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2	1	Cog. Mgr. D. B. Hardy	<i>D. B. Hardy</i>	3/19/98					
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Tank 241-S-302, Grab Samples, 302S-97-1, 302S-97-2 and 302S-97-3 Analytical Results for the Final Report

Franciska H. Steen

Waste Management of Hanford, Inc., Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

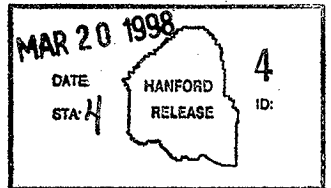
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ANALYTICAL SERVICES

**TANK 241-S-302, GRAB SAMPLES,
302S-97-1, 302S-97-2 and 302S-97-3
ANALYTICAL RESULTS FOR THE FINAL REPORT**

Project Coordinator: Franciska H. Steen

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

by

**222-S Laboratory
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NARRATIVE

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222-S ANALYTICAL SERVICES

TANK 241-S-302, GRAB SAMPLES, 302-S-97-1, 302-S-97-2 and 302-S-97-3 ANALYTICAL RESULTS FOR THE FINAL REPORT

This document is the final report for tank 240-S-302 grab samples. Three grab samples were collected on January 30, 1998. Analyses were performed on samples 302-S-97-1, 302-S-97-2 and 302-S-97-3 in accordance with the *Compatibility Grab Sampling and Analysis Plan* (TSAP) (Sasaki, 1997) and the *Data Quality Objectives for Tank Farms Waste Compatibility Program* (DQO) (Mulkey, 1997). The analytical results are presented in 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.

302-S-97-1

Visual observation indicated that the sample was a clear light-yellow liquid with less than one percent solids. No organic layer was observed. The 125 mL sample was submitted to the laboratory for analysis of inorganic analytes and radionuclides

302-S-97-2

Visual observation indicated that the sample was a clear light-yellow liquid with less than one percent solids. No organic layer was observed. The 125 mL sample was submitted to the laboratory for analysis of inorganic analytes and radionuclides

302-S-97-3

Visual observation indicated that the sample was a clear light-yellow liquid with less than one percent solids. No organic layer was observed. The 125 mL sample was submitted to the laboratory for analysis of inorganic analytes and radionuclides

Table 2: Appearance Information for Tank 240-S-302 Grab Samples

Sample Number	Date Sampled	Date Received	% Settled Solids	Sample Description
302-S-97-1	1/30/98	1/30/98	<0.1%	Clear light-yellow liquid; no organic layer was observed.
302-S-97-2	1/30/98	1/30/98	<0.1%	Clear light-yellow liquid; no organic layer was observed.
302-S-97-3	1/30/98	1/30/98	<0.1%	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.

Differential Scanning Calorimetry (DSC)

The DSC analysis was performed in duplicate on direct subsamples. The exothermic energy based on dry weight of subsample was calculated for all subsamples. The average of the TGA results for each subsample was used in the dry weight correction for that subsample. There were no exotherms observed during the analysis of the tank 240-S-302 samples. The standard recoveries for this analysis were within the required limits.

Thermogravimetric Analysis (TGA)

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

Specific Gravity (Sp.G.)

Specific gravity analysis was performed on the three liquid subsamples. The results ranged from 0.985 g/mL to 0.989 g/mL. The standard recoveries and RPDs for this analysis were within the required limits.

pH

The pH analysis was performed on direct subsamples as indicated by a blank in the aliquot class (A#) column in Table 1. The results ranged from 9.04 to 9.63. The standard recoveries for this analysis were within the required limits.

OH

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

Ion Chromatography (IC)

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

The required analytes were fluoride (F^-), chloride (Cl^-), nitrate (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. There are no customer defined QC parameters for Br^- and oxalate and any anomalies in those results are not discussed. The standard recoveries, spike recoveries and RPDs for these analyses were within the required limits.

Inductively Coupled Plasma Spectrophotometry (ICP)

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), nickel (Ni), sodium (Na) 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.

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

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

Table 3. ICP Serial Dilution Results for Tank 240-S-302 Grab Samples				
Sample ID	Analyte	Undiluted Sample Results (mg/mL)	Serial Dilution Result	Percent Difference (%)
S98T000376	Na	3.82E+02	3.95E+02	3.5
S98T000378	Na	5.81E+02	6.02E+02	3.5

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

The liquid subsamples were prepared for analysis by performing an acid dilution. The results for the ICP/MS Uranium analyte results are included in Table 1. The standard recoveries, spike recoveries and RPDs for Uranium 238 were within the required limits.

Total Inorganic/Organic Carbon (TIC/TOC)

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 $\mu\text{gC/mL}$ for liquids.

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

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

Radionuclide Analyses

Gamma Energy Analysis (GEA)

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

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

Strontium 90 (^{90}Sr)

^{90}Sr analysis was performed in duplicate on direct subsamples as indicated by a blank in the A# column in Table 1. The standard recoveries and RPDs for this analysis were within the required limits.

Americium 241 (^{241}Am)

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

Plutonium 239/240 ($^{239/240}\text{Pu}$)

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

Compatibility Program Concerns

Differential Scanning Calorimetry - DSC- Energetics Decision Rule

For waste compatibility energetics decision concerns, the exotherm/endothrm ratio of the liquid samples is evaluated. This ratio must be less than one (1). The 240-S-302 grab samples did not exhibit any exotherms (the results were zero), therefore, the calculated ratio will also be zero (less than one).

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

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

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Procedures

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

Table 4. Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
DSC	Liquid	N/A	LA-514-114 Rev. D-1
TGA	Liquid	N/A	LA-514-114 Rev. D-1
Sp.G.	Liquid	N/A	LA-510-112 Rev. D-1
IC	Liquid	N/A	LA-533-105 Rev. E-0
ICP	Liquid	N/A	LA-505-161 Rev. C-2
TICTOC	Liquid	N/A	LA-342-100 Rev. F-1
pH	Liquid	N/A	LA-212-106 Rev. C-0
OH	Liquid	N/A	LA-211-102 Rev. D-0
GEA	Liquid	N/A	LA-548-121 Rev. F-0
²³⁹ Pu	Liquid	N/A	LA-953-104 Rev. B-0
²⁴¹ Am	Liquid	N/A	LA-953-104 Rev. B-0
⁹⁰ Sr	Liquid	N/A	LA-220-101 Rev. E-3

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Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
U	Liquid	N/A	LT-506-101, Rev. A-1

Abbreviations:

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

References

- Mulkey, C. H. and M. S. Miller, 1997, *Data Quality Objectives for the Waste Compatibility Program*, HNF-SD-WM-DQO-001, Rev. 2, Lockheed Martin Hanford Corporation, Richland, WA 99352.
- Sasaki, L. M., 1997, *Compatibility Grab Sampling and Analysis Plan for Fiscal Year 1998*, HNF-SD-WM-TSAP-150, Rev. 0-A, Lockheed Martin Hanford Corporation, Richland, WA 99352.
- Schreiber, R. D., 1997, *Fiscal Year 1997 Memorandum of Understanding for the TWRS Characterization Project*, HNF-SD-WM-SD-023, Rev. 0, Lockheed Martin Hanford Corporation, Richland, WA 99352.

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ATTACHMENT 1

S-302 SAMPLE BREAKDOWN

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Attachment 1

S-302 GRAB SAMPLE BREAKDOWN

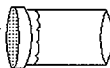
Catch Tank
Level Riser

302-S-97-1
S98T000376



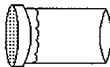
DSC
TGA
TIC/TOC
ICP
IC-ANIONS
PH
OH
SPG
GEA
AM241
PU239
SR90
ICP/MS-U
VOL% SOLIDS

302-S-97-2
S98T000377



DSC
TGA
TIC/TOC
ICP
IC-ANIONS
PH
OH
SPG
GEA
AM241
PU239
SR90
ICP/MS-U
VOL% SOLIDS

302-S-97-3
S98T000378



DSC
TGA
TIC/TOC
ICP
IC-ANIONS
PH
OH
SPG
GEA
AM241
PU239
SR90
ICP/MS-U
VOL% SOLIDS

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SAMPLE DATA SUMMARY

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Table 1. Data Summary Report
S-302 GRAB1RISER: CATCH TANK
SEGMENT #: 302-S-97-1

SEGMENT PORTION: Supernate

Sample #	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S981000376		DSC Exotherm Dry	loulles/g Dry	98.12	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S981000376		DSC Exotherm on Perkin Elmer	loulles/g	95.18	<42.00	< 42.00	125.0	0.00e+00	0.00	n/a	n/a	n/a	n/a
S981000376		Oil by Pot. Titration	ug/mL	100.6	n/a	9.320	9.310	9.315	0.11	n/a	41.70	n/a	n/a
S981000376		Oil Direct	Sp. G.	98.99	n/a	9.89e-01	9.89e-01	9.89e-01	0.00	n/a	1.00e-02	n/a	n/a
S981000376		Specific Gravity		98.99	n/a	9.89e-01	99.44	99.45	0.02	n/a	1.00e-02	n/a	n/a
S981000376		% Water by TGA onmes	ug/mL	98.36	n/a	1.11e+02	111.0	111.0	0.00	n/a	5.000	n/a	n/a
S981000376		IC by ActiOn/Calorimetry	ug/mL	99.67	5.800	4.00	<4.00e+1	n/a	n/a	98.50	40.00	n/a	n/a
S981000376		IC by ActiOn/Calorimetry	ug/mL	92.00	4.300	40.00	n/a	n/a	n/a	92.50	60.00	n/a	n/a
S981000376		IC by Fe-89/90 High Level	ug/mL	93.64	<2.10e-06	3.59e-03	3.61e-03	3.60e-03	0.56	n/a	2.49e-06	1.10e+00	n/a
S981000376		IC by Fe-89/90 High Level	ug/mL	87.52	<2.78e-06	1.53e-03	1.66e-05	1.60e-05	8.15	n/a	3.10e-06	3.46e+00	n/a
S981000376		Pv-239/240 by TRISPEC Resin	ug/mL	n/a	n/a	<1.59e-02	<1.59e-02	n/a	n/a	n/a	1.60e-02	n/a	n/a
S981000376		Uranium-233 by ICP/MS	ug/mL	n/a	n/a	<1.40e-02	4.30e-01	4.40e-01	4.31	n/a	1.40e-02	n/a	n/a
S981000376		Uranium-235 by ICP/MS	ug/mL	n/a	n/a	<1.40e-02	1.82e-02	1.82e-02	9.37	n/a	9.00e-03	n/a	n/a
S981000376		Uranium-238 by ICP/MS	ug/mL	n/a	n/a	4.31e-01	4.30e-01	4.30e-01	4.74	n/a	5.40e-02	n/a	n/a
S981000376		Uranium-238 by ICP/MS	ug/mL	108.5	n/a	1.72e-02	1.90e-02	1.90e-02	63.31	114.0	5.40e-02	n/a	n/a
S981000376		Aluminum-ICP-Acid Dil.	ug/mL	98.20	<5.00e-02	5.19e-01	5.16e-01	5.18e-01	0.58	94.30	5.00e-02	n/a	n/a
S981000376		Chromium-ICP-Acid Dil.	ug/mL	97.60	<5.00e-02	6.23e-01	6.25e-01	6.24e-01	0.32	96.20	1.00e-02	n/a	n/a
S981000376		Iron-ICP-Acid Dil.	ug/mL	97.80	<5.00e-02	5.31e-01	5.13e-01	5.22e-01	3.45	91.00	5.00e-02	n/a	n/a
S981000376		Manganese-ICP-Acid Dil.	ug/mL	98.60	<1.00e-02	4.28e-02	4.33e-02	4.30e-02	1.16	95.40	1.00e-02	n/a	n/a
S981000376		Sodium-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	3.82e+02	381.0	381.5	0.26	-4.146e2	1.00e-01	n/a	n/a
S981000376		Zinc-ICP-Acid Dil.	ug/mL	99.20	<2.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	97.00	2.00e-02	n/a	n/a
S981000376		Fluoride-IC-Ploxex 4000/4500	ug/mL	99.60	<1.00e-02	3.09e-02	3.07e-02	3.07e-02	0.98	97.20	1.00e-02	n/a	n/a
S981000376		Chloride-IC-Ploxex 4000/4500	ug/mL	96.61	<1.20e-02	9.536	9.060	9.298	5.16	103.7	1.32e-01	n/a	n/a
S981000376		Nitrite-IC - D-Ionex 4000/4500	ug/mL	97.75	<1.08e-01	< 1.188	<1.190	n/a	n/a	96.50	1.188	n/a	n/a
S981000376		Nitrate by IC-Ploxex 4000/4500	ug/mL	97.42	<1.39e-01	3.50e+02	345.0	347.4	1.44	91.08	1.529	n/a	n/a
S981000376		Phosphate-IC-D-Ionex 4000/4500	ug/mL	92.59	<1.20e-01	91.42	90.20	90.81	1.32	100.6	1.320	n/a	n/a
S981000376		Sulfate by IC-Ploxex 4000/4500	ug/mL	96.36	<1.38e-01	12.08	12.40	12.24	2.45	97.63	1.518	n/a	n/a
S981000376		Cesium-137 by GEA	ug/mL	103.0	<3.03e-05	1.06e-02	1.12e-02	1.09e-02	5.50	n/a	1.00e-01	1.32	n/a
S981000376		Volume % Settled Solids	%	n/a	n/a	< 1.000	n/a	n/a	n/a	n/a	1.00e-01	n/a	n/a
S981000376		Am-241 by Extraction	ug/mL	109.7	<5.43e-06	<5.83e-06	<6.98e-6	n/a	n/a	n/a	5.83e-06	1.15e+01	n/a

Table 1. Data Summary Report
S-302 GRA61

SEGMENT PORTION: Supernate

RISER: CATCH TANK
SEGMENT #: 502-S-97-2

Sample#	R #46	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S981000377		DSC Exotherm Dry	loultes/g Dry	98.42	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S981000377		DSC Exotherm on Perkin Elmer	loultes/g	95.18	<42.00	< 42.00	<42	9.040	n/a	n/a	41.70	n/a
S981000377		OH- by Pot. Titration	ug/mL	100.6	n/a	9.040	9.040	9.040	0.00	n/a	1.00e-02	n/a
S981000377		PH Direct	Sp. G.	98.99	n/a	9.87e-01	9.88e-01	9.88e-01	0.10	n/a	1.00e-02	n/a
S981000377		Specific Gravity	%	98.36	n/a	99.43	98.89	99.16	0.54	n/a	5.000	n/a
S981000377		Water by TGA on Perkin Elmer	ug/mL	99.67	5.800	96.30	95.60	95.95	0.73	n/a	40.00	n/a
S981000377		IC by Acid Conductivity	ug/mL	92.00	< 40.00	< 40.00	<4.00E+1	n/a	n/a	n/a	2.52e-06	1.03E+00
S981000377		IC by TGA on Perkin Elmer	ug/mL	93.64	<2.10e-06	4.14e-03	4.23e-03	4.19e-03	2.62	n/a	1.36e-06	2.64E+00
S981000377		Stoichiometry by HPLC	ug/mL	91.10	<1.01e-06	1.05e-03	1.16e-03	1.11e-03	9.95	n/a	1.40e-02	n/a
S981000377		Pz-239/240 by TGA SPEC Resin	ug/mL	n/a	n/a	<1.59e-02	<1.59e-2	n/a	n/a	n/a	1.60e-02	n/a
S981000377		Uranium-235 by ICP/MS	ug/mL	n/a	n/a	<1.40e-02	<1.39e-2	n/a	n/a	n/a	9.00e-03	n/a
S981000377		Uranium-235 by ICP/MS	ug/mL	n/a	n/a	3.11e-01	3.09e-01	3.10e-01	0.65	n/a	1.60e-02	n/a
S981000377		Uranium-238 by ICP/MS	ug/mL	108.5	n/a	<1.59e-02	<1.59e-2	n/a	n/a	n/a	5.40e-02	n/a
S981000377		Aluminum-238 by ICP/MS	ug/mL	98.20	<5.00e-02	5.20e-01	5.13e-01	45.26	0.66	97.00	5.40e-02	n/a
S981000377		Chromium-ICP-Acid Dil.	ug/mL	97.60	<1.00e-02	4.80e-01	4.56e-01	5.16e-01	1.36	n/a	5.00e-02	n/a
S981000377		Iron-ICP-Acid Dil.	ug/mL	97.80	<5.00e-02	5.53e-01	5.63e-01	5.58e-01	5.13	n/a	1.00e-02	n/a
S981000377		Sodium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-02	4.15e-02	4.32e-02	4.23e-02	4.01	n/a	5.00e-02	n/a
S981000377		Manganese-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	3.13e-02	3.18e-02	316.5	0.95	n/a	1.00e-01	n/a
S981000377		Nickel-ICP-Acid Dil.	ug/mL	99.20	<2.00e-02	<2.00e-02	<2.00e-2	n/a	n/a	n/a	2.00e-02	n/a
S981000377		Zirconium-ICP-Acid Dil.	ug/mL	99.60	<1.00e-02	2.20e-02	2.24e-02	2.22e-02	1.80	n/a	1.00e-02	n/a
S981000377		Fluoride-IC-Bioxon 4000/4500	ug/mL	96.61	<1.20e-02	8.712	8.470	8.591	2.79	n/a	1.32e-01	n/a
S981000377		Nitrate by IC-Bioxon 4000/4500	ug/mL	97.75	< 1.188	< 1.188	<1.1960	20.60	0.00	n/a	1.87e-01	n/a
S981000377		Nitrate by IC-Bioxon 4000/4500	ug/mL	92.59	<1.359e-01	3.00e-02	294.0	297.2	2.02	n/a	1.529	n/a
S981000377		Phosphate by IC-Bioxon 4000/4500	ug/mL	92.66	<1.20e-01	72.33	70.50	71.41	2.52	n/a	1.320	n/a
S981000377		Sulfate by IC-Bioxon 4000/4500	ug/mL	96.36	<1.38e-01	10.75	10.90	10.82	0.92	n/a	1.518	n/a
S981000377		Cesium-137 by GEA	ug/mL	103.0	<3.03e-05	1.14e-02	1.12e-02	1.13e-02	1.77	n/a	1.00e-01	n/a
S981000377		Volume % Settled Solids	%	n/a	n/a	< 1.000	n/a	n/a	n/a	n/a	5.49e-06	1.00E+02
S981000377		Am-241 by Extraction	ug/mL	109.7	<5.43e-06	<5.49e-06	<5.77E-6	n/a	n/a	n/a	1.00E+02	n/a

Table 1. Data Summary Report
S-302 GRAB1RISER: CATCH TANK
SEGMENT #: 302-S-97-3

SEGMENT PORTION: Supernate

Sample #	RA# Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T000378	DSC Exotherm Dry, Calculated	lous/g Dry	97.40	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S98T000378	DSC Exotherm on Perkin Elmer	lous/g	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S98T000378	Oil by Pet. Titration	ug/ml	95.18	<42.00	<1.29e+02	<125	n/a	n/a	n/a	125.0	n/a
S98T000378	Oil by Direct Gravity	ug/ml	100.6	n/a	9.620	9.620	9.620	0.10	n/a	1.00e-02	n/a
S98T000378	Specific Gravity	Sp.G.	98.99	n/a	9.85e-01	9.87e-01	9.86e-01	0.20	n/a	1.00e-02	n/a
S98T000378	Water by TOC on Perkin Elmer	ug/ml	98.36	n/a	99.35	99.41	99.38	0.05	n/a	n/a	n/a
S98T000378	TOC by Acid/Coulometry	ug/ml	95.02	2.800	1.35e+02	135.0	135.0	0.00	101.0	5.000	n/a
S98T000378	TOC by Resultate/Coulometry	ug/ml	89.67	14.50	<40.00	<4.00e+1	n/a	n/a	91.40	40.000	n/a
S98T000378	Stroclum 89/90, High Level	ug/ml	93.64	<2.10e+06	4.28e-03	4.24e-03	4.26e-03	0.94	n/a	2.58e-06	1.02e+00
S98T000378	Pu-239/240 by TRU-SPEC Resin	uCi/ml	87.52	<2.78e+06	2.98e-05	2.80e-05	2.89e-05	6.23	n/a	3.98e-06	2.75e+00
S98T000378	Uranium-235 by ICP/MS	ug/ml	n/a	n/a	<3.18e-02	<2.79e-2	n/a	n/a	n/a	3.20e-02	n/a
S98T000378	Uranium-234 by ICP/MS	ug/ml	n/a	n/a	<2.79e-02	<2.79e-2	n/a	n/a	n/a	2.80e-02	n/a
S98T000378	Uranium-235 by ICP/MS	ug/ml	n/a	n/a	9.22e-01	9.38e-01	9.30e-01	1.72	n/a	1.90e-02	n/a
S98T000378	Uranium-236 by ICP/MS	ug/ml	n/a	n/a	4.16e-02	4.06e-02	4.11e-02	2.43	n/a	3.20e-02	n/a
S98T000378	Uranium-238 by ICP/MS	ug/ml	108.5	n/a	1.31e+02	133.0	131.8	1.52	105.5	1.08e-01	n/a
S98T000378	Aluminum-ICP-Acid Dil.	ug/ml	98.20	<5.00e-02	8.90e-01	8.80e-01	8.85e-01	1.13	96.90	1.00e-01	n/a
S98T000378	Chromium-ICP-Acid Dil.	ug/ml	97.80	<5.00e-02	<1.00e-01	<1.00e-1	1.250	0.00	95.50	2.00e-02	n/a
S98T000378	Iron-ICP-Acid Dil.	ug/ml	98.60	<5.00e-02	5.17e-02	5.02e-02	5.10e-02	2.94	94.50	2.00e-02	n/a
S98T000378	Nickel-ICP-Acid Dil.	ug/ml	101.0	<1.00e-01	5.81e+02	586.0	583.5	0.86	316.0	2.00e-01	n/a
S98T000378	Sodium-ICP-Acid Dil.	ug/ml	99.20	<2.00e-02	6.67e-02	6.65e-02	6.66e-02	0.30	96.70	4.00e-02	n/a
S98T000378	Zirconium-ICP-Acid Dil.	ug/ml	93.73	<1.00e-02	11.83	12.40	12.12	4.96	110.3	1.32e-01	n/a
S98T000378	Fluoride-IC-Bioxon 4000/4500	ug/ml	96.88	<1.70e-02	27.78	27.20	27.49	2.18	96.88	1.87e-01	n/a
S98T000378	Chloride-IC-Bioxon 4000/4500	ug/ml	97.24	<1.08e-01	1.06e+02	106.0	106.2	0.00	103.3	1.188	n/a
S98T000378	Nitrate-IC - Dionex 4000/4500	ug/ml	95.12	<1.39e-01	4.13e+02	406.0	409.7	1.71	96.80	1.529	n/a
S98T000378	Phosphate-IC-Bioxon 4000/4500	ug/ml	96.88	<1.20e-01	1.89e+02	185.0	187.1	2.14	95.23	1.320	n/a
S98T000378	Sulfate by IC-Bioxon 4000/4500	ug/ml	99.37	<1.38e-01	15.20	14.70	14.95	3.34	97.78	1.518	n/a
S98T000378	Cesium-137 by GEA	uCi/ml	103.0	<3.03e-05	2.31e-02	2.32e-02	2.31e-02	0.43	n/a	n/a	0.880
S98T000378	Volume % Settled Solids	%	109.7	<1.000	<1.000	<1.000	<1.000	n/a	n/a	1.00e-01	n/a
S98T000378	Am-241 by Extraction	uCi/ml	109.7	<5.43e-06	<5.34e-06	<5.13E-6	<5.13E-6	n/a	n/a	5.34e-06	1.00e+02

HNF-SD-WM-DP-294, REV. 0

CHAIN OF CUSTODY

HNF-SD-WM-DP-294, REV. 0

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CHAIN-OF-CUSTODY RECORD FOR CPO

Sample Number 302597	(2) Supervisor/Sampler K. J. Puzanik	(8) Seal Intact Upon Release? ☒ Yes ☐ No		
(4) Riser CATCH TR	(5) Cask/Pg Seal No. TF-8	(10) Seal Intact Upon Receipt? ☒ Yes ☐ No		
(6) Shipment Description: 302-140008	(7) Sampling Data Y N - Lithium Bromide ☐ Y ☒ N Amount <u>14</u> Concentration <u>14</u> - X-Ray ☐ Y ☒ N - Partial Sample ☐ Y ☒ N - Retrieved Partial Sample Stroke Length <u>14</u>	(11) Seal Number AND Cask/Pg SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No		
1. Work Package Number <u>WS-97-00275/b</u> 2. Cask/Pg Seal Number <u>2200</u> 3. Date Sample Collected <u>1-30-98</u> 4. Time Sample Collected <u>0945hr</u>		(12) Laboratory Comments:		
Relinquished By (Sign and PRINT) Relay R587m-n Relinquished By (Sign and PRINT) W. J. Puzanik Relinquished By (Sign and PRINT) W. J. Puzanik			(15) Date/Time <u>1-30-98 1103</u> (18) Date/Time <u>1-30-98 1144</u> (23) Date/Time <u>1-30-98 1144</u>	(16) Receiver Comments (20) Receiver Comments (24) Receiver Comments (28) Receiver Comments (27) Date/Time (26) Received By (Sign and PRINT) Relinquished By (Sign and PRINT) Relinquished By (Sign and PRINT)

Field Comments:

CHAIN-OF-CUSTODY RECORD FOR CPO

HNF-SD-WM-DP-294 REV. 0

(1) Sample Number 302-S-97-2		(2) Specimen/Sampler L. A. Parnitz		(9) Seal Intact Upon Release? ☒ Yes ☐ No	
(4) Riser Top 40-5-97-2		(5) Casting Serial No. Casting No. 09-4		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No	
Shipment Description:				(11) Seal Number AND Cast/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No	
A. Work Package Number W5-97-00275/0				(12) Laboratory Comments:	
B. Casting Seal Number 2188					
C. Date Sample Collected 1-30-98					
D. Time Sample Collected 0948h					
(7) Sampling Data					
Y N ☐ ☐ Lithium Bromide Amount Concentration X-Ray Partial Sample Retrieved Partial Sample Stroke Length					
Field Comments:					

22

(13) Relinquished By (Sign and PRINT) Robert A. Parnitz	(15) Date/Time 1-30-98	(16) Receiver Comments
(14) Relinquished By (Sign and PRINT) Robert A. Parnitz	(17) Date/Time 1-30-98	(18) Receiver Comments
(15) Relinquished By (Sign and PRINT) Robert A. Parnitz	(19) Date/Time 1-30-98	(20) Receiver Comments
(16) Relinquished By (Sign and PRINT) Robert A. Parnitz	(21) Date/Time 1-30-98	(22) Receiver Comments
(17) Relinquished By (Sign and PRINT) Robert A. Parnitz	(23) Date/Time 1-30-98	(24) Receiver Comments
(18) Relinquished By (Sign and PRINT) Robert A. Parnitz	(25) Date/Time 1-30-98	(26) Receiver Comments
(19) Relinquished By (Sign and PRINT) Robert A. Parnitz	(27) Date/Time 1-30-98	(28) Receiver Comments

CHAIN-OF-CUSTODY RECORD FOR CPO

HNF-SD-WM-DP-294 REV. 0

(1) Sample Number 302-S-97-3 *		(2) Supervisor/Sampler R. J. Puznik		(9) Seal Intact Upon Release? ☒ Yes ☐ No	
(3) Inmate 302-S-97-3 *		(4) Rising 0424 TR		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No	
(5) Casing Serial No. 3-8A		(6) Sampling Date 3-8A		(11) Seal Number AND Casing SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No	
(7) Shipment Description: A. Work Package Number W49-97-0022570		(8) Lithium Bromide ☒ Y ☐ N		(12) Laboratory Comments:	
B. Casing Seal Number 2190		Amount MA			
C. Date Sample Collected 1-30-98		Concentration MA			
D. Time Sample Collected 0955h		- X-Ray ☒ Y ☐ N			
		- Partial Sample ☒ Y ☐ N			
		- Retrieved Partial Sample Stroke Length MA			
Field Comments: * ORIGINAL BOTTLE BROKE, NEW BOTTLE HAS NO ETCHING ON IT. 1-30-98					
(13) Relinquished By (Sign and PRINT) R. J. Puznik Robert J Puznik					
(14) Received By (Sign and PRINT) Robert J Puznik					
(15) Relinquished By (Sign and PRINT) Robert J Puznik					
(16) Received By (Sign and PRINT) Robert J Puznik					
(17) Relinquished By (Sign and PRINT) Robert J Puznik					
(18) Received By (Sign and PRINT) Robert J Puznik					
(19) Relinquished By (Sign and PRINT) Robert J Puznik					
(20) Received By (Sign and PRINT) Robert J Puznik					
(21) Relinquished By (Sign and PRINT) Robert J Puznik					
(22) Received By (Sign and PRINT) Robert J Puznik					
(23) Relinquished By (Sign and PRINT) Robert J Puznik					
(24) Received By (Sign and PRINT) Robert J Puznik					
(25) Relinquished By (Sign and PRINT) Robert J Puznik					
(26) Received By (Sign and PRINT) Robert J Puznik					
(27) Relinquished By (Sign and PRINT) Robert J Puznik					
(28) Received By (Sign and PRINT) Robert J Puznik					

HNF-SD-WM-DP-294, REV. 0

SAMPLE HANDLING

HNF-SD-WM-DP-294, REV. 0

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LABCORE Data Entry Template for Worklist# 22136

Analyst: RLC Instrument: NONE Book # _____

Method: LA-519-151 Rev/Mod F.O

Worklist Comment: S-302 GRAB1, @BRKDWN1 skw

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000081	S-302 GRAB1	1 SAMPLE	S98T000376	0	@BRKDWN1 DOSERATE	LIQUID	N/A	0.7		mrad/hour
98000081	S-302 GRAB1	1 SAMPLE	S98T000376	0	@BRKDWN1 SEALNUM	LIQUID	N/A	2200		
98000081	S-302 GRAB1	1 SAMPLE	S98T000376	0	@BRKDWN1 ETCHNUM	LIQUID	N/A	3025-97-1		
98000081	S-302 GRAB1	1 SAMPLE	S98T000376	0	@BRKDWN1 APPEAR02	LIQUID	N/A	Clear		
98000081	S-302 GRAB1	1 SAMPLE	S98T000376	0	@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		ml
98000081	S-302 GRAB1	1 SAMPLE	S98T000376	0	@BRKDWN1 STLSD01	LIQUID	N/A	<1.0		%
98000081	S-302 GRAB1	1 SAMPLE	S98T000376	0	@BRKDWN1 COLOR-01	LIQUID	N/A	V.4. Yellow		
98000081	S-302 GRAB1	1 SAMPLE	S98T000376	0	@BRKDWN1 ORGVOL02	LIQUID	N/A	0		ml
98000081	S-302 GRAB1	2 SAMPLE	S98T000377	0	@BRKDWN1 DOSERATE	LIQUID	N/A	0.7		mrad/hour
98000081	S-302 GRAB1	2 SAMPLE	S98T000377	0	@BRKDWN1 SEALNUM	LIQUID	N/A	2188		
98000081	S-302 GRAB1	2 SAMPLE	S98T000377	0	@BRKDWN1 ETCHNUM	LIQUID	N/A	3023-97-2		
98000081	S-302 GRAB1	2 SAMPLE	S98T000377	0	@BRKDWN1 APPEAR02	LIQUID	N/A	Clear		
98000081	S-302 GRAB1	2 SAMPLE	S98T000377	0	@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		ml
98000081	S-302 GRAB1	2 SAMPLE	S98T000377	0	@BRKDWN1 STLSD01	LIQUID	N/A	<1.0		%
98000081	S-302 GRAB1	2 SAMPLE	S98T000377	0	@BRKDWN1 COLOR-01	LIQUID	N/A	V.4. Yellow		
98000081	S-302 GRAB1	2 SAMPLE	S98T000377	0	@BRKDWN1 ORGVOL02	LIQUID	N/A	0		ml
98000081	S-302 GRAB1	3 SAMPLE	S98T000378	0	@BRKDWN1 DOSERATE	LIQUID	N/A	0.7		mrad/hour
98000081	S-302 GRAB1	3 SAMPLE	S98T000378	0	@BRKDWN1 SEALNUM	LIQUID	N/A	2190		

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 22136

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000081	S-302 GRAB1	3 SAMPLE	S98T000378	0	@BRKDOWN1 ETCHNUM	LIQUID	N/A	<u>None</u>		
98000081	S-302 GRAB1	3 SAMPLE	S98T000378	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	<u>Clear</u>		
98000081	S-302 GRAB1	3 SAMPLE	S98T000378	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	<u>125</u>		mL
98000081	S-302 GRAB1	3 SAMPLE	S98T000378	0	@BRKDOWN1 STLSDL01	LIQUID	N/A	<u><1.0</u>		%
98000081	S-302 GRAB1	3 SAMPLE	S98T000378	0	@BRKDOWN1 COLOR-01	LIQUID	N/A	<u>V.L. Yellow</u>		
98000081	S-302 GRAB1	3 SAMPLE	S98T000378	0	@BRKDOWN1 ORGVOL02	LIQUID	N/A	<u>0</u>		mL

Final page for worklist # 22136

Analyst Signature

Date

2/3/98

Analyst Signature

Date

2-3-98

Validated
2/6/98
B.K. Fuller

Data Entry Comments:

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

HNF-SD-WM-DP-294, REV. 0

INORGANIC ANALYSIS

HNF-SD-WM-DP-294, REV. 0

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02/04/98 13:31

Page: 1

LABCORE Data Entry Template for Worklist# 22165Analyst: ADP Instrument: DSC0 3 Book # 12N14BMethod: LA-514-114 Rev/Mod D-1

Worklist Comment: S302 GRAB1, DSC-03, Run under nitrogen. skw

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	LIQUID	<u>28.45</u>	<u>28.00</u>	<u>N/A</u>	Joules/g
98000081	S-302 GRAB1	2	SAMPLE	S98T000376	0		DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
98000081	S-302 GRAB1	3	DUP	S98T000376	0		DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g
98000081	S-302 GRAB1	4	SAMPLE	S98T000377	0		DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
98000081	S-302 GRAB1	5	DUP	S98T000377	0		DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 22165

Anthony Jureta 2-9-98
Analyst Signature Date

Paul Jones 2-10-98
Analyst Signature Date

Validated 2/11/98 B. Schelley

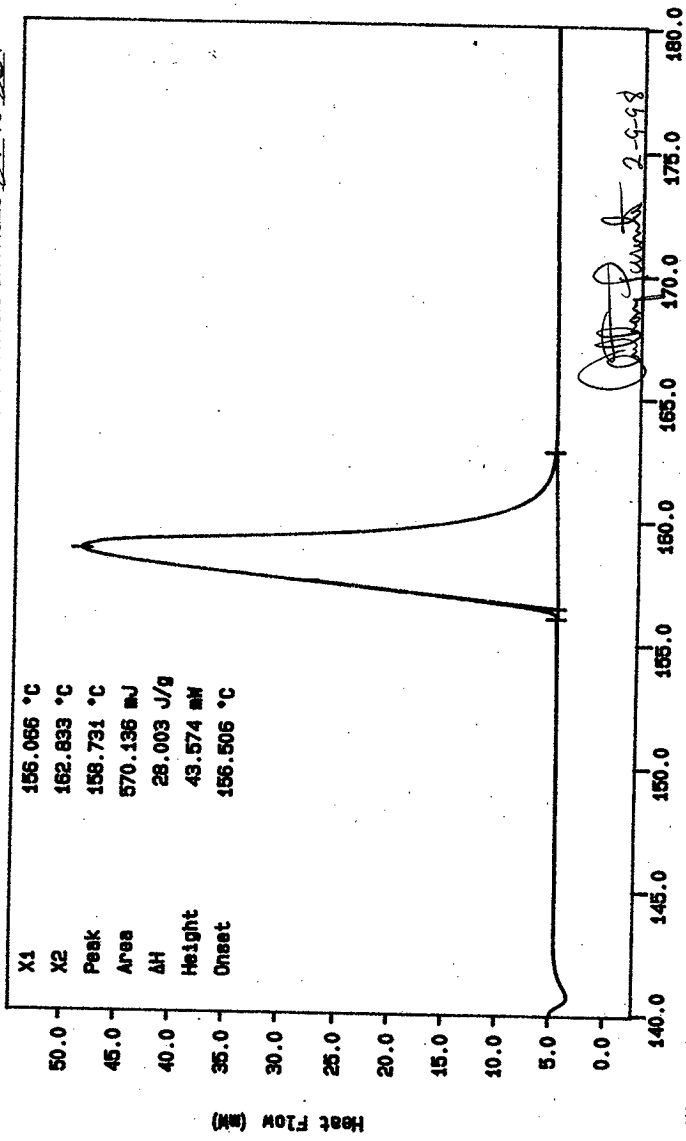
Data Entry Comments:

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

HNF-SD-WM-DP-294 REV. 0

Curve 1: DSC
 File Info: IND020902 Mon Feb 9 22:07:24 1998
 Sample Weight: 20.360 mg
 STD 12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 31 TO 32.



N2, EXOTHERM DOWN
 TRACER 120.8 g THERM: 0.0 min RATE: 10.0 °C/min
 AD PURINTON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Feb 9 22:12:00 1998

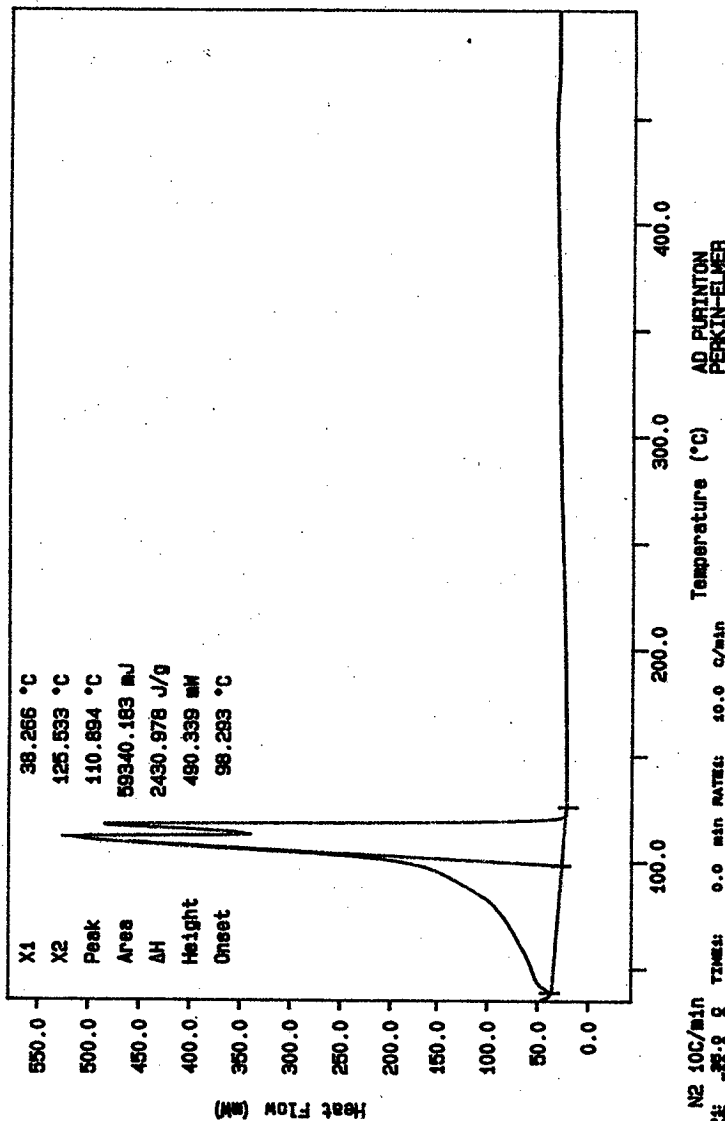
HNF-SD-WM-DP-294 REV. 0

Curve 1: DSC

File info: S4W020901 Tue Feb 10 02:52:52 1998

Sample Weight: 24.410 mg

S98T000976 SAM



N2 10C/min

TIME: 55.8 s

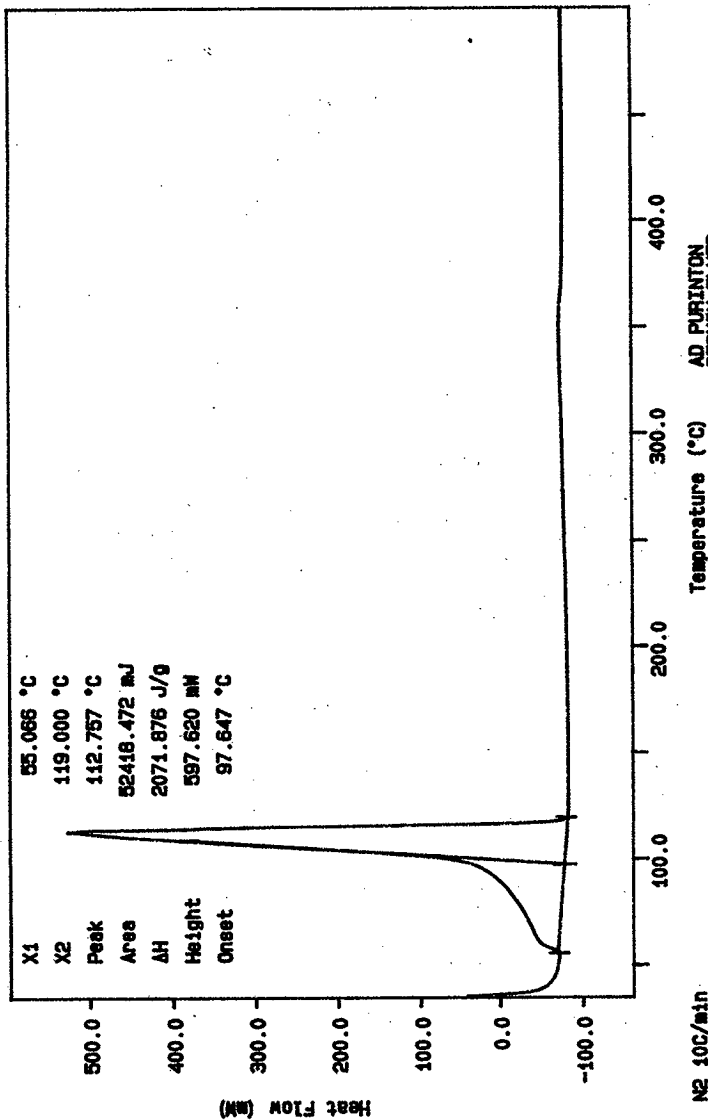
0.0 min RATE: 10.0 C/min

Temperature (°C)

AD PURINTON
PERKIN-ELMER7 Series Thermal Analysis System
Tue Feb 10 02:53:31 1998

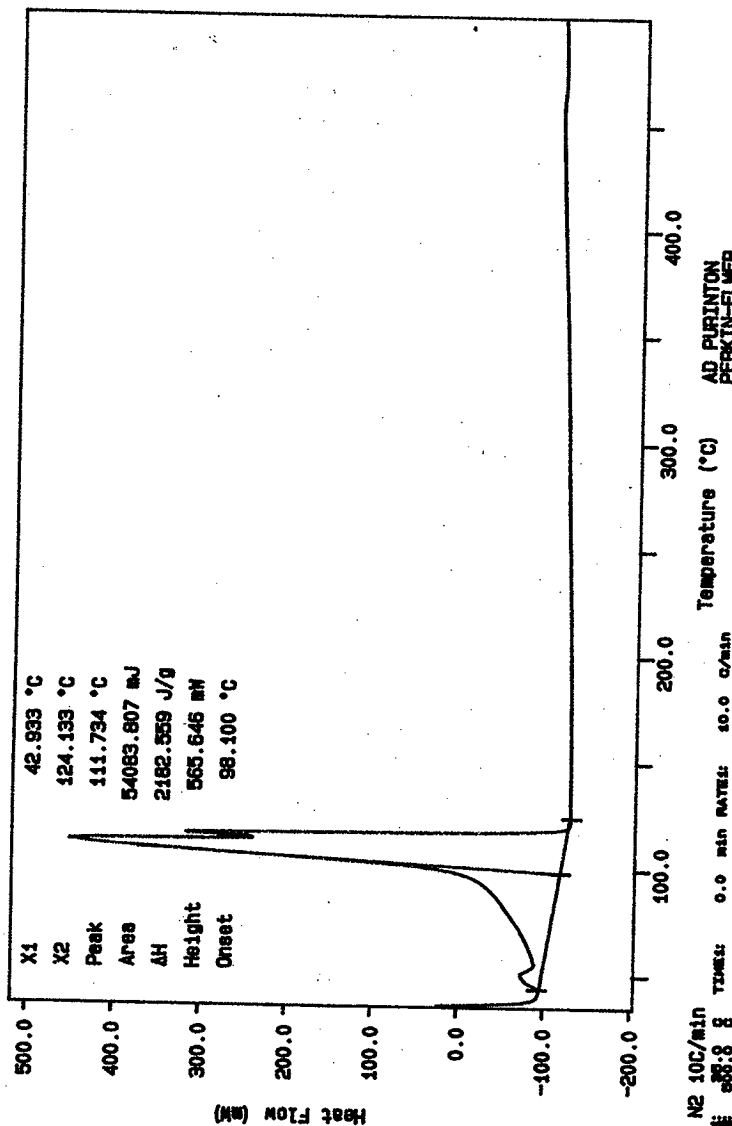
HNF-SD-WM-DP-294 REV. 0

Curve 1: DSC
File Info: SAM020902 Tue Feb 10 03:42:44 1998
Sample Weight: 25.300 mg
998T000376 DUP



HNF-SD-WM-DP-294 REV. 0

Curve 1: DSC
 File Info: SAM020903 Tue Feb 10 04:36:14 1998
 Sample Weight: 24.780 mg
 S98T000377 SAM



AD PURINTON
 PEKIN-ELMER
 7 Series Thermal Analysis System
 Tue Feb 10 04:38:44 1998

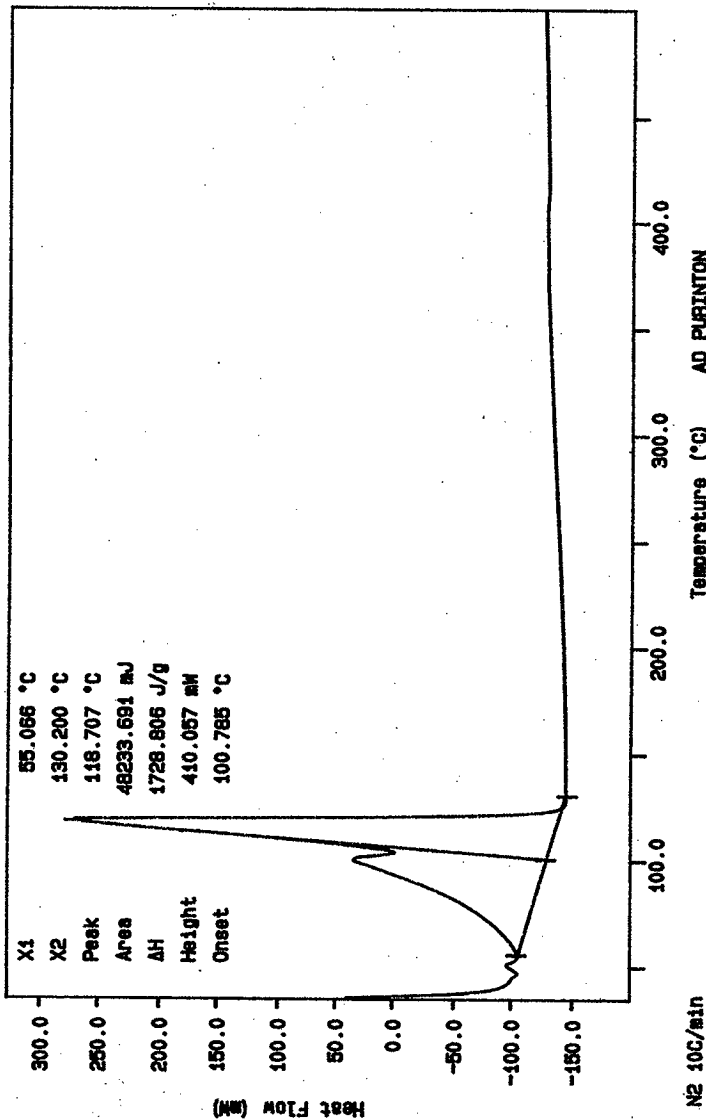
HNF-SD-WM-DP-294 REV. 0

Curve 1: DSC

File Info: SAM020304 Tue Feb 10 05:28:08 1998

Sample Weight: 27.900 mg

S98T000377 DUP



N2 10C/min

TIME: 58.8 g

TIME: 0.0 min

NATE: 10.0 C/min

Temperature (°C)

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Feb 10 08:01:17 1998

HNF-SD-WM-DP-294 REV. 0

worklist rpt Version 2.1 05/15/95

02/04/98 13:33

Page: 1

LABCORE Data Entry Template for Worklist# 22166

Analyst: RM Instrument: DSC0 3 Book # 12094BMethod: LA-514-114 Rev/Mod D-1

Worklist Comment: S302 GRAB1, DSC-03, Run under nitrogen. skw

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>27.71</u>	<u>N/A</u>	Joules/g
80000081	S-302 GRAB1	2 SAMPLE	S98T000378	0	DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
80000081	S-302 GRAB1	3 DUP	S98T000378	0	DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 22166

Analyst Signature RM Date 2/4/98Analyst Signature RJ Jones Date 2-11-98Validated 2/12/98 RM

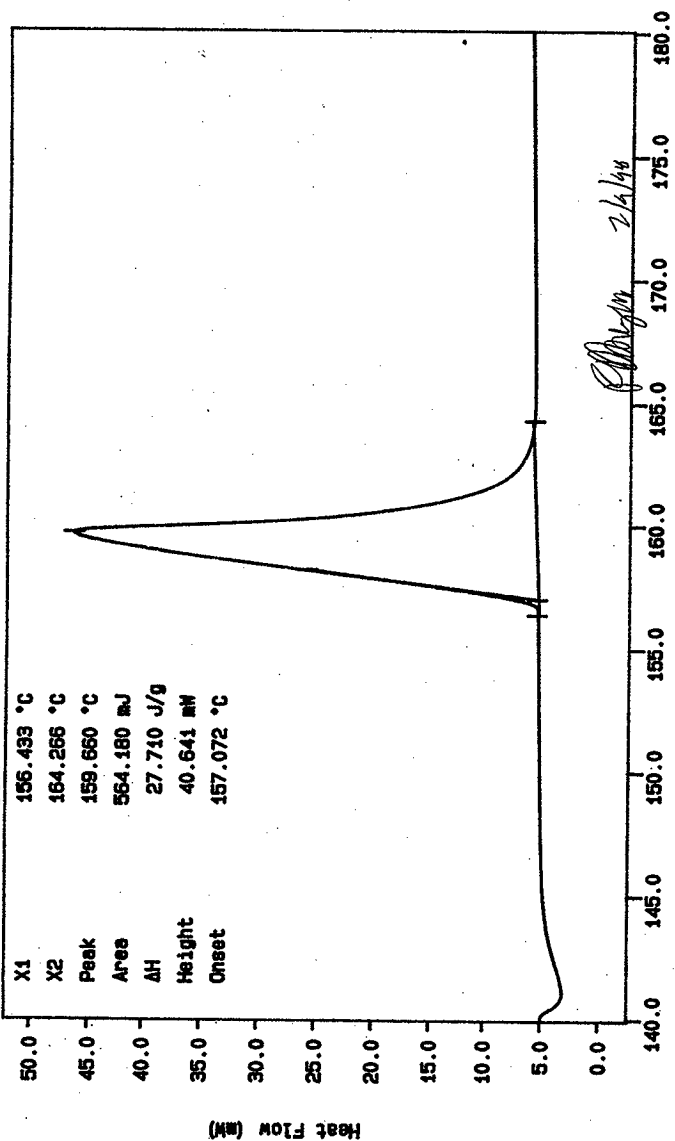
Data Entry Comments:

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

HNF-SD-WM-DP-294 REV. 0

Curve 1: DSC
 File info: IND020901 Mon Feb 9 07:45:47 1998
 Sample Weight: 20.360 mg
 STD 12N14-B

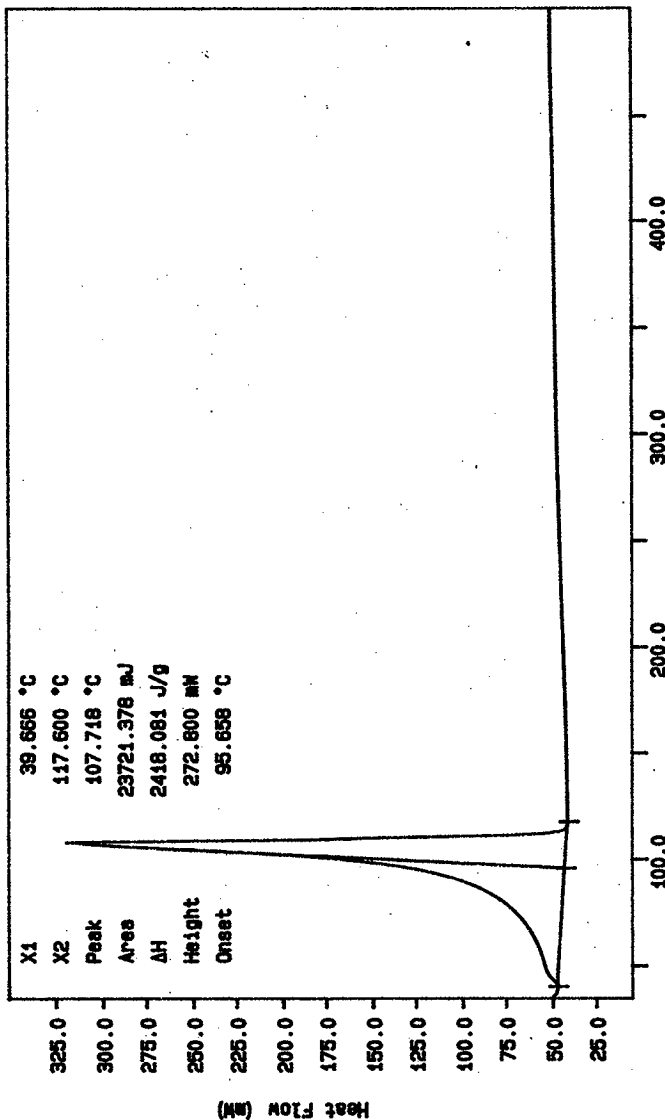
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 21 TO 21.



