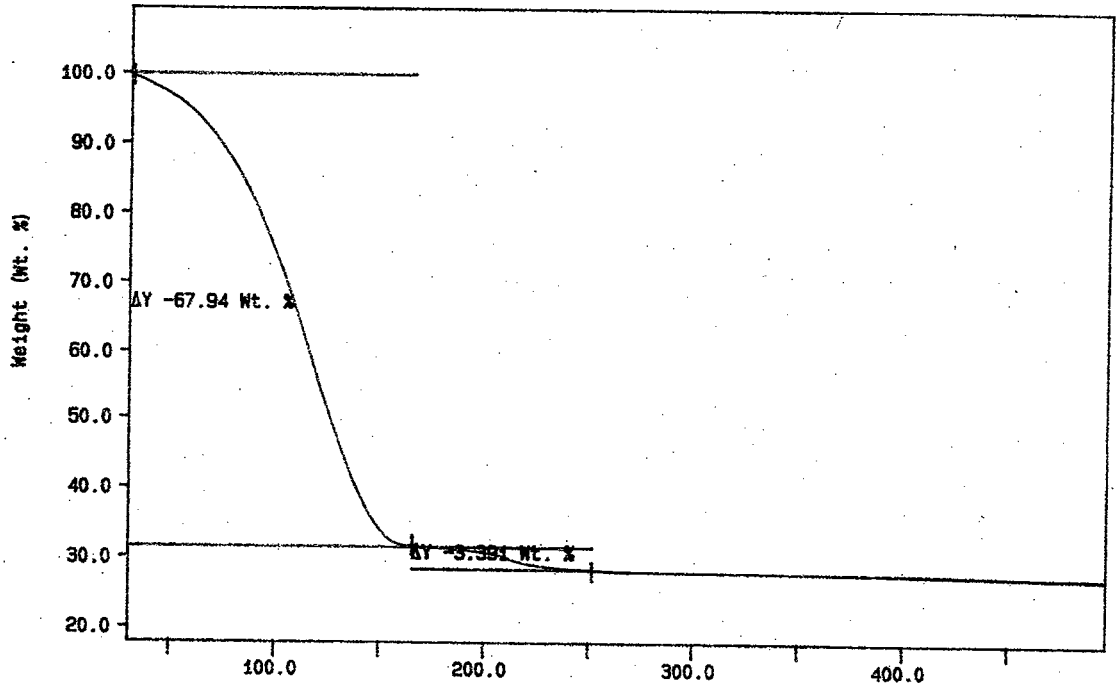
Curve 1: TGA
File info: SAM071801 Sat Jul 18 20:08:38 1998
Sample Weight: 12.621 mg
S98T001364



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

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jul 20 10:29:29 1998

Curve 1: TGA
File info: SAM071802 Sat Jul 18 21:14:53 1998
Sample Weight: 13.411 mg
S98T001364 DUP



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

KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jul 20 10:31:10 1998

LABCORE Completed Worklist Report for Worklist# 24113

Analyst: jro **Instrument:** BA001 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: AN101 GRAB1, SPG-01 Use a cal pipette. skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	SPG-01	LIQUID	1.3779	1.370	99.427	% Recovery
2	SAMPLE	S98T001362		0	SPG-01	LIQUID	N/A	1.033	1.00e-003	Sp.G.
3	DUP	S98T001362		0	SPG-01	LIQUID	1.033	1.043	0.963	RPD
4	SAMPLE	S98T001363		0	SPG-01	LIQUID	N/A	1.200	1.00e-003	Sp.G.
5	DUP	S98T001363		0	SPG-01	LIQUID	1.200	1.208	0.664	RPD
6	SAMPLE	S98T001364		0	SPG-01	LIQUID	N/A	1.251	1.00e-003	Sp.G.
7	DUP	S98T001364		0	SPG-01	LIQUID	1.251	1.250	0.080	RPD

Final page for worklist# 24113

Analyst Signature **Date**

JKWollan 6/4/98
Analyst Signature **Date**

8/5/98
Reviewer Signature **Date**

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

worklistrpt Version 2.1 05/15/95
05/21/98 11:21

LABCORE Data Entry Template for Worklist# 24113

Analyst: JRO **Instrument:** BA001 _____ **Book #** 134/N166

Method: LA-510-112 Rev/Mod E0

Worklist Comment: AN101 GRAB1, SPG-01 Use a cal pipette. skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				SPG-01	LIQUID	1.3779	1.370	N/A	Sp.G.
98000238	AN-101 GRAB1	2	SAMPLE	S98T001362	0		SPG-01	LIQUID	N/A	1.033		Sp.G.
98000238	AN-101 GRAB1	3	DUP	S98T001362	0		SPG-01	LIQUID	1.033	1.043	N/A	Sp.G.
98000238	AN-101 GRAB1	4	SAMPLE	S98T001363	0		SPG-01	LIQUID	N/A	1.200		Sp.G.
98000238	AN-101 GRAB1	5	DUP	S98T001363	0		SPG-01	LIQUID	1.200	1.208	N/A	Sp.G.
98000238	AN-101 GRAB1	6	SAMPLE	S98T001364	0		SPG-01	LIQUID	N/A	1.251		Sp.G.
98000238	AN-101 GRAB1	7	DUP	S98T001364	0		SPG-01	LIQUID	1.251	1.250	N/A	Sp.G.

Final page for worklist # 24113

Analyst Signature Date 5-27-98

Analyst Signature Date 6/4/98

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)

		STD	REPLICATE
Type			
STD	Gross Weight (W2)	1.4671	1.4766
Work List	Tare Weight (W1)	1.3301	1.3396
24113	Weight of Solution (W2-W1)	0.137	0.137
Test Code	Volume of Solution µL	100.0000	100.0000
SPG-01	Specific Gravity	1.3700	1.3700
Matrix	Specific Gravity (Average)	1.3700	
LIQUID			
Sample #			
STD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
jro	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
05/27/98	v RESULT v		
Time	Specific Gravity Average =	1.370	

Data Entry by:	JKM	Date:	06/04/98
Approved by:	NA	Date:	

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAM	REPLICATE
Type			
SAM	Gross Weight (W2)	1.4682	
Work List	Tare Weight (W1)	1.3649	
24113	Weight of Solution (W2-W1)	0.1033	0
Test Code	Volume of Solution µL	100.0000	
SPG-01	Specific Gravity	1.0330	NA
Matrix			
LIQUID			
Sample #			
S98T001362			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
jro	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
05/27/98	v RESULT v		
Time	Specific Gravity =	1.033	

Data Entry by:	PKM	Date:	06/04/98
Approved by:	N/A	Date:	

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUP	REPLICATE
Type			
DUP	Gross Weight (W2)	1.4414	
Work List	Tare Weight (W1)	1.3371	
24113	Weight of Solution (W2-W1)	0.1043	0
Test Code	Volume of Solution µL	100.0000	
SPG-01	Specific Gravity	1.0430	NA
Matrix			
LIQUID			
Sample #			
S98T001362			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
jro	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
05/27/98	v RESULT v		
Time	Specific Gravity =	1.043	

Data Entry by:	KM	Date:	06/04/98
Approved by:	NA	Date:	

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAM	REPLICATE
SAM	Gross Weight (W2)	1.4797	
Work List	Tare Weight (W1)	1.3597	
24113	Weight of Solution (W2-W1)	0.12	0
Test Code	Volume of Solution µL	100.0000	
SPG-01	Specific Gravity	1.2000	NA
Matrix			
LIQUID			
Sample #			
S98T001363			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
jro	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
05/27/98	v RESULT v		
Time	Specific Gravity =	1.200	

Data Entry by:	JKM	Date:	06/04/98
Approved by:	NA	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUP	REPLICATE
DUP	Gross Weight (W2)	1.4935	
Work List	Tare Weight (W1)	1.3727	
24113	Weight of Solution (W2-W1)	0.1208	0
Test Code	Volume of Solution µL	100.0000	
SPG-01	Specific Gravity	1.2080	NA
Matrix			
LIQUID			
Sample #			
S98T001363			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
jro	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
05/27/98	v RESULT v		
Time	Specific Gravity =	1.208	

Data Entry by:	JKM	Date:	06/04/98
Approved by:	NA	Date:	

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAM	REPLICATE
SAM	Gross Weight (W2)	1.4908	
Work List	Tare Weight (W1)	1.3657	
24113	Weight of Solution (W2-W1)	0.1251	0
Test Code	Volume of Solution µL	100.0000	
SPG-01	Specific Gravity	1.2510	NA
Matrix			
LIQUID			
Sample #			
S98T001364			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
jro	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
05/27/98	v RESULT v		
Time	Specific Gravity =	1.251	

Data Entry by:	DKM	Date:	06/04/98
Approved by:	NA	Date:	

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUP	REPLICATE
DUP	Gross Weight (W2)	1.4138	
Work List	Tare Weight (W1)	1.2888	
24113	Weight of Solution (W2-W1)	0.125	0
Test Code	Volume of Solution µL	100.0000	
SPG-01	Specific Gravity	1.2500	NA
Matrix			
LIQUID			
Sample #			
S98T001364			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
jro	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
05/27/98	v RESULT v		
Time	Specific Gravity =	1.250	

Data Entry by:	JKM	Date:	06/04/98
Approved by:	NA	Date:	

Form 510112L1 Rev. 1.1

LABCORE Completed Worklist Report for Worklist# 24148

Analyst: rdm **Instrument:** PH01>7 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: AN101 GRAB1, pH-01 skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STDPH			0	PH-01	LIQUID	7.00	6.96	99.429	% Recovery
2	SAMPLE	S98T001362		0	PH-01	LIQUID	N/A	13.06	1.00e-002	pH
3	DUP	S98T001362		0	PH-01	LIQUID	13.06	13.07	0.077	RPD
4	SAMPLE	S98T001363		0	PH-01	LIQUID	N/A	13.43	1.00e-002	pH
5	DUP	S98T001363		0	PH-01	LIQUID	13.43	13.33	0.747	RPD
6	SAMPLE	S98T001364		0	PH-01	LIQUID	N/A	13.49	1.00e-002	pH
7	DUP	S98T001364		0	PH-01	LIQUID	13.49	13.50	0.074	RPD

Final page for worklist# 24148

Analyst Signature Date

C.J. Ogan 5/27/98
Analyst Signature Date

5/28/98
Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 24148

Analyst: RDM **Instrument:** PH01 **Book #** 18N19E

Method: LA-212-106 Rev/Mod

Worklist Comment: AN101 GRAB1, pH-01 skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STDPH				PH-01	LIQUID		6.96	N/A	pH
98000238	AN-101 GRAB1	2	SAMPLE	S98T001362	0		PH-01	LIQUID	N/A	13.06		pH
98000238	AN-101 GRAB1	3	DUP	S98T001362	0		PH-01	LIQUID		13.07	N/A	pH
98000238	AN-101 GRAB1	4	SAMPLE	S98T001363	0		PH-01	LIQUID	N/A	13.43		pH
98000238	AN-101 GRAB1	5	DUP	S98T001363	0		PH-01	LIQUID		13.33	N/A	pH
98000238	AN-101 GRAB1	6	SAMPLE	S98T001364	0		PH-01	LIQUID	N/A	13.49		pH
98000238	AN-101 GRAB1	7	DUP	S98T001364	0		PH-01	LIQUID		13.50	N/A	pH

Final page for worklist # 24148

RDM 5/24/98
Analyst Signature **Date**

C. Green 5/26/98
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.

HNF-1640 REV. 0

LABCORE Completed Worklist Report for Worklist# 24145

Analyst: krm **Instrument:** PH01 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: AN101 GRAB1, OH-01, STD: 0.050mL skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK			0	OH-01	LIQUID	1	<2.5e3		ug/mL
2	STD			0	OH-01	LIQUID	1.72e4	1.72e+4	100.000	% Recovery
3	SAMPLE	S98T001362		0	OH-01	LIQUID	N/A	6.58e+3	2500.000	ug/mL
4	DUP	S98T001362		0	OH-01	LIQUID	6.58e+3	6.37e+3	3.243	RPD
5	SAMPLE	S98T001363		0	OH-01	LIQUID	N/A	2.66e+4	2500.000	ug/mL
6	DUP	S98T001363		0	OH-01	LIQUID	2.66e+4	2.68e+4	0.749	RPD
7	SAMPLE	S98T001364		0	OH-01	LIQUID	N/A	3.41e+4	2500.000	ug/mL
8	DUP	S98T001364		0	OH-01	LIQUID	3.41e+4	3.21e+4	6.042	RPD

Final page for worklist# 24145

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

5/28/98

Reviewer Signature **Date**

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

LABCORE Data Entry Template for Worklist# 24145

Analyst: KRM **Instrument:** PH01 _____ **Book #** 11/108

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

Worklist Comment: AN101 GRAB1, OH-01, STD: 0.050mL skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				OH-01	LIQUID		<2.5E+3	N/A	ug/mL
		2	STD				OH-01	LIQUID		1.72E+4	N/A	ug/mL
98000238	AN-101 GRAB1	3	SAMPLE	S98T001362	0		OH-01	LIQUID	N/A	6.58E+3	2.50E+3	ug/mL
98000238	AN-101 GRAB1	4	DUP	S98T001362	0		OH-01	LIQUID	6.58E+3	6.37 E+3	N/A	ug/mL
98000238	AN-101 GRAB1	5	SAMPLE	S98T001363	0		OH-01	LIQUID	N/A	2.66 E+4	2.50E+3	ug/mL
98000238	AN-101 GRAB1	6	DUP	S98T001363	0		OH-01	LIQUID	2.66E+4	2.68E+4	N/A	ug/mL
98000238	AN-101 GRAB1	7	SAMPLE	S98T001364	0		OH-01	LIQUID	N/A	3.41E+4	2.50E+3	ug/mL
98000238	AN-101 GRAB1	8	DUP	S98T001364	0		OH-01	LIQUID	3.41E+4	3.21E+4	N/A	ug/mL

Final page for worklist # 24145

5-23-98
Analyst Signature **Date**

Sue Hogan 5-26-98
Analyst Signature **Date**
C.J. Quinn 5/26/98

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.

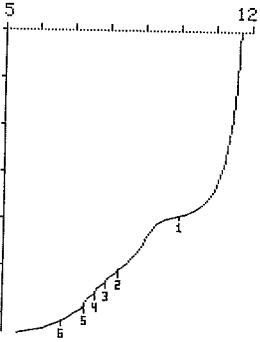
1363

date 98-05-23 time 19:47
GET pH 12 # 58
Id.#1 1314-2
Id.#2 .1994
pH(init) 11.66

	V/ml	pH
EP1	.393	9.99
EP2	.507	8.32
EP3	.531	7.95
EP4	.556	7.64
EP5	.580	7.34
EP6	.615	6.72

stop volt.reached
========

date 98-05-23 time 19:47
GET pH 12 # 58
.10ml/div ΔpH=1/div
start V .000 ml



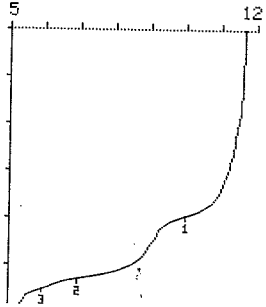
1363 DaP

date 98-05-23 time 19:53
GET pH 12 # 59
Id.#1 1314-2
Id.#2 .1994
pH(init) 11.64

	V/ml	pH
EP1	.396	10.00
EP2	.530	6.95
EP3	.551	5.97

stop volt.reached
========

date 98-05-23 time 19:56
GET pH 12 # 59
.10ml/div ΔpH=1/div
start V .000 ml



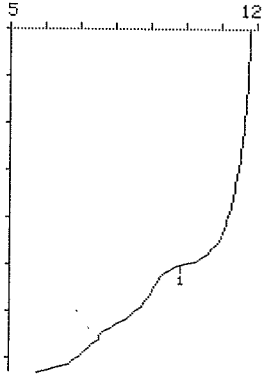
1364

date 98-05-23 time 23:16
GET pH 12 # 60
Id.#1 1314-2
Id.#2 .1994
pH(init) 11.80

	V/ml	pH
EP1	.503	9.84

stop volt.reached
========

date 98-05-23 time 23:31
GET pH 12 # 60
.10ml/div ΔpH=1/div
start V .000 ml



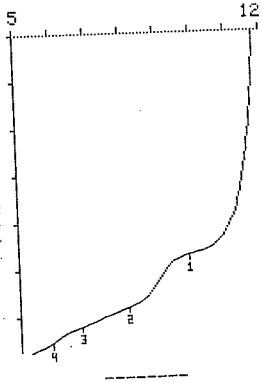
1364 DaP

date 98-05-23 time 23:39
GET pH 12 # 61
Id.#1 1314-2
Id.#2 .1994
pH(init) 11.80

	V/ml	pH
EP1	.473	9.84
EP2	.581	8.12
EP3	.622	6.75
EP4	.653	5.91

stop volt.reached
========

date 98-05-23 time 23:47
GET pH 12 # 61
.10ml/div ΔpH=1/div
start V .000 ml

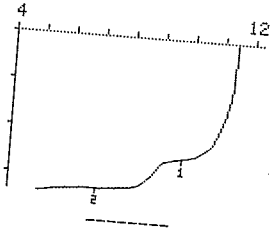


date 98-05-23 time 19:34
GET pH 12 # 55
Id.#1 1314-2
Id.#2 .1994
pH(init) 11.40

	V/ml	pH
EP1	.254	9.76
EP2	.327	6.93

stop volt.reached
========

date 98-05-23 time 19:35
GET pH 12 # 55
.10ml/div ΔpH=1/div
start V .000 ml



Blk

date 98-05-23 time 19:39
GET pH 12 # 57
Id.#1 1314-2
Id.#2 .1994
pH(init) 5.49

	V/ml	pH
EP1	.006	4.42

stop volt.reached
========

date 98-05-23 time 19:40
GET pH 12 # 57
.10ml/div ΔpH=1/div
start V .000 ml

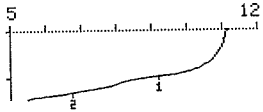
1361

date 98-05-23 time 23:52
GET pH 12 # 62
Id.#1 1314-2
Id.#2 .1994
pH(init) 11.13

	V/ml	pH
EP1	.097	9.20
EP2	.131	6.74

stop volt.reached
========

date 98-05-24 time 00:00
GET pH 12 # 62
.10ml/div ΔpH=1/div
start V .000 ml



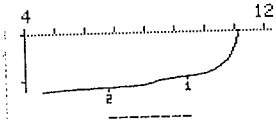
1362
Dup

date 98-05-24 time 00:04
GET pH 12 # 63
Id.#1 1314-2
Id.#2 .1994
pH(init) 11.12

	V/ml	pH
EP1	.094	9.40
EP2	.116	6.74

stop volt.reached
========

date 98-05-24 time 00:07
GET pH 12 # 63
.10ml/div ΔpH=1/div
start V .000 ml



PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		STANDARD
Type	Sample Size (mL) SS	0.050
STANDARD	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.254
24145	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.01E+00
OH-01	OH in Sample in µg/mL (PPM)	1.72E+04
Matrix		
LIQUID		
Sample #		
WL24145		
Instrument Code		
PH01		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/23/98		
Time		STANDARD
12:00 PM	Concentration of OH in Sample (Molarity)	1.01E+00
	OH in Sample in µg/mL (PPM)	1.72E+04

Data Entry by:		Date:	05/26/98
Approved by:	NA	Date:	

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		BLANK
Type	Sample Size (mL) SS	0.050
BLANK	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.006
24145	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.39E-02
OH-01	OH in Sample in µg/mL (PPM)	4.07E+02
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
WL24145		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/23/98		
Time		BLANK
12:00 PM	Concentration of OH in Sample (Molarity)	2.39E-02
	OH in Sample in µg/mL (PPM)	<2500

The Result is < Detection Limit

Data Entry by:		Date:	05/26/98
Approved by:	NA	Date:	

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

OH (AUTO) : LA-211-102 (D-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	0.097
24145	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	3.87E-01
OH-01	OH in Sample in µg/mL (PPM)	6.58E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T001362		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/23/98		
Time		SAMPLE
12:00 PM	Concentration of OH in Sample (Molarity)	3.87E-01
	OH in Sample in µg/mL (PPM)	6.58E+03

Data Entry by:		Date:	05/26/98
Approved by:	NA	Date:	

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUPLICATE
Type	Sample Size (mL) SS	0.050
DUPLICATE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.094
24145	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	3.75E-01
OH-01	OH in Sample in µg/mL (PPM)	6.37E+03
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T001362		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/23/98		
Time		DUPLICATE
12:00 PM	Concentration of OH in Sample (Molarity)	3.75E-01
	OH in Sample in µg/mL (PPM)	6.37E+03

Data Entry by:		Date:	05/26/98
Approved by:	NA	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

OH (AUTO) : LA-211-102 (D-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	0.393
24145	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.57E+00
OH-01	OH in Sample in µg/mL (PPM)	2.66E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T001363		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/23/98		
Time		SAMPLE
12:00 PM	Concentration of OH in Sample (Molarity)	1.57E+00
	OH in Sample in µg/mL (PPM)	2.66E+04

Data Entry by:		Date:	05/26/98
Approved by:	NA	Date:	

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUPLICATE
Type	Sample Size (mL) SS	0.050
DUPLICATE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.396
24145	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.58E+00
OH-01	OH in Sample in µg/mL (PPM)	2.68E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T001363		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/23/98		
Time		DUPLICATE
12:00 PM	Concentration of OH in Sample (Molarity)	1.58E+00
	OH in Sample in µg/mL (PPM)	2.68E+04

Data Entry by:		Date:	05/26/98
Approved by:	NA	Date:	

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

OH (AUTO) : LA-211-102 (D-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	0.503
24145	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.01E+00
OH-01	OH in Sample in µg/mL (PPM)	3.41E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T001364		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/23/98		
Time		SAMPLE
12:00 PM	Concentration of OH in Sample (Molarity)	2.01E+00
	OH in Sample in µg/mL (PPM)	3.41E+04

Data Entry by:		Date:	05/26/98
Approved by:	NA	Date:	

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUPLICATE
Type	Sample Size (mL) SS	0.050
DUPLICATE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.473
24145	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.89E+00
OH-01	OH in Sample in µg/mL (PPM)	3.21E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T001364		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
05/23/98		
Time		DUPLICATE
12:00 PM	Concentration of OH in Sample (Molarity)	1.89E+00
	OH in Sample in µg/mL (PPM)	3.21E+04

Data Entry by:		Date:	05/26/98
Approved by:	NA	Date:	

LABCORE Completed Worklist Report for Worklist# 24144

Analyst: mf **Instrument:** NH301 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: AN101 GRAB1, NH3-01, STD: 1.0mL skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK		0		NH3-01	LIQUID	1	<5.0		ug/mL
2	STD		0		NH3-01	LIQUID	4.01e2	4.3e2	107.232	% Recovery
3	SAMPLE	S98T001365	0		NH3-01	LIQUID	N/A	6.28e0	5.000	ug/mL
4	DUP	S98T001365	0		NH3-01	LIQUID	6.28	<5.00		RPD
5	SPK	S98T001365	0		NH3-01	LIQUID	100	97	97.000	% Recovery
6	SAMPLE	S98T001366	0		NH3-01	LIQUID	N/A	2.18e1	5.000	ug/mL
7	DUP	S98T001366	0		NH3-01	LIQUID	2.18e1	2.27e1	4.045	RPD
8	SAMPLE	S98T001367	0		NH3-01	LIQUID	N/A	4.0e1	1.00e-002	ug/mL
9	DUP	S98T001367	0		NH3-01	LIQUID	4.0e1	3.57e1	11.361	RPD
10	STD		0		NH3-01	LIQUID	4.01e2	3.68e2	91.771	% Recovery

Final page for worklist# 24144

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

5/28/98

Reviewer Signature **Date**

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

LABCORE Data Entry Template for Worklist# 24144

Analyst: 6C269/MF **Instrument:** NH301 _____ **Book #** 41N19-F

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

Worklist Comment: AN101 GRAB1, NH3-01, STD: 1.0mL skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT	
		1	BLNK				NH3-01	LIQUID		<5.00	N/A	ug/mL	
		2	STD				NH3-01	LIQUID		4.3E+2	N/A	ug/mL	
98000238	AN-101 GRAB1	3	SAMPLE	S98T001365	0		NH3-01	LIQUID	N/A	6.28E0	5.00	ug/mL	
98000238	AN-101 GRAB1	4	DUP	S98T001365	0		NH3-01	LIQUID	6.28	<5.00 mg/L 5/28/98 ~~7.86~~	N/A	ug/mL	
98000238	AN-101 GRAB1	5	SPK	S98T001365	0		NH3-01	LIQUID		3.95E+2	N/A	ug/mL	97%
98000238	AN-101 GRAB1	6	SAMPLE	S98T001366	0		NH3-01	LIQUID	N/A	2.18E+1	5.00	ug/mL	
98000238	AN-101 GRAB1	7	DUP	S98T001366	0		NH3-01	LIQUID	2.18E+1	2.27E+1	N/A	ug/mL	
98000238	AN-101 GRAB1	8	SAMPLE	S98T001367	0		NH3-01	LIQUID	N/A	4.0E+1	5.00	ug/mL	
98000238	AN-101 GRAB1	9	DUP	S98T001367	0		NH3-01	LIQUID	4.00E+1	3.57E+1	N/A	ug/mL	
		10	STD				NH3-01	LIQUID		3.68E+2	N/A	ug/mL	

Final page for worklist # 24144

Mary Tracy 5-26-98
Analyst Signature **Date**

C.J. Quinn 5/27/98
Analyst Signature **Date**

Jon K Allen 5/28/98

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

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

				BLNK
Type	Instrument Data (µg/mL)	ID		0.000
BLNK	Blank Result from the Instrument (µg/mL)	BR		0.0907
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM		1.0
24144	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL		25.0
Test Code				
NH3-01				
Matrix				
LIQUID				
Batch Number				
98002594				
Rerun				
0				
Sample Prep				
N/A	NH3 Concentration (µg/mL)	NH3 CONC	<	~~1.00E+00~~ 5.00
Sample #				
BLANK	Method Detection Limit (µg/mL) 0.200 x 25/1 = 5			~~1.00~~ 5.00
Instrument Code				
NH301				
Prepared By				
CJO	NH3 Concentration (µg/mL) = (BR) * (FVOL / VSAM)			
Chemist				
MJL				
Analyst				
MF				
Date Complete				
05/27/98				
Analysis Date				
05/26/98				
Analysis Time				
09:00 AM				
Sample Point	NH3 Concentration (µg/mL)			< ~~1.00E+00~~ 5.00
AN-101				

MJL 5/28/98

MJL 5/28/98

Analyst:		MF Date:	05/27/98
Signature of Chemist:	MJL	MJL Date:	

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: STD2

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

			STD
Type	Instrument Data (µg/mL)	ID	17.300
STD	Blank Result from the Instrument (µg/mL)	BR	0.0907
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
24144	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	LCS Standard Book Number	LCS	41N19F
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL	4.01E+02
Matrix			
LIQUID			
Batch Number			
98002594			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	4.30E+02
Sample #			
STANDARD	Method Detection Limit (µg/mL) 0.200 x 25/1 = 5.00 ~~1.00~~		
Instrument Code			
NH301			
Prepared By			
CJO	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
MJL			
Analyst			
MF	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100		
Date Complete			
05/27/98			
Analysis Date			
05/26/98			
Analysis Time	LCS Standard % Recovery		107%
09:00 AM			
Sample Point	NH3 Concentration (µg/mL)		4.30E+02
AN-101			

Analyst:	MF	Date:	05/27/98
Signature of Chemist: NA	MJL	Date:	

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: SAM3

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

			SAMPLE
Type	Instrument Data (µg/mL)	ID	0.342
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.0907
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
24144	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID			
Batch Number			
98002594			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	6.28E+00
Sample #			
S98T001365	Method Detection Limit (µg/mL) 0.200 x 25/1 = 5.00	1.00	
Instrument Code			
NH301			
Prepared By			
CJO	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
MJL			
Analyst			
MF			
Date Complete			
05/27/98			
Analysis Date			
05/26/98			
Analysis Time			
09:00 AM			
Sample Point	NH3 Concentration (µg/mL)		6.28E+00
AN-101			

MJL 5/28/98

Analyst:		MF	Date: 05/27/98
Signature of Chemist:	N/A	MJL	Date:

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: DUP4

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

			DUP
Type	Instrument Data (µg/mL)	ID	0.261
DUP	Blank Result from the Instrument (µg/mL)	BR	0.0907
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
24144	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID			
Batch Number	Sample Concentration (µg/mL)	SAM CONC	6.28E+00
98002594			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	4.26E+00
Sample #			
S98T001365	Method Detection Limit (µg/mL) 0.200 x 25/1 = 5.00 ~~1.00~~ MJL 5/28/98		
Instrument Code			
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 1		
Prepared By			
CJO	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
MJL			
Analyst			
MF			
Date Complete			
05/27/98			
Analysis Date			
05/26/98			
Analysis Time			
09:00 AM	RPD (DUP & SAM)		38%
Sample Point	NH3 Concentration (µg/mL)		~~4.26E+00~~
AN-101			< 5.00 MJL 5/28/98

Analyst:	NA	MF Date:	05/27/98
Signature of Chemist:		MJL Date:	

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: SPIKE5

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

			SPK
Type	Instrument Data (µg/mL)	ID	15.900
SPK	Blank Result from the Instrument (µg/mL)	BR	0.0907
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
24144	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	Spike Book Number	SPK	41N19F
NH3-01	Spike Value (µg/mL)	SPK VAL	4.01E+02
Matrix	Vol of Spike Standard Used (mL)	VOL SPK	1.000
LIQUID			
Batch Number			
98002594			
Rerun	Sample Instrument Data (µg/mL)	SAM ID	0.342
0	Sample Volume of Sample (mL)	SAM VSAM	1.0
Sample Prep	Sample Final Volume (mL)	SAM FVOL	25.0
N/A	NH3 Concentration (µg/mL)	NH3 CONC	3.95E+02
Sample #			
S98T001365	Method Detection Limit (µg/mL) 0.200 x 25/1 = 5.00 ~~1.00~~		

MJL 5/28/98

Instrument Code	
NH301	
Prepared By	
CJO	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)
Chemist	
MJL	QC ACTUAL = SPK VAL
Analyst	QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM))
MF	Spike % Recovery =
Date Complete	((((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / (SPK VAL * VOL SPK)) * 100
05/27/98	
Analysis Date	QC ACTUAL (µg) 4.01E+02
05/26/98	QC FOUND (µg) 3.89E+02
Analysis Time	Spike % Recovery 97%
09:00 AM	
Sample Point	NH3 Concentration (µg/mL) 3.95E+02
AN-101	

Analyst:		MF Date:	05/27/98
Signature of Chemist:	NA	MJL Date:	

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: SAM6

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

			SAMPLE
Type	Instrument Data (µg/mL)	ID	0.962
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.0907
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
24144	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID			
Batch Number			
98002594			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	2.18E+01
Sample #			
S98T001366	Method Detection Limit (µg/mL) 0.200 x 25/1 = 5.00 ~~1.00~~		
Instrument Code			
NH301			
Prepared By			
CJO	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
MJL			
Analyst			
MF			
Date Complete			
05/27/98			
Analysis Date			
05/26/98			
Analysis Time			
09:00 AM			
Sample Point	NH3 Concentration (µg/mL)		2.18E+01
AN-101			

MJL 5/28/98

Analyst:		MF	Date: 05/27/98
Signature of Chemist:	NA	MJL	Date:

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: DUP7

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

			DUP
Type	Instrument Data (µg/mL)	ID	1.000
DUP	Blank Result from the Instrument (µg/mL)	BR	0.0907
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
24144	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID			
Batch Number	Sample Concentration (µg/mL)	SAM CONC	2.18E+01
98002594			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	2.27E+01
Sample #			
S98T001366	Method Detection Limit (µg/mL) 0.200 x 25/1 = 5.00 ~~1.00~~ MJL 5/28/98		
Instrument Code			
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 1		
Prepared By			
CJO	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
MJL			
Analyst			
MF			
Date Complete			
05/27/98			
Analysis Date			
05/26/98			
Analysis Time			
09:00 AM	RPD (DUP & SAM)		4%
Sample Point	NH3 Concentration (µg/mL)		2.27E+01
AN-101			

Analyst:	NA	MF	Date: 05/27/98
Signature of Chemist:		MJL	Date:

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: SAM8

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

			SAMPLE
Type	Instrument Data (µg/mL)	ID	1.690
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.0907
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
24144	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID			
Batch Number			
98002594			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	4.00E+01
Sample #			
S98T001367	Method Detection Limit (µg/mL)	0.200 X 25/1 = 5.00 ~~4.00~~	
Instrument Code			
NH301			
Prepared By			
CJO	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
MJL			
Analyst			
MF			
Date Complete			
05/27/98			
Analysis Date			
05/26/98			
Analysis Time			
09:00 AM			
Sample Point	NH3 Concentration (µg/mL)		4.00E+01
AN-101			

MJC 5/28/98

Analyst:	NA	MF	Date: 05/27/98
Signature of Chemist:		MJL	Date:

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: DUP9

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

			DUP
Type	Instrument Data (µg/mL)	ID	1.520
DUP	Blank Result from the Instrument (µg/mL)	BR	0.0907
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
24144	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID			
Batch Number	Sample Concentration (µg/mL)	SAM CONC	4.00E+01
98002594			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	3.57E+01
Sample #			
S98T001367	Method Detection Limit (µg/mL) 0.200x 25/1 = 5.00 ~~1.00~~ MJL 5/28/98		
Instrument Code			
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 1		
Prepared By			
CJO	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
MJL			
Analyst			
MF			
Date Complete			
05/27/98			
Analysis Date			
05/26/98			
Analysis Time			
09:00 AM	RPD (DUP & SAM)		11%
Sample Point	NH3 Concentration (µg/mL)		3.57E+01
AN-101			

Analyst:		MF	Date: 05/27/98
Signature of Chemist:	NA	MJL	Date:

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	14.800
STD	Blank Result from the Instrument (µg/mL)	BR	0.0907
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
24144	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	LCS Standard Book Number	LCS	41N19F
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL	4.01E+02
Matrix			
LIQUID			
Batch Number			
98002594			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	3.68E+02
Sample #			
STANDARD	Method Detection Limit (µg/mL) 0.200 x 25/1 = 5.00 ~~1.00~~		

MJL 5/28/98

Instrument Code	
NH301	
Prepared By	
CJO	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)
Chemist	
MJL	
Analyst	
MF	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100
Date Complete	
05/27/98	
Analysis Date	
05/26/98	
Analysis Time	LCS Standard % Recovery 92%
09:00 AM	
Sample Point	NH3 Concentration (µg/mL) 3.68E+02
AN-101	

Analyst:		MF	Date: 05/27/98
Signature of Chemist:	NA	MJL	Date:

SAMPLE.WB1 REV XX 37810NML

DOUBLE KNOWN ADDITION SELECTED
AT 08:41, 05-26-98

SAMPLE VOL= 25.000 AT 08:41, 05-26-98
ENTERED

EMF= 184.8 mV AT 08:54, 05-26-98

EMF= 185.0 mV AT 08:54, 05-26-98
ENTERED

STD CONCN= 1000 AT 08:54, 05-26-98
ENTERED

STD VOL= .25000 AT 08:55, 05-26-98
ENTERED

EMF= 62.6 mV AT 08:56, 05-26-98

EMF= 62.5 mV AT 08:57, 05-26-98
ENTERED

STD VOL= 2.5000 AT 08:57, 05-26-98
ENTERED

EMF= 2.7 mV AT 08:58, 05-26-98

EMF= 2.7 mV AT 08:59, 05-26-98
ENTERED

1:NH3 SLOPE=-60.0 mV/DEC
AT 08:59, 05-26-98

1:NH3 CONCN= .0907 BCK

DOUBLE KNOWN ADDITION SELECTED
AT 08:59, 05-26-98

HNF-1640 REV. 0

SAMPLE VOL= 25.000 AT 14:35, 05-26-98
ENTERED

EMF= 71.4 mV AT 14:36, 05-26-98

EMF= 71.2 mV AT 14:37, 05-26-98

EMF= 71.1 mV AT 14:37, 05-26-98

EMF= 70.9 mV AT 14:37, 05-26-98

EMF= 70.8 mV AT 14:38, 05-26-98

EMF= 70.7 mV AT 14:38, 05-26-98

EMF= 70.5 mV AT 14:39, 05-26-98

EMF= 70.2 mV AT 14:40, 05-26-98

EMF= 70.1 mV AT 14:40, 05-26-98

EMF= 70.0 mV AT 14:41, 05-26-98

EMF= 69.8 mV AT 14:42, 05-26-98
ENTERED

STD CONCN= 1000 AT 14:42, 05-26-98
ENTERED

STD VOL= .25000 AT 14:42, 05-26-98
ENTERED

EMF= 56.8 mV AT 14:43, 05-26-98

EMF= 56.7 mV AT 14:43, 05-26-98

EMF= 56.6 mV AT 14:44, 05-26-98
ENTERED

STD VOL= 2.5000 AT 14:44, 05-26-98
ENTERED

EMF= 17.7 mV AT 14:45, 05-26-98

EMF= 17.5 mV AT 14:45, 05-26-98

EMF= 17.3 mV AT 14:46, 05-26-98

EMF= 17.2 mV AT 14:47, 05-26-98

EMF= 17.1 mV AT 14:47, 05-26-98

EMF= 17.0 mV AT 14:48, 05-26-98

EMF= 16.9 mV AT 14:49, 05-26-98

EMF= 16.8 mV AT 14:50, 05-26-98

EMF= 16.9 mV AT 14:50, 05-26-98
ENTERED

1:NH3 SLOPE=-60.1 mV/DEC
AT 14:50, 05-26-98

1:NH3 CONCN= 14.8 41 N 19 F/1 ml

DOUBLE KNOWN ADDITION SELECTED
AT 10:30, 05-26-98

SAMPLE VOL= 25.000 AT 10:30, 05-26-98
ENTERED

EMF= 147.6 mV AT 10:37, 05-26-98

EMF= 148.0 mV AT 10:37, 05-26-98

EMF= 148.4 mV AT 10:38, 05-26-98

EMF= 148.7 mV AT 10:38, 05-26-98

EMF= 148.8 mV AT 10:38, 05-26-98
ENTERED

STD CONCN= 1000 AT 10:39, 05-26-98
ENTERED

STD VOL= .25000 AT 10:39, 05-26-98
ENTERED

EMF= 61.0 mV AT 10:41, 05-26-98

EMF= 60.9 mV AT 10:41, 05-26-98
ENTERED

STD VOL= 2.5000 AT 10:42, 05-26-98
ENTERED

EMF= 2.2 mV AT 10:43, 05-26-98

EMF= 2.1 mV AT 10:43, 05-26-98

EMF= 2.1 mV AT 10:43, 05-26-98
ENTERED

1:NH3 SLOPE=-59.6 mV/DEC
AT 10:43, 05-26-98

1:NH3 CONCN= .342 598T001365/1ml

[illegible]
ENTERED

EMF= 154.0 mV AT 11:04, 05-26-98

EMF= 154.3 mV AT 11:05, 05-26-98

EMF= 154.6 mV AT 11:05, 05-26-98

EMF= 154.9 mV AT 11:05, 05-26-98

EMF= 155.1 mV AT 11:06, 05-26-98

EMF= 155.4 mV AT 11:06, 05-26-98

EMF= 155.8 mV AT 11:07, 05-26-98

EMF= 155.8 mV AT 11:07, 05-26-98
ENTERED

STD CONCN= 1000 AT 11:07, 05-26-98
ENTERED

STD VOL= .25000 AT 11:07, 05-21 [illegible]
ENTERED

EMF= 62.3 mV AT [illegible]

EMF= 62.2 mV [illegible] 11:16, 05-26-98
ENTERED

STD [illegible] 2.5000 [illegible] 05-26-98
ENTERED

EMF= [illegible] 11:11, 05-26-98

EMF= 3.9 mV AT 11:11, 05-26-98

EMF= 3.9 mV AT 11:11, 05-26-98
ENTERED

1:NH3 SLOPE=-58.9 mV/DEC
AT 11:11, 05-26-98

1:NH3 CONCN= .261

398T001365 Dup/ind

BEST AVAILABLE COPY

```
DOUBLE KNOWN ADDITION SELECTED
 AT 13:45, 05-26-98

SAMPLE VOL= 25.000 AT 13:45, 05-26-98
ENTERED

 MF= 140.0 mV AT 13:46, 05-26-98

MF= 139.8 mV AT 13:47, 05-26-98

MF= 139.8 mV AT 13:47, 05-26-98

MF= 139.6 mV AT 13:49, 05-26-98

MF= 139.5 mV AT 13:49, 05-26-98
NTERED

TD CONCN= 1000 AT 13:49, 05-26-98
NTERED

TD VOL= .25000 AT 13:50, 05-26-98
NTERED

MF= 77.5 mV AT 13:50, 05-26-98

MF= 77.4 mV AT 13:50, 05-26-98
NTERED

TD VOL= 2.5000 AT 13:51, 05-26-98
NTERED

MF= 20.6 mV AT 13:51, 05-26-98

MF= 20.5 mV AT 13:52, 05-26-98
NTERED

:NH3 SLOPE=-59.0 mV/DEC
 AT 13:52, 05-26-98

:NH3 CONCN= .962
```

598T001366 / 1ml

DOUBLE KNOWN ADDITION SELECTED
AT 13:56, 05-26-98

SAMPLE VOL= 25.000 AT 13:56, 05-26-98
ENTERED

EMF= 136.7 mV AT 13:57, 05-26-98

EMF= 137.1 mV AT 13:57, 05-26-98

EMF= 137.2 mV AT 13:57, 05-26-98

EMF= 137.6 mV AT 13:58, 05-26-98

EMF= 137.9 mV AT 13:59, 05-26-98

EMF= 138.0 mV AT 13:59, 05-26-98

EMF= 138.1 mV AT 14:00, 05-26-98

EMF= 138.1 mV AT 14:01, 05-26-98

EMF= 138.1 mV AT 14:01, 05-26-98
ENTERED

STD CONCN= 1000 AT 14:01, 05-26-98
ENTERED

STD VOL= .25000 AT 14:01, 05-26-98
ENTERED

EMF= 76.7 mV AT 14:02, 05-26-98

EMF= 76.6 mV AT 14:03, 05-26-98
ENTERED

STD VOL= 2.5000 AT 14:03, 05-26-98
ENTERED

EMF= 19.5 mV AT 14:04, 05-26-98

EMF= 19.5 mV AT 14:04, 05-26-98

EMF= 19.4 mV AT 14:05, 05-26-98
ENTERED

1:NH3 SLOPE=-59.4 mV/DEC
AT 14:05, 05-26-98

1:NH3 CONCN= 1.00 598T001366 Dup/1 ml

DOUBLE KNOWN ADDITION SELECTED
AT 14:10, 05-26-98

SAMPLE VOL= 25.000 AT 14:10, 05-26-98
ENTERED

EMF= 125.8 mV AT 14:12, 05-26-98

EMF= 126.1 mV AT 14:12, 05-26-98

EMF= 126.4 mV AT 14:13, 05-26-98
ENTERED

STD CONCN= 1000 AT 14:14, 05-26-98
ENTERED

STD VOL= .25000 AT 14:14, 05-26-98
ENTERED

EMF= 76.1 mV AT 14:14, 05-26-98

EMF= 76.1 mV AT 14:15, 05-26-98

EMF= 76.3 mV AT 14:16, 05-26-98

EMF= 76.3 mV AT 14:16, 05-26-98
ENTERED

STD VOL= 2.5000 AT 14:17, 05-26-98
ENTERED

EMF= 20.2 mV AT 14:17, 05-26-98

EMF= 20.1 mV AT 14:18, 05-26-98

EMF= 20.1 mV AT 14:19, 05-26-98

EMF= 20.0 mV AT 14:19, 05-26-98
ENTERED

1:NH3 SLOPE=-59.9 mV/DEC
AT 14:19, 05-26-98

1:NH3 CONCN= 1.69 598T001367/1 ml

```
DOUBLE KNOWN ADDITION SELECTED
 AT 14:21, 05-26-98

SAMPLE VOL= 25.000 AT 14:21, 05-26-98
ENTERED

EMF= 127.4 mV AT 14:22, 05-26-98

EMF= 128.4 mV AT 14:23, 05-26-98

EMF= 128.6 mV AT 14:23, 05-26-98

EMF= 129.0 mV AT 14:23, 05-26-98

EMF= 129.2 mV AT 14:24, 05-26-98

EMF= 129.3 mV AT 14:24, 05-26-98

EMF= 129.5 mV AT 14:25, 05-26-98

EMF= 129.5 mV AT 14:26, 05-26-98

EMF= 129.8 mV AT 14:27, 05-26-98

EMF= 129.8 mV AT 14:27, 05-26-98
ENTERED

STD CONCN= 1000 AT 14:27, 05-26-98
ENTERED

STD VOL= .25000 AT 14:28, 05-26-98
ENTERED

EMF= 77.4 mV AT 14:28, 05-26-98

EMF= 77.3 mV AT 14:29, 05-26-98

EMF= 77.4 mV AT 14:31, 05-26-98

EMF= 77.4 mV AT 14:31, 05-26-98
ENTERED

STD VOL= 2.5000 AT 14:31, 05-26-98
ENTERED

EMF= 20.9 mV AT 14:32, 05-26-98

EMF= 20.9 mV AT 14:32, 05-26-98

EMF= 20.8 mV AT 14:32, 05-26-98

EMF= 20.8 mV AT 14:33, 05-26-98

EMF= 20.7 mV AT 14:33, 05-26-98

EMF= 20.8 mV AT 14:33, 05-26-98
ENTERED

1:NH3 SLOPE=-59.9 mV/DEC
 AT 14:34, 05-26-98
```

