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Tank 241-U-102, Grab Samples 2U-99-1, 2U-99-2 and 2U-99-3 Analytical Results for the Final Report

Franciska H. Steen

Waste Management of Hanford, Inc., Richland, WA 99352
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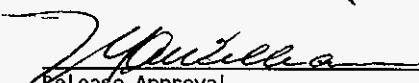
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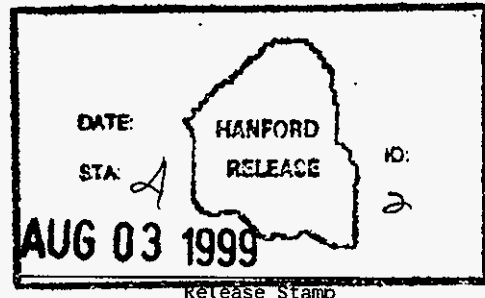
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WASTE MANAGEMENT LABORATORY

**TANK 241-U-102, GRAB SAMPLES
2U-99-1, 2U-99-2 AND 2U-99-3
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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WASTE MANAGEMENT LABORATORY

TANK 241-U-102 GRAB SAMPLES,
2U-99-1, 2U-99-2, 2U-99-3, 2U-99-4 and 2U-99-5
ANALYTICAL RESULTS FOR THE FINAL REPORT

This document is the final report for tank 241-U-102 grab samples. Five grab samples were collected from riser 13 on May 26, 1999 and received by the 222-S laboratory on May 26 and May 27, 1999. Samples 2U-99-3 and 2U-99-4 were submitted to the Process Chemistry Laboratory for special studies. Samples 2U-99-1, 2U-99-2 and 2U-99-5 were submitted to the laboratory for analyses. Analyses were performed in accordance with the *Compatibility Grab Sampling and Analysis Plan for Fiscal Year 1999* (TSAP) (Sasaki, 1999) and the *Data Quality Objectives for Tank Farms Waste Compatibility Program* (DQO) (Fowler 1995, Mulkey and Miller 1998). The analytical results are presented in the data summary report (Table 1).

None of the subsamples submitted for differential scanning calorimetry (DSC), total organic carbon (TOC) and plutonium 239 (Pu239) analyses exceeded the notification limits as stated in TSAP (Sasaki, 1999).

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.

2U-99-1

This sample was collected at a depth of 343 inches. Visual observation indicated that the sample was an opaque yellow liquid with approximately eight-percent fine brown solids. No organic layer was observed.

There was insufficient solid material to submit to the laboratory for analyses. Two 10-gram liquid samples were submitted to the laboratory for analysis of inorganic analytes and radionuclides.

2U-99-2

This sample was collected at a depth of 410 inches. Visual observation indicated that the sample was an opaque yellow liquid with approximately nine-percent fine brown solids. No organic layer was observed.

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There was insufficient solid material to submit to the laboratory for analyses. Two 10-gram liquid samples were submitted to the laboratory for analysis of inorganic analytes and radionuclides.

2U-99-5

This sample was collected at a depth of 470 inches. Visual observation indicated that the sample was an opaque yellow liquid with sixty-percent fine brown and gray-white crystalline solids. No organic layer was observed.

The solids were allowed to settle and the liquid portion of the sample was decanted. One 10-gram solid sample and two 10-gram liquid samples were submitted to the laboratory for analysis of inorganic analytes and radionuclides.

Table 2: Appearance Information for Tank 241-U-102 Grab Samples

Sample Number	Date Sampled	Date Received	Sampling Depth (in.)	% Settled Solids	Sample Description
2U-99-1	05/26/99	05/26/99	343	7.6%	Opaque yellow liquid with brown solids; no organic layer was observed.
2U-99-2	05/26/99	05/26/99	410	8.6%	Opaque yellow liquid with brown solids; no organic layer was observed.
2U-99-5	05/26/99	05/27/99	470	60%	Opaque yellow liquid with fine brown and gray-white crystalline solids; 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 the dry weight of the 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. More information may be obtained by examining the raw data.

The standard recoveries were within the required limits of 80% - 120% and Relative Percent Differences (RPDs) were below 20%.

TGA - Thermogravimetric Analysis

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 200°C. However, for tank 241-U-102 Grab Samples 100% of the thermograms showed weight loss beyond 200°C. The results for all subsamples were the sum of two weight loss steps. More information may be obtained by examining the raw data.

The standard recoveries were within the required limits of 80% - 120% and the RPDs were less than 20%.

Bulk Density

Bulk density was performed on the solid subsample from 2U-99-5 as required by the TSAP (Sasaki, 1999). The result of the bulk density analysis was 1.56 g/mL. The bulk density result was greater than the 1.5 g/mL used to determine the solid total alpha activity notification limit stated in the TSAP (Sasaki, 1999). Therefore, the bulk density result of 1.56 g/mL was used to recalculate the solid total alpha notification limit for the tank. There were no quality control (QC) parameters stated in the TSAP (Sasaki, 1999) for these samples.

Specific Gravity (Sp.G.)

Specific gravity analysis was performed in duplicate on direct liquid subsamples. The standard recoveries were within the control limits of the laboratory and the RPDs were less than 20%.

OH - Hydroxide

The OH analysis was performed in duplicate on direct subsamples of liquid as indicated by a blank in the A# column in Table 1. The solid subsamples did not require a hydroxide analysis. The standard recoveries were within the required limits of 80% - 120% and the RPDs were less than 20%.

pH

The pH analysis was required for both the solid and liquid portion of the samples. The pH analysis was performed on direct subsamples as indicated by a blank in the aliquot class (A#) column in Table 1.

Results for pH that are greater than 12.5 are suspect and should be considered estimates because the highest calibration buffer available is 12.5 and pH electrode performance degrades at a high pH. The standard values were within the required limits (± 0.1 pH unit) and the RPDs were less than 20%.

NH₃ - Ammonia

The NH₃ analysis was performed on a direct aliquots of the liquid subsamples as indicated by a blank in the A# column in Table 1.

A high RPD (>20%) was reported for one liquid subsample (2U-99-1, S99T000973). The result was near the detection limit which decreased the precision of the analysis. No reanalysis was requested. The standard recoveries were within the required limits of 80%-120% and the spike recovery was within the required limits of 75% - 125%.

IC - Ion Chromatography

The IC analyses were performed in duplicate on direct liquid subsamples as indicated by a blank in the A# column in Table 1. The solid subsamples were prepared for analysis by performing a water digest. This is indicated by a "W" in the A# column in Table 1.

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

A high RPD (>20%) was reported for one liquid subsample analyzed for PO₄⁻³ (2U-99-2, S99T000971). The high RPD was attributed to sample inhomogeneity and no reanalyses were requested. More information may be obtained by examining the raw data.

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A spike recovery outside of the required limits (75% - 125) was reported for one liquid subsample analyzed for NO_3^- (2U-99-1, S99T000970). The spike failure was attributed to the high concentration of this analyte in the sample with respect to the amount of spike standard added. No reanalysis was requested.

The standard recoveries were within the required limits of 80%-120%.

ICP - Inductively Coupled Plasma Spectrophotometry

The liquid subsamples were prepared for analysis by an acid adjustment of the direct subsample. This is indicated by a "D" in the A# column in Table 1. The solid subsamples were prepared for analysis by performing a fusion digest as indicated by an "F" in the A# column in Table 1.

The required analytes were aluminum (Al), chromium (Cr), iron (Fe), manganese (Mn), sodium (Na), nickel (Ni) and zirconium (Zr). All other analyte results are presented in Appendix A. These results are considered "opportunistic" and do not have customer defined QC parameters. Therefore, any anomalies in those results are not discussed in this report.

A high RPD (>20%) was reported for one subsample analyzed for Ni, the solid portion of 2U-99-5 (S99T000963). Since the fusion digestion process was performed using a nickel crucible as the digestion vessel, the high RPD was attributed to the non-uniform leaching of Ni from the crucible and no reanalysis was requested.

The standard recoveries were within the required limits of 80% - 120% and the spike recoveries were within the required limits of 75% - 125%.

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

The liquid subsamples were prepared for analysis by an acid adjustment of the direct subsample as indicated by a "D" in the A# column in Table 1. The solid subsamples were prepared for analysis by performing an acid digest as indicated by an "A" in the A# column in Table 1.

The standard recoveries for U235 and U238 were within the required limits of 80%-120%, the spike recoveries for U235 and U238 were within the required limits of 75%-125% and the RPDs were less than 20%.

TIC/TOC - Total Inorganic/Organic Carbon

The TIC/TOC analysis was performed on direct sample aliquots using the persulfate oxidation method. None of the subsamples submitted for the TOC analysis exceeded the notification limit of 30,000 $\mu\text{gC/mL}$ for liquid and 30,000 $\mu\text{gC/g}$ for solids.

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.

A high RPD (>20%) was reported for one sample analyzed for TIC and TOC, the solid portion of 2U-99-5 (S99T000960). A triplicate analysis was performed. The results are presented in Table 3. The results showed little improvement in the RPDs. No further analysis was requested.

Table 3: Triplicate TOC Results

Sample ID	Analyte	Sample Result ($\mu\text{g/g}$)	Duplicate Result ($\mu\text{g/g}$)	Triplicate Result ($\mu\text{g/g}$)
2U-99-5 (S99T000960) Solid	TIC	6.08E+03	9.43E+03	7.54E+03
	TOC	7.94E+03	4.99E+03	1.16E+04

A spike recovery outside of the required limits (75% - 125%) was reported for one subsample analyzed for TIC, the solid portion of 2U-99-5 (S99T000960). The spike failure was attributed to sample inhomogeneity and no reanalysis was requested.

The RPDs were less than 20% and the standard recoveries were within the required limits of 80%-120%.

Radionuclide Analyses

Total Alpha (AT)

The total alpha (AT) analysis was performed in duplicate on direct subsamples for the liquids as indicated by a blank in the A# column in Table 1. Solid subsamples were prepared for analysis by performing a fusion digest in duplicate. The fusion digest is indicated with an "F" in the A# column in Table 1.

All liquid AT results were below the total alpha activity action limit of 61.5 $\mu\text{Ci/mL}$. All solid AT results were below the total alpha activity limit of 39.43 $\mu\text{Ci/g}$ (based on a bulk density of 1.56 g/mL).

High RPDs were reported for two liquid subsamples, 2U-99-1 (S99T000973) and 2U-99-5 (S99T000975). The results were near the detection limit which decreased the precision of the analysis. No reanalyses were requested due to the low alpha activity in the samples. More information may be obtained by examining the raw data.

The standard recoveries were within the required limits of 70%-130% and the spike recoveries were within the required limits of 75% - 125%.

GEA - Gamma Energy Analysis

The gamma energy (GEA) analysis was performed in duplicate on direct subsamples for the liquids as indicated by a blank in the A# column in Table 1. The solid subsamples were prepared for analysis by performing a fusion digest as indicated by an "F" in the A# column in Table 1.

The required isotope was ^{137}Cs . The results for ^{60}Co 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 were within the required limits of 80%-120% and the RPDs were less than 20%.

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⁹⁰Sr - Strontium 90

⁹⁰Sr analysis was performed in duplicate on direct subsamples as indicated by a blank in the A# column in Table 1. The solid subsamples were prepared for analysis by performing a fusion digest as indicated by an "F" in the A# column in Table 1.

A small amount of ⁹⁰Sr contamination was found in the method blanks. The levels of contamination are inconsequential when compared to the results for the samples. These contaminants do not impact sample data quality.

The standard recoveries were within the required limits of 80%-120% and the RPDs were less than 20%.

²⁴¹Am - Americium 241

²⁴¹Am analysis was performed in duplicate on direct subsamples for the liquids as indicated by a blank in the A# column in Table 1. The solid subsamples were prepared for analysis by performing a fusion digest as indicated by an "F" in the A# column in Table 1.

The standard recoveries were within the required limits of 80%-120% and the RPDs were less than 20%.

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

^{239/240}Pu analysis was performed in duplicate on direct subsamples for the liquids as indicated by a blank in the A# column in Table 1. The solid subsamples were prepared for analysis by performing a fusion digest as indicated by an "F" in the A# column in Table 1.

The standard recoveries were within the required limits of 70%-130% and the RPDs were less than 20%.

Compatibility Program Concerns

DSC - Differential Scanning Calorimetry - 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). This requirement is satisfied for all samples. The exotherm and endotherm calculated ratios are presented in Attachment 2.

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

The Corrosion Decision Rule does not apply to the samples from this tank since this rule applies to double shell tanks and 241-U-102 is a single shell tank. However, the calculations were performed and included in this report for informational purposes only. These calculations are presented in Attachment 3.

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

^{239/240}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 E-2 μCi/mL (0.001 g/L) stated in the compatibility DQO.

Uranium (U) - Criticality Decision Rule

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

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	Solid/Liquid	N/A	LA-514-114 Rev. D-2
TGA	Solid/Liquid	N/A	LA-514-114 Rev. D-2
Bulk Density	Solid	N/A	LO-160-103 Rev. B-0 LA-519-132 Rev. B-0
Sp.G.	Liquid	N/A	LA-510-112 Rev. E-0
NH3	Liquid	N/A	LA-631-001 Rev. D-0
IC	Solid	LA-505-101 Rev. G-1	LA-533-105 Rev. F-0
	Liquid	N/A	

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Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
ICP	Solid	LA-549-141 Rev. G-0	LA-505-161 Rev. C-3
	Liquid	LA-504-101 Rev. E-0	
ICP/MS	Solid	LA-505-163 Rev. B-1	LA-506-101 Rev. A-1
	Liquid	LA-504-101 Rev. E-0	
TICTOC	Solid/Liquid	N/A	LA-342-100 Rev. F-2
PH	Solid	N/A	LA-212-105 Rev.
	Liquid		LA-212-106 Rev. C-4
OH	Solid	LA-505-101 Rev. G-1	LA-211-102 Rev. D-1
	Liquid	N/A	
Alpha	Solid	LA-549-141 Rev. G-0	LA-508-101 Rev. G-0
	Liquid	N/A	
GEA	Solid	LA-549-101 Rev. G-0	LA-548-121 Rev. F-0
	Liquid	N/A	
²³⁹ Pu	Solid	LA-549-101 Rev. G-0	LA-953-104 Rev. B-1
	Liquid	N/A	

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Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
241Am	Solid	LA-549-101 Rev. G-0	LA-953-104 Rev. B-1
	Liquid	N/A	
90Sr	Solid	LA-549-101 Rev. G-0	LA-220-101 Rev. E-5
	Liquid	N/A	

Abbreviations:

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

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U-102 SAMPLE BREAKDOWN

ATTACHMENT 1

HNF-1674 REV. 0

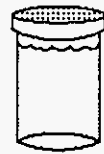
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U-102 GRAB SAMPLE BREAKDOWN

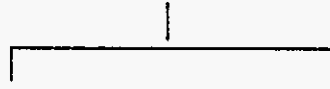
Attachment 1

2U-99-1

S99T000947



ARCHIVE



S99T000970

DSC
TGA
SpG
PH
OH
IC-ANIONS
ICP
TICTOC



S99T000973

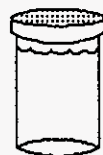
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GEA
SR90
ICP/MS-U
ALPHA
NH3

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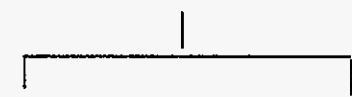
U-102 GRAB SAMPLE BREAKDOWN

2U-99-2

S99T000948



ARCHIVE



S99T000971

DSC
TGA
SpG
PH
OH
IC-ANIONS
ICP
TICTOC



S99T000974

PU239
AM241
GEA
SR90
ICP/MS-U
ALPHA
NH3

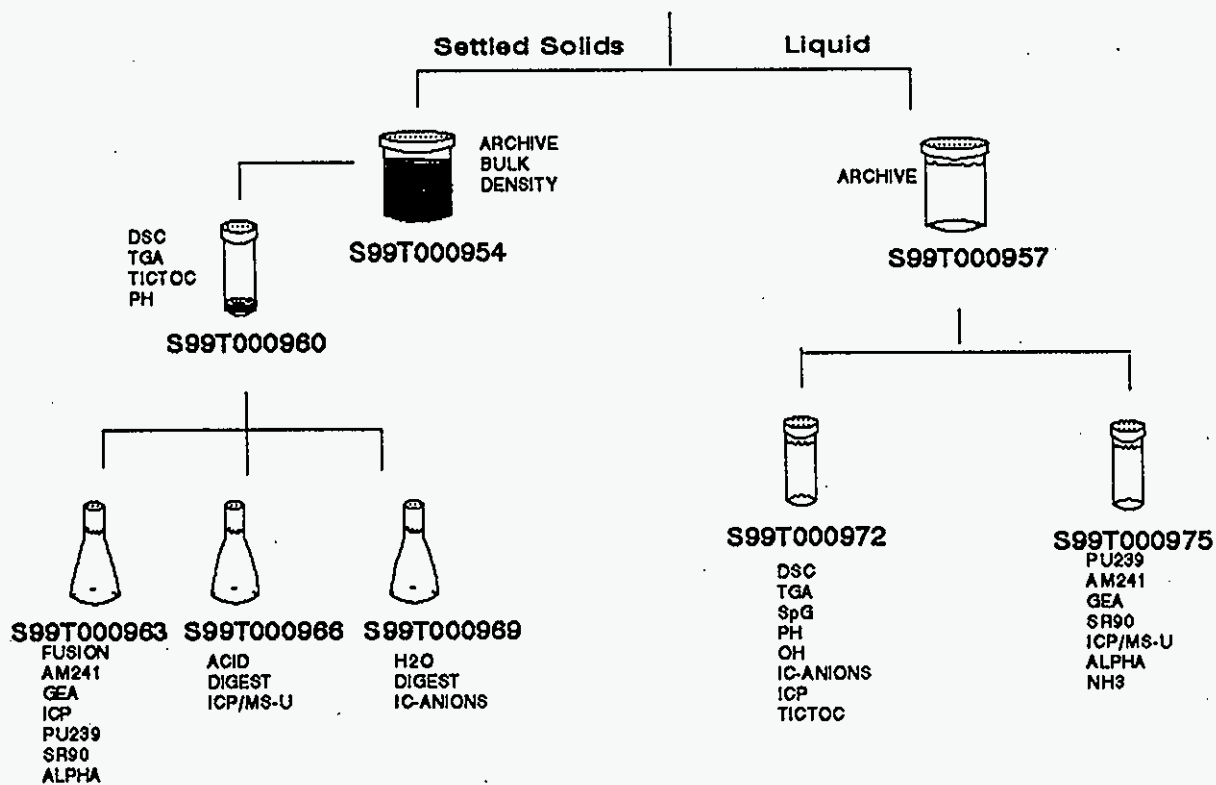
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U-102 GRAB SAMPLE BREAKDOWN

Attachment 1

2U-99-5

S99T000949



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SAMPLE DATA SUMMARY

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Table 1. Data Summary Report.
U-102 GRAB1

RISER: n/a
SEGMENT #: 2U-99-1

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000947		Volume % Settled Solids	%	n/a	n/a	7.600	n/a	n/a	n/a	n/a	1.00e-01	n/a

Supernate: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000970		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	66.30	57.90	62.10	13.5	n/a	n/a	n/a
S99T000970		DSC Exotherm on Perkin Elmer	Joules/g	96.27	n/a	34.79	30.38	32.59	13.5	n/a	n/a	n/a
S99T000970		OH- by Pot. Titration	ug/mL	101.3	<1250.0	2.70e+04	2.79e+04	2.74e+04	3.28	n/a	1.25e+03	n/a
S99T000970		pH Direct	pH	n/a	n/a	> 13.50	>13.50	n/a	n/a	n/a	1.00e-02	n/a
S99T000970		Specific Gravity	Sp.G.	97.90	n/a	1.421	1.503	1.462	5.61	n/a	1.00e-03	n/a
S99T000970		% Water by TGA on Perkin Elmer	%	98.50	n/a	47.13	47.93	47.53	1.68	n/a	n/a	n/a
S99T000970		TIC by Acid/Coulometry	ug/mL	99.50	3.00e-01	4.32e+03	4.18e+03	4.25e+03	3.29	95.90	5.000	n/a
S99T000970		TOC by Persulfate/Coulometry	ug/mL	92.67	5.700	1.09e+04	1.07e+04	1.08e+04	1.85	88.60	40.00	n/a
S99T000970	D	Aluminium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-02	3.20e+04	3.16e+04	3.18e+04	1.26	97.80	301.0	n/a
S99T000970	D	Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-02	98.10	99.00	98.55	0.91	99.50	6.010	n/a
S99T000970	D	Iron-ICP-Acid Dil.	ug/mL	102.2	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	102.0	30.10	n/a
S99T000970	D	Manganese-ICP-Acid Dil.	ug/mL	97.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	92.60	6.010	n/a
S99T000970	D	Sodium-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	2.34e+05	2.24e+05	2.29e+05	4.37	93.90	601.0	n/a
S99T000970	D	Nickel-ICP-Acid Dil.	ug/mL	100.2	<2.00e-02	1.17e+02	117.0	117.0	0.00	99.60	12.00	n/a
S99T000970	D	Zirconium-ICP-Acid Dil.	ug/mL	98.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	97.10	6.010	n/a
S99T000970		Fluoride-IC-Dionex 4000/4500	ug/mL	115.9	<1.20e-02	1.06e+03	1.04e+03	1.05e+03	1.90	96.06	61.81	n/a
S99T000970		Chloride-IC-Dionex 4000/4500	ug/mL	107.3	<1.70e-02	1.08e+04	1.10e+04	1.09e+04	1.83	116.3	87.57	n/a
S99T000970		Nitrite-IC - Dionex 4000/4500	ug/mL	104.9	<1.08e-01	1.32e+05	1.34e+05	1.33e+05	1.50	126.9	556.3	n/a
S99T000970		Nitrate by IC-Dionex 4000/4500	ug/mL	99.14	<1.39e-01	2.01e+05	2.02e+05	2.01e+05	0.50	116.3	716.0	n/a
S99T000970		Phosphate-IC-Dionex 4000/4500	ug/mL	107.7	<1.20e-01	3.17e+03	3.31e+03	3.24e+03	4.32	102.2	618.1	n/a
S99T000970		Sulfate by IC-Dionex 4000/4500	ug/mL	107.3	<1.38e-01	3.71e+03	4.09e+03	3.90e+03	9.74	103.1	710.8	n/a
S99T000973		Ammonia by ISE-Std Additions	ug/mL	80.15	<50.00	67.50	89.50	78.50	28.0	81.86	50.00	n/a
S99T000973		Strontium-89/90 High Level	uCi/mL	100.6	2.80e-02	7.030	6.970	7.000	0.86	n/a	4.00e-02	2.49E+00
S99T000973		Pu-239/240 by TRU-SPEC Resin	uCi/mL	100.0	<3.35e-04	3.54e-04	3.61e-04	3.57e-04	1.96	n/a	3.42e-04	7.13E+00
S99T000973	D	Uranium-233 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<1.22e-01	<1.22e-1	n/a	n/a	n/a	1.22e-01	n/a
S99T000973	D	Uranium-234 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<1.22e-01	<1.22e-1	n/a	n/a	n/a	1.22e-01	n/a
S99T000973	D	Uranium-235 by ICP/MS Acid Add	ug/mL	112.7	<1.20e-05	<1.22e-01	<1.22e-1	n/a	n/a	99.86	1.22e-01	n/a
S99T000973	D	Uranium-236 by ICP/MS Acid Add	ug/mL	n/a	<1.60e-05	<1.63e-01	<1.63e-1	n/a	n/a	n/a	1.63e-01	n/a
S99T000973	D	Uranium-238 by ICP/MS Acid Add	ug/mL	108.5	<1.20e-05	1.111	1.190	1.151	6.96	97.00	1.22e-01	n/a
S99T000973		Cesium-137 by GEA	uCi/mL	101.1	<2.19e-03	4.17e+02	413.0	415.0	0.96	n/a	n/a	0.100
S99T000973		Am-241 by Extraction	uCi/mL	93.46	<3.49e-04	1.10e-02	1.17e-02	1.13e-02	6.17	n/a	9.08e-04	2.19E+00
S99T000973		Alpha in Liquid Samples	uCi/mL	93.23	<6.50e-03	1.14e-02	1.42e-02	1.28e-02	21.9	95.80	1.60e-02	1.22E+02

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Table 1. Data Summary Report.
U-102 GRAB1

RISER: n/a
SEGMENT #: 2U-99-2

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000948		Volume % Settled Solids	%	n/a	n/a	8.600	n/a	n/a	n/a	n/a	1.00e-01	n/a

Supernate: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000971		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	47.95	48.50	48.23	1.14	n/a	n/a	n/a
S99T000971		DSC Exotherm on Perkin Elmer	Joules/g	96.27	n/a	25.26	25.55	25.41	1.14	n/a	n/a	n/a
S99T000971		OH- by Pot. Titration	ug/mL	101.3	<1250.0	3.02e+04	3.02e+04	3.02e+04	0.00	n/a	1.25e+03	n/a
S99T000971		pH Direct	pH	n/a	n/a	> 13.50	>13.50	n/a	n/a	n/a	1.00e-02	n/a
S99T000971		Specific Gravity	Sp.G.	97.90	n/a	1.467	1.500	1.484	2.22	n/a	1.00e-03	n/a
S99T000971		% Water by TGA on Perkin Elmer	%	98.50	n/a	47.02	47.63	47.33	1.29	n/a	n/a	n/a
S99T000971		TIC by Acid/Coulometry	ug/mL	99.50	3.00e-01	3.44e+03	3.61e+03	3.52e+03	4.82	n/a	5.000	n/a
S99T000971		TOC by Persulfate/Coulometry	ug/mL	92.67	5.700	1.11e+04	1.16e+04	1.14e+04	4.41	n/a	40.00	n/a
S99T000971	D	Aluminium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-02	3.40e+04	3.33e+04	3.36e+04	2.08	n/a	30.10	n/a
S99T000971	D	Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-02	75.40	73.20	74.30	2.96	n/a	6.010	n/a
S99T000971	D	Iron-ICP-Acid Dil.	ug/mL	102.2	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S99T000971	D	Manganese-ICP-Acid Dil.	ug/mL	97.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000971	D	Sodium-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	2.22e+05	2.15e+05	2.19e+05	3.20	n/a	60.10	n/a
S99T000971	D	Nickel-ICP-Acid Dil.	ug/mL	100.2	<2.00e-02	1.19e+02	120.0	119.5	0.84	n/a	12.00	n/a
S99T000971	D	Zirconium-ICP-Acid Dil.	ug/mL	98.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000971		Fluoride-IC-Dionex 4000/4500	ug/mL	115.9	<1.20e-02	1.05e+03	1.13e+03	1.09e+03	7.34	n/a	61.81	n/a
S99T000971		Chloride-IC-Dionex 4000/4500	ug/mL	107.3	<1.70e-02	1.23e+04	1.24e+04	1.24e+04	0.81	n/a	87.57	n/a
S99T000971		Nitrite-IC - Dionex 4000/4500	ug/mL	104.9	<1.08e-01	1.53e+05	1.54e+05	1.53e+05	0.65	n/a	556.3	n/a
S99T000971		Nitrate by IC-Dionex 4000/4500	ug/mL	99.14	<1.39e-01	1.97e+05	1.97e+05	1.97e+05	0.00	n/a	716.0	n/a
S99T000971		Phosphate-IC-Dionex 4000/4500	ug/mL	107.7	<1.20e-01	2.66e+03	1.88e+03	2.27e+03	34.4	n/a	618.1	n/a
S99T000971		Sulfate by IC-Dionex 4000/4500	ug/mL	107.3	<1.38e-01	3.21e+03	3.24e+03	3.22e+03	0.93	n/a	710.8	n/a
S99T000974		Ammonia by ISE-Std Additions	ug/mL	85.78	<50.00	3.71e+02	332.0	351.5	11.1	n/a	50.00	n/a
S99T000974		Strontium-89/90 High Level	uCi/mL	100.6	2.80e-02	6.610	6.770	6.690	2.39	n/a	3.90e-02	2.56E+00
S99T000974		Pu-239/240 by TRU-SPEC Resin	uCi/mL	100.0	<3.35e-04	<3.52e-04	<3.51E-4	n/a	n/a	n/a	3.52e-04	7.40E+00
S99T000974	D	Uranium-233 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<1.22e-01	<1.22e-1	n/a	n/a	n/a	1.22e-01	n/a
S99T000974	D	Uranium-234 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<1.22e-01	<1.22e-1	n/a	n/a	n/a	1.22e-01	n/a
S99T000974	D	Uranium-235 by ICP/MS Acid Add	ug/mL	112.7	<1.20e-05	<1.22e-01	<1.22e-1	n/a	n/a	n/a	1.22e-01	n/a
S99T000974	D	Uranium-236 by ICP/MS Acid Add	ug/mL	n/a	<1.60e-05	<1.63e-01	<1.63e-1	n/a	n/a	n/a	1.63e-01	n/a
S99T000974	D	Uranium-238 by ICP/MS Acid Add	ug/mL	108.5	<1.20e-05	8.01e-01	7.91e-01	7.96e-01	1.26	n/a	1.22e-01	n/a
S99T000974		Cesium-137 by GEA	uCi/mL	101.1	<2.19e-03	4.27e+02	422.0	424.5	1.18	n/a	n/a	0.0900
S99T000974		Am-241 by Extraction	uCi/mL	93.46	<3.49e-04	1.15e-02	1.03e-02	1.09e-02	11.0	n/a	1.00e-03	2.23E+00
S99T000974		Alpha in Liquid Samples	uCi/mL	93.23	<6.50e-03	1.82e-02	1.76e-02	1.79e-02	3.35	n/a	1.60e-02	6.48E+01

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Table 1. Data Summary Report.
U-102 GRAB1

RISER: n/a
SEGMENT #: 2U-99-5

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000972		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	52.98	51.76	52.37	2.33	n/a	n/a	n/a
S99T000972		DSC Exotherm on Perkin Elmer	Joules/g	95.64	n/a	27.80	27.16	27.48	2.33	n/a	n/a	n/a
S99T000972		OH- by Pot. Titration	ug/mL	101.3	<1250.0	3.02e+04	3.01e+04	3.02e+04	0.33	n/a	1.25e+03	n/a
S99T000972		pH Direct	pH	n/a	n/a	13.04	13.19	13.11	1.14	n/a	1.00e-02	n/a
S99T000972		Specific Gravity	Sp.G.	97.90	n/a	1.515	1.476	1.495	2.61	n/a	1.00e-03	n/a
S99T000972		% Water by TGA on Perkin Elmer	%	98.50	n/a	46.84	48.21	47.53	2.88	n/a	n/a	n/a
S99T000972		TIC by Acid/Coulometry	ug/mL	99.50	3.00e-01	3.87e+03	3.62e+03	3.74e+03	6.68	n/a	5.000	n/a
S99T000972		TOC by Persulfate/Coulometry	ug/mL	92.67	5.700	1.17e+04	1.11e+04	1.14e+04	5.26	n/a	40.00	n/a
S99T000972	D	Aluminium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-02	3.37e+04	3.43e+04	3.40e+04	1.76	n/a	30.10	n/a
S99T000972	D	Chromium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-02	86.40	85.80	86.10	0.70	n/a	6.010	n/a
S99T000972	D	Iron-ICP-Acid Dil.	ug/mL	102.2	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S99T000972	D	Manganese-ICP-Acid Dil.	ug/mL	97.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000972	D	Sodium-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	2.18e+05	2.23e+05	2.21e+05	2.27	n/a	60.10	n/a
S99T000972	D	Nickel-ICP-Acid Dil.	ug/mL	100.2	<2.00e-02	1.21e+02	121.0	121.0	0.00	n/a	12.00	n/a
S99T000972	D	Zirconium-ICP-Acid Dil.	ug/mL	98.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000972		Fluoride-IC-Dionex 4000/4500	ug/mL	115.9	<1.20e-02	1.09e+03	1.15e+03	1.12e+03	5.36	n/a	61.81	n/a
S99T000972		Chloride-IC-Dionex 4000/4500	ug/mL	107.3	<1.70e-02	1.22e+04	1.23e+04	1.23e+04	0.82	n/a	87.57	n/a
S99T000972		Nitrite-IC - Dionex 4000/4500	ug/mL	104.9	<1.08e-01	1.52e+05	1.54e+05	1.53e+05	1.31	n/a	556.3	n/a
S99T000972		Nitrate by IC-Dionex 4000/4500	ug/mL	99.14	<1.39e-01	1.96e+05	1.97e+05	1.96e+05	0.51	n/a	716.0	n/a
S99T000972		Phosphate-IC-Dionex 4000/4500	ug/mL	107.7	<1.20e-01	3.03e+03	2.85e+03	2.94e+03	6.12	n/a	618.1	n/a
S99T000972		Sulfate by IC-Dionex 4000/4500	ug/mL	107.3	<1.38e-01	3.48e+03	3.82e+03	3.65e+03	9.32	n/a	710.8	n/a
S99T000975		Ammonia by ISE-Std Additions	ug/mL	85.78	<50.00	6.90e+02	745.0	717.5	7.67	n/a	50.00	n/a
S99T000975		Strontium-89/90 High Level	uCi/mL	100.6	2.80e-02	9.000	8.690	8.845	3.50	n/a	3.90e-02	2.18E+00
S99T000975		Pu-239/240 by TRU-SPEC Resin	uCi/mL	100.0	<3.35e-04	1.02e-03	9.42e-04	9.81e-04	7.95	n/a	3.77e-04	4.34E+00
S99T000975	D	Uranium-233 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<1.22e-01	<1.22e-1	n/a	n/a	n/a	1.22e-01	n/a
S99T000975	D	Uranium-234 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<1.22e-01	<1.22e-1	n/a	n/a	n/a	1.22e-01	n/a
S99T000975	D	Uranium-235 by ICP/MS Acid Add	ug/mL	112.7	<1.20e-05	<1.22e-01	<1.22e-1	n/a	n/a	n/a	1.22e-01	n/a
S99T000975	D	Uranium-236 by ICP/MS Acid Add	ug/mL	n/a	<1.60e-05	<1.63e-01	<1.63e-1	n/a	n/a	n/a	1.63e-01	n/a
S99T000975	D	Uranium-238 by ICP/MS Acid Add	ug/mL	108.5	<1.20e-05	1.298	1.260	1.279	3.13	n/a	1.22e-01	n/a
S99T000975		Cesium-137 by GEA	uCi/mL	101.1	<2.19e-03	6.68e+02	655.0	661.5	1.97	n/a	n/a	0.130
S99T000975		Am-241 by Extraction	uCi/mL	93.46	<3.49e-04	1.36e-02	1.23e-02	1.29e-02	10.0	n/a	1.00e-03	2.15E+00
S99T000975		Alpha in Liquid Samples	uCi/mL	93.23	<6.50e-03	2.05e-02	1.36e-02	1.70e-02	40.5	n/a	1.60e-02	6.48E+01

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Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000949		Volume % Settled Solids	%	n/a	n/a	60.00	n/a	n/a	n/a	n/a	1.00e-01	n/a
S99T000954		Bulk Density of Sample	g/mL	n/a	n/a	1.560	n/a	n/a	n/a	n/a	5.00e-01	n/a
S99T000960		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S99T000960		DSC Exotherm on Perkin Elmer	Joules/g	96.06	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S99T000960		pH on SST Samples	pH	n/a	n/a	12.67	12.65	12.66	0.16	n/a	1.00e-02	n/a
S99T000960		% Water by TGA on Perkin Elmer	%	101.3	n/a	44.69	41.09	42.89	8.39	n/a	n/a	n/a
S99T000960		TIC by Acid/Coulometry	ug/g	100.3	n/a	6.08e+03	9.43e+03	7.76e+03	43.2	159.0	5.000	n/a
S99T000960		TOC by Persulfate/Coulometry	ug/g	90.67	n/a	7.94e+03	4.99e+03	6.46e+03	45.6	119.0	40.00	n/a

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Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000963	F		Strontium-89/90 High Level	uCi/g	97.97	<1.09e-01	82.30	85.70	84.00	4.05	n/a	1.73e-01	1.59E+00
S99T000963	F		Pu-239/240 by TRU-SPEC Resin	uCi/g	102.4	<3.39e-03	9.56e-02	9.41e-02	9.49e-02	1.58	n/a	7.00e-03	1.98E+00
S99T000963	F		Aluminium -ICP-Fusion	ug/g	98.80	<5.00e-02	2.75e+04	2.77e+04	2.76e+04	0.72	97.60	996.0	n/a
S99T000963	F		Chromium -ICP-Fusion	ug/g	99.60	<1.00e-02	7.03e+03	7.11e+03	7.07e+03	1.13	99.00	199.0	n/a
S99T000963	F		Iron -ICP-Fusion	ug/g	100.6	<5.00e-02	2.51e+03	2.47e+03	2.49e+03	1.61	99.50	996.0	n/a
S99T000963	F		Manganese -ICP-Fusion	ug/g	96.20	<1.00e-02	4.95e+02	521.0	508.0	5.12	92.50	199.0	n/a
S99T000963	F		Sodium -ICP-Fusion	ug/g	100.0	<1.00e-01	1.76e+05	1.73e+05	1.75e+05	1.72	102.0	1.99e+03	n/a
S99T000963	F		Nickel -ICP-Fusion	ug/g	99.00	<2.00e-02	2.02e+03	1.50e+03	1.76e+03	29.5	98.70	398.0	n/a
S99T000963	F		Zirconium -ICP-Fusion	ug/g	97.00	<1.00e-02	<1.99e+02	<1.99e2	n/a	n/a	96.10	199.0	n/a
S99T000963	F		Cesium-137 by GEA	uCi/g	97.33	<1.14e-01	2.08e+02	208.0	207.9	0.00	n/a	n/a	0.400
S99T000963	F		Am-241 by Extraction	uCi/g	100.0	<3.02e-02	4.55e-01	4.55e-01	4.55e-01	0.00	n/a	5.10e-02	2.22E+00
S99T000963	F		Alpha of Digested Solid	uCi/g	93.23	<2.50e-02	5.96e-01	5.80e-01	5.88e-01	2.72	93.70	2.00e-02	1.35E+01
S99T000966	A		Uranium-233 by ICP/MS AcidD159	ug/g	n/a	<1.20e-05	<9.86e-01	<9.17e-1	n/a	n/a	n/a	9.86e-01	n/a
S99T000966	A		Uranium-234 by ICP/MS AcidD159	ug/g	n/a	<1.20e-05	<9.86e-01	<9.17e-1	n/a	n/a	n/a	9.86e-01	n/a
S99T000966	A		Uranium-235 by ICP/MS AcidD159	ug/g	108.5	<1.20e-05	45.56	48.80	47.18	6.78	103.4	9.86e-01	n/a
S99T000966	A		Uranium-236 by ICP/MS AcidD159	ug/g	n/a	<1.60e-05	< 1.315	1.450	n/a	n/a	n/a	1.315	n/a
S99T000966	A		Uranium-238 by ICP/MS AcidD159	ug/g	95.80	3.80e-05	6.73e+03	7.27e+03	7.00e+03	7.71	112.0	9.86e-01	n/a
S99T000969	W		Fluoride-IC-Dionex 4000/4500	ug/g	103.3	<1.20e-02	6.20e+02	598.0	609.1	3.61	95.21	124.5	n/a
S99T000969	W		Chloride-IC-Dionex 4000/4500	ug/g	107.4	1.90e-02	6.27e+03	6.05e+03	6.16e+03	3.57	103.1	176.4	n/a
S99T000969	W		Nitrite-IC - Dionex 4000/4500	ug/g	101.5	3.82e-01	7.28e+04	7.19e+04	7.23e+04	1.24	113.5	1.12e+03	n/a
S99T000969	W		Nitrate by IC-Dionex 4000/4500	ug/g	97.09	<1.39e-01	9.70e+04	9.71e+04	9.70e+04	0.10	108.2	1.44e+03	n/a
S99T000969	W		Phosphate-IC-Dionex 4000/4500	ug/g	106.6	<1.20e-01	1.93e+04	1.90e+04	1.92e+04	1.57	106.2	1.24e+03	n/a
S99T000969	W		Sulfate by IC-Dionex 4000/4500	ug/g	103.0	<1.38e-01	1.85e+04	1.87e+04	1.86e+04	1.08	105.0	1.43e+03	n/a

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ADDITIONAL DSC RESULTS FOR TANK
FOR TANK 241-U-102 GRAB SAMPLES

ATTACHMENT 2

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Attachment 2. Additional DSC Results for Tank 241-U-102 Grab Samples

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S99T000970						
2U-99-1	Samp	34.79	253.8	992.1	118.8	0.04
	Dup	30.38	256.1	1004.7	126.8	0.03
S99T000971						
2U-99-2	Samp	25.26	256.0	892.7	118.0	0.03
	Dup	25.55	257.6	1043.0	130.4	0.02
S99T000972						
2U-99-5	Samp	27.80	253.7	826.8	117.6	0.03
	Dup	27.16	255.4	925.5	120.8	0.03

Energy Ratio = Exothermic Energy /Endothermic Energy

* - This ratio must be < 1 for Compatibility Energetics

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WASTE COMPAAITIBILITY CORROSION RULES
FOR TANK 241-U-102 GRAB SAMPLES

ATTACHMENT 3

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Attachment 3. Waste Compatibility Corrosion Rules for 241-U-102 Grab Samples

Sample ID	Analyte	Result (ug/mL)	Result (M)	If [NO ₃] ≤ 1.0 M?	If [OH] 0.010 M ≤ [OH] ≤ 8.0 M?	If [NO ₂] 0.011 M ≤ [NO ₂] ≤ 5.5 M	If [OH] + [NO ₂] [NO ₃] / ([OH] + [NO ₂]) < 2.5?
S99T000970 Supernate Sample	NO ₃	2.10E+05	3.387				
	OH	2.70E+04	1.588				
	NO ₂	1.32E+05	2.870	1.0 M < [NO ₃] < 3.0 M?	0.1 M * [NO ₃] < [OH] < 10 M?		>= 0.4 * [NO ₃]?
				3.0 M < [NO ₃] < 5.5 M? YES	0.3 ≤ [OH] < 10 M? YES		≥ 1.2 M? YES

Sample ID	Analyte	Result (ug/mL)	Result (M)	If [NO ₃] ≤ 1.0 M?	If [OH] 0.010 M ≤ [OH] ≤ 8.0 M?	If [NO ₂] 0.011 M ≤ [NO ₂] ≤ 5.5 M	If [OH] + [NO ₂] [NO ₃] / ([OH] + [NO ₂]) < 2.5?
S99T000970 Supernate Duplicate	NO ₃	2.02E+05	3.258				
	OH	2.79E+04	1.641				
	NO ₂	1.34E+05	2.913	1.0 M < [NO ₃] < 3.0 M?	0.1 M * [NO ₃] < [OH] < 10 M?		>= 0.4 * [NO ₃]?
				3.0 M < [NO ₃] < 5.5 M? YES	0.3 ≤ [OH] < 10 M? YES		≥ 1.2 M? YES

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Attachment 3. Waste Compatibility Corrosion Rules for 241-U-102 Grab Samples

Sample ID	Analyte	Result (ug/mL)	Result (M)	Corrosion Rule	Pass/Fail
S99T000971	NO ₂	1.97E+05	3.177	$\leq 1.0 \text{ M}^2$	Pass
	OH	3.02E+04	1.776	$0.010 \text{ M} \leq [\text{OH}] \leq 8.0 \text{ M}^2$	Pass
	NO ₃	1.97E+05	3.177	$0.011 \text{ M} \leq [\text{NO}_2] \leq 5.5 \text{ M}$	Pass
Supernate	NO ₂	1.54E+05	3.348	$1.0 \text{ M} < [\text{NO}_2] < 3.0 \text{ M}^2$	Fail
	OH	3.02E+04	1.776	$0.1 \text{ M} \cdot [\text{NO}_2] < [\text{OH}] < 10 \text{ M}^2$	Fail
	NO ₃	1.97E+05	3.177	$[\text{NO}_2]/([\text{OH}] + [\text{NO}_2]) < 2.5?$	Fail
Duplicate	NO ₂	1.54E+05	3.348	$1.0 \text{ M} < [\text{NO}_2] < 3.0 \text{ M}^2$	Fail
	OH	3.02E+04	1.776	$0.1 \text{ M} \cdot [\text{NO}_2] < [\text{OH}] < 10 \text{ M}^2$	Fail
	NO ₃	1.97E+05	3.177	$[\text{NO}_2]/([\text{OH}] + [\text{NO}_2]) < 2.5?$	Fail
				$3.0 \text{ M} < [\text{NO}_2] \leq 5.5 \text{ M}^2$	Yes
				$0.3 \leq [\text{OH}] < 10 \text{ M}^2$	Yes
				$\geq 1.2 \text{ M}^2$	Yes

Attachment 3. Waste Compatibility Corrosion Rules for 241-U-102 Grab Samples

Sample ID	Analyte	Result (ug/mL)	Result (M)	I_1 [NO ₃]	I_2 [OH]	I_3 [NO ₂]	I_4 [OH] + [NO ₂]
				≤ 1.0 M?	0.010 M \leq [OH] ≤ 8.0 M?	0.011 M \leq [NO ₂] ≤ 5.5 M	$[NO_3]/([OH] + [NO_2]) < 2.5?$
S99T000972	NO ₃	1.96E+05	3.161				
Supernatant Sample	OH	3.02E+04	1.776				
	NO ₂	1.52E+05	3.304	1.0 M $<$ [NO ₃] < 8.0 M?	0.1 M * [NO ₃] < 10 M?		> 0.4 * [NO ₃]?
				3.0 M $<$ [NO ₃] < 5.5 M?	0.3 \leq [OH] < 10 M?		> 1.2 M?
				YES	YES		YES

Sample ID	Analyte	Result (ug/mL)	Result (M)	I_1 [NO ₃]	I_2 [OH]	I_3 [NO ₂]	I_4 [OH] + [NO ₂]
				≤ 1.0 M?	0.010 M \leq [OH] ≤ 8.0 M?	0.011 M \leq [NO ₂] ≤ 5.5 M	$[NO_3]/([OH] + [NO_2]) < 2.5?$
S99T000972	NO ₃	1.97E+05	3.177				
Supernatant Duplicate	OH	3.01E+04	1.771				
	NO ₂	1.54E+05	3.348	1.0 M $<$ [NO ₃] < 3.0 M?	0.1 M * [NO ₃] < 10 M?		> 0.4 * [NO ₃]?
				3.0 M $<$ [NO ₃] < 5.5 M?	0.3 \leq [OH] < 10 M?		> 1.2 M?
				YES	YES		YES

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CHAIN OF CUSTODY

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CHAIN-OF-CUSTODY RECORD FOR CPO

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667912 DT

(9) Seal Intact Upon Release? Yes No
 (10) Seal Intact Upon Receipt? Yes No
 (11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6a) Yes No

(12) Laboratory Comments:

(7) Sampling Data

Y N
 - Lithium Bromide
 Amount _____
 Concentration _____
 - X-Ray
 - Partial Sample
 Retrieved Partial Sample Stroke Length _____

(1) Sample Number 2U-99-1
 (2) Supervisor/Sampler K. S. Kaznick
 (3) Tank V-102
 (4) Riser 13
 (5) Cask/Pig Serial No. 5-10
 (6) Shipment Description:
 A. Work Package Number WS99-00055/0
 B. Cask/Pig Seal Number 1629
 C. Date Sample Collected 5-26-99
 D. Time Sample Collected 1112

(8) Field Comments:

Suspended Solids 5-26-99
2 r/n - WC UNCORRECTED

1-30-97 WBC
16

(13) Relinquished By (Sign and PRINT) <u>James Sicksel</u>	(14) Received By (Sign and PRINT) <u>MLDunning</u>	(15) Date/Time <u>1325</u>	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) <u>MLDunning</u>	(18) Received By (Sign and PRINT) <u>R. Chambers</u>	(18) Date/Time <u>1450</u>	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT) <u>MLDunning</u>	(22) Received By (Sign and PRINT)	(23) Date/Time <u>5-26-99</u>	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

CHAIN-OF-CUSTODY RECORD FOR CPO

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(9) Seal Intact Upon Release? Yes No
 (10) Seal Intact Upon Receipt? Yes No
 (11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 8b) Yes No

(12) Laboratory Comments:

(2) Supervisor/Sampler *R. J. Patrick*
 (5) Cask/Pig Serial No. *TF-4A*
 (7) Sampling Date *5-26-99*
 - Lithium Bromide Y N
 - Amount *NA*
 - Concentration
 - X-Ray
 - Partial Sample
 - Retrieved Partial Sample Stroke Length _____

(1) Sample Number *2U99-2*
 (3) Tank *V-102*
 (4) Riser *13*
 (6) Shipment Description: *W9-99-0055/0*
 A. Work Package Number *1630*
 B. Cask/Pig Seal Number *5-26-99*
 C. Date Sample Collected *6134*
 D. Time Sample Collected _____

(8) Field Comments:

*Suspended solids @ 52699
 2 r/in window closed uncorrected*

35

7-30-99 IS

(13) Relinquished By (Sign and PRINT) <i>James Schick James Schick</i>	(14) Received By (Sign and PRINT) <i>ML Dunning</i>	(15) Date/Time <i>1325</i>	(17) Receiver Comments
(17) Relinquished By (Sign and PRINT) <i>ML Dunning</i>	(18) Received By (Sign and PRINT) <i>Richard Puchner</i>	(19) Date/Time <i>5-26-99</i>	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time <i>5-26-99</i>	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 20-99-3	(2) Supervisor/Sampler K. J. Riazvil	(3) Tank U-102	(4) Riser 13	(5) Cask/Pig Serial No. B-I-3
(9) Seal Intact Upon Release? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
(10) Seal Intact Upon Receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				

(6) Shipment Description:		(7) Sampling Data	
A. Work Package Number WS-99-00055/0	B. Cask/Pig Seal Number 1631	Retrieved Partial Sample Stroke Length	Partial Sample
C. Date Sample Collected 5-26-99	D. Time Sample Collected 1141	<input type="checkbox"/> X-Ray	<input type="checkbox"/> Lithium Bromide
Surpanded solids @ 526.99		<input type="checkbox"/> Concentration	<input type="checkbox"/> Amount
1.5 r/hr window closed unconnected		<input type="checkbox"/> - X-Ray	<input type="checkbox"/> - Partial Sample
(8) Field Comments:		<div style="border: 1px solid black; padding: 5px;"> <input type="checkbox"/> Retrieved Partial Sample Stroke Length </div>	

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7-30-92 JL

(12) Laboratory Comments:

(13) Relinquished By (Sign and PRINT) Robert Riazvil	(14) Received By (Sign and PRINT) K. J. Riazvil	(15) Date/Time 10 10	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) Robert Riazvil	(18) Received By (Sign and PRINT) K. J. Riazvil	(19) Date/Time 5-27-99	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT) Robert Riazvil	(22) Received By (Sign and PRINT) K. J. Riazvil	(23) Date/Time 5-27-99	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 2U-99-4		(2) Supervisor/Sampler <i>R. J. Praznik</i>		(9) Seal Intact Upon Release? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
(3) Tank U-102	(4) Riser 13	(5) Cask/Pig/Serial No. G-7		(10) Seal Intact Upon Receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
(6) Shipment Description: A. Work Package Number U-599-00055/0 B. Cask/Pig Seal Number 1632 C. Date Sample Collected 5-26-99 D. Time Sample Collected 1145		(7) Sampling Data		(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
		- Lithium Bromide <input type="checkbox"/> Y <input type="checkbox"/> N			
		Amount _____			
		Concentration NA _____			
		- X-Ray <input type="checkbox"/> <input type="checkbox"/>		(12) Laboratory Comments:	
		- Partial Sample <input type="checkbox"/> <input type="checkbox"/>			
		- Retrieved Partial Sample Stroke Length _____			
(8) Field Comments: Suspended Solids @ 52699 1.5 R/hr Window Closed uncorrected 37					
(13) Relinquished By (Sign and PRINT) <i>Robert Praznik</i>		(14) Received By (Sign and PRINT) <i>James F. ...</i>		(15) Date/Time 1010	(17) Receiver Comments
(17) Relinquished By (Sign and PRINT) <i>James F. ...</i>		(18) Received By (Sign and PRINT) <i>R.T. Steele</i>		(19) Date/Time 5-27-99	(20) Receiver Comments
				(21) Relinquished By (Sign and PRINT)	
				(23) Date/Time 5-27-99	(24) Receiver Comments
				(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)

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7-30-97 JE

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 20-99-5 (2) Supervisor/Sampler R.J. Piazzi Bluf (9) Seal Intact Upon Release? Yes No

(3) Tank U-102 (4) Riser 13 (5) Cask/Pig Serial No. G-9 (10) Seal Intact Upon Receipt? Yes No

(6) Shipment Description: (7) Sampling Data Y N
 A. Work Package Number WS 99-00055/6
 B. Cask/Pig Seal Number 1633
 C. Date Sample Collected 5-26-99
 D. Time Sample Collected 1151
 - Lithium Bromide Y N
 Amount _____
 Concentration NA _____
 - X-Ray Y N
 - Partial Sample Y N
 - Retrieved Partial Sample Stroke Length _____

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

(12) Laboratory Comments:

(8) Field Comments:
 Suspended Solids, Depth 35'-10", NOT
 AS STATED AS ON PROCESS MEMO CFE-99-00241
 1.5 r/hr Window Closed UNCORRECTED
 5-26-99

38

7-30-97 JS

(13) Relinquished By (Sign and PRINT) R. J. Piazzi (14) Received By (Sign and PRINT) James C. Stead (15) Date/Time 1115 5-27-99 (17) Receiver Comments

(17) Relinquished By (Sign and PRINT) James C. Stead (18) Received By (Sign and PRINT) R. J. Stead (19) Date/Time 1155 5-27-99 (20) Receiver Comments

(21) Relinquished By (Sign and PRINT) _____ (22) Received By (Sign and PRINT) _____ (23) Date/Time _____ (24) Receiver Comments

(25) Relinquished By (Sign and PRINT) _____ (26) Received By (Sign and PRINT) _____ (27) Date/Time _____ (28) Receiver Comments

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LABCORE Data Entry Template for Worklist# 29969

Analyst: Arj Instrument: BA000 Book # _____Method: AdminDataEntry Rev/Mod NA

Worklist Comment: @BRKDWN1 U-102 99-1,2,5

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
99000200	U-102 GRAB1	1	SAMPLE	S99T00947	0		@BRKDWN1 DOSERATE	SOLID	N/A	N/A		mrad/hour
99000200	U-102 GRAB1	1	SAMPLE	S99T00947	0		@BRKDWN1 SEALNUM	SOLID	N/A	1629		
99000200	U-102 GRAB1	1	SAMPLE	S99T00947	0		@BRKDWN1 ETCHNUM	SOLID	N/A	2U-99-1		
99000200	U-102 GRAB1	1	SAMPLE	S99T00947	0		@BRKDWN1 APPEAR02	SOLID	N/A	Opaque		
99000200	U-102 GRAB1	1	SAMPLE	S99T00947	0		@BRKDWN1 SAMPANT2	SOLID	N/A	125		mL
99000200	U-102 GRAB1	1	SAMPLE	S99T00947	0		@BRKDWN1 STLSD01	SOLID	N/A	7.6		%
99000200	U-102 GRAB1	1	SAMPLE	S99T00947	0		@BRKDWN1 COLOR-01	SOLID	N/A	Yellow		
99000200	U-102 GRAB1	1	SAMPLE	S99T00947	0		@BRKDWN1 ORGVOL02	SOLID	N/A	0		mL
99000200	U-102 GRAB1	2	SAMPLE	S99T00948	0		@BRKDWN1 DOSERATE	SOLID	N/A	N/A		mrad/hour
99000200	U-102 GRAB1	2	SAMPLE	S99T00948	0		@BRKDWN1 SEALNUM	SOLID	N/A	1630		
99000200	U-102 GRAB1	2	SAMPLE	S99T00948	0		@BRKDWN1 ETCHNUM	SOLID	N/A	2U-99-2		
99000200	U-102 GRAB1	2	SAMPLE	S99T00948	0		@BRKDWN1 APPEAR02	SOLID	N/A	Opaque		
99000200	U-102 GRAB1	2	SAMPLE	S99T00948	0		@BRKDWN1 SAMPANT2	SOLID	N/A	125		mL
99000200	U-102 GRAB1	2	SAMPLE	S99T00948	0		@BRKDWN1 STLSD01	SOLID	N/A	8.6		%
99000200	U-102 GRAB1	2	SAMPLE	S99T00948	0		@BRKDWN1 COLOR-01	SOLID	N/A	Yellow		
99000200	U-102 GRAB1	2	SAMPLE	S99T00948	0		@BRKDWN1 ORGVOL02	SOLID	N/A	0		mL
99000200	U-102 GRAB1	3	SAMPLE	S99T00949	0		@BRKDWN1 DOSERATE	SOLID	N/A	N/A		mrad/hour
99000200	U-102 GRAB1	3	SAMPLE	S99T00949	0		@BRKDWN1 SEALNUM	SOLID	N/A	1633		

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.

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Page: 2

LABCORE Data Entry Template for Worklist# 29969

GROUP	PROJECT	S TYPE	SAMPLI#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
99000200	U-102 GRAB1	3 SAMPLE	S99T010949	0	@BRKDOWN1 ETCHNUM	SOLID	N/A	24-99-5		
99000200	U-102 GRAB1	3 SAMPLE	S99T010949	0	@BRKDOWN1 APPEAR02	SOLID	N/A	Opaque		
99000200	U-102 GRAB1	3 SAMPLE	S99T010949	0	@BRKDOWN1 SAMPAMT2	SOLID	N/A	125		mL
99000200	U-102 GRAB1	3 SAMPLE	S99T010949	0	@BRKDOWN1 STLSLD01	SOLID	N/A	60		%
99000200	U-102 GRAB1	3 SAMPLE	S99T010949	0	@BRKDOWN1 COLOR-01	SOLID	N/A	yellow		
99000200	U-102 GRAB1	3 SAMPLE	S99T010949	0	@BRKDOWN1 ORGVOL02	SOLID	N/A	0		mL

Final page for worklist # 29969

David A. Baker 6-1-99
Analyst Signature Date

RS/Hee 6/2/99
Analyst Signature Date

Validated RW Schrock
6/2/99

Calculated % settled solids for:

24-99-3 - 76%

24-99-4 - 37%

Hee 6/1/99

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-1674 REV. 0

SAMPLE PREPARATION

HNF-1674 REV. 0

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worklistrpt Version 2.1 05/15/95
06/03/99 08:57

HNF-1674 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 30034

Analyst: gay Instrument: FUS01 Book # N/A

Method: LA-549-141 Rev/Mod G-Ø

Worklist Comment: U102 GRAB1, FUSION01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	<u>1</u>	<u>250</u>	N/A	g/L
99000200	U-102 GRAB1	2 SAMPLE	S99T000963	0 F	FUSION01	SOLID	N/A	<u>2.0588</u>		g/L
	<u>15147g →</u>		<u>250g</u>							
99000200	U-102 GRAB1	3 SAMPLE	S99T000963	0	DOSE-02	SOLID	N/A	<u>46</u>		mrad/hour
99000200	U-102 GRAB1	4 DUP	S99T000963	0 F	FUSION01	SOLID	<u>2.0588</u>	<u>2.0616</u>	N/A	g/L
	<u>15154g →</u>		<u>250g</u>							
99000200	U-102 GRAB1	5 DUP	S99T000963	0	DOSE-02	SOLID	<u>40</u>	<u>40</u>	N/A	mrad/hour

Final page for worklist # 30034

A. Yag 6-4-99
Analyst Signature Date

Sonia Z. Capione 6/8/99
Analyst Signature Date

Parent

Daughter

S99T000960 → S99T000963

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
06/03/99 09:02

HNF-1674 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 30035

Analyst: PHZ Instrument: H2O01 Book # N/A

Method: LA-504-101 Rev/Mod G-1

Worklist Comment: U102 GRAB1, H2ODIG01 skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				H2ODIG01	SOLID	<u>1</u>	<u>.100</u>	N/A	g/L
99000200	U-102 GRAB1	2	SAMPLE	S99T000969	0	W	H2ODIG01	SOLID	N/A	<u>4.915</u>		g/L
				<u>.49157</u>						<u>.100</u>		
99000200	U-102 GRAB1	3	SAMPLE	S99T000969	0		DOSE-02	SOLID	N/A	<u>7</u>		mrad/hour
99000200	U-102 GRAB1	4	DUP	S99T000969	0	W	H2ODIG01	SOLID	<u>4.915</u>	<u>5.105</u>	N/A	g/L
				<u>.51057</u>						<u>.100</u>		
99000200	U-102 GRAB1	5	DUP	S99T000969	0		DOSE-02	SOLID	<u>7</u>	<u>7</u>	N/A	mrad/hour

Final page for worklist # 30035

PHZ 6/7/99
Analyst Signature Date

Analyst Signature Date

Parent Daughter
S99T000960 → S99T000969

Data Entry Comments: APT - DARRELL HAINES

DATA ENTRY 6-7-99

Validated by: Sal H. Pang
06/07/99

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-1674 REV. 0

worklistrpt Version 2.1 05/15/95
06/03/99 08:54

Page: 1

LABCORE Data Entry Template for Worklist# 30033

Analyst:

Amz

Instrument: ACD01

Book # *WHC-14*
WHC-2

*2.5 ml each into
50 ml final volume
D.F. = 20x*

Method: LA-505-163 Rev/Mod *B-1*

Worklist Comment: U102 GRAB1, ACIDIG01 skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				ACIDIG01	SOLID	<i>1</i>	<i>.050</i>	N/A	g/L
		2	STD-PREP				ACIDIG01	SOLID	<i>20</i>	<i>20</i>	N/A	g/L
99000200	U-102 GRAB1	3	SAMPLE	S99T000966	0	A	ACIDIG01	SOLID	N/A	<i>4.88</i>		g/L
				<i>.2440g</i>						<i>.050g</i>		
99000200	U-102 GRAB1	4	SAMPLE	S99T000966	0		DOSE-02	SOLID	N/A	<i>48</i>		mrad/hour
99000200	U-102 GRAB1	5	DUP	S99T000966	0	A	ACIDIG01	SOLID	<i>4.88</i>	<i>5.246</i>	N/A	g/L
				<i>.2623g</i>						<i>.050g</i>		
99000200	U-102 GRAB1	6	DUP	S99T000966	0		DOSE-02	SOLID	<i>48</i>	<i>48</i>	N/A	mrad/hour
99000200	U-102 GRAB1	7	SPK	S99T000966	0	A	ACIDIG01	SOLID	<i>1</i>	<i>5.346</i>	N/A	g/L
				<i>.2673g</i>						<i>.050g</i>		
99000200	U-102 GRAB1	8	SPK	S99T000966	0		DOSE-02	SOLID	<i>48</i>	<i>54</i>	N/A	mrad/hour

Final page for worklist # 30033

Parent 6/7/99

Analyst Signature Date

Parent

S99T000960

Analyst Signature Date

Daughter

S99T000966

Data Entry Comments:

HPT - DARRELL HAINES

Validated by:

DATA ENTRY 6-7-99

Jh. Howell

Paul M. Page

06/07/99

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-1674 REV. 0

000

BULK DENSITY WORKSHEET

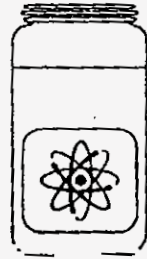
HNF-1674 REV. 0

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BULK DENSITY WORKSHEET

Date: 6-1-99
P.C.: Steer
Phone: 372-2495
Group#: 99000200

Tank: U-102
Core: 2U-99-5
Seg.: _____
Auger: _____
Sample ID: _____



LabCore# S99T000754 Data entry initials _____

Jar #: 2U-99-5
Jar/Vial Size: _____ mL
Initial Wt.: _____ g
Final Wt.: _____ g
Net Wt.: _____ g

Cone# _____
Final Vol.: 10.5 mL
Final Wt.: 24.06 g
Initial Wt.: 7.68 g
Net Wt.: 16.38 g

Bulk Density 1.56 g/mL

Appearance/Narrative:

HNF-1674 REV. 0

INORGANIC ANALYSIS

10/10/00

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10/10/00

LABCORE Data Entry Template for Worklist# 30020

Analyst: MRK Instrument: DSC0 3 Book # 12714-B

Method: LA-514-114 Rev/Mod D-2

Worklist Comment: U102 GRAB1, DSC-03 Run under nitrogen. skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>27.39</u>	<u>N/A</u>	Joules/g
99000200	U-102 GRAB1	2 SAMPLE	S99T000970	0	DSC-03	LIQUID	<u>N/A</u>	<u>34.79</u>		Joules/g
99000200	U-102 GRAB1	3 DUP	S99T000970	0	DSC-03	LIQUID	<u>34.79</u>	<u>30.38</u>	<u>N/A</u>	Joules/g
99000200	U-102 GRAB1	4 SAMPLE	S99T000971	0	DSC-03	LIQUID	<u>N/A</u>	<u>25.26</u>		Joules/g
99000200	U-102 GRAB1	5 DUP	S99T000971	0	DSC-03	LIQUID	<u>25.26</u>	<u>25.55</u>	<u>N/A</u>	Joules/g

Final page for worklist # 30020

MRK
Analyst Signature
6/4/99
Date

Mary Fran
Analyst Signature
6/10/99
Date

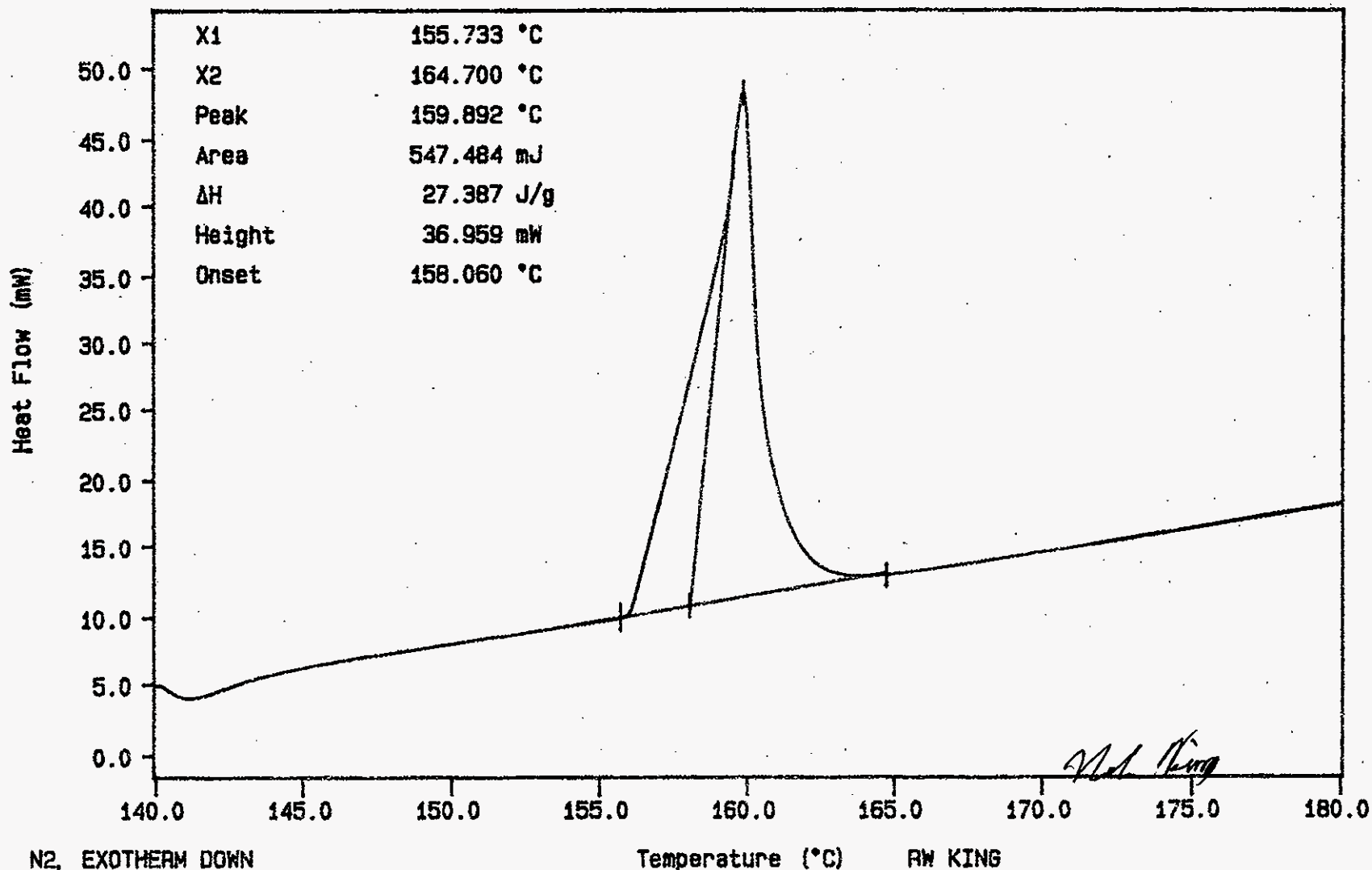
[Signature]
REVIEWER SIGNATURE
6-15-99
DATE

Data Entry Comments:

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

Curve 1: DSC
File info: IND060301 Fri Jun 4 19:03:13 1999
Sample Weight: 19.991 mg
STD 12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 56 TO 60.



56

HNF-1674 REV. 0

N2, EXOTHERM DOWN
TEMP IN: 140.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min
TEMP FN: 180.0 °C

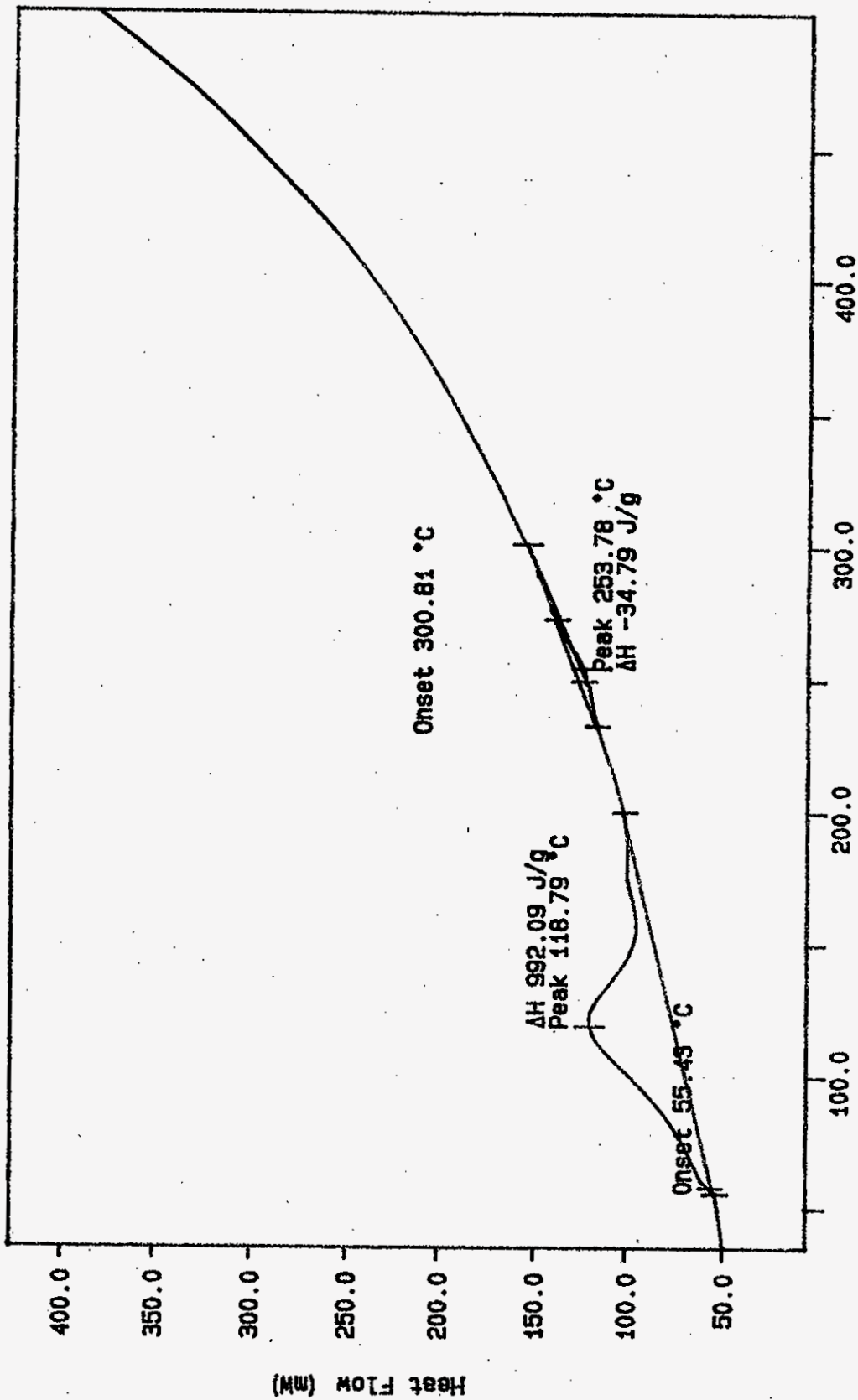
RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jun 4 19:14:48 1999

01/12/15 07:09 FAX

016/034

HNF-1674 REV. 0

Curve 1: DSC
 File info: SAM060301 Fri Jun 4 20:09:02 1999
 Sample Weight: 15.330 mg
 S99T000970

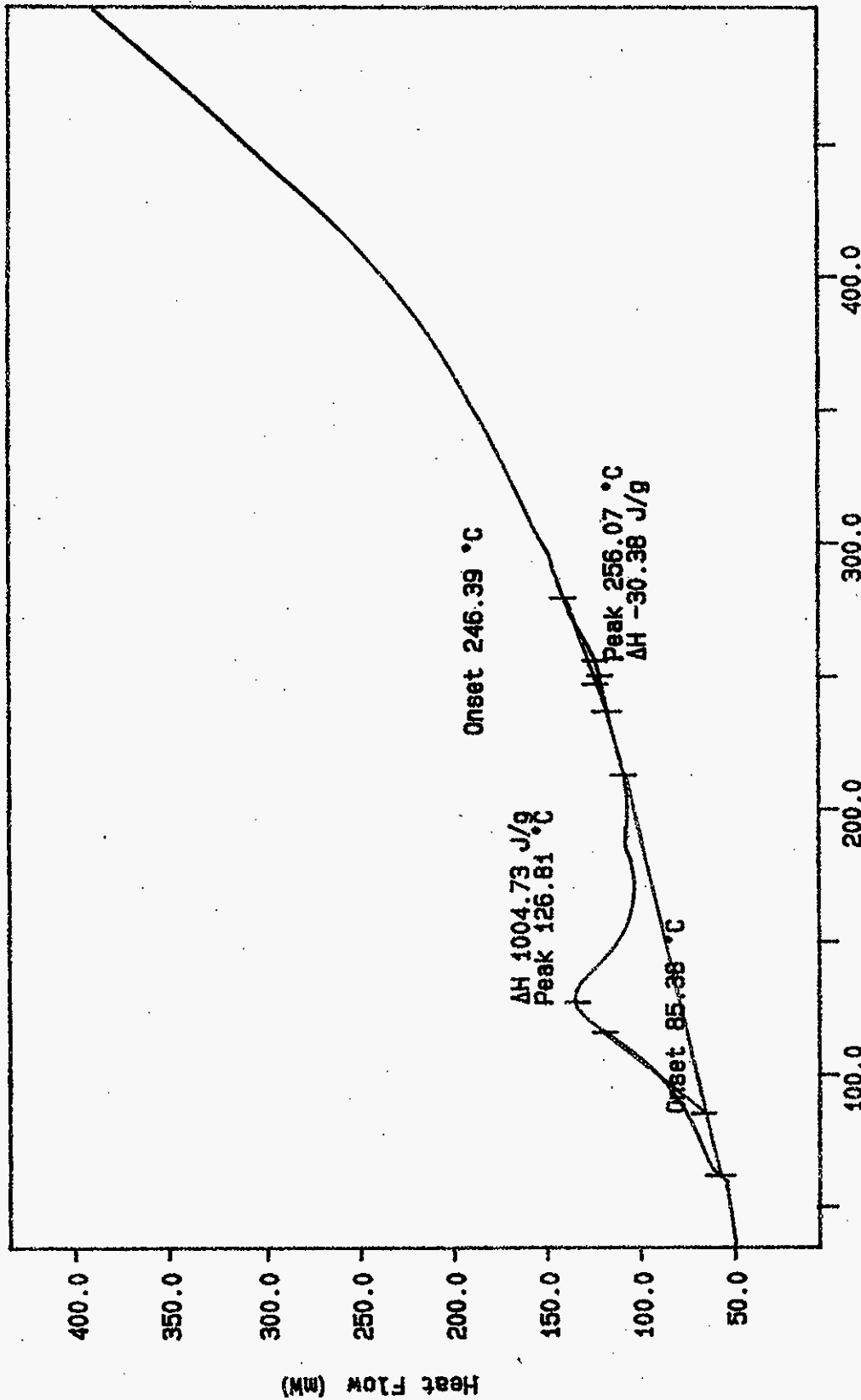


N2 10C/min
 TEMP: 35.0 °C
 RATE: 500.0 °C

TIME: 0.0 min RATE: 10.0 C/min

RW KING
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Jun 4 20:42:01 1999

Curve 1: DSC
 File info: SAM060302 Fri Jun 4 21: 40: 01 1999
 Sample Weight: 17.240 mg
 S99T000970 DUP



N2 10C/min
 TEMP: 35.8 C
 TIME: 500.8 C

0.0 min RATE: 10.0 C/min

RW KING
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Jun 4 21: 42: 20 1999

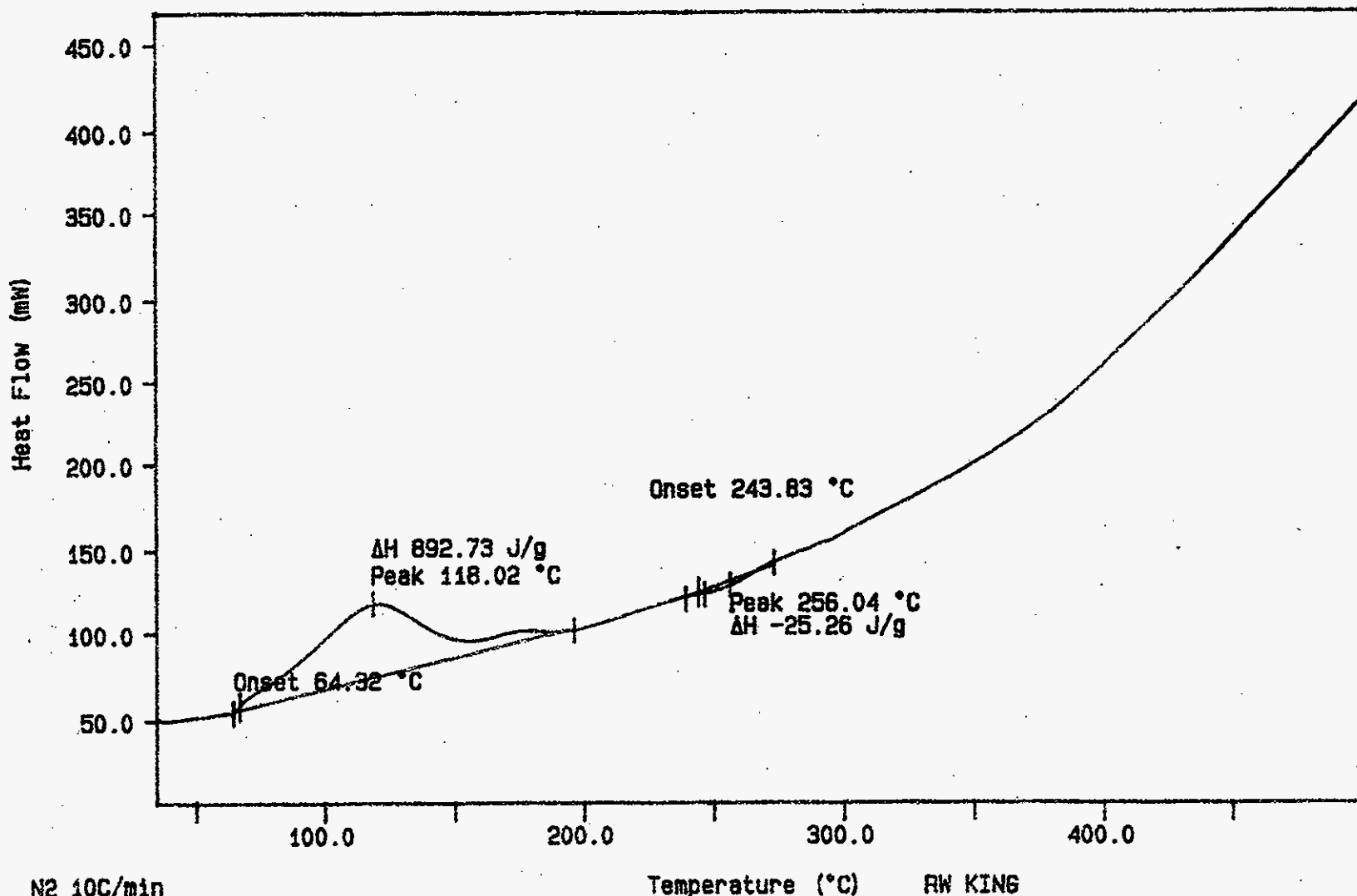
Curve 1: DSC

File info: SAM050403 Fri Jun 4 22:33:36 1999

Sample Weight: 16.460 mg

S99T000971

59



N2 10C/min

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

Temperature (°C)

RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jun 4 22:40:04 1999

HNF-1674 REV. 0

01/12/15 07:11 FAX

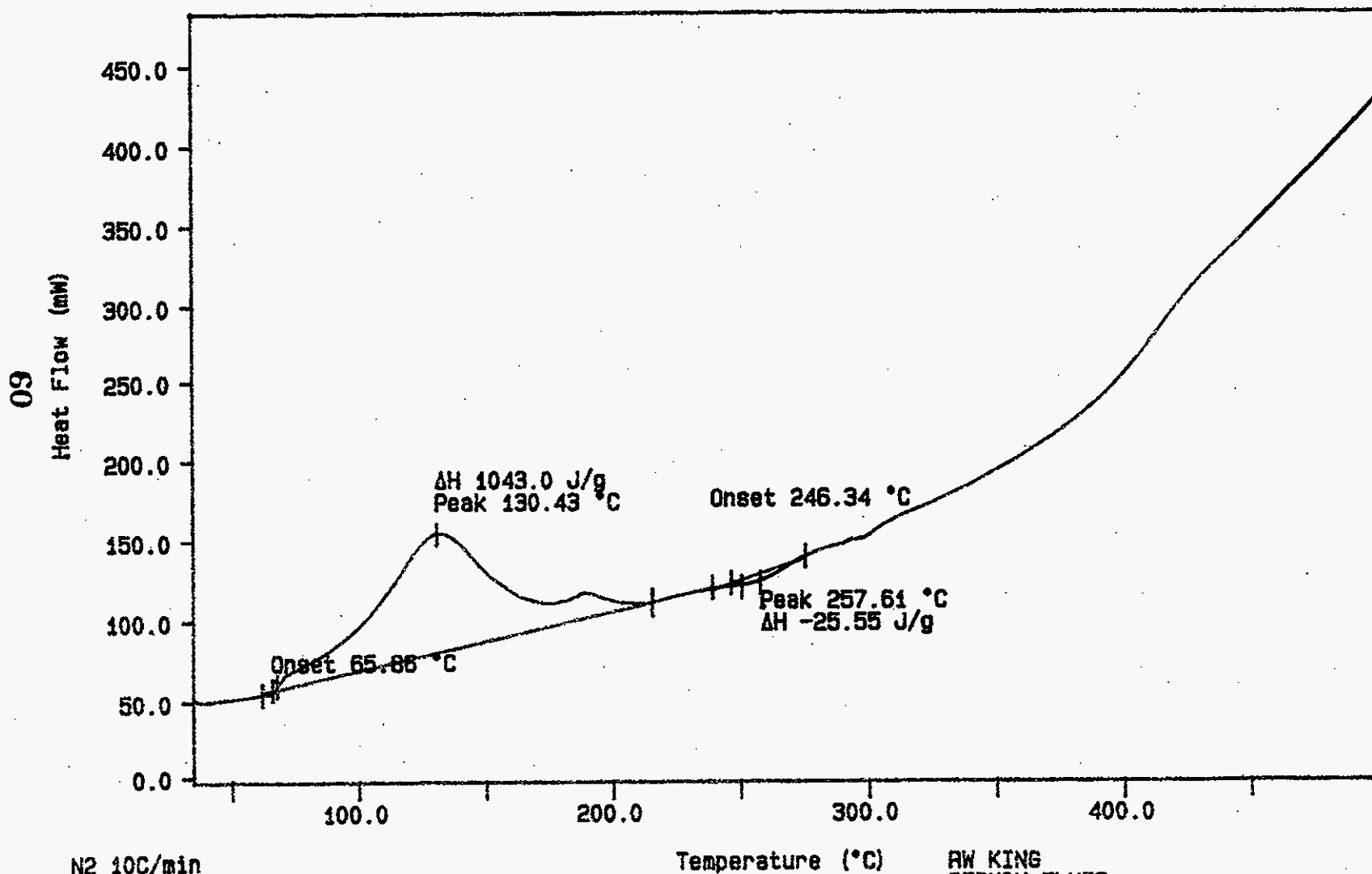
019/034

Curve 1: DSC

File info: SAM060404 Fri Jun 4 23:31:08 1999

Sample Weight: 25.310 mg

S99T000971 DUP



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

AW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jun 4 23:38:39 1999

HNF-1674 REV. 0

01/12/15 07:11 FAX

020/034

worklistrpt Version 2.1 05/15/95
06/03/99 07:59

LABCORE Data Entry Template for Worklist# 30021

Analyst: RM Instrument: DSC0: 3 Book # 12114-B

Method: LA-514-114 Rev/Mod 0-2

Worklist Comment: U102 GRAB1, DSC-03 Run under nitrogen. skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>27.21</u>	N/A	Joules/g
99000200	U-102 GRAB1	2 SAMPLE	S99T000972	0	DSC-03	LIQUID	<u>N/A</u>	<u>27.8</u>		Joules/g
99000200	U-102 GRAB1	3 DUP	S99T000972	0	DSC-03	LIQUID	<u>27.8</u>	<u>27.16</u>	N/A	Joules/g

Final page for worklist # 30021

[Signature] 6/5/99
Analyst Signature Date

[Signature] 6/10/99
Analyst Signature Date

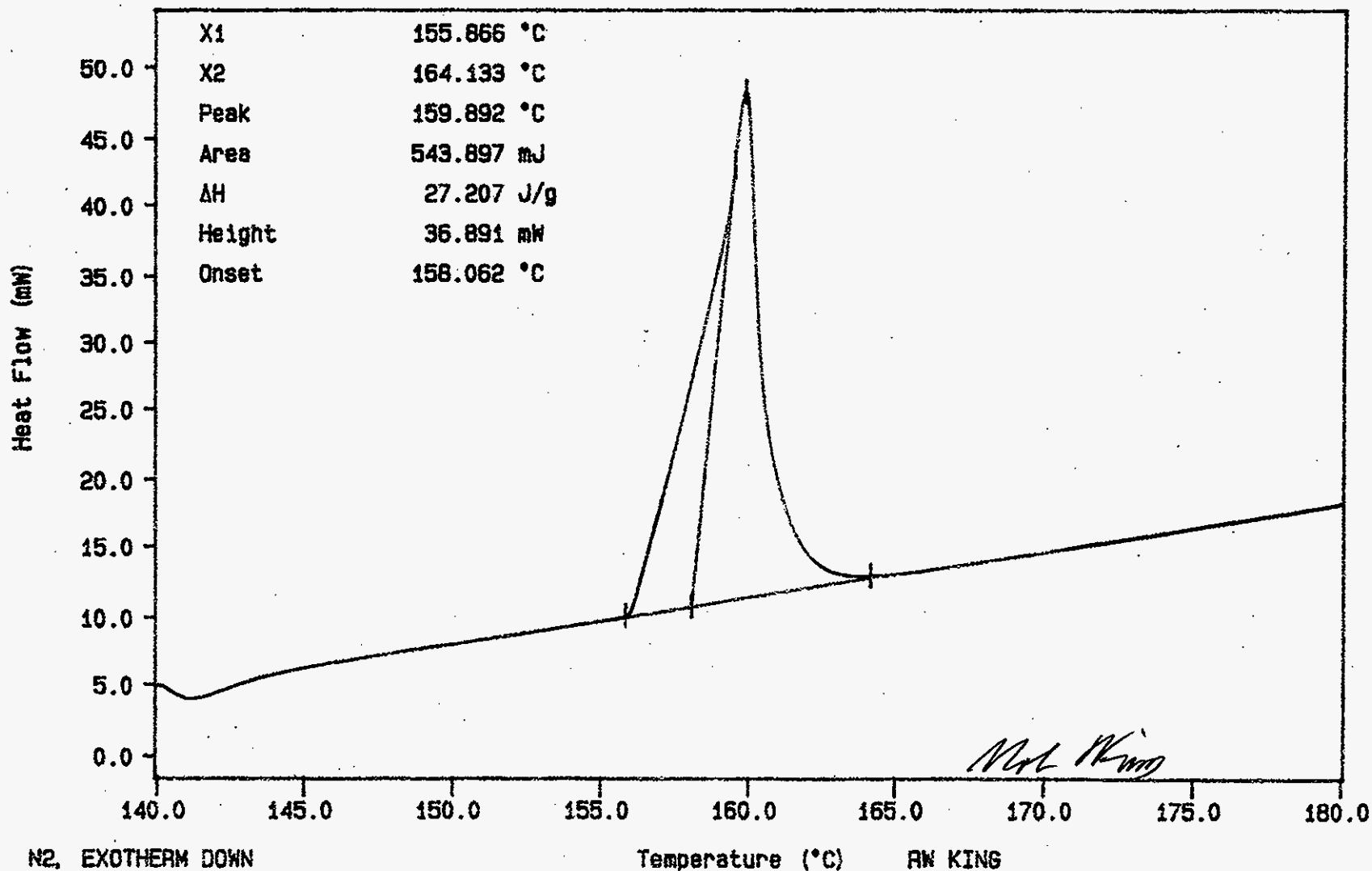
<u>[Signature]</u>	<u>6-15-99</u>
REVIEWER SIGNATURE	DATE

Data Entry Comments:

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

Curve 1: DSC
File info: IND060301 Fri Jun 4 19: 03: 13 1999
Sample Weight: 19.991 mg
STD 12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 62 TO 64.