N2, EXOTHERM DOWN
 RATE 100.0 g/min
 0.0 min RATE: 10.0 C/min
 RD MEYERS
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Feb 9 08:17 1998

HNF-SD-WM-DP-294 REV. 0

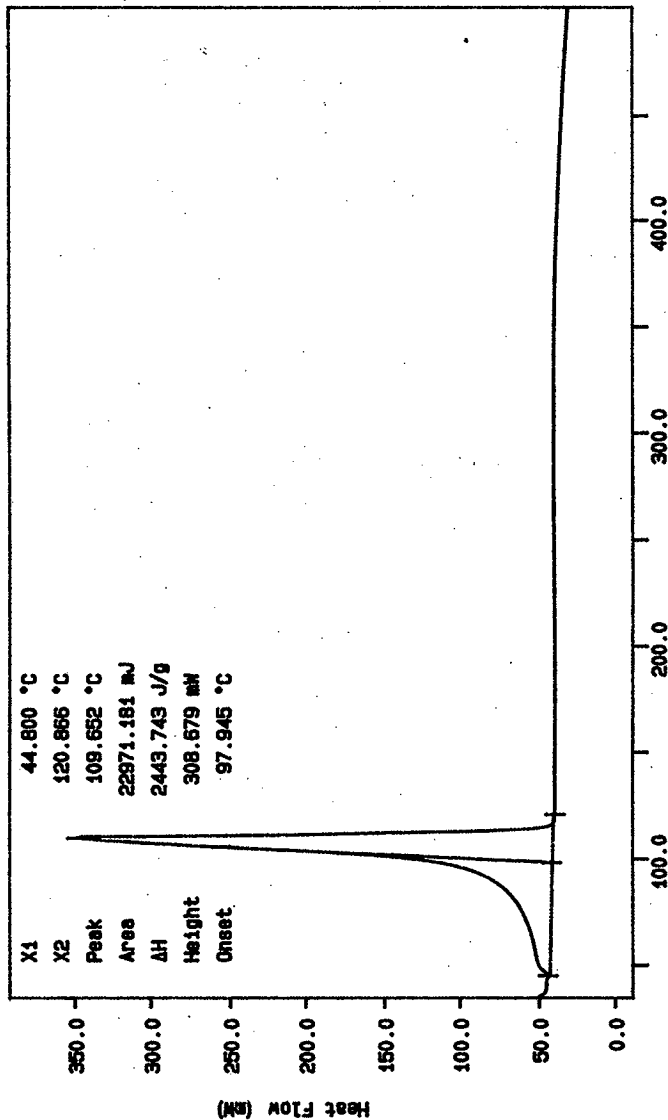
Curve 1: DSC
 File info: SAM020916 Mon Feb 9 15:24:25 1998
 Sample Weight: 9.810 mg
 S98T000378



N2 100/min
 TIME: 35.8 s
 RATE: 0.0 min RATE: 10.0 °C/min
 RD MEYERS
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Feb 9 15:27:46 1998

HNF-SD-WM-DP-294 REV. 0

Curve 1: DSC
 File info: SAM020917 Mon Feb 9 16:18:21 1998
 Sample Weight: 9.400 mg
 998T0003780UP



N2 10C/min
 TIME: 55:58
 0.0 min RATE: 10.0 C/min
 RD MEYERS
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Feb 9 16:27:17 1998

LABCORE Data Entry Template for Worklist# 22415

Analyst: ppb Instrument: DSC0 2 Book # NA

Method: LA-514-113 Rev/Mod GB 2/17/98

Worklist Comment: S-302 Grab DSC-02 liquid. -ppb

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000081	S-302 GRAB1	1 SAMPLE	S98T000376	0		DSC-02	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g Dry
98000081	S-302 GRAB1	2 DUP	S98T000376	0		DSC-02	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g Dry
98000081	S-302 GRAB1	3 SAMPLE	S98T000377	0		DSC-02	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g Dry
98000081	S-302 GRAB1	4 DUP	S98T000377	0		DSC-02	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g Dry
98000081	S-302 GRAB1	5 SAMPLE	S98T000378	0		DSC-02	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g Dry
98000081	S-302 GRAB1	6 DUP	S98T000378	0		DSC-02	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g Dry

Final page for worklist # 22415

Shachels 2/17/98
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

worklistrpt Version 2.1 05/15/95
02/04/98 13:57

HNF-SD-WM-DP-294 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 22173Analyst: ADP Instrument: TGA0 3 Book # 103NEAMethod: LA-514-114 Rev/Mod D-1

Worklist Comment: S302 GRAB1, TGA-03, Run under nitrogen. skw

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.0</u>	<u>58.03</u>	<u>N/A</u>	%
98000081	S-302 GRAB1	2 SAMPLE	S98T000376	0	TGA-03	LIQUID	<u>N/A</u>	<u>99.46</u>		%
98000081	S-302 GRAB1	3 DUP	S98T000376	0	TGA-03	LIQUID	<u>99.46</u>	<u>99.44</u>	<u>N/A</u>	%
98000081	S-302 GRAB1	4 SAMPLE	S98T000377	0	TGA-03	LIQUID	<u>N/A</u>	<u>99.43</u>		%
98000081	S-302 GRAB1	5 DUP	S98T000377	0	TGA-03	LIQUID	<u>99.43</u>	<u>98.89</u>	<u>N/A</u>	%

Final page for worklist # 22173

Anthony Puntero 2-9-98
Analyst Signature Date

[Signature] 2-12-98
Analyst Signature Date

Validated 2/17/98 [Signature]

Data Entry Comments:

Second STD ran due to delay in work completion with a result of 58.18% and a % Recovery of 98.61. 2/12/98

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.

Curve 1: TGA

File Info: TER020209 Mon Feb 9 22:28:37 1998

Sample Weight: 12.254 mg

STD 103NB-A

Feb. 12, 1998

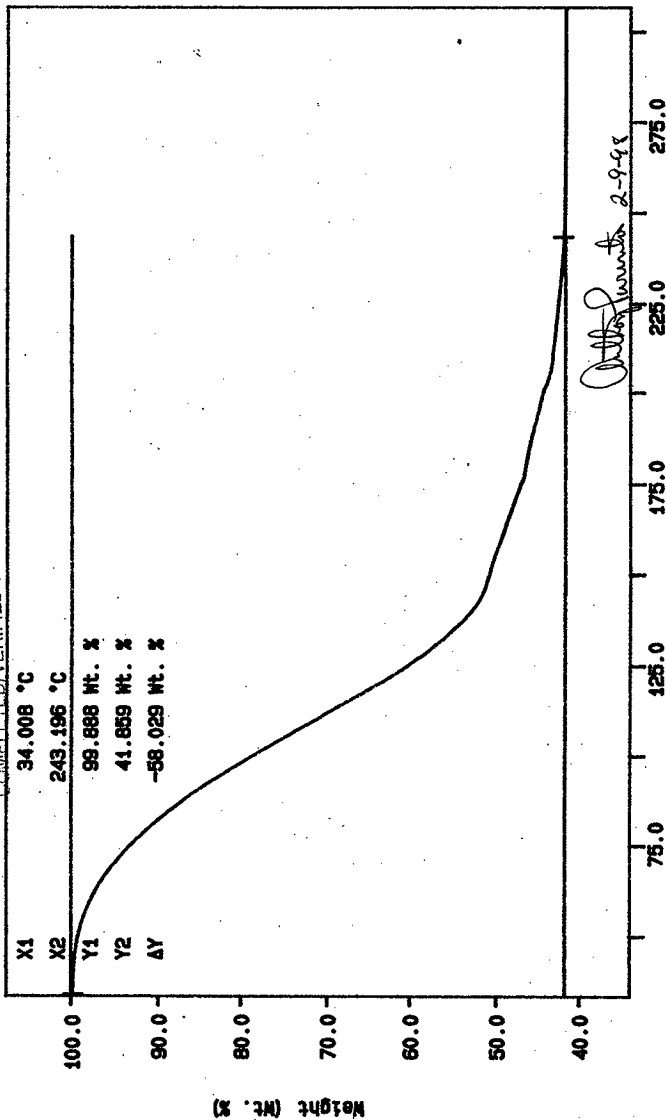
1:17PM

WHC 222S LAB ROOM 2F BACKSIDE

No. 0893 P. 2/7

HNH-SD-WM-DP-294 REV. 0

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 42 TO 47.



100/MIN N2
TIME: 23.88
TIME: 23.88
0.0 MIN RATE: 10.0 C/min
AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Feb 9 22:30:03 1998

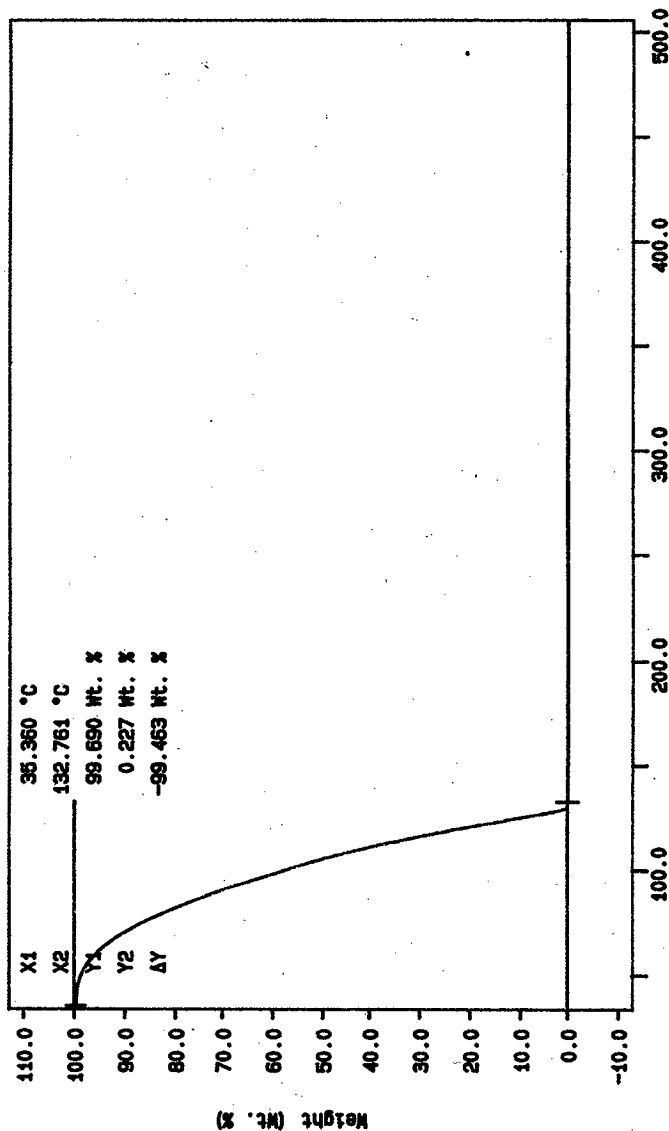
HNF-SD-WM-DP-294 REV. 0

Curve 1: TGA

File info: SAM020905 Tue Feb 10 03:48:50 1998

Sample Weight: 14.576 mg

S98T000376 SAM



10C/MIN N2

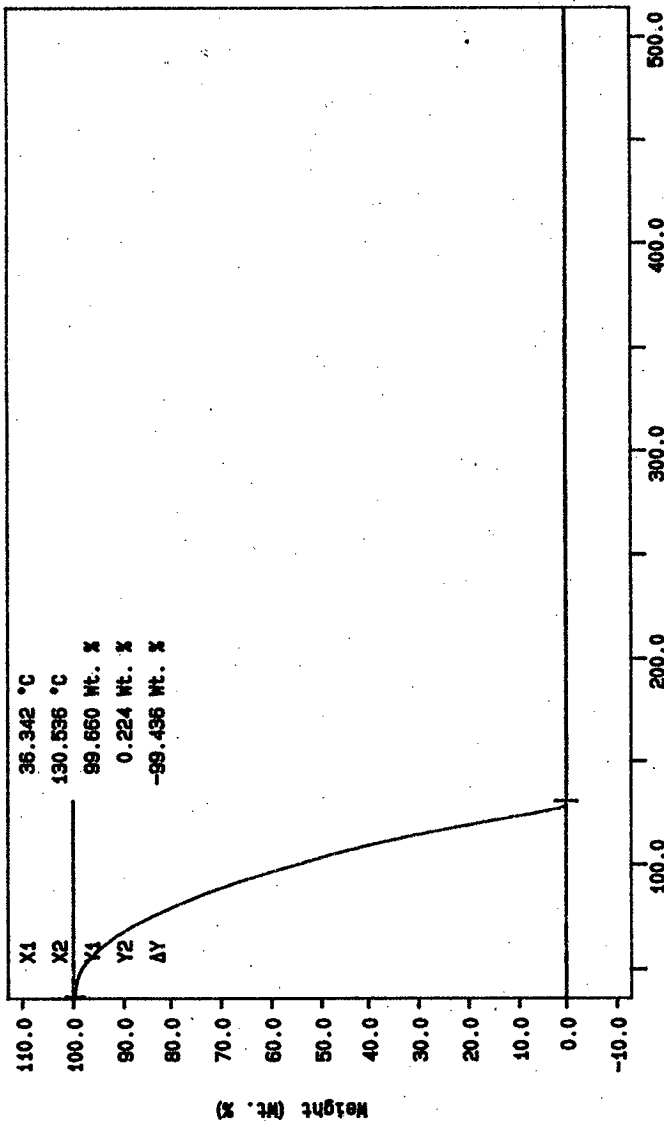
TIME 58.8 s

0.0 MIN RATE: 10.0 C/min

AD PURINTIN
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Feb 10 03:50:27 1998

HNF-SD-WM-DP-294 REV. 0

Curve 1: TGA
 File info: SAM020906 Tue Feb 10 04:51:57 1998
 Sample Weight: 14.617 mg
 S98T000376 DUP

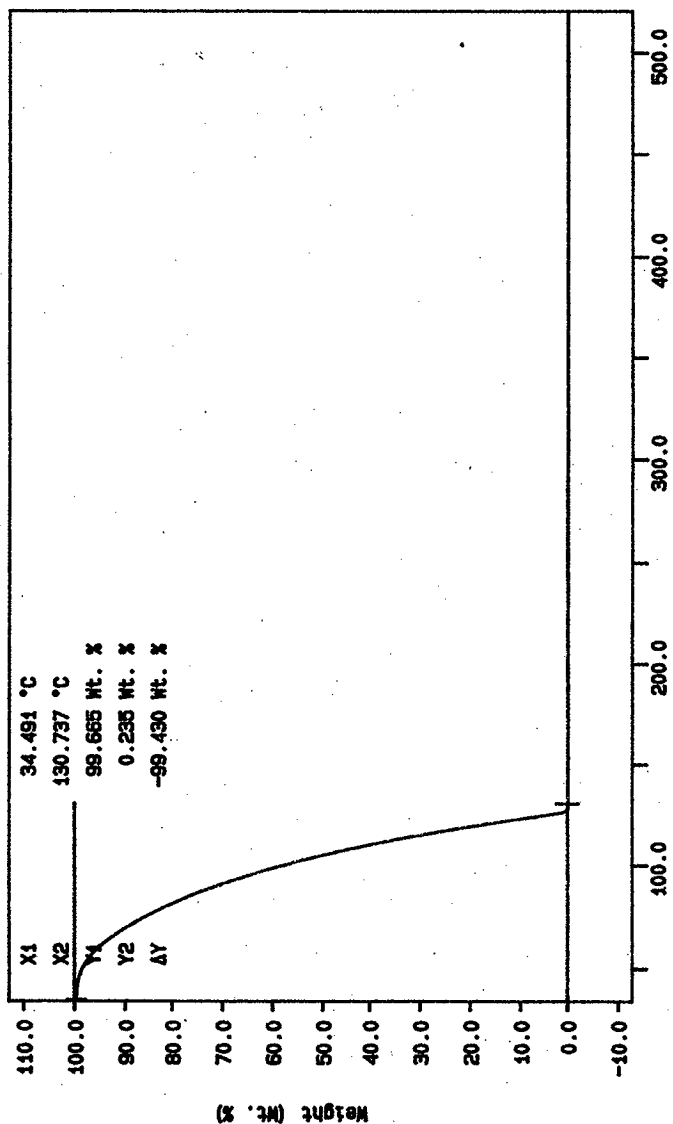


AD PURINTIN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Tue Feb 10 04:52:11 1998

100/MIN N2
 TIME: 55.8 s
 RATE: 10.0 °C/min

HNH-SD-WM-DP-294 REV.0

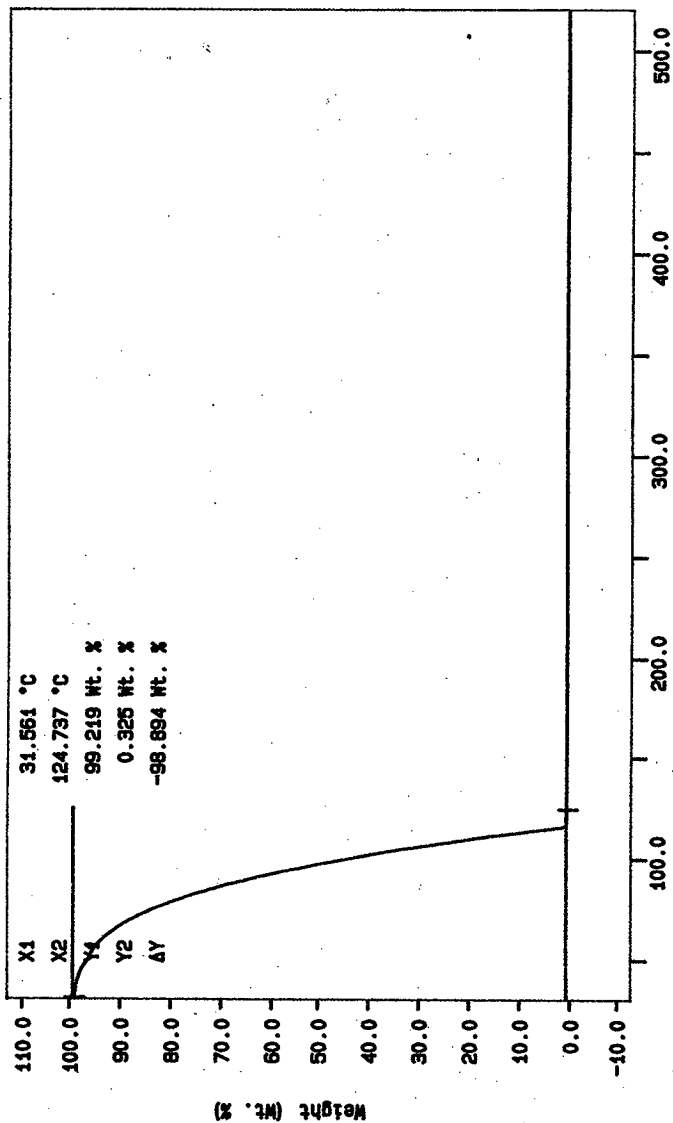
Curve 1: TGA
 File Info: SAM020907 Tue Feb 10 05: 04 1998
 Sample Weight: 13.073 mg
 S98T000377 SAM



100/MIN N2
 TIME: 00:08
 0.0 MIN RATE: 10.0 C/min
 AD PURINTIN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Tue Feb 10 08: 05: 41 1998

HNF-SD-WM-DP-294 REV. 0

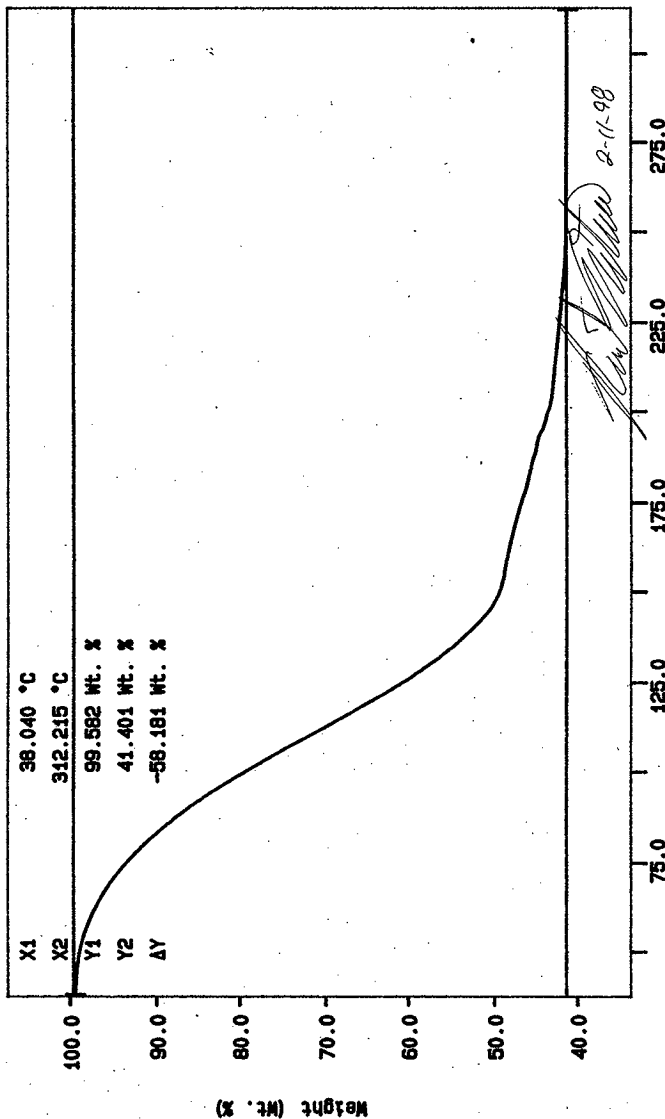
Curve 1: TGA
File info: SAM021105 Thu Feb 12 05:10:05 1998
Sample Weight: 8.480 mg
998T000377 DUP



10C/MIN N2
TIME 35.8 S
0.0 min RATE: 10.0 C/min
KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Feb 12 05:11:08 1998

HNF-SD-WM-DP-294 REV. 0

Curve 1: TGA
File Info: TER021101 Wed Feb 11 22:08:59 1998
Sample Weight: 12.278 mg
STD 103N8-A



KR MONTEITH
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Feb 12 01:41:38 1998

10C/MIN N2
TIME: 33.8 S
RATE: 10.0 C/min

worklistrpt Version 2.1 05/15/95
02/04/98 13:58

HNF-SD-WM-DP-294 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 22174

Analyst: ADP Instrument: TGA0 3 Book # 103N8AMethod: LA-514-114 Rev/Mod D-1

Worklist Comment: S302 GRAB1, TGA-03, Run under nitrogen. skw

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.0</u>	<u>58.03*</u>	<u>N/A</u>	%
98000081	S-302 GRAB1	2 SAMPLE	S98T000378	0	TGA-03	LIQUID	<u>N/A</u>	<u>99.36</u>		%
98000081	S-302 GRAB1	3 DUP	S98T000378	0	TGA-03	LIQUID	<u>99.36</u>	<u>99.41</u>	<u>N/A</u>	%

Final page for worklist # 22174

Analyst Signature Anthony Peruta Date 2-9-98Analyst Signature [Signature] Date 2-11-98Validated 2/12/98 [Signature]

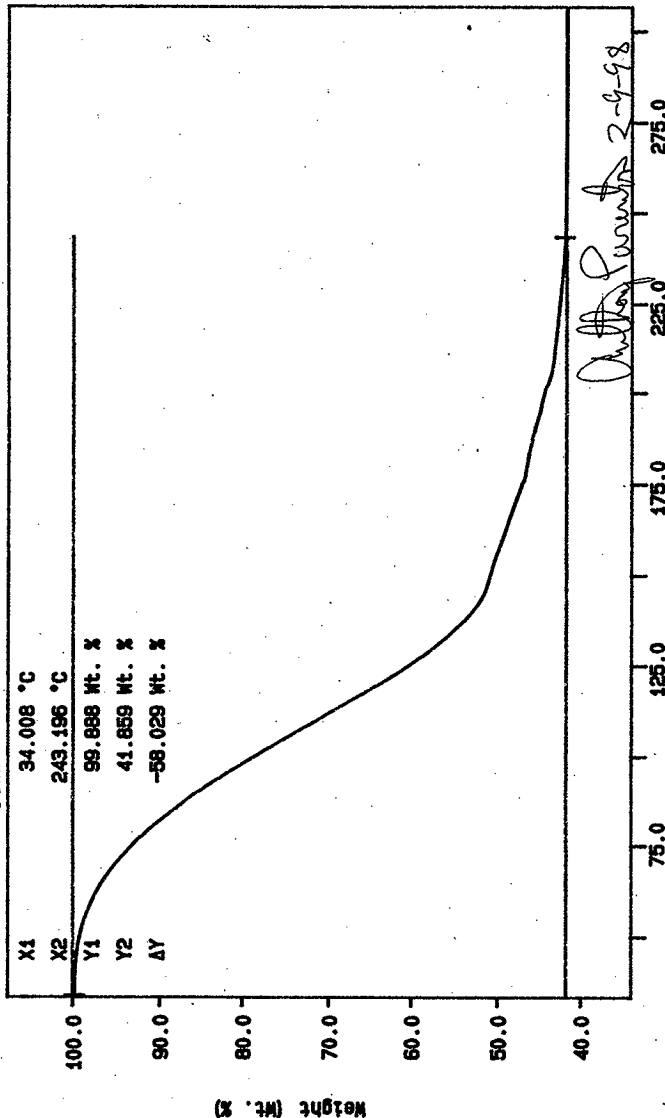
Data Entry Comments:

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

HNFS-SD-WM-DP-294 REV. 0

Curve 1: T6A
 File Info: TER020209 Mon Feb 9 22:28:37 1998
 Sample Weight: 12.254 mg
 STD 103N8-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 49 TO 51.



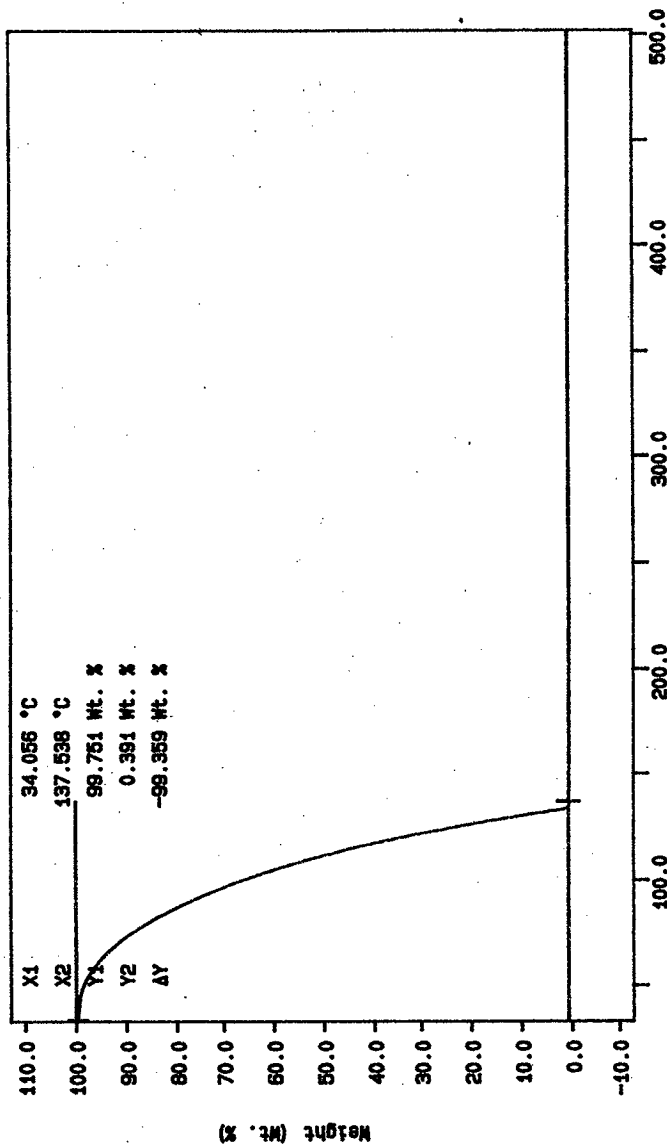
HNF-SD-WM-DP-294 REV. 0

Curve 1: TGA

File Info: SAM020903 Tue Feb 10 01:43:43 1998

Sample Weight: 16.505 mg

9987000378 SAM



10C/MIN N2

TIME: 00:08

0.0 min RATE: 10.0 C/min

AD PURINTIN

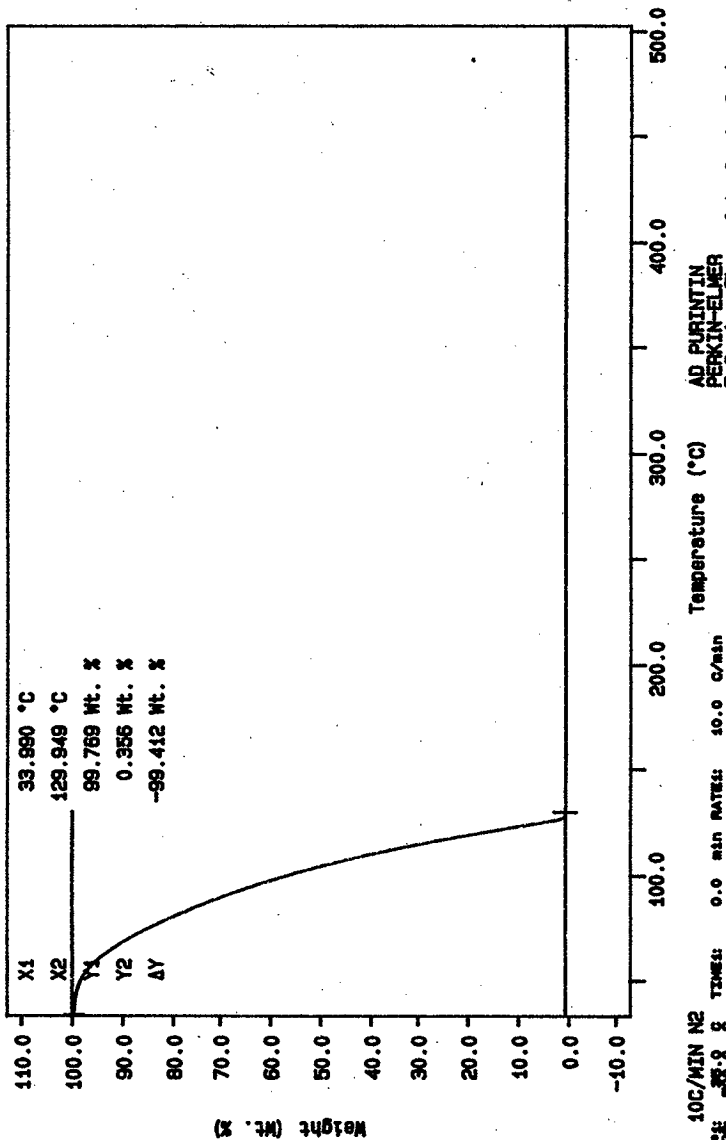
PERKIN-ELMER

7 Series Thermal Analysis System

Tue Feb 10 01:44:00 1998

HNF-SD-WM-DP-294 REV.0

Curve 1: TGA
File info: SAM020904 Tue Feb 10 02:46:57 1998
Sample Weight: 13.213 mg
S98T000378 DUP



LABCORE Data Entry Template for Worklist# 22167

Analyst: SLH Instrument: BA001 Book # 134N16C

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

Worklist Comment: S302 GRAB1, SPG-01 skw

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.3779</u>	<u>1.364</u>	<u>N/A</u>	Sp.G.
98000081	S-302 GRAB1	2 SAMPLE	S98T000376	0	SPG-01	LIQUID	<u>N/A</u>	<u>0.989</u>	<u>0.010</u>	Sp.G.
98000081	S-302 GRAB1	3 DUP	S98T000376	0	SPG-01	LIQUID	<u>0.989</u>	<u>0.989</u>	<u>N/A</u>	Sp.G.
98000081	S-302 GRAB1	4 SAMPLE	S98T000377	0	SPG-01	LIQUID	<u>N/A</u>	<u>0.987</u>	<u>0.010</u>	Sp.G.
98000081	S-302 GRAB1	5 DUP	S98T000377	0	SPG-01	LIQUID	<u>0.987</u>	<u>0.988</u>	<u>N/A</u>	Sp.G.
98000081	S-302 GRAB1	6 SAMPLE	S98T000378	0	SPG-01	LIQUID	<u>N/A</u>	<u>0.985</u>	<u>0.010</u>	Sp.G.
98000081	S-302 GRAB1	7 DUP	S98T000378	0	SPG-01	LIQUID	<u>0.985</u>	<u>0.987</u>	<u>N/A</u>	Sp.G.

Final page for worklist # 22167

Sharon Hood Boatright
Analyst Signature Date
2-4-98

Susan Doo 2/05/98
Analyst Signature Date

Approved RW Schoedon 2/5/98

Data Entry Comments:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	2.4183	2.4788
Work List	Tare Weight (W1)	1.7347	1.7947
22167	Weight of Solution (W2-W1)	0.6836	0.6841
Test Code	Volume of Solution μ L	501.4400	501.4400
SPG-01	Specific Gravity	1.3633	1.3643
Matrix	Specific Gravity (Average)	1.3638	
LIQUID			
Sample #			
134N16C			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SLH	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
02/04/98	v RESULT v		
Time	Specific Gravity Average =	1.364	
10:00 PM			

Data Entry by:	Date:	02/05/98
Approved by:	Date:	2/5/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.2599	
Work List	Tare Weight (W1)	1.7638	
22167	Weight of Solution (W2-W1)	0.4961	0
Test Code	Volume of Solution μ L	501.4400	
SPG-01	Specific Gravity	0.9894	NA
Matrix			
LIQUID			
Sample #			
S98T000376			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SLH	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
02/04/98	ν RESULT ν		
Time	Specific Gravity =	0.989	
10:00 PM			

Data Entry by:	Date:	02/05/98
Approved by:	Date:	2/5/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	2.2747	
Work List	Tare Weight (W1)	1.7788	
22167	Weight of Solution (W2-W1)	0.4959	0
Test Code	Volume of Solution μL	501.4400	
SPG-01	Specific Gravity	0.9890	NA
Matrix			
LIQUID			
Sample #			
S98T000376			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SLH	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date	v RESULT v		
02/04/98	Specific Gravity =	0.989	
Time			
10:00 PM			

Data Entry by:	<i>SLH</i>	Date:	02/05/98
Approved by:	<i>Rev Schneider</i>	Date:	2/5/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.2300	
Work List	Tare Weight (W1)	1.7353	
22167	Weight of Solution (W2-W1)	0.4947	0
Test Code	Volume of Solution μL	501.4400	
SPG-01	Specific Gravity	0.9866	NA
Matrix			
LIQUID			
Sample #			
S98T000377			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SLH	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
02/04/98	ν RESULT ν		
Time	Specific Gravity =	0.987	
10:00 PM			

Data Entry by:

Date:

02/05/98

Approved by:

Date:

2/5/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	2.2331	
Work List	Tare Weight (W1)	1.7375	
22167	Weight of Solution (W2-W1)	0.4956	0
Test Code	Volume of Solution μL	501.4400	
SPG-01	Specific Gravity	0.9884	NA
Matrix			
LIQUID			
Sample #			
S98T000377			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SLH	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date	∇ RESULT ∇		
02/04/98	Specific Gravity =	0.988	
Time			
10:00 PM			

Data Entry by:	<i>RG</i>	Date:	02/05/98
Approved by:	<i>RW Schmalz</i>	Date:	2/5/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	2.2623	
Work List	Tare Weight (W1)	1.7682	
22167	Weight of Solution (W2-W1)	0.4941	0
Test Code	Volume of Solution μ L	501.4400	
SPG-01	Specific Gravity	0.9854	NA
Matrix			
LIQUID			
Sample #			
S98T000378			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SLH	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date	v RESULT v		
02/04/98			
Time	Specific Gravity =	0.985	
10:00 PM			

Data Entry by:	<i>RS</i>	Date:	02/05/98
Approved by:	<i>Phil Schroeder</i>	Date:	2/5/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	2.2323	
Work List	Tare Weight (W1)	1.7376	
22167	Weight of Solution (W2-W1)	0.4947	0
Test Code	Volume of Solution μ L	501.4400	
SPG-01	Specific Gravity	0.9866	NA
Matrix			
LIQUID			
Sample #			
S98T000378			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
SLH	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date	v RESULT v		
02/04/98	Specific Gravity =	0.987	
Time			
10:00 PM			

Data Entry by:	<i>alg</i>	Date:	02/05/98
Approved by:	<i>RW Schroeder</i>	Date:	2/5/98

LABCORE Data Entry Template for Worklist# 22171

Analyst: RL Instrument: PH01 > 7 Book # 18779-C

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

Worklist Comment: S302 GRAB1, pH-01 skw

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH			PH-01	LIQUID	<u>7.00</u>	<u>7.04</u>	<u>N/A</u>	pH
98000081	S-302 GRAB1	2 SAMPLE	S98T000376	0	PH-01	LIQUID	<u>N/A</u>	<u>9.32</u>	<u>0.01</u>	pH
98000081	S-302 GRAB1	3 DUP	S98T000376	0	PH-01	LIQUID	<u>9.32</u>	<u>9.31</u>	<u>N/A</u>	pH
98000081	S-302 GRAB1	4 SAMPLE	S98T000377	0	PH-01	LIQUID	<u>N/A</u>	<u>9.04</u>	<u>0.01</u>	pH
98000081	S-302 GRAB1	5 DUP	S98T000377	0	PH-01	LIQUID	<u>9.04</u>	<u>9.04</u>	<u>N/A</u>	pH
98000081	S-302 GRAB1	6 SAMPLE	S98T000378	0	PH-01	LIQUID	<u>N/A</u>	<u>9.63</u>	<u>0.01</u>	pH
98000081	S-302 GRAB1	7 DUP	S98T000378	0	PH-01	LIQUID	<u>9.63</u>	<u>9.62</u>	<u>N/A</u>	pH

Final page for worklist # 22171

Mike King 2/16/98
Analyst Signature Date

R. Jones 2-5-98
Analyst Signature Date

Larry Hammett 2-6-98
REVIEWER SIGNATURE DATE

PJCD RWS 2/11/98

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.

LABCORE Data Entry Template for Worklist# 22170

Analyst: SLH Instrument: PH01 Book # 10128-A

Method: LA-211-102 Rev/Mod DO

Worklist Comment: S302 GRAB1, OH-01, STD = 0.050mL skw

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID	<u>1</u>	<u>242</u>	<u>N/A</u>	ug/mL
		2 STD			OH-01	LIQUID	<u>1.66⁸⁰⁴</u>	<u>1.58⁸⁰⁴</u>	<u>N/A</u>	ug/mL
98000081	S-302 GRAB1	3 SAMPLE	S98T000376	0	OH-01	LIQUID	<u>N/A</u>	<u>242</u>	<u>4.17⁸⁰¹</u>	ug/mL
98000081	S-302 GRAB1	4 DUP	S98T000376	0	OH-01	LIQUID	<u>242</u>	<u>1.25⁸⁰²</u>	<u>N/A</u>	ug/mL
98000081	S-302 GRAB1	5 TRIPL	S98T000376	0	OH-01	LIQUID	<u>1.25⁸⁰²</u>	<u>242</u>	<u>N/A</u>	ug/mL
98000081	S-302 GRAB1	6 SAMPLE	S98T000377	0	OH-01	LIQUID	<u>N/A</u>	<u>242</u>	<u>4.17⁸⁰¹</u>	ug/mL
98000081	S-302 GRAB1	7 DUP	S98T000377	0	OH-01	LIQUID	<u>242</u>	<u>242</u>	<u>N/A</u>	ug/mL
98000081	S-302 GRAB1	8 SAMPLE	S98T000378	0	OH-01	LIQUID	<u>N/A</u>	<u>2125</u>	<u>1.25⁸⁰²</u>	ug/mL
98000081	S-302 GRAB1	9 DUP	S98T000378	0	OH-01	LIQUID	<u>2125</u>	<u>2125</u>	<u>N/A</u>	ug/mL

Final page for worklist # 22170

SLH ATTACHED
Analyst Signature Date

[Signature] 2-10-98
Analyst Signature Date

Approved RW Schoedon 2/11/98

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.

LABCORE Data Entry Template for Worklist# 22170

Analyst: SLH Instrument: PH01 Book # 101N8-A

Method: LA-211-102 Rev/Mod _____

Worklist Comment: S302 GRAB1, OH-01, STD= 0.050mL skw

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID	_____	_____	N/A	ug/mL
		2 STD			OH-01	LIQUID	_____	_____	N/A	ug/mL
98000081	S-302 GRAB1	3 SAMPLE	S98T000376	0	OH-01	LIQUID	N/A	_____	_____	ug/mL
98000081	S-302 GRAB1	4 DUP	S98T000376	0	OH-01	LIQUID	_____	_____	N/A	ug/mL
98000081	S-302 GRAB1	5 SAMPLE	S98T000377	0	OH-01	LIQUID	N/A	_____	_____	ug/mL
98000081	S-302 GRAB1	6 DUP	S98T000377	0	OH-01	LIQUID	_____	_____	N/A	ug/mL
98000081	S-302 GRAB1	7 SAMPLE	S98T000378	0	OH-01	LIQUID	N/A	_____	_____	ug/mL
98000081	S-302 GRAB1	8 DUP	S98T000378	0	OH-01	LIQUID	_____	_____	N/A	ug/mL

Final page for worklist # 22170

Sandra L. Hard Boatwright
 Analyst Signature Date
 2-10-98

 Analyst Signature Date

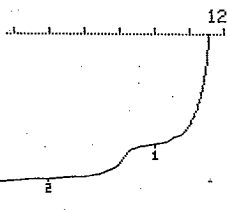
Data Entry Comments:

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.

101N8-A
35 = 7050ml
+ 1ml Ball

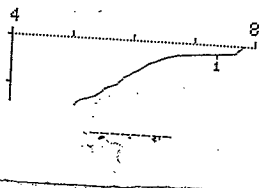
98-02-10 time 02:29
pH 12 # 239
Id.#1 25
Id.#2 .1994
pH(init) 11.54
V/ml pH
.233 9.95
.387 6.91
volt.reached
=====

98-02-10 time 02:38
pH 12 # 239
ml/div dPH=1/div
rt V .000 ml



Sam
S98T00376 = 3ml
date 98-02-10 time 03:02
GET pH 12 # 241
Id.#1 25
Id.#2 .1994
pH(init) 7.78
V/ml pH
EP1 .021 7.38
stop volt.reached
=====

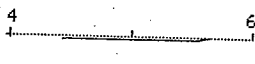
date 98-02-10 time 03:04
GET pH 12 # 241
.10ml/div dPH=1/div
start V .000 ml



BK WC 22170

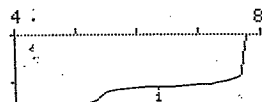
date 98-02-10 time 02:17
GET pH 12 # 237
Id.#1 25
Id.#2 .1994
pH(init) 5.64
stop volt.reached
=====

date 98-02-10 time 02:17
GET pH 12 # 237
.10ml/div dPH=1/div
start V .000 ml



dup
S98T00376 = 3ml
date 98-02-10 time 03:08
GET pH 12 # 242
Id.#1 25
Id.#2 .1994
pH(init) 7.75
V/ml pH
EP1 .111 6.35
stop volt.reached
=====

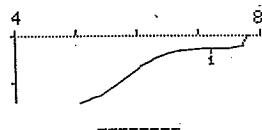
date 98-02-10 time 03:23
GET pH 12 # 242
.10ml/div dPH=1/div
start V .000 ml



trp
S98T00376 = 3ml

date 98-02-10 time 03:27
GET pH 12 # 243
Id.#1 25
Id.#2 .1994
pH(init) 7.78
V/ml pH
EP1 .028 7.20
stop volt.reached
=====

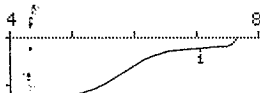
date 98-02-10 time 03:35
GET pH 12 # 243
.10ml/div dPH=1/div
start V .000 ml



3ml
S98T00 377 *3ml*

date 98-02-10 time 03:39
GET pH 12 # 244
Id.#1 25
Id.#2 .1994
pH(init) 7.65
V/ml pH
EP1 .023 7.06
stop volt.reached
=====

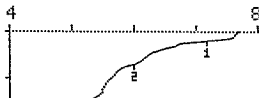
date 98-02-10 time 03:44
GET pH 12 # 244
.10ml/div dPH=1/div
start V .000 ml



dup
S98T00 377 *3ml*

date 98-02-10 time 03:47
GET pH 12 # 245
Id.#1 25
Id.#2 .1994
pH(init) 7.66
V/ml pH
EP1 .019 7.18
EP2 .070 5.99
stop volt.reached
=====

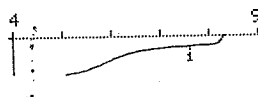
date 98-02-10 time 03:49
GET pH 12 # 245
.10ml/div dPH=1/div
start V .000 ml



S98T00 378 *3ml*

date 98-02-10 time 04:04
GET pH 12 # 247
Id.#1 25
Id.#2 .1994
pH(init) 8.28
V/ml pH
EP1 .022 7.60
stop volt.reached
=====

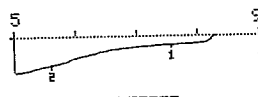
date 98-02-10 time 04:17
GET pH 12 # 247
.10ml/div dPH=1/div
start V .000 ml



S98T00 378 *dup*
3ml

date 98-02-10 time 04:20
GET pH 12 # 248
Id.#1 25
Id.#2 .1994
pH(init) 8.23
V/ml pH
EP1 .019 7.57
EP2 .061 5.59
stop volt.reached
=====

date 98-02-10 time 04:33
GET pH 12 # 248
.10ml/div dPH=1/div
start V .000 ml

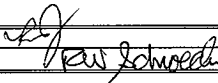


PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		BLANK
Type	Sample Size (mL) SS	3.000
BLANK	Concentration of HNO ₃ (Molarity)	0.1994
Work List	HNO ₃ Titrant at OH end-point in mL	0.000
22170	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	0.00E+00
OH-01	OH in Sample in µg/mL (PPM)	0.00E+00
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
BLANK		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
PH01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/10/98		
Time		
04:00 AM	Concentration of OH in Sample (Molarity)	0.00E+00
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:		Date:	02/10/98
Approved by:		Date:	2/11/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

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	0.233
22170	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.29E-01
OH-01	OH in Sample in µg/mL (PPM)	1.58E+04
Matrix		
LIQUID		
Sample #		
101N8A		
Instrument Code		
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/10/98		
Time		STANDARD
04:00 AM	Concentration of OH in Sample (Molarity)	9.29E-01
	OH in Sample in µg/mL (PPM)	1.58E+04

Data Entry by:

Approved by:

Form 211102_1 Rev. 1.3

Date: 02/10/98

Date: 2/11/98

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		SAMPLE
Type	Sample Size (mL) SS	3.000
SAMPLE	Concentration of HNO ₃ (Molarity)	0.1994
Work List	HNO ₃ Titrant at OH end-point in mL	0.021
22170	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.40E-03
OH-01	OH in Sample in µg/mL (PPM)	2.37E+01
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T000376		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
PH01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/10/98		
Time		
04:00 AM	Concentration of OH in Sample (Molarity)	1.40E-03
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:	<i>[Signature]</i>	Date:	02/10/98
Approved by:	<i>[Signature]</i>	Date:	2/11/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		DUPLICATE
Type	Sample Size (mL) SS	3.000
DUPLICATE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.111
22170	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	7.38E-03
OH-01	OH in Sample in µg/mL (PPM)	1.25E+02
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T000376		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/10/98		
Time		
04:00 AM		
		DUPLICATE
Concentration of OH in Sample (Molarity)		7.38E-03
OH in Sample in µg/mL (PPM)		1.25E+02

Data Entry by:

Approved by:

Form 211102_1 Rev. 1.3

Date: 02/10/98

Date: 2/11/98

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

	TRIPLICATE
Type	Sample Size (mL) SS
TRIPLICATE	Concentration of HNO ₃ (Molarity)
Work List	HNO ₃ Titrant at OH end-point in mL
22170	Dilution Factor DF
Test Code	Concentration of OH in Sample (Molarity)
OH-01	OH in Sample in µg/mL (PPM)

Matrix	
LIQUID	
Sample #	Detection Limit = 125µg / SS * DF
S98T000376	
Instrument Code	Detection Limit (µg/mL)
PH01	4.17E+01
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor
SLH	
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))
02/10/98	
Time	
04:00 AM	
	TRIPLICATE
	Concentration of OH in Sample (Molarity)
	1.86E-03
	OH in Sample in µg/mL (PPM)
	<42

The Result is < Detection Limit

Data Entry by:	Date: 02/10/98
Approved by:	Date: 2/11/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAMPLE
Type	Sample Size (mL) SS	3.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.023
22170	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.53E-03
OH-01	OH in Sample in µg/mL (PPM)	2.60E+01

Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T000377		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*((17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/10/98		
Time		
04:00 AM	Concentration of OH in Sample (Molarity)	1.53E-03
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:	<i>[Signature]</i>	Date:	02/10/98
Approved by:	<i>[Signature]</i>	Date:	2/11/98
Form 211102_1 Rev. 1.3		Page 1 of 1	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		DUPLICATE
Type	Sample Size (mL) SS	3.000
DUPLICATE	Concentration of HNO ₃ (Molarity)	0.1994
Work List	HNO ₃ Titrant at OH end-point in mL	0.019
22170	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.26E-03
OH-01	OH in Sample in µg/mL (PPM)	2.15E+01
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T000377		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
PH01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/10/98		
Time		
04:00 AM		
		DUPLICATE
Concentration of OH in Sample (Molarity)		1.26E-03
OH in Sample in µg/mL (PPM)		<42

The Result is < Detection Limit

Data Entry by:	<i>[Signature]</i>	Date:	02/10/98
Approved by:	<i>[Signature]</i>	Date:	2/11/98

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		SAMPLE
Type	Sample Size (mL) SS	1.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1994
Work List	HNO3 Titrant at OH end-point in mL	0.022
22170	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	4.39E-03
OH-01	OH in Sample in µg/mL (PPM)	7.46E+01
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T000378		
Instrument Code	Detection Limit (µg/mL)	1.25E+02
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/10/98		
Time		
04:00 AM		
		SAMPLE
Concentration of OH in Sample (Molarity)		4.39E-03
OH in Sample in µg/mL (PPM)		<125
The Result is < Detection Limit		

Data Entry by:

Approved by:

Form 211102_1 Rev. 1.3

Date: 02/10/98

Date: 2/11/98

Page 1 of 1

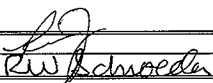
PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUPLICATE
Type	Sample Size (mL) SS	1.000
DUPLICATE	Concentration of HNO ₃ (Molarity)	0.1994
Work List	HNO ₃ Titrant at OH end-point in mL	0.019
22170	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	3.79E-03
OH-01	OH in Sample in µg/mL (PPM)	6.44E+01

Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T000378		
Instrument Code	Detection Limit (µg/mL)	1.25E+02
PH01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
SLH		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
02/10/98		
Time		
04:00 AM	Concentration of OH in Sample (Molarity)	3.79E-03
	OH in Sample in µg/mL (PPM)	<125

The Result is < Detection Limit

Data Entry by:		Date:	02/10/98
Approved by:		Date:	2/11/98

LABCORE Completed Worklist Report for Worklist# 22168

Analyst: pjm

Instrument: IC01

Book# 111 N20D

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

Worklist Comment: S302 GRAB1, @IC-01 skw

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 P04	QC	1	<1.20e-1		ug/mL
1	CCB	0	@IC-QC S04	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	5.70e+01	96.610 % Recovery	
2	CCV	0	@IC-QC CL	QC	8.00e1	7.82e+01	97.750 % Recovery	
2	CCV	0	@IC-QC NO2	QC	5.43e2	5.29e+02	97.422 % Recovery	
2	CCV	0	@IC-QC BR	QC	5.89e2	5.61e+02	95.246 % Recovery	
2	CCV	0	@IC-QC NO3	QC	5.94e2	5.50e+02	92.593 % Recovery	
2	CCV	0	@IC-QC P04	QC	5.45e2	5.05e+02	92.661 % Recovery	
2	CCV	0	@IC-QC S04	QC	6.32e2	6.09e+02	96.361 % Recovery	
2	CCV	0	@IC-QC OXALATE2	QC	5.32e2	5.15e+02	96.805 % Recovery	
3	SAMPLE	S98T000376	0	@IC-01 F-02	LIQUID	N/A	9.556e+00	0.132 ug/mL
3	SAMPLE	S98T000376	0	@IC-01 CL-02	LIQUID	N/A	2.277e+01	0.187 ug/mL
3	SAMPLE	S98T000376	0	@IC-01 NO2-02	LIQUID	N/A	< 1.188e+00	1.188 ug/mL
3	SAMPLE	S98T000376	0	@IC-01 BR-02	LIQUID	N/A	< 1.375e+00	1.375 ug/mL
3	SAMPLE	S98T000376	0	@IC-01 NO3-02	LIQUID	N/A	3.498e+02	1.529 ug/mL
3	SAMPLE	S98T000376	0	@IC-01 P04-02	LIQUID	N/A	9.142e+01	1.320 ug/mL
3	SAMPLE	S98T000376	0	@IC-01 S04-02	LIQUID	N/A	1.208e+01	1.518 ug/mL
3	SAMPLE	S98T000376	0	@IC-01 OXALATE2	LIQUID	N/A	< 1.155e+00	1.155 ug/mL
4	DUP	S98T000376	0	@IC-01 F-02	LIQUID	9.54e+00	9.06e+00	5.161 RPD
4	DUP	S98T000376	0	@IC-01 CL-02	LIQUID	2.28e+01	2.30e+01	0.873 RPD
4	DUP	S98T000376	0	@IC-01 NO2-02	LIQUID	<1.19e0	<1.19e0	RPD
4	DUP	S98T000376	0	@IC-01 BR-02	LIQUID	<1.38e0	<1.38e0	RPD
4	DUP	S98T000376	0	@IC-01 NO3-02	LIQUID	3.50e+02	3.45e+02	1.439 RPD
4	DUP	S98T000376	0	@IC-01 P04-02	LIQUID	9.14e+01	9.02e+01	1.322 RPD
4	DUP	S98T000376	0	@IC-01 S04-02	LIQUID	1.21e+01	1.24e+01	2.449 RPD
4	DUP	S98T000376	0	@IC-01 OXALATE2	LIQUID	<1.16e0	<1.16e0	RPD
5	SPK	S98T000376	0	@IC-01 F-02	LIQUID	5.90e1	6.12e+01	103.729 % Recovery
5	SPK	S98T000376	0	@IC-01 CL-02	LIQUID	8.00e1	7.34e+01	91.750 % Recovery
5	SPK	S98T000376	0	@IC-01 NO2-02	LIQUID	5.43e2	5.24e+02	96.501 % Recovery
5	SPK	S98T000376	0	@IC-01 BR-02	LIQUID	5.89e2	5.73e+02	96.284 % Recovery
5	SPK	S98T000376	0	@IC-01 NO3-02	LIQUID	5.94e2	5.41e+02	91.077 % Recovery
5	SPK	S98T000376	0	@IC-01 P04-02	LIQUID	5.45e2	5.48e+02	100.550 % Recovery
5	SPK	S98T000376	0	@IC-01 S04-02	LIQUID	6.32e2	6.17e+02	97.627 % Recovery
5	SPK	S98T000376	0	@IC-01 OXALATE2	LIQUID	5.32e2	5.19e+02	97.556 % Recovery
6	SAMPLE	S98T000377	0	@IC-01 F-02	LIQUID	N/A	8.712e+00	0.132 ug/mL