HNF-1640 REV. 0

AMPLE VOL= 25.000 AT 14:35, 05-26-98
NTERED

MF= 71.4 mV AT 14:36, 05-26-98

MF= 71.2 mV AT 14:37, 05-26-98

MF= 71.1 mV AT 14:37, 05-26-98

MF= 70.9 mV AT 14:37, 05-26-98

MF= 70.8 mV AT 14:38, 05-26-98

MF= 70.7 mV AT 14:38, 05-26-98

MF= 70.5 mV AT 14:39, 05-26-98

MF= 70.2 mV AT 14:40, 05-26-98

MF= 70.1 mV AT 14:40, 05-26-98

MF= 70.0 mV AT 14:41, 05-26-98

MF= 69.8 mV AT 14:42, 05-26-98
NTERED

TD CONCN= 1000 AT 14:42, 05-26-98
NTERED

TD VOL= .25000 AT 14:42, 05-26-98
NTERED

MF= 56.8 mV AT 14:43, 05-26-98

MF= 56.7 mV AT 14:43, 05-26-98

MF= 56.6 mV AT 14:44, 05-26-98
NTERED

TD VOL= 2.5000 AT 14:44, 05-26-98
NTERED

MF= 17.7 mV AT 14:45, 05-26-98

MF= 17.5 mV AT 14:45, 05-26-98

MF= 17.3 mV AT 14:46, 05-26-98

MF= 17.2 mV AT 14:47, 05-26-98

MF= 17.1 mV AT 14:47, 05-26-98

MF= 17.0 mV AT 14:48, 05-26-98

MF= 16.9 mV AT 14:49, 05-26-98

MF= 16.8 mV AT 14:50, 05-26-98

MF= 16.9 mV AT 14:50, 05-26-98
NTERED

1:NH3 SLOPE=-60.1 mV/DEC
AT 14:50, 05-26-98

1:NH3 CONCN= 14.8 41 N 14 F/1 ml

LABCORE Completed Worklist Report for Worklist# 24114

Analyst: adp **Instrument:** IC01 **Book#** 137N20-B

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

Worklist Comment: AN101 GRAB1, @IC-01 skm

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	5.90e1	5.67e+01	96.102	% Recovery
2	CCV		0	@IC-QC	CL	QC	8.00e1	7.39e+01	92.375	% Recovery
2	CCV		0	@IC-QC	NO2	QC	5.42e2	4.85e+02	89.483	% Recovery
2	CCV		0	@IC-QC	BR	QC	5.89e2	5.82e+02	98.812	% Recovery
2	CCV		0	@IC-QC	NO3	QC	5.94e2	5.79e+02	97.475	% Recovery
2	CCV		0	@IC-QC	PO4	QC	5.45e2	5.06e+02	92.844	% Recovery
2	CCV		0	@IC-QC	SO4	QC	6.32e2	6.22e+02	98.418	% Recovery
2	CCV		0	@IC-QC	OXALATE2	QC	5.31e2	5.08e+02	95.669	% Recovery
3	SAMPLE	S98T001362	0	@IC-01	F-02	LIQUID	N/A	7.782e+01	13.330	ug/mL
3	SAMPLE	S98T001362	0	@IC-01	CL-02	LIQUID	N/A	3.997e+02	18.890	ug/mL
3	SAMPLE	S98T001362	0	@IC-01	NO2-02	LIQUID	N/A	6.158e+03	120.000	ug/mL
3	SAMPLE	S98T001362	0	@IC-01	BR-02	LIQUID	N/A <	1.389e+02	138.900	ug/mL
3	SAMPLE	S98T001362	0	@IC-01	NO3-02	LIQUID	N/A	1.145e+04	154.400	ug/mL
3	SAMPLE	S98T001362	0	@IC-01	PO4-02	LIQUID	N/A	2.396e+02	133.300	ug/mL
3	SAMPLE	S98T001362	0	@IC-01	SO4-02	LIQUID	N/A	1.624e+02	153.300	ug/mL
3	SAMPLE	S98T001362	0	@IC-01	OXALATE2	LIQUID	N/A <	1.167e+02	116.700	ug/mL
4	DUP	S98T001362	0	@IC-01	F-02	LIQUID	7.78e+01	8.03e+01	3.163	RPD
4	DUP	S98T001362	0	@IC-01	CL-02	LIQUID	4.00e+02	3.93e+02	1.765	RPD
4	DUP	S98T001362	0	@IC-01	NO2-02	LIQUID	6.16e+03	6.04e+03	1.967	RPD
4	DUP	S98T001362	0	@IC-01	BR-02	LIQUID	<1.39e2	<1.39e2		RPD
4	DUP	S98T001362	0	@IC-01	NO3-02	LIQUID	1.14e+04	1.16e+04	1.739	RPD
4	DUP	S98T001362	0	@IC-01	PO4-02	LIQUID	2.40e+02	2.16e+02	10.526	RPD
4	DUP	S98T001362	0	@IC-01	SO4-02	LIQUID	1.62e+02	<1.53e2		RPD
4	DUP	S98T001362	0	@IC-01	OXALATE2	LIQUID	<1.17e2	<1.17e2		RPD
5	SPK	S98T001362	0	@IC-01	F-02	LIQUID	5.90e1	6.35e+01	107.627	% Recovery
5	SPK	S98T001362	0	@IC-01	CL-02	LIQUID	8.00e1	8.34e+01	104.250	% Recovery
5	SPK	S98T001362	0	@IC-01	NO2-02	LIQUID	5.42e2	5.27e+02	97.232	% Recovery
5	SPK	S98T001362	0	@IC-01	BR-02	LIQUID	5.89e2	5.80e+02	98.472	% Recovery
5	SPK	S98T001362	0	@IC-01	NO3-02	LIQUID	5.94e2	6.30e+02	106.061	% Recovery
5	SPK	S98T001362	0	@IC-01	PO4-02	LIQUID	5.45e2	4.96e+02	91.009	% Recovery
5	SPK	S98T001362	0	@IC-01	SO4-02	LIQUID	6.32e2	6.30e+02	99.684	% Recovery
5	SPK	S98T001362	0	@IC-01	OXALATE2	LIQUID	5.31e2	5.09e+02	95.857	% Recovery
6	SAMPLE	S98T001363	0	@IC-01	F-02	LIQUID	N/A	5.231e+02	122.400	ug/mL

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

LABCORE Completed Worklist Report for Worklist# 24114

Seq	Type	Sample#	R	A	Test	Matrix	Actual		Found	DL or Yield	Unit
6	SAMPLE	S98T001363	0	@IC-01	CL-02	LIQUID	N/A		2.181e+03	173.400	ug/mL
6	SAMPLE	S98T001363	0	@IC-01	NO2-02	LIQUID	N/A		3.794e+04	1102.000	ug/mL
6	SAMPLE	S98T001363	0	@IC-01	BR-02	LIQUID	N/A	<	1.275e+03	1275.000	ug/mL
6	SAMPLE	S98T001363	0	@IC-01	NO3-02	LIQUID	N/A		7.972e+04	1418.000	ug/mL
6	SAMPLE	S98T001363	0	@IC-01	PO4-02	LIQUID	N/A		2.018e+03	1224.000	ug/mL
6	SAMPLE	S98T001363	0	@IC-01	SO4-02	LIQUID	N/A	<	1.408e+03	1408.000	ug/mL
6	SAMPLE	S98T001363	0	@IC-01	OXALATE2	LIQUID	N/A		1.186e+03	1071.000	ug/mL
7	DUP	S98T001363	0	@IC-01	F-02	LIQUID	5.23e+02		4.96e+02	5.299	RPD
7	DUP	S98T001363	0	@IC-01	CL-02	LIQUID	2.18e+03		2.18e+03	0.000	RPD
7	DUP	S98T001363	0	@IC-01	NO2-02	LIQUID	3.79e+04		3.80e+04	0.264	RPD
7	DUP	S98T001363	0	@IC-01	BR-02	LIQUID	<1.28e3		<1.28e3		RPD
7	DUP	S98T001363	0	@IC-01	NO3-02	LIQUID	7.97e+04		8.03e+04	0.750	RPD
7	DUP	S98T001363	0	@IC-01	PO4-02	LIQUID	2.02e+03		2.09e+03	3.406	RPD
7	DUP	S98T001363	0	@IC-01	SO4-02	LIQUID	<1.41e3		<1.41e3		RPD
7	DUP	S98T001363	0	@IC-01	OXALATE2	LIQUID	1.19e+03		<1.07e3		RPD

Final page for worklist# 24114

Analyst Signature Date

Analyst Signature Date

William H. Baird 5/28/98
Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 24114

Analyst: ADD **Instrument:** IC0 1 **Book#** 137N20-B

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

Worklist Comment: AN101 GRAB1, @IC-01 skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S98T001362	0		@IC-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested:			BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
4	DUP	S98T001362	0		@IC-01	LIQUID		
5	SPK	S98T001362	0		@IC-01	LIQUID		
6	SAMPLE	S98T001363	0		@IC-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested:			BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
7	DUP	S98T001363	0		@IC-01	LIQUID		

Final page for worklist # 24114

Anthony Pinnington 5-27-98
Analyst Signature **Date**

uploaded 5-28-98
John Worell
24114MAY.CSV

Analyst Signature **Date**

Validated 5/28/98
J Bond

Data Entry Comments:

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

HNF-1640 REV. 0

Data Reprocessed On 05/27/1998 13:59:51

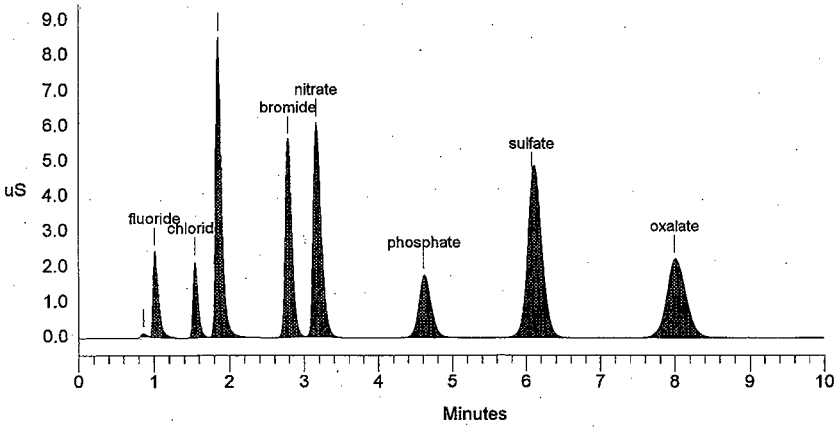
Sample Name: 137N20-B Date: 05/27/1998 13:37:14
Data File : C:\DX\DATA\98052651.D16
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 16 Detector:CDM-1
Analyst : Anthony Parrott Column: AG4A/AS4A anion column
5-27-98

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	0.86		0.000		81	376	2	
2	1.01	fluoride	56.694	96.09	2413	11542	2	-0.65
3	1.55	chloride	73.943	92.43	2159	10031	1	-2.11
4	1.85	nitrite	485.160	89.51	8512	45554	1	-2.97
5	2.78	bromide	581.743	98.77	5588	34657	1	-4.79
6	3.16	nitrate	578.651	97.42	6080	44807	1	0.00
7	4.61	phosphate	505.732	92.79	1757	20396	1	-5.46
8	6.08	sulfate	621.609	98.36	4565	63907	1	-7.32
9	8.00	oxalate	508.103	95.69	2228	39687	1	-7.41
		Totals	3411.634		33384	270959		

File: 98052651.D16 Sample: 137N20-B



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 106 TO 112.