62

HNF-1674 REV. 0

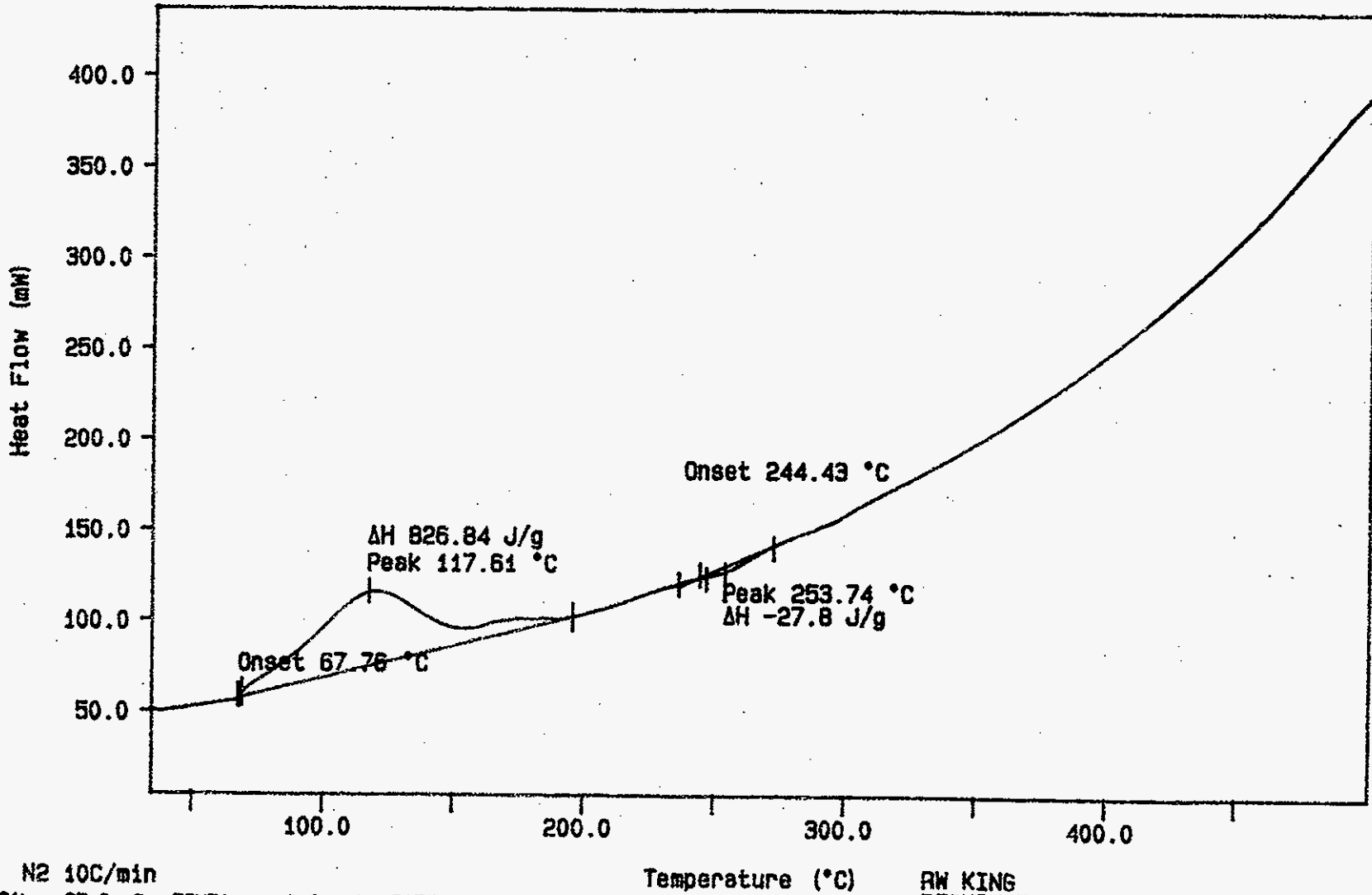
N2, EXOTHERM DOWN
TEMP: 140.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 180.0 C

Temperature (°C)

RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 5 01: 05: 26 1999

Curve 1: DSC
File info: SAM060405 Sat Jun 5 00:30:16 1999
Sample Weight: 15.240 mg
S99T000972

01/12/15 07:13 FAX



HNF-1674 REV. 0

N2 10C/min

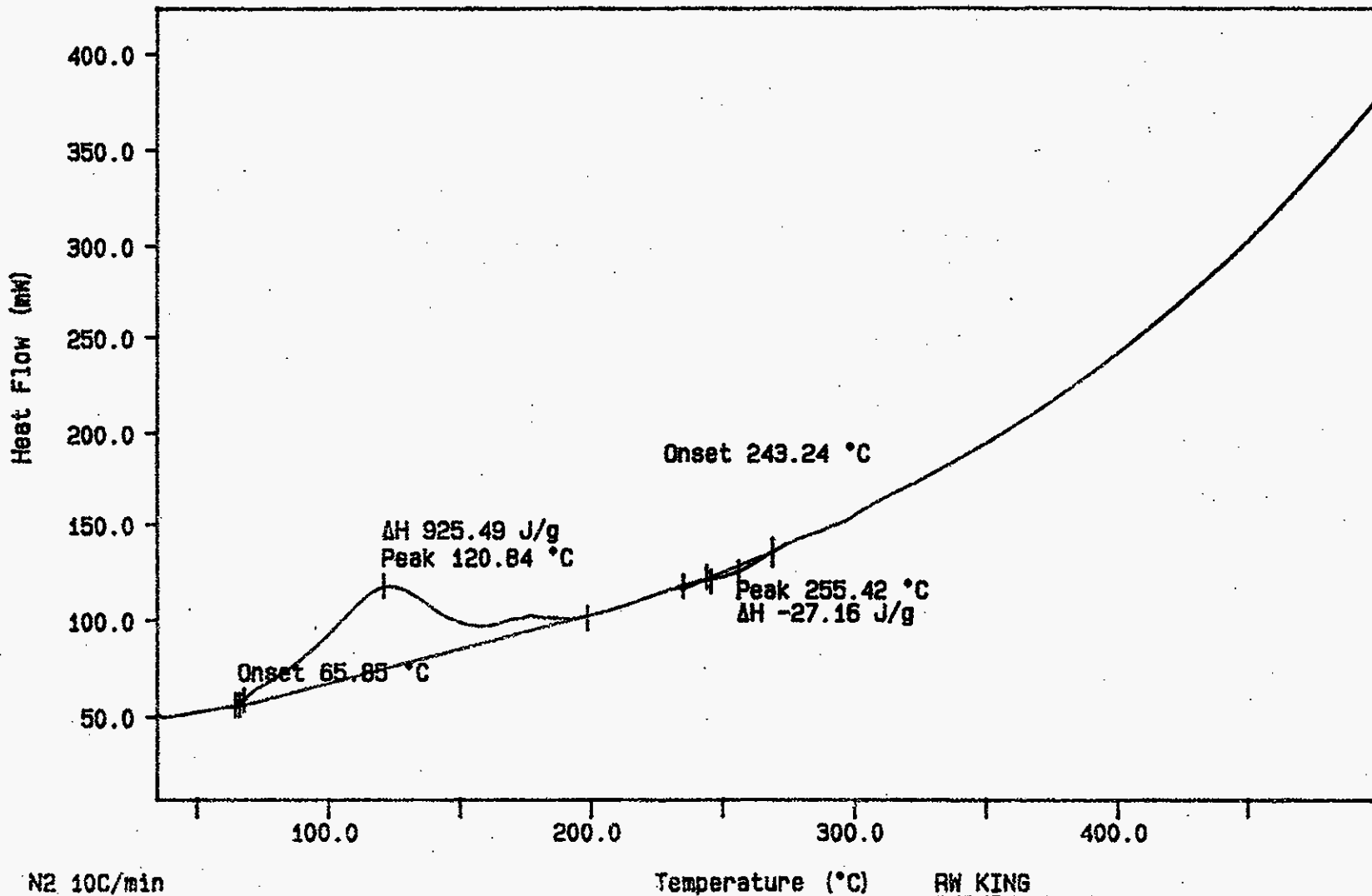
TEMP: 35.0 C
TEMP: 500.0 C

TIME: 0.0 min RATE: 10.0 C/min

RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 5 00:54:35 1999

023/034

Curve 1: DSC
File info: SAM060501 Sat Jun 5 01:44:28 1999
Sample Weight: 15.190 mg
S99T000972 DUP



N2 10C/min

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

RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 5 01:54:18 1999

69

HNF-1674 REV. 0

LABCORE Data Entry Template for Worklist# 30022

Analyst: NK Instrument: DSC0 3 Book # 12/14-B

Method: LA-514-114 Rev/Mod D-2

Worklist Comment: U102 GRAB1, DSC-03 Run under nitrogen. skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	SOLID	<u>28.45</u>	<u>27.33</u>	<u>N/A</u>	Joules/g
99000200	U-102 GRAB1	2 SAMPLE	S99T000960	0	DSC-03	SOLID	<u>N/A</u>	<u>0</u>		Joules/g
99000200	U-102 GRAB1	3 DUP	S99T000960	0	DSC-03	SOLID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 30022

NK
Analyst Signature 6/6/99
Date

Mary Tracy
Analyst Signature 6/10/99
Date

<u>[Signature]</u>	<u>6-15-99</u>
REVIEWER SIGNATURE	DATE

Data Entry Comments:

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

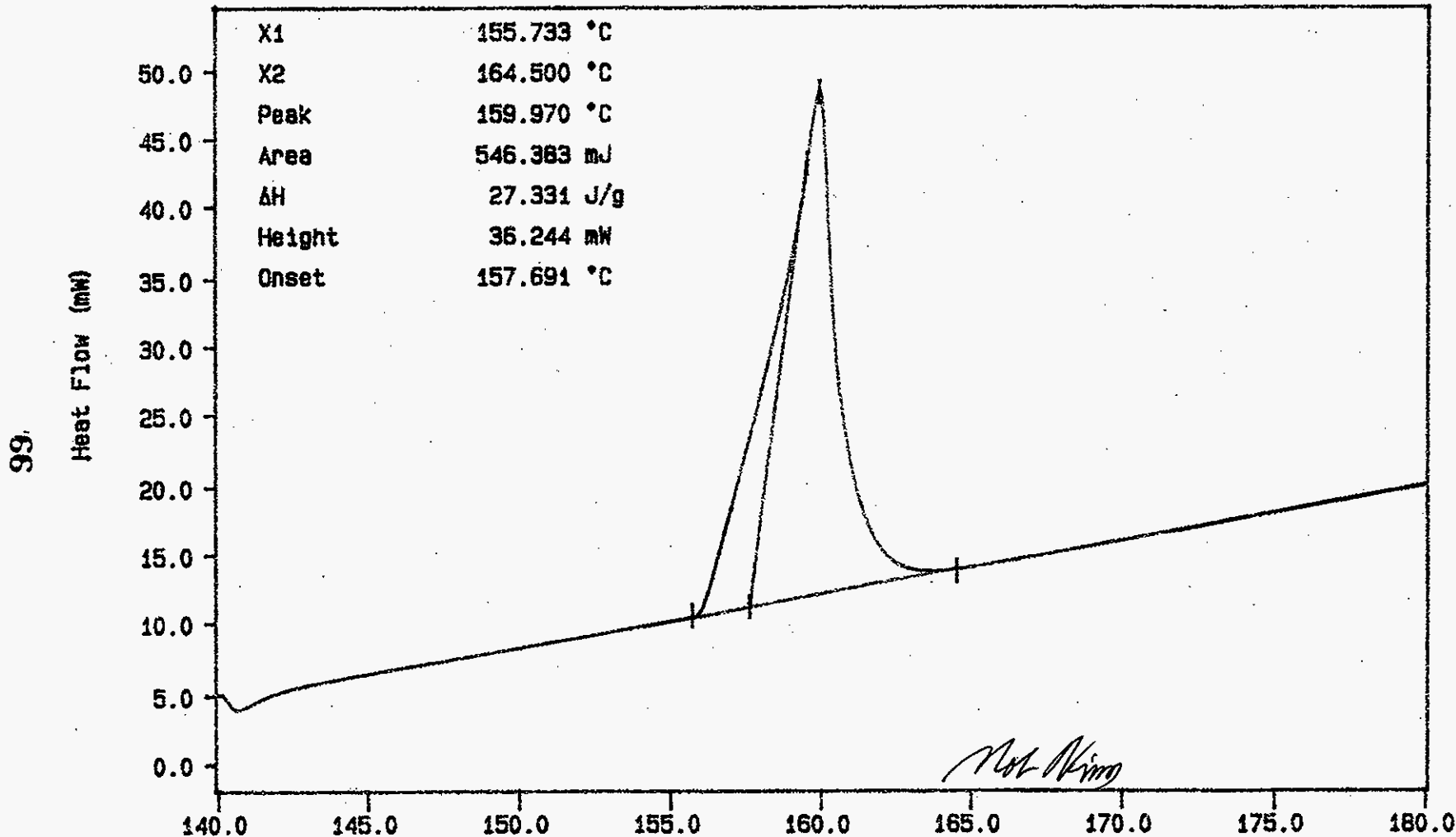
Curve 1: DSC

File info: IND060501 Sun Jun 6 00:01:16 1999

Sample Weight: 19.991 mg

STD 12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 66 TO 68.



99.

HNF-1674 REV. 0

N2, EXOTHERM DOWN

Temperature (°C)

TEMP: 140.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 180.0 C

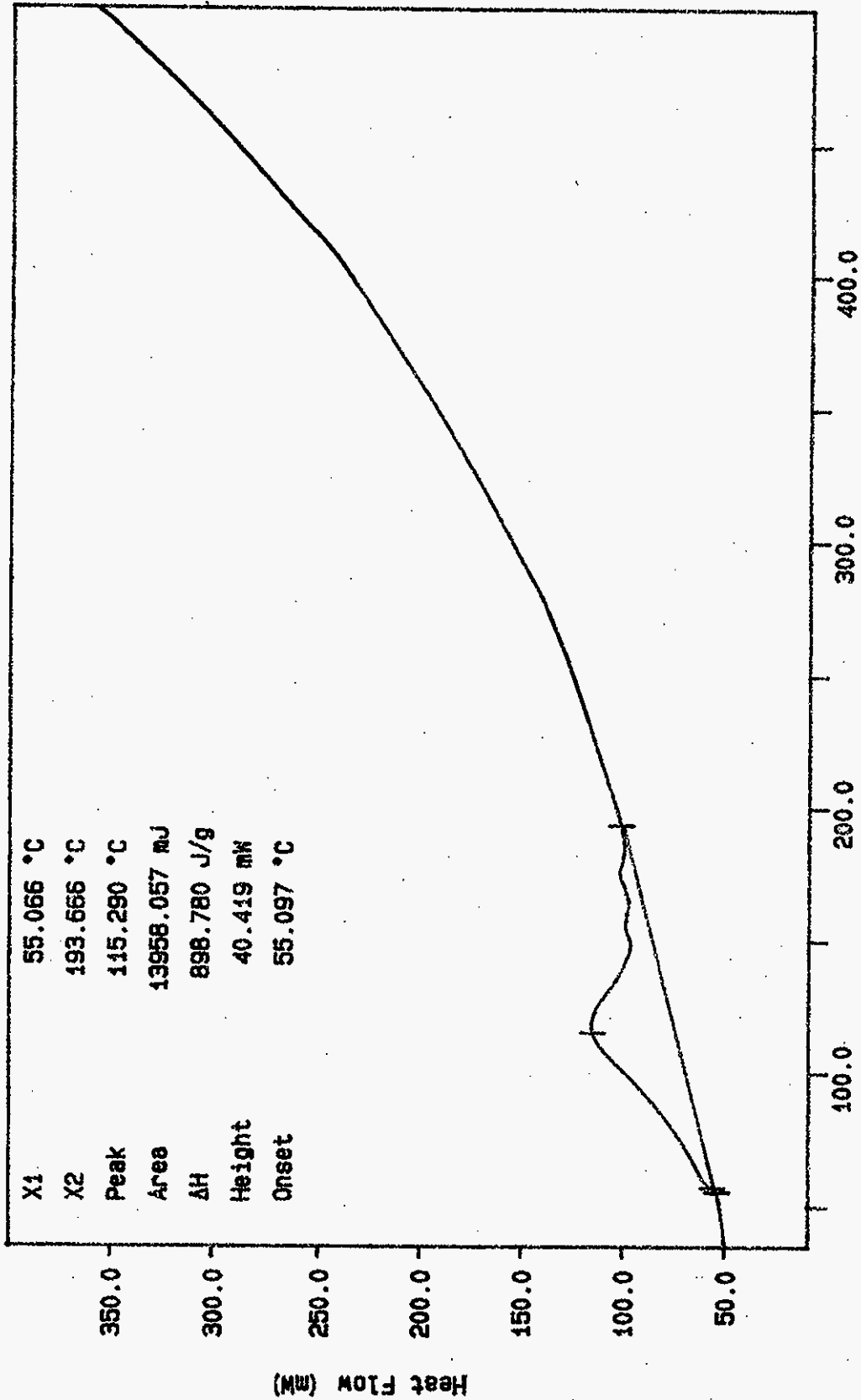
RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jun 6 01:30:02 1999

01/12/15 07:14 FAX

026/034

HNF-1674 REV. 0

Curve 1: DSC
 File info: SAM060601 Sun Jun 6 02:29:52 1999
 Sample Weight: 15.530 mg
 S99T000960



N2 100/min
 TEMP: 35.8 C
 TIME: 505.8 S
 RATE: 0.0 min RATE: 10.0 C/min

Temperature (°C)

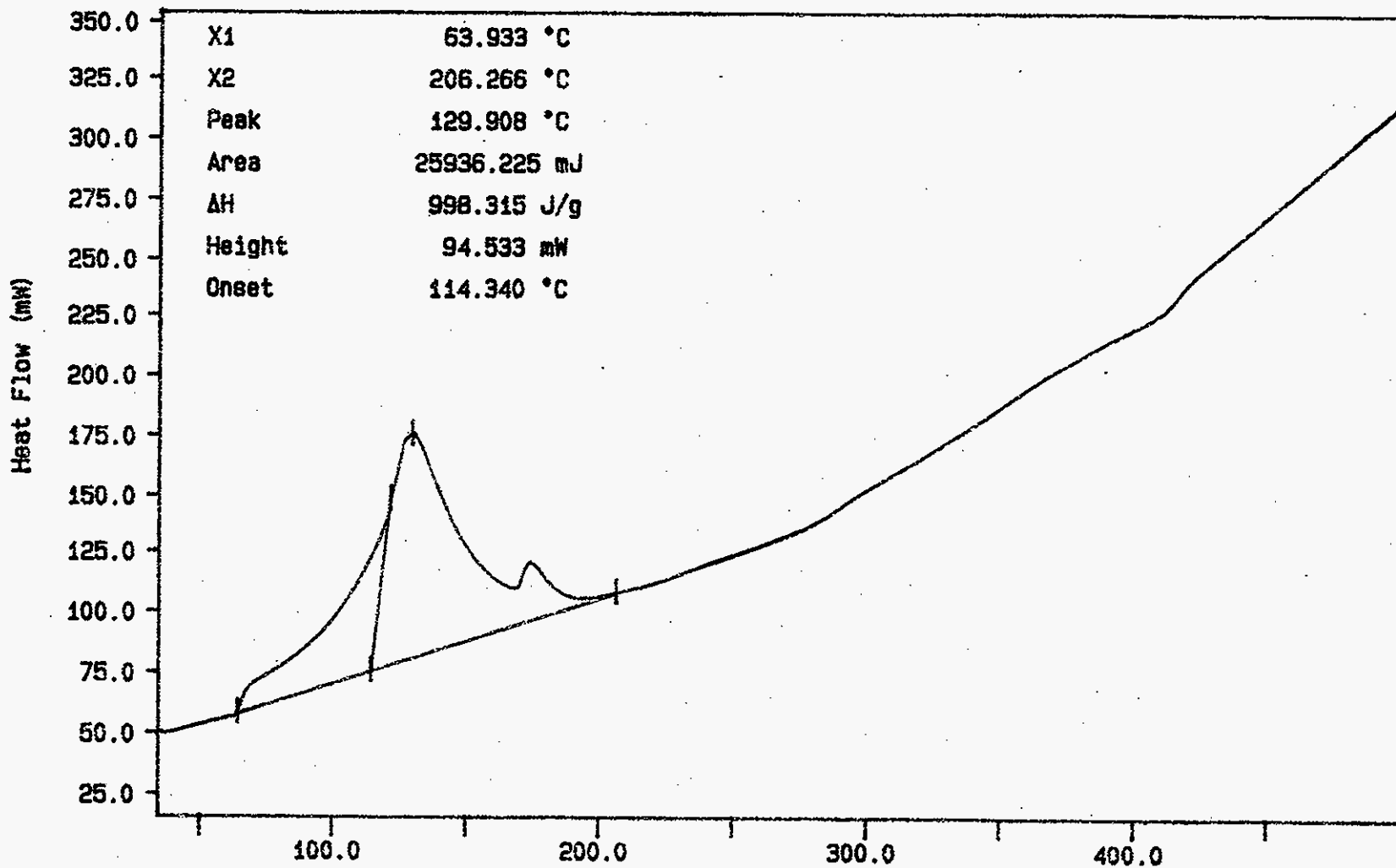
AW KING
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sun Jun 6 02:30:50 1999

Curve 1: DSC

File info: SAM060602 Sun Jun 6 03: 21: 29 1999

Sample Weight: 25.980 mg

S99T000960 DUP



N2 10C/min

TEMP1: 35.0 °C
TEMP2: 500.0 °C

TIME1: 0.0 min RATE1: 10.0 C/min

Temperature (°C)

RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jun 6 03: 25: 39 1999

HNF-1674 REV. 0

LABCORE Completed Worklist Report for Worklist# 30189

Analyst: mf Instrument: DSC0 Book#: _____

Method: LA-514-113 Rev/Mod D-2

Worklist Comment: DRY DSC-02 U102 GRAB MF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 SAMPLE	S99T000960	0	DSC-02	SOLID	N/A	0		Joules/g Dry
2 DUP	S99T000960	0	DSC-02	SOLID	0	0	0.000	RPD
3 SAMPLE	S99T000970	0	DSC-02	LIQUID	N/A	66.30		Joules/g Dry
4 DUP	S99T000970	0	DSC-02	LIQUID	66.30	57.90	13.527	RPD
5 SAMPLE	S99T000971	0	DSC-02	LIQUID	N/A	47.95		Joules/g Dry
6 DUP	S99T000971	0	DSC-02	LIQUID	47.95	48.50	1.140	RPD
7 SAMPLE	S99T000972	0	DSC-02	LIQUID	N/A	52.98		Joules/g Dry
8 DUP	S99T000972	0	DSC-02	LIQUID	52.98	51.76	2.330	RPD

Final page for worklist# 30189

Analyst Signature _____ Date _____

Mary Tracy 6/15/99
Analyst Signature Date

[Signature] 6-15-99
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 30028

Analyst: PK Instrument: TGA0 3 Book # 117178-A

Method: LA-514-114 Rev/Mod 0-2

Worklist Comment: U102 GRAB1, TGA-03 Run under nitrogen. skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.4</u>	<u>58.51</u>	N/A	%
99000200	U-102 GRAB1	2 SAMPLE	S99T000970	0	TGA-03	LIQUID	N/A	<u>47.13</u>		%
99000200	U-102 GRAB1	3 DUP	S99T000970	0	TGA-03	LIQUID	<u>47.13</u>	<u>47.93</u>	N/A	%
99000200	U-102 GRAB1	4 SAMPLE	S99T000971	0	TGA-03	LIQUID	N/A	<u>47.02</u>		%
99000200	U-102 GRAB1	5 DUP	S99T000971	0	TGA-03	LIQUID	<u>47.02</u>	<u>47.63</u>	N/A	%

Final page for worklist # 30028

PK 6/4/99
Analyst Signature Date

W. J. ... 6/10/99
Analyst Signature Date

[Signature] 6-15-99
REVIEWER SIGNATURE DATE

Data Entry Comments:

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

Curve 1: TGA

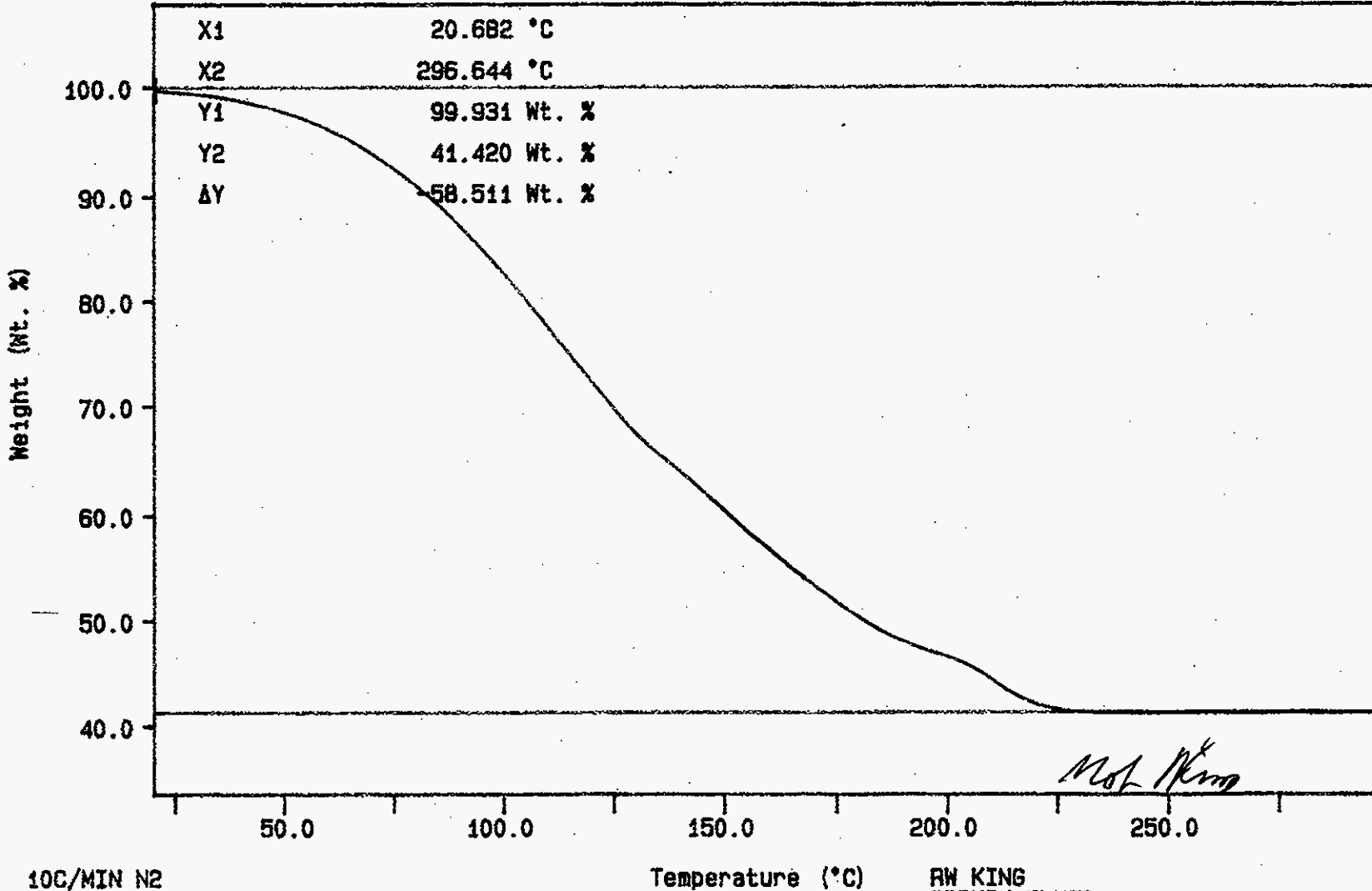
File info: TER060301 Fri Jun 4 19: 11: 22 1999

Sample Weight: 21.268 mg

117N8-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 71 TO 75.

71



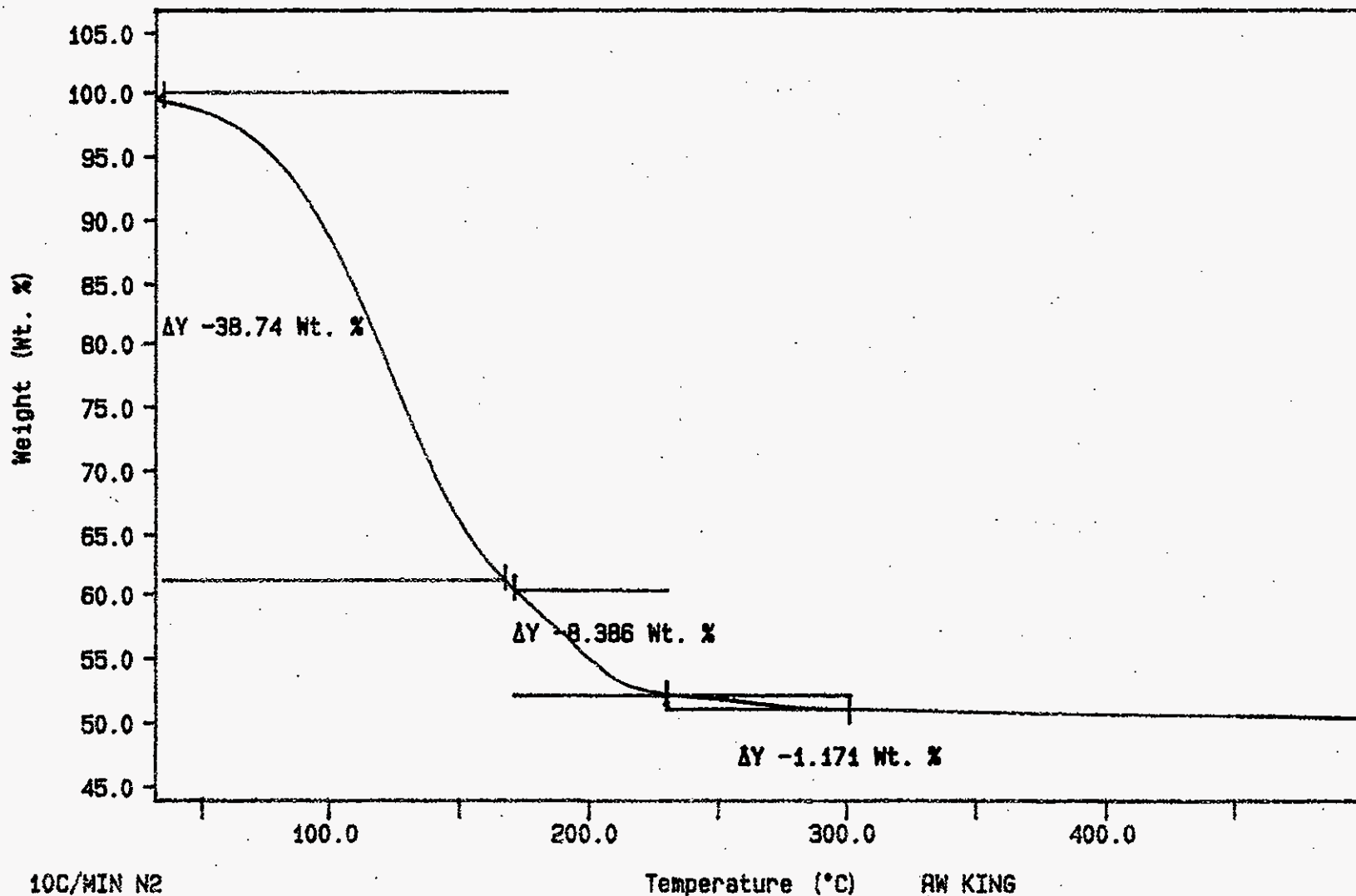
10C/MIN N2
TEMP: 35.0 C
TEMP: 300.0 C
TIME: 0.0 min RATE: 10.0 C/min

RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jun 4 19: 16: 41 1999

HNF-1674 REV. 0

Curve 1: TGA
File info: SAM060303 Fri Jun 4 22: 30: 24 1999
Sample Weight: 15.011 mg
S99T000970

72



10C/MIN N2
TEMP: 35.0 C
TEMP: 500.0 C
TIME: 0.0 min RATES: 10.0 C/min

Temperature (°C)

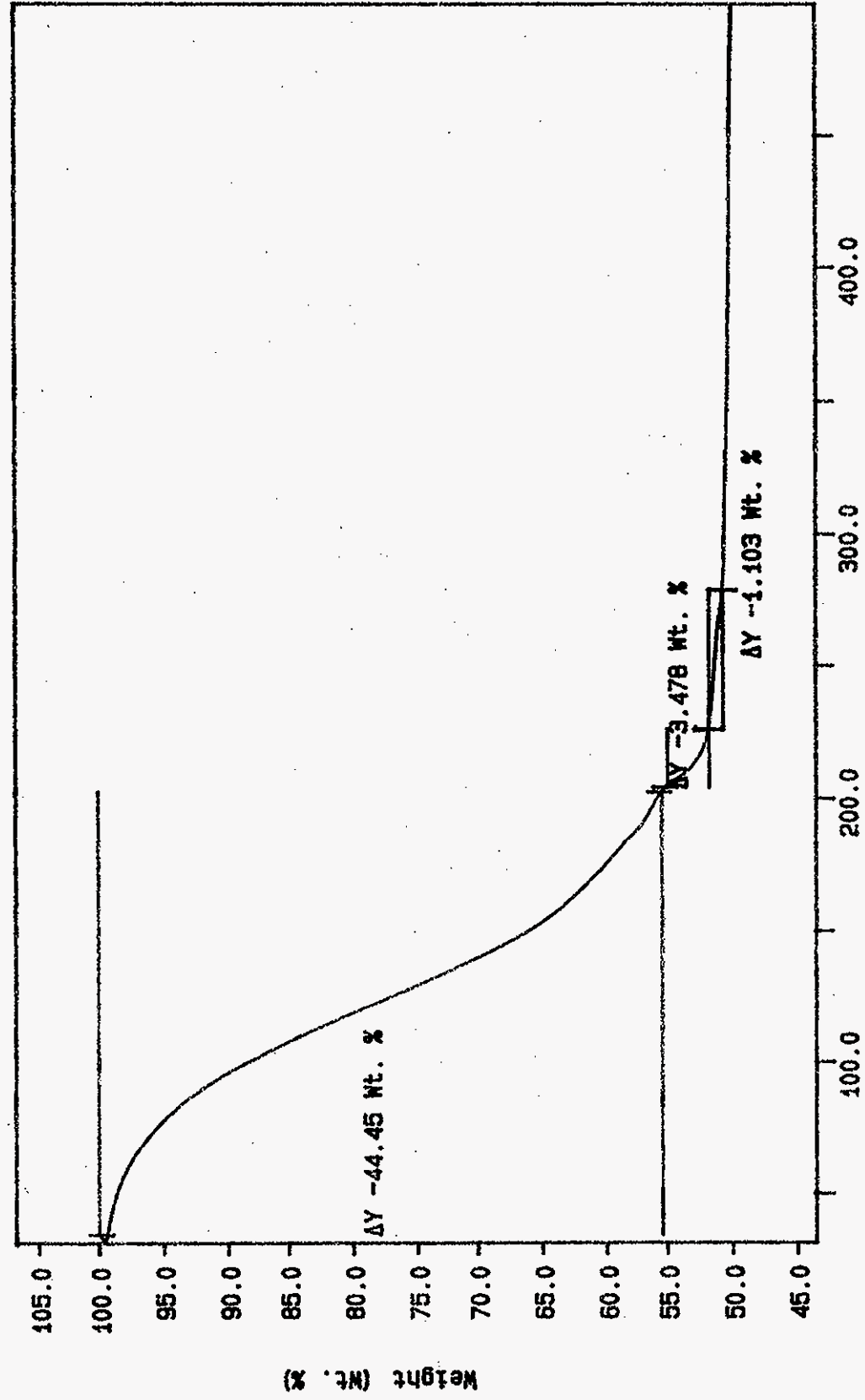
RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jun 4 22: 31: 35 1999

HNF-1674 REV. 0

01/12/15 07:00 FAX

003

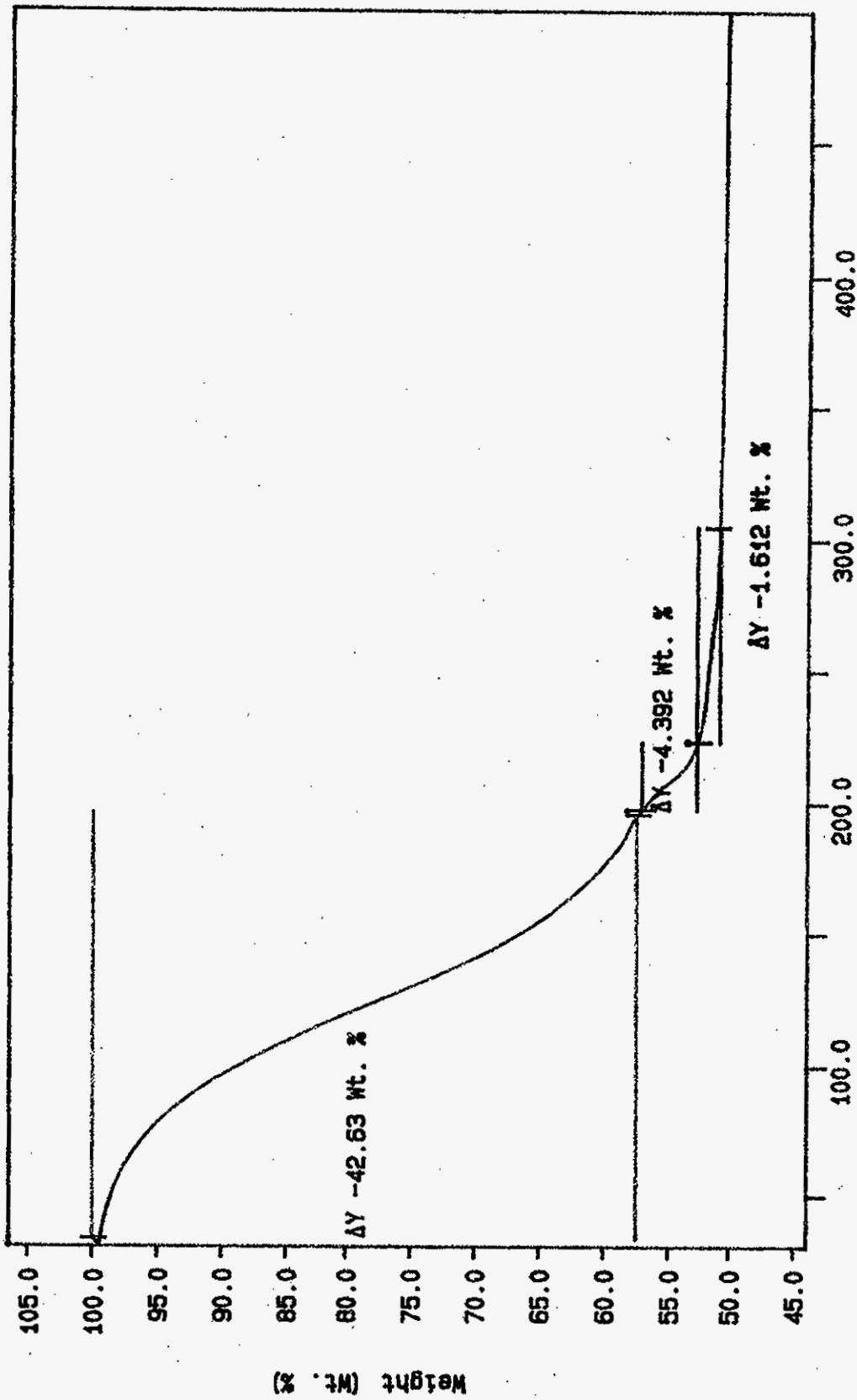
Curve 1: TGA
 File info: SAM060404 Fri Jun 4 23:35:25 1999
 Sample Weight: 15.185 mg
 S99T000970 DUP



10C/MIN N2
 TEMP: 35.0 C
 TEMP: 500.0 C
 TIMES: 0.0 min RATES: 10.0 C/min
 Temperature (°C)
 RW KING
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Jun 4 23:44:44 1999

HNF-1674 REV. 0

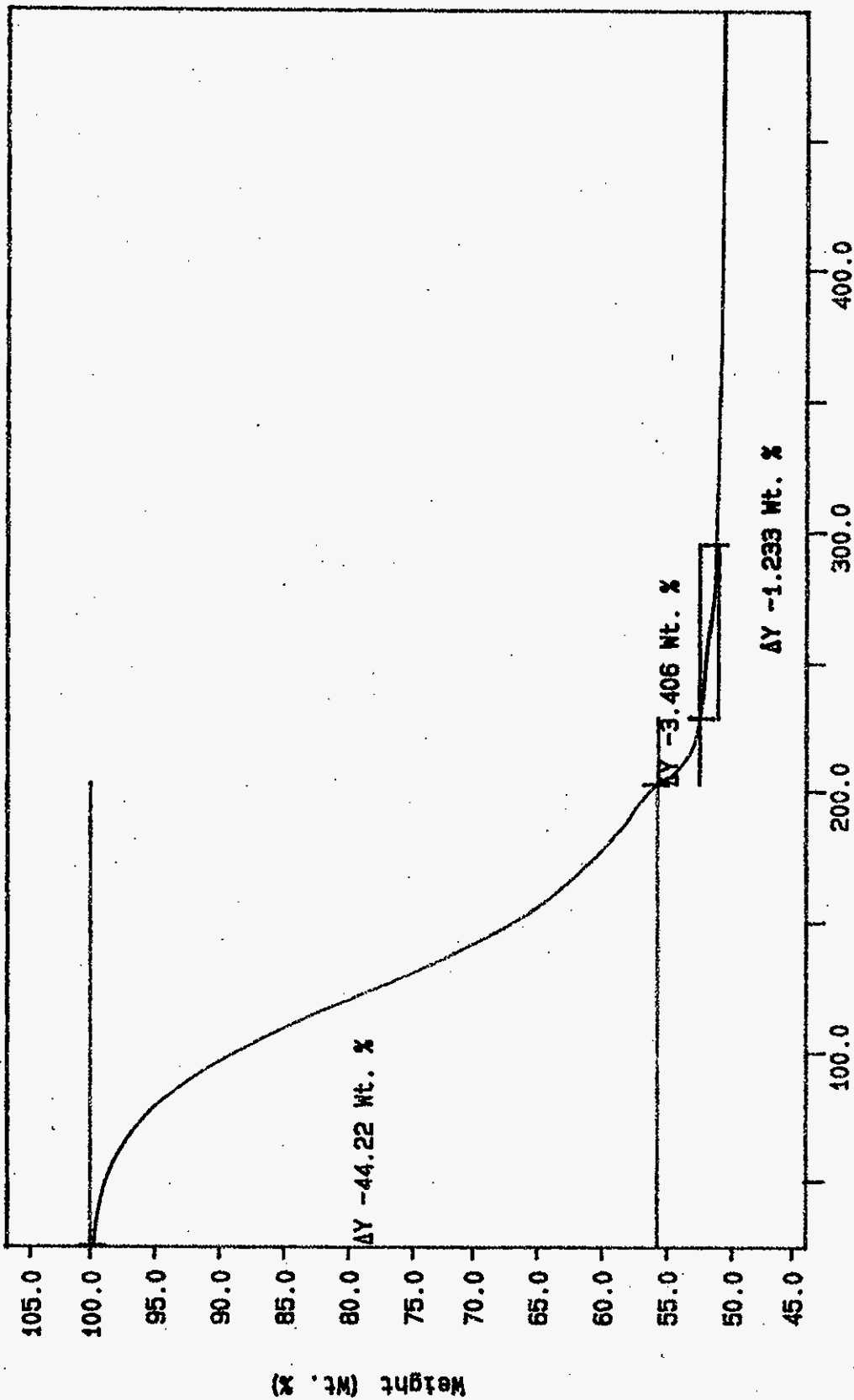
Curve 1: TGA
 File info: SAM060301 Fri Jun 4 20: 14: 00 1999
 Sample Weight: 16.045 mg
 S99T000971



10C/MIN N2
 TEMP: 35.0 C
 TEMPE: 500.0 C
 TIMES: 0.0 MIN RATE: 10.0 C/MIN
 Temperature (°C)
 RM KING
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Jun 4 20: 33: 51 1999

HNF-1674 REV. 0

Curve 1: TGA
 File info: SAM060302 Fri Jun 4 21:25:39 1999
 Sample Weight: 15.821 mg
 S99T000971 DUP



10C/MIN N2
 TEMP: 35.8 C
 TIME: 000.8 S
 0.0 min RATE: 10.0 C/min

Temperature (°C)

RW KING
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Jun 4 21:30:42 1999

LABCORE Completed Worklist Report for Worklist# 30029

Analyst: rwk

Instrument: TGA03

Book#: 117N8A

Method: LA-514-114 Rev/Mod

D-2

Worklist Comment: U102 GRAB1, TGA-03 Run under nitrogen. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	TGA-03	LIQUID	5.94e1	58.51	98.502 % Recovery	
2 SAMPLE	S99T000972	0	TGA-03	LIQUID	N/A	46.84	%	
3 DUP	S99T000972	0	TGA-03	LIQUID	46.84	48.21	2.883 RPD	

Final page for worklist# 30029

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

LABCORE Data Entry Template for Worklist# 30029

Analyst: MM Instrument: TGA0 3 Book # 117178-A

Method: LA-514-114 Rev/Mod _____

Worklist Comment: U102 GRAB1, TGA-03 Run under nitrogen. skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.4</u>	<u>58.51</u>	N/A	%
99000200	U-102 GRAB1	2 SAMPLE	S99T000972	0	TGA-03	LIQUID	N/A	<u>46.84</u> <u>47.11</u>	<u>6/4/99</u>	
99000200	U-102 GRAB1	3 DUP	S99T000972	0	TGA-03	LIQUID	<u>46.84</u>	<u>48.21</u>	N/A	%

Final page for worklist # 30029

MM King 6/5/99
Analyst Signature Date

Ernest Jones 6/10/99
Analyst Signature Date

Data Entry Comments:

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

Curve 1: TGA

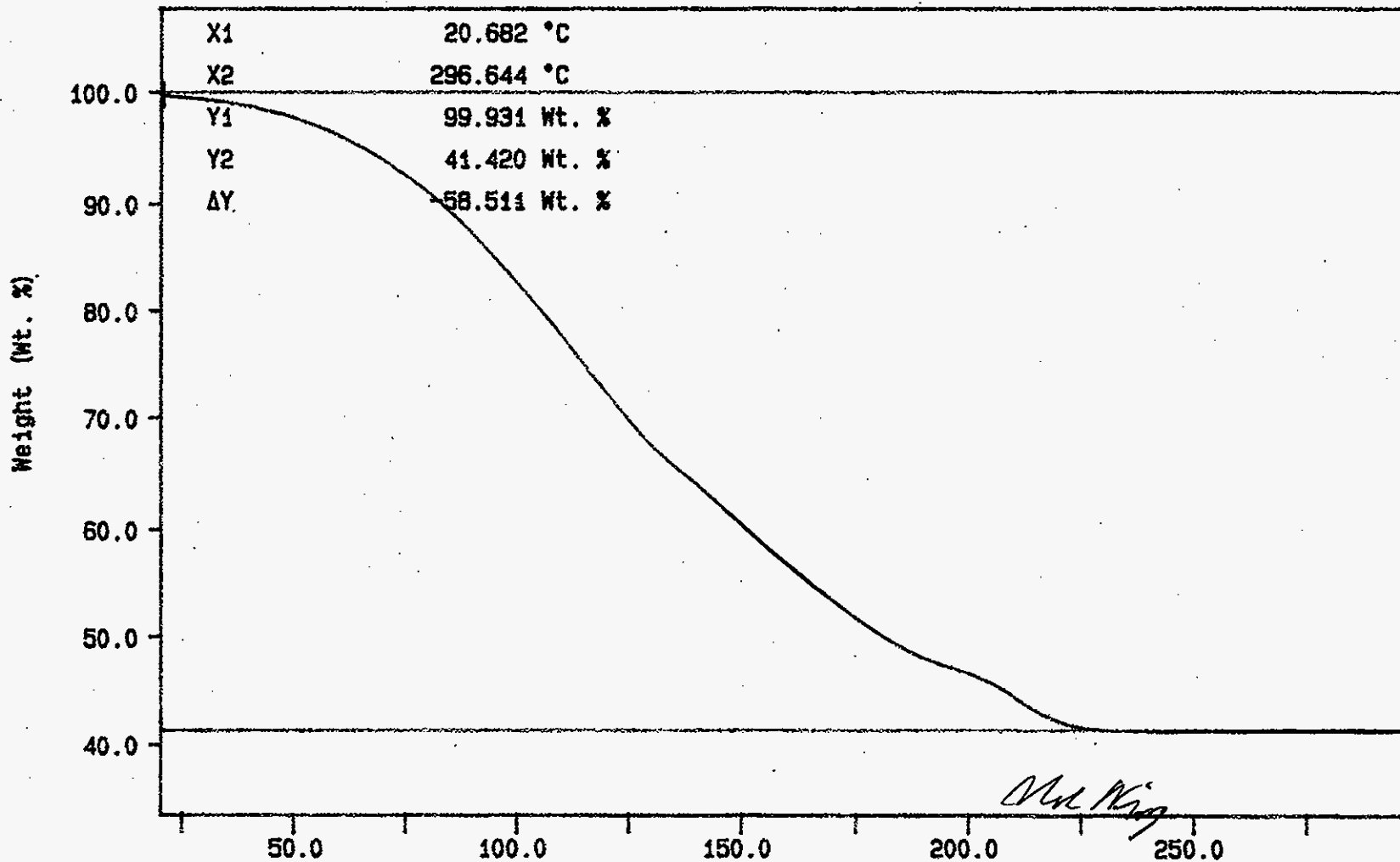
File info: TER060301 Fri Jun 4 19: 11: 22 1999

Sample Weight: 21.268 mg

117N8-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 78 TO 80

01/12/15 07:02 FAX



HNF-1674 REV. 0

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

Temperature (°C)

RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 5 01:03:47 1999

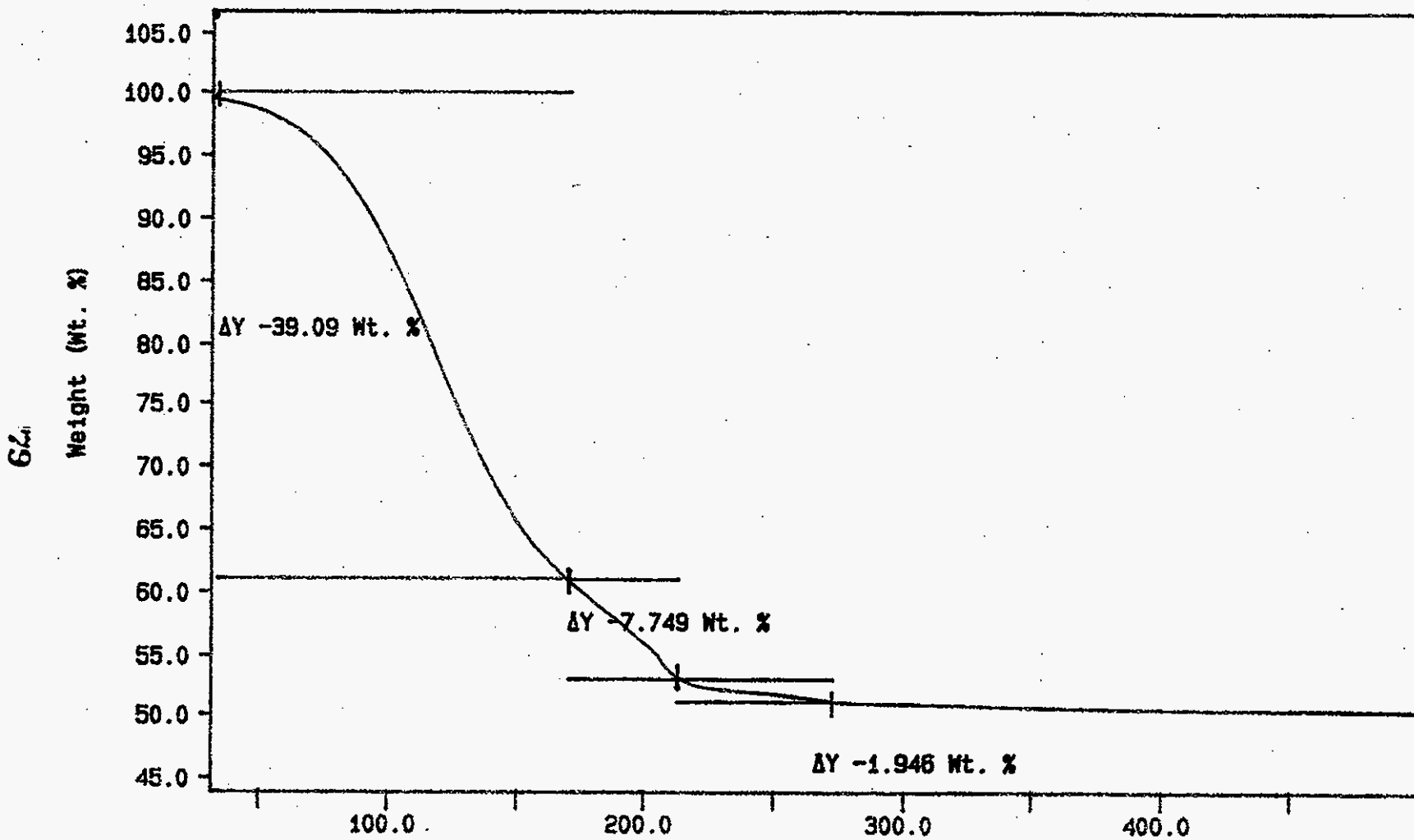
008

Curve 1: TGA

File info: SAM060405 Sat Jun 5 00:40:50 1999

Sample Weight: 13.964 mg

S99T000972



10C/MIN N2

TEMP: 35.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 500.0 C

Temperature (°C)

RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 5 00:59:03 1999

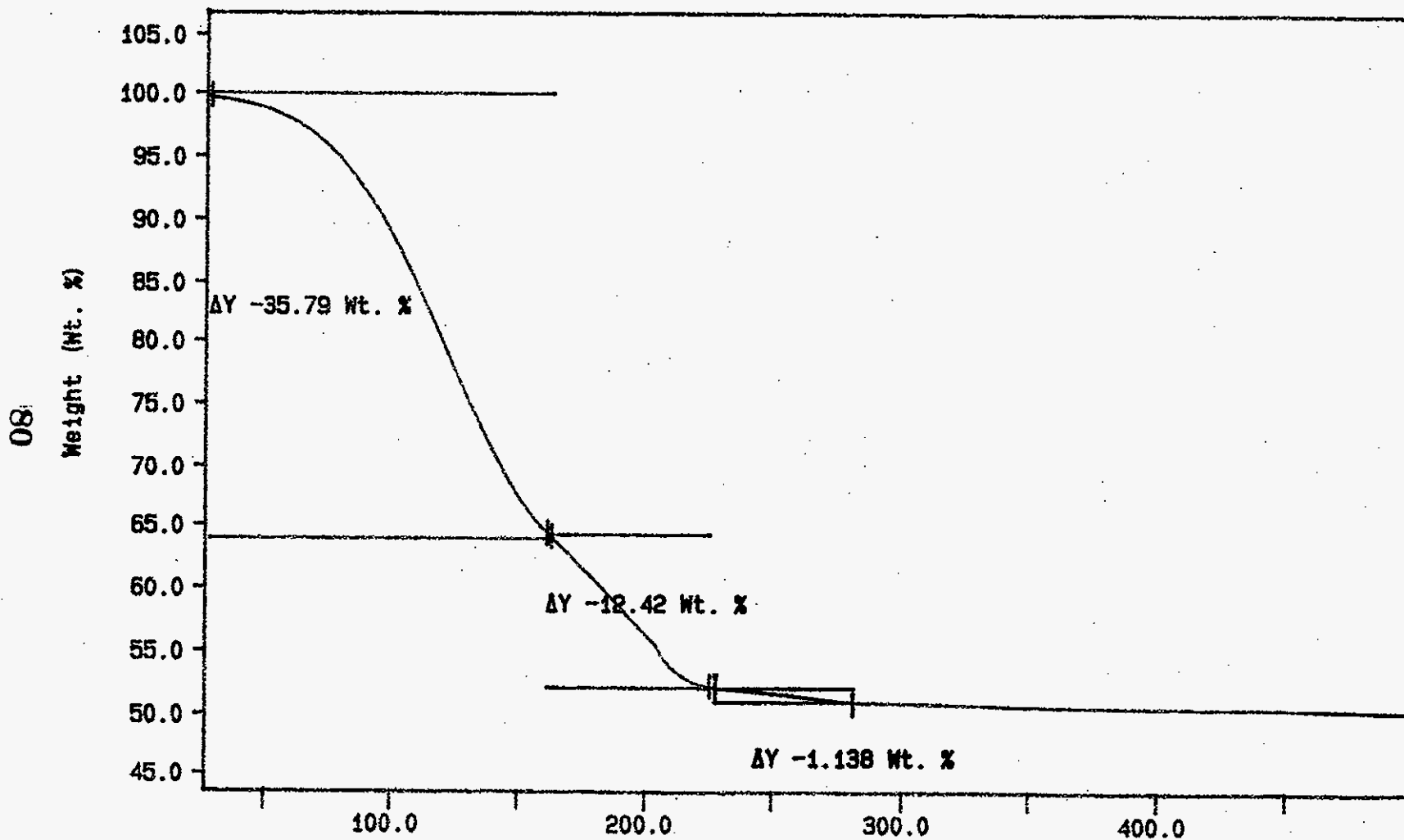
HNF-1674 REV. 0

Curve 1: TGA

File info: SAM060501 Sat Jun 5 01:49:31 1999

Sample Weight: 16.537 mg

S99T000972 DUP



10C/MIN N2

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

Temperature (°C)

RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 5 01:56:18 1999

HNF-1674 REV.0

LABCORE Completed Worklist Report for Worklist# 30030

Analyst: rwk

Instrument: TGA03

Book#: 117N8A

Method: LA-514-114 Rev/Mod _____

Worklist Comment: U102 GRAB1, TGA-03 Run under nitrogen. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	TGA-03	SOLID	5.94e1	60.20	101.347 % Recovery	
2 SAMPLE	S99T000960	0	TGA-03	SOLID	N/A	44.69	%	
3 DUP	S99T000960	0	TGA-03	SOLID	44.69	41.09	8.394 RPD	

Final page for worklist# 30030

Analyst Signature Date

Wm J. Tracy 6/15/99

Analyst Signature Date

[Signature] 6-15-99

Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 30030

Analyst: MM Instrument: TGA0 3 Book # 11778-A

Method: LA-514-114 Rev/Mod D-2

Worklist Comment: U102 GRAB1, TGA-03 Run under nitrogen. skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	SOLID	<u>59.4</u>	<u>60.20</u>	N/A	%
99000200	U-102 GRAB1	2 SAMPLE	S99T000960	0	TGA-03	SOLID	N/A	<u>44.69</u>		%
99000200	U-102 GRAB1	3 DUP	S99T000960	0	TGA-03	SOLID	<u>44.69</u>	<u>42.09</u> <u>41.09</u>	N/A	% 6/15/99

Final page for worklist # 30030

MM 6/6/99
Analyst Signature Date

MM 6/10/99
Analyst Signature Date

Data Entry Comments:

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

Curve 1: TGA

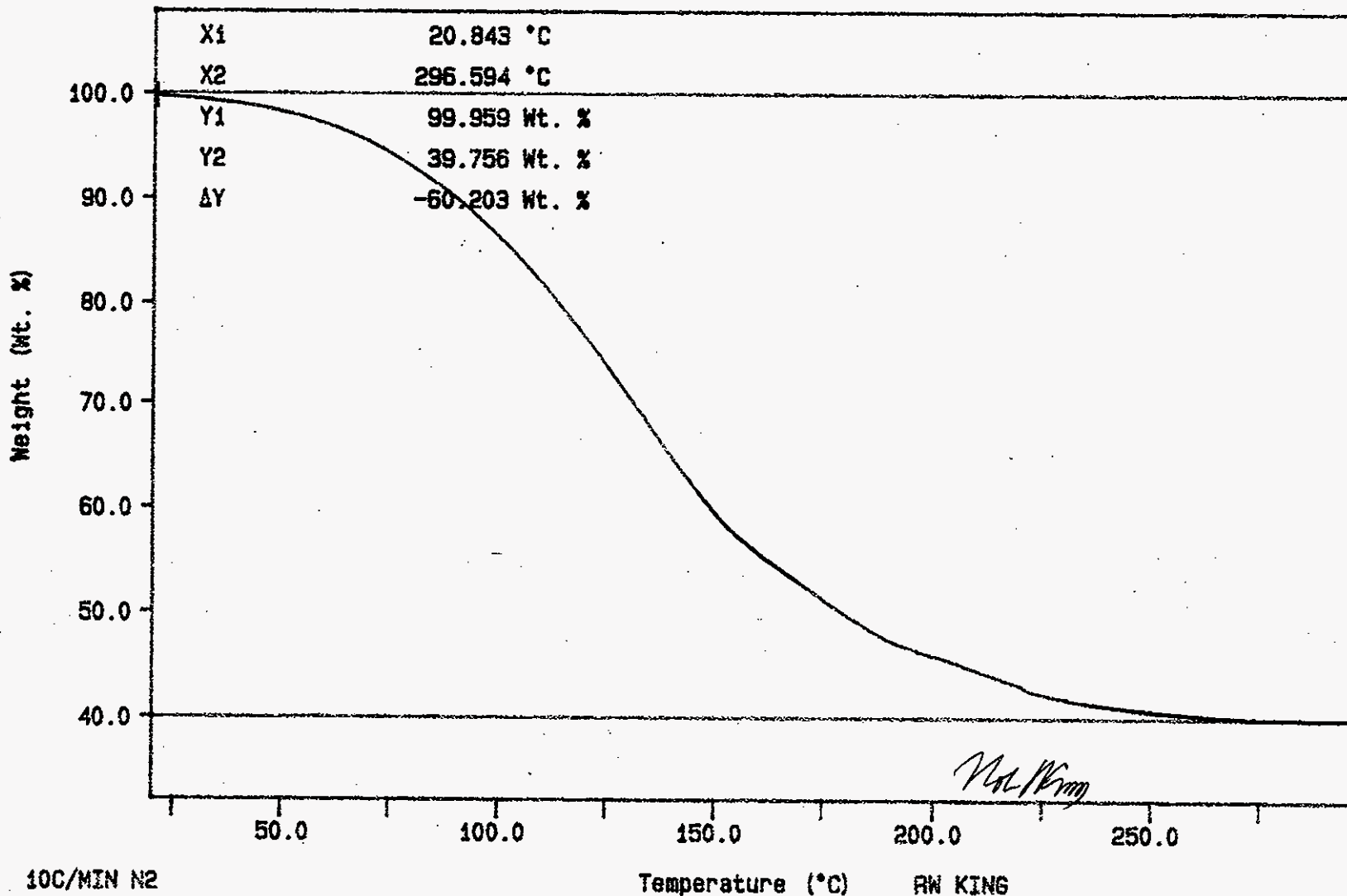
File info: TER060501 Sun Jun 6 00:18:13 1999

Sample Weight: 20.379 mg

117NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 83 TO 85.

83



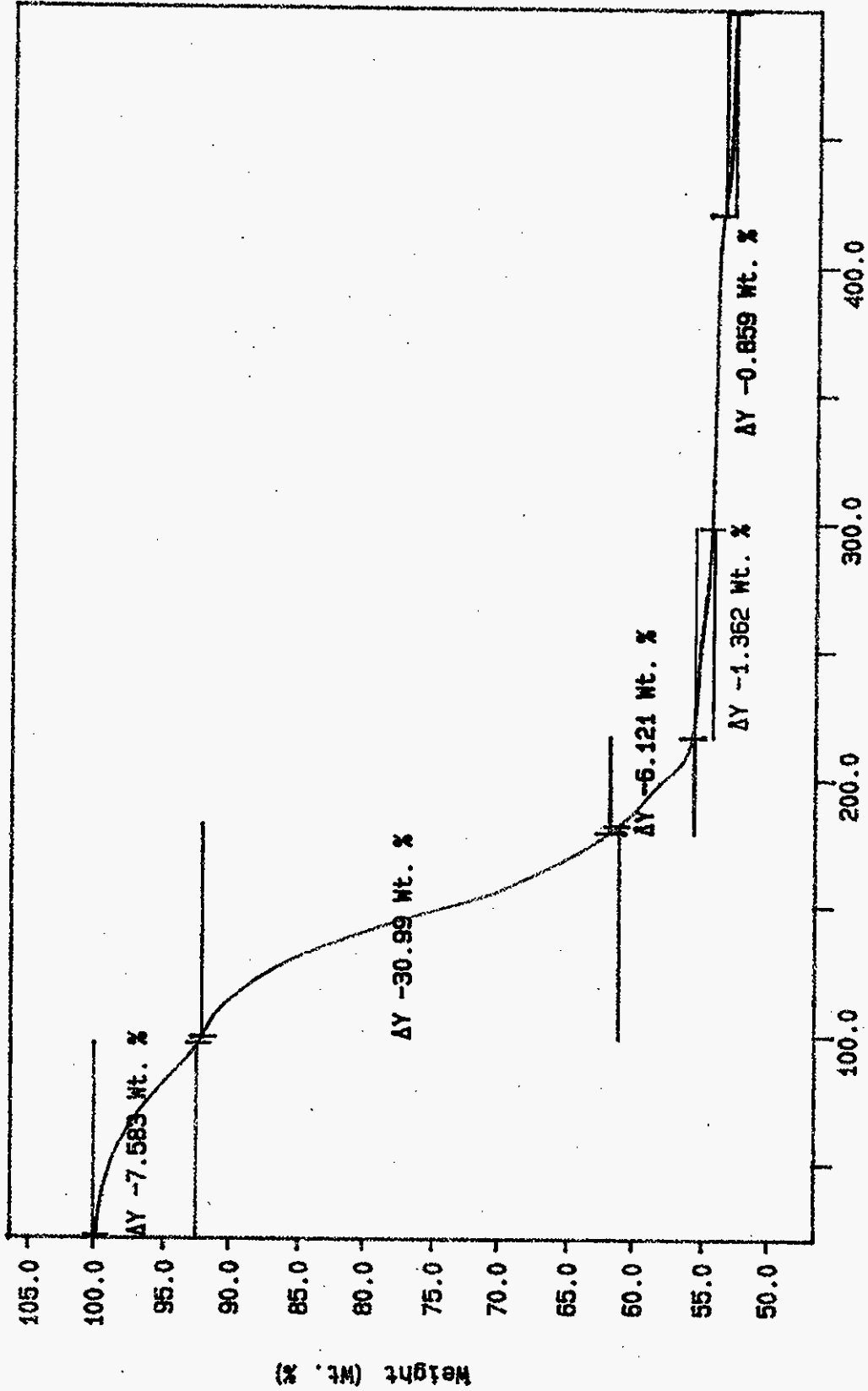
10C/MIN N2
TEMP: 35.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 300.0 C

Temperature (°C)

RW KING
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jun 6 01:32:26 1999

HNF-1674 REV. 0

Curve 1: TGA
 File info: SAM060601 Sun Jun 6 02:24:21 1999
 Sample Weight: 20.641 mg
 S99T000960



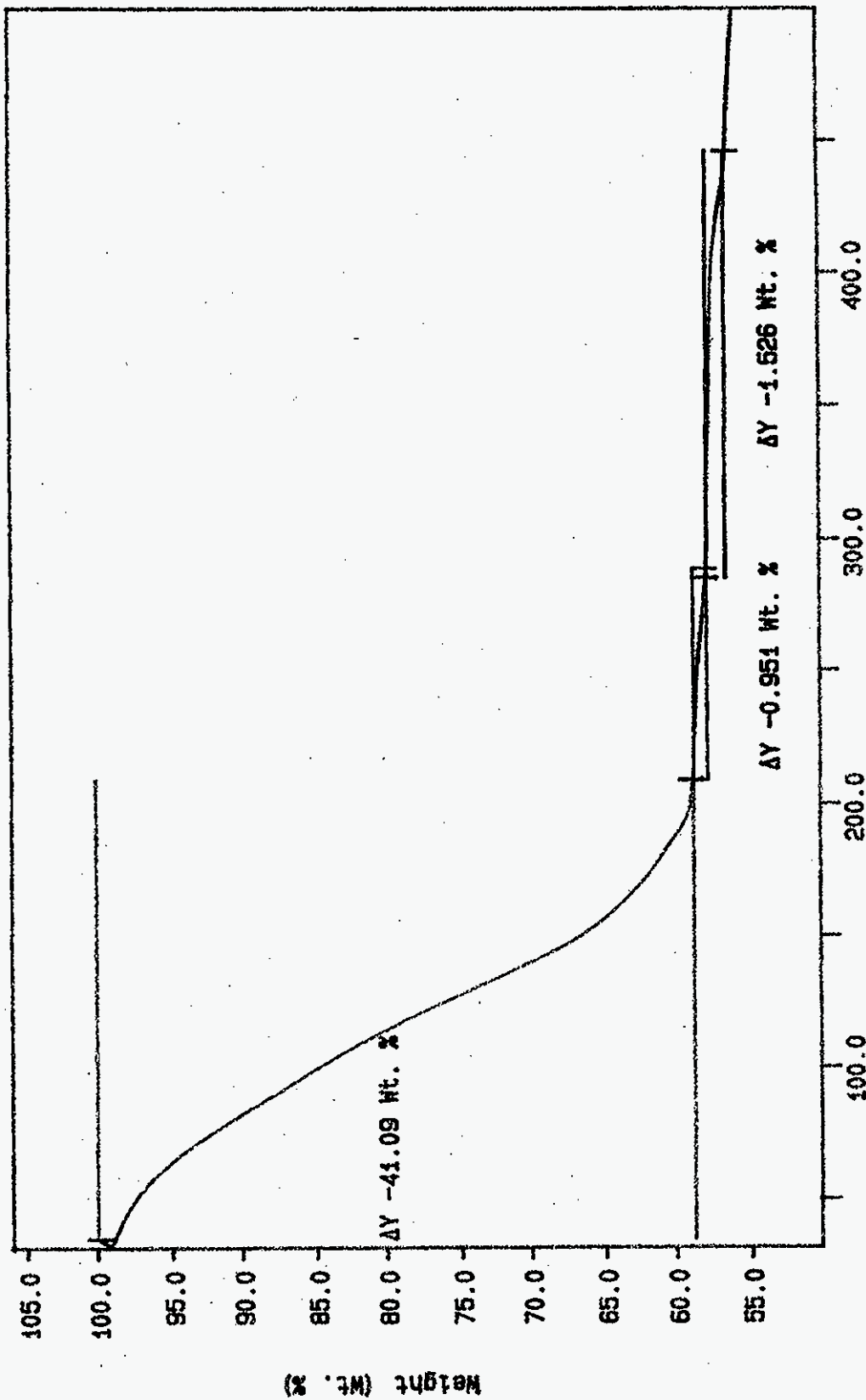
RW KING
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sun Jun 6 02:28:26 1999

100/MIN N2
 TEMP: 35.0 C
 TEMPE: 500.0 C

0.0 MIN RATES: 10.0 G/min
 TIMES: 0.0 MIN RATES: 10.0 G/min

HNF-1674 REV. 0

Curve 1: TGA
 File Info: SAM060602 Sun Jun 5 03:29:19 1999
 Sample Weight: 10.452 mg
 S99T000960 DUP



10C/MIN N2
 TEMP: 35.0 C
 TEMPE 500.0 C
 TIME: 0.0 MIN RATE: 10.0 C/MIN

RW KING
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sun Jun 6 03:32:10 1999

LABCORE Completed Worklist Report for Worklist# 30023

Analyst: rdm

Instrument: BA001

Book#: 134N16C

Method: LA-510-112 Rev/Mod _____

Worklist Comment: U102 GRAB1, SPG-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	SPG-01	LIQUID	1.3779	1.349	97.903 % Recovery	
2 SAMPLE	S99T000970	0	SPG-01	LIQUID	N/A	1.421	1.00e-003	Sp.G.
3 DUP	S99T000970	0	SPG-01	LIQUID	1.421	1.503	5.609 RPD	
4 SAMPLE	S99T000971	0	SPG-01	LIQUID	N/A	1.467	1.00e-003	Sp.G.
5 DUP	S99T000971	0	SPG-01	LIQUID	1.467	1.500	2.224 RPD	
6 SAMPLE	S99T000972	0	SPG-01	LIQUID	N/A	1.515	1.00e-003	Sp.G.
7 DUP	S99T000972	0	SPG-01	LIQUID	1.515	1.476	2.608 RPD	

Final page for worklist# 30023

Analyst Signature _____ Date _____

Mary Frank 6/8/99
Analyst Signature _____ Date _____

[Signature] 6/9/99
Reviewer Signature _____ Date _____

HNF-1674 REV. 0

worklistrpt Version 2.1 05/15/95

Page: 1

06/03/99 08:01

LABCORE Data Entry Template for Worklist# 30023

Analyst: ROm Instrument: BA001 Book # 134N16 CMethod: LA-510-112 Rev/Mod E-0

Worklist Comment: U102 GRAB1, SPG-01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID			N/A	Sp.G.
99000200	U-102 GRAB1	2 SAMPLE	S99T000970	0	SPG-01	LIQUID	N/A			Sp.G.
99000200	U-102 GRAB1	3 DUP	S99T000970	0	SPG-01	LIQUID			N/A	Sp.G.
99000200	U-102 GRAB1	4 SAMPLE	S99T000971	0	SPG-01	LIQUID	N/A			Sp.G.
99000200	U-102 GRAB1	5 DUP	S99T000971	0	SRG-01	LIQUID			N/A	Sp.G.
99000200	U-102 GRAB1	6 SAMPLE	S99T000972	0	SPG-01	LIQUID	N/A			Sp.G.
99000200	U-102 GRAB1	7 DUP	S99T000972	0	SPG-01	LIQUID			N/A	Sp.G.

Final page for worklist # 30023

ROm 6/8/99
 Analyst Signature Date

Marie Franz 6/8/99
 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.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (E-0)

Type		STD	REPLICATE
STD	Gross Weight (W2)	1.4293	1.4383
Work List	Tare Weight (W1)	1.2970	1.3009
30023	Weight of Solution (W2-W1)	0.1323	0.1374
Test Code	Volume of Solution μ L	100.0000	100.0000
SPG-01	Specific Gravity	1.3230	1.3740
Matrix	Specific Gravity (Average)	1.3485	
LIQUID			
Sample #			
STD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
06/08/99	v RESULT v		
Time	Specific Gravity Average =	1.349	
01:25 PM			

Data Entry by:	Date: 06/08/99
Approved by: <i>NA</i>	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (E-0)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.5131	0.0000
Work List	Tare Weight (W1)	1.3710	0.0000
30023	Weight of Solution (W2-W1)	0.1421	0
Test Code	Volume of Solution μ L	100.0000	0.0000
SPG-01	Specific Gravity	1.4210	NA
Matrix			
LIQUID			
Sample #			
S99T000970			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
06/08/99	v RESULT v		
Time	Specific Gravity =	1.421	
01:25 PM			

Data Entry by:	Date: 06/08/99
Approved by: <i>NA</i>	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (E-0)

Type		DUP	REPLICATE
DUP	Gross Weight (W2)	1.4254	0.0000
Work List	Tare Weight (W1)	1.2751	0.0000
30023	Weight of Solution (W2-W1)	0.1503	0
Test Code	Volume of Solution μ L	100.0000	0.0000
SPG-01	Specific Gravity	1.5030	NA
Matrix			
LIQUID			
Sample #			
S99T000970			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
06/08/99	v RESULT v		
Time	Specific Gravity =	1.503	
01:25 PM			

Data Entry by:	Date: 06/08/99
Approved by: <i>NA</i>	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (E-0)

		SAMPLE	REPLICATE
Type			
SAMPLE	Gross Weight (W2)	1.4580	0.0000
Work List	Tare Weight (W1)	1.3113	0.0000
30023	Weight of Solution (W2-W1)	0.1467	0
Test Code	Volume of Solution μ L	100.0000	0.0000
SPG-01	Specific Gravity	1.4670	NA
Matrix			
LIQUID			
Sample #			
S99T000971			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date	v RESULT v		
06/08/99			
Time	Specific Gravity =	1.467	
01:25 PM			

Data Entry by:	Date:	06/08/99
Approved by: NA	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (E-0)

Type		DUP	REPLICATE
DUP	Gross Weight (W2)	1.4896	0.0000
Work List	Tare Weight (W1)	1.3396	0.0000
30023	Weight of Solution (W2-W1)	0.15	0
Test Code	Volume of Solution μ L	100.0000	0.0000
SPG-01	Specific Gravity	1.5000	NA
Matrix			
LIQUID			
Sample #			
S99T000971			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
06/08/99	v RESULT v		
Time	Specific Gravity =	1.500	
01:25 PM			

Data Entry by:	Date: 06/08/99
Approved by: <i>NA</i>	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (E-0)

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.4786	0.0000
Work List	Tare Weight (W1)	1.3271	0.0000
30023	Weight of Solution (W2-W1)	0.1515	0
Test Code	Volume of Solution μ L	100.0000	0.0000
SPG-01	Specific Gravity	1.5150	NA
Matrix			
LIQUID			
Sample #			
S99T000972			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
06/08/99	v RESULT v		
Time	Specific Gravity =	1.515	
01:25 PM			

Data Entry by:	Date: 06/08/99
Approved by: <i>NA</i>	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (E-0)

Type		DUP	REPLICATE
DUP	Gross Weight (W2)	1.4007	0.0000
Work List	Tare Weight (W1)	1.2531	0.0000
30023	Weight of Solution (W2-W1)	0.1476	0
Test Code	Volume of Solution μ L	100.0000	0.0000
SPG-01	Specific Gravity	1.4760	NA
Matrix			
LIQUID			
Sample #			
S99T000972			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
06/08/99	\vee RESULT \vee		
Time	Specific Gravity =	1.476	
01:25 PM			

Data Entry by:	Date: 06/08/99
Approved by: <i>NA</i>	Date:

LABCORE Completed Worklist Report for Worklist# 30026

Analyst: rdm

Instrument: PH01 > 7

Book#: _____

Method: LA-212-106 Rev/Mod C-4

Worklist Comment: U102 GRAB1, pH-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STDPH	0	PH-01	LIQUID	8.0 8.0 ^{8/3/99}	7.97	7.970	pH
2	SAMPLE	S99T000970 0	PH-01	LIQUID	N/A >	13.50	1.00e-002	pH
3	DUP	S99T000970 0	PH-01	LIQUID	>13.50	>13.50		RPD
4	SAMPLE	S99T000971 0	PH-01	LIQUID	N/A >	13.50	1.00e-002	pH
5	DUP	S99T000971 0	PH-01	LIQUID	>13.50	>13.50		RPD
6	SAMPLE	S99T000972 0	PH-01	LIQUID	N/A	13.04	1.00e-002	pH
7	DUP	S99T000972 0	PH-01	LIQUID	13.04	13.19	1.144	RPD

Final page for worklist# 30026

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____


Reviewer Signature _____ Date 6/10/99

worklistrpt Version 2.1 05/15/95
06/03/99 08:06

HNF-1674 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 30026

Analyst: RM Instrument: PH01 Book # 18N19G

Method: LA-212-106 Rev/Mod C-4

Worklist Comment: U102 GRAB1, pH-01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH			PH-01	LIQUID	<u>8.0</u>	<u>7.97</u>	N/A	pH
99000200	U-102 GRAB1	2 SAMPLE	S99T000970	0	PH-01	LIQUID	N/A	<u>13.63</u>		pH
99000200	U-102 GRAB1	3 DUP	S99T000970	0	PH-01	LIQUID	<u>13.63</u>	<u>13.62</u>	N/A	pH
99000200	U-102 GRAB1	4 SAMPLE	S99T000971	0	PH-01	LIQUID	N/A	<u>13.56</u>		pH
99000200	U-102 GRAB1	5 DUP	S99T000971	0	PH-01	LIQUID	<u>13.56</u>	<u>13.52</u>	N/A	pH
99000200	U-102 GRAB1	6 SAMPLE	S99T000972	0	PH-01	LIQUID	N/A	<u>13.04</u>		pH
99000200	U-102 GRAB1	7 DUP	S99T000972	0	PH-01	LIQUID	<u>13.04</u>	<u>13.19</u>	N/A	pH

Final page for worklist # 30026

RM 6/9/99
Analyst Signature Date

Marie Jones 6/9/99
Analyst Signature Date

Faxed out 6/9/99
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.

LABCORE Completed Worklist Report for Worklist# 30027

Analyst: jis Instrument: PH01>7 Book#: _____

Method: LA-212-105 Rev/Mod _____

Worklist Comment: U102 GRAB1, pH-02 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STDPH		0	PH-02	SOLID	8.0 ^{8/3/99}	7.97	7.970	pH
2 SAMPLE	S99T000960	0	PH-02	SOLID	N/A	12.67	1.00e-002	pH
3 DUP	S99T000960	0	PH-02	SOLID	12.67	12.65	0.158	RPD

Final page for worklist# 30027

Analyst Signature _____ Date _____
Analyst Signature *Mary Jones* Date *6/4/99*
Reviewer Signature *[Signature]* Date *6/7/99*

worklistrpt Version 2.1 05/15/95
06/03/99 08:07

LABCORE Data Entry Template for Worklist# 30027

Analyst: JIS Instrument: PH01 Book # 18N19-G

Method: LA-212-105 Rev/Mod _____

Worklist Comment: U102 GRAB1, pH-02 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH			PH-02	SOLID	<u>8.0</u>	<u>7.97</u>	N/A	pH
99000200	U-102 GRAB1	2 SAMPLE	S99T000960	0	PH-02	SOLID	<u>N/A</u>	<u>12.67</u>		pH
99000200	U-102 GRAB1	3 DUP	S99T000960	0	PH-02	SOLID		<u>12.65</u>	N/A	pH

Final page for worklist # 30027

Jeff Salbreid
Analyst Signature _____ Date _____

Mary Jones 6/4/99
Analyst Signature _____ Date _____

Data Entry Comments:

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

LABCORE Completed Worklist Report for Worklist# 30025

Analyst: jis

Instrument: PH01

Book#: 33N15A

Method: LA-211-102 Rev/Mod _____

Worklist Comment: U102 GRAB1, OH-01 STD: 0.050mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK		0	OH-01	LIQUID	1	<1250		ug/mL
2 STD		0	OH-01	LIQUID	1.56e4	1.58e4	101.282 % Recovery	
3 SAMPLE	S99T000970	0	OH-01	LIQUID	N/A	2.70e4	125.000	ug/mL
4 DUP	S99T000970	0	OH-01	LIQUID	2.70e4	2.79e4	3.279	RPD
5 SAMPLE	S99T000971	0	OH-01	LIQUID	N/A	3.02e4	125.000	ug/mL
6 DUP	S99T000971	0	OH-01	LIQUID	3.02e4	3.02e4	0.000	RPD
7 SAMPLE	S99T000972	0	OH-01	LIQUID	N/A	3.02e4	125.000	ug/mL
8 DUP	S99T000972	0	OH-01	LIQUID	3.02e4	3.01e4	0.332	RPD

Final page for worklist# 30025

Analyst Signature

Date

Wendy Frank 6/7/99
Analyst Signature Date

[Signature] 6/8/99
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 30025

Analyst: JIS Instrument: PH01 Book # 33NISA

Method: LA-211-102 Rev/Mod D-1

Worklist Comment: U102 GRAB1, OH-01 STD: 0.050mL skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID			N/A	ug/mL
		2 STD			OH-01	LIQUID			N/A	ug/mL
99000200	U-102 GRAB1	3 SAMPLE	S99T000970	0	OH-01	LIQUID	N/A			ug/mL
99000200	U-102 GRAB1	4 DUP	S99T000970	0	OH-01	LIQUID			N/A	ug/mL
99000200	U-102 GRAB1	5 SAMPLE	S99T000971	0	OH-01	LIQUID	N/A			ug/mL
99000200	U-102 GRAB1	6 DUP	S99T000971	0	OH-01	LIQUID			N/A	ug/mL
99000200	U-102 GRAB1	7 SAMPLE	S99T000972	0	OH-01	LIQUID	N/A			ug/mL
99000200	U-102 GRAB1	8 DUP	S99T000972	0	OH-01	LIQUID			N/A	ug/mL

Final page for worklist # 30025

Jeff Soltman 6-4-99
Analyst Signature Date

Mary Franz 6/19/99
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.

calibration data
 date 99-06-04
 pH(S) 1 7.00
 pH(S) 2 10.00
 t.cal. 24.0 °C
 slope(rel) .975
 U(as) 56.2 mV
 electr. input 1
 =====

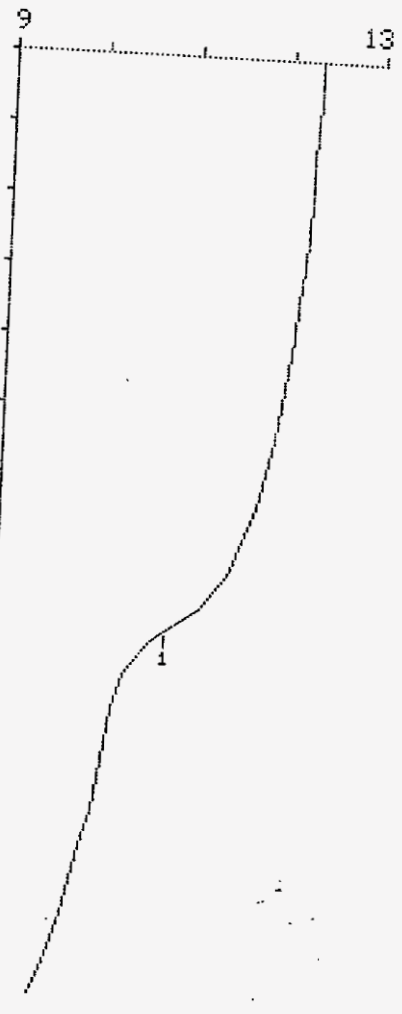
date 99-06-04 time 11:05
 GET pH 12 # 254
 Id.#1 893-2
 Id.#2 .1934
 pH(init) 12.31
 V/ml pH
 EP1 .821 10.83
 stop volt.reached
 =====

date 99-06-04 time 11:13
 GET pH 12 # 255
 Id.#1 893-2
 Id.#2 .1934
 pH(init) 12.27
 V/ml pH
 EP1 .849 10.86
 manual stop
 =====

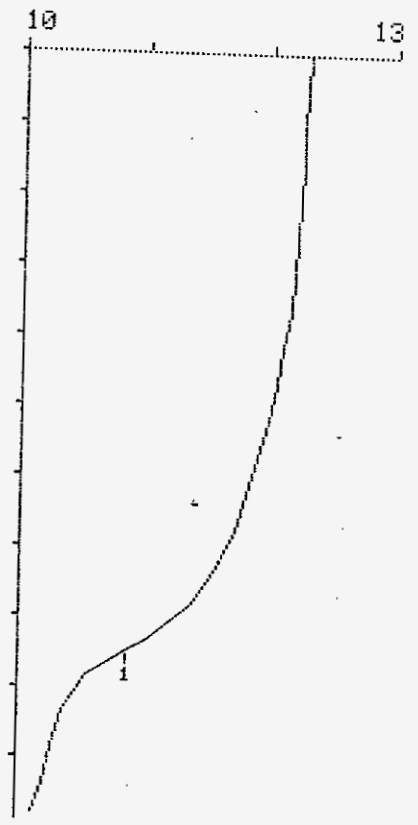
970

date 99-06-04 time 09:26
 GET pH 12 # 252
 Id.#1 BK 893-2
 Id.#2 .1934
 pH(init) 5.55
 V/ml pH
 EP1 .009 4.40
 manual stop
 =====

date 99-06-04 time 11:05
 GET pH 12 # 254
 .10ml/div ΔpH=1/div
 start V .000 ml



date 99-06-04 time 11:13
 GET pH 12 # 255
 .10ml/div ΔpH=1/div
 start V .000 ml

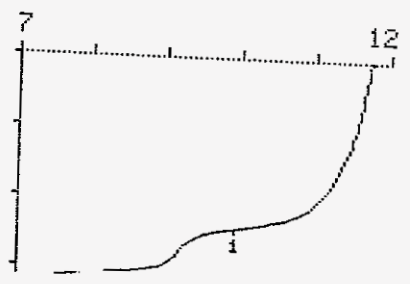


970 Dup

date 99-06-04 time 09:33
 GET pH 12 # 253
 Id.#1 893-2
 Id.#2 .1934
 pH(init) 11.70
 V/ml pH
 EP1 .241 9.94
 stop volt.reached
 =====

STL

date 99-06-04 time 09:34
 GET pH 12 # 253
 .10ml/div ΔpH=1/div
 start V .000 ml



```

date 99-06-04 time 11:51
GET pH      12 # 257
Id.#1      893-2
Id.#2      .1934
pH(init)   12.36
           V/ml      pH
EP1        .919     10.93
manual stop
=====

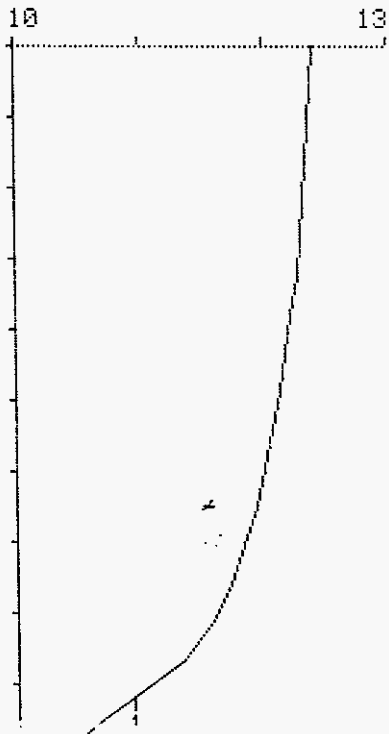
```

971

```

date 99-06-04 time 11:52
GET pH      12 # 257
.10ml/div  ΔpH=1/div
start V    .000 ml

```



```

date 99-06-04 time 12:02
GET pH      12 # 258
Id.#1      893-2
Id.#2      .1934
pH(init)   12.36
           V/ml      pH
EP1        .920     10.94
manual stop
=====

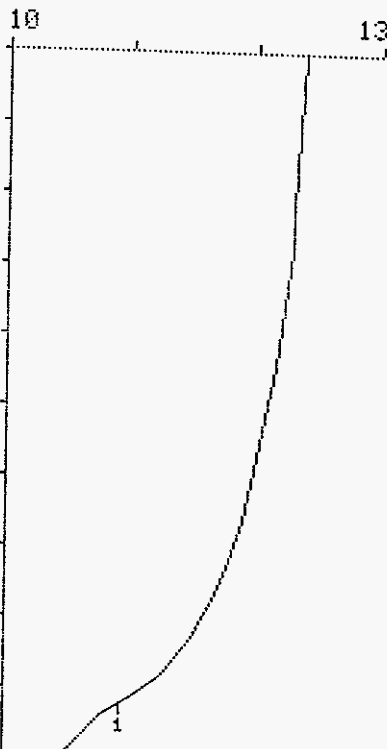
```

971 Dup

```

date 99-06-04 time 12:02
GET pH      12 # 258
.10ml/div  ΔpH=1/div
start V    .000 ml

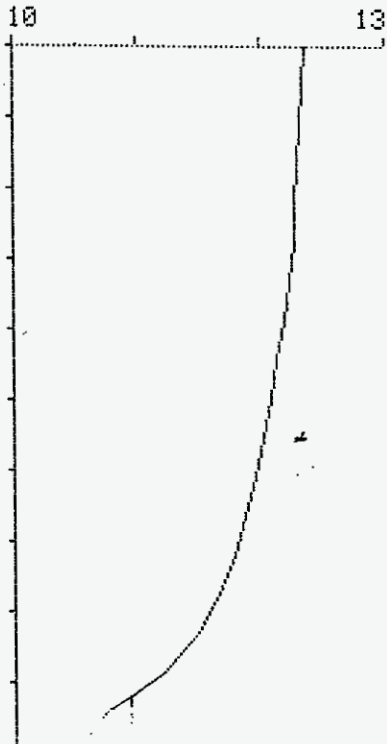
```



date 99-06-04 time 12:14
GET pH 12 # 259
Id.#1 893-2
Id.#2 .1934
pH(init) 12.34
V/ml pH
EP1 .918 10.93
manual stop
=====

972

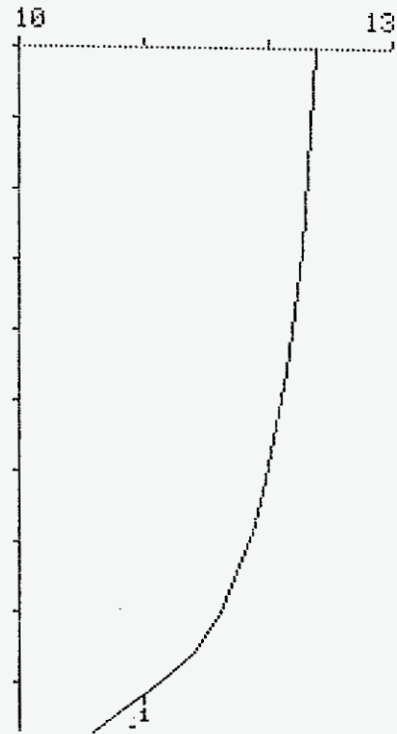
date 99-06-04 time 12:15
GET pH 12 # 259
.10ml/div Δ pH=1/div
start V .000 ml



date 99-06-04 time 12:21
GET pH 12 # 260
Id.#1 893-2
Id.#2 .1934
pH(init) 12.35
V/ml pH
EP1 .915 11.00
manual stop
=====

972 Dup

date 99-06-04 time 12:21
GET pH 12 # 260
.10ml/div Δ pH=1/div
start V .000 ml



OH (AUTO) : LA-211-102 (D-1)

OH (AUTO) : LA-211-102 (D-1)		BLNK
Type	Sample Size (mL) SS	0.100
BLNK	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.009
30025	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.74E-02
Matrix	Concentration of Sample in PPM	2.96E+02
LIQUID		
Sample #		
BLNK	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	1.25E+03
Analyst		
JIS	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
06/04/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
01:30 PM		
		BLNK
	Concentration of Sample (MOLARITY)	1.74E-02
	Concentration of Sample in PPM	<1250

The Result is < Detection Limit

OH (AUTO) : LA-211-102 (D-1)

OH (AUTO) : LA-211-102 (D-1)		STD
Type	Sample Size (mL) SS	0.050
STD	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.241
30025	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	9.32E-01
Matrix	Concentration of Sample in PPM	1.58E+04
LIQUID		
Sample #		
STD		
Instrument Code		
PH01	Detection Limit (PPM)	
Analyst		
JIS	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
06/04/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
01:30 PM		
		STD
	Concentration of Sample (MOLARITY)	9.32E-01
	Concentration of Sample in PPM	1.58E+04

OH (AUTO) : LA-211-102 (D-1)

OH (AUTO) : LA-211-102 (D-1)		SAMPLE
Type	Sample Size (mL) SS	0.100
SAMPLE	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.821
30025	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.59E+00
Matrix	Concentration of Sample in PPM	2.70E+04
LIQUID		
Sample #		
S99T000970	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	1.25E+03
Analyst		
JIS	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
06/04/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
01:30 PM		
		SAMPLE
	Concentration of Sample (MOLARITY)	1.59E+00
	Concentration of Sample in PPM	2.70E+04

OH (AUTO) : LA-211-102 (D-1)

OH (AUTO) : LA-211-102 (D-1)		DUP
Type	Sample Size (mL) SS	0.100
DUP	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.849
30025	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.64E+00
Matrix	Concentration of Sample in PPM	2.79E+04
LIQUID		
Sample #		
S99T000970	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	1.25E+03
Analyst		
JIS	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
06/04/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
01:30 PM		
		DUP
	Concentration of Sample (MOLARITY)	1.64E+00
	Concentration of Sample in PPM	2.79E+04

OH (AUTO) : LA-211-102 (D-1)

		SAMPLE
Type	Sample Size (mL) SS	0.100
SAMPLE	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.919
30025	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.78E+00
Matrix	Concentration of Sample in PPM	3.02E+04
LIQUID		
Sample #		
S99T000971	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	1.25E+03
Analyst		
JIS	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
06/04/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
01:30 PM		
		SAMPLE
	Concentration of Sample (MOLARITY)	1.78E+00
	Concentration of Sample in PPM	3.02E+04

OH (AUTO) : LA-211-102 (D-1)

OH (AUTO) : LA-211-102 (D-1)		DUP
Type	Sample Size (mL) SS	0.100
DUP	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.920
30025	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.78E+00
Matrix	Concentration of Sample in PPM	3.02E+04
LIQUID		
Sample #		
S99T000971	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	1.25E+03
Analyst		
JIS	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
06/04/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
01:30 PM		DUP
	Concentration of Sample (MOLARITY)	1.78E+00
	Concentration of Sample in PPM	3.02E+04

OH (AUTO) : LA-211-102 (D-1)

OH (AUTO) : LA-211-102 (D-1)		SAMPLE
Type	Sample Size (mL) SS	0.100
SAMPLE	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.918
30025	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.78E+00
Matrix	Concentration of Sample in PPM	3.02E+04
LIQUID		
Sample #		
S99T000972	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	1.25E+03
Analyst		
JIS	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
06/04/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
01:30 PM		
		SAMPLE
	Concentration of Sample (MOLARITY)	1.78E+00
	Concentration of Sample in PPM	3.02E+04

OH (AUTO) : LA-211-102 (D-1)

OH (AUTO) : LA-211-102 (D-1)		DUP
Type	Sample Size (mL) SS	0.100
DUP	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.915
30025	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.77E+00
Matrix	Concentration of Sample in PPM	3.01E+04
LIQUID		
Sample #		
S99T000972	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	1.25E+03
Analyst		
JIS	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
06/04/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
01:30 PM		
		DUP
	Concentration of Sample (MOLARITY)	1.77E+00
	Concentration of Sample in PPM	3.01E+04

LABCORE Completed Worklist Report for Worklist# 30024

Analyst: krm Instrument: NH301 Book#: _____

Method: LA-631-001 Rev/Mod _____

Worklist Comment: U102 GRAB1, NH3-01, STD:1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK		0	NH3-01	LIQUID	1	<5.00E+1		ug/mL
2 STD		0	NH3-01	LIQUID	4.08E+02	4.67E+2	114.461 % Recovery	
3 SAMPLE	S99T000973	0	NH3-01	LIQUID	N/A	1.27E+02	50.000	ug/mL
4 DUP	S99T000973	0	NH3-01	LIQUID	1.27E+2	1.52E+2	17.921	RPD
5 SPK	S99T000973	0	NH3-01	LIQUID	1.02E+02	7.13E+01	69.902 % Recovery	
6 SAMPLE	S99T000974	0	NH3-01	LIQUID	N/A	3.71E+02	50.000	ug/mL
7 DUP	S99T000974	0	NH3-01	LIQUID	3.71E+2	3.32E+2	11.095	RPD
8 SAMPLE	S99T000975	0	NH3-01	LIQUID	N/A	6.90E+02	50.000	ug/mL
9 DUP	S99T000975	0	NH3-01	LIQUID	6.90E+2	7.45E+2	7.666	RPD
10 STD		0	NH3-01	LIQUID	4.08E+02	3.50E+2	85.784 % Recovery	

Final page for worklist# 30024

Analyst Signature _____ Date _____

Mary Tracy 6/9/99
Analyst Signature Date

[Signature] 6/10/99
Reviewer Signature Date

Sample S99T000973 will
Be rerun due to spike failure.
mp

LABCORE Data Entry Template for Worklist# 30024

Analyst: KRM Instrument: NH301 Book # 59219A

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

Worklist Comment: U102 GRAB1, NH3-01, STD:1.0mL skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				NH3-01	LIQUID			N/A	ug/mL
		2	STD				NH3-01	LIQUID			N/A	ug/mL
99000200	U-102 GRAB1	3	SAMPLE	S99T000973	0		NH3-01	LIQUID	N/A			ug/mL
99000200	U-102 GRAB1	4	DUP	S99T000973	0		NH3-01	LIQUID			N/A	ug/mL
99000200	U-102 GRAB1	5	SPK	S99T000973	0		NH3-01	LIQUID			N/A	ug/mL
99000200	U-102 GRAB1	6	SAMPLE	S99T000974	0		NH3-01	LIQUID	N/A			ug/mL
99000200	U-102 GRAB1	7	DUP	S99T000974	0		NH3-01	LIQUID			N/A	ug/mL
99000200	U-102 GRAB1	8	SAMPLE	S99T000975	0		NH3-01	LIQUID	N/A			ug/mL
99000200	U-102 GRAB1	9	DUP	S99T000975	0		NH3-01	LIQUID			N/A	ug/mL
		10	STD				NH3-01	LIQUID			N/A	ug/mL

Final page for worklist # 30024

[Signature] 6-8-99
Analyst Signature Date

[Signature] 6/9/99
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.