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

LABCORE Completed Worklist Report for Worklist# 22168

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SAMPLE	S98T000377	0	@IC-01 CL-02	LIQUID	N/A	2.065e+01	0.187	ug/mL
6 SAMPLE	S98T000377	0	@IC-01 NO2-02	LIQUID	N/A	1.188e+00	1.188	ug/mL
6 SAMPLE	S98T000377	0	@IC-01 BR-02	LIQUID	N/A	1.375e+00	1.375	ug/mL
6 SAMPLE	S98T000377	0	@IC-01 NO3-02	LIQUID	N/A	3.004e+02	1.529	ug/mL
6 SAMPLE	S98T000377	0	@IC-01 PO4-02	LIQUID	N/A	7.233e+01	1.320	ug/mL
6 SAMPLE	S98T000377	0	@IC-01 SO4-02	LIQUID	N/A	1.075e+01	1.518	ug/mL
6 SAMPLE	S98T000377	0	@IC-01 OXALATE2	LIQUID	N/A	1.155e+00	1.155	ug/mL
7 DUP	S98T000377	0	@IC-01 F-02	LIQUID	8.71e+00	8.47e+00	2.794	RPD
7 DUP	S98T000377	0	@IC-01 CL-02	LIQUID	2.06e+01	2.06e+01	0.000	RPD
7 DUP	S98T000377	0	@IC-01 NO2-02	LIQUID	<1.19e0	<1.19e0		RPD
7 DUP	S98T000377	0	@IC-01 BR-02	LIQUID	<1.38e0	<1.38e0		RPD
7 DUP	S98T000377	0	@IC-01 NO3-02	LIQUID	3.00e+02	2.94e+02	2.020	RPD
7 DUP	S98T000377	0	@IC-01 PO4-02	LIQUID	7.23e+01	7.05e+01	2.521	RPD
7 DUP	S98T000377	0	@IC-01 SO4-02	LIQUID	1.08e+01	1.09e+01	0.922	RPD
7 DUP	S98T000377	0	@IC-01 OXALATE2	LIQUID	<1.16e0	<1.16e0		RPD

Final page for worklist# 22168

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Jan M. Luge
Reviewer Signature _____ Date 2/11/98

02/04/98 13:35
A-0004-1

HNF-SD-WM-DP-294 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 22168

Analyst: RM Instrument: IC0 1 Book# 111220DMethod: LA-533-105 Rev/Mod E-0

Worklist Comment: S302 GRAB1, @IC-01 skw

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S98T000376 0			@IC-01	LIQUID	98000081	S-302 GRAB1
					Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
4	DUP	S98T000376 0			@IC-01	LIQUID		
5	SPK	S98T000376 0			@IC-01	LIQUID		
6	SAMPLE	S98T000377 0			@IC-01	LIQUID	98000081	S-302 GRAB1
					Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
7	DUP	S98T000377 0			@IC-01	LIQUID		

Final page for worklist # 22168

RM McCann 2/5/98
 Analyst Signature Date

Analyst Signature Date

uploaded 2/5/98 by R Jones
 corrected & reuploaded 2/11/98 M Luy
 Validated 2/11/98 M Luy

Data Entry Comments:

22168 FCB, SCIT22168 FCB, CSV

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

=====

Sample Name: CCB	Date: 02/05/1998 14:25:42
Data File : C:\DX\DATA\98020501.D08	HNF-SD-WM-DP-294 REV. 0
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 8	Detector: CDM-1
Analyst :	Column: AG4A/AS4A anion column

=====

Calibration Volume Dilution Points Rate Start Stop Area Reject

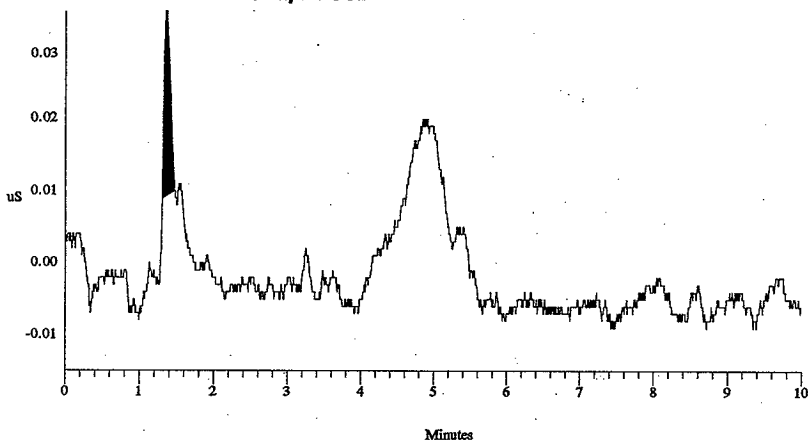
External 1 1 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.36		0.000	26	148	1	
Totals			0.000	26	148		

Direct R McCoun 2/5/98

File: 98020501.D08 Sample: CCB



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 77 TO 83.

```

=====
Sample Name: CCV 111N20D                      Date: 02/05/1998 14:39:20
Data File  : C:\DX\DATA\98020501.D09          HNF-SD-WM-DP-294 REV. 0
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 9            Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

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=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
=====

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External      1          101    3000  5Hz   0.00 10.00          30
=====

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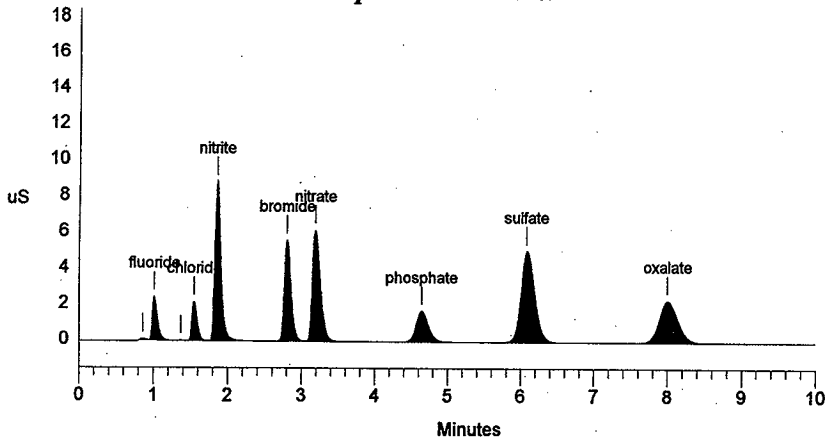
```

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

```

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	101	460	2	
2	1.01	fluoride	56.982	2438	11432	2	0.33
3	1.37		0.000	20	108	1	
4	1.55	chloride	78.234	2169	10512	1	-1.49
5	1.85	nitrite	528.874	8821	49350	1	-3.47
6	2.80	bromide	561.096	5607	35014	1	-1.41
7	3.19	nitrate	549.640	6145	45887	1	-3.14
8	4.64	phosphate	505.398	1717	20482	1	-2.73
9	6.08	sulfate	608.705	5027	65649	1	-3.34
10	8.00	oxalate	514.851	2332	40792	1	-3.26
Totals			3403.781	34376	279685		

• 100 mL - 10 mL *RL McCown 2/5/98*
 File: 98020501.D09 Sample: CCV 111N20D



Sample Name: S98T000376 SMPL	Date: 02/05/1998 15:14:39
Data File : F:\DATA\98020501.D11	HNF-SD-WM-DP-294 REV. 0
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 11	Detector: CDM-1
Analyst :	Column: AG4A/AS4A anion column

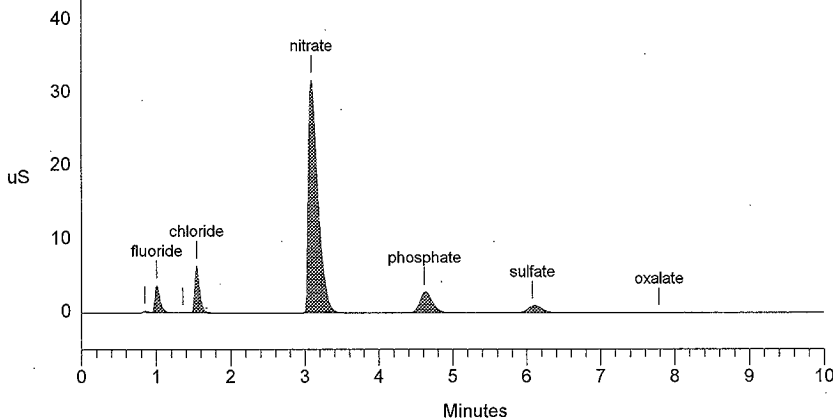
Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
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External	1	11	3000	5Hz	0.00	10.00		30
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***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	195	900	2	
2	1.01	fluoride	9.536	3681	17742	2	-0.33
3	1.35		0.000	54	283	1	
4	1.54	chloride	22.770	6364	28730	1	-1.91
5	3.09	nitrate	349.809	31846	283765	1	-0.11
6	4.61	phosphate	91.420	2830	34488	1	-3.28
7	6.08	sulfate	12.083	924	12819	1	-3.34
8	7.79	oxalate	1.035	13	388	1	-5.84
Totals			486.653	45908	379113		

File: 98020501.D11 Sample: S98T000376 SMPL



Data Reprocessed On 02/11/1998 13:39:00

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=====
Sample Name: S98T000376 DUP                      Date: 02/05/1998 15:32:07
Data File  : F:\DATA\98020501.D12
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 12              Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

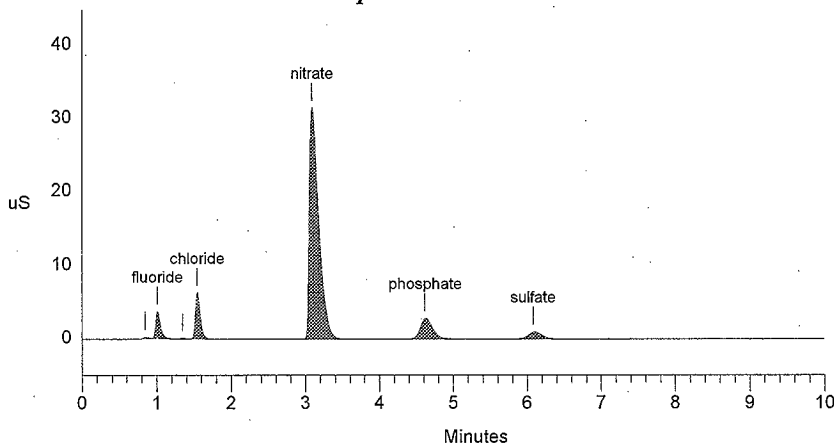
Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 11 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	188	842	2	
2	1.01	fluoride	9.062	3659	16842	2	-0.33
3	1.35		0.000	55	287	1	
4	1.54	chloride	22.986	6248	29011	1	-1.91
5	3.09	nitrate	344.810	31543	279393	1	-0.11
6	4.61	phosphate	90.161	2827	33999	1	-3.28
7	6.08	sulfate	12.445	963	13168	1	-3.34
Totals			479.465	45485	373542		

File: 98020501.D12 Sample: S98T000376 DUP



Data Reprocessed On 02/11/1998 13:39:56

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=====
Sample Name: S98T000376 SPK                      Date: 02/05/1998 15:48:00
Data File  : F:\DATA\98020501.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

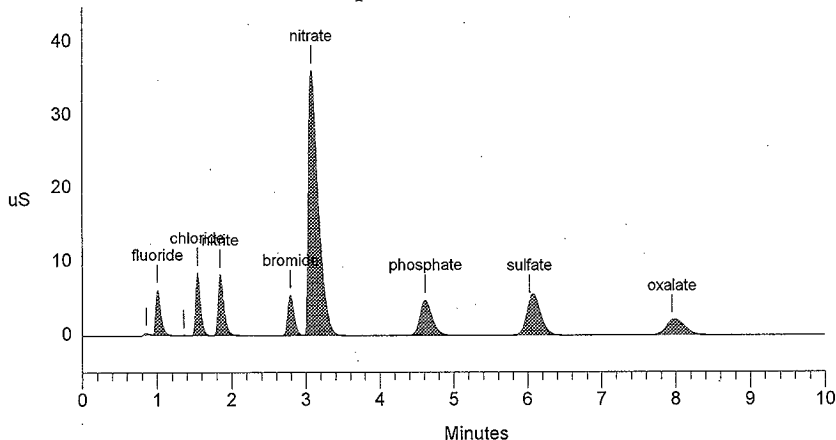
External 1 11 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	263	1136	2	
2	1.01	fluoride	15.656	6083	29401	2	-0.33
3	1.35		0.000	40	203	1	
4	1.54	chloride	30.111	8479	38418	1	-1.91
5	1.85	nitrite	52.405	8232	44818	1	-3.82
6	2.79	bromide	57.335	5447	32793	1	-1.64
7	3.07	nitrate	403.951	36128	331817	1	0.11
8	4.61	phosphate	146.236	4825	56116	1	-3.28
9	6.03	sulfate	73.815	4765	73080	1	-4.19
10	7.95	oxalate	51.903	2035	37726	1	-3.91

Totals 831.411 76296 645509

File: 98020501.D13 Sample: S98T000376 SPK



Data Reprocessed On 02/11/1998 13:40:50

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=====
Sample Name: S98T000377 SMPL                      Date: 02/05/1998 16:14:08
Data File  : F:\DATA\98020501.D15
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 15                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

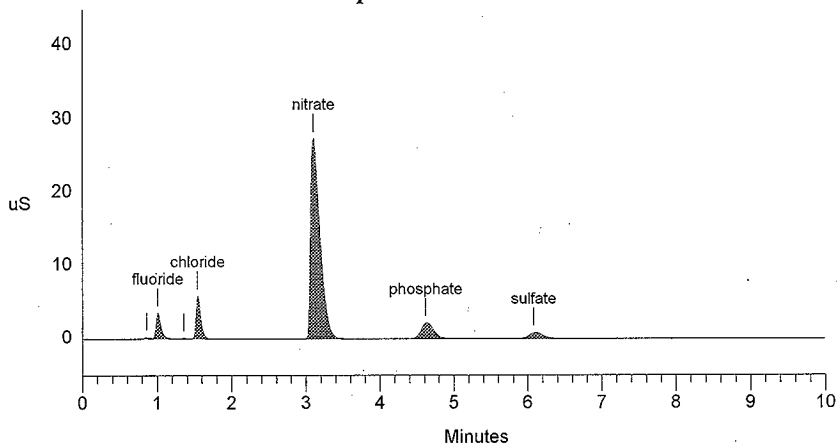
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Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
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External	1	11	3000	5Hz	0.00	10.00		30
----------	---	----	------	-----	------	-------	--	----

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	162	770	2	
2	1.01	fluoride	8.712	3475	16178	2	-0.33
3	1.35		0.000	53	295	1	
4	1.54	chloride	20.650	5779	25970	1	-1.91
5	3.10	nitrate	300.355	27332	240984	1	0.00
6	4.61	phosphate	72.325	2160	27103	1	-3.28
7	6.08	sulfate	10.754	832	11541	1	-3.34
Totals			412.796	39791	322841		

File: 98020501.D15 Sample: S98T000377 SMPL

Data Reprocessed On 02/11/1998 13:41:30

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=====
Sample Name: S98T000377 DUP                      Date: 02/05/1998 16:24:54
Data File  : F:\DATA\98020501.D16
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 16              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

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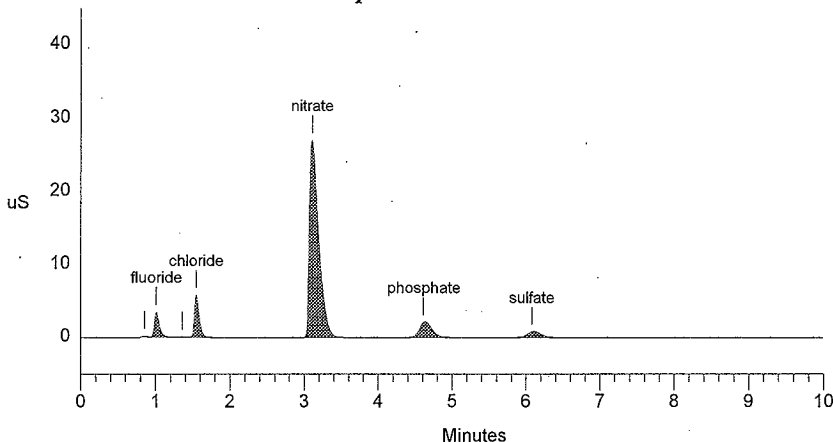
Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 11 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	138	605	2	
2	1.01	fluoride	8.475	3430	15728	2	0.33
3	1.36		0.000	56	305	1	
4	1.55	chloride	20.563	5821	25858	1	-1.49
5	3.11	nitrate	294.500	27084	235986	1	-0.11
6	4.61	phosphate	70.534	2105	26414	1	-3.28
7	6.08	sulfate	10.863	825	11645	1	-3.34
Totals			404.935	39459	316542		

File: 98020501.D16 Sample: S98T000377 DUP



LABCORE Completed Worklist Report for Worklist# 22169

Analyst: pjm

Instrument: IC01

Book# 111N20DMethod: A-533-105 Rev/Mod E-0

Worklist Comment: S302 GRAB1, @IC-01 skw

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 P04	QC	1	<1.20e-1		ug/mL
1 CCB	0	@IC-QC S04	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	5.53e+01	93.729 % Recovery	
2 CCV	0	@IC-QC CL	QC	8.00e1	7.75e+01	96.875 % Recovery	
2 CCV	0	@IC-QC NO2	QC	5.43e2	5.28e+02	97.238 % Recovery	
2 CCV	0	@IC-QC BR	QC	5.89e2	5.88e+02	99.830 % Recovery	
2 CCV	0	@IC-QC NO3	QC	5.94e2	5.65e+02	95.118 % Recovery	
2 CCV	0	@IC-QC P04	QC	5.45e2	5.28e+02	96.881 % Recovery	
2 CCV	0	@IC-QC S04	QC	6.32e2	6.28e+02	99.367 % Recovery	
2 CCV	0	@IC-QC OXALATE2	QC	5.32e2	5.28e+02	99.248 % Recovery	
3 SAMPLE	S98T000378 0	@IC-01 F-02	LIQUID	N/A	1.183e+01	0.132 ug/mL	
3 SAMPLE	S98T000378 0	@IC-01 CL-02	LIQUID	N/A	2.778e+01	0.187 ug/mL	
3 SAMPLE	S98T000378 0	@IC-01 NO2-02	LIQUID	N/A	1.063e+02	1.188 ug/mL	
3 SAMPLE	S98T000378 0	@IC-01 BR-02	LIQUID	N/A	1.375e+00	1.375 ug/mL	
3 SAMPLE	S98T000378 0	@IC-01 NO3-02	LIQUID	N/A	4.134e+02	1.529 ug/mL	
3 SAMPLE	S98T000378 0	@IC-01 P04-02	LIQUID	N/A	1.892e+02	1.320 ug/mL	
3 SAMPLE	S98T000378 0	@IC-01 S04-02	LIQUID	N/A	1.520e+01	1.518 ug/mL	
3 SAMPLE	S98T000378 0	@IC-01 OXALATE2	LIQUID	N/A	1.155e+00	1.155 ug/mL	
4 DUP	S98T000378 0	@IC-01 F-02	LIQUID	1.18e+01	1.24e+01	4.959 RPD	
4 DUP	S98T000378 0	@IC-01 CL-02	LIQUID	2.78e+01	2.72e+01	2.182 RPD	
4 DUP	S98T000378 0	@IC-01 NO2-02	LIQUID	1.06e+02	1.06e+02	0.000 RPD	
4 DUP	S98T000378 0	@IC-01 BR-02	LIQUID	<1.38e0	<1.38e0	RPD	
4 DUP	S98T000378 0	@IC-01 NO3-02	LIQUID	4.13e+02	4.06e+02	1.709 RPD	
4 DUP	S98T000378 0	@IC-01 P04-02	LIQUID	1.89e+02	1.85e+02	2.139 RPD	
4 DUP	S98T000378 0	@IC-01 S04-02	LIQUID	1.52e+01	1.47e+01	3.344 RPD	
4 DUP	S98T000378 0	@IC-01 OXALATE2	LIQUID	<1.16e0	<1.16e0	RPD	
5 SPK	S98T000378 0	@IC-01 F-02	LIQUID	5.90e1	6.51e+01	110.339 % Recovery	
5 SPK	S98T000378 0	@IC-01 CL-02	LIQUID	8.00e1	7.75e+01	96.875 % Recovery	
5 SPK	S98T000378 0	@IC-01 NO2-02	LIQUID	5.43e2	5.61e+02	103.315 % Recovery	
5 SPK	S98T000378 0	@IC-01 BR-02	LIQUID	5.89e2	5.59e+02	94.907 % Recovery	
5 SPK	S98T000378 0	@IC-01 NO3-02	LIQUID	5.94e2	5.75e+02	96.801 % Recovery	
5 SPK	S98T000378 0	@IC-01 P04-02	LIQUID	5.45e2	5.19e+02	95.229 % Recovery	
5 SPK	S98T000378 0	@IC-01 S04-02	LIQUID	6.32e2	6.18e+02	97.785 % Recovery	
5 SPK	S98T000378 0	@IC-01 OXALATE2	LIQUID	5.32e2	5.24e+02	98.496 % Recovery	

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

LABCORE Completed Worklist Report for Worklist# 22169

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

Final page for worklist# 22169

Analyst Signature Date

 2-9-98

Analyst Signature Date

 2/10/98

Reviewer Signature Date

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

HNF-SD-WM-DP-294 REV. 0

02/04/98 13:36
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 22169Analyst: RLU Instrument: IC0 1 Book# 111N20DMethod: LA-533-105 Rev/Mod E-0

Worklist Comment: S302 GRAB1, @IC-01 skw

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 SAMPLE	S98T000378 0		@IC-01	LIQUID	98000081	S-302 GRAB1
	Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02					
4 DUP	S98T000378 0		@IC-01	LIQUID		
5 SPK	S98T000378 0		@IC-01	LIQUID		

Final page for worklist # 22169Analyst Signature RLU Date 2/5/98

Analyst Signature _____ Date _____

Data Entry Comments:

22169 F08, Sch22169 F08, CSV

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

Sample Name: CCB	Date: 02/05/1998 10:53:16
Data File : C:\DX\DATA\98020501.D01	HNF-SD-WM-DP-294 REV. 0
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 1	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

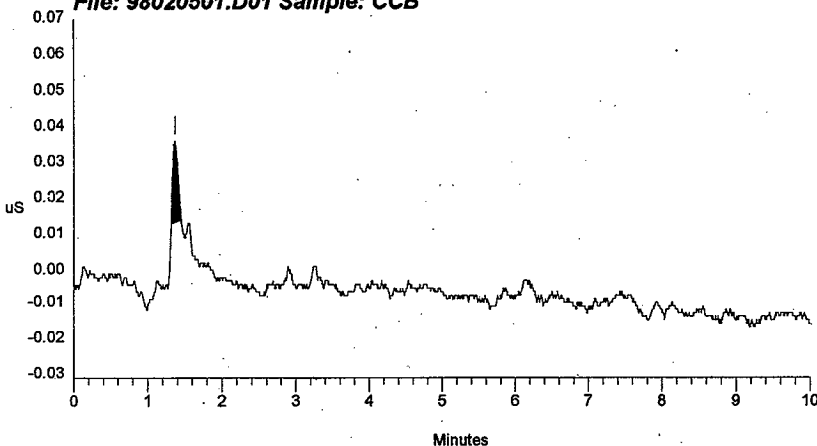
***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.37		0.000	23	107	1	

direct Totals 0.000 23 107

R. McLown 2/5/98

File: 98020501.D01 Sample: CCB



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 87 TO 91

Sample Name: CCV 111N20D Date: 02/05/1998 11:11:32
 Data File : C:\DX\DATA\98020501.D02 HNF-SD-WM-DP-294 REV. 0
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 2 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration Volume Dilution Points Rate Start Stop Area Reject

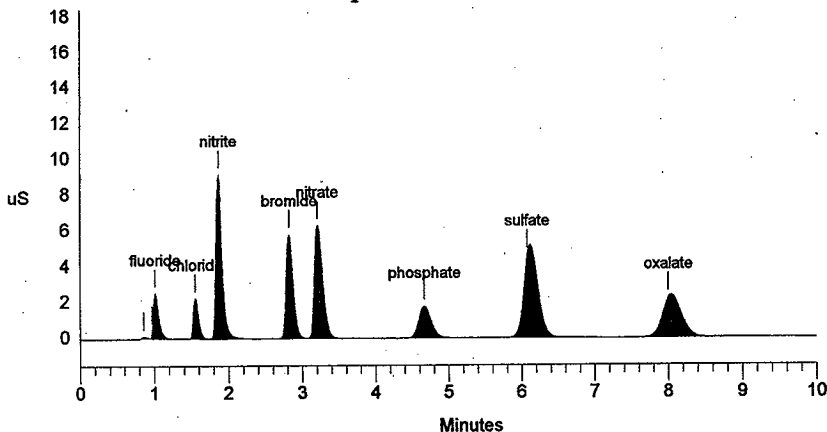
External 1 101 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	96	420	2	
2	0.97		0.000	411	497	2	
3	1.01	fluoride	55.252	2497	11076	2	0.33
4	1.55	chloride	77.538	2242	10417	1	-1.06
5	1.87	nitrite	528.445	9161	49309	1	-2.78
6	2.82	bromide	588.041	5789	36744	1	-0.70
7	3.21	nitrate	565.059	6281	47184	1	-2.53
8	4.67	phosphate	528.292	1774	21434	1	-2.17
9	6.08	sulfate	627.685	4646	67689	1	-3.34
10	8.00	oxalate	528.480	2238	41883	1	-3.26

Totals 3498.791 35134 286652

.100mL - 10mL R McLow 2/5/98
 File: 98020501.D02 Sample: CCV 111N20D



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=====
Sample Name: S98T000378 SMPL                      Date: 02/05/1998 13:30:50
Data File  : F:\DATA\98020501.D05
Method     : C:\DX\METHOD\KIT.MET                 HNF-SD-WM-DP-294 REV. 0
ACI Address: 1 System: 1 Inject#: 5                 Detector: CDM-1
Analyst    :                                         Column: AG4A/AS4A anion column
=====

```

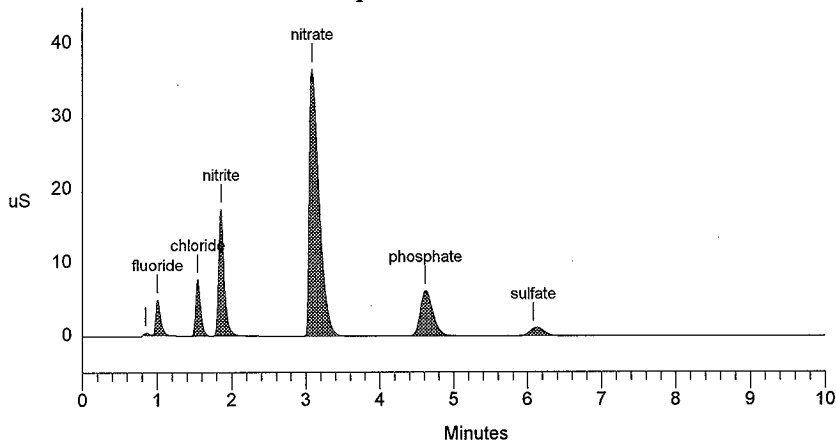
Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 11 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	342	1529	2	
2	1.01	fluoride	11.832	4804	22106	2	-0.33
3	1.55	chloride	27.776	7673	35312	1	-1.49
4	1.86	nitrite	106.291	17307	91957	1	-3.12
5	3.09	nitrate	413.354	36589	340300	1	-0.11
6	4.61	phosphate	189.211	6120	73545	1	-3.28
7	6.08	sulfate	15.198	1034	15820	1	-3.34
Totals			763.662	73869	580568		

File: 98020501.D05 Sample: S98T000378 SMPL



Data Reprocessed On 02/09/1998 12:35:57

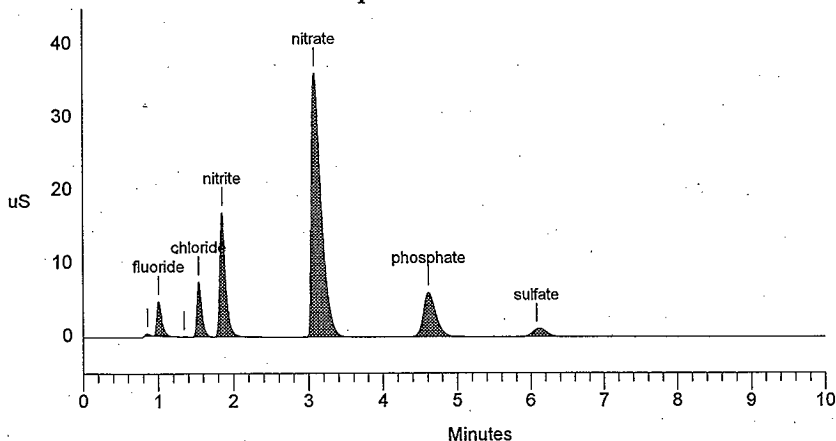
Sample Name: S98T000378 DUP	Date: 02/05/1998 13:54:29
Data File : F:\DATA\98020501.D06	INF-SD-WM-DP-294 REV. 0
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 6	Detector: CDM-1
Analyst :	Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	11	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	354	1612	2	
2	1.01	fluoride	12.442	4800	23268	2	-0.33
3	1.35		0.000	29	150	1	
4	1.54	chloride	27.233	7525	34593	1	-1.91
5	1.85	nitrite	105.593	16978	91344	1	-3.47
6	3.08	nitrate	406.358	36179	333984	1	0.00
7	4.61	phosphate	184.821	6121	71744	1	-3.28
8	6.08	sulfate	14.693	1066	15333	1	-3.34
Totals			751.139	73052	572029		