HNF-1640 REV. 0

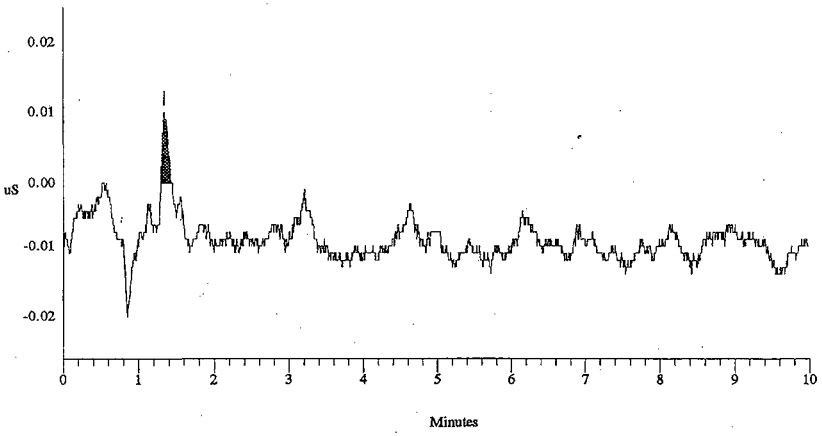
```
==============================================================================
| Sample Name: BLANK                          Date: 05/27/1998 13:25:00       |
| Data File  : C:\DX\DATA\98052651.D15                                        |
| Method     : C:\DX\METHOD\KIT.MET                                           |
| 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	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	1.34		0.000	10	46	1	
		Totals	0.000	10	46		

File: 98052651.D15 Sample: BLANK



SS 1

Data Reprocessed On 05/28/1998 08:03:07

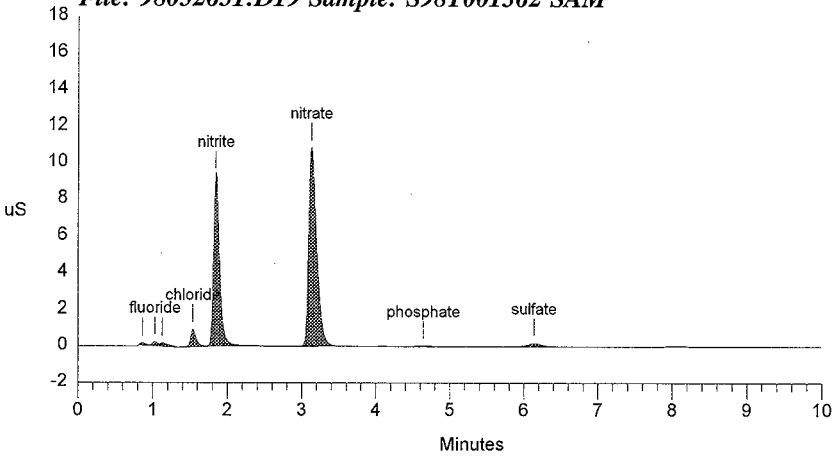
Sample Name: S98T001362 SAM Date: 05/27/1998 14:22:13
Data File : F:\DATA\98052651.D19
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 19 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	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	0.86		0.000	140	744	2	
2	1.03	fluoride	77.822	245	1260	2	0.65
3	1.13		0.000	202	1585	2	
4	1.53	chloride	399.733	960	5000	1	-2.95
5	1.84	nitrite	6157.614	9283	52728	1	-3.66
6	3.13	nitrate	11445.356	10840	81850	1	-0.11
7	4.64	phosphate	239.610	40	466	1	-4.92
8	6.13	sulfate	162.374	189	2709	1	-6.50
		Totals	18482.509	21898	146343		

File: 98052651.D19 Sample: S98T001362 SAM



Data Reprocessed On 05/28/1998 08:04:08

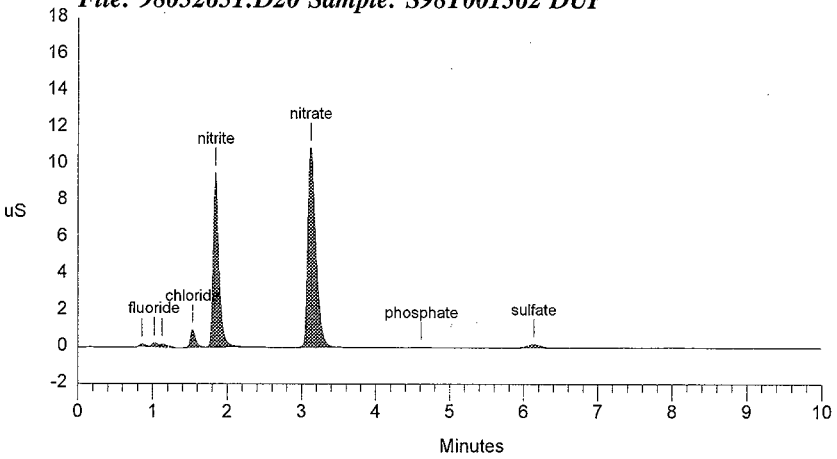
Sample Name: S98T001362 DUP	Date: 05/27/1998 14:33:32
Data File : F:\DATA\98052651.D20	
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 20	Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1111	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	142	777	2	
2	1.02	fluoride	80.322	245	1307	2	0.00
3	1.13		0.000	205	1486	2	
4	1.53	chloride	393.344	966	4923	1	-2.95
5	1.84	nitrite	6037.658	9508	51680	1	-3.66
6	3.12	nitrate	11632.214	10883	83231	1	9.47
7	4.61	phosphate	215.917	32	378	1	-5.46
8	6.13	sulfate	142.682	189	2531	1	-6.50
		Totals	18502.137	22170	146314		

File: 98052651.D20 Sample: S98T001362 DUP



Data Reprocessed On 05/28/1998 08:05:01

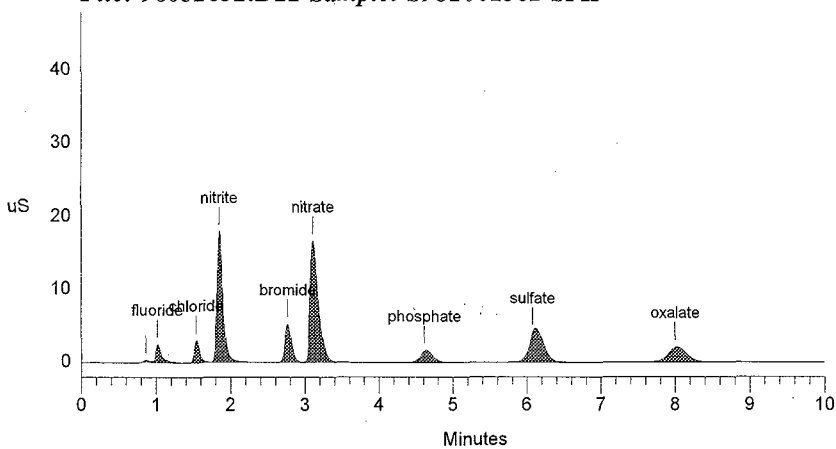
Sample Name: S98T001362 SPK Date: 05/27/1998 14:44:33
Data File : F:\DATA\98052651.D21
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 21 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	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	0.86		0.000	217	1090	2	
2	1.02	fluoride	718.880	2412	13356	2	0.00
3	1.54	chloride	1242.520	3033	15321	1	-2.53
4	1.85	nitrite	11478.337	17860	99235	1	-3.32
5	2.77	bromide	5861.115	5203	31651	1	-5.25
6	3.10	nitrate	17805.464	16618	129607	1	0.00
7	4.61	phosphate	5249.053	1567	19207	1	-5.46
8	6.08	sulfate	6530.286	4067	61044	1	-7.32
9	8.00	oxalate	5136.699	2020	36421	1	-7.41
		Totals	54022.355	52997	406932		

File: 98052651.D21 Sample: S98T001362 SPK



Data Reprocessed On 05/28/1998 08:05:56

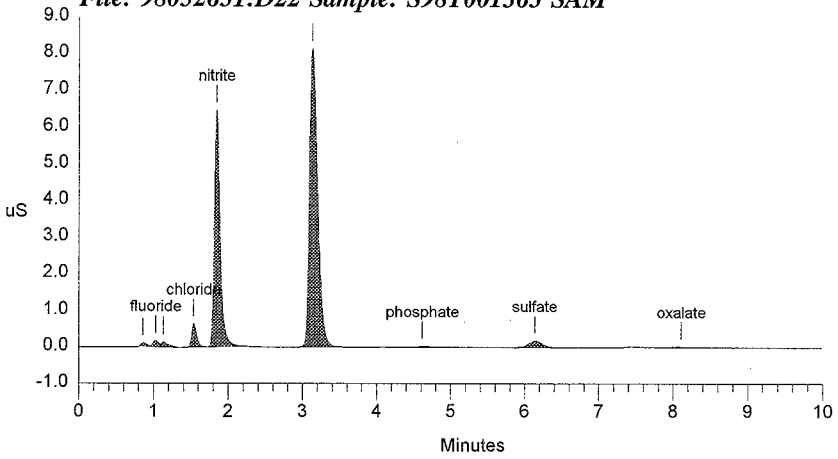
Sample Name: S98T001363 SAM Date: 05/27/1998 14:55:27
Data File : F:\DATA\98052651.D22
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 22 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	10201	3000	5Hz	0.00	10.00	30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	86	481	2	
2	1.03	fluoride	523.138	171	871	2	0.65
3	1.13		0.000	141	1000	2	
4	1.53	chloride	2180.720	639	3045	1	-2.95
5	1.84	nitrite	37937.727	6460	35024	1	-3.66
6	3.13	nitrate	79724.157	8149	61591	1	-0.11
7	4.61	phosphate	2018.275	34	393	1	-5.46
8	6.13	sulfate	1200.732	179	2424	1	-6.50
9	8.11	oxalate	1186.367	19	470	1	-6.17
		Totals	124771.116	15878	105299		

File: 98052651.D22 Sample: S98T001363 SAM



Data Reprocessed On 05/28/1998 08:07:05

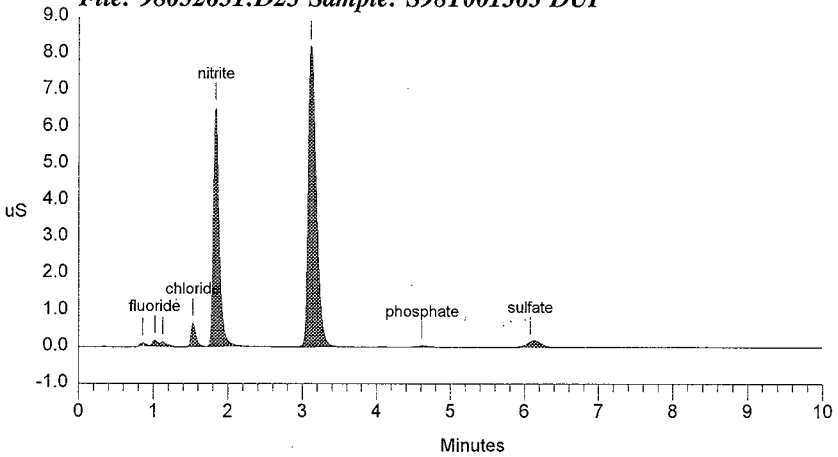
Sample Name: S98T001363 DUP Date: 05/27/1998 15:10:09
Data File : F:\DATA\98052651.D23
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 23 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	10201	3000	5Hz	0.00	10.00	30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	86	446	2	
2	1.02	fluoride	496.452	163	817	2	0.00
3	1.13		0.000	132	834	2	
4	1.53	chloride	2176.138	648	3039	1	-3.38
5	1.83	nitrite	37967.355	6514	35052	1	-4.01
6	3.11	nitrate	80335.372	8196	62076	1	9.24
7	4.61	phosphate	2088.805	40	421	1	-5.46
8	6.08	sulfate	1277.704	157	2500	1	-7.32
		Totals	124341.827	15937	105184		

File: 98052651.D23 Sample: S98T001363 DUP



LABCORE Completed Worklist Report for Worklist# 24142

Analyst: vlm **Instrument:** IC01 **Book#** 137N20B

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

Worklist Comment: AN101 GRAB1, @IC-01 skm

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	5.90e1	5.91e+01	100.169	% Recovery
2	CCV		0	@IC-QC	CL	QC	8.00e1	7.40e+01	92.500	% Recovery
2	CCV		0	@IC-QC	NO2	QC	5.42e2	4.90e+02	90.406	% Recovery
2	CCV		0	@IC-QC	BR	QC	5.89e2	5.95e+02	101.019	% Recovery
2	CCV		0	@IC-QC	NO3	QC	5.94e2	5.80e+02	97.643	% Recovery
2	CCV		0	@IC-QC	PO4	QC	5.45e2	5.14e+02	94.312	% Recovery
2	CCV		0	@IC-QC	SO4	QC	6.32e2	6.23e+02	98.576	% Recovery
2	CCV		0	@IC-QC	OXALATE2	QC	5.31e2	5.06e+02	95.292	% Recovery
3	SAMPLE	S98T001364	0	@IC-01	F-02	LIQUID	N/A	4.478e+02	25.450	ug/mL
3	SAMPLE	S98T001364	0	@IC-01	CL-02	LIQUID	N/A	2.813e+03	36.060	ug/mL
3	SAMPLE	S98T001364	0	@IC-01	NO2-02	LIQUID	N/A	4.538e+04	229.100	ug/mL
3	SAMPLE	S98T001364	0	@IC-01	BR-02	LIQUID	N/A <	2.651e+02	265.100	ug/mL
3	SAMPLE	S98T001364	0	@IC-01	NO3-02	LIQUID	N/A	9.139e+04	294.800	ug/mL
3	SAMPLE	S98T001364	0	@IC-01	PO4-02	LIQUID	N/A	1.502e+03	254.500	ug/mL
3	SAMPLE	S98T001364	0	@IC-01	SO4-02	LIQUID	N/A	2.124e+03	292.700	ug/mL
3	SAMPLE	S98T001364	0	@IC-01	OXALATE2	LIQUID	N/A	4.802e+02	222.700	ug/mL
4	DUP	S98T001364	0	@IC-01	F-02	LIQUID	4.48e+02	4.76e+02	6.061	RPD
4	DUP	S98T001364	0	@IC-01	CL-02	LIQUID	2.81e+03	2.72e+03	3.255	RPD
4	DUP	S98T001364	0	@IC-01	NO2-02	LIQUID	4.54e+04	4.54e+04	0.000	RPD
4	DUP	S98T001364	0	@IC-01	BR-02	LIQUID	<2.65e2	<2.65e2		RPD
4	DUP	S98T001364	0	@IC-01	NO3-02	LIQUID	9.14e+04	9.10e+04	0.439	RPD
4	DUP	S98T001364	0	@IC-01	PO4-02	LIQUID	1.50e+03	1.40e+03	6.897	RPD
4	DUP	S98T001364	0	@IC-01	SO4-02	LIQUID	2.12e+03	2.07e+03	2.387	RPD
4	DUP	S98T001364	0	@IC-01	OXALATE2	LIQUID	4.80e+02	5.50e+02	13.592	RPD

Final page for worklist# 24142

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

Jason M. Sage 5/28/98

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

LABCORE Data Entry Template for Worklist# 24142

Analyst: VLM **Instrument:** IC0 ICOI **Book#** 137N20 B

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

Worklist Comment: AN101 GRAB1, @IC-01 skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S98T001364	0		@IC-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested:			BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
4	DUP	S98T001364	0		@IC-01	LIQUID		

Final page for worklist # 24142

Valerie Massie 05-28-98
Analyst Signature **Date**

Analyst Signature **Date**

uploaded 5-28-98
John Worrell
24142MAY.CSV

Validated 5/28/98 MJ Fye

Data Entry Comments:

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

HNF-1640 REV. 0

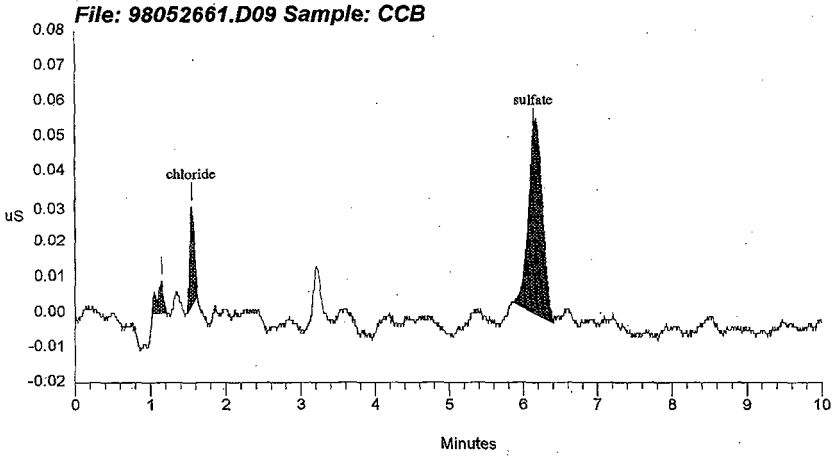
Sample Name: CCB
Date: 05/28/1998 11:20:18
Data File : C:\DX\DATA\98052661.D09
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 9
Detector:CDM-1
Analyst : Valerie Mason
Column: AG4A/AS4A anion column

05-28-98

alibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
xternal	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	1.15		0.000	9	54	1	
2	1.55	chloride	-0.006	28	116	1	-2.11
3	6.13	sulfate	-0.053	51	712	1	-6.50
		Totals	-0.060	88	883		



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 115 TO 118.

Data Reprocessed On 05/28/1998 13:24:05

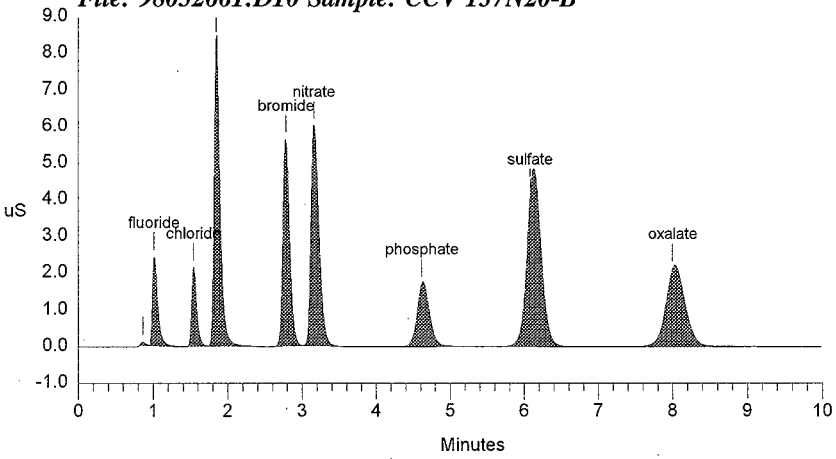
Sample Name: CCV 137N20-B Date: 05/28/1998 11:32:21
Data File : F:\DATA\98052661.D10
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 10 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	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	0.86		0.000	89	402	2	
2	1.01	fluoride	59.079	2407	12041	2	-0.65
3	1.54	chloride	73.958	2142	10033	1	-2.53
4	1.85	nitrite	489.511	8381	45972	1	-3.32
5	2.78	bromide	594.858	5628	35465	1	-4.79
6	3.16	nitrate	580.087	5998	44921	1	0.00
7	4.61	phosphate	514.410	1719	20758	1	-5.46
8	6.08	sulfate	623.284	4170	64079	1	-7.32
9	8.00	oxalate	505.950	2135	39516	1	-7.41
		Totals	3441.136	32670	273188		

File: 98052661.D10 Sample: CCV 137N20-B



Data Reprocessed On 05/28/1998 13:25:28

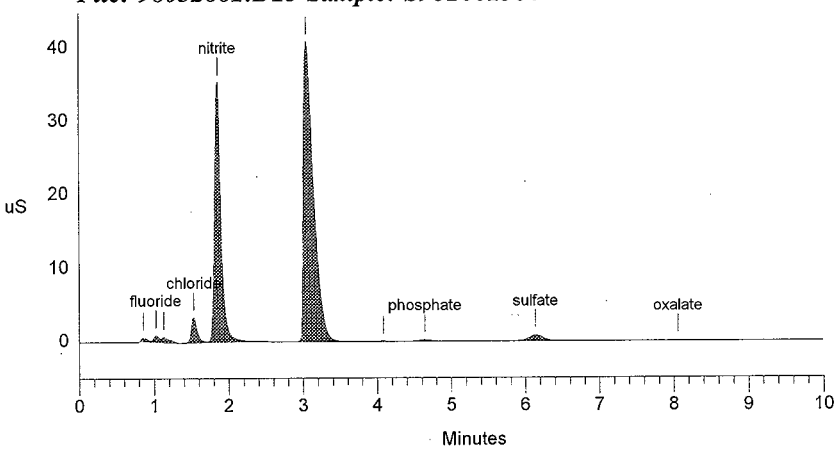
Sample Name: S98T001364 Date: 05/28/1998 12:12:15
Data File : F:\DATA\98052661.D13
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 13 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	2121	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	469	2654	2	
2	1.02	fluoride	447.824	856	4195	2	0.00
3	1.13		0.000	733	5688	2	
4	1.53	chloride	2812.734	3398	18196	1	-3.38
5	1.85	nitrite	45376.726	35334	206702	1	-2.97
6	3.05	nitrate	91390.754	40922	381960	1	6.90
7	4.08		0.000	30	243	1	
8	4.64	phosphate	1502.190	206	2492	1	-4.92
9	6.13	sulfate	2124.420	809	11301	1	-6.50
10	8.05	oxalate	480.240	79	1344	1	-6.79
		Totals	144134.888	82834	634775		

File: 98052661.D13 Sample: S98T001364



Data Reprocessed On 05/28/1998 13:26:35

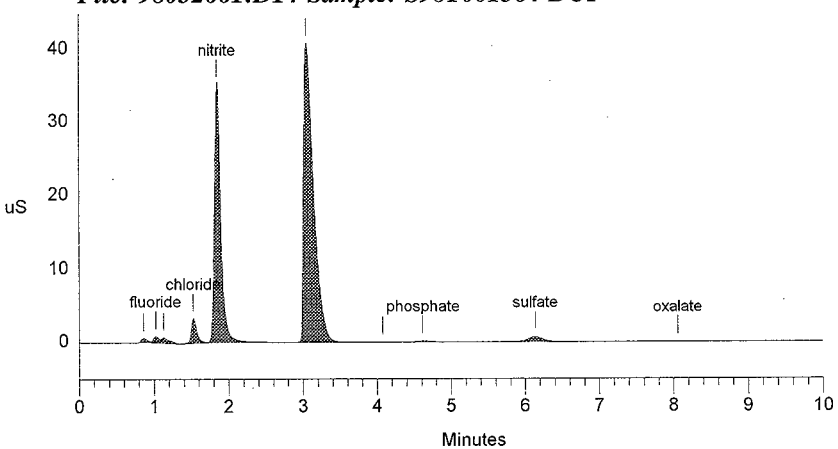
Sample Name: S98T001364 DUP Date: 05/28/1998 12:24:29
Data File : F:\DATA\98052661.D14
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 14 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	2121	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	520	2988	2	
2	1.02	fluoride	475.784	883	4470	2	0.00
3	1.13		0.000	760	5793	2	
4	1.52	chloride	2722.164	3344	17603	1	-3.80
5	1.85	nitrite	45429.418	35197	206943	1	-3.32
6	3.05	nitrate	90994.917	40838	380030	1	6.90
7	4.07		0.000	30	249	1	
8	4.61	phosphate	1397.937	193	2290	1	-5.46
9	6.13	sulfate	2068.432	734	11035	1	-6.50
10	8.05	oxalate	549.712	84	1604	1	-6.79
		Totals	143638.365	82583	633005		

File: 98052661.D14 Sample: S98T001364 DUP



05/20/98 15:38
A-0004-1

File #: 980526G.TXT

HNF-1640 REV. 0

LABCORE Data Entry Template for Worklist# 24096

Analyst: JK Sells **Instrument:** ICP01-2 JK 5-26-98 **Book#** 72848G

Method: LA-505-~~151~~/161 Rev/Mod C-2
JK 5-26-98

Worklist Comment: ICP AN-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	S98T001362	0	D	@ICP-D01	LIQUID		
7	SAMPLE	S98T001362	0	D	@ICP-D01	LIQUID	98000238	AN-101 GRAB1
	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	S98T001362	0	D	@ICP-D01	LIQUID		
9	SPK (1ppm) sample x spike 6x (10 ppm) JK 5-26-98	S98T001362	0	D	@ICP-D01	LIQUID		
10	CCV				@ICP-QC	QC		
11	CCB				@ICP-QC	QC		
12	SAMPLE	S98T001363	0	D	@ICP-D01	LIQUID	98000238	AN-101 GRAB1
	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: uploaded 5-27-98
Joh Worell

Validated by:
Saul M. Pang
5/27/98

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

HNF-1640 Rev.0

LABCORE Data Entry Template for Worklist# 24096

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
13	DUP	S98T001363	0	D	@ICP-D01	LIQUID		
14	SAMPLE	S98T001364	0	D	@ICP-D01	LIQUID	98000238	AN-101 GRAB1

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	S98T001364	0	D	@ICP-D01	LIQUID		
16	ICSA				@ICP-QC	QC		
17	ICSAB				@ICP-QC	QC		
18	CCV				@ICP-QC	QC		
19	CCB				@ICP-QC	QC		

Final page for worklist # 24096

JK 05-26-98

Analyst Signature	Date		Analyst Signature	Date
S98T001362-L	2-10-2-8	DF 255		
S98T001362	2-10	51		
S98T001362-D	2-10	51		
S98T001362-a	2-10	51	.2ml sample + 2.0 ml 5575 + 7.76 ml HNO3	
S98T001362-X	2-10-19	510		
S98T001362-aX	2-10-19	510	1ml sample + 1ml each X6HC 28+35 + 7ml HNO3	
S98T001363	.025-10	DF 401		
S98T001363-D	.025-10	401		
S98T001364	.025-10	401		
S98T001364-D	.025-10	401		

Data Entry Comments:

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

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Analysis Report Summary Tue 05-26-98 11:58:49 AM page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	980526A	ICP2	05/26/98	09:03	DKS	Q	CONC
2	ICB	980526A	ICP2	05/26/98	09:06	DKS	Q	CONC
3	LLS	980526A	ICP2	05/26/98	09:12	DKS	Q	CONC
4	ICSA	980526A	ICP2	05/26/98	09:14	DKS	Q	CONC
5	ICSAB	980526A	ICP2	05/26/98	09:17	DKS	Q	CONC
6	S98T001362_L	980526A	ICP2	05/26/98	09:21	DKS	S	CONC
7	S98T001362	980526A	ICP2	05/26/98	09:25	DKS	S	CONC
8	S98T001362_D	980526A	ICP2	05/26/98	09:29	DKS	S	CONC
9	S98T001362_A	980526A	ICP2	05/26/98	09:41	DKS	S	CONC
~~10~~	~~S98T001362_X~~	~~980526A~~	~~ICP2~~	~~05/26/98~~	~~09:49~~	~~DKS~~	~~S~~	~~CONC~~
~~11~~	~~S98T001362_AX~~	~~980526A~~	~~ICP2~~	~~05/26/98~~	~~09:53~~	~~DKS~~	~~S~~	~~CONC~~
12	S98T001362_X	980526A	ICP2	05/26/98	10:03	DKS	S	CONC
13	S98T001362_AX	980526A	ICP2	05/26/98	10:08	DKS	S	CONC
14	CCV	980526A	ICP2	05/26/98	11:23	DKS	Q	CONC
15	CCB	980526A	ICP2	05/26/98	11:27	DKS	Q	CONC
16	S98T001363	980526A	ICP2	05/26/98	11:31	DKS	S	CONC
17	S98T001363_D	980526A	ICP2	05/26/98	11:34	DKS	S	CONC
18	S98T001364	980526A	ICP2	05/26/98	11:37	DKS	S	CONC
19	S98T001364_D	980526A	ICP2	05/26/98	11:41	DKS	S	CONC
20	ICSA	980526A	ICP2	05/26/98	11:45	DKS	Q	CONC
21	ICSAB	980526A	ICP2	05/26/98	11:48	DKS	Q	CONC
22	CCV_1	980526A	ICP2	05/26/98	11:52	DKS	Q	CONC
23	CCB_1	980526A	ICP2	05/26/98	11:55	DKS	Q	CONC

JK 5-26-98

JK 5-26-98

05-26-98
Worklist #24086

AN-101
S98T001362
S98T001363
S98T001364

Post Spike: S98T001362

$$Na = \frac{\left(\frac{24827}{510}\right) - \left(\frac{19628}{510}\right)}{10} \times 100 = 101.9\ \%$$

Spike:

$$Al = \frac{\left(\frac{1315.7}{51}\right) - \left(\frac{1276.5}{51}\right)}{1} \times 100 = 76.9\ \%$$

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 121 TO 125.

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.8502	4.8643	4.9647	4.9163	4.9235	4.9961
2	ICB	-.00015	.00858	-.00488	-.00094	.00001	.00018
3	LLS	.02134	.11541	.19468	.09775	.10074	.01079
4	ICSA	.00112	245.44	.04757	-.00784	.00227	.00056
5	ICSAB	.96771	244.40	.03458	-.00385	.47200	.48598
6	S98T001362_L	1.6049	1289.7	-3.3225	3.2026	.02628	.11860
7	S98T001362_	1.4118	1276.5	-1.9410	2.9193	.01210	.04981
8	S98T001362_D	1.3254	1255.6	-1.8129	3.0855	.03605	.05214
9	S98T001362_A	48.077	1315.7	51.591	54.189	50.067	52.403
~~10~~	~~S98T001362_X~~	~~1.2842~~	~~1301.7~~	~~-1.4921~~	~~1.6589~~	~~.03295~~	~~.21336~~
~~11~~	~~S98T001362_AX~~	~~4325.3~~	~~5614.5~~	~~4705.5~~	~~4644.8~~	~~4675.3~~	~~4641.5~~
12	S98T001362_X	6.4305	1288.2	-.16068	.23657	.05428	.30820
13	S98T001362_AX	4892.1	6268.7	5125.5	5056.1	5199.2	5074.6
14	CCV	4.8735	4.8992	5.0486	4.9689	5.0331	5.0928
15	CCB	.00026	.01559	.00648	-.00326	.00013	.00051
16	S98T001363	7.3555	9376.0	-20.401	9.3276	.02214	.42946
17	S98T001363_D	8.0564	9484.5	-10.871	9.8882	.00772	.48525
18	S98T001364_	8.9245	10016.	-18.843	10.448	.34829	.46700
19	S98T001364_D	8.7016	9973.6	-18.003	12.688	.37968	.50411
20	ICSA	.00426	247.26	.04823	-.01239	.00232	.00074
21	ICSAB	.96774	246.41	.02698	-.01660	.48234	.49541
22	CCV_1	4.9223	4.9382	5.0658	5.0223	5.0885	5.1522
23	CCB_1	.00079	.01743	.00139	.00138	.00013	.00046

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#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	4.9996	4.8830	4.9183	4.9540	4.8639	4.8070
2	ICB	-.00835	-.00240	-.00082	.00095	.00145	-.00022
3	LLS	.20521	.22244	.01013	.20867	.04217	.02206
4	ICSA	-.01539	259.40	.00599	.00480	.00538	-.00024
5	ICSAB	.00446	258.55	.94707	.00676	.47132	.46406
6	S98T001362_L	3.0788	4.0346	.08542	1.7411	.65748	23.644
7	S98T001362_	-.60038	2.7864	.00777	.18996	.01249	23.140
8	S98T001362_D	.33651	2.2422	.00059	-.08475	.16363	23.105
9	S98T001362_A	52.450	55.391	51.426	51.498	50.742	73.214
~~10~~	~~S98T001362_X~~	~~18.727~~	~~1.7820~~	~~-.23748~~	~~1.3866~~	~~.87497~~	~~24.455~~
~~11~~	~~S98T001362_AX~~	~~4688.9~~	~~4750.7~~	~~4622.2~~	~~4653.0~~	~~4609.1~~	~~4664.1~~
12	S98T001362_X	-3.5577	3.4795	.08770	1.0484	.75244	24.046
13	S98T001362_AX	5136.1	5200.8	5048.6	5122.8	5010.3	5119.6
14	CCV	5.0562	4.9829	4.9708	5.0275	4.9205	4.8696
15	CCB	.01172	-.00142	-.00018	.00337	-.00037	.00135
16	S98T001363	7.5988	1.8362	-.11570	-.42772	1.3273	200.16
17	S98T001363_D	-10.706	2.0657	.27149	1.7638	1.0305	202.36
18	S98T001364_	-1.0574	3.9808	-.06052	.66842	1.4754	230.24
19	S98T001364_D	.27056	3.6450	-.00934	-.82772	1.4789	229.62
20	ICSA	-.00182	259.85	.00717	.01158	.00167	-.00231
21	ICSAB	.01272	259.99	.95288	.00679	.47068	.46486
22	CCV_1	5.1099	5.0857	5.0306	5.0745	4.9757	4.9313
23	CCB_1	-.02480	.00104	-.00063	.00441	.00319	.00072

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#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	4.7264	.00365	4.7254	4.9949	4.9533	4.9573
2	ICB	.00010	-.00072	.00096	.03637	-.00051	-.00064
3	LLS	.01840	-.00047	.10088	.44430	.10329	.02074
4	ICSA	.00330	-.02232	93.165	.20286	-.00442	.00227
5	ICSAB	.47381	-.02003	92.478	.14447	-.00432	.96632
6	S98T001362_L	.23656	.02297	.60627	708.57	.24071	.00000
7	S98T001362_	.01693	-.01037	.42223	696.01	-.00555	-.01111
8	S98T001362_D	.06305	.01678	.60509	680.34	-.03201	.00534
9	S98T001362_A	48.778	.03509	49.635	731.73	51.569	50.143
~~10~~	~~S98T001362_X~~	~~.18787~~	~~-.10543~~	~~-.10270~~	~~698.13~~	~~-.17020~~	~~.05534~~
~~11~~	~~S98T001362_AX~~	~~4369.7~~	~~3.8488~~	~~4469.7~~	~~5225.6~~	~~4641.9~~	~~4607.8~~
12	S98T001362_X	.06532	.13445	.25770	698.98	.02440	-.05536
13	S98T001362_AX	4771.4	4.1801	4900.4	5888.2	5111.3	5108.9
14	CCV	4.7913	.00369	4.7999	5.0714	5.0308	4.9767
15	CCB	.00029	-.00042	.00076	.12479	.00004	-.00053
16	S98T001363	.30671	-.33009	3.2334	3030.5	-.25450	-.34698
17	S98T001363_D	.39748	-.36363	3.5762	3062.6	.03769	-.26016
18	S98T001364_	.25125	-.23872	3.5345	3707.5	-.18799	-.30374
19	S98T001364_D	.38305	-.18120	3.4632	3662.0	-.27589	-.08716
20	ICSA	.00392	-.02030	93.490	.17125	-.00320	.00162
21	ICSAB	.48331	-.01916	93.289	.12150	-.00414	.98060
22	CCV_1	4.8363	.00419	4.8486	5.1309	5.0841	5.0322
23	CCB_1	.00071	-.00015	.00101	.12272	.00020	-.00021

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#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.9856	4.8361	4.8999	5.1432	4.9514	4.8980
2	ICB	.00821	-.00017	.00373	.01186	-.00009	.00328
3	LLS	.21939	.01923	.10204	.21916	.20297	.04186
4	ICSA	255.18	-.00619	-.01319	195.49	.00301	-.00885
5	ICSAB	253.65	.44963	-.01528	196.20	-.00005	.93121
6	S98T001362_L	4.0760	.00130	3.5081	19717.	.34800	1.6124
7	S98T001362_	.78391	-.00342	3.5500	19419.	-.23586	.01741
8	S98T001362_D	.53497	.00787	3.4387	18871.	.08058	.13065
9	S98T001362_A	51.626	49.553	55.154	19164.	51.168	50.538
~~10~~	~~S98T001362_X~~	~~2.8017~~	~~-.01414~~	~~3.2669~~	~~20038.~~	~~.50696~~	~~.95279~~
~~11~~	~~S98T001362_AX~~	~~4801.1~~	~~4615.7~~	~~4621.5~~	~~21054.~~	~~4532.2~~	~~4627.5~~
12	S98T001362_X	5.6961	.04896	3.9081	19628.	.57474	1.4899
13	S98T001362_AX	5301.9	5069.9	5017.7	24827.	4974.7	5069.0
14	CCV	5.0397	4.8904	4.9580	5.1650	5.0013	4.9516
15	CCB	.01490	-.00002	.00342	.00107	.00039	.00117
16	S98T001363	1.6594	-.09532	28.466	105230.	.32319	.60601
17	S98T001363_D	5.6520	-.07259	29.031	106040.	.36849	2.3900
18	S98T001364_	3.8174	-.03505	33.798	123540.	.16860	1.7353
19	S98T001364_D	2.6254	-.01071	32.734	122640.	.33835	1.4566
20	ICSA	256.98	-.00668	-.01508	196.71	.00086	-.00473
21	ICSAB	255.73	.45047	-.01736	198.05	.00164	.93828
22	CCV_1	5.0763	4.9504	5.0137	5.2243	5.0448	5.0344
23	CCB_1	.00964	.00000	.00264	.00590	.00197	-.00011

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#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	4.8888	4.7833	4.9413	4.8732	4.6394	4.9466
2	ICB	.01169	-.00070	.01405	.00022	.00918	.00086
3	LLS	.39932	.21574	.19720	.09473	.19293	Q.13789
4	ICSA	.02217	.04273	.00464	.00867	.04167	.00038
5	ICSAB	.02125	.99194	.01239	.00526	.05539	-.00208
6	S98T001362_L	54.683	5.6945	84.561	2.6776	4.5434	17.375
7	S98T001362_	52.631	3.7940	82.946	.59464	2.2525	17.000
8	S98T001362_D	52.257	3.3193	81.178	-.01526	2.3811	16.776
9	S98T001362_A	103.76	53.457	133.46	51.826	53.833	69.229
~~10~~	~~S98T001362_X~~	~~52.362~~	~~3.5411~~	~~80.924~~	~~1.2287~~	~~11.225~~	~~19.354~~
~~11~~	~~S98T001362_AX~~	~~4684.0~~	~~4647.9~~	~~4646.9~~	~~4665.6~~	~~4544.9~~	~~4680.4~~
12	S98T001362_X	51.799	3.8633	82.739	-1.8936	11.071	20.127
13	S98T001362_AX	5075.1	5107.1	5036.7	5070.2	4938.9	5125.1
14	CCV	4.9245	4.8305	4.9602	4.9483	4.6399	4.9813
15	CCB	.01408	.00086	.01132	.00303	.01954	-.00026
16	S98T001363	479.53	23.521	694.44	-.50895	20.460	32.236
17	S98T001363_D	500.13	26.746	702.51	-.92979	20.110	33.901
18	S98T001364_	552.98	34.802	807.74	-.04667	22.876	38.521
19	S98T001364_D	549.47	35.395	814.80	-.03305	21.909	40.928
20	ICSA	.02479	.01556	-.00291	-.00873	.05103	-.00410
21	ICSAB	.03151	.98536	-.00570	.00477	.04673	-.00651
22	CCV_1	4.9584	4.8895	5.0170	4.9962	4.7257	5.0342
23	CCB_1	.01348	.00207	.00543	.00280	.02962	.00233

JM 5-26-98

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.8616	4.9632	.17660	Q4.4606	4.7990	9.6120
2	ICB	-.01242	-.00022	.00725	-.00020	.01402	-.04042
3	LLS	.19191	.02050	.01507	.02101	.43204	.45533
4	ICSA	-.01630	-.00276	.00040	.00164	-.03625	-.08301
5	ICSAB	-.01915	-.00273	.00398	.00165	.00550	-.08139
6	S98T001362_L	-.51604	-.01177	2.7580	.12824	1.4147	-.15684
7	S98T001362_	-.35128	.00676	.45966	-.02318	.21110	1.4122
8	S98T001362_D	.00142	.00895	.21281	.02285	-.02296	3.2162
9	S98T001362_A	50.292	51.441	2.3197	46.585	49.963	101.00
~~10~~	~~S98T001362_X~~	~~-2.1036~~	~~.00019~~	~~2.6447~~	~~.36384~~	~~5.6882~~	~~-2.9630~~
~~11~~	~~S98T001362_AX~~	~~4509.6~~	~~4629.9~~	~~166.70~~	~~4578.7~~	~~4582.2~~	~~8809.1~~
12	S98T001362_X	.13564	.02287	3.0133	.48371	4.2743	3.4233
13	S98T001362_AX	4955.6	5102.7	181.35	5047.3	4993.0	9611.2
14	CCV	4.9654	5.0506	.18568	4.5418	4.7738	9.7599
15	CCB	-.00586	-.00008	.01201	.00004	.00385	-.02315
16	S98T001363	-4.2059	-.05476	3.0370	.00680	7.8405	-2.8359
17	S98T001363_D	-4.3769	-.07307	4.9203	-.07940	9.6728	-2.9067
18	S98T001364_	-4.1126	-.01850	4.9830	.10571	4.3326	.58824
19	S98T001364_D	-2.0489	-.00075	4.0378	.00866	-2.5415	7.1376
20	ICSA	-.02705	-.00278	.01368	.00170	.00054	-.12813
21	ICSAB	-.02603	-.00278	.01146	.00101	.00793	-.14966
22	CCV_1	5.0015	5.1028	.19119	4.5904	4.8407	9.8554
23	CCB_1	-.00443	-.00004	.01085	.00027	.00595	-.01518

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#	Sample Name	V	Y	Zn	Zr
1	ICV	5.0112	.00657	5.0270	4.9494
2	ICB	-.00195	-.00060	-.00012	-.00148
3	LLS	.09976	-.00019	.01980	.01824
4	ICSA	.00233	.00732	-.00323	-.00184
5	ICSAB	.46989	.00724	.92956	-.00250
6	S98T001362_L	.03476	-.03989	.11924	-.12259
7	S98T001362_	-.02711	-.01658	.10485	.01370
8	S98T001362_D	.04479	-.00136	.17031	.08061
9	S98T001362_A	52.265	.06098	53.342	51.821
~~10~~	~~S98T001362_X~~	~~-.09870~~	~~.00125~~	~~.08063~~	~~-.19461~~
~~11~~	~~S98T001362_AX~~	~~4603.6~~	~~6.2871~~	~~4400.4~~	~~4583.9~~
12	S98T001362_X	.35272	.07847	.37533	-.06138
13	S98T001362_AX	4995.0	6.9053	4732.8	4984.3
14	CCV	5.0812	.00666	5.0539	5.0217
15	CCB	-.00072	-.00030	.00020	-.00086
16	S98T001363	-.77190	-.21875	.06625	-.10389
17	S98T001363_D	-.70442	-.25014	.17828	-.24401
18	S98T001364_	-.57075	-.15736	.74348	.01098
19	S98T001364_D	-.35917	-.12872	.78578	.20747
20	ICSA	.00038	.00663	-.00257	-.00479
21	ICSAB	.47296	.00680	.92336	-.00471
22	CCV_1	5.1400	.00670	5.1014	5.0741
23	CCB_1	-.00036	-.00015	-.00038	-.00079

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File # U0527A.TXT

LABCORE Data Entry Template for Worklist# 24204

Analyst: B. Goecke **Instrument:** ICPMS1 _____ **Book#** 21810-P

Method: LA-506-101 Rev/Mod A-0

Worklist Comment: ICP/MS AN-101 GRAB (DIRECT)

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@MSU238	QC		
2	ICB				@MSU-A1	LIQUID		
3	SERDIL	S98T001365			@MSU-A1	LIQUID		
~~3~~	~~SERDIL~~	~~S98T001365~~	~~0~~		~~@MSU-A1~~	~~LIQUID~~		
4	SAMPLE	S98T001365	0		@MSU-A1	LIQUID	98000238	AN-101 GRAB1
	Analytes Requested:	U233-A1 ; U234-A1 , U235-A1 , U236-A1 , U238-A1						
5	DUP	S98T001365	0		@MSU-A1	LIQUID		
6	SPK	S98T001365	0		@MSU-A1	LIQUID		
7	SAMPLE	S98T001366	0		@MSU-A1	LIQUID	98000238	AN-101 GRAB1
	Analytes Requested:	U233-A1 , U234-A1 , U235-A1 , U236-A1 , U238-A1						
8	DUP	S98T001366	0		@MSU-A1	LIQUID		
9	SAMPLE	S98T001367	0		@MSU-A1	LIQUID	98000238	AN-101 GRAB1
	Analytes Requested:	U233-A1 , U234-A1 , U235-A1 , U236-A1 , U238-A1						
10	DUP	S98T001367	0		@MSU-A1	LIQUID		
11	CCV				@MSU238	QC		
12	CCB				@MSU-A1	LIQUID		

SERDIL 5-27-98

Template

Final page for worklist # 24204

Validated by:

Analyst Signature	Date	Analyst Signature	Date
B. Goecke	5-27-98	Saul M. Parra	5/27/98

Data Entry Comments:

S98T001365	1ml-8ml-.025ml-10ml	DA
1365-D	1ml-8ml-.025ml-10ml	4010
1365-A	1ml-8ml-.025ml-10ml (.02ml 10ppb-U)	4010
S98T001366	.25ml-10ml-.025ml-10ml	4010
1366-D	.25ml-10ml-.025ml-10ml	16441
S98T001367	.25ml-10ml-.025ml-10ml	16441
1367-D	.25ml-10ml-.025ml-10ml	16441
S98T001365-L	1ml-8ml-.025ml-10ml-1ml-8ml	20050

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

LABCORE Completed Worklist Report for Worklist# 24204

Analyst: bjg **Instrument:** ICPMS1 **Book#:** 71N10-P

Method: LA-506-101 Rev/Mod 0

Worklist Comment: ICP/MS AN-101 GRAB (DIRECT)

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	ICV		0	@MSU238	U238	QC	0.020	2.07e-02	103.500	% Recovery
2	ICB		0	@MSU-A1	U233-A1	LIQUID	1	<3.22e-6		ug/mL
2	ICB		0	@MSU-A1	U234-A1	LIQUID	1	<5.89e-6		ug/mL
2	ICB		0	@MSU-A1	U235-A1	LIQUID	1	<5.25e-6		ug/mL
2	ICB		0	@MSU-A1	U236-A1	LIQUID	1	<3.25e-6		ug/mL
2	ICB		0	@MSU-A1	U238-A1	LIQUID	1	<6.44e-6		ug/mL
3	SAMPLE	S98T001365	0	@MSU-A1	U233-A1	LIQUID	N/A <	1.291e-02	1.29e-002	ug/mL
3	SAMPLE	S98T001365	0	@MSU-A1	U234-A1	LIQUID	N/A <	2.360e-02	2.36e-002	ug/mL
3	SAMPLE	S98T001365	0	@MSU-A1	U235-A1	LIQUID	N/A <	2.105e-02	2.10e-002	ug/mL
3	SAMPLE	S98T001365	0	@MSU-A1	U236-A1	LIQUID	N/A <	1.302e-02	1.30e-002	ug/mL
3	SAMPLE	S98T001365	0	@MSU-A1	U238-A1	LIQUID	N/A	2.498e+00	2.58e-002	ug/mL
4	DUP	S98T001365	0	@MSU-A1	U233-A1	LIQUID	<1.29e-2	<1.29e-2		RPD
4	DUP	S98T001365	0	@MSU-A1	U234-A1	LIQUID	<2.36e-2	<2.36e-2		RPD
4	DUP	S98T001365	0	@MSU-A1	U235-A1	LIQUID	<2.10e-2	<2.10e-2		RPD
4	DUP	S98T001365	0	@MSU-A1	U236-A1	LIQUID	<1.30e-2	<1.30e-2		RPD
4	DUP	S98T001365	0	@MSU-A1	U238-A1	LIQUID	2.50e+00	2.57e+00	2.761	RPD
5	SPK	S98T001365	0	@MSU-A1	U233-A1	LIQUID	N/A	9.81e-05		% Recovery
5	SPK	S98T001365	0	@MSU-A1	U234-A1	LIQUID	N/A	5.16e-03		% Recovery
5	SPK	S98T001365	0	@MSU-A1	U235-A1	LIQUID	N/A	5.66e-01		% Recovery
5	SPK	S98T001365	0	@MSU-A1	U236-A1	LIQUID	N/A	1.12e-02		% Recovery
5	SPK	S98T001365	0	@MSU-A1	U238-A1	LIQUID	80.2	8.03e+01	100.125	% Recovery
6	SAMPLE	S98T001366	0	@MSU-A1	U233-A1	LIQUID	N/A <	5.291e-02	5.29e-002	ug/mL
6	SAMPLE	S98T001366	0	@MSU-A1	U234-A1	LIQUID	N/A <	9.676e-02	9.68e-002	ug/mL
6	SAMPLE	S98T001366	0	@MSU-A1	U235-A1	LIQUID	N/A <	8.629e-02	8.63e-002	ug/mL
6	SAMPLE	S98T001366	0	@MSU-A1	U236-A1	LIQUID	N/A <	5.340e-02	5.34e-002	ug/mL
6	SAMPLE	S98T001366	0	@MSU-A1	U238-A1	LIQUID	N/A	1.358e+01	0.106	ug/mL
7	DUP	S98T001366	0	@MSU-A1	U233-A1	LIQUID	<5.29e-2	<5.29e-2		RPD
7	DUP	S98T001366	0	@MSU-A1	U234-A1	LIQUID	<9.68e-2	<9.68e-2		RPD
7	DUP	S98T001366	0	@MSU-A1	U235-A1	LIQUID	<8.63e-2	9.54e-02		RPD
7	DUP	S98T001366	0	@MSU-A1	U236-A1	LIQUID	<5.34e-2	<5.34e-2		RPD
7	DUP	S98T001366	0	@MSU-A1	U238-A1	LIQUID	1.36e+01	1.48e+01	8.451	RPD
8	SAMPLE	S98T001367	0	@MSU-A1	U233-A1	LIQUID	N/A <	5.291e-02	5.29e-002	ug/mL
8	SAMPLE	S98T001367	0	@MSU-A1	U234-A1	LIQUID	N/A <	9.676e-02	9.68e-002	ug/mL
8	SAMPLE	S98T001367	0	@MSU-A1	U235-A1	LIQUID	N/A	1.019e-01	8.63e-002	ug/mL
8	SAMPLE	S98T001367	0	@MSU-A1	U236-A1	LIQUID	N/A <	5.340e-02	5.34e-002	ug/mL
8	SAMPLE	S98T001367	0	@MSU-A1	U238-A1	LIQUID	N/A	1.495e+01	0.106	ug/mL
9	DUP	S98T001367	0	@MSU-A1	U233-A1	LIQUID	<5.29e-2	<5.29e-2		RPD
9	DUP	S98T001367	0	@MSU-A1	U234-A1	LIQUID	<9.68e-2	<9.68e-2		RPD
9	DUP	S98T001367	0	@MSU-A1	U235-A1	LIQUID	1.02e-01	9.70e-02	5.025	RPD
9	DUP	S98T001367	0	@MSU-A1	U236-A1	LIQUID	<5.34e-2	<5.34e-2		RPD
9	DUP	S98T001367	0	@MSU-A1	U238-A1	LIQUID	1.49e+01	1.48e+01	0.673	RPD

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

LABCORE Completed Worklist Report for Worklist# 24204

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
10	CCV		0	@MSU238	U238	QC	0.020	2.00e-02	100.000	% Recovery
11	CCB		0	@MSU-A1	U233-A1	LIQUID	1	<3.22e-6		ug/mL
11	CCB		0	@MSU-A1	U234-A1	LIQUID	1	<5.89e-6		ug/mL
11	CCB		0	@MSU-A1	U235-A1	LIQUID	1	<5.25e-6		ug/mL
11	CCB		0	@MSU-A1	U236-A1	LIQUID	1	<3.25e-6		ug/mL
11	CCB		0	@MSU-A1	U238-A1	LIQUID	1	<6.44e-6		ug/mL

Final page for worklist# 24204

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date 10/19/98

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

ISO_U Method -Definitions and Calculations

Data file requirements:
The method in each section is identified by the line:
Method=ISO_U

The background is identified by the line:
Comment=background
or
Comment=BACKGROUND
The first two sections of the file will contain the background information.

If Mode=IR then the avg column in the Results section contains isotope ratio values. If Mode=CONC, then the avg column contains concentration values for U235 and U238 in ppb; the rest are IR values.

Dilution factors (if not equal to 1.0) are on the comment line for each tray slot.
Comment= x df(or DF) where x is the dilution factor
If the comment is blank, the dilution factor is 1.0.

Concentration calculation:
If the analyte is not U235 or U238, then the calculation for each analyte is as follows:

$$\text{concentration(analyte)} = \frac{\text{concentration (U235)} * [\text{IR(analyte)} - \text{BackgroundIR(analyte)}]}{[\text{IR(U235)} - \text{BackgroundIR(U235)}] * 1000}$$

U235 and U238 results are divided by 1000 to convert the units to ppm.

Detection Limit calculation :
If the result is less than the detection limit, then the result is replaced by the detection limit and the range field is set to '<'.

The detection limit for all analytes is:

$$\text{Detection Limit (analyte x)} = \frac{15 * \text{Background stddev(analyte x)} * [\text{ICV Concentration(U235)}]}{([\text{ICV IR(U235)}] - [\text{BackgroundIR(U235)}]) * 1000}$$

In addition, all calculations are corrected for digest and dilution factors.

Spikes:
Spike results will only be calculated for U238.
The sample contribution to the spike is calculated by the same method used for the Actinide method.

Analysis Report

05/27/98 10:01:18

Method: MS_TUNE Sample Name: ms-tune Operator: bjg
Comment:
Run Time: 05/27/98 10:00 Type: Unk Mode: INT Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	137700.
Stddev	2502.
%RSD	1.818
#1	138100.
#2	141700.
#3	139200.
#4	139100.
#5	132600.
#6	136800.
#7	139600.
#8	137400.
#9	135700.
#10	136500.

5-27-98
AN-101 GRH2
W.C.# 24204
File # U0527A.TXT
598T00 1365, 1366, 1367

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 128 TO 152.

Analysis Report 05/27/98 10:03:30 page 1

Method: MS_TUNE Sample Name: ms-tune Operator: bjg
Comment:
Run Time: 05/27/98 10:02 Type: Unk Mode: INT Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	133900.
Stddev	2452.
%RSD	1.831
#1	137200.
#2	131600.
#3	131900.
#4	135200.
#5	137500.
#6	132800.
#7	135700.
#8	132400.
#9	131200.

Analysis Report 05/27/98 10:17:31 page 1

Method: ISO_U Sample Name: blank Operator: bjg
Comment: background
Run Time: 05/27/98 10:16 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.8205	.8230	.7503	.7345	2.148
Stddev	.1086	.1986	.1771	.1096	.217
%RSD	13.23	24.13	23.60	14.92	10.12
#1	.9872	.7404	.8814	.8109	2.045
#2	.8554	.7129	.4990	.7841	2.424
#3	.7028	.5974	.6325	.7379	2.214
#4	.7987	1.017	.9076	.5446	2.215
#5	.7586	1.048	.8309	.7947	1.842

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	14.010
Stddev	.202
%RSD	1.4412
#1	14.182
#2	14.028
#3	14.229
#4	13.772
#5	13.841

Analysis Report 05/27/98 10:17:38 page 1

Method: ISO_U Sample Name: blank Operator: bjg
Comment: background
Run Time: 05/27/98 10:16 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.8205	.8230	.0002	.7345	.0003
Stddev	.1086	.1986	.0003	.1096	.0005
%RSD	13.23	24.13	148.1	14.92	173.6
#1	.9872	.7404	.0005	.8109	.0000
#2	.8554	.7129	-.0003	.7841	.0009
#3	.7028	.5974	.0000	.7379	.0004
#4	.7987	1.017	.0005	.5446	.0004
#5	.7586	1.048	.0004	.7947	-.0004

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	14.010
Stddev	.202
%RSD	1.4412
#1	14.182
#2	14.028
#3	14.229
#4	13.772
#5	13.841

Analysis Report 05/27/98 10:19:46 page 1

Method: ISO_U Sample Name: iso_u Operator: bjg
Comment: check standard 100 ppb
Run Time: 05/27/98 10:18 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7.185	4.228	370.9	8.499	46160.
Stddev	.363	.483	10.8	.818	864.
%RSD	5.059	11.43	2.924	9.627	1.872
#1	7.059	4.612	364.7	8.052	45910.
#2	6.926	3.445	361.6	8.738	45910.
#3	7.542	4.124	383.4	9.102	47690.
#4	6.800	4.341	382.1	9.296	45690.
#5	7.598	4.617	362.9	7.307	45600.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	13.841
Stddev	.262
%RSD	1.8939
#1	14.095
#2	14.077
#3	13.458
#4	13.823
#5	13.754

Analysis Report 05/27/98 10:19:53 page 1

Method: ISO_U Sample Name: iso_u Operator: bjg
Comment: check standard 100 ppb
Run Time: 05/27/98 10:18 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	7.185	4.228	.7294	8.499	98.77
Stddev	.363	.483	.0214	.818	1.85
%RSD	5.059	11.43	2.929	9.627	1.873
#1	7.059	4.612	.7171	8.052	98.23
#2	6.926	3.445	.7111	8.738	98.23
#3	7.542	4.124	.7540	9.102	102.0
#4	6.800	4.341	.7514	9.296	97.77
#5	7.598	4.617	.7136	7.307	97.58

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	13.841
Stddev	.262
%RSD	1.8939
#1	14.095
#2	14.077
#3	13.458
#4	13.823
#5	13.754

Analysis Report 05/27/98 10:34:00 page 1

Method: ISO_U Sample Name: icv Operator: bjg
Comment: direct
Run Time: 05/27/98 10:32 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.032	1.167	34.46	4.041	9673.
Stddev	.332	.336	1.02	.432	170.
%RSD	16.36	28.75	2.954	10.68	1.759
#1	1.898	1.110	33.26	3.724	9753.
#2	1.929	1.251	35.09	4.073	9837.
#3	1.772	.6381	34.60	4.218	9555.
#4	1.945	1.548	33.63	4.645	9784.
#5	2.614	1.289	35.73	3.544	9436.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	13.983
Stddev	.079
%RSD	.56733
#1	13.965
#2	13.994
#3	14.105
#4	13.885
#5	13.966

Analysis Report 05/27/98 10:34:07 page 1

Method: ISO_U Sample Name: icv Operator: bjg
Comment: direct
Run Time: 05/27/98 10:32 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	2.032	1.167	.0666	4.041	20.69
Stddev	.332	.336	.0020	.432	.36
%RSD	16.36	28.75	3.009	10.68	1.759
#1	1.898	1.110	.0643	3.724	20.86
#2	1.929	1.251	.0679	4.073	21.04
#3	1.772	.6381	.0669	4.218	20.44
#4	1.945	1.548	.0650	4.645	20.93
#5	2.614	1.289	.0691	3.544	20.19

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	13.983
Stddev	.079
%RSD	.56733
#1	13.965
#2	13.994
#3	14.105
#4	13.885
#5	13.966

Analysis Report 05/27/98 10:40:31 page 1

Method: ISO_U Sample Name: icb Operator: bjg
Comment: direct
Run Time: 05/27/98 10:39 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.7774	.6490	.7911	.6988	1.900
Stddev	.1825	.2035	.0533	.2521	.203
%RSD	23.48	31.35	6.738	36.07	10.69
#1	.5579	.4533	.8369	.5231	1.569
#2	.8085	.9555	.8452	.4777	1.911
#3	.6248	.6615	.7351	1.103	2.021
#4	.9109	.7007	.7357	.7707	2.102
#5	.9848	.4742	.8025	.6201	1.897

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	13.906
Stddev	.368
%RSD	2.6456
#1	14.339
#2	13.606
#3	13.604
#4	14.272
#5	13.708

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Method: ISO_U Sample Name: icb Operator: bjg
Comment: direct
Run Time: 05/27/98 10:39 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.7774	.6490	.0003	.6988	-.0003
Stddev	.1825	.2035	.0001	.2521	.0004
%RSD	23.48	31.35	33.25	36.07	165.6
#1	.5579	.4533	.0004	.5231	-.0010
#2	.8085	.9555	.0004	.4777	-.0002
#3	.6248	.6615	.0002	1.103	.0000
#4	.9109	.7007	.0002	.7707	.0002
#5	.9848	.4742	.0003	.6201	-.0003

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	13.906
Stddev	.368
%RSD	2.6456
#1	14.339
#2	13.606
#3	13.604
#4	14.272
#5	13.708

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Method: ISO_U Sample Name: s98t001365 Operator: bjg
Comment: 4010 df
Run Time: 05/27/98 10:49 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.7139	.7370	2.787	.7121	293.2
Stddev	.0932	.1753	.265	.2353	7.5
%RSD	13.06	23.78	9.489	33.05	2.574
#1	.7677	1.024	2.888	.8042	284.0
#2	.6285	.6654	2.329	.4806	290.0
#3	.7808	.5577	3.012	.6321	292.7
#4	.7949	.6814	2.839	.5678	294.8
#5	.5976	.7570	2.869	1.076	304.6

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	13.282
Stddev	.443
%RSD	3.3358
#1	13.678
#2	13.525
#3	13.448
#4	13.209
#5	12.550

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Method: ISO_U Sample Name: s98t001365 Operator: bjg
Comment: 4010 df
Run Time: 05/27/98 10:49 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.7139	.7370	.0042	.7121	.6230
Stddev	.0932	.1753	.0005	.2353	.0161
%RSD	13.06	23.78	12.26	33.05	2.591
#1	.7677	1.024	.0044	.8042	.6033
#2	.6285	.6654	.0033	.4806	.6161
#3	.7808	.5577	.0047	.6321	.6219
#4	.7949	.6814	.0044	.5678	.6265
#5	.5976	.7570	.0044	1.076	.6474

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	13.282
Stddev	.443
%RSD	3.3358
#1	13.678
#2	13.525
#3	13.448
#4	13.209
#5	12.550

$u_{238} = 0.6230 \times 4010$

$= 2.498 \approx +3 \frac{ug}{L}$

$= 2.498 \frac{ug}{ml}$

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Method: ISO_U Sample Name: s98t001365_d Operator: bjg
Comment: 4010 df
Run Time: 05/27/98 10:52 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.5282	.5510	2.395	.8494	302.0
Stddev	.1163	.1492	.510	.0727	11.0
%RSD	22.02	27.08	21.29	8.560	3.642
#1	.6615	.6226	2.218	.8561	302.0
#2	.6137	.5728	2.087	.9001	315.1
#3	.5095	.6271	1.920	.9014	284.9
#4	.4942	.2883	3.213	.8649	306.6
#5	.3623	.6440	2.536	.7245	301.4

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.478
Stddev	.316
%RSD	2.5332
#1	12.849
#2	12.221
#3	12.758
#4	12.140
#5	12.422

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Method: ISO_U Sample Name: s98t001365_d Operator: bjg
Comment: 4010 df
Run Time: 05/27/98 10:52 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.5282	.5510	.0035	.8494	.6418
Stddev	.1163	.1492	.0010	.0727	.0235
%RSD	22.02	27.08	28.91	8.560	3.666
#1	.6615	.6226	.0031	.8561	.6419
#2	.6137	.5728	.0029	.9001	.6698
#3	.5095	.6271	.0025	.9014	.6053
#4	.4942	.2883	.0051	.8649	.6516
#5	.3623	.6440	.0038	.7245	.6405

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.478
Stddev	.316
%RSD	2.5332
#1	12.849
#2	12.221
#3	12.758
#4	12.140
#5	12.422

Analysis Report 05/27/98 10:59:08 page 1

Method: ISO_U Sample Name: s98t001365_a Operator: bjg
Comment: 4010 df
Run Time: 05/27/98 10:57 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.8329	1.476	72.31	2.152	9651.
Stddev	.1826	.378	2.34	.323	358.
%RSD	21.93	25.58	3.238	15.01	3.708
#1	.9252	1.207	72.01	2.333	9838.
#2	.8908	1.665	72.93	1.665	9621.
#3	1.058	2.041	69.69	2.494	9516.
#4	.6329	1.345	75.90	2.255	10120.
#5	.6575	1.122	71.01	2.011	9161.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.828
Stddev	.305
%RSD	2.3768
#1	12.430
#2	12.910
#3	13.230
#4	12.641
#5	12.927

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Method: ISO_U Sample Name: s98t001365_a Operator: bjg
Comment: 4010 df
Run Time: 05/27/98 10:57 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.8329	1.476	.1412	2.152	20.65
Stddev	.1826	.378	.0046	.323	.77
%RSD	21.93	25.58	3.267	15.01	3.708
#1	.9252	1.207	.1406	2.333	21.05
#2	.8908	1.665	.1424	1.665	20.58
#3	1.058	2.041	.1360	2.494	20.36
#4	.6329	1.345	.1483	2.255	21.64
#5	.6575	1.122	.1386	2.011	19.60

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.828
Stddev	.305
%RSD	2.3768
#1	12.430
#2	12.910
#3	13.230
#4	12.641
#5	12.927

Spike :

$$U_{238} = \frac{20.65 - 0.6230}{20} \times 100 = 100.1\%$$

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Method: ISO_U Sample Name: s98t001366 Operator: bjg
Comment: 16441 df
Run Time: 05/27/98 11:05 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.6808	.6980	3.175	.8294	387.9
Stddev	.1542	.1507	.217	.1526	9.8
%RSD	22.65	21.59	6.835	18.40	2.531
#1	.4368	.7644	3.058	.9828	373.6
#2	.7781	.8948	2.918	.7781	396.4
#3	.6181	.5795	3.206	.6567	382.0
#4	.7971	.5181	3.188	.9963	395.1
#5	.7738	.7331	3.503	.7331	392.7

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.871
Stddev	.551
%RSD	4.2779
#1	13.736
#2	12.852
#3	12.943
#4	12.546
#5	12.277

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Method: ISO_U Sample Name: s98t001366 Operator: bjg
Comment: 16441 df
Run Time: 05/27/98 11:05 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.6808	.6980	.0050	.8294	.8258
Stddev	.1542	.1507	.0004	.1526	.0210
%RSD	22.65	21.59	8.530	18.40	2.544
#1	.4368	.7644	.0048	.9828	.7950
#2	.7781	.8948	.0045	.7781	.8438
#3	.6181	.5795	.0051	.6567	.8131
#4	.7971	.5181	.0050	.9963	.8410
#5	.7738	.7331	.0057	.7331	.8359

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.871
Stddev	.551
%RSD	4.2779
#1	13.736
#2	12.852
#3	12.943
#4	12.546
#5	12.277

Analysis Report 05/27/98 11:09:49 page 1

Method: ISO_U Sample Name: s98t001366_d Operator: bjg
Comment: 16441 df
Run Time: 05/27/98 11:07 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.6749	.6758	3.551	.7828	423.3
Stddev	.3719	.2192	.387	.1371	12.2
%RSD	55.10	32.43	10.89	17.52	2.894
#1	.8043	.9652	3.821	.6435	431.5
#2	1.262	.6918	3.581	.8139	402.5
#3	.4569	.7892	3.987	.9969	425.9
#4	.3240	.4050	3.361	.6885	423.5
#5	.5278	.5278	3.005	.7714	433.0

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.284
Stddev	.148
%RSD	1.2035
#1	12.432
#2	12.287
#3	12.038
#4	12.346
#5	12.315

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Method: ISO_U Sample Name: s98t001366_d Operator: bjg
Comment: 16441 df
Run Time: 05/27/98 11:07 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.6749	.6758	.0058	.7828	.9014
Stddev	.3719	.2192	.0008	.1371	.0262
%RSD	55.10	32.43	13.25	17.52	2.908
#1	.8043	.9652	.0063	.6435	.9189
#2	1.262	.6918	.0058	.8139	.8569
#3	.4569	.7892	.0066	.9969	.9070
#4	.3240	.4050	.0054	.6885	.9019
#5	.5278	.5278	.0047	.7714	.9222

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.284
Stddev	.148
%RSD	1.2035
#1	12.432
#2	12.287
#3	12.038
#4	12.346
#5	12.315

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Method: ISO_U Sample Name: s98t001367 Operator: bjg
Comment: 16441 df
Run Time: 05/27/98 11:10 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.6494	.5847	3.794	.7843	427.0
Stddev	.1071	.0798	.439	.0799	18.8
%RSD	16.50	13.65	11.57	10.18	4.407
#1	.6583	.6994	4.238	.7817	454.6
#2	.6963	.4915	4.178	.7782	416.3
#3	.6705	.5522	3.155	.7888	418.4
#4	.7528	.5547	3.724	.6735	437.5
#5	.4691	.6255	3.675	.8991	408.1

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.489
Stddev	.290
%RSD	2.3196
#1	12.153
#2	12.207
#3	12.677
#4	12.620
#5	12.790

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Method: ISO_U Sample Name: s98t001367 Operator: bjg
Comment: 16441 df
Run Time: 05/27/98 11:10 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.6494	.5847	.0062	.7843	.9093
Stddev	.1071	.0798	.0009	.0799	.0403
%RSD	16.50	13.65	13.88	10.18	4.428
#1	.6583	.6994	.0071	.7817	.9683
#2	.6963	.4915	.0070	.7782	.8864
#3	.6705	.5522	.0050	.7888	.8909
#4	.7528	.5547	.0061	.6735	.9318
#5	.4691	.6255	.0060	.8991	.8688

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.489
Stddev	.290
%RSD	2.3196
#1	12.153
#2	12.207
#3	12.677
#4	12.620
#5	12.790

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Method: ISO_U Sample Name: s98t001367_d Operator: bjg
Comment: 16441 df
Run Time: 05/27/98 11:13 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.6930	.7639	3.640	.7880	421.7
Stddev	.4276	.2017	.452	.2562	7.7
%RSD	61.70	26.40	12.41	32.51	1.831
#1	.8458	.8055	3.665	1.087	425.9
#2	.4256	.5803	2.863	.5029	408.7
#3	1.325	1.069	3.932	1.026	422.5
#4	.2069	.5794	3.973	.6208	422.9
#5	.6619	.7860	3.765	.7033	428.7

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.241
Stddev	.458
%RSD	3.7453
#1	12.415
#2	12.924
#3	11.699
#4	12.081
#5	12.086

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Method: ISO_U Sample Name: s98t001367_d Operator: bjg
Comment: 16441 df
Run Time: 05/27/98 11:13 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.6930	.7639	.0059	.7880	.8981
Stddev	.4276	.2017	.0009	.2562	.0165
%RSD	61.70	26.40	15.02	32.51	1.840
#1	.8458	.8055	.0060	1.087	.9070
#2	.4256	.5803	.0044	.5029	.8701
#3	1.325	1.069	.0065	1.026	.8998
#4	.2069	.5794	.0066	.6208	.9006
#5	.6619	.7860	.0062	.7033	.9129

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.241
Stddev	.458
%RSD	3.7453
#1	12.415
#2	12.924
#3	11.699
#4	12.081
#5	12.086

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Method: ISO_U Sample Name: s98t001365_1 Operator: bjg
Comment: 20050 df
Run Time: 05/27/98 11:20 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.6611	.6608	1.144	.5368	60.63
Stddev	.2160	.1761	.301	.1150	3.06
%RSD	32.67	26.65	26.27	21.43	5.050
#1	.7445	.7445	1.058	.5486	63.71
#2	.7088	.5513	1.575	.7088	61.00
#3	.8929	.5823	1.281	.3882	63.44
#4	.6497	.4968	1.032	.5350	57.93
#5	.3097	.9291	.7743	.5033	57.06

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.867
Stddev	.150
%RSD	1.1640
#1	12.760
#2	12.697
#3	12.879
#4	13.084
#5	12.915

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Method: ISO_U Sample Name: s98t001365_1 Operator: bjg
Comment: 20050 df
Run Time: 05/27/98 11:20 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.6611	.6608	.0010	.5368	.1254
Stddev	.2160	.1761	.0006	.1150	.0066
%RSD	32.67	26.65	58.55	21.43	5.225
#1	.7445	.7445	.0008	.5486	.1320
#2	.7088	.5513	.0019	.7088	.1262
#3	.8929	.5823	.0013	.3882	.1314
#4	.6497	.4968	.0008	.5350	.1196
#5	.3097	.9291	.0003	.5033	.1178

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.867
Stddev	.150
%RSD	1.1640
#1	12.760
#2	12.697
#3	12.879
#4	13.084
#5	12.915

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Method: ISO_U Sample Name: ccv Operator: bjg
Comment: direct
Run Time: 05/27/98 11:26 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.880	1.078	32.29	3.848	9359.
Stddev	.419	.343	1.16	.508	295.
%RSD	22.32	31.84	3.596	13.21	3.148
#1	2.035	.8878	31.56	4.180	8961.
#2	2.038	.8624	33.67	3.332	9583.
#3	2.416	1.584	33.31	4.158	9703.
#4	1.396	.7758	32.00	3.258	9332.
#5	1.514	1.281	30.94	4.309	9219.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.933
Stddev	.343
%RSD	2.6529
#1	13.516
#2	12.755
#3	12.625
#4	12.891
#5	12.880

Analysis Report 05/27/98 11:27:48 page 1

Method: ISO_U Sample Name: ccv Operator: bjg
Comment: direct
Run Time: 05/27/98 11:26 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	1.880	1.078	.0624	3.848	20.02
Stddev	.419	.343	.0023	.508	.63
%RSD	22.32	31.84	3.667	13.21	3.149
#1	2.035	.8878	.0609	4.180	19.17
#2	2.038	.8624	.0651	3.332	20.50
#3	2.416	1.584	.0644	4.158	20.76
#4	1.396	.7758	.0618	3.258	19.96
#5	1.514	1.281	.0597	4.309	19.72

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.933
Stddev	.343
%RSD	2.6529
#1	13.516
#2	12.755
#3	12.625
#4	12.891
#5	12.880

Analysis Report 05/27/98 11:38:19 page 1

Method: ISO_U Sample Name: ccb Operator: bjg
Comment: direct
Run Time: 05/27/98 11:36 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.6901	.7238	.8203	.8587	1.709
Stddev	.1969	.0794	.2316	.2272	.261
%RSD	28.54	10.98	28.24	26.46	15.26
#1	.3979	.7560	.7958	1.154	1.711
#2	.5727	.7363	1.023	.8590	1.636
#3	.8269	.6694	.4331	.7481	1.733
#4	.8312	.8312	.9499	.5541	2.098
#5	.8217	.6261	.9000	.9782	1.370

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.580
Stddev	.214
%RSD	1.7008
#1	12.565
#2	12.224
#3	12.698
#4	12.632
#5	12.778

Analysis Report 05/27/98 11:38:24 page 1

Method: ISO_U Sample Name: ccb Operator: bjg
Comment: direct
Run Time: 05/27/98 11:36 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.6901	.7238	.0004	.8587	-.0007
Stddev	.1969	.0794	.0005	.2272	.0006
%RSD	28.54	10.98	122.2	26.46	83.28
#1	.3979	.7560	.0003	1.154	-.0007
#2	.5727	.7363	.0008	.8590	-.0008
#3	.8269	.6694	-.0004	.7481	-.0006
#4	.8312	.8312	.0006	.5541	.0002
#5	.8217	.6261	.0005	.9782	-.0014

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	12.580
Stddev	.214
%RSD	1.7008
#1	12.565
#2	12.224
#3	12.698
#4	12.632
#5	12.778

LABCORE Completed Worklist Report for Worklist# 24102

Analyst: slh **Instrument:** CARB2 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: AN101 GRAB1, @TICTOC, STD: TIC=1.0mL, TOC=.200mL skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK		0	@TICTOC1	TIC-02	LIQUID	1	3.30E+0	3.300	ug/mL
1	BLNK		0	@TICTOC1	TOC-02	LIQUID	1	3.90E+0	3.900	ug/mL
2	STD		0	@TICTOC1	TIC-02	LIQUID	6.02E+02	5.75E+2	95.515	% Recovery
2	STD		0	@TICTOC1	TOC-02	LIQUID	3.00E+03	2.77E+3	92.333	% Recovery
3	SAMPLE	S98T001362	0	@TICTOC1	TIC-02	LIQUID	N/A	6.74E+02	5.000	ug/mL
3	SAMPLE	S98T001362	0	@TICTOC1	TOC-02	LIQUID	N/A	2.18E+02	40.000	ug/mL
4	DUP	S98T001362	0	@TICTOC1	TIC-02	LIQUID	6.74E+2	6.86E+2	1.765	RPD
4	DUP	S98T001362	0	@TICTOC1	TOC-02	LIQUID	2.18E+2	2.29E+2	4.922	RPD
5	SPK	S98T001362	0	@TICTOC1	TIC-02	LIQUID	1.00E+02	1.01E+02	101.000	% Recovery
5	SPK	S98T001362	0	@TICTOC1	TOC-02	LIQUID	1.00E+02	9.67E+01	96.700	% Recovery