SAMPLE VOL= 25.000 AT 09:42, 06-08-99
ENTERED

EMF= 29.7 mV AT 09:42, 06-08-99

EMF= 29.9 mV AT 09:43, 06-08-99

EMF= 30.2 mV AT 09:43, 06-08-99

EMF= 39.1 mV AT 09:48, 06-08-99

EMF= 39.4 mV AT 09:49, 06-08-99

EMF= 39.7 mV AT 09:49, 06-08-99

EMF= 39.9 mV AT 09:49, 06-08-99

EMF= 40.3 mV AT 09:50, 06-08-99

EMF= 40.6 mV AT 09:50, 06-08-99

EMF= 40.7 mV AT 09:51, 06-08-99

ENTERED

STD CONC= 999 AT 09:51, 06-08-99
ENTERED

STD VOL= .25000 AT 09:52, 06-08-99
ENTERED

EMF=-75.7 mV AT 09:55, 06-08-99

EMF=-76.0 mV AT 09:55, 06-08-99

EMF=-76.2 mV AT 09:56, 06-08-99

EMF=-76.3 mV AT 09:56, 06-08-99
ENTERED

STD VOL= 2.5000 AT 09:57, 06-08-99
ENTERED

EMF=-134.6 mV AT 10:00, 06-08-99

EMF=-134.8 mV AT 10:00, 06-08-99

EMF=-134.9 mV AT 10:01, 06-08-99

EMF=-134.9 mV AT 10:01, 06-08-99
ENTERED

1:NH3 SLOPE=-58.8 mV/DEC
AT 10:01, 06-08-99

1:NH3 CONC= .102

DOUBLE KNOWN ADDITION SELECTED
AT 10:01, 06-08-99

BLK

SAMPLE VOL= 25.000 AT 10:17, 06-08-99

ENTERED

EMF=-74.8 mV AT 10:17, 06-08-99

EMF=-74.8 mV AT 10:18, 06-08-99

EMF=-74.7 mV AT 10:18, 06-08-99

ENTERED

STD CONC= 999 AT 10:19, 06-08-99

ENTERED

STD VOL= .25000 AT 10:19, 06-08-99

ENTERED

EMF=-92.8 mV AT 10:22, 06-08-99

EMF=-92.5 mV AT 10:22, 06-08-99

EMF=-92.6 mV AT 10:23, 06-08-99

EMF=-92.7 mV AT 10:23, 06-08-99

EMF=-92.7 mV AT 10:23, 06-08-99

ENTERED

STD VOL= 2.5000 AT 10:24, 06-08-99

ENTERED

EMF=-135.8 mV AT 10:26, 06-08-99

EMF=-135.9 mV AT 10:27, 06-08-99

EMF=-136.2 mV AT 10:27, 06-08-99

ENTERED

1:NH3 SLOPE=-58.2 mV/DEC

AT 10:27, 06-08-99

1:NH3 CONC= 9.44

DOUBLE KNOWN ADDITION SELECTED

AT 10:27, 06-08-99

57D

SAMPLE VOL= 25.000 AT 13:40, 06-08-99
ENTERED

EMF=-57.5 mV AT 13:40, 06-08-99

EMF=-57.6 mV AT 13:40, 06-08-99

EMF=-57.5 mV AT 13:40, 06-08-99
ENTERED

STD CONC= 999 AT 13:41, 06-08-99
ENTERED

STD VOL= .25000 AT 13:41, 06-08-99
ENTERED

EMF=-82.8 mV AT 13:44, 06-08-99

EMF=-83.1 mV AT 13:44, 06-08-99

EMF=-83.3 mV AT 13:45, 06-08-99

EMF=-83.4 mV AT 13:45, 06-08-99
ENTERED

STD VOL= 2.5000 AT 13:46, 06-08-99
ENTERED

EMF=-130.6 mV AT 13:48, 06-08-99

EMF=-130.9 mV AT 13:49, 06-08-99

EMF=-131.1 mV AT 13:49, 06-08-99

EMF=-131.4 mV AT 13:50, 06-08-99

EMF=-131.6 mV AT 13:50, 06-08-99

EMF=-131.6 mV AT 13:51, 06-08-99

EMF=-131.7 mV AT 13:51, 06-08-99

EMF=-131.7 mV AT 13:51, 06-08-99
ENTERED

1: NH3 SLOPE=-58.1 mV/DEC
AT 13:51, 06-08-99

1: NH3 CONC= 5.49

DOUBLE KNOWN ADDITION SELECTED
AT 13:52, 06-08-99

599 T 97⁷⁰
3
SPK

SAMPLE VOL= 25.000 AT 14:00, 06-08-99
ENTERED

EMF=-61.0 mV AT 14:00, 06-08-99

EMF=-61.0 mV AT 14:02, 06-08-99
ENTERED

STD CONCEN= 999 AT 14:02, 06-08-99
ENTERED

STD VOL= .25000 AT 14:02, 06-08-99
ENTERED

EMF=-81.6 mV AT 14:05, 06-08-99

EMF=-82.0 mV AT 14:05, 06-08-99

EMF=-82.2 mV AT 14:06, 06-08-99

EMF=-82.7 mV AT 14:07, 06-08-99

EMF=-82.7 mV AT 14:07, 06-08-99
ENTERED

STD VOL= 2.5000 AT 14:07, 06-08-99
ENTERED

EMF=-129.1 mV AT 14:10, 06-08-99

EMF=-129.3 mV AT 14:11, 06-08-99

EMF=-129.6 mV AT 14:11, 06-08-99

EMF=-129.7 mV AT 14:12, 06-08-99

EMF=-129.7 mV AT 14:12, 06-08-99
ENTERED

1:NH3 SLOPE=-59.8 mV/DEC
AT 14:12, 06-08-99

1:NH3 CONCEN= 7.53

DOUBLE KNOWN ADDITION SELECTED
AT 14:12, 06-08-99

S 995 974

SAMPLE VOL= 25.000 AT 15:19, 06-08-99
ENTERED

HNF-1674 REV. 0

EMF=-65.6 mV AT 15:19, 06-08-99

EMF=-65.7 mV AT 15:19, 06-08-99

EMF=-65.8 mV AT 15:20, 06-08-99

EMF=-65.9 mV AT 15:21, 06-08-99

EMF=-65.9 mV AT 15:23, 06-08-99

EMF=-66.0 mV AT 15:23, 06-08-99

EMF=-66.0 mV AT 15:23, 06-08-99
ENTERED

STD CONC= 999 AT 15:24, 06-08-99
ENTERED

STD VOL= .25000 AT 15:24, 06-08-99
ENTERED

EMF=-88.2 mV AT 15:27, 06-08-99

EMF=-88.5 mV AT 15:27, 06-08-99

EMF=-88.7 mV AT 15:28, 06-08-99

EMF=-88.9 mV AT 15:28, 06-08-99

EMF=-89.0 mV AT 15:29, 06-08-99

EMF=-89.0 mV AT 15:29, 06-08-99
ENTERED

STD VOL= 2.5000 AT 15:29, 06-08-99
ENTERED

EMF=-135.5 mV AT 15:32, 06-08-99

EMF=-135.9 mV AT 15:33, 06-08-99

EMF=-136.2 mV AT 15:33, 06-08-99

EMF=-136.3 mV AT 15:34, 06-08-99

EMF=-136.3 mV AT 15:34, 06-08-99
ENTERED

1:NH3 SLOPE=-59.0 mV/DEC
AT 15:34, 06-08-99

1:NH3 CONC= 6.75

DOUBLE KNOWN ADDITION SELECTED
AT 15:34, 06-08-99

979 Dup

SAMPLE VOL= 25.000 AT 15:46, 06-08-99
ENTERED

EMF=-87.0 mV AT 15:46, 06-08-99

EMF=-87.1 mV AT 15:47, 06-08-99

EMF=-87.2 mV AT 15:47, 06-08-99

ENTERED

STD CONCEN= 999 AT 15:48, 06-08-99
ENTERED

STD VOL= .25000 AT 15:48, 06-08-99
ENTERED

EMF=-99.6 mV AT 15:50, 06-08-99

EMF=-99.9 mV AT 15:50, 06-08-99

EMF=-100.1 mV AT 15:50, 06-08-99

EMF=-100.3 mV AT 15:51, 06-08-99

EMF=-100.4 mV AT 15:51, 06-08-99

EMF=-100.5 mV AT 15:52, 06-08-99

EMF=-100.5 mV AT 15:52, 06-08-99
ENTERED

STD VOL= 2.5000 AT 15:53, 06-08-99
ENTERED

EMF=-138.6 mV AT 15:56, 06-08-99

EMF=-138.8 mV AT 15:56, 06-08-99

EMF=-139.2 mV AT 15:57, 06-08-99

EMF=-139.3 mV AT 15:57, 06-08-99

EMF=-139.3 mV AT 15:58, 06-08-99
ENTERED

1:NH3 SLOPE=-57.6 mV/DEC
AT 15:58, 06-08-99

1:NH3 CONCEN= 13.9

DOUBLE KNOWN ADDITION SELECTED
AT 15:58, 06-08-99

5997 975

SAMPLE VOL= 25.000 AT 16:37, 06-08-99
ENTERED

HNF-1674 REV. 0

EMF=-86.3 mV AT 16:37, 06-08-99

EMF=-86.4 mV AT 16:38, 06-08-99

EMF=-86.5 mV AT 16:39, 06-08-99

EMF=-86.5 mV AT 16:39, 06-08-99
ENTERED

STD CONC= 999 AT 16:40, 06-08-99
ENTERED

STD VOL= .25000 AT 16:40, 06-08-99
ENTERED

EMF=-98.4 mV AT 16:42, 06-08-99

EMF=-98.6 mV AT 16:42, 06-08-99

EMF=-98.8 mV AT 16:42, 06-08-99

EMF=-98.9 mV AT 16:43, 06-08-99

EMF=-99.0 mV AT 16:43, 06-08-99

EMF=-99.1 mV AT 16:44, 06-08-99

EMF=-99.2 mV AT 16:44, 06-08-99

EMF=-99.3 mV AT 16:45, 06-08-99

EMF=-99.4 mV AT 16:45, 06-08-99

EMF=-99.4 mV AT 16:45, 06-08-99
ENTERED

STD VOL= 2.5000 AT 16:47, 06-08-99
ENTERED

EMF=-137.3 mV AT 16:49, 06-08-99

EMF=-137.6 mV AT 16:49, 06-08-99

EMF=-137.8 mV AT 16:50, 06-08-99

EMF=-138.2 mV AT 16:50, 06-08-99

EMF=-138.3 mV AT 16:51, 06-08-99

EMF=-138.4 mV AT 16:51, 06-08-99

EMF=-138.4 mV AT 16:51, 06-08-99
ENTERED

1:NH3 SLOPE=-59.3 mV/DEC
AT 16:51, 06-08-99

1:NH3 CONC= 15.0

DOUBLE KNOWN ADDITION SELECTED
AT 16:52, 06-08-99

975 Dup

SAMPLE VOL= 25.000 AT 18:47, 06-08-99
ENTERED

EMF=-77.6 mV AT 18:53, 06-08-99

EMF=-77.9 mV AT 18:53, 06-08-99

EMF=-78.1 mV AT 18:54, 06-08-99

EMF=-78.3 mV AT 18:54, 06-08-99

EMF=-78.5 mV AT 18:55, 06-08-99

EMF=-78.5 mV AT 18:55, 06-08-99
ENTERED

STD CONC= 999 AT 18:56, 06-08-99
ENTERED

STD VOL= .25000 AT 18:56, 06-08-99
ENTERED

EMF=-99.2 mV AT 18:59, 06-08-99

EMF=-99.4 mV AT 18:59, 06-08-99

EMF=-99.8 mV AT 19:00, 06-08-99

EMF=-99.9 mV AT 19:01, 06-08-99

EMF=-100.0 mV AT 19:01, 06-08-99

EMF=-100.1 mV AT 19:02, 06-08-99

EMF=-100.2 mV AT 19:02, 06-08-99
ENTERED

STD VOL= 2.5000 AT 19:02, 06-08-99
ENTERED

EMF=-144.9 mV AT 19:05, 06-08-99

EMF=-145.2 mV AT 19:06, 06-08-99

EMF=-145.4 mV AT 19:06, 06-08-99

EMF=-145.6 mV AT 19:06, 06-08-99

EMF=-145.8 mV AT 19:07, 06-08-99

EMF=-145.9 mV AT 19:08, 06-08-99

EMF=-145.9 mV AT 19:08, 06-08-99
ENTERED

1: NH3 SLOPE=-57.5 mV/DEC
AT 19:08, 06-08-99

1: NH3 CONC= 7.10

End STD
59N19-A
.500 ml
121

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

LIQUIDS/SOLIDS

			BLNK
Type	Instrument Data (µg/mL)	ID	0.000
BLNK	Blank Result from the Instrument (µg/mL)	BR	0.102
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30024	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID	Dilution Factor	DF	1.000
Batch Number			
99002347			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	< 5.00E+01
Sample #			
BLNK	Detection Limit (µg/mL)		5.00E+01
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM)		
Prepared By			
MF	NH3 Concentration (µg/mL) = (BR) * (FVOL / VSAM) * DDF		
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
06/09/99			
Analysis Date			
06/08/99			
Analysis Time			
07:08 PM			
Sample Point	NH3 Concentration (µg/mL)		< 5.00E+01
U102 GRAB1			

Analyst:		KRM Date: 06/09/99
Signature of Chemist:	<i>NA</i>	MJL Date:

WORKBOOK PAGE: STD2

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

LAD 7/6/99

LIQUIDS/SOLIDS

			STD
Type	Instrument Data (µg/mL)	ID	9.440
STD	Blank Result from the Instrument (µg/mL)	BR	0.102
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30024	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	LCS Standard Book Number	LCS	59N19A
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL	4.08E+02
Matrix			
LIQUID			
Batch Number			
99002347			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	4.67E+02
Sample #			
STD	Detection Limit (µg/mL)	5.00E+01	
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM)		
Prepared By			
MF	NH3 Concentration (µg/mL) = (ID-BR)*(FVOL /VSAM)		
Chemist			
MJL	QC ACTUAL = STD VAL		
Analyst	QC FOUND = (ID-BR) * (FVOL/VSAM)		
KRM			
Date Complete			
06/09/99			
Analysis Date	QC ACTUAL (µg)		4.08E+02
06/08/99	QC FOUND (µg)		4.67E+02
Analysis Time			
07:08 PM			
Sample Point			
U102 GRAB1			

Analyst:	KRM	Date:	06/09/99
Signature of Chemist:	<i>NA</i>	MJL	Date:

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

*7/6/99
LAD*

LIQUIDS/SOLIDS

LIQUIDS/SOLIDS			SAMPLE
Type	Instrument Data (µg/mL)	ID	2.640
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.102
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30024	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID	Dilution Factor	DF	1.000
Batch Number			
99002347			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	1.27E+02
Sample #			
S99T000973	Detection Limit (µg/mL)	5.00E+01	
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM) * DF		
Prepared By			
MF	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)*DF		
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
06/09/99			
Analysis Date			
06/08/99			
Analysis Time			
07:08 PM			
Sample Point	NH3 Concentration (µg/mL)		1.27E+02
U102 GRAB1			

Analyst:	KRM	Date:	06/09/99
Signature of Chemist:	<i>NA</i>	MJL	Date:

AMMONIA (NH3) : LA-631-001 (C-0) ^D ^{7/6/99} ^{1.2}

LIQUIDS/SOLIDS

		DUP
Type	Instrument Data (µg/mL)	3.150
DUP	Blank Result from the Instrument (µg/mL)	0.102
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	0.500
30024	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	25.0
Test Code		
NH3-01		
Matrix		
LIQUID	Dilution Factor	1.000
Batch Number		
99002347		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	1.52E+02
Sample #		
S99T000973	Detection Limit (µg/mL)	5.00E+01
Instrument Code		
NH301	Detection Limit = 1.000µg * (FVOL/VSAM) * DF	
Prepared By		
MF	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)*DF	
Chemist		
MJL		
Analyst		
KRM		
Date Complete		
06/09/99		
Analysis Date		
06/08/99		
Analysis Time		
07:08 PM		
Sample Point	NH3 Concentration (µg/mL)	1.52E+02
LL 102 GRAB 1		

Analyst:		KRM Date: 06/09/99
Signature of Chemist:	<i>NA</i>	MJL Date:

WORKBOOK PAGE: SPIKE5

AMMONIA (NH3) : LA-631-001 (C-0) ^{LAO} 06/09/99

LIQUIDS/SOLIDS

			SPK
Type	Instrument Data (µg/mL)	ID	5.490
SPK	Blank Result from the Instrument (µg/mL)	BR	0.102
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30024	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	Spike Book Number	SPK	59N19A
NH3-01	Spike Value (µg/mL)	SPK VAL	4.08E+02
Matrix	Vol of Spike Standard Used (mL)	VOL SPK	0.250
LIQUID			
Batch Number			
99002347			
Rerun	Sample Instrument Data (µg/mL)	SAM ID	2.64
0	Sample Volume of Sample (mL)	SAM VSAM	0.500
Sample Prep	Sample Final Volume (mL)	SAM FVOL	25.0
N/A			
Sample #			
S99T000973			
Instrument Code			
NH301			
Prepared By			
MF			
Chemist			
MJL	QC ACTUAL = SPK VAL * VOL SPK		
Analyst	QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM))		
KRM			
Date Complete			
06/09/99			
Analysis Date	QC ACTUAL (µg)		1.02E+02
06/08/99	QC FOUND (µg)		7.13E+01
Analysis Time			
07:08 PM			
Sample Point			
LL 102 GRAB 1			

Analyst:	KRM Date: 06/09/99
Signature of Chemist: <i>NA</i>	MJL Date:

WORKBOOK PAGE: SAM6

AMMONIA (NH3) : LA-631-001 (C-0) ^D _{7/14/99}

LIQUIDS/SOLIDS

			SAMPLE
Type	Instrument Data (µg/mL)	ID	7.530
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.102
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30024	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID	Dilution Factor	DF	1.000
Batch Number			
99002347			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	3.71E+02
Sample #			
S99T000974	Detection Limit (µg/mL)	5.00E+01	
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM) * DF		
Prepared By			
MF	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)*DF		
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
06/09/99			
Analysis Date			
06/08/99			
Analysis Time			
07:08 PM			
Sample Point	NH3 Concentration (µg/mL)		3.71E+02
LID2 GRAB1			

Analyst:	KRM	Date:	06/09/99
Signature of Chemist:	<i>NA</i>	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: DUP7

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

D *14D* *7/1/99*

LIQUIDS/SOLIDS

DUP

Type	Instrument Data (µg/mL)	ID	6.750
DUP	Blank Result from the Instrument (µg/mL)	BR	0.102
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30024	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID	Dilution Factor	DF	1.000
Batch Number			
99002347			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	3.32E+02
Sample #			
S99T000974	Detection Limit (µg/mL)	5.00E+01	
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM) * DF		
Prepared By			
MF	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)*DF		
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
06/09/99			
Analysis Date			
06/08/99			
Analysis Time			
07:08 PM			
Sample Point	NH3 Concentration (µg/mL)		3.32E+02
LA 102 GRAB 1			

Analyst:		KRM Date: 06/09/99
Signature of Chemist:	<i>NA</i>	MJL Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: SAM8

AMMONIA (NH3) : LA-631-001 (C-0) ^D _{11/1/99}

LIQUIDS/SOLIDS

			SAMPLE
Type	Instrument Data (µg/mL)	ID	13.900
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.102
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30024	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID	Dilution Factor	DF	1.000
Batch Number			
99002347			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	6.90E+02
Sample #			
S99T000975	Detection Limit (µg/mL)		5.00E+01
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM) * DF		
Prepared By			
MF	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)*DF		
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
06/09/99			
Analysis Date			
06/08/99			
Analysis Time			
07:08 PM			
Sample Point	NH3 Concentration (µg/mL)		6.90E+02
LIQ2 GRAB1			

Analyst:	KRM Date: 06/09/99
Signature of Chemist: <i>NA</i>	MJL Date:

SAMPLE.WB1 REV 1.0

631001ML

AMMONIA (NH3) : LA-631-001 (C-0) ^D 7/16/99

LIQUIDS/SOLIDS

		DUP
Type	Instrument Data (µg/mL)	15.000
DUP	Blank Result from the Instrument (µg/mL)	0.102
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	0.500
30024	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	25.0
Test Code		
NH3-01		
Matrix		
LIQUID	Dilution Factor	1.000
Batch Number		
99002347		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	7.45E+02

ID	
BR	
VSAM	
FVOL	
DF	
NH3 CONC	
Detection Limit (µg/mL)	5.00E+01
Instrument Code	
NH301	Detection Limit = 1.000µg * (FVOL/VSAM) * DF
Prepared By	
MF	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)*DF
Chemist	
MJL	
Analyst	
KRM	
Date Complete	
06/09/99	
Analysis Date	
06/08/99	
Analysis Time	
07:08 PM	
Sample Point	NH3 Concentration (µg/mL)
LL102 GRAB1	7.45E+02

Analyst:	KRM Date: 06/09/99
Signature of Chemist: <i>MF</i>	MJL Date:

WORKBOOK PAGE: ST_END10

AMMONIA (NH3) : LA-631-001 (C-0) ^{7/6/99}

LIQUIDS/SOLIDS

			STD
Type	Instrument Data (µg/mL)	ID	7.100
STD	Blank Result from the Instrument (µg/mL)	BR	0.102
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30024	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	LCS Standard Book Number	LCS	59N19A
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL	4.08E+02
Matrix			
Batch Number			
99002347			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	3.50E+02
Sample #			
	Detection Limit (µg/mL)		5.00E+01
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM)		
Prepared By			
MF	NH3 Concentration (µg/mL) = (ID-BR)*(FVOL /VSAM)		
Chemist			
MJL	QC ACTUAL = STD VAL		
Analyst	QC FOUND = (ID-BR) * (FVOL/VSAM)		
KRM			
Date Complete			
06/09/99			
Analysis Date	QC ACTUAL (µg)		4.08E+02
06/08/99	QC FOUND (µg)		3.50E+02
Analysis Time			
07:08 PM			
Sample Point			
U 102 GRAB 1			

Analyst:	KRM Date: 06/09/99
Signature of Chemist:	MJL Date:

SAMPLE.WB1 REV 1.0

631001ML

LABCORE Completed Worklist Report for Worklist# 30142

Analyst: slh

Instrument: NH301

Book#: _____

Method: LA-631-001 Rev/Mod _____

Worklist Comment: U102 GRAB NH3-01 RERUN MF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	NH3-01	LIQUID	4.08E+02	3.71E+2	90.931 % Recovery	
2 BLNK		0	NH3-01	LIQUID	1	<5.00E+1		ug/mL
3 SAMPLE	S99T000973	0	NH3-01	LIQUID	N/A	6.75E+01	50.000	ug/mL
4 DUP	S99T000973	0	NH3-01	LIQUID	6.75E+1	8.95E+1	28.025	RPD
5 SPK	S99T000973	0	NH3-01	LIQUID	1.02E+02	8.35E+01	81.863 % Recovery	
6 STD		0	NH3-01	LIQUID	4.08E+02	3.27E+2	80.147 % Recovery	

Final page for worklist# 30142

Analyst Signature _____

Date _____

Mary Franzy 6/14/99
Analyst Signature Date

AMLA 6/17/99
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 30142

Analyst: SLH Instrument: NH301 _____ Book# 59N19-A

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

Worklist Comment: U102 GRAB NH3-01 RERUN MF

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			NH3-01	LIQUID		
2 SAMPLE	S99T000973 0		NH3-01	LIQUID	99000200	U-102, GRAB1
	Analytes Requested: NH3-01					
3 DUP	S99T000973 0		NH3-01	LIQUID		
4 SPK	S99T000973 0		NH3-01	LIQUID		
5 STD			NH3-01	LIQUID		

Final page for worklist # 30142

Jandrea Hood Boatright
 Signature Date
 6-11-99

Mary Francis 6/14/99
 Signature Date

Data Entry Comments:

SAMPLE VOL= 25.000 AT 18:44, 06-10-99
ENTERED

EMF= 34.2 mV AT 18:54, 06-10-99

EMF= 33.8 mV AT 18:54, 06-10-99

EMF= 33.4 mV AT 18:55, 06-10-99

EMF= 33.1 mV AT 18:55, 06-10-99

EMF= 32.8 mV AT 18:56, 06-10-99

EMF= 32.7 mV AT 18:56, 06-10-99

ENTERED

STD CONC= 997 AT 18:56, 06-10-99
ENTERED

STD VOL= .25000 AT 18:56, 06-10-99
ENTERED

EMF=-87.2 mV AT 19:04, 06-10-99

EMF=-87.5 mV AT 19:05, 06-10-99

EMF=-87.7 mV AT 19:05, 06-10-99

EMF=-87.9 mV AT 19:05, 06-10-99

EMF=-87.9 mV AT 19:05, 06-10-99
ENTERED

STD VOL= 2.5000 AT 19:06, 06-10-99
ENTERED

EMF=-144.7 mV AT 19:08, 06-10-99

EMF=-144.9 mV AT 19:08, 06-10-99

EMF=-145.1 mV AT 19:09, 06-10-99

EMF=-145.2 mV AT 19:09, 06-10-99

EMF=-145.2 mV AT 19:09, 06-10-99
ENTERED

1:NH3 SLOPE=-57.5 mV/DEC
AT 19:09, 06-10-99

1:NH3 CONC= .0792

BIK WL 30142

DOUBLE KNOWN ADDITION SELECTED
AT 22:22. 06-10-99

SAMPLE VOL= 25.000 AT 22:22. 06-10-99
ENTERED

EMF=-76.2 mV AT 22:26. 06-10-99

EMF=-76.6 mV AT 22:26. 06-10-99

EMF=-77.0 mV AT 22:27. 06-10-99

EMF=-77.2 mV AT 22:27. 06-10-99

EMF=-77.3 mV AT 22:27. 06-10-99

ENTERED

STD CONC= 997 AT 22:28. 06-10-99

ENTERED

STD VOL= .25000 AT 22:28. 06-10-99

ENTERED

EMF=-97.1 mV AT 22:30. 06-10-99

EMF=-97.4 mV AT 22:30. 06-10-99

EMF=-97.7 mV AT 22:31. 06-10-99

EMF=-97.9 mV AT 22:31. 06-10-99

EMF=-98.2 mV AT 22:32. 06-10-99

EMF=-98.5 mV AT 22:32. 06-10-99

ENTERED

STD VOL= 2.5000 AT 22:33. 06-10-99

ENTERED

EMF=-143.3 mV AT 22:35. 06-10-99

EMF=-143.6 mV AT 22:35. 06-10-99

EMF=-144.2 mV AT 22:36. 06-10-99

EMF=-144.2 mV AT 22:37. 06-10-99

EMF=-144.4 mV AT 22:37. 06-10-99

EMF=-144.4 mV AT 22:37. 06-10-99

ENTERED

1: NH3 SLOPE=-58.4 mV/DEC

AT 22:37. 06-10-99

1: NH3 CONC= 7.50

STD

59N19-A

WL 30142

.500ml

DOUBLE KNOWN ADDITION SELECTED
AT 23:16, 06-10-99

SAMPLE VOL= 25.000 AT 23:22, 06-10-99
ENTERED

EMF=-0.6 mV AT 23:22, 06-10-99

EMF=-0.8 mV AT 23:23, 06-10-99

EMF=-1.1 mV AT 23:24, 06-10-99

EMF=-1.3 mV AT 23:24, 06-10-99
ENTERED

STD CONC= 997 AT 23:24, 06-10-99
ENTERED

STD VOL= .25000 AT 23:24, 06-10-99
ENTERED

EMF=-53.3 mV AT 23:28, 06-10-99

EMF=-53.6 mV AT 23:29, 06-10-99

EMF=-53.9 mV AT 23:29, 06-10-99

EMF=-54.2 mV AT 23:29, 06-10-99

EMF=-54.5 mV AT 23:30, 06-10-99

EMF=-54.8 mV AT 23:30, 06-10-99

EMF=-55.0 mV AT 23:31, 06-10-99

EMF=-55.4 mV AT 23:31, 06-10-99

EMF=-55.6 mV AT 23:31, 06-10-99

EMF=-55.9 mV AT 23:32, 06-10-99

EMF=-56.1 mV AT 23:32, 06-10-99

EMF=-56.3 mV AT 23:32, 06-10-99
ENTERED

STD VOL= 2.5000 AT 23:34, 06-10-99
ENTERED

EMF=-112.6 mV AT 23:36, 06-10-99

EMF=-113.0 mV AT 23:37, 06-10-99

EMF=-113.3 mV AT 23:37, 06-10-99

EMF=-113.6 mV AT 23:38, 06-10-99

EMF=-113.9 mV AT 23:38, 06-10-99

EMF=-114.1 mV AT 23:38, 06-10-99

136

.500 ml ss

399T000973

10/2

ENTERED

HNF-1674 REV. 0

1:NH3 SLOPE=-61.3 mV/DEC
AT 23:39, 06-10-99

2/2

1:NH3 CONC= 1.43

S99T000973

.500 ml SS

DOUBLE KNOWN ADDITION SELECTED
AT 00:08, 06-11-99

SAMPLE VOL= 25.000 AT 00:09, 06-11-99
ENTERED

EMF= 1.8 mV AT 00:11, 06-11-99

EMF= 1.5 mV AT 00:12, 06-11-99

EMF= 1.3 mV AT 00:12, 06-11-99

EMF= 1.2 mV AT 00:12, 06-11-99

EMF= 1.0 mV AT 00:13, 06-11-99

EMF= 0.9 mV AT 00:13, 06-11-99

EMF= 0.7 mV AT 00:13, 06-11-99

EMF= 0.6 mV AT 00:14, 06-11-99

EMF= 0.5 mV AT 00:14, 06-11-99

ENTERED

STD CONC= 997 AT 00:14, 06-11-99
ENTERED

STD VOL= .25000 AT 00:14, 06-11-99
ENTERED

EMF=-47.3 mV AT 00:18, 06-11-99

EMF=-47.6 mV AT 00:19, 06-11-99

EMF=-47.9 mV AT 00:19, 06-11-99

EMF=-48.2 mV AT 00:19, 06-11-99

EMF=-48.4 mV AT 00:20, 06-11-99

EMF=-48.5 mV AT 00:20, 06-11-99

ENTERED

STD VOL= 2.5000 AT 00:20, 06-11-99
ENTERED

EMF=-104.7 mV AT 00:23, 06-11-99

EMF=-105.0 mV AT 00:24, 06-11-99

EMF=-105.3 mV AT 00:24, 06-11-99

EMF=-105.6 mV AT 00:24, 06-11-99

.500 ml SS

137

S99T000973

10/2

ENTERED

HNF-1674 REV. 0

1: NH3 SLOPE=-61.4 mV/DEC
AT 00:25, 06-11-99

1: NH3 CONC= 1.87

999T000973

Dup ^{2 of 2} .500ml ss

DOUBLE KNOWN ADDITION SELECTED
AT 00:48, 06-11-99

SAMPLE VOL= 25.000 AT 00:49, 06-11-99
ENTERED

EMF=-21.9 mV AT 00:52, 06-11-99

EMF=-22.3 mV AT 00:52, 06-11-99

EMF=-22.8 mV AT 00:53, 06-11-99

EMF=-23.1 mV AT 00:53, 06-11-99

EMF=-23.6 mV AT 00:54, 06-11-99

EMF=-23.7 mV AT 00:54, 06-11-99

ENTERED

STD CONC= 997 AT 00:54, 06-11-99
ENTERED

STD VOL= .25000 AT 00:54, 06-11-99
ENTERED

EMF=-51.4 mV AT 00:58, 06-11-99

EMF=-51.9 mV AT 00:58, 06-11-99

EMF=-52.2 mV AT 00:59, 06-11-99

EMF=-52.6 mV AT 00:59, 06-11-99

EMF=-52.9 mV AT 00:59, 06-11-99

EMF=-53.3 mV AT 01:00, 06-11-99

EMF=-53.5 mV AT 01:00, 06-11-99

ENTERED

STD VOL= 2.5000 AT 01:01, 06-11-99
ENTERED

EMF=-104.2 mV AT 01:05, 06-11-99

EMF=-104.7 mV AT 01:06, 06-11-99

EMF=-105.1 mV AT 01:06, 06-11-99

EMF=-105.4 mV AT 01:07, 06-11-99

EMF=-105.6 mV AT 01:07, 06-11-99

EMF=-105.6 mV AT 01:07, 06-11-99

ENTERED

1 of 2 .500ml ss

138 999T000973 SPK +.250 59M9-A

1:NH3 SLOPE=-41.4 mV/DEC
AT 01:07, 06-11-99

1:NH3 CONCN= 4.77

2/2

999T000973
.500ml ss

spk
+.250 59M19-A

DOUBLE KNOWN ADDITION SELECTED
AT 02:28. 06-11-99

SAMPLE VOL= 25.000 AT 02:28. 06-11-99
ENTERED

EMF=-32.5 mV AT 02:30, 06-11-99

EMF=-33.6 mV AT 02:31, 06-11-99

EMF=-34.1 mV AT 02:32, 06-11-99

EMF=-34.5 mV AT 02:32, 06-11-99

EMF=-34.9 mV AT 02:33, 06-11-99

EMF=-35.3 mV AT 02:33, 06-11-99

EMF=-35.4 mV AT 02:33, 06-11-99
ENTERED

STD CONC= 997 AT 02:34, 06-11-99
ENTERED

STD VOL= .25000 AT 02:34, 06-11-99
ENTERED

EMF=-57.6 mV AT 02:36, 06-11-99

EMF=-58.1 mV AT 02:37, 06-11-99

EMF=-58.5 mV AT 02:37, 06-11-99

EMF=-58.8 mV AT 02:38, 06-11-99

EMF=-59.1 mV AT 02:38, 06-11-99

EMF=-59.2 mV AT 02:38, 06-11-99
ENTERED

STD VOL= 2.5000 AT 02:39, 06-11-99
ENTERED

EMF=-106.4 mV AT 02:42, 06-11-99

EMF=-106.7 mV AT 02:42, 06-11-99

EMF=-107.0 mV AT 02:42, 06-11-99

EMF=-107.2 mV AT 02:43, 06-11-99

EMF=-107.6 mV AT 02:43, 06-11-99

EMF=-107.7 mV AT 02:43, 06-11-99
ENTERED

1:NH3 SLOPE=-60.3 mV/DEC
AT 02:43, 06-11-99

1:NH3 CONC= 6.61

.500 ml 35

59N19-A

End STD

WORKBOOK PAGE: STD1

AMMONIA (NH3) : LA-631-001 (C-0)^{AD} 7/16/99

LIQUIDS/SOLIDS

			STD
Type	Instrument Data (µg/mL)	ID	7.500
STD	Blank Result from the Instrument (µg/mL)	BR	0.079
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30142	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	LCS Standard Book Number	LCS	59N19A
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL	4.08E+02
Matrix			
LIQUID			
Batch Number			
99002476			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	3.71E+02
Sample #			
STD	Detection Limit (µg/mL)		5.00E+01
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM)		
Prepared By			
MF	NH3 Concentration (µg/mL) = (ID-BR)*(FVOL /VSAM)		
Chemist			
MJL	QC ACTUAL = STD VAL		
Analyst	QC FOUND = (ID-BR) * (FVOL/VSAM)		
SLH			
Date Complete			
06/14/99			
Analysis Date	QC ACTUAL (µg)		4.08E+02
06/11/99	QC FOUND (µg)		3.71E+02
Analysis Time			
02:40 AM			
Sample Point			
U102 GRAB			

Analyst:		SLH Date: 06/14/99
Signature of Chemist:	<i>NA</i>	MJL Date:

WORKBOOK PAGE: BLANK2

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

LIQUIDS/SOLIDS

			BLNK
Type	Instrument Data (µg/mL)	ID	0.000
BLNK	Blank Result from the Instrument (µg/mL)	BR	0.079
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30142	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID	Dilution Factor	DF	1.000
Batch Number			
99002476			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	< 5.00E+01
Sample #			
BLNK	Detection Limit (µg/mL)		5.00E+01
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM)		
Prepared By			
MF	NH3 Concentration (µg/mL) = (BR) * (FVOL / VSAM) * DDF		
Chemist			
MJL			
Analyst			
SLH			
Date Complete			
06/14/99			
Analysis Date			
06/11/99			
Analysis Time			
02:40 AM			
Sample Point	NH3 Concentration (µg/mL)		< 5.00E+01
U102 GRAB			

Analyst:		SLH Date: 06/14/99
Signature of Chemist:	<i>NA</i>	MJL Date:

WORKBOOK PAGE: SAM3

AMMONIA (NH3) : LA-631-001 (C-0) *06/14/99*

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	1.430
SAMPLE	Blank Result from the Instrument (µg/mL)	0.079
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	0.500
30142	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	25.0
Test Code		
NH3-01		
Matrix		
LIQUID	Dilution Factor	1.000
Batch Number		
99002476		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	6.75E+01
Sample #		
S99T000973	Detection Limit (µg/mL)	5.00E+01
Instrument Code		
NH301	Detection Limit = 1.000µg * (FVOL/VSAM) * DF	
Prepared By		
MF	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)*DF	
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
06/14/99		
Analysis Date		
06/11/99		
Analysis Time		
02:40 AM		
Sample Point	NH3 Concentration (µg/mL)	6.75E+01
U102 GRAB		

Analyst:	SLH Date: 06/14/99
Signature of Chemist: <i>NA</i>	MJL Date:

WORKBOOK PAGE: DUP4

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

Type	Instrument Data (µg/mL)	ID	1.870
DUP	Blank Result from the Instrument (µg/mL)	BR	0.079
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30142	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID	Dilution Factor	DF	1.000
Batch Number			
99002476			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	8.95E+01
Sample #			
S99T000973	Detection Limit (µg/mL)		5.00E+01
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM) * DF		
Prepared By			
MF	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)*DF		
Chemist			
MJL			
Analyst			
SLH			
Date Complete			
06/14/99			
Analysis Date			
06/11/99			
Analysis Time			
02:40 AM			
Sample Point	NH3 Concentration (µg/mL)		8.95E+01
U102 GRAB			

Analyst:	SLH Date: 06/14/99
Signature of Chemist: <i>NA</i>	MJL Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: SPIKE5

AMMONIA (NH3) : LA-631-001 (C-0) ^D _{7/14/99}

LIQUIDS/SOLIDS

			SPK
Type	Instrument Data (µg/mL)	ID	4.770
SPK	Blank Result from the Instrument (µg/mL)	BR	0.079
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30142	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	Spike Book Number	SPK	59N19A
NH3-01	Spike Value (µg/mL)	SPK VAL	4.08E+02
Matrix	Vol of Spike Standard Used (mL)	VOL SPK	0.250
LIQUID			
Batch Number			
99002476			
Rerun	Sample Instrument Data (µg/mL)	SAM ID	1.43
0	Sample Volume of Sample (mL)	SAM VSAM	0.500
Sample Prep	Sample Final Volume (mL)	SAM FVOL	25.0
N/A			
Sample #			
S99T000973			
Instrument Code			
NH301			
Prepared By			
MF			
Chemist			
MJL	QC ACTUAL = SPK VAL * VOL SPK		
Analyst	QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM))		
SLH			
Date Complete			
06/14/99			
Analysis Date	QC ACTUAL (µg)		1.02E+02
06/11/99	QC FOUND (µg)		8.35E+01
Analysis Time			
02:40 AM			
Sample Point			
U102 GRAB			

Analyst:	SLH Date: 06/14/99
Signature of Chemist: <i>NA</i>	MJL Date:

SAMPLE.WB1 REV 1.0

631001ML

AMMONIA (NH3) : LA-631-001

D 7/6/99
AD

LIQUIDS/SOLIDS

			STD
Type	Instrument Data (µg/mL)	ID	6.610
STD	Blank Result from the Instrument (µg/mL)	BR	0.079
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30142	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	LCS Standard Book Number	LCS	59N19A
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL	4.08E+02
Matrix			
LIQUID			
Batch Number			
99002476			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	3.27E+02
Sample #			
	Detection Limit (µg/mL)		5.00E+01
Instrument Code			
NH301	Detection Limit = 1.000µg * (FVOL/VSAM)		
Prepared By			
MF	NH3 Concentration (µg/mL) = (ID-BR)*(FVOL /VSAM)		
Chemist			
MJL	QC ACTUAL = STD VAL		
Analyst	QC FOUND = (ID-BR) * (FVOL/VSAM)		
SLH			
Date Complete			
06/14/99			
Analysis Date	QC ACTUAL (µg)		4.08E+02
06/11/99	QC FOUND (µg)		3.27E+02
Analysis Time			
02:40 AM			
Sample Point			
U102 GRAB			

Analyst:		SLH Date: 06/14/99
Signature of Chemist:	<i>NA</i>	MJL Date:

HNF-1674 REV. 0
LABCORE Completed Worklist Report for Worklist# 30031

Analyst: adp

Instrument: IC40S1

Book#: 83N21A

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

Worklist Comment: U102 GRAB1, @IC-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	@IC-QC	F	QC	1	<1.20e-2		ug/mL
1 CCB	0	@IC-QC	CL	QC	1	<1.70e-2		ug/mL
1 CCB	0	@IC-QC	NO2	QC	1	<1.08e-1		ug/mL
1 CCB	0	@IC-QC	BR	QC	1	<1.25e-1		ug/mL
1 CCB	0	@IC-QC	NO3	QC	1	<1.39e-1		ug/mL
1 CCB	0	@IC-QC	PO4	QC	1	<1.20e-1		ug/mL
1 CCB	0	@IC-QC	SO4	QC	1	<1.38e-1		ug/mL
1 CCB	0	@IC-QC	OXALATE2	QC	1	<1.05e-1		ug/mL
2 LCS-INST	0	@IC-QC	F	QC	5.84e1	6.77e+01	115.925 % Recovery	
2 LCS-INST	0	@IC-QC	CL	QC	8.06e1	8.65e+01	107.320 % Recovery	
2 LCS-INST	0	@IC-QC	NO2	QC	5.32e2	5.58e+02	104.887 % Recovery	
2 LCS-INST	0	@IC-QC	BR	QC	5.76e2	6.08e+02	105.556 % Recovery	
2 LCS-INST	0	@IC-QC	NO3	QC	5.84e2	5.79e+02	99.144 % Recovery	
2 LCS-INST	0	@IC-QC	PO4	QC	5.44e2	5.86e+02	107.721 % Recovery	
2 LCS-INST	0	@IC-QC	SO4	QC	6.42e2	6.89e+02	107.321 % Recovery	
2 LCS-INST	0	@IC-QC	OXALATE2	QC	5.34e2	5.60e+02	104.869 % Recovery	
3 CCV	0	@IC-QC	F	QC	6.40e1	6.82e+01	106.562 % Recovery	
3 CCV	0	@IC-QC	CL	QC	8.95e1	9.82e+01	109.721 % Recovery	
3 CCV	0	@IC-QC	NO2	QC	5.31e2	5.54e+02	104.331 % Recovery	
3 CCV	0	@IC-QC	BR	QC	6.30e2	6.36e+02	100.952 % Recovery	
3 CCV	0	@IC-QC	NO3	QC	7.00e2	7.28e+02	104.000 % Recovery	
3 CCV	0	@IC-QC	PO4	QC	6.35e2	6.79e+02	106.929 % Recovery	
3 CCV	0	@IC-QC	SO4	QC	7.00e2	7.26e+02	103.714 % Recovery	
3 CCV	0	@IC-QC	OXALATE2	QC	5.25e2	5.34e+02	101.714 % Recovery	
4 SAMPLE	S99T000970	0	@IC-01	F-02	LIQUID	N/A	1.065e+03	61.810 ug/mL
4 SAMPLE	S99T000970	0	@IC-01	CL-02	LIQUID	N/A	1.080e+04	87.570 ug/mL
4 SAMPLE	S99T000970	0	@IC-01	NO2-02	LIQUID	N/A	1.323e+05	556.300 ug/mL
4 SAMPLE	S99T000970	0	@IC-01	BR-02	LIQUID	N/A	6.439e+02	643.900 ug/mL
4 SAMPLE	S99T000970	0	@IC-01	NO3-02	LIQUID	N/A	2.005e+05	716.000 ug/mL
4 SAMPLE	S99T000970	0	@IC-01	PO4-02	LIQUID	N/A	3.169e+03	618.100 ug/mL
4 SAMPLE	S99T000970	0	@IC-01	SO4-02	LIQUID	N/A	3.712e+03	710.800 ug/mL
4 SAMPLE	S99T000970	0	@IC-01	OXALATE2	LIQUID	N/A	5.409e+02	540.900 ug/mL
5 DUP	S99T000970	0	@IC-01	F-02	LIQUID	1.06e+03	1.04e+03	1.905 RPD
5 DUP	S99T000970	0	@IC-01	CL-02	LIQUID	1.08e+04	1.10e+04	1.835 RPD
5 DUP	S99T000970	0	@IC-01	NO2-02	LIQUID	1.32e+05	1.34e+05	1.504 RPD
5 DUP	S99T000970	0	@IC-01	BR-02	LIQUID	<6.44e2	<6.44e2	RPD
5 DUP	S99T000970	0	@IC-01	NO3-02	LIQUID	2.01e+05	2.02e+05	0.496 RPD
5 DUP	S99T000970	0	@IC-01	PO4-02	LIQUID	3.17e+03	3.31e+03	4.321 RPD
5 DUP	S99T000970	0	@IC-01	SO4-02	LIQUID	3.71e+03	4.09e+03	9.744 RPD
5 DUP	S99T000970	0	@IC-01	OXALATE2	LIQUID	<5.41e2	<5.41e2	RPD
6 SPK	S99T000970	0	@IC-01	F-02	LIQUID	5.84e1	5.61e+01	96.062 % Recovery

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

LABCORE Completed Worklist Report for Worklist# 30031

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SPK	S99T000970	0	@IC-01	CL-02	LIQUID	8.06e1	9.37e+01	116.253 %	Recovery
6 SPK	S99T000970	0	@IC-01	NO2-02	LIQUID	5.32e2	6.75e+02	126.880 %	Recovery
6 SPK	S99T000970	0	@IC-01	BR-02	LIQUID	5.76e2	5.69e+02	98.785 %	Recovery
6 SPK	S99T000970	0	@IC-01	NO3-02	LIQUID	5.84e2	6.79e+02	116.267 %	Recovery
6 SPK	S99T000970	0	@IC-01	PO4-02	LIQUID	5.44e2	5.56e+02	102.206 %	Recovery
6 SPK	S99T000970	0	@IC-01	SO4-02	LIQUID	6.42e2	6.62e+02	103.115 %	Recovery
6 SPK	S99T000970	0	@IC-01	OXALATE2	LIQUID	5.34e2	5.30e+02	99.251 %	Recovery
7 SAMPLE	S99T000971	0	@IC-01	F-02	LIQUID	N/A	1.054e+03	61.810	ug/mL
7 SAMPLE	S99T000971	0	@IC-01	CL-02	LIQUID	N/A	1.230e+04	87.570	ug/mL
7 SAMPLE	S99T000971	0	@IC-01	NO2-02	LIQUID	N/A	1.525e+05	556.300	ug/mL
7 SAMPLE	S99T000971	0	@IC-01	BR-02	LIQUID	N/A	6.439e+02	643.900	ug/mL
7 SAMPLE	S99T000971	0	@IC-01	NO3-02	LIQUID	N/A	1.969e+05	716.000	ug/mL
7 SAMPLE	S99T000971	0	@IC-01	PO4-02	LIQUID	N/A	2.665e+03	618.100	ug/mL
7 SAMPLE	S99T000971	0	@IC-01	SO4-02	LIQUID	N/A	3.206e+03	710.800	ug/mL
7 SAMPLE	S99T000971	0	@IC-01	OXALATE2	LIQUID	N/A	5.409e+02	540.900	ug/mL
8 DUP	S99T000971	0	@IC-01	F-02	LIQUID	1.05e+03	1.13e+03	7.339	RPD
8 DUP	S99T000971	0	@IC-01	CL-02	LIQUID	1.23e+04	1.24e+04	0.810	RPD
8 DUP	S99T000971	0	@IC-01	NO2-02	LIQUID	1.53e+05	1.54e+05	0.651	RPD
8 DUP	S99T000971	0	@IC-01	BR-02	LIQUID	<6.44e2	<6.44e2		RPD
8 DUP	S99T000971	0	@IC-01	NO3-02	LIQUID	1.97e+05	1.97e+05	0.000	RPD
8 DUP	S99T000971	0	@IC-01	PO4-02	LIQUID	2.66e+03	1.88e+03	34.361	RPD
8 DUP	S99T000971	0	@IC-01	SO4-02	LIQUID	3.21e+03	3.24e+03	0.930	RPD
8 DUP	S99T000971	0	@IC-01	OXALATE2	LIQUID	<5.41e2	<5.41e2		RPD
9 SAMPLE	S99T000972	0	@IC-01	F-02	LIQUID	N/A	1.090e+03	61.810	ug/mL
9 SAMPLE	S99T000972	0	@IC-01	CL-02	LIQUID	N/A	1.224e+04	87.570	ug/mL
9 SAMPLE	S99T000972	0	@IC-01	NO2-02	LIQUID	N/A	1.520e+05	556.300	ug/mL
9 SAMPLE	S99T000972	0	@IC-01	BR-02	LIQUID	N/A	6.439e+02	643.900	ug/mL
9 SAMPLE	S99T000972	0	@IC-01	NO3-02	LIQUID	N/A	1.956e+05	716.000	ug/mL
9 SAMPLE	S99T000972	0	@IC-01	PO4-02	LIQUID	N/A	3.032e+03	618.100	ug/mL
9 SAMPLE	S99T000972	0	@IC-01	SO4-02	LIQUID	N/A	3.475e+03	710.800	ug/mL
9 SAMPLE	S99T000972	0	@IC-01	OXALATE2	LIQUID	N/A	5.409e+02	540.900	ug/mL
10 DUP	S99T000972	0	@IC-01	F-02	LIQUID	1.09e+03	1.15e+03	5.357	RPD
10 DUP	S99T000972	0	@IC-01	CL-02	LIQUID	1.22e+04	1.23e+04	0.816	RPD
10 DUP	S99T000972	0	@IC-01	NO2-02	LIQUID	1.52e+05	1.54e+05	1.307	RPD
10 DUP	S99T000972	0	@IC-01	BR-02	LIQUID	<6.44e2	<6.44e2		RPD
10 DUP	S99T000972	0	@IC-01	NO3-02	LIQUID	1.96e+05	1.97e+05	0.509	RPD
10 DUP	S99T000972	0	@IC-01	PO4-02	LIQUID	3.03e+03	2.85e+03	6.122	RPD
10 DUP	S99T000972	0	@IC-01	SO4-02	LIQUID	3.48e+03	3.82e+03	9.315	RPD
10 DUP	S99T000972	0	@IC-01	OXALATE2	LIQUID	<5.41e2	<5.41e2		RPD

Final page for worklist# 30031

Analyst Signature

Date

Analyst Signature

Date

James L. Luce 6/9/99
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 30031

Analyst: ASP Instrument: IC 4051 Book# 83N 21-A LCS
 Method: LA-533-105 Rev/Mod F-0 82N 21-A CCV

Worklist Comment: U102 GRAB1, @IC-01 skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	CCB		@IC-QC	QC		
2	LCS-TNST		@IC-QC	QC		
3	CCV		@IC-QC	QC		
4	SAMPLE	S99T000970 0	@IC-01	LIQUID	99000200 U-102 GRAB1	
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
5	DUP	S99T000970 0	@IC-01	LIQUID		
6	SPK	S99T000970 0	@IC-01	LIQUID		
7	SAMPLE	S99T000971 0	@IC-01	LIQUID	99000200 U-102 GRAB1	
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
8	DUP	S99T000971 0	@IC-01	LIQUID		
9	SAMPLE	S99T000972 0	@IC-01	LIQUID	99000200 U-102 GRAB1	
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
10	DUP	S99T000972 0	@IC-01	LIQUID		

Final page for worklist # 30031

Anthony Purnik 08-05-99
 Signature Date

 Signature Date

Data Entry Comments

up loaded 6-8-99
John Howell

Validated 6/9/99 Jm Lye

30031JUN.CSV

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

HNF-1674 REV. 0

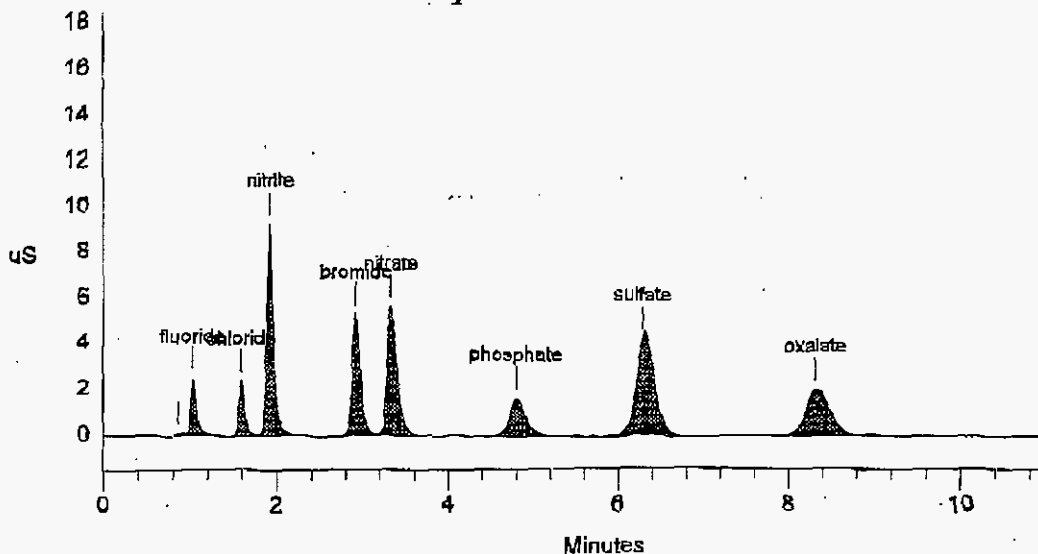
Sample Name: 83N21-A LCS Date: 06/05/1999 07:29:39
 Data File : C:\DX\DATA\99060501.D02
 Method : C:\DX\METHOD\KIT.MFT
 ACI Address: 1 System: 1 Inject#: 2 Detector: CDM-1
 Analyst : *Anthony P. ...* Column: AG4A/AS4A anion column

6-5-99
 Calibration Volume Dilution Points Rate Start Stop Area Reject
 External 1 101 3300 5Hz 0.00 11.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Hl. Code	%Delta
1	0.87		0.000	90	400	2	
2	1.03	fluoride	67.6881	15.90	2389	2	-1.59
3	1.59	chloride	86.5221	107.38	2338	1	-1.65
4	1.92	nitrite	558.1551	104.92	9274	1	-2.70
5	2.92	bromide	607.6821	105.50	5280	1	-2.34
6	3.33	nitrate	579.2149	99.18	5636	1	-2.82
7	4.80	phosphate	586.1511	107.75	1621	1	0.56
8	6.29	sulfate	689.2001	107.35	4279	1	0.85
9	8.32	oxalate	560.2641	104.18	2045	1	1.30
Totals			3734.876	32953	284681		

File: 99060501.D02 Sample: 83N21-A LCS



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 150 TO 159.

HNF-1674 REV. 0

Data Reprocessed On 06/05/1999 09:35:30

```

=====
Sample Name: 82N21-A CCV                               Date: 06/05/1999 07:56:07
Data File  : C:\DX\DATA\99060501.D04
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 4                    Detector: CDM-1
Analyst    :                                           Column: AG4A/AS4A anion column
=====

```

```

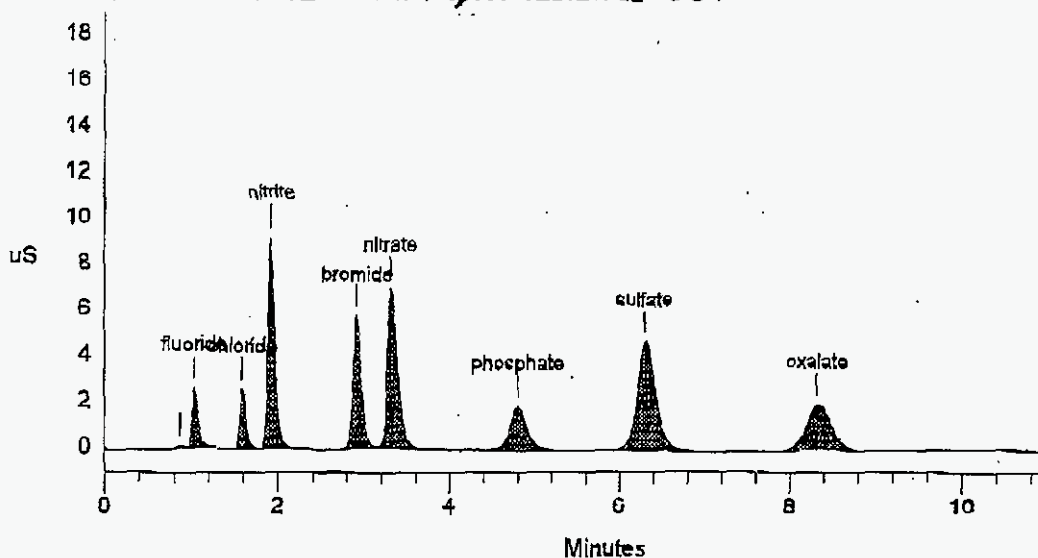
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           101  3300  5Hz   0.00 11.00      30
-----

```

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

PK. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	93	367	1	
2	1.03	fluoride	68.189	2569	11704	1	-1.59
3	1.59	chloride	98.171	2564	12356	1	-2.06
4	1.92	nitrite	554.256	9249	49526	1	-2.70
5	2.91	bromide	635.855	5734	37797	1	-2.56
6	3.31	nitrate	728.265	6985	57083	1	-3.40
7	4.80	phosphate	678.569	1869	25093	1	0.56
8	6.29	sulfate	725.949	4672	70283	1	0.85
9	8.32	oxalate	534.436	1994	40265	1	1.30
Totals			4023.691	35730	304474		

File: 99060501.D04 Sample: 82N21-A CCV



HNF-1674 REV. 0

```

=====
Sample Name: BLANK CCB                      Date: 06/05/1999 07:14:12
Data File  : C:\DX\DATA\99060501.D01
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 1         Detector: CDW-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

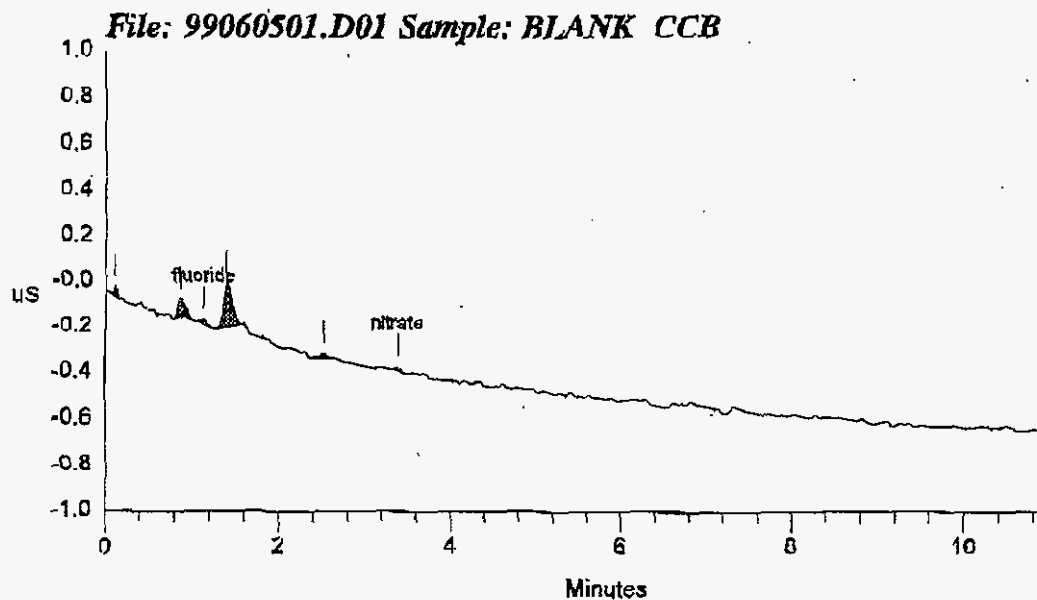
```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1 3300 5Hz 0.00 11.00          30
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.11		0.000	52	153	1	
2	0.85		0.000	93	533	1	
3	1.13	fluoride	0.006	28	107	1	7.30
4	1.39		0.000	202	1372	1	
5	2.52		0.000	31	189	1	
6	3.39	nitrate	0.010	22	82	1	-1.26
Totals			0.017	428	2436		



Data Reprocessed On 06/08/1999 15:17:41

```

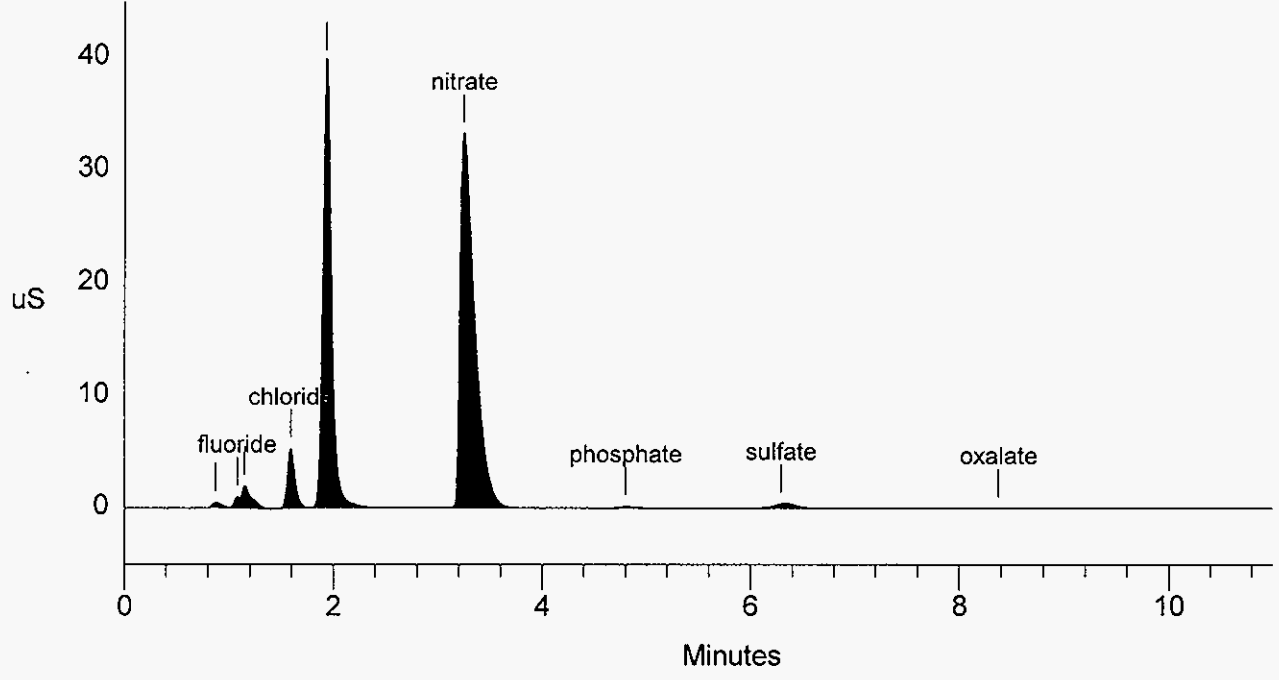
=====
| Sample Name: S99T000970 SAM                               Date: 06/05/1999 10:00:15
| Data File  : F:\DATA\99060501.D07
| Method     : C:\DX\METHOD\KIT.MET
| ACI Address: 1 System: 1 Inject#: 7                      Detector:CDM-1
| Analyst    :                                             Column: AG4A/AS4A anion column
=====
  
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3300	5Hz	0.00	11.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	471	2844	2	
2	1.08	fluoride	1064.716	1041	3551	2	2.86
3	1.15		0.000	2020	13296	2	
4	1.59	chloride	10801.527	5319	26928	1	-1.65
5	1.93	nitrite	132281.650	39624	231523	1	-2.03
6	3.25	nitrate	200494.953	33225	327391	1	-0.10
7	4.80	phosphate	3169.271	162	2272	1	0.56
8	6.29	sulfate	3711.627	404	6973	1	0.85
9	8.37	oxalate	288.353	26	428	1	1.95
Totals			351812.098	82290	615205		

File: 99060501.D07 Sample: S99T000970 SAM



```

=====
Sample Name: S99T000970  DUP                      Date: 06/05/1999 10:13:36
Data File  : F:\DATA\99060501.D08
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 8                Detector: CDM-1
Analyst    :                                     Column: AG4A/AS4A anion column
=====

```

```

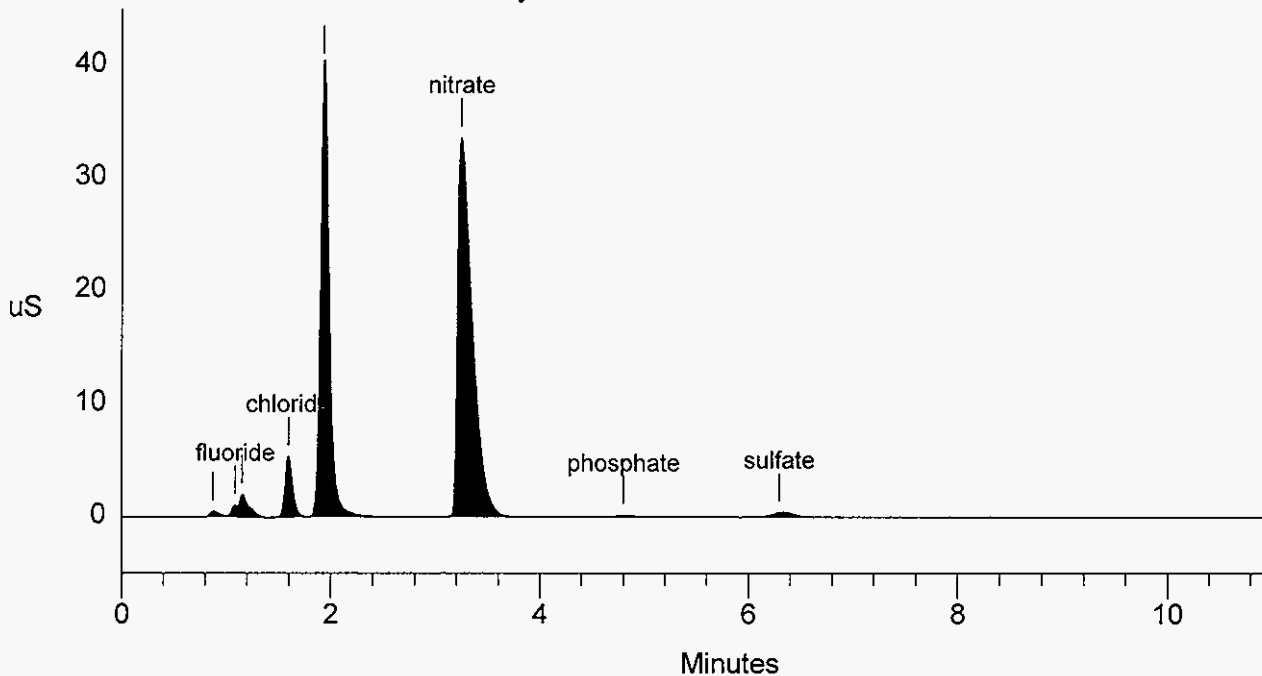
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           5151  3300  5Hz  0.00 11.00           30
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	457	2687	2	
2	1.09	fluoride	1037.306	1037	3459	2	3.49
3	1.15		0.000	2017	13173	2	
4	1.59	chloride	10954.681	5399	27317	1	-1.65
5	1.93	nitrite	133695.338	40058	233994	1	-2.03
6	3.25	nitrate	201986.792	33611	330028	1	-0.10
7	4.80	phosphate	3310.016	166	2373	1	0.56
8	6.29	sulfate	4086.301	424	7678	1	0.85
Totals			355070.433	83169	620709		

File: 99060501.D08 Sample: S99T000970 DUP



```

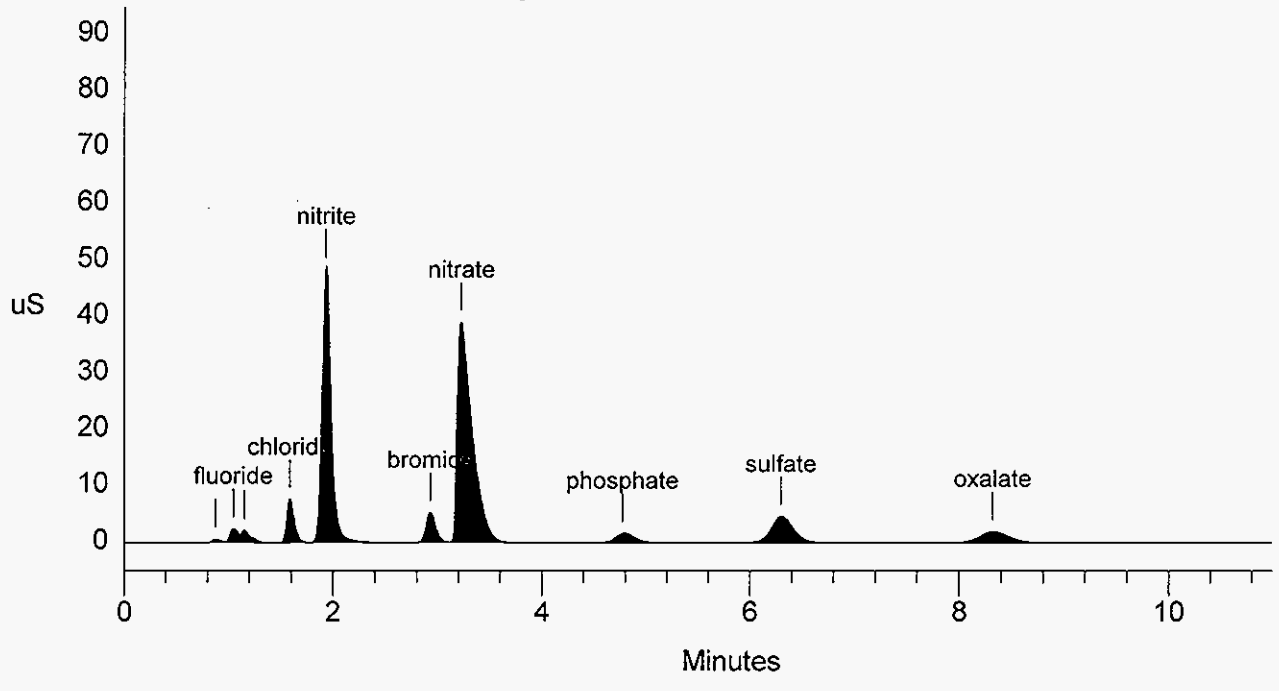
=====
| Sample Name: S99T000970  SPK                               Date: 06/05/1999 10:25:30
| Data File   : F:\DATA\99060501.D09
| Method      : C:\DX\METHOD\KIT.MET
| ACI Address: 1 System: 1 Inject#: 9                       Detector: CDM-1
| Analyst     :                                             Column: AG4A/AS4A anion column
=====
    
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3300	5Hz	0.00	11.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	512	2535	2	
2	1.05	fluoride	3899.556	2422	13145	2	-0.32
3	1.15		0.000	2183	13801	2	
4	1.59	chloride	15532.122	7724	39050	1	-2.06
5	1.93	nitrite	166383.073	48514	291107	1	-2.03
6	2.93	bromide	28712.331	5291	33421	1	-1.90
7	3.23	nitrate	234793.763	38987	388929	1	-0.10
8	4.77	phosphate	31229.265	1642	22615	1	0.00
9	6.29	sulfate	37149.098	4696	70524	1	0.85
10	8.32	oxalate	26790.009	1974	39580	1	1.30
Totals			544489.218	113944	914708		

File: 99060501.D09 Sample: S99T000970 SPK



```

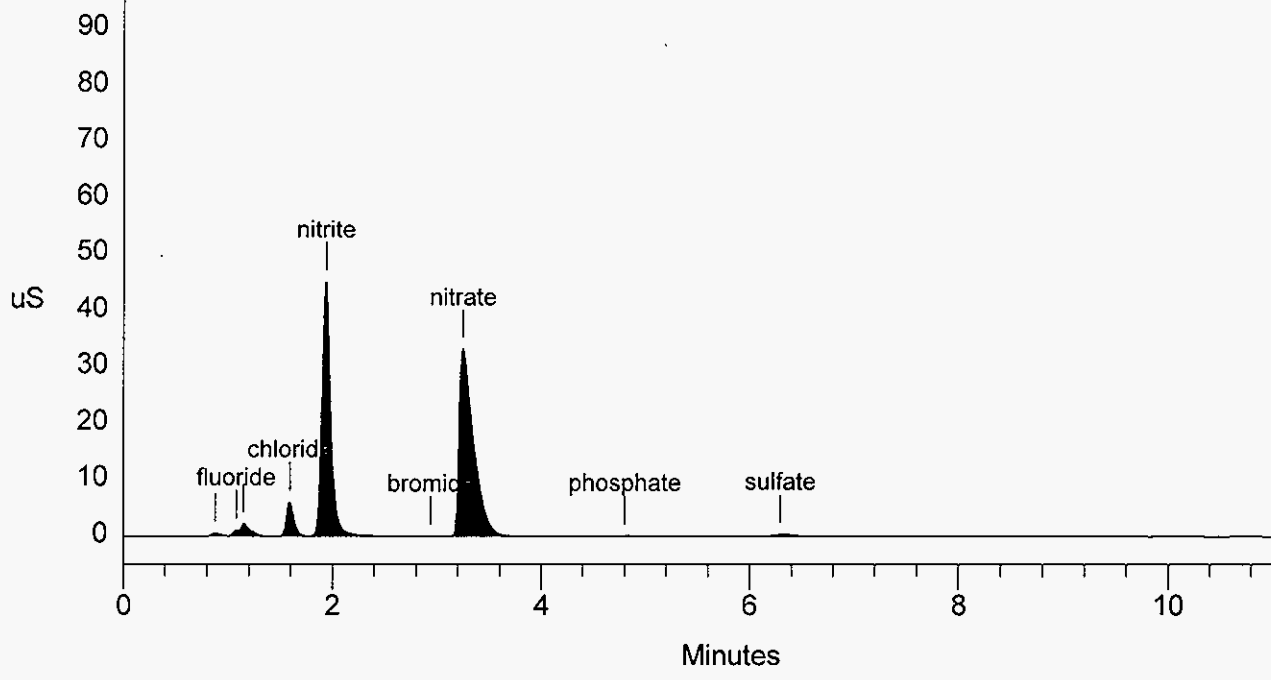
=====
Sample Name: S99T000971 SAM                               Date: 06/05/1999 10:37:35
Data File  : F:\DATA\99060501.D10
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 10                      Detector: CDM-1
Analyst    :                                               Column: AG4A/AS4A anion column
=====
    
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3300	5Hz	0.00	11.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	498	2957	2	
2	1.08	fluoride	1053.565	1113	3514	2	2.86
3	1.15		0.000	2226	15031	2	
4	1.59	chloride	12297.161	6107	30738	1	-1.65
5	1.94	nitrite	152470.136	45050	266803	1	-1.69
6	2.94	bromide	152.726	27	176	1	-1.67
7	3.25	nitrate	196874.980	33149	321006	1	-0.10
8	4.80	phosphate	2665.122	143	1910	1	0.56
9	6.29	sulfate	3205.616	362	6022	1	0.85
Totals			368719.304	88677	648155		

File: 99060501.D10 Sample: S99T000971 SAM



```

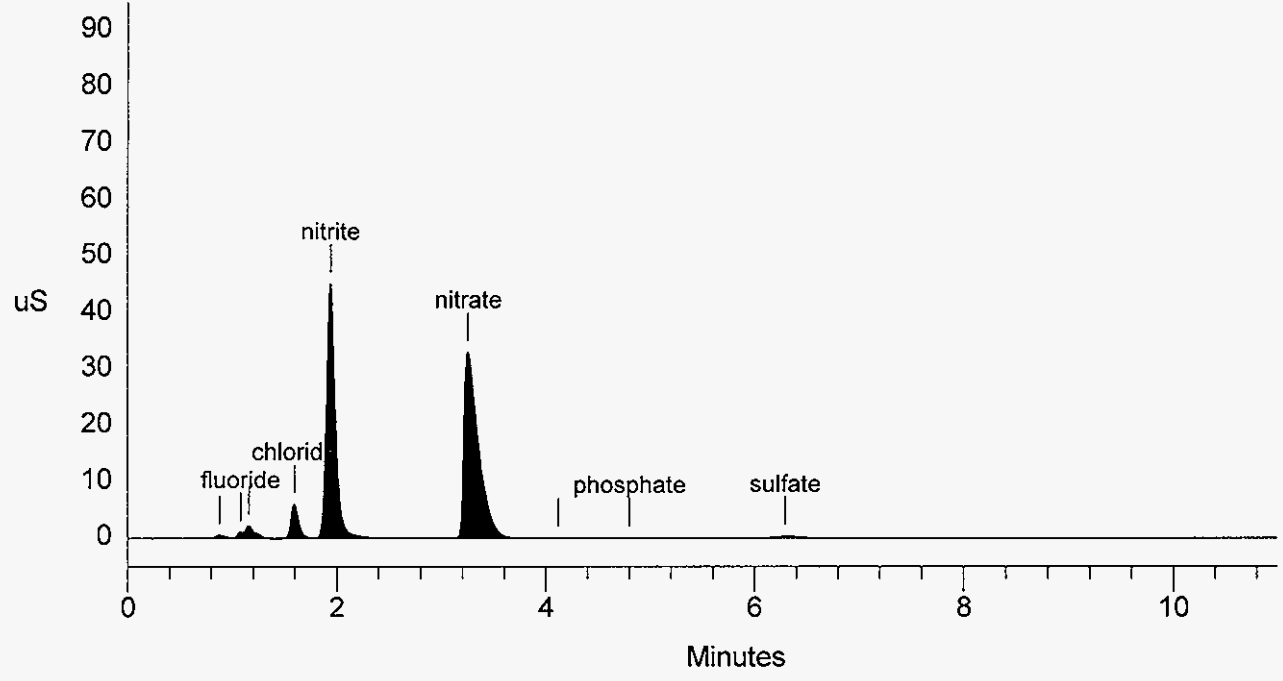
=====
| Sample Name: S99T000971  DUP                               Date: 06/05/1999 10:49:23
| Data File   : F:\DATA\99060501.D11
| Method      : C:\DX\METHOD\KIT.MET
| ACI Address: 1 System: 1 Inject#: 11                      Detector: CDM-1
| Analyst     :                                             Column: AG4A/AS4A anion column
=====
    
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3300	5Hz	0.00	11.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	504	3071	2	
2	1.08	fluoride	1134.078	1116	3783	2	2.86
3	1.16		0.000	2251	14933	2	
4	1.59	chloride	12377.170	6119	30942	1	-1.65
5	1.94	nitrite	153702.732	45198	268956	1	-1.69
6	3.25	nitrate	196808.651	33063	320889	1	0.10
7	4.12		0.000	16	123	1	
8	4.80	phosphate	1881.285	120	1348	1	0.56
9	6.29	sulfate	3237.206	367	6081	1	0.85
Totals			369141.122	88755	650127		

File: 99060501.D11 Sample: S99T000971 DUP



```

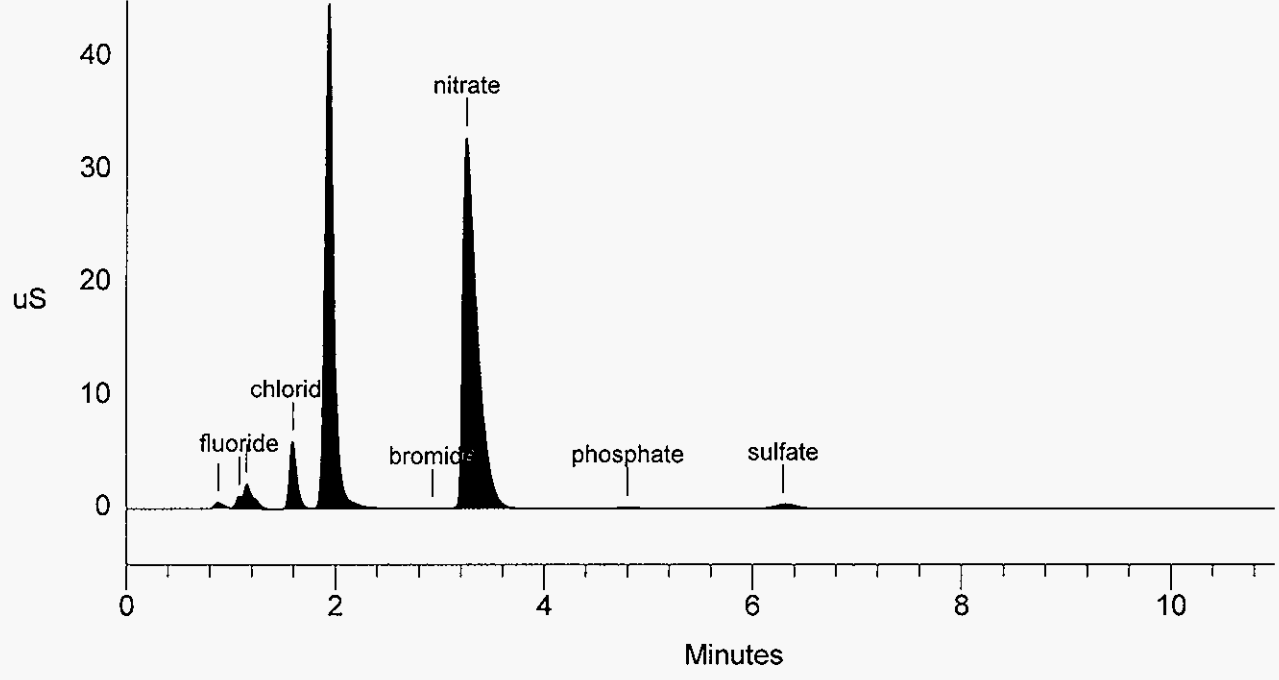
=====
Sample Name: S99T000972 SAM                               Date: 06/05/1999 11:23:17
Data File  : F:\DATA\99060501.D12
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 12                      Detector: CDM-1
Analyst    :                                             Column: AG4A/AS4A anion column
=====
    
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	5151	3300	5Hz	0.00	11.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	503	3011	2	
2	1.08	fluoride	1089.801	1126	3635	2	2.86
3	1.15		0.000	2227	15073	2	
4	1.59	chloride	12235.376	6029	30580	1	-1.65
5	1.94	nitrite	151959.820	44707	265911	1	-1.69
6	2.93	bromide	162.444	19	187	1	-2.12
7	3.25	nitrate	195570.288	32851	318710	1	0.10
8	4.80	phosphate	3032.136	157	2173	1	0.56
9	6.29	sulfate	3475.019	388	6528	1	0.85
Totals			367524.885	88007	645809		

File: 99060501.D12 Sample: S99T000972 SAM



```

=====
Sample Name: S99T000972  DUP                               Date: 06/05/1999 11:38:27
Data File  : F:\DATA\99060501.D13
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 13                      Detector: CDM-1
Analyst    :                                               Column: AG4A/AS4A anion column
=====
    
```

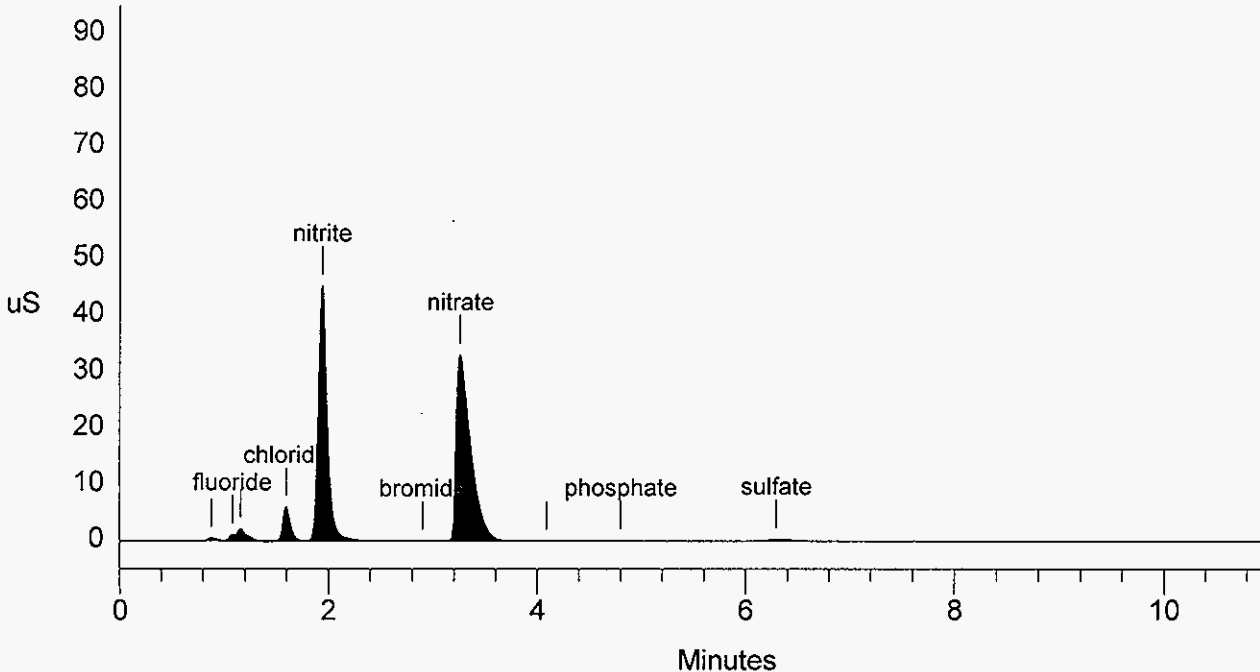
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-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           5151  3300  5Hz   0.00 11.00           30
    
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	520	3136	2	
2	1.08	fluoride	1146.678	1132	3825	2	2.86
3	1.16		0.000	2252	14918	2	
4	1.59	chloride	12321.041	6100	30799	1	-1.65
5	1.94	nitrite	153813.315	45159	269149	1	-1.69
6	2.90	bromide	174.071	28	201	1	-3.01
7	3.26	nitrate	196505.236	33057	320355	1	0.00
8	4.09		0.000	18	135	1	
9	4.80	phosphate	2845.505	146	2039	1	0.56
10	6.29	sulfate	3820.615	398	7178	1	0.85
Totals			370626.461	88810	651737		

File: 99060501.D13 Sample: S99T000972 DUP



LABCORE Completed Worklist Report for Worklist# 30041

Analyst: adp

Instrument: IC40S1

Book#: 83N21A

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

Worklist Comment: U102 GRAB1, @IC-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit	
1	CCB	0	@IC-QC	F	QC	1	<1.20e-2	ug/mL	
1	CCB	0	@IC-QC	CL	QC	1	<1.70e-2	ug/mL	
1	CCB	0	@IC-QC	NO2	QC	1	<1.08e-1	ug/mL	
1	CCB	0	@IC-QC	BR	QC	1	<1.25e-1	ug/mL	
1	CCB	0	@IC-QC	NO3	QC	1	<1.39e-1	ug/mL	
1	CCB	0	@IC-QC	PO4	QC	1	<1.20e-1	ug/mL	
1	CCB	0	@IC-QC	SO4	QC	1	<1.38e-1	ug/mL	
1	CCB	0	@IC-QC	OXALATE2	QC	1	<1.05e-1	ug/mL	
2	LCS-INST	0	@IC-QC	F	QC	5.84e1	6.03e+01	103.253 % Recovery	
2	LCS-INST	0	@IC-QC	CL	QC	8.06e1	8.66e+01	107.444 % Recovery	
2	LCS-INST	0	@IC-QC	NO2	QC	5.32e2	5.40e+02	101.504 % Recovery	
2	LCS-INST	0	@IC-QC	BR	QC	5.76e2	5.78e+02	100.347 % Recovery	
2	LCS-INST	0	@IC-QC	NO3	QC	5.84e2	5.67e+02	97.089 % Recovery	
2	LCS-INST	0	@IC-QC	PO4	QC	5.44e2	5.80e+02	106.618 % Recovery	
2	LCS-INST	0	@IC-QC	SO4	QC	6.42e2	6.61e+02	102.960 % Recovery	
2	LCS-INST	0	@IC-QC	OXALATE2	QC	5.34e2	5.50e+02	102.996 % Recovery	
3	CCV	0	@IC-QC	F	QC	6.40e1	6.73e+01	105.156 % Recovery	
3	CCV	0	@IC-QC	CL	QC	8.95e1	9.53e+01	106.480 % Recovery	
3	CCV	0	@IC-QC	NO2	QC	5.31e2	5.49e+02	103.390 % Recovery	
3	CCV	0	@IC-QC	BR	QC	6.30e2	6.54e+02	103.810 % Recovery	
3	CCV	0	@IC-QC	NO3	QC	7.00e2	7.35e+02	105.000 % Recovery	
3	CCV	0	@IC-QC	PO4	QC	6.35e2	6.78e+02	106.772 % Recovery	
3	CCV	0	@IC-QC	SO4	QC	7.00e2	7.27e+02	103.857 % Recovery	
3	CCV	0	@IC-QC	OXALATE2	QC	5.25e2	5.47e+02	104.190 % Recovery	
4	BLNK-PREP	0	@IC-01	F-02	SOLID	1	<1.20e-2	ug/g	
4	BLNK-PREP	0	@IC-01	CL-02	SOLID	1	1.90e-02	0.019 ug/g	
4	BLNK-PREP	0	@IC-01	NO2-02	SOLID	1	3.82e-01	0.382 ug/g	
4	BLNK-PREP	0	@IC-01	BR-02	SOLID	1	<1.25e-1	ug/g	
4	BLNK-PREP	0	@IC-01	NO3-02	SOLID	1	<1.39e-1	ug/g	
4	BLNK-PREP	0	@IC-01	PO4-02	SOLID	1	<1.20e-1	ug/g	
4	BLNK-PREP	0	@IC-01	SO4-02	SOLID	1	<1.38e-1	ug/g	
4	BLNK-PREP	0	@IC-01	OXALATE2	SOLID	1	<1.05e-1	ug/g	
5	SAMPLE	S99T000969	0 W	@IC-01	F-02	SOLID	N/A	6.203e+02	124.500 ug/g
5	SAMPLE	S99T000969	0 W	@IC-01	CL-02	SOLID	N/A	6.274e+03	176.400 ug/g
5	SAMPLE	S99T000969	0 W	@IC-01	NO2-02	SOLID	N/A	7.276e+04	1120.000 ug/g
5	SAMPLE	S99T000969	0 W	@IC-01	BR-02	SOLID	N/A	1.297e+03	1297.000 ug/g
5	SAMPLE	S99T000969	0 W	@IC-01	NO3-02	SOLID	N/A	9.695e+04	1442.000 ug/g
5	SAMPLE	S99T000969	0 W	@IC-01	PO4-02	SOLID	N/A	1.934e+04	1245.000 ug/g
5	SAMPLE	S99T000969	0 W	@IC-01	SO4-02	SOLID	N/A	1.846e+04	1432.000 ug/g
5	SAMPLE	S99T000969	0 W	@IC-01	OXALATE2	SOLID	N/A	1.706e+04	1089.000 ug/g
6	DUP	S99T000969	0 W	@IC-01	F-02	SOLID	6.20e+02	5.98e+02	3.612 RPD

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

LABCORE Completed Worklist Report for Worklist# 30041

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 DUP	S99T000969	0	W	@IC-01	CL-02	SOLID	6.27e+03	6.05e+03	3.571 RPD
6 DUP	S99T000969	0	W	@IC-01	NO2-02	SOLID	7.28e+04	7.19e+04	1.244 RPD
6 DUP	S99T000969	0	W	@IC-01	BR-02	SOLID	<1.30e3	<1.25e3	RPD
6 DUP	S99T000969	0	W	@IC-01	NO3-02	SOLID	9.70e+04	9.71e+04	0.103 RPD
6 DUP	S99T000969	0	W	@IC-01	PO4-02	SOLID	1.93e+04	1.90e+04	1.567 RPD
6 DUP	S99T000969	0	W	@IC-01	SO4-02	SOLID	1.85e+04	1.87e+04	1.075 RPD
6 DUP	S99T000969	0	W	@IC-01	OXALATE2	SOLID	1.71e+04	1.73e+04	1.163 RPD
7 SPK	S99T000969	0	W	@IC-01	F-02	SOLID	5.84e1	5.56e+01	95.205 % Recovery
7 SPK	S99T000969	0	W	@IC-01	CL-02	SOLID	8.06e1	8.31e+01	103.102 % Recovery
7 SPK	S99T000969	0	W	@IC-01	NO2-02	SOLID	5.32e2	6.04e+02	113.534 % Recovery
7 SPK	S99T000969	0	W	@IC-01	BR-02	SOLID	5.76e2	5.78e+02	100.347 % Recovery
7 SPK	S99T000969	0	W	@IC-01	NO3-02	SOLID	5.84e2	6.32e+02	108.219 % Recovery
7 SPK	S99T000969	0	W	@IC-01	PO4-02	SOLID	5.44e2	5.78e+02	106.250 % Recovery
7 SPK	S99T000969	0	W	@IC-01	SO4-02	SOLID	6.42e2	6.74e+02	104.984 % Recovery
7 SPK	S99T000969	0	W	@IC-01	OXALATE2	SOLID	5.34e2	5.52e+02	103.371 % Recovery

Final page for worklist# 30041

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

James M. Luge
Reviewer Signature _____ Date 6/10/99

HNF-1674 REV. 0

Page: 1

06/03/99 10:41

WS2

LABCORE Data Entry Template for Worklist# 30041

Analyst: ASP Instrument: IC 4051 Book# 83N21-A LES
82N21-A CCV

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

Worklist Comment: U102 GRAB1, @IC-01 skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	LCS-INST				@IC-QC	QC		
3	CCV				@IC-QC	QC		
4	BLNK-PREP				@IC-01	SOLID		
5	SAMPLE	S99T000969	0	W	@IC-01	SOLID	99000200	U-102 GRAB1
Analytes Requested: BR-02, CL-02, F-02, NO2-02, NO3-02, OXALATE2, PO4-02, SO4-02								
6	DUP	S99T000969	0	W	@IC-01	SOLID		
7	SPK	S99T000969	0	W	@IC-01	SOLID		

Final page for worklist # 30041

[Signature] 06/10/99
Signature Date

Signature Date

Data Entry Comments:

uploaded 6-10-99

Faxed 6-10-99

validated 6/10/99 [Signature]

30041JUN.CSV

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

HNF-1674 REV. 0

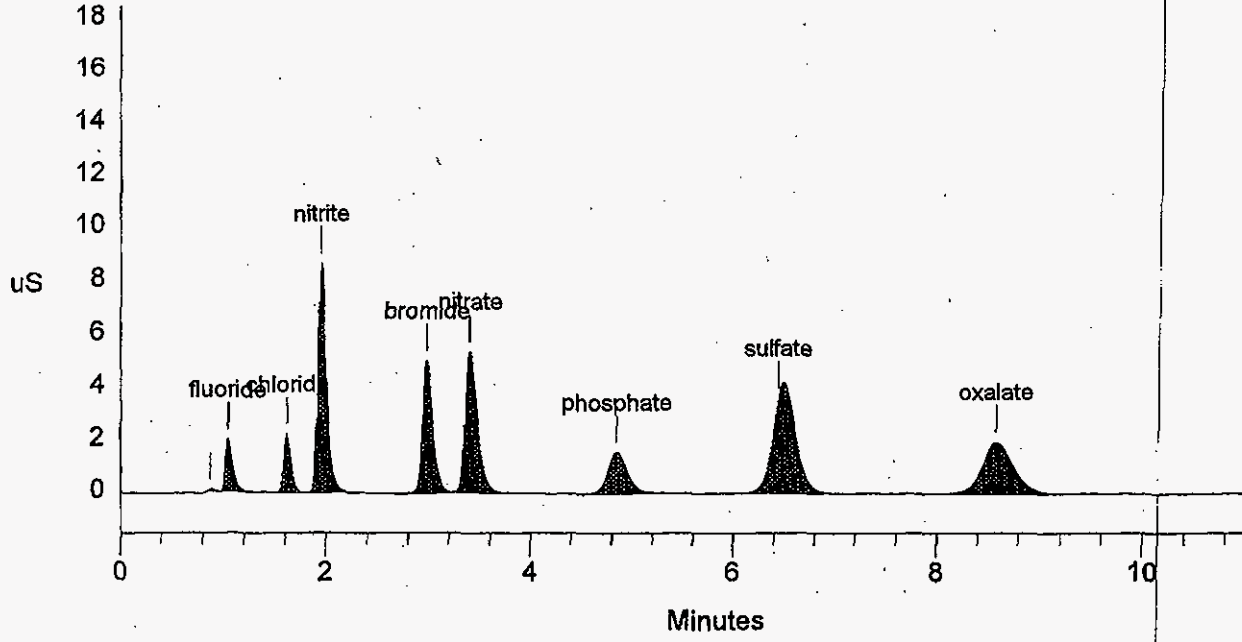
Sample Name: 83N21-A LCS Date: 06/10/1999 04:08:26
 Data File : C:\DX\DATA\99060911.D15
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 15 Detector: CDM-1
 Analyst : *Anthony Purinton* Column: AG4A/AS4A anion column
06/10/99

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3300	5Hz	0.00	11.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	93	407	2	
2	1.05	fluoride	60.263	1996	10328	2	-0.32
3	1.62	chloride	86.570	2232	10885	1	0.00
4	1.95	nitrite	540.077	8648	48260	1	-1.01
5	2.99	bromide	578.353	5008	34343	1	-0.11
6	3.41	nitrate	567.295	5340	44343	1	-0.68
7	4.85	phosphate	580.130	1574	21412	1	1.68
8	6.45	sulfate	661.269	3619	63954	1	3.42
9	8.59	oxalate	550.085	1973	41438	1	4.55
Totals			3624.042	30484	275370		

File: 99060911.D15 Sample: 83N21-A LCS



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 163 TO 169.