File: 98020501.D06 Sample: S98T000378 DUP



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=====
Sample Name: S98T000378 SPK                      Date: 02/05/1998 14:12:26
Data File  : F:\DATA\98020501.D07
Method     : C:\DX\METHOD\KIT.MET                HNF-SD-WM-DP-294 REV. 0
ACI Address: 1 System: 1 Inject#: 7                Detector: CDM-1
Analyst    :                                     Column: AG4A/AS4A anion column
=====

```

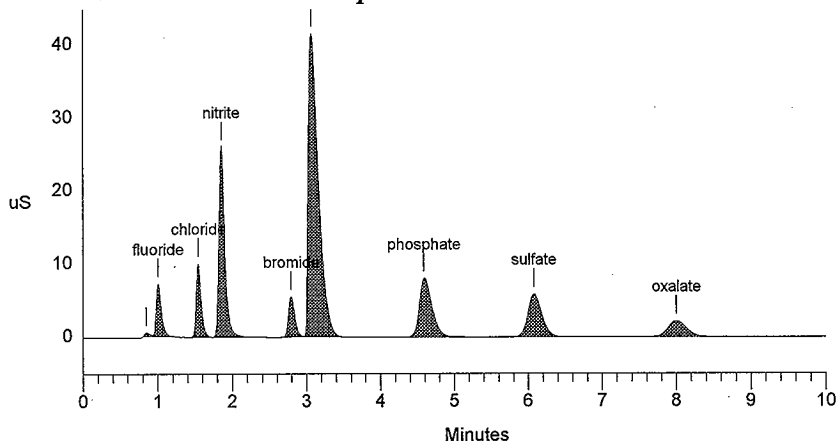
Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 11 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	429	1986	2	
2	1.01	fluoride	18.339	7149	34541	2	-0.33
3	1.55	chloride	35.527	10044	45711	1	-1.49
4	1.85	nitrite	162.402	26048	141358	1	-3.47
5	2.79	bromide	55.882	5503	31939	1	-1.64
6	3.07	nitrate	470.890	41555	393147	1	-0.11
7	4.59	phosphate	241.159	7959	95217	1	-3.84
8	6.08	sulfate	76.983	5866	76219	1	-3.34
9	8.00	oxalate	52.374	2165	38073	1	-3.26
Totals			1113.556	106717	858191		

File: 98020501.D07 Sample: S98T000378 SPK



02/05/98 10:12

A-0004-1

File #: 980206C.TKT

HNF-SD-WM-DP-294 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 22189

Analyst: DK Jc/6 Instrument: ICP01-2 3K 1-6-98 Book# 70B48aMethod: LA-505-154/161 Rev/Mod C-2Worklist Comment: 3K 1-6-98 ICP S-302 (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	S98T000376 0 D	@ICP-D01	LIQUID		
7	SAMPLE	S98T000376 0 D	@ICP-D01	LIQUID	98000081 S-302 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	S98T000376 0 D	@ICP-D01	LIQUID		
9	SPK: (1 ppb)	S98T000376 0 D	@ICP-D01	LIQUID		
10	CCV	Spike 6x (10 ppb) 3K 1-6-98	@ICP-QC	QC		
11	CCB		@ICP-QC	QC		
12	SAMPLE	S98T000377 0 D	@ICP-D01	LIQUID	98000081 S-302 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:

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

02/05/98 10:12

A-0004-1

INF-SD-WM-DP-294 REV. 0

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LABCORE Data Entry Template for Worklist# 22189

S Type	Sample#	R A	Test	Matrix	Group#	Project
13 DUP	S98T000377	0 D	@ICP-D01	LIQUID		
14 SERDIL	S98T000378	0 D	@ICP-D01	LIQUID		
15 SAMPLE	S98T000378	0 D	@ICP-D01	LIQUID	98000081	S-302 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						
16 DUP	S98T000378	0 D	@ICP-D01	LIQUID		
17 SPK SAMPLE X (1 ppm)	S98T000378	0 D	@ICP-D01	LIQUID		
18 ICSA SPKs 4X (10 ppm) 2-6-98			@ICP-QC	QC		
19 ICSAB			@ICP-QC	QC		
20 CCV			@ICP-QC	QC		
21 CCB			@ICP-QC	QC		

Final page for worklist # 22189

JK Lido 02-06-98
 Analyst Signature Date
 5987060376-L, 2-8, DF 5
 5987060376 direct 1
 5987000376-D direct 1
 5987000376-Q direct, 8 ml sample + 2 ml STS, DF 1.25
 5987060376-X, 1-9, DF 10
 5987000376-QX, 1-9, 1 ml sample + 1 ml each XWHL 28+35+7 ml HNO₃, DF 10
 598700377 direct, DF 1
 598700377-D direct 1
 598700378-L, 4-4-2-8, DF 10
 598700378 4-4 2

Reviewed & Validated by:
Sal M. Parag 2/9/98
 Analyst Signature Date

5987060378-D, 4-4, DF 2
 5987000378-Q 4-4 2, 4 ml sample + 1.6 ml STS + 2.4 ml HNO₃
 5987060378-X 4-4-1-9 20
 5987000378-QX 4-4-1-9 20, 1 ml sample + 1 ml each XWHL 28+35+7 ml HNO₃

Data Entry Comments:

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

HNF-SD-WM-DP-294 REV. 0

Analysis Report

Summary

Fri 02-06-98 03:01:45 PM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	980206C	ICP2	02/06/98	13:12	DKS	Q	CONC
2	ICB	980206C	ICP2	02/06/98	13:15	DKS	Q	CONC
3	LLS	980206C	ICP2	02/06/98	13:18	DKS	Q	CONC
4	ICSA	980206C	ICP2	02/06/98	13:21	DKS	Q	CONC
5	ICSAB	980206C	ICP2	02/06/98	13:25	DKS	Q	CONC
6	S98T000376 L	980206C	ICP2	02/06/98	13:29	DKS	S	CONC
7	S98T000376 -	980206C	ICP2	02/06/98	13:32	DKS	S	CONC
8	S98T000376 D	980206C	ICP2	02/06/98	13:35	DKS	S	CONC
9	S98T000376 A	980206C	ICP2	02/06/98	13:39	DKS	S	CONC
10	S98T000376 X	980206C	ICP2	02/06/98	13:44	DKS	S	CONC
11	S98T000376 AX	980206C	ICP2	02/06/98	13:47	DKS	S	CONC
12	CCV	980206C	ICP2	02/06/98	14:03	DKS	Q	CONC
13	CCB	980206C	ICP2	02/06/98	14:06	DKS	Q	CONC
14	S98T000377	980206C	ICP2	02/06/98	14:10	DKS	S	CONC
15	S98T000377 D	980206C	ICP2	02/06/98	14:12	DKS	S	CONC
16	S98T000378 L	980206C	ICP2	02/06/98	14:16	DKS	S	CONC
17	S98T000378 -	980206C	ICP2	02/06/98	14:19	DKS	S	CONC
18	S98T000378 D	980206C	ICP2	02/06/98	14:22	DKS	S	CONC
19	S98T000378 A	980206C	ICP2	02/06/98	14:27	DKS	S	CONC
20	S98T000378 X	980206C	ICP2	02/06/98	14:33	DKS	S	CONC
21	S98T000378 AX	980206C	ICP2	02/06/98	14:37	DKS	S	CONC
22	ICSA	980206C	ICP2	02/06/98	14:49	DKS	Q	CONC
23	ICSAB	980206C	ICP2	02/06/98	14:52	DKS	Q	CONC
24	CCV 1	980206C	ICP2	02/06/98	14:55	DKS	Q	CONC
25	CCB 1	980206C	ICP2	02/06/98	14:58	DKS	Q	CONC

JK

5-302

02.06.98

Worklist # 22189

598T000376

598T000377

598T000378

S98T000376

$$\text{Spike: } Al = \frac{\left(\frac{1.6971}{1.25}\right) - \left(\frac{0.51884}{1.25}\right)}{1} \times 100 = 94.3\%$$

$$\text{Post Spike: } Na = \frac{\left(\frac{466.66}{10}\right) - \left(\frac{389.88}{10}\right)}{10} \times 100 = 76.8\%$$

S98T000378

$$\text{Spike: } Al = \frac{\left(\frac{2.8282}{2.00}\right) - \left(\frac{0.89026}{2.00}\right)}{1} \times 100 = 96.9\%$$

$$\text{Post Spike: } Na = \frac{\left(\frac{787.28}{20}\right) - \left(\frac{614.61}{20}\right)}{10} \times 100 = 86.3\%$$

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 94 TO 98.

HNF-SD-WM-DP-284 REV. 0

Analysis Report

Averages

Fri 02-06-98 03:01:45 PM

page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.9830	4.9067	5.1299	5.0217	4.9826	5.0636
2	ICB	.00100	-.00052	-.01218	.00127	-.00009	.00004
3	LLS	.02275	.10046	.19165	.10398	.09743	.01025
4	ICSA	.00105	239.27	.02252	-.00108	.00219	.00000
5	IC SAB	.94548	236.81	.00057	-.00580	.45457	.46927
6	S98T000376 L	.03603	.48247	.00282	.05530	.00598	-.00009
7	S98T000376	.03918	.51884	.05839	.05487	.00665	.00039
8	S98T000376 D	.03976	.51601	.03469	.05599	.00642	.00040
9	S98T000376 A	1.0599	1.6971	1.4151	1.2801	1.1942	1.2559
10	S98T000376 X	.07836	.48154	.06879	.06130	.00652	-.00183
11	S98T000376 AX	88.008	94.348	99.262	95.237	95.970	96.541
12	CCV	4.9849	4.8648	5.0991	4.9377	4.8958	4.9817
13	CCB	.00340	.00548	.00042	.00594	.00014	.00000
14	S98T000377	.03031	.51985	.06051	.05295	.00480	.00026
15	S98T000377 D	.02993	.51337	.03401	.04865	.00473	.00023
16	S98T000378 L	.07403	.89723	.06923	.07140	.01236	.00082
17	S98T000378	.06580	.89026	.05478	.05743	.01166	.00076
18	S98T000378 D	.06640	.87971	.05379	.05938	.01186	.00068
19	S98T000378 A	1.8071	2.8282	2.1867	1.9882	1.9116	1.9889
20	S98T000378 X	.05880	.82719	-.09039	.05451	.01147	-.00041
21	S98T000378 AX	186.63	192.47	200.09	194.31	196.04	195.68
22	ICSA	.00388	234.24	.00301	-.00368	.00216	.00025
23	IC SAB	.94193	231.79	.04232	-.00776	.44266	.46049
24	CCV 1	5.0026	4.7845	5.0671	4.8625	4.7914	4.9145
25	CCB 1	-.00047	-.00112	-.00389	.00298	.00012	-.00008

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	4.9562	4.9868	5.0638	5.0384	5.0814	4.8777
2	ICB	.00081	-.00045	-.00095	-.00815	.00065	-.00057
3	LLS	.20735	.23214	.01083	.20935	.04200	.02039
4	ICSA	-.02460	255.13	.00443	.00707	-.00013	-.00364
5	IC SAB	-.03329	250.86	.93502	-.00105	.46152	.45305
6	S98T000376 L	-.03972	1.8884	-.00412	-.03145	-.01097	.62323
7	S98T000376	.00613	1.7147	-.00350	-.01932	.00037	.62341
8	S98T000376 D	-.01822	1.8394	-.00406	-.02213	.00100	.62528
9	S98T000376 A	1.2071	3.0902	1.2369	1.2087	1.2507	1.8260
10	S98T000376 X	-.16029	1.8755	-.00717	-.03022	.02322	.63794
11	S98T000376 AX	98.458	102.04	98.463	96.106	98.259	99.522
12	CCV	4.9033	4.9935	5.0370	4.9606	5.0575	4.8614
13	CCB	.00114	.00749	.00057	.00787	.00055	-.00059
14	S98T000377	-.00289	2.0262	-.00119	-.00898	.00284	.48017
15	S98T000377 D	.00325	2.2069	-.00311	-.01221	.00137	.45575
16	S98T000378 L	-.23572	1.9769	-.00980	-.06157	-.00389	1.2571
17	S98T000378	.00173	1.9618	-.01075	-.02262	-.00057	1.2500
18	S98T000378 D	.00332	1.9518	-.01006	-.04517	-.00119	1.2488
19	S98T000378 A	1.9158	3.8876	1.9677	1.9257	1.9827	3.1607
20	S98T000378 X	-.09991	1.9464	-.03276	-.09377	-.00806	1.2413
21	S98T000378 AX	198.70	203.45	198.69	196.02	199.02	201.21
22	ICSA	-.01746	252.33	.00460	.00720	.00215	-.00222
23	IC SAB	-.03608	251.79	.92888	.01209	.45793	.45441
24	CCV 1	4.9564	5.0899	5.0508	4.8575	5.0710	4.8869

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#	Sample Name	Bi	Ca	Gd	Ce	Co	Cr
25	GCB_1	-.01640	.00636	-.00051	.00236	-.00008	-.00206

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	4.7289	.00613	4.8897	4.7922	5.0314	4.9253
2	ICB	.00015	.00000	.00013	-.00492	-.00143	.00000
3	LLS	.01718	.00098	.09793	Q.66879	.10099	.02035
4	ICSA	-.00033	.00182	92.425	.13883	-.00435	.00270
5	ICSAB	.45063	.00861	91.157	-.13109	-.00504	.91540
6	S98T000376 L	-.18659	-.00799	.51893	5.6962	.01080	.00156
7	S98T000376	-.18593	-.00832	.53099	5.6922	.01503	.00166
8	S98T000376 D	-.18343	-.00730	.51347	5.7371	.01430	.00212
9	S98T000376 A	.96500	-.00535	1.6688	6.9035	1.2363	1.1588
10	S98T000376 X	-.17383	.00637	.50534	6.0167	.01298	.01257
11	S98T000376_AX	89.465	.13209	94.734	97.625	96.028	90.233
12	CCV	4.6484	.00704	4.8662	4.6039	4.9354	4.7334
13	CCB	-.00016	.00064	.00168	.14959	.00062	.00031
14	S98T000377	-.11719	-.00356	.55257	5.0557	.01024	.00242
15	S98T000377 D	-.11918	-.00307	.56277	4.9895	.00890	.00196
16	S98T000378 L	-.36434	-.01175	-.20367	6.9971	.02650	.00536
17	S98T000378	-.35729	-.01440	-.19259	6.3577	.02741	.00278
18	S98T000378 D	-.36297	-.01609	-.20282	6.3480	.02877	.00270
19	S98T000378 A	1.4746	-.01336	1.7072	8.3603	1.9758	1.8543
20	S98T000378 X	-.37547	-.00438	-.21862	5.8338	.01229	.01262
21	S98T000378_AX	183.40	.26104	190.88	196.31	195.79	187.87
22	ICSA	-.00031	.00269	91.078	.11540	-.00375	.00312
23	ICSAB	.43668	.00285	90.367	.29127	-.00221	.86810
24	CCV_1	4.5290	.00872	4.8401	4.6439	4.8344	4.5453
25	CCB_1	-.00100	.00164	.00023	-.04496	-.00010	.00134

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.0860	4.9326	5.0766	5.0509	4.8868	4.9630
2	ICB	-.01180	.00002	.00259	-.01958	.00023	-.00396
3	LLS	.21093	.01947	.10043	.17978	.19470	.03773
4	ICSA	.251.56	-.00649	-.01627	185.18	.00179	-.01036
5	ICSAB	248.78	.43801	-.01472	183.85	-.00120	.90403
6	S98T000376 L	.22049	.04681	.00329	395.42	-.02189	.00119
7	S98T000376	.21239	.04282	.00550	382.02	-.01337	.00495
8	S98T000376 D	.22677	.04329	.00666	380.78	-.01290	-.00090
9	S98T000376 A	1.4185	1.2354	1.2612	376.84	1.1719	1.2129
10	S98T000376 X	.19619	.04937	.00973	389.88	.01647	-.00888
11	S98T000376_AX	99.932	98.186	97.892	466.66	92.790	97.820
12	CCV	5.0519	4.9080	5.0330	4.8466	4.7802	4.8953
13	CCB	.00486	.00030	.00288	-.02375	-.00077	.00144
14	S98T000377	.24868	.04150	.01071	314.98	.00654	.00426
15	S98T000377 D	.26768	.04320	.00400	318.22	-.00800	.00080
16	S98T000378 L	.46269	.05378	.00896	601.68	-.03301	.01469
17	S98T000378	.45180	.05174	.01179	581.20	-.02797	.00347
18	S98T000378 D	.46400	.05024	.00906	585.84	-.02580	.00124
19	S98T000378 A	2.4049	1.9427	2.0098	587.52	1.8627	1.9309
20	S98T000378 X	.42622	.05534	-.02621	614.61	-.04808	-.05541

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#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
21	S98T000378_AX	205.05	198.56	198.50	787.28	189.24	197.80
22	ICSA	247.08	-.00628	-.01519	178.81	.00080	-.00357
23	ICSAB	244.58	4.3619	-.01786	175.90	.00107	.90631
24	CCV 1	4.9582	4.9247	5.0431	4.6693	4.6594	4.9205
25	CCB 1	.00644	.00046	.00181	-.05673	-.00314	-.00283

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.0335	5.0293	4.9273	4.8295	4.7522	4.8730
2	ICB	.00817	-.00581	.00495	.00179	.02184	.00621
3	LLS	.39466	.20781	.20364	.10108	.21571	.15636
4	ICSA	.02737	.04181	-.00384	-.00271	.03038	.00390
5	ICSAB	.01833	.98514	-.00427	-.00852	.03701	-.00109
6	S98T000376 L	30.926	-.03496	4.2789	.04784	.25966	3.4558
7	S98T000376	32.484	.01272	4.1182	.03506	.20995	3.4012
8	S98T000376 D	32.210	.02287	4.1445	.02160	.19251	3.3916
9	S98T000376 A	32.710	1.2388	5.2684	1.2120	1.6398	4.9090
10	S98T000376 X	29.941	.10583	4.1834	-.00280	.50498	3.6423
11	S98T000376_AX	126.34	100.09	99.432	98.881	99.428	107.15
12	CCV	4.9467	5.0144	4.9138	4.8039	4.7095	4.8691
13	CCB	.00479	-.00539	-.00263	.00978	.02917	.01386
14	S98T000377	24.840	.04661	3.6506	.02986	.18138	4.0708
15	S98T000377 D	24.714	.01986	3.6811	.02620	.13926	4.1191
16	S98T000378 L	60.634	-.04440	5.5037	.07366	.48717	4.3136
17	S98T000378	61.779	.01916	5.3514	.04146	.27064	4.1947
18	S98T000378 D	62.447	.01924	5.3479	.03600	.26828	4.1955
19	S98T000378 A	63.793	1.9888	7.2765	1.9494	2.4953	6.1266
20	S98T000378 X	60.472	-.30488	5.5404	.06724	.64793	4.3523
21	S98T000378_AX	255.65	202.04	200.45	200.36	194.82	204.00
22	ICSA	.01887	.04001	-.00571	-.00270	.04405	.00543
23	ICSAB	.03157	1.0224	-.00997	-.00126	.06151	.00484
24	CCV 1	4.9662	5.0544	4.9353	4.7952	4.6666	4.8849
25	CCB 1	.00729	-.00340	.01439	.00073	.02973	.01127

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.8715	5.0858	.04463	4.9498	4.8301	9.7004
2	ICB	.00077	-.00004	-.00071	-.00043	-.00291	.00205
3	LLS	.19797	.02005	.00554	.02015	.40087	.48645
4	ICSA	-.00995	-.00253	-.02308	.00123	.00177	-.07808
5	ICSAB	-.01295	-.00252	-.02201	.00101	-.01738	-.07717
6	S98T000376 L	-.02040	.01049	.11241	.00114	.02069	57.606
7	S98T000376	-.02008	.00966	.14701	.00036	-.00281	57.693
8	S98T000376 D	-.01690	.01034	.14817	.00056	-.00336	56.892
9	S98T000376 A	1.1591	1.2412	.17375	1.2134	1.1609	58.470
10	S98T000376 X	.11922	.01237	.06850	.00416	.07299	56.000
11	S98T000376_AX	92.618	95.263	1.1083	96.637	95.983	235.14
12	CCV	4.7796	4.8924	.04856	4.8927	4.7503	9.4577
13	CCB	.00940	.00012	.00067	.00064	.01326	.03340
14	S98T000377	-.00689	.01001	.11129	.00217	.01157	37.897
15	S98T000377 D	-.00866	.01094	.11006	.00081	.00183	37.580
16	S98T000378 L	.00396	.01044	.28612	.00403	-.07690	112.37

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#	Sample Name	Sm	Sr	Th	Ti	Tl	U
17	S98T000378	-.01678	.00950	.32879	.00050	-.00233	110.25
18	S98T000378 D	-.02232	.00938	.31609	-.00069	-.01508	111.64
19	S98T000378 A	1.8529	1.9726	.34744	1.9383	1.8695	115.36
20	S98T000378 X	.08105	.01084	.27747	-.00043	-.11152	112.83
21	S98T000378 AX	189.29	194.25	2.4838	196.67	194.23	479.44
22	ICSA	-.00619	-.00257	-.01309	.00171	.00564	-.09652
23	ICSAB	-.00095	-.00255	-.01298	.00128	-.01120	-.07830
24	CCV 1	4.6606	4.8897	.05017	4.8311	4.7994	9.2372
25	CCB 1	.01506	.00021	-.00685	-.00003	-.00380	.06177

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.0394	.00716	4.9430	4.9781
2	ICB	.00066	.00007	-.00053	.00036
3	LLS	.10136	.00073	.01989	.02013
4	ICSA	.00379	.00779	-.00401	.00009
5	ICSAB	.45766	.00763	.91238	-.00089
6	S98T000376 L	.00845	-.00057	.02155	.03078
7	S98T000376	.00903	-.00108	.02418	.03061
8	S98T000376 D	.01179	-.00050	.02383	.03087
9	S98T000376 A	1.2520	.00140	1.2481	1.2457
10	S98T000376 X	.04880	.00755	.01726	.05692
11	S98T000376 AX	96.823	.15557	93.610	96.215
12	CCV	4.9988	.00750	4.9557	4.9170
13	CCB	.00242	.00053	-.00020	.00146
14	S98T000377	.01036	.00003	.02476	.02201
15	S98T000377 D	.01043	-.00006	.02460	.02238
16	S98T000378 L	.03541	.00083	.02497	.07805
17	S98T000378	.02947	.00016	.03221	.06671
18	S98T000378 D	.02635	-.00089	.03312	.06651
19	S98T000378 A	1.9984	.00223	1.9862	2.0016
20	S98T000378 X	.06957	.01004	.01636	.08448
21	S98T000378 AX	196.53	.30881	189.12	195.55
22	ICSA	.00455	.00803	-.00332	.00009
23	ICSAB	.45536	.00834	.91548	.00093
24	CCV 1	4.9802	.00837	5.0309	4.8689
25	CCB 1	.00405	.00114	-.00034	.00292

DK L28

02.06-98

LABCORE Data Entry Template for Worklist# 22530

Analyst: B. Gotschke Instrument: ICPMS1 _____ Book# 80N10-D

Method: LT-506-101 Rev/Mod A-1

Worklist Comment: ICP/MS 302 GRAB (DIRECT)

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@MSU238	QC		
2	ICB				@MSU-A1	LIQUID		
3	SAMPLE	S98T000376	0	A	@MSU-A1	LIQUID	98000081	S-302 GRAB1
Analytes Requested: U233-A1 , U234-A1 , U235-A1 , U236-A1 , U238-A1								
4	DUP	S98T000376	0	A	@MSU-A1	LIQUID		
5	SPK	S98T000376	0	A	@MSU-A1	LIQUID		
6	SAMPLE	S98T000377	0	A	@MSU-A1	LIQUID	98000081	S-302 GRAB1
Analytes Requested: U233-A1 , U234-A1 , U235-A1 , U236-A1 , U238-A1								
7	DUP	S98T000377	0	A	@MSU-A1	LIQUID		
8	SPK	S98T000377	0	A	@MSU-A1	LIQUID		
9	SAMPLE	S98T000378	0	A	@MSU-A1	LIQUID	98000081	S-302 GRAB1
Analytes Requested: U233-A1 , U234-A1 , U235-A1 , U236-A1 , U238-A1								
10	DUP	S98T000378	0	A	@MSU-A1	LIQUID		
11	SPK	S98T000378	0	A	@MSU-A1	LIQUID		
12	CCV				@MSU238	QC		
13	CCB				@MSU-A1	LIQUID		

Final page for worklist # 22530

B. Gotschke 3-12-98
Analyst Signature Date

Analyst Signature Date
D.F. 3/12/98
1001
1001
1002

Data Entry Comments:

Validated by Smp Arong 3-13-98 via 3-19-98

On data pages of concentration made, the units for
1-233, 1-234 and 1-236 are invalid because of software
S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code
99

ISO_U Method

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:

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

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:

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

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.

Method: MS_TUNE Sample Name: Sample-0

Operator:

Comment:

Run Time: 03/12/98 13:04 Type: Unk

Mode: INT

Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	462900.
Stddev	5754.
%RSD	1.243

#1	461700.
#2	470300.
#3	470600.
#4	465300.
#5	460300.
#6	456300.
#7	455200.
#8	468700.
#9	463300.
#10	457100.


3-12-98

WL # 22530

S-302

5987000326-378

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 100 TO 133.

Method: MS_TUNE Sample Name: Sample-0

Operator:

Comment:

Run Time: 03/12/98 13:06 Type: Unk

Mode: INT

Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	484900.
Stddev	4107.
%RSD	.8469
#1	491000.
#2	479600.
#3	480200.
#4	480000.
#5	482600.
#6	486800.
#7	484800.
#8	487800.
#9	486800.
#10	489300.

Method: ISO_U

Sample Name: BLANK

Operator:

Comment:

Run Time: 03/12/98 13:08 Type: Std

Mode: IR

Corr.Fact: 1.000000

Elem	U_[235]	U_[238]
Line	235/pulse	238/pulse
Units	Cts/S	Cts/S
Avg	1.421	1.974
Stddev	.194	.134
%RSD	13.63	6.761
#1	1.294	2.188
#2	1.273	1.910
#3	1.750	2.010
#4	1.431	1.845
#5	1.358	1.917

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	26.498
Stddev	.405
%RSD	1.5286
#1	26.277
#2	25.922
#3	26.865
#4	26.558
#5	26.869

Method: ISO_U

Sample Name: U High Std

Operator:

Comment:

Run Time: 03/12/98

13:10 Type: Std

Mode: IR

Corr.Fact: 1.000000

Elem	U_[235]	U_[238]
Line	235/pulse	238/pulse
Units	Cts/S	Cts/S
Avg	130.7	15990.
Stddev	4.2	406.
%RSD	3.198	2.543

#1	126.2	15460.
#2	129.7	16130.
#3	136.9	16540.
#4	128.0	15770.
#5	132.6	16030.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	27.021
Stddev	.594
%RSD	2.1973

#1	27.744
#2	26.881
#3	26.125
#4	27.267
#5	27.087

Method: ISO_U Sample Name: BLANK

Operator:

Comment: BACKGROUND

Run Time: 03/12/98 13:38 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	1.472	1.401	1.350	1.657	2.728
Stddev	.155	.136	.122	.126	.336
%RSD	10.51	9.677	9.042	7.620	12.32

#1	1.365	1.432	1.365	1.702	2.359
#2	1.630	1.545	1.223	1.749	2.836
#3	1.588	1.505	1.321	1.488	2.408
#4	1.262	1.229	1.548	1.784	2.895
#5	1.514	1.295	1.295	1.564	3.145

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	29.692
Stddev	.165
%RSD	.55687

#1	29.671
#2	29.445
#3	29.906
#4	29.711
#5	29.730

Method: ISO_U Sample Name: BLANK

Operator:

Comment: BACKGROUND

Run Time: 03/12/98 13:38 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	1.472	1.401	-.0004	1.657	.0047
Stddev	.155	.136	.0007	.126	.0021
%RSD	10.51	9.677	172.4	7.620	44.55

#1	1.365	1.432	-.0003	1.702	.0024
#2	1.630	1.545	-.0011	1.749	.0054
#3	1.588	1.505	-.0006	1.488	.0027
#4	1.262	1.229	.0007	1.784	.0057
#5	1.514	1.295	-.0007	1.564	.0073

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	29.692
Stddev	.165
%RSD	.55687

#1	29.671
#2	29.445
#3	29.906
#4	29.711
#5	29.730

Method: ISO_U Sample Name: MULTI-ELEMENT STD

Operator:

Comment: 100 PPB U

Run Time: 03/12/98 13:41 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	8.517	2.855	139.2	5.348	16200.
Stddev	.543	.197	3.8	.318	301.
%RSD	6.379	6.885	2.697	5.951	1.857
#1	8.915	2.740	132.8	4.922	15760.
#2	8.180	2.984	140.0	5.573	16050.
#3	7.725	3.131	139.3	5.574	16350.
#4	8.799	2.770	142.0	5.088	16280.
#5	8.966	2.651	141.9	5.582	16550.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	29.028
Stddev	.368
%RSD	1.2677

#1	29.558
#2	29.158
#3	29.063
#4	28.696
#5	28.665

Method: ISO_U

Sample Name: MULTI-ELEMENT STD

Operator:

Comment: 100 PPB U

Run Time: 03/12/98 13:41 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	8.517	2.855	.7578	5.348	100.6
Stddev	.543	.197	.0207	.318	1.9
%RSD	6.379	6.885	2.725	5.951	1.858
#1	8.915	2.740	.7227	4.922	97.92
#2	8.180	2.984	.7621	5.573	99.73
#3	7.725	3.131	.7585	5.574	101.6
#4	8.799	2.770	.7730	5.088	101.1
#5	8.966	2.651	.7727	5.582	102.8

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	29.028
Stddev	.368
%RSD	1.2677

#1	29.558
#2	29.158
#3	29.063
#4	28.696
#5	28.665

Method: ISO_U Sample Name: icv

Operator: bjg

Comment: direct

Run Time: 03/12/98 13:54 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	2.667	1.396	13.65	2.689	3497.
Stddev	.257	.106	.85	.291	126.
%RSD	9.621	7.605	6.223	10.81	3.619
#1	2.907	1.414	12.29	2.200	3289.
#2	2.274	1.325	13.78	2.912	3500.
#3	2.550	1.464	13.62	2.665	3530.
#4	2.775	1.520	13.96	2.890	3530.
#5	2.829	1.255	14.61	2.778	3634.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.583
Stddev	.735
%RSD	2.4024

#1	31.817
#2	30.560
#3	30.390
#4	30.273
#5	29.874

Method: ISO_U Sample Name: icv

Operator: bjg

Comment: direct

Run Time: 03/12/98 13:54 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	2.667	1.396	.0673	2.689	21.71
Stddev	.257	.106	.0047	.291	.79
%RSD	9.621	7.605	6.946	10.81	3.621
#1	2.907	1.414	.0598	2.200	20.42
#2	2.274	1.325	.0680	2.912	21.73
#3	2.550	1.464	.0671	2.665	21.92
#4	2.775	1.520	.0690	2.890	21.92
#5	2.829	1.255	.0726	2.778	22.57

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.583
Stddev	.735
%RSD	2.4024

#1	31.817
#2	30.560
#3	30.390
#4	30.273
#5	29.874

Method: ISO_U
Comment: direct

Sample Name: ich

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Operator: bjg

Run Time: 03/12/98 14:14 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	1.354	1.294	1.414	1.542	2.686
Stddev	.157	.099	.112	.188	.273
%RSD	11.62	7.620	7.945	12.18	10.18
#1	1.267	1.193	1.297	1.476	2.296
#2	1.447	1.367	1.320	1.844	2.830
#3	1.212	1.308	1.563	1.340	2.902
#4	1.259	1.195	1.402	1.482	2.501
#5	1.585	1.409	1.489	1.569	2.898

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	31.789
Stddev	.980
%RSD	3.0837

#1	33.536
#2	31.447
#3	31.354
#4	31.383
#5	31.223

Method: ISO_U Sample Name: icb

Operator: bjg

Comment: direct

Run Time: 03/12/98 14:14 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	1.354	1.294	.0000	1.542	.0044
Stddev	.157	.099	.001	.188	.0017
%RSD	11.62	7.620	1613.	12.18	38.41

#1	1.267	1.193	-.0007	1.476	.0020
#2	1.447	1.367	-.0006	1.844	.0053
#3	1.212	1.308	.0008	1.340	.0058
#4	1.259	1.195	-.0001	1.482	.0033
#5	1.585	1.409	.0004	1.569	.0057

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	31.789
Stddev	.980
%RSD	3.0837

#1	33.536
#2	31.447
#3	31.354
#4	31.383
#5	31.223

Method: ISO_U

Sample Name: s98t000376

Operator: bjg

Comment: 1001 df

Run Time: 03/12/98 14:17 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	1.493	2.209	79.65	4.612	9945.
Stddev	.139	.192	3.58	.155	294.
%RSD	9.340	8.691	4.489	3.354	2.953

#1	1.594	2.043	74.18	4.349	9478.
#2	1.272	2.020	79.01	4.628	9935.
#3	1.536	2.400	80.04	4.736	9986.
#4	1.446	2.161	81.08	4.631	10290.
#5	1.615	2.422	83.96	4.715	10040.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	31.348
Stddev	.595
%RSD	1.8975

#1	32.308
#2	31.439
#3	31.253
#4	30.772
#5	30.967

Method: ISO_U Sample Name: s98t000376

Operator: bjg

Comment: 1001 df

Run Time: 03/12/98 14:17 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	1.493	2.209	.4303	4.612	61.77
Stddev	.139	.192	.0197	.155	1.82
%RSD	9.340	8.691	4.570	3.354	2.954
#1	1.594	2.043	.4002	4.349	58.88
#2	1.272	2.020	.4268	4.628	61.71
#3	1.536	2.400	.4324	4.736	62.03
#4	1.446	2.161	.4382	4.631	63.90
#5	1.615	2.422	.4540	4.715	62.34

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	31.348
Stddev	.595
%RSD	1.8975

#1	32.308
#2	31.439
#3	31.253
#4	30.772
#5	30.967

Method: ISO_U

Sample Name: s98t000376_d

Operator: bjg

Comment: 1001 df

Run Time: 03/12/98

14:19 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	1.427	2.558	83.09	4.915	10420.
Stddev	.287	.211	1.63	.399	134.
%RSD	20.13	8.257	1.959	8.119	1.288
#1	1.156	2.745	81.69	4.896	10200.
#2	1.432	2.392	82.01	4.833	10420.
#3	1.196	2.294	82.38	5.162	10430.
#4	1.875	2.771	85.64	4.315	10550.
#5	1.474	2.587	83.75	5.371	10490.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.610
Stddev	.371
%RSD	1.2118

#1	31.149
#2	30.729
#3	30.511
#4	30.131
#5	30.532

Method: ISO_U Sample Name: s98t000376_d Operator: bjg
 Comment: 1001 df
 Run Time: 03/12/98 14:19 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	1.427	2.558	.4492	4.915	64.71
Stddev	.287	.211	.0090	.399	.83
%RSD	20.13	8.257	1.993	8.119	1.288

#1	1.156	2.745	.4415	4.896	63.34
#2	1.432	2.392	.4433	4.833	64.73
#3	1.196	2.294	.4453	5.162	64.80
#4	1.875	2.771	.4633	4.315	65.55
#5	1.474	2.587	.4528	5.371	65.14

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.610
Stddev	.371
%RSD	1.2118

#1	31.149
#2	30.729
#3	30.511
#4	30.131
#5	30.532

Method: ISO_U Sample Name: s98t000376_a

Operator: bjg

Comment: 1001 df

Run Time: 03/12/98 14:22 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	1.440	2.803	113.3	5.833	13620.
Stddev	.200	.308	1.4	.280	212.
%RSD	13.87	10.99	1.248	4.799	1.558

#1	1.646	2.689	113.1	5.851	13340.
#2	1.473	2.631	113.0	6.304	13490.
#3	1.283	2.700	114.1	5.751	13670.
#4	1.189	2.642	111.2	5.664	13670.
#5	1.609	3.351	115.0	5.597	13900.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.202
Stddev	.318
%RSD	1.0527

#1	30.676
#2	30.218
#3	29.997
#4	30.278
#5	29.839

Method: ISO_U Sample Name: s98t000376_a

Comment: 1001 df

Run Time: 03/12/98 14:22 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	1.440	2.803	.6154	5.833	84.58
Stddev	.200	.308	.0078	.280	1.32
%RSD	13.87	10.99	1.264	4.799	1.558
#1	1.646	2.689	.6143	5.851	82.87
#2	1.473	2.631	.6140	6.304	83.81
#3	1.283	2.700	.6198	5.751	84.93
#4	1.189	2.642	.6040	5.664	84.92
#5	1.609	3.351	.6249	5.597	86.36

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.202
Stddev	.318
%RSD	1.0527

#1	30.676
#2	30.218
#3	29.997
#4	30.278
#5	29.839

Method: ISO_U

Sample Name: s98t000377

Operator: bjg

Comment: 1001 df

Run Time: 03/12/98 14:27 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	1.411	2.101	57.94	4.042	7256.
Stddev	.215	.117	.91	.302	92.
%RSD	15.20	5.544	1.563	7.471	1.274
#1	1.358	2.038	59.26	3.943	7342.
#2	1.162	2.193	57.80	3.667	7100.
#3	1.288	2.080	57.03	4.028	7263.
#4	1.544	2.241	58.40	4.067	7274.
#5	1.705	1.954	57.24	4.504	7300.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.267
Stddev	.167
%RSD	.55122

#1	30.182
#2	30.545
#3	30.291
#4	30.121
#5	30.198

Method: ISO_U Sample Name: s98t000377

Comment: 1001 df

Run Time: 03/12/98 14:27 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	1.411	2.101	.3109	4.042	45.07
Stddev	.215	.117	.0050	.302	.57
%RSD	15.20	5.544	1.602	7.471	1.274
#1	1.358	2.038	.3181	3.943	45.60
#2	1.162	2.193	.3101	3.667	44.10
#3	1.288	2.080	.3059	4.028	45.11
#4	1.544	2.241	.3134	4.067	45.18
#5	1.705	1.954	.3070	4.504	45.34

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.267
Stddev	.167
%RSD	.55122

#1	30.182
#2	30.545
#3	30.291
#4	30.121
#5	30.198

Method: ISO_U

Sample Name: s98t000377_d

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Operator: bjg

Comment: 1001 df

Run Time: 03/12/98 14:28 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	1.359	2.031	57.57	4.020	7295.
Stddev	.108	.143	1.25	.148	104.
%RSD	7.913	7.038	2.179	3.695	1.425
#1	1.337	1.925	57.84	3.833	7226.
#2	1.219	2.108	56.79	4.052	7237.
#3	1.358	1.838	56.44	3.907	7305.
#4	1.361	2.174	57.16	4.199	7236.
#5	1.521	2.112	59.61	4.106	7473.

Int. Std.	Ir [193]
Line	193/pulse
Units	Cts/S
Avg	30.185
Stddev	.390
%RSD	1.2912

#1	30.655
#2	30.356
#3	30.200
#4	30.124
#5	29.590

Method: ISO_U

Sample Name: s98t000377_d

Operator: bjg

Comment: 1001 df

Run Time: 03/12/98 14:28 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	1.359	2.031	.3088	4.020	45.31
Stddev	.108	.143	.0069	.148	.65
%RSD	7.913	7.038	2.234	3.695	1.425
#1	1.337	1.925	.3103	3.833	44.88
#2	1.219	2.108	.3046	4.052	44.95
#3	1.358	1.838	.3026	3.907	45.37
#4	1.361	2.174	.3066	4.199	44.94
#5	1.521	2.112	.3201	4.106	46.41

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/s
Avg	30.185
Stddev	.390
%RSD	1.2912

#1	30.655
#2	30.356
#3	30.200
#4	30.124
#5	29.590

Method: ISO_U Sample Name: s98t000377_a

Operator: bjg

Comment: 1001 df

Run Time: 03/12/98 14:30 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	1.460	2.443	84.03	4.838	10380.
Stddev	.247	.111	2.09	.350	221.
%RSD	16.93	4.535	2.488	7.231	2.133
#1	1.811	2.484	80.44	5.017	10030.
#2	1.378	2.257	84.10	5.112	10360.
#3	1.233	2.550	85.70	5.015	10540.
#4	1.615	2.481	84.73	4.246	10360.
#5	1.264	2.443	85.18	4.802	10600.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.127
Stddev	.637
%RSD	2.1151

#1	31.197
#2	30.125
#3	29.609
#4	30.025
#5	29.678

Method: ISO_U

Sample Name: s98t000377_a

Operator: bjg

Comment: 1001 df

Run Time: 03/12/98 14:30 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	1.460	2.443	.4544	4.838	64.47
Stddev	.247	.111	.0115	.350	1.38
%RSD	16.93	4.535	2.531	7.231	2.133
#1	1.811	2.484	.4347	5.017	62.32
#2	1.378	2.257	.4548	5.112	64.35
#3	1.233	2.550	.4636	5.015	65.48
#4	1.615	2.481	.4582	4.246	64.33
#5	1.264	2.443	.4607	4.802	65.85

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.127
Stddev	.637
%RSD	2.1151

#1	31.197
#2	30.125
#3	29.609
#4	30.025
#5	29.678

Method: ISO_U

Sample Name: s98t000378

Operator: bjg

Comment: 2002 df

Run Time: 03/12/98 14:35 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	1.445	2.482	85.17	5.242	10500.
Stddev	.120	.261	.75	.272	101.
%RSD	8.300	10.52	.8860	5.190	.9600
#1	1.326	2.783	85.04	4.976	10360.
#2	1.646	2.371	84.65	5.005	10450.
#3	1.421	2.627	85.77	5.172	10530.
#4	1.400	2.099	86.09	5.515	10630.
#5	1.431	2.529	84.29	5.541	10520.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.246
Stddev	.224
%RSD	.74156

#1	30.545
#2	30.372
#3	30.260
#4	30.009
#5	30.046

Method: ISO_U

Sample Name: s98t000378

Operator: bjg

Comment: 2002 df

Run Time: 03/12/98 14:35 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	1.445	2.482	.4607	5.242	65.21
Stddev	.120	.261	.0042	.272	.63
%RSD	8.300	10.52	.9011	5.190	.9601
#1	1.326	2.783	.4599	4.976	64.33
#2	1.646	2.371	.4578	5.005	64.93
#3	1.421	2.627	.4640	5.172	65.43
#4	1.400	2.099	.4657	5.515	66.01
#5	1.431	2.529	.4558	5.541	65.35

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.246
Stddev	.224
%RSD	.74156

#1	30.545
#2	30.372
#3	30.260
#4	30.009
#5	30.046

Method: ISO_U

Sample Name: s98t000378_d

Operator: bjg

Comment: 2002 df

Run Time: 03/12/98 14:37 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	1.459	2.318	86.62	5.151	10730.
Stddev	.228	.198	2.07	.239	136.
%RSD	15.62	8.530	2.391	4.638	1.265
#1	1.333	2.390	83.71	5.057	10520.
#2	1.322	2.158	87.55	4.985	10750.
#3	1.844	2.160	85.64	5.150	10700.
#4	1.492	2.629	89.22	5.562	10860.
#5	1.305	2.254	86.97	5.000	10830.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	29.944
Stddev	.520
%RSD	1.7354

#1	30.749
#2	29.887
#3	30.098
#4	29.484
#5	29.503

Method: ISO_U Sample Name: s98t000378_d

HNF-SD-WM-DP-294 REV. 0

Operator: bjg

Comment: 2002 df

Run Time: 03/12/98 14:37 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	1.459	2.318	.4686	5.151	66.67
Stddev	.228	.198	.0114	.239	.84
%RSD	15.62	8.530	2.431	4.638	1.265

#1	1.333	2.390	.4526	5.057	65.34
#2	1.322	2.158	.4737	4.985	66.76
#3	1.844	2.160	.4632	5.150	66.47
#4	1.492	2.629	.4829	5.562	67.47
#5	1.305	2.254	.4706	5.000	67.29

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	29.944
Stddev	.520
%RSD	1.7354

#1	30.749
#2	29.887
#3	30.098
#4	29.484
#5	29.503

Method: ISO_U
 Comment: 2002 df

Sample Name: s98t000378_a

Operator: bjg

Run Time: 03/12/98

14:39 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	1.603	2.741	115.3	6.117	13890.
Stddev	.123	.225	2.0	.173	144.
%RSD	7.689	8.206	1.713	2.829	1.040
#1	1.678	2.459	112.0	6.282	13640.
#2	1.636	2.597	116.9	6.123	13960.
#3	1.397	2.829	115.1	6.028	13930.
#4	1.591	3.047	116.1	5.875	13960.
#5	1.711	2.771	116.6	6.278	13980.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	29.638
Stddev	.310
%RSD	1.0458

#1	30.088
#2	29.644
#3	29.697
#4	29.533
#5	29.229

Method: ISO_U Sample Name: s98t000378_a Operator: bjg
 Comment: 2002 df
 Run Time: 03/12/98 14:39 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	1.603	2.741	.6266	6.117	86.31
Stddev	.123	.225	.0109	.173	.90
%RSD	7.689	8.206	1.734	2.829	1.040
#1	1.678	2.459	.6083	6.282	84.72
#2	1.636	2.597	.6351	6.123	86.69
#3	1.397	2.829	.6256	6.028	86.56
#4	1.591	3.047	.6307	5.875	86.72
#5	1.711	2.771	.6333	6.278	86.87

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	29.638
Stddev	.310
%RSD	1.0458

#1	30.088
#2	29.644
#3	29.697
#4	29.533
#5	29.229

Method: ISO_U Sample Name: ccv

Operator: bjg

Comment: direct

Run Time: 03/12/98 14:47 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	3.002	1.403	13.38	2.730	3503.
Stddev	.203	.128	.49	.225	109.
%RSD	6.772	9.135	3.674	8.236	3.107
#1	2.912	1.464	12.62	2.404	3316.
#2	3.294	1.419	13.99	2.641	3495.
#3	2.865	1.211	13.51	2.767	3568.
#4	3.129	1.556	13.42	2.834	3567.
#5	2.809	1.363	13.35	3.006	3568.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.924
Stddev	.855
%RSD	2.7644

#1	32.447
#2	30.666
#3	30.542
#4	30.524
#5	30.443

Method: ISO_U Sample Name: ccv

Operator: bjg

Comment: direct

Run Time: 03/12/98 14:47 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	3.002	1.403	.0658	2.730	21.75
Stddev	.203	.128	.0027	.225	.68
%RSD	6.772	9.135	4.110	8.236	3.109
#1	2.912	1.464	.0616	2.404	20.59
#2	3.294	1.419	.0691	2.641	21.70
#3	2.865	1.211	.0665	2.767	22.15
#4	3.129	1.556	.0660	2.834	22.15
#5	2.809	1.363	.0656	3.006	22.15

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	30.924
Stddev	.855
%RSD	2.7644

#1	32.447
#2	30.666
#3	30.542
#4	30.524
#5	30.443

Method: ISO_U Sample Name: ccb

Comment: direct

Run Time: 03/12/98 15:07 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	1.544	1.345	1.552	1.530	3.333
Stddev	.137	.135	.019	.101	.269
%RSD	8.854	10.06	1.204	6.597	8.066
#1	1.455	1.225	1.580	1.473	3.142
#2	1.419	1.524	1.541	1.524	3.065
#3	1.515	1.236	1.550	1.707	3.274
#4	1.565	1.287	1.530	1.478	3.738
#5	1.768	1.453	1.558	1.470	3.448

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	28.550
Stddev	.231
%RSD	.80987

#1	28.169
#2	28.545
#3	28.711
#4	28.756
#5	28.569

Method: ISO_U Sample Name: ccb

Operator: bjg

Comment: direct

Run Time: 03/12/98 15:07 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	1.544	1.345	.0007	1.530	.0084
Stddev	.137	.135	.0001	.101	.0017
%RSD	8.854	10.06	14.31	6.597	19.78
#1	1.455	1.225	.0009	1.473	.0073
#2	1.419	1.524	.0007	1.524	.0068
#3	1.515	1.236	.0007	1.707	.0081
#4	1.565	1.287	.0006	1.478	.0110
#5	1.768	1.453	.0008	1.470	.0092

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	28.550
Stddev	.231
%RSD	.80987

#1	28.169
#2	28.545
#3	28.711
#4	28.756
#5	28.569

worklistdata Version 1.0 05/15/96
02/20/98 21:52

Page: 1

LABCORE Completed Worklist Report for Worklist# 22156

Analyst: slh

Instrument: CARB2

Book# 25N128 TIC
26N12C TOCMethod: LA342-100 Rev/Mod F-1Worklist Comment: BX103TOC AND S302 GRAB1 @TICTOC. RCJ

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	@TICTOC1 TIC-02	LIQUID	1	5.80E+0	5.800	ug/mL
1 BLNK	0	@TICTOC1 TOC-02	LIQUID	1	4.30E+0	4.300	ug/mL
2 STD	0	@TICTOC1 TIC-02	LIQUID	6.02E+02	6.00E+2	99.668 % Recovery	
2 STD	0	@TICTOC1 TOC-02	LIQUID	3.00E+03	2.76E+3	92.000 % Recovery	
3 SAMPLE	S98T000201 0	@TICTOC1 TIC-02	LIQUID	N/A	9.03E+03	5.000	ug/mL
3 SAMPLE	S98T000201 0	@TICTOC1 TOC-02	LIQUID	N/A	6.49E+03	40.000	ug/mL
4 DUP	S98T000201 0	@TICTOC1 TIC-02	LIQUID	9.93E+3	9.17E+3	1.538 RPD	
4 DUP	S98T000201 0	@TICTOC1 TOC-02	LIQUID	6.49E+3	6.56E+3	1.073 RPD	
5 SAMPLE	S98T000204 0	@TICTOC1 TIC-02	LIQUID	N/A	8.63E+03	5.000	ug/mL
5 SAMPLE	S98T000204 0	@TICTOC1 TOC-02	LIQUID	N/A	5.70E+03	40.000	ug/mL
6 DUP	S98T000204 0	@TICTOC1 TIC-02	LIQUID	8.63E+3	9.17E+3	6.967 RPD	
6 DUP	S98T000204 0	@TICTOC1 TOC-02	LIQUID	5.70E+3	6.37E+3	11.102 RPD	
7 SPK	S98T000204 0	@TICTOC1 TIC-02	LIQUID	1.00E+02	9.61E+01	96.100 % Recovery	
7 SPK	S98T000204 0	@TICTOC1 TOC-02	LIQUID	1.00E+02	9.99E+01	99.900 % Recovery	
8 SAMPLE	S98T000376 0	@TICTOC1 TIC-02	LIQUID	N/A	1.11E+02	5.000	ug/mL
8 SAMPLE	S98T000376 0	@TICTOC1 TOC-02	LIQUID	N/A	4.00E+01	40.000	ug/mL
9 DUP	S98T000376 0	@TICTOC1 TIC-02	LIQUID	1.11E+2	1.11E+2	0.000 RPD	
9 DUP	S98T000376 0	@TICTOC1 TOC-02	LIQUID	<4.00E+1	<4.00E+1	RPD	
10 SPK	S98T000376 0	@TICTOC1 TIC-02	LIQUID	1.00E+02	9.85E+01	98.500 % Recovery	
10 SPK	S98T000376 0	@TICTOC1 TOC-02	LIQUID	1.00E+02	9.25E+01	92.500 % Recovery	
11 SAMPLE	S98T000377 0	@TICTOC1 TIC-02	LIQUID	N/A	9.63E+01	5.000	ug/mL
11 SAMPLE	S98T000377 0	@TICTOC1 TOC-02	LIQUID	N/A	4.00E+01	40.000	ug/mL
12 DUP	S98T000377 0	@TICTOC1 TIC-02	LIQUID	9.63E+1	9.56E+1	0.730 RPD	
12 DUP	S98T000377 0	@TICTOC1 TOC-02	LIQUID	<4.00E+1	<4.00E+1	RPD	

Final page for worklist# 22156

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

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

02/20/98 21:41
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 22156Analyst: SLT Instrument: CARB2 Book# _____

Method: LA-342-100 Rev/Mod _____

Worklist Comment: BX103TOC AND S302 GRAB1 @TICTOC. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	LIQUID		
2	STD				@TICTOC1	LIQUID		
3	SAMPLE	S98T000201 0			@TICTOC1	LIQUID	98000048	BX-103 TOC
		Analytes Requested: TIC-02 , TOC-02						
4	DUP	S98T000201 0			@TICTOC1	LIQUID		
5	SAMPLE	S98T000204 0			@TICTOC1	LIQUID	98000047	BX-103 TOC
		Analytes Requested: TIC-02 , TOC-02						
6	DUP	S98T000204 0			@TICTOC1	LIQUID		
7	SPK	S98T000204 0			@TICTOC1	LIQUID		
8	SAMPLE	S98T000376 0			@TICTOC1	LIQUID	98000081	S-302 GRAB1
		Analytes Requested: TIC-02 , TOC-02						
9	DUP	S98T000376 0			@TICTOC1	LIQUID		
10	SPK	S98T000376 0			@TICTOC1	LIQUID		
11	SAMPLE	S98T000377 0			@TICTOC1	LIQUID	98000081	S-302 GRAB1
		Analytes Requested: TIC-02 , TOC-02						
12	DUP	S98T000377 0			@TICTOC1	LIQUID		

Final page for worklist # 22156
588 ATTACH
 Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Data Entry Comments:

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

HNF--SD--WM--DP--294, REV. 0

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02/04/98 13:23
A-0004-1

HNF-SD-WM-DP-294 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 22157

Analyst: SLH Instrument: CARB2 Book# TIC 25N12-B
TOC 26N12-C

Method: LA-342-100 Rev/Mod _____

Worklist Comment: S302 GRAB1, @TICTOC1, STD: TIC= 1.0mL, TOC= 0.200mL skw

S Type	Sample#	R A Test	Matrix	Group#	Project
1 BLNK		@TICTOC1	LIQUID		
2 STD		@TICTOC1	LIQUID		
3 SAMPLE	S98T000376 0	@TICTOC1	LIQUID	98000081	S-302 GRAB1
	Analytes Requested: TIC-02 , TOC-02				
4 DUP	S98T000376 0	@TICTOC1	LIQUID		
5 SPK	S98T000376 0	@TICTOC1	LIQUID		
6 SAMPLE	S98T000377 0	@TICTOC1	LIQUID	98000081	S-302 GRAB1
	Analytes Requested: TIC-02 , TOC-02				
7 DUP	S98T000377 0	@TICTOC1	LIQUID		

Final page for worklist # 22157

Sandra Howard Boatright
Analyst Signature Date
2-18-98

Analyst Signature Date

Data Entry Comments:

this WL added to WL 22157

WORKBOOK PAGE: BLANK1

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	9.5	25.4
22156	µg of Carbon from Baseline (C2)	3.7	29.7

Test Code
@TICTOC1
Matrix
LIQUID
Batch Number
98000445
Rerun
0
Sample Prep
N/A
Sample #
BLANK
Instrument Code
CARB2
Prepared By
RCJ
Chemist
RWS
Analyst
SLH
Date Complete
02/20/98
Analysis Date
02/18/98
Analysis Time
Method Detection Limit in µg/mL
Sample Point
BX103/S302

µg of Carbon = |C1-C2|

	TIC	TOC
Analysis Time	5	40
Sample Point	5.80E+00	4.30E+00

Data Entered By:	RCJ	Date:	02/20/98
Signature of Chemist:	<i>R. W. Schwed</i>	Date:	2/23/98

BLANK WB1 REV 1.0

342100ML

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)	603.9	582.2
22156	µg of Carbon from Baseline (C2)	3.7	29.7
Test Code	Standard Book Number	25N12B	26N12C
@TICTOC1	Standard Value (µg/ml)	602	3000

Matrix
LIQUID
Batch Number
98000445
Rerun
0
Sample Prep
N/A
Sample #
STANDARD
Instrument Code
CARB2
Prepared By
RCJ
Chemist
RWS
Analyst
SLH
Date Complete
02/20/98
Analysis Date
02/18/98
Analysis Time
Method Detection Limit in µg/mL
QC Actual in µg/mL
Sample Point
QC Found in µg/mL
BX103/S302
Percent Standard Recovery

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
5	40
6.02E+02	3.00E+03
6.00E+02	2.76E+03
99.7	92.1

Data Entered By:	RCJ	Date:	02/20/98
Signature of Chemist:	<i>RW Schmitt</i>	Date:	2/23/98

STANDARD WB1 REV 1.0

342100ML

HNH-SD-WM-DP-294, REV. 0

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HNH-SD-WM-DP-294, REV. 0

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HNF-SD-WM-DP-294, REV. 0

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WORKBOOK PAGE: SPIKE7

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	0.1000	0.1000
Work List	Final Coulometer Reading in µg (C1)	866.2	599.9
22156	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	0.1000
@TIC/TOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	1155.5	899.5
LIQUID	Spike Book Number	25N12B	26N12C
Batch Number	Spike Standard Value in µg/mL (SPK CONC)	602	3000
98000445			
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = (C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 1		
S98T000204			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB2	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
RCJ			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
02/20/98			
Analysis Date			
02/18/98			
Analysis Time			
		TIC	TOC
	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.79E+02	3.00E+03
BX103/S302	Percent Spike Recovery	96.1	99.9

Data Entered By:	RCJ	Date:	02/20/98
Signature of Chemist:	<i>RWS</i>	Date:	2/23/98

WORKBOOK PAGE: SAM8

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	1.0000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	114.5	28.2
22156	µg of Carbon from Baseline (C2)	3.7	29.7
Test Code			
@TICTOC1			

Matrix
LIQUID

Batch Number
98000445

Rerun
0

Sample Prep
N/A

Sample #
S98T000376

Instrument Code
CARB2

Prepared By
RCJ

Chemist
RWS

Analyst
SLH

Date Complete
02/20/98

Analysis Date
02/18/98

Analysis Time

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

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

		TIC	TOC
Method Detection Limit in µg/mL		5	40
Sample Point	µg of Carbon/mL Note:	1.11E+02	4.00E+01
BX103/S302			

Data Entered By:	RCJ	Date:	02/20/98
Signature of Chemist:	<i>RWS</i>	Date:	2/23/98

WORKBOOK PAGE: DUP9

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

LIQUIDS

Type	Sample Size in mL (SS)	TIC	TOC
DUP	Dilution Factor (DF)	1.0000	1.0000
Work List		1	1
22156	µg of Carbon in Sample (C1)	114.6	26.9
	µg of Carbon from Baseline (C2)	3.7	29.7
Test Code @TIC/TOC1	Known µg of C from Original Sample	1.11E+2	<4.00E+1

Matrix
LIQUID
Batch Number
98000445
Rerun
0
Sample Prep
N/A
Sample #
S98T000376
Instrument Code
CARB2
Prepared By
RCJ
Chemist
RWS
Analyst
SLH
Date Complete
02/20/98
Analysis Date
02/18/98
Analysis Time
Sample Point
BX103/S302

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

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL Note: <	1.11E+02	4.00E+01

Data Entered By:	RCJ	Date:	02/20/98
Signature of Chemist:	<i>RWS</i>	Date:	2/23/98

WORKBOOK PAGE: SPIKE10

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	1.0000	1.0000
Work List	Final Coulometer Reading in µg (C1)	114.5	28.2
22156	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	1.0000	1.0000
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	410.9	305.6
LIQUID	Spike Book Number	25N12B	26N12C
Batch Number	Spike Standard Value in µg/mL (SPK CONC)	602	3000
98000445			
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 1$		
S98T000376			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB2	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
RCJ			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
02/20/98			
Analysis Date			
02/18/98			
Analysis Time			
	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.93E+02	2.77E+03
BX103/S302	Percent Spike Recovery	98.5	92.5

Data Entered By:	RCJ	Date:	02/20/98
Signature of Chemist:	<i>RWS</i>	Date:	2/23/98

HNF-SD-WM-DP-294 REV. 0

WORKBOOK PAGE: SAM11

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

LIQUIDS

Type	Sample Size in mL (SS)	TIC	TOC
SAMPLE	Dilution Factor (DF)	1.0000	1.0000
Work List	µg of Carbon in Sample (C1)	1	1
22156	µg of Carbon from Baseline (C2)	100	24.5
Test Code		3.7	29.7
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98000445			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T000377			
Instrument Code			
CARB2			
Prepared By			
RCJ			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
02/20/98			
Analysis Date			
02/18/98			
Analysis Time			
Sample Point			
BX103/S302			

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

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL Note: <	9.63E+01	4.00E+01

Data Entered By:

RCJ

Date: 02/20/98

Signature of Chemist:

RW Schneider

Date: 2/23/98

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: DUP12

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	1.0000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	99.3	16.6
22156	µg of Carbon from Baseline (C2)	3.7	29.7
Test Code	Known µg of C from Original Sample	9.63E+1	<4.00E+1
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98000445			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
0	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S98T000377			
Instrument Code			
CARB2			
Prepared By			
RCJ			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
02/20/98			
Analysis Date	NOTE: FOR TOC: The Reported Result is	<	40.
02/18/98			
Analysis Time	Method Detection Limit in µg/mL	5	40
Sample Point	µg of Carbon/mL Note:	<	9.56E+01 4.00E+01
BX103/S302			

Data Entered By:	RCJ	Date:	02/20/98
Signature of Chemist:	<i>RWS</i>	Date:	2/23/98

HNF-SD-WM-DP-294 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE 2

Date: 02/17/98

Time: 19:41:22

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	0.10	0.00
2	1.01	0.40	75.00
3	1.51	0.70	42.86
4	2.00	0.80	12.50
5	2.50	1.00	20.00
6	3.00	1.20	16.67
7	3.50	1.30	7.69
8	4.00	1.80	27.78
9	4.50	1.80	0.00
10	5.00	1.80	0.00
11	5.50	1.90	5.26
12	6.00	2.10	9.52
13	6.50	2.20	4.55
14	7.00	2.40	8.33
15	7.50	2.50	4.00
16	8.00	2.70	7.41
17	8.50	2.80	3.57
18	9.00	3.00	6.67
19	9.50	3.20	6.25
20	10.00	3.30	3.03
21	10.50	3.50	5.71
22	11.00	3.70	5.41

BLANK VALUE = 3.7 micrograms carbon

BLANK FACTOR = 3.7 / 10.99609 =

+3.4E-01

ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 150 TO 175.

Sample Run By:

SL HOOD

00002

HNF-SD-WM-DP-294 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE 2

Date: 02/17/98

Time: 19:54:12

Sample Size = 1 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # = BASE 2

Max Readings = 22

Blank Value = N/A

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.80	0.00
2	1.01	4.80	83.33
3	1.51	10.40	53.85
4	2.00	14.90	30.20
5	2.50	18.00	17.22
6	3.00	20.10	10.45
7	3.50	21.40	6.07
8	4.00	22.50	4.89
9	4.50	23.40	3.85
10	5.00	24.30	3.70
11	5.50	24.90	2.41
12	6.00	25.50	2.35
13	6.50	26.00	1.92
14	7.00	26.60	2.26
15	7.50	27.00	1.48
16	8.00	27.40	1.46
17	8.50	27.80	1.44
18	9.00	28.20	1.42
19	9.50	28.60	1.40
20	10.00	29.00	1.38
21	10.50	29.40	1.36
22	11.00	29.70	1.01

BLANK VALUE = 29.7 micrograms carbon

BLANK FACTOR = 29.7 / 10.99976 = +2.70E+00 ug/min Carbon

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

Sample Run By:

SL HOOD

00002

HNF-SD-WM-DP-294 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 23

Date: 02/17/98

Time: 20:08:13

Sample Size = 1000 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .34 ug/minute C

% Difference = 10

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

1	0.51	0.30	0.00
2	1.01	61.00	99.51
3	1.51	273.00	77.66
4	2.00	433.40	37.01
5	2.50	525.20	17.48
6	3.00	568.80	7.67
7	3.50	588.60	3.36
8	4.00	595.60	1.18
9	4.50	598.20	0.43
10	5.00	599.10	0.15
11	5.50	599.90	0.13
12	6.00	600.30	0.07
13	6.50	601.10	0.13
14	7.00	601.20	0.02
15	7.50	601.60	0.07
16	8.00	601.90	0.05
17	8.50	602.20	0.05
18	9.00	602.60	0.07
19	9.50	602.90	0.05
20	10.00	603.20	0.05
21	10.50	603.60	0.07
22	11.00	603.90	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 3.739917 micrograms carbon

BLANK FACTOR = 3.739917 / 10.99976 = +3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(603.9 - 3.739253) (1)/(1000) = +6.002E-01 g/L Carbon
 (603.9 - 3.739253) (1)/(1000) (12) = +5.001E-02 Molar Carbon

Sample Run By:

SL Hood Boatright

SL HOOD

00002

1ml = 25N12-B

HNF-SD-WM-DP-294 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 2

Date: 02/17/98

Time: 21:36:28

Sample Size = 200 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.7 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.00	1.90	84.21
3	1.50	55.30	96.56
4	2.00	200.00	72.35
5	2.50	387.10	48.33
6	3.00	499.90	22.56
7	3.50	547.20	8.64
8	4.00	564.80	3.12
9	4.50	570.80	1.05
10	5.00	573.50	0.47
11	5.50	575.00	0.26
12	6.00	576.00	0.17
13	6.50	576.90	0.16
14	7.00	577.80	0.16
15	7.50	578.40	0.10
16	8.00	579.10	0.12
17	8.50	579.60	0.09
18	9.00	580.20	0.10
19	9.50	580.70	0.09
20	10.00	581.40	0.12
21	10.50	581.70	0.05
22	11.00	582.20	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 29.69934 micrograms carbon

BLANK FACTOR = 29.69934 / 10.99976 = +2.7E+00 ug/min Carbon

SAMPLE RESULTS:

(582.2 - 29.69407) (1)/(200) =

+2.763E+00

g/L Carbon

(582.2 - 29.69407) (1)/(200) (12) =

+2.302E-01

Molar Carbon

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

Sample Run By:

SL HOOD

00002

200 ml = 26 N12-C

HNF-SD-WM-DP-294 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK 2

Date: 02/17/98

Time: 21:51:24

Sample Size = 1 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .34 ug/minute C

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.20	0.00
2	1.00	1.40	85.71
3	1.50	3.20	56.25
4	2.00	3.80	15.79
5	2.50	4.50	15.56
6	3.00	4.80	6.25
7	3.50	5.10	5.88
8	4.00	5.40	5.56
9	4.50	5.70	5.26
10	5.00	6.00	5.00
11	5.50	6.30	4.76
12	6.00	6.60	4.55
13	6.50	6.80	2.94
14	7.00	7.10	4.23
15	7.50	7.40	4.05
16	8.00	7.70	3.90
17	8.50	8.00	3.75
18	9.00	8.20	2.44
19	9.50	8.60	4.65
20	10.00	8.90	3.37
21	10.50	9.10	2.20
22	11.00	9.50	4.21

USER INPUT BLANK VALUE

BLANK VALUE = 3.739917 micrograms carbon

BLANK FACTOR = 3.739917 / 10.99976 = +3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(9.5 - 3.738714) (1)/(1)	=	+5.8E+00	g/L Carbon
(9.5 - 3.738714) (1)/(1) (12)	=	+4.8E-01	Molar Carbon

Sample Run By:

SL HOOD

00002

HNF-SD-WM-DP-294 REV. 0

TOC-- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK 2

Date: 02/17/98

Time: 22:04:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.7 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          1.30         61.54
  3          1.50          5.20         75.00
  4          2.00          9.30         44.09
  5          2.50         12.70         26.77
  6          3.00         14.80         14.19
  7          3.50         16.30          9.20
  8          4.00         17.60          7.39
  9          4.50         18.60          5.38
 10          5.00         19.40          4.12
 11          5.50         19.90          2.51
 12          6.00         20.60          3.40
 13          6.50         21.00          1.90
 14          7.00         21.50          2.33
 15          7.50         22.00          2.27
 16          8.00         22.50          2.22
 17          8.50         22.90          1.75
 18          9.00         23.40          2.14
 19          9.50         23.90          2.09
 20         10.00         24.30          1.65
 21         10.50         24.80          2.02
 22         11.00         25.40          2.36

```

USER INPUT BLANK VALUE

BLANK VALUE = 29.69934 micrograms carbon

BLANK FACTOR = 29.69934 / 10.99976 = +2.7E+00 ug/min Carbon

SAMPLE RESULTS:

```

( 25.4 - 29.69176 ) (1)/(1) = < 5.00 E-3 g/L Carbon
( 25.4 - 29.69176 ) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

```

Sample Run By:

SL HOOD

00002

HNF-SD-WM-DP-294, REV. 0

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HNH-SD-WM-DP-294, REV. 0

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HNF-SD-WM-DP-294, REV. 0

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HNF-SD-WM-DP-294, REV. 0

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HNF-SD-WM-DP-294, REV. 0

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HNH-SD-WM-DP-294, REV. 0

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HNF-SD-WM-DP-294, REV. 0

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HNH-SD-WM-DP-294, REV. 0

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HNF-SD-WM-DP-294 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T00204 SPK

Date: 02/18/98

Time: 01:16:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .34 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	4.60	89.13
3	1.50	143.80	96.80
4	2.00	465.60	69.12
5	2.50	775.70	39.98
6	3.00	972.70	20.25
7	3.50	1069.00	9.01
8	4.00	1114.40	4.07
9	4.50	1133.80	1.71
10	5.00	1141.30	0.66
11	5.50	1144.20	0.25
12	6.00	1146.10	0.17
13	6.50	1147.40	0.11
14	7.00	1148.70	0.11
15	7.50	1149.70	0.09
16	8.00	1150.80	0.10
17	8.50	1151.70	0.08
18	9.00	1152.50	0.07
19	9.50	1153.20	0.06
20	10.00	1154.30	0.10
21	10.50	1154.90	0.05
22	11.00	1155.50	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 3.739917 micrograms carbon

BLANK FACTOR = 3.739917 / 10.99976 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(1155.5 - 3.739549) (1)/(1) =

(1155.5 - 3.739549) (1)/(1) (12) =

+1.1518E+03 g/L Carbon

+9.5980E+01 Molar Carbon

Sample Run By:

SL HOOD

00002

100ml
 55 = .1123g + .500ml spk

25N12-B

164

HNF-SD-WM-DP-294 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T00204 SPK Date: 02/18/98 Time: 01:29:26

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.7 ug/minute C

Analyst : SL HOOD

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	6.20	88.71
3	1.50	84.50	92.66
4	2.00	271.40	68.87
5	2.50	529.00	48.70
6	3.00	710.60	25.56
7	3.50	797.00	10.84
8	4.00	839.00	5.01
9	4.50	861.50	2.61
10	5.00	872.50	1.26
11	5.50	878.60	0.69
12	6.00	882.50	0.44
13	6.50	885.30	0.32
14	7.00	887.50	0.25
15	7.50	889.30	0.20
16	8.00	891.10	0.20
17	8.50	892.80	0.19
18	9.00	894.20	0.16
19	9.50	895.50	0.15
20	10.00	897.00	0.17
21	10.50	898.40	0.16
22	11.00	899.50	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 29.69934 micrograms carbon

BLANK FACTOR = 29.69934 / 10.99976 = +2.7E+00 ug/min Carbon

SAMPLE RESULTS:

(899.5 - 29.6919) (1)/(1) =

+8.698E+02 g/L Carbon

(899.5 - 29.6919) (1)/(1) (12) =

+7.248E+01 Molar Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1:5 ug/min Carbon!!!!>>>>

Sample Run By:

SL HOOD

00002

S = .100 ml # .1123g

+ .100 ml spl 26 N/2-C 165

HNF-SD-WM-DP-294 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T000376

Date: 02/18/98

Time: 01:41:42

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .34 ug/minute C

Analyst : SL HOOD

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.80	0.00
2	1.01	1.90	57.89
3	1.50	22.10	91.40
4	2.00	55.70	60.32
5	2.50	82.40	32.40
6	3.00	97.40	15.40
7	3.50	104.10	6.44
8	4.00	106.90	2.62
9	4.50	108.20	1.20
10	5.00	109.10	0.82
11	5.50	109.60	0.46
12	6.00	110.00	0.36
13	6.50	110.40	0.36
14	7.00	110.90	0.45
15	7.50	111.40	0.45
16	8.00	111.80	0.36
17	8.50	112.30	0.45
18	9.00	112.80	0.44
19	9.50	113.20	0.35
20	10.00	113.60	0.35
21	10.50	114.00	0.35
22	11.00	114.50	0.44

USER INPUT BLANK VALUE

BLANK VALUE = 3.739917 micrograms carbon

BLANK FACTOR = 3.739917 / 10.99976 =

+3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(114.5 - 3.739943) (1)/(1) =

+1.108E+02 g/L Carbon

(114.5 - 3.739943) (1)/(1) (12) =

+9.230E+00 Molar Carbon

Sample Run By:

SL HOOD

00002

nd = .96693

HNF-SD-WM-DP-294 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T000376

Date: 02/18/98

Time: 01:54:16

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.7 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      1.40      57.14
3      1.50      5.70      75.44
4      2.00      11.40     50.00
5      2.50      15.30     25.49
6      3.00      17.90     14.53
7      3.50      19.40      7.73
8      4.00      20.50      5.37
9      4.50      21.40      4.21
10     5.00      22.10      3.17
11     5.50      22.50      1.78
12     6.00      23.20      3.02
13     6.50      23.60      1.69
14     7.00      24.10      2.07
15     7.50      24.70      2.43
16     8.00      25.20      1.98
17     8.50      25.70      1.95
18     9.00      26.20      1.91
19     9.50      26.90      2.60
20    10.00      27.30      1.47
21    10.50      27.70      1.44
22    11.00      28.20      1.77

```

USER INPUT BLANK VALUE

BLANK VALUE = 29.69934 micrograms carbon

BLANK FACTOR = 29.69934 / 10.99976 = +2.7E+00 ug/min Carbon

SAMPLE RESULTS:

(28.2 - 29.6919) (1) / (1) =

< 5.00 E-3 g/L Carbon

(28.2 - 29.6919) (1) / (1) (12) =

< 4.17 E-4 Molar Carbon

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

Sample Run By:

SL HOOD

00002

SS = 1ml = .9669g

HNF-SD-WM-DP-294 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T00376 DUP

Date: 02/18/98

Time: 02:06:41

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .34 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	2.40	79.17
3	1.51	22.30	89.24
4	2.00	56.10	60.25
5	2.50	82.20	31.75
6	3.00	97.40	15.61
7	3.50	104.20	6.53
8	4.00	107.20	2.80
9	4.50	108.60	1.29
10	5.00	109.30	0.64
11	5.50	109.80	0.46
12	6.00	110.30	0.45
13	6.50	110.60	0.27
14	7.00	111.20	0.54
15	7.50	111.70	0.45
16	8.00	112.10	0.36
17	8.50	112.40	0.27
18	9.00	112.80	0.35
19	9.50	113.20	0.35
20	10.00	113.60	0.35
21	10.50	114.10	0.44
22	11.00	114.60	0.44

USER INPUT BLANK VALUE

BLANK VALUE = 3.739917 micrograms carbon

BLANK FACTOR = 3.739917 / 10.99976 = +3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(114.6 - 3.739266) (1)/(1) =

+1.109E+02 g/L Carbon

(114.6 - 3.739266) (1)/(1)(12) =

+9.238E+00 Molar Carbon

Sample Run By:

SL HOOD

00002

SS = 1ml = .9678g

HNF-SD-WM-DP-294 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T00376 DUP

Date: 02/18/98

Time: 02:18:59

Sample Size = 1 uL

Analyst: SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.7 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.01	1.30	76.92
3	1.50	6.00	78.33
4	2.00	11.00	45.45
5	2.50	15.00	26.67
6	3.00	17.30	13.29
7	3.50	18.70	7.49
8	4.00	19.50	4.10
9	4.50	20.30	3.94
10	5.00	20.90	2.87
11	5.50	21.50	2.79
12	6.00	22.00	2.27
13	6.50	22.50	2.22
14	7.00	23.10	2.60
15	7.50	23.40	1.28
16	8.00	24.00	2.50
17	8.50	24.50	2.04
18	9.00	25.00	2.00
19	9.50	25.40	1.57
20	10.00	25.80	1.55
21	10.50	26.50	2.64
22	11.00	26.90	1.49

USER INPUT BLANK VALUE

BLANK VALUE = 29.69934 micrograms carbon

BLANK FACTOR = 29.69934 / 10.99976 = +2.7E+00 ug/min Carbon

SAMPLE RESULTS:

(26.9 - 29.69685) (1)/(1) = < 5.00 E-3 g/L Carbon
 (26.9 - 29.69685) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SL HOOD

00002

SS = 1ml = .9678g

HNF-SD-WM-DP-294 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T00376 SPK

Date: 02/18/98

Time: 02:31:56

Sample Size = 1 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .34 ug/minute C

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.40	0.00
2	1.01	4.10	90.24
3	1.51	71.80	94.29
4	2.00	201.50	64.37
5	2.50	300.20	32.88
6	3.00	356.20	15.72
7	3.50	385.90	7.70
8	4.00	398.60	3.19
9	4.50	402.80	1.04
10	5.00	404.50	0.42
11	5.50	405.40	0.22
12	6.00	406.10	0.17
13	6.50	406.70	0.15
14	7.00	407.10	0.10
15	7.50	407.60	0.12
16	8.00	408.20	0.15
17	8.50	408.60	0.10
18	9.00	409.10	0.12
19	9.50	409.70	0.15
20	10.00	410.00	0.07
21	10.50	410.40	0.10
22	11.00	410.90	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 3.739917 micrograms carbon

BLANK FACTOR = 3.739917 / 10.99976 =

+3.4E-01

ug/min Carbon

SAMPLE RESULTS:

(410.9 - 3.739606) (1)/(1) =

+4.072E+02 g/L Carbon

(410.9 - 3.739606) (1)/(1)(12) =

+3.393E+01 Molar Carbon

Sample Run By:

SL HOOD

00002

ml = .9682g + .500ml spk

25N12-B

170

HNF-SD-WM-DP-294 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T00376 SPK

Date: 02/18/98

Time: 02:44:28

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.7 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		2.70	77.78
3	1.50		36.80	92.66
4	2.00		119.70	69.26
5	2.50		209.10	42.75
6	3.00		261.70	20.10
7	3.50		285.80	8.43
8	4.00		294.50	2.95
9	4.50		297.10	0.88
10	5.00		298.50	0.47
11	5.50		299.50	0.33
12	6.00		300.40	0.30
13	6.50		300.80	0.13
14	7.00		301.50	0.23
15	7.50		302.10	0.20
16	8.00		302.60	0.17
17	8.50		303.20	0.20
18	9.00		303.70	0.16
19	9.50		304.40	0.23
20	10.00		304.60	0.07
21	10.50		305.10	0.16
22	11.00		305.60	0.16

USER INPUT BLANK VALUE

BLANK VALUE = 29.69934 micrograms carbon

BLANK FACTOR = 29.69934 / 10.99976 = +2.7E+00 ug/min Carbon

SAMPLE RESULTS:

(305.6 - 29.69188) (1)/(1) = +2.759E+02 g/L Carbon
 (305.6 - 29.69188) (1)/(1) (12) = +2.299E+01 Molar Carbon
 <<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By:

SL HOOD

00002

SS = 1uL = .9862g + .500uL spk

26N12-C

171

HNF-SD-WM-DP-294 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S908T000377

Date: 02/18/98

Time: 03:23:22

Sample Size = 1 uL

Analyst: SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .34 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.01	1.50	80.00
3	1.50	17.80	91.57
4	2.00	46.60	61.80
5	2.50	70.70	34.09
6	3.00	84.40	16.23
7	3.50	90.70	6.95
8	4.00	93.40	2.89
9	4.50	94.40	1.06
10	5.00	95.10	0.74
11	5.50	95.50	0.42
12	6.00	95.90	0.42
13	6.50	96.40	0.52
14	7.00	96.80	0.41
15	7.50	97.20	0.41
16	8.00	97.60	0.41
17	8.50	98.00	0.41
18	9.00	98.30	0.31
19	9.50	98.80	0.51
20	10.00	99.10	0.30
21	10.50	99.80	0.70
22	11.00	100.00	0.20

USER INPUT BLANK VALUE

BLANK VALUE = 3.739917 micrograms carbon

BLANK FACTOR = 3.739917 / 10.99976 = +3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(100 - 3.738646) (1)/(1) =

+9.626E+01 g/L Carbon

(100 - 3.738646) (1)/(1) (12) =

+8.022E+00 Molar Carbon

Sample Run By:

SL HOOD

00002

SS/ml = .97729

HNF-SD-WM-DP-294 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T000377

Date: 02/18/98

Time: 03:35:22

Sample Size = 1 uL

Analyst: SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.7 ug/minute C

% Difference = 10

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

1	0.51	0.20	0.00
2	1.01	0.90	77.78
3	1.50	5.20	82.69
4	2.00	10.40	50.00
5	2.50	13.60	23.53
6	3.00	15.80	13.92
7	3.50	17.00	7.06
8	4.00	17.80	4.49
9	4.50	18.50	3.78
10	5.00	19.10	3.14
11	5.50	19.60	2.55
12	6.00	20.20	2.97
13	6.50	20.60	1.94
14	7.00	21.10	2.37
15	7.50	21.50	1.86
16	8.00	22.00	2.27
17	8.50	22.40	1.79
18	9.00	22.80	1.75
19	9.50	23.10	1.30
20	10.00	23.60	2.12
21	10.50	24.20	2.48
22	11.00	24.50	1.22

USER INPUT BLANK VALUE

BLANK VALUE = 29.69934 micrograms carbon

BLANK FACTOR = 29.69934 / 10.99976 =

+2.7E+00

ug/min Carbon

SAMPLE RESULTS:

(24.5 - 29.68962) (1) / (1) =

< 5.00 E-3 g/L Carbon

(24.5 - 29.68962) (1) / (1) (12) =

< 4.17 E-4 Molar Carbon

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

Sample Run By:

SL HOOD

00002

BS = 1ml = .9772g

HNF-SD-WM-DP-294 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV. 2.0

Sample: S98T00377 DUP

Date: 02/18/98

Time: 03:48:53

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .34 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	1.00	2.10	100.00
3	1.50	23.50	91.06
4	2.00	52.90	55.58
5	2.50	73.80	28.32
6	3.00	85.60	13.79
7	3.50	90.40	5.31
8	4.00	92.50	2.27
9	4.50	93.60	1.18
10	5.00	94.10	0.53
11	5.50	94.60	0.53
12	6.00	94.90	0.32
13	6.50	95.40	0.52
14	7.00	95.90	0.52
15	7.50	96.30	0.42
16	8.00	96.70	0.41
17	8.50	97.10	0.41
18	9.00	97.60	0.51
19	9.50	98.10	0.51
20	10.00	98.40	0.30
21	10.50	98.80	0.40
22	11.00	99.30	0.50

USER INPUT BLANK VALUE

BLANK VALUE = 3.739917 micrograms carbon

BLANK FACTOR = 3.739917 / 10.99976 = +3.4E-01 ug/min Carbon

SAMPLE RESULTS:

(99.3 - 3.738978) (1)/(1) =

+9.56E+01

g/L Carbon

(99.3 - 3.738978) (1)/(1) (12) =

+7.96E+00

Molar Carbon

Sample Run By:

SL HOOD

00002

SS = 1ml = .9724g

HNF-SD-WM-DP-294 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T00377 DUP

Date: 02/18/98

Time: 04:01:17

Sample Size = 1 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.7 ug/minute C

% Difference = 10

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

1	0.51	0.20	0.00
2	1.00	0.50	60.00
3	1.50	1.10	54.55
4	2.00	1.70	35.29
5	2.50	3.80	55.26
6	3.00	6.20	38.71
7	3.50	8.40	26.19
8	4.00	9.50	11.58
9	4.50	10.60	10.38
10	5.00	11.10	4.50
11	5.50	11.70	5.13
12	6.00	12.20	4.10
13	6.50	12.70	3.94
14	7.00	13.20	3.79
15	7.50	13.50	2.22
16	8.00	14.10	4.26
17	8.50	14.30	1.40
18	9.00	14.80	3.38
19	9.50	15.20	2.63
20	10.00	15.60	2.56
21	10.50	15.90	1.89
22	11.00	16.60	4.22

USER INPUT BLANK VALUE

BLANK VALUE = 29.69934 micrograms carbon

BLANK FACTOR = 29.69934 / 10.99976 =

+2.7E+00

ug/min Carbon

SAMPLE RESULTS:

(16.6 - 29.69683) (1)/(1) =

< 5.00 E-3 g/L Carbon

(16.6 - 29.69683) (1)/(1) (12) =

< 4.17 E-4 Molar Carbon

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

Sample Run By:

SL HOOD

00002

SS = 1ml = .9724g

LABCORE Completed Worklist Report for Worklist# 22158

Analyst: slh

Instrument: CARB2

Book# TIC 25N12B
TOC 26N12C

Method: LA342-100 Rev/Mod F-1

Worklist Comment: S302 GRAB1, @TICTOC1, STD: TIC= 1.0mL, TOC= 0.200mL skw

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	@TICTOC1 TIC-02	LIQUID	1	2.80E+0	2.800	ug/mL
1 BLNK	0	@TICTOC1 TOC-02	LIQUID	1	1.45E+1	14.500	ug/mL
2 STD	0	@TICTOC1 TIC-02	LIQUID	6.02E+02	5.72E+2	95.017 % Recovery	
2 STD	0	@TICTOC1 TOC-02	LIQUID	3.00E+03	2.69E+3	89.667 % Recovery	
3 SAMPLE	S98T000378 0	@TICTOC1 TIC-02	LIQUID	N/A	1.35E+02	5.000	ug/mL
3 SAMPLE	S98T000378 0	@TICTOC1 TOC-02	LIQUID	N/A <	4.00E+01	40.000	ug/mL
4 DUP	S98T000378 0	@TICTOC1 TIC-02	LIQUID	1.35E+2	1.35E+2	0.000	RPD
4 DUP	S98T000378 0	@TICTOC1 TOC-02	LIQUID	<4.00E+1	<4.00E+1		RPD
5 SPK	S98T000378 0	@TICTOC1 TIC-02	LIQUID	1.00E+02	1.01E+02	101.000 % Recovery	
5 SPK	S98T000378 0	@TICTOC1 TOC-02	LIQUID	1.00E+02	9.14E+01	91.400 % Recovery	

Final page for worklist# 22158

Analyst Signature

Date

slh 2/17/98
Analyst Signature

Date

R. J. Schneider
Reviewer Signature

2/17/98
Date

02/04/98 13:23
A-0004-1

HNF-SD-WM-DP-294 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 22158

Analyst: SUH Instrument: CARB2 Book# TIC 25N12-B
TOC 26N12-C
Method: LA-342-100 Rev/Mod _____

Worklist Comment: S302 GRAB1, @TICTOC1, STD: TIC= 1.0mL, TOC= 0.200mL skw

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	LIQUID		
2 STD			@TICTOC1	LIQUID		
3 SAMPLE	S98T000378 0		@TICTOC1	LIQUID	98000081	S-302 GRAB1
	Analytes Requested: TIC-02 , TOC-02					
4 DUP	S98T000378 0		@TICTOC1	LIQUID		
5 SPK	S98T000378 0		@TICTOC1	LIQUID		

Final page for worklist # 22158

Suhnd Boathright
Analyst Signature Date
2-6-98

Analyst Signature Date

Data Entry Comments:

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

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

HNF-SD-WM-DP-294 REV. 0

Sample: STD 2

Date: 02/05/98

Time: 23:17:48

Sample Size = 1000 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .79 ug/minute C

% Difference = 10

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

1	0.51	0.50	0.00
2	1.00	0.80	37.50
3	1.50	7.40	89.19
4	2.00	58.50	87.35
5	2.50	157.80	62.93
6	3.00	270.50	41.66
7	3.50	373.80	27.64
8	4.00	454.30	17.72
9	4.50	510.00	10.92
10	5.00	542.60	6.01
11	5.50	560.80	3.25
12	6.00	569.50	1.53
13	6.50	573.50	0.70
14	7.00	575.70	0.38
15	7.50	576.90	0.21
16	8.00	577.90	0.17
17	8.50	578.60	0.12
18	9.00	579.10	0.09
19	9.50	579.60	0.09
20	10.00	580.00	0.07
21	10.50	580.50	0.09
22	11.00	581.00	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 8.689133 micrograms carbon

BLANK FACTOR = 8.689133 / 10.9989 = +7.9E-01 ug/min Carbon

SAMPLE RESULTS:

(581 - 8.689035) (1)/(1000) = +5.723E-01 g/L Carbon
 (581 - 8.689035) (1)/(1000) (12) = +4.769E-02 Molar Carbon

Sample Run By:

SL HOOD

00002

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 178 TO 196.

HNF-SD-WM-DP-294 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 2

Date: 02/05/98

Time: 23:31:49

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.53 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	1.00	40.00
3	1.51	1.50	33.33
4	2.00	6.00	75.00
5	2.50	28.50	78.95
6	3.00	88.30	67.72
7	3.50	193.80	54.44
8	4.00	320.50	39.53
9	4.50	429.30	25.34
10	5.00	499.00	13.97
11	5.50	537.70	7.20
12	6.00	556.90	3.45
13	6.50	565.00	1.43
14	7.00	568.80	0.67
15	7.50	570.80	0.35
16	8.00	572.30	0.26
17	8.50	573.10	0.14
18	9.00	574.00	0.16
19	9.50	574.60	0.10
20	10.00	575.30	0.12
21	10.50	576.00	0.12
22	11.00	576.40	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 38.82612 micrograms carbon

BLANK FACTOR = 38.82612 / 10.9989 = +3.5E+00 ug/min Carbon

SAMPLE RESULTS:

(576.4 - 38.81966) (1) / (200) = +2.688E+00 g/L Carbon
 (576.4 - 38.81966) (1) / (200) (12) = +2.240E-01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SL HOOD

00002

200ml 26N12-C

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

HNF-SD-WM-DP-294 REV. 0

Sample: BASE 2

Date: 02/05/98

Time: 22:48:21

Sample Size = 1 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # = BASE 2

Max Readings = 22

Blank Value = N/A

% Difference = 10

== Reading ==	Analysis	Time	==== Coulometer ==	% Difference ==
1	0.51		0.40	0.00
2	1.01		0.70	42.86
3	1.51		1.30	46.15
4	2.00		2.20	40.91
5	2.50		2.80	21.43
6	3.00		3.60	22.22
7	3.50		3.90	7.69
8	4.00		4.40	11.36
9	4.50		4.60	4.35
10	5.00		4.90	6.12
11	5.50		5.20	5.77
12	6.00		5.60	7.14
13	6.50		6.00	6.67
14	7.00		6.30	4.76
15	7.50		6.50	3.08
16	8.00		6.80	4.41
17	8.50		7.10	4.23
18	9.00		7.50	5.33
19	9.50		7.70	2.60
20	10.00		8.10	4.94
21	10.50		8.50	4.71
22	11.00		8.70	2.30

BLANK VALUE = 8.7 micrograms carbon

BLANK FACTOR = 8.7 / 10.99963 =

+7.9E-01

ug/min Carbon

Sample Run By:

SL HOOD

00002

HNF-SD-WM-DP-294 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE 2

Date: 02/05/98

Time: 23:01:17

Sample Size = 1 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # = BASE 2

Max Readings = 22

Blank Value = N/A

% Difference = 10

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

1	0.51	0.60	0.00
2	1.01	0.90	33.33
3	1.50	1.20	25.00
4	2.00	4.40	72.73
5	2.50	10.00	56.00
6	3.00	16.50	39.39
7	3.50	22.30	26.01
8	4.00	26.70	16.48
9	4.50	29.80	10.40
10	5.00	31.50	5.40
11	5.50	32.90	4.26
12	6.00	33.70	2.37
13	6.50	34.60	2.60
14	7.00	35.20	1.70
15	7.50	35.70	1.40
16	8.00	36.30	1.65
17	8.50	36.80	1.36
18	9.00	37.20	1.08
19	9.50	37.70	1.33
20	10.00	38.00	0.79
21	10.50	38.40	1.04
22	11.00	38.80	1.03

BLANK VALUE = 38.8 micrograms carbon

BLANK FACTOR = 38.8 / 10.9989 =

+3.53E+00 ug/min Carbon

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

Sample Run By:

SL HOOD

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

HNF-SD-WM-DP-294 REV.0

Sample: BLK 2

Date: 02/05/98

Time: 23:48:29

Sample Size = 1 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .79 ug/minute C

% Difference = 10

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

1	0.51	0.70	0.00
2	1.01	1.00	30.00
3	1.51	1.90	47.37
4	2.00	3.30	42.42
5	2.50	4.50	26.67
6	3.00	5.30	15.09
7	3.50	5.90	10.17
8	4.00	6.40	7.81
9	4.50	6.80	5.88
10	5.00	7.30	6.85
11	5.50	7.60	3.95
12	6.00	8.00	5.00
13	6.50	8.30	3.61
14	7.00	8.70	4.60
15	7.50	9.10	4.40
16	8.00	9.30	2.15
17	8.50	9.90	6.06
18	9.00	10.20	2.94
19	9.50	10.40	1.92
20	10.00	11.00	5.45
21	10.50	11.10	0.90
22	11.00	11.50	3.48

USER INPUT BLANK VALUE

BLANK VALUE = 8.689133 micrograms carbon

BLANK FACTOR = 8.689133 / 10.9989 = +7.9E-01 ug/min Carbon

SAMPLE RESULTS:

(11.5 - 8.689133) (1)/(1) =

+2.81E+00 g/L Carbon

(11.5 - 8.689133) (1)/(1) (12) =

+2.34E-01 Molar Carbon

Sample Run By:

SL HOOD

00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

HNF-SD-WM-DP-294 REV. 0

Sample: BLK 2

Date: 02/06/98

Time: 00:05:28

Sample Size = 1 uL

Analyst : SL HOOD

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 3.53 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.70	42.86
3	1.50	1.10	36.36
4	2.00	2.80	60.71
5	2.50	5.30	47.17
6	3.00	8.20	35.37
7	3.50	11.20	26.79
8	4.00	14.20	21.13
9	4.50	16.40	13.41
10	5.00	18.10	9.39
11	5.50	19.10	5.24
12	6.00	19.80	3.54
13	%-1433.50	20.70	4.35
14	%-1433.00	21.20	2.36
15	%-1432.50	21.50	1.40
16	%-1432.00	22.00	2.27
17	%-1431.50	22.40	1.79
18	%-1431.00	22.80	1.75
19	%-1430.50	23.20	1.72
20	%-1430.00	23.60	1.69
21	%-1429.50	24.00	1.67
22	%-1429.00	24.30	1.23

USER INPUT BLANK VALUE

BLANK VALUE = 38.82612 micrograms carbon

BLANK FACTOR = 38.82612 / 10.9989 = +3.5E+00 ug/min Carbon

SAMPLE RESULTS:

(24.3 --5044.377) (1)/(1) = +5.07E+03 g/L Carbon
 (24.3 --5044.377) (1)/(1) (12) = +4.22E+02 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SL HOOD

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

HNF-SD-WM-DP-294 REV.0

Sample: S98T000378

Date: 02/06/98

Time: 00:55:59

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .79 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	1.00	1.00	40.00
3	1.50	1.60	37.50
4	2.00	7.00	77.14
5	2.50	26.30	73.38
6	3.00	56.40	53.37
7	3.50	85.30	33.88
8	4.00	108.50	21.38
9	4.50	123.40	12.07
10	5.00	131.50	6.16
11	5.50	136.20	3.45
12	6.00	138.20	1.45
13	6.50	139.40	0.86
14	7.00	140.30	0.64
15	7.50	141.00	0.50
16	8.00	141.40	0.28
17	8.50	141.80	0.28
18	9.00	142.30	0.35
19	9.50	142.70	0.28
20	10.00	143.10	0.28
21	10.50	143.50	0.28
22	11.00	144.00	0.35

USER INPUT BLANK VALUE

BLANK VALUE = 8.689133 micrograms carbon

BLANK FACTOR = 8.689133 / 10.9989 = +7.9E-01 ug/min Carbon

SAMPLE RESULTS:

(144 - 8.686975) (1)/(1) = +1.353E+02 g/L Carbon
 (144 - 8.686975) (1)/(1) (12) = +1.128E+01 Molar Carbon

Sample Run By:

SL HOOD

00002

1ml = 9973g

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

HNF-SD-WM-DP-294 REV. 0

Sample: S98T000378

Date: 02/06/98

Time: 02:17:01

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.53 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	0.80	25.00
3	1.50	1.30	38.46
4	2.00	2.80	53.57
5	2.50	6.00	53.33
6	3.00	10.40	42.31
7	3.50	15.10	31.13
8	4.00	19.30	21.76
9	4.50	22.50	14.22
10	5.00	24.80	9.27
11	5.50	26.30	5.70
12	6.00	27.50	4.36
13	6.50	28.20	2.48
14	7.00	28.80	2.08
15	7.50	29.40	2.04
16	8.00	30.00	2.00
17	8.50	30.50	1.64
18	9.00	30.90	1.29
19	9.50	31.40	1.59
20	10.00	32.10	2.18
21	10.50	32.40	0.93
22	11.00	32.60	0.61

USER INPUT BLANK VALUE

BLANK VALUE = 38.82612 micrograms carbon

BLANK FACTOR = 38.82612 / 10.9989 = +3.5E+00 ug/min Carbon

SAMPLE RESULTS:

(32.6 - 38.81648) (1)/(1) = < 5.00 E-3 g/L Carbon
 (32.6 - 38.81648) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SL HOOD

00002

SS ml = .9973g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

HNF-SD-WM-DP-294 REV. 0

Sample: S98T00378 DUP Date: 02/06/98

Time: 02:41:11

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .79 ug/minute CAnalyst : 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	0.80	62.50
3	1.51	1.60	50.00
4	2.01	7.40	78.38
5	2.51	27.60	73.19
6	3.01	58.10	52.50
7	3.51	87.20	33.37
8	4.00	109.90	20.66
9	4.50	124.10	11.44
10	5.00	132.10	6.06
11	5.50	136.20	3.01
12	6.00	138.30	1.52
13	6.50	139.30	0.72
14	7.00	140.10	0.57
15	7.50	140.60	0.36
16	8.00	141.20	0.42
17	8.50	141.50	0.21
18	9.00	142.00	0.35
19	9.50	142.40	0.28
20	10.00	142.80	0.28
21	10.50	143.30	0.35
22	11.00	143.70	0.28

USER INPUT BLANK VALUE

BLANK VALUE = 8.689133 micrograms carbon

BLANK FACTOR = 8.689133 / 10.9989 = +7.9E-01 ug/min Carbon

SAMPLE RESULTS:

(143.7 - 8.690531) (1)/(1) = +1.350E+02 g/L Carbon
 (143.7 - 8.690531) (1)/(1) (12) = +1.125E+01 Molar Carbon

Sample Run By:

SL HOOD

00002

35 1ml = 1.0036g

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

HNF-SD-WM-DP-294 REV. 0

Sample: S98T0378 DUP

Date: 02/06/98

Time: 02:57:59

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.53 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	0.80	37.50
3	1.51	1.00	20.00
4	2.00	2.00	50.00
5	2.50	4.30	53.49
6	3.00	7.20	40.28
7	3.50	11.20	35.71
8	4.00	15.00	25.33
9	4.50	18.20	17.58
10	5.00	20.60	11.65
11	5.50	22.20	7.21
12	6.00	23.50	5.53
13	6.50	24.20	2.89
14	7.00	24.80	2.42
15	7.50	25.30	1.98
16	8.00	25.90	2.32
17	8.50	26.40	1.89
18	9.00	26.70	1.12
19	9.50	27.10	1.48
20	10.00	27.70	2.17
21	10.50	28.00	1.07
22	11.00	28.30	1.06

USER INPUT BLANK VALUE

BLANK VALUE = 38.82612 micrograms carbon

BLANK FACTOR = 38.82612 / 10.9989 = +3.5E+00 ug/min Carbon

SAMPLE RESULTS:

(28.3 - 38.82294) (1)/(1) = < 5.00 E-3 g/L Carbon
 (28.3 - 38.82294) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SL HOOD

00002

SS 1ml = 1.0036g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

HNF-SD-WM-DP-294 REV. 0

Sample: S98T00378 SPK

Date: 02/06/98

Time: 03:34:31

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .79 ug/minute C

Analyst : SL HOOD

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.70	0.00
2	1.01	0.90	22.22
3	1.50	1.70	47.06
4	2.00	15.90	89.31
5	2.50	76.40	79.19
6	3.00	169.30	54.87
7	3.50	261.10	35.16
8	4.00	335.10	22.08
9	4.50	385.70	13.12
10	5.00	415.00	7.06
11	5.50	431.00	3.71
12	6.00	438.30	1.67
13	6.50	441.90	0.81
14	7.00	443.70	0.41
15	7.50	444.80	0.25
16	8.00	445.70	0.20
17	8.50	446.40	0.16
18	9.00	447.10	0.16
19	9.50	447.50	0.09
20	10.00	448.30	0.18
21	10.50	448.60	0.07
22	11.00	449.40	0.18

USER INPUT BLANK VALUE

BLANK VALUE = 8.689133 micrograms carbon

BLANK FACTOR = 8.689133 / 10.9989 = +7.9E-01 ug/min Carbon

SAMPLE RESULTS:

(449.4 - 8.689084) (1)/(1) = +4.407E+02 g/L Carbon
 (449.4 - 8.689084) (1)/(1) (12) = +3.673E+01 Molar Carbon

Sample Run By:

SL HOOD

00002

SS InL = .9916g + .500ml 25N12-B
 spk

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

HNF-SD-WM-DP-294 REV. 0

Sample: S98T00378 SPK Date: 02/06/98 Time: 03:47:40

Sample Size = 1 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 3.53 ug/minute C % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.10	45.45
3	1.50	1.50	26.67
4	2.00	4.20	64.29
5	2.50	15.00	72.00
6	3.00	43.50	65.52
7	3.50	94.80	54.11
8	4.00	160.60	40.97
9	4.50	218.90	26.63
10	5.00	257.50	14.99
11	5.50	280.20	8.10
12	6.00	291.80	3.98
13	6.50	297.20	1.82
14	7.00	299.90	0.90
15	7.50	301.60	0.56
16	8.00	302.70	0.36
17	8.50	303.70	0.33
18	9.00	304.30	0.20
19	9.50	305.00	0.23
20	10.00	305.70	0.23
21	10.50	306.30	0.20
22	11.00	306.70	0.13

USER INPUT BLANK VALUE

BLANK VALUE = 38.82612 micrograms carbon

BLANK FACTOR = 38.82612 / 10.9989 = +3.5E+00 ug/min Carbon

SAMPLE RESULTS:

(306.7 - 38.81589) (1)/(1) = +2.679E+02 g/L Carbon
 (306.7 - 38.81589) (1)/(1) (12) = +2.232E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SL HOOD

00002

55 /ml = .9916g + .100ml 26A12-C spk

WORKBOOK PAGE: BLANK1

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

LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	0.0000	0.0000
BLNK	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	11.5	24.3
22158	µg of Carbon from Baseline	(C2)	8.7	38.8

Test Code

@TICTOC1

Matrix

LIQUID

Batch Number

98000447

Rerun

0

Sample Prep

N/A

Sample #

BLNK

Instrument Code

CARB2

Prepared By

RTS

Chemist

RWS

Analyst

SLH

Date Complete

02/17/98

Analysis Date

02/06/98

Analysis Time

Method Detection Limit in µg/mL

TIC

TOC

5

40

Sample Point

µg of Carbon

2.80E+00

1.45E+01

S-302 GRAB1

Data Entered By:

RTS

Date: 02/17/98

Signature of Chemist:

RTS

Date: 2/17/98

BLANK.WB1 REV 1.0

342100ML

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)	581	576.4
22158	μg of Carbon from Baseline (C2)	8.7	38.8
Test Code	Standard Book Number	25N12B	26N12C
@TICTOC1	Standard Value ($\mu\text{g}/\text{ml}$)	602	3000

Matrix
LIQUID
Batch Number
98000447
Rerun
0
Sample Prep
N/A
Sample #
Instrument Code
CARB2
Prepared By
RTS
Chemist
RWS
Analyst
SLH
Date Complete
02/17/98
Analysis Date
02/06/98
Analysis Time
Sample Point
S-302 GRAB1

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

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in $\mu\text{g}/\text{mL}$	5	40
QC Actual in $\mu\text{g}/\text{mL}$	6.02E+02	3.00E+03
QC Found in $\mu\text{g}/\text{mL}$	5.72E+02	2.69E+03
Percent Standard Recovery	95.1	89.6

Data Entered By:	RTS	Date: 02/17/98
Signature of Chemist:	<i>RWS</i>	Date: 2/17/98

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)	1.0000	1.0000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	144	32.6
22158	µg of Carbon from Baseline (C2)	8.7	38.8
Test Code			
@TICTOC1			

Matrix
LIQUID
Batch Number
98000447
Rerun
0
Sample Prep
N/A
Sample #
S98T000378
Instrument Code
CARB2
Prepared By
RTS
Chemist
RWS
Analyst
SLH
Date Complete
02/17/98
Analysis Date
02/06/98
Analysis Time
Sample Point
S-302 GRAB1

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

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL Note: <	1.35E+02	4.00E+01

Data Entered By:

RTS

Date: 02/17/98

Signature of Chemist:

R. W. Schneider

Date: 2/17/98

SAMPLE.WB1 REV 1.0

342100ML

192

WORKBOOK PAGE: DUP4

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	1.0000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	143.7	28.3
22158	µg of Carbon from Baseline (C2)	8.7	38.8
Test Code	Known µg of C from Original Sample	1.35E+2	<4.00E+1
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98000447			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T000378			
Instrument Code			
CARB2			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
02/17/98			
Analysis Date			
02/06/98			
Analysis Time			
	Method Detection Limit in µg/mL	5	40
Sample Point			
S-302 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

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

TIC	TOC
1.35E+02	4.00E+01

Data Entered By:

RTS

Date: 02/17/98

Signature of Chemist:

Don Schreder

Date: 2/17/98

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)	1.0000	1.0000
Work List	Final Coulometer Reading in µg (C1)	144	32.6
22158	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	1.0000	1.0000
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	449.4	306.7
LIQUID	Spike Book Number	25N12B	26N12C
Batch Number	Spike Standard Value in µg/mL (SPK CONC)	602	3000
98000447			
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) *$		
S98T000378			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB2	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
02/17/98			
Analysis Date			
02/06/98			
Analysis Time			
		TIC	TOC
	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	6.11E+02	2.74E+03
S-302 GRAB1	Percent Spike Recovery	101.5	91.4

Data Entered By:	RTS	Date:	02/17/98
Signature of Chemist:	<i>RWS</i>	Date:	2/17/98

HNF-SD-WM-DP-294, REV. 0

RADIOCHEMICAL ANALYSIS

HNF-SD-WM-DP-294, REV. 0

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LABCORE Completed RadChem Report for Worklist#: 22272

Analyst: crj

Instrument: GEA01

Book# 86656

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

Worklist Comment: S-302GRAB-1 RERUN, USE TANKFUS STD 1ML SS. RCJ

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	GEA-01 C060-02 LIQUID	S.511e-03	5.51e-03	99.946	% Recovery	
1 STD	0	GEA-01 C060-02E LIQUID	1	5.51	5.510	% Ct Error	
1 STD	0	GEA-01 CS13702 LIQUID	5.483e-03	5.65e-03	103.046	% Recovery	
1 STD	0	GEA-01 CS13702E LIQUID	1	7.26	7.260	% Ct Error	
2 BLNK	0	GEA-01 C060-02 LIQUID	1	<2.61e-5		uCi/mL	
2 BLNK	0	GEA-01 CS13702 LIQUID	1	<3.03e-5		uCi/mL	
3 SAMPLE	S98T000376 0	GEA-01 C060-02 LIQUID	N/A	< 2.781e-05	278.1e-007	uCi/mL	
3 SAMPLE	S98T000376 0	GEA-01 C060-02E LIQUID	N/A	n/a	0.0e+000	% Ct. Error	
3 SAMPLE	S98T000376 0	GEA-01 CS13702 LIQUID	N/A	1.060e-02	0.0e+000	uCi/mL	
3 SAMPLE	S98T000376 0	GEA-01 CS13702E LIQUID	N/A	1.32	0.0e+000	% Ct. Error	
4 DUP	S98T000376 0	GEA-01 C060-02 LIQUID	<2.78e-5	<2.80e-5		RPD	
4 DUP	S98T000376 0	GEA-01 C060-02E LIQUID	1	n/a		% Ct Error	
4 DUP	S98T000376 0	GEA-01 CS13702 LIQUID	1.06e-02	1.12e-02	5.505 RPD		
4 DUP	S98T000376 0	GEA-01 CS13702E LIQUID	1	1.28	1.280	% Ct Error	
5 SAMPLE	S98T000377 0	GEA-01 C060-02 LIQUID	N/A	< 2.623e-05	262.3e-007	uCi/mL	
5 SAMPLE	S98T000377 0	GEA-01 C060-02E LIQUID	N/A	n/a	0.0e+000	% Ct. Error	
5 SAMPLE	S98T000377 0	GEA-01 CS13702 LIQUID	N/A	1.140e-02	0.0e+000	uCi/mL	
5 SAMPLE	S98T000377 0	GEA-01 CS13702E LIQUID	N/A	1.28	0.0e+000	% Ct. Error	
6 DUP	S98T000377 0	GEA-01 C060-02 LIQUID	<2.62e-5	<2.80e-5		RPD	
6 DUP	S98T000377 0	GEA-01 C060-02E LIQUID	1	n/a		% Ct Error	
6 DUP	S98T000377 0	GEA-01 CS13702 LIQUID	1.14e-02	1.12e-02	1.770 RPD		
6 DUP	S98T000377 0	GEA-01 CS13702E LIQUID	1	1.29	1.290	% Ct Error	
7 SAMPLE	S98T000378 0	GEA-01 C060-02 LIQUID	N/A	< 2.726e-05	272.6e-007	uCi/mL	
7 SAMPLE	S98T000378 0	GEA-01 C060-02E LIQUID	N/A	n/a	0.0e+000	% Ct. Error	
7 SAMPLE	S98T000378 0	GEA-01 CS13702 LIQUID	N/A	2.310e-02	0.0e+000	uCi/mL	
7 SAMPLE	S98T000378 0	GEA-01 CS13702E LIQUID	N/A	0.880	0.0e+000	% Ct. Error	
8 DUP	S98T000378 0	GEA-01 C060-02 LIQUID	<2.73e-5	<2.90e-5		RPD	
8 DUP	S98T000378 0	GEA-01 C060-02E LIQUID	1	n/a		% Ct Error	
8 DUP	S98T000378 0	GEA-01 CS13702 LIQUID	2.31e-02	2.32e-02	0.432 RPD		
8 DUP	S98T000378 0	GEA-01 CS13702E LIQUID	1	0.870	0.870	% Ct Error	

Comments Section:

Comments for sample# S98T000376 and test @GEA-01 .

DL=0 => N/A.

DL=0 => n/a.

Comments for sample# S98T000377 and test @GEA-01 .

DL=0 => N/A.

DL=0 => n/a.

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

LABCORE Completed RadChem Report for Worklist#: 22272

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

Comments for sample# S98T000378 and test @GEA-01 .

DL=0 => N/A.

DL=0 => n/a.

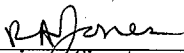
Final page for worklist# 22272

Analyst Signature

Date

Analyst Signature

Date


Reviewer Signature

2-13-98
Date

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

LABCORE Data Entry Template for Worklist# 22272

Analyst: CRS Instrument: GEA00 / Book# 86856

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

Worklist Comment: S-302GRAB-1 RERUN, USE TANKFUS STD 1ML SS. RCI

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-01	LIQUID		
2 BLNK			@GEA-01	LIQUID		
3 SAMPLE	S98T000376 0		@GEA-01	LIQUID	98000081	S-302 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4 DUP	S98T000376 0		@GEA-01	LIQUID		
5 SAMPLE	S98T000377 0		@GEA-01	LIQUID	98000081	S-302 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6 DUP	S98T000377 0		@GEA-01	LIQUID		
7 SAMPLE	S98T000378 0		@GEA-01	LIQUID	98000081	S-302 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
8 DUP	S98T000378 0		@GEA-01	LIQUID		

Final page for worklist # 22272

[Signature] 2/11/98
Analyst Signature Date

[Signature] 2/13/98
Analyst Signature Date
[Signature] 2/13/98

Data Entry Comments:

 * 222-S Laboratory Counting Room 11-FEB-1998 11:30:02.87 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<< HNF-SD-WM-DP-294 REV. 0
 Worklist #: 22272
 Sample ID: WL22272-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Cf. Opener

>>>>>>> COUNT INFORMATION <<<<<<<<<
 Detector ID:
 File Number: dka300:[spec.GEA1]1g1689.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:12.51 sec
 Dead Time: 0.4%

Verified by:

RA Jones 2-12-98

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
 Sample Count Time: 11-FEB-1998 10:39:09.57
 Decayed to: 11-FEB-1998 10:39:09.57
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
 Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:12:15.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	31.22	229	0.87	63.08	58	9	38.8			
0	59.42	83	0.70	119.48	116	7	94.6		AM-241	0.254
0	609.11*	64	1.53	1218.83	1212	14	93.4			
0	661.59*	1294	1.30	1323.81	1318	13	7.3		CS-137	5.65
0	1173.13	1003	1.68	2347.15	2339	17	7.9		CO-60	5.53
0	1332.37	913	1.73	2665.76	2656	20	7.7		CO-60	5.49

Total number of lines in spectrum 6
Number of unidentified lines 1
Number of lines tentatively identified by NID 5 83.33%

Nuclide Type :

Nuclide	Hliffe	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma
			Uncorrected	Decay Corr		
			uCi/L	uCi/L	2-Sigma Error	%Error Flags
CO-60	5.27Y	1.00	5.513E+00	5.513E+00	0.304E+00	5.51
CS-137	30.00Y	1.00	5.648E+00	5.648E+00	0.410E+00	7.26
AM-241	432.20Y	1.00	2.544E-01	2.544E-01	2.408E-01	94.63
Total Activity :			1.142E+01	1.142E+01		

Grand Total Activity : 1.142E+01 1.142E+01

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	174.	477.59	1.7453E+00
NA-22	34.	1274.53	1.7397E-01
NA-24	16.	1368.55	1.3411E-01
K-40	596.	1460.75	7.0305E+00
SC-46	106.	1120.55	2.7029E-01
CR-51	257.	320.08	1.4970E+00
MN-54	105.	834.83	2.2191E-01
CO-56	109.	846.76	2.2815E-01
CO-57	520.	122.06	1.4283E-01
CO-58	91.	810.78	2.0492E-01
FE-59	89.	1099.25	4.3545E-01
ZN-65	77.	1115.55	4.5642E-01
SE-75	321.	264.66	2.4389E-01
KR-85	176.	514.00	4.4718E+01
SR-85	176.	514.01	2.0196E-01
Y-88	10.	1836.06	1.4451E-01
Y-91	51.	1204.67	6.7003E+01
NB-94	94.	871.09	2.1692E-01
NB-95	92.	765.78	1.9660E-01
ZR-95	100.	756.73	3.7139E-01
RU-103	170.	497.08	2.0372E-01
RURH-106	102.	621.93	3.5442E+00
AG-108m	102.	722.94	2.1803E-01
CD-109	452.	88.03	3.1368E+00
AG-110M	159.	657.76	2.4034E-01
SN-113	224.	391.69	2.6562E-01
TE-123m	503.	159.00	1.5419E-01
SB-124	123.	602.73	1.9118E-01
SB-125	213.	427.89	6.1223E-01
TE-125m	553.	109.27	4.4336E+01
I-129	328.	39.60	9.1217E-01
I-131	236.	364.48	2.0108E-01
XE-131m	511.	163.93	6.7452E+00
BA-133	230.	356.02	2.5381E-01
CS-134	120.	604.70	1.9033E-01
CS-136	105.	818.51	2.2027E-01
CS-138	13.	1435.86	2.6134E-01
CE-139	464.	165.85	1.5859E-01
BA-140	139.	537.31	7.4000E-01
LA-140	16.	1596.21	1.5614E-01
CE-141	528.	145.44	2.6682E-01
CE-144	508.	133.51	1.1117E+00
CEPR-144	508.	133.51	2.2211E+00
EU-152	522.	121.78	4.3251E-01
EU-154	506.	123.07	3.0010E-01
EU-155	447.	86.54	3.4355E-01
HF-181	160.	482.18	2.1757E-01
TA-182	371.	67.75	2.5009E-01
HG-203	324.	279.20	1.8391E-01
BI-207	111.	569.70	1.7373E-01
Tl-208	317.	277.36	2.3356E+00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	341.	46.50	2.1010E+00
BI-212	120.	727.18	3.2201E+00
PB-212	455.	238.63	3.5767E-01
BI-214	279.	609.31	6.2483E-01
PB-214	338.	351.92	9.3637E-01
RA-224	386.	240.99	3.6650E+00
RA-226	478.	186.10	3.8851E+00
AC-228	158.	911.21	1.0743E+00
TH-228	498.	84.37	9.3893E+00
TH-229	447.	88.47	4.5561E-01
U-232	466.	57.78	5.5973E+01
PA-233	287.	312.17	4.0341E-01
PA-234M	88.	1001.03	2.7569E+01
TH-234	472.	92.60	2.0622E+00
U-235	488.	185.71	2.3850E-01
NP-237	450.	86.48	9.1157E-01
U-237	494.	59.54	3.3725E-01
NP-238	86.	984.45	8.1621E-01
NP-239	516.	106.12	5.2969E-01
PU-239	540.	129.30	1.9680E+03
AM-243	511.	74.67	2.0107E-01

 222-S Laboratory Counting Room 11-FEB-1998 15:05:04.53 *

 >>>>>>> SAMPLE INFORMATION <<<<<<<<< HNF-SD-WM-DP-294 REV. 0

rklist #: 22272
 mple ID: WL22272-BLK
 mple Size: 1.00000E-03 L
 lution Factor: 1.00000E+00

Removed by:

Cf. Opium

>>>>>>> COUNT INFORMATION <<<<<<<<<
 tector ID:
 le Number: dka300:[spec.GEAl]lg1691.cnf
 ometry: 41
 unt Time: 0 02:30:00.00 sec
 al Time: 0 02:30:33.82 sec
 ad Time: 0.4%

Verified by:

R Jones 2-12-98

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
 mple Count Time: 11-FEB-1998 12:33:52.73
 ayed to: 11-FEB-1998 12:33:52.73
 andard Deviations: 2
 alysis Library: ENVGEA
 alyst: CJO
 ckground Subtract: DKA300:[SPEC.GEAl]1GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
 ate of last energy calibration: 20-MAR-1996 09:10:33.62
 ate of last efficiency calibration: 20-MAR-1996 09:10:52.48

st-NID Peak Search Report

Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
12.74	110	1.01	26.13	22	8122.5			
16.00	247	1.20	32.66	29	9 58.3			
661.76*	75	1.05	1324.15	1318	12 98.1		CS-137	3.034E-02

Total number of lines in spectrum 3
Number of unidentified lines 2
Number of lines tentatively identified by NID 1 33.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	3.034E-02	3.034E-02	2.976E-02	98.08%	1
Total Activity :			3.034E-02	3.034E-02			

Grand Total Activity : 3.034E-02 3.034E-02

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	341.	477.59	2.1760E-01
NA-22	92.	1274.53	2.9068E-02
NA-24	63.	1368.55	2.7149E-02
K-40	1746.	1460.75	1.2606E+00
SC-46	243.	1120.55	4.1506E-02
CR-51	610.	320.08	2.0723E-01
MN-54	155.	834.83	2.5783E-02
CO-56	152.	846.76	2.5959E-02
CO-57	1460.	122.06	1.9496E-02
CO-58	173.	810.78	2.6660E-02
FE-59	125.	1099.25	5.2466E-02
CO-60	68.	1332.50	2.6089E-02
ZN-65	151.	1115.55	6.4835E-02
SE-75	773.	264.66	3.4213E-02
KR-85	361.	514.00	5.7044E+00
SR-85	360.	514.01	2.5770E-02
Y-88	21.	1836.06	1.9634E-02
Y-91	143.	1204.67	1.1400E+01
NB-94	151.	871.09	2.6484E-02
NB-95	217.	765.78	2.8100E-02
ZR-95	191.	756.73	4.7847E-02
RU-103	304.	497.08	2.4291E-02
RURH-106	206.	621.93	4.5406E-01
AG-108m	195.	722.94	2.7833E-02
CD-109	1206.	88.03	3.8145E-01
AG-110M	206.	657.76	2.5091E-02
SN-113	454.	391.69	3.3712E-02
TE-123m	1368.	159.00	2.2070E-02
SB-124	225.	602.73	2.3379E-02
SB-125	363.	427.89	7.1287E-02
TE-125m	1332.	109.27	5.4375E+00
I-129	782.	39.60	1.6922E-01
I-131	496.	364.48	2.6130E-02
XE-131m	1234.	163.93	9.1790E-01
TBA-133	522.	356.02	3.4178E-02
CS-134	244.	604.70	2.4411E-02
CS-136	164.	818.51	2.6206E-02
CS-138	47.	1435.86	1.0265E-01
CE-139	1250.	165.85	2.2764E-02
BA-140	308.	537.31	9.8244E-02
LA-140	33.	1596.21	2.2964E-02
CE-141	1445.	145.44	3.7645E-02
CE-144	1407.	133.51	1.5445E-01
CEPR-144	1406.	133.51	3.0857E-01
EU-152	1464.	121.78	5.8998E-02
EU-154	1438.	123.07	4.1284E-02
EU-155	1215.	86.54	4.1989E-02
HF-181	292.	482.18	2.6176E-02
TA-182	958.	67.75	2.9197E-02
HG-203	730.	279.20	2.4961E-02
BI-207	291.	569.70	2.5086E-02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
Tl-208	725.	277.36	3.1916E-01
Pb-210	880.	46.50	3.0899E-01
Bi-212	249.	727.18	4.2902E-01
Pb-212	1208.	238.63	5.2694E-02
Bi-214	611.	609.31	8.3649E-02
Pb-214	831.	351.92	2.9262E-01
Ra-224	1042.	240.99	5.4753E-01
Ra-226	1309.	186.10	5.7160E-01
Ac-228	370.	911.21	1.5954E-01
Th-228	1348.	84.37	1.1401E+00
Th-229	1198.	88.47	5.5608E-02
U-232	1044.	57.78	6.3737E+00
Pa-233	616.	312.17	5.3222E-02
Pa-234M	136.	1001.03	3.4010E+00
Th-234	1400.	92.60	2.6744E-01
U-235	1314.	185.71	3.4807E-02
Np-237	1220.	86.48	1.1130E-01
U-237	1015.	59.54	3.6462E-02
Np-238	126.	984.45	9.9003E-02
Np-239	1302.	106.12	6.6569E-02
Pu-239	1453.	129.30	2.6739E+02
Am-241	1015.	59.54	3.4854E-02
Am-243	1312.	74.67	2.3432E-02

 * 222-S Laboratory Counting Room 11-FEB-1998 18:02:56.01

>>>>>>>> SAMPLE INFORMATION <<<<<<<<< HNF-SD-WM-DP-294 REV. 0
 Worklist #: 22272
 Sample ID: S98T000376-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Milakovic

>>>>>>>> COUNT INFORMATION <<<<<<<<<
 Detector ID:
 File Number: dka300:[spec.GEA1]lg1692.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:39.10 sec
 Dead Time: 0.4%

Verified by:

R. Jones 2-12-98

>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
 Sample Count Time: 11-FEB-1998 15:31:40.54
 Decayed to: 11-FEB-1998 15:31:40.54
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: CJO
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
 Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	12.52	125	1.26	25.70	24	6100.3			
0	16.03	366	1.23	32.71	29	8 43.1			
0	31.68	4513	1.00	64.00	59	10 5.7			
0	36.20	1233	1.04	73.05	69	9 15.7			
0	661.54*	26195	1.44	1323.71	1316	15 1.3		CS-137	10.6

Total number of lines in spectrum	5	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	1	20.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
CS-137	30.00Y	1.00	1.057E+01	1.057E+01	0.014E+01	1.32	
Total Activity :			1.057E+01	1.057E+01			

Grand Total Activity : 1.057E+01 1.057E+01

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	1113.	477.59	3.8768E-01
NA-22	95.	1274.53	2.9509E-02
NA-24	50.	1368.55	2.4436E-02
K-40	1787.	1460.75	1.2752E+00
SC-46	269.	1120.55	4.3582E-02
CR-51	1265.	320.08	2.9646E-01
MN-54	180.	834.83	2.7718E-02
CO-56	155.	846.76	2.6201E-02
CO-57	2067.	122.06	2.3146E-02
CO-58	164.	810.78	2.5933E-02
FE-59	123.	1099.25	5.2203E-02
CO-60	78.	1332.50	2.7811E-02
ZN-65	150.	1115.55	6.4550E-02
SE-75	1471.	264.66	4.6935E-02
KR-85	809.	514.00	8.4568E+00
SR-85	808.	514.01	3.8220E-02
Y-88	22.	1836.06	1.9936E-02
Y-91	131.	1204.67	1.0918E+01
NB-94	141.	871.09	2.5684E-02
NB-95	214.	765.78	2.7894E-02
ZR-95	194.	756.73	4.8168E-02
RU-103	780.	497.08	3.8443E-02
RURH-106	352.	621.93	5.8911E-01
AG-108m	194.	722.94	2.7770E-02
CD-109	1810.	88.03	4.6580E-01
AG-110M	1003.	657.76	5.4236E-02
SN-113	1156.	391.69	5.3282E-02
TE-123m	1948.	159.00	2.6278E-02
SB-124	376.	602.73	2.9965E-02
SB-125	1177.	427.89	1.2671E-01
TE-125m	1951.	109.27	6.5632E+00
I-129	1268.	39.60	2.1460E-01
I-131	1126.	364.48	3.9043E-02
XE-131m	1983.	163.93	1.1599E+00
BA-133	1131.	356.02	4.9923E-02
CS-134	361.	604.70	2.9525E-02
CS-136	155.	818.51	2.5485E-02
CS-138	56.	1435.86	1.1220E-01
CE-139	1979.	165.85	2.8545E-02
BA-140	534.	537.31	1.2836E-01
LA-140	26.	1596.21	2.0669E-02
CE-141	2006.	145.44	4.4247E-02
CE-144	2023.	133.51	1.8475E-01
CEPR-144	2023.	133.51	3.6916E-01
EU-152	2053.	121.78	6.9696E-02
EU-154	2035.	123.07	4.9003E-02
EU-155	1798.	86.54	5.0937E-02
HF-181	973.	482.18	4.7064E-02
TA-182	1474.	67.75	3.6097E-02
HG-203	1325.	279.20	3.3447E-02
BI-207	395.	569.70	2.9114E-02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	1358.	277.36	4.3444E-01
PB-210	1369.	46.50	3.8394E-01
BI-212	221.	727.18	4.0534E-01
PB-212	1919.	238.63	6.6172E-02
BI-214	734.	609.31	9.1479E-02
PB-214	1458.	351.92	3.8598E-01
RA-224	1668.	240.99	6.9016E-01
RA-226	2245.	186.10	7.4562E-01
AC-228	394.	911.21	1.6462E-01
TH-228	1820.	84.37	1.3221E+00
TH-229	1761.	88.47	6.7231E-02
U-232	1613.	57.78	7.8944E+00
PA-233	1245.	312.17	7.5168E-02
PA-234M	135.	1001.03	3.3956E+00
TH-234	1938.	92.60	3.1390E-01
U-235	2224.	185.71	4.5120E-02
NP-237	1799.	86.48	1.3475E-01
U-237	1585.	59.54	4.5402E-02
NP-238	114.	984.45	9.4521E-02
NP-239	1852.	106.12	7.9197E-02
PU-239	2033.	129.30	3.1557E+02
AM-241	1585.	59.54	4.3398E-02
AM-243	1884.	74.67	2.8004E-02

* 222-S Laboratory Counting Room 11-FEB-1998 23:16:18.87

>>>>>>>> SAMPLE INFORMATION <<<<<<<<< HNF-SD-WM-DP-294 REV. 0
Worklist #: 22272
Sample ID: S98T0376-DUP Removed by:
Sample Size: 1.00000E-03 L
Dilution Factor: 1.00000E+00 Shulze

>>>>>>>> COUNT INFORMATION <<<<<<<<<
Detector ID:
File Number: dka300:[spec.GEA1]1g1694.cnf
Geometry: 41
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:30:39.41 sec
Dead Time: 0.4%

Verified by:
RA Jones 2-12-98

>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
Sample Count Time: 11-FEB-1998 20:44:59.68
Decayed to: 11-FEB-1998 20:44:59.68
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: SLH2
Background Subtract: DKA300:[SPEC.GEA1]1GBACK

>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
Date of last energy calibration: 20-MAR-1996 09:10:33.62
Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.75	260	1.44	26.15	24	6	49.0			
0	16.27	367	2.66	33.19	30	8	43.3			
0	31.76	4640	1.04	64.17	60	9	5.5			
0	36.27	1520	0.89	73.18	69	9	12.9			
0	661.53*	27703	1.42	1323.69	1316	16	1.3		CS-137	11.2

Total number of lines in spectrum 5
Number of unidentified lines 4
Number of lines tentatively identified by NID 1 20.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	1.118E+01	1.118E+01	0.014E+01	1.28	
Total Activity :			1.118E+01	1.118E+01			