6	SAMPLE	S98T001363	0	@TICTOC1	TIC-02	LIQUID	N/A	2.79E+03	5.000	ug/mL
6	SAMPLE	S98T001363	0	@TICTOC1	TOC-02	LIQUID	N/A	1.32E+03	40.000	ug/mL
7	DUP	S98T001363	0	@TICTOC1	TIC-02	LIQUID	2.79E+3	2.79E+3	0.000	RPD
7	DUP	S98T001363	0	@TICTOC1	TOC-02	LIQUID	1.32E+3	1.27E+3	3.861	RPD
8	SAMPLE	S98T001364	0	@TICTOC1	TIC-02	LIQUID	N/A	3.01E+03	5.000	ug/mL
8	SAMPLE	S98T001364	0	@TICTOC1	TOC-02	LIQUID	N/A	1.58E+03	40.000	ug/mL
9	DUP	S98T001364	0	@TICTOC1	TIC-02	LIQUID	3.01E+3	3.08E+3	2.299	RPD
9	DUP	S98T001364	0	@TICTOC1	TOC-02	LIQUID	1.58E+3	1.51E+3	4.531	RPD

Comments Section:

Comments for sample# S98T001362 **and test** @TICTOC1.
CLEAR LIQUID

Comments for sample# S98T001363 **and test** @TICTOC1.
YELLOW LIQUID

Final page for worklist# 24102

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

6/3/98

Reviewer Signature **Date**

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

MNF-1640 REV. 0

LABCORE Data Entry Template for Worklist# 24102

Analyst: SH **Instrument:** CARB2 **Book#** DR 25N12-C
TOC 26N12-E

Method: LA-342-100 **Rev/Mod** F-1

Worklist Comment: AN101 GRAB1, @TICTOC, STD: TIC=1.0mL, TOC=.200mL skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	LIQUID		
2	STD				@TICTOC1	LIQUID		
3	SAMPLE	S98T001362	0		@TICTOC1	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: TIC-02 , TOC-02						
4	DUP	S98T001362	0		@TICTOC1	LIQUID		
5	SPK	S98T001362	0		@TICTOC1	LIQUID		
6	SAMPLE	S98T001363	0		@TICTOC1	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: TIC-02 , TOC-02						
7	DUP	S98T001363	0		@TICTOC1	LIQUID		
8	SAMPLE	S98T001364	0		@TICTOC1	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: TIC-02 , TOC-02						
9	DUP	S98T001364	0		@TICTOC1	LIQUID		

Final page for worklist # 24102

Jk Hood Bootright
Analyst Signature **Date** 5-31-98

Mary Fray 6-2-98
Analyst Signature **Date**

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (F-1) LIQUIDS

			TIC	TOC
Type: BLNK	Sample Size in mL	(SS)	0.0000	0.0000
	Dilution Factor	(DF)	1	1
Work List: 24102	µg of Carbon in Sample	(C1)	9	37.2
	µg of Carbon from Baseline	(C2)	5.7	33.3

Test Code: @TICTOC1
Matrix: LIQUID
Batch Number: 98002552
Rerun: 0
Sample Prep: N/A
Sample #: BLK
Instrument Code: CARB2
Prepared By: MF
Chemist: MJL
Analyst: SLH
Date Complete: 06/02/98
Analysis Date: 05/31/98
Analysis Time: 01:00 AM
Sample Point: AN101 GRAB1

µg of Carbon = |C1-C2|

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon	3.30E+00	3.90E+00

Data Entered By: MF Date: 06/02/98
Signature of Chemist: ~~[illegible] MJL~~ N/A Date: 9/11/98
342100MJ
L+D 10/15/98

L+D 10/15/98
~~SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES ____ TO ____.~~

BLANK.WB1 REV 1.0

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (F-1) 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)	580.2	586.4
24102	µg of Carbon from Baseline	(C2)	5.7	33.3
Test Code	Standard Book Number		25N12C	26N12E
@TICTOC1	Standard Value (µg/ml)		602	3000

Matrix
LIQUID
Batch Number
98002552
Rerun
0
Sample Prep
N/A
Sample #
STD
Instrument Code
CARB2
Prepared By
MF
Chemist
MJL
Analyst
SLH
Date Complete
06/02/98
Analysis Date
05/31/98
Analysis Time
01:00 AM
Sample Point
AN101 GRAB1

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

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in µg/mL	5	40
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	5.75E+02	2.77E+03
Percent Standard Recovery	95.4	92.2

Data Entered By:	MF	Date:	06/02/98
Signature of Chemist:		Date:	

STANDARD.WB1 REV 1.0 342100ML

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (F-1) LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	0.5000	0.5000
SAMPLE	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	342.7	142.4
24102	µg of Carbon from Baseline	(C2)	5.7	33.3
Test Code				
@TICTOC1				

Matrix	LIQUID
Batch Number	98002552
Rerun	0
Sample Prep	N/A
Sample #	S98T001362
Instrument Code	CARB2
Prepared By	MF
Chemist	MJL
Analyst	SLH
Date Complete	06/02/98
Analysis Date	05/31/98
Analysis Time	01:00 AM
Sample Point	AN101 GRAB1

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	6.74E+02	2.18E+02

Data Entered By:	NA	MF	Date:	06/02/98
Signature of Chemist:			Date:	

SAMPLE.WB1 REV 1.0 342100ML

WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (F-1) LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	0.5000	0.5000
DUP	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	348.8	147.6
24102	µg of Carbon from Baseline	(C2)	5.7	33.3
Test Code	Known µg of C from Original Sample		6.74E+2	2.18E+2
@TICTOC1				

Matrix	LIQUID
Batch Number	98002552
Rerun	0
Sample Prep	N/A
Sample #	S98T001362
Instrument Code	CARB2
Prepared By	MF
Chemist	MJL
Analyst	SLH
Date Complete	06/02/98
Analysis Date	05/31/98
Analysis Time	01:00 AM
Sample Point	AN101 GRAB1

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	6.86E+02	2.29E+02

Data Entered By:	MF	Date:	06/02/98
Signature of Chemist:	NA	Date:	

SAMPLE.WB1 REV 1.0 342100ML

WORKBOOK PAGE: SPIKE5

TIC/TOC : LA-342-100 (F-1) LIQUIDS

Type	Sample Vial Data		TIC	TOC
SPK	Sample Volume in mL	(SS)	0.5000	0.5000
Work List	Final Coulometer Reading in µg	(C1)	342.7	142.4
24102	Spiked Vial Data			
Test Code	Sample Volume in mL	(SPK SS)	0.5000	0.5000
@TICTOC1	Amount of Spike Std. in mL	(SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg	(C2)	645.5	432.5
LIQUID	Spike Book Number		25N12C	26N12E
Batch Number	Spike Standard Value in µg/ml	(SPK CONC)	602	3000
98002552	µg C in baseline	(BL)	5.7	33.3

Rerun	0
Sample Prep	N/A
Sample #	S98T001362
Instrument Code	CARB2
Prepared By	MF
Chemist	MJL
Analyst	SLH
Date Complete	06/02/98
Analysis Date	05/31/98
Analysis Time	01:00 AM
Sample Point	AN101 GRAB1

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

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

	TIC	TOC
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	6.06E+02	2.90E+03
Percent Spike Recovery	100.6	96.7

Data Entered By:	MF	Date:	06/02/98
Signature of Chemist:	NA	Date:	

SPIKE.WB1 REV 1.3 342100ML

WORKBOOK PAGE: SAM6

TIC/TOC : LA-342-100 (F-1) 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)	284.8	165.6
24102	µg of Carbon from Baseline	(C2)	5.7	33.3
Test Code				
@TICTOC1				

Matrix	LIQUID
Batch Number	98002552
Rerun	0
Sample Prep	N/A
Sample #	S98T001363
Instrument Code	CARB2
Prepared By	MF
Chemist	MJL
Analyst	SLH
Date Complete	06/02/98
Analysis Date	05/31/98
Analysis Time	01:00 AM
Sample Point	AN101 GRAB1

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	2.79E+03	1.32E+03

Data Entered By:	N/A	MF	Date:	06/02/98
Signature of Chemist:			Date:	

SAMPLE.WB1 REV 1.0 342100ML

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WORKBOOK PAGE: DUP7

TIC/TOC : LA-342-100 (F-1) 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)	284.6	160.6
24102	µg of Carbon from Baseline	(C2)	5.7	33.3
Test Code	Known µg of C from Original Sample		2.79E+3	1.32E+3
@TICTOC1				

Matrix	LIQUID
Batch Number	98002552
Rerun	0
Sample Prep	N/A
Sample #	S98T001363
Instrument Code	CARB2
Prepared By	MF
Chemist	MJL
Analyst	SLH
Date Complete	06/02/98
Analysis Date	05/31/98
Analysis Time	01:00 AM
Sample Point	AN101 GRAB1

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	2.79E+03	1.27E+03

Data Entered By:	MF	Date:	06/02/98
Signature of Chemist:	NA	Date:	

SAMPLE.WB1 REV 1.0 342100ML

WORKBOOK PAGE: SAM8

TIC/TOC : LA-342-100 (F-1) 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)	307	190.8
24102	µg of Carbon from Baseline	(C2)	5.7	33.3
Test Code				
@TICTOC1				

Matrix: LIQUID

Batch Number: 98002552

Rerun: 0

Sample Prep: N/A

Sample #: S98T001364

Instrument Code: CARB2

Prepared By: MF

Chemist: MJL

Analyst: SLH

Date Complete: 06/02/98

Analysis Date: 05/31/98

Analysis Time: 01:00 AM

Sample Point: AN101 GRAB1

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	3.01E+03	1.58E+03

Data Entered By:	MF	Date:	06/02/98
Signature of Chemist:	NA	Date:	

SAMPLE.WB1 REV 1.0 342100ML

I:\342100\OUT\24102.WB1 06/02/98 13:25:47

WORKBOOK PAGE: DUP9

TIC/TOC : LA-342-100 (F-1) LIQUIDS

			TIC	TOC
Type: DUP	Sample Size in mL	(SS)	0.1000	0.1000
	Dilution Factor	(DF)	1	1
Work List: 24102	µg of Carbon in Sample	(C1)	313.5	184.3
	µg of Carbon from Baseline	(C2)	5.7	33.3
Test Code: @TICTOC1	Known µg of C from Original Sample		3.01E+3	1.58E+3

Matrix: LIQUID
Batch Number: 98002552
Rerun: 0
Sample Prep: N/A
Sample #: S98T001364
Instrument Code: CARB2
Prepared By: MF
Chemist: MJL
Analyst: SLH
Date Complete: 06/02/98
Analysis Date: 05/31/98
Analysis Time: 01:00 AM
Sample Point: AN101 GRAB1

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	3.08E+03	1.51E+03

Data Entered By:	MF	Date:	06/02/98
Signature of Chemist:	NA	Date:	

SAMPLE.WB1 REV 1.0 342100ML

HNF-1640 REV. 0

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

Sample: BASE 2 Date: 05/30/98 Time: 21:59:54

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE 2
Blank Value = N/A

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.50	40.00
3	1.50	0.70	28.57
4	2.00	1.00	30.00
5	2.50	1.30	23.08
6	3.00	1.70	23.53
7	3.50	2.00	15.00
8	4.00	2.30	13.04
9	4.50	2.60	11.54
10	5.00	2.90	10.34
11	5.50	3.10	6.45
12	6.00	3.30	6.06
13	6.50	3.60	8.33
14	7.00	3.80	5.26
15	7.50	4.00	5.00
16	8.00	4.20	4.76
17	8.50	4.50	6.67
18	9.00	4.70	4.26
19	9.50	5.00	6.00
20	10.00	5.20	3.85
21	10.50	5.40	3.70
22	11.00	5.70	5.26

BLANK VALUE = 5.7 micrograms carbon
BLANK FACTOR = 5.7 / 10.9989 = +5.2E-01 ug/min Carbon

Sample Run By: SL HOOD 00002

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

Sample: BASE 2 Date: 05/30/98 Time: 22:12:55

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE 2
Blank Value = N/A

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.50	20.00
3	1.50	1.90	73.68
4	2.00	8.50	77.65
5	2.50	16.30	47.85
6	3.00	21.20	23.11
7	3.50	24.70	14.17
8	4.00	26.30	6.08
9	4.50	27.20	3.31
10	5.00	28.00	2.86
11	5.50	28.60	2.10
12	6.00	29.20	2.05
13	6.50	29.60	1.35
14	7.00	30.20	1.99
15	7.50	30.70	1.63
16	8.00	30.90	0.65
17	8.50	31.40	1.59
18	9.00	31.70	0.95
19	9.50	32.00	0.94
20	10.00	32.60	1.84
21	10.50	33.00	1.21
22	11.00	33.30	0.90

BLANK VALUE = 33.3 micrograms carbon
BLANK FACTOR = 33.3 / 10.99768 = +3.03E+00 ug/min Carbon

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

Sample Run By: _____
SL HOOD 00002

HNF-1640 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 2 Date: 05/30/98 Time: 22:26:34

Sample Size = 1000 uL
Dil Factor = 1
Blank ID # =
Blank Value = .52 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	1.00	80.00
3	1.50	48.90	97.96
4	2.00	173.20	71.77
5	2.50	308.30	43.82
6	3.00	415.90	25.87
7	3.50	492.80	15.60
8	4.00	537.30	8.28
9	4.50	560.10	4.07
10	5.00	569.50	1.65
11	5.50	573.70	0.73
12	6.00	575.50	0.31
13	6.50	576.50	0.17
14	7.00	577.10	0.10
15	7.50	577.60	0.09
16	8.00	578.10	0.09
17	8.50	578.50	0.07
18	9.00	578.90	0.07
19	9.50	579.20	0.05
20	10.00	579.50	0.05
21	10.50	579.90	0.07
22	11.00	580.20	0.05

USER INPUT BLANK VALUE
BLANK VALUE = 5.718794 micrograms carbon
BLANK FACTOR = 5.718794 / 10.99768 = +5.2E-01 ug/min Carbon

SAMPLE RESULTS:
(580.2 - 5.718921)(1)/(1000) = +5.745E-01 g/L Carbon
(580.2 - 5.718921)(1)/(1000)(12) = +4.787E-02 Molar Carbon

Sample Run By: SL Hood Boatright
SL HOOD 00002

1ml = 25N12-C

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 171 TO 188

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 2 Date: 05/30/98 Time: 22:38:56

Sample Size = 200 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.03 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.50	20.00
3	1.51	3.50	85.71
4	2.00	34.50	89.86
5	2.50	132.30	73.92
6	3.00	295.00	55.15
7	3.50	441.00	33.11
8	4.00	519.20	15.06
9	4.50	557.10	6.80
10	5.00	571.80	2.57
11	5.50	577.20	0.94
12	6.00	579.30	0.36
13	6.50	580.90	0.28
14	7.00	581.80	0.15
15	7.50	582.70	0.15
16	8.00	583.20	0.09
17	8.50	583.90	0.12
18	9.00	584.60	0.12
19	9.50	585.00	0.07
20	10.00	585.50	0.09
21	10.50	586.00	0.09
22	11.00	586.40	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 33.32297 micrograms carbon
BLANK FACTOR = 33.32297 / 10.99768 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(586.4 - 33.32371)(1)/(200) = +2.765E+00 g/L Carbon
(586.4 - 33.32371)(1)/(200)(12) = +2.304E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: SL Hood Bootryut
SL HOOD 00002
.200 ml = 26 N/2-E

HNF-1640 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK 2 Date: 05/30/98 Time: 22:52:21

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .52 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.40	71.43
3	1.50	2.60	46.15
4	2.04	3.20	18.75
5	2.54	3.90	17.95
6	3.04	4.30	9.30
7	3.54	4.80	10.42
8	4.04	5.00	4.00
9	4.54	5.40	7.41
10	5.04	5.60	3.57
11	5.54	5.90	5.08
12	6.04	6.10	3.28
13	6.54	6.50	6.15
14	7.03	6.80	4.41
15	7.53	7.00	2.86
16	8.03	7.30	4.11
17	8.53	7.60	3.95
18	9.03	7.80	2.56
19	9.53	8.10	3.70
20	10.03	8.40	3.57
21	10.53	8.60	2.33
22	11.03	9.00	4.44

USER INPUT BLANK VALUE
BLANK VALUE = 5.718794 micrograms carbon
BLANK FACTOR = 5.718794 / 10.99768 = +5.2E-01 ug/min Carbon

SAMPLE RESULTS:
(9 - 5.736948)(1)/(1) = +3.3E+00 g/L Carbon
(9 - 5.736948)(1)/(1)(12) = +2.7E-01 Molar Carbon

Sample Run By: SL HOOD 00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK 2 Date: 05/30/98 Time: 23:05:45

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.03 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.60	50.00
3	1.51	1.90	68.42
4	2.00	8.00	76.25
5	2.50	16.80	52.38
6	3.00	24.30	30.86
7	3.50	27.90	12.90
8	4.00	29.90	6.69
9	4.50	30.90	3.24
10	5.00	31.90	3.13
11	5.50	32.50	1.85
12	6.00	33.10	1.81
13	6.50	33.40	0.90
14	7.00	33.90	1.47
15	7.50	34.40	1.45
16	8.00	34.80	1.15
17	8.50	35.10	0.85
18	9.00	35.50	1.13
19	9.50	36.00	1.39
20	10.00	36.40	1.10
21	10.50	36.80	1.09
22	11.00	37.20	1.08

USER INPUT BLANK VALUE
BLANK VALUE = 33.32297 micrograms carbon
BLANK FACTOR = 33.32297 / 10.99768 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(37.2 - 33.32371)(1)/(1) = +3.88E+00 g/L Carbon
(37.2 - 33.32371)(1)/(1)(12) = +3.23E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

HNF-1640 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001362 Date: 05/30/98 Time: 23:35:09

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .52 ug/minute C

Analyst : SL HOOD
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	1.80	72.22
4	2.00	30.40	94.08
5	2.50	110.50	72.49
6	3.00	197.90	44.16
7	3.50	261.80	24.41
8	4.00	302.40	13.43
9	4.50	323.50	6.52
10	5.00	331.80	2.50
11	5.50	335.30	1.04
12	6.00	336.90	0.47
13	6.50	338.00	0.33
14	7.00	338.60	0.18
15	7.50	339.40	0.24
16	8.00	339.90	0.15
17	8.50	340.50	0.18
18	9.00	340.90	0.12
19	9.50	341.40	0.15
20	10.00	341.80	0.12
21	10.50	342.30	0.15
22	11.00	342.70	0.12

USER INPUT BLANK VALUE
BLANK VALUE = 5.718794 micrograms carbon
BLANK FACTOR = 5.718794 / 10.99768 = +5.2E-01 ug/min Carbon

SAMPLE RESULTS:
(342.7 - 5.718984)(1)/(1) = +3.370E+02 g/L Carbon
(342.7 - 5.718984)(1)/(1)(12) = +2.808E+01 Molar Carbon

Sample Run By: SL HOOD 00002

SS = .500ml = .5139g

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001362 Date: 05/30/98 Time: 23:51:17

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.03 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	0.60	16.67
3	1.51	2.70	77.78
4	2.00	15.80	82.91
5	2.50	48.20	67.22
6	3.00	83.90	42.55
7	3.50	107.60	22.03
8	4.00	120.30	10.56
9	4.50	126.90	5.20
10	5.00	131.10	3.20
11	5.50	133.90	2.09
12	6.00	135.50	1.18
13	6.50	136.90	1.02
14	7.00	137.90	0.73
15	7.50	138.70	0.58
16	8.00	139.40	0.50
17	8.50	140.10	0.50
18	9.00	140.70	0.43
19	9.50	141.20	0.35
20	10.00	141.60	0.28
21	10.50	142.00	0.28
22	11.00	142.40	0.28

USER INPUT BLANK VALUE
BLANK VALUE = 33.32297 micrograms carbon
BLANK FACTOR = 33.32297 / 10.99768 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(142.4 - 33.32667)(1)/(1) = +1.091E+02 g/L Carbon
(142.4 - 33.32667)(1)/(1)(12) = +9.089E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: SL HOOD 00002

SS = .500 ml = .5139 g

HNF-1640 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T01362 DUP Date: 05/31/98 Time: 00:05:33

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .52 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.20	50.00
3	1.50	2.80	57.14
4	2.00	35.60	92.13
5	2.50	119.90	70.31
6	3.00	207.50	42.22
7	3.50	271.50	23.57
8	4.00	311.40	12.81
9	4.50	331.30	6.01
10	5.00	338.60	2.16
11	5.50	341.90	0.97
12	%-1434.00	343.20	0.38
13	%-1433.50	344.20	0.29
14	%-1433.00	345.00	0.23
15	%-1432.50	345.50	0.14
16	%-1432.00	346.00	0.14
17	%-1431.50	346.60	0.17
18	%-1431.00	347.20	0.17
19	%-1430.50	347.60	0.12
20	%-1430.00	347.90	0.09
21	%-1429.50	348.40	0.14
22	%-1429.00	348.80	0.11

USER INPUT BLANK VALUE
BLANK VALUE = 5.718794 micrograms carbon
BLANK FACTOR = 5.718794 / 10.99768 = +5.2E-01 ug/min Carbon

SAMPLE RESULTS:
(348.8 --743.0801)(1)/(1) = +1.092E+03 g/L Carbon
(348.8 --743.0801)(1)/(1)(12) = +9.099E+01 Molar Carbon

Please Re-Calculate SLHB

Sample Run By: SL HOOD 00002

SS = .500 ml = .5134g

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T01362 DUP Date: 05/31/98 Time: 00:19:22

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.03 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.60	50.00
3	1.50	2.10	71.43
4	2.00	12.20	82.79
5	2.50	41.50	70.60
6	3.00	78.20	46.93
7	3.50	106.80	26.78
8	4.00	122.70	12.96
9	4.50	130.70	6.12
10	5.00	135.60	3.61
11	5.50	138.20	1.88
12	6.00	140.40	1.57
13	6.50	141.80	0.99
14	7.00	142.90	0.77
15	7.50	143.60	0.49
16	8.00	144.40	0.55
17	8.50	145.00	0.41
18	9.00	145.60	0.41
19	9.50	146.10	0.34
20	10.00	146.50	0.27
21	10.50	146.90	0.27
22	11.00	147.60	0.47

USER INPUT BLANK VALUE
BLANK VALUE = 33.32297 micrograms carbon
BLANK FACTOR = 33.32297 / 10.99768 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(147.6 - 33.32343)(1)/(1) = +1.143E+02 g/L Carbon
(147.6 - 33.32343)(1)/(1)(12) = +9.523E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: SL HOOD 00002

SS = .500 ml = .5134g

HNF-1640 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T01362 SPK Date: 05/31/98 Time: 00:33:24

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .52 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.70	42.86
3	1.50	4.00	82.50
4	2.00	63.60	93.71
5	2.50	218.60	70.91
6	3.00	382.70	42.88
7	3.50	501.50	23.69
8	4.00	572.10	12.34
9	4.50	611.30	6.41
10	5.00	629.00	2.81
11	5.50	635.30	0.99
12	6.00	638.30	0.47
13	6.50	639.60	0.20
14	7.00	640.70	0.17
15	7.50	641.50	0.12
16	8.00	642.10	0.09
17	8.50	642.80	0.11
18	9.00	643.40	0.09
19	9.50	644.00	0.09
20	10.00	644.60	0.09
21	10.50	645.30	0.11
22	11.00	645.50	0.03

USER INPUT BLANK VALUE
BLANK VALUE = 5.718794 micrograms carbon
BLANK FACTOR = 5.718794 / 10.99768 = +5.2E-01 ug/min Carbon

SAMPLE RESULTS:
(645.5 - 5.718441)(1)/(1) = +6.398E+02 g/L Carbon
(645.5 - 5.718441)(1)/(1)(12) = +5.332E+01 Molar Carbon

Sample Run By: SL HOOD 00002

SS = .500 ml = .5105g + .500 ml spk 25 N12-C

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T01362 SPK Date: 05/31/98 Time: 01:35:02

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.03 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.70	42.86
3	1.51	3.00	76.67
4	2.00	20.20	85.15
5	2.50	77.50	73.94
6	3.00	196.40	60.54
7	3.50	308.70	36.38
8	4.00	371.50	16.90
9	4.50	402.90	7.79
10	5.00	415.30	2.99
11	5.50	420.80	1.31
12	6.00	423.30	0.59
13	6.50	425.50	0.52
14	7.00	426.60	0.26
15	7.50	427.70	0.26
16	8.00	428.50	0.19
17	8.50	429.30	0.19
18	9.00	430.10	0.19
19	9.50	430.60	0.12
20	10.00	431.30	0.16
21	10.50	431.80	0.12
22	11.00	432.50	0.16

USER INPUT BLANK VALUE
BLANK VALUE = 33.32297 micrograms carbon
BLANK FACTOR = 33.32297 / 10.99768 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(432.5 - 33.32342)(1)/(1) = +3.992E+02 g/L Carbon
(432.5 - 33.32342)(1)/(1)(12) = +3.326E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

SS = .500 ml = .5105g + 100ml spk 26N12-E

HNF-1640 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001363 Date: 05/31/98 Time: 01:49:59

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .52 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.04	0.40	100.00
3	1.54	1.70	76.47
4	2.04	26.30	93.54
5	2.54	90.90	71.07
6	3.04	166.70	45.47
7	3.54	223.30	25.35
8	4.04	255.90	12.74
9	4.54	270.60	5.43
10	5.04	275.60	1.81
11	5.54	277.80	0.79
12	6.04	279.30	0.54
13	6.54	280.10	0.29
14	7.04	280.90	0.28
15	7.54	281.50	0.21
16	8.04	282.10	0.21
17	8.54	282.50	0.14
18	9.04	283.10	0.21
19	9.54	283.60	0.18
20	10.04	284.00	0.14
21	10.54	284.60	0.21
22	11.04	284.80	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 5.718794 micrograms carbon
BLANK FACTOR = 5.718794 / 10.99768 = +5.2E-01 ug/min Carbon

SAMPLE RESULTS:
(284.8 - 5.738888)(1)/(1) = +2.791E+02 g/L Carbon
(284.8 - 5.738888)(1)/(1)(12) = +2.326E+01 Molar Carbon

Sample Run By: SL HOOD 00002

85 = .100 ml = .1260 g

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001363 Date: 05/31/98 Time: 02:03:26

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.03 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	0.90	44.44
3	1.50	2.60	65.38
4	2.00	14.30	81.82
5	2.50	45.40	68.50
6	3.00	90.40	49.78
7	3.50	125.50	27.97
8	4.00	144.10	12.91
9	4.50	152.70	5.63
10	5.00	156.50	2.43
11	5.50	158.80	1.45
12	6.00	160.20	0.87
13	6.50	161.10	0.56
14	7.00	161.90	0.49
15	7.50	162.40	0.31
16	8.00	163.00	0.37
17	8.50	163.50	0.31
18	9.00	164.10	0.37
19	9.50	164.40	0.18
20	10.00	165.00	0.36
21	10.50	165.20	0.12
22	11.00	165.60	0.24

USER INPUT BLANK VALUE
BLANK VALUE = 33.32297 micrograms carbon
BLANK FACTOR = 33.32297 / 10.99768 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(165.6 - 33.32646)(1)/(1) = +1.323E+02 g/L Carbon
(165.6 - 33.32646)(1)/(1)(12) = +1.102E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

SS = .100ml = .1260g

HNF-1640 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T01363 DUP Date: 05/31/98 Time: 02:17:49

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .52 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.60	50.00
3	1.51	2.30	73.91
4	2.00	31.30	92.65
5	2.50	100.10	68.73
6	3.00	172.80	42.07
7	3.50	225.00	23.20
8	4.00	255.80	12.04
9	4.50	268.50	4.73
10	5.00	274.10	2.04
11	5.50	276.60	0.90
12	6.00	278.10	0.54
13	6.50	278.90	0.29
14	7.00	279.70	0.29
15	7.50	280.50	0.29
16	8.00	281.20	0.25
17	8.50	281.70	0.18
18	9.00	282.30	0.21
19	9.50	282.80	0.18
20	10.00	283.50	0.25
21	10.50	284.00	0.18
22	11.00	284.60	0.21

USER INPUT BLANK VALUE
BLANK VALUE = 5.718794 micrograms carbon
BLANK FACTOR = 5.718794 / 10.99768 = +5.2E-01 ug/min Carbon

SAMPLE RESULTS:
(284.6 - 5.719397)(1)/(1) = +2.789E+02 g/L Carbon
(284.6 - 5.719397)(1)/(1)(12) = +2.324E+01 Molar Carbon

Sample Run By: SL HOOD 00002

SS = .100 ml = .1245g

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T01363 DUP Date: 05/31/98 Time: 02:30:15

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.03 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	0.90	44.44
3	1.51	2.20	59.09
4	2.00	15.70	85.99
5	2.50	49.90	68.54
6	3.00	90.30	44.74
7	3.50	121.30	25.56
8	4.00	138.40	12.36
9	4.50	146.70	5.66
10	5.00	150.70	2.65
11	5.50	153.30	1.70
12	6.00	154.60	0.84
13	6.50	155.80	0.77
14	7.00	156.80	0.64
15	7.50	157.40	0.38
16	8.00	158.00	0.38
17	8.50	158.40	0.25
18	9.00	159.00	0.38
19	9.50	159.50	0.31
20	10.00	159.80	0.19
21	10.50	160.20	0.25
22	11.00	160.60	0.25

USER INPUT BLANK VALUE
BLANK VALUE = 33.32297 micrograms carbon
BLANK FACTOR = 33.32297 / 10.99768 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(160.6 - 33.32648)(1)/(1) = +1.273E+02 g/L Carbon
(160.6 - 33.32648)(1)/(1)(12) = +1.061E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: SL HOOD 00002

SS = ~~5000~~ 5-31-98 = .100 ml = .1245g

HNF-1640 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001364 Date: 05/31/98 Time: 02:45:13

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .52 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.70	57.14
3	1.50	1.20	41.67
4	2.00	18.10	93.37
5	2.50	74.90	75.83
6	3.00	153.40	51.17
7	3.50	219.20	30.02
8	4.00	262.80	16.59
9	4.50	285.80	8.05
10	5.00	294.70	3.02
11	5.50	298.30	1.21
12	6.00	300.20	0.63
13	6.50	301.30	0.37
14	7.00	302.30	0.33
15	7.50	303.00	0.23
16	8.00	303.80	0.26
17	8.50	304.40	0.20
18	9.00	304.90	0.16
19	9.50	305.50	0.20
20	10.00	306.00	0.16
21	10.50	306.50	0.16
22	11.00	307.00	0.16

USER INPUT BLANK VALUE
BLANK VALUE = 5.718794 micrograms carbon
BLANK FACTOR = 5.718794 / 10.99768 = +5.2E-01 ug/min Carbon

SAMPLE RESULTS:
(307 - 5.718873)(1)/(1) = +3.013E+02 g/L Carbon
(307 - 5.718873)(1)/(1)(12) = +2.511E+01 Molar Carbon

Sample Run By: SL HOOD 00002

SS= .100 ml = .127 lg

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001364 Date: 05/31/98 Time: 02:57:27

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.03 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.00	50.00
3	1.51	5.40	81.48
4	2.00	39.70	86.40
5	2.50	92.60	57.13
6	3.00	136.70	32.26
7	3.50	162.40	15.83
8	4.00	174.30	6.83
9	4.50	179.30	2.79
10	5.00	182.00	1.48
11	5.50	183.80	0.98
12	6.00	184.90	0.59
13	6.50	186.00	0.59
14	7.00	186.80	0.43
15	7.50	187.50	0.37
16	8.00	188.10	0.32
17	8.50	188.50	0.21
18	9.00	189.10	0.32
19	9.50	189.50	0.21
20	10.00	190.00	0.26
21	10.50	190.40	0.21
22	11.00	190.80	0.21

USER INPUT BLANK VALUE
BLANK VALUE = 33.32297 micrograms carbon
BLANK FACTOR = 33.32297 / 10.99768 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(190.8 - 33.32593)(1)/(1) = +1.575E+02 g/L Carbon
(190.8 - 33.32593)(1)/(1)(12) = +1.312E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: SL HOOD 00002

SS = .100 ml = .127 g

HNF-1640 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T01364 DUP Date: 05/31/98 Time: 03:11:17

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .52 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.60	66.67
3	1.51	1.70	64.71
4	2.04	25.10	93.23
5	2.54	94.40	73.41
6	3.04	178.40	47.09
7	3.54	241.00	25.98
8	4.04	278.10	13.34
9	4.54	295.50	5.89
10	5.04	301.80	2.09
11	5.54	304.80	0.98
12	6.04	306.40	0.52
13	6.54	307.60	0.39
14	7.04	308.60	0.32
15	7.53	309.30	0.23
16	8.04	310.10	0.26
17	8.53	310.90	0.26
18	9.03	311.40	0.16
19	9.53	312.00	0.19
20	10.03	312.60	0.19
21	10.53	312.90	0.10
22	11.03	313.50	0.19

USER INPUT BLANK VALUE
BLANK VALUE = 5.718794 micrograms carbon
BLANK FACTOR = 5.718794 / 10.99768 = +5.2E-01 ug/min Carbon

SAMPLE RESULTS:
(313.5 - 5.737504)(1)/(1) = +3.078E+02 g/L Carbon
(313.5 - 5.737504)(1)/(1)(12) = +2.565E+01 Molar Carbon

Sample Run By: SL HOOD 00002

SS = .100ml = .1290g

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T01364 DUP Date: 05/31/98 Time: 03:26:28

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.03 ug/minute C

Analyst : SL HOOD
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	0.90	33.33
3	1.50	1.90	52.63
4	2.00	16.50	88.48
5	2.50	55.90	70.48
6	3.00	103.80	46.15
7	3.50	140.40	26.07
8	4.00	160.70	12.63
9	4.50	169.70	5.30
10	5.00	174.40	2.69
11	5.50	176.40	1.13
12	6.00	178.10	0.95
13	6.50	179.10	0.56
14	7.00	180.10	0.56
15	7.50	180.70	0.33
16	8.00	181.50	0.44
17	8.50	182.00	0.27
18	9.00	182.40	0.22
19	9.50	183.30	0.49
20	10.00	183.50	0.11
21	10.50	183.90	0.22
22	11.00	184.30	0.22

USER INPUT BLANK VALUE
BLANK VALUE = 33.32297 micrograms carbon
BLANK FACTOR = 33.32297 / 10.99768 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(184.3 - 33.32343)(1)/(1) = +1.510E+02 g/L Carbon
(184.3 - 33.32343)(1)/(1)(12) = +1.258E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

SS= .100 ml = .1290 g

LABCORE Completed Worklist Report for Worklist# 24103

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

Method: _____ Rev/Mod _____

Worklist Comment: AN101 GRAB1, TOC-01, STD: .200- 2.0- .200mL skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK			0	TOC-01	LIQUID	1	1.40E+0	1.400	ug/mL
2	STD			0	TOC-01	LIQUID	3.00E+03	3.08E+3	102.667	% Recovery
3	SAMPLE	S98T001362		0	TOC-01	LIQUID	N/A	3.06E+02	6.750	ug/mL
4	DUP	S98T001362		0	TOC-01	LIQUID	3.06E+2	2.65E+2	14.361	RPD
5	SPK	S98T001362		0	TOC-01	LIQUID	1.00E+02	9.12E+01	91.200	% Recovery
6	SAMPLE	S98T001363		0	TOC-01	LIQUID	N/A	1.12E+03	20.000	ug/mL
7	DUP	S98T001363		0	TOC-01	LIQUID	1.12E+3	1.19E+3	6.061	RPD
8	SAMPLE	S98T001364		0	TOC-01	LIQUID	N/A	1.29E+03	20.000	ug/mL
9	DUP	S98T001364		0	TOC-01	LIQUID	1.29E+3	1.29E+3	0.000	RPD

Final page for worklist# 24103

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

6/1/98

Reviewer Signature **Date**

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

HNF-1640 REV. 0

LABCORE Data Entry Template for Worklist# 24103

Analyst: JIS **Instrument:** TOC01 **Book#** 26N12-0

Method: LA-344-105 Rev/Mod E-0

Worklist Comment: AN101 GRAB1, TOC-01, STD: .200- 2.0- .200mL skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				TOC-01	LIQUID		
2	STD				TOC-01	LIQUID		
3	SAMPLE	S98T001362	0		TOC-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested:			TOC-01			
4	DUP	S98T001362	0		TOC-01	LIQUID		
5	SPK	S98T001362	0		TOC-01	LIQUID		
6	SAMPLE	S98T001363	0		TOC-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested:			TOC-01			
7	DUP	S98T001363	0		TOC-01	LIQUID		
8	SAMPLE	S98T001364	0		TOC-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested:			TOC-01			
9	DUP	S98T001364	0		TOC-01	LIQUID		

Final page for worklist # 24103

Analyst Signature 5-26-98 Date

Analyst Signature 5/28/98 Date

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

TOC : LA-344-105 (E-0) LIQUIDS

			BLNK
Type	Sample Volume in mL	(SS)	2.000
BLNK	H2SO4 Volume in mL	(VR)	0.700
Work List	Volume Injected in mL	(VI)	0.200
24103	Dilution Factor (calculated)	(DF)	1.350
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Blank	(C1)	2.3
Matrix	µg of Carbon from Baseline	(C2)	0.9
LIQUID			
Batch Number			
98002553	µg of Carbon = |C1-C2|		
Rerun			
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
Sample Prep			
N/A			
Sample #			
BLANK			
Instrument Code			
TOC01			
Prepared By			
CJO			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
05/28/98			
Analysis Date			
05/26/98			
Analysis Time	Method Detection Limit in µg/mL		6.75E+00
03:10 PM			
Sample Point	µg of Carbon		1.40E+00
AN-101 GRAB1			

Data Entered By:	CJO	Date:	05/28/98
Signature of Chemist:	[signature] for MJL NA	Date:	9/11/98

BLANK.WB1 REV 2.0 344105ML LAD 10/15/98

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
24103	Dilution Factor (calculated)	(DF)	11.000
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon Found	(C1)	56.9
Matrix	µg of Carbon from Baseline	(C2)	0.9
LIQUID	Standard Book Number		26N12D
Batch Number	Standard Value (µg/ml)		3000
98002553			
Rerun			
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI		
Sample Prep			
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
Sample #			
STANDARD			
Instrument Code			
TOC01			
Prepared By			
CJO			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
05/28/98			
Analysis Date			
05/26/98			
Analysis Time	Method Detection Limit in µg/mL		5.50E+01
03:10 PM	QC Actual in µg/mL		3.00E+03
Sample Point	QC Found in µg/mL		3.08E+03
AN-101 GRAB1	Percent Standard Recovery		102.7

Data Entered By:	CJO	Date:	05/28/98
Signature of Chemist:	NA	Date:	

STANDARD.WB1 REV 2.0 344105ML

WORKBOOK PAGE: SAM3

TOC : LA-344-105 (E-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	2.000
SAMPLE	H2SO4 Volume in mL	(VR)	0.700
Work List	Volume Injected in mL	(VI)	0.200
24103	Dilution Factor (calculated)	(DF)	1.350
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	46.3
Matrix	µg of Carbon from Baseline	(C2)	0.9
LIQUID			
Batch Number			
98002553			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T001362			
Instrument Code			
TOC01			
Prepared By			
CJO			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
05/28/98			
Analysis Date			
05/26/98			
Analysis Time			
03:10 PM			
Sample Point			
AN-101 GRAB1			

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

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

Method Detection Limit in µg/mL	6.75E+00
µg of Carbon/mL	3.06E+02

Data Entered By:	CJO	Date:	05/28/98
Signature of Chemist:	NA	Date:	

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: DUP4

TOC : LA-344-105 (E-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	2.000
DUP	H2SO4 Volume in mL	(VR)	0.700
Work List	Volume Injected in mL	(VI)	0.200
24103	Dilution Factor (calculated)	(DF)	1.350
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	40.1
Matrix	µg of Carbon from Baseline	(C2)	0.9
LIQUID	Result from Sample Page		3.06E+2
Batch Number			
98002553			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T001362			
Instrument Code			
TOC01			
Prepared By			
CJO			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
05/28/98			
Analysis Date			
05/26/98			
Analysis Time			
03:10 PM			
Sample Point			
AN-101 GRAB1			

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

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

Method Detection Limit in µg/mL	6.75E+00
µg of Carbon/mL	2.65E+02

Data Entered By:	CJO	Date:	05/28/98
Signature of Chemist:	NA	Date:	

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: SPIKE5

TOC : LA-344-105 (E-0) LIQUIDS

SPIKE

Type	Sample Vial Data		Spiked Vial Data	
SPK	Sample Volume in mL (SS)	2.000	Was the sample dilution used? (yes/no)	YES
Work List	H2SO4 Volume in mL (VR)	0.700	Sample Volume in mL (SPK SS)	0.400
24103	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.000
Test Code	µg of Carbon in Sample (C1)	46.3	Amount of Spike Std. in mL (SPK VOL)	0.400
TOC-01	µg of Carbon from Baseline (C2)	0.9	Volume Injected in mL (SPK VI)	0.200
Matrix			µg C in Sample + Spike (C3)	297.2
LIQUID			Pre-Spike Dilution Factor (PDF)	1.35
Batch Number			Spike Book Number	26N12D
98002553			Spike Value in µg/ml	3000

Rerun
0

Sample Prep
N/A

Sample #
S98T001362

Instrument Code
TOC01

Prepared By
CJO

Chemist
MJL

Analyst
JIS

Date Complete
05/28/98

Analysis Date
05/26/98

Analysis Time
03:10 PM

Sample Point
AN-101 GRAB1

Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI
Sample Correction Factor (SAM CF) = (SS + VR) / (VI)
Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)

QC Actual in µg/mL = Spike Value (µg/mL)
QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)
Percent Spike Recovery = (QC Found) / (QC Actual) * 100

QC Actual in µg/mL	3.00E+03
QC Found in µg/mL	2.74E+03
Percent Spike Recovery	91.2

Data Entered By:	CJO	Date:	05/28/98
Signature of Chemist:	N/A	Date:	

SPIKE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: SAM6

TOC : LA-344-105 (E-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.500
SAMPLE	H2SO4 Volume in mL	(VR)	1.500
Work List	Volume Injected in mL	(VI)	0.200
24103	Dilution Factor (calculated)	(DF)	4.000
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	56.8
Matrix	µg of Carbon from Baseline	(C2)	0.9
LIQUID			
Batch Number			
98002553			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T001363			
Instrument Code			
TOC01			
Prepared By			
CJO			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
05/28/98			
Analysis Date			
05/26/98			
Analysis Time			
03:10 PM			
Sample Point			
AN-101 GRAB1			

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

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

Method Detection Limit in µg/mL	2.00E+01
µg of Carbon/mL	1.12E+03

Data Entered By:	CJO	Date:	05/28/98
Signature of Chemist:	NA	Date:	

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: DUP7

TOC : LA-344-105 (E-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.500
DUP	H2SO4 Volume in mL	(VR)	1.500
Work List	Volume Injected in mL	(VI)	0.200
24103	Dilution Factor (calculated)	(DF)	4.000
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	60.6
Matrix	µg of Carbon from Baseline	(C2)	0.9
LIQUID	Result from Sample Page		1.12E+3
Batch Number			
98002553			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T001363			
Instrument Code			
TOC01			
Prepared By			
CJO			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
05/28/98			
Analysis Date			
05/26/98			
Analysis Time			
03:10 PM			
Sample Point			
AN-101 GRAB1			

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

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

Method Detection Limit in µg/mL	2.00E+01
µg of Carbon/mL	1.19E+03

Data Entered By:	CJO	Date:	05/28/98
Signature of Chemist:	NA	Date:	

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: SAM8

TOC : LA-344-105 (E-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.500
SAMPLE	H2SO4 Volume in mL	(VR)	1.500
Work List	Volume Injected in mL	(VI)	0.200
24103	Dilution Factor (calculated)	(DF)	4.000
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	65.3
Matrix	µg of Carbon from Baseline	(C2)	0.9
LIQUID			
Batch Number			
98002553			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T001364			
Instrument Code			
TOC01			
Prepared By			
CJO			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
05/28/98			
Analysis Date			
05/26/98			
Analysis Time			
03:10 PM			
Sample Point			
AN-101 GRAB1			

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

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

Method Detection Limit in µg/mL	2.00E+01
µg of Carbon/mL	1.29E+03

Data Entered By:	CJO	Date:	05/28/98
Signature of Chemist:	NA	Date:	

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: DUP9

TOC : LA-344-105 (E-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.500
DUP	H2SO4 Volume in mL	(VR)	1.500
Work List	Volume Injected in mL	(VI)	0.200
24103	Dilution Factor (calculated)	(DF)	4.000
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	65.4
Matrix	µg of Carbon from Baseline	(C2)	0.9
LIQUID	Result from Sample Page		1.29E+3
Batch Number			
98002553			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T001364			
Instrument Code			
TOC01			
Prepared By			
CJO			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
05/28/98			
Analysis Date			
05/26/98			
Analysis Time			
03:10 PM			
Sample Point			
AN-101 GRAB1			

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

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

Method Detection Limit in µg/mL	2.00E+01
µg of Carbon/mL	1.29E+03

Data Entered By:	CJO	Date:	05/28/98
Signature of Chemist:	NA	Date:	

SAMPLE.WB1 REV 2.0 344105ML

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BASE Date: 05/26/98 Time: 08:14:24

Sample Size = 200 uL
Dil Factor = 1
Blank ID # =
Blank Value = 0 ug/minute C

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.10	100.00
3	1.51	0.30	66.67
4	2.01	0.40	25.00
5	2.51	0.50	20.00
6	3.01	0.60	16.67
7	3.51	0.60	0.00
8	4.01	0.60	0.00
9	4.51	0.60	0.00
10	5.01	0.70	14.29
11	5.51	0.70	0.00
12	6.01	0.80	12.50
13	6.51	0.90	11.11
14	7.00	0.90	0.00

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

SAMPLE RESULTS:
(.9 - 0)(1)/(200) = < 5.00 E-3 g/L Carbon
(.9 - 0)(1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: ~~Jackie Dion for JI Solbrack~~ JI SOLBRACK 00000 RK7 12/20/98

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 200 TO 209.

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 26N12D Date: 05/26/98 Time: 09:01:43

Sample Size = 200 uL Analyst : JI SOLBRACK
Dil Factor = 11 Min Readings = 14
Blank ID # = Max Readings = 14
Blank Value = 0 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	30.20	99.67
3	1.51	47.40	36.29
4	2.01	51.70	8.32
5	2.50	53.90	4.08
6	3.00	55.00	2.00
7	3.50	55.60	1.08
8	4.00	55.90	0.54
9	4.50	56.30	0.71
10	5.00	56.30	0.00
11	5.50	56.50	0.35
12	6.00	56.70	0.35
13	6.50	56.70	0.00
14	7.00	56.90	0.35

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

SAMPLE RESULTS:
(56.9 - 0)(11)/(200) = +3.13E+00 g/L Carbon
(56.9 - 0)(11)/(200)(12) = +2.61E-01 Molar Carbon

Sample Run By: JI SOLBRACK 00000

MNF-1640 REV. 0

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

Sample: BLK Date: 05/26/98 Time: 09:22:24

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.50	80.00
3	1.51	0.70	28.57
4	2.00	0.90	22.22
5	2.50	1.00	10.00
6	3.00	1.20	16.67
7	3.50	1.30	7.69
8	4.00	1.40	7.14
9	4.50	1.60	12.50
10	5.00	1.70	5.88
11	5.50	1.90	10.53
12	6.00	2.00	5.00
13	6.50	2.10	4.76
14	7.00	2.30	8.70

BLANK VALUE = 2.3 micrograms carbon
BLANK FACTOR = 2.3 / 7.003967 = +3.3E-01 ug/min Carbon

Sample Run By: JI SOLBRACK 00000

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001362 Date: 05/26/98 Time: 13:41:01

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3283853 ug/minute C

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	23.10	99.13
3	1.51	37.00	37.57
4	2.01	40.60	8.87
5	2.51	42.20	3.79
6	3.01	43.10	2.09
7	3.51	43.80	1.60
8	4.01	44.30	1.13
9	4.50	44.70	0.89
10	5.00	45.00	0.67
11	5.50	45.30	0.66
12	6.00	45.60	0.66
13	6.50	46.00	0.87
14	7.00	46.30	0.65

BLANK VALUE = 2.3 micrograms carbon
BLANK FACTOR = 2.3 / 7.003967 = +3.3E-01 ug/min Carbon

SAMPLE RESULTS:
(46.3 - 2.30002)(11)/(200) = +2.42E+00 g/L Carbon
(46.3 - 2.30002)(11)/(200)(12) = +2.02E-01 Molar Carbon

Sample Run By: _____
JI SOLBRACK 00000

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001362DUP Date: 05/26/98 Time: 13:51:31

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3283853 ug/minute C

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.50	0.00
2	1.01	25.70	94.16
3	1.51	32.80	21.65
4	2.00	35.00	6.29
5	2.50	36.20	3.31
6	3.00	37.10	2.43
7	3.50	37.60	1.33
8	4.00	38.10	1.31
9	4.50	38.50	1.04
10	5.00	38.80	0.77
11	5.50	39.20	1.02
12	6.00	39.50	0.76
13	6.50	39.90	1.00
14	7.00	40.10	0.50

BLANK VALUE = 2.3 micrograms carbon
BLANK FACTOR = 2.3 / 7.003967 = +3.3E-01 ug/min Carbon

SAMPLE RESULTS:
(40.1 - 2.299679)(11)/(200) = +2.08E+00 g/L Carbon
(40.1 - 2.299679)(11)/(200)(12) = +1.73E-01 Molar Carbon

Sample Run By: JI SOLBRACK 00000

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T1362SPK Date: 05/26/98 Time: 14:02:38

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3283853 ug/minute C

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.40	0.00
2	1.01	179.90	98.11
3	1.50	257.00	30.00
4	2.00	278.80	7.82
5	2.50	287.80	3.13
6	3.00	291.30	1.20
7	3.50	293.30	0.68
8	4.00	294.30	0.34
9	4.50	295.10	0.27
10	5.00	295.70	0.20
11	5.50	296.10	0.14
12	6.00	296.60	0.17
13	6.50	296.90	0.10
14	7.00	297.20	0.10

BLANK VALUE = 2.3 micrograms carbon
BLANK FACTOR = 2.3 / 7.003967 = +3.3E-01 ug/min Carbon

SAMPLE RESULTS:
(297.2 - 2.299679)(11)/(200) = +1.622E+01 g/L Carbon
(297.2 - 2.299679)(11)/(200)(12) = +1.352E+00 Molar Carbon

Sample Run By: _____
JI SOLBRACK 00000

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001363 Date: 05/26/98 Time: 10:22:53

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3283853 ug/minute C

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	32.70	99.39
3	1.51	43.50	24.83
4	2.01	47.90	9.19
5	2.51	50.50	5.15
6	3.01	52.00	2.88
7	3.51	53.20	2.26
8	4.01	54.00	1.48
9	4.51	54.70	1.28
10	5.01	55.30	1.08
11	5.51	55.70	0.72
12	6.01	56.10	0.71
13	6.51	56.30	0.36
14	7.00	56.80	0.88

BLANK VALUE = 2.3 micrograms carbon
BLANK FACTOR = 2.3 / 7.00396 = +3.3E-01 ug/min Carbon

SAMPLE RESULTS:
(56.8 - 2.300301)(11)/(200) = +3.00E+00 g/L Carbon
(56.8 - 2.300301)(11)/(200)(12) = +2.50E-01 Molar Carbon

Sample Run By: JI SOLBRACK 00000

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001363DUP Date: 05/26/98 Time: 10:33:34

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3283853 ug/minute C

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	37.70	98.14
3	1.51	47.10	19.96
4	2.01	51.50	8.54
5	2.51	53.90	4.45
6	3.01	55.70	3.23
7	3.51	56.90	2.11
8	4.01	57.60	1.22
9	4.50	58.40	1.37
10	5.00	58.90	0.85
11	5.50	59.30	0.67
12	6.00	59.80	0.84
13	6.50	60.20	0.66
14	7.00	60.60	0.66

BLANK VALUE = 2.3 micrograms carbon
BLANK FACTOR = 2.3 / 7.003967 = +3.3E-01 ug/min Carbon

SAMPLE RESULTS:
(60.6 - 2.30002)(11)/(200) = +3.21E+00 g/L Carbon
(60.6 - 2.30002)(11)/(200)(12) = +2.67E-01 Molar Carbon

Sample Run By: JI SOLBRACK 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T1364 Date: 05/26/98 Time: 10:55:34

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3283853 ug/minute C

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	30.50	99.67
3	1.51	48.10	36.59
4	2.01	54.20	11.25
5	2.51	57.70	6.07
6	3.01	59.90	3.67
7	3.51	61.20	2.12
8	4.01	62.10	1.45
9	4.50	62.90	1.27
10	5.00	63.50	0.94
11	5.50	64.10	0.94
12	6.00	64.50	0.62
13	6.51	64.80	0.46
14	7.00	65.30	0.77

BLANK VALUE = 2.3 micrograms carbon
BLANK FACTOR = 2.3 / 7.003967 = +3.3E-01 ug/min Carbon

SAMPLE RESULTS:
(65.3 - 2.300301)(11)/(200) = +3.46E+00 g/L Carbon
(65.3 - 2.300301)(11)/(200)(12) = +2.89E-01 Molar Carbon

Sample Run By: JI SOLBRACK 00000

HNF-1640 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T001364DUP Date: 05/26/98 Time: 11:05:30

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3283853 ug/minute-C

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	33.50	99.40
3	1.51	48.90	31.49
4	2.01	54.40	10.11
5	2.51	57.60	5.56
6	3.01	59.80	3.68
7	3.51	61.00	1.97
8	4.01	62.10	1.77
9	4.51	62.90	1.27
10	5.01	63.50	0.94
11	5.51	64.10	0.94
12	6.01	64.50	0.62
13	6.51	65.00	0.77
14	7.00	65.40	0.61

BLANK VALUE = 2.3 micrograms carbon
BLANK FACTOR = 2.3 / 7.003967 = +3.3E-01 ug/min Carbon

SAMPLE RESULTS:
(65.4 - 2.300301)(11)/(200) = +3.47E+00 g/L Carbon
(65.4 - 2.300301)(11)/(200)(12) = +2.89E-01 Molar Carbon

Sample Run By: JI SOLBRACK 00000

RADIOCHEMICAL ANALYSIS

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LABCORE Completed Worklist Report for Worklist# 24152

Analyst: scl **Instrument:** GEA02 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: AN-101 GEA STD 1.0 mL SEE TRAVELER lad

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@GEA-01	C060-02	LIQUID	4.823e-03	5.09e-03	105.536	% Recovery
1	STD		0	@GEA-01	C060-02E	LIQUID	1	3.09	3.090	% Ct Error
1	STD		0	@GEA-01	CS13702	LIQUID	7.536e-03	7.84e-03	104.034	% Recovery
1	STD		0	@GEA-01	CS13702E	LIQUID	1	2.99	2.990	% Ct Error
2	BLNK		0	@GEA-01	C060-02	LIQUID	1	<2.31e-4		uCi/mL
2	BLNK		0	@GEA-01	CS13702	LIQUID	1	<2.01e-4		uCi/mL
3	SAMPLE	S98T001365	0	@GEA-01	C060-02	LIQUID	N/A	< 7.538e-04	7.54e-004	uCi/mL
3	SAMPLE	S98T001365	0	@GEA-01	C060-02E	LIQUID	N/A	n/a		% Ct. Error
3	SAMPLE	S98T001365	0	@GEA-01	CS13702	LIQUID	N/A	2.170e+01		uCi/mL
3	SAMPLE	S98T001365	0	@GEA-01	CS13702E	LIQUID	N/A	0.190		% Ct. Error
4	DUP	S98T001365	0	@GEA-01	C060-02	LIQUID	<7.54e-4	<6.87e-4		RPD
4	DUP	S98T001365	0	@GEA-01	C060-02E	LIQUID	1	n/a		% Ct Error
4	DUP	S98T001365	0	@GEA-01	CS13702	LIQUID	2.17e+01	2.17e+01	0.000	RPD
4	DUP	S98T001365	0	@GEA-01	CS13702E	LIQUID	1	0.190	0.190	% Ct Error
5	SAMPLE	S98T001366	0	@GEA-01	C060-02	LIQUID	N/A	< 3.150e-03	3.15e-003	uCi/mL
5	SAMPLE	S98T001366	0	@GEA-01	C060-02E	LIQUID	N/A	n/a		% Ct. Error
5	SAMPLE	S98T001366	0	@GEA-01	CS13702	LIQUID	N/A	1.000e+02		uCi/mL
5	SAMPLE	S98T001366	0	@GEA-01	CS13702E	LIQUID	N/A	0.170		% Ct. Error
6	DUP	S98T001366	0	@GEA-01	C060-02	LIQUID	<3.15e-3	<3.05e-3		RPD
6	DUP	S98T001366	0	@GEA-01	C060-02E	LIQUID	1	n/a		% Ct Error
6	DUP	S98T001366	0	@GEA-01	CS13702	LIQUID	1.00e+02	9.95e+01	0.501	RPD
6	DUP	S98T001366	0	@GEA-01	CS13702E	LIQUID	1	0.180	0.180	% Ct Error
7	SAMPLE	S98T001367	0	@GEA-01	C060-02	LIQUID	N/A	< 3.004e-03	3.00e-003	uCi/mL
7	SAMPLE	S98T001367	0	@GEA-01	C060-02E	LIQUID	N/A	n/a		% Ct. Error
7	SAMPLE	S98T001367	0	@GEA-01	CS13702	LIQUID	N/A	1.190e+02		uCi/mL
7	SAMPLE	S98T001367	0	@GEA-01	CS13702E	LIQUID	N/A	0.160		% Ct. Error
8	DUP	S98T001367	0	@GEA-01	C060-02	LIQUID	<3.00e-3	<2.97e-3		RPD
8	DUP	S98T001367	0	@GEA-01	C060-02E	LIQUID	1	n/a		% Ct Error
8	DUP	S98T001367	0	@GEA-01	CS13702	LIQUID	1.19e+02	1.19e+02	0.000	RPD
8	DUP	S98T001367	0	@GEA-01	CS13702E	LIQUID	1	0.160	0.160	% Ct Error

Comments Section:

Comments for sample# S98T001365 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S98T001366 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S98T001367 and test @GEA-01 .

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

LABCORE Completed Worklist Report for Worklist# 24152

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

DL=0 => n/a.

Final page for worklist# 24152

Analyst Signature Date

Analyst Signature Date

John Relyea 27 May 98
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 24152

Analyst: S.L **Instrument:** GEA00 2 **Book#** 28857

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

Worklist Comment: AN-101 GEA STD 1.0 mL SEE TRAVELER lad

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@GEA-01	LIQUID		
2	BLNK				@GEA-01	LIQUID		
3	SAMPLE	S98T001365	0		@GEA-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4	DUP	S98T001365	0		@GEA-01	LIQUID		
5	SAMPLE	S98T001366	0		@GEA-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6	DUP	S98T001366	0		@GEA-01	LIQUID		
7	SAMPLE	S98T001367	0		@GEA-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
8	DUP	S98T001367	0		@GEA-01	LIQUID		

Final page for worklist # 24152

Sue Fai 5-22-98
Analyst Signature **Date**

Raymond 5-26-98
Analyst Signature **Date**

Data Entry Comments:

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