HNF-1674 REV. 0

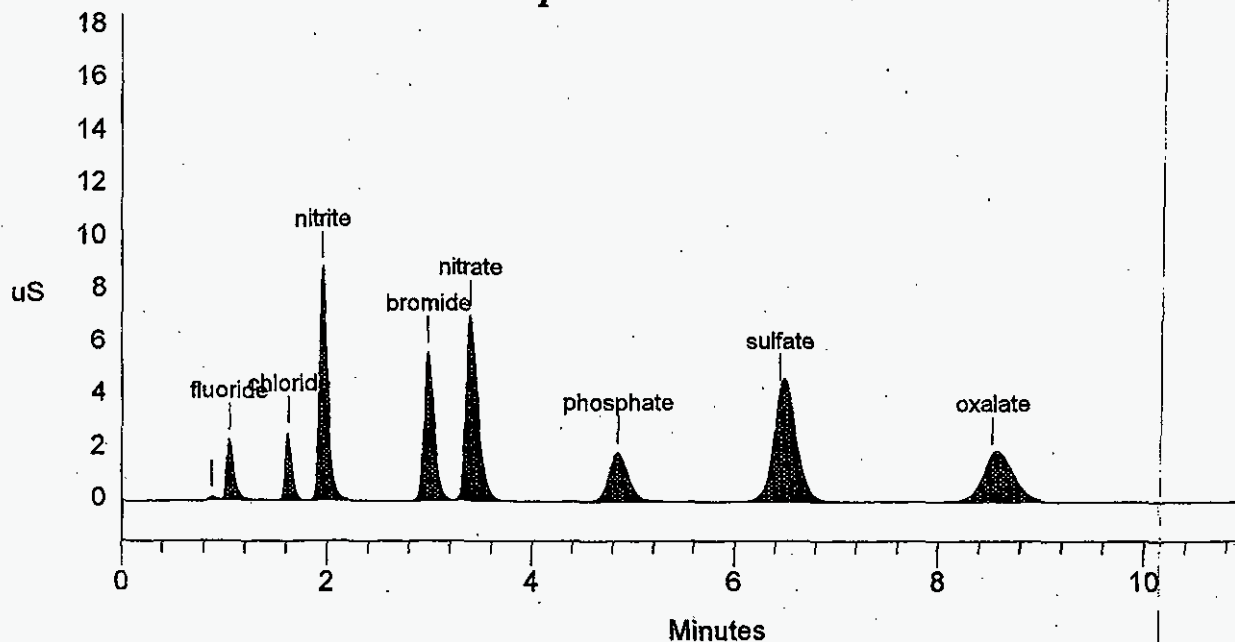
Sample Name: 82N21-A CCV Date: 06/10/1999 04:20:17
 Data File : C:\DX\DATA\99060911.D16
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 16 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3300	5Hz	0.00	11.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	118	513	2	
2	1.05	fluoride	67.302	2269	11550	2	-0.32
3	1.62	chloride	95.254	2558	11986	1	0.00
4	1.95	nitrite	549.168	8838	49072	1	-1.01
5	2.98	bromide	653.916	5630	38883	1	-0.33
6	3.39	nitrate	735.159	7009	57630	1	-1.07
7	4.85	phosphate	677.741	1879	25062	1	1.68
8	6.45	sulfate	727.379	4250	70423	1	3.42
9	8.53	oxalate	547.074	1842	41212	1	3.90
Totals			4052.993	34394	306331		

File: 99060911.D16 Sample: 82N21-A CCV



HNF-1674 REV. 0

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=====
Sample Name: BLANK CCB                      Date: 06/10/1999 03:56:32
Data File  : C:\DX\DATA\99060911.D14
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 14        Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

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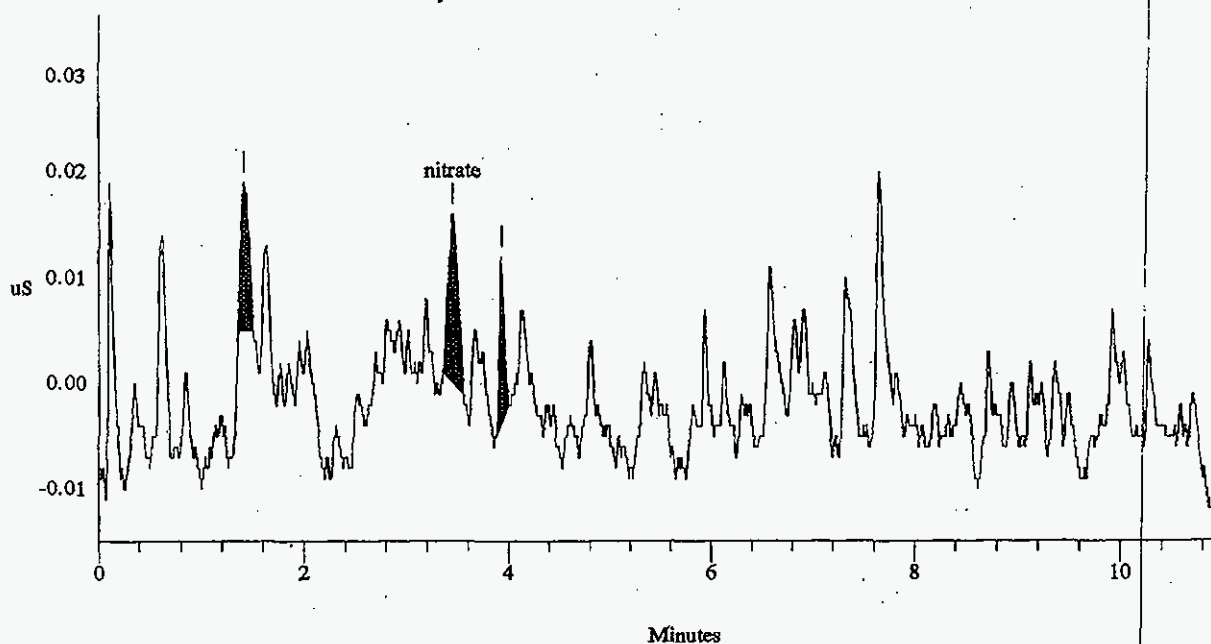
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1           1    3300  5Hz   0.00 11.00           30
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.41		0.000	14	78	1	
2	3.45	nitrate	0.014	16	107	1	0.68
3	3.93		0.000	16	51	1	
Totals			0.014	46	237		

File: 99060911.D14 Sample: BLANK CCB



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```

=====
Sample Name: PREP BLANK                      Date: 06/10/1999 04:32:09
Data File  : C:\DX\DATA\99060911.D17
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 17         Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

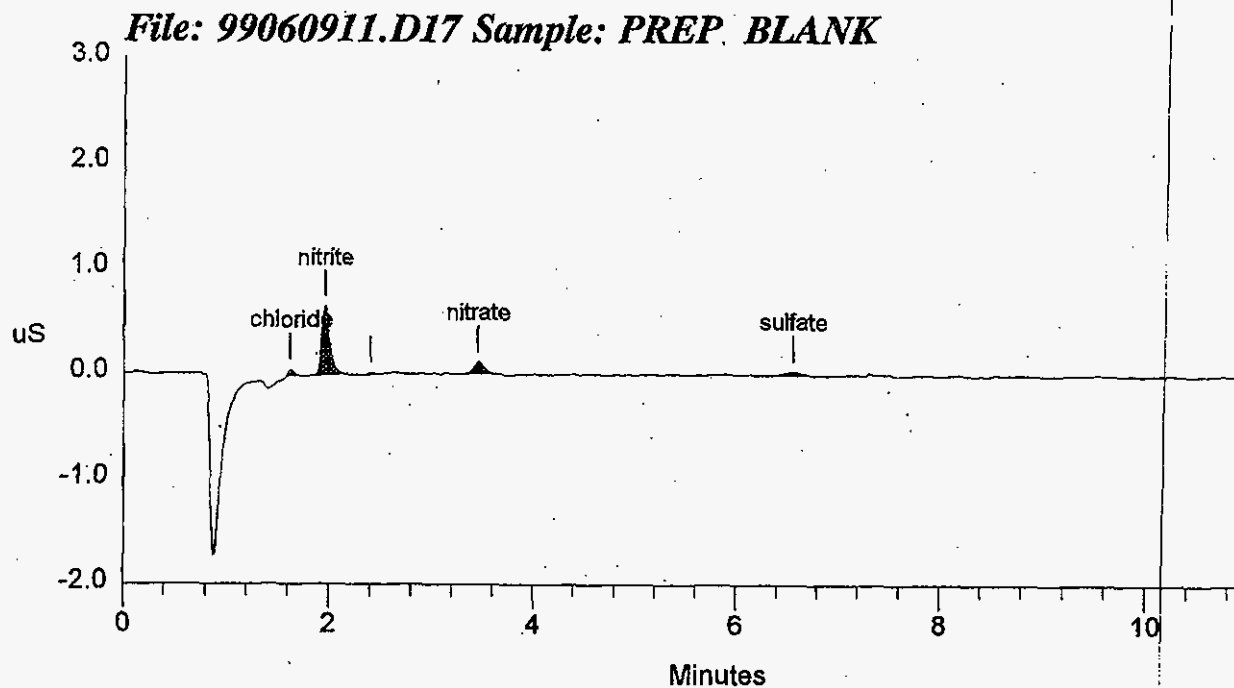
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-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           1 3300 5Hz 0.00 11.00           30
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.62	chloride	0.019	58	239	1	0.00
2	1.96	nitrite	0.382	642	3452	1	-0.68
3	2.40		0.000	13	45	1	
4	3.45	nitrate	0.098	106	763	1	0.68
5	6.56	sulfate	0.048	31	460	1	5.13
Totals			0.547	850	4960		



HNF-1674 REV. 0

```

=====
Sample Name: S99T000969 SAM                      Date: 06/10/1999 04:44:03
Data File  : C:\DX\DATA\99060911.D18
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 18              Detector: CDM-1
Analyst    :                                     Column: AG4A/AS4A anion column
=====

```

```

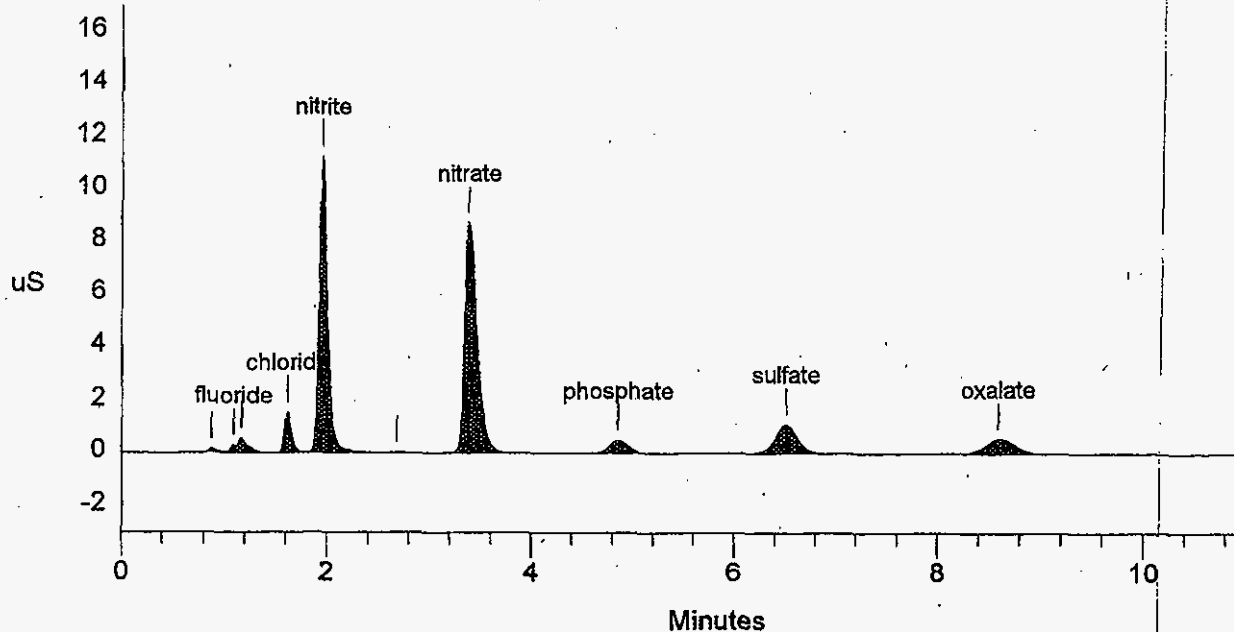
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          51  3300  5Hz  0.00 11.00          30
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	133	781	2	
2	1.09	fluoride	3.049	298	1024	2	4.13
3	1.17		0.000	560	3682	2	
4	1.61	chloride	30.836	1544	7661	1	-0.41
5	1.95	nitrite	357.630	11232	63282	1	-1.01
6	2.68		0.000	21	58	1	
7	3.38	nitrate	476.519	8741	74246	1	-1.46
8	4.85	phosphate	95.032	507	6896	1	1.68
9	6.51	sulfate	90.725	1116	17244	1	4.27
10	8.59	oxalate	83.834	592	12552	1	4.55
Totals			1137.624	24744	187424		

File: 99060911.D18 Sample: S99T000969 SAM



HNF-1674 REV. 0

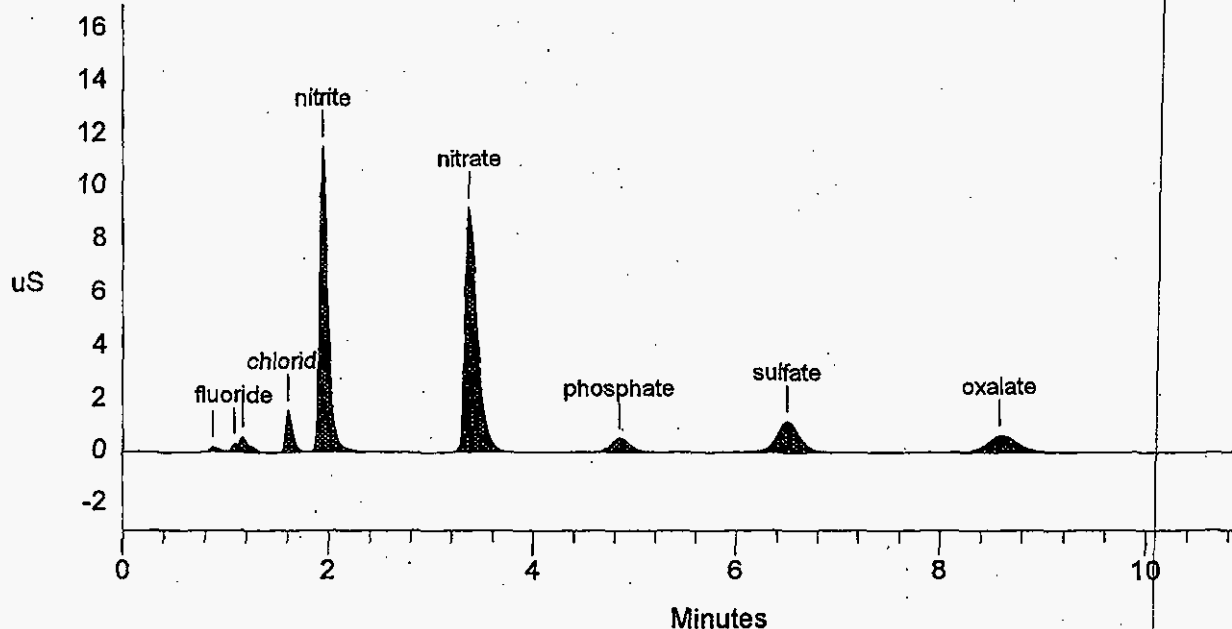
Sample Name: S99T000969 DUP Date: 06/10/1999 04:57:56
 Data File : C:\DX\DATA\99060911.D19
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 19 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	51	3300	5Hz	0.00	11.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	164	962	2	
2	1.09	fluoride	3.053	292	1026	2	3.49
3	1.17		0.000	563	3716	2	
4	1.61	chloride	30.883	1596	7673	1	-0.41
5	1.95	nitrite	366.967	11518	64933	1	-1.35
6	3.37	nitrate	495.468	9188	77249	1	-1.65
7	4.85	phosphate	97.151	542	7050	1	1.68
8	6.51	sulfate	95.599	1166	18173	1	4.27
9	8.59	oxalate	88.487	631	13247	1	4.55
Totals			1177.607	25660	194029		

File: 99060911.D19 Sample: S99T000969 DUP



```

=====
Sample Name: S99T000969   SPK                      Date: 06/10/1999 05:09:35
Data File  : C:\DX\DATA\99060911.D20
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1   System: 1   Inject#: 20           Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

```

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

