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Section 1 of 2

Document Information

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Tank 241-U-103, Grab Samples 3U-99-1, 3U-99-2 and 3U-99-3 Analytical Results for the Final Report

Franciska H. Steen

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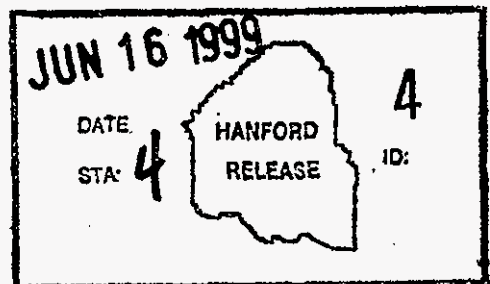
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WASTE MANAGEMENT LABORATORY

**TANK 241-U-103, GRAB SAMPLES
3U-99-1, 3U-99-2 AND 3U-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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WASTE MANAGEMENT LABORATORY

**TANK 241-U-103, GRAB SAMPLES,
3U-99-1, 3U-99-2 and 3U-99-3
ANALYTICAL RESULTS FOR THE FINAL REPORT**

This document is the final report for tank 241-U-103 grab samples. Three grab samples were collected from riser 13 on March 12, 1999 and received by the 222-S laboratory on March 15, 1999. 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.

3U-99-1

This sample was collected at a depth of 304 inches. Visual observation indicated that the sample was an opaque yellow liquid with fifteen- percent 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.

3U-99-2

This sample was collected at a depth of 393 inches. Visual observation indicated that the sample was an opaque yellow liquid with thirty- percent 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.

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3U-99-3

This sample was collected at a depth of 470 inches. Visual observation indicated that the sample was an opaque yellow liquid with thirty- percent 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-103 Grab Samples

Sample Number	Date Sampled	Date Received	Sampling Depth (in.)	% Settled Solids	Sample Description
3U-99-1	03/12/99	03/15/99	304	15%	Opaque yellow liquid with gray-white crystalline solids; no organic layer was observed.
3U-99-2	03/12/99	03/15/99	393	30%	Opaque yellow liquid with gray-white crystalline solids; no organic layer was observed.
3U-99-3	03/12/99	03/15/99	470	30%	Opaque yellow liquid with 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.

As noted in the appearance information in Table 2, the solid material collected from Tank 241-U-103 grab samples was a gray and white crystalline salt. It was impossible to separate the different colored material. Obtaining reproducible results with this non-homogenous material was very difficult and may have been the main reason for the large difference between the sample and duplicate measurements for many of the analyses.

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.

A relative percent difference (RPD) outside of the required range (>30% for solids) was reported for one subsample. The nonhomogeneous material and small sample size required for this analysis made it difficult to obtain reproducible results. The high RPD was due to sample inhomogeneity and no reanalysis was performed.

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

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-103 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.

A RPD outside of the required range (>30% for solids) was reported for one subsample. The nonhomogeneous material and small sample size required for this analysis made it difficult to obtain reproducible results. The high RPD was due to sample inhomogeneity and no reanalysis was performed.

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

Bulk Density

Bulk density was performed on the solid subsamples as required by the TSAP (Sasaki, 1999). The results of the bulk density test ranged from 1.5 g/mL to 1.64 g/mL. The bulk density results were 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 1.64 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 were prepared for analysis by performing a water digest. This is indicated by a "W" 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%.

pH

The pH analysis was required for both the solid and liquid portion of the samples. However, the concentration of hydroxide in the liquid samples indicated a meaningful pH result would not be obtained. Therefore, with concurrence from the customer, the pH analysis on the liquid portion of the samples was not performed. The solid subsamples were prepared for analysis by performing a water digest. This is indicated by a "W" in the aliquot class (A#) column in Table 1. 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. The spike recovery was within the required limits of 75%-125%, the standard recovery was within the required limits of 80%-120% and the RPDs were less than 20%.

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.

High RPDs (>20%) were reported for F⁻, NO₃⁻, PO₄⁻³ and SO₄⁻². The information is presented in Table 3. The chemist noted that the high RPDs were due to sample inhomogeneity and no reanalyses were requested. More information may be obtained by examining the raw data.