```
*******************************************************************************
* 222-S Laboratory Counting Room   22-MAY-1998 17:04:04.43                    *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              24152
Sample ID:               WL24152-STD                    Removed by:
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00                    SLWalk

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2                           Verified by:
File Number:             dka300:[spec.GEA2]2g2720.cnf   John Relyea 26 May 98
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:34.06 sec
Dead Time:               1.1%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       22-MAY-1998 16:12:57.59
Decayed to:              22-MAY-1998 16:12:57.59
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 GL
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       16-DEC-1997 11:02:19.60
 Date of last efficiency calibration:   10-NOV-1997 10:04:32.95
*******************************************************************************
```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.58*	5392	1.45	1323.19	1315	16	3.0		CS-137	7.84
0	1173.06	2469	1.83	2346.29	2337	17	4.5		CO-60	4.90
0	1332.25	2404	1.94	2664.72	2655	18	4.2		CO-60	5.30

Summary of Nuclide Activity
Sample ID : WL24152-STD

Acquisition date : 22-MAY-1998 16:12:57

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.00	5.091E+00	5.091E+00	0.157E+00	3.09	
CS-137	30.00Y	1.00	7.844E+00	7.844E+00	0.235E+00	2.99	
		Total Activity :	1.293E+01	1.293E+01			
		Grand Total Activity :	1.293E+01	1.293E+01			

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

Minimum Detectable Activity Report
Sample ID : WL24152-STD

Acquisition date : 22-MAY-1998 16:12:57

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	252.	477.59	6.8415E-01
NA-22	21.	1274.53	5.1465E-02
NA-24	8.	1368.55	3.6432E-02
K-40	115.	1460.75	1.1780E+00
SC-46	99.	1120.55	9.3618E-02
CR-51	291.	320.08	5.1837E-01
MN-54	144.	834.83	8.8205E-02
CO-56	116.	846.76	8.0513E-02
CO-57	321.	122.06	4.2833E-02
CO-58	135.	810.78	8.4027E-02
FE-59	146.	1099.25	1.9585E-01
ZN-65	119.	1115.55	2.0056E-01
SE-75	326.	264.66	7.9993E-02
KR-85	205.	514.00	1.5811E+01
SR-85	205.	514.01	7.1445E-02
Y-88	1.	1836.06	2.2701E-02
Y-91	42.	1204.67	2.2206E+01
NB-94	142.	871.09	9.0677E-02
NB-95	131.	765.78	7.8715E-02
ZR-95	119.	756.73	1.3611E-01
RU-103	178.	497.08	6.8326E-02
RURH-106	155.	621.93	1.4335E+00
AG-108m	110.	722.94	7.5807E-02
CD-109	303.	88.03	1.4008E+00
AG-110M	220.	657.76	9.3369E-02
SN-113	266.	391.69	9.4284E-02
TE-123m	361.	159.00	4.4465E-02
SB-124	150.	602.73	6.9684E-02
SB-125	288.	427.89	2.3164E-01
TE-125m	302.	109.27	1.3643E+01
I-129	290.	39.60	1.5789E+01
I-131	267.	364.48	6.9676E-02
XE-131m	297.	163.93	1.7468E+00
BA-133	263.	356.02	8.8359E-02
CS-134	141.	604.70	6.8021E-02
CS-136	121.	818.51	8.0232E-02
CS-138	9.	1435.86	8.2365E-02
CE-139	303.	165.85	4.3352E-02
BA-140	156.	537.31	2.5709E-01
LA-140	9.	1596.21	4.5373E-02
CE-141	348.	145.44	7.5777E-02
CE-144	321.	133.51	3.2061E-01
CEPR-144	321.	133.51	6.4062E-01
EU-152	328.	121.78	1.3108E-01
EU-154	328.	123.07	9.1602E-02
EU-155	299.	86.54	1.5781E-01
HF-181	237.	482.18	8.6088E-02
TA-182	265.	67.75	2.1120E-01
HG-203	300.	279.20	5.7751E-02
BI-207	138.	569.70	6.3615E-02
TL-208	328.	277.36	7.7361E-01

Minimum Detectable Activity Report (continued) Page : 4
Sample ID : WL24152-STD Acquisition date : 22-MAY-1998 16:12:57

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	257.	46.50	1.0263E+01
BI-212	120.	727.18	1.0832E+00
PB-212	405.	238.63	1.1013E-01
BI-214	162.	609.31	1.5946E-01
PB-214	325.	351.92	3.0092E-01
RA-224	362.	240.99	1.1565E+00
RA-226	376.	186.10	1.1406E+00
AC-228	168.	911.21	3.8304E-01
TH-228	307.	84.37	4.3368E+00
TH-229	308.	88.47	2.0487E-01
U-232	272.	57.78	7.6609E+01
PA-233	290.	312.17	1.3210E-01
PA-234M	137.	1001.03	1.1914E+01
TH-234	275.	92.60	7.9636E-01
U-235	374.	185.71	6.9214E-02
NP-237	299.	86.48	4.1807E-01
U-237	324.	59.54	4.3097E-01
NP-238	128.	984.45	3.4389E-01
NP-239	306.	106.12	1.7449E-01
PU-239	346.	129.30	5.8075E+02
AM-241	324.	59.54	4.1338E-01
AM-243	299.	74.67	1.1794E-01

```
*******************************************************************************
* 222-S Laboratory Counting Room   22-MAY-1998 20:44:23.63                    *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              24152
Sample ID:               WL24152-BLNK                    Removed by:
Sample Size:             1.00000E-04 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2                            Verified by:
File Number:             dka300:[spec.GEA2]2g2721.cnf
Geometry:                42
Count Time:              0 02:30:00.00 sec
Real Time:               0 02:30:55.33 sec
Dead Time:               0.6%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       22-MAY-1998 18:13:00.38
Decayed to:              22-MAY-1998 18:13:00.38
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 SLH2
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       16-DEC-1997 11:02:19.60
 Date of last efficiency calibration:   10-NOV-1997 10:04:32.95
*******************************************************************************
```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	352.04*	131	2.74	704.05	698	14	47.5			
0	583.51*	46	1.45	1167.03	1159	15	95.4			
0	661.61*	41	1.54	1323.26	1318	12	116.4		CS-137	0.201
0	1460.57*	23	1.93	2921.43	2912	18	181.7		K-40	1.72

Summary of Nuclide Activity
Sample ID : WL24152-BLNK

Acquisition date : 22-MAY-1998 18:13:00

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
~~K-40~~	~~1.28E+09Y~~	~~1.00~~	~~1.720E+00~~	~~1.720E+00~~	~~3.126E+00~~	~~181.74~~	
~~CS-137~~	~~30.00Y~~	~~1.00~~	~~2.011E-01~~	~~2.011E-01~~	~~2.341E-01~~	~~116.44~~	
			---	---			
Total Activity :			1.921E+00	1.921E+00			
Grand Total Activity :			1.921E+00	1.921E+00			

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

Minimum Detectable Activity Report
Sample ID : WL24152-BLNK

Acquisition date : 22-MAY-1998 18:13:00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	83.	477.59	1.3442E+00
NA-22	28.	1274.53	1.9370E-01
NA-24	26.	1368.55	2.0958E-01
SC-46	57.	1120.55	2.4151E-01
CR-51	149.	320.08	1.2527E+00
MN-54	35.	834.83	1.5256E-01
CO-56	45.	846.76	1.7221E-01
CO-57	200.	122.06	1.1376E-01
CO-58	46.	810.78	1.6961E-01
FE-59	29.	1099.25	3.0650E-01
CO-60	38.	1332.50	2.3080E-01
ZN-65	28.	1115.55	3.4099E-01
SE-75	183.	264.66	2.0223E-01
KR-85	118.	514.00	4.0398E+01
SR-85	117.	514.01	1.8254E-01
Y-88	6.	1836.06	1.4392E-01
Y-91	40.	1204.67	7.1966E+01
NB-94	41.	871.09	1.6969E-01
NB-95	56.	765.78	1.7647E-01
ZR-95	58.	756.73	3.2323E-01
RU-103	100.	497.08	1.7305E-01
RURH-106	57.	621.93	2.9796E+00
AG-108m	58.	722.94	1.8633E-01
CD-109	214.	88.03	3.9544E+00
AG-110M	62.	657.76	1.7080E-01
SN-113	102.	391.69	1.9837E-01
TE-123m	224.	159.00	1.1778E-01
SB-124	60.	602.73	1.5101E-01
SB-125	114.	427.89	4.9575E-01
TE-125m	202.	109.27	3.7503E+01
I-129	164.	39.60	4.0004E+01
I-131	125.	364.48	1.6188E-01
XE-131m	206.	163.93	4.8879E+00
BA-133	116.	356.02	1.9945E-01
CS-134	77.	604.70	1.6988E-01
CS-136	48.	818.51	1.7334E-01
CS-138	18.	1435.86	7.7643E-01
CE-139	205.	165.85	1.1968E-01
BA-140	59.	537.31	5.4377E-01
LA-140	14.	1596.21	1.8409E-01
CE-141	210.	145.44	1.9825E-01
CE-144	210.	133.51	8.7121E-01
CEPR-144	210.	133.51	1.7407E+00
EU-152	200.	121.78	3.4392E-01
EU-154	196.	123.07	2.3804E-01
EU-155	218.	86.54	4.5227E-01
HF-181	97.	482.18	1.8771E-01
TA-182	171.	67.75	5.6986E-01
HG-203	158.	279.20	1.4141E-01
BI-207	59.	569.70	1.4209E-01
TL-208	174.	277.36	1.8995E+00

Minimum Detectable Activity Report (continued) Page : 4
Sample ID : WL24152-BLNK Acquisition date : 22-MAY-1998 18:13:00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	156.	46.50	2.6967E+01
BI-212	50.	727.18	2.3987E+00
PB-212	208.	238.63	2.6566E-01
BI-214	161.	609.31	5.2915E-01
PB-214	248.	351.92	1.9573E+00
RA-224	206.	240.99	2.9546E+00
RA-226	212.	186.10	2.8815E+00
AC-228	83.	911.21	9.1403E-01
TH-228	214.	84.37	1.2154E+01
TH-229	205.	88.47	5.6116E-01
U-232	149.	57.78	1.9088E+02
PA-233	141.	312.17	3.1181E-01
PA-234M	38.	1001.03	2.1665E+01
TH-234	190.	92.60	2.2223E+00
U-235	214.	185.71	1.7628E-01
NP-237	219.	86.48	1.2006E+00
U-237	167.	59.54	1.0464E+00
NP-238	32.	984.45	6.0654E-01
NP-239	191.	106.12	4.6818E-01
PU-239	205.	129.30	1.5024E+03
AM-241	167.	59.54	1.0001E+00
AM-243	199.	74.67	3.2311E-01

```
*****************************************************************************
* 222-S Laboratory Counting Room   22-MAY-1998 23:34:40.21                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              24152
Sample ID:               S98T1365-SAM
Sample Size:             1.00000E-04 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2722.cnf
Geometry:                43
Count Time:              0 02:30:00.00 sec
Real Time:               0 02:37:14.56 sec
Dead Time:               4.6%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       22-MAY-1998 20:56:57.08
Decayed to:              22-MAY-1998 20:56:57.08
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 SLH2
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       16-DEC-1997 11:02:19.60
 Date of last efficiency calibration:   10-NOV-1997 10:09:16.15
*****************************************************************************
```

Removed by: SLHelt

Verified by: John Relyea 26 May 98

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.59*	1217356	1.47	1323.21	1315	16	0.2		CS-137	2.170E+04
0	817.13	21	1.41	1634.33	1631	8	99.1			
0	1323.26	89	2.37	2646.75	2641	14	26.1			
0	1460.59*	46	2.07	2921.47	2913	16	93.1		K-40	12.1
0	1764.33*	23	2.54	3529.08	3522	14	68.5			

Summary of Nuclide Activity
Sample ID : S98T1365-SAM Acquisition date : 22-MAY-1998 20:56:57

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~K-40~~	~~1.28E+09Y~~	~~1.00~~	~~1.206E+01~~	~~1.206E+01~~	~~1.123E+01~~	~~93.13~~	
CS-137	30.00Y	1.00	2.170E+04	2.170E+04	0.004E+04	0.19	
			---	---			
	Total Activity :		2.171E+04	2.171E+04			
	Grand Total Activity :		2.171E+04	2.171E+04			

DTR 5/26/98

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

Minimum Detectable Activity Report
Sample ID : S98T1365-SAM

Acquisition date : 22-MAY-1998 20:56:57

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	35740.	477.59	9.7460E+01
NA-22	25.	1274.53	6.5821E-01
NA-24	22.	1368.55	6.9118E-01
SC-46	53.	1120.55	8.4435E-01
CR-51	33190.	320.08	6.7760E+01
MN-54	69.	834.83	7.6085E-01
CO-56	66.	846.76	7.5018E-01
CO-57	37162.	122.06	6.0948E+00
CO-58	50.	810.78	6.4454E-01
FE-59	48.	1099.25	1.3958E+00
CO-60	31.	1332.50	7.5384E-01
ZN-65	43.	1115.55	1.5073E+00
SE-75	37431.	264.66	1.0649E+01
KR-85	18718.	514.00	1.7967E+03
SR-85	18716.	514.01	8.1268E+00
Y-88	6.	1836.06	4.9550E-01
Y-91	41.	1204.67	2.6445E+02
NB-94	61.	871.09	7.4161E-01
NB-95	76.	765.78	7.4096E-01
ZR-95	76.	756.73	1.3499E+00
RU-103	22645.	497.08	9.1539E+00
RURH-106	7966.	621.93	1.2138E+02
AG-108m	108.	722.94	9.1821E-01
CD-109	30705.	88.03	1.8869E+02
AG-110M	24116.	657.76	1.1581E+01
SN-113	34028.	391.69	1.2871E+01
TE-123m	38280.	159.00	5.9501E+00
SB-124	8061.	602.73	6.0315E+00
SB-125	38508.	427.89	3.2245E+01
TE-125m	33785.	109.27	1.9197E+03
I-129	27717.	39.60	1.8083E+03
I-131	32483.	364.48	9.3398E+00
XE-131m	38085.	163.93	2.5583E+02
BA-133	32889.	356.02	1.1991E+01
CS-134	8115.	604.70	6.0775E+00
CS-136	54.	818.51	6.7048E-01
CS-138	16.	1435.86	2.6841E+00
CE-139	38164.	165.85	6.2751E+00
BA-140	13554.	537.31	2.8399E+01
LA-140	12.	1596.21	6.0145E-01
CE-141	38416.	145.44	1.0421E+01
CE-144	38044.	133.51	4.5894E+01
CEPR-144	38042.	133.51	9.1703E+01
EU-152	37069.	121.78	1.8433E+01
EU-154	37476.	123.07	1.2953E+01
EU-155	30950.	86.54	2.1473E+01
HF-181	29132.	482.18	1.1416E+01
TA-182	27913.	67.75	2.8631E+01
HG-203	35947.	279.20	7.8069E+00
BI-207	8884.	569.70	6.0248E+00
TL-208	36262.	277.36	1.0064E+02

Minimum Detectable Activity Report (continued) Page : 4
Sample ID : S98T1365-SAM Acquisition date : 22-MAY-1998 20:56:57

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	27730.	46.50	1.3197E+03
BI-212	111.	727.18	1.2786E+01
PB-212	39868.	238.63	1.3718E+01
BI-214	8195.	609.31	1.3391E+01
PB-214	32428.	351.92	8.4533E+01
RA-224	39708.	240.99	1.5290E+02
RA-226	48017.	186.10	1.6522E+02
AC-228	89.	911.21	3.4443E+00
TH-228	30873.	84.37	5.8190E+02
TH-229	30797.	88.47	2.7388E+01
U-232	27539.	57.78	9.9796E+03
PA-233	33579.	312.17	1.7429E+01
PA-234M	50.	1001.03	8.9649E+01
TH-234	31363.	92.60	1.1341E+02
U-235	47380.	185.71	9.9829E+00
NP-237	30978.	86.48	5.6901E+01
U-237	27807.	59.54	5.2303E+01
NP-238	37.	984.45	2.3638E+00
NP-239	33018.	106.12	2.4418E+01
PU-239	37852.	129.30	8.0133E+04
AM-241	27807.	59.54	4.9980E+01
AM-243	29253.	74.67	1.5527E+01

```
*******************************************************************************
* 222-S Laboratory Counting Room    23-MAY-1998 02:18:37.00                   *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              24152
Sample ID:               S98T1365-DUP                    Removed by:
Sample Size:             1.00000E-04 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2                            Verified by:
File Number:             dka300:[spec.GEA2]2g2723.cnf
Geometry:                43
Count Time:              0 02:30:00.00 sec
Real Time:               0 02:37:14.91 sec
Dead Time:               4.6%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       22-MAY-1998 23:40:51.47
Decayed to:              22-MAY-1998 23:40:51.47
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 SLH2
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       16-DEC-1997 11:02:19.60
 Date of last efficiency calibration:   10-NOV-1997 10:09:16.15
*******************************************************************************
```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.60*	1215955	1.48	1323.23	1315	16	0.2		CS-137	2.167E+04
0	1322.50	72	1.60	2645.24	2637	15	37.1			
0	1460.60*	49	1.96	2921.49	2915	13	86.7		K-40	12.8

Summary of Nuclide Activity
Sample ID : S98T1365-DUP

Acquisition date : 22-MAY-1998 23:40:51

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 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~~	~~1.282E+01~~	~~1.282E+01~~	~~1.111E+01~~	~~86.67~~	
CS-137	30.00Y	1.00	2.167E+04	2.167E+04	0.004E+04	0.19	
			---	---			
	Total Activity :		2.169E+04	2.169E+04			
	Grand Total Activity :		2.169E+04	2.169E+04			

JJR 5/26/98

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

Minimum Detectable Activity Report
Sample ID : S98T1365-DUP

Acquisition date : 22-MAY-1998 23:40:51

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	35962.	477.59	9.7762E+01
NA-22	38.	1274.53	7.9108E-01
NA-24	19.	1368.55	6.6020E-01
SC-46	56.	1120.55	8.6257E-01
CR-51	33609.	320.08	6.8185E+01
MN-54	57.	834.83	6.9371E-01
CO-56	60.	846.76	7.2092E-01
CO-57	36853.	122.06	6.0695E+00
CO-58	55.	810.78	6.7048E-01
FE-59	41.	1099.25	1.3045E+00
CO-60	25.	1332.50	6.8670E-01
ZN-65	52.	1115.55	1.6434E+00
SE-75	37580.	264.66	1.0670E+01
KR-85	18614.	514.00	1.7917E+03
SR-85	18611.	514.01	8.1041E+00
Y-88	10.	1836.06	6.0703E-01
Y-91	46.	1204.67	2.7820E+02
NB-94	60.	871.09	7.3768E-01
NB-95	81.	765.78	7.6551E-01
ZR-95	80.	756.73	1.3803E+00
RU-103	22620.	497.08	9.1488E+00
RURH-106	7723.	621.93	1.1953E+02
AG-108m	106.	722.94	9.1082E-01
CD-109	30786.	88.03	1.8894E+02
AG-110M	23822.	657.76	1.1510E+01
SN-113	34047.	391.69	1.2874E+01
TE-123m	38172.	159.00	5.9418E+00
SB-124	8091.	602.73	6.0426E+00
SB-125	38448.	427.89	3.2220E+01
TE-125m	33929.	109.27	1.9238E+03
I-129	27856.	39.60	1.8128E+03
I-131	32918.	364.48	9.4020E+00
XE-131m	38017.	163.93	2.5561E+02
BA-133	32545.	356.02	1.1928E+01
CS-134	8052.	604.70	6.0540E+00
CS-136	51.	818.51	6.5311E-01
CS-138	17.	1435.86	2.8034E+00
CE-139	38214.	165.85	6.2792E+00
BA-140	13606.	537.31	2.8452E+01
LA-140	8.	1596.21	5.2570E-01
CE-141	38352.	145.44	1.0412E+01
CE-144	38330.	133.51	4.6065E+01
CEPR-144	38329.	133.51	9.2047E+01
EU-152	36873.	121.78	1.8385E+01
EU-154	37118.	123.07	1.2891E+01
EU-155	30635.	86.54	2.1364E+01
HF-181	28938.	482.18	1.1378E+01
TA-182	27817.	67.75	2.8582E+01
HG-203	35943.	279.20	7.8066E+00
BI-207	8914.	569.70	6.0346E+00
TL-208	36061.	277.36	1.0036E+02

Minimum Detectable Activity Report (continued) Page : 4
Sample ID : S98T1365-DUP Acquisition date : 22-MAY-1998 23:40:51

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	27304.	46.50	1.3095E+03
BI-212	119.	727.18	1.3200E+01
PB-212	40057.	238.63	1.3751E+01
BI-214	7899.	609.31	1.3149E+01
PB-214	32596.	351.92	8.4755E+01
RA-224	39638.	240.99	1.5277E+02
RA-226	48325.	186.10	1.6575E+02
AC-228	101.	911.21	3.6528E+00
TH-228	30402.	84.37	5.7747E+02
TH-229	30726.	88.47	2.7356E+01
U-232	27305.	57.78	9.9372E+03
PA-233	33508.	312.17	1.7411E+01
PA-234M	51.	1001.03	9.0865E+01
TH-234	31644.	92.60	1.1392E+02
U-235	47696.	185.71	1.0016E+01
NP-237	30649.	86.48	5.6599E+01
U-237	27757.	59.54	5.2257E+01
NP-238	58.	984.45	2.9207E+00
NP-239	33264.	106.12	2.4508E+01
PU-239	37888.	129.30	8.0171E+04
AM-241	27758.	59.54	4.9936E+01
AM-243	29240.	74.67	1.5523E+01

```
*******************************************************************************
* 222-S Laboratory Counting Room   23-MAY-1998 07:47:23.49                    *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              24152
Sample ID:               S98T1366-SAM                    Removed by:
Sample Size:             1.00000E-03 L
Dilution Factor:         4.10000E+01

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2                            Verified by:
File Number:             dka300:[spec.GEA2]2g2726.cnf
Geometry:                43
Count Time:              0 02:30:00.00 sec
Real Time:               0 02:37:59.80 sec
Dead Time:               5.1%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       23-MAY-1998 05:08:56.45
Decayed to:              23-MAY-1998 05:08:56.45
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 SLH2
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       16-DEC-1997 11:02:19.60
 Date of last efficiency calibration:   10-NOV-1997 10:09:16.15
*******************************************************************************
```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	188.39	4631	4.52	376.75	371	15	33.1			
0	661.59*	1368703	1.47	1323.21	1315	16	0.2		CS-137	1.000E+05
0	1238.58	17	1.24	2477.36	2471	9	116.9			
0	1322.43	97	1.38	2645.10	2638	15	32.1			
0	1460.52*	46	1.89	2921.32	2911	20	98.2		K-40	49.4
0	1764.20*	15	2.06	3528.83	3521	15	98.4			

Summary of Nuclide Activity
Sample ID : S98T1366-SAM Acquisition date : 23-MAY-1998 05:08:56

Total number of lines in spectrum	6	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	4	66.67%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~K-40~~	~~1.28E+09Y~~	~~1.00~~	~~4.940E+01~~	~~4.940E+01~~	~~4.849E+01~~	~~98.16~~	
CS-137	30.00Y	1.00	1.000E+05	1.000E+05	0.002E+05	0.17	
			---	---			
	Total Activity :		1.001E+05	1.001E+05			
	Grand Total Activity :		1.001E+05	1.001E+05			

DJP 5/6/98

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

Minimum Detectable Activity Report
Sample ID : S98T1366-SAM Acquisition date : 23-MAY-1998 05:08:56

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	40075.	477.59	4.2306E+02
NA-22	19.	1274.53	2.4101E+00
NA-24	24.	1368.55	2.9471E+00
SC-46	61.	1120.55	3.6797E+00
CR-51	36988.	320.08	2.9323E+02
MN-54	56.	834.83	2.8293E+00
CO-56	53.	846.76	2.7904E+00
CO-57	41554.	122.06	2.6420E+01
CO-58	90.	810.78	3.4674E+00
FE-59	43.	1099.25	5.4569E+00
CO-60	33.	1332.50	3.1497E+00
ZN-65	45.	1115.55	6.3081E+00
SE-75	41703.	264.66	4.6077E+01
KR-85	21119.	514.00	7.8228E+03
SR-85	21118.	514.01	3.5385E+01
Y-88	4.	1836.06	1.7053E+00
Y-91	37.	1204.67	1.0273E+03
NB-94	50.	871.09	2.7752E+00
NB-95	83.	765.78	3.1718E+00
ZR-95	73.	756.73	5.4334E+00
RU-103	25316.	497.08	3.9674E+01
RURH-106	8707.	621.93	5.2016E+02
AG-108m	106.	722.94	3.7399E+00
CD-109	34781.	88.03	8.2321E+02
AG-110M	27248.	657.76	5.0459E+01
SN-113	37929.	391.69	5.5703E+01
TE-123m	42777.	159.00	2.5785E+01
SB-124	8963.	602.73	2.6067E+01
SB-125	43598.	427.89	1.4065E+02
TE-125m	37687.	109.27	8.3116E+03
I-129	31003.	39.60	7.8396E+03
I-131	36599.	364.48	4.0640E+01
XE-131m	43181.	163.93	1.1167E+03
BA-133	36379.	356.02	5.1697E+01
CS-134	8911.	604.70	2.6104E+01
CS-136	69.	818.51	3.0882E+00
CS-138	13.	1435.86	1.0066E+01
CE-139	42794.	165.85	2.7240E+01
BA-140	15239.	537.31	1.2342E+02
LA-140	5.	1596.21	1.7736E+00
CE-141	43050.	145.44	4.5223E+01
CE-144	42716.	133.51	1.9935E+02
CEPR-144	42715.	133.51	3.9834E+02
EU-152	41496.	121.78	7.9949E+01
EU-154	41719.	123.07	5.6022E+01
EU-155	34663.	86.54	9.3154E+01
HF-181	32980.	482.18	4.9792E+01
TA-182	31383.	67.75	1.2444E+02
HG-203	40186.	279.20	3.3838E+01
BI-207	9734.	569.70	2.5849E+01
TL-208	40435.	277.36	4.3563E+02

Minimum Detectable Activity Report (continued) Page : 4
Sample ID : S98T1366-SAM Acquisition date : 23-MAY-1998 05:08:56

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	30745.	46.50	5.6963E+03
BI-212	114.	727.18	5.3059E+01
PB-212	44661.	238.63	5.9520E+01
BI-214	9159.	609.31	5.8022E+01
PB-214	36609.	351.92	3.6982E+02
RA-224	44548.	240.99	6.6394E+02
RA-226	54434.	186.10	7.2112E+02
AC-228	96.	911.21	1.4622E+01
TH-228	34253.	84.37	2.5126E+03
TH-229	34851.	88.47	1.1943E+02
U-232	30570.	57.78	4.3101E+04
PA-233	37561.	312.17	7.5566E+01
PA-234M	60.	1001.03	4.0201E+02
TH-234	35337.	92.60	4.9348E+02
U-235	53743.	185.71	4.3585E+01
NP-237	34626.	86.48	2.4661E+02
U-237	30794.	59.54	2.2563E+02
NP-238	45.	984.45	1.0601E+01
NP-239	36666.	106.12	1.0549E+02
PU-239	42898.	129.30	3.4970E+05
AM-241	30794.	59.54	2.1561E+02
AM-243	33040.	74.67	6.7641E+01

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*******************************************************************************
* 222-S Laboratory Counting Room   23-MAY-1998 10:45:11.42                    *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              24152
Sample ID:               S98T001366-DUP
Sample Size:             1.00000E-03 L
Dilution Factor:         4.10000E+01

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2727.cnf
Geometry:                43
Count Time:              0 02:30:00.00 sec
Real Time:               0 02:37:57.65 sec
Dead Time:               5.0%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       23-MAY-1998 08:06:43.98
Decayed to:              23-MAY-1998 08:06:43.98
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 GL
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       16-DEC-1997 11:02:19.60
 Date of last efficiency calibration:   10-NOV-1997 10:09:16.15
*******************************************************************************
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Removed by:

Verified by: John Relyea 26 May 98

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.56*	1362254	1.47	1323.16	1315	16	0.2		CS-137	9.955E+04
0	1322.59	116	2.14	2645.41	2637	15	22.4			
0	1378.23	20	1.40	2756.72	2750	14	81.2			
0	1460.65*	43	1.70	2921.59	2914	14	107.4		K-40	46.7
0	1764.17*	13	1.97	3528.77	3522	14	111.7			

Summary of Nuclide Activity
Sample ID : S98T001366-DUP Acquisition date : 23-MAY-1998 08:06:43

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
~~K-40~~	~~1.28E+09Y~~	~~1.00~~	~~4.671E+01~~	~~4.671E+01~~	~~5.015E+01~~	~~107.37~~	
CS-137	30.00Y	1.00	9.955E+04	9.955E+04	0.017E+04	0.18	
		Total Activity :	9.960E+04	9.960E+04			
		Grand Total Activity :	9.960E+04	9.960E+04			

JTR 5/26/98

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

Minimum Detectable Activity Report
Sample ID : S98T001366-DUP

Acquisition date : 23-MAY-1998 08:06:43

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	39994.	477.59	4.2263E+02
NA-22	30.	1274.53	2.9191E+00
NA-24	13.	1368.55	2.2856E+00
SC-46	61.	1120.55	3.6933E+00
CR-51	36965.	320.08	2.9314E+02
MN-54	76.	834.83	3.2534E+00
CO-56	75.	846.76	3.2658E+00
CO-57	41445.	122.06	2.6385E+01
CO-58	45.	810.78	2.4959E+00
FE-59	39.	1099.25	5.2225E+00
CO-60	30.	1332.50	3.0520E+00
ZN-65	37.	1115.55	5.7733E+00
SE-75	42018.	264.66	4.6250E+01
KR-85	20978.	514.00	7.7967E+03
SR-85	20974.	514.01	3.5265E+01
Y-88	9.	1836.06	2.3474E+00
Y-91	27.	1204.67	8.9336E+02
NB-94	62.	871.09	3.0534E+00
NB-95	114.	765.78	3.6825E+00
ZR-95	88.	756.73	5.9023E+00
RU-103	25399.	497.08	3.9739E+01
RURH-106	8931.	621.93	5.2677E+02
AG-108m	121.	722.94	3.9814E+00
CD-109	34543.	88.03	8.2040E+02
AG-110M	28283.	657.76	5.1404E+01
SN-113	37719.	391.69	5.5549E+01
TE-123m	42545.	159.00	2.5715E+01
SB-124	9074.	602.73	2.6227E+01
SB-125	43259.	427.89	1.4010E+02
TE-125m	37764.	109.27	8.3200E+03
I-129	31155.	39.60	7.8587E+03
I-131	36350.	364.48	4.0503E+01
XE-131m	42528.	163.93	1.1083E+03
BA-133	36651.	356.02	5.1890E+01
CS-134	9193.	604.70	2.6510E+01
CS-136	68.	818.51	3.0564E+00
CS-138	23.	1435.86	1.3222E+01
CE-139	42852.	165.85	2.7258E+01
BA-140	15263.	537.31	1.2352E+02
LA-140	10.	1596.21	2.2763E+00
CE-141	43258.	145.44	4.5331E+01
CE-144	42649.	133.51	1.9919E+02
CEPR-144	42648.	133.51	3.9803E+02
EU-152	41416.	121.78	7.9872E+01
EU-154	41557.	123.07	5.5914E+01
EU-155	34471.	86.54	9.2897E+01
HF-181	32738.	482.18	4.9609E+01
TA-182	31589.	67.75	1.2485E+02
HG-203	40229.	279.20	3.3856E+01
BI-207	9991.	569.70	2.6186E+01
TL-208	40380.	277.36	4.3533E+02

Minimum Detectable Activity Report (continued) Page : 4
Sample ID : S98T001366-DUP Acquisition date : 23-MAY-1998 08:06:43

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	30668.	46.50	5.6891E+03
BI-212	131.	727.18	5.6675E+01
PB-212	44248.	238.63	5.9245E+01
BI-214	9164.	609.31	5.8039E+01
PB-214	36480.	351.92	3.6909E+02
RA-224	44304.	240.99	6.6212E+02
RA-226	54217.	186.10	7.1969E+02
AC-228	105.	911.21	1.5247E+01
TH-228	34295.	84.37	2.5141E+03
TH-229	34580.	88.47	1.1897E+02
U-232	30486.	57.78	4.3042E+04
PA-233	37552.	312.17	7.5558E+01
PA-234M	52.	1001.03	3.7475E+02
TH-234	34979.	92.60	4.9099E+02
U-235	53530.	185.71	4.3498E+01
NP-237	34474.	86.48	2.4606E+02
U-237	30780.	59.54	2.2558E+02
NP-238	36.	984.45	9.5532E+00
NP-239	37060.	106.12	1.0605E+02
PU-239	42498.	129.30	3.4807E+05
AM-241	30780.	59.54	2.1556E+02
AM-243	32690.	74.67	6.7283E+01

```
*****************************************************************************
* 222-S Laboratory Counting Room   23-MAY-1998 14:55:17.89                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              24152
Sample ID:               S98T001367-SAM
Sample Size:             1.00000E-03 L
Dilution Factor:         4.10000E+01

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2
File Number:             dka300:[spec.GEA2]2g2728.cnf
Geometry:                43
Count Time:              0 02:30:00.00 sec
Real Time:               0 02:39:16.77 sec
Dead Time:               5.8%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       23-MAY-1998 12:15:34.14
Decayed to:              23-MAY-1998 12:15:34.14
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 GL
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       16-DEC-1997 11:02:19.60
 Date of last efficiency calibration:   10-NOV-1997 10:09:16.15
*****************************************************************************
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Removed by:

Verified by:

John Relyea 26 May 98

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.55*	1631658	1.48	1323.13	1315	16	0.2		CS-137	1.192E+05
0	1322.84	134	2.00	2645.91	2640	12	22.6			
0	1460.50*	56	2.12	2921.29	2912	16	76.8		K-40	60.7

Summary of Nuclide Activity
Sample ID : S98T001367-SAM

Acquisition date : 23-MAY-1998 12:15:34

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 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~~	~~6.068E+01~~	~~6.068E+01~~	~~4.657E+01~~	~~76.75~~	
CS-137	30.00Y	1.00	1.192E+05	1.192E+05	0.002E+05	0.16	
		Total Activity :	1.193E+05	1.193E+05			
		Grand Total Activity :	1.193E+05	1.193E+05			