```

```

External          1          51    3300  5Hz   0.00  11.00          30

```

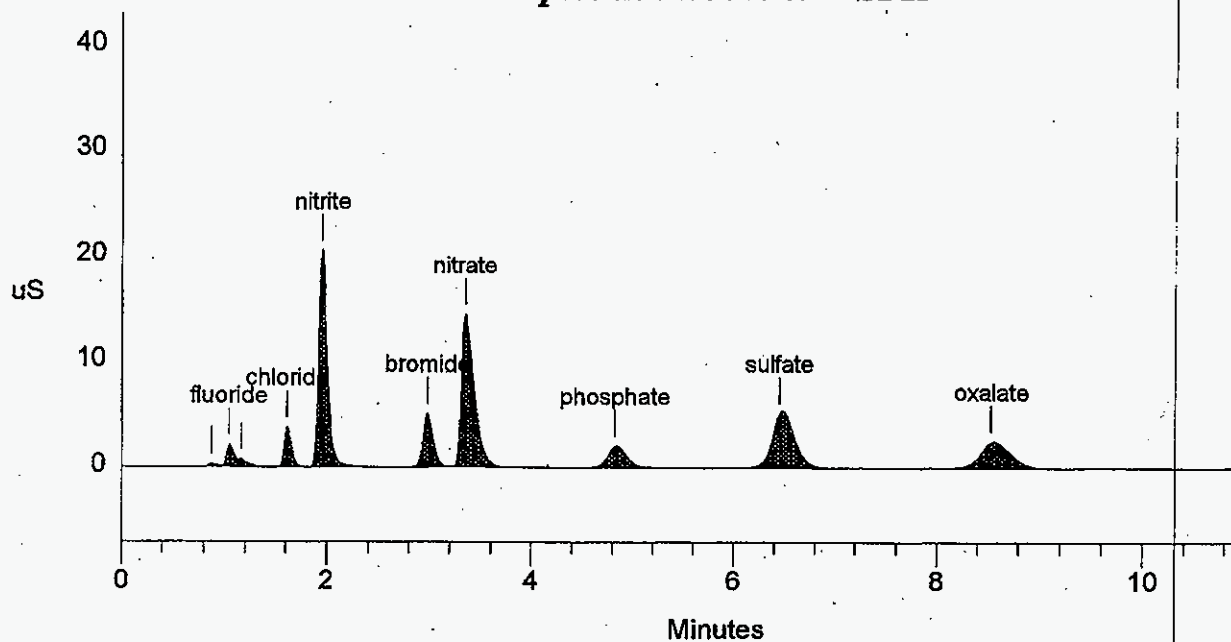
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***** Peak Report: All Peaks *****

```

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	232	1189	2	
2	1.05	fluoride	30.870	2017	10479	2	-0.32
3	1.17		0.000	716	4213	2	
4	1.61	chloride	72.410	3750	18121	1	-0.41
5	1.95	nitrite	659.603	20461	116678	1	-1.01
6	2.98	bromide	288.906	5009	33970	1	-0.33
7	3.35	nitrate	792.298	14338	124825	1	-2.24
8	4.83	phosphate	383.987	2035	28164	1	1.12
9	6.45	sulfate	427.876	5099	82199	1	3.42
10	8.53	oxalate	359.848	2493	53602	1	3.90
Totals			3015.797	56149	473441		

File: 99060911.D20 Sample: S99T000969 SPK



File #: 9608Q

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Page: 1

06/03/99 07:01
ws2

LABCORE Data Entry Template for Worklist# 30017

Analyst: MSG Instrument: ICP01 2-8-99 Book# 79B48B

Method: LA-505-151/161 Rev/Mod C-3

Ensure dose rate at 30cm
is ≤ 50 mrem/hr prior to
performing this analysis

Worklist Comment: ICP U-102 (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	S99T000970 0 D	@ICP-D01	LIQUID		
7	SAMPLE	S99T000970 0 D	@ICP-D01	LIQUID	99000200 U-102	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	S99T000970 0 D	@ICP-D01	LIQUID		
9	SPK-POST	S99T000970 0 D	@ICP-D01	LIQUID		
10	CCV		@ICP-QC	QC		
11	CCB		@ICP-QC	QC		
12	SAMPLE	S99T000971 0 D	@ICP-D01	LIQUID	99000200 U-102	GRAB1
Analytes Requested: AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01						

Data Entry Comments:
uploaded 6-8-99
John W. Powell

Validated by:
Sal M. Fay
06/08/99

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

HNF-1674 REV. 0

06/03/99 07:01

Page: 2

ws2

LABCORE Data Entry Template for Worklist# 30017

S Type	Sample#	R A	Test	Matrix	Group#	Project
13 DUP	S99T000971	0 D	@ICP-D01	LIQUID		
14 SAMPLE	S99T000972	0 D	@ICP-D01	LIQUID	99000200	U-102 GRAB1
Analytes Requested: AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01						
15 DUP	S99T000972	0 D	@ICP-D01	LIQUID		
16 ICSA			@ICP-QC	QC		
17 ICSAB			@ICP-QC	QC		
18 CCV			@ICP-QC	QC		
19 CCB			@ICP-QC	QC		

Final page for worklist # 30017

DK

06.08-99

Signature	Date	
599T000970_L	025-15-28	DF 3005
599T000970	025-15	601
599T000970_D	025-15	601
599T000970_Q	025-15	601
599T000970_X	025-15-19	6010
599T000970_QX	025-15-19	6010
599T000971	025-15	DF 601
599T000971_D	025-15	601
599T000972	025-15	DF 601
599T000972_D	025-15	601

Signature Date

Data Entry Comments:

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

HNF-1674 REV. 0

Analysis Report

Summary

06/08/99 11:52:15 AM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	9608A	ICP2	06/08/99	09:37	DKS	Q	CONC
2	ICB	9608A	ICP2	06/08/99	09:42	DKS	Q	CONC
3	LLS	9608A	ICP2	06/08/99	09:45	DKS	Q	CONC
4	ICSA	9608A	ICP2	06/08/99	09:47	DKS	Q	CONC
5	ICSAB	9608A	ICP2	06/08/99	09:50	DKS	Q	CONC
6	S99T000970_L	9608A	ICP2	06/08/99	10:03	DKS	S	CONC
7	S99T000970	9608A	ICP2	06/08/99	10:06	DKS	S	CONC
8	S99T000970_D	9608A	ICP2	06/08/99	10:09	DKS	S	CONC
9	S99T000970_A	9608A	ICP2	06/08/99	10:12	DKS	S	CONC
10	S99T000970_X	9608A	ICP2	06/08/99	10:19	DKS	S	CONC
11	S99T000970_AX	9608A	ICP2	06/08/99	10:22	DKS	S	CONC
12	CCV	9608A	ICP2	06/08/99	11:20	DKS	Q	CONC
13	CCB	9608A	ICP2	06/08/99	11:24	DKS	Q	CONC
14	S99T000971	9608A	ICP2	06/08/99	11:27	DKS	S	CONC
15	S99T000971_D	9608A	ICP2	06/08/99	11:29	DKS	S	CONC
16	S99T000972	9608A	ICP2	06/08/99	11:32	DKS	S	CONC
17	S99T000972_D	9608A	ICP2	06/08/99	11:35	DKS	S	CONC
18	ICSA	9608A	ICP2	06/08/99	11:40	DKS	Q	CONC
19	ICSAB	9608A	ICP2	06/08/99	11:43	DKS	Q	CONC
20	CCV	9608A	ICP2	06/08/99	11:46	DKS	Q	CONC
21	CCB	9608A	ICP2	06/08/99	11:49	DKS	Q	CONC

K. L. D.

U-102

06-08-99

5997000970

Work List #30017

5991000971

S99T000970:

599T000972

Post Spike:

$$al = \frac{\left(\frac{90738}{6010}\right) - \left(\frac{31988}{6010}\right)}{10} \times 100 = 97.8\%$$

$$Ha = \frac{\left(\frac{290940}{6010}\right) - \left(\frac{234490}{6010}\right)}{10} \times 100 = 93.9\%$$

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 172 TO 176.

HNF-1674 REV. 0

Analysis Report

Averages

06/08/99 11:52:15 AM

page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.9723	4.9981	5.0539	5.1847	4.9303	5.0561
2	ICB	-.00045	-.00065	.00220	.00276	-.00008	.00000
3	LLS	.01690	.10221	.20419	.10002	.09712	.00993
4	ICSA	.00004	248.79	.04700	.00943	.00033	.00015
5	ICSAB	.95374	247.23	.05299	.00819	.45411	.46379
6	S99T000970_L	18.765	31921.	-12.124	78.640	-.03946	.70810
7	S99T000970	17.221	31253.	-17.826	81.277	.08520	.39158
8	S99T000970_D	16.485	31574.	-25.893	80.450	.05203	.28606
9	S99T000970_A	569.01	32453.	595.26	689.19	555.64	591.49
10	S99T000970_X	31.682	31988.	-40.620	62.940	.34590	1.6392
11	S99T000970_AX	57523.	90738.	60128.	60508.	59621.	59802.
12	CCV	4.8880	4.8741	4.9988	5.0800	4.7793	4.9915
13	CCB	-.00090	.00009	.00000	.00083	-.00003	.00005
14	S99T000971	15.664	33992.	-20.437	82.769	-.05746	.31058
15	S99T000971_D	15.381	33343.	-21.930	80.457	.03665	.29688
16	S99T000972	16.873	33743.	-15.084	83.272	.10818	.29727
17	S99T000972_D	15.889	34314.	-20.034	85.421	.01180	.33302
18	ICSA	-.00082	246.65	.06419	.00254	.00034	.00020
19	ICSAB	.94715	245.32	.05319	.00360	.45034	.46167
20	CCV	4.9235	4.8918	5.0354	5.1086	4.7914	5.0311
21	CCB	-.00072	.00023	-.00321	.00387	-.00002	.00005

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.1048	5.1406	5.1338	5.0936	5.0441	5.0318
2	ICB	-.03106	.00636	.00091	-.00323	.00008	.00079
3	LLS	.19400	.24132	.01098	.20722	.04052	.02159
4	ICSA	-.00228	260.96	-.00353	.03199	.00088	-.00272
5	ICSAB	-.01963	261.40	.94796	.02046	.46918	.47471
6	S99T000970_L	-11.401	168.54	7.5759	1.5990	.19417	100.80
7	S99T000970	-27.424	172.34	6.5987	10.880	2.2106	98.133
8	S99T000970_D	-7.4191	144.02	5.9837	3.3472	.98459	98.970
9	S99T000970_A	600.41	763.77	616.46	586.56	596.65	696.12
10	S99T000970_X	-152.34	212.01	11.653	59.826	-3.6621	101.17
11	S99T000970_AX	60580.	59647.	59985.	59460.	60044.	60068.
12	CCV	4.9830	5.1210	5.1086	4.9582	4.9990	5.0004
13	CCB	-.01486	.00516	.00067	.00004	-.00161	-.00061
14	S99T000971	-18.798	146.62	5.7143	-2.0136	1.4410	75.448
15	S99T000971_D	-11.569	138.60	6.0693	4.6873	1.4074	73.215
16	S99T000972	-23.693	159.40	6.2943	10.061	1.5232	86.448
17	S99T000972_D	-17.373	148.56	5.4859	2.5078	1.0687	85.822
18	ICSA	-.00223	260.94	-.00299	.01807	.00319	-.00121
19	ICSAB	-.01049	259.35	.94524	.01019	.46484	.47157
20	CCV	5.0978	5.1847	5.1515	4.9851	5.0463	5.0415
21	CCB	-.02604	.00534	.00076	-.00602	-.00037	.00015

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Analysis Report

Averages

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#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.1450	-.03112	5.1114	5.2389	5.1303	5.0879
2	ICB	-.00048	.00125	-.00084	.01422	-.00035	.00059
3	LLS	.01808	.00217	.10139	.55142	.10256	.02161
4	ICSA	-.00096	-.25708	99.032	.08613	-.00398	.00334
5	ICSAB	.48222	.26113	98.780	.24022	-.00512	.95937
6	S99T000970_L	12.351	2.8909	11.237	4523.6	-.69454	3.0928
7	S99T000970	12.450	1.4588	11.468	4233.5	1.9253	.61724
8	S99T000970_D	12.504	1.1677	10.600	4227.9	.76997	.35906
9	S99T000970_A	606.01	4.8038	610.10	4830.7	597.30	568.62
10	S99T000970_X	7.3280	3.6000	14.169	4572.6	4.6036	2.0555
11	S99T000970_AX	59351.	373.25	59483.	61975.	59424.	58532.
12	CCV	4.9862	.03238	5.0317	4.9899	5.0011	4.9229
13	CCB	-.00087	.00127	-.00042	-.08878	-.00036	.00059
14	S99T000971	13.674	1.8914	12.179	4419.6	-.08203	1.0298
15	S99T000971_D	12.964	2.3721	11.846	4202.5	.31412	1.5446
16	S99T000972	15.216	1.9765	26.553	4375.6	1.2449	.97781
17	S99T000972_D	14.562	1.4258	24.635	4347.5	-.08517	.41061
18	ICSA	.00041	.25391	98.980	.16046	-.00470	.00360
19	ICSAB	.47697	.25778	98.235	-.11140	-.00533	.95352
20	CCV	4.9961	.03387	5.0532	4.9640	5.0181	4.8875
21	CCB	-.00078	.00253	-.00093	-.04861	-.00079	.00128

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.0918	4.8600	5.0994	5.0962	5.1185	5.0117
2	ICB	-.00062	.00021	.00021	.01369	.00135	.00170
3	LLS	.21283	.01942	.10261	.19837	.20284	.04303
4	ICSA	253.92	-.00847	-.01060	188.05	.01041	-.00871
5	ICSAB	251.92	.43039	-.01186	185.86	.01086	.93141
6	S99T000970_L	23.924	1.4575	121.44	232380.	4.6498	123.69
7	S99T000970	17.427	1.3251	122.47	221050.	4.0030	117.17
8	S99T000970_D	9.4052	1.2201	122.94	224130.	3.8732	117.22
9	S99T000970_A	585.54	556.79	733.13	226610.	595.02	715.60
10	S99T000970_X	78.770	1.5076	118.88	234490.	-3.0992	128.29
11	S99T000970_AX	59153.	59650.	60208.	290940.	59226.	60080.
12	CCV	4.9463	4.8012	5.0511	4.9450	4.9579	4.9933
13	CCB	.00102	.00026	-.00114	-.01065	-.00211	-.00116
14	S99T000971	1.9131	1.6716	130.32	221700.	4.5142	118.71
15	S99T000971_D	4.5402	1.6753	127.17	215350.	4.3175	120.32
16	S99T000972	14.820	2.5870	126.81	218380.	4.8421	121.12
17	S99T000972_D	.45200	2.3843	127.62	222660.	2.7923	120.90
18	ICSA	251.72	-.00816	-.00982	184.51	.01103	-.00805
19	ICSAB	249.51	.42707	-.01038	184.44	.01014	.93465
20	CCV	4.9769	4.8408	5.0894	4.8968	4.9759	5.0205
21	CCB	-.00592	.00050	-.00034	-.02434	.00068	.00291

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Analysis Report

Averages

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#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.1030	5.0383	5.0489	5.0842	4.9908	5.2807
2	ICB	.00960	-.00933	-.00667	-.00678	.00394	.00633
3	LLS	.40208	.20749	.18329	.09372	.19612	.13122
4	ICSA	-.02869	.06114	-.04456	.01315	-.03436	-.00563
5	ICSAB	-.00028	1.0391	-.03784	.00249	-.02728	-.00541
6	S99T000970_L	1077.0	-2.7902	2185.7	-17.386	38.899	33.820
7	S99T000970	1051.5	39.526	2197.4	-.69994	40.335	21.443
8	S99T000970_D	1062.5	19.091	2228.5	3.3822	39.636	21.051
9	S99T000970_A	1678.0	616.10	2847.1	611.07	654.03	653.63
10	S99T000970_X	1098.2	-67.108	2073.6	36.108	103.06	23.501
11	S99T000970_AX	61587.	60023.	62653.	60051.	60135.	59627.
12	CCV	5.0607	5.0266	4.9621	5.0012	4.9482	5.1919
13	CCB	.01359	-.01232	-.00771	-.00661	.02228	.00071
14	S99T000971	942.42	21.207	1983.0	-5.2887	50.258	22.571
15	S99T000971_D	932.62	15.452	1944.9	-2.6365	48.616	23.299
16	S99T000972	990.71	25.119	1988.0	1.5647	45.324	23.072
17	S99T000972_D	1012.4	17.289	2019.3	-5.5810	52.434	25.016
18	ICSA	.00000	.06776	-.04492	.00508	-.02505	-.00816
19	ICSAB	-.00181	1.0280	-.03612	.00538	-.01513	-.00643
20	CCV	5.0841	5.0924	4.9930	5.0462	4.9983	5.2271
21	CCB	.01835	-.00543	-.01403	-.00279	.02556	.00455

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	5.1143	5.0033	.44254	5.1306	4.9074	10.412
2	ICB	.00865	.00008	-.01022	-.00033	.00920	.04165
3	LLS	.21360	.02001	.01778	.02000	.41637	.52641
4	ICSA	-.01130	.00151	.10838	.00165	-.05405	.04690
5	ICSAB	-.00365	.00155	.10202	.00207	-.02553	.03971
6	S99T000970_L	24.142	.35603	-7.8742	-.90102	47.335	90.780
7	S99T000970	6.8842	.30466	3.7209	.26052	19.022	42.415
8	S99T000970_D	4.7537	.25010	-2.3817	-.02418	.19705	43.200
9	S99T000970_A	599.93	579.03	47.950	601.63	584.87	1234.6
10	S99T000970_X	30.996	.34687	46.849	-1.5878	15.579	177.54
11	S99T000970_AX	59524.	59302.	5018.0	59834.	59512.	118650.
12	CCV	4.9886	4.8690	.42086	5.0217	4.9138	10.132
13	CCB	.00951	.00005	-.00374	-.00044	.00940	.03458
14	S99T000971	11.935	.32329	-9.8632	.12590	-.71576	51.146
15	S99T000971_D	14.681	.33964	-7.5007	-.04725	-5.1181	78.756
16	S99T000972	12.293	.35926	.62689	.16289	6.3213	57.687
17	S99T000972_D	8.0056	.28681	-9.0274	-.38938	.68691	44.600
18	ICSA	-.00073	.00157	.10670	.00223	-.04071	.05004
19	ICSAB	-.00071	.00159	.09242	.00189	-.03893	.06083
20	CCV	4.9890	4.8832	.42864	5.0367	4.9166	10.148
21	CCB	.01845	.00023	-.00771	.00010	-.00178	.07985

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Analysis Report

Averages

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#	Sample Name	V	Y	Zn	Zr
1	ICV	5.0736	.01340	5.0609	4.9122
2	ICB	.00132	.00068	.00069	.00193
3	LLS	.10085	.00087	.02063	.01901
4	ICSA	-.00484	.01074	-.00545	-.00279
5	ICSAB	.46818	.01121	1.0059	-.00224
6	S99T000970_L	2.5481	.90547	10.537	4.0846
7	S99T000970	.76145	.59561	6.9616	.57689
8	S99T000970_D	.64944	.40646	7.3306	.90975
9	S99T000970_A	597.80	1.9299	612.98	583.46
10	S99T000970_X	.03153	.39656	10.982	-.05336
11	S99T000970_AX	59824.	162.46	59990.	59460.
12	CCV	5.0101	.01407	5.0201	4.8250
13	CCB	.00153	.00029	.00142	.00167
14	S99T000971	1.8510	.87512	2.9387	2.3064
15	S99T000971_D	2.4349	1.2410	3.1860	2.5976
16	S99T000972	1.4956	.77793	1.5794	2.5064
17	S99T000972_D	1.0360	.54748	1.5930	2.7501
18	ICSA	-.00302	.01105	-.00501	-.00205
19	ICSAB	.46560	.01104	1.0023	-.00051
20	CCV	5.0464	.01445	5.0656	4.8514
21	CCB	.00325	.00098	.00104	.00334

JK
06-08-99

06/08/99 12:02
ws2

File# 9609B

HNF-1674 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 30112

Analyst: JK Seto Instrument: ICP01 2-6-99 Book# 79848B

Method: LA-505-151/161 Rev/Mod C-3

Ensure dose rate at 30cm
is ≤ 50 mrem/hr prior to
performing this analysis

Worklist Comment: ICP U-102 (FUSION)

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	PREPBLKTJA				@ICP-F01	SOLID		
7	SERDIL	S99T000963	0	F	@ICP-F01	SOLID		
8	SAMPLE	S99T000963	0	F	@ICP-F01	SOLID	99000200	U-102 GRAB1
Analytes Requested: AG-F-01 , AL-F-01 , AS-F-01 , B-F-01 , BA-F-01 , BE-F-01 , BI-F-01 , CA-F-01 , CD-F-01 , CE-F-01 , CO-F-01 , CR-F-01 , CU-F-01 , FE-F-01 , LA-F-01 , LI-F-01 , MG-F-01 , MN-F-01 , MO-F-01 , NA-F-01 , ND-F-01 , NI-F-01 , P-F-01 , PB-F-01 , S-F-01 , SB-F-01 , SE-F-01 , SI-F-01 , SM-F-01 , SR-F-01 , TI-F-01 , TL-F-01 , U-F-01 , V-F-01 , ZN-F-01 , ZR-F-01								
9	DUP	S99T000963	0	F	@ICP-F01	SOLID		
10	SPK-POST	S99T000963	0	F	@ICP-F01	SOLID		
11	ICSA				@ICP-QC	QC		
12	ICSAB				@ICP-QC	QC		
13	CCV				@ICP-QC	QC		
14	CCB				@ICP-QC	QC		

Data Entry Comments:

up loaded 6-9-99
John Worell

Validated by:

Sam M. Parry
06/14/99

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

HNF-1674 REV. 0

06/08/99 12:02

ws2

LABCORE Data Entry Template for Worklist# 30112

S Type	Sample#	R A	Test	Matrix	Group#	Project
--------	---------	-----	------	--------	--------	---------

Final page for worklist # 30112

JK *[Signature]* 06-09-99

Signature	Date	
Prep b/k TJE	, 25-10	DF 1
5797000963_L	, 25-10-2-8	DF 205
5997000963	, 25-10	41
5997000963_D	, 25-10	41
5997000963_E	, 25-10	41
5997000963_X	, 25-10-1-9	410
5997000963_5X	, 25-10-1-9	410

Signature	Date
-----------	------

Data Entry Comments:

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

HNF-1674 REV. 0

Analysis Report

Summary

06/09/99 02:02:45 PM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	9609B	ICP2	06/09/99	12:56	DKS	Q	CONC
2	ICB	9609B	ICP2	06/09/99	12:59	DKS	Q	CONC
3	LLS	9609B	ICP2	06/09/99	13:02	DKS	Q	CONC
4	ICSA	9609B	ICP2	06/09/99	13:05	DKS	Q	CONC
5	ICSAB	9609B	ICP2	06/09/99	13:08	DKS	Q	CONC
6	PREPBLKTJA	9609B	ICP2	06/09/99	13:14	DKS	Q	CONC
7	S99T000963_L	9609B	ICP2	06/09/99	13:17	DKS	S	CONC
8	S99T000963	9609B	ICP2	06/09/99	13:20	DKS	S	CONC
9	S99T000963_D	9609B	ICP2	06/09/99	13:23	DKS	S	CONC
10	S99T000963_A	9609B	ICP2	06/09/99	13:26	DKS	S	CONC
11	S99T000963_X	9609B	ICP2	06/09/99	13:33	DKS	S	CONC
12	S99T000963_AX	9609B	ICP2	06/09/99	13:36	DKS	S	CONC
13	ICSA	9609B	ICP2	06/09/99	13:50	DKS	Q	CONC
14	ICSAB	9609B	ICP2	06/09/99	13:52	DKS	Q	CONC
15	CCV	9609B	ICP2	06/09/99	13:56	DKS	Q	CONC
16	CCB	9609B	ICP2	06/09/99	13:59	DKS	Q	CONC

JK L&D
06-09-99
Weeklist #30112

6-162
599T000963

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 179 TO 182.

Analysis Report

Averages

06/09/99 02:02:45 PM

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page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.9031	4.9377	5.0497	5.1260	4.8043	5.0390
2	ICB	.00076	.00639	.00230	.00366	.00002	.00011
3	LLS	.01616	.10711	.20310	.10658	.09628	.01000
4	ICSA	-.00051	246.45	.07937	.00358	.00035	.00019
5	ICSAB	.94611	248.15	.03044	.00111	.45530	.46259
6	PREPBLKTJA	.00134	.00754	.01188	.00027	.00036	.00002
7	S99T000963_L	.11607	60.183	2.2401	.00443	.04280	.02390
8	S99T000963	.05553	56.559	.39359	.00392	.03859	.00357
9	S99T000963_D	.22424	57.054	.70850	.16523	.04870	.00519
10	S99T000963_A	37.833	96.592	41.090	41.410	37.925	40.011
11	S99T000963_X	.67579	61.544	6.4218	-.22529	.06785	-.03237
12	S99T000963_AX	3838.5	4131.1	4150.7	4167.6	4094.0	4129.2
13	ICSA	.00163	248.61	.05654	.00532	.00024	.00021
14	ICSAB	.95022	248.51	.04751	.00382	.45802	.46507
15	CCV	4.9608	4.9943	5.1292	5.2055	4.9257	5.0966
16	CCB	.00158	.01077	.01390	.00759	.00008	.00017

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	4.9678	5.0875	5.0779	4.9886	4.9798	4.9760
2	ICB	-.03126	.00920	.00052	.00008	.00096	.00054
3	LLS	.18973	.23825	.00983	.20887	.04157	.02147
4	ICSA	.00073	255.80	-.00551	.01858	-.00058	-.00149
5	ICSAB	-.00039	256.13	.92984	.01345	.46108	.46602
6	PREPBLKTJA	-.00911	.00993	.00010	-.00072	.00094	.00139
7	S99T000963_L	-.89641	3.0120	-.03624	-.13481	-.04072	14.752
8	S99T000963	.12296	2.1716	.01560	.01958	.02262	14.483
9	S99T000963_D	-.18470	1.6137	.06827	.68538	.13402	14.655
10	S99T000963_A	40.036	42.967	41.574	40.087	40.611	55.086
11	S99T000963_X	-2.4661	5.1673	.53002	1.8094	.44547	15.125
12	S99T000963_AX	4165.1	4091.4	4115.1	4084.9	4102.2	4122.9
13	ICSA	.02028	258.12	-.00630	.00950	.00088	-.00070
14	ICSAB	-.01974	258.29	.93823	.01459	.46506	.47238
15	CCV	5.1048	5.1644	5.1268	5.0809	5.0307	5.0329
16	CCB	-.00494	.00992	.00056	.00484	-.00120	.00034

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.0434	.02974	5.0324	5.1248	5.0470	4.9772
2	ICB	.00059	.00156	.00050	.24880	.00044	.00145
3	LLS	.01886	.00153	.09989	Q.63128	.10232	.02142
4	ICSA	-.00048	.25071	97.521	.14955	-.00469	.00353
5	ICSAB	.48239	.25460	97.785	-.07662	-.00549	.97540
6	PREPBLKTJA	.00138	.00041	.00272	Q269.93	.00021	.00036
7	S99T000963_L	.28642	.01608	5.2898	10955.	.04945	.07382
8	S99T000963	.05252	.03418	5.1765	10336.	.02643	.04038
9	S99T000963_D	.09668	.09421	5.1015	12304.	.14959	.07758
10	S99T000963_A	40.714	.26078	45.974	10437.	40.558	39.122
11	S99T000963_X	.39908	.26082	5.7261	10836.	.63914	.40874
12	S99T000963_AX	4080.3	24.410	4094.0	14727.	4092.8	4076.5
13	ICSA	.00015	.25066	98.469	.36004	-.00687	.00372

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#	Sample Name	Cu	Eu	Fe	K	La	Li
14	ICSAB	.48452	.25473	98.305	.17404	-.00599	.97713
15	CCV	5.1333	.03023	5.0676	5.0597	5.1346	5.0770
16	CCB	.00082	.00033	.00157	-.07287	-.00028	-.00054

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.0333	4.8108	5.0308	5.0013	4.9988	4.9516
2	ICB	.00244	.00027	.00098	-.02055	.00463	.00181
3	LLS	.21006	.01913	.10207	.20313	.20495	.04260
4	ICSA	252.85	-.00869	-.01049	188.31	.01660	-.00538
5	ICSAB	253.19	.42547	-.01426	190.17	.01149	.91889
6	PREPBLKTJA	.00204	.00149	.00014	.08759	.00538	Q.13240
7	S99T000963_L	-.25138	1.0297	.18378	375.73	1.0969	4.4084
8	S99T000963	.09064	1.0194	.17230	362.01	.32449	4.1536
9	S99T000963_D	1.2292	1.0743	.18845	356.40	.49506	3.0958
10	S99T000963_A	40.032	38.938	41.460	403.68	40.293	44.603
11	S99T000963_X	6.8491	1.1291	.20645	372.89	1.8892	6.4149
12	S99T000963_AX	4106.7	4102.3	4103.3	4425.7	4059.8	4110.6
13	ICSA	254.51	-.00886	-.00905	189.91	.01500	-.00789
14	ICSAB	253.96	.42749	-.01098	190.31	.01715	.92551
15	CCV	5.0716	4.8571	5.0965	5.1010	5.0823	5.0127
16	CCB	.00251	.00011	-.00009	-.00612	.00216	-.00301

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.0828	4.9888	5.0149	5.0486	4.9738	5.1538
2	ICB	.02027	.00058	.00362	.00258	.02871	.01194
3	LLS	.40922	.20135	.19514	.09500	.23563	.12944
4	ICSA	-.00699	.05212	-.03496	.00389	-.01429	-.00387
5	ICSAB	-.01184	1.0084	-.03558	.00193	-.00471	-.00890
6	PREPBLKTJA	.01063	.00348	-.00793	-.00899	.02295	.01162
7	S99T000963_L	16.112	-.31870	12.280	-.34776	3.1559	2.3339
8	S99T000963	13.481	-.09267	12.833	.02803	.91701	1.2242
9	S99T000963_D	13.566	.64089	12.861	.46140	1.7349	1.4226
10	S99T000963_A	55.186	40.383	53.519	41.678	41.323	43.722
11	S99T000963_X	20.716	3.7608	9.9200	2.8231	13.073	4.7109
12	S99T000963_AX	4157.3	4113.8	4154.8	4142.8	4145.8	4036.3
13	ICSA	-.00669	.05598	-.03727	-.00193	.00402	-.00551
14	ICSAB	.00035	1.0270	-.03279	-.00112	-.00172	-.00747
15	CCV	5.1665	5.0257	5.0719	5.1230	5.0512	5.2028
16	CCB	.02260	-.00445	-.00333	.00161	.03482	.00414

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	5.0441	4.9109	.40888	5.0429	4.9044	10.203
2	ICB	.01447	.00012	.00832	.00104	.00175	.04380
3	LLS	.20725	.01978	.02581	.02064	.42624	.51091
4	ICSA	-.00346	.00165	-.09761	.00248	-.05407	.12054
5	ICSAB	-.01445	.00164	.09061	.00187	-.04949	.08840
6	PREPBLKTJA	.00252	.00003	.01028	.00080	.02118	-.06914
7	S99T000963_L	.35691	.01169	1.7666	.11976	.84093	13.072

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Analysis Report

Averages

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#	Sample Name	Sm	Sr	Th	Ti	Tl	U
8	S99T000963	.35469	.01707	.60622	.05077	.57636	11.135
9	S99T000963_D	.77597	.02217	1.4857	.09585	-.00342	12.326
10	S99T000963_A	40.626	39.290	3.8460	40.805	39.720	92.828
11	S99T000963_X	3.0079	.02382	6.5200	.19696	6.3719	21.570
12	S99T000963_AX	4104.2	4077.3	320.25	4092.7	4122.0	8144.2
13	ICSA	-.00665	.00157	-.09933	.00264	-.06909	.09839
14	ICSAB	-.00993	.00162	.10226	.00265	-.02559	.09712
15	CCV	5.1356	4.9951	.41838	5.1192	4.9530	10.363
16	CCB	.00226	.00000	.00759	-.00011	-.00440	.00564

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.0160	.01318	5.0116	4.8511
2	ICB	.00254	.00060	.00049	.00097
3	LLS	.09967	.00064	.02048	.01786
4	ICSA	-.00435	.01039	-.00638	-.00216
5	ICSAB	.46359	.00986	.99261	-.00255
6	PREPBLKTJA	.00062	-.00012	.00027	-.00030
7	S99T000963_L	.07935	.02664	.18211	.06859
8	S99T000963	.06837	.04035	.06531	.11467
9	S99T000963_D	.15519	.06883	.09466	.03057
10	S99T000963_A	40.738	.13768	41.284	39.399
11	S99T000963_X	.76849	.15186	.59974	.08667
12	S99T000963_AX	4099.6	10.774	4110.3	4082.3
13	ICSA	-.00519	.01032	-.00633	-.00248
14	ICSAB	.46525	.01040	.99811	-.00282
15	CCV	5.0768	.01287	5.0503	4.9188
16	CCB	.00007	-.00015	.00058	.00004

JK

06-09-99

LABCORE Completed Worklist Report for Worklist# 30040

Analyst: kjt

Instrument: ICPMS1

Book#: 990609-1

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

Worklist Comment: ICP/MS U-102 (DIRECT) Iso-U

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	ICV		0		@MSU-QC U235	QC	0.000142	1.60e-04	112.676	% Recovery
1	ICV		0		@MSU-QC U238	QC	0.020	2.17e-02	108.500	% Recovery
2	ICB		0		@MSU-QC U233	QC	1	<1.20e-5		ug/mL
2	ICB		0		@MSU-QC U234	QC	1	<1.20e-5		ug/mL
2	ICB		0		@MSU-QC U235	QC	1	<1.20e-5		ug/mL
2	ICB		0		@MSU-QC U236	QC	1	<1.60e-5		ug/mL
2	ICB		0		@MSU-QC U238	QC	1	<1.20e-5		ug/mL
3	SAMPLE	S99T000973	0	D	@MSU-D1 U233-D1	LIQUID	<u>N/A</u>	< 1.224e-01	0.122	ug/mL
3	SAMPLE	S99T000973	0	D	@MSU-D1 U234-D1	LIQUID	<u>N/A</u>	< 1.224e-01	0.122	ug/mL
3	SAMPLE	S99T000973	0	D	@MSU-D1 U235-D1	LIQUID	<u>N/A</u>	< 1.224e-01	0.122	ug/mL
3	SAMPLE	S99T000973	0	D	@MSU-D1 U236-D1	LIQUID	<u>N/A</u>	< 1.632e-01	0.163	ug/mL
3	SAMPLE	S99T000973	0	D	@MSU-D1 U238-D1	LIQUID	<u>N/A</u>	1.111e+00	0.122	ug/mL
4	DUP	S99T000973	0	D	@MSU-D1 U233-D1	LIQUID	<1.22e-1	<1.22e-1		RPD
4	DUP	S99T000973	0	D	@MSU-D1 U234-D1	LIQUID	<1.22e-1	<1.22e-1		RPD
4	DUP	S99T000973	0	D	@MSU-D1 U235-D1	LIQUID	<1.22e-1	<1.22e-1		RPD
4	DUP	S99T000973	0	D	@MSU-D1 U236-D1	LIQUID	<1.63e-1	<1.63e-1		RPD
4	DUP	S99T000973	0	D	@MSU-D1 U238-D1	LIQUID	1.11e+00	1.19e+00	6.957	RPD
5	SPK-POST	S99T000973	0	D	@MSU-D1 U235-D1	LIQUID	0.0001422	1.42e-04	99.859	% Recovery
5	SPK-POST	S99T000973	0	D	@MSU-D1 U238-D1	LIQUID	0.020	1.94e-02	97.000	% Recovery
6	SAMPLE	S99T000974	0	D	@MSU-D1 U233-D1	LIQUID	<u>N/A</u>	< 1.224e-01	0.122	ug/mL
6	SAMPLE	S99T000974	0	D	@MSU-D1 U234-D1	LIQUID	<u>N/A</u>	< 1.224e-01	0.122	ug/mL
6	SAMPLE	S99T000974	0	D	@MSU-D1 U235-D1	LIQUID	<u>N/A</u>	< 1.224e-01	0.122	ug/mL
6	SAMPLE	S99T000974	0	D	@MSU-D1 U236-D1	LIQUID	<u>N/A</u>	< 1.632e-01	0.163	ug/mL
6	SAMPLE	S99T000974	0	D	@MSU-D1 U238-D1	LIQUID	<u>N/A</u>	8.008e-01	0.122	ug/mL
7	DUP	S99T000974	0	D	@MSU-D1 U233-D1	LIQUID	<1.22e-1	<1.22e-1		RPD
7	DUP	S99T000974	0	D	@MSU-D1 U234-D1	LIQUID	<1.22e-1	<1.22e-1		RPD
7	DUP	S99T000974	0	D	@MSU-D1 U235-D1	LIQUID	<1.22e-1	<1.22e-1		RPD
7	DUP	S99T000974	0	D	@MSU-D1 U236-D1	LIQUID	<1.63e-1	<1.63e-1		RPD
7	DUP	S99T000974	0	D	@MSU-D1 U238-D1	LIQUID	8.01e-01	7.91e-01	1.256	RPD
8	SAMPLE	S99T000975	0	D	@MSU-D1 U233-D1	LIQUID	<u>N/A</u>	< 1.224e-01	0.122	ug/mL
8	SAMPLE	S99T000975	0	D	@MSU-D1 U234-D1	LIQUID	<u>N/A</u>	< 1.224e-01	0.122	ug/mL
8	SAMPLE	S99T000975	0	D	@MSU-D1 U235-D1	LIQUID	<u>N/A</u>	< 1.224e-01	0.122	ug/mL
8	SAMPLE	S99T000975	0	D	@MSU-D1 U236-D1	LIQUID	<u>N/A</u>	< 1.632e-01	0.163	ug/mL
8	SAMPLE	S99T000975	0	D	@MSU-D1 U238-D1	LIQUID	<u>N/A</u>	1.298e+00	0.122	ug/mL
9	DUP	S99T000975	0	D	@MSU-D1 U233-D1	LIQUID	<1.22e-1	<1.22e-1		RPD
9	DUP	S99T000975	0	D	@MSU-D1 U234-D1	LIQUID	<1.22e-1	<1.22e-1		RPD
9	DUP	S99T000975	0	D	@MSU-D1 U235-D1	LIQUID	<1.22e-1	<1.22e-1		RPD
9	DUP	S99T000975	0	D	@MSU-D1 U236-D1	LIQUID	<1.63e-1	<1.63e-1		RPD
9	DUP	S99T000975	0	D	@MSU-D1 U238-D1	LIQUID	1.30e+00	1.26e+00	3.125	RPD
10	CCV		0		@MSU-QC U235	QC	0.000142	1.59e-04	111.972	% Recovery
10	CCV		0		@MSU-QC U238	QC	0.020	2.18e-02	109.000	% Recovery

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

LABCORE Completed Worklist Report for Worklist# 30040

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
11	CCB	0			EMSU-QC U233	QC	1	<1.20e-5		ug/mL
11	CCB	0			EMSU-QC U234	QC	1	<1.20e-5		ug/mL
11	CCB	0			EMSU-QC U235	QC	1	<1.20e-5		ug/mL
11	CCB	0			EMSU-QC U236	QC	1	<1.60e-5		ug/mL
11	CCB	0			EMSU-QC U238	QC	1	<1.20e-5		ug/mL

Final page for worklist# 30040

Analyst Signature Date

Analyst Signature Date

Saul M. Pang 06/14/99

Reviewer Signature Date

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

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06/03/99 09:58

ws2

LABCORE Data Entry Template for Worklist# 30040

Analyst: KST Instrument: ICPMS1 Book# 0906 990609-1

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

Worklist Comment: ICP/MS U-102 (DIRECT) Iso-U

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@MSU-QC	QC		
2	ICB		@MSU-QC	QC		
3	SAMPLE	S99T000973 0 D	@MSU-D1	LIQUID	99000200	U-102 GRAB1
Analytes Requested: U233-D1 , U234-D1 , U235-D1 , U236-D1 , U238-D1						
4	DUP	S99T000973 0 D	@MSU-D1	LIQUID		
5	SPK-POST	S99T000973 0 D	@MSU-D1	LIQUID		
6	SAMPLE	S99T000974 0 D	@MSU-D1	LIQUID	99000200	U-102 GRAB1
Analytes Requested: U233-D1 , U234-D1 , U235-D1 , U236-D1 , U238-D1						
7	DUP	S99T000974 0 D	@MSU-D1	LIQUID		
8	SAMPLE	S99T000975 0 D	@MSU-D1	LIQUID	99000200	U-102 GRAB1
Analytes Requested: U233-D1 , U234-D1 , U235-D1 , U236-D1 , U238-D1						
9	DUP	S99T000975 0 D	@MSU-D1	LIQUID		
10	CCV		@MSU-QC	QC		
11	CCB		@MSU-QC	QC		

Final page for worklist # 30040

K S Mondabe 06-09-99

Signature

Date

Signature

Date

S99T000973
973-d
973-a
974
974-d
975
975-d

06-10-1-10 10201 df

↓ ↓

file 0609a:1xt

scan 0973
0974
0975

Data Entry Comments:

Post spike .02 ml of 10 ppm Uranium Std

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

Analysis Report

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Method: MS_TUNE

Sample Name: ms-tune

Operator:

Comment:

Run Time: 06/09/99 10:13

Type: Unk

Mode: INT

Corr.Fact: 1.000000

lem	In[115]
ine	115/pulse
nits	Cts/S
-vg	104300.
tddev	1809.
RSD	1.734

#1	102100.
#2	105500.
#3	105800.
#4	102800.
#5	101900.
#6	103300.
#7	103800.
#8	105300.
#9	107300.
#10	105400.

Uploaded & Validated by:
Saikh M. Pang
 06/14/99

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 186 TO 204.

Analysis Report

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page 1

Method: ISOU

Sample Name: BLANK

Operator:

Comment:

Run Time: 06/09/99 10:18 Type: Std

Mode: IR

Corr. Fact: 1.000000

Line	U_ [233] 233/pulse Cts/S	U_ [234] 234/pulse Cts/S	U_ [235] 235/pulse Cts/S	U_ [236] 236/pulse Cts/S	U_ [238] 238/pulse Cts/S
Avg	5.940	5.609	5.722	4.322	6.392
Stddev	.892	.454	.882	1.218	.991
%RSD	15.02	8.098	15.42	28.18	15.51
#1	6.565	6.312	5.302	3.787	7.575
#2	5.263	5.520	5.007	4.365	5.007
#3	7.204	5.532	5.146	3.345	7.076
#4	5.376	5.632	6.016	3.712	6.272
#5	5.293	5.047	7.139	6.401	6.031

Int. Std.

Line	Ir [193] 193/pulse Cts/S
Avg	3.9421
Stddev	.0731
%RSD	1.8535
#1	3.9606
#2	3.8949
#3	3.8866
#4	3.9061
#5	4.0622

Method : ISOU

Standardzn Report

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page 1

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El Name	Slope	Y-int	Correlation	Date Stdized
U [233]	679.1366	5.9402	1.0000000	06/09/99 10:19:36

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	5.9402
100ppb U	0.711	0.711	0	0	488.81

U [233]

0

(S) IR⁵⁴⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
J [234]	679.6031	5.6086	1.0000000	06/09/99 10:19:36

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	5.6086
100ppb U	0.711	0.711	0	0	488.81

U [234]

0

(S) IR⁵⁴⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U [235]	679.4435	5.7220	1.0000000	06/09/99 10:19:36

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	5.722
100ppb U	0.711	0.711	0	0	488.81

U [235]

0

(S) IR⁵⁴⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U [236]	681.4127	4.3219	1.0000000	06/09/99 10:19:36

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	4.3219
100ppb U	0.711	0.711	0	0	488.81

U [236]

0

(S) IR⁵⁴⁰⁰¹⁰

Concentration

Method : ISOU

Standardzn Report

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page 2

Sample Name	Slope	Y-int	Correlation	Date Stdized
[238]	645.4896	6.3920	1.0000000	06/09/99 10:19:36

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	6.392
100ppb U	99.3	99.3	0	0	64104

U [238]

0

70520110
S) IR

Concentration

Analysis Report

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page 1

Method: ISOU

Sample Name: 100ppb U

Operator:

Comment:

Run Time: 06/09/99 10:21 Type: Std

Mode: IR

Corr.Fact: 1.000000

Line	U_ [233] 233/pulse	U_ [234] 234/pulse	U_ [235] 235/pulse	U_ [236] 236/pulse	U_ [238] 238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	453.6	453.6	453.6	453.6	59890.
Stddev	8.0	8.0	8.0	8.0	1168.
%RSD	1.768	1.768	1.768	1.768	1.950
#1	442.6	442.6	442.6	442.6	57900.
#2	450.1	450.1	450.1	450.1	60990.
#3	458.7	458.7	458.7	458.7	60100.
#4	463.5	463.5	463.5	463.5	60270.
#5	453.0	453.0	453.0	453.0	60170.

Int. Std.

Ir [193]

Line	193/pulse
Units	Cts/S
Avg	4.0250
Stddev	.0590
%RSD	1.4670
#1	4.0232
#2	3.9544
#3	3.9800
#4	4.0780
#5	4.0893

Method : ISOU

Standardzn Report

06/09/99 10:23:48

page 1

El Name	Slope	Y-int	Correlation	Date Stdized
U [233]	629.5695	5.9402	1.0000000	06/09/99 10:23:11

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	5.9402
100ppb U	0.711	0.711	0	0	453.56

U [233]

0

(S) IR⁵⁰⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U [234]	630.0359	5.6086	1.0000000	06/09/99 10:23:11

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	5.6086
100ppb U	0.711	0.711	0	0	453.56

U [234]

0

(S) IR⁵⁰⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U [235]	629.8765	5.7220	1.0000000	06/09/99 10:23:11

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	5.722
100ppb U	0.711	0.711	0	0	453.56

U [235]

0

(S) IR⁵⁰⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U [236]	631.8456	4.3219	1.0000000	06/09/99 10:23:11

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	4.3219
100ppb U	0.711	0.711	0	0	453.56

U [236]

0

(S) IR⁵⁰⁰⁰¹⁰

Concentration

Method : ISOU

Standardzn Report

06/09/99 10:23:48

page 2

Name	Slope	Y-int	Correlation	Date Stdized
[238]	603.0281	6.3920	1.0000000	06/09/99 10:23:10

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
-blank	0	0	0	0	6.392
.00ppb U	99.3	99.3	0	0	59887

U [238]

0

65880000
S) IR

Concentration

Analysis Report

06/09/99 10:29:50

page 1

HNF-1674 REV. 0

Operator: kjt

Method: ISOU Sample Name: blank

Comment: background

Run Time: 06/09/99 10:28 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	-.0007	-.0009	-.0015	.0022	.0003
Stddev	.0010	.0022	.0011	.0014	.0020
%RSD	140.3	234.4	74.71	61.62	774.2
#1	-.0015	-.0030	.0000	.0016	-.0021
#2	-.0020	.0006	-.0010	.0036	.0014
#3	.0001	.0007	-.0030	.0031	.0014
#4	-.0006	.0007	-.0019	.0002	-.0016
#5	.0003	-.0036	-.0015	.0025	.0022

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.9751
Stddev	.0650
%RSD	1.6346

#1	4.0152
#2	3.9424
#3	4.0633
#4	3.9576
#5	3.8969

Analysis Report

06/09/99 10:32:39 HNF-1674 REV. 0

page 1

Method: ISOU Sample Name: ICV Operator: kjt
 Comment: iso-u lcs
 Run Time: 06/09/99 10:31 Type: Unk Mode: CONC Corr.Fact: 1.000000

Item	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	.0003	.0016	.1602	.0044	21.73
Stddev	.0014	.0010	.0050	.0014	.66
RSD	397.5	64.05	3.136	32.34	3.040
1	-.0011	.0013	.1567	.0043	22.04
2	-.0022	.0027	.1639	.0049	21.55
3	.0013	.0014	.1664	.0063	20.78
4	-.0002	.0002	.1602	.0024	22.58
5	.0004	.0025	.1541	.0040	21.69

Item	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.9240
Stddev	.0684
RSD	1.7436

1	3.9072
2	3.8326
3	3.9181
4	3.9386
5	4.0233

Analysis Report

06/09/99 10:40:22

page 1

Method: ISOU Sample Name: icb Operator: kjt
 Comment: 2% nitric
 Run Time: 06/09/99 10:39 Type: Unk Mode: CONC Corr.Fact.: 1.000000

Line	U_ [233] 233/pulse	U_ [234] 234/pulse	U_ [235] 235/pulse	U_ [236] 236/pulse	U_ [238] 238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	-.0008	-.0011	-.0003	.0019	-.0001
Stddev	.0017	.0018	.0021	.0020	.0017
RSD	217.5	170.0	659.4	104.8	1386.
#1	-.0031	-.0010	-.0034	.0004	.0022
#2	-.0015	-.0019	.0021	-.0003	-.0002
#3	-.0004	-.0025	-.0005	.0020	-.0022
#4	.0015	-.0018	.0012	.0026	.0006
#5	-.0004	.0020	-.0011	.0049	-.0010

Int. Std.	Ir [193] 193/pulse
Line	Cts/S
Avg	3.9154
Stddev	.0946
RSD	2.4164

#1	4.0244
#2	3.9788
#3	3.8698
#4	3.9216
#5	3.7821

Analysis Report

06/09/99 10:42:31

page 1

Method: ISOU Sample Name: s99t000973 Operator: Kjt
 Comment: 10201 df
 Run Time: 06/09/99 10:41 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	.0005	.0010	.0021	.0039	.1089
Stddev	.0011	.0025	.0016	.0013	.0074
%RSD	215.4	265.9	74.02	33.92	6.775

#1	.0005	-.0001	.0010	.0037	.1019
#2	.0018	.0011	.0042	.0027	.1070
#3	.0016	-.0022	.0004	.0061	.1211
#4	-.0002	.0048	.0018	.0033	.1096
#5	-.0009	.0011	.0032	.0037	.1049

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.3468
Stddev	.2118
%RSD	6.3286

#1	3.6917
#2	3.3352
#3	3.1797
#4	3.3601
#5	3.1672

Analysis Report

06/09/99 10:45:46

page 1

Method: ISOU Sample Name: s99t000973_d Operator: kjt
 Comment: 10201 df
 Run Time: 06/09/99 10:44 Type: Unk Mode: CONC Corr.Fact.: 1.000000

Element	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	.0002	.0006	.0006	.0028	.1163
Stddev	.0017	.0018	.0033	.0007	.0143
%RSD	822.2	283.8	544.0	23.38	12.32

#1	.0001	.0022	-.0008	.0033	.1295
#2	.0020	.0023	-.0002	.0022	.1049
#3	-.0018	-.0013	.0046	.0019	.1131
#4	.0019	.0013	.0030	.0033	.1328
#5	-.0011	-.0013	-.0036	.0031	.1011

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.0011
Stddev	.3320
%RSD	11.064

#1	2.4971
#2	3.0520
#3	3.2444
#4	2.8789
#5	3.3332

Analysis Report

06/09/99 10:48:19

page 1

Method: ISOU Sample Name: s99t000973_a Operator: kjt
 Comment: 10201 df
 Run Time: 06/09/99 10:47 Type: Unk Mode: CONC Corr.Fact: 1.000000

Item	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	.0013	.0059	.1416	.0081	19.49
Stddev	.0014	.0025	.0050	.0015	.77
RSD	105.6	42.70	3.563	17.99	3.968

#1	.0012	.0074	.1442	.0084	19.26
#2	.0016	.0079	.1435	.0096	20.69
#3	.0007	.0030	.1347	.0069	19.78
#4	.0032	.0032	.1474	.0094	18.95
#5	.0012	.0078	.1383	.0063	18.77

Item	Ir [193]
Line	193/pulse
Units	Cts/S
Avg	3.0124
Stddev	.1314
RSD	4.3607

#1	3.0709
#2	2.7944
#3	2.9920
#4	3.0749
#5	3.1296

Analysis Report

06/09/99 10:57:12

page 1

Method: ISOU Sample Name: s99t000974 Operator: kjt

Comment: 10201 df

Run Time: 06/09/99 10:55 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	.0007	.0004	.0010	.0027	.0785
Stddev	.0011	.0017	.0007	.0022	.0016
%RSD	169.5	424.3	69.95	83.43	2.028
#1	.0000	.0001	.0012	.0003	.0770
#2	-.0008	.0017	.0013	.0042	.0778
#3	.0017	-.0010	.0002	.0031	.0773
#4	.0018	-.0013	.0019	.0005	.0805
#5	.0005	.0025	.0004	.0052	.0798

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.5194
Stddev	.1679
%RSD	4.7716

#1	3.7787
#2	3.5813
#3	3.4235
#4	3.4662
#5	3.3470

Analysis Report

06/09/99 11:01:03

page 1

Method: ISOU Sample Name: s99t000974_d Operator: kjt
 Comment: 10201 df
 Run Time: 06/09/99 10:59 Type: Unk Mode: CONC Corr.Fact: 1.000000

Line	U_ [233] 233/pulse	U_ [234] 234/pulse	U_ [235] 235/pulse	U_ [236] 236/pulse	U_ [238] 238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	-.0001	.0012	-.0003	.0047	.0775
Stddev	.0016	.0014	.0007	.0017	.0087
RSD	1782.	118.7	216.6	34.95	11.20
1	-.0001	.0018	.0000	.0043	.0878
2	-.0014	.0027	.0005	.0042	.0703
3	-.0019	.0010	-.0013	.0028	.0672
4	.0009	-.0011	.0000	.0073	.0834
5	.0020	.0015	-.0009	.0051	.0788

Int. Std.	Ir [193] 193/pulse
Line	Cts/S
Avg	3.1672
Stddev	.1303
RSD	4.1130

#1	3.0517
#2	3.0764
#3	3.3792
#4	3.1387
#5	3.1899

Analysis Report

06/09/99 11:07:56

Method: ISOU Sample Name: s99t000975 Operator: kjt
 Comment: 10201 df
 Run Time: 06/09/99 11:06 Type: Unk Mode: CONC Corr.Fact: 1.000000

Item	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	.0013	-.0002	.0009	.0049	.1272
Stddev	.0022	.0017	.0014	.0023	.0100
RSD	166.9	844.2	155.6	45.79	7.863

1	-.0010	-.0007	-.0009	.0025	.1132
2	.0011	-.0021	.0000	.0055	.1392
3	.0022	.0024	.0014	.0082	.1331
4	.0046	-.0011	.0027	.0032	.1222
5	-.0003	.0005	.0013	.0053	.1280

Item	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.1540
Stddev	.1331
RSD	4.2189

#1	3.3081
#2	3.1549
#3	2.9423
#4	3.1645
#5	3.2002

Analysis Report

06/09/99 11:10:06

page 1

Method: ISOU Sample Name: s99t000975_d Operator: kjt

Comment: 10201 df

Run Time: 06/09/99 11:08 Type: Unk Mode: CONC Corr.Fact: 1.000000

Item	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	.0017	.0016	.0019	.0049	.1237
Stddev	.0027	.0007	.0021	.0027	.0106
RSD	158.4	45.38	111.8	54.08	8.565
1	-.0018	.0022	.0004	.0087	.1406
2	.0024	.0006	.0007	.0062	.1270
3	-.0002	.0011	.0026	.0016	.1153
4	.0033	.0019	.0052	.0042	.1157
5	.0050	.0021	.0004	.0039	.1197

Item	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.9476
Stddev	.2662
RSD	9.0321

1	2.4999
2	3.0924
3	3.1867
4	2.9418
5	3.0173

Analysis Report

06/09/99 11:14:19

page 1

Method: ISOU Sample Name: ccv Operator: kjt
 Comment: iso-u lcs
 Run Time: 06/09/99 11:13 Type: Unk Mode: CONC Corr.Fact: 1.000000

Line	U_ [233]	U_ [234]	U_ [235]	U_ [236]	U_ [238]
Units	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
	ppb	ppb	ppb	ppb	ppb
Avg	.0000	.0017	.1588	.0061	21.76
Stddev	.001	.0014	.0077	.0010	.23
%RSD	3199.	80.72	4.855	16.76	1.057

#1	-.0002	.0020	.1530	.0056	21.91
#2	-.0007	.0016	.1512	.0048	21.53
#3	.0011	.0035	.1557	.0076	21.52
#4	.0008	-.0004	.1682	.0064	22.03
#5	-.0012	.0017	.1657	.0061	21.81

Int. Std.	Ir [193]
Line	193/pulse
Units	Cts/S
Avg	3.4129
Stddev	.0754
%RSD	2.2100

#1	3.4230
#2	3.5358
#3	3.4012
#4	3.3487
#5	3.3556

Analysis Report

06/09/99 11:19:48

page 1

Method: ISOU Sample Name: ccb

Operator: kjt

Comment: 2% nitric

Run Time: 06/09/99 11:18 Type: Unk

Mode: CONC

Corr.Fact.: 1.000000

Line	U_ [233] 233/pulse	U_ [234] 234/pulse	U_ [235] 235/pulse	U_ [236] 236/pulse	U_ [238] 238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0002	.0016	.0008	.0023	.0016
Stddev	.0008	.0012	.0014	.0012	.0020
RSD	517.6	77.11	168.1	51.13	129.7

#1	.0004	.0012	.0018	.0013	.0033
#2	-.0001	.0031	.0009	.0036	.0036
#3	-.0007	-.0002	.0007	.0020	.0001
#4	.0014	.0020	.0020	.0011	-.0011
#5	-.0002	.0020	-.0014	.0034	.0020

Int. Std.	Ir [193] 193/pulse
Line	Cts/S
Avg	3.6082
Stddev	.0613
%RSD	1.6996

#1	3.7072
#2	3.5600
#3	3.5659
#4	3.5806
#5	3.6273

LABCORE Completed Worklist Report for Worklist# 30103

Analyst: *kjt*

Instrument: ICPMS1

Book#: 990609-1

Method: LA-506-101 Rev/Mod A1

990610-1

Worklist Comment: ICP/MS U-102(SOLID ACID DIGEST) Iso-U

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	ICV		0		MSU-QC U235	QC	0.000142	1.54e-04	108.451	% Recovery
1	ICV		0		MSU-QC U238	QC	0.020	2.16e-02	108.000	% Recovery
2	ICB		0		MSU-QC U233	QC	1	<1.20e-5		ug/mL
2	ICB		0		MSU-QC U234	QC	1	<1.20e-5		ug/mL
2	ICB		0		MSU-QC U235	QC	1	<1.20e-5		ug/mL
2	ICB		0		MSU-QC U236	QC	1	<1.60e-5		ug/mL
2	ICB		0		MSU-QC U238	QC	1	<1.20e-5		ug/mL
3	STD-PREP		0		MSU-A1 U238-A1	SOLID	10.0	9.58e+00	95.800	% Recovery
4	BLNK-PREP		0		MSU-A1 U233-A1	SOLID	1	<1.20e-5		ug/g
4	BLNK-PREP		0		MSU-A1 U234-A1	SOLID	1	<1.20e-5		ug/g
4	BLNK-PREP		0		MSU-A1 U235-A1	SOLID	1	<1.20e-5		ug/g
4	BLNK-PREP		0		MSU-A1 U236-A1	SOLID	1	<1.60e-5		ug/g
4	BLNK-PREP		0		MSU-A1 U238-A1	SOLID	1	3.80e-05	3.800e-005	ug/g
5	SAMPLE	S99T000966	0	A	MSU-A1 U233-A1	SOLID	N/A	< 9.861e-01	0.986	ug/g
5	SAMPLE	S99T000966	0	A	MSU-A1 U234-A1	SOLID	N/A	< 9.861e-01	0.986	ug/g
5	SAMPLE	S99T000966	0	A	MSU-A1 U235-A1	SOLID	N/A	4.556e+01	0.986	ug/g
5	SAMPLE	S99T000966	0	A	MSU-A1 U236-A1	SOLID	N/A	< 1.315e+00	1.315	ug/g
5	SAMPLE	S99T000966	0	A	MSU-A1 U238-A1	SOLID	N/A	6.731e+03	0.986	ug/g
6	DUP	S99T000966	0	A	MSU-A1 U233-A1	SOLID	<9.86e-1	<9.17e-1		RPD
6	DUP	S99T000966	0	A	MSU-A1 U234-A1	SOLID	<9.86e-1	<9.17e-1		RPD
6	DUP	S99T000966	0	A	MSU-A1 U235-A1	SOLID	4.56e+01	4.88e+01	6.780	RPD
6	DUP	S99T000966	0	A	MSU-A1 U236-A1	SOLID	<1.31e0	1.45e+00		RPD
6	DUP	S99T000966	0	A	MSU-A1 U238-A1	SOLID	6.73e+03	7.27e+03	7.714	RPD
7	SPK	S99T000966	0	A	MSU-A1 U235-A1	SOLID	14.22	1.17e+01	82.278	% Recovery
7	SPK	S99T000966	0	A	MSU-A1 U238-A1	SOLID	2000	1.81e+03	90.500	% Recovery
8	SPK-POST	S99T000966	0	A	MSU-A1 U235-A1	SOLID	0.0001422	1.47e-04	103.376	% Recovery
8	SPK-POST	S99T000966	0	A	MSU-A1 U238-A1	SOLID	0.020	2.24e-02	112.000	% Recovery
9	CCV		0		MSU-QC U235	QC	0.000142	1.48e-04	104.225	% Recovery
9	CCV		0		MSU-QC U238	QC	0.020	2.10e-02	105.000	% Recovery
10	CCB		0		MSU-QC U233	QC	1	<1.20e-5		ug/mL
10	CCB		0		MSU-QC U234	QC	1	<1.20e-5		ug/mL
10	CCB		0		MSU-QC U235	QC	1	<1.20e-5		ug/mL
10	CCB		0		MSU-QC U236	QC	1	<1.60e-5		ug/mL
10	CCB		0		MSU-QC U238	QC	1	<1.20e-5		ug/mL

Final page for worklist# 30103

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

HNF-1674 REV. 0

LABCORE Completed Worklist Report for Worklist# 30103

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

		<i>Saul M. Pang</i>					
		Reviewer Signature			06/14/99		Date

06/07/99 15:44

ws2

~~U9900 B.F.T~~ File: U9909A.FXT
8/04/99

Page: 1

LABCORE Data Entry Template for Worklist# 30103

Analyst: KST Instrument: ICPMS1 Book# 990609-1
990610-1

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

Worklist Comment: ICP/MS U-102(SOLID ACID DIGEST) Iso-U

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@MSU-QC	QC		
2	ICB		@MSU-QC	QC		
3	STD-PREP		@MSU-A1	SOLID		
4	BLNK-PREP		@MSU-A1	SOLID		
5	SAMPLE	S99T000966 0 A	@MSU-A1	SOLID	99000200	U-102 GRAB1
Analytes Requested: U233-A1 , U234-A1 , U235-A1 , U236-A1 , U238-A1						
6	DUP	S99T000966 0 A	@MSU-A1	SOLID		
7	SPK	S99T000966 0 A	@MSU-F1	SOLID		
8	SPK-POST	S99T000966 0 A	@MSU-F1	SOLID		
9	CCV		@MSU-QC	QC		
10	CCB		@MSU-QC	QC		

Final page for worklist # 30103

KS Romdebe 6-10-99
Signature Date

Signature Date

std - prep	05-10	201 df	
Blnk - Prep	Direct	1 df	
S99T000966	05-10	41 df	025-10
-d			
-s			
-a			
			401 df

Data Entry Comments:

Scan U966
post spike .02 ml of 10 ppm Uranium

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

Analysis Report

06/10/99 10:20:51

page 1

Method: MS_TUNE Sample Name: Sample-0

Operator:

Comment:

Run Time: 06/10/99 10:19 Type: Unk Mode: INT Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	74420.
Stddev	1012.
%RSD	1.360
#1	73840.
#2	73120.
#3	74020.
#4	74620.
#5	74270.
#6	76270.
#7	75630.
#8	74080.
#9	75120.
#10	73210.

Uploaded & Validated by:
Jan H. Pang
06/14/99

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 208 TO 227.

Analysis Report

06/10/99 10:21:58

page 1

Method: MS_TUNE Sample Name: ms-tune

Operator: kjt

Comment:

Run Time: 06/10/99 10:21 Type: Unk

Mode: INT

Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	74780.
Stddev	738.
%RSD	.9869

#1	74080.
#2	74790.
#3	74820.
#4	73590.
#5	75570.
#6	74930.
#7	76190.
#8	74850.
#9	74180.
#10	74780.

Analysis Report

06/10/99 10:22:58

page 1

Method: MS_TUNE Sample Name: ms-tune

Operator: kjt

Comment:

Run Time: 06/10/99 10:22 Type: Unk

Mode: INT

Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	75750.
Stddev	458.
%RSD	.6046

#1	76130.
#2	76150.
#3	75560.
#4	75980.
#5	75480.
#6	76620.
#7	75060.
#8	75470.
#9	75610.
#10	75450.

Analysis Report

06/10/99 10:25:02

page 1

Method: ISOU

Sample Name: BLANK

Operator:

Comment:

Run Time: 06/10/99 10:23

Type: Std

Mode: IR

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7.523	6.967	7.677	8.058	8.295
Stddev	1.436	.752	.806	.984	1.002
%RSD	19.09	10.80	10.50	12.21	12.08
#1	9.570	7.266	7.266	7.089	8.506
#2	7.259	5.739	7.428	8.609	9.284
#3	6.951	6.781	8.816	6.951	8.985
#4	5.708	7.438	6.746	9.168	6.746
#5	8.128	7.609	8.128	8.474	7.955

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.9029
Stddev	.0561
%RSD	1.9313
#1	2.8214
#2	2.9619
#3	2.9493
#4	2.8906
#5	2.8913

Method : ISOU

Standardzn Report

06/10/99 10:25:15

page 1

El Name	Slope	Y-int	Correlation	Date Stdized
J_[233]	627.3433	7.5230	1.0000000	06/10/99 10:24:59

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	7.523
100ppb U	0.711	0.711	0	0	453.56

U [233]

0

(S) IR⁵⁰⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
J_[234]	628.1258	6.9667	1.0000000	06/10/99 10:24:59

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	6.9667
100ppb U	0.711	0.711	0	0	453.56

U [234]

0

(S) IR⁵⁰⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_[235]	627.1274	7.6766	1.0000000	06/10/99 10:24:59

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	7.6766
100ppb U	0.711	0.711	0	0	453.56

U [235]

0

(S) IR⁵⁰⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_[236]	626.5909	8.0580	1.0000000	06/10/99 10:24:59

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.058
100ppb U	0.711	0.711	0	0	453.56

U [236]

0

(S) IR⁵⁰⁰⁰¹⁰

Concentration

Method : ISOU

Standardzn Report

06/10/99 10:25:16

page 2

El Name	Slope	Y-int	Correlation	Date Stdized
U [238]	603.0090	8.2954	1.0000000	06/10/99 10:24:59

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.2954
100ppb U	99.3	99.3	0	0	59887

U [238]

0

(S) IR 59887

Concentration

Analysis Report

06/10/99 10:27:24

page 1

Method: ISOU

Sample Name: 100ppb U

Operator:

Comment:

Run Time: 06/10/99 10:26 Type: Std

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	487.4	487.4	487.4	487.4	62790.
Stddev	5.1	5.1	5.1	5.1	1617.
%RSD	1.038	1.038	1.038	1.038	2.576
#1	491.5	491.5	491.5	491.5	62900.
#2	486.6	486.6	486.6	486.6	64490.
#3	479.9	479.9	479.9	479.9	63430.
#4	486.5	486.5	486.5	486.5	63010.
#5	492.7	492.7	492.7	492.7	60130.

Int. Std.

Ir[193]

Line	193/pulse
Units	Cts/S
Avg	2.9750
Stddev	.0607
%RSD	2.0422
#1	2.9509
#2	2.8988
#3	2.9661
#4	2.9951
#5	3.0638

Method : ISOU

Standardzn Report

06/10/99 10:27:45

page 1

El Name	Slope	Y-int	Correlation	Date Stdized
U [233]	674.9815	7.5230	1.0000000	06/10/99 10:27:22

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	7.523
100ppb U	0.711	0.711	0	0	487.43

U [233]

0

(S) IR⁵⁴⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U [234]	675.7640	6.9667	1.0000000	06/10/99 10:27:22

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	6.9667
100ppb U	0.711	0.711	0	0	487.43

U [234]

0

(S) IR⁵⁴⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U [235]	674.7656	7.6766	1.0000000	06/10/99 10:27:22

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	7.6766
100ppb U	0.711	0.711	0	0	487.43

U [235]

0

(S) IR⁵⁴⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U [236]	674.2291	8.0580	1.0000000	06/10/99 10:27:22

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.058
100ppb U	0.711	0.711	0	0	487.43

U [236]

0

(S) IR⁵⁴⁰⁰¹⁰

Concentration

Method : ISOU

Standardzn Report

06/10/99 10:27:45

page 2

El Name	Slope	Y-int	Correlation	Date Stdized
U_[238]	632.2544	8.2954	1.0000000	06/10/99 10:27:22

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.2954
100ppb U	99.3	99.3	0	0	62791

U [238]

0

(S) IR 69070110

Concentration

Analysis Report

06/10/99 10:33:03

page 1

Method: ISOU Sample Name: blank

Operator: kjt

Comment: background

Run Time: 06/10/99 10:31 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	.0002	-.0001	-.0009	-.0019	.0018
Stddev	.0018	.0007	.0021	.0013	.0011
%RSD	977.1	577.2	249.4	69.64	64.25
#1	-.0016	.0002	.0014	-.0019	.0029
#2	-.0017	.0000	-.0037	-.0006	.0008
#3	.0022	-.0006	-.0007	-.0007	.0020
#4	.0013	.0007	-.0023	-.0026	.0004
#5	.0007	-.0010	.0009	-.0038	.0029

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.0471
Stddev	.0348
%RSD	1.1412

#1	3.0172
#2	3.0725
#3	3.0420
#4	3.0921
#5	3.0117

Analysis Report

06/10/99 10:35:19

page 1

Method: ISOU Sample Name: icv

Operator: kjt

Comment: iso-u lcs

Run Time: 06/10/99 10:34 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	-.0012	.0004	.1544	.0020	21.63
Stddev	.0012	.0013	.0066	.0028	.34
%RSD	94.34	301.9	4.271	142.3	1.560
#1	.0000	.0013	.1617	.0056	21.30
#2	-.0014	-.0018	.1459	-.0015	22.07
#3	-.0027	.0005	.1493	.0026	21.30
#4	-.0020	.0015	.1561	-.0001	21.67
#5	-.0001	.0007	.1589	.0032	21.82

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.0955
Stddev	.0420
%RSD	1.3580

#1	3.1299
#2	3.0523
#3	3.1493
#4	3.0655
#5	3.0807

Analysis Report

06/10/99 10:40:41

page 1

Method: ISOU

Sample Name: icb

Operator: kjt

Comment: 2% nitric

Run Time: 06/10/99 10:39 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Element	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	-.0022	.0004	-.0021	-.0010	-.0003
Stddev	.0026	.0016	.0009	.0012	.0009
RSD	121.0	367.0	41.07	121.8	294.5
#1	-.0032	-.0010	-.0009	.0009	.0008
#2	-.0055	.0013	-.0017	-.0008	-.0010
#3	-.0030	.0023	-.0022	-.0026	-.0009
#4	-.0008	-.0014	-.0031	-.0014	.0006
#5	.0015	.0009	-.0028	-.0012	-.0011

Int. Std.

Line	Ir[193]
Units	193/pulse
	Cts/S
Avg	3.1602
Stddev	.0486
RSD	1.5382
#1	3.1859
#2	3.1250
#3	3.1663
#4	3.2231
#5	3.1005

Analysis Report

06/10/99 10:42:51

page 1

Method: ISOU

Sample Name: std-prep

Operator: kjt

Comment: 201 df

Run Time: 06/10/99 10:41 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	-.0004	.0016	.3440	.0048	47.65
Stddev	.0019	.0021	.0090	.0015	1.74
%RSD	426.2	132.1	2.625	31.49	3.646
#1	-.0029	.0007	.3316	.0039	46.06
#2	.0018	.0033	.3510	.0026	49.44
#3	.0010	.0034	.3424	.0064	46.18
#4	-.0005	.0024	.3408	.0056	46.98
#5	-.0016	-.0017	.3545	.0056	49.58

Int. Std.

Ir[193]

Line	193/pulse
Units	Cts/S
Avg	3.1992
Stddev	.0370
%RSD	1.1573
#1	3.2280
#2	3.1511
#3	3.2383
#4	3.2068
#5	3.1717

Analysis Report

06/10/99 10:50:13

page 1

Method: ISOU

Sample Name: blnk-prep

Operator: kjt

Comment: 1 df

Run Time: 06/10/99 10:48

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	.0049	.0080	.0068	.0086	.0380
Stddev	.0010	.0043	.0027	.0032	.0035
%RSD	21.31	53.47	40.38	36.84	9.188
#1	.0035	.0080	.0109	.0087	.0359
#2	.0041	.0106	.0035	.0052	.0373
#3	.0057	.0134	.0076	.0132	.0439
#4	.0055	.0026	.0055	.0099	.0381
#5	.0057	.0053	.0064	.0062	.0349

Int. Std.

Ir[193]

Line	193/pulse
Units	Cts/S
Avg	2.2986
Stddev	.1076
%RSD	4.6808

#1	2.2253
#2	2.3380
#3	2.1504
#4	2.4099
#5	2.3695

Analysis Report

06/10/99 11:00:27

page 1

Method: ISOU

Sample Name: s99t000966

Operator: kjt

Comment: 401 df

Run Time: 06/10/99 10:59 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	-.0009	.0028	.5545	.0148	81.91
Stddev	.0012	.0005	.0077	.0035	1.25
%RSD	134.1	18.30	1.382	23.88	1.528
#1	-.0015	.0024	.5552	.0150	81.92
#2	.0004	.0028	.5663	.0129	81.15
#3	-.0024	.0023	.5471	.0191	80.51
#4	-.0011	.0035	.5483	.0100	82.14
#5	.0002	.0032	.5556	.0171	83.83

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
avg	3.3917
Stddev	.0463
%RSD	1.3658

#1	3.3805
#2	3.3389
#3	3.4655
#4	3.3777
#5	3.3957

Analysis Report

06/10/99 11:03:14

page 1

Method: ISOU

Sample Name: s99t000966_d

Operator: kjt

Comment: 401 df

Run Time: 06/10/99 11:01

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	-.0015	.0048	.6379	.0190	95.12
Stddev	.0011	.0024	.0159	.0018	1.69
RSD	69.77	49.91	2.496	9.504	1.773
#1	-.0024	.0048	.6364	.0215	97.01
#2	-.0001	.0012	.6258	.0175	96.21
#3	-.0013	.0073	.6476	.0204	95.00
#4	-.0028	.0042	.6594	.0175	92.57
#5	-.0011	.0067	.6203	.0183	94.80

Int. Std.

Ir [193]

Line	193/pulse
Units	Cts/S
Avg	3.2335
Stddev	.0704
RSD	2.1780
#1	3.1250
#2	3.2201
#3	3.2363
#4	3.2733
#5	3.3128

Analysis Report

06/10/99 11:07:27

page 1

Method: ISOU

Sample Name: s99t000966_s

Operator: kjt

Comment: 401 df

Run Time: 06/10/99 11:06 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	-.0018	.0058	.7629	.0194	113.8
Stddev	.0019	.0024	.0663	.0047	7.7
%RSD	110.7	41.09	8.688	24.08	6.769
#1	.0002	.0081	.8369	.0249	119.4
#2	-.0036	.0054	.7717	.0183	116.5
#3	-.0039	.0031	.6559	.0126	100.2
#4	-.0014	.0085	.7630	.0188	116.7
#5	.0000	.0040	.7869	.0224	116.2

Int. Std.

Ir[193]

Line	193/pulse
Units	Cts/S
Avg	3.5474
Stddev	.2685
%RSD	7.5699
#1	3.3361
#2	3.4367
#3	4.0132
#4	3.4293
#5	3.5218

Analysis Report

06/10/99 11:09:56

page 1

Method: ISOU Sample Name: s99t000966_a Operator: kjt
 Comment: 401 df
 Run Time: 06/10/99 11:08 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	-.0007	.0072	.7010	.0200	104.3
Stddev	.0017	.0005	.0312	.0039	2.7
%RSD	232.3	7.088	4.451	19.67	2.593
#1	.0003	.0077	.7046	.0206	106.5
#2	.0004	.0074	.6958	.0259	106.5
#3	-.0037	.0065	.6906	.0150	100.6
#4	.0000	.0077	.6641	.0188	102.2
#5	-.0007	.0069	.7498	.0196	105.5

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.3473
Stddev	.0500
%RSD	1.4950

#1	3.3727
#2	3.3331
#3	3.3876
#4	3.3775
#5	3.2658

Analysis Report

06/10/99 11:23:02

page 1

Method: ISOU

Sample Name: ccv

Operator: kjt

Comment: iso-u lcs

Run Time: 06/10/99 11:21 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	-.0027	-.0011	.1481	-.0010	20.95
Stddev	.0009	.0017	.0071	.0025	.39
%RSD	32.42	155.3	4.800	237.1	1.838
#1	-.0038	-.0028	.1453	-.0014	21.19
#2	-.0027	-.0002	.1558	-.0035	20.78
#3	-.0014	-.0014	.1516	.0031	20.73
#4	-.0029	.0014	.1373	-.0016	21.50
#5	-.0026	-.0026	.1504	-.0019	20.56

Int. Std.

Ir[193]

Line	193/pulse
Units	Cts/S
Avg	3.4505
Stddev	.0297
%RSD	.85986
#1	3.4392
#2	3.4262
#3	3.4913
#4	3.4242
#5	3.4716

Analysis Report

06/10/99 11:27:51

page 1

Method: ISOU Sample Name: ccb Operator: kjt
 Comment: iso-u lcs
 Run Time: 06/10/99 11:26 Type: Unk Mode: CONC Corr.Fact: 1.000000

Element	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	-.0030	-.0025	-.0026	-.0039	-.0013
stddev	.0014	.0020	.0010	.0020	.0012
RSD	46.05	80.41	38.38	52.36	92.04

1	-.0049	-.0026	-.0012	-.0042	-.0024
2	-.0020	-.0050	-.0024	-.0056	-.0015
3	-.0036	.0000	-.0023	-.0056	-.0023
4	-.0014	-.0037	-.0035	-.0007	.0005
5	-.0032	-.0011	-.0036	-.0033	-.0008

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
avg	3.5130
stddev	.0314
RSD	.89400

=1	3.5550
=2	3.4772
=3	3.5208
=4	3.4867
=5	3.5252

LABCORE Completed Worklist Report for Worklist# 30018

Analyst: pjm

Instrument: CARB2

Book#: _____

Method: LA-342-100 Rev/Mod

Worklist Comment: U102 GRAB1, @TICTOC1, STD: TIC=1.0mL, TOC=0.200mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK		0	@TICTOC1 TIC-02	LIQUID	1	3.00E-1	0.300	ug/mL
1 BLNK		0	@TICTOC1 TOC-02	LIQUID	1	5.70E+0	5.700	ug/mL
2 STD		0	@TICTOC1 TIC-02	LIQUID	6.02E+02	5.99E+2	99.502	% Recovery
2 STD		0	@TICTOC1 TOC-02	LIQUID	3.00E+03	2.78E+3	92.667	% Recovery
3 SAMPLE	S99T000970	0	@TICTOC1 TIC-02	LIQUID	N/A	4.32E+03	5.000	ug/mL
3 SAMPLE	S99T000970	0	@TICTOC1 TOC-02	LIQUID	N/A	1.09E+04	40.000	ug/mL
4 DUP	S99T000970	0	@TICTOC1 TIC-02	LIQUID	4.32E+3	4.18E+3	3.294	RPD
4 DUP	S99T000970	0	@TICTOC1 TOC-02	LIQUID	1.09E+4	1.07E+4	1.852	RPD
5 SPK	S99T000970	0	@TICTOC1 TIC-02	LIQUID	1.00E+02	9.59E+01	95.900	% Recovery
5 SPK	S99T000970	0	@TICTOC1 TOC-02	LIQUID	1.00E+02	8.86E+01	88.600	% Recovery
6 SAMPLE	S99T000971	0	@TICTOC1 TIC-02	LIQUID	N/A	3.44E+03	5.000	ug/mL
6 SAMPLE	S99T000971	0	@TICTOC1 TOC-02	LIQUID	N/A	1.11E+04	40.000	ug/mL
7 DUP	S99T000971	0	@TICTOC1 TIC-02	LIQUID	3.44E+3	3.61E+3	4.823	RPD
7 DUP	S99T000971	0	@TICTOC1 TOC-02	LIQUID	1.11E+4	1.16E+4	4.405	RPD
8 SAMPLE	S99T000972	0	@TICTOC1 TIC-02	LIQUID	N/A	3.87E+03	5.000	ug/mL
8 SAMPLE	S99T000972	0	@TICTOC1 TOC-02	LIQUID	N/A	1.17E+04	40.000	ug/mL
9 DUP	S99T000972	0	@TICTOC1 TIC-02	LIQUID	3.87E+3	3.62E+3	6.676	RPD
9 DUP	S99T000972	0	@TICTOC1 TOC-02	LIQUID	1.17E+4	1.11E+4	5.263	RPD

Final page for worklist# 30018

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

Mary Franz 6/7/99

[Signature] 6/8/99

LABCORE Data Entry Template for Worklist# 30018

Analyst: RLC Instrument: CARB2 Book# TIC - 25N12E

Method: LA-342-100 Rev/Mod F-2 TOC - 34N12A

Worklist Comment: U102 GRAB1, @TICTOC1, STD: TIC=1.0mL, TOC=0.200mL skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	LIQUID		
2	STD				@TICTOC1	LIQUID		
3	SAMPLE	S99T000970 0			@TICTOC1	LIQUID	99000200	U-102 GRAB1
Analytes Requested: TIC-02 , TOC-02								
4	DUP	S99T000970 0			@TICTOC1	LIQUID		
5	SPK	S99T000970 0			@TICTOC1	LIQUID		
6	SAMPLE	S99T000971 0			@TICTOC1	LIQUID	99000200	U-102 GRAB1
Analytes Requested: TIC-02 , TOC-02								
7	DUP	S99T000971 0			@TICTOC1	LIQUID		
8	SAMPLE	S99T000972 0			@TICTOC1	LIQUID	99000200	U-102 GRAB1
Analytes Requested: TIC-02 , TOC-02								
9	DUP	S99T000972 0			@TICTOC1	LIQUID		

Final page for worklist # 30018

RLC 6/6/99
Signature Date

Mary Franz 6/7/99
Signature Date

Data Entry Comments:

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

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

Sample: BASE-2

Date: 06/05/99

Time: 22:08:45

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

Analyst : PJ MCCOWN
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.10	100.00
3	1.01	0.40	75.00
4	1.50	0.80	50.00
5	2.00	0.90	11.11
6	2.50	1.20	25.00
7	3.00	1.50	20.00
8	3.50	1.80	16.67
9	4.00	2.10	14.29
10	4.50	2.20	4.55
11	5.00	2.50	12.00
12	5.50	2.70	7.41
13	6.00	3.00	10.00
14	6.50	3.40	11.76
15	7.00	3.40	0.00
16	7.50	3.90	12.82
17	8.00	4.00	2.50
18	8.50	4.20	4.76
19	9.00	4.60	8.70
20	9.50	4.70	2.13
21	10.00	5.00	6.00
22	10.50	5.10	1.96

BLANK VALUE = 5.1 micrograms carbon
 BLANK FACTOR = 5.1 / 10.49817 = +4.9E-01 ug/min Carbon

Sample Run By: PJ McCown 6/6/99
 PJ MCCOWN: 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 230 TO 238.

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
 TIC/TOC REV. 2.0
 <<< BLANK ANALYSIS >>>

Sample: BASE-2

Date: 06/05/99

Time: 22:27:37

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

Analyst : PJ MCCOWN
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	=== Analysis Time ===	==== Coulometer ====	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.50	100.00
3	1.01	0.70	28.57
4	1.51	1.50	53.33
5	2.01	1.50	70.00
6	2.50	11.30	55.75
7	3.00	15.70	28.03
8	3.50	18.10	13.26
9	4.00	19.50	7.18
10	4.50	20.60	5.34
11	5.00	21.60	4.63
12	5.50	22.90	5.68
13	6.00	23.70	3.38
14	6.50	24.50	3.27
15	7.00	24.90	1.61
16	7.50	25.30	1.58
17	8.00	25.80	1.94
18	8.50	26.00	0.77
19	9.00	26.40	1.52
20	9.50	26.60	0.75
21	10.00	26.80	0.75
22	10.50	27.10	1.11

BLANK VALUE = 27.1 micrograms carbon
 BLANK FACTOR = 27.1 / 10.49915 = +2.58E+00 ug/min Carbon

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

Sample Run By: PJ McCown 6/6/99
 PJ MCCOWN 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD-2

Date: 06/05/99

Time: 22:52:42

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

Analyst : PJ MCCOWN
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.50	0.10	100.00
3	1.00	4.30	97.67
4	1.51	74.20	94.20
5	2.00	236.50	68.63
6	2.50	405.50	41.68
7	3.00	512.20	20.83
8	3.50	564.40	9.25
9	4.00	584.90	3.50
10	4.50	593.10	1.38
11	5.00	596.30	0.54
12	5.50	598.00	0.28
13	6.00	599.00	0.17
14	6.50	599.90	0.15
15	7.00	600.50	0.10
16	7.50	601.20	0.12
17	8.00	601.60	0.07
18	8.50	602.30	0.12
19	9.00	602.60	0.05
20	9.50	603.20	0.10
21	10.03	603.40	0.03
22	10.53	603.80	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 5.144581 micrograms carbon

BLANK FACTOR = 5.144581 / 10.49915 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(603.8 - 5.160731) (1) / (1000) = +5.986E-01 g/L Carbon
 (603.8 - 5.160731) (1) / (1000) (12) = +4.989E-02 Molar Carbon

Sample Run By: PJ McCown 6/6/99
PJ MCCOWN 00000

1.0ML 25N12E

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD-2

Date: 06/05/99

Time: 23:20:41

Sample Size = 200 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.58 ug/minute C

Analyst : PJ MCCOWN
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.00	1.10	63.64
4	1.51	35.30	96.88
5	2.00	209.50	83.15
6	2.50	418.90	49.99
7	3.00	516.40	18.88
8	3.50	552.10	6.47
9	4.00	565.70	2.40
10	4.50	571.50	1.01
11	5.00	574.30	0.49
12	5.50	576.20	0.33
13	6.00	577.40	0.21
14	6.50	578.50	0.19
15	7.00	579.40	0.16
16	7.50	580.00	0.10
17	8.00	580.70	0.12
18	8.50	581.30	0.10
19	9.00	581.80	0.09
20	9.50	582.40	0.10
21	10.00	582.80	0.07
22	10.50	583.10	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 27.0878 micrograms carbon

BLANK FACTOR = 27.0878 / 10.49915 = 2.578E+00 ug/min Carbon

SAMPLE RESULTS:

(583.1 - 27.0878) (1) / (200) = +2.780E+00 g/L Carbon
(583.1 - 27.0878) (1) / (200) (12) = +2.317E-01 Molar Carbon

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

Sample Run By: PJ McCown 6/6/99
PJ MCCOWN 00000
-200ML 34N12A

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLNK-2

Date: 06/05/99

Time: 23:36:37

Sample Size = 1 uL

Analyst : PJ MCCOWN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .49 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.20	100.00
3	1.01	0.50	60.00
4	1.51	0.70	28.57
5	2.00	0.90	22.22
6	2.50	1.20	25.00
7	3.00	1.40	14.29
8	3.50	1.60	12.50
9	4.00	1.80	11.11
10	4.50	2.10	14.29
11	5.00	2.20	4.55
12	5.50	2.40	8.33
13	6.00	2.80	14.29
14	6.50	3.00	6.67
15	7.00	3.20	6.25
16	7.50	3.30	3.03
17	8.00	3.60	8.33
18	8.50	3.80	5.26
19	9.00	4.00	5.00
20	9.50	4.20	4.76
21	10.00	4.40	4.55
22	10.50	4.80	8.33

USER INPUT BLANK VALUE

BLANK VALUE = 5.144581 micrograms carbon

BLANK FACTOR = 5.144581 / 10.49915 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(4.8 - 5.144581) (1)/(1) - = < 5.00 E-3 g/L Carbon
 (4.8 - 5.144581) (1)/(1) (12) = < 4.17 E-4 Molar Carbon

Sample Run By: PJ MCCOWN 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLNK-2

Date: 06/05/99

Time: 23:50:14

Sample Size = 1 uL

Analyst : PJ MCCOWN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.58 ug/minute C

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.30	100.00
3	1.01	0.50	40.00
4	1.51	1.00	50.00
5	2.00	2.20	54.55
6	2.50	6.40	65.63
7	3.00	11.00	41.82
8	3.50	13.70	19.71
9	4.00	15.40	11.04
10	4.50	16.50	6.67
11	5.00	17.30	4.62
12	5.50	17.80	2.81
13	6.00	18.50	3.78
14	6.50	19.10	3.14
15	7.00	19.40	1.55
16	7.50	19.70	1.52
17	8.00	20.20	2.48
18	8.50	20.40	0.98
19	9.00	20.70	1.45
20	9.50	21.00	1.43
21	10.00	21.30	1.41
22	10.50	21.40	0.47

USER INPUT BLANK VALUE

BLANK VALUE = 27.0878 micrograms carbon

BLANK FACTOR = 27.0878 / 10.49915 = +2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(21.4 - 27.08528) (1)/(1) = < 5.00 E-3 g/L Carbon
 (21.4 - 27.08528) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

PJ
PJ MCCOWN

00000

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000970

Date: 06/06/99

Time: 00:02:46

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

Analyst : PJ MCCOWN
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.01	0.50	20.00
4	1.51	2.50	80.00
5	2.00	45.90	94.55
6	2.50	163.30	71.89
7	3.00	279.60	41.60
8	3.50	355.00	21.24
9	4.00	393.40	9.76
10	4.50	412.20	4.56
11	5.00	420.70	2.02
12	5.50	425.10	1.04
13	6.00	427.90	0.65
14	6.50	429.80	0.44
15	7.00	431.30	0.35
16	7.50	432.80	0.35
17	8.00	433.70	0.21
18	%-1431.50	434.50	0.18
19	%-1431.00	435.40	0.21
20	%-1430.50	436.00	0.14
21	%-1430.00	436.80	0.18
22	%-1429.50	437.50	0.16

USER INPUT BLANK VALUE

BLANK VALUE = 5.144581 micrograms carbon

BLANK FACTOR = 5.144581 / 10.49915 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(437.5 --700.4554)(1)/(1) = +1.138E+03 g/L Carbon
(437.5 --700.4554)(1)/(1)(12) = +9.483E+01 Molar Carbon

Sample Run By: PJ McCown
PJ MCCOWN 00000
.100ML

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000970

Date: 06/06/99

Time: 01:33:14

Sample Size = 1 uL

Analyst : PJ MCCOWN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.58 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.30	100.00
3	1.00	0.60	50.00
4	1.50	4.20	85.71
5	2.00	63.40	93.38
6	2.50	305.30	79.23
7	3.00	667.50	54.26
8	3.50	891.00	25.08
9	4.00	996.40	10.58
10	4.50	1050.60	5.16
11	5.00	1079.40	2.67
12	5.50	1094.70	1.40
13	6.00	1103.30	0.78
14	6.50	1108.30	0.45
15	7.00	1111.80	0.31
16	7.50	1114.50	0.24
17	8.00	1116.30	0.16
18	8.50	1118.00	0.15
19	9.00	1119.20	0.11
20	9.50	1120.20	0.09
21	10.00	1120.90	0.06
22	10.50	1121.50	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 27.0878 micrograms carbon

BLANK FACTOR = 27.0878 / 10.49915 = +2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(1121.5 - 27.08742) (1)/(1) = +1.0944E+03 g/L Carbon
 (1121.5 - 27.08742) (1)/(1) (12) = +9.1201E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!!>>>>

Sample Run By:

PJ MCCOWN

00000

.100 mL

237

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 970 DUP

Date: 06/06/99

Time: 01:48:43

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .49 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.20	0.00
2	1.01	0.70	71.43
3	1.50	17.60	96.02
4	2.00	119.40	85.26
5	2.50	250.70	52.37
6	3.00	335.30	25.23
7	3.50	377.10	11.08
8	4.00	396.90	4.99
9	4.50	406.40	2.34
10	5.00	410.90	1.10
11	5.50	413.50	0.63
12	6.00	415.20	0.41
13	6.50	416.50	0.31
14	7.00	417.80	0.31
15	7.50	418.80	0.24
16	8.00	419.70	0.21
17	8.50	420.40	0.17
18	9.00	421.10	0.17
19	9.50	421.80	0.17
20	10.00	422.30	0.12
21	10.50	422.90	0.14
22	11.00	423.50	0.14

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(423.5 - 5.38902) (1)/(1) = +4.181E+02 g/L Carbon
 (423.5 - 5.38902) (1)/(1) (12) = +3.484E+01 Molar Carbon

Sample Run By:

PJ MCCOWN

00000

.100ML

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 970 DUP

Date: 06/06/99

Time: 02:02:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.58 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.50	0.00
2	1.01	2.10	76.19
3	1.50	56.00	96.25
4	2.00	312.50	82.08
5	2.50	672.80	53.55
6	3.00	870.20	22.68
7	3.50	969.60	10.25
8	4.00	1022.30	5.16
9	4.50	1052.60	2.88
10	5.00	1068.60	1.50
11	5.50	1078.40	0.91
12	6.00	1083.60	0.48
13	6.50	1087.30	0.34
14	7.00	1090.00	0.25
15	7.50	1092.10	0.19
16	8.00	1093.70	0.15
17	8.50	1095.00	0.12
18	9.00	1095.90	0.08
19	9.50	1096.90	0.09
20	10.00	1097.70	0.07
21	10.50	1098.30	0.05
22	11.00	1099.10	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(1099.1 - 28.37441) (1)/(1) = +1.0707E+03 g/L Carbon
 (1099.1 - 28.37441) (1)/(1) (12) = +8.9227E+01 Molar Carbon

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

Sample Run By: *PJM*

PJ MCCOWN

00000

0100 mL

J. Blw
6/6/99

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 970 SPK

Date: 06/06/99

Time: 02:14:32

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .49 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	1.20	0.00
2	1.00	1.80	33.33
3	1.50	6.00	70.00
4	2.00	90.60	93.38
5	2.50	306.30	70.42
6	3.00	502.50	39.04
7	3.50	611.90	17.88
8	4.00	668.00	8.40
9	4.50	695.20	3.91
10	5.00	707.30	1.71
11	5.50	712.30	0.70
12	6.00	715.50	0.45
13	6.50	717.30	0.25
14	7.00	718.90	0.22
15	7.50	720.20	0.18
16	8.00	721.30	0.15
17	8.50	722.40	0.15
18	9.00	723.50	0.15
19	9.50	724.10	0.08
20	10.00	724.90	0.11
21	10.50	725.60	0.10
22	11.03	726.30	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(726.3 - 5.405518) (1)/(1) =

+7.209E+02 g/L Carbon

(726.3 - 5.405518) (1)/(1) (12) =

+6.007E+01 Molar Carbon

Sample Run By:

PJM
PJ MCCOWN

00000

.100ML
+.500ML 25N125

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 970 SPK

Date: 06/06/99

Time: 02:27:18

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.58 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.40	64.29
3	1.51	22.30	93.72
4	2.00	175.40	87.29
5	2.50	586.70	70.10
6	3.01	991.10	40.80
7	3.50	1183.10	16.23
8	4.00	1270.00	6.84
9	4.50	1317.80	3.63
10	5.00	1344.70	2.00
11	5.50	1358.80	1.04
12	6.00	1366.70	0.58
13	6.50	1371.80	0.37
14	7.00	1375.20	0.25
15	7.50	1377.90	0.20
16	8.00	1380.20	0.17
17	8.50	1381.80	0.12
18	9.00	1383.20	0.10
19	9.50	1384.40	0.09
20	10.00	1385.60	0.09
21	10.50	1386.40	0.06
22	11.00	1387.20	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(1387.2 - 28.37701) (1)/(1) = +1.3588E+03 g/L Carbon

(1387.2 - 28.37701) (1)/(1) (12) = +1.1324E+02 Molar Carbon

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

Sample Run By:

PJM
PJ MCCOWN
.100mL

00000

4-100mL 34N12A

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000971

Date: 06/06/99

Time: 02:39:46

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .49 ug/minute. C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference
1	0.51	0.70	0.00
2	1.01	1.30	46.15
3	1.51	11.70	88.89
4	2.00	69.50	83.17
5	2.50	172.70	59.76
6	3.00	252.90	31.71
7	3.50	298.70	15.33
8	4.00	321.70	7.15
9	4.50	331.90	3.07
10	5.00	336.40	1.34
11	5.50	339.00	0.77
12	6.00	340.50	0.44
13	6.50	342.00	0.44
14	7.00	343.10	0.32
15	7.50	344.20	0.32
16	8.00	345.00	0.23
17	8.50	345.80	0.23
18	9.00	346.60	0.23
19	9.50	347.30	0.20
20	10.00	348.00	0.20
21	10.50	348.60	0.17
22	11.00	349.30	0.20

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+4.9E-01

ug/min Carbon

SAMPLE RESULTS:

(349.3 - 5.389439) (1)/(1) =

+3.439E+02

g/L Carbon

(349.3 - 5.389439) (1)/(1) (12) =

+2.866E+01

Molar Carbon

Sample Run By:

PJ MCCOWN

00000

.100mL

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000971

Date: 06/06/99

Time: 02:53:36

Sample Size = 1 uL

Analyst : PJ MCCOWN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.58 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	1.20	41.67
3	1.50	12.70	90.55
4	2.00	129.40	90.19
5	2.50	469.10	72.42
6	3.00	788.80	40.53
7	3.50	946.90	16.70
8	4.00	1027.20	7.82
9	4.50	1073.00	4.27
10	5.00	1099.20	2.38
11	5.50	1112.90	1.23
12	6.00	1120.10	0.64
13	6.50	1124.70	0.41
14	7.00	1128.30	0.32
15	7.50	1130.60	0.20
16	8.00	1132.50	0.17
17	8.50	1134.10	0.14
18	9.00	1135.30	0.11
19	9.50	1136.20	0.08
20	10.00	1137.20	0.09
21	10.50	1138.00	0.07
22	11.00	1138.40	0.04

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+2.6E+00

ug/min. Carbon

SAMPLE RESULTS:

(1138.4 - 28.37441) (1) / (I) =

+1.1100E+03 g/L Carbon

(1138.4 - 28.37441) (1) / (1) (12) =

+9.2502E+01 Molar Carbon

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

Sample Run By:

PJ
PJ MCCOWN

00000

.100mL

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 971 DUP

Date: 06/06/99

Time: 03:06:48

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .49 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.70	0.00
2	1.01	1.10	36.36
3	1.50	8.60	87.21
4	2.01	68.80	87.50
5	2.51	169.20	59.34
6	3.00	252.80	33.07
7	3.50	304.30	16.92
8	4.00	332.50	8.48
9	4.50	345.50	3.76
10	5.00	351.40	1.68
11	5.50	354.80	0.96
12	6.00	356.40	0.45
13	6.50	357.90	0.42
14	7.00	359.40	0.42
15	7.50	360.30	0.25
16	8.00	361.30	0.28
17	8.50	362.00	0.19
18	9.00	363.00	0.28
19	9.50	363.70	0.19
20	10.00	364.30	0.16
21	10.50	365.00	0.19
22	11.00	365.70	0.19

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(365.7 - 5.389432) (1) / (1) =

+3.603E+02 g/L Carbon

(365.7 - 5.389432) (1) / (1) (12) =

+3.003E+01 Molar Carbon

Sample Run By:

PJM
PJ MCCOWN
.100 mL

00000

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 971 DUP

Date: 06/06/99

Time: 03:19:37

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.58 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference
1	0.51	0.60	0.00
2	1.01	1.30	53.85
3	1.50	9.40	86.17
4	2.00	110.40	91.49
5	2.50	463.20	76.17
6	3.00	818.30	43.39
7	3.50	989.40	17.29
8	4.00	1072.30	7.73
9	4.50	1119.80	4.24
10	5.00	1147.00	2.37
11	5.50	1160.70	1.18
12	6.00	1168.00	0.63
13	6.50	1172.50	0.38
14	7.00	1175.60	0.26
15	7.50	1178.10	0.21
16	8.00	1179.80	0.14
17	8.50	1181.10	0.11
18	9.00	1182.20	0.09
19	9.50	1183.20	0.08
20	10.00	1184.10	0.08
21	10.50	1184.80	0.06
22	11.00	1185.50	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(1185.5 - 28.37484) (1)/(1) =

+1.1571E+03 g/L Carbon

(1185.5 - 28.37484) (1)/(1) (12) =

+9.6427E+01 Molar Carbon

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

Sample Run By: *PJM*

PJ MCCOWN

00000

.100 mL

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000972 Date: 06/06/99 Time: 03:32:04

Sample Size = 1 uL Analyst : PJ MCCOWN
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .49 ug/minute C % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.00	50.00
3	1.50	7.00	85.71
4	2.00	59.30	88.20
5	2.50	163.70	63.78
6	3.00	257.80	36.50
7	3.50	320.50	19.56
8	4.00	355.10	9.74
9	4.50	371.60	4.44
10	5.00	377.80	1.64
11	5.50	380.80	0.79
12	6.00	382.80	0.52
13	6.50	384.20	0.36
14	7.00	385.40	0.31
15	7.50	386.40	0.26
16	8.00	387.40	0.26
17	8.50	388.60	0.31
18	9.00	389.00	0.10
19	9.50	389.90	0.23
20	10.00	390.60	0.18
21	10.50	391.30	0.18
22	11.00	391.90	0.15

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 = +4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(391.9 - 5.38902) (1)/(1) = +3.865E+02 g/L Carbon
(391.9 - 5.38902) (1)/(1) (12) = +3.221E+01 Molar Carbon

Sample Run By: *PJ McCown*
PJ MCCOWN
.100ML

00000

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000972

Date: 06/06/99

Time: 03:44:47

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.58 ug/minute C

Analyst : PJ MCCOWN

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	33.70	96.14
4	2.00	340.10	90.09
5	2.50	789.60	56.93
6	3.00	995.90	20.71
7	3.50	1085.00	8.21
8	4.00	1133.50	4.28
9	4.50	1159.80	2.27
10	5.00	1172.60	1.09
11	5.50	1178.70	0.52
12	6.00	1182.40	0.31
13	6.50	1185.10	0.23
14	7.00	1187.30	0.19
15	7.50	1188.80	0.13
16	8.00	1190.00	0.10
17	8.50	1191.00	0.08
18	9.00	1191.90	0.08
19	9.50	1192.60	0.06
20	10.00	1193.40	0.07
21	10.50	1194.20	0.07
22	11.00	1194.90	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 = +2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(1194.9 - 28.37697) (1)/(1) = +1.1665E+03 g/L Carbon

(1194.9 - 28.37697) (1)/(1) (12) = +9.7210E+01 Molar Carbon

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

Sample Run By:

R/k
PJ MCCOWN

00000

100ml

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 972 DUP

Date: 06/06/99

Time: 04:06:26

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .49 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.60	0.00
2	1.00	1.10	45.45
3	1.50	3.40	67.65
4	2.00	30.70	88.93
5	2.50	119.10	74.22
6	3.00	223.30	46.66
7	3.50	289.30	22.81
8	4.00	326.10	11.28
9	4.50	344.80	5.42
10	5.00	352.10	2.07
11	5.50	355.60	0.98
12	6.00	357.60	0.56
13	6.50	359.10	0.42
14	7.00	360.50	0.39
15	7.50	361.40	0.25
16	8.00	362.30	0.25
17	8.50	363.20	0.25
18	9.00	364.10	0.25
19	9.50	364.90	0.22
20	10.03	365.60	0.19
21	10.53	366.30	0.19
22	11.03	366.80	0.14

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+4.9E-01 ug/min Carbon

SAMPLE RESULTS:

(366.8 - 5.405507) (1) / (1) =

+3.614E+02 g/L Carbon

(366.8 - 5.405507) (1) / (1) (12) =

+3.012E+01 Molar Carbon

Sample Run By:

PJM
PJ MCCOWN

00000

.100 ML

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 972 DUP

Date: 06/06/99

Time: 04:19:55

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.58 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.60	0.00
2	1.01	3.50	82.86
3	1.50	64.20	94.55
4	2.00	377.20	82.98
5	2.50	757.50	50.20
6	3.00	933.10	18.82
7	3.50	1017.30	8.28
8	4.00	1066.10	4.58
9	4.50	1094.70	2.61
10	5.00	1109.30	1.32
11	5.50	1116.70	0.66
12	6.00	1121.20	0.40
13	6.50	1124.50	0.29
14	7.00	1126.90	0.21
15	7.50	1128.60	0.15
16	8.00	1130.00	0.12
17	8.50	1131.30	0.11
18	9.00	1132.20	0.08
19	9.50	1133.20	0.09
20	10.00	1133.90	0.06
21	10.50	1134.50	0.05
22	11.00	1135.30	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+2.6E+00 ug/min Carbon

SAMPLE RESULTS:

(1135.3 - 28.37701) (1)/(1) =

+1.1069E+03 g/L Carbon

(1135.3 - 28.37701) (1)/(1)(12) =

+9.2244E+01 Molar Carbon

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

Sample Run By:

PJM
PJ MCCOWN

00000

-100ML

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (F-2)

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)	4.8	21.4
30018	µg of Carbon from Baseline (C2)	5.1	27.1
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
99002335			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
BLNK			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
06/07/99			
Analysis Date			
06/06/99			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:00 AM		5	40
Sample Point	µg of Carbon	3.00E-01	5.70E+00
U102 GRAB1			

Data Entered By:	MF	Date:	06/07/99
Signature of Chemist:	<i>MF</i>	Date:	

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (F-2)

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)	603.8	583.1
30018	µg of Carbon from Baseline (C2)	5.1	27.1
Test Code	Standard Book Number	25N12E	34N12A
@TIC/TOC1	Standard Value (µg/ml)	602	3000
Matrix	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		
LIQUID			
Batch Number			
99002335			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
STD			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
06/07/99			
Analysis Date			
06/06/99			
Analysis Time	Method Detection Limit in µg/mL	5	40
05:00 AM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.99E+02	2.78E+03
U102 GRAB1	Percent Standard Recovery	99.5	92.7

Data Entered By:	MF	Date:	06/07/99
Signature of Chemist:	<i>MF</i>	Date:	

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (F-2)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	437.5	1121.5
30018	µg of Carbon from Baseline (C2)	5.1	27.1
Test Code			
@TICTOC1			
Matrix	<p>µg of Carbon/mL = (C1-C2) * DF / SS</p> <p>µg of Carbon/mL for TIC = 5 if C1 < C2</p> <p>µg of Carbon/mL for TOC = 40 if C1 < C2</p>		
LIQUID			
Batch Number			
99002335			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S99T000970			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
06/07/99			
Analysis Date			
06/06/99			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:00 AM		5	40
Sample Point	µg of Carbon/mL	4.32E+03	1.09E+04
U102 GRAB1			

Data Entered By:	MF	Date:	06/07/99
Signature of Chemist:	<i>MF</i>	Date:	

WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (F-2)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	423.5	1099.1
30018	µg of Carbon from Baseline (C2)	5.1	27.1
Test Code	Known µg of C from Original Sample	4.32E+3	1.09E+4
@TICTOC1			
Matrix	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		
LIQUID			
Batch Number			
99002335			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S99T000970			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
06/07/99			
Analysis Date			
06/06/99			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:00 AM		5	40
Sample Point	µg of Carbon/mL	4.18E+03	1.07E+04
U102 GRAB1			

Data Entered By:	MF	Date:	06/07/99
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: SPIKE5

TIC/TOC : LA-342-100 (F-2) 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)	437.5	1121.5
30018	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	0.1000
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	726.3	1387.2
LIQUID	Spike Book Number	25N12E	34N12A
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	3000
99002335	µg C in baseline (BL)	5.1	27.1

Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = ((C2-BL) - (C1-BL) * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100		
S99T000970			
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			
MF			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
06/07/99			
Analysis Date			
06/06/99			
Analysis Time		TIC	TOC
05:00 AM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.78E+02	2.66E+03
U102 GRAB1	Percent Spike Recovery	95.9	88.6

Data Entered By:	MF	Date:	06/07/99
Signature of Chemist:	<i>MF</i>	Date:	

WORKBOOK PAGE: SAM6

TIC/TOC : LA-342-100 (F-2)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	349.3	1138.4
30018	µg of Carbon from Baseline (C2)	5.1	27.1
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
99002335			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S99T000971			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
06/07/99			
Analysis Date			
06/06/99			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:00 AM		5	40
Sample Point	µg of Carbon/mL	3.44E+03	1.11E+04
U102 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

Data Entered By:	MF	Date:	06/07/99
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: DUP7

TIC/TOC : LA-342-100 (F-2)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	365.7	1185.5
30018	µg of Carbon from Baseline (C2)	5.1	27.1
Test Code	Known µg of C from Original Sample	3.44E+3	1.11E+4
@TICTOC1			
Matrix	<p>µg of Carbon/mL = (C1-C2) * DF / SS</p> <p>µg of Carbon/mL for TIC = 5 if C1 < C2</p> <p>µg of Carbon/mL for TOC = 40 if C1 < C2</p>		
LIQUID			
Batch Number			
99002335			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S99T000971			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
06/07/99			
Analysis Date			
06/06/99			
Analysis Time	Method Detection Limit in µg/mL	5	40
05:00 AM			
Sample Point	µg of Carbon/mL	3.61E+03	1.16E+04
U102 GRAB1			

Data Entered By:	MF	Date:	06/07/99
Signature of Chemist:	<i>MF</i>	Date:	

WORKBOOK PAGE: SAM8

TIC/TOC : LA-342-100 (F-2)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	391.9	1194.9
30018	µg of Carbon from Baseline (C2)	5.1	27.1
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
99002335			
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 #			
S99T000972			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
06/07/99			
Analysis Date			
06/06/99			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:00 AM		5	40
Sample Point	µg of Carbon/mL	3.87E+03	1.17E+04
U102 GRAB1			

Data Entered By:	MF	Date:	06/07/99
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: DUP9

TIC/TOC : LA-342-100 (F-2)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	366.8	1135.3
30018	µg of Carbon from Baseline (C2)	5.1	27.1
Test Code	Known µg of C from Original Sample	3.87E+3	1.17E+4
@TICTOC1			
Matrix	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		
LIQUID			
Batch Number			
99002335			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S99T000972			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
06/07/99			
Analysis Date			
06/06/99			
Analysis Time	Method Detection Limit in µg/mL	5	40
05:00 AM			
Sample Point	µg of Carbon/mL	3.62E+03	1.11E+04
U102 GRAB1			

Data Entered By:	MF	Date:	06/07/99
Signature of Chemist:	<i>NA</i>	Date:	

LABCORE Completed Worklist Report for Worklist# 30143

Analyst: jds

Instrument: CARB2

Book#: _____

Method: LA-342-100 Rev/Mod _____

Worklist Comment: U102 GRAB @TICTOC SOLID RERUN MF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@TICTOC1 TIC-02	SOLID	6.02E+02	6.04E+2	100.332 % Recovery	
1 STD		0	@TICTOC1 TOC-02	SOLID	3.00E+03	2.72E+3	90.667 % Recovery	
2 SAMPLE	S99T000960	0	@TICTOC1 TIC-02	SOLID	N/A	6.08E+03	5.000 ug/g	
2 SAMPLE	S99T000960	0	@TICTOC1 TOC-02	SOLID	N/A	7.94E+03	40.000 ug/g	
3 DUP	S99T000960	0	@TICTOC1 TIC-02	SOLID	6.08E+3	9.43E+3	43.198 RPD	
3 DUP	S99T000960	0	@TICTOC1 TOC-02	SOLID	7.94E+3	4.99E+3	45.630 RPD	
4 TRIPL	S99T000960	0	@TICTOC1 TIC-02	SOLID	6.08E+3	7.54E+3	21.439 RPD	
4 TRIPL	S99T000960	0	@TICTOC1 TOC-02	SOLID	7.94E+3	1.16E+4	37.462 RPD	
5 SPK	S99T000960	0	@TICTOC1 TIC-02	SOLID	1.00E+02	1.59E+02	159.000 % Recovery	
5 SPK	S99T000960	0	@TICTOC1 TOC-02	SOLID	1.00E+02	1.19E+02	119.000 % Recovery	

Final page for worklist# 30143

Analyst Signature Date

Mary Franz 6/15/99

Analyst Signature Date

[Signature] 6/17/99

Reviewer/Signature Date

HNF-1674 REV. 0

06/10/99 13:55

Page: 1

ws2

LABCORE Data Entry Template for Worklist# 30143

Analyst: Jds Instrument: CARB2 Book# 25 N12E
34 N12A

Method: LA-342-100 Rev/Mod F-2

Worklist Comment: U102 GRAB @TICTOC SOLID RERUN MF

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@TICTOC1	SOLID		
2 SAMPLE	S99T000960 0		@TICTOC1	SOLID	99000200	U-102 GRAB1
Analytes Requested: TIC-02 , TOC-02						
3 DUP	S99T000960 0		@TICTOC1	SOLID		
4 SPK	S99T000960 0		@TICTOC1	SOLID		

Final page for worklist # 30143

Jds 6/15/99
Signature Date

Mary Jones 6/15/99
Signature Date

Data Entry Comments:

Ran a Trip on 960

Sample was not Homogenous

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

HNF-1674 REV. 0

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

Sample: BASE

Date: 06/14/99

Time: 19:27:40

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

Analyst : JD SPELLMAN
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.10	100.00
3	1.01	0.40	75.00
4	1.50	0.60	33.33
5	2.00	1.10	45.45
6	2.50	1.40	21.43
7	3.00	1.70	17.65
8	3.50	1.90	10.53
9	4.00	2.10	9.52
10	4.50	2.30	8.70
11	5.00	2.50	8.00
12	5.50	2.60	3.85
13	6.00	2.80	7.14
14	6.50	3.00	6.67
15	7.00	3.10	3.23
16	7.50	3.30	6.06
17	8.00	3.50	5.71
18	8.50	3.60	2.78
19	9.00	3.80	5.26
20	9.50	4.00	5.00
21	10.00	4.10	2.44
22	10.50	4.30	4.65

BLANK VALUE = 4.3 micrograms carbon
BLANK FACTOR = 4.3 / 10.49829 = 0.40950 +4.1E-01 ug/min Carbon

Sample Run By:

JD Spellman
JD SPELLMAN

6-15-99

22222

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 261 TO 281.

HNF-1674 REV. 0

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

Sample: BASE Date: 06/14/99 Time: 19:40:23

Sample Size = 1 uL Analyst : JD SPELLMAN
Dil Factor = 1 Min Readings = 22
Blank ID # = BASE Max Readings = 22
Blank Value = N/A % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.20	100.00
3	1.00	0.70	71.43
4	1.50	5.80	87.93
5	2.00	10.70	45.79
6	2.50	14.70	27.21
7	3.00	17.50	16.00
8	3.50	19.20	8.85
9	4.00	20.10	4.48
10	4.50	20.70	2.90
11	5.00	21.10	1.90
12	5.50	21.50	1.86
13	6.00	21.90	1.83
14	6.50	22.10	0.90
15	7.00	22.50	1.78
16	7.50	22.80	1.32
17	8.00	23.00	0.87
18	8.50	23.30	1.29
19	9.00	23.50	0.85
20	9.50	24.00	2.08
21	10.00	24.20	0.83
22	10.50	24.60	1.63

BLANK VALUE = 24.6 micrograms carbon
BLANK FACTOR = 24.6 / 10.49805 = +2.34E+00 ug/min Carbon

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

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 06/14/99

Time: 19:56:21

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .41 ug/minute C

Analyst : JD SPELLMAN
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.50	0.20	100.00
3	1.00	0.70	71.43
4	1.50	27.30	97.44
5	2.00	146.20	81.33
6	2.50	303.00	51.75
7	3.00	433.20	30.06
8	3.50	517.40	16.27
9	4.00	563.70	8.21
10	4.50	587.20	4.00
11	5.00	596.90	1.63
12	5.50	601.30	0.73
13	6.00	602.90	0.27
14	6.50	604.20	0.22
15	7.00	605.00	0.13
16	7.50	605.50	0.08
17	8.00	606.20	0.12
18	8.50	606.50	0.05
19	9.00	607.10	0.10
20	9.50	607.40	0.05
21	10.00	607.80	0.07
22	10.50	608.10	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 4.304199 micrograms carbon

BLANK FACTOR = 4.304199 / 10.49805 = +4.1E-01 ug/min Carbon

SAMPLE RESULTS:

(608.1 - 4.304199) (1) / (1) = +6.038E+02 g/L Carbon
(608.1 - 4.304199) (1) / (1) (12) = +5.032E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: STD

Date: 06/14/99

Time: 20:08:50

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.43 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.20	100.00
3	1.01	21.00	99.05
4	1.50	186.70	88.75
5	2.00	396.80	52.95
6	2.50	501.80	20.92
7	3.00	537.90	6.71
8	3.50	551.20	2.41
9	4.00	556.60	0.97
10	4.50	559.30	0.48
11	5.00	560.80	0.27
12	5.50	562.10	0.23
13	6.00	563.20	0.20
14	6.50	564.20	0.18
15	7.00	564.90	0.12
16	7.50	565.60	0.12
17	8.00	566.10	0.09
18	8.50	566.80	0.12
19	9.00	567.20	0.07
20	9.50	567.60	0.07
21	10.00	568.20	0.11
22	10.50	568.40	0.04

USER INPUT BLANK VALUE

BLANK VALUE = 25.51025 micrograms carbon

BLANK FACTOR = 25.51025 / 10.49805 = 2.43 ug/min Carbon

SAMPLE RESULTS:

(568.4 - 25.51233) (1) / (1) = +5.429E+02 g/L Carbon

(568.4 - 25.51233) (1) / (1) (12) = +4.524E+01 Molar Carbon

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

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: BLK

Date: 06/14/99

Time: 20:19:42

Sample Size = 1 uL

Dil Factor = .1

Blank ID # =

Blank Value = .41 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.50	0.30	100.00
3	1.01	0.60	50.00
4	1.50	1.00	40.00
5	2.00	1.30	23.08
6	2.50	1.60	18.75
7	3.00	1.90	15.79
8	3.50	2.10	9.52
9	4.00	2.40	12.50
10	4.50	2.80	14.29
11	5.00	3.00	6.67
12	5.50	3.30	9.09
13	6.00	3.70	10.81
14	6.50	3.80	2.63
15	7.00	4.00	5.00
16	7.50	4.30	6.98
17	8.00	4.50	4.44
18	8.50	4.70	4.26
19	9.00	5.00	6.00
20	9.50	5.20	3.85
21	10.00	5.50	5.45
22	10.50	5.80	5.17

USER INPUT BLANK VALUE

BLANK VALUE = 4.304199 micrograms carbon

BLANK FACTOR = 4.304199 / 10.49805 = +4.1E-01 ug/min Carbon

SAMPLE RESULTS:

(5.8 - 4.304199) (1)/(1) = +1.5E+00 g/L Carbon
 (5.8 - 4.304199) (1)/(1) (12) = +1.2E-01 Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 06/15/99

Time: 01:12:16

Sample Size = 1 uL

Analyst : JD SPELLMAN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.34 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.20	100.00
3	1.01	0.80	75.00
4	1.50	3.00	73.33
5	2.00	6.00	50.00
6	2.50	12.60	52.38
7	3.00	17.20	26.74
8	3.50	19.60	12.24
9	4.00	20.90	6.22
10	4.50	21.20	1.42
11	5.00	22.10	4.07
12	5.50	22.60	2.21
13	6.00	22.70	0.44
14	6.50	23.00	1.30
15	7.00	23.60	2.54
16	7.50	24.70	4.45
17	8.00	25.70	3.89
18	8.50	26.50	3.02
19	9.00	26.90	1.49
20	9.50	27.30	1.47
21	10.00	27.50	0.73
22	10.50	27.70	0.72

USER INPUT BLANK VALUE

BLANK VALUE = 24.56543 micrograms carbon

BLANK FACTOR = 24.56543 / 10.49805 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(27.7 - 24.56571) (1)/(1) = +3.13E+00 g/L Carbon
 (27.7 - 24.56571) (1)/(1) (12) = +2.61E-01 Molar Carbon

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

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000960

Date: 06/15/99

Time: 01:31:12

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .41 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.01	1.30	69.23
4	1.50	48.40	97.31
5	2.00	171.10	71.71
6	2.50	258.40	33.78
7	3.00	329.20	21.51
8	3.50	378.80	13.09
9	4.00	397.20	4.63
10	4.50	412.00	3.59
11	5.00	423.00	2.60
12	5.50	431.00	1.86
13	6.00	437.80	1.55
14	6.50	441.10	0.75
15	7.00	443.30	0.50
16	7.50	445.90	0.58
17	8.00	448.30	0.54
18	8.50	450.30	0.44
19	9.00	451.90	0.35
20	9.50	453.20	0.29
21	10.00	454.40	0.26
22	10.50	455.80	0.31

USER INPUT BLANK VALUE

BLANK VALUE = 4.304199 micrograms carbon.

BLANK FACTOR = 4.304199 / 10.49805 = +4.1E-01 ug/min Carbon

SAMPLE RESULTS:

(455.8 - 4.304249) (1)/(1) = +4.515E+02 g/L Carbon

(455.8 - 4.304249) (1)/(1) (12) = +3.762E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000960

Date: 06/15/99

Time: 01:43:26

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.34 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	25.60	100.00
3	1.00	232.80	89.00
4	1.50	472.40	50.72
5	2.00	548.60	13.89
6	2.50	575.50	4.67
7	3.00	588.40	2.19
8	3.50	594.90	1.09
9	4.00	599.10	0.70
10	4.50	602.10	0.50
11	5.00	603.70	0.27
12	5.50	605.10	0.23
13	6.00	606.40	0.21
14	6.50	607.50	0.18
15	7.00	608.50	0.16
16	7.50	609.20	0.11
17	8.00	610.00	0.13
18	8.50	610.80	0.13
19	9.00	611.60	0.13
20	9.50	612.30	0.11
21	10.00	612.90	0.10
22	10.50	613.60	0.11

USER INPUT BLANK VALUE

BLANK VALUE = 24.56543 micrograms carbon

BLANK FACTOR = 24.56543 / 10.49805 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(613.6 - 24.56766) (1)/(1) = +5.890E+02 g/L Carbon
 (613.6 - 24.56766) (1)/(1) (12) = +4.909E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000960DUP Date: 06/15/99 Time: 01:56:43

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .41 ug/minute C

Analyst : JD SPELLMAN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time =====	Coulometer =====	% Difference ==
1	0.08	0.00	0.00
2	0.51	1.00	100.00
3	1.01	4.10	75.61
4	1.51	92.20	95.55
5	2.00	409.10	77.46
6	2.50	677.30	39.60
7	3.00	831.20	18.52
8	3.50	921.20	9.77
9	4.00	958.90	3.93
10	4.50	973.80	1.53
11	5.00	980.10	0.64
12	5.50	983.70	0.37
13	6.00	986.30	0.26
14	6.50	988.30	0.20
15	7.00	989.90	0.16
16	7.50	991.20	0.13
17	8.00	992.70	0.15
18	8.50	994.00	0.13
19	9.00	995.10	0.11
20	9.50	996.20	0.11
21	10.00	997.30	0.11
22	10.50	998.30	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 4.304199 micrograms carbon

BLANK FACTOR = 4.304199 / 10.49805 = +4.1E-01 ug/min Carbon

SAMPLE RESULTS:

(998.3 - 4.304249) (1) / (1) = +9.940E+02 g/L Carbon
(998.3 - 4.304249) (1) / (1) (12) = +8.283E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000960DUP Date: 06/15/99 Time: 02:13:11

Sample Size = 1 uL Analyst : JD SPELLMAN
Dil Factor = 1 Min Readings = 22
Blank ID, # = Max Readings = 22
Blank Value = 2.34 ug/minute C % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	7.30	100.00
3	1.00	113.80	93.59
4	1.50	337.50	66.28
5	2.00	446.40	24.40
6	2.50	489.40	8.79
7	3.00	510.70	4.17
8	3.50	521.80	2.11
9	4.00	529.10	1.38
10	4.50	533.40	0.81
11	5.00	536.70	0.61
12	5.50	539.00	0.43
13	6.00	540.80	0.33
14	6.50	542.40	0.29
15	7.00	543.90	0.28
16	7.50	545.00	0.20
17	8.00	546.00	0.18
18	8.50	546.90	0.16
19	9.00	547.80	0.16
20	9.50	548.80	0.18
21	10.00	549.60	0.15
22	10.50	550.40	0.15

USER INPUT BLANK VALUE

BLANK VALUE = 24.56543 micrograms carbon
BLANK FACTOR = 24.56543 / 10.49805 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(550.4 - 24.5653) (1)/(1) = +5.258E+02 g/L Carbon
(550.4 - 24.5653) (1)/(1) (12) = +4.382E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0Sample: S99T000960 ^{Trip} ~~SPKs~~ _{6/15/99} Date: 06/15/99 Time: 02:26:04Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .41 ug/minute CAnalyst : JD SPELLMAN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference
1	0.08	0.00	0.00
2	0.51	1.00	100.00
3	1.01	2.90	65.52
4	1.50	54.00	94.63
5	2.00	156.50	65.50
6	2.50	224.10	30.17
7	3.00	263.60	14.98
8	3.50	280.20	5.92
9	4.00	286.10	2.06
10	4.50	289.50	1.17
11	5.00	291.30	0.62
12	5.50	292.60	0.44
13	6.00	293.60	0.34
14	6.50	294.70	0.37
15	7.00	295.80	0.37
16	7.50	296.80	0.34
17	8.00	297.60	0.27
18	8.50	298.60	0.33
19	9.00	299.60	0.33
20	9.50	300.50	0.30
21	10.00	301.10	0.20
22	10.50	302.00	0.30

USER INPUT BLANK VALUE

BLANK VALUE = 4.304199 micrograms carbon

BLANK FACTOR = 4.304199 / 10.49805 = +4.1E-01 ug/min Carbon

SAMPLE RESULTS:

(302 - 4.304593) (1) / (1)	=	+2.977E+02	g/L Carbon
(302 - 4.304593) (1) / (1) (12)	=	+2.481E+01	Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000960TRP Date: 06/15/99 Time: 02:45:14

Sample Size = 1 uL	Analyst : JD SPELLMAN
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = 2.34 ug/minute C	% Difference = 10

-- Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	1.30	100.00
3	1.00	36.00	96.39
4	1.50	198.10	81.83
5	2.04	333.50	40.60
6	2.54	409.40	18.54
7	3.04	445.60	8.12
8	3.54	460.10	3.15
9	4.04	466.00	1.27
10	4.54	469.60	0.77
11	5.04	471.80	0.47
12	5.54	473.00	0.25
13	6.04	474.90	0.40
14	6.54	475.80	0.19
15	7.04	477.20	0.29
16	7.54	478.10	0.19
17	8.04	479.40	0.27
18	8.54	480.20	0.17
19	9.04	481.30	0.23
20	9.54	482.20	0.19
21	10.04	483.10	0.19
22	10.54	483.90	0.17

USER INPUT BLANK VALUE

BLANK VALUE = 24.56543 micrograms carbon

BLANK FACTOR = 24.56543 / 10.49805 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(483.9 - 24.65734) (1) / (1)	=	+4.592E+02	g/L Carbon
(483.9 - 24.65734) (1) / (1) (12)	=	+3.827E+01	Molar Carbon

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

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000960SPK Date: 06/15/99 Time: 03:02:13

Sample Size = 1 uL
 Dil Factor = 1
 Blank ID # =
 Blank Value = .41 ug/minute C

Analyst : JD SPELLMAN
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	3.20	100.00
3	1.01	33.70	90.50
4	1.51	307.90	89.05
5	2.00	647.60	52.46
6	2.50	860.60	24.75
7	3.00	972.20	11.48
8	3.50	1024.10	5.07
9	4.00	1045.80	2.07
10	4.50	1055.20	0.89
11	5.00	1059.40	0.40
12	5.50	1062.10	0.29
13	6.00	1064.20	0.20
14	6.50	1065.90	0.16
15	7.00	1067.50	0.15
16	7.50	1069.00	0.14
17	8.00	1070.40	0.13
18	8.50	1071.40	0.09
19	9.00	1072.60	0.11
20	9.50	1073.80	0.11
21	10.00	1074.80	0.09
22	10.50	1076.00	0.11

USER INPUT BLANK VALUE

BLANK VALUE = 4.304199 micrograms carbon

BLANK FACTOR = 4.304199 / 10.49805 = +4.1E-01 ug/min Carbon

SAMPLE RESULTS:

(1076 - 4.304249) (1) / (1) = +1.0717E+03 g/L Carbon
 (1076 - 4.304249) (1) / (1) (12) = +8.9308E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1674 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000960SPK Date: 06/15/99 Time: 03:13:48

Sample Size = 1 uL	Analyst : JD SPELLMAN
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = 2.34 ug/minute C	% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	34.00	100.00
3	1.01	395.30	91.40
4	1.51	844.90	53.21
5	2.00	1026.80	17.72
6	2.50	1084.70	5.34
7	3.00	1113.50	2.59
8	3.50	1127.50	1.24
9	4.00	1134.90	0.65
10	4.50	1139.80	0.43
11	5.00	1143.10	0.29
12	5.50	1145.50	0.21
13	6.00	1147.60	0.18
14	6.50	1149.70	0.18
15	7.00	1151.30	0.14
16	7.50	1152.60	0.11
17	8.00	1153.80	0.10
18	8.50	1155.00	0.10
19	9.00	1155.90	0.08
20	9.50	1157.20	0.11
21	10.00	1158.00	0.07
22	10.50	1158.60	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 24.56543 micrograms carbon

BLANK FACTOR = 24.56543 / 10.49805 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(1158.6 - 24.57) (1)/(1) =	+1.1340E+03 g/L Carbon
(1158.6 - 24.57) (1)/(1) (12) =	+9.4502E+01 Molar Carbon

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

Sample Run By:

JD SPELLMAN

22222

WORKBOOK PAGE: STD1

TIC/TOC : LA-342-100 (F-2)

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)	608.1	568.4
30143	µg of Carbon from Baseline (C2)	4.3	24.6
Test Code	Standard Book Number	25N12E	34N12A
@TICTOC1	Standard Value (µg/ml)	602	3000
Matrix			
LIQUID			
Batch Number			
99002477			
Rerun			
0	QC Actual in µg/mL = Standard Value (µg/mL)		
Sample Prep	QC Found in µg/mL = (C1 - C2) * DF / SS		
N/A	QC Found in µg/mL for TIC = 5 if C1 < C2		
Sample #	QC Found in µg/mL for TOC = 40 if C1 < C2		
STD			
Instrument Code	% Recovery = QC Found / QC Actual * 100		
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
06/15/99			
Analysis Date			
06/15/99			
Analysis Time	Method Detection Limit in µg/mL	5	40
03:30 AM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	6.04E+02	2.72E+03
U102 GRAB	Percent Standard Recovery	100.3	90.6

Data Entered By:	MF	Date:	06/15/99
Signature of Chemist:	<i>NA</i>	Date:	

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM2

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0742	0.0742
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	455.8	613.6
30143	µg of Carbon from Baseline (C2)	4.3	24.6
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
99002477			
Rerun	µg of Carbon/g = (C1-C2) * DF / SS		
0	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S99T000960			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
06/15/99			
Analysis Date			
06/15/99			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
03:30 AM		5	40
Sample Point	µg of Carbon/g	6.08E+03	7.94E+03
U102 GRAB			

Data Entered By:	MF	Date:	06/15/99
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: DUP3

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1054	0.1054
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	998.3	550.4
30143	µg of Carbon from Baseline (C2)	4.3	24.6
Test Code	Known µg of C from Original Sample	6.08E+3	7.94E+3
@TICTOC1			
Matrix			
SOLID			
Batch Number			
99002477			
Rerun	µg of Carbon/g = (C1-C2) * DF / SS		
0	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S99T000960			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
06/15/99			
Analysis Date			
06/15/99			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
03:30 AM		5	40
Sample Point	µg of Carbon/g	9.43E+03	4.99E+03
U102 GRAB			

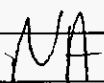
Data Entered By:	MF	Date:	06/15/99
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: TRIPL4

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0395	0.0395
TRIPL	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	302	483.9
30143	µg of Carbon from Baseline (C2)	4.3	24.6
Test Code	Known µg of C from Original Sample	6.08E+3	7.94E+3
@TICTOC1	Duplicate Result	9.43E+3	4.99E+3
Matrix	<p>µg of Carbon/g = (C1-C2) * DF / SS</p> <p>µg of Carbon/g for TIC = 5 if C1 < C2</p> <p>µg of Carbon/g for TOC = 40 if C1 < C2</p>		
SOLID			
Batch Number			
99002477			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S99T000960			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
06/15/99			
Analysis Date			
06/15/99			
Analysis Time	Method Detection Limit in ug/g	5	40
03:30 AM			
Sample Point	µg of Carbon/g	7.54E+03	1.16E+04
U102 GRAB			

Data Entered By:	MF	Date:	06/15/99
Signature of Chemist:		Date:	

WORKBOOK PAGE: SPIKE5

TIC/TOC : LA-342-100 (F-2)

SOLIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.0742	0.0742
Work List	Final Coulometer Reading in µg (C1)	455.8	613.6
30143	Spiked Vial Data		
Test Code	Sample Size in g (SPK SS)	0.0977	0.0977
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	1076	1158.6
SOLID	Spike Book Number	25N12E	34N12A
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	3000
99002477	µg C in baseline (BL)	4.3	24.6
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = ((C2-BL) - (C1-BL) * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100		
S99T000960			
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			
MF			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
06/15/99			
Analysis Date			
06/15/99			
Analysis Time			
03:30 AM			
Sample Point	QC Actual in µg/mL	TIC	TOC
U102 GRAB	QC Found in µg/mL	6.02E+02	3.00E+03
	Percent Spike Recovery	9.54E+02	3.58E+03
		158.5	119.5

Data Entered By:	MF	Date:	06/15/99
Signature of Chemist:	<i>MF</i>	Date:	

HNF-1674 REV. 0

RADIOCHEMICAL ANALYSIS

HNF-1674 REV. 0

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LABCORE Completed Worklist Report for Worklist# 30095

Analyst: scl

Instrument: AB15

Book#: _____

Method: LA-508-101 Rev/Mod _____

Worklist Comment: U-102 GRAB1, @ALPHA01, SS by Ludlum. Std = 1.0mL skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@ALPHA01 ALPHA01	LIQUID	2.51E-04	2.34E-4	93.227	% Recovery
1	STD		0		@ALPHA01 ALPHA01E	LIQUID	1.00	3.06E+00	3.060	% Ct. Error
2	BLNK		0		@ALPHA01 ALPHA01	LIQUID	1	<6.50E-3		uCi/mL
2	BLNK		0		@ALPHA01 ALPHA01E	LIQUID	1.00	5.00E+02	500.000	uCi/mL
3	BLNK/BKG		0		@ALPHA01 ALPHA01	LIQUID	1.00E+00	5.83E-01	0.583	BLNK/BKG
4	SAMPLE	S99T000973	0		@ALPHA01 ALPHA01	LIQUID	N/A	1.14E-02	1.61e-002	uCi/mL
4	SAMPLE	S99T000973	0		@ALPHA01 ALPHA01E	LIQUID	N/A	1.22E+02		% Ct. Error
5	DUP	S99T000973	0		@ALPHA01 ALPHA01	LIQUID	1.14E-2	1.42E-2	21.875	RPD
5	DUP	S99T000973	0		@ALPHA01 ALPHA01E	LIQUID	1.00	9.19E+01	91.900	% Ct. Error
6	SPK	S99T000973	0		@ALPHA01 ALPHA01	LIQUID	3.81E-02	3.65E-02	95.801	% Recovery
7	SAMPLE	S99T000974	0		@ALPHA01 ALPHA01	LIQUID	N/A	1.82E-02	1.61e-002	uCi/mL
7	SAMPLE	S99T000974	0		@ALPHA01 ALPHA01E	LIQUID	N/A	6.48E+01		% Ct. Error
8	DUP	S99T000974	0		@ALPHA01 ALPHA01	LIQUID	1.82E-2	1.76E-2	3.352	RPD
8	DUP	S99T000974	0		@ALPHA01 ALPHA01E	LIQUID	1.00	7.14E+01	71.400	% Ct. Error
9	SAMPLE	S99T000975	0		@ALPHA01 ALPHA01	LIQUID	N/A	2.05E-02	1.61e-002	uCi/mL
9	SAMPLE	S99T000975	0		@ALPHA01 ALPHA01E	LIQUID	N/A	6.48E+01		% Ct. Error
10	DUP	S99T000975	0		@ALPHA01 ALPHA01	LIQUID	2.05E-2	1.36E-2	40.469	RPD
10	DUP	S99T000975	0		@ALPHA01 ALPHA01E	LIQUID	1.00	1.10E+02	110.000	% Ct. Error

Final page for worklist# 30095

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

M. C. Carr
Reviewer Signature _____ Date 16 Jun 99

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

LABCORE Data Entry Template for Worklist# 30095

Analyst: S.L Instrument: AB00 15 Book# 50857

Method: LA-508-101 Rev/Mod G-0

Worklist Comment: U-102 GRAB1, @ALPHA01, SS by Ludlum. Std= 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	LIQUID		
2 BLNK			@ALPHA01	LIQUID		
3 BLNK/BKG			@ALPHA01	LIQUID		
4 SAMPLE	S99T000973 0		@ALPHA01	LIQUID	99000200	U-102 GRAB1
Analytes Requested: ALPHA01 , ALPHA01E						
5 DUP	S99T000973 0		@ALPHA01	LIQUID		
6 SPK	S99T000973 0		@ALPHA01	LIQUID		
7 SAMPLE	S99T000974 0		@ALPHA01	LIQUID	99000200	U-102 GRAB1
Analytes Requested: ALPHA01 , ALPHA01E						
8 DUP	S99T000974 0		@ALPHA01	LIQUID		
9 SAMPLE	S99T000975 0		@ALPHA01	LIQUID	99000200	U-102 GRAB1
Analytes Requested: ALPHA01 , ALPHA01E						
10 DUP	S99T000975 0		@ALPHA01	LIQUID		

Final page for worklist # 30095

Sue Le 6-14-99

 Signature Date

Em Buehler 6-15-99

 Signature Date
Newlight 6/15/99

Data Entry Comments:

WORKBOOK PAGE: STD1

AT : LA-508-101 (G-0) LA-508-113 (B-0) STANDARD

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	15	15
STD	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	4129	4295
30095	COUNT TIME in MINUTES (CT)	30	30
AT or TB?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	50B57	50B57
Matrix	EFFICIENCY FACTOR (EFF)	0.2695	0.2695
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	137.433	142.967
Batch Number	Standard Value in $\mu\text{Ci/mL}$	2.51E-04	
99002421	Concentration in $\mu\text{Ci/L}$ =	2.30E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$ =	2.39E-01	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	2.3433E-01	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL30095-STD	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	2.34E-04	DETECTION LEVEL
Analyst			
SCL			
Date Complete			7.88E-07
06/15/99	RELATIVE COUNTING ERROR =	3.1%	$\mu\text{Ci/mL}$
Analysis Date			
06/14/99			
Analysis Time			
01:20 PM			
Sample Point			
U-102 GRAB1			

Analyst:	EMB	Date: 15-Jun-99
Signature of Chemist: <i>SA Carth</i>	SAC	Date: <i>16 Jun 99</i>
STANDARD.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (G-0) LIQUIDS

		BLNK	REPLICATE
Type	DETECTOR NUMBER	15	15
BLNK	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	6	1
30095	COUNT TIME in MINUTES (CT)	30	30
AT for TB?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	0.500	0.500
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2695	0.2695
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.191	0.191
Batch Number			
99002421	Blank Concentration in $\mu\text{Ci/L}$	< 6.50E+00	
ReRun	Replicate Concentration in $\mu\text{Ci/L}$	< 6.50E+00	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 6.4970E+00	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
WL30095-BLNK	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 6.50E-03	DETECTION LEVEL
Analyst	LESS Than Value was Determined from Lc.		
SCL			
Date Complete	RELATIVE COUNTING ERROR	500.0%	1.61E-02 $\mu\text{Ci/mL}$
06/15/99			
Analysis Date			
06/14/99			
Analysis Time			
01:20 PM			
Sample Point			
U-102 GRAB1			

Analyst:	SCL	Date: 15-Jun-99
Signature of Chemist:		SAC Date: 16 Jun 99

BLANK.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: SAM4

AT : LA-508-101 (G-0) LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	13	19
30095	COUNT TIME in MINUTES (CT)	30	30
A or B?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	0.500	0.500
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2695	0.2695
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.233	0.433
Batch Number			
99002421	Blank Concentration in $\mu\text{Ci/L}$	7.96E+00	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.48E+01	
0	Average Concentration in $\mu\text{Ci/L}$	1.1367E+01	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S99T000973	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	1.14E-02	DETECTION LEVEL
Analyst			
SCL			1.61E-02
Date Complete	RELATIVE COUNTING ERROR	122.0%	$\mu\text{Ci/mL}$
06/15/99			
Analysis Date			
06/14/99			
Analysis Time			
01:20 PM			
Sample Point			
U-102 GRAB1			

Analyst:	SCL	Date: 15-Jun-99
Signature of Chemist:	<i>SCL</i>	SAC Date: 16 Jun 99
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: DUP5


AT : LA-508-101 (G-0) LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	16	21
30095	COUNT TIME in MINUTES (CT)	30	30
AT or TB?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	0.500	0.500
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2695	0.2695
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.333	0.500
Batch Number			
99002421	Blank Concentration in µCi/L	1.14E+01	
Rerun	Replicate Concentration in µCi/L	1.71E+01	
0	Average Concentration in µCi/L	1.4209E+01	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)		
S99T000973	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L		
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Average) =	1.42E-02	DETECTION LEVEL
Analyst			
SCL			1.61E-02
Date Complete	RELATIVE COUNTING ERROR	91.9%	µCi/mL
06/15/99			
Analysis Date			
06/14/99			
Analysis Time			
01:20 PM			
Sample Point			
U-102 GRAB1			

Analyst:	SCL	Date: 15-Jun-99
Signature of Chemist:	<i>SAC</i>	Date: 16 Jun 99
SAMPLE.WB1 Rev. 1.	508101ML	

AT : LA-508-101 (G-0) LA-508-113 (B-0) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	15	15
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	67192	63983
30095	COUNT TIME in MINUTES (CT)	30	30
AT or TB?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.500	0.500
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	12B59	12B59
99002421	SPIKE VALUE in µCi/mL (SVal)	3.8122E-02	3.8122E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2695	0.2695
0	SAMPLE + SPIKE µCi/mL (S+S)	7.64E+01	7.27E+01
Sample Prep	AVERAGE or MAXIMUM µCi/mL in SAMPLE	1.1367E-02	
N/A			
Sample #			
S99T000973			
Instrument Code	Rs (Sample Count Rate) = (TC / CT) - BKG		
WB26872	SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)		
Prepared By	QC ACTUAL = SVal		
EMB	QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))		
Chemist	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100		
SAC			
Analyst			
SCL			
Date Complete			
06/15/99			
Analysis Date			
06/14/99	QC ACTUAL =	3.81E-02	
Analysis Time	QC FOUND =	3.65E-02	
01:20 PM	AVG. PERCENT SPIKE RECOVERY =	95.8%	
Sample Point			
U-102 GRAB1			

Analyst:	EMB	Date: 15-Jun-99
Signature of Chemist:		SAC Date: 16 Jun 99
SPIKE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM7

AT : LA-508-101 (G-0) LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	22	22
30095	COUNT TIME in MINUTES (CT)	30	30
At for IB ?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	0.500	0.500
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2695	0.2695
LIQUID	Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE	0.533	0.533
Batch Number			
99002421	Blank Concentration in µCi/L	1.82E+01	
Rerun	Replicate Concentration in µCi/L	1.82E+01	
0	Average Concentration in µCi/L	1.8187E+01	

Sample Prep: N/A

Sample #: S99T000974

Instrument Code: WB26872

Prepared By: EMB

Chemist: SAC

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100


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

Analyst	ALPHA TOTAL in µCi/mL (Average)	=	1.82E-02	DETECTION LEVEL
SCL				
Date Complete	RELATIVE COUNTING ERROR		64.8%	1.61E-02 µCi/mL
06/15/99				

Analysis Date: 06/14/99

Analysis Time: 01:20 PM

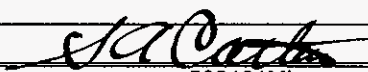
Sample Point: U-102 GRAB1

Analyst:	SCL	Date: 15-Jun-99
Signature of Chemist:		Date: 16 Jun 99
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: DUP8

AT : LA-508-101 (G-0) LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	23	20
30095	COUNT TIME in MINUTES (CT)	30	30
AT or TB?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	0.500	0.500
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2695	0.2695
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.567	0.467
Batch Number			
99002421	Blank Concentration in µCi/L	1.93E+01	
Rerun	Replicate Concentration in µCi/L	1.59E+01	
0	Average Concentration in µCi/L	1.7619E+01	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)		
S99T000974	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L		
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Average) =	1.76E-02	DETECTION LEVEL
Analyst			
SCL			1.61E-02
Date Complete	RELATIVE COUNTING ERROR	71.4%	µCi/mL
06/15/99			
Analysis Date			
06/14/99			
Analysis Time			
01:20 PM			
Sample Point			
U-102 GRAB1			

Analyst:	SCL	Date: 15-Jun-99
Signature of Chemist:		SAC Date: 16 Jun 99
SAMPLE.WB1 Rev. 1.	508101ML	


AT : LA-508-101 (G-0) LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	26	22
30095	COUNT TIME in MINUTES (CT)	30	30
At or TB ?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	0.500	0.500
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2695	0.2695
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.667	0.533
Batch Number			
99002421	Blank Concentration in µCi/L	2.27E+01	
Rerun	Replicate Concentration in µCi/L	1.82E+01	
0	Average Concentration in µCi/L	2.0460E+01	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)		
S99T000975	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L		
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Average)	=	2.05E-02
Analyst			DETECTION LEVEL
SCL			
Date Complete			1.61E-02
06/15/99	RELATIVE COUNTING ERROR		µCi/mL
Analysis Date			
06/14/99			
Analysis Time			
01:20 PM			
Sample Point			
U-102 GRAB1			

Analyst:	SCL	Date: 15-Jun-99
Signature of Chemist:	<i>SAC</i>	Date: 16 Jun 99
SAMPLE.WB1 Rev. 1.	508101ML	

AT : LA-508-101 (G-0) LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	14	22
30095	COUNT TIME in MINUTES (CT)	30	30
A for B ?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	0.500	0.500
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2695	0.2695
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.267	0.533
Batch Number			
99002421	Blank Concentration in µCi/L	9.09E+00	
Rerun	Replicate Concentration in µCi/L	1.82E+01	
0	Average Concentration in µCi/L	1.3640E+01	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)		
S99T000975	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L		
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Average) =	1.36E-02	DETECTION LEVEL
Analyst			
SCL			1.61E-02
Date Complete	RELATIVE COUNTING ERROR	109.6%	µCi/mL
06/15/99			
Analysis Date			
06/14/99			
Analysis Time			
01:20 PM			
Sample Point			
U-102 GRAB1			

Analyst:	SCL	Date: 15-Jun-99
Signature of Chemist:		SAC Date: 16 Jun 99

LABCORE Completed Worklist Report for Worklist# 30096

Analyst: akl

Instrument: AB16

Book#: _____

Method: LA-508-101 Rev/Mod _____

Worklist Comment: U-102 GRAB1, @ALPHA01, SS by Ludlum. Std: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	@ALPHA01 ALPHA01	SOLID	2.51E-04	2.34E-4	93.227	% Recovery
1 STD	0	0	@ALPHA01 ALPHA01E	SOLID	1.00	3.05E+00	3.050	% Ct. Erro
2 BLNK-PREP	0	0	@ALPHA01 ALPHA01	SOLID	1	<2.50E-2		uCi/g
2 BLNK-PREP	0	0	@ALPHA01 ALPHA01E	SOLID	1.00	1.84E+02	184.000	uCi/g
3 BLNK/BKG	0	0	@ALPHA01 ALPHA01	SOLID	1.00E+00	7.22E+00	7.220	BLNK/BKG
4 SAMPLE	S99T000963	0 F	@ALPHA01 ALPHA01	SOLID	N/A	5.96E-01	1.96e-002	uCi/g
4 SAMPLE	S99T000963	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	1.35E+01		% Ct. Error
5 DUP	S99T000963	0 F	@ALPHA01 ALPHA01	SOLID	5.96E-1	5.80E-1	2.721	RPD
5 DUP	S99T000963	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	1.42E+01	14.200	% Ct. Erro
6 SPK	S99T000963	0 F	@ALPHA01 ALPHA01	SOLID	3.81E-02	3.57E-02	93.701	% Recovery

Final page for worklist# 30096

Analyst Signature

Date

Analyst Signature

Date


Reviewer Signature

10 June 99
Date

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

LABCORE Data Entry Template for Worklist# 30096

Analyst: AKL Instrument: AB00 16 Book# 50657

Method: LA-508-101 Rev/Mod G-0

Worklist Comment: U-102 GRAB1, @ALPHA01, SS.by Ludlum. Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	SOLID		
2 BLNK-PREP			@ALPHA01	SOLID		
3 BLNK/BKG			@ALPHA01	SOLID		
4 SAMPLE	S99T000963	0 F	@ALPHA01	SOLID	99000200	U-102 GRAB1
Analytes Requested: ALPHA01 , ALPHA01E						
5 DUP	S99T000963	0 F	@ALPHA01	SOLID		
6 SPK	S99T000963	0 F	@ALPHA01	SOLID		

Final page for worklist # 30096

Alita Jensen 6/9/99
Signature Date

Jenna Z Cochran 6/10/99
Signature Date
JZC 6/10/99

Data Entry Comments:

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

WORKBOOK PAGE: STD1

AT : LA-508-101 (G-0) LA-508-113 (B-0) STANDARD

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	16	16
STD	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	4145	4208
30096	COUNT TIME in MINUTES (CT)	30	30
At or IB?	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	50B57	50B57
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	138.137	140.237
Batch Number	Standard Value in $\mu\text{Ci/mL}$	2.51E-04	
99002422	Concentration in $\mu\text{Ci/L}$ =	2.32E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$ =	2.35E-01	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	2.3368E-01	


Sample Prep	N/A		
Sample #	Rs (Sample Count Rate) = (TC / CT) - BKG		
WL30096	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/ μCi)		
Instrument Code	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
WB27806	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
Prepared By	SZC		
Chemist	SAC		
Analyst	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	2.34E-04	DETECTION LEVEL
AKL			
Date Complete	RELATIVE COUNTING ERROR =	3.0%	4.00E-07 $\mu\text{Ci/mL}$
06/10/99			
Analysis Date	06/09/99		
Analysis Time	02:30 PM		
Sample Point	U-102 GRAB		

Analyst:	SZC	Date: 10-Jun-99
Signature of Chemist:	<i>AKL</i>	SAC Date: <i>10 Jun 99</i>
STANDARD.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (G-0) SOLIDS

		BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER	16	16
BLNK-PREP	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	10	3
30096	COUNT TIME in MINUTES (CT)	30	30
AT	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0588	2.0588
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.303	0.179
Batch Number			
99002422	Blank Concentration in µCi/g	2.50E-02	
Rerun	Replicate Concentration in µCi/g	< 1.47E-02	
0	Maximum Concentration in µCi/g	< 2.4984E-02	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)		
WL30096			
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SZC			
Chemist			
SAC	ALPHA TOTAL in µCi/g (Maximum) =	< 2.50E-02	DETECTION LEVEL
Analyst	LESS THAN Value was Determined from Rs.		
AKL			
Date Complete	RELATIVE COUNTING ERROR	184.3%	1.96E-02 µCi/g
06/10/99			
Analysis Date			
06/09/99			
Analysis Time			
02:30 PM			
Sample Point			
U-102 GRAB			

Analyst:	AKL	Date: 10-Jun-99
Signature of Chemist:		SAC Date: 10-Jun-99

BLANK.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: SAM4

AT : LA-508-101 (G-0) SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	215	221
30096	COUNT TIME in MINUTES (CT)	30	30
At or IB?	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0588	2.0588
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	7.137	7.337
Batch Number			
99002422	Blank Concentration in µCi/g	5.88E-01	
Rerun	Replicate Concentration in µCi/g	6.04E-01	
0	Average Concentration in µCi/g	5.9604E-01	
Sample Prep			
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)		
S99T000963			
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SZC			
Chemist			
SAC	ALPHA TOTAL in µCi/g (Average) =	5.96E-01	DETECTION LEVEL
Analyst			
AKL			1.96E-02
Date Complete	RELATIVE COUNTING ERROR	13.5%	µCi/g
06/10/99			
Analysis Date			
06/09/99			
Analysis Time			
02:30 PM			
Sample Point			
U-102 GRAB			


Analyst:	AKL	Date: 10-Jun-99
Signature of Chemist:	<i>[Signature]</i>	SAC Date: 10 Jun 99
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: DUP5

AT : LA-508-101 (G-0)


SOLIDS

	DUP	REPLICATE
Type	DETECTOR NUMBER	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2
Worklist	GROSS COUNTS (GC)	194
30096	COUNT TIME in MINUTES (CT)	30
AT or TE ?	BACKGROUND in cpm (BKG)	0.03
AT	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0616
Matrix	EFFICIENCY FACTOR (EFF)	0.2683
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	6.437
Batch Number		
99002422	Blank Concentration in $\mu\text{Ci/g}$	5.29E-01
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	6.31E-01
0	Average Concentration in $\mu\text{Ci/g}$	5.8015E-01
Sample Prep	Rs (Sample Count Rate) = (TC / CT) - BKG	
FUSION01	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$	
Sample	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
S99T000963	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Instrument Code		
WB27806		
Prepared By		
SZC		
Chemist		
SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	5.80E-01
Analyst		
AKL		
Date Complete	RELATIVE COUNTING ERROR	14.2%
06/10/99		
Analysis Date		
06/09/99		
Analysis Time		
02:30 PM		
Sample Point		
U-102 GRAB		

Analyst:	AKL	Date: 10-Jun-99
Signature of Chemist:		SAC Date: 10 June 99
SAMPLE.WB1 Rev. 1.	508101ML	

AT : LA-508-101 (G-0) LA-508-113 (B-0) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	16	16
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Worklist	TOTAL COUNTS (TC)	66386	61704
30096	COUNT TIME in MINUTES (CT)	30	30
At or TB?	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	1.000	1.000
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0588	2.0588
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	12B59	12B59
99002422	SPIKE VALUE in µCi/mL (SVal)	3.8123E-02	3.8123E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2683	0.2683
0	SAMPLE + SPIKE µCi/g (S+S)	1.82E+02	1.69E+02
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE	5.9604E-01	
FUSION01			
Sample #			
S99T000963	Rs (Sample Count Rate) = (TC / CT) - BKG		
Instrument Code	SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)		
WB27806	QC ACTUAL = SVal		
Prepared By	QC FOUND = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))		
SZC	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100		
Chemist			
SAC			
Analyst			
AKL			
Date Complete			
06/10/99			
Analysis Date			
06/09/99	QC ACTUAL =	3.81E-02	
Analysis Time	QC FOUND =	3.57E-02	
02:30 PM	AVG. PERCENT SPIKE RECOVERY =	93.7%	
Sample Point			
U-102 GRAB			

Analyst:	SZC	Date: 10-Jun-99
Signature of Chemist:		SAC Date: 10 Jun 99

LABCORE Completed Worklist Report for Worklist# 30003

Analyst: scl

Instrument: GEA03

Book#: 46B57

Method: LA-548-121 Rev/Mod F-φ

Worklist Comment: U102 GRAB1, @GEA-01, STD: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@GEA-01 CO60-02	LIQUID	5.235e-03	5.76e-03	110.029	% Recovery
1 STD		0	@GEA-01 CO60-02E	LIQUID	1	2.00	2.000	% Ct Error
1 STD		0	@GEA-01 CS13702	LIQUID	8.079e-03	8.17e-03	101.126	% Recovery
1 STD		0	@GEA-01 CS13702E	LIQUID	1	2.07	2.070	% Ct Error
2 BLNK		0	@GEA-01 CO60-02	LIQUID	1	<1.40e-3		uCi/mL
2 BLNK		0	@GEA-01 CS13702	LIQUID	1	<2.19e-3		uCi/mL
3 SAMPLE	S99T000973	0	@GEA-01 CO60-02	LIQUID	N/A	1.670e-02		uCi/mL
3 SAMPLE	S99T000973	0	@GEA-01 CO60-02E	LIQUID	N/A	23.2		% Ct. Error
3 SAMPLE	S99T000973	0	@GEA-01 CS13702	LIQUID	N/A	4.170e+02		uCi/mL
3 SAMPLE	S99T000973	0	@GEA-01 CS13702E	LIQUID	N/A	0.100		% Ct. Error
4 DUP	S99T000973	0	@GEA-01 CO60-02	LIQUID	1.67e-02	1.58e-02	5.538	RPD
4 DUP	S99T000973	0	@GEA-01 CO60-02E	LIQUID	1	30.0	30.000	% Ct Error
4 DUP	S99T000973	0	@GEA-01 CS13702	LIQUID	4.17e+02	4.13e+02	0.964	RPD
4 DUP	S99T000973	0	@GEA-01 CS13702E	LIQUID	1	0.100	0.100	% Ct Error
5 SAMPLE	S99T000974	0	@GEA-01 CO60-02	LIQUID	N/A	1.530e-02		uCi/mL
5 SAMPLE	S99T000974	0	@GEA-01 CO60-02E	LIQUID	N/A	24.6		% Ct. Error
5 SAMPLE	S99T000974	0	@GEA-01 CS13702	LIQUID	N/A	4.270e+02		uCi/mL
5 SAMPLE	S99T000974	0	@GEA-01 CS13702E	LIQUID	N/A	0.0900		% Ct. Error
6 DUP	S99T000974	0	@GEA-01 CO60-02	LIQUID	1.53e-02	1.71e-02	11.111	RPD
6 DUP	S99T000974	0	@GEA-01 CO60-02E	LIQUID	1	21.1	21.100	% Ct Error
6 DUP	S99T000974	0	@GEA-01 CS13702	LIQUID	4.27e+02	4.22e+02	1.178	RPD
6 DUP	S99T000974	0	@GEA-01 CS13702E	LIQUID	1	0.100	0.100	% Ct Error
7 SAMPLE	S99T000975	0	@GEA-01 CO60-02	LIQUID	N/A	2.560e-02		uCi/mL
7 SAMPLE	S99T000975	0	@GEA-01 CO60-02E	LIQUID	N/A	40.5		% Ct. Error
7 SAMPLE	S99T000975	0	@GEA-01 CS13702	LIQUID	N/A	6.680e+02		uCi/mL
7 SAMPLE	S99T000975	0	@GEA-01 CS13702E	LIQUID	N/A	0.130		% Ct. Error
8 DUP	S99T000975	0	@GEA-01 CO60-02	LIQUID	2.56e-02	2.33e-02	9.407	RPD
8 DUP	S99T000975	0	@GEA-01 CO60-02E	LIQUID	1	43.9	43.900	% Ct Error
8 DUP	S99T000975	0	@GEA-01 CS13702	LIQUID	6.68e+02	6.55e+02	1.965	RPD
8 DUP	S99T000975	0	@GEA-01 CS13702E	LIQUID	1	0.130	0.130	% Ct Error

Comments Section:

Comments for sample# S99T000973 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S99T000974 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S99T000975 and test @GEA-01 .

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

LABCORE Completed Worklist Report for Worklist# 30003

Seq	Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
DL=0 => n/a.									

Final page for worklist# 30003

Analyst Signature	Date	Analyst Signature	Date
-------------------	------	-------------------	------

	6-7-99		
Reviewer Signature	Date		

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

LABCORE Data Entry Template for Worklist# 30003

Analyst: S. L Instrument: GEA00 3 Book# _____

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

Worklist Comment: U102 GRAB1, @GEA-01, STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-01	LIQUID		
2 BLNK			@GEA-01	LIQUID		
3 SAMPLE	S99T000973 0		@GEA-01	LIQUID	99000200	U-102 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4 DUP	S99T000973 0		@GEA-01	LIQUID		
5 SAMPLE	S99T000974 0		@GEA-01	LIQUID	99000200	U-102 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6 DUP	S99T000974 0		@GEA-01	LIQUID		
7 SAMPLE	S99T000975 0		@GEA-01	LIQUID	99000200	U-102 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
8 DUP	S99T000975 0		@GEA-01	LIQUID		

Final page for worklist # 30003

Sue L 6-4-99
Signature Date

NC Wright 6/7/99
Signature Date

Data Entry Comments:

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

 * 222-S Laboratory Counting Room 4-JUN-1999 16:12:05.69 *

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

Worklist #: 30003
 Sample ID: WL30003-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Em Barba

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3353.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:10.98 sec
 Dead Time: 0.4%

Verified by:

John Relyea 7 June 99

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

Sample Count Time: 4-JUN-1999 15:21:22.37
 Decayed to: 4-JUN-1999 15:21:22.37
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 3-MAY-1999 16:16:33.11
 Date of last efficiency calibration: 3-MAY-1999 16:18:22.52

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	5.95	584	1.59	11.71	8	9	18.3			
0	661.45*	10603	1.44	1323.00	1316	14	2.1		CS-137	8.18
0	1173.12	5780	1.76	2345.91	2337	18	2.8		CO-60	5.83
0	1332.50	5117	1.80	2664.40	2656	15	2.8		CO-60	5.68

Summary of Nuclide Activity

Sample ID : WL30003-STD

Acquisition date : 4-JUN-1999 15:21:22

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
CO-60	5.27Y	1.00	5.756E+00	5.756E+00	0.115E+00	2.00	
CS-137	30.00Y	1.00	8.175E+00	8.175E+00	0.169E+00	2.07	
Total Activity :			1.393E+01	1.393E+01			

Grand Total Activity : 1.393E+01 1.393E+01

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : WL30003-STD

Acquisition date : 4-JUN-1999 15:21:22

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	396.	477.59	4.8029E-01
NA-24	17.	1368.55	2.5349E-02
K-40	328.	1460.75	9.6852E-01
AR-41	48.	1293.60	4.4468E-02
SC-46	196.	1120.55	6.6048E-02
CR-51	449.	320.08	3.9446E-01
MN-54	225.	834.83	5.6351E-02
CO-56	206.	846.76	5.4688E-02
CO-58	181.	810.78	4.9978E-02
FE-59	248.	1099.25	1.2897E-01
ZN-65	210.	1115.55	1.3389E-01
SE-75	503.	264.66	6.2915E-02
KR-85	337.	514.00	1.1143E+01
SR-85	336.	514.01	5.0352E-02
Y-88	8.	1836.06	2.2349E-02
Y-91	75.	1204.67	1.4706E+01
NB-94	259.	871.09	6.2333E-02
ZRNB-95	162.	724.20	1.9632E-01
RU-103	329.	497.08	5.1384E-02
RURH-106	205.	621.93	8.7865E-01
AG-108m	168.	722.94	4.8622E-02
CD-109	350.	88.03	9.6426E-01
AG-110M	359.	657.76	6.2763E-02
SN-113	415.	391.69	6.9033E-02
TE-123m	432.	159.00	3.1205E-02
SB-124	203.	602.73	4.3351E-02
SB-125	437.	427.89	1.6412E-01
TE-125m	378.	109.27	9.5335E+00
I-129	353.	39.60	4.6965E+01
I-131	396.	364.48	5.0598E-02
XE-131m	472.	163.93	1.4094E+00
BA-133	383.	356.02	6.3987E-02
CS-134	187.	604.70	4.1841E-02
CS-136	228.	818.51	5.6079E-02
CS-138	19.	1435.86	5.7469E-02
CE-139	453.	165.85	3.3965E-02
BA-140	271.	537.31	1.8454E-01
LA-140	17.	1596.21	2.8962E-02
CE-141	414.	145.44	5.2666E-02
CE-144	425.	133.51	2.3277E-01
CEPR-144	425.	133.51	4.6518E-01
EU-152	447.	121.78	9.5721E-02
EU-154	43.	1274.51	1.0351E-01
EU-155	355.	86.54	1.1049E-01
HF-181	371.	482.18	6.0241E-02
TA-182	307.	67.75	1.6900E-01
HG-203	473.	279.20	4.5506E-02
BI-207	240.	569.70	4.5152E-02
TL-208	457.	277.36	5.7477E-01
PB-210	320.	46.50	1.7125E+01
BI-212	196.	727.18	7.1760E-01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL30003-STD

Acquisition date : 4-JUN-1999 15:21:22

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	585.	238.63	8.4755E-02
BI-214	263.	609.31	1.0802E-01
PB-214	478.	351.92	2.1864E-01
RA-224	528.	240.99	8.9394E-01
RA-226	576.	186.10	9.1097E-01
AC-228	312.	911.21	2.6478E-01
TH-228	372.	84.37	3.0950E+00
TH-229	348.	88.47	1.3919E-01
U-232	334.	57.78	7.7206E+01
PA-233	466.	312.17	1.0313E-01
UTH-233	522.	245.34	3.2355E+01
PA-234M	250.	1001.03	1.0454E+01
TH-234	334.	63.29	2.5535E+00
U-235	579.	185.71	5.5530E-02
NP-237	353.	86.48	2.9212E-01
U-237	340.	101.07	1.0897E-01
NP-238	228.	984.45	2.3227E-01
NP-239	403.	106.12	1.2498E-01
PU-239	437.	129.30	4.1069E+02
AM-241	338.	59.54	3.6760E-01
AM-243	352.	74.67	8.7895E-02

* 222-S Laboratory Counting Room 4-JUN-1999 18:48:08.90 *

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

Worklist #: 30003
Sample ID: WL30003-BLK
Sample Size: 1.00000E-03 L
Dilution Factor: 1.01000E+02

Removed by:
Ag L. Plot

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

Detector ID: GEA3
File Number: dka300:[spec.GEA3]3g3354.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:30:44.69 sec
Dead Time: 0.5%

Verified by:
John Relyea 2 June 99

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

Sample Count Time: 4-JUN-1999 16:16:54.81
Decayed to: 4-JUN-1999 16:16:54.81
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: EMB
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 3-MAY-1999 16:16:33.11
Date of last efficiency calibration: 3-MAY-1999 16:18:22.52

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	8.29	1521	3.39	16.40	7	27 12.1			
0	1238.92*	48	4.25	2477.40	2470	15 91.4			

Summary of Nuclide Activity

Page : 2

Sample ID : WL30003-BLK

Acquisition date : 4-JUN-1999 16:16:54

Total number of lines in spectrum	2	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	1	50.00%

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

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : WL30003-BLK

Acquisition date : 4-JUN-1999 16:16:54

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	174.	477.59	1.0879E+01
NA-24	30.	1368.55	1.1463E+00
K-40	977.	1460.75	5.5563E+01
AR-41	47.	1293.60	1.9778E+00
SC-46	141.	1120.55	1.8949E+00
CR-51	250.	320.08	1.0006E+01
MN-54	100.	834.83	1.2878E+00
CO-56	87.	846.76	1.2229E+00
CO-58	101.	810.78	1.2743E+00
FE-59	67.	1099.25	2.3244E+00
CO-60	56.	1332.50	1.3986E+00
ZN-65	65.	1115.55	2.5829E+00
SE-75	267.	264.66	1.5563E+00
KR-85	195.	514.00	2.8863E+02
SR-85	194.	514.01	1.3021E+00
Y-88	17.	1836.06	1.0206E+00
Y-91	82.	1204.67	5.1702E+02
NB-94	81.	871.09	1.2063E+00
ZRNB-95	110.	724.20	5.4926E+00
RU-103	130.	497.08	1.1081E+00
RURH-106	113.	621.93	2.2249E+01
AG-108m	90.	722.94	1.2163E+00
CD-109	239.	88.03	2.6990E+01
AG-110M	109.	657.76	1.1926E+00
SN-113	172.	391.69	1.5196E+00
TE-123m	281.	159.00	8.5362E-01
SB-124	148.	602.73	1.2539E+00
SB-125	187.	427.89	3.6646E+00
TE-125m	243.	109.27	2.5904E+02
I-129	193.	39.60	1.1813E+03
I-131	235.	364.48	1.3271E+00
XE-131m	319.	163.93	3.9321E+01
BA-133	211.	356.02	1.6165E+00
CS-134	145.	604.70	1.2474E+00
CS-136	83.	818.51	1.1680E+00
CS-137	308.	661.66	2.1869E+00
CS-138	30.	1435.86	4.9520E+00
CE-139	314.	165.85	9.5743E-01
BA-140	144.	537.31	4.5984E+00
LA-140	39.	1596.21	1.4517E+00
CE-141	279.	145.44	1.4655E+00
CE-144	298.	133.51	6.5978E+00
CEPR-144	298.	133.51	1.3189E+01
EU-152	272.	121.78	2.5343E+00
EU-154	53.	1274.51	3.8528E+00
EU-155	253.	86.54	3.1581E+00
HF-181	161.	482.18	1.3579E+00
TA-182	213.	67.75	4.7687E+00
HG-203	296.	279.20	1.2210E+00
BI-207	119.	569.70	1.0886E+00
TL-208	274.	277.36	1.5100E+01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL30003-BLK

Acquisition date : 4-JUN-1999 16:16:54

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	218.	46.50	4.7993E+02
BI-212	127.	727.18	1.9638E+01
PB-212	404.	238.63	2.3842E+00
BI-214	333.	609.31	4.0782E+00
PB-214	374.	351.92	1.4575E+01
RA-224	290.	240.99	2.2669E+01
RA-226	341.	186.10	2.3751E+01
AC-228	197.	911.21	7.1457E+00
TH-228	272.	84.37	8.9436E+01
TH-229	235.	88.47	3.8771E+00
U-232	189.	57.78	1.9765E+03
PA-233	242.	312.17	2.5273E+00
UTH-233	282.	245.34	8.0760E+02
PA-234M	95.	1001.03	2.2203E+02
TH-234	226.	63.29	7.1182E+01
U-235	356.	185.71	1.4760E+00
NP-237	254.	86.48	8.3851E+00
U-237	218.	101.07	2.9706E+00
NP-238	73.	984.45	4.6165E+00
NP-239	231.	106.12	3.2456E+00
PU-239	246.	129.30	1.0464E+04
AM-241	192.	59.54	9.4267E+00
AM-243	301.	74.67	2.7461E+00

 * 222-S Laboratory Counting Room 4-JUN-1999 21:44:58.12 *

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

Worklist #: 30003
 Sample ID: S99T000973-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

[Signature]

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3356.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:47:36.85 sec
 Dead Time: 11%

Verified by:

[Signature] 7 June 99

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

Sample Count Time: 4-JUN-1999 18:56:51.58
 Decayed to: 4-JUN-1999 18:56:51.58
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 3-MAY-1999 16:16:33.11
 Date of last efficiency calibration: 3-MAY-1999 16:26:42.53

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
10	6.14	95220	1.75	12.10	7	27	1.3	4.46E+03		
10	13.59	7275	0.72	27.00	7	27	8.6			
0	74.88*	1299	1.02	149.65	148	6	63.2		AM-243	167.
0	661.50*	4497900	1.48	1323.10	1315	16	0.1		CS-137	4.169E+05
0	1173.64	124	1.77	2346.95	2338	18	54.8		CO-60	13.6
0	1323.05	1269	2.04	2645.51	2636	18	6.5			
0	1332.83	152	1.52	2665.06	2658	16	25.4		CO-60	17.9

Summary of Nuclide Activity

Sample ID : S99T000973-SAM

Acquisition date : 4-JUN-1999 18:56:51

Total number of lines in spectrum 7
 Number of unidentified lines 3
 Number of lines tentatively identified by NID 4 57.14%

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			
CO-60	5.27Y	1.00	1.672E+01	1.672E+01	0.388E+01	23.23	
CS-137	30.00Y	1.00	4.169E+05	4.169E+05	0.004E+05	0.10	
AM-243	7380.00Y*****		1.672E+02	1.672E+02	1.058E+02	63.25	
Total Activity :			4.171E+05	4.171E+05			

JFR
7 June 99

Grand Total Activity : 4.171E+05 4.171E+05

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

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

Minimum Detectable Activity Report
 Sample ID : S99T000973-SAM

Page : 3
 Acquisition date : 4-JUN-1999 18:56:51

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	108052.	477.59	9.4382E+02
NA-24	36.	1368.55	3.9157E+00
K-40	956.	1460.75	1.7297E+02
AR-41	77.	1293.60	8.2399E+00
SC-46	209.	1120.55	7.4271E+00
CR-51	90124.	320.08	6.5618E+02
MN-54	214.	834.83	6.3851E+00
CO-56	208.	846.76	6.3451E+00
CO-58	214.	810.78	6.3148E+00
FE-59	168.	1099.25	1.1693E+01
ZN-65	196.	1115.55	1.4170E+01
SE-75	98941.	264.66	1.0291E+02
KR-85	56150.	514.00	1.7080E+04
SR-85	56144.	514.01	7.7260E+01
Y-88	21.	1836.06	3.7149E+00
Y-91	99.	1204.67	1.8109E+03
NB-94	250.	871.09	7.0516E+00
ZRNB-95	532.	724.20	4.1472E+01
RU-103	68374.	497.08	8.7898E+01
RURH-106	21091.	621.93	1.0395E+03
AG-108m	525.	722.94	1.0011E+01
CD-109	65095.	88.03	1.7255E+03
AG-110M	76655.	657.76	1.0734E+02
SN-113	94295.	391.69	1.2317E+02
TE-123m	89562.	159.00	5.4290E+01
SB-124	22143.	602.73	5.2989E+01
SB-125	110219.	427.89	3.0960E+02
TE-125m	73148.	109.27	1.7108E+04
I-129	55941.	39.60	2.8843E+04
I-131	90215.	364.48	9.0317E+01
XE-131m	89543.	163.93	2.3405E+03
BA-133	89251.	356.02	1.1489E+02
CS-134	22049.	604.70	5.3062E+01
CS-136	251.	818.51	6.8576E+00
CS-138	35.	1435.86	1.8287E+01
CE-139	89820.	165.85	5.7429E+01
BA-140	40618.	537.31	2.6737E+02
LA-140	19.	1596.21	3.3464E+00
CE-141	88208.	145.44	9.4249E+01
CE-144	86036.	133.51	4.1264E+02
CEPR-144	86036.	133.51	8.2455E+02
EU-152	82004.	121.78	1.6460E+02
EU-154	150.	1274.51	1.9878E+01
EU-155	64921.	86.54	1.9615E+02
HF-181	87903.	482.18	1.1024E+02
TA-182	57803.	67.75	2.8436E+02
HG-203	96304.	279.20	7.5777E+01
BI-207	25918.	569.70	5.5236E+01
TL-208	96356.	277.36	9.7309E+02
PB-210	55428.	46.50	1.7174E+04
BI-212	454.	727.18	1.2780E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T000973-SAM

Acquisition date : 4-JUN-1999 18:56:51

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	104313.	238.63	1.3230E+02
BI-214	22004.	609.31	1.1603E+02
PB-214	89333.	351.92	8.6739E+02
RA-224	103443.	240.99	1.4721E+03
RA-226	124009.	186.10	1.5849E+03
AC-228	324.	911.21	3.0732E+01
TH-228	64626.	84.37	5.3459E+03
TH-229	65223.	88.47	2.5002E+02
U-232	55811.	57.78	1.0787E+05
PA-233	90922.	312.17	1.6888E+02
UTH-233	102974.	245.34	5.3031E+04
PA-234M	201.	1001.03	1.0512E+03
TH-234	56327.	63.29	3.8963E+03
U-235	122032.	185.71	9.5630E+01
NP-237	64958.	86.48	5.1979E+02
U-237	69340.	101.07	2.0366E+02
NP-238	172.	984.45	2.3059E+01
NP-239	71052.	106.12	2.1789E+02
PU-239	85598.	129.30	7.2130E+05
AM-241	55759.	59.54	5.2644E+02

 * 222-S Laboratory Counting Room 5-JUN-1999 00:34:53.78 *

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

Worklist #: 30003
 Sample ID: S99T000973-DUP
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3357.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:47:26.27 sec
 Dead Time: 10%

Verified by:

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

Sample Count Time: 4-JUN-1999 21:46:59.46
 Decayed to: 4-JUN-1999 21:46:59.46
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 3-MAY-1999 16:16:33.11
 Date of last efficiency calibration: 3-MAY-1999 16:26:42.53

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
10	6.14	94446	1.75	12.10	7	27	1.3	4.25E+03		
10	9.59*	18287	0.70	19.00	7	27	3.6			
10	12.09	11298	0.72	24.00	7	27	5.6			
0	189.08	14785	5.92	378.15	371	18	18.4			
0	661.48*	4455193	1.48	1323.07	1315	16	0.1		CS-137	4.129E+05
0	1173.25	172	2.05	2346.16	2337	18	38.8		CO-60	18.7
0	1323.02	1167	2.03	2645.46	2639	14	6.6			
0	1333.77	116	1.67	2666.94	2658	18	45.9		CO-60	13.7

Summary of Nuclide Activity

Sample ID : S99T000973-DUP

Acquisition date : 4-JUN-1999 21:46:59

Total number of lines in spectrum 8
 Number of unidentified lines 5
 Number of lines tentatively identified by NID 3 37.50%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			uCi/L	uCi/L	2-Sigma Error	%Error	
CO-60	5.27Y	1.00	1.584E+01	1.584E+01	0.475E+01	30.01	
CS-137	30.00Y	1.00	4.129E+05	4.129E+05	0.004E+05	0.10	
Total Activity :			4.129E+05	4.129E+05			

Grand Total Activity : 4.129E+05 4.129E+05

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

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

Minimum Detectable Activity Report
 Sample ID : S99T000973-DUP

Page : 3
 Acquisition date : 4-JUN-1999 21:46:59

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	106621.	477.59	9.3756E+02
NA-24	45.	1368.55	4.3638E+00
K-40	938.	1460.75	1.7136E+02
AR-41	64.	1293.60	7.5458E+00
SC-46	262.	1120.55	8.2827E+00
CR-51	89913.	320.08	6.5541E+02
MN-54	234.	834.83	6.6680E+00
CO-56	233.	846.76	6.7091E+00
CO-58	252.	810.78	6.8288E+00
FE-59	178.	1099.25	1.2035E+01
ZN-65	159.	1115.55	1.2810E+01
SE-75	98338.	264.66	1.0260E+02
KR-85	56141.	514.00	1.7079E+04
SR-85	56133.	514.01	7.7253E+01
Y-88	24.	1836.06	3.9702E+00
Y-91	90.	1204.67	1.7317E+03
NB-94	249.	871.09	7.0314E+00
ZRNB-95	479.	724.20	3.9387E+01
RU-103	67880.	497.08	8.7580E+01
RURH-106	20674.	621.93	1.0292E+03
AG-108m	503.	722.94	9.8001E+00
CD-109	64181.	88.03	1.7133E+03
AG-110M	78953.	657.76	1.0893E+02
SN-113	93618.	391.69	1.2273E+02
TE-123m	88084.	159.00	5.3841E+01
SB-124	21875.	602.73	5.2669E+01
SB-125	109044.	427.89	3.0795E+02
TE-125m	71920.	109.27	1.6964E+04
I-129	55335.	39.60	2.8686E+04
I-131	88761.	364.48	8.9587E+01
XE-131m	89238.	163.93	2.3365E+03
BA-133	88573.	356.02	1.1445E+02
CS-134	21933.	604.70	5.2923E+01
CS-136	220.	818.51	6.4332E+00
CS-138	41.	1435.86	1.9511E+01
CE-139	89402.	165.85	5.7295E+01
BA-140	40115.	537.31	2.6572E+02
LA-140	35.	1596.21	4.3946E+00
CE-141	87370.	145.44	9.3800E+01
CE-144	85205.	133.51	4.1065E+02
CEPR-144	85203.	133.51	8.2056E+02
EU-152	81935.	121.78	1.6453E+02
EU-154	141.	1274.51	1.9323E+01
EU-155	64284.	86.54	1.9519E+02
HF-181	87004.	482.18	1.0967E+02
TA-182	57549.	67.75	2.8374E+02
HG-203	95457.	279.20	7.5444E+01
BI-207	25924.	569.70	5.5242E+01
TL-208	95763.	277.36	9.7010E+02
PB-210	54513.	46.50	1.7032E+04
BI-212	440.	727.18	1.2581E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T000973-DUP

Acquisition date : 4-JUN-1999 21:46:59

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	103342.	238.63	1.3168E+02
BI-214	21666.	609.31	1.1514E+02
PB-214	88670.	351.92	8.6332E+02
RA-224	102542.	240.99	1.4657E+03
RA-226	122580.	186.10	1.5757E+03
AC-228	288.	911.21	2.9014E+01
TH-228	63832.	84.37	5.3131E+03
TH-229	64212.	88.47	2.4808E+02
U-232	55224.	57.78	1.0730E+05
PA-233	90402.	312.17	1.6840E+02
UTH-233	102715.	245.34	5.2965E+04
PA-234M	180.	1001.03	9.9653E+02
TH-234	56192.	63.29	3.8917E+03
U-235	120757.	185.71	9.5130E+01
NP-237	64296.	86.48	5.1714E+02
U-237	68681.	101.07	2.0269E+02
NP-238	184.	984.45	2.3789E+01
NP-239	70373.	106.12	2.1684E+02
PU-239	84908.	129.30	7.1839E+05
AM-241	55395.	59.54	5.2473E+02
AM-243	60985.	74.67	1.4821E+02

 * 222-S Laboratory Counting Room 5-JUN-1999 07:20:39.35 *

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

Worklist #: 30003
 Sample ID: S99T000974-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

Em Butler

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3360.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:48:03.05 sec
 Dead Time: 11%

Verified by:

John Relyea 7 June 99

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

Sample Count Time: 5-JUN-1999 04:32:06.92
 Decayed to: 5-JUN-1999 04:32:06.92
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: GL
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 3-MAY-1999 16:16:33.11
 Date of last efficiency calibration: 3-MAY-1999 16:26:42.53

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
10	5.52	84791	1.16	10.86	7	27	1.1	2.72E+03		
10	7.13	65229	1.47	14.07	7	27	1.9			
10	8.97*	29045	1.02	17.75	7	27	3.1			
10	12.03	27861	1.27	23.89	7	27	3.7			
10	13.30	17699	1.88	26.42	7	27	7.4			
0	661.47*	4604581	1.48	1323.06	1315	16	0.1		CS-137	4.268E+05
0	1173.17	145	1.17	2346.00	2339	14	37.6		CO-60	15.8
0	1323.03	1233	1.89	2645.48	2636	19	7.0			
0	1332.68	127	1.80	2664.75	2655	16	32.4		CO-60	15.0

Summary of Nuclide Activity
 Sample ID : S99T000974-SAM

Acquisition date : 5-JUN-1999 04:32:06

Total number of lines in spectrum 9
 Number of unidentified lines 6
 Number of lines tentatively identified by NID 3 33.33%

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			
CO-60	5.27Y	1.00	1.535E+01	1.535E+01	0.377E+01	24.58	
CS-137	30.00Y	1.00	4.268E+05	4.268E+05	0.004E+05	0.09	
Total Activity :			4.268E+05	4.268E+05			

Grand Total Activity : 4.268E+05 4.268E+05

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

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

Minimum Detectable Activity Report
 Sample ID : S99T000974-SAM

Page : 3
 Acquisition date : 5-JUN-1999 04:32:06

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	110117.	477.59	9.5278E+02
NA-24	47.	1368.55	4.4116E+00
K-40	894.	1460.75	1.6734E+02
AR-41	77.	1293.60	8.2336E+00
SC-46	271.	1120.55	8.4185E+00
CR-51	92438.	320.08	6.6454E+02
MN-54	223.	834.83	6.5043E+00
CO-56	262.	846.76	7.0913E+00
CO-58	252.	810.78	6.8339E+00
FE-59	182.	1099.25	1.2157E+01
ZN-65	174.	1115.55	1.3362E+01
SE-75	101340.	264.66	1.0415E+02
KR-85	57426.	514.00	1.7273E+04
SR-85	57418.	514.01	7.8130E+01
Y-88	18.	1836.06	3.4551E+00
Y-91	103.	1204.67	1.8435E+03
NB-94	262.	871.09	7.2029E+00
ZRNB-95	528.	724.20	4.1320E+01
RU-103	70452.	497.08	8.9221E+01
RURH-106	21197.	621.93	1.0421E+03
AG-108m	536.	722.94	1.0113E+01
CD-109	66642.	88.03	1.7458E+03
AG-110M	82563.	657.76	1.1139E+02
SN-113	96664.	391.69	1.2470E+02
TE-123m	91121.	159.00	5.4760E+01
SB-124	22858.	602.73	5.3835E+01
SB-125	111970.	427.89	3.1204E+02
TE-125m	74514.	109.27	1.7267E+04
I-129	57073.	39.60	2.9132E+04
I-131	91968.	364.48	9.1190E+01
XE-131m	91489.	163.93	2.3658E+03
BA-133	91444.	356.02	1.1629E+02
CS-134	22719.	604.70	5.3859E+01
CS-136	237.	818.51	6.6702E+00
CS-138	36.	1435.86	1.8474E+01
CE-139	91871.	165.85	5.8079E+01
BA-140	41617.	537.31	2.7063E+02
LA-140	27.	1596.21	3.8879E+00
CE-141	89773.	145.44	9.5080E+01
CE-144	88644.	133.51	4.1884E+02
CEPR-144	88644.	133.51	8.3694E+02
EU-152	83837.	121.78	1.6642E+02
EU-154	167.	1274.51	2.0911E+01
EU-155	66578.	86.54	1.9863E+02
HF-181	89855.	482.18	1.1145E+02
TA-182	58856.	67.75	2.8693E+02
HG-203	98649.	279.20	7.6693E+01
BI-207	26887.	569.70	5.6255E+01
TL-208	99402.	277.36	9.8832E+02
PB-210	56332.	46.50	1.7314E+04
BI-212	480.	727.18	1.3127E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T000974-SAM

Acquisition date : 5-JUN-1999 04:32:06

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	106631.	238.63	1.3376E+02
BI-214	22515.	609.31	1.1737E+02
PB-214	90787.	351.92	8.7656E+02
RA-224	105647.	240.99	1.4877E+03
RA-226	126482.	186.10	1.6006E+03
AC-228	329.	911.21	3.0968E+01
TH-228	66565.	84.37	5.4254E+03
TH-229	66528.	88.47	2.5251E+02
U-232	56449.	57.78	1.0849E+05
PA-233	93300.	312.17	1.7107E+02
UTH-233	105194.	245.34	5.3599E+04
PA-234M	187.	1001.03	1.0159E+03
TH-234	57801.	63.29	3.9469E+03
U-235	124526.	185.71	9.6601E+01
NP-237	66586.	86.48	5.2625E+02
U-237	70634.	101.07	2.0555E+02
NP-238	201.	984.45	2.4838E+01
NP-239	72757.	106.12	2.2049E+02
PU-239	86751.	129.30	7.2613E+05
AM-241	56617.	59.54	5.3046E+02
AM-243	62711.	74.67	1.5029E+02

* 222-S Laboratory Counting Room 5-JUN-1999 10:13:54.25 *

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

Worklist #: 30003
Sample ID: S99T974-DUP
Sample Size: 1.00000E-03 L
Dilution Factor: 1.01000E+02

Removed by:

Em Barba

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

Detector ID: GEA3
File Number: dka300:[spec.GEA3]3g3361.cnf
Geometry: 43
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:47:50.30 sec
Dead Time: 11%

Verified by:

John Relyea 7 June 99

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

Sample Count Time: 5-JUN-1999 07:25:32.61
Decayed to: 5-JUN-1999 07:25:32.61
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: EMB
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 3-MAY-1999 16:16:33.11
Date of last efficiency calibration: 3-MAY-1999 16:26:42.53

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
10	6.12	95853	1.75	12.05	7	27	1.3	4.40E+03		
10	12.09	11449	0.72	24.00	7	27	5.6			
0	661.46*	4556649	1.48	1323.04	1315	16	0.1		CS-137	4.223E+05
0	1173.44	137	1.93	2346.55	2339	14	42.3		CO-60	15.0
0	1275.21	114	1.73	2549.93	2542	18	40.5			
0	1322.98	1290	2.01	2645.38	2638	17	6.4			
0	1332.94	153	1.76	2665.28	2659	15	24.3		CO-60	18.1

Summary of Nuclide Activity
 Sample ID : S99T974-DUP

Page : 2
 Acquisition date : 5-JUN-1999 07:25:32

Total number of lines in spectrum 7
 Number of unidentified lines 3
 Number of lines tentatively identified by NID 4 57.14%

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			
CO-60	5.27Y	1.00	1.709E+01	1.709E+01	0.361E+01	21.12	
CS-137	30.00Y	1.00	4.223E+05	4.223E+05	0.004E+05	0.10	
Total Activity :			4.223E+05	4.223E+05			

Grand Total Activity : 4.223E+05 4.223E+05

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

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

Minimum Detectable Activity Report
 Sample ID : S99T974-DUP

Page : 3
 Acquisition date : 5-JUN-1999 07:25:32

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	109386.	477.59	9.4962E+02
NA-24	35.	1368.55	3.8704E+00
K-40	904.	1460.75	1.6824E+02
AR-41	62.	1293.60	7.4660E+00
SC-46	237.	1120.55	7.8800E+00
CR-51	91605.	320.08	6.6154E+02
MN-54	215.	834.83	6.3904E+00
CO-56	252.	846.76	6.9671E+00
CO-58	246.	810.78	6.7513E+00
FE-59	185.	1099.25	1.2272E+01
ZN-65	172.	1115.55	1.3313E+01
SE-75	100566.	264.66	1.0375E+02
KR-85	56987.	514.00	1.7207E+04
SR-85	56980.	514.01	7.7832E+01
Y-88	14.	1836.06	3.1478E+00
Y-91	111.	1204.67	1.9056E+03
NB-94	222.	871.09	6.6477E+00
ZRNB-95	553.	724.20	4.2244E+01
RU-103	69499.	497.08	8.8617E+01
RURH-106	20974.	621.93	1.0366E+03
AG-108m	542.	722.94	1.0171E+01
CD-109	66225.	88.03	1.7404E+03
AG-110M	84465.	657.76	1.1266E+02
SN-113	95720.	391.69	1.2410E+02
TE-123m	90112.	159.00	5.4456E+01
SB-124	22709.	602.73	5.3659E+01
SB-125	111411.	427.89	3.1127E+02
TE-125m	74232.	109.27	1.7234E+04
I-129	56226.	39.60	2.8916E+04
I-131	91001.	364.48	9.0709E+01
XE-131m	91613.	163.93	2.3674E+03
BA-133	90168.	356.02	1.1548E+02
CS-134	22549.	604.70	5.3658E+01
CS-136	235.	818.51	6.6373E+00
CS-138	35.	1435.86	1.8360E+01
CE-139	91744.	165.85	5.8039E+01
BA-140	41112.	537.31	2.6899E+02
LA-140	38.	1596.21	4.5728E+00
CE-141	88992.	145.44	9.4666E+01
CE-144	87569.	133.51	4.1630E+02
CEPR-144	87568.	133.51	8.3185E+02
EU-152	82619.	121.78	1.6521E+02
EU-154	150.	1274.51	1.9914E+01
EU-155	65879.	86.54	1.9759E+02
HF-181	88601.	482.18	1.1067E+02
TA-182	58450.	67.75	2.8594E+02
HG-203	97592.	279.20	7.6282E+01
BI-207	26229.	569.70	5.5565E+01
TL-208	97823.	277.36	9.8046E+02
PB-210	55574.	46.50	1.7197E+04
BI-212	493.	727.18	1.3305E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T974-DUP

Acquisition date : 5-JUN-1999 07:25:32

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	106254.	238.63	1.3352E+02
BI-214	22188.	609.31	1.1651E+02
PB-214	90810.	351.92	8.7562E+02
RA-224	105645.	240.99	1.4877E+03
RA-226	125370.	186.10	1.5935E+03
AC-228	311.	911.21	3.0117E+01
TH-228	65875.	84.37	5.3972E+03
TH-229	66317.	88.47	2.5211E+02
U-232	56495.	57.78	1.0853E+05
PA-233	92112.	312.17	1.6998E+02
UTH-233	104564.	245.34	5.3439E+04
PA-234M	186.	1001.03	1.0128E+03
TH-234	57077.	63.29	3.9221E+03
U-235	123503.	185.71	9.6204E+01
NP-237	65918.	86.48	5.2361E+02
U-237	70244.	101.07	2.0498E+02
NP-238	194.	984.45	2.4410E+01
NP-239	72283.	106.12	2.1977E+02
PU-239	86343.	129.30	7.2443E+05
AM-241	56535.	59.54	5.3008E+02
AM-243	62599.	74.67	1.5016E+02

* 222-S Laboratory Counting Room 5-JUN-1999 12:59:07.04 *

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

Worklist #: 30003
Sample ID: S99T975-SAM
Sample Size: 1.00000E-03 L
Dilution Factor: 1.01000E+02

Removed by:
Em Barck

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

Detector ID: GEA3
File Number: dka300:[spec.GEA3]3g3363.cnf
Geometry: 44
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:39:53.15 sec
Dead Time: 6.2%

Verified by:
John Relyea 7 June 99

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

Sample Count Time: 5-JUN-1999 10:18:44.06
Decayed to: 5-JUN-1999 10:18:44.06
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: EMB
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 3-MAY-1999 16:16:33.11
Date of last efficiency calibration: 3-MAY-1999 16:30:14.85

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
10	5.44	38666	1.04	10.70	7	27	1.6	7.27E+02		
10	6.64	41629	1.69	13.10	7	27	2.2			
10	8.15	30540	1.81	16.13	7	27	3.4			
10	9.90*	23164	1.83	19.63	7	27	4.3			
10	11.99	15637	1.85	23.81	7	27	6.2			
10	14.75	4695	1.07	29.32	7	27	13.0			
0	75.08*	2398	1.13	150.04	148	6	26.4		AM-243	1.022E+03
0	84.61*	1579	0.89	169.12	167	7	46.7		TH-228	2.390E+04
0	661.44*	2412739	1.46	1322.98	1315	16	0.1		CS-137	6.676E+05
0	1173.27	103	1.25	2346.21	2339	14	46.6		CO-60	33.8
0	1322.92	393	1.89	2645.26	2639	14	11.8			
0	1333.08	55	1.57	2665.57	2658	15	71.1		CO-60	19.3

Summary of Nuclide Activity
 Sample ID : S99T975-SAM

Page : 2
 Acquisition date : 5-JUN-1999 10:18:44

Total number of lines in spectrum 12
 Number of unidentified lines 7
 Number of lines tentatively identified by NID 5 41.67%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
CO-60	5.27Y	1.00	2.558E+01	2.558E+01	1.036E+01	40.49	
CS-137	30.00Y	1.00	6.676E+05	6.676E+05	0.009E+05	0.13	
TH-228	1.91Y	1.00	2.390E+04	2.390E+04	1.116E+04	46.70	J70
AM-243	7380.00Y*****	1.00	1.022E+03	1.022E+03	0.270E+03	26.43	J70
Total Activity :			6.926E+05	6.926E+05			7 June 99

Grand Total Activity : 6.926E+05 6.926E+05

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

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

Minimum Detectable Activity Report

Sample ID : S99T975-SAM

Acquisition date : 5-JUN-1999 10:18:44

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	58822.	477.59	2.0890E+03
NA-24	36.	1368.55	1.1681E+01
K-40	912.	1460.75	5.0707E+02
AR-41	55.	1293.60	2.0790E+01
SC-46	182.	1120.55	2.0885E+01
CR-51	51722.	320.08	1.5255E+03
MN-54	155.	834.83	1.6361E+01
CO-56	140.	846.76	1.5712E+01
CO-58	147.	810.78	1.5803E+01
FE-59	100.	1099.25	2.7519E+01
ZN-65	108.	1115.55	3.1998E+01
SE-75	55408.	264.66	2.4046E+02
KR-85	31811.	514.00	3.8497E+04
SR-85	31806.	514.01	1.7413E+02
Y-88	19.	1836.06	1.0467E+01
Y-91	84.	1204.67	5.0486E+03
NB-94	128.	871.09	1.5322E+01
ZRNB-95	236.	724.20	8.3501E+01
RU-103	38461.	497.08	1.9755E+02
RURH-106	11420.	621.93	2.2867E+03
AG-108m	230.	722.94	2.0052E+01
CD-109	38932.	88.03	4.4923E+03
AG-110M	46226.	657.76	2.4900E+02
SN-113	55014.	391.69	2.8471E+02
TE-123m	55367.	159.00	1.4061E+02
SB-124	12335.	602.73	1.1823E+02
SB-125	62286.	427.89	7.0115E+02
TE-125m	44212.	109.27	4.4924E+04
I-129	31784.	39.60	5.6280E+04
I-131	53079.	364.48	2.1054E+02
XE-131m	55999.	163.93	6.0779E+03
BA-133	52388.	356.02	2.6799E+02
CS-134	12363.	604.70	1.1878E+02
CS-136	131.	818.51	1.5044E+01
CS-138	35.	1435.86	5.2744E+01
CE-139	56465.	165.85	1.4936E+02
BA-140	22758.	537.31	5.9879E+02
LA-140	35.	1596.21	1.3077E+01
CE-141	53410.	145.44	2.4357E+02
CE-144	52368.	133.51	1.0766E+03
CEPR-144	52367.	133.51	2.1512E+03
EU-152	50388.	121.78	4.3396E+02
EU-154	99.	1274.51	4.9026E+01
EU-155	39393.	86.54	5.1383E+02
HF-181	48540.	482.18	2.4568E+02
TA-182	33722.	67.75	7.0725E+02
HG-203	54037.	279.20	1.7631E+02
BI-207	14834.	569.70	1.2497E+02
TL-208	54064.	277.36	2.2656E+03
PB-210	31511.	46.50	3.6941E+04
BI-212	227.	727.18	2.7295E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T975-SAM

Acquisition date : 5-JUN-1999 10:18:44

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	59043.	238.63	3.1407E+02
BI-214	12088.	609.31	2.5711E+02
PB-214	52013.	351.92	1.9294E+03
RA-224	58928.	240.99	3.5006E+03
RA-226	74180.	186.10	3.9727E+03
AC-228	231.	911.21	7.8300E+01
TH-229	38798.	88.47	6.4937E+02
U-232	32128.	57.78	2.5566E+05
PA-233	52235.	312.17	3.9365E+02
UTH-233	58095.	245.34	1.2533E+05
PA-234M	106.	1001.03	2.3230E+03
TH-234	32861.	63.29	9.5417E+03
U-235	72939.	185.71	2.3967E+02
NP-237	39493.	86.48	1.3629E+03
U-237	41256.	101.07	5.3088E+02
NP-238	97.	984.45	5.2691E+01
NP-239	42548.	106.12	5.6936E+02
PU-239	51988.	129.30	1.8840E+06
AM-241	32135.	59.54	1.2600E+03

 * 222-S Laboratory Counting Room 5-JUN-1999 16:01:47.57 *

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

Worklist #: 30003
 Sample ID: S99T975-DUP
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

Em Bareh

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3365.cnf
 Geometry: 44
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:39:40.68 sec
 Dead Time: 6.1%

Verified by:

John Redge June 99

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

Sample Count Time: 5-JUN-1999 13:21:36.91
 Decayed to: 5-JUN-1999 13:21:36.91
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

Date of last energy calibration: 3-MAY-1999 16:16:33.11
 Date of last efficiency calibration: 3-MAY-1999 16:30:14.85

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	6.19	63230	1.95	12.19	8	11	1.7			
0	75.00*	2294	1.16	149.90	148	6	27.4		AM-243	978.
0	84.69*	2701	1.44	169.28	167	6	23.7		TH-228	4.088E+04
0	661.44*	2366581	1.46	1323.00	1315	16	0.1		CS-137	6.549E+05
0	1173.34	78	1.55	2346.35	2338	13	59.9		CO-60	25.7
0	1323.01	374	1.98	2645.45	2640	12	11.7			
0	1333.27	60	1.41	2665.95	2658	14	64.1		CO-60	21.4

Summary of Nuclide Activity

Sample ID : S99T975-DUP

Acquisition date : 5-JUN-1999 13:21:36

Total number of lines in spectrum 7
 Number of unidentified lines 2
 Number of lines tentatively identified by NID 5 71.43%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
CO-60	5.27Y	1.00	2.333E+01	2.333E+01	1.025E+01	43.93	
CS-137	30.00Y	1.00	6.549E+05	6.549E+05	0.009E+05	0.13	
TH-228	1.91Y	1.00	4.088E+04	4.088E+04	0.969E+04	23.71	JJR
AM-243	7380.00Y*****	1.00	9.776E+02	9.776E+02	2.679E+02	27.40	JJR
Total Activity :			6.967E+05	6.967E+05			7 June 99

Grand Total Activity : 6.967E+05 6.967E+05

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

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

Minimum Detectable Activity Report

Page : 3

Sample ID : S99T975-DUP

Acquisition date : 5-JUN-1999 13:21:36

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	57270.	477.59	2.0614E+03
NA-24	45.	1368.55	1.3018E+01
K-40	940.	1460.75	5.1473E+02
AR-41	67.	1293.60	2.2662E+01
SC-46	163.	1120.55	1.9788E+01
CR-51	50997.	320.08	1.5148E+03
MN-54	127.	834.83	1.4876E+01
CO-56	114.	846.76	1.4246E+01
CO-58	128.	810.78	1.4768E+01
FE-59	96.	1099.25	2.6923E+01
ZN-65	102.	1115.55	3.1194E+01
SE-75	53981.	264.66	2.3735E+02
KR-85	31103.	514.00	3.8068E+04
SR-85	31100.	514.01	1.7219E+02
Y-88	26.	1836.06	1.2103E+01
Y-91	79.	1204.67	4.8878E+03
NB-94	145.	871.09	1.6226E+01
ZRNB-95	258.	724.20	8.7209E+01
RU-103	37458.	497.08	1.9497E+02
RURH-106	11246.	621.93	2.2694E+03
AG-108m	237.	722.94	2.0342E+01
CD-109	38008.	88.03	4.4388E+03
AG-110M	44072.	657.76	2.4315E+02
SN-113	53298.	391.69	2.8025E+02
TE-123m	54289.	159.00	1.3924E+02
SB-124	12111.	602.73	1.1716E+02
SB-125	61192.	427.89	6.9498E+02
TE-125m	43454.	109.27	4.4538E+04
I-129	30968.	39.60	5.5556E+04
I-131	51141.	364.48	2.0667E+02
XE-131m	54811.	163.93	6.0132E+03
BA-133	51061.	356.02	2.6459E+02
CS-134	12090.	604.70	1.1747E+02
CS-136	118.	818.51	1.4291E+01
CS-138	35.	1435.86	5.2618E+01
CE-139	55078.	165.85	1.4752E+02
BA-140	22331.	537.31	5.9316E+02
LA-140	23.	1596.21	1.0788E+01
CE-141	52842.	145.44	2.4228E+02
CE-144	51073.	133.51	1.0632E+03
CEPR-144	51072.	133.51	2.1245E+03
EU-152	49452.	121.78	4.2992E+02
EU-154	113.	1274.51	5.2263E+01
EU-155	38378.	86.54	5.0718E+02
HF-181	47473.	482.18	2.4297E+02
TA-182	33126.	67.75	7.0099E+02
HG-203	52962.	279.20	1.7455E+02
BI-207	14181.	569.70	1.2220E+02
TL-208	52962.	277.36	2.2424E+03
PB-210	30999.	46.50	3.6641E+04
BI-212	228.	727.18	2.7344E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T975-DUP

Acquisition date : 5-JUN-1999 13:21:36

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	58210.	238.63	3.1185E+02
BI-214	11928.	609.31	2.5541E+02
PB-214	50972.	351.92	1.9078E+03
RA-224	57523.	240.99	3.4587E+03
RA-226	72881.	186.10	3.9378E+03
AC-228	235.	911.21	7.8894E+01
TH-229	37822.	88.47	6.4117E+02
U-232	31349.	57.78	2.5255E+05
PA-233	50734.	312.17	3.8796E+02
UTH-233	57022.	245.34	1.2417E+05
PA-234M	82.	1001.03	2.0665E+03
TH-234	32101.	63.29	9.4311E+03
U-235	71968.	185.71	2.3807E+02
NP-237	38452.	86.48	1.3448E+03
U-237	40209.	101.07	5.2412E+02
NP-238	85.	984.45	4.9499E+01
NP-239	41490.	106.12	5.6224E+02
PU-239	50514.	129.30	1.8571E+06
AM-241	31293.	59.54	1.2435E+03

LABCORE Completed Worklist Report for Worklist# 30044

Analyst: scl

Instrument: GEA01

Book#: 46B57

Method: LA-548-121 Rev/Mod F - ϕ

Worklist Comment: U102 GRAB1, @GEA-02 Std: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@GEA-01 CO60-02	SOLID	5.224e-03	5.63e-03	107.772	% Recovery
1 STD		0	@GEA-01 CO60-02E	SOLID	1	2.79	2.790	% Ct Error
1 STD		0	@GEA-01 CS13702	SOLID	8.076e-03	7.86e-03	97.325	% Recovery
1 STD		0	@GEA-01 CS13702E	SOLID	1	2.72	2.720	% Ct Error
2 BLNK-PREP		0	@GEA-01 CO60-02	SOLID	1	<5.54e-2		uCi/g
2 BLNK-PREP		0	@GEA-01 CS13702	SOLID	1	<1.14e-1		uCi/g
3 SAMPLE	S99T000963	0 F	@GEA-01 CO60-02	SOLID	N/A	< 5.535e-02	5.54e-002	uCi/g
3 SAMPLE	S99T000963	0 F	@GEA-01 CO60-02E	SOLID	N/A	n/a		% Ct. Error
3 SAMPLE	S99T000963	0 F	@GEA-01 CS13702	SOLID	N/A	2.079e+02		uCi/g
3 SAMPLE	S99T000963	0 F	@GEA-01 CS13702E	SOLID	N/A	0.400		% Ct. Error
4 DUP	S99T000963	0 F	@GEA-01 CO60-02	SOLID	<5.54e-2	<6.13e-2		RPD
4 DUP	S99T000963	0 F	@GEA-01 CO60-02E	SOLID	1	n/a		% Ct Error
4 DUP	S99T000963	0 F	@GEA-01 CS13702	SOLID	2.08e+02	2.08e+02	0.000	RPD
4 DUP	S99T000963	0 F	@GEA-01 CS13702E	SOLID	1.00	0.400	0.400	% Ct Error

Final page for worklist# 30044

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____


Reviewer Signature

6-14-99
Date

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

LABCORE Data Entry Template for Worklist# 30044

Analyst: S.L Instrument: GEA00 / Book# 46B57

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

Worklist Comment: U102 GRAB1, @GEA-02 Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-01	SOLID		
2 BLNK-PREP			@GEA-01	SOLID		
3 SAMPLE	S99T000963	0 F	@GEA-01	SOLID	99000200	U-102 GRAB1
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4 DUP	S99T000963	0 F	@GEA-01	SOLID		

Final page for worklist # 30044

Sue L... 6-10-99
Signature Date

Em Baek 6-14-99
Signature Date

Data Entry Comments:

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

 * 222-S Laboratory Counting Room 10-JUN-1999 10:13:59.86 *

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

Worklist #: 30044
 Sample ID: WL30044-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

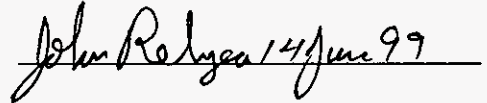
Removed by:



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

Detector ID: GEA1
 File Number: dka300:[spec.GEA1]1g1736.cnf
 Geometry: 41
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:14.45 sec
 Dead Time: 0.5%

Verified by:



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

Sample Count Time: 10-JUN-1999 09:23:12.90
 Decayed to: 10-JUN-1999 09:23:12.90
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: NEW
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

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

Date of last energy calibration: 3-MAY-1999 13:09:39.34
 Date of last efficiency calibration: 3-MAY-1999 13:10:20.91

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	31.86	1063	1.07	63.92	60	8	11.9			
0	36.42	239	0.93	73.04	69	9	48.1			
0	661.73*	6684	1.37	1323.35	1315	15	2.7		CS-137	7.86
0	1173.18	3426	1.80	2346.36	2336	19	4.0		CO-60	5.75
0	1332.46	2970	1.88	2665.04	2656	17	3.9		CO-60	5.52

Summary of Nuclide Activity

Sample ID : WL30044-STD

Acquisition date : 10-JUN-1999 09:23:12

Total number of lines in spectrum 5
 Number of unidentified lines 2
 Number of lines tentatively identified by NID 3 60.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			uCi/L	uCi/L	2-Sigma Error	%Error	
CO-60	5.27Y	1.00	5.627E+00	5.627E+00	0.157E+00	2.79	
CS-137	30.00Y	1.00	7.864E+00	7.864E+00	0.214E+00	2.72	
Total Activity :			1.349E+01	1.349E+01			

Grand Total Activity : 1.349E+01 1.349E+01

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

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

Minimum Detectable Activity Report

Sample ID : WL30044-STD

Acquisition date : 10-JUN-1999 09:23:12

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	427.	477.59	7.0388E-01
NA-24	20.	1368.55	4.5009E-02
K-40	513.	1460.75	2.0166E+00
AR-41	49.	1293.60	7.5036E-02
SC-46	209.	1120.55	1.1301E-01
CR-51	500.	320.08	5.4390E-01
MN-54	219.	834.83	8.9124E-02
CO-56	230.	846.76	9.2467E-02
CO-58	227.	810.78	8.8668E-02
FE-59	204.	1099.25	1.9435E-01
ZN-65	206.	1115.55	2.2031E-01
SE-75	568.	264.66	8.5221E-02
KR-85	354.	514.00	1.6415E+01
SR-85	354.	514.01	7.4191E-02
Y-88	11.	1836.06	4.2892E-02
Y-91	93.	1204.67	2.7204E+01
NB-94	243.	871.09	9.7427E-02
ZRNB-95	185.	724.20	3.2589E-01
RU-103	381.	497.08	7.8601E-02
RURH-106	228.	621.93	1.3890E+00
AG-108m	199.	722.94	8.1871E-02
CD-109	603.	88.03	8.4198E-01
AG-110M	360.	657.76	9.5776E-02
SN-113	432.	391.69	9.5271E-02
TE-123m	702.	159.00	4.6751E-02
SB-124	242.	602.73	7.0438E-02
SB-125	454.	427.89	2.3038E-01
TE-125m	659.	109.27	1.1646E+01
I-129	466.	39.60	4.7853E-01
I-131	439.	364.48	7.1012E-02
XE-131m	702.	163.93	2.0389E+00
BA-133	441.	356.02	9.1136E-02
CS-134	249.	604.70	7.1761E-02
CS-136	236.	818.51	9.0988E-02
CS-138	29.	1435.86	1.1623E-01
CE-139	673.	165.85	4.9289E-02
BA-140	250.	537.31	2.5740E-01
LA-140	20.	1596.21	5.2285E-02
CE-141	704.	145.44	7.8101E-02
CE-144	711.	133.51	3.2834E-01
CEPR-144	711.	133.51	6.5607E-01
EU-152	655.	121.78	1.1906E-01
EU-154	51.	1274.51	1.8721E-01
EU-155	596.	86.54	9.2058E-02
HF-181	410.	482.18	8.9491E-02
TA-182	515.	67.75	6.9512E-02
HG-203	564.	279.20	6.3638E-02
BI-207	253.	569.70	6.8199E-02
TL-208	573.	277.36	8.2370E-01
PB-210	492.	46.50	8.0867E-01
BI-212	178.	727.18	1.0663E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL30044-STD

Acquisition date : 10-JUN-1999 09:23:12

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	673.	238.63	1.1463E-01
BI-214	356.	609.31	1.8713E-01
PB-214	556.	351.92	3.1269E-01
RA-224	612.	240.99	1.2146E+00
RA-226	794.	186.10	1.3048E+00
AC-228	334.	911.21	4.4403E-01
TH-228	629.	84.37	2.4457E+00
TH-229	616.	88.47	1.2434E-01
U-232	591.	57.78	1.6031E+01
PA-233	470.	312.17	1.3484E-01
UTH-233	599.	245.34	4.3833E+01
PA-234M	232.	1001.03	1.6575E+01
TH-234	548.	63.29	7.8952E-01
U-235	792.	185.71	7.9241E-02
NP-237	601.	86.48	2.4448E-01
U-237	682.	101.07	1.2951E-01
NP-238	209.	984.45	3.6506E-01
NP-239	627.	106.12	1.3966E-01
PU-239	705.	129.30	5.5856E+02
AM-241	641.	59.54	9.1923E-02
AM-243	651.	74.67	5.2732E-02

* 222-S Laboratory Counting Room 10-JUN-1999 12:47:46.15 *

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

Worklist #: 30044
Sample ID: WL30044-BLNK
Sample Size: 2.50000E-04 L
Dilution Factor: 1.00000E+00

Removed by:



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

Detector ID: GEA1
File Number: dka300:[spec.GEA1]1g1737.cnf
Geometry: 41
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:30:32.09 sec
Dead Time: 0.4%

Verified by:



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

Sample Count Time: 10-JUN-1999 10:16:43.13
Decayed to: 10-JUN-1999 10:16:43.13
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: MB
Background Subtract: DKA300:[SPEC.GEA1]1GBACK

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

Date of last energy calibration: 3-MAY-1999 13:09:39.34
Date of last efficiency calibration: 3-MAY-1999 13:10:20.91

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.79	210	1.20	25.81	23	6	49.1			
0	16.00	276	1.58	32.22	29	8	47.2			
0	661.59*	150	1.54	1323.07	1317	15	56.8		CS-137	0.235

Summary of Nuclide Activity

Sample ID : WL30044-BLNK

Acquisition date : 10-JUN-1999 10:16:43

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L				
CS-137	30.00Y	1.00	2.351E-01	2.351E-01	1.336E-01	56.82		
Total Activity :			2.351E-01	2.351E-01				
Grand Total Activity :			2.351E-01	2.351E-01				

use for detection limit
14 June 99
JAR

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

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

Minimum Detectable Activity Report

Page : 3

Sample ID : WL30044-BLNK

Acquisition date : 10-JUN-1999 10:16:43

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	341.	477.59	8.4117E-01
NA-24	67.	1368.55	1.0926E-01
K-40	1709.	1460.75	4.8516E+00
AR-41	86.	1293.60	1.7340E-01
SC-46	249.	1120.55	1.6373E-01
CR-51	617.	320.08	8.0417E-01
MN-54	194.	834.83	1.1209E-01
CO-56	156.	846.76	1.0240E-01
CO-58	178.	810.78	1.0519E-01
FE-59	137.	1099.25	2.1395E-01
CO-60	87.	1332.50	1.1408E-01
ZN-65	130.	1115.55	2.3536E-01
SE-75	784.	264.66	1.3304E-01
KR-85	408.	514.00	2.3449E+01
SR-85	408.	514.01	1.0600E-01
Y-88	16.	1836.06	6.6846E-02
Y-91	161.	1204.67	4.7060E+01
NB-94	159.	871.09	1.0597E-01
ZRNB-95	200.	724.20	4.5121E-01
RU-103	292.	497.08	9.2224E-02
RURH-106	223.	621.93	1.8344E+00
AG-108m	195.	722.94	1.0833E-01
CD-109	1181.	88.03	1.5601E+00
AG-110M	195.	657.76	9.5069E-02
SN-113	425.	391.69	1.2607E-01
TE-123m	1320.	159.00	8.5034E-02
SB-124	229.	602.73	9.1576E-02
SB-125	375.	427.89	2.8003E-01
TE-125m	1315.	109.27	2.1788E+01
I-129	762.	39.60	8.1105E-01
I-131	486.	364.48	9.9880E-02
XE-131m	1258.	163.93	3.6278E+00
BA-133	491.	356.02	1.2806E-01
CS-134	237.	604.70	9.3509E-02
CS-136	174.	818.51	1.0499E-01
CS-138	43.	1435.86	3.8433E-01
CE-139	1354.	165.85	9.2619E-02
BA-140	263.	537.31	3.5278E-01
LA-140	48.	1596.21	1.0536E-01
CE-141	1366.	145.44	1.4424E-01
CE-144	1438.	133.51	6.1872E-01
CEPR-144	1438.	133.51	1.2363E+00
EU-152	1383.	121.78	2.2903E-01
EU-154	107.	1274.51	3.5305E-01
EU-155	1171.	86.54	1.7083E-01
HF-181	338.	482.18	1.0867E-01
TA-182	902.	67.75	1.2194E-01
HG-203	754.	279.20	9.7849E-02
BI-207	252.	569.70	9.0792E-02
TL-208	785.	277.36	1.2805E+00
PB-210	868.	46.50	1.4276E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL30044-BLNK

Acquisition date : 10-JUN-1999 10:16:43

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	231.	727.18	1.6124E+00
PB-212	1206.	238.63	2.0348E-01
BI-214	621.	609.31	3.2742E-01
PB-214	873.	351.92	1.1562E+00
RA-224	974.	240.99	2.0475E+00
RA-226	1240.	186.10	2.1659E+00
AC-228	346.	911.21	6.0239E-01
TH-228	1266.	84.37	4.5958E+00
TH-229	1167.	88.47	2.2673E-01
U-232	1068.	57.78	2.8567E+01
PA-233	588.	312.17	2.0073E-01
UTH-233	827.	245.34	6.8451E+01
PA-234M	153.	1001.03	1.8094E+01
TH-234	1073.	63.29	1.4629E+00
U-235	1246.	185.71	1.3198E-01
NP-237	1179.	86.48	4.5353E-01
U-237	1263.	101.07	2.3445E-01
NP-238	150.	984.45	4.1951E-01
NP-239	1337.	106.12	2.7275E-01
PU-239	1385.	129.30	1.0375E+03
AM-241	1041.	59.54	1.5546E-01
AM-243	1237.	74.67	9.6321E-02

 * 222-S Laboratory Counting Room 10-JUN-1999 15:46:51.90 *

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

Worklist #: 30044
 Sample ID: S99T963-SAM
 Sample Size: 2.50000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

Em Barbee

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

Detector ID: GEA1
 File Number: dka300:[spec.GEA1]1g1739.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:31:41.79 sec
 Dead Time: 1.1%

Verified by:

John Ralyea 14 June 99

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

Sample Count Time: 10-JUN-1999 13:14:41.30
 Decayed to: 10-JUN-1999 13:14:41.30
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: MB
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

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

Date of last energy calibration: 3-MAY-1999 13:09:39.34