Table 3. Ion Chromatography RPD Failures

Sample Number	Analyte	RPD
S99T000548	F ⁻	23%
	SO ₄ ⁻²	32.9%
S99T000559	NO ₃ ⁻	26.4%
	SO ₄ ⁻²	21.5%
S99T000537	PO ₄ ⁻³	29.3%
S99T000558	PO ₄ ⁻³	123%
	SO ₄ ⁻²	28.1%

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

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 an acid digest as indicated by an "A" 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.

High RPDs (>20%) were reported for Cr, Fe and Mn on one sample, the solid portion of 3U-99-3 (S99T000557). It should be noted that these failures occurred on the acid digested sample aliquots and in certain matrices, some metals may not be completely or uniformly dissolved by the acid digestion process. Since the concentration of Fe and Mn was less than ten times the detection limit and the precision of the analysis was decreased, no reanalysis was requested. The RPD failure for Cr was due to sample inhomogeneity and no reanalysis was requested.

Matrix spike recoveries outside of the 75% to 125% control limits as set by the TSAP (Sasaki, 1999) were reported for one sample analyzed for Al and Na. This was attributed to the high concentration of these analytes in the sample with respect to the amount of spike standard added. A post digestion spike analysis was performed as an additional instrument performance

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check. The post digestion spike recovery for Al was 95.65%. The post digestion spike recovery for Na was 101.09%. More information may be obtained by examining the raw data.

The Al and Na results were more than four times the concentration of the spike added. This high concentration made it difficult to add sufficient spike to perform a meaningful analysis. Therefore, the assessment of the accuracy of the measurement for this analyte was also made by comparison of the sample results to those of a serial dilution of the sample. The serial dilution was performed by preparing and analyzing an additional five-fold dilution of the sample. The result obtained from this analysis should be within $\pm 10\%$ of the undiluted sample result. The results of this comparison are presented in Table 4 and indicate the accuracy of this analysis was acceptable.

Table 4: ICP Serial Dilution Results

Sample ID and Analyte	Sample Result ($\mu\text{g/mL}$)	Serial Dilution Result ($\mu\text{g/mL}$)	Percent Difference (%)
3U-99-1 (S99T000552)			
Al	75.14	79.508	5.8%
Na	914.0	974.91	6.7%

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

High standard recoveries ($>125\%$) were reported for Na on the acid digest portion of the samples. These high recoveries could have been due to leaching of the glassware during the digestion process or contamination from sample handling (talcum powder from the surgeon's gloves worn by the analysts). No reanalysis was performed, as it was difficult to avoid contamination from these processes.

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.

High RPDs ($>20\%$) were reported for two samples. These high RPDs were attributed to sample inhomogeneity and no reanalyses were requested.

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

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 TOC spike recovery (126%) was reported for one sample. This spike failure was due to matrix interferences. 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 37.5 $\mu\text{Ci/g}$ (based on a bulk density of 1.64 g/mL).

A high RPD (39.6%) was reported for one subsample. 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) analyses were 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%.

^{90}Sr - Strontium 90

^{90}Sr 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 ^{90}Sr 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%.

^{241}Am - Americium 241

^{241}Am 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.

A high RPD (>20%) was reported for one sample. The sample was analyzed twice with no improvement in the RPD. No further reanalysis was requested.

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

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^{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.

A high RPD (>20%) was reported for one sample. The results were near the detection limit which decreased the precision of the analysis. No reanalysis was requested.

The standard recoveries were within the required limits of 70%-130%.

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). For waste compatibility energetics decision concerns, the exotherm/endothrm 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-103 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 5 lists the analytical procedures used for performing the sample analyses. Abbreviations for analyses are defined in the table notes.