JTB 5/26/98

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

Minimum Detectable Activity Report
Sample ID : S98T001367-SAM

Acquisition date : 23-MAY-1998 12:15:34

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	47743.	477.59	4.6165E+02
NA-22	29.	1274.53	2.8988E+00
NA-24	15.	1368.55	2.3969E+00
SC-46	78.	1120.55	4.1391E+00
CR-51	44326.	320.08	3.2093E+02
MN-54	70.	834.83	3.1419E+00
CO-56	62.	846.76	2.9946E+00
CO-57	49401.	122.06	2.8800E+01
CO-58	89.	810.78	3.4433E+00
FE-59	48.	1099.25	5.7397E+00
CO-60	29.	1332.50	3.0037E+00
ZN-65	39.	1115.55	5.8764E+00
SE-75	50058.	264.66	5.0469E+01
KR-85	24913.	514.00	8.4937E+03
SR-85	24913.	514.01	3.8421E+01
Y-88	7.	1836.06	2.1152E+00
Y-91	48.	1204.67	1.1589E+03
NB-94	69.	871.09	3.2189E+00
NB-95	119.	765.78	3.7651E+00
ZR-95	112.	756.73	6.6250E+00
RU-103	30220.	497.08	4.3334E+01
RURH-106	10610.	621.93	5.7387E+02
AG-108m	142.	722.94	4.2835E+00
CD-109	41582.	88.03	8.9987E+02
AG-110M	35067.	657.76	5.7219E+01
SN-113	45564.	391.69	6.1036E+01
TE-123m	51059.	159.00	2.8164E+01
SB-124	10888.	602.73	2.8713E+01
SB-125	51440.	427.89	1.5274E+02
TE-125m	45208.	109.27	9.1009E+03
I-129	37157.	39.60	8.5800E+03
I-131	43475.	364.48	4.4285E+01
XE-131m	50864.	163.93	1.2118E+03
BA-133	43585.	356.02	5.6572E+01
CS-134	10893.	604.70	2.8843E+01
CS-136	76.	818.51	3.2186E+00
CS-138	14.	1435.86	1.0695E+01
CE-139	51144.	165.85	2.9772E+01
BA-140	18304.	537.31	1.3522E+02
LA-140	10.	1596.21	2.2767E+00
CE-141	51385.	145.44	4.9395E+01
CE-144	51092.	133.51	2.1797E+02
CEPR-144	51092.	133.51	4.3555E+02
EU-152	49354.	121.78	8.7170E+01
EU-154	49797.	123.07	6.1191E+01
EU-155	41190.	86.54	1.0152E+02
HF-181	39032.	482.18	5.4154E+01
TA-182	37606.	67.75	1.3619E+02
HG-203	48297.	279.20	3.7087E+01
BI-207	12010.	569.70	2.8695E+01
TL-208	48252.	277.36	4.7576E+02

Minimum Detectable Activity Report (continued) Page : 4
Sample ID : S98T001367-SAM Acquisition date : 23-MAY-1998 12:15:34

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	36863.	46.50	6.2357E+03
BI-212	158.	727.18	6.1860E+01
PB-212	53640.	238.63	6.5214E+01
BI-214	10768.	609.31	6.2884E+01
PB-214	43845.	351.92	4.0768E+02
RA-224	52948.	240.99	7.2373E+02
RA-226	64680.	186.10	7.8590E+02
AC-228	96.	911.21	1.4616E+01
TH-228	40978.	84.37	2.7475E+03
TH-229	41627.	88.47	1.3049E+02
U-232	36791.	57.78	4.7270E+04
PA-233	44988.	312.17	8.2680E+01
PA-234M	52.	1001.03	3.7386E+02
TH-234	41622.	92.60	5.3544E+02
U-235	63746.	185.71	4.7458E+01
NP-237	41175.	86.48	2.6885E+02
U-237	36598.	59.54	2.4592E+02
NP-238	51.	984.45	1.1267E+01
NP-239	44170.	106.12	1.1577E+02
PU-239	51317.	129.30	3.8238E+05
AM-241	36598.	59.54	2.3498E+02
AM-243	39510.	74.67	7.3947E+01

```
*****************************************************************************
* 222-S Laboratory Counting Room   23-MAY-1998 17:51:11.10                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              24152
Sample ID:               S98T001367-DUP                  Removed by:
Sample Size:             1.00000E-03 L
Dilution Factor:         4.10000E+01

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA2                            Verified by:
File Number:             dka300:[spec.GEA2]2g2730.cnf
Geometry:                43
Count Time:              0 02:30:00.00 sec
Real Time:               0 02:39:15.43 sec
Dead Time:               5.8%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       23-MAY-1998 15:11:26.31
Decayed to:              23-MAY-1998 15:11:26.31
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 GL
Background Subtract:     DKA300:[SPEC.GEA2]2GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       16-DEC-1997 11:02:19.60
 Date of last efficiency calibration:   10-NOV-1997 10:09:16.15
*****************************************************************************
```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.55*	1628171	1.47	1323.13	1315	16	0.2		CS-137	1.190E+05
0	963.24	49	4.37	1926.58	1920	12	51.2			
0	1322.68	141	2.02	2645.58	2638	19	22.5			

Summary of Nuclide Activity
Sample ID : S98T001367-DUP

Acquisition date : 23-MAY-1998 15:11:26

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 Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	1.190E+05	1.190E+05	0.002E+05	0.16	
			---	---			
	Total Activity :		1.190E+05	1.190E+05			
	Grand Total Activity :		1.190E+05	1.190E+05			

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

Minimum Detectable Activity Report
Sample ID : S98T001367-DUP

Acquisition date : 23-MAY-1998 15:11:26

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	48135.	477.59	4.6354E+02
NA-22	29.	1274.53	2.8984E+00
NA-24	20.	1368.55	2.7566E+00
K-40	322.	1460.75	9.3278E+01
SC-46	60.	1120.55	3.6494E+00
CR-51	44329.	320.08	3.2094E+02
MN-54	81.	834.83	3.3541E+00
CO-56	71.	846.76	3.1940E+00
CO-57	49246.	122.06	2.8755E+01
CO-58	81.	810.78	3.2936E+00
FE-59	53.	1099.25	6.0155E+00
CO-60	29.	1332.50	2.9690E+00
ZN-65	47.	1115.55	6.4048E+00
SE-75	49714.	264.66	5.0296E+01
KR-85	24771.	514.00	8.4695E+03
SR-85	24769.	514.01	3.8311E+01
Y-88	7.	1836.06	2.1253E+00
Y-91	45.	1204.67	1.1311E+03
NB-94	66.	871.09	3.1523E+00
NB-95	109.	765.78	3.6096E+00
ZR-95	96.	756.73	6.1754E+00
RU-103	30177.	497.08	4.3303E+01
RURH-106	10482.	621.93	5.7041E+02
AG-108m	119.	722.94	3.9398E+00
CD-109	41078.	88.03	8.9442E+02
AG-110M	34884.	657.76	5.7070E+01
SN-113	45182.	391.69	6.0781E+01
TE-123m	50892.	159.00	2.8118E+01
SB-124	10784.	602.73	2.8577E+01
SB-125	51713.	427.89	1.5314E+02
TE-125m	45644.	109.27	9.1446E+03
I-129	37087.	39.60	8.5720E+03
I-131	43699.	364.48	4.4398E+01
XE-131m	50754.	163.93	1.2105E+03
BA-133	43553.	356.02	5.6551E+01
CS-134	10732.	604.70	2.8631E+01
CS-136	67.	818.51	3.0285E+00
CS-138	13.	1435.86	1.0423E+01
CE-139	50782.	165.85	2.9667E+01
BA-140	18294.	537.31	1.3518E+02
LA-140	11.	1596.21	2.3739E+00
CE-141	50851.	145.44	4.9139E+01
CE-144	50933.	133.51	2.1763E+02
CEPR-144	50933.	133.51	4.3487E+02
EU-152	49194.	121.78	8.7029E+01
EU-154	49588.	123.07	6.1063E+01
EU-155	41003.	86.54	1.0129E+02
HF-181	39078.	482.18	5.4186E+01
TA-182	37662.	67.75	1.3629E+02
HG-203	48143.	279.20	3.7028E+01
BI-207	11880.	569.70	2.8541E+01

Minimum Detectable Activity Report (continued) Page : 4
Sample ID : S98T001367-DUP Acquisition date : 23-MAY-1998 15:11:26

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	48630.	277.36	4.7761E+02
PB-210	36761.	46.50	6.2271E+03
BI-212	138.	727.18	5.8157E+01
PB-212	53514.	238.63	6.5137E+01
BI-214	10760.	609.31	6.2861E+01
PB-214	43280.	351.92	4.0499E+02
RA-224	53053.	240.99	7.2444E+02
RA-226	64277.	186.10	7.8345E+02
AC-228	92.	911.21	1.4318E+01
TH-228	40673.	84.37	2.7372E+03
TH-229	41069.	88.47	1.2961E+02
U-232	36728.	57.78	4.7230E+04
PA-233	44735.	312.17	8.2448E+01
PA-234M	60.	1001.03	4.0170E+02
TH-234	41722.	92.60	5.3609E+02
U-235	63442.	185.71	4.7345E+01
NP-237	41009.	86.48	2.6831E+02
U-237	36814.	59.54	2.4665E+02
NP-238	42.	984.45	1.0253E+01
NP-239	44171.	106.12	1.1577E+02
PU-239	50798.	129.30	3.8045E+05
AM-241	36814.	59.54	2.3567E+02
AM-243	39041.	74.67	7.3508E+01

worklistdata Version 1.0 05/15/96
05/28/98 11:11

LABCORE Completed Worklist Report for Worklist# 24164

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

Method: _____ Rev/Mod _____

Worklist Comment: AN101 GRAB1, @SR90-01, STD: 1.0mL, SS by Ludlum. skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@SR90-01 SR90-01	LIQUID	1.05E-03	1.07E-3	101.905	% Recovery
1	STD			0	@SR90-01 SR90-01C	LIQUID	100	8.47E+01	84.700	% Recovery
1	STD			0	@SR90-01 SR90-01E	LIQUID	1.00	2.08E+00	2.080	% Ct. Erro
2	BLNK			0	@SR90-01 SR90-01	LIQUID	1	<6.09E-4		uCi/mL
2	BLNK			0	@SR90-01 SR90-01C	LIQUID	100	8.59E+01	85.900	% Recovery
2	BLNK			0	@SR90-01 SR90-01E	LIQUID	1.00	9.09E+02	909.000	uCi/mL
3	BLNK/BKG			0	@SR90-01 SR90-01	LIQUID	1	9.55E-01	0.955	BLNK/BKG
4	SAMPLE	S98T001365		0	@SR90-01 SR90-01	LIQUID	N/A	9.30E-03	1.25e-003	uCi/mL
4	SAMPLE	S98T001365		0	@SR90-01 SR90-01C	LIQUID	N/A	8.66E+01		% Recovery
4	SAMPLE	S98T001365		0	@SR90-01 SR90-01E	LIQUID	N/A	1.69E+01		% Ct. Error
5	DUP	S98T001365		0	@SR90-01 SR90-01	LIQUID	9.30E-3	8.87E-3	4.733	RPD
5	DUP	S98T001365		0	@SR90-01 SR90-01C	LIQUID	100	8.60E+01	86.000	% Recovery
5	DUP	S98T001365		0	@SR90-01 SR90-01E	LIQUID	1.00	1.75E+01	17.500	% Cnt Err
6	SAMPLE	S98T001366		0	@SR90-01 SR90-01	LIQUID	N/A	5.55E-02	1.25e-003	uCi/mL
6	SAMPLE	S98T001366		0	@SR90-01 SR90-01C	LIQUID	N/A	8.58E+01		% Recovery
6	SAMPLE	S98T001366		0	@SR90-01 SR90-01E	LIQUID	N/A	5.97E+00		% Ct. Error
7	DUP	S98T001366		0	@SR90-01 SR90-01	LIQUID	5.55E-2	5.77E-2	3.887	RPD
7	DUP	S98T001366		0	@SR90-01 SR90-01C	LIQUID	100	8.68E+01	86.800	% Recovery
7	DUP	S98T001366		0	@SR90-01 SR90-01E	LIQUID	1.00	5.81E+00	5.810	% Cnt Err
8	SAMPLE	S98T001367		0	@SR90-01 SR90-01	LIQUID	N/A	5.37E-02	1.23e-003	uCi/mL
8	SAMPLE	S98T001367		0	@SR90-01 SR90-01C	LIQUID	N/A	8.68E+01		% Recovery
8	SAMPLE	S98T001367		0	@SR90-01 SR90-01E	LIQUID	N/A	6.02E+00		% Ct. Error
9	DUP	S98T001367		0	@SR90-01 SR90-01	LIQUID	5.37E-2	5.58E-2	3.836	RPD
9	DUP	S98T001367		0	@SR90-01 SR90-01C	LIQUID	100	8.60E+01	86.000	% Recovery
9	DUP	S98T001367		0	@SR90-01 SR90-01E	LIQUID	1.00	5.92E+00	5.920	% Cnt Err

Final page for worklist# 24164

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

Reviewer Signature 29 May 98 **Date**

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

LABCORE Data Entry Template for Worklist# 24164

Analyst: AKH **Instrument:** AB00 #12 **Book#** 28857

Method: LA-220-101 Rev/Mod E-3

Worklist Comment: AN101 GRAB1, @SR90-01, STD: 1.0mL, SS by Ludlum. skm

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	S98T001365	0		@SR90-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5	DUP	S98T001365	0		@SR90-01	LIQUID		
6	SAMPLE	S98T001366	0		@SR90-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7	DUP	S98T001366	0		@SR90-01	LIQUID		
8	SAMPLE	S98T001367	0		@SR90-01	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
9	DUP	S98T001367	0		@SR90-01	LIQUID		

Final page for worklist # 24164

Alita Hurson 5/27/98
Analyst Signature **Date**

RC Wright 5/28/98
Analyst Signature **Date**

MB... 5/28/98.

Data Entry Comments:

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

HNF-1640 Rev. 0

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5) LIQUIDS

							STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
STD	TOTAL COUNTS	(TC)	8984	GROSS WEIGHT	(W2)		7.6077
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.5230
24164	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3)		0.0847
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		5.42
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	894.00	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
98002614	TIME OF SEPARATION	(ST)	08:20	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	05/27/98	DETECTION LIMIT	(Ld)		2.62
0	TIME OF COUNT	(TOC)	13:45	Sr-89/90 CONC. in µCi/L			1.0697E+00
Sample Prep	DATE OF COUNT	(DOC)	05/27/98				
N/A	STANDARD BOOK #		28B57				
Sample #	STANDARD VALUE in µCi/mL		1.0547E-03				
WL#24164-STD							
Instrument Code							
WB27811							
Prepared By							
NEW							
Chemist							
SAC							
Analyst							
AKL							
Date Complete							
05/28/98							
Analysis Date							
05/27/98							
Analysis Time							
12:50 PM							
Sample Point							
AN-101 GRAB1							

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

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

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

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

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

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

NOTE: Expected weight = CVA * 0.1

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

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

Sr-89/90 CONCENTRATION	1.07E-03	µCi/mL
RELATIVE COUNTING ERROR	2.1%	
PERCENT CARRIER RECOVERY	84.7%	

DETECTION LEVEL 3.13E-06 µCi/L

Analyst:		AKL	Date:	28-May-98
Signature of Chemist:	S A Cathe	SAC	Date:	29 May 98

STANDARD.WB1 REV 2.0 22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / E-3 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLNK	TOTAL COUNTS	(TC)	42	GROSS WEIGHT	(W2)	7.5866
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5007
24164	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3)	0.0859
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	5.75
@SR90-01	DILUTION FACTOR	DF	41			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	-0.20	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98002614	TIME OF SEPARATION	(ST)	08:20	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/27/98	DETECTION LIMIT	(Ld)	2.62
0	TIME OF COUNT	(TOC)	14:05	Sr-89/90 CONC in µCi/L	<	6.0916E-01
Sample Prep	DATE OF COUNT	(DOC)	05/27/98			
N/A						
Sample #						
WL#24164-BLK						

BLNK

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)
NEW	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
AKL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
05/28/98	
Analysis Date	
05/27/98	Sr-89/90 CONCENTRATION < 6.09E-04 µCi/mL
Analysis Time	LESS THAN Value was Determined from Lc.
12:50 PM	RELATIVE COUNTING ERROR 908.8%
Sample Point	
AN-101 GRAB1	PERCENT CARRIER RECOVERY 85.9%

DETECTION LEVEL 1.26E-03 µCi/mL

Analyst:		AKL	Date:	28-May-98
Signature of Chemist:	S A Catto	SAC	Date:	29 May 98

BLANK.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM4

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL		(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	239	GROSS WEIGHT		(W2)	7.5812
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT		(W1)	7.4946
24164	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT		(W3)	0.0866
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)		(DT)	6.00
@SR90-01	DILUTION FACTOR	DF	41				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	19.50	SR-90 EFFICIENCY FACTOR		(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR		(C2)	0.4660
98002614	TIME OF SEPARATION	(ST)	08:20	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	05/27/98	DETECTION LIMIT		(Ld)	2.62
0	TIME OF COUNT	(TOC)	14:20	Sr-89/90 CONC in µCi/L			9.2986E+00
Sample Prep	DATE OF COUNT	(DOC)	05/27/98				
N/A							
Sample #							
S98T001365							
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)						
NEW	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						
AKL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
05/28/98							
Analysis Date							DETECTION LEVEL
05/27/98	Sr-89/90 CONCENTRATION		9.30E-03		µCi/mL		
Analysis Time							
12:50 PM	RELATIVE COUNTING ERROR		16.9%				1.25E-03 µCi/mL
Sample Point							
AN-101 GRAB1	PERCENT CARRIER RECOVERY		86.6%				

Analyst:		AKL	Date:	28-May-98
Signature of Chemist:	SACatto	SAC	Date:	29 May 98

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: DUP5

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL		(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	229	GROSS WEIGHT		(W2)	7.5712
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT		(W1)	7.4852
24164	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT		(W3)	0.0860
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)		(DT)	6.17
@SR90-01	DILUTION FACTOR	DF	41				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	18.50	SR-90 EFFICIENCY FACTOR		(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR		(C2)	0.4660
98002614	TIME OF SEPARATION	(ST)	08:20	Rmax			N/A
Rerun #	DATE OF SEPARATION	(SD)	05/27/98	DETECTION LIMIT		(Ld)	2.62
0	TIME OF COUNT	(TOC)	14:30	Sr-89/90 CONC in µCi/L			8.8677E+00
Sample Prep #	DATE OF COUNT	(DOC)	05/27/98				
N/A							
Sample #							
S98T001365							
Instrument Code							
WB27811							
Prepared By							
NEW							
Chemist							
SAC							
Analyst							
AKL							
Date Complete							
05/28/98							
Analysis Date							
05/27/98							
Analysis Time							
12:50 PM							
Sample Point							
AN-101 GRAB1							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)
NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96
Percent Carrier Recovery = (Net Weight / Expected weight) * 100
NOTE: Expected weight = CVA * 0.1
Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	8.87E-03	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	17.5%		1.26E-03 µCi/mL
PERCENT CARRIER RECOVERY	86.0%		

Analyst:		AKL	Date:	28-May-98
Signature of Chemist:	SACaton	SAC	Date:	29 May 98

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM6

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

							SAMPLE
Type:	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	1203	GROSS WEIGHT	(W2)		7.5997
Work List:	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.5139
24164	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3)		0.0858
Test Code:	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		6.42
@SR90-01	DILUTION FACTOR	DF	41				
Matrix:	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	115.90	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number:	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
98002614	TIME OF SEPARATION	(ST)	08:25	Rmax			N/A
Rerun:	DATE OF SEPARATION	(SD)	05/27/98	DETECTION LIMIT	(Ld)		2.62
0	TIME OF COUNT	(TOC)	14:50	Sr-89/90 CONC in µCi/L			5.5539E+01
Sample Prep:	DATE OF COUNT	(DOC)	05/27/98				
N/A							
Sample #:							
S98T001366							

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)
NEW	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
AKL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete:	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
05/28/98	
Analysis Date:	
05/27/98	
Analysis Time:	
12:50 PM	
Sample Point:	
AN-101 GRAB1	

Sr-89/90 CONCENTRATION	5.55E-02	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	6.0%		1.25E-03 µCi/mL
PERCENT CARRIER RECOVERY	85.8%		

Analyst:		AKL	Date:	28-May-98
Signature of Chemist:	SA Carter	SAC	Date:	29 May 98

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: DUP7

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	1265	GROSS WEIGHT	(W2)		7.8554
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.7686
24164	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3)		0.0868
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		6.67
@SR90-01	DILUTION FACTOR	DF	41				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	122.10	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
98002614	TIME OF SEPARATION	(ST)	08:25	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	05/27/98	DETECTION LIMIT		(Ld)	2.62
0	TIME OF COUNT	(TOC)	15:05	Sr-89/90 CONC in µCi/L			5.7685E+01
Sample Prep	DATE OF COUNT	(DOC)	05/27/98				
N/A							
Sample #							
S98T001366							

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)
NEW	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
AKL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
05/28/98	

Analysis Date				DETECTION LEVEL
05/27/98	Sr-89/90 CONCENTRATION	5.77E-02	µCi/mL	
Analysis Time				
12:50 PM	RELATIVE COUNTING ERROR	5.8%		1.24E-03 µCi/mL
Sample Point				
AN-101 GRAB1	PERCENT CARRIER RECOVERY	86.8%		

Analyst:		AKL	Date:	28-May-98
Signature of Chemist:	S A Catto	SAC	Date:	29 May 98

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM8

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	1184	GROSS WEIGHT	(W2)		7.8804
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.7936
24164	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3)		0.0868
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		7.03
@SR90-01	DILUTION FACTOR	DF	41				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	114.00	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
98002614	TIME OF SEPARATION	(ST)	08:25	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	05/27/98	DETECTION LIMIT	(Ld)		2.62
0	TIME OF COUNT	(TOC)	15:27	Sr-89/90 CONC in µCi/L			5.3654E+01
Sample Prep	DATE OF COUNT	(DOC)	05/27/98				
N/A							
Sample #							
S98T001367							
Instrument Code							
WB27811							
Prepared By							
NEW							
Chemist							
SAC							
Analyst							
AKL							
Date Complete							
05/28/98							
Analysis Date							
05/27/98							
Analysis Time							
12:50 PM							
Sample Point							
AN-101 GRAB1							

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

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

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

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

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

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

NOTE: Expected weight = CVA * 0.1

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

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

				DETECTION LEVEL
Sr-89/90 CONCENTRATION	5.37E-02	µCi/mL		
RELATIVE COUNTING ERROR	6.0%			1.23E-03 µCi/mL
PERCENT CARRIER RECOVERY	86.8%			

Analyst:	AKL	Date:	28-May-98	
Signature of Chemist:	SAC	Date:	29 May 98	

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: DUP9

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

							DUP
Type:	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	1221	GROSS WEIGHT	(W2)		7.8677
Work List:	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.7817
24164	BACKGROUND in cpm	(BKG)	4.4	NET WEIGHT	(W3)		0.0860
Test Code:	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		7.25
@SR90-01	DILUTION FACTOR	DF	41				
Matrix:	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	117.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number:	CRITICAL LEVEL	(Lc)	1.26	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
98002614	TIME OF SEPARATION	(ST)	08:25	Rmax			N/A
Rerun:	DATE OF SEPARATION	(SD)	05/27/98	DETECTION LIMIT		(Ld)	2.62
0	TIME OF COUNT	(TOC)	15:40	Sr-89/90 CONC in µCi/L			5.5786E+01
Sample Prep:	DATE OF COUNT	(DOC)	05/27/98				
N/A							
Sample #:							
S98T001367							
Instrument Code:							
WB27811							
Prepared By:							
NEW							
Chemistry:							
SAC							
Analyst:							
AKL							
Date Complete:							
05/28/98							
Analysis Date:							
05/27/98							
Analysis Time:							
12:50 PM							
Sample Point:							
AN-101 GRAB1							

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

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

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

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

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

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

NOTE: Expected weight = CVA * 0.1

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

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

Sr-89/90 CONCENTRATION	5.58E-02	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	5.9%		1.24E-03 µCi/mL
PERCENT CARRIER RECOVERY	86.0%		

Analyst:		AKL	Date:	28-May-98
Signature of Chemist:	S.A. Watts	SAC	Date:	29 May 98

SAMPLE.WB1 REV 2.0 22010NML

LABCORE Completed Worklist Report for Worklist# 24151

Analyst: akl **Instrument:** AB13 **Book#** 28 B57

Method: LA-953-104 Rev/Mod B-9

Worklist Comment: AN-101 AM241 STD= 1 Ml lad

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@AM24101	AM24101	LIQUID	2.27E-04	1.76E-4	77.533	% Recovery
1	STD		0	@AM24101	AM24101T	LIQUID	100.	9.38E+01	93.800	% Recovery
1	STD		0	@AM24101	AM24101E	LIQUID	1.0	1.65E+00	1.650	% Ct Error
2	BLNK		0	@AM24101	AM24101	LIQUID	1	<1.03E-5		uCi/mL
2	BLNK		0	@AM24101	AM24101T	LIQUID	100.0	6.53E+01	65.300	% Recovery
2	BLNK		0	@AM24101	AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct Error
3	SAMPLE	S98T001365	0	@AM24101	AM24101	LIQUID	N/A <	5.79E-06	5.79e-006	uCi/mL
3	SAMPLE	S98T001365	0	@AM24101	AM24101E	LIQUID	N/A	1.00E+02		% Ct. Error
3	SAMPLE	S98T001365	0	@AM24101	AM24101T	LIQUID	N/A	8.86E+01		% Recovery
4	DUP	S98T001365	0	@AM24101	AM24101	LIQUID	<5.79E-6	<5.73E-6		RPD
4	DUP	S98T001365	0	@AM24101	AM24101T	LIQUID	100.0	9.06E+01	90.600	% Recovery
4	DUP	S98T001365	0	@AM24101	AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct Error
5	SAMPLE	S98T001366	0	@AM24101	AM24101	LIQUID	N/A	1.20E-05	6.42e-006	uCi/mL
5	SAMPLE	S98T001366	0	@AM24101	AM24101E	LIQUID	N/A	4.08E+00		% Ct. Error
5	SAMPLE	S98T001366	0	@AM24101	AM24101T	LIQUID	N/A	8.96E+01		% Recovery
6	DUP	S98T001366	0	@AM24101	AM24101	LIQUID	1.20E-5	1.23E-5	2.469	RPD
6	DUP	S98T001366	0	@AM24101	AM24101T	LIQUID	100.0	9.17E+01	91.700	% Recovery
6	DUP	S98T001366	0	@AM24101	AM24101E	LIQUID	1.0	3.91E+00	3.910	% Ct Error
7	SAMPLE	S98T001367	0	@AM24101	AM24101	LIQUID	N/A	1.37E-05	6.95e-006	uCi/mL
7	SAMPLE	S98T001367	0	@AM24101	AM24101E	LIQUID	N/A	3.90E+00		% Ct. Error
7	SAMPLE	S98T001367	0	@AM24101	AM24101T	LIQUID	N/A	8.47E+01		% Recovery
8	DUP	S98T001367	0	@AM24101	AM24101	LIQUID	1.37E-5	1.34E-5	2.214	RPD
8	DUP	S98T001367	0	@AM24101	AM24101T	LIQUID	100.0	6.37E+01	63.700	% Recovery
8	DUP	S98T001367	0	@AM24101	AM24101E	LIQUID	1.0	4.12E+00	4.120	% Ct Error

Final page for worklist# 24151

Analyst Signature Date Analyst Signature Date

John Relyea 28 May 98
Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 24151

Analyst: AKL **Instrument:** AM01 13 **Book#** 24B57

Method: LA-953-104 Rev/Mod B0

Worklist Comment: AN-101 AM241 STD= 1 Ml lad sample size by Ludlum

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	LIQUID		
2	BLNK				@AM24101	LIQUID		
3	SAMPLE	S98T001365	0		@AM24101	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: AM24101 , AM24101E, AM24101T						
4	DUP	S98T001365	0		@AM24101	LIQUID		
5	SAMPLE	S98T001366	0		@AM24101	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: AM24101 , AM24101E, AM24101T						
6	DUP	S98T001366	0		@AM24101	LIQUID		
7	SAMPLE	S98T001367	0		@AM24101	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: AM24101 , AM24101E, AM24101T						
8	DUP	S98T001367	0		@AM24101	LIQUID		

Final page for worklist # 24151

Alita Henson 5/26/98
Analyst Signature **Date**

LRaymond 5-27-98
Analyst Signature **Date**
RE Wright 5/27/98

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0)) LIQUID

							STD
Type	Date Counted		MAY-26-98	Am 241 AEA Frac.		(C241)	0.551
STD	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.		(C243)	0.292
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.		(Cm)	0
24151	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			6317
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)		(TC)	30
@AM24101	Tracer Book No.		140B43	Background in cpm		(Bkg)	0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	1034	Am 241 cpm			84.44
LIQUID	Detector Number		13	Am 243 cpm			44.76
Batch Number	Detector Efficiency	(DetEff)	0.3166	Cm 243/244 cpm			0
98002600	Standard Book No		28B57	AEA Count Time		(min)	480
Rerun	Standard Value in µCi/mL		2.270E-04	Am 241 µCi/L =			1.7578E-01
0				Cm 243/244 µCi/L =		<	1.7004E-02

Sample Prep
N/A
Sample Number
WL24151
Instrument Code
WB27810
Prepared By
VAR
Chemist
JFR
Analyst
AKL
Date Complete
05/27/98
Analysis Date
05/26/98
Analysis Time
10:15 AM
Sample Point
AN-101 GRAB1

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	1.76E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	1.7%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/mL		< 1.70E-05	1.70E-05
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	93.8%	1.70E-05

Analyst:	AKL	Date:	05/27/98
Signature of Chemist: John Rolyea	JFR	Date:	28 May 98

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0)) LIQUID / SO

Type	Date Counted		MAY-26-98	Am 241 AEA Frac.	(C241)		BLNK 0
BLNK	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.695
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
24151	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			1853
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		140B43	Background in cpm	(Bkg)		0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	1034	Am 241 cpm			0
LIQUID	Detector Number		13	Am 243 cpm			29.78
Batch Number	Detector Efficiency	(DetEff)	0.3166	Cm 243/244 cpm			0
98002600				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =		<	1.0259E-02
0				Cm 243/244 µCi/L =		<	1.0259E-02
Sample Prep							
N/A							
Sample Number							
WL24151							
Instrument Code							
WB27810							
Prepared By							
VAR							
Chemist							
JFR							
Analyst							
AKL							
Date Complete							
05/27/98							
Analysis Date							
05/26/98							
Analysis Time							
10:15 AM							
Sample Point							
AN-101 GRAB1							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL =	< 1.03E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error =	100.0%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241 1.03E-05
Cm 243/244 µCi/mL	< 1.03E-05	
Relative Counting Error =	100.0%	Cm 243/244 1.03E-05
Am 243 Tracer Recovery =	65.3%	

Analyst:		AKL	Date:	05/27/98
Signature of Chemist:	John Relyea	JFR	Date:	28 May 98

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0)) LIQUID / SO

							SAMPLE
Type	Date Counted		MAY-26-98	Am 241 AEA Frac.		(C241)	0
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.		(C243)	0.908
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.		(Cm)	0
24151	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			1923
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)		(TC)	30
@AM24101	Tracer Book No.		140B43	Background in cpm		(Bkg)	0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	1034	Am 241 cpm			0
LIQUID	Detector Number		13	Am 243 cpm			39.59
Batch Number	Detector Efficiency	(DetEff)	0.3166	Cm 243/244 cpm			0
98002600				AEA Count Time		(min)	480
Rerun				Am 241 µCi/L =		<	5.7911E-03
0				Cm 243/244 µCi/L =		<	5.7911E-03
Sample Prep							
N/A							
Sample Number							
S98T001365							
Instrument Code							
WB27810							
Prepared By							
VAR							
Chemist							
JFR							
Analyst							
AKL							
Date Complete							
05/27/98							
Analysis Date							
05/26/98							
Analysis Time							
10:15 AM							
Sample Point							
AN-101 GRAB1							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL	=	< 5.79E-06
Relative Counting Error	=	100.0%

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 µCi/mL		< 5.79E-06
Relative Counting Error	=	100.0%
Am 243 Tracer Recovery	=	88.6%

DETECTION LEVELS in µCi/mL	
Am 241	5.79E-06
Cm 243/244	5.79E-06

Analyst:		AKL	Date:	05/27/98
Signature of Chemist:	John Delyza	JFR	Date:	28 May 98

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0)) LIQUID / SO

Type	Date Counted		MAY-26-98	Am 241 AEA Frac.	(C241)	DUP	0
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.897
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
24151	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			1991
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		140B43	Background in cpm	(Bkg)		0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	1034	Am 241 cpm			0
LIQUID	Detector Number		13	Am 243 cpm			39.91
Batch Number	Detector Efficiency	(DetEff)	0.3166	Cm 243/244 cpm			0
98002600				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =		<	5.7306E-03
0				Cm 243/244 µCi/L =		<	5.7306E-03
Sample Prep							
N/A							

Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
S98T001365	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Instrument Code	
WB27810	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV
VAR	
Chemist	NOTE: Am-241 Result is a LESS THAN Value.
JFR	Am 241 µCi/mL = < 5.73E-06
Analyst	Relative Counting Error = 100.0%
AKL	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.
05/27/98	Cm 243/244 µCi/mL < 5.73E-06
Analysis Date	Relative Counting Error = 100.0%
05/26/98	Am 243 Tracer Recovery = 90.6%
Analysis Time	
10:15 AM	
Sample Point	
AN-101 GRAB1	

DETECTION LEVELS in µCi/mL	
Am 241	5.73E-06
Cm 243/244	5.73E-06

Analyst:		AKL	Date:	05/27/98
Signature of Chemist:	John Relyea	JFR	Date:	28 May 98

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0)) LIQUID / SO

Type	Date Counted		MAY-26-98	Am 241 AEA Frac.	(C241)	SAMPLE	0.104
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.81
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
24151	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			2180
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		140B43	Background in cpm	(Bkg)		0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	1034	Am 241 cpm			5.42
LIQUID	Detector Number		13	Am 243 cpm			42.41
Batch Number	Detector Efficiency	(DetEff)	0.3166	Cm 243/244 cpm			0
98002600				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =			1.1960E-02
0				Cm 243/244 µCi/L =		<	6.4165E-03
Sample Prep							
N/A							
Sample Number							
S98T001366							
Instrument Code							
WB27810							
Prepared By							
VAR							
Chemist							
JFR							
Analyst							
AKL							
Date Complete							
05/27/98							
Analysis Date							
05/26/98							
Analysis Time							
10:15 AM							
Sample Point							
AN-101 GRAB1							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	1.20E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error =	4.1%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 6.42E-06	6.42E-06
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	89.6%	6.42E-06

Analyst:	AKL	Date:	05/27/98
Signature of Chemist: John Relyea	JFR	Date:	28 May 98

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0)) LIQUID / SO

Type	Date Counted		MAY-26-98	Am 241 AEA Frac.	(C241)	DUP	0.109
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.827
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
24151	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			2185
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		140B43	Background in cpm	(Bkg)		0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	1034	Am 241 cpm			5.92
LIQUID	Detector Number		13	Am 243 cpm			45.1
Batch Number	Detector Efficiency	(DetEff)	0.3166	Cm 243/244 cpm			0
98002600				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =			1.2278E-02
0				Cm 243/244 µCi/L =		<	6.1413E-03
Sample Prep							
N/A							
Sample Number							
S98T001366							
Instrument Code							
WB27810							
Prepared By							
VAR							
Chemist							
JFR							
Analyst							
AKL							
Date Complete							
05/27/98							
Analysis Date							
05/26/98							
Analysis Time							
10:15 AM							
Sample Point							
AN-101 GRAB1							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	1.23E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	3.9%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241 6.14E-06
Cm 243/244 µCi/mL		< 6.14E-06	
Relative Counting Error	=	100.0%	Cm 243/244 6.14E-06
Am 243 Tracer Recovery	=	91.7%	

Analyst:		AKL	Date:	05/27/98
Signature of Chemist:	John Relyea	JFR	Date:	28 May 98

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM7

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0)) LIQUID / SO

Type	Date Counted		MAY-26-98	Am 241 AEA Frac.	(C241)	SAMPLE	0.116
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.791
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
24151	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			2110
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		140B43	Background in cpm	(Bkg)		0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	1034	Am 241 cpm			6.18
LIQUID	Detector Number		13	Am 243 cpm			42.17
Batch Number	Detector Efficiency	(DetEff)	0.3166	Cm 243/244 cpm			0
98002600				AEA Count Time	(min)		480
Retrin				Am 241 µCi/L =			1.3661E-02
0				Cm 243/244 µCi/L =		<	6.9524E-03
Sample Plan							
N/A							

Sample Number: S98T001367

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Instrument Code: WB27810

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Prepared By: VAR

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist: JFR

Am 241 µCi/mL	=	1.37E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	3.9%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/mL		< 6.95E-06	6.95E-06
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	84.7%	6.95E-06

Analyst: AKL

Analyst: AKL

Date Complete: 05/27/98

Analysis Date: 05/26/98

Analysis Time: 10:15 AM

Sample Point: AN-101 GRAB1

Analyst:	AKL	Date:	05/27/98
Signature of Chemist: John Relyea	JFR	Date:	28 May 98

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP8

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0)) LIQUID / SO

Type	Date Counted		MAY-26-98	Am 241 AEA Frac.	(C241)		0.096
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)		0.667
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)		0
24151	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			1883
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)		30
@AM24101	Tracer Book No.		140B43	Background in cpm	(Bkg)		0.23
Matrix	Am-243 Tracer Value	(dpm/mL)	1034	Am 241 cpm			5.39
LIQUID	Detector Number		13	Am 243 cpm			37.37
Batch Number	Detector Efficiency	(DetEff)	0.3166	Cm 243/244 cpm			0
98002600				AEA Count Time	(min)		480
Rerun				Am 241 µCi/L =			1.3407E-02
0				Cm 243/244 µCi/L =		<	1.0961E-02
Sample Prep							
N/A							
Sample Number							
S98T001367							
Instrument Code							
WB27810							
Prepared By							
VAR							
Chemist							
JFR							
Analyst							
AKL							
Date Complete							
05/27/98							
Analysis Date							
05/26/98							
Analysis Time							
10:15 AM							
Sample Point							
AN-101 GRAB1							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	1.34E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error =	4.1%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 1.10E-05	1.10E-05
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	63.7%	1.10E-05

Analyst:		AKL	Date:	05/27/98
Signature of Chemist:	John Relyea	JFR	Date:	28 May 98

SAMPLE.WB1 REV 1.2 953103ML

222-S Analytical Laboraratory
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
S98T001366-SAM-A
File ID: 13a1371.CNF

Counted on: 5/26/98 @22:27
Detector: AEA13
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	183.3	183.3	300.917	300.917	12.000	6.058	6.000	3.240
2	1570.9	1570.9	255.120	255.119	12.000	4.375	6.000	2.316

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	~~Pu238~~	0.104	5.487	5.470	0.0170	0.03	5.42	3.8	30.4	0.137E-04
	Am241		5.479	5.470	0.009				23.3	0.105E-04
2	Am243	0.810	5.266	5.260	0.0060	0.02	42.41	1.4	172.7	0.778E-04
		---					---			
Totals:		0.914	<--valid peaks only-->				47.83			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.441
Efficiency = 0.2481 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25130.0	100.000
Smoothed	25130.0	100.000
Composite fit	22962.7	91.376
Residuals	2167.3	8.624

Analyzed by: _____
GL

Spectrum 13a1371.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9918.2

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Raw Data Dump for AEA Spectrum: 13a1371.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	1.	2.	2.	1.	1.	1.	1.	1.
21	0.	0.	0.	1.	4.	1.	2.	0.	2.	1.
31	1.	2.	2.	1.	0.	1.	2.	1.	1.	0.
41	1.	0.	0.	1.	3.	1.	3.	2.	4.	0.
51	0.	1.	2.	0.	2.	3.	1.	0.	0.	1.
61	1.	1.	0.	2.	0.	1.	2.	4.	1.	3.
71	2.	2.	2.	2.	2.	2.	2.	3.	3.	4.
81	0.	1.	2.	1.	3.	1.	3.	2.	3.	2.
91	1.	1.	3.	3.	4.	1.	2.	1.	2.	6.
101	0.	5.	3.	8.	2.	3.	4.	2.	3.	3.
111	0.	3.	3.	2.	3.	0.	1.	4.	1.	3.
121	4.	1.	4.	5.	1.	7.	2.	1.	2.	2.
131	4.	4.	5.	5.	3.	2.	4.	6.	5.	6.
141	2.	5.	5.	7.	7.	4.	3.	3.	8.	4.
151	4.	5.	5.	4.	6.	3.	7.	5.	5.	9.
161	4.	6.	9.	6.	1.	8.	8.	7.	4.	10.
171	7.	7.	13.	9.	10.	14.	6.	11.	6.	9.
181	8.	12.	8.	8.	11.	12.	7.	12.	7.	14.
191	13.	10.	11.	16.	11.	13.	13.	11.	15.	13.
201	12.	14.	17.	8.	16.	22.	15.	25.	21.	25.
211	16.	24.	29.	21.	20.	24.	24.	27.	28.	34.
221	36.	45.	44.	27.	39.	46.	43.	57.	55.	55.
231	63.	76.	89.	107.	122.	126.	131.	127.	160.	196.
241	230.	272.	341.	404.	461.	519.	637.	720.	838.	984.
251	1181.	1378.	1469.	1668.	1825.	1808.	1577.	1107.	600.	305.
261	214.	130.	124.	134.	112.	96.	99.	116.	85.	64.
271	63.	39.	28.	16.	10.	6.	6.	5.	11.	10.
281	11.	13.	17.	18.	15.	20.	27.	34.	42.	56.
291	70.	57.	86.	93.	106.	132.	141.	158.	180.	204.
301	207.	211.	171.	123.	87.	57.	43.	32.	33.	30.
311	22.	20.	11.	12.	2.	1.	0.	0.	0.	0.
321	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	2.	1.	0.
341	0.	0.	0.	0.	0.	1.	0.	2.	0.	0.
351	1.	1.	0.	1.	0.	0.	1.	1.	3.	3.
361	5.	2.	5.	0.	5.	5.	6.	4.	9.	9.
371	6.	3.	2.	3.	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.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	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.								