Grand Total Activity : 1.118E+01 1.118E+01

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	1274.	477.59	4.1427E-01
NA-22	94.	1274.53	2.9340E-02
NA-24	49.	1368.55	2.4328E-02
K-40	1746.	1460.75	1.2607E+00
SC-46	267.	1120.55	4.3419E-02
CR-51	1302.	320.08	3.0062E-01
MN-54	170.	834.83	2.6966E-02
CO-56	153.	846.76	2.5993E-02
CO-57	2125.	122.06	2.3466E-02
CO-58	141.	810.78	2.4145E-02
FE-59	118.	1099.25	5.1164E-02
CO-60	79.	1332.50	2.8024E-02
ZN-65	132.	1115.55	6.0843E-02
SE-75	1450.	264.66	4.6604E-02
KR-85	784.	514.00	8.3262E+00
SR-85	783.	514.01	3.7636E-02
Y-88	26.	1836.06	2.1519E-02
Y-91	150.	1204.67	1.1642E+01
NB-94	143.	871.09	2.5791E-02
NB-95	227.	765.78	2.8698E-02
ZR-95	215.	756.73	5.0692E-02
RU-103	842.	497.08	3.9890E-02
RURH-106	337.	621.93	5.7645E-01
AG-108m	207.	722.94	2.8624E-02
CD-109	1715.	88.03	4.5362E-01
AG-110M	1070.	657.76	5.5967E-02
SN-113	1298.	391.69	5.6397E-02
TE-123m	1844.	159.00	2.5575E-02
SB-124	405.	602.73	3.1076E-02
SB-125	1283.	427.89	1.3219E-01
TE-125m	1944.	109.27	6.5522E+00
I-129	1349.	39.60	2.2118E-01
I-131	1190.	364.48	4.0107E-02
XE-131m	2021.	163.93	1.1707E+00
BA-133	1297.	356.02	5.3405E-02
CS-134	402.	604.70	3.1104E-02
CS-136	155.	818.51	2.5528E-02
CS-138	51.	1435.86	1.0693E-01
CE-139	1969.	165.85	2.8478E-02
BA-140	585.	537.31	1.3416E-01
LA-140	40.	1596.21	2.5109E-02
CE-141	2104.	145.44	4.5298E-02
CE-144	2034.	133.51	1.8523E-01
CEPR-144	2034.	133.51	3.7010E-01
EU-152	2128.	121.78	7.0936E-02
EU-154	2122.	123.07	5.0020E-02
EU-155	1777.	86.54	5.0642E-02
HF-181	967.	482.18	4.6940E-02
TA-182	1557.	67.75	3.7080E-02
HG-203	1388.	279.20	3.4219E-02
BI-207	448.	569.70	3.0947E-02

Minimum Detectable Activity Report (continued)

Sample ID : S98T0376-DUP

Acquisition date : 11-FEB-1998 20:44:59

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	1454.	277.36	4.4921E-01
PB-210	1428.	46.50	3.9201E-01
BI-212	249.	727.18	4.2947E-01
PB-212	1915.	238.63	6.6108E-02
BI-214	761.	609.31	9.3118E-02
PB-214	1518.	351.92	3.9369E-01
RA-224	1690.	240.99	6.9475E-01
RA-226	2236.	186.10	7.4422E-01
AC-228	381.	911.21	1.6196E-01
TH-228	1852.	84.37	1.3334E+00
TH-229	1739.	88.47	6.6818E-02
U-232	1588.	57.78	7.8349E+00
PA-233	1307.	312.17	7.6991E-02
PA-234M	140.	1001.03	3.4543E+00
TH-234	1903.	92.60	3.1110E-01
U-235	2224.	185.71	4.5111E-02
NP-237	1782.	86.48	1.3411E-01
U-237	1620.	59.54	4.5896E-02
NP-238	130.	984.45	1.0071E-01
NP-239	1841.	106.12	7.8967E-02
PU-239	2114.	129.30	3.2168E+02
AM-241	1621.	59.54	4.3870E-02
AM-243	1904.	74.67	2.8151E-02

 * 222-S Laboratory Counting Room 12-FEB-1998 01:53:30.11 *

>>>>>>> SAMPLE INFORMATION <<<<<<<< HNF-SD-WM-DP-294 REV. 0
 Worklist #: 22272
 Sample ID: S98T0377-SAM Removed by:
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00 *g. HNF*

>>>>>>> COUNT INFORMATION <<<<<<<<
 Detector ID:
 File Number: dka300:[spec.GEA1]lg1695.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:39.74 sec
 Dead Time: 0.4%

Verified by:
R. Jones 2-12-98

>>>>>>> ANALYSIS INFORMATION <<<<<<<<
 Sample Count Time: 11-FEB-1998 23:22:11.83
 Decayed to: 11-FEB-1998 23:22:11.83
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<
 Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.75	261	1.29	26.15	24	5	42.9			
0	16.44	405	1.09	33.53	30	9	42.6			
0	21.41	269	1.29	43.47	40	7	52.2			
0	31.74	4771	0.99	64.14	60	8	5.0			
0	36.17	1283	0.83	72.99	69	9	15.7			
0	661.54*	28211	1.42	1323.71	1316	16	1.3		CS-137	11.4
0	1631.33	31	0.69	3264.00	3258	15	82.8			

Total number of lines in spectrum 7
Number of unidentified lines 6
Number of lines tentatively identified by NID 1 14.29%

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	1.139E+01	1.139E+01	0.015E+01	1.28	
Total Activity :			1.139E+01	1.139E+01			

Grand Total Activity : 1.139E+01 1.139E+01

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
 Sample ID : S98T0377-SAM

Acquisition date : 11-FEB-1998 23:22:11

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	1204.	477.59	4.0280E-01
NA-22	106.	1274.53	3.1047E-02
NA-24	53.	1368.55	2.5128E-02
K-40	1768.	1460.75	1.2682E+00
SC-46	268.	1120.55	4.3463E-02
CR-51	1266.	320.08	2.9653E-01
MN-54	185.	834.83	2.8084E-02
CO-56	182.	846.76	2.8218E-02
CO-57	2075.	122.06	2.3189E-02
CO-58	130.	810.78	2.3278E-02
FE-59	123.	1099.25	5.2132E-02
CO-60	69.	1332.50	2.6228E-02
ZN-65	138.	1115.55	6.2128E-02
SE-75	1481.	264.66	4.7091E-02
KR-85	837.	514.00	8.5985E+00
SR-85	836.	514.01	3.8861E-02
Y-88	26.	1836.06	2.1515E-02
Y-91	144.	1204.67	1.1437E+01
NB-94	146.	871.09	2.6105E-02
NB-95	219.	765.78	2.8240E-02
ZR-95	167.	756.73	4.4867E-02
RU-103	854.	497.08	4.0166E-02
RURH-106	325.	621.93	5.6647E-01
AG-108m	166.	722.94	2.5729E-02
CD-109	1785.	88.03	4.6263E-01
AG-110M	1123.	657.76	5.7326E-02
SN-113	1272.	391.69	5.5840E-02
TE-123m	2046.	159.00	2.6917E-02
SB-124	373.	602.73	2.9855E-02
SB-125	1307.	427.89	1.3344E-01
TE-125m	2018.	109.27	6.6732E+00
I-129	1303.	39.60	2.1746E-01
I-131	1155.	364.48	3.9521E-02
XE-131m	1988.	163.93	1.1612E+00
BA-133	1209.	356.02	5.1592E-02
CS-134	377.	604.70	3.0152E-02
CS-136	164.	818.51	2.6215E-02
CS-138	40.	1435.86	9.5652E-02
CE-139	2001.	165.85	2.8701E-02
BA-140	578.	537.31	1.3336E-01
LA-140	32.	1596.21	2.2552E-02
CE-141	2000.	145.44	4.4179E-02
CE-144	2112.	133.51	1.8872E-01
CEPR-144	2112.	133.51	3.7706E-01
EU-152	2093.	121.78	7.0356E-02
EU-154	2023.	123.07	4.8857E-02
EU-155	1796.	86.54	5.0913E-02
HF-181	1027.	482.18	4.8326E-02
TA-182	1520.	67.75	3.6642E-02
HG-203	1448.	279.20	3.4944E-02
BI-207	450.	569.70	3.1016E-02

Nuclide	Bckgnd	Energy	MDA
	Sum	(keV)	(uCi/L)
TL-208	1451.	277.36	4.4881E-01
PB-210	1425.	46.50	3.9153E-01
BI-212	242.	727.18	4.2340E-01
PB-212	1961.	238.63	6.6882E-02
BI-214	734.	609.31	9.1485E-02
PB-214	1582.	351.92	4.0180E-01
RA-224	1696.	240.99	6.9599E-01
RA-226	2272.	186.10	7.5005E-01
AC-228	353.	911.21	1.5599E-01
TH-228	1896.	84.37	1.3490E+00
TH-229	1746.	88.47	6.6955E-02
U-232	1569.	57.78	7.7877E+00
PA-233	1287.	312.17	7.6415E-02
PA-234M	127.	1001.03	3.2924E+00
TH-234	1948.	92.60	3.1468E-01
U-235	2270.	185.71	4.5573E-02
NP-237	1800.	86.48	1.3480E-01
U-237	1625.	59.54	4.5957E-02
NP-238	143.	984.45	1.0529E-01
NP-239	1983.	106.12	8.1921E-02
PU-239	2075.	129.30	3.1871E+02
AM-241	1625.	59.54	4.3929E-02
AM-243	1769.	74.67	2.7145E-02

 * 222-S Laboratory Counting Room 12-FEB-1998 05:22:26.46
 * *****

>>>>>>> SAMPLE INFORMATION <<<<<<<<<
 Worklist #: 22272
 Sample ID: SS98T0377-DUP
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

HNF-SD-WM-DP-294 REV. 0

Removed by:

Shul

>>>>>>> COUNT INFORMATION <<<<<<<<<
 Detector ID:
 File Number: dka300:[spec.GEA1]lg1698.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:39.20 sec
 Dead Time: 0.4%

Verified by:

PA Jones 2-12-98

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
 Sample Count Time: 12-FEB-1998 02:51:12.36
 Decayed to: 12-FEB-1998 02:51:12.36
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
 Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	12.63	133	0.82	25.91	23	7110.5			
0	15.85	230	1.07	32.35	29	7 63.3			
0	31.75	4853	1.00	64.15	60	10 5.4			
0	36.30	1281	0.89	73.24	69	9 15.1			
0	661.53*	27655	1.42	1323.69	1316	15 1.3		CS-137	11.2
0	1378.95	57	1.54	2758.97	2751	17 70.5 1.87E+00			

Total number of lines in spectrum	6	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	1	16.67%

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	<u>1.116E+01</u>	<u>1.116E+01</u>	0.014E+01	1.29	
Total Activity :			1.116E+01	1.116E+01			

Grand Total Activity : 1.116E+01 1.116E+01

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	1159.	477.59	3.9541E-01
NA-22	102.	1274.53	3.0471E-02
NA-24	60.	1368.55	2.6612E-02
K-40	1715.	1460.75	1.2496E+00
SC-46	256.	1120.55	4.2562E-02
CR-51	1295.	320.08	2.9981E-01
MN-54	138.	834.83	2.4382E-02
CO-56	149.	846.76	2.5712E-02
CO-57	2020.	122.06	2.2882E-02
CO-58	158.	810.78	2.5534E-02
FE-59	116.	1099.25	5.0638E-02
CO-60	79.	1332.50	2.8016E-02
ZN-65	132.	1115.55	6.0769E-02
SE-75	1404.	264.66	4.5863E-02
KR-85	786.	514.00	8.3376E+00
SR-85	785.	514.01	3.7681E-02
Y-88	21.	1836.06	1.9460E-02
Y-91	165.	1204.67	1.2189E+01
NB-94	147.	871.09	2.6193E-02
NB-95	183.	765.78	2.5897E-02
ZR-95	226.	756.73	5.1896E-02
RU-103	884.	497.08	4.0869E-02
RURH-106	347.	621.93	5.8506E-01
AG-108m	193.	722.94	2.7670E-02
CD-109	1803.	88.03	4.6493E-01
AG-110M	1122.	657.76	5.7288E-02
SN-113	1200.	391.69	5.4268E-02
TE-123m	2026.	159.00	2.6791E-02
SB-124	390.	602.73	3.0508E-02
SB-125	1270.	427.89	1.3156E-01
TE-125m	1922.	109.27	6.5157E+00
I-129	1340.	39.60	2.2050E-01
I-131	1210.	364.48	4.0440E-02
XE-131m	2000.	163.93	1.1646E+00
BA-133	1214.	356.02	5.1682E-02
CS-134	399.	604.70	3.0967E-02
CS-136	180.	818.51	2.7359E-02
CS-138	49.	1435.86	1.0485E-01
CE-139	2022.	165.85	2.8851E-02
BA-140	588.	537.31	1.3448E-01
LA-140	37.	1596.21	2.4324E-02
CE-141	2011.	145.44	4.4303E-02
CE-144	2006.	133.51	1.8395E-01
CEPR-144	2006.	133.51	3.6756E-01
EU-152	2023.	121.78	6.9199E-02
EU-154	2040.	123.07	4.9065E-02
EU-155	1835.	86.54	5.1449E-02
HF-181	1028.	482.18	4.8356E-02
TA-182	1539.	67.75	3.6864E-02
HG-203	1426.	279.20	3.4672E-02
BI-207	452.	569.70	3.1085E-02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	1465.	277.36	4.5082E-01
PB-210	1420.	46.50	3.9087E-01
BI-212	247.	727.18	4.2780E-01
PB-212	1905.	238.63	6.5947E-02
BI-214	766.	609.31	9.3435E-02
PB-214	1526.	351.92	3.9469E-01
RA-224	1744.	240.99	7.0558E-01
RA-226	2263.	186.10	7.4866E-01
AC-228	346.	911.21	1.5440E-01
TH-228	1910.	84.37	1.3539E+00
TH-229	1782.	88.47	6.7629E-02
U-232	1675.	57.78	8.0421E+00
PA-233	1317.	312.17	7.7284E-02
PA-234M	121.	1001.03	3.2163E+00
TH-234	1949.	92.60	3.1474E-01
U-235	2247.	185.71	4.5347E-02
NP-237	1836.	86.48	1.3612E-01
U-237	1563.	59.54	4.5081E-02
NP-238	152.	984.45	1.0851E-01
NP-239	1971.	106.12	8.1677E-02
PU-239	2037.	129.30	3.1584E+02
AM-241	1563.	59.54	4.3091E-02
AM-243	1919.	74.67	2.8262E-02

 * 222-S Laboratory Counting Room 12-FEB-1998 09:28:35.59 *

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

Worklist #: 22272
 Sample ID: S98T000378-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

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

Detector ID:
 File Number: dka300:[spec.GEAl]lg1701.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:47.34 sec
 Dead Time: 0.5%

Verified by:

2-12-98

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

Sample Count Time: 12-FEB-1998 06:57:10.44
 Decayed to: 12-FEB-1998 06:57:10.44
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEAl]1GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<

Date of last energy calibration: 20-MAR-1996 09:10:33.62
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	15.79	282	1.23	32.23	29	7 59.7			
0	21.53	227	1.14	43.70	42	6 67.2			
0	31.71	9953	1.03	64.07	60	10 3.5			
0	36.23	2785	1.02	73.10	69	9 8.7			
0	661.52*	57297	1.45	1323.68	1316	16 0.9		CS-137	23.1
0	1408.13	36	1.46	2817.36	2813	10 72.2			
0	1764.35*	42	1.86	3530.21	3520	20 89.6	9.64E-01		

Summary of Nuclide Activity
 Sample ID : S98T000378-SAM

Acquisition date : 12-FEB-1998 06:57:10

Total number of lines in spectrum	7	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	3	42.86%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
CS-137	30.00Y	1.00	<u>2.312E+01</u>	<u>2.312E+01</u>	0.020E+01	0.88	
Total Activity :			2.312E+01	2.312E+01			

Grand Total Activity : 2.312E+01 2.312E+01

Flags: "K" = Keyline not found
 "E" = Manually edited

"M" = Manually accepted
 "A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	2063.	477.59	5.2535E-01
NA-22	97.	1274.53	2.9771E-02
NA-24	52.	1368.55	2.4932E-02
K-40	1686.	1460.75	1.2389E+00
SC-46	271.	1120.55	4.3734E-02
CR-51	2029.	320.08	3.7416E-01
MN-54	185.	834.83	2.8103E-02
CO-56	160.	846.76	2.6581E-02
CO-57	2781.	122.06	2.6801E-02
CO-58	150.	810.78	2.4922E-02
FE-59	119.	1099.25	5.1293E-02
CO-60	75.	1332.50	2.7256E-02
ZN-65	146.	1115.55	6.3845E-02
SE-75	2142.	264.66	5.6494E-02
KR-85	1269.	514.00	1.0547E+01
SR-85	1268.	514.01	4.7694E-02
Y-88	28.	1836.06	2.2236E-02
Y-91	144.	1204.67	1.1432E+01
NB-94	141.	871.09	2.5629E-02
NB-95	236.	765.78	2.9251E-02
ZR-95	159.	756.73	4.3879E-02
RU-103	1404.	497.08	5.1292E-02
RURH-106	491.	621.93	6.9240E-01
AG-108m	192.	722.94	2.7587E-02
CD-109	2384.	88.03	5.3373E-01
AG-110M	1993.	657.76	7.6043E-02
SN-113	2024.	391.69	7.0214E-02
TE-123m	2623.	159.00	3.0432E-02
SB-124	491.	602.73	3.4115E-02
SB-125	2299.	427.89	1.7627E-01
TE-125m	2523.	109.27	7.4525E+00
I-129	1813.	39.60	2.5590E-01
I-131	1929.	364.48	5.0888E-02
XE-131m	2674.	163.93	1.3444E+00
BA-133	1917.	356.02	6.4728E-02
CS-134	486.	604.70	3.4083E-02
CS-136	163.	818.51	2.6079E-02
CS-138	56.	1435.86	1.1228E-01
CE-139	2646.	165.85	3.2954E-02
BA-140	897.	537.31	1.6540E-01
LA-140	41.	1596.21	2.5312E-02
CE-141	2668.	145.44	5.0939E-02
CE-144	2729.	133.51	2.1419E-01
CEPR-144	2730.	133.51	4.2801E-01
EU-152	2793.	121.78	8.1144E-02
EU-154	2750.	123.07	5.6858E-02
EU-155	2442.	86.54	5.9255E-02
HF-181	1766.	482.18	6.3110E-02
TA-182	2151.	67.75	4.3488E-02
HG-203	2142.	279.20	4.2380E-02
BI-207	570.	569.70	3.4782E-02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	2186.	277.36	5.4933E-01
PB-210	1996.	46.50	4.6233E-01
BI-212	262.	727.18	4.3998E-01
PB-212	2631.	238.63	7.7335E-02
BI-214	894.	609.31	1.0074E-01
PB-214	2180.	351.92	4.7111E-01
RA-224	2481.	240.99	8.3967E-01
RA-226	3120.	186.10	8.7741E-01
AC-228	365.	911.21	1.5862E-01
TH-228	2553.	84.37	1.5627E+00
TH-229	2362.	88.47	7.7713E-02
U-232	2170.	57.78	9.1379E+00
PA-233	1957.	312.17	9.3945E-02
PA-234M	135.	1001.03	3.3884E+00
TH-234	2513.	92.60	3.5690E-01
U-235	3090.	185.71	5.3085E-02
NP-237	2448.	86.48	1.5688E-01
U-237	2221.	59.54	5.3624E-02
NP-238	119.	984.45	9.6622E-02
NP-239	2450.	106.12	9.0936E-02
PU-239	2740.	129.30	3.6570E+02
AM-241	2221.	59.54	5.1257E-02
AM-243	2485.	74.67	3.2105E-02

* 222-S Laboratory Counting Room 12-FEB-1998 12:11:29.16 *

>>>>>>> SAMPLE INFORMATION <<<<<<<<< HNF-SD-WM-DP-294 REV. 0
Worklist #: 22272
Sample ID: S98T000378-DUP
Sample Size: 1.00000E-03 L
Dilution Factor: 1.00000E+00

Removed by:

[Signature]

>>>>>>> COUNT INFORMATION <<<<<<<<<
Detector ID:
File Number: dka300:[spec.GEAL]lg1702.cnf
Geometry: 41
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:30:47.42 sec
Dead Time: 0.5%

Verified by:

[Signature] 2-12-98

>>>>>>> ANALYSIS INFORMATION <<<<<<<<<
Sample Count Time: 12-FEB-1998 09:40:00.98
Decayed to: 12-FEB-1998 09:40:00.98
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: GL
Background Subtract: DKA300:[SPEC.GEAL]1GBACK

>>>>>>> CALIBRATION INFORMATION <<<<<<<<<
Date of last energy calibration: 20-MAR-1996 09:10:33.62
Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	21.82	210	0.93	44.29	41	7	80.3			
0	31.71	9873	1.01	64.06	60	9	3.4			
0	36.18	2821	0.99	73.01	69	9	8.6			
0	661.52*	57535	1.42	1323.68	1316	15	0.9		CS-137	23.2
0	1631.00	15	1.10	3263.34	3259	9	94.3			
0	1848.65	21	0.65	3698.92	3693	12	84.2			

Total number of lines in spectrum	6	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	1	16.67%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			uCi/L	uCi/L	2-Sigma Error	%Error	
CS-137	30.00Y	1.00	2.322E+01	2.322E+01	0.020E+01	0.87	
Total Activity :			2.322E+01	2.322E+01			

Grand Total Activity :	2.322E+01	2.322E+01
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Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	2098.	477.59	5.2969E-01
NA-22	91.	1274.53	2.8926E-02
NA-24	55.	1368.55	2.5621E-02
K-40	1736.	1460.75	1.2569E+00
SC-46	247.	1120.55	4.1849E-02
CR-51	1998.	320.08	3.7126E-01
MN-54	167.	834.83	2.6744E-02
CO-56	146.	846.76	2.5409E-02
CO-57	2723.	122.06	2.6522E-02
CO-58	148.	810.78	2.4761E-02
FE-59	145.	1099.25	5.6504E-02
CO-60	85.	1332.50	2.8994E-02
ZN-65	148.	1115.55	6.4172E-02
SE-75	2214.	264.66	5.7415E-02
KR-85	1262.	514.00	1.0519E+01
SR-85	1261.	514.01	4.7557E-02
Y-88	21.	1836.06	1.9394E-02
Y-91	152.	1204.67	1.1739E+01
NB-94	149.	871.09	2.6314E-02
NB-95	189.	765.78	2.6308E-02
ZR-95	170.	756.73	4.5268E-02
RU-103	1374.	497.08	5.0748E-02
RURH-106	475.	621.93	6.8079E-01
AG-108m	191.	722.94	2.7518E-02
CD-109	2327.	88.03	5.2734E-01
AG-110M	2049.	657.76	7.7087E-02
SN-113	2017.	391.69	7.0095E-02
TE-123m	2673.	159.00	3.0718E-02
SB-124	574.	602.73	3.6820E-02
SB-125	2183.	427.89	1.7180E-01
TE-125m	2599.	109.27	7.5618E+00
I-129	1869.	39.60	2.5979E-01
I-131	1998.	364.48	5.1786E-02
XE-131m	2618.	163.93	1.3305E+00
BA-133	1921.	356.02	6.4798E-02
CS-134	577.	604.70	3.7067E-02
CS-136	165.	818.51	2.6281E-02
CS-138	65.	1435.86	1.2012E-01
CE-139	2588.	165.85	3.2593E-02
BA-140	884.	537.31	1.6419E-01
LA-140	31.	1596.21	2.2459E-02
CE-141	2763.	145.44	5.1832E-02
CE-144	2707.	133.51	2.1331E-01
CEPR-144	2707.	133.51	4.2626E-01
EU-152	2725.	121.78	8.0157E-02
EU-154	2721.	123.07	5.6566E-02
EU-155	2351.	86.54	5.8144E-02
HF-181	1698.	482.18	6.1899E-02
TA-182	2056.	67.75	4.2529E-02
HG-203	2101.	279.20	4.1982E-02
BI-207	562.	569.70	3.4538E-02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	2171.	277.36	5.4743E-01
PB-210	1958.	46.50	4.5801E-01
BI-212	269.	727.18	4.4572E-01
PB-212	2645.	238.63	7.7542E-02
BI-214	881.	609.31	1.0006E-01
PB-214	2248.	351.92	4.7833E-01
RA-224	2478.	240.99	8.3914E-01
RA-226	3280.	186.10	8.9947E-01
AC-228	386.	911.21	1.6295E-01
TH-228	2462.	84.37	1.5350E+00
TH-229	2338.	88.47	7.7324E-02
U-232	2153.	57.78	9.1040E+00
PA-233	1955.	312.17	9.3904E-02
PA-234M	129.	1001.03	3.3213E+00
TH-234	2495.	92.60	3.5560E-01
U-235	3280.	185.71	5.4668E-02
NP-237	2351.	86.48	1.5379E-01
U-237	2144.	59.54	5.2699E-02
NP-238	130.	984.45	1.0064E-01
NP-239	2462.	106.12	9.1147E-02
PU-239	2677.	129.30	3.6150E+02
AM-241	2144.	59.54	5.0372E-02
AM-243	2536.	74.67	3.2429E-02

LABCORE Completed RadChem Report for Worklist#: 22195

Analyst: crj Instrument: AB12 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: @SR90-01 (302-S-97-3) GRAB (DET SS LL) STD=1ML RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@SR90-01 SR90-01 LIQUID		2.36E-03	2.21E-3	93.644	% Recovery
1 STD	0		@SR90-01 SR90-01C LIQUID		100	9.17E+01	91.700	% Recovery
1 STD	0		@SR90-01 SR90-01E LIQUID		1.00	1.40E+00	1.400	% Ct. Err
2 BLNK	0		@SR90-01 SR90-01 LIQUID		1	<2.10E-6		uCi/mL
2 BLNK	0		@SR90-01 SR90-01C LIQUID		100	9.08E+01	90.800	% Recovery
2 BLNK	0		@SR90-01 SR90-01E LIQUID		1.00	2.33E+02	233.000	uCi/mL
3 BLNK/BKG	0		@SR90-01 SR90-01 LIQUID		1	1.23E+00	1.230	BLNK/BKG
4 SAMPLE	S98T000376	0	@SR90-01 SR90-01 LIQUID	N/A		3.59E-03	249.0e-008	uCi/mL
4 SAMPLE	S98T000376	0	@SR90-01 SR90-01C LIQUID	N/A		9.13E+01	0.0e+000	% Recovery
4 SAMPLE	S98T000376	0	@SR90-01 SR90-01E LIQUID	N/A		1.10E+00	0.0e+000	% Ct. Error
5 DUP	S98T000376	0	@SR90-01 SR90-01 LIQUID		3.59E-3	3.61E-3		0.556 RPD
5 DUP	S98T000376	0	@SR90-01 SR90-01C LIQUID		100	9.11E+01	91.100	% Recovery
5 DUP	S98T000376	0	@SR90-01 SR90-01E LIQUID		1.00	1.10E+00	1.100	% Ct. Err
6 SAMPLE	S98T000377	0	@SR90-01 SR90-01 LIQUID	N/A		4.14E-03	252.0e-008	uCi/mL
6 SAMPLE	S98T000377	0	@SR90-01 SR90-01C LIQUID	N/A		8.98E+01	0.0e+000	% Recovery
6 SAMPLE	S98T000377	0	@SR90-01 SR90-01E LIQUID	N/A		1.03E+00	0.0e+000	% Ct. Error
7 DUP	S98T000377	0	@SR90-01 SR90-01 LIQUID		4.14E-3	4.25E-3		2.622 RPD
7 DUP	S98T000377	0	@SR90-01 SR90-01C LIQUID		100	9.13E+01	91.300	% Recovery
7 DUP	S98T000377	0	@SR90-01 SR90-01E LIQUID		1.00	1.01E+00	1.010	% Ct. Err
8 SAMPLE	S98T000378	0	@SR90-01 SR90-01 LIQUID	N/A		4.28E-03	255.0e-008	uCi/mL
8 SAMPLE	S98T000378	0	@SR90-01 SR90-01C LIQUID	N/A		8.86E+01	0.0e+000	% Recovery
8 SAMPLE	S98T000378	0	@SR90-01 SR90-01E LIQUID	N/A		1.02E+00	0.0e+000	% Ct. Error
9 DUP	S98T000378	0	@SR90-01 SR90-01 LIQUID		4.28E-3	4.24E-3		0.939 RPD
9 DUP	S98T000378	0	@SR90-01 SR90-01C LIQUID		100	9.20E+01	92.000	% Recovery
9 DUP	S98T000378	0	@SR90-01 SR90-01E LIQUID		1.00	9.96E-01	0.996	% Ct. Err

Final page for worklist# 22195

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

CRJ 9 Feb 98
Reviewer Signature _____ Date _____

02/05/98 11:04
A-0004-1

LABCORE Data Entry Template for Worklist# 22195

Analyst: CRS Instrument: AB00 12 Book# 80856
 Method: LA-220-101 Rev/Mod E-3
 Worklist Comment: @SR90-01 (302-S-97-3) GRAB (DET SS LL) STD=1ML RTS

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	S98T000376 0		@SR90-01	LIQUID	98000081 S-302	GRAB1
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 DUP	S98T000376 0		@SR90-01	LIQUID		
6 SAMPLE	S98T000377 0		@SR90-01	LIQUID	98000081 S-302	GRAB1
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7 DUP	S98T000377 0		@SR90-01	LIQUID		
8 SAMPLE	S98T000378 0		@SR90-01	LIQUID	98000081 S-302	GRAB1
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
9 DUP	S98T000378 0		@SR90-01	LIQUID		

Final page for worklist # 22195

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

#378 Lost some of sample while mounting

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

HNF-SD-WM-DP-294 REV. 0

WORKBOOK PAGE: STD1

9/24/98 ERR- LA-220-101 E-3

9m4/98ERR- LA-220-101 E-3

Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	STANDARD
STD	TOTAL COUNTS (TC)	19656	GROSS WEIGHT (W2)	1.000
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.6734
22195	BACKGROUND in cpm (BKG)	3.1	NET WEIGHT (W3)	7.5817
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	0.0917
@SR90-01	DILUTION FACTOR (DF)	1		3.57
Matrix	DIGEST DILUTION FACTOR DDF	1		
LIQUID	SAMPLE COUNT RATE (Rs)	1962.50	SR-90 EFFICIENCY FACTO (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.06	Y-90 EFFICIENCY FACTOR (C2)	0.4660
98000492	TIME OF SEPARATION (ST)	10:50	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)	02/06/98	DETECTION LIMIT (Ld)	2.21
0	TIME OF COUNT (TOC)	14:24	Sr-89/90 CONC. in µCi/L	2.2131E+00
Sample Prep	DATE OF COUNT (DOC)	02/06/98		
N/A	STANDARD BOOK #	86B56		
Sample #	STANDARD VALUE in µCi/mL	2.3587E-03		
WL22195-STD				
Instrument Code				
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)			
Prepared By	Sr-89/90 CONC in µCi/mL	REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc If RS<0		
MCB	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)			
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))			
SAC	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)			
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100			
CRJ	NOTE: Expected weight = CVA * 0.1			
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
02/07/98	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
Analysis Date				
02/06/98	Sr-89/90 CONCENTRATION	2.21E-03	µCi/mL	DETECTION LEVEL
Analysis Time				
01:20 PM	RELATIVE COUNTING ERROR	1.4%		2.49E-06
Sample Point				µCi/L
S-302 GRAB1	PERCENT CARRIER RECOVERY	91.7%		

Analyst:	CRJ	Date:	07-Feb-98
Signature of Chemist:	SAC	Date:	9 Feb 98

STANDARD.WB1 REV 2.0

22010NML

HNF-SD-WM-DP-294 REV. C

WORKBOOK PAGE: BLNK2

LA-220-101 / E-3

~~ERR-100~~ 2/9/98

				BLNK	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
BLNK	TOTAL COUNTS (TC)	38	GROSS WEIGHT	(W2)	7.7022
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT	(W1)	7.6114
22195	BACKGROUND in cpm (BKG)	3.1	NET WEIGHT	(W3)	0.0908
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS)	(DT)	3.83
@SR90-01	DILUTION FACTOR (DF)	1			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	0.70	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.06	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98000492	TIME OF SEPARATION (ST)	10:50	Rmax		1.85
Rerun	DATE OF SEPARATION (SD)	02/06/98	DETECTION LIMIT	(Ld)	2.21
0	TIME OF COUNT (TOC)	14:40	Sr-89/90 CONC in µCi/L	<	2.0974E-03
Sample Prep	DATE OF COUNT (DOC)	02/06/98			
N/A					
Sample #					
WL22195-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)				
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
02/07/98					
Analysis Date					
02/06/98	Sr-89/90 CONCENTRATION	< 2.10E-06	µCi/mL	DETECTION LEVEL	
Analysis Time	LESS THAN Value was Determined from Rmax.				
01:20 PM	RELATIVE COUNTING ERROR	232.6%	2.51E-06		
Sample Point					
S-302 GRAB1	PERCENT CARRIER RECOVERY	90.8%	µCi/mL		

Analyst:	CRJ	Date:	07-Feb-98
Signature of Chemist:	SAC	Date:	9 Feb 98

BLANK.WB1 REV 2.0

22010NML

4/7/98
 WORKBOOK PAGE: SAM4

ERR - LA-220-101 E3

ERR- LA-220-101 E3

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	31898	GROSS WEIGHT	(W2)	7.7061
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.6148
22195	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)	0.0913
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	4.08
@SR90-01	DILUTION FACTOR	DF	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	3186.70	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.06	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98000492	TIME OF SEPARATION	(ST)	10:50	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	02/06/98	DETECTION LIMIT	(Ld)	2.21
0	TIME OF COUNT	(TOC)	14:55	Sr-89/90 CONC in µCi/L		3.5888E+00
Sample Prep	DATE OF COUNT	(DOC)	02/06/98			
N/A						
Sample #						
S98T000376						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery (W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
02/07/98						
Analysis Date						
02/06/98	Sr-89/90 CONCENTRATION		3.59E-03	µCi/mL	DETECTION LEVEL	
Analysis Time						
01:20 PM	RELATIVE COUNTING ERROR		1.1%	2.49E-06		
Sample Point						
S-302 GRAB1	PERCENT CARRIER RECOVERY		91.3%	µCi/mL		

Analyst:	CRJ	Date:	07-Feb-98
Signature of Chemist:	SAC	Date:	

SAMPLE WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP5

ERR *Call LA-220-101 E-3*

				DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS	(TC)	32077	GROSS WEIGHT	(W2) 7.6049
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.5138
22195	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3) 0.0911
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 4.33
@SR90-01	DILUTION FACTOR	DF	1		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	3204.60	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.06	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
98000492	TIME OF SEPARATION	(ST)	10:50	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	02/06/98	DETECTION LIMIT	(Ld) 2.21
0	TIME OF COUNT	(TOC)	15:10	Sr-89/90 CONC in $\mu\text{Ci/L}$	3.6070E+00
Sample Prep	DATE OF COUNT	(DOC)	02/06/98		
N/A					
Sample #					
S98T000376					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in $\mu\text{Ci/L}$ Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)				
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
02/07/98					
Analysis Date					
02/06/98	Sr-89/90 CONCENTRATION		3.61E-03	$\mu\text{Ci/mL}$	
Analysis Time					
01:20 PM	RELATIVE COUNTING ERROR		1.1%		2.49E-06
Sample Point					$\mu\text{Ci/mL}$
S-302 GRAB1	PERCENT CARRIER RECOVERY		91.1%		

Analyst:	CRJ	Date:	07-Feb-98
Signature of Chemist:	SAC	Date:	9 Feb 98
SAMPLE.WB1 REV 2.0 22010NML			

WORKBOOK PAGE: SAM6

ERR LA-220-101 E-3

				SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS (TC)		36324	GROSS WEIGHT (W2)	7.6047
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT (W1)	7.5149
22195	BACKGROUND in cpm (BKG)		3.1	NET WEIGHT (W3)	0.0898
Test Code	SAMPLE VOLUME in mL (SS)		1.000	DELTA TIME (HOURS) (DT)	4.40
@SR90-01	DILUTION FACTOR (DF)		1		
Matrix	DIGEST DILUTION FACTOR (DDF)		1		
LIQUID	SAMPLE COUNT RATE (Rs)		3629.30	SR-90 EFFICIENCY FACTOR (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)		1.06	Y-90 EFFICIENCY FACTOR (C2)	0.4660
98000492	TIME OF SEPARATION (ST)		10:56	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)		02/06/98	DETECTION LIMIT (Ld)	2.21
0	TIME OF COUNT (TOC)		15:20	Sr-89/90 CONC in $\mu\text{Ci/L}$	4.1411E+00
Sample Prep	DATE OF COUNT (DOC)		02/06/98		
N/A					
Sample #					
S98T000377					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in $\mu\text{Ci/L}$ Replace RS with RMAX if $RS \leq Lc$ and $RS > 0$ or Replace RS with Lc if $RS < 0$				
Prepared By	$RS * DF * DDF / ((C1 + C2 * (1 - e \text{ to the power of } ((-\text{natural log } 2) / 64.2 * DT)))) * SS * REC * 2220000$				
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery $((W2 - W1) / (CVA * 0.1000))$				
Chemist	Relative Counting Error = (The Square Root of $(TC + BKG * CT)$ / $(TC + BKG * CT) * 1.96$				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = $CVA * 0.1$				
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = $((DOC - SD) * 24) + (TOC - ST) / 100$				
02/07/98					
Analysis Date					
02/06/98	Sr-89/90 CONCENTRATION		4.14E-03	$\mu\text{Ci/mL}$	DETECTION LEVEL 2.52E-06 $\mu\text{Ci/mL}$
Analysis Time					
01:20 PM	RELATIVE COUNTING ERROR		1.0%		
Sample Point					
S-302 GRAB1	PERCENT CARRIER RECOVERY		89.8%		

Analyst:	CRJ	Date:	07-Feb-98
Signature of Chemist:	SAC	Date:	9 Feb 98

SAMPLE.WB1 REV 2.0

22010NML

ERR LA-220-101 E-3

				DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS	(TC)	37975	GROSS WEIGHT	(W2) 7.6098
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.5185
22195	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3) 0.0913
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 4.57
@SR90-01	DILUTION FACTOR	DF	1		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	3794.40	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.06	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
98000492	TIME OF SEPARATION	(ST)	10:56	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	02/06/98	DETECTION LIMIT	(Ld) 2.21
0	TIME OF COUNT	(TOC)	15:30	Sr-89/90 CONC in µCi/L	4.2506E+00
Sample Prep	DATE OF COUNT	(DOC)	02/06/98		
N/A					
Sample #					
S98T000377					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/(64.2*DT))))*SS*REC*22200000)				
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
02/07/98					
Analysis Date					
02/06/98	Sr-89/90 CONCENTRATION	4.25E-03	µCi/mL	DETECTION LEVEL	
Analysis Time					
01:20 PM	RELATIVE COUNTING ERROR	1.0%	2.48E-06		
Sample Point					
S-302 GRAB1	PERCENT CARRIER RECOVERY	91.3%	µCi/mL		

Analyst:	CRJ	Date:	07-Feb-98
Signature of Chemist:	SAC	Date:	7 Feb 98

SAMPLE.WB1 REV 2.0

22010NML

HNF-SD-WM-DP-294 REV. 0

WORKBOOK PAGE: SAM8

ERR LA-220-101 E-3

ERR LA-220-101 E-3

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000	
SAMPLE	TOTAL COUNTS	(TC)	37257	GROSS WEIGHT	(W2) 7.6312	
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.5426	
22195	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3) 0.0886	
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 4.88	
@SR90-01	DILUTION FACTOR	DF	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	3722.60	SR-90 EFFICIENCY FACTOR	(C1) 0.4180	
Batch Number	CRITICAL LEVEL	(Lc)	1.06	Y-90 EFFICIENCY FACTOR	(C2) 0.4660	
98000492	TIME OF SEPARATION	(ST)	10:56	Rmax	N/A	
Rerun	DATE OF SEPARATION	(SD)	02/06/98	DETECTION LIMIT	(Ld) 2.21	
0	TIME OF COUNT	(TOC)	15:49	Sr-89/90 CONC in µCi/L	4.2826E+00	
Sample Prep	DATE OF COUNT	(DOC)	02/06/98			
N/A						
Sample #						
S98T000378						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
02/07/98						
Analysis Date						
02/06/98	Sr-89/90 CONCENTRATION		4.28E-03	µCi/mL	DETECTION LEVEL 2.55E-06 µCi/mL	
Analysis Time						
01:20 PM	RELATIVE COUNTING ERROR		1.0%			
Sample Point						
S-302 GRAB1	PERCENT CARRIER RECOVERY		88.6%			

Analyst:	CRJ	Date:	07-Feb-98
Signature of Chemist:	SAC	Date:	9 Feb 98

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP9

ERR LA-220-101 F-3

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	38788	GROSS WEIGHT	(W2)	7.6440
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5520
22195	BACKGROUND in cpm	(BKG)	3.1	NET WEIGHT	(W3)	0.0920
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	5.98
@SR90-01	DILUTION FACTOR	DF	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	3875.70	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.06	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98000492	TIME OF SEPARATION	(ST)	10:56	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	02/06/98	DETECTION LIMIT	(Ld)	2.21
0	TIME OF COUNT	(TOC)	16:55	Sr-89/90 CONC in µCi/L		4.2438E+00
Sample Prep	DATE OF COUNT	(DOC)	02/06/98			
N/A						
Sample #						
S98T000378						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))) * SS*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT)) * 1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
02/07/98						
Analysis Date						DETECTION LEVEL 2.42E-06 µCi/mL
02/06/98	Sr-89/90 CONCENTRATION	4.24E-03	µCi/mL			
Analysis Time						
01:20 PM	RELATIVE COUNTING ERROR	1.0%				
Sample Point						
S-302 GRAB1	PERCENT CARRIER RECOVERY	92.0%				

Analyst:	CRJ	Date:	07-Feb-98
Signature of Chemist:	SAC	Date:	7 Feb 98

SAMPLE.WB1 REV 2.0

22010NML

HNF-SD-WM-DP-294 REV. 0

LABCORE Completed Worklist Report for Worklist# 22191

Analyst: jmv

Instrument: AB15

Book# _____

Method: LA-953-102 Rev/Mod B-0

Worklist Comment: @AM24101 (302-S-97-1 GRAB (DET SS USEING LL) STD= 1ML RTS

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@AM24101 AM24101 LIQUID		1.03E-04	1.13E-4	109.709 % Recovery	
1 STD	0	@AM24101 AM24101T LIQUID		100.	8.34E+01	83.400 % Recovery	
1 STD	0	@AM24101 AM24101E LIQUID		1.0	1.91E+00	1.910 % Ct Error	
2 BLNK	0	@AM24101 AM24101 LIQUID		1	<5.43E-6		uCi/mL
2 BLNK	0	@AM24101 AM24101T LIQUID		100.0	8.71E+01	87.100 % Recovery	
2 BLNK	0	@AM24101 AM24101E LIQUID		1.0	1.00E+02	100.000 % Ct Error	
3 SAMPLE	S98T000376 0	@AM24101 AM24101 LIQUID		N/A	5.8259E-06	5.83E-006	uCi/mL
3 SAMPLE	S98T000376 0	@AM24101 AM24101E LIQUID		N/A	1.15E+01		% Ct. Error
3 SAMPLE	S98T000376 0	@AM24101 AM24101T LIQUID		N/A	8.88E+01		% Recovery
4 DUP	S98T000376 0	@AM24101 AM24101 LIQUID		<5.83E-6	<6.96E-6		RPD
4 DUP	S98T000376 0	@AM24101 AM24101T LIQUID		100.0	7.70E+01	77.000 % Recovery	
4 DUP	S98T000376 0	@AM24101 AM24101E LIQUID		1.0	1.10E+01	11.000 % Ct Error	
5 SAMPLE	S98T000377 0	@AM24101 AM24101 LIQUID		N/A	5.49E-06	5.49E-006	uCi/mL
5 SAMPLE	S98T000377 0	@AM24101 AM24101E LIQUID		N/A	1.00E+02		% Ct. Error
5 SAMPLE	S98T000377 0	@AM24101 AM24101T LIQUID		N/A	8.49E+01		% Recovery
6 DUP	S98T000377 0	@AM24101 AM24101 LIQUID		<5.49E-6	<5.77E-6		RPD
6 DUP	S98T000377 0	@AM24101 AM24101T LIQUID		100.0	8.07E+01	80.700 % Recovery	
6 DUP	S98T000377 0	@AM24101 AM24101E LIQUID		1.0	1.00E+02	100.000 % Ct Error	
7 SAMPLE	S98T000378 0	@AM24101 AM24101 LIQUID		N/A	5.34E-06	5.34E-006	uCi/mL
7 SAMPLE	S98T000378 0	@AM24101 AM24101E LIQUID		N/A	1.00E+02		% Ct. Error
7 SAMPLE	S98T000378 0	@AM24101 AM24101T LIQUID		N/A	8.72E+01		% Recovery
8 DUP	S98T000378 0	@AM24101 AM24101 LIQUID		<5.34E-6	<5.13E-6		RPD
8 DUP	S98T000378 0	@AM24101 AM24101T LIQUID		100.0	8.97E+01	89.700 % Recovery	
8 DUP	S98T000378 0	@AM24101 AM24101E LIQUID		1.0	1.00E+02	100.000 % Ct Error	

Final page for worklist# 22191

Analyst Signature

Date

Analyst Signature

Date

John Pelzer 10/26/98
Reviewer Signature Date
Validated

LABCORE Data Entry Template for Worklist# 22191

Analyst: DMV Instrument: AM01 Book# 75856

Method: LA-953-104 Rev/Mod _____

Worklist Comment: @AM24101 (302-S-97-1 GRAB (DET SS USEING LL) STD 1ML RTS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S98T000376 0		@AM24101	LIQUID	98000081	S-302 GRAB1
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S98T000376 0		@AM24101	LIQUID		
5 SAMPLE	S98T000377 0		@AM24101	LIQUID	98000081	S-302 GRAB1
Analytes Requested: AM24101 , AM24101E, AM24101T						
6 DUP	S98T000377 0		@AM24101	LIQUID		
7 SAMPLE	S98T000378 0		@AM24101	LIQUID	98000081	S-302 GRAB1
Analytes Requested: AM24101 , AM24101E, AM24101T						
8 DUP	S98T000378 0		@AM24101	LIQUID		

Final page for worklist # 22191

DMV 2-6-98
Analyst Signature Date

Joe Hogan 2-9-98
Analyst Signature Date
N.E. Wright 2/9/98

Data Entry Comments:

Solids Bottom of Sample

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

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL22191-STD
 File ID: 9a9066.CNF

Counted on: 2/ 7/98 @ 3:22
 Detector: AEA9
 Geometry number: 1
 Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	907.2	907.2	299.547	299.547	12.000	6.497	6.000	1.232
2	800.9	800.9	253.601	253.470	12.000	4.824	6.000	0.950
3	11.5	11.5	157.653	156.761	106.000	454.894	53.000	128.842

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu238	0.526	5.487	5.470	0.0170.03	48.76	1.3	283.6	0.128E-03
	Am241		5.479	5.470	0.009			217.2	0.978E-04
2	Am243	0.434	5.266	5.258	0.0080.02	40.22	1.5	170.1	0.766E-04
3	Pu242	0.026	4.891	4.813	0.0782.09	2.44	27.6	10.2	0.460E-05
	Np237		4.769	4.813	-.044			11.7	0.528E-05

Totals: 0.985 <--valid peaks only--> 91.41

DETECTOR CALIBRATION

Energy (MEV) = 4.092 + (0.0046)*Channel
 Energy range (MeV): 4.092 TO 6.447
 Efficiency = 0.2388 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	44536.0	100.000
Smoothed	44538.1	100.005
Composite fit	43882.0	98.532
Residuals	654.0	1.468

Analyzed by: MB

[illegible]

Raw Data Dump for AEA Spectrum: 9a9066.CNF										
1	0.	0.	2.	0.	5.	6.	0.	4.	1.	1.
11	1.	7.	1.	5.	0.	4.	2.	2.	3.	2.
21	0.	3.	3.	4.	5.	4.	1.	1.	1.	1.
31	2.	1.	2.	0.	2.	0.	1.	4.	0.	3.
41	7.	3.	2.	1.	4.	4.	2.	2.	1.	1.
51	4.	5.	3.	3.	1.	3.	6.	3.	1.	2.
61	3.	6.	2.	6.	5.	5.	2.	5.	4.	3.
71	0.	3.	4.	4.	4.	6.	4.	2.	3.	5.
81	4.	5.	4.	3.	7.	1.	8.	6.	3.	2.
91	1.	5.	5.	4.	3.	9.	4.	5.	9.	7.
101	8.	6.	6.	3.	5.	3.	5.	11.	4.	7.
111	9.	3.	3.	5.	4.	5.	5.	5.	2.	6.
121	5.	13.	8.	9.	8.	5.	13.	8.	15.	6.
131	10.	7.	13.	6.	9.	13.	9.	12.	11.	10.
141	9.	11.	9.	12.	12.	15.	10.	18.	17.	10.
151	14.	13.	13.	18.	12.	14.	18.	18.	13.	16.
161	13.	14.	16.	15.	23.	15.	12.	11.	33.	22.
171	24.	19.	26.	22.	19.	20.	30.	28.	34.	28.
181	25.	34.	30.	39.	44.	30.	25.	36.	46.	43.
191	39.	36.	40.	52.	59.	49.	55.	61.	75.	41.
201	56.	70.	52.	69.	81.	86.	78.	91.	82.	110.
211	88.	115.	107.	115.	134.	138.	118.	144.	156.	130.
221	160.	182.	184.	183.	182.	218.	204.	232.	258.	263.
231	273.	270.	309.	337.	340.	337.	401.	408.	455.	450.
241	459.	496.	574.	617.	616.	658.	672.	728.	726.	720.
251	826.	843.	943.	990.	941.	830.	606.	390.	243.	194.
261	190.	175.	184.	189.	217.	210.	212.	198.	235.	206.
271	212.	237.	228.	235.	254.	253.	255.	295.	308.	362.
281	380.	372.	384.	425.	458.	499.	506.	553.	540.	636.
291	733.	705.	738.	732.	814.	824.	831.	882.	935.	985.
301	971.	858.	644.	397.	258.	180.	167.	140.	129.	95.
311	61.	50.	36.	25.	12.	7.	1.	2.	0.	0.
321	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	1.	1.	0.	0.	0.	0.	2.	0.	1.
351	0.	0.	1.	0.	0.	1.	1.	0.	0.	0.
361	0.	1.	0.	1.	0.	0.	0.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL22191-BLNK
 File ID: 10a1065.CNF

Counted on: 2/ 7/98 @ 3:23
 Detector: AEA10
 Geometry number: 1
 Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	325.6	325.6	246.621	246.282	28.000	25.020	14.000	1.922

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu239	0.985	5.147	5.224	-0.0770.12	40.55	1.4	168.3	0.758E-04
	Am243		5.266	5.224	0.042			170.0	0.766E-04
Totals:			0.985	<--valid peaks only-->			40.55		

DETECTOR CALIBRATION

Energy (MEV) = 4.091 + (0.0046)*Channel
 Energy range (MeV): 4.091 TO 6.446
 Efficiency = 0.2409 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19763.0	100.000
Smoothed	19765.7	100.014
Composite fit	19463.4	98.484
Residuals	299.6	1.516

Analyzed by: _____

MB

[illegible]

Raw	Data	Dump	for	AEA	Spectrum:	10a1065.CNF	HNF-SD-WM-DP-294	REV. 0		
1	0.	0.	8.	10.	8.	3.	8.	7.	4.	10.
11	7.	5.	7.	6.	5.	16.	8.	11.	6.	7.
21	10.	9.	4.	7.	11.	8.	10.	12.	5.	7.
31	7.	8.	6.	7.	11.	12.	9.	16.	6.	17.
41	6.	9.	7.	9.	9.	18.	9.	12.	10.	11.
51	9.	12.	10.	12.	15.	15.	9.	8.	14.	11.
61	15.	8.	14.	15.	14.	9.	6.	10.	6.	8.
71	10.	15.	16.	9.	11.	12.	14.	25.	13.	16.
81	10.	21.	15.	13.	21.	11.	14.	20.	16.	18.
91	14.	18.	18.	17.	18.	24.	18.	15.	19.	14.
101	13.	24.	19.	16.	18.	29.	19.	20.	19.	35.
111	23.	19.	20.	28.	27.	25.	25.	30.	29.	23.
121	25.	33.	31.	24.	24.	22.	31.	35.	22.	23.
131	30.	35.	30.	30.	33.	38.	29.	32.	35.	26.
141	29.	35.	24.	34.	40.	47.	36.	51.	39.	44.
151	38.	42.	29.	43.	38.	45.	48.	59.	49.	55.
161	56.	48.	46.	53.	50.	56.	64.	68.	60.	59.
171	63.	48.	64.	75.	55.	67.	59.	63.	82.	76.
181	71.	85.	92.	80.	88.	96.	69.	102.	105.	84.
191	104.	100.	98.	111.	100.	105.	111.	112.	110.	109.
201	144.	120.	119.	137.	148.	146.	156.	148.	148.	151.
211	152.	144.	166.	174.	177.	191.	207.	202.	200.	176.
221	184.	217.	223.	191.	207.	209.	248.	254.	257.	260.
231	246.	266.	282.	297.	311.	287.	297.	299.	306.	265.
241	316.	322.	331.	301.	319.	340.	342.	310.	299.	329.
251	297.	223.	298.	255.	262.	204.	128.	88.	57.	30.
261	31.	29.	26.	26.	19.	17.	10.	17.	10.	11.
271	3.	4.	2.	4.	3.	0.	3.	2.	4.	2.
281	0.	1.	3.	2.	2.	3.	3.	3.	1.	5.
291	3.	1.	0.	0.	1.	3.	0.	1.	0.	0.
301	0.	0.	1.	2.	1.	0.	0.	0.	0.	0.
311	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	1.	1.	0.	0.	1.	0.
351	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
361	2.	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.	1.	1.	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	1.	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 Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S98T376-SAM
 File ID: 11a1168.CNF

Counted on: 2/ 7/98 @ 3:23
 Detector: AEAll
 Geometry number: 1
 Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	13.7	13.7	302.699	302.699	16.000	5.958	8.000	1.454
2	897.1	897.1	255.885	255.884	10.000	4.113	5.000	0.948

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count	%err	Activity
			Exp.	Obs. Diff.	FWHM	Rate c/m @95	d/m uCi/ea
1	Pu238	0.014	5.487	5.485	0.0020.03	0.61 11.4	3.6 0.160E-05
	Am241		5.479	5.485	-0.006		2.7 0.123E-05
2	Am243	0.900	5.266	5.270	-0.0040.02	39.31 1.4	166.5 0.750E-04
Totals:		0.914	<--valid peaks only-->			39.92	

DETECTOR CALIBRATION

Energy (MEV) = $4.093 + (0.0046) \times \text{Channel}$
 Energy range (MeV): 4.093 TO 6.448
 Efficiency = 0.2385 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20973.0	100.000
Smoothed	20973.8	100.004
Composite fit	19159.9	91.355
Residuals	1813.1	8.645

Analyzed by: _____

MB

The image displays a fractal-like pattern of dots and numbers. The pattern is composed of dots, with some dots replaced by the number 1 or 2. The structure is self-similar, with the number 2 appearing in the upper right and lower right sections, and the number 1 appearing in the lower left section. The pattern is formed by a sequence of dots, with the number 2 appearing at specific positions and the number 1 appearing at other positions. The pattern is a Sierpinski triangle, which is a fractal that is self-similar and has a non-integer dimension. The pattern is composed of dots, with some dots replaced by the number 1 or 2. The structure is self-similar, with the number 2 appearing in the upper right and lower right sections, and the number 1 appearing in the lower left section.

Raw Data	Dump	for AEA Spectrum:	11a1168.CNF	HNF-SD-WM-DP-294 REV.0
1	0.	0.	2.	2.
11	1.	0.	0.	0.
21	1.	2.	0.	0.
31	3.	2.	0.	0.
41	2.	2.	1.	3.
51	0.	1.	0.	3.
61	2.	3.	2.	0.
71	3.	2.	1.	0.
81	2.	0.	2.	4.
91	4.	2.	3.	0.
101	5.	2.	3.	1.
111	1.	4.	7.	2.
121	3.	5.	2.	4.
131	8.	9.	5.	9.
141	5.	6.	6.	4.
151	7.	9.	7.	7.
161	10.	7.	10.	16.
171	14.	15.	20.	8.
181	18.	18.	19.	15.
191	35.	32.	26.	25.
201	49.	47.	50.	35.
211	60.	92.	65.	81.
221	147.	129.	141.	147.
231	217.	238.	229.	241.
241	390.	388.	415.	479.
251	677.	673.	755.	833.
261	146.	77.	89.	73.
271	34.	22.	20.	12.
281	4.	0.	5.	4.
291	7.	7.	9.	3.
301	13.	20.	12.	15.
311	1.	1.	3.	1.
321	0.	0.	0.	1.
331	0.	0.	0.	0.
341	0.	0.	0.	0.
351	0.	0.	0.	0.
361	0.	0.	0.	0.
371	0.	0.	1.	1.
381	0.	0.	0.	0.
391	0.	0.	0.	0.
401	0.	0.	0.	0.
411	0.	0.	0.	0.
421	0.	0.	0.	0.
431	0.	0.	0.	0.
441	0.	0.	0.	0.
451	0.	0.	0.	0.
461	0.	0.	0.	0.
471	0.	0.	0.	0.