 Date of last efficiency calibration: 3-MAY-1999 13:10:20.91

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	21.75	1396	1.03	43.73	40	8	25.7			
0	31.87	46680	0.99	63.95	60	9	1.5			
0	36.40	13476	1.13	73.00	69	10	3.8			
0	59.40	1036	0.91	118.98	116	7	29.6		AM-241	1.05
0	123.11	719	1.16	246.36	244	6	38.6		EU-154	0.661
0	661.79*	273006	1.44	1323.47	1315	16	0.4		CS-137	428.
0	1273.85	94	1.81	2547.77	2541	17	68.7		EU-154	0.650
0	1460.81*	45	1.95	2921.85	2913	182	12.7		K-40	1.12

Summary of Nuclide Activity
 Sample ID : S99T963-SAM

Page : 2
 Acquisition date : 10-JUN-1999 13:14:41

Total number of lines in spectrum 8
 Number of unidentified lines 3
 Number of lines tentatively identified by NID 5 62.50%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr		2-Sigma	Flags
			Uncorrected	Decay Corr	2-Sigma Error	%Error		
K-40	1.28E+09Y	1.00	1.122E+00	1.122E+00	2.388E+00	212.72	87R	
CS-137	30.00Y	1.00	4.283E+02	4.283E+02	0.017E+02	0.40		
EU-154	8.59Y	1.00	6.586E-01	6.586E-01	2.214E-01	33.62	14 June 99	
AM-241	432.20Y*****		1.055E+00	1.055E+00	0.312E+00	29.59		
Total Activity :			4.311E+02	4.311E+02				

Grand Total Activity : 4.311E+02 4.311E+02

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

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

Minimum Detectable Activity Report

Page : 3

Sample ID : S99T963-SAM

Acquisition date : 10-JUN-1999 13:14:41

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	9303.	477.59	4.2870E+00
NA-24	71.	1368.55	1.1254E-01
AR-41	84.	1293.60	1.7181E-01
SC-46	279.	1120.55	1.7294E-01
CR-51	7232.	320.08	2.7079E+00
MN-54	179.	834.83	1.0770E-01
CO-56	192.	846.76	1.1299E-01
CO-58	174.	810.78	1.0412E-01
FE-59	144.	1099.25	2.1934E-01
CO-60	87.	1332.50	1.1396E-01
ZN-65	144.	1115.55	2.4707E-01
SE-75	7584.	264.66	4.0793E-01
KR-85	4644.	514.00	7.7533E+01
SR-85	4642.	514.01	3.5063E-01
Y-88	27.	1836.06	8.4501E-02
Y-91	150.	1204.67	4.5457E+01
NB-94	186.	871.09	1.1426E-01
ZRNB-95	329.	724.20	5.7319E-01
RU-103	5770.	497.08	3.9943E-01
RURH-106	1531.	621.93	4.6946E+00
AG-108m	340.	722.94	1.4151E-01
CD-109	6823.	88.03	3.7142E+00
AG-110M	7500.	657.76	5.6974E-01
SN-113	8289.	391.69	5.4495E-01
TE-123m	7344.	159.00	1.9874E-01
SB-124	1700.	602.73	2.4351E-01
SB-125	9407.	427.89	1.3693E+00
TE-125m	6990.	109.27	4.9791E+01
I-129	6141.	39.60	2.2715E+00
I-131	7552.	364.48	3.8601E-01
XE-131m	7503.	163.93	8.7750E+00
BA-133	7584.	356.02	4.9352E-01
CS-134	1662.	604.70	2.4186E-01
CS-136	163.	818.51	1.0162E-01
CS-138	47.	1435.86	4.0511E-01
CE-139	7483.	165.85	2.1578E-01
BA-140	3373.	537.31	1.2314E+00
LA-140	38.	1596.21	9.5295E-02
CE-141	7511.	145.44	3.3529E-01
CE-144	7539.	133.51	1.4048E+00
CEPR-144	7539.	133.51	2.8071E+00
EU-152	7953.	121.78	5.4429E-01
EU-155	7083.	86.54	4.1606E-01
HF-181	7237.	482.18	4.9100E-01
TA-182	6381.	67.75	3.2048E-01
HG-203	7435.	279.20	3.0293E-01
BI-207	2027.	569.70	2.5158E-01
TL-208	7497.	277.36	3.9032E+00
PB-210	6192.	46.50	3.7678E+00
BI-212	282.	727.18	1.7748E+00
PB-212	8138.	238.63	5.2330E-01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T963-SAM

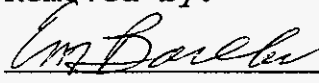
Acquisition date : 10-JUN-1999 13:14:41

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-214	2044.	609.31	5.8774E-01
PB-214	7758.	351.92	3.4272E+00
RA-224	7752.	240.99	5.7084E+00
RA-226	10552.	186.10	6.2507E+00
AC-228	359.	911.21	6.1329E-01
TH-228	6881.	84.37	1.0617E+01
TH-229	6732.	88.47	5.3937E-01
U-232	6441.	57.78	6.9413E+01
PA-233	7339.	312.17	6.9726E-01
UTH-233	7691.	245.34	2.0593E+02
PA-234M	167.	1001.03	1.8842E+01
TH-234	6383.	63.29	3.5308E+00
U-235	10391.	185.71	3.7710E-01
NP-237	7095.	86.48	1.1014E+00
U-237	6757.	101.07	5.3725E-01
NP-238	153.	984.45	4.2455E-01
NP-239	7132.	106.12	6.2454E-01
PU-239	7505.	129.30	2.3942E+03
AM-243	6951.	74.67	2.2621E-01

 * 222-S Laboratory Counting Room 14-JUN-1999 08:00:54.97 *

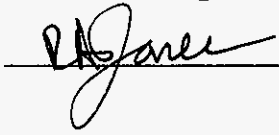
>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<

Worklist #: 30044
 Sample ID: S99T963-DUP
 Sample Size: 2.50000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:


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

Detector ID: GEA1
 File Number: NI3AF:2.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:31:42.57 sec
 Dead Time: 1.1%

Verified by:
 6-21-99 ¹⁴

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

Sample Count Time: 10-JUN-1999 15:53:38.47
 Decayed to: 10-JUN-1999 15:53:38.47
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

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

Date of last energy calibration: 3-MAY-1999 13:09:39.34
 Date of last efficiency calibration: 3-MAY-1999 13:10:20.91

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	21.74	1400	1.05	43.71	40	8	25.4			
0	31.87	44973	0.99	63.95	60	8	1.5			
0	36.41	13185	1.06	73.02	69	9	3.6			
0	42.57	612	1.38	85.34	82	7	51.1			
0	59.35	774	0.91	118.88	116	7	40.1		AM-241	0.787
0	123.04	904	0.92	246.21	243	8	38.5		EU-154	0.832
0	661.80*	273202	1.44	1323.48	1315	16	0.4		CS-137	429.
0	723.45	110	1.64	1446.79	1443	8	45.1		EU-154	0.797
0	1004.74	92	0.97	2009.41	2004	11	51.5		EU-154	1.01
0	1275.10	84	1.57	2550.26	2545	10	50.4		EU-154	0.585
0	1764.79*	26	1.53	3530.16	3522	17	135.3			

Summary of Nuclide Activity
 Sample ID : S99T963-DUP

Page : 2
 Acquisition date : 10-JUN-1999 15:53:38

Total number of lines in spectrum 11
 Number of unidentified lines 4
 Number of lines tentatively identified by NID 7 63.64%

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	4.286E+02	4.286E+02	0.017E+02	0.40	
EU-154	8.59Y	1.00	7.570E-01	7.570E-01	1.749E-01	23.11	
AM-241	432.20Y*****		7.872E-01	7.872E-01	3.155E-01	40.08	
Total Activity :			4.301E+02	4.301E+02			

Grand Total Activity : 4.301E+02 4.301E+02

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

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

Minimum Detectable Activity Report

Page : 3

Sample ID : S99T963-DUP

Acquisition date : 10-JUN-1999 15:53:38

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	9147.	477.59	4.2512E+00
NA-24	56.	1368.55	1.0081E-01
K-40	1701.	1460.75	4.8417E+00
AR-41	99.	1293.60	1.8526E-01
SC-46	261.	1120.55	1.6753E-01
CR-51	7422.	320.08	2.7430E+00
MN-54	187.	834.83	1.1013E-01
CO-56	190.	846.76	1.1248E-01
CO-58	178.	810.78	1.0519E-01
FE-59	130.	1099.25	2.0899E-01
CO-60	108.	1332.50	1.2636E-01
ZN-65	133.	1115.55	2.3795E-01
SE-75	7644.	264.66	4.0952E-01
KR-85	4735.	514.00	7.8282E+01
SR-85	4734.	514.01	3.5407E-01
Y-88	28.	1836.06	8.5971E-02
Y-91	157.	1204.67	4.6439E+01
NB-94	194.	871.09	1.1639E-01
ZRNB-95	316.	724.20	5.6263E-01
RU-103	5674.	497.08	3.9613E-01
RURH-106	1605.	621.93	4.8053E+00
AG-108m	319.	722.94	1.3716E-01
CD-109	6807.	88.03	3.7100E+00
AG-110M	7417.	657.76	5.6660E-01
SN-113	8101.	391.69	5.3877E-01
TE-123m	7515.	159.00	2.0103E-01
SB-124	1643.	602.73	2.3945E-01
SB-125	9506.	427.89	1.3764E+00
TE-125m	7131.	109.27	5.0288E+01
I-129	6170.	39.60	2.2769E+00
I-131	7607.	364.48	3.8741E-01
XE-131m	7600.	163.93	8.8309E+00
BA-133	7553.	356.02	4.9253E-01
CS-134	1590.	604.70	2.3663E-01
CS-136	171.	818.51	1.0425E-01
CS-138	43.	1435.86	3.8635E-01
CE-139	7552.	165.85	2.1677E-01
BA-140	3304.	537.31	1.2189E+00
LA-140	49.	1596.21	1.0687E-01
CE-141	7468.	145.44	3.3434E-01
CE-144	7541.	133.51	1.4050E+00
CEPR-144	7540.	133.51	2.8074E+00
EU-152	8087.	121.78	5.4882E-01
EU-155	7186.	86.54	4.1906E-01
HF-181	7249.	482.18	4.9140E-01
TA-182	6317.	67.75	3.1887E-01
HG-203	7354.	279.20	3.0129E-01
BI-207	2029.	569.70	2.5174E-01
TL-208	7374.	277.36	3.8712E+00
PB-210	6267.	46.50	3.7904E+00
BI-212	271.	727.18	1.7399E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T963-DUP

Acquisition date : 10-JUN-1999 15:53:38

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	8165.	238.63	5.2415E-01
BI-214	2093.	609.31	5.9463E-01
PB-214	7815.	351.92	3.4401E+00
RA-224	7951.	240.99	5.7806E+00
RA-226	10565.	186.10	6.2548E+00
AC-228	373.	911.21	6.2464E-01
TH-228	7009.	84.37	1.0715E+01
TH-229	6621.	88.47	5.3494E-01
U-232	6416.	57.78	6.9280E+01
PA-233	7377.	312.17	6.9907E-01
UTH-233	7876.	245.34	2.0837E+02
PA-234M	168.	1001.03	1.8909E+01
TH-234	6388.	63.29	3.5321E+00
U-235	10378.	185.71	3.7687E-01
NP-237	7208.	86.48	1.1101E+00
U-237	6698.	101.07	5.3493E-01
NP-238	150.	984.45	4.2049E-01
NP-239	7217.	106.12	6.2822E-01
PU-239	7590.	129.30	2.4077E+03
AM-243	6907.	74.67	2.2551E-01

LABCORE Completed Worklist Report for Worklist# 30006

Analyst: rro

Instrument: AB10

Book#: _____

Method: LA-220-101 Rev/Mod _____

Worklist Comment: U102 GRAB1, @SR90-01, STD: 1.0mL SS by Ludlum. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@SR90-01 SR90-01	LIQUID	8.35E-04	8.40E-4	100.599 %	Recovery
1 STD		0	@SR90-01 SR90-01C	LIQUID	100	9.40E+01	94.000 %	Recovery
1 STD		0	@SR90-01 SR90-01E	LIQUID	1.00	2.26E+00	2.260 %	Ct. Error
2 BLNK		0	@SR90-01 SR90-01	LIQUID	1	2.80E-2	0.028	uCi/mL
2 BLNK		0	@SR90-01 SR90-01C	LIQUID	100	9.29E+01	92.900 %	Recovery
2 BLNK		0	@SR90-01 SR90-01E	LIQUID	1.00	1.08E+02	108.000	uCi/mL
3 BLNK/BKG		0	@SR90-01 SR90-01	LIQUID	1	1.30E+00	1.300	BLNK/BKG
4 SAMPLE	S99T000973	0	@SR90-01 SR90-01	LIQUID	N/A	7.03E+00	3.95e-002	uCi/mL
4 SAMPLE	S99T000973	0	@SR90-01 SR90-01C	LIQUID	N/A	9.34E+01		% Recovery
4 SAMPLE	S99T000973	0	@SR90-01 SR90-01E	LIQUID	N/A	2.49E+00		% Ct. Error
5 DUP	S99T000973	0	@SR90-01 SR90-01	LIQUID	7.03E+0	6.97E+0	0.857	RPD
5 DUP	S99T000973	0	@SR90-01 SR90-01C	LIQUID	100	8.57E+01	85.700 %	Recovery
5 DUP	S99T000973	0	@SR90-01 SR90-01E	LIQUID	1.00	2.61E+00	2.610 %	Cnt Err
6 SAMPLE	S99T000974	0	@SR90-01 SR90-01	LIQUID	N/A	6.61E+00	3.92e-002	uCi/mL
6 SAMPLE	S99T000974	0	@SR90-01 SR90-01C	LIQUID	N/A	9.21E+01		% Recovery
6 SAMPLE	S99T000974	0	@SR90-01 SR90-01E	LIQUID	N/A	2.56E+00		% Ct. Error
7 DUP	S99T000974	0	@SR90-01 SR90-01	LIQUID	6.61E+0	6.77E+0	2.392	RPD
7 DUP	S99T000974	0	@SR90-01 SR90-01C	LIQUID	100	9.31E+01	93.100 %	Recovery
7 DUP	S99T000974	0	@SR90-01 SR90-01E	LIQUID	1.00	2.51E+00	2.510 %	Cnt Err
8 SAMPLE	S99T000975	0	@SR90-01 SR90-01	LIQUID	N/A	9.00E+00	3.87e-002	uCi/mL
8 SAMPLE	S99T000975	0	@SR90-01 SR90-01C	LIQUID	N/A	9.23E+01		% Recovery
8 SAMPLE	S99T000975	0	@SR90-01 SR90-01E	LIQUID	N/A	2.18E+00		% Ct. Error
9 DUP	S99T000975	0	@SR90-01 SR90-01	LIQUID	9.00E+0	8.69E+0	3.505	RPD
9 DUP	S99T000975	0	@SR90-01 SR90-01C	LIQUID	100	9.18E+01	91.800 %	Recovery
9 DUP	S99T000975	0	@SR90-01 SR90-01E	LIQUID	1.00	2.22E+00	2.220 %	Cnt Err

Final page for worklist# 30006

Analyst Signature


Date

Analyst Signature

Date

Reviewer Signature

Date

 15 June 99

LABCORE Data Entry Template for Worklist# 30006

Analyst: RRO Instrument: AB00 #10 Book# 46 B57

Method: LA-220-101 Rev/Mod E-X5 ^{LD}
_{7/6/99}

Worklist Comment: U102 GRAB1, @SR90-01, STD: 1.0mL SS by Ludlum. skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@SR90-01	LIQUID		
2 BLNK			@SR90-01	LIQUID		
3 BLNK/BKG			@SR90-01	LIQUID		
4 SAMPLE	S99T000973 0		@SR90-01	LIQUID	99000200	U-102 GRAB1
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 DUP	S99T000973 0		@SR90-01	LIQUID		
6 SAMPLE	S99T000974 0		@SR90-01	LIQUID	99000200	U-102 GRAB1
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7 DUP	S99T000974 0		@SR90-01	LIQUID		
8 SAMPLE	S99T000975 0		@SR90-01	LIQUID	99000200	U-102 GRAB1
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
9 DUP	S99T000975 0		@SR90-01	LIQUID		

Final page for worklist # 30006

Robin R O'Dell 6/12/99
 Signature Date
Ang L Platt


Raymond 6-12-99
 Signature Date
Ang L Platt 6-13-99

Data Entry Comments:

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

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5) LIQUIDS


				STANDARD
Type	DETECTOR NUMBER	10	CARRIER ADDED in mL (CVA)	1.000
STD	TOTAL COUNTS (TC)	7797	GROSS WEIGHT (W2)	7.4612
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.3672
30006	BACKGROUND in cpm (BKG)	8.3	NET WEIGHT (W3)	0.0940
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	7.50
@SR90-01	DILUTION FACTOR (DF)	1		
Matrix	DIGEST DILUTION FACTOR DDF	1		
LIQUID	SAMPLE COUNT RATE (Rs)	771.40	SR-90 EFFICIENCY FACTO (C1)	0.4051
Batch Number	CRITICAL LEVEL (Lc)	1.74	Y-90 EFFICIENCY FACTOR (C2)	0.4503
99002330	TIME OF SEPARATION (ST)	23:35	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)	06/11/99	DETECTION LIMIT (Ld)	3.56
0	TIME OF COUNT (TOC)	07:05	Sr-89/90 CONC. in µCi/L	8.3989E-01
Sample Prep	DATE OF COUNT (DOC)	06/12/99		
N/A	STANDARD BOOK #	46B57		
Sample #	STANDARD VALUE in µCi/mL	8.3549E-04		
WL30006-STD				
Instrument Code				
WB26870	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)			
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0			
VAR	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			
RRO	NOTE: Expected weight = CVA * 0.1			
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
06/12/99	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
Analysis Date				DETECTION LEVEL 3.88E-06 µCi/L
06/12/99	Sr-89/90 CONCENTRATION	8.40E-04	µCi/mL	
Analysis Time				
02:00 AM	RELATIVE COUNTING ERROR	2.3%		
Sample Point				
U-102 GRAB1	PERCENT CARRIER RECOVERY	94.0%		

Analyst:	RRO	Date:	12-Jun-99
Signature of Chemist:		SAC	Date: 15 Jun 99

WORKBOOK PAGE: BLANK2

LA-220-101 / E-3 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					BLNK
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA) 1.000
BLNK	TOTAL COUNTS (TC)		108	GROSS WEIGHT (W2)	7.3904
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT (W1)	7.2975
30006	BACKGROUND in cpm (BKG)		8.3	NET WEIGHT (W3)	0.0929
Test Code	SAMPLE VOLUME in mL (SS)		2.000	DELTA TIME (HOURS) (DT)	8.00
@SR90-01	DILUTION FACTOR (DF)		10201		
Matrix	DIGEST DILUTION FACTOR (DDF)		1		
LIQUID	SAMPLE COUNT RATE (Rs)		2.50	SR-90 EFFICIENCY FACTOR (C1)	0.4051
Batch Number	CRITICAL LEVEL (Lc)		1.74	Y-90 EFFICIENCY FACTOR (C2)	0.4503
99002330	TIME OF SEPARATION (ST)		23:35	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)		06/11/99	DETECTION LIMIT (Ld)	3.56
0	TIME OF COUNT (TOC)		07:35	Sr-89/90 CONC in µCi/L 1.3977E+01	
Sample Prep	DATE OF COUNT (DOC)		06/12/99		
N/A					
Sample #					
WL30006-BLNK					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)				
VAR	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				
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
06/12/99					
Analysis Date					
06/12/99	Sr-89/90 CONCENTRATION		1.40E-02	µCi/mL	DETECTION LEVEL 1.99E-02 µCi/mL
Analysis Time					
02:00 AM	RELATIVE COUNTING ERROR		108.4%		
Sample Point					
U-102 GRAB1	PERCENT CARRIER RECOVERY		92.9%		

Analyst:	RRO	Date:	12-Jun-99
Signature of Chemist:		SAC	Date: 15 Jun 99

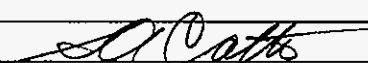
BLANK.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM4

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

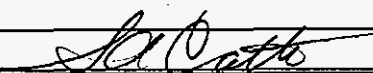
						SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	6430	GROSS WEIGHT	(W2)	7.4083
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.3149
30006	BACKGROUND in cpm	(BKG)	8.3	NET WEIGHT	(W3)	0.0934
Test Code	SAMPLE VOLUME in mL	(SS)	2.000	DELTA TIME (HOURS)	(DT)	8.42
@SR90-01	DILUTION FACTOR	DF	10201			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	634.70	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	1.74	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
99002330	TIME OF SEPARATION	(ST)	23:35	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/11/99	DETECTION LIMIT	(Ld)	3.56
0	TIME OF COUNT	(TOC)	08:00	Sr-89/90 CONC in µCi/L 3.5147E+03		
Sample Prep	DATE OF COUNT	(DOC)	06/12/99			
N/A						
Sample #						
S99T000973						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
VAR	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					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
06/12/99						
Analysis Date						DETECTION LEVEL 1.97E-02 µCi/mL
06/12/99	Sr-89/90 CONCENTRATION		3.51E+00		µCi/mL	
Analysis Time						
02:00 AM	RELATIVE COUNTING ERROR		2.5%			
Sample Point						
U-102 GRAB1	PERCENT CARRIER RECOVERY		93.4%			

Analyst:	RRO	Date:	12-Jun-99
Signature of Chemist:		SAC	Date: 15 Jun 99

SAMPLE.WB1 REV 2.0

22010NML


					DUP	
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS (TC)		5870	GROSS WEIGHT	(W2)	7.4001
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT	(W1)	7.3144
30006	BACKGROUND in cpm (BKG)		8.3	NET WEIGHT	(W3)	0.0857
Test Code	SAMPLE VOLUME in mL (SS)		2.000	DELTA TIME (HOURS)	(DT)	8.62
@SR90-01	DILUTION FACTOR (DF)		10201			
Matrix	DIGEST DILUTION FACTOR (DDF)		1			
LIQUID	SAMPLE COUNT RATE (Rs)		578.70	SR-90 EFFICIENCY FACTOR (C1)		0.4051
Batch Number	CRITICAL LEVEL (Lc)		1.74	Y-90 EFFICIENCY FACTOR (C2)		0.4503
99002330	TIME OF SEPARATION (ST)		23:35	Rmax		N/A
Return	DATE OF SEPARATION (SD)		06/11/99	DETECTION LIMIT (Ld)		3.56
0	TIME OF COUNT (TOC)		08:12	Sr-89/90 CONC in µCi/L 3.4856E+03		
Sample Prep	DATE OF COUNT (DOC)		06/12/99			
N/A						
Sample #						
S99T000973						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
VAR	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					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
06/12/99						
Analysis Date						DETECTION LEVEL
06/12/99	Sr-89/90 CONCENTRATION		3.49E+00		µCi/mL	
Analysis Time						
02:00 AM	RELATIVE COUNTING ERROR		2.6%		2.15E-02 µCi/mL	
Sample Point						
U-102 GRAB1	PERCENT CARRIER RECOVERY		85.7%			

Analyst:	RRO	Date:	12-Jun-99
Signature of Chemist:		SAC	Date: 15 Jun 99

WORKBOOK PAGE: SAM6

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

						SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS (TC)		6097	GROSS WEIGHT	(W2)	7.4156
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT	(W1)	7.3235
30006	BACKGROUND in cpm (BKG)		8.3	NET WEIGHT	(W3)	0.0921
Test Code	SAMPLE VOLUME in mL (SS)		2.000	DELTA TIME (HOURS)	(DT)	10.58
@SR90-01	DILUTION FACTOR (DF)		10201			
Matrix	DIGEST DILUTION FACTOR (DDF)		1			
LIQUID	SAMPLE COUNT RATE (Rs)		601.40	SR-90 EFFICIENCY FACTOR (C1)		0.4051
Batch Number	CRITICAL LEVEL (Lc)		1.74	Y-90 EFFICIENCY FACTOR (C2)		0.4503
99002330	TIME OF SEPARATION (ST)		23:40	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)		06/11/99	DETECTION LIMIT (Ld)		3.56
0	TIME OF COUNT (TOC)		10:15	Sr-89/90 CONC in µCi/L 3.3065E+03		
Sample Prep	DATE OF COUNT (DOC)		06/12/99			
N/A						
Sample #						
S99T000974						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
VAR	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					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
06/12/99						
Analysis Date						
06/12/99	Sr-89/90 CONCENTRATION		3.31E+00	µCi/mL		DETECTION LEVEL 1.96E-02 µCi/mL
Analysis Time						
02:00 AM	RELATIVE COUNTING ERROR		2.6%			
Sample Point						
U-102 GRAB1	PERCENT CARRIER RECOVERY		92.1%			

Analyst:	RRO	Date:	12-Jun-99
Signature of Chemist:		SAC	Date: 15 Jun 99

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: DUP7

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

						DUP
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	6331	GROSS WEIGHT	(W2)	7.4231
Worklist	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.3300
30006	BACKGROUND in cpm	(BKG)	8.3	NET WEIGHT	(W3)	0.0931
Test Code	SAMPLE VOLUME in mL	(SS)	2.000	DELTA TIME (HOURS)	(DT)	11.00
@SR90-01	DILUTION FACTOR	DF	10201			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	624.80	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	1.74	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
99002330	TIME OF SEPARATION	(ST)	23:40	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/11/99	DETECTION LIMIT	(Ld)	3.56
0	TIME OF COUNT	(TOC)	10:40	Sr-89/90 CONC in µCi/L 3.3848E+03		
Sample Prep	DATE OF COUNT	(DOC)	06/12/99			
N/A						
Sample #						
S99T000974						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
VAR	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					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
06/12/99						
Analysis Date						DETECTION LEVEL
06/12/99	Sr-89/90 CONCENTRATION		3.38E+00		µCi/mL	
Analysis Time						
02:00 AM	RELATIVE COUNTING ERROR		2.5%		1.93E-02	
Sample Point						µCi/mL
U-102 GRAB1	PERCENT CARRIER RECOVERY		93.1%			

Analyst:	RRO	Date:	12-Jun-99
Signature of Chemist:	SAC	Date:	15 Jun 99

SAMPLE.WB1 REV 2.0

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WORKBOOK PAGE: SAM8

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

						SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS (TC)		8354	GROSS WEIGHT	(W2)	7.3938
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT	(W1)	7.3015
30006	BACKGROUND in cpm (BKG)		8.3	NET WEIGHT	(W3)	0.0923
Test Code	SAMPLE VOLUME in mL (SS)		2.000	DELTA TIME (HOURS)	(DT)	11.50
@SR90-01	DILUTION FACTOR (DF)		10201			
Matrix	DIGEST DILUTION FACTOR (DDF)		1			
LIQUID	SAMPLE COUNT RATE (Rs)		827.10	SR-90 EFFICIENCY FACTOR (C1)		0.4051
Batch Number	CRITICAL LEVEL (Lc)		1.74	Y-90 EFFICIENCY FACTOR (C2)		0.4503
99002330	TIME OF SEPARATION (ST)		23:40	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)		06/11/99	DETECTION LIMIT (Ld)		3.56
0	TIME OF COUNT (TOC)		11:10	Sr-89/90 CONC in µCi/L 4.4984E+03		
Sample Prep	DATE OF COUNT (DOC)		06/12/99			
N/A						
Sample #						
S99T000975						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
VAR	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					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
06/12/99						
Analysis Date						DETECTION LEVEL 1.94E-02 µCi/mL
06/12/99	Sr-89/90 CONCENTRATION		4.50E+00		µCi/mL	
Analysis Time						
02:00 AM	RELATIVE COUNTING ERROR		2.2%			
Sample Point						
U-102 GRAB1	PERCENT CARRIER RECOVERY		92.3%			

Analyst:	RRO	Date:	12-Jun-99
Signature of Chemist:	SAC	Date:	15 Jun 99

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP9

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					DUP
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS (TC)		8051	GROSS WEIGHT	(W2) 7.4094
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT	(W1) 7.3176
30006	BACKGROUND in cpm (BKG)		8.3	NET WEIGHT	(W3) 0.0918
Test Code	SAMPLE VOLUME in mL (SS)		2.000	DELTA TIME (HOURS)	(DT) 11.75
@SR90-01	DILUTION FACTOR (DF)		10201		
Matrix	DIGEST DILUTION FACTOR (DDF)		1		
LIQUID	SAMPLE COUNT RATE (Rs)		796.80	SR-90 EFFICIENCY FACTOR (C1)	0.4051
Batch Number	CRITICAL LEVEL (Lc)		1.74	Y-90 EFFICIENCY FACTOR (C2)	0.4503
99002330	TIME OF SEPARATION (ST)		23:40	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)		06/11/99	DETECTION LIMIT (Ld)	3.56
0	TIME OF COUNT (TOC)		11:25	Sr-89/90 CONC in µCi/L	4.3470E+03
Sample Prep	DATE OF COUNT (DOC)		06/12/99		
N/A					
Sample #					
S99T000975					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)				
VAR	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				
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
06/12/99					
Analysis Date					
06/12/99	Sr-89/90 CONCENTRATION		4.35E+00	µCi/mL	DETECTION LEVEL 1.94E-02 µCi/mL
Analysis Time					
02:00 AM	RELATIVE COUNTING ERROR		2.2%		
Sample Point					
U-102 GRAB1	PERCENT CARRIER RECOVERY		91.8%		

Analyst:	RRO	Date:	12-Jun-99
Signature of Chemist:	<i>[Signature]</i> SAC	Date:	15 Jun 99

SAMPLE.WB1 REV 2.0

22010NML

LABCORE Completed Worklist Report for Worklist# 30045

Analyst: scl

Instrument: AB12

Book#: _____

Method: LA-220-101 Rev/Mod _____

Worklist Comment: U102 GRAB1, @SR90-01 SS by Ludlum. Std: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@SR90-01 SR90-01	SOLID	8.36E-04	8.19E-4	97.967 %	Recovery
1 STD		0	@SR90-01 SR90-01C	SOLID	100	9.17E+01	91.700 %	Recovery
1 STD		0	@SR90-01 SR90-01E	SOLID	1.00	2.32E+00	2.320 %	Ct. Erro
2 BLNK-PREP		0	@SR90-01 SR90-01	SOLID	1	<1.09E-1		uCi/g
2 BLNK-PREP		0	@SR90-01 SR90-01C	SOLID	100	9.19E+01	91.900 %	Recovery
2 BLNK-PREP		0	@SR90-01 SR90-01E	SOLID	1.00	5.76E+02	576.000	uCi/g
3 BLNK/BKG		0	@SR90-01 SR90-01	SOLID	1	1.06E+00	1.060	BLNK/BKG
4 SAMPLE	S99T000963	0 F	@SR90-01 SR90-01	SOLID	N/A	8.23E+01	0.173	uCi/g
4 SAMPLE	S99T000963	0 F	@SR90-01 SR90-01C	SOLID	N/A	9.31E+01		% Recovery
4 SAMPLE	S99T000963	0 F	@SR90-01 SR90-01E	SOLID	N/A	1.59E+00		% Ct. Error
5 DUP	S99T000963	0 F	@SR90-01 SR90-01	SOLID	8.23E+1	8.57E+1	4.048	RPD
5 DUP	S99T000963	0 F	@SR90-01 SR90-01C	SOLID	100	9.26E+01	92.600 %	Recovery
5 DUP	S99T000963	0 F	@SR90-01 SR90-01E	SOLID	1.00	1.56E+00	1.560 %	Cnt Err

Final page for worklist# 30045

Analyst Signature

Date

Analyst Signature

Date


Reviewer Signature

17 June 99
Date

LABCORE Data Entry Template for Worklist# 30045

Analyst: SL Instrument: AB00 12 Book# 46857

Method: LA-220-101 Rev/Mod E-X5 ^{LAD}_{7/6/99}

Worklist Comment: U102 GRAB1, @SR90-01 SS by Ludlum. Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@SR90-01	SOLID		
2 BLNK-PREP			@SR90-01	SOLID		
3 BLNK/BKG			@SR90-01	SOLID		
4 SAMPLE	S99T000963	0 F	@SR90-01	SOLID	99000200	U-102 GRAB1
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 DUP	S99T000963	0 F	@SR90-01	SOLID		

Final page for worklist # 30045

SL 6-10-99
Signature Date

Raymond 6-11-99
Signature Date

A7 6-13-99

Data Entry Comments:

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5) LIQUIDS

				STANDARD
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000
STD	TOTAL COUNTS (TC)	7356	GROSS WEIGHT (W2)	7.4029
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.3112
30045	BACKGROUND in cpm (BKG)	6.7	NET WEIGHT (W3)	0.0917
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	3.92
@SR90-01	DILUTION FACTOR (DF)	1		
Matrix	DIGEST DILUTION FACTOR (DDF)	1		
LIQUID	SAMPLE COUNT RATE (Rs)	728.90	SR-90 EFFICIENCY FACTO (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.56	Y-90 EFFICIENCY FACTOR (C2)	0.4660
99002370	TIME OF SEPARATION (ST)	11:20	Rmax	N/A
Retain	DATE OF SEPARATION (SD)	06/10/99	DETECTION LIMIT (Ld)	3.21
0	TIME OF COUNT (TOC)	15:15	Sr-89/90 CONC. in µCi/L	8.1879E-01
Sample Prep	DATE OF COUNT (DOC)	06/10/99		
N/A	STANDARD BOOK #	46B57		
Sample #	STANDARD VALUE in µCi/mL	8.3560E-04		
WL30045-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<=Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0			
VAR	RS*DF*DDF*1000/(((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000)			
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))			
SAC	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT))*1.96			
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100			
SCL	NOTE: Expected weight = CVA * 0.1			
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
06/11/99	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
Analysis Date				DETECTION LEVEL 3.61E-06 µCi/L
06/10/99	Sr-89/90 CONCENTRATION	8.19E-04	µCi/mL	
Analysis Time				
03:15 PM	RELATIVE COUNTING ERROR	2.3%		
Sample Point				
U-102 GRAB1	PERCENT CARRIER RECOVERY	91.7%		

Analyst:	SCL	Date:	11-Jun-99
Signature of Chemist:	<i>[Signature]</i>	SAC	Date: 14 Jun 99

STANDARD.WB1 REV 2.0

22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / E-3 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

BLNK-PREP

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLNK-PREP	TOTAL COUNTS	(TC)	71	GROSS WEIGHT	(W2)	7.4276
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.3357
30045	BACKGROUND in cpm	(BKG)	6.7	NET WEIGHT	(W3)	0.0919
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	4.22
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST FACTOR (g/L)	(D g/L)	2.0588			
SOLID	SAMPLE COUNT RATE	(Rs)	0.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.56	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
99002370	TIME OF SEPARATION	(ST)	11:20	Rmax		1.99
Rerun	DATE OF SEPARATION	(SD)	06/10/99	DETECTION LIMIT	(Ld)	3.21
0	TIME OF COUNT	(TOC)	15:33	Sr-89/90 CONC in µCi/g	<	1.0929E-01
Sample Prep	DATE OF COUNT	(DOC)	06/10/99			
N/A						
Sample #						

WL30045-BLNK						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS ≤ Lc and RS ≥ 0 or Replace RS with Lc if RS < 0					
Prepared By	RS * 1000 * DF / ((C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT))) * SS * (Dg/L) * REC * 2220000)					
VAR	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2 - W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT)) * 1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
06/11/99						
Analysis Date						
06/10/99	Sr-89/90 CONCENTRATION		< 1.09E-01		µCi/g	DETECTION LEVEL 1.76E-01 µCi/g
Analysis Time	LESS THAN Value was Determined from Rmax.					
03:15 PM	RELATIVE COUNTING ERROR		575.6%			
Sample Point						
U-102 GRAB 1	PERCENT CARRIER RECOVERY		91.9%			

Analyst:	SCL	Date:	11-Jun-99
Signature of Chemist:	<i>SCL</i>	SAC	Date: 14 Jul 99

WORKBOOK PAGE: SAM4

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

						SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	15327	GROSS WEIGHT	(W2)	7.3835
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2904
30045	BACKGROUND in cpm	(BKG)	6.7	NET WEIGHT	(W3)	0.0931
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	4.53
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST FACTOR (g/L)	(D g/L)	2.0588			
SOLID	SAMPLE COUNT RATE	(Rs)	1526.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.56	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
99002370	TIME OF SEPARATION	(ST)	11:20	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/99	DETECTION LIMIT	(Ld)	3.21
0	TIME OF COUNT	(TOC)	15:52	Sr-89/90 CONC in µCi/g 8.2272E+01		
Sample Prep	DATE OF COUNT	(DOC)	06/10/99			
FUSION01						
Sample #						
S99T000963						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/g $\text{Replace RS with RMAX if } RS \leq Lc \text{ and } RS \geq 0 \text{ or Replace RS with Lc if } RS < 0$					
Prepared By	$RS * 1000 * DF / ((C1 + C2 * (1 - e^{-\ln(2) / 64.2 * DT})) * SS * (Dg/L) * REC * 2220000)$					
VAR	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery $((W2 - W1) / (CVA * 0.1000))$					
Chemist	Relative Counting Error = $(\text{The Square Root of } (TC + BKG * CT) / (TC - BKG * CT)) * 1.96$					
SAC	Percent Carrier Recovery = $(\text{Net Weight} / \text{Expected weight}) * 100$					
Analyst	NOTE: Expected weight = $CVA * 0.1$					
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = $((DOC - SD) * 24) + (TOC - ST) / 100$					
06/11/99						
Analysis Date						DETECTION LEVEL
06/10/99	Sr-89/90 CONCENTRATION	8.23E+01		µCi/g		
Analysis Time						
03:15 PM	RELATIVE COUNTING ERROR	1.6%		1.73E-01 µCi/g		
Sample Point						
U-102 GRAB1	PERCENT CARRIER RECOVERY	93.1%				

Analyst:	SCL	Date:	11-Jun-99
Signature of Chemist:	<i>[Signature]</i>	Date:	14 Jun 99

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP5

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	DUP
DUP	TOTAL COUNTS	(TC)	15925	GROSS WEIGHT	(W2)	7.4386
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.3460
30045	BACKGROUND in cpm	(BKG)	6.7	NET WEIGHT	(W3)	0.0926
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	4.72
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST FACTOR (g/L)	(D g/L)	2.0616			
SOLID	SAMPLE COUNT RATE	(Rs)	1585.80	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.56	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
99002370	TIME OF SEPARATION	(ST)	11:20	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/99	DETECTION LIMIT	(Ld)	3.21
0	TIME OF COUNT	(TOC)	16:03	Sr-89/90 CONC in µCi/g		8.5670E+01
Sample Prep	DATE OF COUNT	(DOC)	06/10/99			
FUSION01						
Sample #						
S99T000963						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*(Dg/L)*REC*2220000)				
VAR	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
06/11/99					
Analysis Date					DETECTION LEVEL
06/10/99	Sr-89/90 CONCENTRATION		8.57E+01	µCi/g	
Analysis Time					
03:15 PM	RELATIVE COUNTING ERROR		1.6%		
Sample Point					
U-102 GRAB1	PERCENT CARRIER RECOVERY		92.6%		1.73E-01 µCi/g

Analyst:	SCL	Date:	11-Jun-99
Signature of Chemist:	<i>SAC</i>	Date:	14 Jun 99

SAMPLE.WB1 REV 2.0

22010NML

LABCORE Completed Worklist Report for Worklist# 30002

Analyst: gll

Instrument: AB15

Book#: _____

Method: LA-953-104 Rev/Mod _____

Worklist Comment: U102 GRAB1, @AM24101 SS by Ludlum. Std= 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@AM24101 AM24101	LIQUID	1.07E-04	1.00E-4	93.458	% Recovery
1 STD		0	@AM24101 AM24101E	LIQUID	1.0	1.91E+00	1.910	% Ct Error
1 STD		0	@AM24101 AM24101T	LIQUID	100.	8.88E+01	88.800	% Recovery
2 BLNK		0	@AM24101 AM24101	LIQUID	1	<3.49E-4		uCi/mL
2 BLNK		0	@AM24101 AM24101E	LIQUID	1.0	1.00E+02	100.000	% Ct Error
2 BLNK		0	@AM24101 AM24101T	LIQUID	100.0	8.32E+01	83.200	% Recovery
3 SAMPLE	S99T000973	0	@AM24101 AM24101	LIQUID	N/A	1.10E-02	9.08e-004	uCi/mL
3 SAMPLE	S99T000973	0	@AM24101 AM24101E	LIQUID	N/A	2.19E+00		% Ct. Error
3 SAMPLE	S99T000973	0	@AM24101 AM24101T	LIQUID	N/A	9.83E+01		% Recovery
4 DUP	S99T000973	0	@AM24101 AM24101	LIQUID	1.10E-2	1.17E-2	6.167	RPD
4 DUP	S99T000973	0	@AM24101 AM24101E	LIQUID	1.0	2.21E+00	2.210	% Ct Error
4 DUP	S99T000973	0	@AM24101 AM24101T	LIQUID	100.0	9.68E+01	96.800	% Recovery
5 SAMPLE	S99T000974	0	@AM24101 AM24101	LIQUID	N/A	1.15E-02	1.04e-003	uCi/mL
5 SAMPLE	S99T000974	0	@AM24101 AM24101E	LIQUID	N/A	2.23E+00		% Ct. Error
5 SAMPLE	S99T000974	0	@AM24101 AM24101T	LIQUID	N/A	9.11E+01		% Recovery
6 DUP	S99T000974	0	@AM24101 AM24101	LIQUID	1.15E-2	1.03E-2	11.009	RPD
6 DUP	S99T000974	0	@AM24101 AM24101E	LIQUID	1.0	2.28E+00	2.280	% Ct Error
6 DUP	S99T000974	0	@AM24101 AM24101T	LIQUID	100.0	9.29E+01	92.900	% Recovery
7 SAMPLE	S99T000975	0	@AM24101 AM24101	LIQUID	N/A	1.36E-02	1.11e-003	uCi/mL
7 SAMPLE	S99T000975	0	@AM24101 AM24101E	LIQUID	N/A	2.15E+00		% Ct. Error
7 SAMPLE	S99T000975	0	@AM24101 AM24101T	LIQUID	N/A	9.61E+01		% Recovery
8 DUP	S99T000975	0	@AM24101 AM24101	LIQUID	1.36E-2	1.23E-2	10.039	RPD
8 DUP	S99T000975	0	@AM24101 AM24101E	LIQUID	1.0	2.17E+00	2.170	% Ct Error
8 DUP	S99T000975	0	@AM24101 AM24101T	LIQUID	100.0	9.49E+01	94.900	% Recovery

Final page for worklist# 30002

Analyst Signature

Date

Analyst Signature

Date

John Relyea 15 June 99
Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 30002

Analyst: ALL Instrument: AM01 #15 Book# 46857

Method: LA-953-104 Rev/Mod B1

Worklist Comment: U102 GRAB1, @AM24101 SS by Ludlum. Std= 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S99T000973 0		@AM24101	LIQUID	99000200	U-102 GRAB1
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S99T000973 0		@AM24101	LIQUID		
5 SAMPLE	S99T000974 0		@AM24101	LIQUID	99000200	U-102 GRAB1
Analytes Requested: AM24101 , AM24101E, AM24101T						
6 DUP	S99T000974 0		@AM24101	LIQUID		
7 SAMPLE	S99T000975 0		@AM24101	LIQUID	99000200	U-102 GRAB1
Analytes Requested: AM24101 , AM24101E, AM24101T						
8 DUP	S99T000975 0		@AM24101	LIQUID		

Final page for worklist # 30002

[Signature] 6-12-99
Signature Date

[Signature] 6-14-99
Signature Date

Data Entry Comments:

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
 WL30002-STD-AM
 File ID: 3a3500.CNF

Counted on: 6/12/99 @19: 1
 Detector: AEA3
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1437.8	1437.8	299.274	299.274	14.000	5.667	7.000	2.739
2	1512.4	1512.4	253.137	253.131	12.000	4.785	6.000	2.247
3	13.2	13.2	140.239	140.239	196.000	1.000	98.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Pu238	0.445	5.487	5.473	0.014	0.03	43.45	1.4	258.1	0.116E-03
	Am241		5.479	5.473	0.006				197.7	0.891E-04
2	Am243	0.453	5.266	5.261	0.005	0.02	44.20	1.4	191.0	0.860E-04
3		0.011		4.741		0.00	1.04	8.8	4.4	0.200E-05
Totals:		0.909	<--valid peaks only-->				88.69			

DETECTOR CALIBRATION

Energy (MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2338 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	46842.0	100.000
Smoothed	46842.0	100.000
Composite fit	42571.5	90.883
Residuals	4270.5	9.117

Analyzed by: _____
 GL

Spectrum 3a3500.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 10385.5

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Raw Data Dump for AEA Spectrum: 3a3500.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	3.	1.	3.	5.
21	3.	2.	4.	3.	0.	0.	2.	2.	5.	4.
31	2.	2.	6.	2.	6.	6.	2.	0.	7.	3.
41	2.	3.	1.	5.	1.	7.	6.	5.	2.	4.
51	1.	5.	1.	3.	5.	2.	6.	5.	2.	4.
61	4.	7.	2.	4.	3.	5.	4.	8.	1.	4.
71	5.	6.	11.	3.	6.	6.	4.	6.	5.	4.
81	11.	5.	5.	2.	3.	3.	4.	9.	6.	5.
91	6.	8.	10.	10.	9.	7.	4.	6.	5.	11.
101	4.	2.	12.	9.	4.	4.	9.	6.	5.	9.
111	5.	15.	5.	11.	6.	12.	10.	6.	7.	11.
121	8.	9.	5.	9.	8.	9.	7.	16.	16.	10.
131	15.	8.	11.	13.	6.	15.	9.	13.	16.	11.
141	13.	18.	7.	11.	9.	12.	10.	19.	9.	9.
151	10.	8.	17.	20.	19.	14.	15.	29.	21.	7.
161	17.	23.	20.	19.	20.	19.	23.	20.	19.	27.
171	22.	22.	13.	20.	22.	22.	23.	17.	28.	34.
181	29.	31.	24.	35.	29.	33.	24.	36.	27.	38.
191	30.	34.	35.	38.	33.	41.	27.	47.	40.	43.
201	33.	37.	43.	46.	59.	45.	47.	39.	51.	40.
211	60.	58.	47.	59.	61.	61.	63.	55.	78.	77.
221	60.	84.	76.	104.	89.	86.	93.	121.	109.	126.
231	144.	147.	180.	197.	180.	234.	229.	257.	315.	320.
241	380.	411.	510.	590.	644.	795.	787.	885.	1050.	1206.
251	1516.	1634.	1752.	1763.	1487.	1132.	692.	382.	268.	182.
261	151.	139.	121.	150.	156.	145.	134.	118.	119.	99.
271	97.	103.	75.	69.	105.	117.	113.	146.	151.	152.
281	169.	195.	242.	238.	266.	319.	351.	432.	452.	534.
291	611.	670.	808.	827.	955.	1132.	1327.	1489.	1711.	1703.
301	1400.	1068.	742.	501.	345.	306.	243.	232.	188.	152.
311	119.	91.	49.	28.	15.	8.	2.	2.	1.	1.
321	2.	1.	1.	0.	1.	1.	1.	1.	2.	0.
331	0.	0.	0.	1.	1.	2.	1.	1.	2.	1.
341	0.	1.	1.	1.	0.	3.	1.	1.	0.	0.
351	2.	1.	2.	1.	1.	0.	1.	0.	0.	0.
361	0.	1.	1.	0.	3.	1.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
391	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
401	1.	1.	0.	0.	0.	0.	0.	2.	0.	0.
411	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	1.	0.	0.	0.	1.	2.	0.	1.
431	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
471	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL30002-BLK-AM
 File ID: 4a4489.CNF

Counted on: 6/12/99 @19: 2
 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	819.2	819.2	253.272	253.272	12.000	4.166	6.000	2.190

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
1	Am243	0.886	5.266	5.257	0.0090	0.02	21.89	1.9	98.5	0.444E-04	
Totals:		0.886	---valid peaks only---				21.89				

DETECTOR CALIBRATION

Energy (MEV) = 4.092 + (0.0046)*Channel
 Energy range (MeV): 4.092 TO 6.448
 Efficiency = 0.2246 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11866.0	100.000
Smoothed	11866.0	100.000
Composite fit	10509.5	88.568
Residuals	1356.5	11.432

Analyzed by: _____

GL

Spectrum 4a4489.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5486.2

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Raw Data Dump for AEA Spectrum: 4a4489.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	1.	0.	1.	2.	1.	0.	0.	0.	2.
31	1.	0.	1.	1.	3.	1.	1.	1.	0.	0.
41	0.	2.	0.	0.	0.	0.	2.	1.	1.	1.
51	1.	0.	0.	2.	0.	0.	1.	1.	0.	2.
61	1.	0.	1.	1.	0.	2.	0.	1.	1.	0.
71	1.	1.	0.	0.	3.	0.	0.	3.	0.	2.
81	1.	0.	1.	0.	2.	4.	2.	1.	2.	0.
91	0.	0.	0.	1.	0.	4.	1.	1.	1.	1.
101	3.	2.	0.	3.	1.	1.	1.	1.	3.	0.
111	1.	2.	2.	4.	2.	2.	1.	1.	4.	2.
121	0.	1.	1.	0.	2.	0.	4.	2.	1.	2.
131	3.	5.	1.	3.	2.	2.	1.	5.	1.	1.
141	2.	2.	4.	1.	4.	1.	5.	6.	3.	3.
151	4.	5.	5.	4.	3.	7.	1.	2.	3.	2.
161	0.	2.	4.	5.	2.	5.	8.	10.	2.	5.
171	3.	4.	0.	4.	3.	4.	7.	5.	5.	1.
181	7.	2.	7.	4.	6.	9.	3.	3.	6.	4.
191	4.	11.	0.	3.	7.	13.	9.	7.	9.	8.
201	8.	9.	12.	9.	7.	18.	13.	12.	12.	17.
211	12.	12.	15.	19.	14.	17.	15.	26.	26.	16.
221	17.	26.	35.	25.	34.	44.	42.	46.	61.	36.
231	45.	60.	71.	91.	70.	100.	116.	109.	126.	165.
241	167.	205.	238.	254.	288.	345.	432.	442.	535.	668.
251	750.	830.	964.	1025.	772.	619.	342.	185.	120.	68.
261	61.	51.	55.	62.	57.	45.	43.	28.	32.	18.
271	10.	12.	2.	0.	0.	2.	1.	0.	0.	0.
281	0.	1.	2.	0.	2.	2.	1.	2.	0.	2.
291	3.	2.	4.	6.	3.	8.	3.	5.	6.	9.
301	10.	6.	1.	1.	1.	2.	0.	2.	0.	2.
311	0.	0.	1.	2.	1.	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.	1.
341	1.	1.	1.	1.	0.	0.	0.	0.	0.	1.
351	0.	2.	0.	0.	1.	0.	0.	0.	0.	0.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	1.	0.	0.	0.	0.	1.	2.	1.	0.
401	0.	2.	0.	0.	0.	0.	0.	0.	1.	0.
411	1.	0.	0.	1.	0.	1.	0.	0.	0.	0.
421	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
471	0.	1.	0.	1.	0.	0.	1.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000973-SAM-A
 File ID: 5a5413.CNF

Counted on: 6/12/99 @19: 4
 Detector: AEA5
 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?	11.7	11.7	436.793	436.793	12.000	3.961	6.000	1.305
2	67.3	67.3	370.082	370.081	12.000	3.920	6.000	1.147
3	1454.2	1454.2	300.870	300.870	14.000	6.522	7.000	2.345
4	683.9	683.9	254.780	254.719	12.000	5.460	6.000	1.842
5	14.2	14.2	157.805	157.796	144.000	1.000	72.000	0.100
6?	8.9	8.9	152.980	152.980	138.000	1.000	69.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
1		????	6.104				0.40	14.2			
2	Cm243	0.029	5.779	5.797	-.0180.02		2.48	5.7	14.2	0.638E-05	
	Cm244		5.795	5.797	-.002				10.3	0.465E-05	
3	Pu238	0.616	5.487	5.479	0.0080.03		52.47	1.2	303.8	0.137E-03	
	Am241		5.479	5.479	0.000				232.7	0.105E-03	
4	Am243	0.288	5.266	5.267	-.0010.03		24.54	1.9	103.3	0.465E-04	
5		0.013		4.821		0.00	1.13	8.4	4.7	0.212E-05	
6		????		4.799			0.70	17.1			
Totals:		0.947	<--valid peaks only-->				80.61				

DETECTOR CALIBRATION

Energy (MEV) = 4.095 + (0.0046)*Channel
 Energy range (MeV): 4.095 TO 6.450
 Efficiency = 0.2399 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	40854.0	100.000
Smoothed	40854.0	100.000
Composite fit	39223.8	96.010
Residuals	1630.2	3.990

Spectrum 5a5413.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 10349.5

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Raw Data Dump for AEA Spectrum: 5a5413.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	3.	0.	2.	2.
21	2.	2.	1.	0.	0.	3.	0.	4.	3.	2.
31	1.	0.	3.	2.	1.	2.	2.	4.	0.	0.
41	3.	3.	1.	1.	4.	0.	0.	2.	3.	4.
51	1.	3.	4.	2.	5.	3.	3.	3.	4.	6.
61	2.	2.	0.	4.	4.	3.	4.	4.	2.	6.
71	6.	2.	2.	4.	1.	3.	5.	1.	5.	1.
81	2.	5.	5.	7.	5.	4.	3.	6.	3.	7.
91	4.	4.	7.	2.	5.	4.	6.	1.	3.	1.
101	2.	1.	4.	3.	6.	7.	3.	4.	4.	10.
111	3.	3.	6.	5.	3.	4.	5.	2.	4.	6.
121	5.	7.	5.	4.	9.	7.	6.	6.	9.	3.
131	5.	7.	9.	10.	4.	7.	5.	8.	8.	8.
141	8.	5.	10.	11.	10.	6.	13.	11.	10.	9.
151	9.	8.	12.	11.	7.	8.	14.	24.	10.	8.
161	12.	8.	9.	13.	15.	16.	11.	11.	16.	13.
171	13.	12.	17.	17.	17.	15.	15.	10.	19.	23.
181	19.	16.	19.	21.	26.	10.	26.	19.	24.	9.
191	32.	15.	18.	29.	22.	21.	22.	25.	19.	26.
201	22.	28.	28.	22.	33.	28.	35.	32.	35.	29.
211	36.	31.	40.	27.	43.	44.	54.	43.	49.	54.
221	50.	53.	85.	60.	66.	77.	53.	87.	82.	68.
231	94.	101.	104.	95.	109.	138.	167.	164.	162.	187.
241	225.	302.	265.	297.	339.	364.	406.	436.	498.	512.
251	562.	694.	662.	700.	811.	767.	648.	458.	302.	199.
261	136.	130.	113.	129.	154.	129.	112.	128.	124.	134.
271	111.	104.	128.	146.	130.	139.	161.	194.	208.	234.
281	244.	271.	278.	302.	365.	414.	409.	476.	522.	550.
291	679.	764.	789.	872.	955.	1105.	1209.	1278.	1426.	1603.
301	1629.	1595.	1366.	1111.	723.	486.	371.	298.	249.	211.
311	172.	136.	92.	72.	41.	29.	13.	8.	5.	2.
321	1.	2.	4.	4.	0.	3.	5.	2.	3.	1.
331	2.	1.	6.	2.	3.	1.	6.	1.	1.	3.
341	5.	4.	2.	6.	6.	10.	6.	15.	12.	9.
351	15.	10.	20.	12.	16.	22.	29.	22.	45.	32.
361	42.	41.	59.	54.	58.	58.	51.	70.	63.	78.
371	68.	72.	59.	25.	10.	2.	0.	1.	0.	0.
381	0.	0.	0.	0.	1.	1.	0.	3.	0.	0.
391	2.	0.	0.	0.	0.	1.	2.	1.	0.	2.
401	1.	0.	1.	0.	2.	2.	1.	1.	3.	0.
411	4.	0.	0.	1.	2.	3.	1.	0.	1.	3.
421	3.	2.	4.	4.	1.	5.	6.	12.	11.	6.
431	10.	10.	9.	8.	9.	15.	12.	14.	11.	6.
441	3.	3.	0.	0.	1.	1.	0.	0.	0.	0.
451	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	2.	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
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000973-DUP-A
 File ID: 6a6418.CNF

Counted on: 6/12/99 @19: 3
 Detector: AEA6
 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?	16.9	16.9	434.967	434.967	10.000	2.692	5.000	1.127
2	74.3	74.3	367.032	367.032	10.000	4.308	5.000	1.564
3	1763.8	1763.8	298.390	298.390	14.000	6.024	7.000	2.964
4	820.8	820.8	252.262	252.251	12.000	4.679	6.000	2.233
5	18.2	18.2	186.174	186.153	82.000	1.000	41.000	0.100
6?	1.7	1.7	165.061	164.757	8.000	0.000	4.000	7.517

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.099			0.46	13.2		
2	Cm244	0.028	5.795	5.786	0.009	0.02	2.43	5.7	10.9	0.491E-05
	Cm243		5.779	5.786	-.007				14.9	0.672E-05
3	Pu238	0.625	5.487	5.471	0.016	0.03	53.84	1.2	335.3	0.151E-03
	Am241		5.479	5.471	0.008				256.9	0.116E-03
4	Am243	0.275	5.266	5.258	0.008	0.02	23.67	1.9	107.2	0.483E-04
5		0.017		4.954		0.00	1.46	7.4	6.6	0.295E-05
6		????		4.856			0.00	1000.		
Totals:		0.945	<--valid peaks only-->				81.40			

DETECTOR CALIBRATION

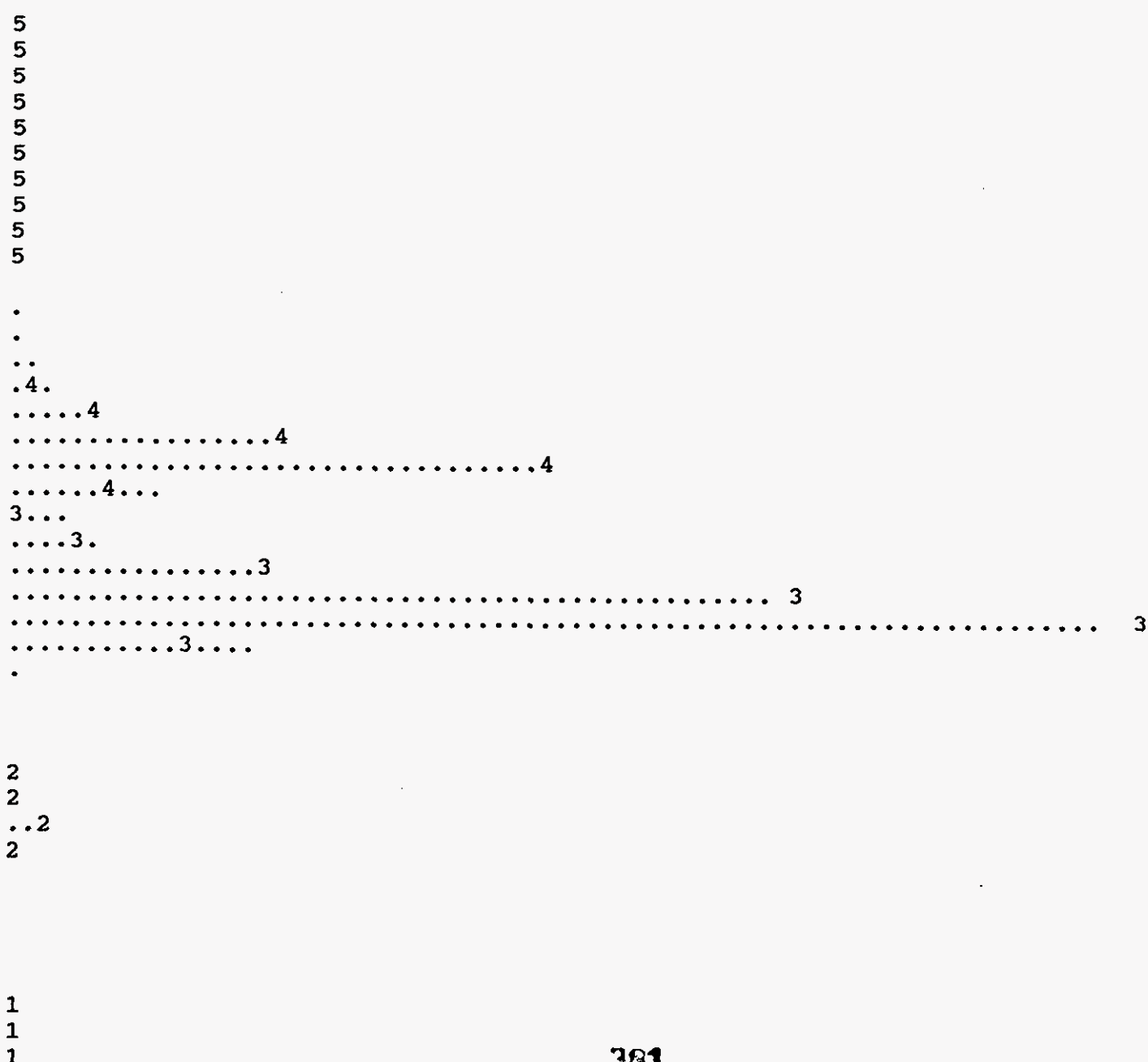
Energy (MEV) = 4.098 + (0.0046)*Channel
 Energy range (MeV): 4.098 TO 6.453
 Efficiency = 0.2230 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	41359.0	100.000
Smoothed	41359.0	100.000
Composite fit	39296.2	95.012
Residuals	2062.8	4.988

Spectrum 6a6418.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11129.9



Raw Data Dump for AEA Spectrum: 6a6418.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	6.	3.	2.
21	0.	1.	3.	4.	4.	1.	1.	2.	0.	2.
31	0.	3.	2.	4.	0.	3.	6.	2.	0.	1.
41	0.	3.	0.	2.	5.	1.	2.	2.	4.	3.
51	0.	2.	1.	3.	4.	2.	2.	5.	1.	6.
61	3.	3.	2.	2.	5.	2.	3.	0.	3.	1.
71	2.	3.	3.	3.	4.	3.	3.	1.	2.	2.
81	7.	4.	1.	1.	2.	2.	3.	4.	5.	1.
91	3.	5.	6.	3.	5.	6.	4.	4.	5.	4.
101	4.	4.	1.	5.	3.	4.	6.	3.	6.	4.
111	5.	5.	3.	0.	6.	6.	10.	5.	10.	10.
121	4.	4.	3.	6.	5.	8.	6.	5.	5.	4.
131	3.	5.	3.	6.	9.	4.	8.	7.	10.	3.
141	7.	9.	2.	8.	7.	3.	6.	4.	9.	4.
151	8.	6.	10.	8.	4.	10.	3.	8.	8.	9.
161	13.	8.	7.	15.	12.	15.	9.	8.	9.	9.
171	5.	9.	10.	12.	19.	7.	13.	14.	13.	10.
181	8.	9.	11.	9.	14.	23.	21.	9.	9.	12.
191	12.	15.	22.	11.	25.	17.	22.	14.	17.	9.
201	13.	17.	18.	24.	26.	19.	26.	25.	26.	22.
211	24.	24.	28.	42.	37.	28.	41.	36.	37.	45.
221	32.	46.	49.	55.	57.	57.	66.	57.	79.	79.
231	86.	85.	94.	106.	103.	101.	154.	155.	162.	163.
241	257.	266.	293.	380.	402.	430.	497.	501.	673.	753.
251	880.	980.	963.	810.	648.	373.	222.	129.	124.	92.
261	91.	96.	104.	99.	107.	78.	101.	75.	101.	90.
271	90.	111.	76.	99.	119.	120.	134.	149.	192.	187.
281	232.	256.	283.	303.	382.	465.	507.	570.	704.	770.
291	814.	950.	1011.	1173.	1424.	1656.	1839.	2059.	2082.	1797.
301	1396.	1032.	685.	516.	390.	312.	268.	217.	178.	135.
311	106.	65.	40.	16.	10.	7.	2.	6.	1.	1.
321	2.	3.	4.	0.	2.	1.	0.	0.	3.	2.
331	4.	2.	4.	3.	0.	3.	5.	4.	6.	3.
341	4.	6.	10.	6.	6.	7.	10.	9.	11.	4.
351	12.	21.	22.	22.	23.	21.	35.	40.	51.	46.
361	56.	67.	57.	59.	67.	93.	68.	87.	81.	44.
371	48.	14.	4.	1.	0.	0.	0.	0.	0.	0.
381	0.	1.	2.	0.	0.	1.	0.	1.	0.	1.
391	1.	0.	0.	0.	1.	1.	1.	0.	1.	0.
401	1.	0.	0.	0.	0.	1.	0.	4.	0.	0.
411	0.	1.	0.	1.	2.	2.	6.	2.	6.	5.
421	5.	5.	3.	7.	6.	6.	9.	11.	5.	6.
431	14.	7.	15.	16.	25.	16.	17.	5.	5.	1.
441	0.	1.	1.	0.	0.	0.	0.	2.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000974-SAM-A
 File ID: 7a7446.CNF

Counted on: 6/12/99 @19: 5
 Detector: AEA7
 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?	15.4	15.4	435.855	435.855	12.000	3.525	6.000	1.213
2	89.8	89.8	368.991	368.991	10.000	2.827	5.000	1.314
3	1901.0	1901.0	299.888	299.888	12.000	5.046	6.000	2.835
4	904.8	904.8	253.850	253.846	10.000	3.940	5.000	2.158

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
1		????	6.101				0.50	12.6			
2	Cm244	0.027	5.795	5.793	0.002	0.01	2.33	5.9	9.7	0.437E-05	
	Cm243		5.779	5.793	-0.14				13.3	0.599E-05	
3	Pu238	0.606	5.487	5.475	0.012	0.02	52.17	1.2	302.1	0.136E-03	
	Am241		5.479	5.475	0.004				231.4	0.104E-03	
4	Am243	0.272	5.266	5.263	0.003	0.02	23.37	1.9	98.4	0.443E-04	
Totals:		0.905	<--valid peaks only-->					77.87			

DETECTOR CALIBRATION

Energy (MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2399 CPM/DPM
 (Data reduction compression factor: 1.)

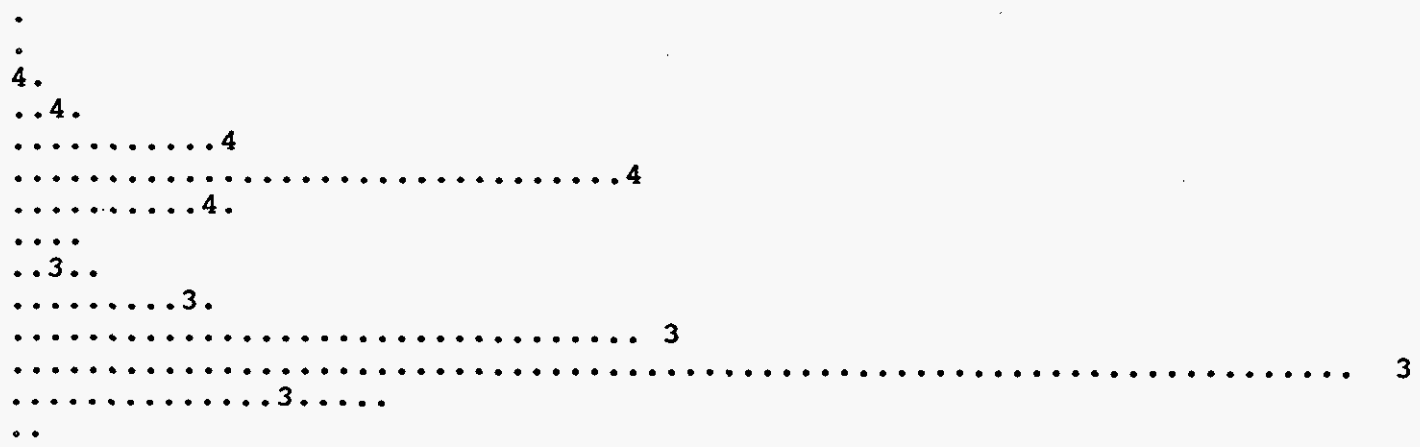
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	41314.0	100.000
Smoothed	41314.0	100.000
Composite fit	37623.7	91.068
Residuals	3690.3	8.932

Analyzed by: _____
 GL

Spectrum 7a7446.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 12496.0



2
.2
.2

1
1
1

Raw Data Dump for AEA Spectrum: 7a7446.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	5.	0.	3.	5.
21	2.	2.	1.	2.	5.	5.	3.	0.	2.	1.
31	3.	0.	2.	4.	2.	1.	0.	2.	2.	3.
41	0.	1.	3.	2.	3.	5.	2.	4.	5.	0.
51	2.	0.	4.	4.	0.	2.	2.	1.	4.	2.
61	3.	3.	3.	5.	3.	5.	4.	1.	2.	5.
71	1.	3.	1.	5.	1.	2.	0.	2.	4.	3.
81	4.	3.	3.	6.	4.	2.	6.	2.	10.	2.
91	2.	1.	6.	3.	3.	7.	1.	10.	3.	5.
101	5.	2.	1.	3.	5.	4.	5.	10.	6.	1.
111	5.	4.	0.	3.	6.	4.	4.	3.	5.	9.
121	6.	4.	3.	3.	5.	5.	9.	9.	5.	8.
131	6.	5.	6.	9.	6.	8.	5.	7.	3.	4.
141	6.	4.	9.	4.	6.	7.	6.	4.	9.	8.
151	9.	7.	7.	7.	8.	5.	6.	8.	4.	9.
161	2.	12.	10.	14.	12.	11.	14.	9.	14.	8.
171	10.	11.	17.	9.	12.	12.	10.	17.	15.	16.
181	10.	15.	12.	15.	14.	9.	16.	10.	17.	15.
191	11.	21.	16.	18.	20.	18.	20.	17.	18.	16.
201	17.	16.	24.	19.	32.	21.	20.	22.	25.	29.
211	19.	25.	21.	29.	27.	37.	40.	22.	30.	36.
221	27.	41.	45.	47.	46.	40.	52.	57.	58.	68.
231	76.	99.	77.	79.	82.	89.	118.	126.	152.	151.
241	173.	211.	224.	302.	317.	328.	361.	405.	483.	550.
251	717.	902.	967.	1140.	1015.	816.	455.	232.	149.	133.
261	115.	114.	120.	98.	105.	98.	92.	83.	93.	80.
271	104.	77.	84.	82.	96.	99.	123.	140.	150.	170.
281	178.	206.	197.	240.	260.	313.	348.	429.	489.	578.
291	614.	754.	843.	878.	1057.	1263.	1520.	1876.	2133.	2283.
301	2187.	1698.	1107.	695.	536.	445.	321.	308.	245.	227.
311	132.	122.	79.	55.	29.	4.	5.	1.	3.	2.
321	2.	1.	4.	5.	1.	2.	3.	2.	1.	2.
331	3.	6.	4.	5.	4.	8.	2.	4.	9.	7.
341	5.	10.	7.	8.	4.	14.	12.	9.	10.	10.
351	13.	14.	15.	14.	17.	23.	14.	39.	31.	41.
361	36.	31.	38.	56.	55.	66.	84.	95.	103.	123.
371	71.	57.	14.	2.	0.	0.	2.	0.	0.	0.
381	1.	0.	1.	0.	1.	0.	1.	0.	1.	0.
391	1.	0.	0.	0.	1.	0.	0.	1.	1.	1.
401	1.	0.	0.	0.	1.	1.	1.	1.	2.	1.
411	1.	3.	0.	2.	2.	2.	0.	1.	1.	1.
421	3.	9.	9.	4.	10.	4.	4.	11.	12.	17.
431	13.	8.	17.	13.	10.	19.	20.	10.	9.	8.
441	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
451	0.	1.	0.	0.	1.	0.	0.	0.	2.	0.
461	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
471	1.	1.	1.	1.	2.	0.	6.	2.	3.	4.
481	1.	0.	1.	1.	0.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000974-DUP-A
 File ID: 8a8431.CNF

Counted on: 6/12/99 @19: 6
 Detector: AEA8
 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?	10.6	10.6	436.091	436.091	10.000	3.586	5.000	0.934
2	74.9	74.9	369.284	369.283	10.000	2.784	5.000	1.086
3	1680.0	1680.0	300.427	300.427	10.000	4.835	5.000	2.624
4	827.2	827.2	254.454	254.449	10.000	4.123	5.000	1.989
5	21.3	21.3	172.678	172.674	142.000	1.000	71.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
1		????	6.102				0.42	13.8			
2	Cm244	0.026	5.795	5.794	0.0010	10.01	2.15	6.1	9.7	0.439E-05	
	Cm243		5.779	5.794	-.015				13.4	0.601E-05	
3	Pu238	0.559	5.487	5.477	0.0100	10.02	46.17	1.3	290.3	0.131E-03	
	Am241		5.479	5.477	0.002				222.4	0.100E-03	
4	Am243	0.278	5.266	5.266	0.0000	0.02	22.97	1.9	105.0	0.473E-04	
5	Pu242	0.021	4.891	4.890	0.0010	10.00	1.70	6.9	7.7	0.346E-05	
Totals:		0.884	<--valid peaks only-->					72.99			

DETECTOR CALIBRATION

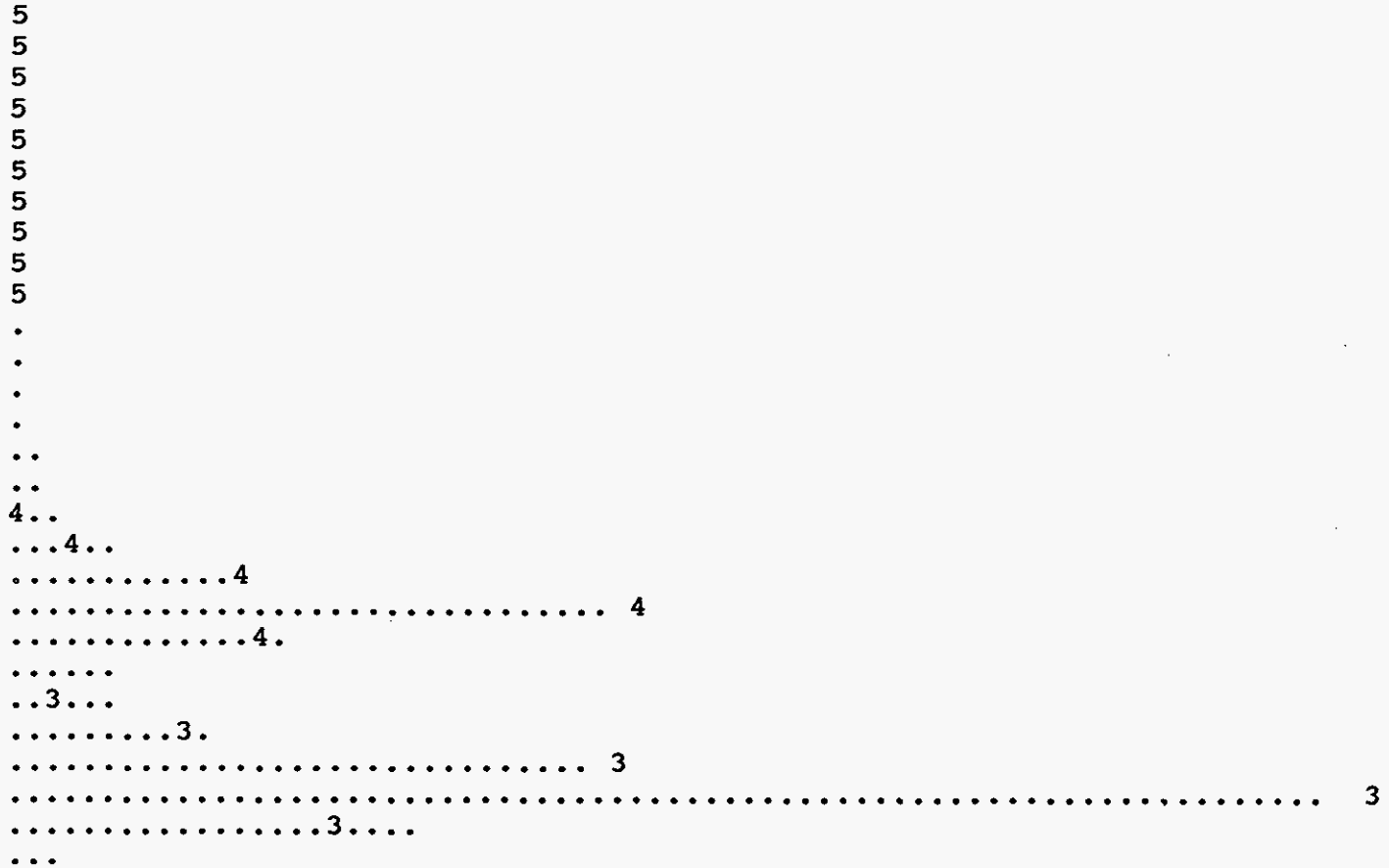
Energy (MEV) = 4.095 + (0.0046)*Channel
 Energy range (MeV): 4.095 TO 6.451
 Efficiency = 0.2209 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	39632.0	100.000
Smoothed	39632.0	100.000
Composite fit	35238.0	88.913
Residuals	4394.0	11.087

Spectrum 8a8431.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11111.2



2
.2
.2

1
1
1
1

Raw Data Dump for AEA Spectrum: 8a8431.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	3.	2.	4.	3.
21	2.	1.	3.	2.	1.	1.	3.	3.	1.	1.
31	4.	5.	3.	3.	2.	3.	4.	3.	3.	3.
41	5.	2.	6.	2.	3.	6.	5.	3.	4.	2.
51	6.	4.	4.	3.	5.	4.	5.	5.	3.	1.
61	2.	5.	9.	4.	2.	4.	6.	3.	2.	5.
71	2.	12.	4.	6.	8.	6.	4.	7.	7.	4.
81	12.	7.	5.	4.	5.	2.	8.	4.	5.	10.
91	1.	4.	5.	5.	9.	4.	2.	6.	4.	7.
101	6.	7.	10.	9.	9.	3.	8.	5.	8.	5.
111	13.	5.	6.	10.	6.	11.	8.	3.	6.	5.
121	11.	8.	5.	5.	11.	6.	1.	7.	9.	6.
131	8.	11.	11.	12.	7.	5.	11.	11.	6.	9.
141	9.	15.	7.	7.	19.	13.	7.	12.	7.	16.
151	11.	10.	13.	12.	9.	14.	15.	9.	8.	13.
161	18.	13.	10.	13.	13.	24.	15.	19.	23.	13.
171	17.	27.	23.	19.	14.	26.	17.	18.	17.	21.
181	20.	17.	22.	30.	22.	22.	27.	22.	30.	27.
191	20.	21.	29.	19.	26.	31.	25.	25.	28.	40.
201	27.	25.	29.	34.	39.	30.	31.	38.	33.	34.
211	37.	38.	44.	45.	56.	60.	50.	40.	54.	56.
221	79.	58.	57.	57.	60.	58.	82.	79.	78.	100.
231	100.	83.	100.	115.	89.	129.	127.	151.	147.	162.
241	177.	213.	203.	251.	285.	333.	351.	399.	421.	486.
251	588.	671.	856.	953.	1037.	911.	569.	331.	179.	127.
261	121.	117.	109.	129.	119.	125.	119.	145.	105.	131.
271	123.	88.	107.	116.	139.	116.	147.	169.	129.	179.
281	163.	203.	222.	235.	236.	255.	318.	348.	422.	488.
291	543.	593.	694.	742.	888.	1000.	1177.	1447.	1755.	1989.
301	2093.	1755.	1219.	736.	515.	378.	312.	309.	271.	199.
311	138.	118.	106.	46.	32.	16.	6.	2.	3.	6.
321	6.	0.	5.	2.	1.	2.	3.	3.	0.	6.
331	3.	1.	4.	4.	2.	2.	3.	4.	4.	3.
341	8.	7.	2.	9.	11.	7.	14.	10.	7.	15.
351	12.	14.	11.	13.	12.	19.	22.	29.	30.	37.
361	38.	50.	39.	44.	48.	54.	58.	82.	89.	87.
371	88.	50.	9.	6.	0.	0.	1.	0.	2.	0.
381	0.	0.	0.	0.	1.	1.	0.	1.	1.	1.
391	0.	1.	1.	0.	1.	1.	3.	0.	2.	2.
401	2.	3.	1.	1.	2.	0.	4.	0.	2.	2.
411	0.	2.	0.	1.	4.	2.	1.	0.	4.	2.
421	3.	4.	3.	7.	7.	7.	10.	10.	6.	12.
431	3.	7.	7.	12.	12.	11.	11.	14.	6.	4.
441	1.	0.	0.	0.	0.	0.	2.	0.	1.	1.
451	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	0.	0.	1.	0.	1.
471	0.	0.	2.	0.	1.	1.	2.	0.	2.	3.
481	2.	2.	1.	1.	0.	2.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000975-SAM-A
 File ID: 9a9332.CNF

Counted on: 6/12/99 @19: 8
 Detector: AEA9
 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?	20.1	20.1	436.657	436.657	8.000	2.275	4.000	0.995
2	97.5	97.5	369.161	369.161	10.000	3.062	5.000	1.330
3	2400.0	2400.0	300.077	300.077	12.000	4.820	6.000	2.893
4	959.8	959.8	253.947	253.943	10.000	3.915	5.000	2.325

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????	6.105			0.52	12.4			
2	Cm244	0.027	5.795	5.794	0.001	10.01	2.67	5.5	11.4	0.512E-05
	Cm243		5.779	5.794	-.015				15.6	0.701E-05
3	Pu238	0.636	5.487	5.477	0.010	0.02	63.33	1.1	373.7	0.168E-03
	Am241		5.479	5.477	0.002				286.2	0.129E-03
4	Am243	0.240	5.266	5.264	0.002	0.02	23.89	1.8	102.5	0.462E-04
Totals:		0.902	<--valid peaks only-->				89.89			

DETECTOR CALIBRATION

Energy (MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2354 CPM/DPM
 (Data reduction compression factor: 1.)

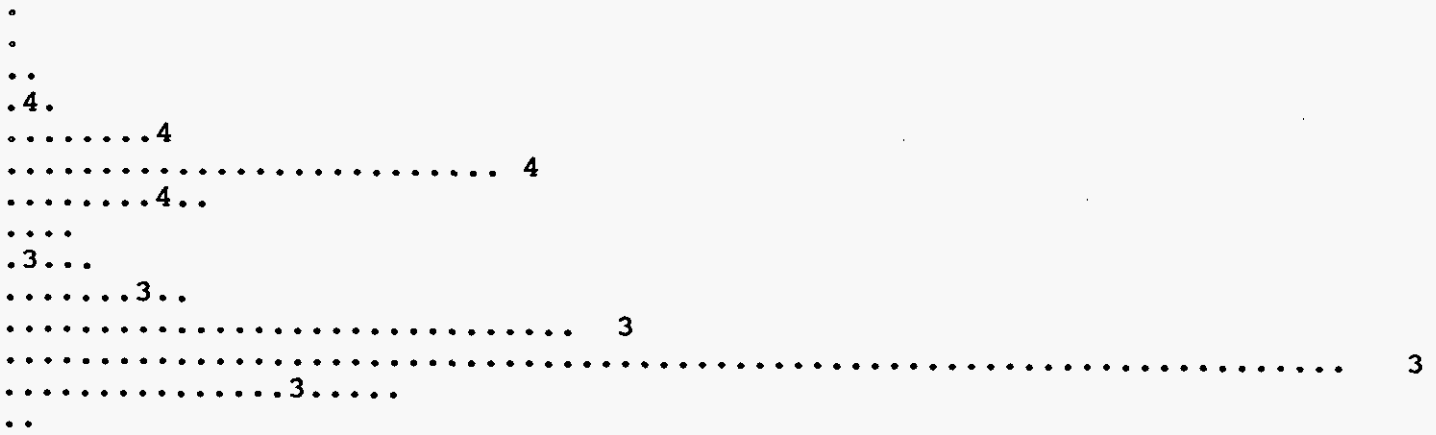
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	47822.0	100.000
Smoothed	47822.0	100.000
Composite fit	43398.2	90.749
Residuals	4423.8	9.251

Analyzed by: _____

Spectrum 9a9332.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 15658.6



2
.2
.2

1
1
1

Raw Data Dump for AEA Spectrum: 9a9332.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.
21	3.	2.	2.	2.	1.	2.	2.	0.	3.	2.
31	1.	2.	3.	1.	3.	2.	4.	3.	1.	1.
41	2.	2.	1.	5.	3.	3.	5.	1.	3.	1.
51	3.	5.	1.	2.	3.	1.	5.	3.	3.	1.
61	0.	1.	1.	2.	2.	3.	5.	4.	2.	3.
71	1.	1.	1.	2.	4.	3.	3.	3.	5.	2.
81	3.	1.	1.	4.	0.	3.	4.	3.	2.	5.
91	2.	3.	3.	3.	1.	1.	3.	5.	5.	6.
101	4.	6.	3.	2.	7.	5.	4.	2.	5.	4.
111	2.	2.	9.	4.	0.	5.	2.	2.	4.	5.
121	4.	5.	3.	4.	2.	2.	5.	5.	6.	5.
131	2.	4.	8.	6.	6.	3.	6.	7.	5.	2.
141	7.	8.	6.	6.	8.	3.	10.	6.	9.	8.
151	9.	6.	11.	6.	6.	4.	11.	7.	5.	1.
161	12.	6.	3.	10.	9.	4.	4.	8.	9.	15.
171	7.	10.	10.	9.	8.	13.	7.	14.	7.	14.
181	12.	14.	14.	9.	8.	12.	14.	10.	14.	10.
191	15.	15.	17.	14.	19.	28.	20.	15.	20.	13.
201	23.	23.	19.	27.	23.	21.	27.	26.	22.	29.
211	35.	30.	23.	30.	32.	31.	34.	32.	39.	33.
221	34.	50.	39.	42.	54.	43.	43.	61.	68.	61.
231	71.	72.	87.	75.	93.	106.	116.	111.	126.	160.
241	165.	192.	225.	246.	291.	356.	358.	415.	433.	562.
251	719.	942.	1024.	1194.	1162.	822.	522.	258.	183.	149.
261	123.	133.	114.	101.	122.	112.	133.	117.	100.	131.
271	94.	105.	93.	113.	148.	132.	167.	145.	188.	216.
281	198.	235.	253.	270.	329.	361.	432.	488.	553.	729.
291	760.	816.	859.	997.	1148.	1389.	1684.	2269.	2767.	2925.
301	2853.	2247.	1436.	949.	666.	538.	490.	388.	360.	297.
311	217.	175.	127.	70.	32.	5.	8.	3.	1.	3.
321	1.	1.	2.	3.	0.	1.	2.	4.	4.	3.
331	5.	3.	2.	6.	6.	4.	5.	2.	5.	5.
341	6.	3.	10.	13.	11.	8.	19.	12.	8.	9.
351	10.	11.	13.	10.	14.	28.	32.	29.	39.	45.
361	46.	59.	55.	54.	68.	56.	89.	103.	114.	124.
371	95.	62.	27.	8.	1.	0.	0.	2.	1.	0.
381	2.	1.	0.	0.	0.	1.	0.	0.	0.	1.
391	0.	0.	2.	1.	0.	0.	0.	0.	1.	1.
401	1.	0.	0.	1.	0.	0.	1.	1.	1.	0.
411	0.	1.	0.	1.	1.	4.	0.	2.	0.	2.
421	4.	1.	4.	2.	1.	10.	10.	10.	20.	11.
431	7.	10.	17.	13.	18.	18.	27.	24.	15.	3.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	3.	0.	2.	0.	2.	5.	2.	2.	6.
481	2.	1.	2.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000975-DUP-A
 File ID: 10a1069.CNF

Counted on: 6/12/99 @19: 9
 Detector: AEA10
 Geometry number: 1
 Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1?	15.7	15.7	435.595	435.595	8.000	3.445	4.000	1.239
2	76.2	76.2	368.412	368.412	12.000	3.590	6.000	1.129
3	1844.6	1844.6	299.625	299.625	12.000	5.781	6.000	2.610
4	761.6	761.6	253.651	253.631	12.000	5.221	6.000	2.157
5	35.9	35.9	210.880	209.937	56.000	1.000	28.000	0.100
6?	8.4	8.4	138.712	138.583	10.000	13.336	5.000	1.829
7?	4.9	4.9	118.744	118.277	10.000	0.610	5.000	0.312
8?	5.5	5.5	105.376	104.325	16.000	5.339	8.000	0.517

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.094			0.49	12.7		
2	Cm244	0.028	5.795	5.784	0.011	0.02	2.63	5.5	11.6	0.521E-05
	Cm243		5.779	5.784	-0.005				15.9	0.714E-05
3	Pu238	0.615	5.487	5.468	0.019	0.03	57.76	1.2	352.5	0.159E-03
	Am241		5.479	5.468	0.011				270.0	0.122E-03
4	Am243	0.258	5.266	5.257	0.009	0.02	24.24	1.8	107.6	0.484E-04
5		0.031		5.056		0.00	2.88	5.5	12.7	0.570E-05
6		????		4.727			0.62	16.4		
7		????		4.634			0.09	75.2		
8		????		4.570			0.47	18.9		

Totals: 0.932 <--valid peaks only--> 87.51

DETECTOR CALIBRATION

Energy(MEV) = 4.090 + (0.0046)*Channel
 Energy range (MeV): 4.090 TO 6.445
 Efficiency = 0.2276 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	45096.0	100.000

Smoothed	45096.0	100.000
Composite fit	42816.7	94.946
Residuals	2279.3	5.054

Analyzed by: _____
GL

Raw Data Dump for AEA Spectrum: 10a1069.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	3.	3.	7.	3.	6.
21	5.	5.	6.	7.	2.	5.	2.	5.	6.	5.
31	9.	3.	3.	2.	4.	4.	6.	5.	6.	5.
41	3.	3.	7.	4.	9.	6.	3.	2.	6.	9.
51	3.	2.	7.	9.	5.	3.	6.	5.	7.	2.
61	3.	3.	8.	3.	3.	4.	3.	6.	8.	9.
71	5.	5.	4.	4.	4.	6.	5.	1.	6.	3.
81	6.	9.	5.	9.	4.	8.	5.	3.	7.	5.
91	6.	6.	7.	7.	8.	10.	12.	2.	6.	8.
101	13.	10.	8.	13.	9.	12.	11.	8.	9.	12.
111	8.	11.	4.	8.	8.	8.	7.	14.	11.	11.
121	8.	8.	7.	7.	12.	12.	12.	8.	12.	11.
131	11.	9.	13.	13.	8.	4.	6.	19.	17.	12.
141	9.	7.	6.	10.	14.	9.	6.	19.	8.	10.
151	18.	15.	9.	12.	14.	17.	16.	16.	16.	13.
161	18.	15.	15.	18.	16.	17.	21.	16.	18.	20.
171	14.	12.	14.	21.	22.	15.	18.	24.	20.	24.
181	21.	17.	18.	24.	29.	18.	29.	29.	20.	26.
191	25.	25.	33.	25.	21.	25.	24.	31.	28.	21.
201	37.	21.	32.	33.	36.	30.	36.	42.	47.	44.
211	44.	43.	45.	32.	39.	35.	45.	46.	59.	52.
221	54.	64.	78.	81.	77.	70.	72.	88.	96.	101.
231	94.	103.	126.	120.	133.	130.	146.	150.	168.	180.
241	193.	238.	282.	284.	359.	379.	408.	463.	483.	570.
251	672.	776.	888.	893.	831.	707.	423.	233.	200.	141.
261	134.	135.	117.	131.	128.	147.	138.	139.	126.	135.
271	113.	131.	144.	145.	144.	172.	171.	199.	212.	240.
281	248.	259.	282.	304.	387.	380.	483.	518.	640.	744.
291	825.	861.	965.	1125.	1230.	1418.	1673.	1827.	2110.	2150.
301	2003.	1584.	1112.	721.	471.	433.	349.	324.	234.	198.
311	156.	99.	64.	48.	28.	11.	1.	4.	1.	3.
321	2.	3.	1.	4.	0.	1.	2.	5.	6.	5.
331	3.	8.	1.	1.	8.	2.	10.	4.	4.	6.
341	13.	1.	6.	6.	11.	10.	16.	12.	13.	14.
351	13.	11.	15.	24.	20.	27.	38.	42.	47.	61.
361	58.	51.	52.	47.	70.	61.	67.	94.	84.	79.
371	62.	40.	13.	3.	1.	1.	0.	1.	0.	1.
381	2.	1.	1.	0.	0.	1.	2.	0.	1.	0.
391	0.	0.	1.	0.	0.	1.	0.	0.	1.	1.
401	0.	0.	2.	1.	1.	2.	0.	0.	2.	1.
411	2.	2.	1.	3.	1.	2.	2.	2.	3.	9.
421	2.	3.	4.	3.	8.	6.	9.	9.	16.	9.
431	6.	7.	23.	14.	18.	15.	20.	17.	4.	2.
441	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	1.	1.	2.	1.	3.	1.	4.	1.
481	4.	1.	0.	0.	0.	2.	0.	0.	0.	0.
491	0.	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) ^{14D} _{6/17/99} LIQUID

				STD
Type	Date Counted	JUN-12-99	Am 241 AEA Frac. (C241)	0.445
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.453
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
30002	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	3850
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	43.45
LIQUID	Detector Number	15	Am 243 cpm	44.2
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
99002319	Standard Book No	46B57	AEA Count Time (min)	480
Retain	Standard Value in µCi/mL	1.070E-04	Am 241 µCi/L =	1.0000E-01
0			Cm 243/244 µCi/L =	< 1.2654E-02

Sample Prep
N/A

Sample Number
WL30002-STD

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Instrument Code
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
EMB

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist
JFR

Analyst
GLL

Am 241 µCi/mL =	1.00E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error =	1.9%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 1.27E-05	1.27E-05
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	88.8%	1.27E-05

Date Complete
06/14/99

Analysis Date
06/12/99

Analysis Time
03:50 AM

Sample Point
U-102 GRAB1

Analyst:	GLL	Date:	06/14/99
Signature of Chemist:	<i>John Relyea</i>	Date:	<i>14 June 99</i>

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) ^{AD 3/18/99} LIQUID / SO

Type	Date Counted	JUN-12-99	Am 241 AEA Frac. (C241)	BLNK
BLNK	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.886
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0
30002	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	925
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	0
LIQUID	Detector Number	15	Am 243 cpm	21.89
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	0
99002319			AEA Count Time (min)	480
Retun			Am 241 µCi/L =	< 3.4877E-01
0			Cm 243/244 µCi/L =	< 3.4877E-01
Sample Prep				
N/A				

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
 Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
 Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
 Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist	NOTE: Am-241 Result is a LESS THAN Value.		
JFR	Am 241 µCi/mL =	< 3.49E-04	DETECTION LEVELS in µCi/mL
Analyst	Relative Counting Error =	100.0%	
GLL			Am 241
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		
06/14/99	Cm 243/244 µCi/mL	< 3.49E-04	3.49E-04
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244
06/12/99	Am 243 Tracer Recovery =	83.2%	3.49E-04

Analysis Time: 03:50 AM
 Sample Point: U-102 GRAB1

Analyst:	GLL	Date:	06/14/99
Signature of Chemist:	<i>John Relyea</i>	JFR	Date: 14 June 99

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0) *LD 7/10/99* LIQUID / SO

				SAMPLE	
Type	Date Counted	JUN-12-99	Am 241 AEA Frac. (C241)		0.616
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)		0.288
Worklist	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)		0.029
30002	Tracer Volume in mL (SPKV)	0.100	Total AT Counts		3352
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)		0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm		52.47
LIQUID	Detector Number	15	Am 243 cpm		24.54
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm		2.48
99002319			AEA Count Time (min)		480
Rerun			Am 241 $\mu\text{Ci/L}$ =		1.0996E+01
0			Cm 243/244 $\mu\text{Ci/L}$ =		< 9.0810E-01

Sample Prep: N/A

Sample Number: S99T000973

Instrument Code: WB26872

Prepared By: EMB

Chemist: JFR

Am-241 $\mu\text{Ci/L} = (\text{C241} * \text{Am-243 Tracer Value} * \text{SPKV} * \text{DF} * \text{DDF} * (1000\text{mL/L})) / (\text{C243} * \text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$

Cm-243/244 $\mu\text{Ci/L} = (\text{Cm} * \text{Am-243 Tracer Value} * \text{SPKV} * \text{DF} * \text{DDF} * (1000\text{mL/L})) / (\text{C243} * \text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$

Relative Counting Error = Square Root of $[(1/(\text{Am-243 cpm} * \text{min})) + (1/(\text{Am-241 or Cm-243/244 cpm} * \text{min}))] * 1.96 * 100$

Am 243 Tracer Recovery = $(\text{Total AT Counts} / \text{TC} - \text{Bkg}) * (1/\text{DetEff}) * \text{C243} * 100 / \text{Am-243 Tracer Value} * \text{SPKV}$

		DETECTION LEVELS in $\mu\text{Ci/mL}$	
JFR	Am 241 $\mu\text{Ci/mL} =$	1.10E-02	Am 241
Analyst	Relative Counting Error =	2.2%	9.08E-04
GLL			Cm 243/244
Data Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		9.08E-04
06/14/99	Cm 243/244 $\mu\text{Ci/mL}$	< 9.08E-04	
Analysis Date	Relative Counting Error =	6.0%	
06/12/99	Am 243 Tracer Recovery =	98.3%	
Analysis Time			
03:50 AM			
Sample Point			
U-102 GRAB1			

Analyst: GLL Date: 06/14/99

Signature of Chemist: *John Relyea* JFR Date: *14 June 99*

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)) ¹ 06/17/99 LIQUID / SO

DUP

Type	Date Counted	JUN-12-99	Am 241 AEA Frac. (C241)	0.625
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.275
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.028
30002	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	3457
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	53.84
LIQUID	Detector Number	15	Am 243 cpm	23.67
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	2.43
99002319			AEA Count Time (min)	480
Rerun			Am 241 µCi/L =	1.1684E+01
0			Cm 243/244 µCi/L =	< 9.6570E-01
Sample Prep				
N/A				

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
 Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
 Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
 Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Chemist	Am 241 µCi/mL =	1.17E-02	DETECTION LEVELS in µCi/mL
JFR	Relative Counting Error =	2.2%	
Analyst	NOTE: Cm-243/244 Result is a LESS THAN Value.		
GLL	Cm 243/244 µCi/mL	< 9.66E-04	
Date Complete	Relative Counting Error =	6.0%	Am 241
06/14/99	Am 243 Tracer Recovery =	96.8%	9.66E-04
Analysis Date			Cm 243/244
06/12/99			9.66E-04

Analysis Time
03:50 AM
Sample Point
U-102 GRAB1

Analyst:	GLL	Date:	06/14/99
Signature of Chemist:	<i>John Relyea</i>	JFR	Date: 14 June 99

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) ¹⁴³ _{7/10/99} LIQUID / SO

				SAMPLE
Type	Date Counted	JUN-12-99	Am 241 AEA Frac. (C241)	0.606
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.272
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.027
30002	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	3289
Test Codes	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	52.17
LIQUID	Detector Number	15	Am 243 cpm	23.37
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	2.33
99002319			AEA Count Time (min)	480
Reruns			Am 241 µCi/L =	1.1454E+01
0			Cm 243/244 µCi/L =	< 1.0376E+00

Sample Prep	N/A			
Sample Number	S99T000974			
Instrument Code	WB26872			
Prepared By	EMB			
Chemist	JFR			
Analyst	GLL			
Date Complete	06/14/99			
Analysis Date	06/12/99			
Analysis Time	03:50 AM			
Sample Point	U-102 GRAB1			

Am-241 µCi/L =	(C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Cm-243/244 µCi/L =	(Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Relative Counting Error =	Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Am 243 Tracer Recovery =	(Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

		DETECTION LEVELS in µCi/mL
Am 241 µCi/mL =	1.15E-02	Am 241
Relative Counting Error =	2.2%	1.04E-03
NOTE: Cm-243/244 Result is a LESS THAN Value.		Cm 243/244
Cm 243/244 µCi/mL	< 1.04E-03	1.04E-03
Relative Counting Error =	6.1%	
Am 243 Tracer Recovery =	91.1%	

Analyst:	GLL	Date:	06/14/99
Signature of Chemist:	<i>John Redgeon</i>	Date:	14 June 99

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0))^{MSD} 7/6/99 LIQUID / SO

DUP

Type	Date Counted	JUN-12-99	Am 241 AEA Frac. (C241)	0.559
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.278
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.026
30002	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	3283
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	46.17
LIQUID	Detector Number	15	Am 243 cpm	22.97
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	2.15
99002319			AEA Count Time (min)	480
Retun			Am 241 µCi/L =	1.0337E+01
0			Cm 243/244 µCi/L =	< 9.9511E-01

Sample Prep	N/A
Sample Number	S99T000974
Instrument Code	WB26872
Prepared By	EMB
Chemist	JFR
Analyst	GLL
Data Complete	06/14/99
Analysis Date	06/12/99
Analysis Time	03:50 AM
Sample Point	U-102 GRAB1

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
 Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
 Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
 Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	1.03E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error =	2.3%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL	< 9.95E-04	
Relative Counting Error =	6.4%	Am 241
Am 243 Tracer Recovery =	92.9%	9.95E-04
		Cm 243/244
		9.95E-04

Analyst:	GLL	Date:	06/14/99
Signature of Chemist:	<i>John Pelyea</i>	JFR	Date: <i>14 June 99</i>

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)) ¹⁰⁰ ^{7/1/99} LIQUID / SO

				SAMPLE	
Type	Date Counted	JUN-12-99	Am 241 AEA Frac.	(C241)	0.636
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac.	(C243)	0.24
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac.	(Cm)	0.027
30002	Tracer Volume in mL (SPKV)	0.100	Total AT Counts		3932
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)		0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm		63.33
LIQUID	Detector Number	15	Am 243 cpm		23.89
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm		2.67
99002319			AEA Count Time (min)		480
Rerun			Am 241 µCi/L =		1.3624E+01
0			Cm 243/244 µCi/L =	<	1.1146E+00

Sample Prep: N/A

Sample Number: S99T000975

Instrument Code: WB26872

Prepared By: EMB

Chemist: JFR

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	1.36E-02	DETECTION LEVELS in µCi/mL
Relative Counting Error =	2.1%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 1.11E-03	1.11E-03
Relative Counting Error =	5.8%	Cm 243/244
Am 243 Tracer Recovery =	96.1%	1.11E-03

Analyst: GLL Date: 06/14/99

Signature of Chemist: *John Pelyea* JFR Date: *14 June 99*

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) *7/1/99* LIQUID / SO

DUP

Type	Date Counted	JUN-12-99	Am 241 AEA Frac. (C241)	0.615
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.258
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.028
30002	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	3614
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.13
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	57.76
LIQUID	Detector Number	15	Am 243 cpm	24.24
Batch Number	Detector Efficiency (DetEff)	0.2894	Cm 243/244 cpm	2.63
99002319			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	1.2255E+01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 1.0494E+00
Sample Prep				
N/A				

Am-241 $\mu\text{Ci/L}$ = $(C241 * \text{Am-243 Tracer Value} * \text{SPKV} * \text{DF} * \text{DDF} * (1000\text{mL/L})) / (C243 * \text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$
 Cm-243/244 $\mu\text{Ci/L}$ = $(\text{Cm} * \text{Am-243 Tracer Value} * \text{SPKV} * \text{DF} * \text{DDF} * (1000\text{mL/L})) / (C243 * \text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$
 Relative Counting Error = Square Root of $[(1/(\text{Am-243 cpm} * \text{min})) + (1/(\text{Am-241 or Cm-243/244 cpm} * \text{min}))] * 1.96 * 100$
 Am 243 Tracer Recovery = $(\text{Total AT Counts} / \text{TC} - \text{Bkg}) * (1/\text{DetEff}) * C243 * 100 / \text{Am-243 Tracer Value} * \text{SPKV}$

Chemist	JFR	Am 241 $\mu\text{Ci/mL}$ =	1.23E-02	DETECTION LEVELS in $\mu\text{Ci/mL}$
Analyst	GLL	Relative Counting Error =	2.2%	
Date Complete	06/14/99	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Analysis Date	06/12/99	Cm 243/244 $\mu\text{Ci/mL}$	< 1.05E-03	1.05E-03
Analysis Time	03:50 AM	Relative Counting Error =	5.8%	Cm 243/244
Sample Point	U-102 GRAB1	Am 243 Tracer Recovery =	94.9%	1.05E-03

Analyst:	GLL	Date:	06/14/99
Signature of Chemist:	<i>John Reizer</i>	JFR	Date: <i>14 June 99</i>
SAMPLE.WB1 REV 1.2	953103ML		

LABCORE Completed Worklist Report for Worklist# 30167

Analyst: ak1

Instrument: AB18

Book#: _____

Method: LA-953-104 Rev/Mod _____

Worklist Comment: U-102 GRAB1, RERUN! OF WL30042 SAMPLE SIZE=0.100ML.new

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@AM24101 AM24101	SOLID	1.07E-04	1.07E-4	100.000	% Recovery
1 STD	0		@AM24101 AM24101E	SOLID	1.0	1.84E+00	1.840	% Ct Error
1 STD	0		@AM24101 AM24101T	SOLID	100.	9.39E+01	93.900	% Recovery
2 BLNK-PREP	0		@AM24101 AM24101	SOLID	1	<3.02E-2		uCi/g
2 BLNK-PREP	0		@AM24101 AM24101E	SOLID	1.0	1.00E+02	100.000	% Ct Error
2 BLNK-PREP	0		@AM24101 AM24101T	SOLID	100.	9.01E+01	90.100	% Recovery
3 SAMPLE	S99T000963	0 F	@AM24101 AM24101	SOLID	N/A	4.55E-01	5.11e-002	uCi/g
3 SAMPLE	S99T000963	0 F	@AM24101 AM24101E	SOLID	N/A	2.22E+00		% Ct. Error
3 SAMPLE	S99T000963	0 F	@AM24101 AM24101T	SOLID	N/A	9.72E+01		% Recovery
4 DUP	S99T000963	0 F	@AM24101 AM24101	SOLID	4.55E-1	4.55E-1	0.000	RPD
4 DUP	S99T000963	0 F	@AM24101 AM24101E	SOLID	1.0	2.01E+00	2.010	% Ct Error
4 DUP	S99T000963	0 F	@AM24101 AM24101T	SOLID	100.0	9.35E+01	93.500	% Recovery

Final page for worklist# 30167

Analyst Signature

Date

Analyst Signature

Date

John Pelyea
 Reviewer Signature 18 June 99
 Date

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

LABCORE Data Entry Template for Worklist# 30167

Analyst: ALL Instrument: AM01 #18 Book# 46B57

Method: LA-953-104 Rev/Mod B1

Worklist Comment: U-102 GRAB1, RERUN! OF WL30042 SAMPLE SIZE=0.100ML.new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	SOLID		
2 BLNK-PREP			@AM24101	SOLID		
3 SAMPLE	S99T000963	0 F	@AM24101	SOLID	99000200	U-102 GRAB1
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S99T000963	0 F	@AM24101	SOLID		

Final page for worklist # 30167

Alita Henson 6/17/99
Signature Date

Suzanne Chase 6/18/99
Signature Date
NEWIGHT 6/18/99

Data Entry Comments:

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
 WL30167-STD-AM
 File ID: 6a6427.CNF

Counted on: 6/17/99 @19:20
 Detector: AEA6
 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	2029.1	2029.1	298.924	298.924	12.000	4.671	6.000	3.717
2	2158.2	2158.2	252.751	252.751	10.000	3.414	5.000	2.760

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Pu238	0.478	5.487	5.474	0.0130.02	48.40	1.3	300.4	0.135E-03	
	Am241		5.479	5.474	0.005			230.1	0.104E-03	
2	Am243	0.453	5.266	5.262	0.0040.02	45.87	1.3	207.0	0.933E-04	
Totals:		0.932	<--valid peaks only-->			94.27				

DETECTOR CALIBRATION

Energy (MEV) = 4.099 + (0.0046)*Channel
 Energy range (MeV): 4.099 TO 6.454
 Efficiency = 0.2238 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48577.0	100.000
Smoothed	48577.0	100.000
Composite fit	45253.7	93.159
Residuals	3323.3	6.841

Analyzed by: _____
 VR

Spectrum 6a6427.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 13638.4

.
..2..
.....2
..... 2
.....2.....
....
1.
....1..
..... 1
..... 1
.....1.....
.

Raw Data Dump for AEA Spectrum: 6a6427.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	0.	1.	1.	2.	0.	0.	0.	1.	0.	0.
31	1.	0.	1.	0.	1.	1.	0.	0.	0.	0.
41	2.	1.	0.	2.	1.	0.	0.	0.	1.	0.
51	1.	1.	0.	0.	0.	0.	0.	0.	1.	0.
61	2.	0.	1.	0.	2.	1.	0.	0.	1.	2.
71	1.	0.	2.	0.	0.	0.	0.	0.	0.	1.
81	0.	0.	3.	2.	0.	0.	0.	0.	0.	0.
91	0.	1.	1.	2.	1.	0.	2.	1.	1.	2.
101	0.	2.	0.	1.	2.	0.	0.	0.	0.	0.
111	1.	4.	0.	1.	0.	2.	2.	1.	0.	0.
121	0.	1.	0.	1.	1.	0.	0.	0.	1.	0.
131	3.	0.	1.	1.	2.	1.	0.	2.	4.	1.
141	2.	0.	1.	0.	1.	1.	3.	0.	6.	2.
151	1.	1.	0.	3.	2.	3.	1.	3.	1.	2.
161	1.	1.	2.	3.	0.	1.	1.	2.	2.	3.
171	5.	1.	1.	5.	1.	3.	3.	4.	3.	3.
181	2.	4.	4.	1.	3.	5.	1.	2.	4.	2.
191	4.	4.	3.	1.	1.	1.	5.	2.	3.	5.
201	4.	5.	4.	2.	8.	6.	7.	15.	5.	10.
211	8.	3.	8.	11.	14.	12.	14.	12.	14.	21.
221	9.	20.	20.	26.	27.	28.	29.	42.	50.	45.
231	49.	73.	71.	83.	100.	103.	124.	123.	184.	255.
241	291.	353.	438.	542.	586.	599.	712.	952.	1183.	1612.
251	2135.	2655.	2741.	2443.	1742.	961.	501.	304.	219.	162.
261	158.	144.	181.	146.	134.	138.	110.	92.	77.	49.
271	48.	41.	32.	37.	36.	48.	66.	87.	78.	75.
281	104.	83.	158.	135.	188.	200.	279.	406.	434.	522.
291	585.	602.	705.	903.	1242.	1535.	1924.	2410.	2518.	2374.
301	1730.	1118.	753.	548.	470.	436.	353.	267.	239.	160.
311	111.	89.	42.	17.	9.	3.	0.	1.	0.	3.
321	0.	0.	1.	1.	0.	1.	0.	1.	1.	1.
331	0.	1.	2.	1.	3.	2.	2.	2.	1.	1.
341	2.	1.	3.	9.	6.	5.	5.	2.	3.	3.
351	1.	2.	1.	2.	1.	0.	0.	1.	1.	3.
361	1.	1.	1.	0.	1.	2.	1.	2.	0.	0.
371	0.	2.	0.	0.	0.	0.	0.	0.	0.	1.
381	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
391	1.	0.	1.	1.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
411	0.	1.	1.	0.	1.	1.	0.	1.	1.	1.
421	0.	1.	0.	0.	1.	1.	0.	0.	1.	1.
431	1.	2.	6.	2.	0.	1.	0.	1.	0.	0.
441	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
461	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
471	0.	1.	2.	4.	4.	2.	3.	4.	2.	6.
481	2.	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
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL30167-BLK-AM
 File ID: 7a7455.CNF

Counted on: 6/17/99 @19:21
 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?	11.4	11.4	299.240	299.240	12.000	5.197	6.000	1.720
2	1981.0	1981.0	253.590	253.589	10.000	3.564	5.000	2.492

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1		????		5.477			0.41	14.0		
2	Am243	0.909	5.266	5.267	-.0010	10.02	44.90	1.3	190.2	0.857E-04
Totals:		0.909	<--valid peaks only-->				44.90			

DETECTOR CALIBRATION

Energy(MEV) = 4.100 + (0.0046)*Channel
 Energy range (MeV): 4.100 TO 6.455
 Efficiency = 0.2385 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	23718.0	100.000
Smoothed	23718.0	100.000
Composite fit	21756.4	91.729
Residuals	1961.6	8.271

Analyzed by: _____

VR

Spectrum 7a7455.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 12658.6

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...2.
.....2
.....2
.....2
.....2...
....
1
1
1
1
1

Raw Data Dump for AEA Spectrum: 7a7455.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	1.	0.	1.	0.	0.	0.	0.	1.	0.
31	2.	2.	2.	1.	1.	0.	1.	0.	0.	2.
41	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
51	0.	0.	1.	1.	1.	0.	1.	2.	1.	2.
61	0.	0.	0.	1.	2.	1.	2.	1.	0.	1.
71	2.	1.	0.	0.	0.	2.	1.	0.	1.	0.
81	1.	1.	2.	1.	1.	0.	0.	2.	2.	1.
91	3.	0.	2.	1.	1.	0.	0.	1.	3.	0.
101	2.	1.	1.	1.	1.	0.	0.	2.	1.	1.
111	0.	0.	1.	1.	2.	1.	0.	1.	2.	1.
121	1.	0.	2.	2.	2.	2.	0.	2.	1.	0.
131	0.	3.	3.	0.	0.	1.	1.	1.	3.	0.
141	1.	1.	1.	0.	3.	3.	1.	0.	1.	1.
151	2.	2.	1.	3.	0.	1.	1.	0.	2.	1.
161	1.	3.	1.	1.	1.	5.	1.	3.	1.	2.
171	3.	0.	2.	1.	0.	0.	3.	2.	5.	3.
181	0.	0.	5.	2.	3.	3.	3.	1.	4.	3.
191	2.	1.	4.	5.	7.	7.	4.	2.	7.	4.
201	8.	12.	4.	5.	4.	8.	4.	9.	5.	15.
211	9.	7.	7.	17.	12.	10.	9.	12.	24.	13.
221	19.	24.	21.	18.	23.	36.	32.	42.	37.	44.
231	56.	77.	89.	85.	101.	99.	127.	127.	157.	241.
241	269.	298.	395.	463.	524.	617.	759.	862.	1025.	1345.
251	1612.	2016.	2374.	2422.	2264.	1520.	790.	357.	246.	198.
261	154.	132.	150.	129.	125.	104.	117.	71.	72.	59.
271	30.	13.	2.	2.	2.	0.	3.	4.	2.	0.
281	0.	1.	3.	1.	4.	0.	3.	1.	5.	6.
291	3.	3.	3.	4.	11.	13.	14.	8.	12.	15.
301	10.	9.	6.	4.	5.	2.	0.	0.	1.	2.
311	0.	0.	0.	1.	0.	1.	0.	0.	2.	0.
321	0.	0.	1.	0.	1.	1.	1.	1.	0.	2.
331	1.	2.	1.	1.	0.	2.	0.	1.	0.	3.
341	1.	2.	2.	8.	3.	2.	9.	7.	7.	1.
351	1.	2.	0.	1.	0.	0.	0.	0.	0.	1.
361	1.	2.	2.	0.	0.	0.	0.	1.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	1.	2.	0.
391	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	1.	1.	1.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	1.	1.	0.	0.	1.	0.	0.	2.	0.
431	2.	0.	1.	1.	3.	2.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
471	0.	2.	2.	2.	4.	9.	9.	3.	9.	6.
481	4.	2.	3.	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
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000963-SAM-A
 File ID: 8a8440.CNF

Counted on: 6/17/99 @19:23
 Detector: AEA8
 Geometry number: 1
 Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	28.5	28.5	367.411	367.411	14.000	4.302	7.000	1.443
2	1043.0	1043.0	299.444	299.444	12.000	6.504	6.000	3.585
3	1249.2	1249.2	253.459	253.456	10.000	4.434	5.000	2.333

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Cm244	0.014	5.795	5.786	0.009	0.02	0.98	9.1	4.3	0.192E-05
	Cm243		5.779	5.786	-0.007				5.8	0.263E-05
2	Pu238	0.458	5.487	5.473	0.014	0.03	31.23	1.6	189.4	0.853E-04
	Am241		5.479	5.473	0.006				145.1	0.653E-04
3	Am243	0.498	5.266	5.262	0.004	0.02	33.94	1.5	149.7	0.674E-04
Totals:		0.970	<--valid peaks only-->				66.15			

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2290 CPM/DPM
 (Data reduction compression factor: 1.)

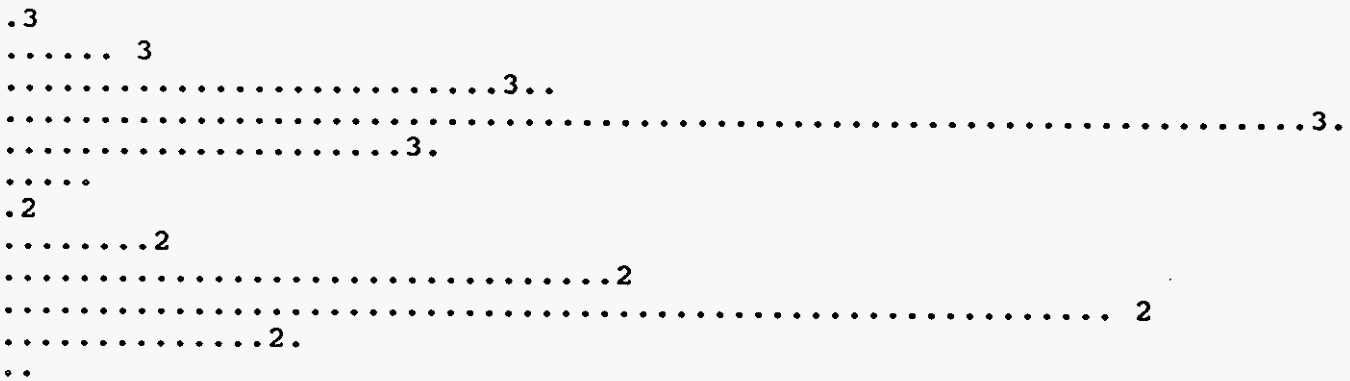
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	32747.0	100.000
Smoothed	32747.0	100.000
Composite fit	31755.2	96.971
Residuals	991.8	3.029

Analyzed by: _____
 VR

Spectrum 8a8440.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 8547.9



1
1
1
1

Raw Data Dump for AEA Spectrum: 8a8440.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
21	0.	0.	0.	1.	0.	1.	0.	1.	1.	1.
31	0.	1.	0.	0.	1.	1.	2.	1.	0.	0.
41	0.	0.	0.	1.	0.	0.	1.	0.	1.	1.
51	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
61	2.	0.	0.	0.	0.	1.	0.	0.	0.	1.
71	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
81	1.	2.	1.	1.	1.	0.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
101	2.	1.	0.	0.	1.	0.	0.	1.	3.	0.
111	1.	0.	0.	0.	1.	1.	1.	2.	1.	0.
121	2.	0.	2.	0.	2.	2.	4.	1.	1.	1.
131	0.	1.	3.	0.	1.	0.	0.	1.	3.	3.
141	2.	1.	1.	1.	2.	0.	1.	0.	2.	3.
151	3.	0.	0.	2.	0.	0.	2.	1.	1.	1.
161	0.	3.	4.	0.	2.	1.	4.	3.	2.	0.
171	0.	0.	3.	2.	2.	1.	3.	2.	1.	0.
181	1.	5.	3.	4.	3.	3.	1.	1.	0.	2.
191	5.	2.	5.	2.	1.	2.	3.	1.	3.	3.
201	1.	5.	2.	1.	8.	3.	3.	5.	9.	6.
211	5.	4.	6.	5.	14.	6.	7.	8.	10.	12.
221	8.	10.	22.	20.	16.	24.	36.	44.	34.	38.
231	46.	63.	68.	76.	83.	101.	105.	120.	147.	173.
241	234.	295.	357.	475.	510.	576.	731.	796.	884.	955.
251	1183.	1253.	1409.	1457.	1375.	1023.	603.	313.	204.	133.
261	103.	91.	80.	92.	82.	82.	80.	65.	50.	40.
271	49.	36.	34.	32.	25.	30.	45.	53.	56.	58.
281	69.	72.	102.	116.	134.	197.	227.	264.	299.	397.
291	472.	531.	559.	658.	742.	851.	1034.	1117.	1186.	1157.
301	1141.	887.	633.	433.	290.	252.	197.	171.	156.	104.
311	88.	54.	41.	30.	10.	5.	1.	0.	0.	1.
321	1.	0.	0.	0.	0.	1.	0.	0.	1.	0.
331	0.	1.	0.	1.	1.	1.	1.	1.	2.	1.
341	1.	3.	4.	6.	5.	13.	13.	8.	7.	7.
351	4.	4.	5.	3.	12.	6.	17.	12.	13.	13.
361	19.	23.	23.	27.	21.	28.	34.	31.	32.	20.
371	17.	11.	5.	1.	0.	0.	1.	0.	0.	0.
381	0.	0.	0.	1.	0.	0.	1.	1.	0.	0.
391	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.
401	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
411	0.	0.	0.	0.	2.	0.	0.	3.	0.	0.
421	0.	3.	1.	1.	5.	3.	4.	3.	2.	5.
431	3.	2.	3.	4.	2.	2.	7.	5.	3.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	1.	3.	2.	3.	4.	6.	7.	8.	5.
481	3.	2.	3.	0.	1.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000963-DUP-A
 File ID: 9a9341.CNF

Counted on: 6/17/99 @19:24
 Detector: AEA9
 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	49.9	49.9	369.281	369.281	10.000	2.240	5.000	1.475
2	1665.2	1665.2	299.979	299.979	12.000	4.373	6.000	3.677
3	2055.5	2055.5	253.767	253.767	10.000	3.103	5.000	2.663

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Cm243	0.012	5.779	5.795	-.0160	0.01	1.02	8.9	6.4	0.287E-05
	Cm244		5.795	5.795	0.000				4.7	0.210E-05
2	Pu238	0.435	5.487	5.477	0.0100	0.02	38.21	1.4	242.6	0.109E-03
	Am241		5.479	5.477	0.002				185.8	0.837E-04
3	Am243	0.472	5.266	5.264	0.0020	0.01	41.48	1.4	191.6	0.863E-04
Totals:		0.919	<--valid peaks only-->				80.70			

DETECTOR CALIBRATION

Energy (MEV) = 4.097 + (0.0046)*Channel
 Energy range (MeV): 4.097 TO 6.452
 Efficiency = 0.2187 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	42169.0	100.000
Smoothed	42169.0	100.000
Composite fit	38747.0	91.885
Residuals	3422.0	8.115

Analyzed by: _____
 VR

Spectrum 9a9341.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 12348.0



1
1

Raw Data Dump for AEA Spectrum: 9a9341.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	1.	2.	0.	0.	0.
21	0.	0.	0.	1.	2.	0.	0.	0.	0.	2.
31	2.	1.	1.	0.	1.	1.	1.	1.	0.	2.
41	0.	0.	0.	1.	1.	2.	0.	0.	1.	0.
51	0.	0.	0.	1.	0.	1.	1.	1.	1.	0.
61	1.	1.	0.	0.	1.	0.	2.	1.	1.	0.
71	0.	2.	1.	2.	0.	1.	0.	2.	1.	1.
81	0.	1.	0.	0.	1.	1.	1.	1.	0.	0.
91	0.	0.	0.	1.	1.	0.	1.	2.	0.	0.
101	0.	2.	0.	0.	1.	0.	0.	0.	0.	1.
111	1.	0.	0.	0.	0.	1.	2.	0.	2.	0.
121	0.	0.	1.	0.	1.	1.	0.	0.	1.	1.
131	0.	1.	1.	0.	0.	1.	0.	0.	2.	2.
141	3.	2.	1.	1.	0.	2.	1.	1.	3.	3.
151	1.	1.	2.	0.	0.	3.	4.	0.	1.	1.
161	2.	1.	6.	2.	2.	2.	0.	4.	1.	3.
171	4.	6.	0.	4.	0.	1.	2.	2.	3.	1.
181	0.	1.	5.	4.	3.	3.	5.	4.	3.	3.
191	4.	3.	2.	3.	6.	5.	4.	5.	6.	4.
201	5.	6.	6.	8.	3.	7.	4.	7.	8.	7.
211	8.	8.	10.	17.	5.	14.	16.	10.	21.	20.
221	16.	13.	17.	26.	19.	26.	23.	25.	41.	39.
231	53.	54.	62.	71.	78.	75.	115.	96.	110.	164.
241	187.	240.	311.	393.	501.	515.	520.	582.	844.	1046.
251	1479.	1994.	2493.	2675.	2364.	1600.	832.	393.	221.	184.
261	169.	147.	141.	143.	139.	132.	118.	91.	85.	65.
271	50.	32.	27.	26.	28.	33.	44.	50.	39.	57.
281	55.	66.	91.	104.	100.	153.	176.	226.	258.	291.
291	383.	450.	457.	550.	741.	948.	1159.	1553.	1904.	2126.
301	1983.	1409.	863.	596.	456.	342.	328.	287.	280.	186.
311	152.	131.	78.	36.	25.	9.	0.	0.	1.	1.
321	0.	0.	1.	0.	0.	1.	0.	0.	0.	1.
331	2.	1.	0.	0.	3.	2.	1.	2.	5.	1.
341	1.	1.	2.	9.	10.	10.	8.	4.	9.	4.
351	4.	1.	4.	3.	2.	2.	7.	10.	14.	16.
361	17.	19.	20.	20.	21.	17.	37.	56.	63.	70.
371	52.	19.	8.	1.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
391	0.	0.	0.	0.	0.	1.	1.	0.	1.	0.
401	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
411	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.