222-S Analytical Laboraratory

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
S98T001366-DUP-A
File ID: 14a1460.CNF

Counted on: 5/26/98 @22:28
Detector: AEA14
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	195.0	195.0	300.478	300.478	14.000	6.653	7.000	3.605
2	1509.9	1509.9	254.794	254.794	12.000	5.230	6.000	2.467
3	10.7	10.7	188.810	188.721	66.000	1.000	33.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	~~Pu238~~	0.109	5.487	5.472	0.015	0.03	5.92	3.7	32.8	0.148E-04
	Am241		5.479	5.472	0.007				25.1	0.113E-04
2	Am243	0.827	5.266	5.261	0.005	0.02	45.10	1.3	181.9	0.819E-04
3	JAR 27 may 98	0.016		4.958		0.00	0.86	9.7	3.4	0.154E-05
Totals:		0.952	<--valid peaks only-->				51.87			

DETECTOR CALIBRATION
Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.445
Efficiency = 0.2505 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26170.0	100.000
Smoothed	26170.0	100.000
Composite fit	24902.8	95.158
Residuals	1267.2	4.842

Analyzed by: _____
GL

Spectrum 14a1460.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10202.8

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Raw Data Dump for AEA Spectrum: 14a1460.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	1.	0.	0.	3.	1.
21	0.	0.	0.	1.	1.	1.	2.	1.	1.	0.
31	1.	0.	1.	0.	2.	1.	2.	0.	0.	0.
41	2.	1.	2.	1.	2.	1.	0.	1.	0.	1.
51	1.	1.	2.	1.	0.	2.	1.	0.	3.	1.
61	2.	0.	2.	2.	0.	2.	0.	3.	2.	0.
71	3.	2.	1.	0.	0.	1.	2.	0.	0.	4.
81	2.	0.	1.	1.	2.	3.	3.	8.	0.	2.
91	2.	0.	2.	0.	1.	1.	2.	2.	3.	0.
101	1.	0.	1.	2.	2.	1.	2.	1.	2.	3.
111	3.	1.	0.	2.	3.	1.	2.	1.	1.	1.
121	3.	2.	3.	2.	2.	0.	1.	3.	2.	3.
131	2.	1.	2.	4.	1.	3.	2.	0.	2.	6.
141	3.	2.	2.	2.	3.	0.	5.	3.	2.	6.
151	6.	1.	3.	3.	6.	3.	4.	5.	3.	3.
161	2.	5.	4.	4.	6.	3.	2.	3.	6.	8.
171	7.	4.	8.	7.	6.	7.	4.	11.	5.	5.
181	6.	9.	6.	6.	16.	6.	13.	12.	9.	14.
191	10.	8.	9.	6.	10.	10.	11.	7.	14.	12.
201	14.	16.	17.	17.	16.	15.	18.	25.	17.	16.
211	23.	20.	28.	27.	27.	18.	25.	33.	23.	33.
221	25.	27.	32.	37.	61.	47.	49.	47.	66.	63.
231	75.	93.	103.	108.	120.	129.	135.	195.	214.	229.
241	294.	310.	361.	478.	596.	623.	738.	886.	1009.	1110.
251	1312.	1385.	1495.	1658.	1691.	1640.	1460.	1072.	594.	303.
261	204.	156.	153.	134.	146.	106.	118.	96.	91.	68.
271	47.	30.	21.	23.	15.	6.	9.	8.	8.	6.
281	13.	16.	21.	19.	20.	24.	44.	44.	57.	66.
291	89.	63.	92.	81.	111.	143.	158.	165.	209.	233.
301	228.	195.	157.	137.	79.	77.	41.	44.	37.	27.
311	29.	19.	10.	7.	3.	1.	1.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
331	1.	1.	0.	1.	0.	0.	0.	1.	2.	1.
341	0.	0.	1.	2.	0.	0.	0.	0.	3.	2.
351	1.	0.	1.	0.	2.	3.	6.	1.	1.	1.
361	3.	11.	4.	7.	9.	2.	4.	5.	8.	12.
371	6.	14.	2.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory HNF-1640 REV. 0

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
S98T001367-SAM-A
File ID: 15a1548.CNF

Counted on: 5/26/98 @22:29
Detector: AEA15
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	10.0	10.0	369.266	369.266	8.000	2.763	4.000	1.148
2	238.9	238.9	300.577	300.577	14.000	5.168	7.000	3.523
3	1802.6	1802.6	254.644	254.644	10.000	3.759	5.000	2.527

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.787			0.28	17.0		
2	~~Pu238~~	0.116	5.487	5.471	0.0160	0.02	6.18	3.6	34.7	0.156E-04
	Am241		5.479	5.471	0.008				26.6	0.120E-04
3	Am243	0.791	5.266	5.260	0.0060	0.02	42.17	1.4	172.3	0.776E-04
		---					---			
Totals:		0.907	<--valid peaks only-->				48.35			

JAR 27 May 98

DETECTOR CALIBRATION
Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.444
Efficiency = 0.2473 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25590.0	100.000
Smoothed	25590.0	100.000
Composite fit	23342.3	91.217
Residuals	2247.7	8.783

Analyzed by: GL

Spectrum 15a1548.CNF

1 Legend; Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10918.2

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Raw Data Dump for AEA Spectrum: 15a1548.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	1.	2.	2.	0.	0.	0.
21	2.	1.	2.	1.	0.	0.	0.	1.	1.	1.
31	1.	1.	0.	0.	0.	1.	0.	1.	1.	2.
41	2.	0.	0.	1.	3.	1.	1.	1.	1.	0.
51	1.	0.	2.	0.	1.	1.	2.	0.	0.	1.
61	1.	0.	1.	0.	1.	0.	1.	2.	4.	2.
71	3.	0.	1.	1.	4.	0.	0.	2.	0.	2.
81	2.	1.	0.	1.	1.	1.	1.	4.	1.	1.
91	0.	1.	3.	1.	2.	3.	1.	2.	2.	2.
101	1.	5.	0.	5.	1.	0.	3.	1.	1.	2.
111	2.	6.	1.	5.	1.	0.	2.	0.	1.	5.
121	0.	4.	1.	1.	2.	3.	2.	4.	1.	1.
131	1.	4.	0.	5.	4.	1.	2.	3.	1.	2.
141	3.	6.	2.	3.	1.	4.	4.	2.	5.	4.
151	7.	3.	3.	6.	1.	4.	3.	2.	6.	5.
161	6.	3.	3.	1.	7.	2.	3.	3.	3.	4.
171	7.	4.	4.	1.	7.	4.	3.	6.	7.	8.
181	9.	9.	6.	6.	9.	12.	10.	13.	5.	6.
191	11.	10.	8.	12.	11.	8.	11.	16.	10.	7.
201	8.	7.	10.	5.	9.	17.	9.	8.	20.	13.
211	15.	24.	19.	9.	16.	15.	21.	20.	24.	24.
221	39.	27.	22.	19.	28.	29.	39.	47.	48.	43.
231	66.	81.	57.	97.	87.	99.	114.	124.	142.	162.
241	203.	263.	286.	337.	445.	545.	638.	672.	791.	956.
251	1208.	1482.	1790.	2133.	2260.	1943.	1477.	837.	425.	235.
261	194.	145.	132.	127.	108.	124.	118.	99.	66.	57.
271	45.	44.	21.	15.	7.	7.	6.	8.	10.	13.
281	9.	14.	17.	22.	18.	25.	26.	42.	35.	61.
291	59.	78.	100.	74.	106.	127.	161.	213.	244.	305.
301	272.	272.	192.	106.	86.	71.	46.	60.	31.	35.
311	27.	24.	13.	12.	3.	1.	1.	1.	0.	0.
321	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
331	0.	0.	0.	0.	1.	1.	0.	1.	0.	0.
341	0.	0.	2.	0.	0.	1.	2.	0.	0.	0.
351	1.	0.	2.	0.	1.	4.	1.	1.	3.	5.
361	10.	5.	7.	4.	9.	9.	11.	7.	5.	17.
371	7.	7.	4.	0.	0.	0.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	1.	1.	0.	1.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	1.	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 Laboraratory
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
S98T001367-DUP-A
File ID: 16a1660.CNF

Counted on: 5/26/98 @22:31
Detector: AEA16
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	151.6	151.6	300.171	300.171	10.000	5.910	5.000	2.090
2	1101.9	1101.9	254.095	254.093	12.000	4.341	6.000	1.487
3	25.3	25.3	146.499	146.494	168.000	1.000	84.000	0.100
4?	6.8	6.8	106.709	106.427	14.000	2.645	7.000	7.045
5	7.2	7.2	96.883	96.391	28.000	2.708	14.000	0.136

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	~~Pu238~~	0.096	5.487	5.467	0.020	0.03	5.39	3.9	28.3	0.128E-04
	Am241		5.479	5.467	0.012				21.7	0.978E-05
2	Am243	0.667	5.266	5.255	0.011	0.02	37.37	1.5	142.8	0.643E-04
~~3~~	~~Np237~~	~~0.036~~	~~4.769~~	~~4.760~~	~~0.009~~	~~0.00~~	~~2.00~~	~~6.3~~	~~8.7~~	~~0.391E-05~~
4		????		4.576			0.11	77.2		
5		~~0.015~~		~~4.530~~		~~0.01~~	~~0.85~~	~~12.9~~	~~3.2~~	~~0.145E-05~~
Totals:		0.815	<--valid peaks only-->				45.61			

JJR
27may98

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.442
Efficiency = 0.2643 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26877.0	100.000
Smoothed	26877.0	100.000
Composite fit	21949.6	81.667
Residuals	4927.4	18.333

Analyzed by: _____
GL

Spectrum 16a1660.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7381.3

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Raw Data Dump for AEA Spectrum: 16a1660.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	3.	6.	6.	7.	2.	7.	4.	4.
21	5.	3.	3.	5.	4.	3.	5.	6.	4.	1.
31	3.	5.	3.	3.	11.	7.	6.	6.	5.	7.
41	8.	10.	3.	3.	4.	5.	5.	6.	7.	7.
51	6.	9.	7.	6.	10.	7.	6.	12.	4.	4.
61	7.	5.	6.	7.	5.	5.	2.	8.	9.	10.
71	8.	9.	11.	7.	4.	13.	9.	8.	7.	10.
81	4.	16.	14.	14.	16.	7.	9.	14.	13.	12.
91	12.	14.	11.	9.	13.	11.	15.	16.	10.	10.
101	11.	14.	12.	6.	7.	18.	11.	17.	7.	8.
111	11.	14.	12.	19.	8.	9.	20.	11.	17.	13.
121	9.	22.	17.	9.	24.	14.	12.	19.	14.	17.
131	20.	12.	16.	15.	20.	20.	17.	14.	24.	31.
141	16.	18.	23.	19.	18.	28.	24.	24.	19.	17.
151	14.	20.	32.	23.	29.	24.	22.	43.	27.	27.
161	35.	34.	24.	39.	26.	31.	28.	36.	30.	31.
171	33.	32.	34.	31.	41.	35.	39.	29.	46.	40.
181	42.	48.	51.	43.	53.	58.	46.	40.	57.	51.
191	50.	64.	64.	68.	52.	59.	63.	70.	78.	66.
201	74.	71.	88.	62.	84.	75.	95.	82.	85.	93.
211	103.	86.	107.	121.	105.	120.	115.	144.	131.	128.
221	135.	137.	131.	153.	159.	168.	185.	167.	186.	181.
231	183.	215.	203.	222.	254.	257.	245.	299.	299.	320.
241	341.	379.	425.	477.	520.	564.	593.	634.	699.	758.
251	872.	1033.	1172.	1296.	1261.	1113.	738.	408.	229.	179.
261	113.	110.	97.	87.	90.	83.	76.	75.	65.	51.
271	55.	42.	24.	24.	28.	18.	27.	20.	27.	33.
281	35.	29.	31.	38.	50.	50.	50.	49.	44.	60.
291	80.	88.	98.	80.	90.	121.	116.	137.	175.	159.
301	182.	157.	113.	53.	39.	47.	34.	44.	27.	23.
311	12.	10.	8.	10.	2.	1.	0.	0.	1.	0.
321	1.	0.	2.	0.	1.	1.	1.	1.	1.	0.
331	0.	0.	3.	0.	0.	1.	0.	0.	0.	2.
341	2.	1.	2.	4.	0.	1.	2.	1.	1.	1.
351	4.	1.	4.	2.	3.	3.	6.	1.	6.	2.
361	2.	5.	5.	3.	2.	6.	5.	7.	7.	8.
371	4.	2.	2.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	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.								

222-S Analytical Laboraratory
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
WL24151-STD-AM
File ID: 9a9133.CNF

Counted on: 5/26/98 @22:23
Detector: AEA9
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	2485.2	2485.2	299.313	299.313	12.000	5.391	6.000	1.995
2	1203.4	1203.4	253.295	253.262	12.000	6.218	6.000	2.069
3	36.8	36.8	131.348	131.341	198.000	1.000	99.000	0.100
4?	7.2	7.2	120.759	120.085	6.000	0.312	3.000	0.144
5?	12.7	12.7	98.490	94.352	30.000	19.772	15.000	15.357
6?	14.0	14.0	65.685	67.104	34.000	20.127	17.000	17.380
7?	6.7	6.7	63.979	63.979	10.000	0.000	5.000	0.000
8?	8.3	8.3	24.158	24.005	10.000	15.726	5.000	12.343

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	~~Pu238~~	0.551	5.487	5.472	0.0150	02	84.44	1.0	486.0	0.219E-03
	Am241		5.479	5.472	0.007				372.3	0.168E-03
2	Am243	0.292	5.266	5.260	0.006	03	44.76	1.4	187.4	0.844E-04
3		0.019		4.699	0.00		2.89	5.3	12.0	0.539E-05
4		????		4.648			0.14	99.3		
5		????		4.529			0.56	26.2		
6		????		4.404			0.63	19.4		
7		????		4.390			0.56	17.3		
8		????		4.206			0.33	25.8		
Totals:		0.862	<--valid peaks only-->				132.08			

JAR 27May98

DETECTOR CALIBRATION
Energy(MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.451
Efficiency = 0.2413 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	73576.0	100.000
Smoothed	73576.0	100.000

Composite fit	64469.5	87.623
Residuals	9106.5	12.377

Analyzed by: _____
GL

Spectrum 9a9133.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 16265.6

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Raw Data Dump for AEA Spectrum: 9a9133.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	1.	16.	8.	6.	11.	17.	13.	10.
21	8.	10.	12.	15.	17.	11.	8.	7.	10.	15.
31	9.	23.	10.	16.	15.	7.	13.	7.	13.	14.
41	9.	8.	14.	27.	13.	15.	8.	10.	15.	19.
51	17.	13.	13.	16.	13.	18.	23.	16.	22.	22.
61	10.	19.	19.	17.	25.	12.	22.	19.	17.	17.
71	17.	15.	21.	15.	15.	11.	18.	19.	21.	16.
81	19.	24.	17.	20.	13.	23.	13.	16.	21.	34.
91	24.	24.	28.	23.	30.	23.	23.	27.	25.	30.
101	19.	25.	25.	23.	25.	15.	25.	20.	25.	23.
111	23.	31.	29.	30.	27.	21.	24.	26.	25.	47.
121	36.	28.	29.	32.	26.	32.	38.	33.	41.	34.
131	33.	37.	40.	28.	37.	35.	24.	32.	41.	42.
141	34.	39.	32.	46.	36.	41.	34.	43.	32.	45.
151	45.	38.	46.	37.	49.	56.	45.	48.	59.	37.
161	39.	47.	50.	52.	54.	52.	46.	56.	41.	54.
171	53.	60.	50.	69.	58.	60.	68.	72.	77.	71.
181	71.	82.	80.	83.	70.	83.	89.	79.	70.	89.
191	78.	97.	99.	107.	91.	110.	99.	104.	94.	117.
201	101.	116.	119.	104.	122.	159.	118.	121.	101.	147.
211	148.	116.	145.	160.	163.	160.	154.	166.	149.	210.
221	185.	179.	203.	214.	230.	211.	234.	240.	235.	253.
231	290.	273.	261.	314.	329.	287.	354.	364.	328.	404.
241	466.	506.	502.	582.	602.	603.	655.	718.	808.	967.
251	1131.	1283.	1419.	1476.	1247.	926.	563.	368.	343.	353.
261	317.	291.	324.	301.	311.	344.	319.	341.	330.	331.
271	324.	298.	366.	380.	396.	380.	431.	479.	465.	517.
281	503.	583.	556.	604.	665.	734.	778.	916.	990.	1050.
291	1181.	1262.	1328.	1496.	1680.	1883.	2204.	2657.	2888.	2992.
301	2510.	1891.	1190.	743.	610.	501.	443.	377.	301.	243.
311	201.	121.	90.	48.	17.	8.	3.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	2.	3.	1.	1.	0.	1.
351	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
361	0.	0.	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.	1.	1.	0.	0.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory
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
WL24151-BLK-AM
File ID: 10a1031.CNF

Counted on: 5/26/98 @22:24
Detector: AEA10
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1000.5	1000.5	253.278	253.278	12.000	3.978	6.000	1.653
2	35.3	35.3	160.287	160.283	138.000	1.000	69.000	0.100
3	8.6	8.6	113.258	112.482	26.000	27.009	13.000	13.835
4?	4.2	4.2	109.951	109.951	12.000	0.000	6.000	5.196

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.695	5.266	5.253	0.013	0.02	29.78	1.6	128.5	0.579E-04
2		~~0.066~~		~~4.826~~		~~0.00~~	~~2.81~~	~~5.3~~	~~12.0~~	~~0.540E-05~~
3	~~Np237~~	~~0.011~~	~~4.640~~	~~4.606~~	~~0.034~~	~~0.12~~	~~0.46~~	~~28.3~~	~~32.6~~	~~0.147E-04~~
4		????		4.594			0.00	*****		
Totals:		0.772	<--valid peaks only-->				33.04			

JTR 27 may 98

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.2341 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20559.0	100.000
Smoothed	20559.0	100.000
Composite fit	15864.1	77.164
Residuals	4694.9	22.836

Analyzed by: _____
GL

Spectrum 10a1031.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 6728.4

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Raw Data Dump for AEA Spectrum: 10a1031.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	3.	6.	9.	5.	3.	4.	9.	6.
21	10.	7.	5.	3.	10.	9.	2.	7.	10.	6.
31	10.	4.	7.	12.	8.	5.	6.	7.	8.	5.
41	7.	5.	7.	6.	8.	9.	6.	6.	7.	10.
51	7.	8.	17.	2.	7.	7.	8.	7.	12.	10.
61	4.	9.	14.	11.	7.	17.	3.	12.	6.	7.
71	9.	15.	9.	3.	7.	4.	7.	15.	10.	21.
81	11.	8.	11.	11.	11.	17.	10.	15.	14.	13.
91	17.	9.	15.	7.	18.	11.	13.	21.	9.	18.
101	12.	16.	12.	20.	16.	15.	8.	16.	17.	20.
111	11.	14.	20.	19.	14.	14.	13.	12.	19.	17.
121	21.	15.	13.	21.	18.	27.	14.	14.	17.	20.
131	20.	17.	15.	18.	18.	17.	22.	25.	24.	17.
141	19.	19.	21.	21.	29.	20.	22.	20.	16.	27.
151	20.	26.	25.	28.	25.	23.	33.	28.	27.	34.
161	32.	32.	21.	27.	25.	24.	26.	33.	29.	46.
171	36.	31.	28.	40.	30.	39.	40.	44.	41.	41.
181	47.	43.	46.	29.	43.	52.	41.	57.	55.	50.
191	46.	38.	59.	58.	42.	60.	48.	55.	56.	56.
201	71.	54.	61.	52.	73.	82.	80.	59.	80.	96.
211	87.	74.	79.	100.	76.	95.	86.	98.	117.	101.
221	98.	98.	115.	91.	118.	122.	133.	141.	133.	152.
231	155.	162.	153.	189.	159.	195.	198.	201.	197.	243.
241	295.	325.	358.	350.	390.	485.	523.	554.	606.	784.
251	945.	1041.	1168.	1209.	1032.	733.	393.	193.	121.	77.
261	74.	93.	68.	56.	62.	60.	44.	43.	28.	21.
271	14.	10.	3.	1.	0.	1.	2.	1.	0.	0.
281	2.	3.	3.	1.	0.	3.	6.	4.	2.	4.
291	5.	4.	2.	1.	2.	2.	11.	6.	7.	8.
301	6.	4.	2.	2.	1.	0.	0.	0.	0.	2.
311	3.	0.	0.	0.	1.	0.	0.	1.	0.	1.
321	1.	0.	1.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
341	0.	0.	2.	0.	2.	1.	0.	2.	0.	1.
351	0.	0.	0.	1.	1.	2.	1.	1.	1.	1.
361	1.	0.	0.	0.	0.	0.	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.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	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.								

222-S Analytical Laboraratory
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
S98T001365-SAM-A
File ID: 11a1130.CNF

Counted on: 5/26/98 @22:25
Detector: AEA11
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1358.3	1358.3	253.776	253.776	12.000	4.504	6.000	2.060

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.908	5.266	5.266	0.000	0.02	39.59	1.4	167.4	0.754E-04
Totals:		0.908	<--valid peaks only-->				39.59			

DETECTOR CALIBRATION
Energy(MEV) = 4.098 + (0.0046)*Channel
Energy range (MeV): 4.098 TO 6.454
Efficiency = 0.2389 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20931.0	100.000
Smoothed	20931.0	100.000
Composite fit	19006.0	90.803
Residuals	1925.0	9.197

Analyzed by: _____
GL

Spectrum 11a1130.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9327.3

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Raw Data Dump for AEA Spectrum: 11a1130.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
21	0.	1.	0.	0.	0.	2.	0.	1.	0.	1.
31	0.	1.	0.	1.	0.	1.	1.	0.	1.	2.
41	0.	0.	1.	1.	1.	1.	3.	1.	3.	1.
51	2.	1.	1.	1.	0.	1.	1.	1.	1.	0.
61	1.	0.	2.	1.	2.	2.	1.	1.	1.	0.
71	0.	1.	1.	1.	1.	2.	1.	1.	4.	0.
81	1.	4.	2.	1.	2.	2.	0.	1.	0.	1.
91	1.	0.	0.	2.	3.	4.	4.	2.	3.	2.
101	1.	2.	1.	3.	1.	0.	3.	2.	0.	0.
111	1.	4.	1.	0.	2.	2.	1.	1.	0.	4.
121	4.	2.	1.	1.	2.	4.	0.	2.	7.	1.
131	3.	0.	1.	4.	1.	4.	3.	7.	3.	4.
141	3.	1.	2.	1.	2.	3.	1.	6.	4.	4.
151	1.	5.	7.	4.	4.	0.	3.	3.	7.	5.
161	3.	4.	2.	7.	7.	5.	5.	6.	5.	5.
171	6.	4.	9.	8.	9.	7.	12.	7.	6.	10.
181	7.	3.	11.	15.	13.	7.	7.	7.	13.	11.
191	11.	11.	13.	17.	10.	14.	13.	22.	14.	18.
201	18.	17.	19.	17.	23.	21.	18.	34.	23.	23.
211	29.	29.	29.	32.	29.	29.	34.	36.	43.	39.
221	43.	44.	52.	63.	71.	55.	61.	75.	90.	86.
231	85.	116.	109.	122.	146.	134.	194.	198.	223.	266.
241	340.	390.	440.	495.	565.	653.	716.	846.	926.	1091.
251	1198.	1356.	1486.	1540.	1530.	1283.	845.	409.	228.	134.
261	140.	114.	109.	85.	99.	94.	70.	75.	48.	38.
271	19.	19.	7.	3.	3.	2.	2.	1.	1.	0.
281	0.	1.	1.	3.	2.	2.	1.	1.	4.	2.
291	3.	9.	6.	6.	5.	12.	5.	7.	8.	12.
301	5.	10.	8.	1.	5.	2.	4.	3.	1.	1.
311	4.	1.	2.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
351	0.	0.	1.	0.	1.	0.	0.	0.	0.	3.
361	2.	0.	0.	1.	0.	0.	0.	0.	0.	2.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	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 Laboraratory
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
S98T001365-DUP-A
File ID: 12a1216.CNF

Counted on: 5/26/98 @22:26
Detector: AEA12
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	10.5	10.5	297.333	297.333	8.000	4.850	4.000	2.058
2	1414.8	1414.8	251.597	251.597	10.000	4.626	5.000	2.298

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.483			0.32	15.8		
2	Am243	0.897	5.266	5.268	-.0020.02		39.91	1.4	172.3	0.776E-04
Totals:		0.897	<--valid peaks only-->				39.91			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0047)*Channel
Energy range (MeV): 4.085 TO 6.492
Efficiency = 0.2340 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21365.0	100.000
Smoothed	21365.0	100.000
Composite fit	19315.2	90.406
Residuals	2049.8	9.594

Analyzed by: _____
GL

Spectrum 12a1216.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9398.2

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Raw Data Dump for AEA Spectrum: 12a1216.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	1.	0.	2.	0.
31	1.	2.	0.	0.	1.	1.	0.	2.	0.	0.
41	1.	1.	1.	1.	0.	1.	0.	0.	2.	2.
51	1.	1.	0.	1.	1.	0.	1.	1.	0.	0.
61	1.	0.	3.	1.	1.	1.	2.	1.	0.	3.
71	2.	0.	1.	0.	2.	2.	1.	2.	3.	3.
81	1.	2.	3.	2.	2.	0.	4.	2.	2.	2.
91	1.	2.	1.	3.	0.	1.	3.	2.	4.	1.
101	0.	4.	2.	2.	1.	2.	1.	2.	2.	2.
111	1.	3.	3.	2.	1.	3.	4.	4.	5.	1.
121	1.	6.	2.	5.	3.	9.	2.	2.	1.	4.
131	1.	3.	1.	6.	4.	3.	1.	5.	2.	7.
141	5.	8.	5.	3.	6.	6.	7.	3.	1.	7.
151	4.	7.	3.	7.	5.	3.	9.	7.	8.	7.
161	3.	6.	8.	7.	3.	3.	9.	6.	8.	10.
171	16.	7.	10.	11.	7.	8.	13.	8.	13.	9.
181	7.	12.	12.	10.	12.	12.	8.	7.	11.	13.
191	23.	10.	14.	11.	16.	27.	21.	20.	26.	18.
201	16.	16.	18.	25.	14.	30.	19.	30.	24.	26.
211	33.	22.	31.	31.	24.	33.	34.	45.	38.	48.
221	51.	67.	55.	54.	66.	69.	89.	96.	99.	93.
231	95.	114.	152.	153.	164.	197.	201.	259.	265.	361.
241	411.	454.	578.	675.	753.	884.	1024.	1142.	1292.	1464.
251	1540.	1632.	1527.	1302.	794.	413.	248.	149.	128.	121.
261	105.	86.	107.	76.	74.	67.	43.	36.	24.	16.
271	5.	6.	0.	2.	0.	2.	1.	0.	0.	2.
281	1.	2.	1.	3.	2.	1.	6.	5.	9.	2.
291	3.	12.	7.	5.	13.	11.	12.	9.	16.	6.
301	5.	3.	1.	3.	2.	0.	0.	1.	0.	1.
311	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
351	0.	0.	1.	0.	2.	0.	0.	0.	0.	1.
361	0.	0.	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.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 24155

Analyst: akl **Instrument:** AB18 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: AN-101 PU239 STD=1.0 mL lad

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@PU23901	PU23901	LIQUID	1.12E-04	1.27E-4	113.393	% Recovery
1	STD			0	@PU23901	PU23901E	LIQUID	1.00	1.86E+00	1.860	% Ct Error
1	STD			0	@PU23901	PU23901T	LIQUID	100	9.00E+01	90.000	% Recovery
2	BLNK			0	@PU23901	PU23901	LIQUID	1	<3.41E-6		uCi/mL
2	BLNK			0	@PU23901	PU23901T	LIQUID	100	8.90E+01	89.000	% Recovery
2	BLNK			0	@PU23901	PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3	SAMPLE	S98T001365		0	@PU23901	PU23901	LIQUID	N/A	8.27E-06	3.98e-006	uCi/mL
3	SAMPLE	S98T001365		0	@PU23901	PU23901T	LIQUID	N/A	8.21E+01		% Recovery
3	SAMPLE	S98T001365		0	@PU23901	PU23901E	LIQUID	N/A	5.35E+00		% Ct. Error
4	DUP	S98T001365		0	@PU23901	PU23901	LIQUID	8.27E-6	8.65E-6	4.492	RPD
4	DUP	S98T001365		0	@PU23901	PU23901T	LIQUID	100	8.70E+01	87.000	% Recovery
4	DUP	S98T001365		0	@PU23901	PU23901E	LIQUID	1.00	5.15E+00	5.150	% Ct Error
5	SAMPLE	S98T001366		0	@PU23901	PU23901	LIQUID	N/A	5.82E-05	5.67e-006	uCi/mL
5	SAMPLE	S98T001366		0	@PU23901	PU23901T	LIQUID	N/A	9.23E+01		% Recovery
5	SAMPLE	S98T001366		0	@PU23901	PU23901E	LIQUID	N/A	2.32E+00		% Ct. Error
6	DUP	S98T001366		0	@PU23901	PU23901	LIQUID	5.82E-5	5.79E-5	0.517	RPD
6	DUP	S98T001366		0	@PU23901	PU23901T	LIQUID	100	8.49E+01	84.900	% Recovery
6	DUP	S98T001366		0	@PU23901	PU23901E	LIQUID	1.00	2.33E+00	2.330	% Ct Error
7	SAMPLE	S98T001367		0	@PU23901	PU23901	LIQUID	N/A	6.54E-05	6.41e-006	uCi/mL
7	SAMPLE	S98T001367		0	@PU23901	PU23901T	LIQUID	N/A	8.62E+01		% Recovery
7	SAMPLE	S98T001367		0	@PU23901	PU23901E	LIQUID	N/A	2.26E+00		% Ct. Error
8	DUP	S98T001367		0	@PU23901	PU23901	LIQUID	6.54E-5	6.62E-5	1.216	RPD
8	DUP	S98T001367		0	@PU23901	PU23901T	LIQUID	100	8.16E+01	81.600	% Recovery
8	DUP	S98T001367		0	@PU23901	PU23901E	LIQUID	1.00	2.32E+00	2.320	% Ct Error

Final page for worklist# 24155

Analyst Signature Date

Analyst Signature Date

John Relyea 28 May 98
Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 24155

Analyst: AKL **Instrument:** PU01 #18 **Book#** 24B57

Method: LA-953-104 Rev/Mod B-0

Worklist Comment: AN-101 PU239 STD=1.0 mL lad Sample size by Ludlum

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S98T001365	0		@PU23901	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S98T001365	0		@PU23901	LIQUID		
5	SAMPLE	S98T001366	0		@PU23901	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: PU23901 , PU23901E, PU23901T						
6	DUP	S98T001366	0		@PU23901	LIQUID		
7	SAMPLE	S98T001367	0		@PU23901	LIQUID	98000238	AN-101 GRAB1
		Analytes Requested: PU23901 , PU23901E, PU23901T						
8	DUP	S98T001367	0		@PU23901	LIQUID		

Final page for worklist # 24155

Alita Hurson 5/26/98
Analyst Signature **Date**

N E Wright 5/27/98
Analyst Signature **Date**

U Raymond 5-27-98

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) LIQUID

Type	DATE COUNTED		MAY-26-98	PU 236 AEA FRAC	(C236)	0.392
STD	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.531
24155	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		3861
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cpm	(Bkg)	0.070
Matrix	DETECTOR NUMBER		18	PU 236 cpm		40.160
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm		54.360
98002603	TRACER PREPARATION VALUE (dpm/mL)		2270.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2085.927	Pu 239/240 µCi/L		1.2728E-01
0	PU-238 TRACER VALUE	(dpm/mL)	0.000			
Sample Prep	STANDARD BOOK NO		28B57			
N/A	STANDARD VALUE in µCi/mL		1.120E-04			
Sample #						
WL#24155-STD						
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date					
WB27809	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}					
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)* 1/EFF *C236*100/Pu-236 Decay Corr'd Value * SPKV					
NEW	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]					
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)					
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]					
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100					
AKL						
Date Complete						
05/27/98	Pu 239/240 µCi/mL		1.27E-04			
Analysis Date	Relative Counting Error	=	1.9%			
05/26/98						
Analysis Time						
10:15 AM						
Sample Point						
AN-101 GRAB1	Pu 236 Tracer Recovery	=	90.0%			

DETECTION LEVELS in µCi/mL
Pu 239/240
7.99E-06

Analyst:	AKL	Date:	27-May-98	
Signature of Chemist:	John Belyea JFR	Date:	28 May 98	

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) L

Type	DATE COUNTED		MAY-26-98	PU 236 AEA FRAC	(C236)	0.928
BLNK	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.013
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.000
24155	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		1614
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cp	(Bkg)	0.070
Matrix	DETECTOR NUMBER		18	PU 236 cpm		41.050
LIQUID	EFFICIENCY FACTOR	EFF	0.2686	PU 238 cpm		0.560
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm		0.000
98002603	TRACER PREPARATION VALUE	(dpm/mL)	2270.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2085.93	Pu 239/240 µCi/L =	<	3.413E-03
0	PU-238 TRACER VALUE	(dpm/mL	0.00			

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
WL#24155-BLK	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
WB27809	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
NEW	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
AKL	
Date Complete	

05/27/98	Pu 239/240 µCi/mL		< 3.41E-06	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	100.0%	
05/26/98				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
10:15 AM	Pu 238 µCimL		< 3.41E-06	3.41E-06
Sample Point	Relative Counting Error	=	12.0%	Pu 238
AN-101 GRAB1	Pu 236 Tracer Recovery	=	89.0%	3.41E-06

Analyst:		AKL	Date:	27-May-98
Signature of Chemist:	John Relyea	JFR	Date:	28 May 98

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) LIQUID /

Type	DATE COUNTED		MAY-26-98	PU 236 AEA FRAC	(C236)		SAMPLE
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)		0.863
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.030
24155	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			0.076
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			1602
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cpm	(Bkg)		30
Matrix	DETECTOR NUMBER		18	PU 236 cpm			0.070
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			34.470
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm			1.190
98002603	TRACER PREPARATION VALUE (dpm/mL)		2270.000	AEA COUNT TIME			3.040
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2085.927	Pu 239/240 µCi/L			480
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				8.2746E-03

Pu Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S98T001365	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27809	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
NEW	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
AKL	
Date Complete	
05/27/98	
Analysis Date	
05/26/98	
Analysis Time	
10:15 AM	
Sample Point	
AN-101 GRAB1	

Pu 239/240 µCi/mL		8.27E-06	DETECTION LEVELS in µCi/mL	
Relative Counting Error	=	5.4%		
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240	
Pu 238 µCimL		< 3.98E-06	3.98E-06	
Relative Counting Error	=	8.3%	Pu 238	
Pu 236 Tracer Recovery	=	82.1%	3.98E-06	

Analyst:		AKL	Date:	27-May-98
Signature of Chemist:	John Relyea	JFR	Date:	28 May 98

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) LIQUID /

							DUP
Type	DATE COUNTED		MAY-26-98	PU 236 AEA FRAC		(C236)	0.869
DUP	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC		(C238)	0.027
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.080
24155	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			1684
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cpm		(Bkg)	0.070
Matrix	DETECTOR NUMBER		18	PU 236 cpm			36.000
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			1.120
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm			3.300
98002603	TRACER PREPARATION VALUE (dpm/mL)		2270.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2085.927	Pu 239/240 µCi/L			8.6500E-03
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S98T001365	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27809	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
NEW	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
AKL	
Date Complete	
05/27/98	
Analysis Date	
05/26/98	
Analysis Time	
10:15 AM	
Sample Point	
AN-101 GRAB1	

Pu 239/240 µCi/mL		8.65E-06	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	5.1%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240 3.73E-06
Pu 238 µCimL		< 3.73E-06	
Relative Counting Error	=	8.6%	Pu 238 3.73E-06
Pu 236 Tracer Recovery	=	87.0%	

Analyst:		AKL	Date:	27-May-98
Signature of Chemist:	John Robyca	JFR	Date:	28 May 98

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) LIQUID / SAMPLE

Type	DATE COUNTED		MAY-26-98	PU 236 AEA FRAC	(C236)	0.539
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.096
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.334
24155	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2880
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cpm	(Bkg)	0.070
Matrix	DETECTOR NUMBER		18	PU 236 cpm		38.930
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		6.930
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm		24.140
98002603	TRACER PREPARATION VALUE (dpm/mL)		2270.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2085.927	Pu 239/240 µCi/L		5.8224E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000			

Sample Prep
N/A
Sample #
S98T001366
Instrument Code
WB27809
Prepared By
NEW
Chemist
JFR
Analyst
AKL
Date Complete
05/27/98
Analysis Date
05/26/98
Analysis Time
10:15 AM
Sample Point
AN-101 GRAB1

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL		5.82E-05	DETECTION LEVELS in µCi/mL	
Relative Counting Error	=	2.3%		
			Pu 239/240	
Pu 238 µCimL		1.67E-05	5.67E-06	
Relative Counting Error	=	3.7%	Pu 238	
Pu 236 Tracer Recovery	=	92.3%	5.67E-06	

Analyst:		AKL	Date:	27-May-98
Signature of Chemist:	John Delgza	JFR	Date:	28 May 98

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) LIQUID /

Type	DATE COUNTED		MAY-26-98	PU 236 AEA FRAC	(C236)	DUP	0.542
DUP	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)		0.086
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.334
24155	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2636
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cpm	(Bkg)		0.070
Matrix	DETECTOR NUMBER		18	PU 236 cpm			38.690
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			6.140
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm			23.810
98002603	TRACER PREPARATION VALUE (dpm/mL)		2270.000	AEA COUNT TIME			480
Rerun #	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2085.927	Pu 239/240 µCi/L			5.7902E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				

Sample Prep
N/A
Sample #
S98T001366
Instrument Code
WB27809
Prepared BY
NEW
Chemist
JFR
Analyst
AKL
Date Complete
05/27/98
Analysis Date
05/26/98
Analysis Time
10:15 AM
Sample Point
AN-101 GRAB1

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)}]

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL		5.79E-05	DETECTION LEVELS in µCi/mL	
Relative Counting Error	=	2.3%		
			Pu 239/240	
Pu 238 µCimL		1.49E-05	6.12E-06	
Relative Counting Error	=	3.9%	Pu 238	
Pu 236 Tracer Recovery	=	84.9%	6.12E-06	

Analyst:	AKL	Date:	27-May-98	
Signature of Chemist: John Relyea	JFR	Date:	28 May 98	

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM7

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) LIQUID / SAMPLE

Type	DATE COUNTED		MAY-26-98	PU 236 AEA FRAC	(C236)	0.510
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.095
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.355
24155	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2842
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cpm	(Bkg)	0.070
Matrix	DETECTOR NUMBER		18	PU 236 cpm		38.080
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		7.120
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm		26.500
98002603	TRACER PREPARATION VALUE (dpm/mL)		2270.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2085.927	Pu 239/240 µCi/L		6.5404E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000			

Sample Prep
N/A
Sample #
S98T001367
Instrument Code
WB27809
Prepared By
NEW
Chemist
JFR
Analyst
AKL
Date Complete
05/27/98
Analysis Date
05/26/98
Analysis Time
10:15 AM
Sample Point
AN-101 GRAB1

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL		6.54E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	2.3%	
			Pu 239/240
Pu 238 µCimL		1.75E-05	6.41E-06
Relative Counting Error	=	3.7%	Pu 238
Pu 236 Tracer Recovery	=	86.2%	6.41E-06

Analyst:		AKL	Date:	27-May-98
Signature of Chemist:	John Relyea	JFR	Date:	28 May 98

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP8

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) LIQUID /

Type	DATE COUNTED		MAY-26-98	PU 236 AEA FRAC	(C236)		0.514
DUP	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)		0.093
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.362
24155	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2669
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cpm	(Bkg)		0.070
Matrix	DETECTOR NUMBER		18	PU 236 cpm			35.910
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			6.470
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm			25.330
98002603	TRACER PREPARATION VALUE (dpm/mL)		2270.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2085.927	Pu 239/240 µCi/L			6.6175E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000				

Sample Prep
N/A
Sample #
S98T001367
Instrument Code
WB27809
Prepared By
NEW
Chemist
JFR
Analyst
AKL
Date Complete
05/27/98
Analysis Date
05/26/98
Analysis Time
10:15 AM
Sample Point
AN-101 GRAB1

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL		6.62E-05		DETECTION LEVELS in µCi/mL
Relative Counting Error	=	2.3%		
				Pu 239/240
Pu 238 µCimL		1.70E-05		6.72E-06
Relative Counting Error	=	3.8%		Pu 238
Pu 236 Tracer Recovery	=	81.6%		6.72E-06

Analyst:	AKL	Date:	27-May-98	
Signature of Chemist: John Relyea	JFR	Date:	28 May 98	

SAMPLE.WB1 REV 1.0 943128ML

222-S Analytical Laboraratory
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
WL24155-STD-PU
File ID: 1a1000.CNF

Counted on: 5/26/98 @22:14
Detector: AEA1
Geometry number: 1
Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	10.3	10.3	472.561	472.561	16.000	5.440	8.000	5.690
2	1603.1	1603.1	360.493	360.493	8.000	2.550	4.000	1.213
3	28.5	28.5	302.089	302.038	16.000	11.554	8.000	8.294
4	77.2	77.2	286.401	286.328	10.000	2.490	5.000	1.904
5?	22.3	22.3	269.667	269.366	12.000	2.776	6.000	1.039
6	2495.6	2495.6	228.168	228.168	10.000	2.799	5.000	1.817

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		6.268			0.25	17.9		
2	Pu236	0.392	5.755	5.752	0.0030	.01	40.16	1.4	168.2	0.758E-04
3		????		5.483			1.00	9.7		
~~4~~	~~Th228~~	~~0.015~~	~~5.400~~	~~5.411~~	~~-.0110~~	~~.01~~	~~1.52~~	~~7.8~~	~~8.8~~	~~0.395E-05~~
5		????		5.333			0.66	12.8		
6	Pu239	0.531	5.147	5.144	0.0030	.01	54.36	1.2	223.1	0.101E-03
	Pu240		5.144	5.144	0.000				223.1	0.101E-03
Totals:		0.938	<--valid peaks only-->				96.03			

DTR 27may98

DETECTOR CALIBRATION
Energy(MEV) = 4.094 + (0.0046)*Channel
Energy range (MeV): 4.094 TO 6.449
Efficiency = 0.2436 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	49128.0	100.000
Smoothed	49128.0	100.000
Composite fit	47018.5	95.706
Residuals	2109.5	4.294

Analyzed by: _____
GL

Spectrum 1a1000.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 15703.4

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Raw Data Dump for AEA Spectrum: 1a1000.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	3.	1.	2.
21	4.	2.	2.	2.	1.	2.	1.	1.	0.	1.
31	1.	2.	0.	4.	2.	0.	2.	1.	2.	2.
41	2.	0.	4.	0.	2.	2.	2.	1.	4.	1.
51	1.	2.	2.	0.	1.	1.	0.	3.	6.	2.
61	3.	0.	4.	0.	4.	2.	0.	1.	3.	1.
71	1.	0.	4.	3.	1.	2.	3.	3.	2.	1.
81	4.	2.	3.	2.	2.	1.	2.	2.	4.	2.
91	1.	5.	2.	5.	5.	1.	1.	2.	3.	2.
101	1.	5.	2.	5.	3.	2.	2.	4.	0.	2.
111	3.	1.	4.	1.	3.	4.	0.	1.	2.	5.
121	4.	3.	7.	2.	4.	1.	6.	2.	6.	2.
131	4.	6.	6.	1.	7.	4.	7.	4.	4.	3.
141	6.	7.	10.	3.	5.	6.	4.	7.	2.	4.
151	10.	4.	5.	10.	3.	9.	7.	6.	10.	6.
161	2.	8.	8.	4.	17.	8.	5.	10.	9.	8.
171	8.	12.	12.	10.	9.	9.	6.	13.	14.	12.
181	14.	14.	8.	20.	17.	13.	22.	16.	26.	13.
191	30.	27.	26.	29.	32.	39.	44.	47.	60.	51.
201	54.	70.	64.	58.	83.	90.	105.	107.	120.	132.
211	165.	224.	243.	290.	388.	427.	598.	659.	669.	691.
221	731.	895.	1034.	1334.	1821.	2257.	2762.	3109.	2973.	2554.
231	1462.	552.	114.	33.	1.	3.	7.	4.	6.	4.
241	5.	6.	4.	1.	6.	7.	5.	10.	3.	7.
251	9.	6.	5.	11.	9.	8.	7.	1.	4.	5.
261	10.	7.	7.	10.	15.	13.	24.	21.	32.	30.
271	32.	14.	12.	13.	16.	13.	12.	11.	21.	23.
281	38.	48.	50.	65.	78.	101.	99.	102.	30.	24.
291	14.	11.	11.	17.	19.	14.	11.	16.	19.	24.
301	32.	36.	36.	26.	15.	16.	10.	18.	13.	10.
311	5.	13.	10.	11.	10.	20.	19.	10.	14.	12.
321	19.	17.	28.	32.	28.	17.	28.	32.	32.	33.
331	34.	42.	54.	49.	54.	57.	74.	65.	77.	109.
341	120.	140.	161.	187.	193.	254.	309.	435.	567.	691.
351	741.	792.	718.	605.	670.	742.	973.	1203.	1482.	1980.
361	2100.	1780.	1016.	434.	109.	19.	4.	3.	1.	2.
371	1.	0.	0.	1.	2.	1.	0.	1.	1.	1.
381	1.	0.	1.	0.	2.	0.	1.	2.	1.	3.
391	0.	1.	2.	1.	0.	2.	0.	2.	1.	0.
401	2.	0.	0.	1.	0.	0.	0.	0.	0.	1.
411	0.	2.	2.	0.	1.	0.	1.	4.	2.	1.
421	1.	1.	1.	2.	0.	2.	0.	1.	4.	1.
431	0.	2.	0.	1.	0.	0.	0.	0.	1.	0.
441	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
461	1.	1.	3.	2.	0.	2.	5.	5.	15.	5.
471	13.	14.	9.	11.	10.	7.	3.	6.	3.	0.
481	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	0.	2.	0.	0.	0.	0.	0.	0.	0.	1.
511	0.	0.								