481	0.	0.	0.	0.
491	0.	0.	0.	0.
511	0.	0.	0.	0.

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 SS98T376-DUP
 File ID: 12a1255.CNF

Counted on: 2/ 7/98 @ 3:23
 Detector: AEA12
 Geometry number: 1
 Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	11.5	11.5	296.230	296.230	14.000	6.393	7.000	1.082
2	802.5	802.5	251.598	251.596	10.000	4.499	5.000	0.942

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu238 Am241	0.015	5.487	5.477	0.0100.03	0.67	10.9	4.1	0.183E-05
2	Am243	0.870	5.479	5.477	0.002	38.16	1.5	3.1	0.140E-05
Totals:			0.885	<--valid peaks only-->			38.83		

DETECTOR CALIBRATION

Energy(MEV) = 4.085 + (0.0047)*Channel
 Energy range (MeV): 4.085 TO 6.491
 Efficiency = 0.2286 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21056.0	100.000
Smoothed	21060.5	100.021
Composite fit	18642.4	88.537
Residuals	2413.6	11.463

Analyzed by:

MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5363.5

[illegible]

Raw	Data	Dump	for	AEA	Spectrum:	12a1255.CNF	HNF-SD-WM-DP-294	REV. 0
1	0.	0.	4.	3.	3.	1.	1.	0.
11	5.	1.	3.	0.	3.	3.	1.	2.
21	2.	3.	2.	1.	2.	0.	1.	3.
31	0.	2.	3.	4.	5.	3.	2.	5.
41	1.	0.	2.	6.	2.	3.	2.	5.
51	1.	2.	2.	6.	5.	3.	2.	4.
61	2.	0.	2.	3.	1.	2.	3.	5.
71	4.	3.	1.	2.	2.	1.	7.	3.
81	4.	1.	6.	2.	4.	7.	3.	5.
91	4.	6.	11.	5.	3.	4.	7.	6.
101	5.	2.	7.	5.	3.	8.	8.	6.
111	6.	6.	10.	5.	7.	11.	3.	6.
121	6.	11.	8.	8.	4.	11.	9.	13.
131	11.	5.	13.	12.	11.	13.	3.	8.
141	7.	16.	12.	18.	8.	11.	13.	7.
151	12.	14.	17.	19.	14.	20.	15.	13.
161	18.	24.	19.	14.	23.	18.	20.	17.
171	20.	19.	23.	31.	23.	26.	20.	26.
181	42.	31.	34.	45.	45.	40.	37.	49.
191	47.	45.	60.	50.	42.	60.	57.	63.
201	79.	61.	76.	64.	90.	95.	102.	95.
211	112.	105.	105.	115.	137.	130.	135.	145.
221	185.	176.	179.	187.	177.	208.	223.	266.
231	254.	299.	296.	346.	329.	368.	365.	392.
241	468.	507.	510.	554.	540.	626.	583.	667.
251	825.	906.	901.	731.	450.	250.	132.	94.
261	56.	47.	46.	41.	45.	32.	39.	20.
271	7.	4.	4.	4.	4.	4.	3.	3.
281	4.	3.	7.	8.	12.	7.	8.	2.
291	12.	9.	9.	10.	11.	14.	13.	10.
301	3.	2.	4.	3.	1.	1.	0.	2.
311	0.	1.	0.	0.	0.	0.	1.	0.
321	0.	1.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.
341	0.	0.	0.	0.	0.	0.	1.	0.
351	1.	2.	0.	0.	0.	0.	1.	0.
361	0.	0.	0.	0.	1.	0.	2.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.						

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S98T377-SAM
File ID: 21a2147.CNF

Counted on: 2/ 7/98 @ 3:24
Detector: AEA21
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	411.4	411.4	251.566	251.566	14.000	7.165	7.000	0.473
2?	0.0	0.1	123.273	123.273	0.000	0.100	0.000	0.100
3?	0.0	0.1	110.279	110.279	0.000	0.100	0.000	0.100
4?	0.0	0.1	103.617	103.617	0.000	0.100	0.000	0.100
5?	0.0	0.1	98.746	98.746	0.000	0.100	0.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs. Diff.	FWHM	Count Rate c/m	%err @95	Activity d/m uCi/ea
1	Am243	1.289	5.266	5.258	0.0080.03	52.22	1.2	220.3 0.992E-04
2		????		4.668		0.00	*****	
3		????		4.608		0.00	*****	
4		????		4.578		0.00	*****	
5		????		4.555		0.00	*****	
Totals:		1.289	<--valid peaks only-->			52.22		

DETECTOR CALIBRATION

Energy(MEV) = 4.101 + (0.0046)*Channel
Energy range (MeV): 4.101 TO 6.456
Efficiency = 0.2394 CPM/DPM
(Data reduction compression factor: 1.)

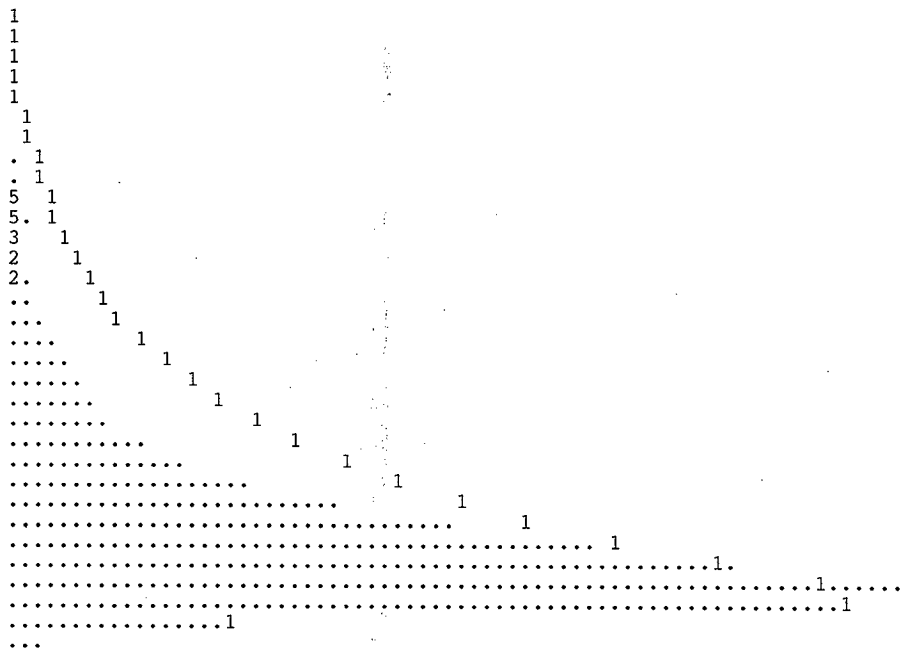
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19452.0	100.000
Smoothed	19456.1	100.021
Composite fit	25071.1	128.887
Residuals	-5619.1	-28.887

Analyzed by:

MB

Display Max.: 3138.6



Raw	Data	Dump	for	ABA	Spectrum:	21a2147.CNF				
1	0.	0.		5.	4.	3.	2.	4.	3.	5.
11	6.	4.		8.	3.	7.	6.	2.	3.	4.
21	8.	5.		7.	4.	6.	4.	4.	2.	4.
31	1.	8.		4.	5.	5.	6.	4.	4.	1.
41	4.	2.		5.	7.	3.	9.	3.	4.	4.
51	4.	7.		5.	4.	6.	6.	4.	4.	7.
61	3.	7.		5.	4.	5.	5.	5.	4.	8.
71	5.	6.		4.	8.	5.	5.	6.	7.	7.
81	11.	4.	11.	3.	11.	11.	5.	13.	14.	11.
91	9.	13.	9.	7.	12.	6.	13.	8.	15.	12.
101	6.	11.	15.	14.	15.	9.	7.	9.	11.	13.
111	10.	14.	7.	9.	11.	8.	13.	9.	12.	14.
121	15.	14.	16.	17.	14.	10.	16.	11.	16.	10.
131	17.	11.	17.	16.	19.	13.	14.	17.	20.	14.
141	28.	20.	21.	25.	23.	23.	17.	24.	28.	23.
151	25.	24.	28.	30.	33.	28.	40.	34.	33.	30.
161	30.	40.	35.	37.	36.	39.	39.	40.	46.	42.
171	34.	45.	50.	33.	45.	50.	48.	53.	40.	53.
181	58.	41.	54.	51.	56.	63.	62.	64.	57.	68.
191	72.	91.	72.	64.	89.	85.	84.	83.	91.	106.
201	108.	116.	102.	112.	116.	116.	121.	136.	122.	146.
211	152.	142.	183.	166.	143.	162.	184.	186.	190.	208.
221	183.	219.	227.	257.	244.	232.	246.	271.	266.	285.
231	304.	304.	294.	286.	337.	346.	342.	338.	340.	335.
241	382.	367.	431.	425.	414.	428.	399.	384.	385.	380.
251	379.	452.	416.	382.	373.	285.	152.	77.	57.	42.
261	30.	34.	27.	20.	29.	28.	21.	14.	15.	12.
271	8.	8.	3.	3.	5.	2.	2.	4.	10.	2.
281	5.	5.	5.	1.	9.	3.	6.	0.	5.	6.
291	2.	7.	3.	8.	3.	1.	5.	5.	6.	7.
301	6.	5.	2.	2.	2.	2.	1.	2.	0.	1.
311	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	2.	0.	0.	1.	0.	0.
351	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
361	1.	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.	1.	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 Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S98T377-DUP
 File ID: 22a2235.CNF

Counted on: 2/ 7/98 @ 3:24
 Detector: AEA22
 Geometry number: 1
 Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	474.3	474.3	251.733	251.733	14.000	7.247	7.000	0.630
2?	0.0	0.1	115.795	115.795	0.000	0.100	0.000	0.100
3?	0.0	0.1	102.587	102.587	0.000	0.100	0.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID Isotope AEA Frag Exp. Peak Centroid Obs. Diff. FWHM Rate c/m @95 Count %err d/m Activity uCi/ea

1	Am243	1.137	5.266	5.249	0.0170.03	47.73	1.3	199.4	0.898E-04
2		????		4.624		0.00	*****		
3		????		4.563		0.00	*****		
Totals:		1.137	<--valid peaks only-->				47.73		

Handwritten notes: 41.78 gm 97e98, 1.00, JFR 9 Feb 98

DETECTOR CALIBRATION

Energy(MEV) = 4.091 + (0.0046)*Channel
 Energy range (MeV): 4.091 TO 6.446
 Efficiency = 0.2418 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20157.0	100.000
Smoothed	20159.7	100.013
Composite fit	22915.7	113.686
Residuals	-2758.7	-13.686

Analyzed by: _____

MB

[illegible]

Raw Data Dump for AEA Spectrum: 22a2235.CNF

1	0.	0.	2.	1.	2.	0.	1.	0.	3.	2.
11	3.	2.	3.	1.	2.	4.	1.	0.	4.	4.
21	3.	2.	5.	1.	3.	3.	1.	4.	3.	3.
31	4.	5.	0.	4.	5.	4.	6.	4.	6.	4.
41	2.	0.	3.	5.	2.	3.	4.	3.	9.	2.
51	6.	5.	2.	3.	5.	5.	4.	11.	5.	5.
61	5.	8.	5.	4.	3.	7.	6.	7.	2.	8.
71	7.	7.	4.	6.	3.	4.	7.	7.	9.	2.
81	5.	8.	6.	7.	4.	4.	6.	8.	10.	6.
91	7.	2.	5.	9.	3.	12.	4.	6.	10.	10.
101	10.	7.	13.	11.	7.	6.	7.	8.	7.	8.
111	12.	14.	8.	9.	18.	12.	14.	9.	12.	10.
121	10.	17.	15.	9.	10.	8.	21.	18.	21.	12.
131	14.	19.	16.	13.	11.	16.	15.	17.	19.	20.
141	11.	24.	15.	16.	16.	20.	18.	16.	25.	24.
151	21.	20.	23.	30.	20.	20.	29.	27.	31.	20.
161	30.	27.	25.	25.	36.	37.	31.	44.	33.	43.
171	42.	40.	45.	38.	29.	39.	63.	54.	40.	46.
181	56.	45.	51.	60.	58.	61.	64.	63.	55.	69.
191	82.	69.	86.	81.	56.	85.	86.	97.	81.	86.
201	100.	94.	107.	121.	101.	122.	136.	105.	113.	138.
211	151.	136.	164.	186.	146.	167.	169.	179.	172.	175.
221	230.	209.	218.	240.	252.	268.	221.	264.	275.	277.
231	297.	295.	352.	308.	385.	333.	362.	372.	350.	380.
241	419.	421.	421.	427.	409.	439.	466.	441.	503.	472.
251	425.	490.	508.	469.	424.	312.	207.	127.	66.	48.
261	42.	35.	32.	29.	32.	31.	26.	27.	23.	13.
271	9.	9.	3.	6.	6.	4.	6.	3.	3.	1.
281	3.	5.	5.	1.	5.	3.	3.	4.	7.	9.
291	9.	3.	4.	9.	5.	3.	10.	5.	1.	3.
301	7.	7.	2.	0.	1.	3.	1.	0.	0.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	1.	0.	0.	1.	0.	0.	0.	0.	1.
341	0.	0.	1.	0.	1.	0.	1.	0.	0.	1.
351	0.	0.	0.	1.	0.	0.	1.	0.	0.	1.
361	0.	0.	0.	0.	0.	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S98T378-SAM
File ID: 23a2328.CNF

Counted on: 2/ 7/98 @ 3:24
Detector: AEA23
Geometry number: 1
Count time: 28808. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	388.4	388.4	252.107	252.107	26.000	9.134	13.000	13.420
2	311.0	311.0	247.100	247.100	18.000	0.087	9.000	0.005
3?	0.0	0.1	151.218	151.218	0.000	0.100	0.000	0.100
4?	0.0	0.1	120.050	120.050	0.000	0.100	0.000	0.100
5?	0.0	0.1	79.926	79.926	0.000	0.100	0.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

1.00

42.58

Peak ID	Isotope	AEA	Peak Centroid	Count	%err	d/m	Activity
1	Am243	Frac Exp.	Obs. Diff.	FWHM	Rate cpm	@95	uCi/ea
1	Am243	0.824	5.266	5.254	0.0120.04	14.68	2.6
2		0.975	5.231	0.00	41.55	1.4	162.1
3		????	4.790	0.00	*****		0.207E-04
4		????	4.647	0.00	*****		0.730E-04
5		????	4.462	0.00	*****		

Totals: 1.250 <--valid peaks only--> 53.23

DETECTOR CALIBRATION

Energy (MEV) = 4.095 + (0.0046)*Channel
Energy range (MeV): 4.095 TO 6.450
Efficiency = 0.2563 CPM/DPM
(Data reduction compression factor: 1.)

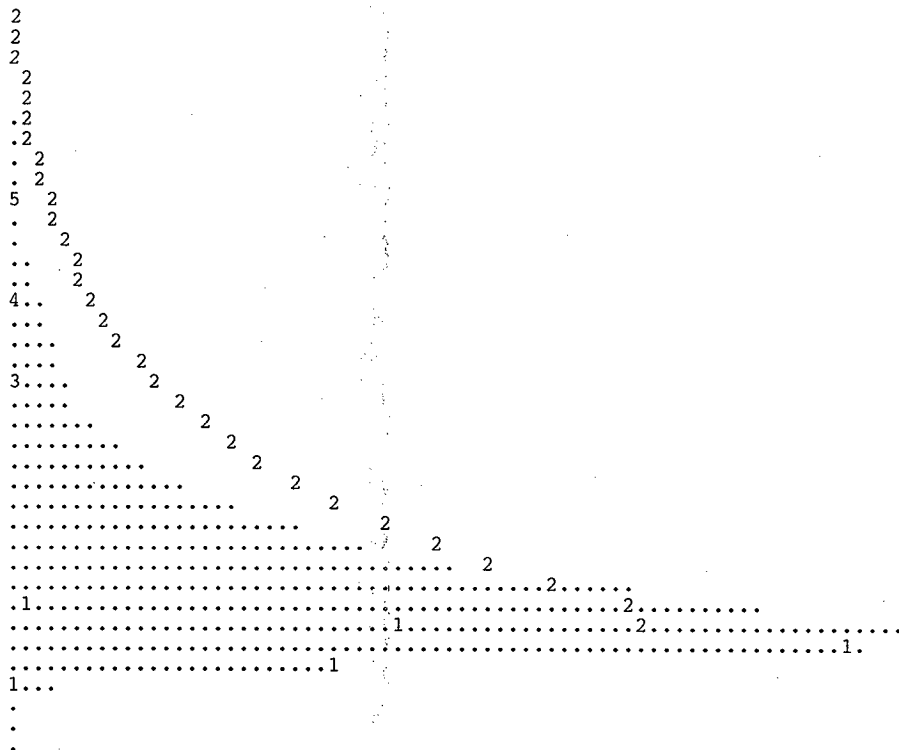
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20454.0	100.000
Smoothed	20454.8	100.004
Composite fit	25558.7	124.957
Residuals	-5104.7	-24.957

Analyzed by:

MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 3007.0



Raw Data Dump for AEA Spectrum: 23a2328.CNF										
1	0.	0.	4.	5.	4.	10.	6.	6.	8.	4.
11	5.	6.	5.	4.	3.	2.	4.	7.	1.	4.
21	11.	5.	4.	4.	7.	3.	6.	4.	4.	4.
31	4.	3.	3.	0.	9.	5.	9.	5.	3.	6.
41	4.	9.	10.	2.	3.	10.	12.	9.	7.	5.
51	9.	7.	5.	15.	4.	6.	3.	5.	7.	5.
61	4.	4.	11.	1.	2.	8.	15.	9.	9.	12.
71	6.	9.	6.	6.	8.	4.	12.	13.	7.	12.
81	10.	11.	5.	12.	6.	5.	8.	8.	8.	11.
91	9.	14.	9.	10.	9.	8.	11.	17.	14.	14.
101	10.	13.	15.	15.	13.	10.	21.	17.	13.	18.
111	11.	20.	16.	18.	9.	17.	16.	19.	17.	20.
121	17.	20.	11.	19.	20.	16.	9.	15.	17.	22.
131	25.	22.	30.	16.	22.	26.	30.	14.	33.	26.
141	27.	26.	28.	31.	27.	29.	26.	37.	27.	30.
151	37.	32.	35.	22.	26.	36.	30.	32.	32.	41.
161	46.	29.	48.	45.	44.	44.	33.	47.	40.	52.
171	44.	65.	42.	44.	63.	58.	60.	68.	60.	59.
181	55.	69.	80.	64.	71.	75.	76.	66.	73.	75.
191	80.	101.	92.	105.	84.	99.	112.	100.	103.	104.
201	97.	105.	128.	143.	140.	138.	142.	149.	136.	143.
211	151.	141.	145.	166.	186.	187.	187.	180.	168.	197.
221	181.	202.	206.	241.	254.	270.	274.	252.	267.	293.
231	305.	281.	297.	307.	316.	303.	337.	326.	344.	378.
241	356.	371.	401.	389.	375.	373.	404.	395.	401.	332.
251	342.	387.	402.	370.	363.	283.	262.	191.	134.	86.
261	54.	27.	29.	33.	28.	16.	24.	21.	18.	8.
271	15.	7.	8.	8.	0.	6.	2.	4.	4.	3.
281	6.	7.	5.	5.	8.	12.	6.	3.	3.	4.
291	8.	9.	11.	8.	10.	5.	8.	3.	11.	7.
301	2.	2.	3.	2.	0.	2.	0.	4.	1.	0.
311	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
331	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
341	0.	0.	0.	0.	1.	0.	0.	0.	0.	2.
351	2.	1.	0.	1.	0.	0.	0.	0.	0.	1.
361	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	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.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S98T378-DUP
 File ID: 24a2427.CNF

Counted on: 2/ 7/98 @ 3:25
 Detector: AEA24
 Geometry number: 1
 Count time: 28806. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	402.2	402.2	249.358	249.358	26.000	12.197	13.000	1.055
2?	1.9	1.9	103.977	102.337	6.000	1.179	3.000	0.531

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count	%err	Activity
		Exp.	Obs.	Diff.	FWHM	Rate c/m @95	d/m uCi/ea
1	Pu239	1.013	5.147	5.240	-0.0930.06	42.40 1.4	176.6 0.796E-04
	Am243	5.266	5.240	0.026			178.4 0.804E-04
2	????	4.564			0.04 226.		
Totals:		1.013	<--valid peaks only-->			42.40	

DETECTOR CALIBRATION

Energy(MEV) = 4.093 + (0.0046)*Channel
 Energy range (MeV): 4.093 TO 6.449
 Efficiency = 0.2401 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20090.0	100.000
Smoothed	20097.0	100.035
Composite fit	20379.3	101.440
Residuals	-289.3	-1.440

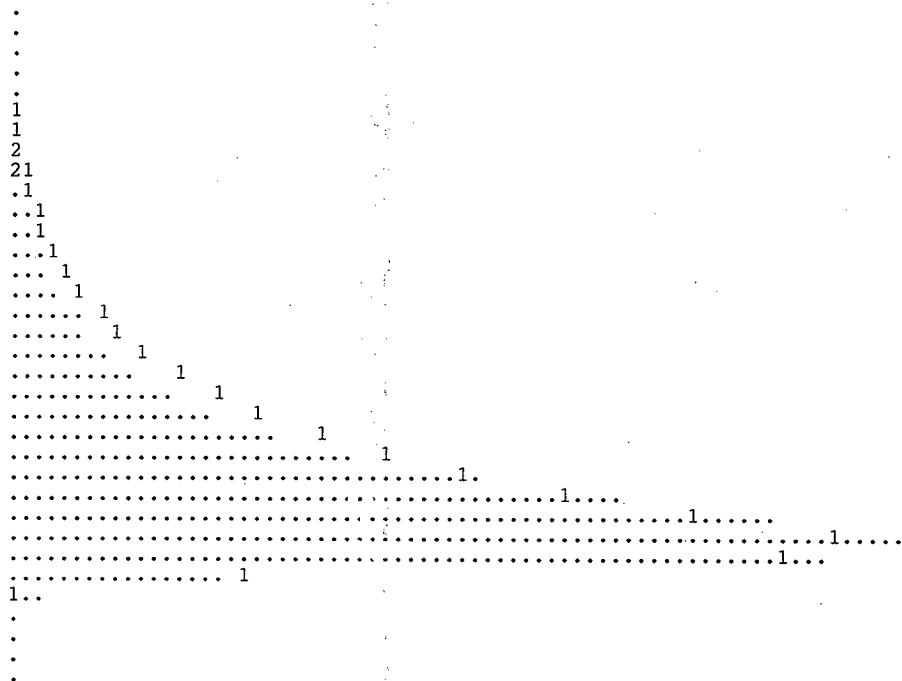
Analyzed by:

MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.:

3106.6



Raw Data	Dump	for AEA	Spectrum:	24a2427.CNF					
1	0.	0.	9.	5.	6.	4.	5.	4.	8.
11	3.	1.	1.	7.	4.	3.	4.	0.	4.
21	4.	5.	2.	6.	4.	4.	5.	9.	5.
31	3.	5.	8.	6.	9.	9.	7.	7.	5.
41	3.	9.	10.	5.	10.	6.	6.	6.	10.
51	3.	9.	5.	10.	3.	2.	7.	3.	8.
61	9.	7.	8.	8.	5.	9.	8.	10.	9.
71	9.	9.	5.	7.	8.	6.	8.	11.	10.
81	6.	5.	9.	6.	8.	8.	8.	12.	5.
91	11.	4.	10.	13.	12.	14.	16.	6.	14.
101	14.	17.	12.	15.	15.	13.	16.	9.	7.
111	12.	14.	12.	13.	9.	16.	14.	12.	13.
121	14.	13.	12.	20.	17.	15.	17.	16.	20.
131	14.	13.	32.	18.	19.	30.	17.	20.	23.
141	27.	23.	21.	25.	32.	26.	23.	30.	25.
151	19.	27.	43.	35.	31.	38.	27.	34.	33.
161	42.	37.	40.	27.	38.	44.	38.	36.	48.
171	46.	31.	44.	48.	49.	57.	47.	56.	53.
181	72.	62.	65.	55.	74.	70.	63.	68.	81.
191	76.	90.	82.	86.	95.	114.	93.	84.	93.
201	101.	102.	111.	141.	142.	140.	137.	115.	140.
211	153.	151.	169.	181.	163.	170.	162.	198.	234.
221	214.	222.	225.	219.	251.	257.	268.	260.	286.
231	309.	305.	291.	300.	318.	350.	354.	391.	369.
241	354.	390.	389.	420.	447.	372.	385.	376.	386.
251	402.	380.	360.	384.	318.	227.	138.	68.	52.
261	50.	29.	34.	24.	32.	15.	18.	9.	15.
271	8.	12.	3.	4.	5.	8.	5.	6.	2.
281	6.	6.	4.	7.	5.	2.	9.	8.	9.
291	10.	4.	5.	4.	11.	10.	7.	8.	9.
301	3.	7.	1.	2.	4.	2.	1.	1.	0.
311	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	1.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	0.
341	0.	0.	1.	1.	1.	1.	0.	1.	1.
351	1.	0.	0.	0.	0.	0.	0.	1.	0.
361	0.	0.	2.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0)

LIQUID

STD

Type	Date Counted	FEB-07-98	Am 241 AEA Frac. (C241)	0.526	
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.434	
Worklist	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
22191	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	3453	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.13	
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	48.76	
LIQUID	Detector Number	15	Am 243 cpm	40.22	
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0	
98000488	Standard Book No	75B56	AEA Count Time (min)	480	
ReRun	Standard Value in $\mu\text{Ci/mL}$	1.030E-04	Am 241 $\mu\text{Ci/L}$ =	1.1290E-01	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 1.2872E-02	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
WL22191	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SEH					
Chemist					
JFR	Am 241 $\mu\text{Ci/mL}$ =	1.13E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	1.9%			
JMV					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
02/09/98	Cm 243/244 $\mu\text{Ci/mL}$	< 1.29E-05	Am 241	1.29E-05	
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244		
02/06/98	Am 243 Tracer Recovery =	83.4%	1.29E-05		
Analysis Time					
02:45 PM					
Sample Point					
S-302 GRAB1					

Analyst:	JMV	Date:	02/09/98
Signature of Chemist:	JFR	Date:	7 Feb 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

BLNK

Type	Date Counted	FEB-07-98	Am 241 AEA Frac. (C241)	0
BLNK	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.985
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
22191	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1592
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0
LIQUID	Detector Number	15	Am 243 cpm	40.55
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
98000488			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 5.4273E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 5.4273E-03
Sample Prep				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
WL22191	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By	NOTE: Am-241 Result is a LESS THAN Value.			
SEH	JFR	Am 241 $\mu\text{Ci/mL}$ =	< 5.43E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$
Chemist	Analyst	Relative Counting Error =	100.0%	
JMV				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
02/09/98	Cm 243/244 $\mu\text{Ci/mL}$	< 5.43E-06	Am 241	5.43E-06
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	5.43E-06
02/06/98	Am 243 Tracer Recovery =	87.1%		
Analysis Time				
02:45 PM				
Sample Point				
S-302 GRAB1				

Analyst:	JMV	Date:	02/09/98
Signature of Chemist:	JFR	Date:	9 Feb 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	FEB-07-98	Am 241 AEA Frac. (C241)	0.014
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.9
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
22191	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1776
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0.61
LIQUID	Detector Number	15	Am 243 cpm	39.31
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
98000488			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 5.8259E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 5.8259E-03
Sample Prep				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S98T000376	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code				
WB26872	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))]* 1.96 * 100			
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
SEH				
Chemist	NOTE: Am-241 Result is a LESS THAN Value.			
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 5.83E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	11.5%		
JMV				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
02/09/98	Cm 243/244 $\mu\text{Ci/mL}$	< 5.83E-06	Am 241	5.83E-06
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	
02/06/98	Am 243 Tracer Recovery =	88.8%		5.83E-06
Analysis Time				
02:45 PM				
Sample Point				
S-302 GRAB1				

Analyst:	JMV	Date:	02/09/98
Signature of Chemist:	JFR	Date:	10 Feb 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

DUP

Type	Date Counted	FEB-07-98	Am 241 AEA Frac. (C241)	0.015
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.87
Work Lists	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
22191	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1592
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0.67
LIQUID	Detector Number	15	Am 243 cpm	38.16
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
98000488			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 6.9570E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 6.9570E-03
Sample Prep				
N/A				
Sample Number	Am 241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S98T000376	Cm 243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code				
WB26872	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min)))] * 1.96 * 100			
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
SEH				
Chemist	NOTE: Am-241 Result is a LESS THAN Value.			
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 6.96E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	11.0%		
JMV				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241	
02/09/98	Cm 243/244 $\mu\text{Ci/mL}$	< 6.96E-06	6.96E-06	
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	
02/06/98	Am 243 Tracer Recovery =	77.0%	6.96E-06	
Analysis Time				
02:45 PM				
Sample Point				
S-302 GRAB1				

Analyst:	JMV	Date:	02/09/98
Signature of Chemist:	JFR	Date:	9 Feb 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

SAMPLE

Type	Date Counted	FEB-07-98	Am 241 AEA Frac. (C241)	0
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	1
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
22191	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1528
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0
LIQUID	Detector Number	15	Am 243 cpm	40.51
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
98000488			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 5.4869E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 5.4869E-03
Sample/Prop				
N/A				
Sample Number	Am 241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S987000377	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By	NOTE: Am-241 Result is a LESS THAN Value.			
SEH	JFR	Am 241 $\mu\text{Ci/mL}$ =	< 5.49E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$
Analyst	JMV	Relative Counting Error =	100.0%	
Date Complete		NOTE: Cm-243/244 Result is a LESS THAN Value.		
02/09/98		Cm 243/244 $\mu\text{Ci/mL}$	< 5.49E-06	Am 241
Analysis Date		Relative Counting Error =	100.0%	5.49E-06
02/06/98		Am 243 Tracer Recovery =	84.9%	Cm 243/244
Analysis Time				5.49E-06
02:45 PM				
Sample Point				
S-302 GRAB1				

Analyst:	JMV	Date:	02/09/98
Signature of Chemist:	JFR	Date:	9 Feb 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

DUP

Type:	Date Counted	FEB-07-98	Am 241 AEA Frac. (C241)	0
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	1
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
22191	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1453
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0
LIQUID	Detector Number	15	Am 243 cpm	41.98
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
98000488			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 5.7708E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 5.7708E-03
Sample Prep				
N/A				
Sample Number	Am 241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S98T000377	Cm 243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By	NOTE: Am-241 Result is a LESS THAN Value.			
SEH	JFR	Am 241 $\mu\text{Ci/mL}$ =	< 5.77E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$
Chemist	Analyst	Relative Counting Error =	100.0%	
JMV				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
02/09/98	Cm 243/244 $\mu\text{Ci/mL}$	< 5.77E-06	Am 241	5.77E-06
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	5.77E-06
02/06/98	Am 243 Tracer Recovery =	80.7%		
Analysis Time				
02:45 PM				
Sample Point				
S-302 GRAB1				

Analyst:	JMV	Date:	02/09/98
Signature of Chemist:	JFR	Date:	9 Feb 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

SAMPLE

Type	Date Counted	FEB-07-98	Am 241 AEA Frac. (C241)	0
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	1
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
22191	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1570
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0
LIQUID	Detector Number	15	Am 243 cpm	42.58
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
98000488			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 5.3397E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 5.3397E-03
Sample Prep				
N/A				

Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 $\mu\text{Ci/mL}$ = < 5.34E-06

Relative Counting Error = 100.0%

DETECTION
LEVELS
in $\mu\text{Ci/mL}$

NOTE: Cm-243/244 Result is a LESS THAN Value.

Cm 243/244 $\mu\text{Ci/mL}$ = < 5.34E-06

Relative Counting Error = 100.0%

Am 243 Tracer Recovery = 87.2%

Am 241

5.34E-06

Cm 243/244

5.34E-06

Analysis Time

02:45 PM

Sample Point

S-302 GRAB1

Analyst:	JMV	Date:	02/09/98
Signature of Chemist:	JFR	Date:	9 Feb 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

DUP

Type	Date Counted	FEB-07-98	Am 241 AEA Frac. (C241)	0
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	1.013
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
22191	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1594
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	140B43	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0
LIQUID	Detector Number	15	Am 243 cpm	42.4
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
98000488			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 5.1250E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 5.1250E-03
Sample Prep				
N/A				
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
S987000378	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
WB26872	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By	NOTE: Am-241 Result is a LESS THAN Value.			
SEH	Am 241 $\mu\text{Ci/mL}$ =	< 5.13E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Chemist	Analyst	Relative Counting Error =	100.0%	
JMV				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
02/09/98	Cm 243/244 $\mu\text{Ci/mL}$ =	< 5.13E-06	Am 241	
Analysis Date	Relative Counting Error =	100.0%	5.13E-06	
02/06/98	Am 243 Tracer Recovery =	89.7%	Cm 243/244	
Analysis Time			5.13E-06	
02:45 PM				
Sample Point				
S-302 GRAB1				

Analyst:	JMV	Date:	02/09/98
Signature of Chemist:	JFR	Date:	9 Feb 98
SAMPLE:WB1 REV 1.2	953103ML		

LABCORE Completed RadChem Report for Worklist#: 22193 → 22252

Analyst: jmv Instrument: AB14 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: @PU23901 (302-S-97-3 GRAB (DET SS LL) STD=1ML RTS

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@PU23901 PU23901	LIQUID	1.09E-04	9.54E-5	87.523	% Recovery
1 STD	0	@PU23901 PU23901E	LIQUID	1.00	1.85E+00	1.850	% Ct Error
1 STD	0	@PU23901 PU23901T	LIQUID	100	8.86E+01	88.600	% Recovery
2 BLNK	0	@PU23901 PU23901	LIQUID	1	<2.78E-6		uCi/mL
2 BLNK	0	@PU23901 PU23901T	LIQUID	100	9.67E+01	96.700	% Recovery
2 BLNK	0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S98T000376	0	@PU23901 PU23901	N/A	1.53E-05	310.0e-008	uCi/mL
3 SAMPLE	S98T000376	0	@PU23901 PU23901T	N/A	9.89E+01	0.0e+000	% Recovery
3 SAMPLE	S98T000376	0	@PU23901 PU23901E	N/A	3.46E+00	0.0e+000	% Ct Error
4 DUP	S98T000376	0	@PU23901 PU23901	LIQUID	1.53E-5	1.66E-5	8.150 RPD
4 DUP	S98T000376	0	@PU23901 PU23901T	LIQUID	100	1.03E+02	103.000 % Recovery
4 DUP	S98T000376	0	@PU23901 PU23901E	LIQUID	1.00	3.33E+00	3.330 % Ct Error
5 SAMPLE	S98T000377	0	@PU23901 PU23901	N/A	1.08E-05	294.0e-008	uCi/mL
5 SAMPLE	S98T000377	0	@PU23901 PU23901T	N/A	9.92E+01	0.0e+000	% Recovery
5 SAMPLE	S98T000377	0	@PU23901 PU23901E	N/A	4.12E+00	0.0e+000	% Ct Error
6 DUP	S98T000377	0	@PU23901 PU23901	LIQUID	1.08E-5	1.68E-5	43.478 RPD
6 DUP	S98T000377	0	@PU23901 PU23901T	LIQUID	100	7.32E+01	73.200 % Recovery
6 DUP	S98T000377	0	@PU23901 PU23901E	LIQUID	1.00	3.81E+00	3.810 % Ct Error
7 SAMPLE	S98T000378	0	@PU23901 PU23901	N/A	2.98E-05	395.0e-008	uCi/mL
7 SAMPLE	S98T000378	0	@PU23901 PU23901T	N/A	9.23E+01	0.0e+000	% Recovery
7 SAMPLE	S98T000378	0	@PU23901 PU23901E	N/A	2.73E+00	0.0e+000	% Ct Error
8 DUP	S98T000378	0	@PU23901 PU23901	LIQUID	2.98E-5	2.80E-5	6.228 RPD
8 DUP	S98T000378	0	@PU23901 PU23901T	LIQUID	100	9.95E+01	99.500 % Recovery
8 DUP	S98T000378	0	@PU23901 PU23901E	LIQUID	1.00	2.66E+00	2.660 % Ct Error

Final page for worklist# 22193

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Relyea
Reviewer Signature _____ Date 9 Feb 98

*Validates S98T376 and S98T378
Reject S98T377 for rerun
RPD too High (43%)*

LABCORE Data Entry Template for Worklist# 22193

Analyst: JmV Instrument: PU01 14 Book# 75856

Method: LA-953-104 Rev/Mod B-0

Worklist Comment: @PU23901 (302-S-97-3) GRAB(DET SS LL) STD 1.0ML RTS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S98T000376 0		@PU23901	LIQUID	98000081	S-302 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S98T000376 0		@PU23901	LIQUID		
5 SAMPLE	S98T000377 0		@PU23901	LIQUID	98000081	S-302 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
6 DUP	S98T000377 0		@PU23901	LIQUID		
7 SAMPLE	S98T000378 0		@PU23901	LIQUID	98000081	S-302 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
8 DUP	S98T000378 0		@PU23901	LIQUID		

Final page for worklist # 22193

JmV 2-6-98
Analyst Signature Date

J. Quinn 2/9/98
Analyst Signature Date
NEUGHT 2/9/98

Data Entry Comments:

Solids Bottom of Sample

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

HNF-SD-WM-DP-294 REV. 0

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)

LIQUID

			STD
Type	DATE COUNTED	FEB-07-98	Pu 236 AEA FRAC (C236) 0.459
STD	SAMPLE VOLUME in mL SS	1.000	Pu 238 AEA FRAC (C238) 0.000
Work Unit	SAMPLE DILUTION FACTOR DF	1.000	Pu 239 AEA FRAC (C239) 0.504
22193	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS 3268
Test Code	DIGEST DILUTION FACTOR DDF	1.000	AT COUNT TIME (MIN) 30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cp (Bkg) 0.670
Matrix	DETECTOR NUMBER	14	Pu 236 cpm 44.920
LIQUID	EFFICIENCY FACTOR EFF	0.291	Pu 238 cpm 0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm 49.280
98000490	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME 480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1928.093	Pu 239/240 µCi/L 9.5366E-02
0	PU-238 TRACER VALUE (dpm/m)	0.000	
Sample Prep	STANDARD BOOK NO	75B56	
N/A	STANDARD VALUE in µCi/mL	1.090E-04	
Sample #			
WL22193-STD			
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date		
WB27807	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]		
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C236*100/Pu-236 Decay Corr'd Value * SPKV		
CJO	Pu 239/240 µCi/L = (C239)/(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C238)(SS)(2220000 dpm/µCi)]		
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)		
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]		
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100		
JMV			
Date Complete	Pu 239/240 µCi/mL	9.54E-05	DETECTION LEVELS in µCi/mL Pu 239/240 6.41E-06
Analysis Date	Relative Counting Error	= 1.8%	
02/06/98			
Analysis Time			
03:00 PM			
Sample Count			
S-302 GRAB1	Pu 236 Tracer Recovery	= 88.6%	

Analyst:	JMV	Date:	09-Feb-98
Signature of Chemist:	JFR	Date:	9 Feb 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	FEB-07-98	PU 236 AEA FRAC (C236)	0.968
BLNK	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTO DF	1.000	PU 239 AEA FRAC (C239)	0.000
22193	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	1702
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND In cp (Bkg)	0.670
Matrix	DETECTOR NUMBER	14	PU 236 cpm	43.280
LIQUID	EFFICIENCY FACTOR EFF	0.2910	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	0.000
98000490	TRACER PREPARATION VALUE (dpm/mL)	2600.00	AEA COUNT TIME	480
Rerun:	PU-236 DECAY CORR'D VALUE (dpm/mL)	1928.09	Pu 239/240 μ Ci/L =	< 2.783E-03
0	PU-238 TRACER VALUE (dpm/	0.00		
Sample Prep				
N/A				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
WL22193-BLANK	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]			
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)			
WB27807	Pu 239/240 μ Ci/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/ μ Ci)]			
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
CJO	Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (D g/L) (SS)]			
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JFR				
Analyst				
JMV				
Date Complete				
02/09/98	Pu 239/240 μ Ci/mL < 2.78E-06		DETECTION LEVELS	
Analysis Date	Relative Counting Error = 100.0%		in μ Ci/mL	
02/06/98				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240	
03:00 PM	Pu 238 μ Ci/mL < 2.78E-06		2.78E-06	
Sample Point	Relative Counting Error = 100.0%		Pu 238	
S-302 GRAB1	Pu 236 Tracer Recovery = 96.7%		2.78E-06	

Analyst:	JMV	Date:	09-Feb-98
Signature of Chemist:	JFR	Date:	9 Feb 98
BLANK.WB1 REV 1.	943128ML		

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)

LIQUID /

SAMPLE

Type	DATE COUNTED	FEB-07-98	Pu 236 AEA FRAC (C236)	0.851	
SAMPLE	SAMPLE VOLUME in mL	SS 1.000	Pu 238 AEA FRAC (C238)	0.000	
WorkList	SAMPLE DILUTION FACTOR	DF 1.000	Pu 239 AEA FRAC (C239)	0.150	
22193	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	1976	
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30	
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.670	
Matrix	DETECTOR NUMBER	14	Pu 236 cpm	44.540	
LIQUID	EFFICIENCY FACTOR	EFF 0.291	Pu 238 cpm	0.000	
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	7.840	
98000490	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480	
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1928.093	Pu 239/240 μ Ci/L	1.5309E-02	
0	PU-238 TRACER VALUE (dpm/mL)	0.000			
Sample Prep					
N/A					
Sample #	Decay Time = Date Counted - Tracer Preparation Date				
S98T000376	Pu-236 Decay Cor'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) *C238*100/(Pu-236 Decay Cor'd Value * SPKV * EFF)				
WB27B07	Pu 239/240 μ Ci/L = (C239)/(Pu 236 Decay Cor'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/ μ Ci)]				
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)				
CJO	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L) / [(Pu-236 Tracer Recovery /100)(2220000 dpm/ μ Ci)(D g/L)(SS)]				
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100				
JFR					
Analyst					
JMV					
Date Complete					
02/09/98	Pu 239/240 μ Ci/mL	1.53E-05	DETECTION LEVELS in μ Ci/mL		
Analysis Date	Relative Counting Error	= 3.5%			
02/06/98					
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.				
03:00 PM	Pu 238 μ Ci/mL	< 3.10E-06			
Sample Point	Relative Counting Error	= 100.0%	Pu 238		
S-302 GRAB1	Pu 236 Tracer Recovery	= 98.9%	3.10E-06		

Analyst:	JMV	Date:	09-Feb-98
Signature of Chemist:	JFR	Date:	9 Feb 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	FEB-07-98	PU 236 AEA FRAC (C236)	0.899
DUP	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)	0.172
22193	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	1953
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.670
Matrix	DETECTOR NUMBER	14	PU 236 cpm	44.780
LIQUID	EFFICIENCY FACTOR	EFF 0.291	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	8.580
98000490	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1928.093	Pu 239/240 μ Ci/L	1.6617E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
NIA				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
S98T000376	Pu-236 Decay Cor'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 Cor'd Value * SPKV * EFF)			
WB27807	Pu 239/240 μ Ci/L = (C239) * (Pu 236 Decay Cor'd Value) * (SPKV) * (1000mL/L) * (DF) * (DDF) / [(C236) * (D g/L) * (2220000 dpm/ μ Ci)]			
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
CJO	Pu 238 μ Ci/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (D g/L) * (SS)]			
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JFR				
Analyst				
JMV				
Date Complete				
02/09/98	Pu 239/240 μ Ci/mL	1.66E-05	DETECTION LEVELS in μ Ci/mL	
Analysis Date	Relative Counting Error	= 3.3%		
02/06/98			Pu 239/240	
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		2.90E-06	
03:00 PM	Pu 238 μ Ci/mL	< 2.90E-06	Pu 238	
Sample Point	Relative Counting Error	= 100.0%		
S-302 GRAB1	Pu 236 Tracer Recovery	= 103.2%		

Analyst:	JMV	Date:	09-Feb-98
Signature of Chemist:	JFR	Date:	9 Feb 98

SAMPLE.WB1 REV 1.0

943128ML

HNF-SD-WM-DP-294 REV. 0

WORKBOOK PAGE: SAM7

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0))

LIQUID /

				LIQUID /	SAMPLE
Type	DATE COUNTED		FEB-07-98	PU 236 AEA FRAC (C236)	0.715
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.026
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.245
22193	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	2194
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm (Bkg)	0.670
Matrix	DETECTOR NUMBER		14	PU 236 cpm	42.000
LIQUID	EFFICIENCY FACTOR	EFF	0.291	PU 238 cpm	1.540
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm	14.380
98000490	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME	480
Refun	PU-236 DECAY CORR'D VALUE (dpm/mL)		1928.093	Pu 239/240 µCi/L	2.9760E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000		
Sample Prep					
NIA					
Sample #	Decay Time = Date Counted - Tracer Preparation Date				
S98T000378	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) * C238 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)				
WB27807	Pu 239/240 µCi/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000 mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/µCi)]				
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)				
CJO	Pu 238 µCi/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/µCi) * (D g/L) * (SS)]				
Chemist	Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100				
JFR					
Analyst					
JMV					
Date Complete					
02/09/98	Pu 239/240 µCi/mL	2.98E-05		DETECTION LEVELS	
Analysis Date	Relative Counting Error	=	2.7%	in µCi/mL	
02/06/95				Pu 239/240	
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			3.95E-06	
03:00 PM	Pu 238 µCi/mL	<	3.95E-06	Pu 238	
Sample Point	Relative Counting Error	=	7.3%		
S-302 GRAB1	Pu 236 Tracer Recovery	=	92.3%	3.95E-06	

Analyst:	JMV	Date:	09-Feb-98
Signature of Chemist:	JFR	Date:	9 Feb 98
SAMPLE.WB1 REV 1.0			

943128ML

HNF-SD-WM-DP-294 REVO

WORKBOOK PAGE: DUP8

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0))

LIQUID /

DUP

Type	DATE COUNTED	FEB-07-98	PU 236 AEA FRAC (C236)	0.770
DUP	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)	0.248
22193	TRACER VOLUME in mL	SPKV	0.100 TOTAL AT COUNTS	2196
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000 AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.670
Matrix	DETECTOR NUMBER	14	PU 236 cpm	46.490
LIQUID	EFFICIENCY FACTOR	EFF	0.291 PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	15.000
98000490	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Resin	PU-236 DECAY CORR'D VALUE (dpm/mL)	1928.093	Pu 239/240 µCi/L	2.7973E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
N/A				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
S98T000378	Pu-236 Decay Cor'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 Cor'd Value * SPKV * EFF)			
WB27807	Pu 239/240 µCi/L = (C239)/(Pu 236 Decay Cor'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)			
CJO	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]			
Client's	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JFR				
Analyst				
JMV				
Date Complete				
02/09/98	Pu 239/240 µCi/mL	2.80E-05	DETECTION LEVELS in µCi/mL	
Analysis Date	Relative Counting Error =	2.7%		
02/06/98				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			
03:00 PM	Pu 238 µCi/mL	< 3.40E-06	Pu 239/240	3.40E-06
Sample Point	Relative Counting Error =	100.0%	Pu 238	
S-302 GRAB	Pu 236 Tracer Recovery =	99.5%		3.40E-06

Analyst:	JMV	Date:	09-Feb-98
Signature of Chemist:	JFR	Date:	9 Feb 98

SAMPLE.WB1 REV 1.0

943128ML

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
WL22193-STD
File ID: 1a1004.CNF

Counted on: 2/ 7/98 @ 2:56
Detector:
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	913.6	913.6	361.130	361.130	10.000	3.277	5.000	0.626
2	33.0	33.0	287.163	286.658	8.000	3.542	4.000	0.939
3	1241.6	1241.6	228.984	228.983	12.000	3.543	6.000	0.910

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count Rate	%err @95	d/m	Activity uCi/ea
		Exp.	Obs.	Diff.	c/m			
1	Pu236	0.459	5.755	5.749	0.0060.02	44.92 1.3	187.0	0.842E-04
2	Th228	0.013	5.400	5.406	0.0060.02	1.28 11.3	7.3	0.331E-05
3	Pu239	0.504	5.147	5.141	0.0060.02	49.28 1.3	201.0	0.906E-04
	Pu240		5.144	5.141	0.003		201.0	0.906E-04

Totals: 0.976 <--valid peaks only--> 95.47

DETECTOR CALIBRATION

Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.2451 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	46940.0	100.000
Smoothed	46938.6	99.997
Composite fit	45832.1	97.640
Residuals	1107.9	2.360

Analyzed by:

MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 8607.2

[illegible]

Raw Data Dump for AEA Spectrum: 1a1004.CNF	HNF-SD-WM-DP-294 REV. 0									
1	0.	0.	0.	0.	0.	2.	0.	0.	1.	1.
11	1.	1.	1.	0.	1.	0.	0.	0.	0.	1.
21	0.	1.	0.	1.	0.	1.	0.	1.	2.	3.
31	1.	0.	1.	1.	0.	1.	0.	0.	0.	1.
41	1.	1.	0.	1.	2.	1.	2.	1.	2.	2.
51	0.	1.	0.	0.	0.	1.	0.	1.	0.	2.
61	3.	1.	6.	2.	1.	0.	0.	0.	2.	4.
71	3.	2.	3.	5.	1.	3.	1.	3.	0.	1.
81	4.	4.	0.	4.	3.	0.	3.	6.	2.	4.
91	1.	3.	6.	9.	4.	8.	6.	4.	2.	3.
101	6.	3.	4.	2.	3.	3.	4.	7.	8.	4.
111	6.	2.	2.	4.	6.	10.	5.	8.	9.	9.
121	9.	13.	5.	10.	9.	8.	9.	11.	6.	12.
131	7.	14.	12.	6.	10.	14.	17.	10.	13.	12.
141	11.	19.	13.	10.	12.	19.	19.	16.	20.	19.
151	18.	15.	24.	15.	24.	17.	17.	17.	21.	33.
161	32.	29.	30.	30.	41.	28.	33.	34.	34.	41.
171	41.	46.	59.	52.	52.	55.	55.	53.	62.	55.
181	64.	67.	85.	67.	82.	94.	109.	98.	113.	112.
191	133.	132.	127.	155.	152.	155.	189.	201.	196.	219.
201	218.	215.	249.	255.	298.	262.	277.	373.	306.	366.
211	393.	437.	437.	486.	499.	539.	586.	629.	692.	736.
221	730.	748.	813.	818.	925.	990.	1210.	1348.	1373.	1464.
231	1231.	849.	410.	133.	26.	7.	12.	12.	7.	10.
241	8.	5.	8.	8.	6.	6.	9.	10.	10.	12.
251	18.	12.	16.	14.	14.	10.	20.	10.	20.	15.
261	13.	18.	25.	18.	16.	17.	28.	29.	29.	24.
271	22.	24.	21.	19.	38.	24.	26.	31.	28.	33.
281	27.	36.	40.	42.	58.	61.	47.	59.	62.	34.
291	33.	24.	33.	27.	31.	31.	26.	38.	26.	30.
301	38.	30.	43.	39.	49.	42.	45.	41.	48.	46.
311	45.	54.	55.	45.	61.	57.	59.	61.	68.	74.
321	101.	88.	90.	120.	115.	132.	140.	133.	142.	123.
331	153.	170.	183.	167.	204.	226.	220.	249.	256.	289.
341	284.	314.	361.	357.	418.	435.	445.	503.	565.	611.
351	632.	722.	734.	686.	658.	636.	653.	686.	804.	881.
361	1048.	1071.	962.	582.	283.	99.	19.	7.	3.	0.
371	1.	1.	1.	2.	0.	1.	0.	1.	1.	0.
381	1.	0.	0.	0.	1.	0.	0.	1.	1.	2.
391	1.	0.	0.	1.	0.	1.	0.	1.	0.	3.
401	1.	1.	2.	0.	0.	1.	0.	0.	0.	0.
411	1.	0.	2.	0.	0.	0.	1.	1.	0.	0.
421	0.	2.	0.	1.	1.	0.	1.	0.	0.	0.
431	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	2.	0.	1.	0.	0.	1.	0.	0.	0.
461	1.	0.	1.	2.	1.	1.	1.	1.	0.	1.
471	5.	1.	1.	3.	3.	1.	3.	2.	0.	2.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
491	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
511	1.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL22193-BLNK
 File ID: 2a2010.CNF

Counted on: 2/ 7/98 @ 2:57
 Detector: AEA2
 Geometry number: 1
 Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	980.5	980.5	359.837	359.837	12.000	4.110	6.000	0.937
2	40.0	40.0	285.687	285.457	12.000	4.108	6.000	0.974

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea	
		Exp.	Obs.	Diff.						
1	Pu236	0.968	5.755	5.737	0.018	0.02	43.28	1.4	186.4	0.840E-04
2	Th228	0.038	5.400	5.395	0.005	0.02	1.72	8.1	10.2	0.460E-05

Totals: 1.006 <--valid peaks only--> 44.99

DETECTOR CALIBRATION

Energy(MEV) = 4.082 + (0.0046)*Channel
 Energy range (MeV): 4.082 TO 6.437
 Efficiency = 0.2369 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21463.0	100.000
Smoothed	21462.5	99.998
Composite fit	21598.5	100.631
Residuals	-135.5	-0.631

Analyzed by: _____
 MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 6594.2

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Raw	Data	Dump	for	AEA	Spectrum:	2a2010.CNF	HNF-SD-WM-DP-294 REV. 0			
1	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.
31	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.
71	0.	1.	1.	0.	0.	0.	0.	0.	1.	0.
81	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
91	0.	0.	0.	0.	0.	1.	1.	0.	1.	0.
101	0.	0.	1.	0.	1.	0.	0.	0.	1.	1.
111	0.	0.	0.	0.	1.	2.	0.	0.	0.	1.
121	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.
131	1.	1.	0.	0.	1.	2.	1.	0.	0.	1.
141	0.	2.	1.	0.	1.	0.	1.	1.	1.	1.
151	1.	2.	2.	0.	0.	0.	2.	0.	0.	0.
161	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
171	1.	5.	0.	0.	0.	0.	0.	0.	1.	0.
181	0.	1.	0.	2.	1.	2.	3.	1.	0.	3.
191	1.	2.	2.	4.	0.	2.	0.	1.	1.	2.
201	2.	1.	2.	1.	0.	4.	3.	0.	3.	3.
211	2.	4.	1.	2.	5.	3.	3.	2.	2.	5.
221	5.	2.	3.	4.	2.	7.	4.	1.	7.	5.
231	6.	4.	3.	5.	5.	4.	4.	5.	5.	3.
241	5.	1.	5.	4.	9.	7.	7.	5.	4.	10.
251	9.	9.	18.	8.	9.	11.	8.	11.	10.	9.
261	11.	15.	16.	17.	19.	18.	25.	13.	19.	22.
271	27.	23.	17.	23.	23.	24.	27.	19.	37.	31.
281	35.	42.	38.	42.	60.	60.	46.	45.	30.	28.
291	19.	21.	19.	18.	15.	23.	26.	15.	20.	25.
301	23.	28.	25.	19.	34.	25.	33.	23.	27.	40.
311	39.	39.	39.	38.	51.	63.	52.	42.	67.	56.
321	65.	77.	76.	84.	102.	99.	115.	118.	116.	133.
331	140.	157.	176.	168.	199.	205.	209.	236.	251.	269.
341	280.	329.	360.	372.	385.	466.	449.	573.	608.	671.
351	727.	709.	803.	749.	719.	790.	828.	917.	1033.	1080.
361	1120.	929.	673.	390.	175.	51.	16.	2.	1.	0.
371	0.	2.	1.	2.	1.	0.	1.	0.	1.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	1.	0.	2.	0.	0.	0.	0.	0.	2.	2.
401	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
421	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
431	1.	0.	0.	0.	0.	1.	1.	0.	0.	3.
441	1.	0.	0.	1.	0.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
461	1.	2.	1.	1.	1.	2.	1.	1.	1.	5.
471	3.	3.	3.	1.	0.	2.	1.	1.	0.	0.
481	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
491	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S98T376-SAM
File ID: 3a3112.CNF