421	0.	0.	1.	3.	0.	1.	5.	3.	1.	4.
431	1.	2.	4.	5.	8.	6.	14.	6.	7.	1.
441	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
461	0.	1.	1.	0.	0.	0.	0.	0.	1.	1.
471	0.	0.	3.	2.	2.	3.	3.	3.	6.	3.
481	3.	4.	1.	1.	0.	0.	0.	0.	0.	0.
491	0.	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) ^{YAD} _{7/16/99} LIQUID

Type	Date Counted	JUN-17-99	Am 241 AEA Frac. (C241)	0.478
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.453
Worklist	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
30167	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	3775
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.07
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	48.4
LIQUID	Detector Number	18	Am 243 cpm	45.87
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
99002506	Standard Book No	46B57	AEA Count Time (min)	480
Retun	Standard Value in µCi/mL	1.070E-04	Am 241 µCi/L =	1.0742E-01
0			Cm 243/244 µCi/L =	< 1.1973E-02
Sample Prep				
N/A				
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
WL30167	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
Instrument Code				
WB27809	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			
SZC				
Chemist				
JFR	Am 241 µCi/mL =	1.07E-04	DETECTION LEVELS in µCi/mL	
Analyst	Relative Counting Error =	1.8%		
AKL			Am 241	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			1.20E-05
06/18/99	Cm 243/244 µCi/mL	< 1.20E-05	Cm 243/244	
Analysis Date	Relative Counting Error =	100.0%	1.20E-05	
06/17/99	Am 243 Tracer Recovery =	93.9%		
Analysis Time				
11:10 AM				
Sample Point				
U-102 GRAB1				

Analyst:	AKL	Date:	06/18/99
Signature of Chemist:	<i>John Relyea</i>	Date:	18 June 99

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) ^{10/16/99}

LIQUID / SO

BLNK-PREP

Type	Date Counted	JUN-17-99	Am 241 AEA Frac. (C241)	0
BLNK-PREP	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.909
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
30167	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	1807
Test Code	Digest Grams of Solids/L (Dg/L)	2.059	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.07
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	0
SOLID	Detector Number	18	Am 243 cpm	44.9
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
99002506			AEA Count Time (min)	480
Rerun			Am 241 µCi/g =	< 3.0190E-02
0			Cm 243/244 µCi/g =	< 3.0190E-02
Sample Prep				
N/A				

Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
 Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (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.

Chemist	JFR	Am241 µCi/g =	< 3.02E-02	DETECTION LEVELS in µCi/g
Analys	AKL	Relative Counting Error =	100.0%	
Date Complete	06/18/99	NOTE: Cm-243/244 Result is a LESS THAN Value.	Cm 243/244 µCi/g	Am 241
Analysis Date	06/17/99	Relative Counting Error =	100.0%	Cm 243/244
Analysis Time	11:10 AM	Am 243 Tracer Recovery =	90.1%	3.02E-02

Analyst:	AKL	Date:	06/18/99
Signature of Chemist:	<i>John Relyea</i>	Date:	18 June 99

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) ¹ *AKL* LIQUID / SO

		JUN-17-99		SAMPLE	
Type	Date Counted			Am 241 AEA Frac. (C241)	0.458
SAMPLE	Sample Volume in mL (SS)	0.100		Am 243 AEA Frac. (C243)	0.498
Work List	Sample D.F. (DF)	1		Cm 243/244 AEA Frac. (Cm)	0.014
30167	Tracer Volume in mL (SPKV)	0.200		Total AT Counts	3558
Test Code	Digest Grams of Solids/L (Dg/L)	2.059		AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59		Background in cpm (Bkg)	0.07
Matrix	Am-243 Tracer Value (dpm/mL)	1130		Am 241 cpm	31.23
SOLID	Detector Number	18		Am 243 cpm	33.94
Batch Number	Detector Efficiency (DetEff)	0.2686		Cm 243/244 cpm	0.98
99002506				AEA Count Time (min)	480
Rerun				Am 241 µCi/g =	4.5475E-01
1				Cm 243/244 µCi/g =	< 5.1055E-02
Sample Prep					
FUSION01					
Sample Number	Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]				
S99T000963	Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB27809	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SZC					
Chemist					
JFR	Am241 µCi/g = 4.55E-01			DETECTION LEVELS in µCi/g	
Analyst	Relative Counting Error = 2.2%			Am 241	5.11E-02
AKL				Cm 243/244	5.11E-02
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
06/18/99	Cm 243/244 µCi/g < 5.11E-02				
Analysis Date	Relative Counting Error = 9.2%				
06/17/99	Am 243 Tracer Recovery = 97.2%				
Analysis Time					
11:10 AM					
Sample Point					
U-102 GRAB1					

Analyst:	AKL	Date:	06/18/99
Signature of Chemist:	<i>John Relyea</i>	Date:	18 June 99
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) ^{AD 1/1/99} LIQUID / SO DUP

Type	Date Counted	JUN-17-99	Am 241 AEA Frac. (C241)	0.435
DUP	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.472
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0.012
30167	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	3610
Test Code	Digest Grams of Solids/L (Dg/L)	2.062	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.07
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	38.21
SOLID	Detector Number	18	Am 243 cpm	41.48
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	1.02
99002506			AEA Count Time (min)	480
Rerun			Am 241 µCi/g =	4.5509E-01
1			Cm 243/244 µCi/g =	< 5.5939E-02

Sample Prep	
FUSION01	
Sample Number	Am-241 µCi/g = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
S99T000963	Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
Instrument Code	
WB27809	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
SZC	
Chemist	

JFR	Am241 µCi/g =	4.55E-01	DETECTION LEVELS in µCi/g
AKL	Relative Counting Error =	2.0%	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
06/18/99	Cm 243/244 µCi/g	< 5.59E-02	5.59E-02
Analysis Date	Relative Counting Error =	9.0%	Cm 243/244
06/17/99	Am 243 Tracer Recovery =	93.5%	5.59E-02

Analysis Time	11:10 AM
Sample Point	U-102 GRAB1

Analyst:	AKL	Date:	06/18/99
Signature of Chemist:	<i>John Relyea</i>	Date:	18 June 99
SAMPLE.WB1 REV 1.2	953103ML		

LABCORE Completed Worklist Report for Worklist# 30005

Analyst: gll

Instrument: AB16

Book#: _____

Method: LA-953-104 Rev/Mod _____

Worklist Comment: U102 GRAB1, @PU23901 SS by Ludlum. STD: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@PU23901 PU23901	LIQUID	1.26E-04	1.26E-4	100.000 % Recovery	
1 STD		0	@PU23901 PU23901T	LIQUID	100	9.54E+01	95.400 % Recovery	
1 STD		0	@PU23901 PU23901E	LIQUID	1.00	1.78E+00	1.780 % Ct Error	
2 BLNK		0	@PU23901 PU23901	LIQUID	1	<3.35E-4		uCi/mL
2 BLNK		0	@PU23901 PU23901T	LIQUID	100	1.00E+02	100.000 % Recovery	
2 BLNK		0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S99T000973	0	@PU23901 PU23901	LIQUID	N/A	3.54E-04	3.42e-004	uCi/mL
3 SAMPLE	S99T000973	0	@PU23901 PU23901T	LIQUID	N/A	1.05E+02		% Recovery
3 SAMPLE	S99T000973	0	@PU23901 PU23901E	LIQUID	N/A	7.13E+00		% Ct. Error
4 DUP	S99T000973	0	@PU23901 PU23901	LIQUID	3.54E-4	3.61E-4		1.958 RPD
4 DUP	S99T000973	0	@PU23901 PU23901T	LIQUID	100	1.00E+02	100.000 % Recovery	
4 DUP	S99T000973	0	@PU23901 PU23901E	LIQUID	1.00	7.05E+00	7.050 % Ct Error	
5 SAMPLE	S99T000974	0	@PU23901 PU23901	LIQUID	N/A	3.52E-04	3.52e-004	uCi/mL
5 SAMPLE	S99T000974	0	@PU23901 PU23901T	LIQUID	N/A	1.03E+02		% Recovery
5 SAMPLE	S99T000974	0	@PU23901 PU23901E	LIQUID	N/A	7.40E+00		% Ct. Error
6 DUP	S99T000974	0	@PU23901 PU23901	LIQUID	<3.52E-4	<3.51E-4		RPD
6 DUP	S99T000974	0	@PU23901 PU23901T	LIQUID	100	1.00E+02	100.000 % Recovery	
6 DUP	S99T000974	0	@PU23901 PU23901E	LIQUID	1.00	7.76E+00	7.760 % Ct Error	
7 SAMPLE	S99T000975	0	@PU23901 PU23901	LIQUID	N/A	1.02E-03	3.77e-004	uCi/mL
7 SAMPLE	S99T000975	0	@PU23901 PU23901T	LIQUID	N/A	1.02E+02		% Recovery
7 SAMPLE	S99T000975	0	@PU23901 PU23901E	LIQUID	N/A	4.34E+00		% Ct. Error
8 DUP	S99T000975	0	@PU23901 PU23901	LIQUID	1.02E-3	9.42E-4		7.951 RPD
8 DUP	S99T000975	0	@PU23901 PU23901T	LIQUID	100	1.03E+02	103.000 % Recovery	
8 DUP	S99T000975	0	@PU23901 PU23901E	LIQUID	1.00	4.47E+00	4.470 % Ct Error	

Final page for worklist# 30005

Analyst Signature

Date

Analyst Signature

Date

John Reber 15 June 99
Reviewer Signature Date

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

06/02/99 09:52
ws2

Page: 1

LABCORE Data Entry Template for Worklist# 30005Analyst: AKL Instrument: PU01 #16 Book# 46B57Method: LA-953-104 Rev/Mod B1

Worklist Comment: U102 GRAB1, @PU23901 SS by Ludlum. STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S99T000973 0		@PU23901	LIQUID	99000200	U-102 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S99T000973 0		@PU23901	LIQUID		
5 SAMPLE	S99T000974 0		@PU23901	LIQUID	99000200	U-102 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
6 DUP	S99T000974 0		@PU23901	LIQUID		
7 SAMPLE	S99T000975 0		@PU23901	LIQUID	99000200	U-102 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
8 DUP	S99T000975 0		@PU23901	LIQUID		

Final page for worklist # 30005

AKL 6-12-99
Signature Date

Em Barber 6-14-99
Signature Date

Data Entry Comments:

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

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL30005-STD-PU
 File ID: 3a3501.CNF

Counted on: 6/13/99 @ 3:19
 Detector: AEA3
 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?	16.8	16.8	474.145	474.145	14.000	4.599	7.000	3.460
2	1619.6	1619.6	360.419	360.419	10.000	3.202	5.000	1.362
3?	72.0	72.0	299.186	298.945	8.000	0.000	4.000	3.686
4	118.2	118.2	285.780	285.776	10.000	3.801	5.000	2.589
5?	32.4	32.4	268.471	268.032	12.000	2.990	6.000	1.038
6	2350.9	2350.9	226.940	226.939	10.000	3.366	5.000	1.941

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.277			0.41	14.1		
2	Pu236	0.413	5.755	5.754	0.0010	10.01	45.41	1.3	198.2	0.893E-04
3		????		5.471			0.00	1000.		
4	Th228	0.025	5.400	5.411	-.0110	10.02	2.76	5.4	16.6	0.749E-05
5		????		5.329			1.02	10.9		
6	Pu239	0.516	5.147	5.140	0.0070	10.02	56.84	1.2	243.1	0.110E-03
	Pu240		5.144	5.140	0.004				243.1	0.110E-03
Totals:		0.954	<--valid peaks only-->				105.00			

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2338 CPM/DPM
 (Data reduction compression factor: 1.)

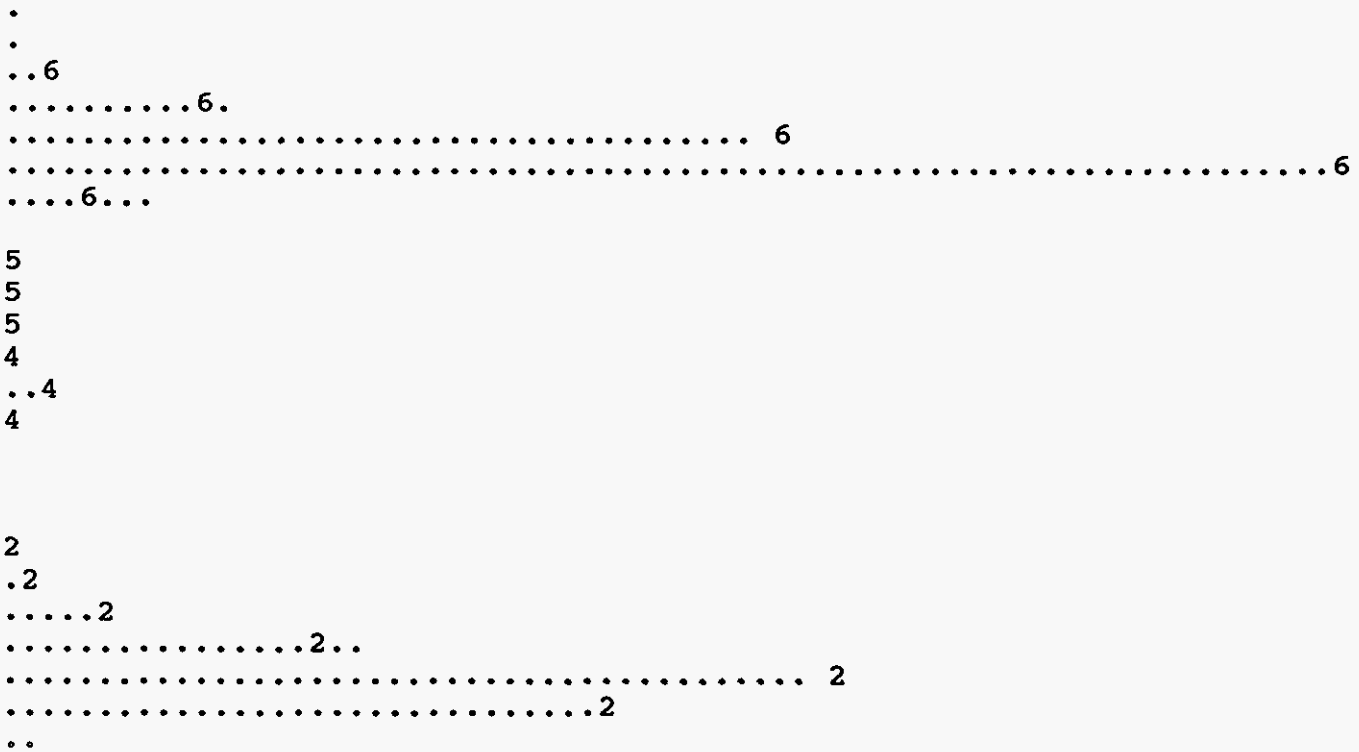
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	52835.0	100.000
Smoothed	52835.0	100.000
Composite fit	51093.8	96.704
Residuals	1741.2	3.296

Spectrum 3a3501.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 14335.3



Raw Data Dump for AEA Spectrum: 3a3501.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	3.	0.	0.	0.
21	0.	3.	0.	0.	2.	0.	0.	1.	0.	0.
31	2.	0.	0.	1.	0.	2.	2.	0.	2.	0.
41	0.	0.	0.	1.	0.	5.	0.	1.	5.	0.
51	1.	1.	1.	0.	1.	2.	3.	2.	0.	1.
61	1.	0.	1.	0.	0.	0.	1.	2.	1.	3.
71	0.	1.	1.	0.	0.	0.	1.	1.	1.	0.
81	3.	2.	0.	0.	1.	0.	0.	3.	1.	1.
91	1.	1.	0.	3.	0.	1.	3.	1.	0.	0.
101	2.	2.	1.	0.	0.	1.	1.	0.	1.	1.
111	0.	0.	2.	2.	1.	2.	1.	3.	1.	2.
121	0.	3.	2.	1.	0.	3.	7.	2.	2.	6.
131	0.	4.	2.	8.	6.	2.	2.	1.	2.	2.
141	5.	3.	3.	3.	6.	1.	4.	6.	1.	5.
151	3.	5.	4.	7.	8.	6.	5.	2.	2.	9.
161	5.	9.	5.	11.	7.	7.	8.	8.	13.	13.
171	10.	13.	15.	21.	20.	23.	13.	12.	14.	22.
181	19.	15.	26.	19.	17.	19.	26.	27.	42.	27.
191	30.	24.	31.	42.	53.	36.	59.	60.	83.	70.
201	68.	72.	84.	96.	112.	114.	150.	125.	165.	210.
211	269.	283.	371.	433.	512.	587.	666.	811.	771.	860.
221	1005.	1216.	1544.	1905.	2265.	2738.	2819.	2681.	2191.	1475.
231	662.	266.	53.	16.	4.	1.	4.	4.	7.	3.
241	4.	2.	1.	8.	6.	5.	4.	6.	9.	5.
251	8.	10.	12.	19.	10.	12.	9.	13.	9.	17.
261	14.	17.	31.	21.	21.	30.	55.	34.	45.	45.
271	27.	23.	20.	15.	23.	22.	30.	33.	48.	45.
281	58.	82.	95.	127.	131.	132.	160.	90.	62.	22.
291	18.	9.	15.	15.	12.	12.	15.	21.	25.	30.
301	14.	17.	23.	28.	16.	6.	12.	12.	7.	13.
311	8.	11.	16.	12.	19.	15.	15.	16.	13.	20.
321	21.	23.	20.	20.	32.	36.	25.	32.	52.	28.
331	42.	38.	59.	51.	62.	67.	94.	85.	109.	111.
341	154.	174.	222.	233.	308.	296.	368.	485.	615.	704.
351	871.	841.	742.	818.	783.	926.	1142.	1385.	1704.	1883.
361	1952.	1791.	1194.	654.	220.	56.	14.	6.	0.	0.
371	1.	1.	1.	0.	3.	1.	0.	1.	2.	0.
381	2.	0.	0.	0.	1.	0.	0.	0.	1.	1.
391	1.	0.	1.	0.	0.	1.	1.	0.	0.	0.
401	0.	2.	0.	0.	1.	0.	0.	0.	1.	0.
411	0.	2.	1.	1.	1.	1.	2.	1.	0.	2.
421	1.	4.	3.	0.	3.	0.	3.	1.	0.	0.
431	3.	1.	1.	1.	1.	1.	0.	1.	0.	1.
441	1.	0.	0.	2.	0.	0.	1.	0.	0.	1.
451	0.	0.	1.	1.	0.	0.	0.	2.	1.	2.
461	0.	4.	2.	2.	5.	3.	5.	8.	13.	11.
471	11.	14.	20.	20.	21.	15.	11.	7.	8.	3.
481	2.	0.	2.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL30005-BLK-PU
 File ID: 4a4490.CNF

Counted on: 6/13/99 @ 3:20
 Detector: AEA4
 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?	24.4	24.4	472.807	472.807	10.000	3.032	5.000	3.400
2	1956.5	1956.5	359.435	359.435	8.000	2.547	4.000	1.391
3	33.8	33.8	301.082	301.052	8.000	0.813	4.000	0.534
4	145.5	145.5	285.003	284.979	10.000	2.463	5.000	2.751
5	38.7	38.7	267.742	267.632	10.000	3.238	5.000	2.863

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????	6.267				0.46	13.3		
2	Pu236	0.914	5.755	5.746	0.0090	0.01	45.33	1.3	206.0	0.928E-04
3	Pu238	0.011	5.487	5.477	0.0100	0.00	0.56	12.1	3.5	0.156E-05
	Am241		5.479	5.477	0.002				2.6	0.119E-05
4	Th228	0.051	5.400	5.403	-0.0030	0.01	2.51	5.8	15.7	0.708E-05
5		0.016		5.323		0.01	0.79	11.8	3.5	0.158E-05
Totals:		0.992	<--valid peaks only-->				49.19			

DETECTOR CALIBRATION

Energy(MEV) = 4.092 + (0.0046)*Channel
 Energy range (MeV): 4.092 TO 6.448
 Efficiency = 0.2246 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

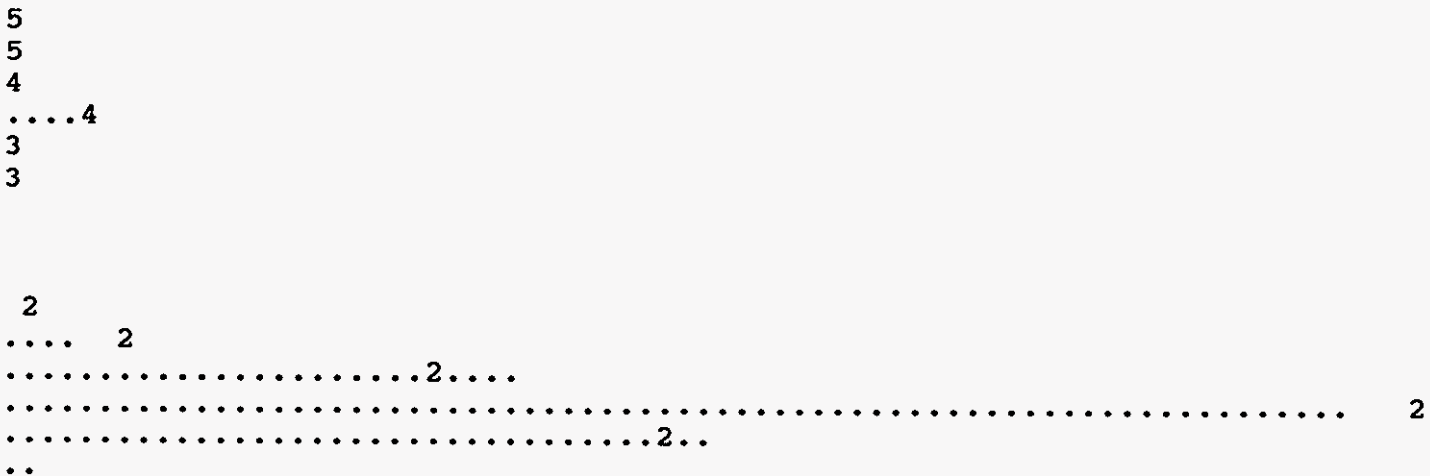
Item	Total	% Recovery
Raw spectrum	23803.0	100.000
Smoothed	23803.0	100.000
Composite fit	23831.7	100.121
Residuals	-28.7	-0.121

Analyzed by: _____
 427 GL

Spectrum 4a4490.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 10610.5



Raw Data Dump for AEA Spectrum: 4a4490.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
41	0.	0.	0.	0.	2.	0.	1.	0.	0.	0.
51	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	2.	0.	0.	0.	0.	0.	0.	0.	0.	1.
71	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
81	2.	0.	1.	0.	0.	0.	2.	0.	0.	1.
91	0.	2.	0.	1.	0.	0.	0.	0.	0.	0.
101	0.	0.	0.	2.	1.	0.	1.	0.	0.	1.
111	0.	0.	0.	0.	2.	0.	0.	1.	0.	0.
121	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
131	1.	1.	0.	0.	0.	0.	0.	1.	0.	1.
141	0.	1.	0.	0.	0.	0.	0.	1.	0.	1.
151	1.	0.	2.	1.	0.	1.	0.	1.	0.	0.
161	1.	0.	0.	0.	0.	1.	0.	1.	2.	0.
171	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.
181	1.	0.	1.	2.	1.	1.	1.	1.	0.	2.
191	1.	0.	0.	1.	0.	0.	0.	0.	0.	1.
201	1.	2.	0.	0.	0.	0.	2.	1.	0.	0.
211	1.	0.	0.	0.	1.	0.	0.	1.	0.	1.
221	1.	1.	2.	2.	4.	2.	2.	3.	2.	1.
231	0.	0.	0.	1.	3.	0.	2.	1.	2.	2.
241	0.	1.	2.	1.	4.	1.	3.	3.	2.	6.
251	6.	2.	5.	6.	6.	6.	3.	3.	4.	10.
261	8.	10.	22.	21.	27.	37.	46.	60.	36.	28.
271	23.	14.	16.	12.	13.	21.	19.	23.	41.	37.
281	57.	81.	130.	190.	188.	194.	119.	62.	33.	14.
291	9.	4.	12.	8.	5.	5.	12.	11.	16.	20.
301	25.	20.	22.	9.	4.	3.	4.	2.	4.	3.
311	4.	0.	5.	3.	4.	6.	3.	1.	3.	2.
321	2.	4.	3.	8.	7.	6.	13.	9.	10.	13.
331	12.	15.	10.	16.	29.	26.	27.	42.	47.	58.
341	100.	110.	113.	163.	195.	289.	471.	620.	729.	926.
351	886.	731.	664.	684.	915.	1136.	1540.	1948.	2428.	2564.
361	2125.	1235.	477.	112.	10.	1.	2.	1.	7.	1.
371	0.	0.	2.	0.	1.	0.	0.	0.	0.	0.
381	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
391	1.	0.	1.	0.	0.	0.	0.	0.	0.	1.
401	0.	1.	0.	1.	1.	0.	1.	2.	0.	1.
411	3.	0.	1.	0.	0.	1.	2.	0.	3.	1.
421	3.	2.	2.	1.	2.	0.	3.	1.	2.	1.
431	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	1.	0.	0.	2.	2.	0.	0.	5.
461	0.	2.	1.	2.	4.	5.	3.	14.	16.	17.
471	18.	29.	34.	29.	15.	8.	10.	5.	1.	0.
481	0.	1.	0.	1.	0.	0.	0.	1.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000973-SAM-P
 File ID: 5a5414.CNF

Counted on: 6/13/99 @ 3:21
 Detector: AEA5
 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?	19.7	19.7	476.291	476.291	12.000	3.855	6.000	3.904
2	1788.3	1788.3	362.622	362.622	10.000	3.066	5.000	1.409
3	45.3	45.3	303.914	303.806	10.000	1.281	5.000	0.591
4	117.8	117.8	287.666	287.583	10.000	3.081	5.000	2.644
5	32.3	32.3	269.824	269.504	12.000	3.514	6.000	2.301
6	61.2	61.2	228.913	228.912	12.000	4.817	6.000	2.812

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.286			0.41	13.9		
2	Pu236	0.895	5.755	5.763	-.0080	0.01	47.50	1.3	202.1	0.910E-04
	Cm243		5.779	5.763	0.016				271.3	0.122E-03
3	Pu238	0.019	5.487	5.492	-.0050	0.01	1.02	9.1	5.9	0.267E-05
	Am241		5.479	5.492	-.013				4.5	0.204E-05
4	Th228	0.045	5.400	5.418	-.0180	0.01	2.37	6.3	13.9	0.627E-05
5		0.014		5.335	0.02		0.75	12.7	3.1	0.141E-05
6	Pu239	0.031	5.147	5.148	-.0010	0.02	1.63	7.0	6.8	0.306E-05
	Pu240		5.144	5.148	-.004				6.8	0.306E-05
Totals:		1.004	<--valid peaks only-->				53.28			

DETECTOR CALIBRATION

Energy (MEV) = 4.095 + (0.0046)*Channel
 Energy range (MeV): 4.095 TO 6.450
 Efficiency = 0.2399 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25489.0	100.000
Smoothed	25489.0	100.000
Composite fit	25777.0	101.130
Residuals	-288.0	-1.130

Spectrum 5a5414.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 10288.7

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Raw Data Dump for AEA Spectrum: 5a5414.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	0.	1.	1.	0.	1.	0.	1.	0.	0.
31	0.	0.	0.	1.	1.	0.	1.	0.	0.	1.
41	0.	0.	0.	0.	2.	2.	0.	0.	0.	0.
51	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
61	0.	0.	1.	0.	3.	1.	0.	0.	0.	1.
71	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
81	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
91	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
101	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
111	0.	0.	1.	1.	0.	0.	0.	1.	1.	0.
121	1.	0.	0.	2.	0.	0.	0.	0.	0.	0.
131	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
141	1.	0.	0.	3.	0.	0.	2.	0.	0.	0.
151	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
161	0.	0.	0.	0.	0.	1.	0.	0.	1.	0.
171	1.	1.	1.	2.	0.	0.	0.	0.	0.	0.
181	2.	1.	1.	1.	1.	0.	0.	0.	0.	0.
191	0.	0.	0.	1.	1.	0.	2.	0.	1.	1.
201	0.	4.	0.	2.	2.	3.	2.	0.	3.	7.
211	2.	3.	6.	10.	7.	13.	19.	13.	11.	30.
221	22.	30.	24.	29.	48.	50.	66.	77.	65.	74.
231	56.	47.	29.	16.	8.	5.	3.	3.	1.	3.
241	3.	2.	3.	0.	0.	2.	1.	4.	3.	2.
251	4.	2.	5.	7.	8.	4.	4.	4.	7.	9.
261	7.	7.	12.	14.	19.	22.	38.	31.	45.	39.
271	41.	30.	21.	16.	17.	17.	19.	11.	18.	33.
281	44.	44.	64.	74.	101.	146.	135.	148.	150.	99.
291	56.	26.	27.	12.	21.	21.	17.	9.	17.	15.
301	26.	24.	33.	28.	36.	24.	22.	8.	3.	7.
311	2.	3.	4.	5.	3.	10.	3.	4.	6.	9.
321	5.	10.	6.	6.	9.	5.	14.	15.	17.	21.
331	18.	26.	23.	22.	19.	36.	40.	48.	46.	57.
341	66.	78.	122.	118.	166.	205.	225.	283.	373.	476.
351	672.	750.	837.	875.	855.	817.	833.	983.	1134.	1402.
361	1760.	2038.	2215.	2025.	1399.	766.	321.	83.	16.	8.
371	2.	1.	0.	2.	0.	1.	0.	0.	0.	0.
381	0.	0.	0.	1.	0.	0.	1.	0.	1.	3.
391	1.	0.	0.	0.	0.	1.	1.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
411	1.	0.	0.	0.	0.	3.	1.	1.	0.	3.
421	0.	4.	0.	4.	3.	2.	2.	6.	1.	3.
431	2.	0.	2.	0.	2.	0.	3.	0.	0.	1.
441	1.	0.	1.	0.	1.	0.	0.	1.	0.	0.
451	1.	0.	1.	0.	0.	2.	0.	0.	0.	1.
461	4.	1.	2.	2.	3.	2.	0.	4.	6.	4.
471	5.	11.	16.	13.	17.	28.	25.	17.	9.	5.
481	7.	5.	6.	5.	2.	0.	2.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000973-DUP-P
 File ID: 6a6419.CNF

Counted on: 6/13/99 @ 3:22
 Detector: AEA6
 Geometry number: 1
 Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1?	16.1	16.1	473.516	473.516	16.000	5.592	8.000	5.139
2	1726.8	1726.8	359.728	359.728	10.000	2.992	5.000	1.322
3	36.3	36.3	301.399	301.293	30.000	6.034	15.000	15.059
4	130.2	130.2	284.670	284.662	10.000	3.382	5.000	2.652
5	29.1	29.1	267.561	267.168	10.000	3.206	5.000	1.831
6	65.6	65.6	226.418	226.416	12.000	4.264	6.000	2.554

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????	6.276				0.40	14.1		
2	Pu236	0.876	5.755	5.753	0.0020	0.01	46.68	1.3	213.6	0.962E-04
3	Pu238	0.017	5.487	5.484	0.0030	0.03	0.89	10.3	5.5	0.249E-05
	Am241		5.479	5.484	-0.005				4.2	0.190E-05
4	Th228	0.052	5.400	5.408	-0.0080	0.02	2.79	5.5	17.6	0.793E-05
5		0.013		5.327		0.01	0.70	13.7	3.1	0.141E-05
6	Pu239	0.031	5.147	5.140	0.0070	0.02	1.67	6.9	7.5	0.337E-05
	Pu240		5.144	5.140	0.004				7.5	0.337E-05
Totals:		0.990	<--valid peaks only-->				52.72			

DETECTOR CALIBRATION

Energy (MEV) = 4.098 + (0.0046)*Channel
 Energy range (MeV): 4.098 TO 6.453
 Efficiency = 0.2230 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25575.0	100.000
Smoothed	25574.9	100.000
Composite fit	25500.5	99.709
Residuals	74.5	0.291

Spectrum 6a6419.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 9788.5

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Raw Data Dump for AEA Spectrum: 6a6419.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	1.	0.	1.	1.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	1.	0.	0.	0.	1.	1.	0.
91	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.
101	0.	0.	2.	0.	0.	0.	1.	0.	0.	0.
111	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.
121	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
131	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
141	0.	1.	1.	1.	1.	1.	1.	0.	1.	0.
151	0.	0.	1.	1.	1.	0.	2.	2.	2.	0.
161	1.	1.	0.	0.	0.	0.	0.	0.	1.	1.
171	0.	1.	1.	0.	1.	0.	1.	0.	1.	0.
181	0.	0.	0.	4.	0.	2.	1.	1.	1.	0.
191	0.	0.	0.	4.	1.	1.	2.	1.	5.	3.
201	2.	3.	4.	2.	6.	5.	5.	7.	8.	8.
211	11.	5.	9.	11.	20.	14.	16.	20.	26.	29.
221	30.	34.	46.	60.	72.	82.	76.	66.	55.	30.
231	23.	13.	7.	2.	4.	3.	3.	2.	4.	3.
241	1.	8.	2.	2.	3.	8.	6.	7.	8.	5.
251	2.	7.	5.	7.	2.	7.	7.	8.	12.	9.
261	5.	14.	21.	26.	28.	33.	37.	48.	30.	24.
271	19.	16.	24.	20.	19.	33.	36.	39.	35.	55.
281	78.	101.	136.	162.	167.	138.	109.	54.	38.	16.
291	20.	13.	14.	14.	13.	17.	20.	24.	20.	23.
301	36.	31.	27.	24.	12.	7.	6.	4.	9.	8.
311	10.	13.	11.	18.	16.	11.	12.	20.	13.	19.
321	23.	18.	21.	39.	25.	26.	57.	38.	44.	50.
331	39.	57.	58.	74.	79.	68.	94.	113.	110.	136.
341	157.	183.	229.	272.	278.	383.	485.	601.	724.	811.
351	835.	826.	821.	824.	892.	1127.	1345.	1634.	1927.	2120.
361	2014.	1411.	793.	315.	72.	10.	2.	0.	4.	1.
371	3.	1.	0.	1.	1.	0.	0.	1.	0.	1.
381	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
391	2.	0.	0.	0.	0.	1.	0.	1.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	1.	1.
411	0.	0.	0.	1.	0.	1.	0.	2.	0.	2.
421	2.	2.	1.	2.	1.	1.	0.	1.	0.	5.
431	0.	1.	0.	0.	3.	0.	0.	0.	1.	1.
441	1.	1.	0.	0.	1.	0.	0.	1.	0.	1.
451	0.	2.	0.	0.	0.	1.	1.	0.	0.	1.
461	0.	1.	1.	9.	2.	5.	6.	9.	7.	5.
471	20.	18.	21.	17.	17.	12.	15.	8.	6.	4.
481	3.	0.	1.	2.	0.	0.	0.	0.	1.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

HNF-1674 REV. 0

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000974-SAM-P
 File ID: 7a7447.CNF

Counted on: 6/13/99 @ 3:23
 Detector: AEA7
 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	24.3	24.3	476.216	476.216	14.000	4.634	7.000	4.264
2	2100.3	2100.3	361.312	361.312	10.000	2.422	5.000	1.367
3	40.1	40.1	302.995	302.976	12.000	2.131	6.000	0.843
4	150.3	150.3	286.303	286.257	10.000	2.355	5.000	2.694
5	37.2	37.2	268.629	268.502	10.000	3.438	5.000	3.189
6	65.9	65.9	227.739	227.739	12.000	4.188	6.000	3.299

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
1		0.010	6.286		0.02	0.56	12.0		2.3	0.105E-05	
2	Pu236	0.870	5.755	5.758	-.0030	0.01	47.27	1.3	201.1	0.906E-04	
3	Pu238	0.020	5.487	5.489	-.0020	0.01	1.09	8.6	6.3	0.284E-05	
	Am241		5.479	5.489	-.010				4.8	0.218E-05	
4	Th228	0.047	5.400	5.412	-.0120	0.01	2.53	6.0	14.9	0.670E-05	
5		0.014		5.331		0.02	0.76	12.2	3.2	0.143E-05	
6	Pu239	0.028	5.147	5.143	0.0040	0.02	1.51	7.3	6.3	0.284E-05	
	Pu240		5.144	5.143	0.001				6.3	0.284E-05	
Totals:		0.989	<--valid peaks only-->				53.72				

DETECTOR CALIBRATION

Energy (MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2399 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26090.0	100.000
Smoothed	26089.9	100.000
Composite fit	25790.7	98.853
Residuals	299.3	1.147
	436	

Spectrum 7a7447.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9482.9

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 5
 3....4
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2
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2.....
2
2.

Raw Data Dump for AEA Spectrum: 7a7447.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	0.	1.	1.	0.	0.	0.	1.	1.	1.
31	0.	0.	0.	0.	4.	1.	0.	0.	0.	0.	1.
41	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	1.	0.	1.	0.	0.	0.	0.	0.	0.	2.	1.
61	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	1.	0.	1.	0.	0.	0.	1.	0.
81	0.	0.	1.	0.	0.	1.	1.	1.	1.	0.	1.
91	1.	0.	0.	1.	1.	0.	0.	2.	1.	1.	0.
101	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
111	0.	1.	1.	0.	0.	1.	2.	0.	0.	0.	0.
121	1.	0.	1.	1.	0.	1.	1.	0.	0.	0.	0.
131	0.	2.	1.	2.	0.	0.	0.	3.	1.	0.	0.
141	0.	1.	1.	0.	1.	2.	1.	0.	0.	0.	1.
151	1.	0.	1.	2.	0.	1.	0.	1.	1.	1.	0.
161	1.	1.	1.	0.	3.	0.	0.	0.	0.	0.	0.
171	1.	0.	0.	2.	0.	1.	1.	0.	1.	1.	1.
181	1.	1.	1.	0.	2.	0.	2.	1.	0.	0.	0.
191	0.	4.	0.	1.	1.	1.	0.	1.	1.	1.	1.
201	1.	1.	0.	0.	2.	0.	2.	2.	7.	2.	2.
211	3.	3.	5.	4.	4.	12.	15.	15.	14.	21.	21.
221	15.	25.	34.	47.	57.	72.	76.	82.	66.	62.	62.
231	35.	36.	13.	5.	0.	0.	1.	1.	2.	3.	3.
241	2.	0.	3.	5.	2.	2.	2.	0.	7.	5.	5.
251	1.	5.	7.	10.	6.	6.	5.	4.	4.	13.	13.
261	3.	4.	10.	14.	17.	38.	44.	44.	50.	47.	47.
271	23.	20.	18.	14.	14.	20.	18.	20.	22.	31.	31.
281	50.	56.	103.	129.	187.	197.	199.	177.	75.	35.	35.
291	11.	10.	15.	13.	9.	18.	15.	18.	12.	26.	26.
301	33.	37.	40.	41.	36.	15.	5.	2.	4.	1.	1.
311	2.	1.	2.	3.	2.	5.	5.	2.	4.	3.	3.
321	4.	4.	4.	5.	2.	6.	2.	9.	9.	10.	10.
331	13.	11.	18.	18.	16.	16.	21.	30.	33.	57.	57.
341	59.	79.	110.	109.	148.	216.	249.	349.	482.	664.	664.
351	846.	910.	869.	788.	665.	763.	903.	1278.	1632.	2159.	2159.
361	2670.	2752.	2206.	1086.	378.	79.	8.	1.	0.	1.	1.
371	4.	2.	2.	1.	1.	1.	0.	0.	0.	0.	0.
381	0.	1.	0.	1.	0.	1.	0.	1.	0.	1.	1.
391	2.	0.	0.	1.	0.	1.	0.	1.	0.	1.	1.
401	1.	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	1.	0.	1.	3.	2.	0.	0.
421	2.	2.	2.	2.	2.	1.	5.	0.	3.	3.	3.
431	2.	1.	0.	1.	3.	0.	3.	0.	0.	1.	1.
441	0.	0.	0.	2.	0.	0.	1.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	2.	2.	0.	0.	0.
461	2.	1.	2.	2.	0.	3.	5.	6.	11.	7.	7.
471	8.	19.	28.	8.	36.	28.	26.	22.	19.	9.	9.
481	8.	7.	1.	3.	3.	1.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.									

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000974-DUP-P
 File ID: 8a8432.CNF

Counted on: 6/13/99 @ 3:24
 Detector: AEA8
 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?	20.1	20.1	475.062	475.062	12.000	3.412	6.000	4.779
2	1937.5	1937.5	361.506	361.506	8.000	2.414	4.000	1.244
3	41.3	41.3	302.401	302.338	30.000	5.598	15.000	15.009
4	140.1	140.1	286.751	286.743	10.000	2.591	5.000	2.349
5	37.1	37.1	269.044	268.852	10.000	3.240	5.000	2.615
6	57.5	57.5	228.835	228.835	10.000	3.387	5.000	2.027

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.281			0.38	14.5		
2	Pu236	0.873	5.755	5.758	-.0030	0.01	45.81	1.3	211.6	0.953E-04
3	Pu238	0.018	5.487	5.486	0.0010	0.03	0.97	9.4	6.1	0.275E-05
	Am241		5.479	5.486	-.007				4.7	0.210E-05
4	Th228	0.050	5.400	5.415	-.0150	0.01	2.61	5.7	16.7	0.751E-05
5		0.015		5.332		0.01	0.78	12.1	3.5	0.158E-05
6	Pu239	0.026	5.147	5.148	-.0010	0.02	1.37	7.6	6.2	0.279E-05
	Pu240		5.144	5.148	-.004				6.2	0.279E-05
Totals:		0.982	<--valid peaks only-->				51.54			

DETECTOR CALIBRATION

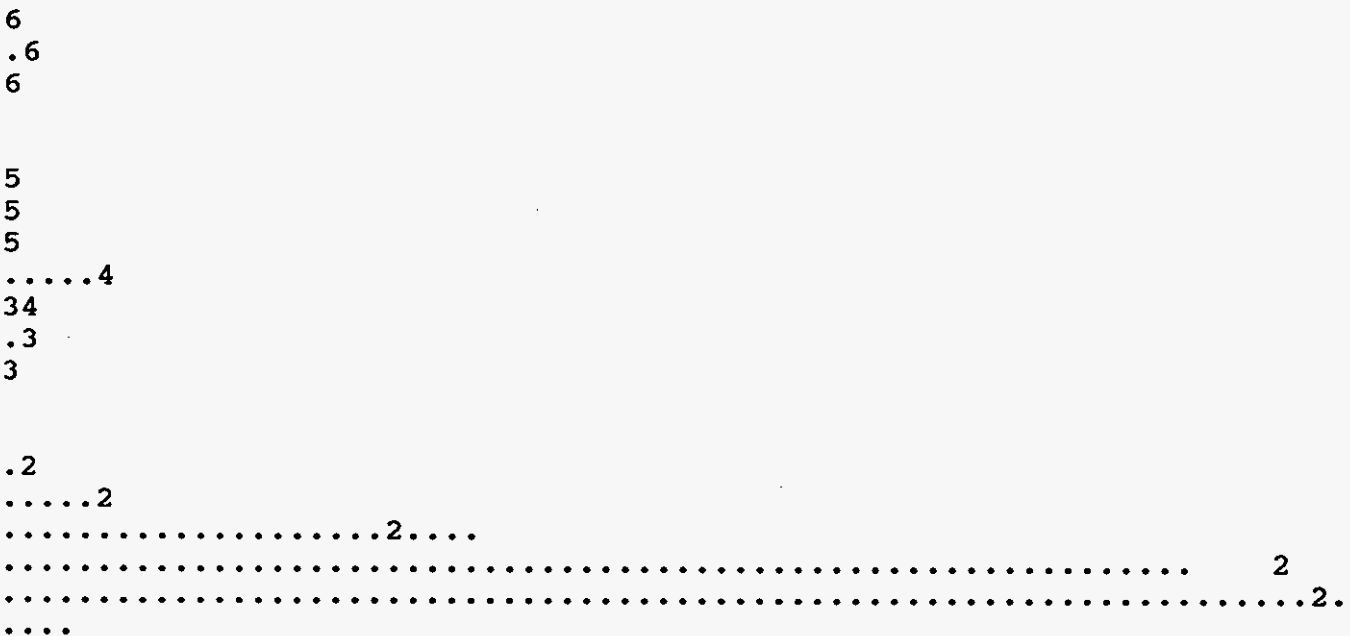
Energy (MEV) = 4.095 + (0.0046)*Channel
 Energy range (MeV): 4.095 TO 6.451
 Efficiency = 0.2209 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	25202.0	100.000
Smoothed	25202.0	100.000
Composite fit	24924.1	98.897
Residuals	277.9	1.103

Spectrum 8a8432.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9028.4



Raw Data Dump for AEA Spectrum: 8a8432.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	1.	0.	0.	1.	1.	0.	0.	0.
31	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
41	1.	0.	0.	1.	0.	0.	1.	0.	0.	0.
51	0.	0.	1.	0.	0.	0.	0.	1.	0.	1.
61	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
71	0.	0.	0.	1.	0.	0.	2.	2.	0.	0.
81	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
91	1.	0.	1.	0.	1.	0.	1.	1.	0.	0.
101	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
111	0.	1.	0.	2.	0.	1.	0.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.
131	1.	0.	1.	0.	0.	0.	1.	1.	0.	1.
141	0.	0.	2.	0.	2.	0.	0.	0.	0.	2.
151	3.	0.	0.	0.	1.	0.	0.	0.	1.	0.
161	1.	1.	1.	1.	1.	1.	1.	0.	0.	1.
171	2.	0.	0.	1.	2.	1.	0.	0.	0.	0.
181	2.	0.	1.	1.	3.	0.	0.	4.	0.	1.
191	0.	0.	0.	2.	1.	4.	3.	2.	3.	1.
201	4.	2.	1.	4.	2.	4.	4.	4.	2.	3.
211	7.	7.	7.	9.	9.	7.	10.	13.	20.	15.
221	24.	18.	20.	26.	43.	51.	46.	60.	79.	61.
231	43.	32.	20.	4.	7.	2.	1.	3.	0.	5.
241	4.	4.	2.	5.	0.	4.	1.	1.	4.	6.
251	2.	2.	6.	5.	6.	5.	3.	7.	2.	7.
261	8.	16.	9.	13.	21.	29.	42.	44.	47.	50.
271	35.	22.	15.	11.	17.	15.	23.	26.	29.	31.
281	36.	53.	77.	89.	126.	173.	191.	159.	106.	38.
291	22.	11.	16.	13.	28.	14.	22.	18.	21.	30.
301	36.	26.	36.	31.	33.	14.	9.	5.	3.	5.
311	5.	6.	10.	2.	3.	4.	5.	8.	6.	8.
321	8.	8.	15.	16.	15.	15.	20.	18.	28.	23.
331	26.	24.	26.	26.	49.	42.	40.	60.	63.	87.
341	100.	112.	155.	195.	199.	210.	265.	352.	428.	626.
351	772.	815.	941.	776.	679.	751.	888.	1140.	1362.	1866.
361	2328.	2563.	2200.	1190.	448.	96.	11.	3.	4.	3.
371	5.	0.	0.	1.	1.	1.	1.	2.	1.	0.
381	0.	0.	2.	1.	0.	2.	1.	0.	1.	0.
391	0.	1.	0.	0.	0.	0.	0.	1.	0.	1.
401	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	1.	1.	1.	2.	0.	1.	2.	0.	3.
421	1.	2.	4.	1.	5.	2.	2.	4.	3.	1.
431	2.	1.	0.	0.	1.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	1.	0.	2.	0.	0.	1.
451	1.	0.	1.	0.	2.	1.	0.	2.	2.	1.
461	1.	0.	1.	0.	2.	4.	1.	3.	4.	4.
471	6.	13.	19.	29.	23.	28.	17.	10.	8.	7.
481	5.	1.	2.	0.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000975-SAM-P
 File ID: 9a9333.CNF

Counted on: 6/13/99 @ 3:25
 Detector: AEA9
 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?	19.8	19.8	475.515	475.515	14.000	4.961	7.000	4.462
2	1915.5	1915.5	361.257	361.257	10.000	2.622	5.000	1.306
3	72.9	72.9	302.451	302.436	12.000	3.377	6.000	1.158
4	123.0	123.0	286.153	286.029	10.000	2.256	5.000	1.996
5	32.8	32.8	268.054	267.739	10.000	3.336	5.000	2.491
6	202.1	202.1	227.979	227.978	10.000	3.386	5.000	2.186

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.284			0.47	13.1		
2	Pu236	0.813	5.755	5.758	-.0030	0.01	47.01	1.3	203.8	0.918E-04
3	Pu238	0.041	5.487	5.487	0.0000	0.02	2.36	5.9	13.9	0.626E-05
	Am241		5.479	5.487	-.008				10.6	0.480E-05
4	Th228	0.038	5.400	5.412	-.0120	0.01	2.21	7.1	13.2	0.597E-05
5		0.012		5.328		0.02	0.71	13.7	3.0	0.136E-05
6	Pu239	0.081	5.147	5.145	0.0020	0.02	4.66	4.1	19.8	0.891E-05
	Pu240		5.144	5.145	-.001				19.8	0.891E-05
Totals:		0.985	<---valid peaks only-->				56.95			

DETECTOR CALIBRATION

Energy (MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2354 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27754.0	100.000
Smoothed	27754.0	100.000
Composite fit	27562.5	99.310
Residuals	191.5	0.690

Spectrum 9a9333.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.:

8746.7

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6

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2...

Raw Data Dump for AEA Spectrum: 9a9333.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
71	0.	1.	1.	0.	0.	0.	1.	0.	0.	2.
81	1.	2.	0.	0.	1.	1.	0.	0.	0.	0.
91	1.	0.	0.	0.	1.	0.	0.	0.	1.	0.
101	0.	0.	1.	1.	1.	1.	1.	2.	1.	1.
111	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
121	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
141	1.	0.	0.	0.	3.	1.	1.	1.	1.	0.
151	0.	0.	0.	0.	0.	2.	0.	0.	2.	1.
161	1.	1.	1.	1.	0.	0.	0.	0.	0.	2.
171	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.
181	0.	1.	2.	0.	1.	0.	1.	0.	3.	3.
191	1.	1.	0.	3.	1.	1.	1.	2.	2.	3.
201	4.	5.	1.	4.	14.	6.	9.	6.	4.	5.
211	17.	19.	21.	19.	32.	33.	39.	42.	55.	57.
221	72.	105.	108.	127.	156.	206.	214.	247.	232.	198.
231	103.	72.	15.	16.	4.	0.	4.	0.	1.	5.
241	1.	3.	3.	5.	3.	3.	1.	7.	4.	5.
251	5.	8.	3.	8.	8.	5.	7.	5.	9.	11.
261	9.	14.	15.	17.	21.	42.	41.	56.	30.	35.
271	33.	15.	20.	22.	16.	23.	26.	26.	34.	42.
281	49.	88.	97.	125.	146.	176.	174.	137.	63.	38.
291	23.	27.	35.	38.	43.	36.	38.	37.	56.	56.
301	64.	93.	88.	81.	48.	30.	12.	7.	5.	10.
311	9.	4.	3.	6.	4.	3.	5.	8.	6.	7.
321	11.	10.	13.	9.	12.	22.	16.	14.	22.	17.
331	23.	27.	34.	32.	41.	43.	45.	37.	73.	93.
341	90.	127.	163.	189.	196.	241.	309.	383.	491.	648.
351	811.	856.	873.	818.	715.	851.	1024.	1245.	1548.	1979.
361	2390.	2428.	1958.	1090.	393.	94.	14.	0.	0.	0.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	1.	0.	0.	0.	0.	3.
421	1.	1.	2.	2.	1.	1.	2.	0.	2.	5.
431	1.	2.	0.	0.	2.	3.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
451	1.	0.	0.	0.	0.	3.	0.	1.	1.	2.
461	0.	0.	3.	2.	2.	5.	6.	3.	4.	13.
471	10.	16.	21.	19.	24.	24.	20.	14.	15.	10.
481	6.	0.	4.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000975-DUP-P
 File ID: 10a1070.CNF

Counted on: 6/13/99 @ 3:26
 Detector: AEA10
 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?	19.5	19.5	475.910	475.910	12.000	4.424	6.000	3.202
2	1849.8	1849.8	360.940	360.940	10.000	2.828	5.000	1.347
3	75.0	75.0	302.486	302.468	10.000	3.213	5.000	1.130
4	126.1	126.1	286.068	285.938	10.000	2.392	5.000	2.234
5	31.3	31.3	268.771	268.467	12.000	2.869	6.000	1.841
6	176.1	176.1	227.949	227.948	12.000	3.979	6.000	2.409

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.279			0.47	13.1		
2	Pu236	0.824	5.755	5.750	0.005	0.01	47.34	1.3	212.2	0.956E-04
3	Pu238	0.041	5.487	5.481	0.006	0.01	2.37	5.9	14.4	0.650E-05
	Am241		5.479	5.481	-.002				11.1	0.498E-05
4	Th228	0.039	5.400	5.405	-.005	0.01	2.27	7.0	14.0	0.632E-05
5		0.012		5.325		0.01	0.69	13.8	3.0	0.136E-05
6	Pu239	0.076	5.147	5.138	0.009	0.02	4.37	4.3	19.2	0.865E-05
	Pu240		5.144	5.138	0.006				19.2	0.865E-05
Totals:		0.992	<--valid peaks only-->				57.03			

DETECTOR CALIBRATION

Energy(MEV) = 4.090 + (0.0046)*Channel
 Energy range (MeV): 4.090 TO 6.445
 Efficiency = 0.2276 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27587.0	100.000
Smoothed	27587.0	100.000
Composite fit	27603.0	100.058
Residuals	-16.0	-0.058

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.:

8936.2

6
...6
.....6
6

5
5
4
3...4.
4..
..3
3

2
. 2
..... 2
.....2.....
..... 2
.....2
2...

Raw Data Dump for AEA Spectrum: 10a1070.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
41	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.
71	0.	1.	0.	0.	0.	1.	1.	0.	0.	0.
81	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
91	0.	1.	0.	1.	0.	1.	0.	3.	0.	0.
101	0.	0.	0.	1.	0.	1.	0.	1.	0.	1.
111	0.	0.	1.	1.	1.	1.	0.	0.	0.	0.
121	1.	0.	0.	0.	1.	1.	1.	0.	1.	1.
131	0.	1.	0.	0.	2.	0.	0.	0.	0.	0.
141	0.	1.	0.	0.	2.	2.	0.	0.	0.	0.
151	1.	1.	1.	1.	0.	1.	0.	0.	1.	0.
161	1.	2.	1.	1.	1.	1.	0.	1.	0.	3.
171	1.	1.	1.	2.	0.	0.	2.	2.	1.	2.
181	1.	2.	0.	1.	0.	1.	0.	0.	1.	0.
191	2.	2.	3.	2.	2.	1.	4.	5.	3.	2.
201	4.	2.	4.	5.	5.	6.	4.	2.	11.	6.
211	14.	17.	16.	22.	17.	49.	41.	51.	67.	59.
221	63.	77.	105.	116.	141.	172.	213.	213.	185.	175.
231	118.	64.	34.	17.	7.	2.	4.	1.	3.	1.
241	4.	0.	2.	5.	4.	6.	1.	5.	3.	3.
251	4.	4.	9.	11.	12.	7.	5.	4.	5.	8.
261	8.	14.	15.	15.	24.	25.	35.	51.	38.	40.
271	28.	25.	17.	13.	15.	29.	24.	22.	37.	45.
281	61.	60.	104.	122.	171.	178.	179.	124.	74.	39.
291	28.	22.	40.	49.	32.	43.	35.	45.	43.	52.
301	81.	89.	91.	91.	53.	20.	16.	12.	5.	6.
311	5.	4.	4.	5.	6.	5.	7.	9.	5.	4.
321	9.	4.	8.	10.	12.	15.	15.	20.	20.	20.
331	27.	21.	23.	39.	31.	44.	58.	66.	61.	98.
341	108.	135.	168.	187.	228.	260.	346.	422.	531.	718.
351	851.	868.	917.	815.	764.	872.	1027.	1362.	1751.	2018.
361	2254.	2250.	1666.	939.	324.	76.	5.	5.	0.	1.
371	0.	1.	0.	0.	0.	0.	0.	0.	1.	1.
381	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
411	0.	1.	0.	0.	0.	0.	2.	1.	2.	0.
421	3.	3.	0.	1.	1.	2.	0.	1.	0.	1.
431	1.	2.	0.	1.	3.	1.	2.	0.	2.	0.
441	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.
451	0.	1.	2.	0.	0.	2.	0.	1.	0.	1.
461	0.	3.	3.	2.	6.	0.	7.	5.	7.	7.
471	14.	17.	13.	18.	20.	25.	22.	18.	7.	9.
481	8.	5.	1.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ^{LAD} 7/16/99

LIQUID

Type	DATE COUNTED	JUN-13-99	PU 236 AEA FRAC (C236)	STD
STD	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238) 0.000
Worklist	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239) 0.516
30005	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS 4235
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN) 30
@PU23901	TRACER BOOK NO		16B59	BACKGROUND in cpm (Bkg) 0.200
Matrix	DETECTOR NUMBER		16	PU 236 cpm 45.410
LIQUID	EFFICIENCY FACTOR	EFF	0.272	PU 238 cpm 0.000
Batch Number	TRACER PREPARATION DATE		04/13/99	PU 239 cpm 56.840
99002323	TRACER PREPARATION VALUE (dpm/mL)		2338.000	AEA COUNT TIME 480
Retrun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2244.936	Pu 239/240 µCi/L 1.2634E-01
0	PU-238 TRACER VALUE (dpm/mL)		0.000	
Sample Prep	STANDARD BOOK NO		46B57	
N/A	STANDARD VALUE in µCi/mL		1.260E-04	

Sample #	WL30005-STD		
Instrument Code	WB27806		
Prepared By	jfr		
Chemist	jfr		
Analyst	gll		
Date Complete	06/14/99		
Analysis Date	06/12/99		
Analysis Time	04:15 AM		
Sample Point	U-102 GRAB1		
	Pu 239/240 µCi/mL	1.26E-04	DETECTION LEVELS in µCi/mL
	Relative Counting Error =	1.8%	
			Pu 239/240 7.70E-06
	Pu 236 Tracer Recovery =	95.4%	

Analyst:	gll	Date:	14-Jun-99
Signature of Chemist:	<i>John Ralston</i>	Date:	15 June 99

STANDARD.WB1 REV 1.0

943128ML

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) ^{7/16/99} **LI** **BLNK**

Type	DATE COUNTED	JUN-13-99	PU 236 AEA FRAC (C236)	0.914
BLNK	SAMPLE VOLUME in mL	1.000	PU 238 AEA FRAC (C238)	0.011
Work List	SAMPLE DILUTION FACTO	101.000	PU 239 AEA FRAC (C239)	0.000
30005	TRACER VOLUME in mL	0.100	TOTAL AT COUNTS	2014
Test Code	DIGEST DILUTION FACTOR	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	16B59	BACKGROUND in cp (Bkg)	0.200
Matrix	DETECTOR NUMBER	16	PU 236 cpm	45.330
LIQUID	EFFICIENCY FACTOR	0.2717	PU 238 cpm	0.560
Batch Number	TRACER PREPARATION DATE	04/13/99	PU 239 cpm	0.000
99002323	TRACER PREPARATION VALUE (dpm/mL)	2338.00	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2244.94	Pu 239/240 µCi/L =	< 3.352E-01
0	PU-238 TRACER VALUE (dpm/m)	0.00		

Sample Prep	N/A
Sample #	WL30005-STD
Instrument Code	WB27806
Prepared By	jfr
Chemist	jfr
Analyst	gll
Date Complete	06/14/99

Decay Time = Date Counted - Tracer Preparation Date
 Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]
 Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)
 Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(222000
 Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recov
 Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(S
 Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 10

06/14/99	Pu 239/240 µCi/mL	< 3.35E-04	DETECTION LEVELS in µCi/mL
06/12/99	Relative Counting Error	= 100.0%	
04:15 AM	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240
U-102 GRAB1	Pu 238 µCi/mL	< 3.35E-04	3.35E-04
	Relative Counting Error	= 12.0%	Pu 238
	Pu 236 Tracer Recovery	= 100.3%	3.35E-04

Analyst:	gll	Date:	14-Jun-99
Signature of Chemist:	<i>John Belgen</i>	Date:	15 Jun 99

943128ML

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) *Handwritten: 1674* LIQUID / SO

				SAMPLE
DATE COUNTED		JUN-13-99	PU 236 AEA FRAC (C236)	0.895
SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.019
SAMPLE DILUTION FACTOR	DF	101.000	PU 239 AEA FRAC (C239)	0.031
TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	2146
DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
TRACER BOOK NO		16B59	BACKGROUND in cpm (Bkg)	0.200
DETECTOR NUMBER		16	PU 236 cpm	47.500
EFFICIENCY FACTOR	EFF	0.272	PU 238 cpm	1.020
TRACER PREPARATION DATE		04/13/99	PU 239 cpm	1.630
TRACER PREPARATION VALUE (dpm/mL)		2338.000	AEA COUNT TIME	480
PU-236 DECAY CORR'D VALUE (dpm/mL)		2244.936	Pu 239/240 µCi/L =	3.5376E-01
PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep
N/A
Sample
S99T000973
Instrument Code
WB27806
Prepared By
jfr
Chemist
jfr
Analyst
gll
Data Complete
06/14/99
Analysis Date
06/12/99
Analysis Time
04:15 AM
Sample Point
U-102 GRAB1

Decay Time = Date Counted - Tracer Preparation Date
 Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]
 Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
 Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
 Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
 Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]
 Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL	3.54E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error =	7.1%	
NOTE: Pu 238 Result is a LESS THAN Value.		
Pu 238 µCi/mL	< 3.42E-04	
Relative Counting Error =	9.0%	Pu 239/240
Pu 236 Tracer Recovery =	104.7%	Pu 238
		3.42E-04

Analyst:	gll	Date:	14-Jun-99
Signature of Chemist:	<i>John Relyea</i>	Date:	15 June 99

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ^{14D} 21/6/99 LIQUID / SO

Type	DATE COUNTED	JUN-13-99	PU 236 AEA FRAC (C236)	DUP
DUP	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.876
Work List	SAMPLE DILUTION FACTOR DF	101.000	PU 239 AEA FRAC (C239)	0.017
30005	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	0.031
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	2101
@PU23901	TRACER BOOK NO	16B59	BACKGROUND in cpm (Bkg)	30
Matrix	DETECTOR NUMBER	16	PU 236 cpm	0.200
LIQUID	EFFICIENCY FACTOR EFF	0.272	PU 238 cpm	46.680
Batch Number	TRACER PREPARATION DATE	04/13/99	PU 239 cpm	0.890
99002323	TRACER PREPARATION VALUE (dpm/mL)	2338.000	AEA COUNT TIME	1.670
Re-run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2244.936	Pu 239/240 µCi/L =	480
0	PU-238 TRACER VALUE (dpm/mL)	0.000		3.6143E-01

Sample Prep	N/A
Sample #	S99T000973
Instrument Code	WB27806
Prepared By	jfr
Chemist	jfr
Analyst	gll
Date Complete	06/14/99

Decay Time = Date Counted - Tracer Preparation Date
 Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {-ln2 * Decay Time/1040.95}]
 Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / ((Pu-236 Decay Corr'd Value * SPKV * EFF)
 Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
 Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
 Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]
 Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

06/14/99	Pu 239/240 µCi/mL	3.61E-04	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error =	7.0%	
06/12/99			
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		
04:15 AM	Pu 238 µCi/mL	< 3.50E-04	Pu 239/240
Sample Point	Relative Counting Error =	9.6%	3.50E-04
U-102 GRAB1	Pu 236 Tracer Recovery =	100.3%	Pu 238
			3.50E-04

Analyst:	gll	Date:	14-Jun-99
Signature of Chemist:	<i>John Reizen</i>	Date:	15 June 99

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)) ^{AD} _{7/10/99} LIQUID / SO

Type	DATE COUNTED	JUN-13-99	PU 236 AEA FRAC (C236)	0.870
SAMPLE	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.020
Work List	SAMPLE DILUTION FACTOR DF	101.000	PU 239 AEA FRAC (C239)	0.028
30005	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	2174
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	16B59	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	16	PU 236 cpm	47.270
LIQUID	EFFICIENCY FACTOR EFF	0.272	PU 238 cpm	1.090
Batch Number	TRACER PREPARATION DATE	04/13/99	PU 239 cpm	1.510
99002323	TRACER PREPARATION VALUE (dpm/mL)	2338.000	AEA COUNT TIME	480
Rein	PU-236 DECAY CORR'D VALUE (dpm/mL)	2244.936	Pu 239/240 µCi/L =	< 3.5219E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	N/A
Sample #	S99T000974
Instrument Code	WB27806
Prepared By	jfr
Chemist	jfr
Analyst	gll
Date Complete	06/14/99
Analysis Date	06/12/99
Analysis Time	04:15 AM
Sample Point	U-102 GRAB1

Decay Time = Date Counted - Tracer Preparation Date	
Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]	
Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)	
Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]	
Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)	
Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]	
Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100	

	Pu 239/240 µCi/mL	< 3.52E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error =	7.4%		Pu 239/240
			3.52E-04
			Pu 238
			3.52E-04

Analyst:	gll	Date:	14-Jun-99
Signature of Chemist:	<i>John Relyea</i>	Date:	15 June 99

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ¹ 7/16/99

LIQUID / SO

DUP

Type	DATE COUNTED	JUN-13-99	PU 236 AEA FRAC (C236)	0.873
DUP	SAMPLE VOLUME in mL	SS 1.000	PU 238 AEA FRAC (C238)	0.018
Work List	SAMPLE DILUTION FACTOR	DF 101.000	PU 239 AEA FRAC (C239)	0.026
30005	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2105
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	16B59	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	16	PU 236 cpm	45.810
LIQUID	EFFICIENCY FACTOR	EFF 0.272	PU 238 cpm	0.970
Batch Number	TRACER PREPARATION DATE	04/13/99	PU 239 cpm	1.370
99002323	TRACER PREPARATION VALUE (dpm/mL)	2338.000	AEA COUNT TIME	480
Results	PU-236 DECAY CORR'D VALUE (dpm/mL)	2244.936	Pu 239/240 µCi/L =	< 3.5098E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	
N/A	
Sample #	
S99T000974	
Instrument Code	
WB27806	
Prepared By	
jfr	
Chemist	
jfr	
Analyst	
gll	
Date Complete	

Decay Time = Date Counted - Tracer Preparation Date
 Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time/1040.95))]
 Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
 Pu 239/240 µCi/L = (C239) * (Pu 236 Decay Corr'd Value) * (SPKV) * (1000mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/µCi)]
 Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
 Pu 238 µCi/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/µCi) * (D g/L) * (SS)]
 Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

06/14/99	Pu 239/240 µCi/mL	< 3.51E-04	DETECTION LEVELS in µCi/mL
06/12/99	Relative Counting Error =	7.8%	
04:15 AM	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240
U-102 GRAB1	Pu 238 µCi/mL	< 3.51E-04	3.51E-04
	Relative Counting Error =	9.2%	Pu 238
	Pu 236 Tracer Recovery =	100.1%	3.51E-04

Analyst:	gll	Date:	14-Jun-99
Signature of Chemist:	<i>John Reyer</i>	Date:	15 June 99
SAMPLE.WB1 REV 1.0	943128ML		

WORKBOOK PAGE: SAM7

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ^{AD 7/16/99} **LIQUID / SO**

				SAMPLE
Type	DATE COUNTED	JUN-13-99	PU 236 AEA FRAC (C236)	0.813
SAMPLE	SAMPLE VOLUME in mL	SS 1.000	PU 238 AEA FRAC (C238)	0.041
Work List	SAMPLE DILUTION FACTOR	DF 101.000	PU 239 AEA FRAC (C239)	0.081
30005	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2310
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	16B59	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	16	PU 236 cpm	47.010
LIQUID	EFFICIENCY FACTOR	EFF 0.272	PU 238 cpm	2.360
Batch Number	TRACER PREPARATION DATE	04/13/99	PU 239 cpm	4.660
99002323	TRACER PREPARATION VALUE (dpm/mL)	2338.000	AEA COUNT TIME	480
Retain	PU-236 DECAY CORR'D VALUE (dpm/mL)	2244.936	Pu 239/240 µCi/L	1.0176E+00
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	N/A
Sample #	S99T000975
Instrument Code	WB27806
Prepared By	jfr
Chemist	jfr
Analyst	gll
Date Complete	06/14/99

Decay Time = Date Counted - Tracer Preparation Date
 Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]
 Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
 Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
 Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
 Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]
 Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Analysis Date	06/12/99	Pu 239/240 µCi/mL	1.02E-03	DETECTION LEVELS in µCi/mL
Analysis Time	04:15 AM	Pu 238 µCi/mL	5.15E-04	
Sample Point	U-102 GRAB1	Relative Counting Error	= 6.0%	
		Pu 236 Tracer Recovery	= 102.4%	

Analyst:	gll	Date:	14-Jun-99
Signature of Chemist:	<i>John Rejean</i>	Date:	15 June 99

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP8

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ¹⁷⁰ 7/16/99				LIQUID / SO	DUP
DATE COUNTED	JUN-13-99		PU 236 AEA FRAC (C236)	0.824	
DUP	SAMPLE VOLUME in mL	SS 1.000	PU 238 AEA FRAC (C238)	0.041	
Work List	SAMPLE DILUTION FACTOR	DF 101.000	PU 239 AEA FRAC (C239)	0.076	
30005	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2286	
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30	
@PU23901	TRACER BOOK NO	16B59	BACKGROUND in cpm (Bkg)	0.200	
Matrix	DETECTOR NUMBER	16	PU 236 cpm	47.340	
LIQUID	EFFICIENCY FACTOR	EFF 0.272	PU 238 cpm	2.370	
Batch Number	TRACER PREPARATION DATE	04/13/99	PU 239 cpm	4.370	
99002323	TRACER PREPARATION VALUE (dpm/mL)	2338.000	AEA COUNT TIME	480	
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2244.936	Pu 239/240 µCi/L	9.4202E-01	
0	PU-238 TRACER VALUE (dpm/mL)	0.000			

Sample Prep	N/A
Sample #	S99T000975
Instrument Code	WB27806
Prepared By	jfr
Chemist	jfr
Analyst	gll
Date Complete	06/14/99

Decay Time = Date Counted - Tracer Preparation Date
 Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]
 Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
 Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
 Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
 Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]
 Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Analysis Date	06/12/99	Pu 239/240 µCi/mL	9.42E-04	DETECTION LEVELS in µCi/mL
Analysis Time	04:15 AM	Pu 238 µCi/mL	5.08E-04	
Sample Point	U-102 GRAB1	Relative Counting Error =	6.0%	Pu 239/240
		Pu 236 Tracer Recovery =	102.7%	Pu 238
				3.72E-04
				3.72E-04

Analyst:	gll	Date:	14-Jun-99
Signature of Chemist:	<i>John Rejcek</i>	Date:	15 June 99

SAMPLE.WB1 REV 1.0 943128ML

HNF-1674 REV. 0

LABCORE Completed Worklist Report for Worklist# 30043

Analyst: aki

Instrument: AB13

Book#: _____

Method: LA-953-104 Rev/Mod _____

Worklist Comment: U102 GRAB1, @PU23901 SS by Ludlum. Std: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@PU23901 PU23901	SOLID	1.26E-04	1.29E-4	102.381	% Recovery
1 STD		0	@PU23901 PU23901T	SOLID	100	9.09E+01	90.900	% Recovery
1 STD		0	@PU23901 PU23901E	SOLID	1	1.75E+00	1.750	% Ct Error
2 BLNK-PREP		0	@PU23901 PU23901	SOLID	1	<3.39E-3		uCi/g
2 BLNK-PREP		0	@PU23901 PU23901T	SOLID	100	9.50E+01	95.000	% Recovery
2 BLNK-PREP		0	@PU23901 PU23901E	SOLID	1	1.00E+02	100.000	uCi/g
3 SAMPLE	S99T000963	0 F	@PU23901 PU23901	SOLID	N/A	9.56E-02	7.27E-003	uCi/g
3 SAMPLE	S99T000963	0 F	@PU23901 PU23901T	SOLID	N/A	9.22E+01		% Recovery
3 SAMPLE	S99T000963	0 F	@PU23901 PU23901E	SOLID	N/A	1.98E+00		% Ct. Error
4 DUP	S99T000963	0 F	@PU23901 PU23901	SOLID	9.56E-2	9.41E-2	1.581	RPD
4 DUP	S99T000963	0 F	@PU23901 PU23901T	SOLID	100	8.76E+01	87.600	% Recovery
4 DUP	S99T000963	0 F	@PU23901 PU23901E	SOLID	1.00	1.88E+00	1.880	% Ct Error

Final page for worklist# 30043

Analyst Signature

Date

Analyst Signature

Date

John Relyea
Reviewer Signature Date 15 June 99

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

LABCORE Data Entry Template for Worklist# 30043

Analyst: AKL Instrument: PU01 #13 Book# 46B57

Method: LA-953-104 Rev/Mod B-1

Worklist Comment: U102 GRAB1, @PU23901 SS by Ludlum. Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	SOLID		
2 BLNK-PREP			@PU23901	SOLID		
3 SAMPLE	S99T000963 0 F		@PU23901	SOLID	99000200	U-102 GRAB1
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S99T000963 0 F		@PU23901	SOLID		

Final page for worklist # 30043

AKL 6-12-99
Signature Date

Em Barla 6-14-99
Signature Date

Data Entry Comments:

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL30043-STD-PU
 File ID: 7a7445.CNF

Counted on: 6/12/99 @10:37
 Detector: AEA7
 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?	10.2	10.2	476.501	476.501	14.000	3.957	7.000	3.686
2	1970.5	1970.5	361.363	361.363	10.000	2.566	5.000	1.358
3?	40.1	40.1	302.197	302.155	10.000	1.957	5.000	0.916
4	140.3	140.3	286.469	286.419	8.000	2.358	4.000	2.311
5?	35.1	35.1	269.014	268.744	10.000	3.030	5.000	1.493
6	2985.7	2985.7	227.777	227.777	10.000	2.698	5.000	2.135

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1		????		6.288			0.22	19.1		
2	Pu236	0.410	5.755	5.758	-.0030	0.01	46.53	1.3	197.9	0.892E-04
3		????		5.486			0.96	9.2		
4	Th228	0.022	5.400	5.413	-.0130	0.01	2.47	6.1	14.5	0.654E-05
5		????		5.332			0.89	10.8		
6	Pu239	0.522	5.147	5.143	0.0040	0.01	59.23	1.2	246.9	0.111E-03
	Pu240		5.144	5.143	0.001				246.9	0.111E-03
Totals:		0.954	<--valid peaks only-->				108.23			

DETECTOR CALIBRATION

Energy (MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2399 CPM/DPM
 (Data reduction compression factor: 1.)

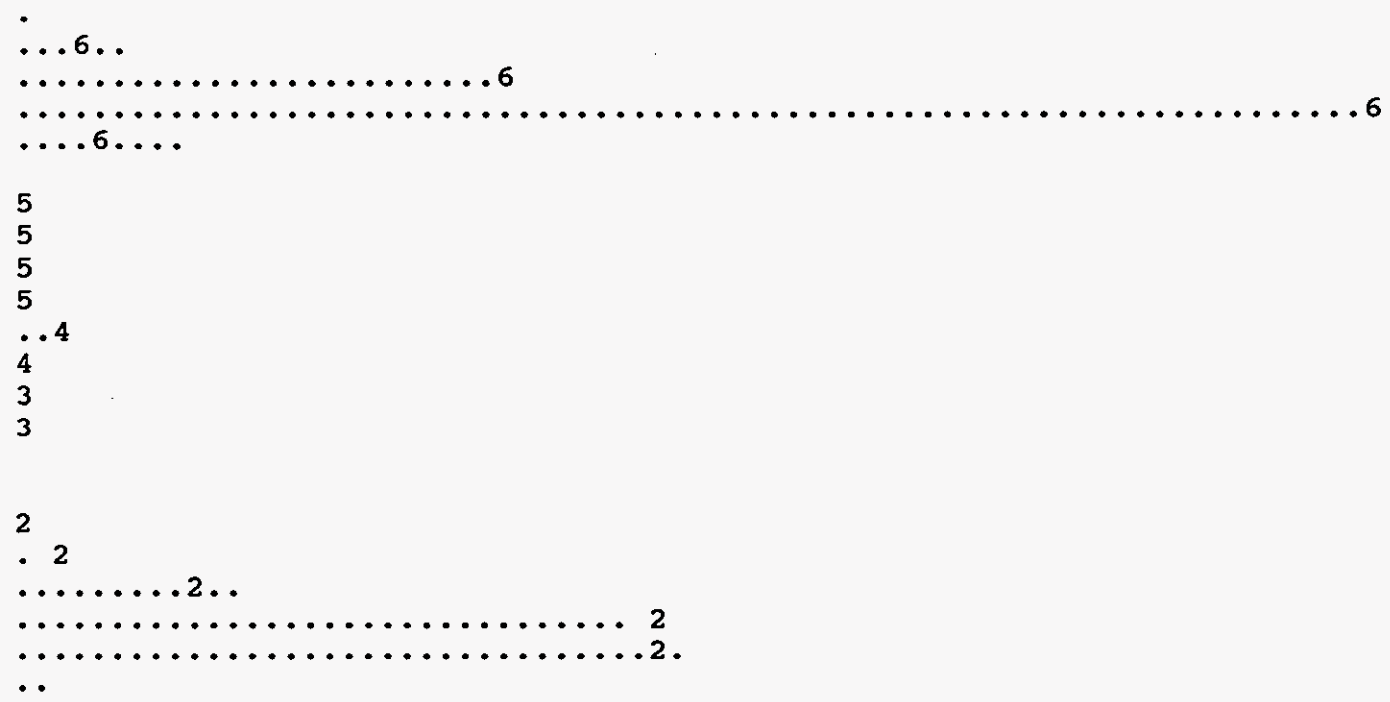
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	54478.0	100.000
Smoothed	54477.9	100.000
Composite fit	52959.5	97.213
Residuals	1518.5	2.787

Spectrum 7a7445.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 18159.6



Raw Data Dump for AEA Spectrum: 7a7445.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
31	0.	3.	1.	2.	0.	1.	0.	0.	0.	1.
41	0.	0.	1.	1.	0.	0.	2.	1.	1.	0.
51	1.	1.	0.	3.	0.	0.	0.	3.	0.	2.
61	2.	1.	2.	1.	0.	0.	0.	2.	0.	1.
71	0.	1.	0.	0.	0.	2.	1.	1.	1.	1.
81	2.	0.	1.	3.	0.	0.	1.	3.	0.	1.
91	0.	1.	3.	1.	0.	1.	1.	2.	0.	1.
101	0.	3.	1.	3.	2.	2.	1.	0.	3.	1.
111	1.	3.	1.	0.	3.	2.	1.	3.	1.	1.
121	1.	1.	2.	0.	3.	0.	1.	1.	1.	2.
131	4.	3.	2.	5.	2.	3.	1.	2.	4.	2.
141	3.	5.	1.	2.	3.	2.	5.	3.	2.	0.
151	5.	3.	3.	6.	5.	0.	3.	5.	5.	3.
161	3.	1.	4.	1.	7.	2.	2.	4.	5.	10.
171	7.	3.	7.	4.	11.	4.	7.	8.	6.	5.
181	8.	3.	6.	11.	9.	2.	12.	11.	12.	10.
191	9.	14.	12.	12.	15.	19.	22.	14.	32.	22.
201	23.	33.	31.	42.	47.	31.	52.	59.	84.	106.
211	127.	141.	207.	262.	346.	445.	537.	602.	655.	684.
221	763.	954.	1277.	1650.	2338.	2940.	3455.	3802.	3467.	2492.
231	1198.	358.	68.	17.	9.	5.	5.	4.	5.	7.
241	5.	3.	1.	5.	3.	7.	7.	6.	6.	9.
251	5.	6.	10.	12.	10.	5.	5.	8.	10.	7.
261	13.	12.	16.	15.	23.	38.	39.	36.	45.	44.
271	36.	19.	15.	14.	9.	15.	15.	22.	31.	37.
281	39.	52.	97.	118.	143.	185.	199.	155.	87.	40.
291	14.	11.	15.	16.	10.	12.	15.	19.	16.	18.
301	36.	32.	21.	28.	30.	7.	7.	3.	7.	8.
311	2.	6.	5.	6.	8.	3.	2.	4.	11.	7.
321	5.	11.	5.	15.	6.	12.	13.	16.	13.	12.
331	21.	23.	18.	21.	24.	31.	31.	33.	49.	45.
341	71.	75.	107.	113.	144.	170.	241.	331.	496.	659.
351	822.	959.	900.	764.	708.	782.	896.	1237.	1557.	2010.
361	2450.	2597.	2047.	1245.	414.	71.	15.	3.	5.	0.
371	2.	3.	0.	1.	1.	0.	1.	2.	1.	4.
381	0.	1.	0.	2.	3.	0.	1.	1.	1.	2.
391	1.	1.	3.	1.	1.	0.	1.	1.	1.	1.
401	1.	1.	3.	1.	1.	1.	1.	0.	0.	0.
411	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
421	1.	1.	1.	0.	1.	0.	0.	1.	0.	1.
431	1.	3.	3.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	1.	0.	1.	2.	0.	1.	1.	0.
451	0.	2.	0.	0.	1.	0.	0.	0.	1.	1.
461	1.	0.	1.	0.	2.	2.	0.	2.	4.	2.
471	3.	4.	10.	4.	7.	16.	12.	10.	5.	2.
481	4.	5.	4.	1.	1.	0.	1.	0.	0.	0.
491	0.	0.	1.	0.	0.	0.	1.	0.	2.	0.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL30043-BLK-PU
 File ID: 8a8430.CNF

Counted on: 6/12/99 @10:38
 Detector: AEA8
 Geometry number: 1
 Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1575.5	1575.5	361.766	361.766	8.000	2.345	4.000	1.356
2?	31.1	31.1	302.620	302.578	8.000	0.037	4.000	3.815
3	108.3	108.3	286.854	286.854	10.000	2.687	5.000	3.388
4	30.5	30.5	269.699	269.637	10.000	2.577	5.000	2.236

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs. Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
1	Pu236	0.916	5.755	5.760 -0.005	0.01	34.73	1.5	160.4	0.723E-04	
	Cm243		5.779	5.760 0.019				215.4	0.970E-04	
2		????		5.487		0.05	40.2			
3	Th228	0.050	5.400	5.415 -0.015	0.01	1.88	6.5	12.0	0.540E-05	
4		0.015		5.336	0.01	0.58	12.7	2.6	0.117E-05	
Totals:		0.981	<--valid peaks only-->				37.19			

DETECTOR CALIBRATION

Energy (MEV) = 4.095 + (0.0046)*Channel
 Energy range (MeV): 4.095 TO 6.451
 Efficiency = 0.2209 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18203.0	100.000
Smoothed	18203.0	100.000
Composite fit	17878.1	98.215
Residuals	324.9	1.785

Analyzed by: _____

VR

Spectrum 8a8430.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 7596.0

4
4
4
....3
.3

1
.. 1
.....1....
..... 1
.....1.
1....

Raw Data Dump for AEA Spectrum: 8a8430.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	0.	0.	1.	0.	2.	1.	0.	1.	0.
31	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
41	1.	0.	2.	1.	0.	0.	0.	1.	0.	0.
51	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
71	1.	1.	0.	0.	0.	1.	1.	0.	1.	0.
81	0.	0.	1.	0.	0.	0.	0.	3.	0.	0.
91	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
101	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	1.	0.	1.	0.	0.	0.	1.	0.
121	1.	0.	0.	0.	1.	1.	1.	0.	1.	1.
131	1.	2.	0.	1.	2.	2.	0.	2.	1.	0.
141	0.	0.	1.	0.	0.	1.	1.	0.	2.	0.
151	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
161	0.	1.	0.	0.	0.	1.	1.	1.	1.	0.
171	0.	1.	0.	0.	1.	0.	0.	2.	1.	1.
181	1.	0.	0.	0.	0.	0.	1.	0.	1.	1.
191	1.	0.	2.	3.	1.	0.	0.	1.	0.	0.
201	0.	1.	2.	0.	1.	2.	0.	0.	0.	3.
211	1.	0.	3.	0.	2.	2.	1.	1.	3.	2.
221	0.	1.	4.	3.	4.	4.	3.	4.	1.	3.
231	1.	2.	2.	1.	0.	0.	0.	3.	0.	1.
241	1.	1.	0.	0.	0.	0.	1.	3.	2.	1.
251	3.	1.	5.	6.	1.	5.	4.	4.	4.	4.
261	2.	5.	7.	9.	18.	11.	22.	32.	38.	40.
271	38.	18.	16.	9.	3.	1.	6.	13.	9.	17.
281	22.	30.	60.	71.	102.	125.	146.	131.	80.	44.
291	11.	7.	9.	9.	6.	8.	12.	10.	6.	12.
301	6.	15.	14.	13.	13.	4.	2.	1.	2.	4.
311	2.	0.	1.	2.	0.	1.	0.	2.	2.	3.
321	0.	4.	3.	5.	9.	6.	6.	4.	7.	8.
331	6.	8.	6.	8.	11.	7.	23.	12.	16.	16.
341	33.	42.	40.	56.	89.	74.	159.	213.	309.	425.
351	594.	671.	681.	584.	497.	523.	573.	791.	1082.	1387.
361	1864.	2050.	1918.	1188.	464.	106.	17.	4.	3.	1.
371	3.	2.	0.	1.	0.	0.	2.	1.	1.	2.
381	2.	1.	0.	0.	3.	0.	0.	0.	0.	0.
391	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
401	1.	0.	1.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	1.	0.	1.	1.	0.	1.	0.	0.
421	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
431	0.	3.	0.	1.	0.	1.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	2.	0.
461	0.	0.	2.	1.	0.	0.	0.	2.	0.	2.
471	0.	6.	9.	6.	6.	9.	6.	5.	5.	3.
481	5.	0.	0.	1.	1.	0.	0.	0.	1.	0.
491	0.	0.	0.	1.	0.	0.	2.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000963-SAM-P
 File ID: 9a9331.CNF

Counted on: 6/12/99 @10:40
 Detector: AEA9
 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	1795.6	1795.6	361.433	361.433	8.000	2.632	4.000	1.459
2	345.3	345.3	302.668	302.666	10.000	2.866	5.000	1.265
3	94.6	94.6	286.944	286.303	10.000	2.056	5.000	3.488
4?	32.1	32.1	269.023	268.777	8.000	2.202	4.000	1.754
5	1874.7	1874.7	227.907	227.907	10.000	3.402	5.000	2.632

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Peak Centroid Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Pu236	0.440	5.755	5.759	-.0040	0.01	41.59	1.4	180.3	0.812E-04
2	Pu238	0.098	5.487	5.488	-.0010	0.01	9.26	2.9	54.6	0.246E-04
	Am241		5.479	5.488	-.009				41.9	0.189E-04
3	Th228	0.015	5.400	5.413	-.0130	0.01	1.40	12.9	8.4	0.377E-05
4		????		5.333			0.60	14.7		
5	Pu239	0.428	5.147	5.145	0.0020	0.02	40.37	1.4	171.5	0.773E-04
	Pu240		5.144	5.145	-.001				171.5	0.773E-04

Totals: 0.981 <--valid peaks only--> 92.63

DETECTOR CALIBRATION

Energy (MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2354 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	45341.0	100.000
Smoothed	45341.0	100.000
Composite fit	44756.6	98.711
Residuals	584.4	1.289

46 analyzed by: _____

Spectrum 9a9331.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 11967.4

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...5.
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4
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23..
3...2.
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1
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Raw Data 'Dump' for AEA Spectrum: 9a9331.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	3.	2.	2.
21	0.	0.	0.	2.	3.	0.	0.	0.	2.	0.
31	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
41	0.	0.	0.	1.	1.	0.	1.	0.	0.	1.
51	1.	1.	0.	0.	0.	1.	2.	0.	1.	0.
61	0.	0.	1.	1.	1.	1.	1.	1.	1.	0.
71	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
81	0.	0.	0.	0.	0.	3.	0.	2.	2.	0.
91	1.	1.	0.	0.	0.	1.	1.	0.	0.	0.
101	0.	0.	2.	3.	0.	2.	1.	1.	2.	1.
111	1.	2.	2.	0.	1.	0.	1.	1.	0.	0.
121	0.	2.	1.	1.	2.	1.	3.	2.	2.	0.
131	4.	1.	5.	2.	1.	3.	2.	3.	6.	8.
141	3.	5.	5.	7.	6.	7.	4.	6.	5.	3.
151	3.	1.	1.	2.	1.	6.	4.	3.	0.	3.
161	0.	3.	3.	1.	5.	2.	2.	4.	2.	6.
171	1.	2.	2.	1.	2.	0.	3.	1.	2.	5.
181	4.	4.	2.	3.	2.	3.	6.	3.	9.	2.
191	3.	2.	4.	3.	11.	7.	7.	6.	14.	9.
201	15.	10.	6.	10.	16.	28.	34.	33.	40.	44.
211	60.	101.	103.	164.	214.	273.	322.	367.	440.	488.
221	574.	694.	851.	1109.	1456.	1863.	2168.	2324.	2161.	1651.
231	1062.	547.	276.	125.	26.	8.	3.	1.	2.	1.
241	3.	1.	3.	2.	2.	3.	4.	1.	3.	4.
251	7.	6.	6.	6.	2.	10.	7.	5.	2.	6.
261	13.	8.	12.	22.	17.	26.	39.	42.	45.	53.
271	32.	16.	16.	15.	15.	6.	18.	20.	35.	35.
281	36.	71.	84.	113.	137.	193.	181.	151.	127.	91.
291	91.	126.	127.	132.	157.	166.	151.	170.	196.	274.
301	322.	427.	423.	394.	285.	139.	42.	12.	5.	2.
311	1.	2.	2.	4.	4.	4.	3.	2.	6.	3.
321	3.	2.	0.	6.	9.	5.	6.	3.	7.	12.
331	7.	7.	8.	8.	14.	18.	24.	16.	25.	31.
341	47.	55.	74.	95.	110.	174.	205.	241.	411.	534.
351	689.	752.	758.	650.	663.	688.	866.	1041.	1404.	1843.
361	2223.	2323.	1950.	1177.	459.	127.	18.	6.	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.	1.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	0.	1.	1.	0.
421	0.	0.	1.	0.	0.	1.	2.	0.	0.	0.
431	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	1.	1.	1.	1.	3.	3.
471	2.	9.	6.	14.	11.	10.	8.	9.	5.	4.
481	4.	1.	1.	2.	2.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T000963-DUP-P
 File ID: 10a1068.CNF

Counted on: 6/12/99 @10:41
 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	1731.4	1731.4	360.998	360.998	10.000	2.945	5.000	1.322
2	319.1	319.1	302.425	302.417	10.000	3.467	5.000	1.226
3	88.0	88.0	287.128	286.315	8.000	2.015	4.000	2.077
4?	26.3	26.3	270.057	269.259	8.000	2.216	4.000	0.986
5	1791.8	1791.8	228.024	228.023	12.000	3.750	6.000	2.205

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Pu236	0.439	5.755	5.750	0.005	0.01	46.22	1.3	207.2	0.934E-04
2	Pu238	0.097	5.487	5.481	0.006	0.02	10.16	2.8	62.0	0.279E-04
	Am241		5.479	5.481	-0.002				47.5	0.214E-04
3	Th228	0.014	5.400	5.407	-0.007	0.01	1.45	14.0	9.0	0.403E-05
4		????		5.328			0.67	16.2		
5	Pu239	0.421	5.147	5.139	0.008	0.02	44.25	1.3	194.4	0.876E-04
	Pu240		5.144	5.139	0.005				194.4	0.876E-04

Totals: 0.970 <--valid peaks only--> 102.08

DETECTOR CALIBRATION

Energy (MEV) = 4.090 + (0.0046)*Channel
 Energy range (MeV): 4.090 TO 6.445
 Efficiency = 0.2276 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

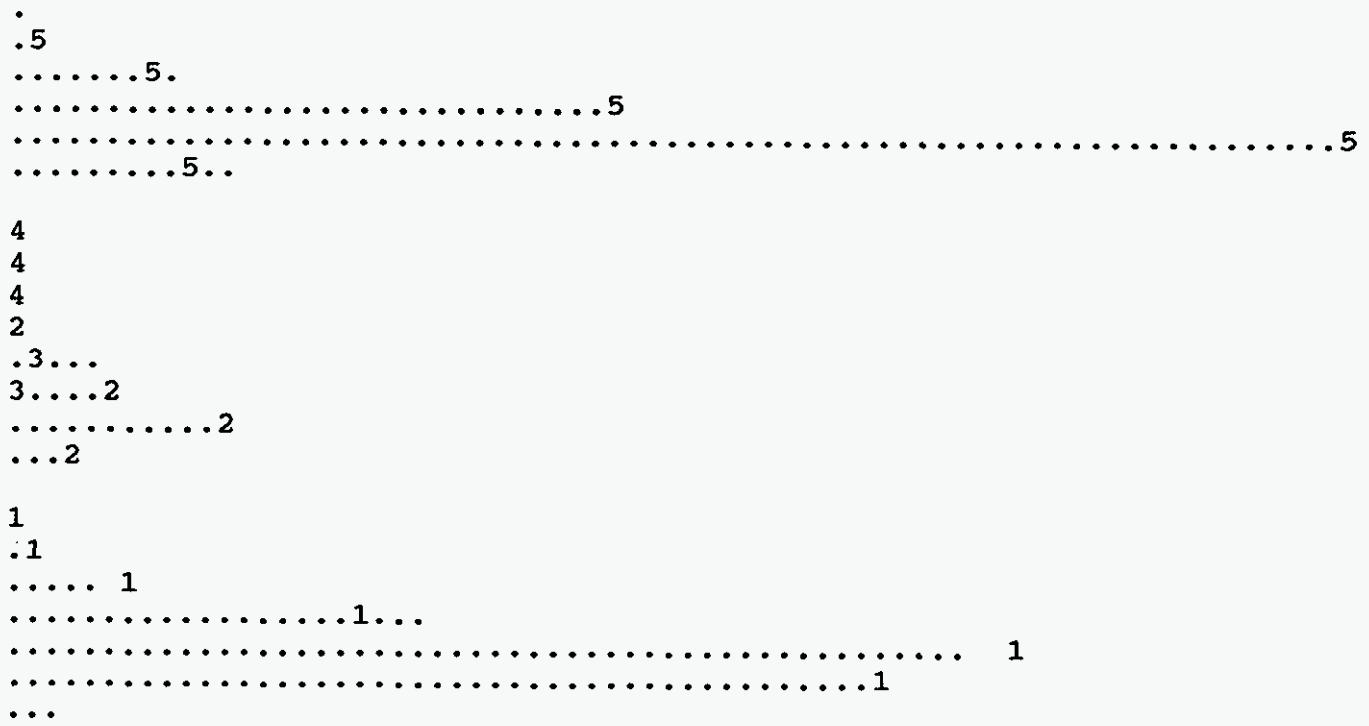
Item	Total	% Recovery
Raw spectrum	50495.0	100.000
Smoothed	50495.0	100.000
Composite fit	49322.5	97.678
Residuals	1172.5	2.322

467 Analyzed by: _____

Spectrum 10a1068.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 11806.2



Raw Data Dump for AEA Spectrum: 10a1068.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
21	0.	1.	1.	1.	1.	2.	2.	1.	0.	2.
31	0.	0.	1.	0.	0.	1.	3.	1.	2.	2.
41	0.	0.	2.	0.	2.	0.	2.	0.	0.	2.
51	1.	2.	1.	1.	1.	1.	0.	2.	4.	1.
61	1.	1.	0.	0.	2.	1.	3.	2.	0.	1.
71	1.	1.	0.	2.	0.	2.	1.	0.	0.	0.
81	0.	0.	0.	2.	0.	1.	1.	2.	2.	2.
91	1.	2.	1.	0.	0.	0.	1.	1.	2.	0.
101	3.	1.	2.	1.	0.	1.	1.	2.	1.	0.
111	0.	3.	2.	4.	3.	1.	2.	1.	2.	3.
121	4.	3.	7.	1.	1.	2.	2.	0.	1.	1.
131	1.	0.	4.	4.	1.	3.	1.	3.	2.	3.
141	2.	2.	10.	9.	5.	6.	6.	6.	9.	2.
151	6.	1.	5.	7.	4.	5.	2.	2.	5.	4.
161	5.	5.	4.	1.	4.	4.	10.	5.	5.	4.
171	11.	9.	10.	9.	8.	10.	8.	9.	4.	9.
181	7.	8.	13.	11.	18.	13.	12.	11.	24.	23.
191	16.	26.	17.	23.	32.	36.	49.	37.	56.	44.
201	41.	51.	52.	66.	55.	68.	99.	95.	109.	122.
211	143.	175.	199.	241.	308.	364.	424.	495.	519.	603.
221	716.	826.	932.	1232.	1505.	1710.	1986.	2142.	2074.	1678.
231	1159.	675.	372.	127.	40.	11.	8.	7.	3.	4.
241	2.	3.	5.	3.	1.	5.	7.	4.	9.	5.
251	15.	5.	13.	4.	18.	10.	10.	11.	10.	14.
261	14.	17.	20.	20.	35.	39.	36.	33.	38.	54.
271	47.	32.	29.	23.	38.	28.	30.	47.	42.	58.
281	72.	88.	117.	140.	160.	175.	196.	193.	138.	119.
291	105.	114.	138.	172.	173.	175.	153.	233.	256.	293.
301	327.	350.	372.	363.	254.	139.	46.	19.	15.	10.
311	12.	13.	12.	11.	11.	13.	15.	14.	8.	15.
321	17.	16.	21.	23.	21.	25.	25.	36.	33.	38.
331	47.	38.	40.	45.	61.	68.	72.	84.	75.	110.
341	125.	151.	148.	198.	231.	289.	390.	437.	583.	653.
351	783.	842.	881.	771.	761.	886.	1056.	1235.	1538.	1924.
361	2151.	2001.	1626.	956.	395.	88.	26.	3.	1.	2.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	1.	0.	0.	1.	2.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
431	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	0.	0.	0.	0.	1.	0.	1.	0.	2.	0.
461	1.	4.	1.	3.	2.	3.	3.	3.	2.	5.
471	3.	4.	4.	6.	14.	6.	5.	4.	4.	4.
481	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) *had 7/10/99* LIQUID

				STD
Type	DATE COUNTED	JUN-12-99	PU 236 AEA FRAC (C236)	0.410
STD	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.522
30043	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	4733
Test Code	DIGEST DILUTION FACTOR DDF	1.000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	16B59	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER	13	PU 236 cpm	46.530
LIQUID	EFFICIENCY FACTOR EFF	0.317	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	04/13/99	PU 239 cpm	59.230
99002369	TRACER PREPARATION VALUE (dpm/mL)	2338.000	AEA COUNT TIME	480
Refills	PU-236 DECAY CORR'D VALUE (dpm/mL)	2246.432	Pu 239/240 µCi/L	1.2883E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep	STANDARD BOOK NO	46B57		
N/A	STANDARD VALUE in µCi/mL	1.260E-04		

Sample #	WL30043-STD		
Instrument Code	WB27810		
Prepared By	jfr		
Chemist	jfr		
Analyst	akl		
Date Complete	06/14/99		
Analysis Date	06/12/99		
Analysis Time	03:55 AM		
Sample Point	U-102 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) * 1/EFF * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV
 Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]
 Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
 Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]
 Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL	1.29E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error =	1.8%	
		Pu 239/240
		8.14E-06
Pu 236 Tracer Recovery =	90.9%	

Analyst:	akl	Date:	14-Jun-99
Signature of Chemist:	<i>John Relyea</i>	Date:	15 June 99

STANDARD.WB1 REV 1.0

943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ^{LI} _{7/16/99} **BLNK-PREP**

Type	DATE COUNTED	JUN-12-99	PU 236 AEA FRAC (C236)	0.916	
BLNK-PREP	SAMPLE VOLUME in mL	SS	0.500	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.000
30043	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	2214
Test Code	DIGEST GRAMS of SOLIDS/	Dg/L	2.0588	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		16B59	BACKGROUND in cp (Bkg)	0.030
Matrix	DETECTOR NUMBER		13	PU 236 cpm	34.730
SOLID	EFFICIENCY FACTOR	EFF	0.3166	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		04/13/99	PU 239 cpm	0.000
99002369	TRACER PREPARATION VALUE (dpm/mL)		2338.00	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2246.43	Pu 239/240 µCi/g =	< 3.389E-03
0	PU-238 TRACER VALUE (dpm/m)		0.00		

Sample Prep	N/A
Sample #	WL30043-BLNK
Instrument Code	WB27810
Prepared By	jfr
Chemist	jfr
Analyst	aki
Date Complete	06/14/99
Analysis Date	06/12/99
Analysis Time	03:55 AM
Sample Point	U-102 GRAB1

Decay Time = Date Counted - Tracer Preparation Date
 Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]
 Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
 Pu 239/240 µCi/g = (C239) * (Pu 236 Decay Corr'd Value) * (SPKV) * (1000mL/L) * (DF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/µCi)]
 Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
 Pu 238 µCi/g = [(Pu 238 dpm) * (DF) * (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/µCi) * (D g/L) * (SS)]
 Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

06/14/99	Pu 239/240 µCi/g	< 3.39E-03	DETECTION LEVELS in µCi/g
06/12/99	Relative Counting Error	= 100.0%	
03:55 AM	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240
	Pu 238 µCi/g	< 3.39E-03	3.39E-03
	Relative Counting Error	= 100.0%	Pu 238
	Pu 236 Tracer Recovery	= 95.0%	3.39E-03

Analyst:	aki	Date:	14-Jun-99
Signature of Chemist:	<i>John Relyea</i>	Date:	15 June 99

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ^{AD} 3/11/99 LIQUID /

				SAMPLE
Type	DATE COUNTED	JUN-12-99	PU 236 AEA FRAC (C236)	0.440
SAMPLE	SAMPLE VOLUME in mL SS	0.500	PU 238 AEA FRAC (C238)	0.098
Worklist	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.428
30043	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	4474
Test Code	DIGEST GRAMS of SOLIDS/L Dg/L	2.0588	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	16B59	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER	13	PU 236 cpm	41.590
SOLID	EFFICIENCY FACTOR EFF	0.317	PU 238 cpm	9.260
Batch Number	TRACER PREPARATION DATE	04/13/99	PU 239 cpm	40.370
99002369	TRACER PREPARATION VALUE (dpm/mL)	2338.000	AEA COUNT TIME	480
Return	PU-236 DECAY CORR'D VALUE (dpm/mL)	2246.432	Pu 239/240 µCi/g	9.5620E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	FUSION01		
Sample #	Decay Time = Date Counted - Tracer Preparation Date		
S99T000963	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)		
WB27810	Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(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)		
jfr	Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]		
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100		
jfr			
Analyst	aki		
Date Complete	06/14/99		

			DETECTION LEVELS in µCi/g
Analysis Date	Pu 239/240 µCi/g	9.56E-02	Pu 239/240 7.27E-03
06/12/99	Relative Counting Error =	2.0%	
Analysis Time	Pu 238 µCi/g	2.19E-02	Pu 238 7.27E-03
03:55 AM	Relative Counting Error =	3.3%	
Sample Point	Pu 236 Tracer Recovery =	92.2%	
U-102 GRAB1			

Analyst:	aki	Date:	14-Jun-99
Signature of Chemist:	<i>John Relyea</i>	Date:	15 June 99

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ^{14D} _{7/1/99} LIQUID /				DUP
Type	DATE COUNTED	JUN-12-99	PU 236 AEA FRAC (C236)	0.439
DUP	SAMPLE VOLUME in mL	SS 0.500	PU 238 AEA FRAC (C238)	0.097
Work List	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.421
30043	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	4259
Site Code	DIGEST GRAMS of SOLIDS/L	Dg/L 2.0616	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	16B59	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER	13	PU 236 cpm	46.220
SOLID	EFFICIENCY FACTOR	EFF 0.317	PU 238 cpm	10.160
Batch Number	TRACER PREPARATION DATE	04/13/99	PU 239 cpm	44.250
99002369	TRACER PREPARATION VALUE (dpm/mL)	2338.000	AEA COUNT TIME	480
Ratio	PU-236 DECAY CORR'D VALUE (dpm/mL)	2246.432	Pu 239/240 µCi/g	9.4142E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	FUSION01		
Sample #	S99T000963		
Instrument Code	WB27810		
Prepared By	jfr		
Chemist	jfr		
Analyst	akl		
Date Complete	06/14/99		
Analysis Date	06/12/99		
Analysis Time	03:55 AM		
Sample Point	U-102 GRAB1		

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 µCi/g = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)

Pu 238 µCi/g = [(Pu 238 dpm)(DF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/g	=	9.41E-02	DETECTION LEVELS in µCi/g
Relative Counting Error	=	1.9%	
Pu 238 µCi/g	=	2.17E-02	Pu 239/240
Relative Counting Error	=	3.1%	7.66E-03
Pu 236 Tracer Recovery	=	87.6%	Pu 238
			7.66E-03

Analyst:	akl	Date:	14-Jun-99
Signature of Chemist:	<i>John Relyea</i>	Date:	<i>15 June 99</i>
SAMPLE.WB1 REV 1.0	943128ML		

HNF-1674 REV. 0

OPPORTUNISTIC ANALYTES
APPENDIX A

HNF-1674 REV. 0

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Appendix A. Opportunistic Analyte Results.
U-102 GRAB1

RISER: n/a
SEGMENT #: 2U-99-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000970	D		Silver-ICP-Acid Dil.	ug/mL	99.40	<1.00e-02	17.20	16.50	16.85	4.15	91.80	6.010	n/a
S99T000970	D		Arsenic-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	99.10	60.10	n/a
S99T000970	D		Boron-ICP-Acid Dil.	ug/mL	103.6	<5.00e-02	81.30	80.50	80.90	0.99	101.0	30.10	n/a
S99T000970	D		Barium-ICP-Acid Dil.	ug/mL	98.60	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	92.50	30.10	n/a
S99T000970	D		Beryllium-ICP-Acid Dil.	ug/mL	101.2	<5.00e-03	< 3.010	<3.01e0	n/a	n/a	98.40	3.010	n/a
S99T000970	D		Bismuth-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	99.90	60.10	n/a
S99T000970	D		Calcium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-01	1.72e+02	144.0	158.0	17.7	98.40	60.10	n/a
S99T000970	D		Cadmium-ICP-Acid Dil.	ug/mL	102.6	<5.00e-03	6.600	5.980	6.290	9.86	101.0	3.010	n/a
S99T000970	D		Cerium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	97.60	60.10	n/a
S99T000970	D		Cobalt-ICP-Acid Dil.	ug/mL	100.8	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	99.30	12.00	n/a
S99T000970	D		Copper-ICP-Acid Dil.	ug/mL	103.0	<1.00e-02	12.50	12.50	12.50	0.00	98.80	6.010	n/a
S99T000970	D		Potassium-ICP-Acid Dil.	ug/mL	104.8	<5.00e-01	4.23e+03	4.23e+03	4.23e+03	0.00	99.40	301.0	n/a
S99T000970	D		Lanthanum-ICP-Acid Dil.	ug/mL	102.6	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	99.40	30.10	n/a
S99T000970	D		Lithium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	94.60	6.010	n/a
S99T000970	D		Magnesium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	97.40	60.10	n/a
S99T000970	D		Molybdenum-ICP-Acid Dil.	ug/mL	102.0	<5.00e-02	1.22e+02	123.0	122.5	0.82	102.0	30.10	n/a
S99T000970	D		Neodymium-ICP-Acid Dil.	ug/mL	102.4	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	99.00	60.10	n/a
S99T000970	D		Phosphorus-ICP-Acid Dil.	ug/mL	102.0	<2.00e-01	1.05e+03	1.06e+03	1.06e+03	0.95	104.0	120.0	n/a
S99T000970	D		Lead-ICP-Acid Dil.	ug/mL	100.8	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	103.0	60.10	n/a
S99T000970	D		Sulfur-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	2.20e+03	2.23e+03	2.22e+03	1.35	108.0	60.10	n/a
S99T000970	D		Antimony-ICP-Acid Dil.	ug/mL	101.6	<6.00e-02	< 36.10	<3.61e1	n/a	n/a	102.0	36.10	n/a
S99T000970	D		Selenium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	109.0	60.10	n/a
S99T000970	D		Silicon-ICP-Acid Dil.	ug/mL	105.6	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	109.0	30.10	n/a
S99T000970	D		Samarium-ICP-Acid Dil.	ug/mL	102.2	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	99.80	60.10	n/a
S99T000970	D		Strontium-ICP-Acid Dil.	ug/mL	100.0	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	96.40	6.010	n/a
S99T000970	D		Titanium-ICP-Acid Dil.	ug/mL	102.6	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	100.0	6.010	n/a
S99T000970	D		Thallium-ICP-Acid Dil.	ug/mL	98.20	<2.00e-01	<1.20e+02	<1.20e2	n/a	n/a	97.30	120.0	n/a
S99T000970	D		Uranium-ICP-Acid Dil.	ug/mL	104.0	<5.00e-01	<3.01e+02	<3.01e2	n/a	n/a	102.5	301.0	n/a
S99T000970	D		Vanadium-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	99.50	30.10	n/a
S99T000970	D		Zinc-ICP-Acid Dil.	ug/mL	101.2	<1.00e-02	6.960	7.330	7.145	5.18	101.0	6.010	n/a
S99T000970			Bromide by Ion Chromatograph	ug/mL	105.6	<1.25e-01	<6.44e+02	<6.44e2	n/a	n/a	98.78	643.9	n/a
S99T000970			Oxalate-IC-Dionex 4000/450	ug/mL	104.9	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	99.25	540.9	n/a
S99T000973			Cobalt-60 by GEA	uci/mL	110.0	<1.40e-03	1.67e-02	1.58e-02	1.63e-02	5.54	n/a	n/a	23.2

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HNF-1674 REV. 0

Appendix A. Opportunistic Analyte Results. U-102 GRAB1

RISER: n/a
SEGMENT #: 2U-99-2
SEGMENT PORTION: Supernate

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S991000971	D	Silver-ICP-Acid Dil.	ug/ml	99.40	<1.00e-02	15.70	15.40	15.55	1.93	n/a	6.010	n/a
S991000971	D	Arsenic-ICP-Acid Dil.	ug/ml	101.0	<1.00e-01	> 60.10	<6.01e1	80.50	81.65	n/a	60.10	n/a
S991000971	D	Boron-ICP-Acid Dil.	ug/ml	103.6	<5.00e-02	82.80	80.50	81.65	2.82	n/a	30.10	n/a
S991000971	D	Barium-ICP-Acid Dil.	ug/ml	98.60	<5.00e-02	> 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S991000971	D	Beryllium-ICP-Acid Dil.	ug/ml	101.2	<5.00e-03	> 3.010	<3.01e0	n/a	n/a	n/a	3.010	n/a
S991000971	D	Bismuth-ICP-Acid Dil.	ug/ml	102.0	<1.00e-01	> 60.10	<6.01e1	143.0	5.59	n/a	60.10	n/a
S991000971	D	Calcium-ICP-Acid Dil.	ug/ml	102.8	<1.00e-01	1.47e+02	139.0	143.0	5.59	n/a	60.10	n/a
S991000971	D	Cadmium-ICP-Acid Dil.	ug/ml	102.6	<5.00e-03	5.710	6.070	5.890	6.11	n/a	3.010	n/a
S991000971	D	Cerium-ICP-Acid Dil.	ug/ml	101.8	<1.00e-01	> 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S991000971	D	Cobalt-ICP-Acid Dil.	ug/ml	100.8	<2.00e-02	> 12.00	<1.20e1	n/a	n/a	n/a	12.00	n/a
S991000971	D	Copper-ICP-Acid Dil.	ug/ml	103.0	<1.00e-02	13.70	13.00	13.35	5.24	n/a	6.010	n/a
S991000971	D	Potassium-ICP-Acid Dil.	ug/ml	104.8	<5.00e-01	4.42e+03	4.20e+03	4.31e+03	5.10	n/a	301.0	n/a
S991000971	D	Lanthanum-ICP-Acid Dil.	ug/ml	102.6	<5.00e-02	> 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S991000971	D	Lithium-ICP-Acid Dil.	ug/ml	101.8	<1.00e-02	> 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S991000971	D	Magnesium-ICP-Acid Dil.	ug/ml	101.8	<1.00e-01	> 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S991000971	D	Molybdenum-ICP-Acid Dil.	ug/ml	102.0	<5.00e-02	1.30e+02	127.0	128.5	2.33	n/a	30.10	n/a
S991000971	D	Neodymium-ICP-Acid Dil.	ug/ml	102.4	<1.00e-01	> 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S991000971	D	Phosphorus-ICP-Acid Dil.	ug/ml	102.0	<2.00e-01	9.42e+02	933.0	937.5	0.96	n/a	120.0	n/a
S991000971	D	Lead-ICP-Acid Dil.	ug/ml	100.8	<1.00e-01	> 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S991000971	D	Sulfur-ICP-Acid Dil.	ug/ml	101.0	<1.00e-01	1.98e+03	1.94e+03	1.96e+03	2.04	n/a	60.10	n/a
S991000971	D	Antimony-ICP-Acid Dil.	ug/ml	101.6	<6.00e-02	> 36.10	<3.61e1	n/a	n/a	n/a	36.10	n/a
S991000971	D	Selenium-ICP-Acid Dil.	ug/ml	99.80	<1.00e-01	> 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S991000971	D	Silicon-ICP-Acid Dil.	ug/ml	105.6	<5.00e-02	> 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S991000971	D	Samarium-ICP-Acid Dil.	ug/ml	102.2	<1.00e-01	> 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S991000971	D	Strontium-ICP-Acid Dil.	ug/ml	100.0	<1.00e-02	> 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S991000971	D	Titanium-ICP-Acid Dil.	ug/ml	102.6	<1.00e-02	> 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S991000971	D	Thallium-ICP-Acid Dil.	ug/ml	98.20	<2.00e-01	<1.20e+02	<1.20e2	n/a	n/a	n/a	120.0	n/a
S991000971	D	Uranium-ICP-Acid Dil.	ug/ml	104.0	<5.00e-01	<3.01e+02	<3.01e2	n/a	n/a	n/a	301.0	n/a
S991000971	D	Vanadium-ICP-Acid Dil.	ug/ml	101.4	<5.00e-02	> 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S991000971	D	Zinc-ICP-Acid Dil.	ug/ml	101.2	<1.00e-02	> 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S991000971		Bromide by Ion Chromatograph	ug/ml	105.6	<1.25e-01	<6.44e+02	<6.44e2	n/a	n/a	n/a	643.9	n/a
S991000971		Oxalate-IC-Dionex 4000/450	ug/ml	104.9	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	n/a	540.9	n/a
S991000974		Cobalt-60 by GEA	uci/ml	110.0	<1.40e-03	1.53e-02	1.71e-02	1.62e-02	11.1	n/a	24.6	n/a

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Appendix A. Opportunistic Analyte Results.
U-102 GRAB1

RISER: n/a
SEGMENT #: 2U-99-5

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000972	D	Silver-ICP-Acid Dil.	ug/ml	99.40	<1.00e-02	16.90	15.90	16.40	6.10	n/a	6.010	n/a
S99T000972	D	Arsenic-ICP-Acid Dil.	ug/ml	101.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000972	D	Boron-ICP-Acid Dil.	ug/ml	103.6	<5.00e-02	83.30	85.40	84.35	2.49	n/a	30.10	n/a
S99T000972	D	Barium-ICP-Acid Dil.	ug/ml	98.60	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S99T000972	D	Beryllium-ICP-Acid Dil.	ug/ml	101.2	<5.00e-03	< 3.010	<3.01e0	n/a	n/a	n/a	3.010	n/a
S99T000972	D	Bismuth-ICP-Acid Dil.	ug/ml	102.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000972	D	Calcium-ICP-Acid Dil.	ug/ml	102.8	<1.00e-01	1.59e+02	149.0	154.0	6.49	n/a	60.10	n/a
S99T000972	D	Cadmium-ICP-Acid Dil.	ug/ml	102.6	<5.00e-03	6.290	5.490	5.890	13.6	n/a	3.010	n/a
S99T000972	D	Cerium-ICP-Acid Dil.	ug/ml	101.8	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000972	D	Cobalt-ICP-Acid Dil.	ug/ml	100.8	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	n/a	12.00	n/a
S99T000972	D	Copper-ICP-Acid Dil.	ug/ml	103.0	<1.00e-02	15.20	14.60	14.90	4.03	n/a	6.010	n/a
S99T000972	D	Potassium-ICP-Acid Dil.	ug/ml	104.8	<5.00e-01	4.38e+03	4.35e+03	4.36e+03	0.69	n/a	301.0	n/a
S99T000972	D	Lanthanum-ICP-Acid Dil.	ug/ml	102.6	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S99T000972	D	Lithium-ICP-Acid Dil.	ug/ml	101.8	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000972	D	Magnesium-ICP-Acid Dil.	ug/ml	101.8	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000972	D	Molybdenum-ICP-Acid Dil.	ug/ml	102.0	<5.00e-02	1.27e+02	128.0	127.5	0.78	n/a	30.10	n/a
S99T000972	D	Neodymium-ICP-Acid Dil.	ug/ml	102.4	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000972	D	Phosphorus-ICP-Acid Dil.	ug/ml	102.0	<2.00e-01	9.91e+02	1.01e+03	1.00e+03	1.90	n/a	120.0	n/a
S99T000972	D	Lead-ICP-Acid Dil.	ug/ml	100.8	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000972	D	Sulfur-ICP-Acid Dil.	ug/ml	101.0	<1.00e-01	1.99e+03	2.02e+03	2.00e+03	1.50	n/a	60.10	n/a
S99T000972	D	Antimony-ICP-Acid Dil.	ug/ml	101.6	<6.00e-02	< 36.10	<3.61e1	n/a	n/a	n/a	36.10	n/a
S99T000972	D	Selenium-ICP-Acid Dil.	ug/ml	99.80	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000972	D	Silicon-ICP-Acid Dil.	ug/ml	105.6	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S99T000972	D	Samarium-ICP-Acid Dil.	ug/ml	102.2	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000972	D	Strontium-ICP-Acid Dil.	ug/ml	100.0	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000972	D	Titanium-ICP-Acid Dil.	ug/ml	102.6	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000972	D	Thallium-ICP-Acid Dil.	ug/ml	98.20	<2.00e-01	<1.20e+02	<1.20e2	n/a	n/a	n/a	120.0	n/a
S99T000972	D	Uranium-ICP-Acid Dil.	ug/ml	104.0	<5.00e-01	<3.01e+02	<3.01e2	n/a	n/a	n/a	301.0	n/a
S99T000972	D	Vanadium-ICP-Acid Dil.	ug/ml	101.4	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S99T000972	D	Zinc-ICP-Acid Dil.	ug/ml	101.2	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000972		Bromide by Ion Chromatograph	ug/ml	105.6	<1.25e-01	<6.44e+02	<6.44e2	n/a	n/a	n/a	643.9	n/a
S99T000972		Oxalate-IC-Dionex 4000/450	ug/ml	104.9	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	n/a	540.9	n/a
S99T000975		Cobalt-60 by GEA	uCi/ml	110.0	<1.40e-03	2.56e-02	2.33e-02	2.44e-02	9.41	n/a	n/a	40.5

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Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000963	F	Silver -ICP-Fusion	ug/g	98.00	<1.00e-02	<1.99e+02	<1.99e2	n/a	n/a	92.30	199.0	n/a
S99T000963	F	Arsenic -ICP-Fusion	ug/g	101.0	<1.00e-01	<1.99e+03	<1.99e3	n/a	n/a	100.0	1.99e+03	n/a
S99T000963	F	Boron -ICP-Fusion	ug/g	102.6	<5.00e-02	<9.96e+02	<9.94e2	n/a	n/a	101.0	996.0	n/a
S99T000963	F	Barium -ICP-Fusion	ug/g	96.00	<5.00e-02	<9.96e+02	<9.94e2	n/a	n/a	92.50	996.0	n/a
S99T000963	F	Beryllium -ICP-Fusion	ug/g	100.8	<5.00e-03	< 99.60	<9.94e1	n/a	n/a	97.60	99.60	n/a
S99T000963	F	Bismuth -ICP-Fusion	ug/g	99.40	<1.00e-01	<1.99e+03	<1.99e3	n/a	n/a	97.60	1.99e+03	n/a
S99T000963	F	Calcium -ICP-Fusion	ug/g	101.8	<1.00e-01	<1.99e+03	<1.99e3	n/a	n/a	105.0	1.99e+03	n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000963	F		Cadmium -ICP-Fusion	ug/g	101.6	<5.00e-03	< 99.60	<9.94e1	n/a	n/a	101.0	99.60	n/a
S99T000963	F		Cerium -ICP-Fusion	ug/g	99.80	<1.00e-01	<1.99e+03	<1.99e3	n/a	n/a	97.80	1.99e+03	n/a
S99T000963	F		Cobalt -ICP-Fusion	ug/g	99.60	<2.00e-02	<3.98e+02	<3.98e2	n/a	n/a	99.10	398.0	n/a
S99T000963	F		Copper -ICP-Fusion	ug/g	100.8	<1.00e-02	<1.99e+02	<1.99e2	n/a	n/a	99.30	199.0	n/a
S99T000963	F		Lanthanum -ICP-Fusion	ug/g	101.0	<5.00e-02	<9.96e+02	<9.94e2	n/a	n/a	98.90	996.0	n/a
S99T000963	F		Lithium -ICP-Fusion	ug/g	99.60	<1.00e-02	<1.99e+02	<1.99e2	n/a	n/a	95.40	199.0	n/a
S99T000963	F		Magnesium -ICP-Fusion	ug/g	100.6	<1.00e-01	<1.99e+03	<1.99e3	n/a	n/a	97.60	1.99e+03	n/a
S99T000963	F		Molybdenum -ICP-Fusion	ug/g	100.6	<5.00e-02	<9.96e+02	<9.94e2	n/a	n/a	101.0	996.0	n/a
S99T000963	F		Neodymium -ICP-Fusion	ug/g	100.0	<1.00e-01	<1.99e+03	<1.99e3	n/a	n/a	98.30	1.99e+03	n/a
S99T000963	F		Phosphorus -ICP-Fusion	ug/g	101.6	<2.00e-01	6.55e+03	6.58e+03	6.56e+03	0.46	102.0	3.98e+03	n/a
S99T000963	F		Lead -ICP-Fusion	ug/g	99.80	<1.00e-01	<1.99e+03	<1.99e3	n/a	n/a	98.50	1.99e+03	n/a
S99T000963	F		Sulfur -ICP-Fusion	ug/g	100.2	<1.00e-01	6.23e+03	6.24e+03	6.24e+03	0.16	99.20	1.99e+03	n/a
S99T000963	F		Antimony -ICP-Fusion	ug/g	101.0	<6.00e-02	<1.19e+03	<1.19e3	n/a	n/a	102.0	1.19e+03	n/a
S99T000963	F		Selenium -ICP-Fusion	ug/g	99.40	<1.00e-01	<1.99e+03	<1.99e3	n/a	n/a	101.0	1.99e+03	n/a
S99T000963	F		Silicon -ICP-Fusion	ug/g	103.0	<5.00e-02	<9.96e+02	<9.94e2	n/a	n/a	107.0	996.0	n/a
S99T000963	F		Samarium -ICP-Fusion	ug/g	100.8	<1.00e-01	<1.99e+03	<1.99e3	n/a	n/a	99.10	1.99e+03	n/a
S99T000963	F		Strontium -ICP-Fusion	ug/g	98.20	<1.00e-02	<1.99e+02	<1.99e2	n/a	n/a	95.80	199.0	n/a
S99T000963	F		Titanium-ICP-Fusion	ug/g	100.8	<1.00e-02	<1.99e+02	<1.99e2	n/a	n/a	99.50	199.0	n/a
S99T000963	F		Thallium -ICP-Fusion	ug/g	98.00	<2.00e-01	<3.98e+03	<3.98e3	n/a	n/a	96.90	3.98e+03	n/a
S99T000963	F		Uranium -ICP-Fusion	ug/g	102.0	<5.00e-01	<9.96e+03	<9.94e3	n/a	n/a	113.0	9.96e+03	n/a
S99T000963	F		Vanadium -ICP-Fusion	ug/g	100.4	<5.00e-02	<9.96e+02	<9.94e2	n/a	n/a	99.40	996.0	n/a
S99T000963	F		Zinc -ICP-Fusion	ug/g	100.2	<1.00e-02	<1.99e+02	<1.99e2	n/a	n/a	101.0	199.0	n/a
S99T000963	F		Cobalt-60 by GEA	uCi/g	107.8	<5.54e-02	<5.54e-02	<6.13e-2	n/a	n/a	n/a	5.50e-02	n/a
S99T000969	W		Bromide by Ion Chromatograph	ug/g	100.3	<1.25e-01	<1.30e+03	<1.25e3	n/a	n/a	100.3	1.30e+03	n/a
S99T000969	W		Oxalate-IC-Dionex 4000/4500	ug/g	103.0	<1.05e-01	1.71e+04	1.73e+04	1.72e+04	1.16	103.4	1.09e+03	n/a

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