222-S Analytical Laboraratory
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
WL24155-BLK-PU
File ID: 2a2093.CNF

Counted on: 5/26/98 @22:15
Detector: AEA2
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1?	11.3	11.3	471.489	471.489	16.000	5.521	8.000	5.152
2	1575.8	1575.8	359.551	359.551	10.000	2.907	5.000	1.355
3	25.3	25.3	301.140	300.909	10.000	1.230	5.000	0.585
4	65.8	65.8	285.597	285.502	10.000	3.147	5.000	2.334
5	23.2	23.2	267.572	267.362	10.000	2.397	5.000	1.375

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	236Pu	????		6.301			0.28	16.9		
2	~~Cm244~~	0.928	5.795	5.775	0.0200	.01	41.05	1.4	170.5	0.768E-04
	~~Cm243~~		5.779	5.775	0.004				233.5	0.105E-03
3	Pu238	0.013	5.487	5.500	-.0130	.01	0.56	12.4	3.2	0.144E-05
	~~Am241~~		5.479	5.500	-.021				2.5	0.110E-05
~~4~~	~~Th228~~	~~0.032~~	~~5.400~~	~~5.427~~	~~-.0270~~	~~.01~~	~~1.40~~	~~8.2~~	~~8.2~~	~~0.370E-05~~
5		0.012		5.342		0.01	0.52	14.5	2.1	0.968E-06
		---					---			
Totals:		0.984	<--valid peaks only-->				43.53			

DHR 27 may 98

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0047)*Channel
Energy range (MeV): 4.085 TO 6.492
Efficiency = 0.2408 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21236.0	100.000
Smoothed	21236.0	100.000
Composite fit	21028.4	99.022
Residuals	207.6	0.978

Analyzed by: _____

Spectrum 2a2093.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8968.5

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5
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3.4
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.......................................................................  2
....................................2.
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Raw Data Dump for AEA Spectrum: 2a2093.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	1.	1.	1.	0.	1.	0.	0.	0.	0.
31	0.	2.	0.	0.	0.	0.	1.	0.	0.	1.
41	1.	0.	0.	1.	1.	0.	1.	0.	3.	0.
51	3.	0.	1.	0.	2.	0.	0.	0.	0.	0.
61	0.	0.	1.	0.	0.	0.	2.	0.	0.	1.
71	0.	2.	0.	1.	0.	0.	0.	0.	0.	2.
81	1.	0.	1.	0.	0.	0.	4.	3.	0.	0.
91	2.	0.	0.	2.	0.	2.	0.	1.	0.	1.
101	0.	0.	0.	1.	1.	2.	1.	0.	0.	0.
111	0.	1.	0.	0.	1.	1.	1.	1.	2.	0.
121	0.	1.	2.	1.	1.	1.	0.	0.	0.	1.
131	1.	0.	0.	1.	1.	1.	1.	1.	0.	2.
141	1.	0.	0.	3.	0.	0.	2.	0.	0.	0.
151	0.	0.	2.	0.	1.	1.	0.	0.	0.	1.
161	0.	0.	1.	0.	1.	0.	1.	0.	0.	1.
171	2.	0.	3.	0.	0.	1.	0.	1.	1.	2.
181	0.	0.	0.	1.	1.	1.	0.	1.	0.	3.
191	0.	0.	0.	1.	0.	2.	1.	0.	2.	0.
201	3.	1.	0.	0.	1.	1.	2.	0.	0.	2.
211	1.	2.	1.	1.	0.	1.	2.	1.	2.	1.
221	3.	0.	1.	0.	7.	1.	3.	2.	3.	3.
231	3.	4.	1.	1.	4.	2.	3.	1.	2.	2.
241	0.	3.	2.	1.	1.	3.	4.	3.	4.	3.
251	2.	10.	8.	8.	4.	9.	5.	2.	4.	12.
261	6.	7.	13.	15.	12.	25.	37.	33.	20.	21.
271	10.	10.	12.	9.	7.	16.	7.	21.	23.	29.
281	52.	44.	58.	70.	80.	89.	73.	56.	31.	19.
291	11.	12.	12.	12.	5.	11.	8.	17.	10.	10.
301	16.	19.	10.	10.	11.	5.	7.	9.	10.	9.
311	8.	8.	13.	10.	8.	12.	11.	14.	8.	9.
321	12.	10.	14.	22.	24.	30.	25.	26.	28.	29.
331	29.	28.	38.	44.	52.	56.	62.	77.	91.	91.
341	107.	148.	167.	210.	283.	312.	406.	521.	680.	770.
351	802.	695.	686.	714.	841.	1000.	1275.	1525.	1863.	1968.
361	1745.	1217.	566.	189.	44.	10.	3.	4.	1.	1.
371	0.	4.	0.	0.	0.	1.	1.	1.	1.	0.
381	1.	1.	1.	0.	1.	0.	0.	1.	0.	1.
391	0.	0.	1.	0.	1.	1.	4.	1.	0.	0.
401	0.	0.	0.	2.	2.	0.	0.	0.	0.	0.
411	0.	1.	1.	0.	2.	0.	1.	1.	4.	3.
421	9.	1.	2.	0.	2.	0.	2.	2.	1.	2.
431	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
441	1.	0.	1.	0.	0.	0.	0.	1.	1.	0.
451	0.	0.	0.	0.	0.	1.	1.	0.	1.	2.
461	2.	1.	4.	2.	4.	8.	3.	8.	13.	11.
471	16.	10.	12.	9.	9.	6.	5.	2.	2.	0.
481	0.	0.	1.	1.	0.	0.	0.	0.	2.	0.
491	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory
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
S98T001365-SAM-P
File ID: 3a3186.CNF

Counted on: 5/26/98 @22:16
Detector: AEA3
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1288.7	1288.7	359.982	359.982	10.000	2.951	5.000	1.322
2	43.3	43.3	301.702	301.659	10.000	3.568	5.000	1.643
3	24.7	24.7	285.957	285.636	8.000	1.991	4.000	1.060
4	112.6	112.6	227.096	227.096	10.000	3.928	5.000	1.958

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.863	5.755	5.752	0.0030	.01	34.47	1.5	152.6	0.687E-04
2	Pu238	0.030	5.487	5.483	0.0040	.02	1.19	8.5	7.2	0.323E-05
	~~Am241~~		5.479	5.483	-.004				5.5	0.247E-05
~~3~~	~~Th228~~	~~0.014~~	~~5.400~~	~~5.410~~	~~-.0100~~	~~.01~~	~~0.55~~	~~15.2~~	~~3.4~~	~~0.151E-05~~
4	Pu239	0.076	5.147	5.140	0.0070	.02	3.04	5.1	13.2	0.594E-05
	Pu240		5.144	5.140	0.004				13.2	0.594E-05
		---					---			
Totals:		0.982	<--valid peaks only-->				39.24			

JTR 27May98

DETECTOR CALIBRATION
Energy(MEV) = 4.096 + (0.0046)*Channel
Energy range (MeV): 4.096 TO 6.451
Efficiency = 0.2305 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19180.0	100.000
Smoothed	19179.9	99.999
Composite fit	18835.8	98.206
Residuals	344.2	1.794

Analyzed by: _____
GL

Spectrum 3a3186.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7083.3

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Raw Data Dump for AEA Spectrum: 3a3186.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	1.	0.
21	0.	0.	0.	3.	1.	1.	1.	0.	0.	0.
31	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	1.	0.	0.	1.	0.	1.	4.	1.
51	0.	1.	0.	1.	1.	0.	1.	2.	0.	3.
61	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
71	2.	2.	2.	0.	0.	0.	0.	1.	2.	1.
81	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
91	1.	0.	0.	3.	0.	0.	1.	0.	0.	0.
101	0.	2.	0.	3.	0.	0.	0.	1.	3.	0.
111	0.	0.	1.	0.	0.	3.	1.	1.	4.	4.
121	1.	2.	0.	1.	0.	3.	2.	0.	0.	0.
131	0.	0.	1.	0.	1.	1.	0.	2.	0.	2.
141	1.	0.	2.	3.	1.	4.	3.	1.	0.	1.
151	1.	0.	0.	1.	3.	2.	0.	1.	0.	0.
161	2.	1.	2.	2.	0.	0.	1.	3.	0.	2.
171	0.	2.	4.	3.	0.	3.	2.	2.	0.	0.
181	3.	2.	2.	3.	1.	0.	2.	4.	3.	3.
191	3.	2.	3.	1.	3.	1.	1.	1.	3.	2.
201	3.	4.	5.	4.	5.	7.	8.	8.	12.	6.
211	12.	13.	30.	31.	27.	30.	41.	43.	40.	49.
221	67.	59.	74.	91.	105.	148.	115.	130.	127.	70.
231	43.	19.	12.	5.	4.	1.	2.	4.	1.	4.
241	3.	2.	1.	3.	2.	3.	6.	4.	0.	4.
251	5.	8.	3.	8.	11.	6.	2.	1.	3.	5.
261	5.	8.	8.	3.	11.	11.	12.	10.	11.	5.
271	5.	5.	9.	2.	12.	6.	4.	11.	16.	8.
281	18.	24.	21.	25.	37.	38.	41.	24.	15.	12.
291	12.	16.	13.	18.	26.	27.	23.	27.	33.	40.
301	46.	63.	40.	39.	18.	15.	7.	6.	4.	9.
311	6.	10.	9.	8.	6.	9.	16.	11.	13.	17.
321	16.	16.	15.	12.	23.	28.	22.	30.	14.	27.
331	43.	37.	36.	36.	52.	52.	52.	76.	68.	85.
341	81.	109.	133.	176.	204.	218.	344.	411.	540.	635.
351	648.	662.	592.	601.	659.	730.	925.	1191.	1366.	1584.
361	1558.	1172.	658.	313.	87.	17.	4.	2.	2.	1.
371	2.	1.	0.	1.	1.	1.	0.	0.	0.	0.
381	1.	0.	0.	0.	0.	1.	1.	0.	0.	1.
391	0.	1.	2.	0.	0.	0.	1.	0.	0.	1.
401	0.	1.	0.	0.	0.	0.	0.	2.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	2.	2.	1.	0.	1.	1.	0.	0.	1.
431	0.	2.	0.	1.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
451	0.	0.	0.	2.	0.	0.	0.	0.	1.	0.
461	0.	1.	0.	0.	0.	2.	2.	3.	2.	1.
471	1.	4.	7.	9.	4.	9.	1.	0.	3.	0.
481	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
491	0.	1.	0.	1.	1.	0.	1.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory
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
S98T001365-DUP-P
File ID: 4a4186.CNF

Counted on: 5/26/98 @22:17
Detector: AEA4
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1228.0	1228.0	359.172	359.172	10.000	2.985	5.000	1.153
2	37.4	37.4	301.089	301.003	10.000	3.096	5.000	1.171
3?	25.1	25.1	290.103	290.103	10.000	0.613	5.000	4.973
4	25.1	25.1	284.789	284.155	10.000	1.521	5.000	0.562
5	119.1	119.1	226.720	226.719	12.000	4.201	6.000	2.059

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff. FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.869	5.755	5.744	0.0110.01	36.00	1.5	150.4	0.678E-04
2	Pu238	0.027	5.487	5.476	0.0110.01	1.12	9.1	6.4	0.287E-05
	~~Am241~~		5.479	5.476	0.003			4.9	0.220E-05
3	DAR 27may98	????		5.426		0.20	37.5		
~~4~~	~~Th228~~	~~0.016~~	~~5.400~~	~~5.399~~	~~0.0010.01~~	~~0.68~~	~~14.5~~	~~3.9~~	~~0.177E-05~~
5	Pu239	0.080	5.147	5.134	0.0130.02	3.30	4.9	13.5	0.608E-05
	Pu240		5.144	5.134	0.010			13.5	0.608E-05
Totals:		0.992	<--valid peaks only-->			41.10			

DETECTOR CALIBRATION
Energy(MEV) = 4.091 + (0.0046)*Channel
Energy range (MeV): 4.091 TO 6.447
Efficiency = 0.2442 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19888.0	100.000
Smoothed	19887.6	99.998
Composite fit	19824.2	99.679
Residuals	63.8	0.321

Analyzed by: _____

Spectrum 4a4186.CNF

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1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    7527.4

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Raw-Data Dump for AEA Spectrum: 4a4186.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
21	1.	0.	0.	0.	0.	1.	1.	1.	0.	2.
31	0.	1.	0.	1.	0.	0.	0.	0.	1.	0.
41	1.	1.	3.	2.	0.	0.	0.	0.	0.	0.
51	3.	0.	0.	0.	0.	0.	1.	1.	0.	0.
61	0.	0.	0.	0.	0.	2.	0.	0.	0.	1.
71	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	1.	2.	1.	0.	0.	2.	1.	0.	0.	0.
91	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
101	1.	0.	0.	1.	1.	0.	0.	1.	1.	0.
111	0.	1.	0.	0.	0.	2.	1.	0.	0.	1.
121	2.	0.	0.	0.	4.	1.	1.	3.	1.	1.
131	0.	1.	0.	3.	2.	1.	2.	1.	4.	1.
141	0.	1.	0.	0.	1.	0.	2.	2.	1.	2.
151	2.	2.	0.	0.	2.	3.	0.	1.	3.	0.
161	1.	1.	1.	0.	0.	1.	2.	0.	0.	0.
171	2.	3.	2.	3.	0.	1.	3.	2.	1.	1.
181	1.	3.	3.	5.	1.	2.	2.	3.	2.	2.
191	0.	2.	0.	3.	1.	8.	3.	4.	5.	4.
201	6.	7.	3.	9.	11.	4.	7.	12.	14.	10.
211	23.	23.	19.	28.	22.	29.	43.	50.	61.	63.
221	64.	76.	96.	103.	122.	132.	139.	131.	105.	80.
231	40.	24.	6.	4.	2.	3.	2.	1.	2.	1.
241	2.	5.	6.	3.	3.	3.	6.	2.	2.	5.
251	6.	7.	2.	7.	7.	5.	1.	5.	6.	7.
261	8.	5.	7.	8.	6.	11.	7.	15.	10.	12.
271	12.	6.	3.	9.	11.	6.	11.	22.	22.	22.
281	30.	26.	33.	38.	38.	31.	38.	14.	14.	27.
291	21.	26.	20.	20.	22.	26.	20.	24.	40.	42.
301	45.	52.	43.	14.	16.	11.	2.	7.	11.	13.
311	10.	3.	6.	18.	9.	11.	13.	14.	14.	23.
321	18.	26.	17.	25.	27.	38.	25.	33.	22.	40.
331	49.	58.	37.	61.	63.	88.	91.	103.	103.	137.
341	150.	198.	212.	254.	301.	350.	434.	523.	635.	643.
351	718.	664.	613.	690.	727.	890.	1044.	1318.	1457.	1498.
361	1243.	780.	307.	86.	21.	0.	1.	1.	0.	3.
371	2.	1.	1.	1.	0.	3.	1.	0.	1.	0.
381	0.	0.	1.	0.	0.	0.	1.	0.	0.	1.
391	1.	1.	0.	0.	1.	0.	0.	1.	0.	1.
401	1.	2.	0.	0.	0.	0.	0.	2.	0.	0.
411	1.	0.	0.	0.	0.	0.	1.	0.	1.	1.
421	1.	1.	1.	1.	2.	1.	3.	0.	1.	1.
431	2.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	1.	0.	0.	2.	0.	0.	1.
451	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
461	1.	1.	2.	1.	1.	1.	3.	4.	6.	4.
471	7.	11.	6.	6.	3.	2.	1.	3.	0.	2.
481	0.	1.	0.	1.	0.	0.	1.	2.	0.	0.
491	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory
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
S98T001366-SAM-P
File ID: 5a5141.CNF

Counted on: 5/26/98 @22:18
Detector: AEA5
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1601.0	1601.0	363.050	363.050	10.000	2.550	5.000	1.277
2?	64.2	64.2	320.593	320.593	8.000	0.000	4.000	3.686
3	243.8	243.8	304.728	304.724	10.000	2.819	5.000	1.125
4?	7.9	7.9	272.152	271.339	6.000	0.686	3.000	0.307
5	1038.1	1038.1	230.167	230.166	12.000	3.628	6.000	2.408

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.539	5.755	5.758	-.0030	01	38.93	1.4	162.7	0.733E-04
2		????		5.563			0.00	1000.		
3	Pu238	0.096	5.487	5.490	-.0030	01	6.93	3.4	39.4	0.177E-04
	~~Am241~~		5.479	5.490	-.011				30.2	0.136E-04
4	DJA 27 may 98	????		5.336			0.17	34.0		
5	Pu239	0.334	5.147	5.147	0.000	02	24.14	1.8	98.9	0.445E-04
	Pu240		5.144	5.147	-.003				98.9	0.445E-04
Totals:		0.969	<--valid peaks only-->				70.00			

DETECTOR CALIBRATION
Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.444
Efficiency = 0.2442 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	34692.0	100.000
Smoothed	34691.9	100.000
Composite fit	33685.8	97.100
Residuals	1006.2	2.900

Analyzed by: _____

Spectrum 5a5141.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9173.8

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Raw Data Dump for AEA Spectrum: 5a5141.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
21	1.	2.	4.	3.	2.	1.	1.	5.	2.	0.
31	2.	3.	2.	1.	1.	3.	0.	1.	1.	2.
41	1.	1.	1.	1.	2.	0.	2.	4.	3.	1.
51	3.	1.	0.	0.	2.	4.	1.	1.	4.	2.
61	1.	2.	4.	2.	2.	1.	2.	1.	1.	0.
71	5.	1.	4.	0.	1.	2.	2.	0.	3.	1.
81	4.	3.	2.	2.	1.	1.	2.	5.	1.	5.
91	0.	3.	5.	1.	0.	4.	3.	3.	9.	0.
101	1.	3.	2.	5.	1.	2.	3.	3.	0.	1.
111	0.	2.	1.	2.	1.	1.	5.	5.	2.	2.
121	4.	3.	3.	1.	5.	5.	1.	2.	2.	4.
131	4.	1.	4.	1.	4.	1.	2.	8.	3.	3.
141	2.	3.	2.	4.	6.	6.	6.	6.	10.	1.
151	7.	5.	5.	2.	5.	5.	4.	6.	5.	2.
161	5.	0.	4.	1.	3.	6.	3.	0.	4.	4.
171	5.	4.	4.	4.	6.	3.	3.	6.	5.	8.
181	6.	7.	6.	6.	5.	6.	7.	8.	8.	8.
191	6.	8.	6.	8.	13.	7.	10.	12.	13.	8.
201	11.	18.	12.	25.	15.	24.	17.	14.	31.	34.
211	37.	60.	48.	86.	89.	121.	128.	182.	201.	260.
221	288.	322.	333.	410.	498.	632.	764.	992.	1169.	1237.
231	1260.	1026.	645.	441.	213.	90.	23.	8.	3.	4.
241	7.	4.	6.	2.	5.	1.	4.	2.	1.	4.
251	6.	6.	4.	9.	6.	10.	9.	10.	10.	4.
261	6.	5.	6.	4.	7.	5.	5.	14.	10.	11.
271	7.	26.	14.	9.	8.	9.	14.	10.	12.	11.
281	14.	23.	20.	24.	27.	46.	51.	63.	57.	67.
291	66.	63.	63.	63.	114.	139.	141.	131.	123.	125.
301	136.	184.	243.	270.	293.	295.	210.	93.	24.	8.
311	4.	9.	6.	6.	11.	8.	8.	8.	13.	7.
321	14.	16.	12.	6.	5.	15.	8.	11.	18.	17.
331	20.	16.	26.	21.	20.	32.	28.	44.	32.	46.
341	48.	65.	72.	107.	100.	131.	152.	201.	279.	341.
351	442.	557.	703.	755.	752.	630.	601.	734.	911.	1037.
361	1371.	1742.	2011.	1962.	1534.	715.	217.	53.	4.	3.
371	1.	1.	2.	0.	1.	0.	3.	2.	0.	1.
381	0.	2.	1.	0.	0.	0.	1.	0.	1.	2.
391	1.	1.	0.	2.	0.	0.	0.	0.	1.	0.
401	3.	1.	0.	2.	1.	0.	0.	0.	4.	0.
411	1.	0.	0.	0.	1.	0.	0.	0.	1.	0.
421	0.	0.	1.	0.	2.	1.	1.	1.	2.	1.
431	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.
441	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
451	0.	0.	0.	2.	0.	0.	0.	0.	0.	2.
461	0.	1.	1.	2.	0.	1.	0.	1.	1.	2.
471	3.	2.	7.	4.	4.	12.	10.	6.	5.	5.
481	3.	2.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory
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
S98T001366-DUP-P
File ID: 6a6124.CNF

Counted on: 5/26/98 @22:19
Detector: AEA6
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1726.6	1726.6	360.786	360.786	8.000	2.254	4.000	1.245
2	259.5	259.5	302.432	302.430	8.000	2.398	4.000	1.233
3	1099.3	1099.3	228.079	228.079	10.000	3.207	5.000	2.321

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.542	5.755	5.750	0.005	0.01	38.69	1.4	168.4	0.758E-04
2	Pu238	0.086	5.487	5.481	0.006	0.01	6.14	3.6	36.3	0.164E-04
	~~Am241~~ Pa 27 May 98		5.479	5.481	-.002				27.8	0.125E-04
3	Pu239	0.334	5.147	5.139	0.008	0.01	23.81	1.8	101.5	0.457E-04
	Pu240		5.144	5.139	0.005				101.5	0.457E-04
Totals:		0.962	<--valid peaks only-->				68.64			

DETECTOR CALIBRATION
Energy(MEV) = 4.090 + (0.0046)*Channel
Energy range (MeV): 4.090 TO 6.446
Efficiency = 0.2345 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	34259.0	100.000
Smoothed	34258.7	99.999
Composite fit	32948.0	96.173
Residuals	1311.0	3.827

Analyzed by: _____
GL

Spectrum 6a6124.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 7531.4

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Raw Data Dump for AEA Spectrum: 6a6124.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	1.	0.	0.	0.	1.	0.	2.	0.	2.	2.
31	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	1.	0.	1.	3.	0.	2.	0.
51	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.
61	0.	0.	1.	0.	3.	1.	0.	0.	1.	3.
71	0.	0.	0.	1.	1.	0.	2.	0.	3.	2.
81	1.	0.	1.	0.	0.	0.	0.	0.	0.	2.
91	0.	1.	4.	1.	1.	2.	0.	0.	0.	0.
101	0.	2.	2.	1.	2.	2.	4.	2.	0.	0.
111	2.	1.	0.	0.	1.	0.	0.	3.	3.	3.
121	2.	3.	1.	1.	5.	3.	1.	1.	1.	0.
131	2.	0.	1.	1.	5.	1.	1.	2.	1.	0.
141	3.	2.	3.	5.	4.	6.	4.	5.	7.	4.
151	2.	4.	5.	6.	3.	3.	4.	1.	2.	4.
161	5.	2.	1.	5.	1.	2.	7.	2.	5.	2.
171	3.	6.	3.	5.	7.	4.	2.	8.	2.	7.
181	9.	8.	4.	5.	6.	8.	5.	9.	6.	9.
191	10.	11.	7.	15.	9.	8.	10.	18.	14.	17.
201	14.	23.	13.	20.	18.	25.	30.	31.	37.	48.
211	52.	62.	84.	117.	129.	162.	215.	250.	260.	305.
221	303.	394.	455.	644.	840.	990.	1237.	1379.	1310.	1002.
231	654.	330.	166.	53.	16.	4.	3.	2.	2.	1.
241	3.	2.	3.	3.	3.	5.	2.	5.	2.	4.
251	7.	7.	8.	10.	8.	7.	4.	3.	3.	3.
261	4.	6.	6.	6.	11.	8.	9.	15.	8.	11.
271	12.	13.	8.	5.	8.	10.	11.	12.	9.	21.
281	23.	22.	34.	32.	56.	58.	66.	50.	42.	56.
291	63.	79.	99.	123.	102.	100.	102.	113.	145.	175.
301	249.	323.	358.	286.	122.	63.	16.	4.	8.	6.
311	9.	0.	7.	5.	10.	10.	9.	7.	6.	6.
321	13.	13.	17.	21.	4.	16.	24.	19.	20.	17.
331	21.	31.	33.	19.	32.	36.	38.	37.	52.	53.
341	60.	83.	92.	133.	146.	187.	221.	333.	496.	643.
351	794.	802.	685.	572.	585.	666.	834.	1070.	1497.	1985.
361	2300.	2104.	1287.	455.	119.	20.	1.	1.	1.	2.
371	0.	0.	0.	1.	1.	3.	0.	2.	1.	1.
381	1.	1.	1.	0.	1.	0.	1.	3.	0.	0.
391	0.	1.	0.	1.	0.	0.	0.	0.	0.	1.
401	3.	1.	0.	0.	1.	0.	0.	1.	0.	1.
411	0.	2.	0.	1.	0.	0.	2.	0.	1.	0.
421	1.	1.	0.	0.	1.	0.	0.	1.	0.	1.
431	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	1.	0.	1.	0.
451	0.	0.	0.	0.	1.	0.	1.	0.	0.	1.
461	0.	2.	0.	1.	0.	2.	2.	1.	1.	2.
471	1.	2.	5.	9.	8.	5.	2.	2.	2.	2.
481	2.	0.	0.	0.	0.	1.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
511	0.	0.								

222-S Analytical Laboraratory
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
S98T001367-SAM-P
File ID: 7a7171.CNF

Counted on: 5/26/98 @22:20
Detector: AEA7
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1630.5	1630.5	363.844	363.844	10.000	2.361	5.000	1.233
2	278.3	278.3	305.462	305.460	8.000	2.601	4.000	1.201
3?	11.4	11.4	271.963	271.580	8.000	1.947	4.000	0.442
4	1180.5	1180.5	230.820	230.819	10.000	3.347	5.000	2.284

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.510	5.755	5.755	0.0000.01		38.08	1.4	157.4	0.709E-04
2	Pu238	0.095	5.487	5.486	0.0010.01		7.12	3.4	40.1	0.181E-04
	~~Am241~~		5.479	5.486	-.007				30.7	0.138E-04
3	JHB 27 May 98	????		5.330			0.46	15.8		
4	Pu239	0.355	5.147	5.143	0.0040.02		26.50	1.7	107.4	0.484E-04
	Pu240		5.144	5.143	0.001				107.4	0.484E-04
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Totals:		0.960	<--valid peaks only-->				71.70			

DETECTOR CALIBRATION
Energy(MEV) = 4.081 + (0.0046)*Channel
Energy range (MeV): 4.081 TO 6.436
Efficiency = 0.2468 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	35842.0	100.000
Smoothed	35841.2	99.998
Composite fit	34642.3	96.653
Residuals	1199.7	3.347

Analyzed by: _____
GL

Spectrum 7a7171.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9614.8

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Raw Data Dump for AEA Spectrum: 7a7171.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.
21	1.	0.	1.	0.	1.	1.	0.	2.	3.	0.
31	0.	1.	0.	2.	0.	0.	4.	1.	0.	1.
41	1.	1.	0.	0.	1.	0.	0.	0.	0.	0.
51	0.	1.	1.	0.	0.	3.	0.	1.	2.	1.
61	3.	0.	1.	1.	2.	2.	0.	1.	0.	1.
71	1.	1.	0.	1.	0.	1.	2.	0.	2.	1.
81	1.	0.	1.	2.	4.	1.	1.	0.	1.	1.
91	2.	2.	1.	0.	1.	1.	0.	2.	2.	0.
101	1.	3.	1.	2.	1.	1.	1.	4.	4.	1.
111	2.	1.	2.	3.	3.	1.	2.	5.	0.	4.
121	3.	0.	2.	2.	1.	3.	2.	2.	2.	1.
131	3.	3.	3.	1.	2.	2.	2.	1.	1.	2.
141	2.	2.	2.	6.	7.	8.	2.	4.	7.	5.
151	6.	6.	7.	5.	4.	5.	7.	1.	3.	3.
161	4.	3.	2.	0.	6.	3.	5.	2.	3.	4.
171	5.	2.	7.	8.	6.	5.	5.	4.	8.	5.
181	3.	11.	4.	6.	6.	7.	4.	14.	7.	6.
191	10.	9.	13.	17.	10.	11.	10.	17.	9.	14.
201	12.	20.	19.	31.	18.	19.	26.	32.	34.	43.
211	41.	42.	60.	63.	85.	100.	120.	183.	211.	238.
221	297.	312.	364.	388.	466.	579.	768.	928.	1141.	1368.
231	1490.	1307.	1020.	627.	324.	160.	55.	11.	4.	4.
241	3.	3.	3.	4.	7.	2.	3.	7.	3.	2.
251	0.	5.	4.	5.	6.	13.	8.	9.	10.	6.
261	5.	8.	5.	6.	8.	0.	9.	11.	8.	13.
271	19.	20.	19.	12.	7.	10.	8.	7.	11.	14.
281	11.	21.	19.	21.	30.	20.	53.	65.	62.	56.
291	57.	52.	54.	71.	99.	130.	143.	143.	111.	126.
301	139.	157.	209.	269.	350.	352.	325.	169.	69.	14.
311	11.	2.	11.	4.	5.	2.	6.	9.	9.	5.
321	10.	9.	16.	11.	16.	14.	14.	24.	18.	20.
331	22.	19.	30.	25.	25.	29.	36.	27.	39.	39.
341	49.	68.	57.	62.	108.	112.	126.	144.	191.	266.
351	336.	450.	684.	717.	778.	681.	607.	600.	679.	890.
361	1036.	1372.	1872.	2104.	2025.	1284.	546.	115.	18.	2.
371	2.	3.	0.	0.	1.	3.	0.	2.	0.	0.
381	2.	1.	1.	0.	1.	2.	0.	3.	3.	2.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
401	1.	1.	1.	1.	0.	0.	0.	0.	1.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	2.	0.	2.	1.	2.	2.	0.	0.
431	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
441	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	1.	1.	0.	1.	0.	0.	1.
461	0.	1.	0.	0.	0.	1.	1.	1.	2.	1.
471	1.	5.	5.	3.	2.	3.	8.	8.	6.	6.
481	3.	4.	3.	3.	0.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory
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
S98T001367-DUP-P
File ID: 8a8127.CNF

Counted on: 5/26/98 @22:22
Detector: AEA8
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1515.0	1515.0	363.154	363.154	10.000	2.337	5.000	1.185
2	274.6	274.6	304.858	304.855	10.000	2.552	5.000	1.353
3	1133.0	1133.0	230.430	230.430	12.000	3.256	6.000	2.199

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.514	5.755	5.757	-.0020	.01	35.91	1.5	158.4	0.714E-04
2	Pu238	0.093	5.487	5.489	-.0020	.01	6.47	3.5	38.9	0.175E-04
	~~Am241~~		5.479	5.489	-.010				29.8	0.134E-04
3	Pu239	0.362	5.147	5.146	0.0010	.01	25.33	1.8	109.5	0.493E-04
	Pu240		5.144	5.146	-.002				109.5	0.493E-04
Totals:		0.968	<--valid peaks only-->				67.71			

DETECTOR CALIBRATION
Energy(MEV) = 4.086 + (0.0046)*Channel
Energy range (MeV): 4.086 TO 6.442
Efficiency = 0.2313 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	33564.0	100.000
Smoothed	33564.0	100.000
Composite fit	32504.0	96.842
Residuals	1060.0	3.158

Analyzed by: _____
GL

Spectrum 8a8127.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8543.3

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Raw Data Dump for AEA Spectrum: 8a8127.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	2.
21	2.	0.	1.	1.	0.	0.	0.	2.	1.	0.
31	0.	0.	1.	0.	0.	0.	2.	1.	1.	1.
41	0.	0.	0.	2.	0.	1.	0.	1.	0.	0.
51	2.	1.	0.	0.	1.	0.	0.	1.	0.	0.
61	1.	0.	1.	0.	0.	1.	0.	0.	2.	1.
71	0.	0.	1.	2.	0.	0.	2.	0.	0.	1.
81	0.	0.	0.	0.	0.	0.	0.	2.	0.	1.
91	0.	1.	1.	0.	1.	0.	1.	3.	1.	1.
101	0.	1.	1.	1.	2.	2.	2.	2.	2.	0.
111	2.	1.	1.	2.	3.	1.	1.	2.	3.	1.
121	0.	0.	1.	1.	4.	1.	1.	1.	0.	1.
131	0.	2.	3.	2.	4.	0.	3.	1.	1.	0.
141	3.	2.	2.	1.	4.	7.	5.	3.	3.	4.
151	2.	2.	4.	6.	5.	3.	5.	1.	0.	4.
161	0.	2.	3.	2.	4.	3.	4.	5.	1.	3.
171	4.	1.	9.	8.	3.	9.	4.	5.	5.	2.
181	11.	9.	7.	7.	1.	5.	8.	4.	12.	8.
191	10.	8.	12.	6.	6.	7.	13.	17.	18.	12.
201	11.	16.	14.	20.	22.	25.	21.	24.	34.	31.
211	40.	50.	67.	71.	81.	107.	162.	174.	214.	260.
221	292.	295.	393.	381.	500.	617.	754.	949.	1178.	1425.
231	1401.	1195.	792.	443.	233.	84.	23.	6.	3.	1.
241	3.	1.	1.	1.	3.	2.	5.	2.	3.	7.
251	6.	3.	4.	5.	14.	12.	7.	6.	4.	1.
261	4.	4.	3.	5.	3.	4.	2.	3.	5.	1.
271	8.	9.	8.	12.	10.	8.	5.	7.	11.	7.
281	8.	14.	16.	10.	16.	21.	44.	41.	48.	41.
291	47.	54.	69.	73.	114.	115.	110.	96.	99.	118.
301	145.	175.	254.	330.	347.	324.	251.	97.	23.	7.
311	9.	5.	5.	8.	6.	8.	9.	5.	9.	12.
321	13.	9.	15.	15.	12.	14.	15.	12.	16.	14.
331	25.	27.	24.	19.	25.	29.	25.	30.	48.	37.
341	47.	58.	61.	70.	94.	118.	143.	188.	197.	325.
351	439.	538.	712.	806.	642.	571.	583.	626.	692.	924.
361	1178.	1579.	1977.	1913.	1428.	725.	163.	18.	5.	1.
371	2.	3.	1.	0.	0.	3.	0.	1.	1.	1.
381	0.	1.	1.	1.	0.	1.	1.	0.	0.	0.
391	1.	0.	0.	1.	0.	1.	0.	0.	0.	1.
401	1.	0.	1.	2.	1.	0.	0.	2.	0.	0.
411	0.	1.	1.	0.	1.	0.	0.	0.	1.	1.
421	1.	0.	1.	0.	1.	2.	0.	0.	0.	1.
431	1.	2.	0.	0.	0.	1.	0.	1.	1.	0.
441	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
451	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
461	0.	0.	1.	0.	1.	1.	0.	1.	1.	0.
471	1.	1.	1.	2.	0.	4.	4.	5.	3.	1.
481	1.	2.	4.	0.	0.	1.	0.	0.	1.	1.
491	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

OPPORTUNISTIC ANALYTES

APPENDIX A

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Opportunistic Analyses for AN-101 Grab1 Samples
AN-101 GRAB1

(CORE NUMBER: n/a
(SEGMENT #: 1AN-98-1

(SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T001362			Tot. Organic Carbon by Coul.	ug/mL	102.7	1.400	3.06e+02	265.0	285.5	14.4	91.20	6.750	n/a
S98T001362	D		Silver-ICP-Acid Dil.	ug/mL	97.00	<1.00e-02	1.410	1.330	1.370	5.84	91.50	5.10e-01	n/a
S98T001362	D		Arsenic-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 5.100	<5.10e0	n/a	n/a	101.0	5.100	n/a
S98T001362	D		Boron-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	2.920	3.090	3.005	5.66	101.0	2.550	n/a
S98T001362	D		Barium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	< 2.550	<2.55e0	n/a	n/a	98.20	2.550	n/a
S98T001362	D		Beryllium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-03	<2.55e-01	<2.55e-1	n/a	n/a	103.0	2.55e-01	n/a
S98T001362	D		Bismuth-ICP-Acid Dil.	ug/mL	100.0	<1.00e-01	< 5.100	<5.10e0	n/a	n/a	103.0	5.100	n/a
S98T001362	D		Calcium-ICP-Acid Dil.	ug/mL	97.60	<1.00e-01	< 5.100	<5.10e0	n/a	n/a	109.0	5.100	n/a
S98T001362	D		Cadmium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-03	<2.55e-01	<2.55e-1	n/a	n/a	101.0	2.55e-01	n/a
S98T001362	D		Cerium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	< 5.100	<5.10e0	n/a	n/a	101.0	5.100	n/a
S98T001362	D		Cobalt-ICP-Acid Dil.	ug/mL	97.20	<2.00e-02	< 1.020	<1.02e0	n/a	n/a	99.50	1.020	n/a
S98T001362	D		Copper-ICP-Acid Dil.	ug/mL	94.60	<1.00e-02	<5.10e-01	<5.10e-1	n/a	n/a	95.70	5.10e-01	n/a
S98T001362	D		Potassium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-01	6.96e+02	680.0	688.0	2.33	70.10	25.50	n/a
S98T001362	D		Lanthanum-ICP-Acid Dil.	ug/mL	99.00	<5.00e-02	< 2.550	<2.55e0	n/a	n/a	101.0	2.550	n/a
S98T001362	D		Lithium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	<5.10e-01	<5.10e-1	n/a	n/a	98.30	5.10e-01	n/a
S98T001362	D		Magnesium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 5.100	<5.10e0	n/a	n/a	101.0	5.100	n/a
S98T001362	D		Molybdenum-ICP-Acid Dil.	ug/mL	98.00	<5.00e-02	3.550	3.440	3.495	3.15	101.0	2.550	n/a
S98T001362	D		Neodymium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	< 5.100	<5.10e0	n/a	n/a	100.0	5.100	n/a
S98T001362	D		Phosphorus-ICP-Acid Dil.	ug/mL	97.80	<2.00e-01	52.60	52.30	52.45	0.57	100.0	10.20	n/a
S98T001362	D		Lead-ICP-Acid Dil.	ug/mL	95.60	<1.00e-01	< 5.100	<5.10e0	n/a	n/a	105.0	5.100	n/a
S98T001362	D		Sulfur-ICP-Acid Dil.	ug/mL	98.80	<1.00e-01	82.90	81.20	82.05	2.07	99.10	5.100	n/a
S98T001362	D		Antimony-ICP-Acid Dil.	ug/mL	97.40	<6.00e-02	< 3.060	<3.06e0	n/a	n/a	102.0	3.060	n/a
S98T001362	D		Selenium-ICP-Acid Dil.	ug/mL	92.80	<1.00e-01	< 5.100	<5.10e0	n/a	n/a	106.0	5.100	n/a
S98T001362	D		Silicon-ICP-Acid Dil.	ug/mL	99.00	<5.00e-02	17.00	16.80	16.90	1.18	102.0	2.550	n/a
S98T001362	D		Samarium-ICP-Acid Dil.	ug/mL	97.20	<1.00e-01	< 5.100	<5.10e0	n/a	n/a	98.60	5.100	n/a
S98T001362	D		Strontium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	<5.10e-01	<5.10e-1	n/a	n/a	101.0	5.10e-01	n/a
S98T001362	D		Titanium-ICP-Acid Dil.	ug/mL	89.20	<1.00e-02	<5.10e-01	<5.10e-1	n/a	n/a	n/a	5.10e-01	n/a
S98T001362	D		Thallium-ICP-Acid Dil.	ug/mL	96.00	<2.00e-01	< 10.20	<1.02e1	n/a	n/a	98.00	10.20	n/a
S98T001362	D		Uranium-ICP-Acid Dil.	ug/mL	96.10	<5.00e-01	< 25.50	<2.55e1	n/a	n/a	99.00	25.50	n/a
S98T001362	D		Vanadium-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	< 2.550	<2.55e0	n/a	n/a	102.0	2.550	n/a
S98T001362	D		Zinc-ICP-Acid Dil.	ug/mL	100.6	<1.00e-02	<5.10e-01	<5.10e-1	n/a	n/a	105.0	5.10e-01	n/a
S98T001362			Bromide by Ion Chromatograph	ug/mL	98.81	<1.25e-01	<1.39e+02	<1.39e2	n/a	n/a	98.47	138.9	n/a
S98T001362			Oxalate-IC-Dionex 4000/450	ug/mL	95.67	<1.05e-01	<1.17e+02	<1.17e2	n/a	n/a	95.86	116.7	n/a
S98T001365			Ammonia by ISE-Std Additions	ug/mL	91.77	<5.000	6.280	<5.00	n/a	n/a	97.00	5.000	n/a
S98T001365			Cobalt-60 by GEA	uCi/mL	105.5	<2.31e-04	<7.54e-04	<6.87e-4	n/a	n/a	n/a	1.00e-03	n/a

Opportunistic Analyses for AN-101 Grab1 Samples
AN-101 GRAB1

CORE NUMBER: n/a
SEGMENT #: 1AN-98-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T001363			Tot. Organic Carbon by Coul.	ug/mL	102.7	1.400	1.12e+03	1.19e+03	1.16e+03	6.06	n/a	20.00	n/a
S98T001363		D	Silver-ICP-Acid Dil.	ug/mL	97.00	<1.00e-02	7.360	8.060	7.710	9.08	n/a	4.010	n/a
S98T001363		D	Arsenic-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001363		D	Boron-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	< 20.10	<2.01e1	n/a	n/a	n/a	20.10	n/a
S98T001363		D	Barium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	< 20.10	<2.01e1	n/a	n/a	n/a	20.10	n/a
S98T001363		D	Beryllium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-03	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S98T001363		D	Bismuth-ICP-Acid Dil.	ug/mL	100.0	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001363		D	Calcium-ICP-Acid Dil.	ug/mL	97.60	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001363		D	Cadmium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-03	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S98T001363		D	Cerium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001363		D	Cobalt-ICP-Acid Dil.	ug/mL	97.20	<2.00e-02	< 8.020	<8.02e0	n/a	n/a	n/a	8.020	n/a
S98T001363		D	Copper-ICP-Acid Dil.	ug/mL	94.60	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001363		D	Potassium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-01	3.03e+03	3.06e+03	3.04e+03	0.99	n/a	200.0	n/a
S98T001363		D	Lanthanum-ICP-Acid Dil.	ug/mL	99.00	<5.00e-02	< 20.10	<2.01e1	n/a	n/a	n/a	20.10	n/a
S98T001363		D	Lithium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001363		D	Magnesium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001363		D	Molybdenum-ICP-Acid Dil.	ug/mL	98.00	<5.00e-02	28.50	29.00	28.75	1.74	n/a	20.10	n/a
S98T001363		D	Neodymium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001363		D	Phosphorus-ICP-Acid Dil.	ug/mL	97.80	<2.00e-01	4.80e+02	500.0	490.0	4.08	n/a	80.20	n/a
S98T001363		D	Lead-ICP-Acid Dil.	ug/mL	95.60	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001363		D	Sulfur-ICP-Acid Dil.	ug/mL	98.80	<1.00e-01	6.94e+02	703.0	698.5	1.29	n/a	40.10	n/a
S98T001363		D	Antimony-ICP-Acid Dil.	ug/mL	97.40	<6.00e-02	< 24.10	<2.41e1	n/a	n/a	n/a	24.10	n/a
S98T001363		D	Selenium-ICP-Acid Dil.	ug/mL	92.80	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001363		D	Silicon-ICP-Acid Dil.	ug/mL	99.00	<5.00e-02	32.20	33.90	33.05	5.14	n/a	20.10	n/a
S98T001363		D	Samarium-ICP-Acid Dil.	ug/mL	97.20	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001363		D	Strontium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001363		D	Titanium-ICP-Acid Dil.	ug/mL	89.20	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001363		D	Thallium-ICP-Acid Dil.	ug/mL	96.00	<2.00e-01	< 80.20	<8.02e1	n/a	n/a	n/a	80.20	n/a
S98T001363		D	Uranium-ICP-Acid Dil.	ug/mL	96.10	<5.00e-01	<2.00e+02	<2.00e2	n/a	n/a	n/a	200.0	n/a
S98T001363		D	Vanadium-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	< 20.10	<2.01e1	n/a	n/a	n/a	20.10	n/a
S98T001363		D	Zinc-ICP-Acid Dil.	ug/mL	100.6	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001363			Bromide by Ion Chromatograph	ug/mL	98.81	<1.25e-01	<1.28e+03	<1.28e3	n/a	n/a	n/a	1.28e+03	n/a
S98T001363			Oxalate-IC-Dionex 4000/450	ug/mL	95.67	<1.05e-01	1.19e+03	<1.07e3	n/a	n/a	n/a	1.07e+03	n/a
S98T001366			Ammonia by ISE-Std Additions	ug/mL	91.77	<5.000	21.80	22.70	22.25	4.04	n/a	5.000	n/a
S98T001366			Cobalt-60 by GEA	uCi/mL	105.5	<2.31e-04	<3.15e-03	<3.05e-3	n/a	n/a	n/a	3.00e-03	n/a

Opportunistic Analyses for AN-101 Grab1 Samples
AN-101 GRAB1

CORE NUMBER: n/a
SEGMENT #: 1AN-98-3

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T001364			Tot. Organic Carbon by Coul.	ug/mL	102.7	1.400	1.29e+03	1.29e+03	1.29e+03	0.00	n/a	20.00	n/a
S98T001364		D	Silver-ICP-Acid Dil.	ug/mL	97.00	<1.00e-02	8.920	8.700	8.810	2.50	n/a	4.010	n/a
S98T001364		D	Arsenic-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001364		D	Boron-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	< 20.10	<2.01e1	n/a	n/a	n/a	20.10	n/a
S98T001364		D	Barium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	< 20.10	<2.01e1	n/a	n/a	n/a	20.10	n/a
S98T001364		D	Beryllium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-03	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S98T001364		D	Bismuth-ICP-Acid Dil.	ug/mL	100.0	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001364		D	Calcium-ICP-Acid Dil.	ug/mL	97.60	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001364		D	Cadmium-ICP-Acid Dil.	ug/mL	98.40	<5.00e-03	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S98T001364		D	Cerium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001364		D	Cobalt-ICP-Acid Dil.	ug/mL	97.20	<2.00e-02	< 8.020	<8.02e0	n/a	n/a	n/a	8.020	n/a
S98T001364		D	Copper-ICP-Acid Dil.	ug/mL	94.60	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001364		D	Potassium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-01	3.71e+03	3.66e+03	3.68e+03	1.36	n/a	200.0	n/a
S98T001364		D	Lanthanum-ICP-Acid Dil.	ug/mL	99.00	<5.00e-02	< 20.10	<2.01e1	n/a	n/a	n/a	20.10	n/a
S98T001364		D	Lithium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001364		D	Magnesium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001364		D	Molybdenum-ICP-Acid Dil.	ug/mL	98.00	<5.00e-02	33.80	32.70	33.25	3.31	n/a	20.10	n/a
S98T001364		D	Neodymium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001364		D	Phosphorus-ICP-Acid Dil.	ug/mL	97.80	<2.00e-01	5.53e+02	549.0	551.0	0.73	n/a	80.20	n/a
S98T001364		D	Lead-ICP-Acid Dil.	ug/mL	95.60	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001364		D	Sulfur-ICP-Acid Dil.	ug/mL	98.80	<1.00e-01	8.08e+02	815.0	811.5	0.86	n/a	40.10	n/a
S98T001364		D	Antimony-ICP-Acid Dil.	ug/mL	97.40	<6.00e-02	< 24.10	<2.41e1	n/a	n/a	n/a	24.10	n/a
S98T001364		D	Selenium-ICP-Acid Dil.	ug/mL	92.80	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001364		D	Silicon-ICP-Acid Dil.	ug/mL	99.00	<5.00e-02	38.50	40.90	39.70	6.05	n/a	20.10	n/a
S98T001364		D	Samarium-ICP-Acid Dil.	ug/mL	97.20	<1.00e-01	< 40.10	<4.01e1	n/a	n/a	n/a	40.10	n/a
S98T001364		D	Strontium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001364		D	Titanium-ICP-Acid Dil.	ug/mL	89.20	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001364		D	Thallium-ICP-Acid Dil.	ug/mL	96.00	<2.00e-01	< 80.20	<8.02e1	n/a	n/a	n/a	80.20	n/a
S98T001364		D	Uranium-ICP-Acid Dil.	ug/mL	96.10	<5.00e-01	<2.00e+02	<2.00e2	n/a	n/a	n/a	200.0	n/a
S98T001364		D	Vanadium-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	< 20.10	<2.01e1	n/a	n/a	n/a	20.10	n/a
S98T001364		D	Zinc-ICP-Acid Dil.	ug/mL	100.6	<1.00e-02	< 4.010	<4.01e0	n/a	n/a	n/a	4.010	n/a
S98T001364			Bromide by Ion Chromatograph	ug/mL	101.0	<1.25e-01	<2.65e+02	<2.65e2	n/a	n/a	n/a	265.1	n/a
S98T001364			Oxalate-IC-Dionex 4000/450	ug/mL	95.29	<1.05e-01	4.80e+02	550.0	515.1	13.6	n/a	222.7	n/a
S98T001367			Ammonia by ISE-Std Additions	ug/mL	91.77	<5.000	40.00	35.70	37.85	11.4	n/a	1.00e-02	n/a
S98T001367			Cobalt-60 by GEA	uCi/mL	105.5	<2.31e-04	<3.00e-03	<2.97e-3	n/a	n/a	n/a	3.00e-03	n/a

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