Counted on: 2/ 7/98 @ 2:57
Detector: AEA3
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	860.7	860.7	360.682	360.682	10.000	3.883	5.000	0.711
2?	5.7	5.7	302.714	302.714	4.000	0.000	2.000	3.758
3	35.9	35.9	286.687	286.337	8.000	2.208	4.000	0.593
4	169.4	169.4	227.696	227.684	12.000	4.543	6.000	0.990

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
		Exp.	Obs.	Diff.		c/m				
1	Pu236	0.851	5.755	5.750	0.0050	0.02	44.54	1.3	192.0	0.865E-04
2		????		5.483			0.00	1000.		
3	Th228	0.025	5.400	5.408	-0.0080	0.01	1.30	11.2	7.7	0.347E-05
4	Pu239	0.150	5.147	5.138	0.0090	0.02	7.84	3.2	33.1	0.149E-04
	Pu240		5.144	5.138	0.006				33.1	0.149E-04

Totals: 1.025 <--valid peaks only--> 53.67

DETECTOR CALIBRATION

Energy (MeV) = 4.091 + (0.0046)*Channel

Energy range (MeV): 4.091 TO 6.446

Efficiency = 0.2367 CPM/DPM

(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25130.0	100.000
Smoothed	25130.7	100.003
Composite fit	25766.0	102.531
Residuals	-636.0	-2.531

Analyzed by: _____

MB

[illegible]

Raw*Data	Dump	for	AEA	Spectrum:	3a3112.CNF	HNF-SD-WM-DP-294 REV.0				
1	0.	0.	0.	1.	1.	1.	1.	3.	0.	
11	2.	0.	1.	1.	0.	1.	1.	1.	3.	
21	1.	1.	0.	0.	2.	0.	1.	0.	0.	
31	0.	1.	1.	0.	0.	0.	1.	0.	0.	
41	1.	0.	0.	0.	0.	1.	1.	0.	0.	
51	0.	0.	0.	1.	0.	0.	1.	0.	0.	
61	0.	1.	0.	0.	2.	0.	0.	0.	1.	
71	0.	4.	1.	0.	1.	1.	0.	0.	2.	
81	0.	1.	0.	1.	0.	0.	1.	0.	0.	
91	1.	1.	0.	0.	1.	2.	0.	0.	1.	
101	1.	2.	2.	0.	1.	1.	0.	2.	0.	
111	1.	2.	3.	2.	2.	0.	0.	0.	1.	
121	1.	1.	1.	0.	2.	4.	1.	3.	2.	
131	1.	2.	5.	2.	1.	2.	1.	6.	2.	
141	2.	5.	4.	3.	4.	3.	5.	4.	2.	
151	4.	5.	6.	4.	1.	4.	5.	4.	3.	
161	4.	5.	2.	6.	6.	2.	5.	8.	9.	
171	9.	10.	7.	6.	4.	8.	13.	10.	11.	
181	20.	12.	11.	11.	17.	21.	16.	16.	19.	
191	26.	26.	27.	26.	19.	32.	24.	33.	24.	
201	42.	37.	38.	41.	38.	45.	46.	53.	56.	
211	63.	74.	72.	95.	86.	101.	93.	133.	127.	
221	116.	129.	135.	145.	144.	167.	186.	187.	190.	
231	120.	62.	32.	21.	11.	10.	5.	3.	8.	
241	5.	4.	8.	4.	11.	6.	11.	11.	8.	
251	8.	12.	13.	14.	10.	17.	19.	15.	16.	
261	19.	23.	10.	26.	9.	19.	37.	20.	21.	
271	26.	30.	22.	23.	29.	33.	26.	38.	41.	
281	32.	44.	48.	50.	53.	60.	66.	64.	53.	
291	28.	30.	21.	29.	30.	36.	34.	40.	35.	
301	45.	47.	46.	50.	34.	35.	37.	39.	39.	
311	52.	55.	51.	59.	55.	77.	59.	60.	94.	
321	85.	78.	92.	100.	101.	109.	133.	128.	152.	
331	175.	183.	173.	190.	201.	230.	237.	286.	245.	
341	307.	320.	355.	355.	409.	428.	417.	465.	544.	
351	676.	716.	709.	690.	615.	668.	681.	722.	818.	
361	986.	918.	831.	538.	266.	101.	19.	6.	4.	
371	0.	1.	1.	2.	2.	1.	0.	0.	2.	
381	2.	0.	2.	0.	0.	2.	1.	0.	1.	
391	0.	2.	0.	0.	0.	0.	0.	1.	0.	
401	1.	1.	2.	0.	0.	0.	0.	0.	1.	
411	0.	0.	1.	0.	1.	0.	0.	1.	0.	
421	2.	2.	2.	0.	1.	2.	0.	1.	0.	
431	1.	1.	0.	0.	0.	1.	1.	1.	0.	
441	0.	0.	0.	1.	1.	1.	0.	1.	0.	
451	0.	0.	1.	0.	0.	3.	3.	2.	1.	
461	1.	1.	2.	1.	4.	2.	2.	2.	2.	
471	1.	2.	1.	1.	3.	3.	4.	3.	1.	
481	2.	2.	0.	2.	1.	0.	1.	0.	1.	
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S98T376-DUP
 File ID: 4a4109.CNF

Counted on: 2/ 7/98 @ 2:57
 Detector: AEA4
 Geometry number: 1
 Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	568.0	568.0	359.015	359.015	10.000	5.394	5.000	5.246
2	446.7	446.7	352.280	352.280	16.000	0.907	8.000	0.106
3?	0.8	0.1	286.030	286.030	4.000	0.100	2.000	0.100
4	112.5	112.5	227.479	227.410	10.000	4.214	5.000	0.484

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Exp.	Peak Centroid Obs. Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.276	5.755	5.737	0.0180.02	13.75	2.4	59.9	0.270E-04
2	Ra224	0.623	5.686	5.706	-0.0200.00	81.03	1.8	141.0	0.635E-04
3		????		5.401		0.00	*****		
4	Pu239	0.172	5.147	5.132	0.0150.02	8.58	3.2	36.7	0.165E-04
	Pu240		5.144	5.132	0.012			36.7	0.165E-04

Totals: 1.071 <--valid peaks only--> 53.37

use combined values for

DETECTOR CALIBRATION

Energy(MEV) = 4.086 + (0.0046)*Channel

Energy range (MeV): 4.086 TO 6.441

Efficiency = 0.2342 CPM/DPM

(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23929.0	100.000
Smoothed	23927.5	99.994
Composite fit	25619.1	107.063
Residuals	-1690.1	-7.063

Analyzed by: _____

MB

Display Max.:

294

Raw Data Dump for AEA Spectrum: 4a4109.CNF									
1	0.	0.	1.	1.	0.	4.	0.	1.	2.
11	0.	2.	4.	2.	4.	2.	0.	1.	3.
21	2.	4.	2.	2.	1.	2.	1.	0.	0.
31	0.	0.	0.	1.	0.	1.	1.	0.	0.
41	1.	1.	0.	0.	2.	2.	0.	0.	0.
51	0.	1.	1.	2.	0.	0.	0.	2.	0.
61	1.	0.	0.	0.	1.	2.	1.	1.	2.
71	2.	2.	1.	1.	0.	1.	1.	2.	1.
81	1.	0.	2.	0.	1.	0.	0.	0.	2.
91	3.	3.	2.	2.	0.	2.	0.	1.	1.
101	1.	4.	1.	2.	1.	4.	1.	1.	3.
111	6.	1.	2.	1.	7.	0.	0.	4.	1.
121	3.	2.	1.	3.	2.	1.	1.	2.	2.
131	2.	2.	4.	4.	6.	5.	9.	5.	2.
141	4.	4.	4.	5.	6.	5.	6.	4.	3.
151	3.	9.	3.	9.	6.	6.	10.	8.	5.
161	5.	7.	13.	11.	4.	11.	5.	7.	14.
171	11.	19.	10.	9.	12.	13.	16.	18.	12.
181	12.	13.	18.	19.	17.	21.	22.	23.	26.
191	31.	27.	22.	41.	39.	40.	50.	54.	47.
201	50.	38.	43.	50.	64.	50.	67.	68.	65.
211	75.	82.	77.	81.	85.	107.	91.	87.	100.
221	100.	102.	105.	108.	120.	132.	96.	123.	149.
231	71.	43.	18.	21.	12.	9.	9.	6.	14.
241	19.	11.	16.	11.	11.	14.	13.	16.	11.
251	12.	11.	18.	20.	22.	24.	11.	19.	18.
261	24.	27.	30.	26.	32.	38.	23.	32.	25.
271	30.	40.	29.	30.	24.	34.	39.	52.	43.
281	46.	42.	37.	53.	44.	44.	60.	47.	37.
291	30.	41.	48.	33.	40.	47.	49.	55.	52.
301	73.	43.	52.	48.	59.	53.	58.	72.	76.
311	73.	70.	77.	92.	87.	88.	89.	116.	118.
321	123.	157.	158.	139.	146.	169.	180.	197.	194.
331	226.	229.	248.	250.	295.	292.	307.	327.	338.
341	378.	433.	418.	441.	462.	465.	500.	548.	539.
351	590.	624.	523.	576.	529.	504.	541.	557.	532.
361	603.	501.	310.	149.	42.	8.	3.	0.	1.
371	0.	2.	0.	1.	0.	0.	0.	0.	1.
381	0.	2.	0.	1.	0.	0.	3.	0.	0.
391	0.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	1.	1.	1.	1.	1.	0.
431	0.	1.	1.	0.	0.	0.	0.	2.	1.
441	0.	0.	1.	0.	1.	1.	0.	1.	1.
451	0.	1.	2.	0.	1.	1.	1.	0.	1.
461	2.	1.	2.	0.	1.	0.	1.	0.	1.
471	0.	0.	5.	1.	3.	2.	1.	2.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S98T378-SAM
 File ID: 7a7092.CNF

Counted on: 2/ 7/98 @ 2:59
 Detector: AEA7
 Geometry number: 1
 Count time: 28808. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	967.4	967.4	360.323	360.323	10.000	3.479	5.000	0.788
2	31.3	31.3	303.070	302.486	8.000	1.749	4.000	0.311
3	29.9	29.9	286.244	285.558	12.000	3.543	6.000	1.055
4	368.6	368.6	228.081	228.077	12.000	4.089	6.000	1.109

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs. Diff.					
1	Pu236	0.715	5.755	5.748	0.0070.02	42.00	1.4	175.0	0.788E-04
2	Pu238	0.026	5.487	5.482	0.0050.01	1.54	10.2	8.7	0.393E-05
	Am241		5.479	5.482	-0.003			6.7	0.301E-05
3	Th228	0.018	5.400	5.404	-0.0040.02	1.07	13.9	6.2	0.277E-05
4	Pu239	0.245	5.147	5.139	0.0080.02	14.38	2.4	58.7	0.265E-04
	Pu240		5.144	5.139	0.005			58.7	0.265E-04

Totals: 1.005 <--valid peaks only--> 58.99

DETECTOR CALIBRATION

Energy(MEV) = 4.090 + (0.0046)*Channel

Energy range (MeV): 4.090 TO 6.445

Efficiency = 0.2449 CPM/DPM

(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28193.0	100.000
Smoothed	28191.4	99.994
Composite fit	28325.0	100.468
Residuals	-132.0	-0.468

Analyzed by:

MB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 6202.7

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Raw Data Dump for AEA Spectrum: 7a7092.CNF					HNF-SD-WM-DP-294 REV. 0				
1	0.	0.	1.	0.	0.	2.	3.	4.	1.
11	1.	2.	0.	1.	2.	0.	3.	2.	3.
21	4.	4.	2.	1.	0.	0.	0.	0.	0.
31	1.	0.	0.	0.	0.	0.	0.	0.	1.
41	0.	0.	0.	0.	1.	0.	0.	1.	0.
51	1.	0.	0.	0.	2.	0.	0.	1.	0.
61	0.	0.	4.	1.	0.	0.	2.	1.	0.
71	0.	0.	0.	0.	0.	0.	1.	1.	0.
81	0.	0.	3.	0.	0.	1.	2.	2.	1.
91	0.	1.	2.	0.	0.	0.	1.	0.	1.
101	2.	1.	1.	0.	0.	2.	0.	0.	1.
111	1.	3.	3.	1.	1.	2.	0.	1.	3.
121	5.	4.	0.	4.	4.	1.	0.	4.	2.
131	3.	5.	9.	6.	6.	2.	3.	2.	5.
141	6.	8.	4.	7.	6.	5.	7.	2.	6.
151	1.	6.	4.	3.	5.	6.	4.	5.	3.
161	9.	3.	9.	5.	7.	5.	7.	12.	7.
171	10.	9.	14.	10.	9.	12.	13.	8.	15.
181	24.	20.	24.	11.	28.	27.	17.	17.	32.
191	28.	32.	30.	40.	24.	43.	37.	54.	51.
201	46.	57.	69.	64.	71.	81.	78.	84.	99.
211	131.	116.	124.	131.	169.	163.	201.	203.	216.
221	220.	233.	292.	297.	338.	352.	387.	400.	428.
231	282.	155.	80.	41.	10.	4.	2.	2.	5.
241	8.	10.	4.	8.	10.	6.	5.	6.	11.
251	9.	15.	8.	8.	11.	9.	12.	11.	10.
261	15.	12.	17.	22.	10.	15.	29.	14.	20.
271	16.	22.	33.	28.	30.	26.	15.	27.	31.
281	38.	29.	52.	53.	62.	58.	56.	57.	47.
291	30.	37.	45.	44.	41.	45.	40.	32.	48.
301	56.	58.	68.	71.	48.	49.	32.	30.	19.
311	42.	31.	46.	42.	40.	35.	48.	44.	62.
321	78.	72.	69.	86.	91.	84.	83.	106.	112.
331	122.	130.	170.	162.	178.	199.	191.	205.	211.
341	235.	298.	329.	347.	385.	473.	469.	465.	581.
351	703.	738.	693.	683.	692.	699.	794.	836.	968.
361	1124.	1031.	819.	383.	144.	20.	7.	3.	2.
371	0.	1.	0.	0.	2.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	1.	0.	1.
391	0.	0.	0.	0.	1.	1.	0.	0.	0.
401	2.	0.	0.	0.	1.	0.	0.	0.	1.
411	0.	1.	0.	0.	0.	0.	0.	2.	0.
421	0.	0.	0.	2.	0.	1.	0.	0.	0.
431	0.	1.	1.	0.	0.	0.	0.	1.	0.
441	0.	0.	0.	1.	0.	0.	1.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	1.
461	1.	0.	3.	0.	1.	3.	1.	2.	4.
471	3.	2.	1.	1.	4.	2.	4.	1.	2.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	1.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S98T378-DUP
File ID: 8a8049.CNF

Counted on: 2/ 7/98 @ 2:59
Detector: AEA8
Geometry number: 1
Count time: 28807. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	758.1	758.1	360.343	360.343	10.000	3.507	5.000	0.514
2?	3.7	3.7	303.766	303.766	8.000	0.000	4.000	3.686
3	23.1	23.1	286.710	286.198	6.000	1.802	3.000	0.553
4	282.3	282.3	227.230	227.214	12.000	5.603	6.000	1.049
5	7.4	7.4	145.816	145.238	24.000	2.781	12.000	0.257

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Pu236	0.770	5.755	5.749	0.0060.02	46.49	1.3	206.5	0.930E-04
2		????		5.489		0.00	1000.		
3	Th228	0.012	5.400	5.408	-0.0080.01	0.73	22.7	4.5	0.203E-05
4	Pu239	0.248	5.147	5.137	0.0100.03	15.00	2.3	65.3	0.294E-04
	Pu240		5.144	5.137	0.007			65.3	0.294E-04
5	Np237	0.011	4.769	4.760	0.0090.01	0.65	13.4	3.3	0.147E-05
Totals:			1.042	<--valid peaks only-->		62.88			

DETECTOR CALIBRATION

Energy (MEV) = $4.092 + (0.0046) \cdot \text{Channel}$
Energy range (MeV): 4.092 TO 6.447
Efficiency = 0.2297 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28986.0	100.000
Smoothed	28988.2	100.008
Composite fit	30189.7	104.153
Residuals	-1203.7	-4.153

Analyzed by:

MB

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300

Raw Data	Dump	for AEA	Spectrum:	8a8049.CNF					
1	0.	0.	5.	0.	4.	3.	2.	7.	0.
11	1.	4.	2.	2.	4.	3.	2.	3.	4.
21	5.	4.	2.	6.	1.	0.	0.	1.	2.
31	1.	0.	1.	0.	0.	1.	1.	1.	2.
41	0.	1.	2.	0.	2.	4.	3.	1.	5.
51	3.	2.	2.	0.	1.	0.	0.	0.	5.
61	2.	2.	3.	0.	2.	0.	1.	1.	0.
71	1.	3.	1.	1.	1.	0.	1.	4.	1.
81	1.	2.	0.	1.	3.	1.	2.	2.	5.
91	4.	6.	3.	2.	2.	6.	4.	3.	4.
101	4.	1.	2.	3.	2.	4.	6.	4.	3.
111	2.	4.	4.	2.	3.	7.	3.	3.	5.
121	5.	3.	4.	9.	9.	2.	5.	4.	15.
131	12.	8.	8.	7.	4.	5.	14.	13.	10.
141	11.	12.	9.	6.	9.	13.	12.	7.	8.
151	8.	11.	8.	4.	5.	11.	9.	12.	7.
161	8.	11.	10.	11.	14.	22.	16.	18.	15.
171	20.	12.	16.	19.	23.	28.	26.	22.	24.
181	28.	34.	29.	32.	35.	35.	31.	53.	39.
191	52.	48.	45.	53.	53.	64.	68.	84.	78.
201	78.	98.	89.	90.	102.	118.	90.	130.	103.
211	136.	148.	138.	149.	148.	184.	177.	190.	214.
221	225.	207.	250.	253.	272.	324.	300.	301.	304.
231	210.	144.	49.	34.	23.	11.	6.	9.	9.
241	4.	17.	10.	7.	18.	13.	12.	14.	13.
251	13.	11.	20.	12.	20.	25.	22.	23.	20.
261	30.	17.	16.	25.	32.	29.	38.	41.	28.
271	40.	38.	23.	31.	36.	38.	46.	34.	49.
281	42.	45.	45.	51.	66.	62.	71.	75.	45.
291	49.	46.	57.	53.	61.	62.	49.	57.	55.
301	55.	68.	74.	85.	63.	69.	59.	55.	59.
311	53.	72.	62.	76.	75.	92.	79.	92.	100.
321	99.	111.	110.	120.	139.	156.	157.	172.	137.
331	177.	199.	219.	231.	229.	241.	244.	299.	275.
341	350.	381.	361.	413.	430.	437.	482.	522.	540.
351	632.	610.	656.	603.	571.	589.	603.	668.	731.
361	890.	806.	654.	331.	107.	20.	5.	3.	0.
371	1.	0.	0.	2.	2.	0.	2.	0.	2.
381	1.	0.	1.	0.	1.	0.	0.	0.	0.
391	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	1.	0.	1.	2.	0.
411	0.	0.	3.	0.	0.	0.	0.	0.	1.
421	2.	1.	1.	0.	1.	0.	0.	0.	0.
431	1.	1.	0.	1.	1.	0.	0.	0.	0.
441	0.	0.	0.	1.	0.	1.	0.	1.	1.
451	1.	0.	0.	1.	0.	1.	1.	0.	1.
461	0.	1.	2.	0.	0.	2.	0.	0.	4.
471	1.	2.	2.	0.	3.	2.	2.	1.	2.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

LABCORE Completed Worklist Report for Worklist# 22252

Analyst: jmv

Instrument: AB19

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: RERUN OF 22193 @PU23901 FOR (302-S-97-3 GRAB) SS=3ML RTS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@PU23901 PU23901	LIQUID	1.09E+04	9.93E+5	91.101	% Recovery
1 STD	0		@PU23901 PU23901E	LIQUID	1.00	1.83E+00	1.830	% Ct Error
1 STD	0		@PU23901 PU23901T	LIQUID	100	1.01E+02	101.000	% Recovery
2 BLNK	0		@PU23901 PU23901	LIQUID	1	<1.01E-6		uCi/mL
2 BLNK	0		@PU23901 PU23901T	LIQUID	100	8.89E+01	88.900	% Recovery
2 BLNK	0		@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S98T000377	0	@PU23901 PU23901	LIQUID	N/A	1.05E-05	1.36E-006	uCi/mL
3 SAMPLE	S98T000377	0	@PU23901 PU23901T	LIQUID	N/A	9.06E+01		% Recovery
3 SAMPLE	S98T000377	0	@PU23901 PU23901E	LIQUID	N/A	2.66E+00		% Ct Error
4 DUP	S98T000377	0	@PU23901 PU23901	LIQUID	1.05E-5	1.16E-5	9.955	RPD
4 DUP	S98T000377	0	@PU23901 PU23901T	LIQUID	100	9.16E+01	91.600	% Recovery
4 DUP	S98T000377	0	@PU23901 PU23901E	LIQUID	1.00	2.61E+00	2.610	% Ct Error

Final page for worklist# 22252

Analyst Signature

Date

Analyst Signature

Date


Reviewer Signature

11 Feb 98
Date

LABCORE Data Entry Template for Worklist# 22252

Analyst: JMV Instrument: PU01 19 Book# 75856

Method: LA-953-104 Rev/Mod B-D

Worklist Comment: RERUN OF 22193 @PU23901 FOR (302-S-97-3 GRAB) SS=3ML RTS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S98T000377 0		@PU23901	LIQUID	98000081	S-302 GRAB1
	Analytes Requested: PU23901 , PU23901E, PU23901T					
4 DUP	S98T000377 0		@PU23901	LIQUID		

Final page for worklist # 22252

JMV 2-10-98
Analyst Signature Date

A. J. L. Platt 2-11-98
Analyst Signature Date
C. J. O'Brien 2-11-98

Data Entry Comments:

Schedule in Grab Sample

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

				STD
Type	DATE COUNTED	FEB-10-98		Pu 238 AEA FRAC (C238)
STD	SAMPLE VOLUME in mL	SS	1.000	Pu 238 AEA FRAC (C238)
Work List	SAMPLE DILUTION FACTOR	DF	1.000	Pu 239 AEA FRAC (C239)
22252	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	
Matrix	DETECTOR NUMBER	19	Pu 238 cpm	
LIQUID	EFFICIENCY FACTOR	EFF	0.334	Pu 238 cpm
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	
98000554	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	
Retain	PU-236 DECAY CORR'D VALUE (dpm/mL)	1924.246	Pu 239/240 µCi/L	
0	PU-238 TRACER VALUE (dpm/mL)	0.000	9.9275E-02	
Sample Prep	STANDARD BOOK NO	75B56		
N/A	STANDARD VALUE in µCi/mL	1.090E-04		
Sample #				
WL22252-STD				
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
WC16100	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			
gll	Pu 239/240 µCi/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) / (1000mL/L) (DF) (DDF) / [(C236) (SS) (2220000 dpm/µCi)]			
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
jfr	Pu 238 µCi/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/µCi) (D g/L) (SS)]			
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
jmv				
Date Complete				
02/11/98	Pu 239/240 µCi/mL	9.93E-05	DETECTION LEVELS in µCi/mL Pu 239/240 5.64E-06	
Analysis Date	Relative Counting Error	= 1.8%		
02/10/98				
Analysis Time				
03:10 PM				
Sample Point				
S-302 GRAB1	Pu 236 Tracer Recovery	=	101.0%	

Analyst:	jmv	Date:	11-Feb-98
Signature of Chemist:	jfr	Date:	11 Feb 98

STANDARD.WB1 REV 1.0

943128ML

HNF-SD-WM-DP-294 REV. 0

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)

LI

BLNK

Type	DATE COUNTED	FEB-10-98	PU 238 AEA FRAC (C236)	0.964
BLNK	SAMPLE VOLUME in mL	SS 3.000	PU 238 AEA FRAC (C236)	0.000
Work List	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.000
22252	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	1778
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cp (Bkg)	0.030
Matrix	DETECTOR NUMBER	19	PU 236 cpm	43.040
LIQUID	EFFICIENCY FACTOR	EFF 0.3338	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	0.000
98000564	TRACER PREPARATION VALUE (dpm/mL)	2600.00	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1924.25	Pu 239/240 μ Ci/L =	< 1.011E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.00		

Sample Prep

N/A

Sample #

WL22252-BLK

Instrument Code

WG16100

Prepared By

git

Chemist

if

Analyst

jmv

Data Complete

02/11/98

Analysis Date

02/10/98

Analysis Time

03:10 PM

Sample Point

S-302 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 μ Ci/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/ μ Ci)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 μ Ci/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (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 μ Ci/mL	< 1.01E-06	DETECTION LEVELS in μ Ci/mL
Relative Counting Error	= 100.0%	
NOTE: Pu 238 Result is a LESS THAN Value.		
Pu 238 μ Ci/mL	< 1.01E-06	
Relative Counting Error	= 100.0%	Pu 238
Pu 236 Tracer Recovery	= 88.9%	1.01E-06

Analyst:	jmv	Date:	11-Feb-98
Signature of Chemist:	<i>[Signature]</i>	Date:	11 Feb 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 / SO

				SAMPLE
Type	DATE COUNTED	FEB-10-98	PU 236 AEA FRAC (C236)	0.702
SAMPLE	SAMPLE VOLUME in mL	SS 3.000	PU 238 AEA FRAC (C238)	0.042
Work List	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.256
22252	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2489
Test Code	DIGEST DILUTION FACTOR	DDF 1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER	19	PU 236 cpm	42.360
LIQUID	EFFICIENCY FACTOR	EFF 0.334	PU 238 cpm	2.560
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	15.470
98000554	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Return	PU-236 DECAY CORR'D VALUE (dpm/mL)	1924.246	Pu 239/240 μ Ci/L	1.0536E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

S98T000377

Instrument Code

WC16100

Prepared By

gil

Chemist

jfr

Analyst

jmv

Date Complete

02/11/98

Analysis Date

02/10/98

Analysis Time

02:10 PM

Sample Point

S-302 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 μ Ci/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/ μ Ci)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (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 μ Ci/mL 1.05E-05

Relative Counting Error = 2.7%

DETECTION

LEVELS

in μ Ci/mL

Pu 239/240

1.36E-06

Pu 238

1.36E-06

Pu 238 μ Ci/mL 1.73E-06

Relative Counting Error = 5.8%

Pu 236 Tracer Recovery = 90.6%

Analyst: jmv Date: 11-Feb-98

Signature of Chemist: *SLCatter* jfr Date: 11 Feb 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 / SO

DUP

Type	DATE COUNTED		FEB-10-98	PU 236 AEA FRAC (C236)	0.663
DUP	SAMPLE VOLUME in mL	SS	3.000	PU 238 AEA FRAC (C238)	0.020
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.266
22252	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	2662
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER		19	PU 236 cpm	41.010
LIQUID	EFFICIENCY FACTOR	EFF	0.334	PU 238 cpm	1.250
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm	16.480
98000554	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		1924.246	Pu 239/240 μ Ci/L	1.1592E-02
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
S98T000377	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.85)}]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C238 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
WC16100	Pu 239/240 μ Ci/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/ μ Ci)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
g/L	Pu 238 μ Ci/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-238 Tracer Recovery / 100) (2220000 dpm/ μ Ci) (D g/L) (SS)]
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
Jr	
Analyst	
jmv	
Date Complete	
02/11/98	Pu 239/240 μ Ci/mL 1.16E-05
Analysis Date	Relative Counting Error = 2.6%
02/10/98	
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.
05:10 PM	Pu 238 μ Ci/mL < 1.43E-06
Sample Point	Relative Counting Error = 8.1%
S-102 GRAB1	Pu 236 Tracer Recovery = 91.6%
	DETECTION LEVELS in μ Ci/mL
	Pu 239/240 1.43E-06
	Pu 238 1.43E-06

Analyst:	jmv	Date:	11-Feb-98
Signature of Chemist:	jfr	Date:	11-Feb-98

SAMPLE.WB1 REV 1.0

943128ML

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL22252-STD-PU
 File ID: 1a1007.CNF

Counted on: 2/10/98 @21:18
 Detector:
 Geometry number: 1
 Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1071.1	1071.1	360.514	360.514	10.000	4.281	5.000	1.054
2	36.8	36.8	287.301	287.103	8.000	3.083	4.000	0.696
3	1480.6	1480.6	228.199	228.198	12.000	4.512	6.000	1.503

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count	%err	Activity
		Exp.	Obs.	Diff.	Rate c/m	@95	d/m uCi/ea
1	Pu236	0.461	5.755	5.749	0.0060.02	45.00 1.3	187.7 0.846E-04
2	Th228	0.016	5.400	5.412	-0.0120.01	1.58 8.2	9.1 0.410E-05
3	Pu239	0.528	5.147	5.141	0.0060.02	51.47 1.2	210.4 0.948E-04
	Pu240		5.144	5.141	0.003		210.4 0.948E-04

Totals: 1.005 <--valid peaks only--> 98.05

DETECTOR CALIBRATION

Energy(MEV) = 4.091 + (0.0046)*Channel
 Energy range (MeV): 4.091 TO 6.446
 Efficiency = 0.2446 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	46818.0	100.000
Smoothed	46818.7	100.002
Composite fit	47073.4	100.546
Residuals	-255.4	-0.546

Analyzed by:

SLH2

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 10523.8

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Raw Data Dump for AEA Spectrum: 1a1007.CNF										
1	0.	0.	2.	1.	0.	1.	0.	0.	0.	1.
11	0.	1.	1.	1.	0.	1.	0.	1.	0.	0.
21	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
31	1.	3.	2.	0.	0.	0.	1.	3.	2.	1.
41	0.	0.	2.	0.	0.	0.	1.	2.	2.	1.
51	0.	1.	0.	1.	1.	0.	0.	0.	0.	1.
61	0.	1.	0.	1.	3.	1.	0.	0.	1.	1.
71	1.	0.	1.	2.	1.	1.	0.	3.	2.	1.
81	0.	4.	0.	0.	0.	3.	0.	1.	1.	0.
91	2.	0.	2.	2.	1.	2.	0.	0.	0.	3.
101	1.	0.	2.	0.	1.	0.	1.	1.	1.	1.
111	3.	0.	2.	0.	0.	1.	3.	3.	1.	4.
121	2.	3.	0.	4.	1.	0.	0.	2.	2.	2.
131	2.	2.	3.	4.	5.	5.	3.	3.	1.	2.
141	5.	7.	3.	0.	4.	2.	4.	6.	5.	4.
151	7.	6.	3.	3.	4.	5.	7.	7.	7.	10.
161	11.	12.	11.	20.	13.	12.	12.	9.	18.	21.
171	23.	7.	22.	23.	25.	25.	22.	28.	23.	30.
181	20.	29.	36.	44.	49.	47.	35.	41.	42.	49.
191	63.	68.	70.	83.	75.	87.	103.	90.	113.	140.
201	137.	150.	136.	189.	210.	182.	192.	258.	297.	258.
211	328.	353.	424.	457.	491.	553.	665.	699.	804.	818.
221	879.	911.	1047.	1141.	1330.	1499.	1601.	1620.	1634.	1557.
231	1255.	871.	438.	159.	33.	9.	3.	4.	4.	7.
241	2.	4.	4.	3.	3.	7.	1.	4.	5.	10.
251	5.	9.	8.	6.	7.	6.	2.	12.	9.	13.
261	8.	13.	6.	17.	16.	18.	22.	23.	18.	18.
271	17.	25.	20.	15.	25.	23.	20.	19.	24.	38.
281	29.	34.	33.	54.	39.	38.	42.	56.	48.	31.
291	16.	17.	14.	13.	10.	12.	22.	24.	21.	25.
301	19.	24.	23.	17.	17.	22.	19.	16.	25.	22.
311	14.	27.	21.	23.	24.	26.	26.	41.	36.	37.
321	41.	46.	45.	38.	46.	69.	57.	87.	73.	84.
331	85.	102.	93.	131.	132.	149.	159.	190.	186.	219.
341	244.	248.	324.	329.	351.	414.	470.	506.	547.	678.
351	729.	804.	835.	859.	816.	856.	870.	979.	1063.	1123.
361	1201.	1132.	993.	717.	343.	134.	33.	2.	4.	1.
371	1.	0.	1.	1.	1.	2.	1.	1.	1.	1.
381	2.	3.	0.	1.	2.	3.	1.	0.	2.	0.
391	1.	0.	1.	0.	0.	0.	0.	2.	1.	0.
401	0.	0.	1.	1.	1.	1.	2.	0.	0.	1.
411	0.	1.	1.	0.	1.	0.	1.	2.	0.	0.
421	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	3.	0.	0.	1.	1.	0.	0.	2.
441	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	1.	1.	0.	1.	1.
461	1.	0.	0.	2.	0.	3.	1.	1.	2.	4.
471	6.	7.	2.	2.	4.	6.	5.	1.	1.	1.
481	0.	1.	0.	0.	2.	0.	0.	0.	0.	0.
491	1.	0.	0.	1.	0.	1.	0.	0.	1.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL22252-BLNK-PU
 File ID: 2a2013.CNF

Counted on: 2/10/98 @21:18
 Detector: AEA2
 Geometry number: 1
 Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	952.9	952.9	359.828	359.828	12.000	4.366	6.000	0.976
2	35.8	35.8	286.368	285.937	14.000	6.041	7.000	2.224
3?	13.1	13.1	270.692	269.499	8.000	2.790	4.000	0.899

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid				Count Rate	%err c/m @95	d/m	Activity uCi/ea
		Exp.	Obs.	Diff.	FWHM					
1	Pu236	0.964	5.755	5.739	0.016	0.02	43.04	1.4	182.5	0.822E-04
2	Th228	0.028	5.400	5.399	0.001	0.03	1.25	10.5	7.3	0.330E-05
3		????		5.323			0.43	22.4		
Totals:		0.992	<--valid peaks only-->				44.29			

DETECTOR CALIBRATION

Energy (MeV) = $4.084 + (0.0046) \times \text{Channel}$
 Energy range (MeV): 4.084 TO 6.439
 Efficiency = 0.2407 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21433.0	100.000
Smoothed	21432.3	99.997
Composite fit	21467.2	100.159
Residuals	-34.2	-0.159

Analyzed by:

SLH2

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 6458.7

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Raw	Data	Dump	for	AEA	Spectrum:	2a2013.CNF				
1	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
31	1.	1.	0.	1.	0.	0.	0.	0.	1.	0.
41	0.	0.	2.	0.	0.	0.	0.	0.	1.	0.
51	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
81	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
91	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
101	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.
111	0.	0.	1.	1.	0.	1.	1.	0.	0.	0.
121	0.	0.	0.	3.	1.	1.	1.	0.	0.	0.
131	0.	1.	0.	1.	1.	2.	0.	1.	3.	0.
141	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
151	0.	1.	1.	1.	0.	1.	0.	1.	1.	1.
161	1.	1.	2.	1.	0.	1.	0.	1.	0.	1.
171	1.	0.	0.	1.	1.	0.	1.	1.	2.	1.
181	1.	0.	1.	0.	0.	1.	3.	0.	1.	0.
191	0.	0.	0.	1.	3.	0.	0.	3.	1.	3.
201	2.	1.	6.	0.	2.	4.	2.	3.	2.	1.
211	3.	1.	1.	4.	1.	0.	2.	4.	5.	1.
221	2.	4.	3.	4.	2.	2.	5.	2.	5.	2.
231	5.	2.	3.	5.	4.	4.	5.	7.	9.	5.
241	4.	12.	10.	5.	1.	5.	6.	10.	9.	4.
251	6.	4.	12.	6.	12.	5.	12.	12.	12.	9.
261	10.	13.	10.	18.	10.	20.	27.	20.	23.	32.
271	22.	32.	16.	19.	27.	17.	24.	20.	30.	25.
281	35.	40.	39.	44.	53.	54.	42.	50.	46.	32.
291	24.	13.	14.	30.	40.	21.	27.	24.	21.	25.
301	31.	32.	43.	29.	37.	27.	28.	45.	45.	40.
311	43.	40.	63.	54.	42.	49.	61.	55.	44.	62.
321	64.	76.	88.	105.	99.	101.	123.	121.	118.	141.
331	130.	146.	157.	182.	165.	225.	207.	223.	254.	289.
341	303.	272.	371.	383.	389.	437.	472.	558.	630.	636.
351	706.	748.	726.	697.	732.	804.	815.	917.	995.	1045.
361	1067.	906.	708.	410.	192.	63.	24.	2.	6.	1.
371	2.	2.	1.	0.	0.	0.	0.	0.	2.	1.
381	2.	1.	1.	0.	1.	0.	0.	2.	1.	0.
391	0.	0.	0.	1.	0.	1.	0.	0.	1.	0.
401	0.	0.	1.	0.	0.	1.	1.	1.	0.	0.
411	1.	0.	0.	1.	0.	0.	0.	1.	1.	0.
421	0.	0.	0.	0.	2.	0.	0.	0.	0.	1.
431	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.
441	1.	0.	0.	0.	0.	0.	0.	3.	0.	1.
451	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
461	0.	1.	3.	0.	0.	0.	2.	2.	1.	2.
471	1.	0.	3.	2.	4.	2.	3.	1.	0.	1.
481	3.	0.	0.	1.	1.	0.	0.	1.	1.	0.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
511	0.	0.								

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 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S98T0377-SAM-PU
 File ID: 3a3115.CNF

Counted on: 2/10/98 @21:19
 Detector: AEA3
 Geometry number: 1
 Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	933.7	933.7	360.545	360.545	10.000	4.141	5.000	0.911
2	32.2	32.2	303.081	302.002	10.000	2.453	5.000	0.259
3?	26.1	26.1	286.260	285.841	10.000	1.732	5.000	0.859
4	395.6	395.6	227.544	227.538	12.000	4.546	6.000	1.262

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
1	Pu236	0.702	5.755	5.751	0.0040.02	42.36	1.4	182.8	0.823E-04	
2	Pu238	0.042	5.487	5.482	0.0050.01	2.56	7.3	15.0	0.676E-05	
	Am241		5.479	5.482	-0.003			11.5	0.518E-05	
3		????		5.407		0.59	26.4			
4	Pu239	0.256	5.147	5.139	0.0080.02	15.47	2.3	65.4	0.295E-04	
	Pu240		5.144	5.139	0.005			65.4	0.295E-04	
Totals:			1.000	<--valid peaks only-->			60.39			

DETECTOR CALIBRATION

Energy(MEV) = $4.093 + (0.0046) \cdot \text{Channel}$
 Energy range (MeV): 4.093 TO 6.448
 Efficiency = 0.2365 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28978.0	100.000
Smoothed	28979.7	100.006
Composite fit	29271.5	101.013
Residuals	-293.5	-1.013

Analyzed by:

SLH2

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222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S98T0377-DUP-PU
 File ID: 4a4114.CNF

Counted on: 2/10/98 @21:19
 Detector: AEA4
 Geometry number: 1
 Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	754.7	754.7	352.727	352.727	24.000	18.495	12.000	5.003
2	35.8	35.8	298.918	294.230	34.000	12.376	17.000	17.542
3	37.6	37.6	285.233	285.233	18.000	0.779	9.000	0.088
4	324.1	324.1	221.082	221.038	22.000	15.721	11.000	4.459

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs. Diff.					
1	Ra224	0.663	5.686	5.709	-0.0230.09	41.01	1.4	187.4	0.844E-04
	Pu236		5.755	5.709	0.046			179.7	0.810E-04
2	Th228 ²³⁰ Pu	0.020	5.400	5.440	-0.0400.06	1.25	12.0	7.6	0.341E-05
	Am241		5.479	5.440	0.039			5.7	0.258E-05
3	Th228	0.043	5.400	5.398	0.0020.00	2.67	6.1	16.2	0.728E-05
4	Pu239	0.266	5.147	5.103	0.0440.07	16.48	2.3	70.8	0.319E-04
	Pu240		5.144	5.103	0.041			70.8	0.319E-04
Totals:			0.993	<--valid peaks only-->			61.41		

DETECTOR CALIBRATION

Energy (MeV) = 4.086 + (0.0046)*Channel
 Energy range (MeV): 4.086 TO 6.442
 Efficiency = 0.2328 CPM/DFM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29697.0	100.000
Smoothed	29695.9	99.996
Composite fit	29476.2	99.257
Residuals	220.8	0.743

Analyzed by:

SLH2

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5753.8

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4
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3.....4...
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.....1...
.....1.....
..... 1
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Raw Data Dump for AEA Spectrum: 4a4114.CNF				HNF-SD-WM-DP-294 REV. 0							
1	0.	0.	0.	1.	0.	3.	0.	1.	3.	2.	2.
11	2.	1.	2.	0.	1.	0.	1.	3.	5.	1.	1.
21	4.	3.	1.	0.	2.	0.	0.	0.	0.	0.	0.
31	0.	0.	1.	2.	0.	0.	0.	1.	0.	0.	0.
41	0.	1.	1.	0.	1.	0.	1.	1.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
61	0.	0.	0.	1.	0.	0.	0.	1.	1.	1.	1.
71	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
81	0.	2.	0.	1.	1.	0.	0.	1.	1.	0.	0.
91	0.	0.	1.	0.	2.	0.	1.	0.	3.	2.	2.
101	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.
111	0.	0.	2.	0.	0.	1.	1.	1.	0.	1.	1.
121	1.	3.	2.	3.	3.	2.	0.	4.	5.	4.	4.
131	1.	5.	5.	1.	2.	4.	4.	4.	3.	1.	1.
141	2.	2.	6.	2.	5.	7.	3.	3.	1.	4.	4.
151	5.	5.	2.	1.	5.	8.	3.	5.	4.	2.	2.
161	5.	6.	4.	7.	6.	4.	6.	11.	4.	8.	8.
171	11.	11.	8.	10.	18.	16.	11.	25.	16.	13.	13.
181	17.	23.	15.	25.	22.	25.	17.	33.	36.	29.	29.
191	31.	27.	40.	53.	39.	64.	53.	73.	74.	83.	83.
201	85.	83.	106.	114.	140.	124.	150.	160.	183.	199.	199.
211	181.	237.	232.	242.	231.	294.	282.	312.	331.	361.	361.
221	363.	328.	307.	320.	309.	297.	289.	270.	214.	156.	156.
231	115.	58.	31.	13.	4.	1.	3.	4.	2.	3.	3.
241	3.	4.	6.	5.	3.	6.	10.	8.	6.	3.	3.
251	10.	13.	4.	8.	10.	11.	23.	19.	18.	18.	18.
261	19.	13.	19.	22.	26.	27.	23.	29.	25.	19.	19.
271	28.	32.	42.	29.	34.	38.	40.	48.	46.	50.	50.
281	49.	39.	48.	44.	58.	43.	54.	47.	29.	32.	32.
291	32.	39.	45.	44.	53.	39.	43.	54.	42.	45.	45.
301	52.	37.	44.	27.	46.	29.	22.	28.	29.	25.	25.
311	33.	41.	35.	33.	36.	54.	56.	57.	79.	61.	61.
321	82.	71.	81.	93.	98.	108.	112.	130.	153.	161.	161.
331	182.	201.	212.	243.	245.	296.	300.	361.	397.	412.	412.
341	440.	466.	490.	571.	668.	613.	637.	735.	764.	740.	740.
351	789.	800.	761.	761.	736.	730.	701.	769.	698.	645.	645.
361	546.	405.	255.	94.	23.	6.	3.	2.	3.	2.	2.
371	1.	0.	1.	2.	0.	0.	0.	1.	2.	0.	0.
381	1.	1.	1.	1.	0.	1.	0.	1.	0.	0.	0.
391	1.	1.	1.	0.	0.	0.	0.	2.	3.	1.	1.
401	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	1.	1.	0.	1.	0.	0.	0.	1.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	0.	0.	1.	0.	3.	0.	0.	0.	0.	2.	2.
451	2.	0.	1.	1.	1.	2.	0.	1.	1.	3.	3.
461	1.	3.	4.	1.	1.	3.	3.	0.	2.	2.	2.
471	3.	1.	0.	1.	1.	1.	0.	2.	0.	0.	0.
481	1.	0.	1.	1.	0.	0.	1.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
511	0.	0.									

HNF-SD-WM-DP-294, REV. 0

APPENDIX A
OPPORTUNISTIC ANALYTE RESULTS

HNH-SD-WM-DP-294, REV. 0

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Appendix A. Opportunistic Analyte Results
S-302 GRAB1

RISER: CATCH TANK
SEGMENT #: 302-S-97-1

SEGMENT PORTION: Supernate

Sample #	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec.	Det Limit	Count Err%
S98T000376	D	Silver-ICP-Acid Dil.	ug/mL	99.60	<1.00e-02	3.92e-02	3.98e-02	3.95e-02	1.52	11.70	1.00e-02	N/A
S98T000376	D	Arsenic-ICP-Acid Dil.	ug/mL	102.6	<1.00e-01	<1.00e-01	<1.00e-01	N/A	N/A	81.3	1.00e-01	N/A
S98T000376	D	Boron-ICP-Acid Dil.	ug/mL	100.4	<5.00e-02	5.49e-02	5.60e-02	5.54e-02	1.98	98.50	5.00e-02	N/A
S98T000376	D	Barium-ICP-Acid Dil.	ug/mL	99.60	<5.00e-02	<5.00e-02	<5.00e-02	N/A	N/A	95.50	5.00e-02	N/A
S98T000376	D	Beryllium-ICP-Acid Dil.	ug/mL	101.2	<5.00e-03	<5.00e-03	<5.00e-03	N/A	N/A	96.60	5.00e-03	N/A
S98T000376	D	Bismuth-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	<1.00e-01	<1.00e-01	N/A	N/A	100.0	1.00e-01	N/A
S98T000376	D	Calcium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	1.710	1.840	1.775	7.32	110.0	1.00e-01	N/A
S98T000376	D	Cadmium-ICP-Acid Dil.	ug/mL	101.2	<5.00e-03	<5.00e-03	<5.00e-03	N/A	N/A	98.90	5.00e-03	N/A
S98T000376	D	Cerium-ICP-Acid Dil.	ug/mL	100.8	<1.00e-01	<1.00e-01	<1.00e-01	N/A	N/A	96.70	1.00e-01	N/A
S98T000376	D	Cobalt-ICP-Acid Dil.	ug/mL	101.6	<2.00e-02	<2.00e-02	<2.00e-02	N/A	N/A	100.0	2.00e-02	N/A
S98T000376	D	Copper-ICP-Acid Dil.	ug/mL	94.60	<1.00e-02	<1.00e-02	<1.00e-02	N/A	N/A	77.20	1.00e-02	N/A
S98T000376	D	Potassium-ICP-Acid Dil.	ug/mL	95.80	<5.00e-01	5.690	5.740	5.715	0.87	96.90	5.00e-01	N/A
S98T000376	D	Lanthanum-ICP-Acid Dil.	ug/mL	100.6	<5.00e-02	<5.00e-02	<5.00e-02	N/A	N/A	98.90	5.00e-02	N/A
S98T000376	D	Lithium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-02	<1.00e-02	<1.00e-02	N/A	N/A	92.70	1.00e-02	N/A
S98T000376	D	Magnesium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-01	2.12e-01	2.27e-01	2.20e-01	6.83	96.50	1.00e-01	N/A
S98T000376	D	Molybdenum-ICP-Acid Dil.	ug/mL	101.6	<5.00e-02	<5.00e-02	<5.00e-02	N/A	N/A	101.0	5.00e-02	N/A
S98T000376	D	Neodymium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-01	<1.00e-01	<1.00e-01	N/A	N/A	93.80	1.00e-01	N/A
S98T000376	D	Nickel-ICP-Acid Dil.	ug/mL	99.20	<2.00e-02	<2.00e-02	<2.00e-02	N/A	N/A	97.00	2.00e-02	N/A
S98T000376	D	Phosphorus-ICP-Acid Dil.	ug/mL	100.6	<2.00e-01	32.50	32.20	32.35	0.93	18.10	2.00e-01	N/A
S98T000376	D	Lead-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	<1.00e-01	<1.00e-01	N/A	N/A	99.10	1.00e-01	N/A
S98T000376	D	Sulfur-ICP-Acid Dil.	ug/mL	98.60	<1.00e-01	4.120	4.140	4.130	0.48	92.00	1.00e-01	N/A
S98T000376	D	Antimony-ICP-Acid Dil.	ug/mL	96.60	<6.00e-02	<6.00e-02	<6.00e-02	N/A	N/A	97.00	6.00e-02	N/A
S98T000376	D	Selenium-ICP-Acid Dil.	ug/mL	95.00	<1.00e-01	2.10e-01	1.93e-01	2.02e-01	8.44	114.0	1.00e-01	N/A
S98T000376	D	Silicon-ICP-Acid Dil.	ug/mL	97.40	<5.00e-02	3.400	3.390	3.395	0.29	121.0	5.00e-02	N/A
S98T000376	D	Samarium-ICP-Acid Dil.	ug/mL	97.40	<1.00e-01	<1.00e-01	<1.00e-01	N/A	N/A	92.70	1.00e-01	N/A
S98T000376	D	Strontium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-02	<1.00e-02	<1.03e-02	N/A	N/A	99.30	1.00e-02	N/A
S98T000376	D	Titanium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	<1.00e-02	<1.00e-02	N/A	N/A	97.10	1.00e-02	N/A
S98T000376	D	Thallium-ICP-Acid Dil.	ug/mL	96.60	<2.00e-01	<2.00e-01	<2.00e-01	N/A	N/A	92.90	2.00e-01	N/A
S98T000376	D	Uranium-ICP-Acid Dil.	ug/mL	97.00	<5.00e-01	57.70	56.90	57.30	1.40	31.10	5.00e-01	N/A
S98T000376	D	Vanadium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	<5.00e-02	<5.00e-02	N/A	N/A	100.0	5.00e-02	N/A
S98T000376	D	Zinc-ICP-Acid Dil.	ug/mL	98.80	<1.00e-02	2.42e-02	2.38e-02	2.40e-02	1.67	97.90	1.00e-02	N/A
S98T000376	D	Bromide by Ion Chromatograph	ug/mL	95.25	<1.25e-01	< 1.375	<1.3860	N/A	N/A	97.28	1.375	N/A
S98T000376	D	Oxalate-IC-Bionex 4000/450	ug/mL	96.81	<1.05e-01	< 1.155	<1.1660	N/A	N/A	97.56	1.155	N/A
S98T000376	D	Cobalt-60 by GEA	uCi/mL	99.95	<2.61e-05	<2.78e-05	<2.80e-05	N/A	N/A	N/A	2.78e-05	N/A

Appendix A. Opportunistic Analyte Results
S-302 GRAB1RISER: CATCH TANK
SEGMENT #: 302-S-97-2

SEGMENT PORTION: Supernate

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD	% Spk Rec	Det Limit	Count Err%
S98T000377	D	Silver-ICP-Acid Dil.	ug/mL	99.60	<1.00e-02	3.03e-02	2.99e-02	3.01e-02	1.33	n/a	1.00e-02	n/a
S98T000377	D	Arsenic-ICP-Acid Dil.	ug/mL	102.6	<1.00e-01	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T000377	D	Boron-ICP-Acid Dil.	ug/mL	100.4	<5.00e-02	5.29e-02	<5.00e-02	n/a	n/a	n/a	5.00e-02	n/a
S98T000377	D	Barium-ICP-Acid Dil.	ug/mL	99.60	<5.00e-02	<5.00e-02	<5.00e-02	n/a	n/a	n/a	5.00e-02	n/a
S98T000377	D	Beryllium-ICP-Acid Dil.	ug/mL	101.2	<5.00e-03	5.00e-03	<5.00e-03	n/a	n/a	n/a	5.00e-03	n/a
S98T000377	D	Bismuth-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T000377	D	Calcium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	2.030	2.210	2.120	8.49	n/a	1.00e-01	n/a
S98T000377	D	Cadmium-ICP-Acid Dil.	ug/mL	101.2	<5.00e-03	<5.00e-03	<5.00e-03	n/a	n/a	n/a	5.00e-03	n/a
S98T000377	D	Cerium-ICP-Acid Dil.	ug/mL	100.8	<1.00e-01	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T000377	D	Cobalt-ICP-Acid Dil.	ug/mL	101.6	<2.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T000377	D	Copper-ICP-Acid Dil.	ug/mL	94.60	<1.00e-02	<1.00e-02	<1.00e-02	n/a	n/a	n/a	1.00e-02	n/a
S98T000377	D	Potassium-ICP-Acid Dil.	ug/mL	95.80	<5.00e-01	5.060	4.990	5.025	1.39	n/a	5.00e-01	n/a
S98T000377	D	Lanthanum-ICP-Acid Dil.	ug/mL	100.6	<5.00e-02	<5.00e-02	<5.00e-02	n/a	n/a	n/a	5.00e-02	n/a
S98T000377	D	Lithium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-01	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T000377	D	Magnesium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-01	2.49e-01	2.68e-01	2.59e-01	7.35	n/a	1.00e-01	n/a
S98T000377	D	Molybdenum-ICP-Acid Dil.	ug/mL	101.6	<5.00e-02	<5.00e-02	<5.00e-02	n/a	n/a	n/a	5.00e-02	n/a
S98T000377	D	Neodymium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-01	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T000377	D	Nickel-ICP-Acid Dil.	ug/mL	99.20	<2.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T000377	D	Phosphorus-ICP-Acid Dil.	ug/mL	100.6	<2.00e-01	24.80	24.70	24.75	0.40	n/a	2.00e-01	n/a
S98T000377	D	Lead-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T000377	D	Sulfur-ICP-Acid Dil.	ug/mL	98.60	<1.00e-01	3.650	3.680	3.665	0.82	n/a	1.00e-01	n/a
S98T000377	D	Antimony-ICP-Acid Dil.	ug/mL	96.60	<6.00e-02	<6.00e-02	<6.00e-02	n/a	n/a	n/a	6.00e-02	n/a
S98T000377	D	Selenium-ICP-Acid Dil.	ug/mL	95.00	<1.00e-01	1.81e-01	1.39e-01	1.60e-01	26.2	n/a	1.00e-01	n/a
S98T000377	D	Silicon-ICP-Acid Dil.	ug/mL	97.40	<5.00e-02	4.070	4.120	4.095	1.22	n/a	5.00e-02	n/a
S98T000377	D	Samarium-ICP-Acid Dil.	ug/mL	97.40	<1.00e-01	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T000377	D	Strontium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-02	1.00e-02	1.09e-02	1.05e-02	8.61	n/a	1.00e-02	n/a
S98T000377	D	Titanium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	<1.00e-02	<1.00e-02	n/a	n/a	n/a	1.00e-02	n/a
S98T000377	D	Thallium-ICP-Acid Dil.	ug/mL	96.60	<2.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	n/a	2.00e-01	n/a
S98T000377	D	Uranium-ICP-Acid Dil.	ug/mL	97.00	<5.00e-01	37.90	37.60	37.75	0.79	n/a	5.00e-01	n/a
S98T000377	D	Vanadium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	<5.00e-02	<5.00e-02	n/a	n/a	n/a	5.00e-02	n/a
S98T000377	D	Zinc-ICP-Acid Dil.	ug/mL	98.80	<1.25e-01	2.49e-02	2.46e-02	2.47e-02	0.81	n/a	1.00e-02	n/a
S98T000377	D	Bromide by Ion Chromatograph	ug/mL	95.25	<1.00e-01	<1.375	<1.38e0	n/a	n/a	n/a	1.375	n/a
S98T000377	D	Oxalate-IC-Bioxex 4000/450	ug/mL	96.81	<1.05e-01	<1.155	<1.16e0	n/a	n/a	n/a	1.155	n/a
S98T000377	D	Cobalt-60 by GEA	uCi/mL	99.95	<2.61e-05	<2.62e-05	<2.80e-05	n/a	n/a	n/a	2.62e-05	n/a

Appendix A. Opportunistic Analyte Results
S-302 GRAB1

RISER: CATCH TANK
SEGMENT #: 302-S-97-3

SEGMENT PORTION: Supernate

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec.	Det Limit	Count Err%
S98T000378	D	Silver-ICP-Acid Dil.	ug/mL	99.60	<1.00e-02	6.58e-02	6.64e-02	6.61e-02	0.91	87.10	2.00e-02	n/a
S98T000378	D	Arsenic-ICP-Acid Dil.	ug/mL	102.6	<1.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	109.0	2.00e-01	n/a
S98T000378	D	Boron-ICP-Acid Dil.	ug/mL	100.4	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	99.40	1.00e-01	n/a
S98T000378	D	Barium-ICP-Acid Dil.	ug/mL	99.60	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	95.60	1.00e-01	n/a
S98T000378	D	Beryllium-ICP-Acid Dil.	ug/mL	101.2	<5.00e-03	<1.00e-02	<1.00e-02	n/a	n/a	99.40	1.00e-02	n/a
S98T000378	D	Bismuth-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	95.80	2.00e-01	n/a
S98T000378	D	Calcium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	1.960	1.950	1.955	0.51	96.30	2.00e-01	n/a
S98T000378	D	Cadmium-ICP-Acid Dil.	ug/mL	101.2	<5.00e-03	<1.00e-02	<1.00e-02	n/a	n/a	98.40	1.00e-02	n/a
S98T000378	D	Cobalt-ICP-Acid Dil.	ug/mL	100.8	<1.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	99.10	2.00e-01	n/a
S98T000378	D	Cerium-ICP-Acid Dil.	ug/mL	101.6	<2.00e-02	<4.00e-02	<4.00e-02	n/a	n/a	99.10	4.00e-02	n/a
S98T000378	D	Copper-ICP-Acid Dil.	ug/mL	94.60	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	73.70	2.00e-02	n/a
S98T000378	D	Lanthanum-ICP-Acid Dil.	ug/mL	95.80	<5.00e-01	6.360	6.350	6.355	0.16	100.0	1.000	n/a
S98T000378	D	Lithium-ICP-Acid Dil.	ug/mL	100.6	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	98.80	1.00e-01	n/a
S98T000378	D	Magnesium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	92.70	2.00e-02	n/a
S98T000378	D	Molybdenum-ICP-Acid Dil.	ug/mL	101.8	<1.00e-01	4.52e-01	4.58e-01	4.58e-01	2.62	97.70	2.00e-01	n/a
S98T000378	D	Neodymium-ICP-Acid Dil.	ug/mL	101.6	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	100.0	1.00e-01	n/a
S98T000378	D	Nickel-ICP-Acid Dil.	ug/mL	97.80	<1.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	93.10	2.00e-01	n/a
S98T000378	D	Phosphorus-ICP-Acid Dil.	ug/mL	99.20	<2.00e-02	<4.00e-02	<4.00e-02	n/a	n/a	96.50	4.00e-02	n/a
S98T000378	D	Lead-ICP-Acid Dil.	ug/mL	100.6	<2.00e-01	61.80	62.40	62.10	0.97	101.0	4.00e-01	n/a
S98T000378	D	Sulfur-ICP-Acid Dil.	ug/mL	98.60	<1.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	99.40	2.00e-01	n/a
S98T000378	D	Antimony-ICP-Acid Dil.	ug/mL	96.60	<5.00e-02	<1.20e-01	<1.20e-01	n/a	n/a	96.30	2.00e-01	n/a
S98T000378	D	Selenium-ICP-Acid Dil.	ug/mL	95.00	<1.00e-01	2.71e-01	2.68e-01	2.70e-01	1.11	97.50	1.20e-01	n/a
S98T000378	D	Silicon-ICP-Acid Dil.	ug/mL	97.40	<5.00e-02	4.190	4.200	4.195	0.24	96.60	1.00e-01	n/a
S98T000378	D	Samarium-ICP-Acid Dil.	ug/mL	97.40	<1.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	92.60	2.00e-01	n/a
S98T000378	D	Strontium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	98.60	2.00e-02	n/a
S98T000378	D	Titanium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	96.90	2.00e-02	n/a
S98T000378	D	Thallium-ICP-Acid Dil.	ug/mL	96.60	<2.00e-01	<4.00e-01	<4.00e-01	n/a	n/a	93.50	4.00e-01	n/a
S98T000378	D	Uranium-ICP-Acid Dil.	ug/mL	97.00	<5.00e-01	1.10e-02	112.0	111.0	1.80	127.5	1.000	n/a
S98T000378	D	Vanadium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	99.90	1.00e-01	n/a
S98T000378	D	Zinc-ICP-Acid Dil.	ug/mL	98.80	<1.00e-02	3.22e-02	3.31e-02	3.26e-02	2.76	97.70	2.00e-02	n/a
S98T000378	D	Bromide by Ion Chromatograph	ug/mL	99.83	<1.25e-01	<1.375	<1.380	n/a	n/a	94.91	1.375	n/a
S98T000378	D	Oxalate-IC-Bioxex 4000/450	ug/mL	99.25	<1.05e-01	<1.155	<1.160	n/a	n/a	98.50	1.155	n/a
S98T000378	D	Cobalt-60 by GEA	uCi/mL	99.95	<2.61e-05	<2.73e-05	<2.90e-05	n/a	n/a	n/a	2.73e-05	n/a

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