Table 5. Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
DSC	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
NH ₃	Liquid	N/A	LA-631-001 Rev. D-0
IC	Solid Liquid	LA-505-101 Rev. G-1 N/A	LA-533-105 Rev. F-0
ICP	Solid Liquid	LA-505-163 Rev. B-1 LA-504-101 Rev. E-0	LA-505-161 Rev. C-3

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Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
ICP/MS	Solid Liquid	LA-505-163 Rev. B-1 LA-504-101 Rev. E-0	LA-506-101 Rev. A-1
TICTOC	Solid/Liquid	N/A	LA-342-100 Rev. F-2
PH	Solid Liquid	LA-505-101 Rev. G-1 N/A	LA-212-106 Rev. C-X
OH	Solid Liquid	LA-505-101 Rev. G-1 N/A	LA-211-102 Rev. D-1
Alpha	Solid Liquid	LA-549-141 Rev. G-0 N/A	LA-508-101 Rev. G-0
GEA	Solid Liquid	LA-549-101 Rev. G-0 N/A	LA-548-121 Rev. F-0
²³⁹ Pu	Solid Liquid	LA-549-101 Rev. G-0 N/A	LA-953-104 Rev. B-1
²⁴¹ Am	Solid Liquid	LA-549-101 Rev. G-0 N/A	LA-953-104 Rev. B-1
⁹⁰ Sr	Solid Liquid	LA-549-101 Rev. G-0 N/A	LA-220-101 Rev. E-4

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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
⁹⁰ Sr	= strontium 90
²³⁹ Pu	= plutonium 239
²⁴¹ Am	= americium 241

References

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SAMPLE BREAKDOWN

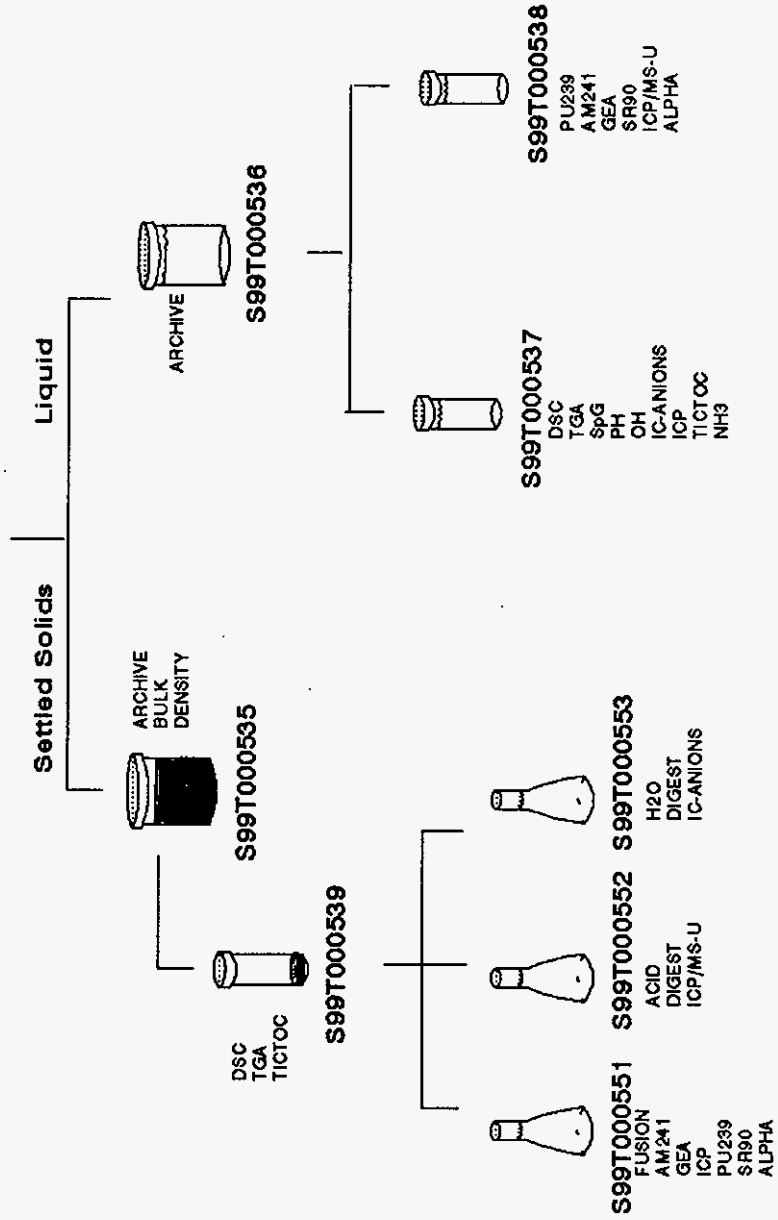
ATTACHMENT 1

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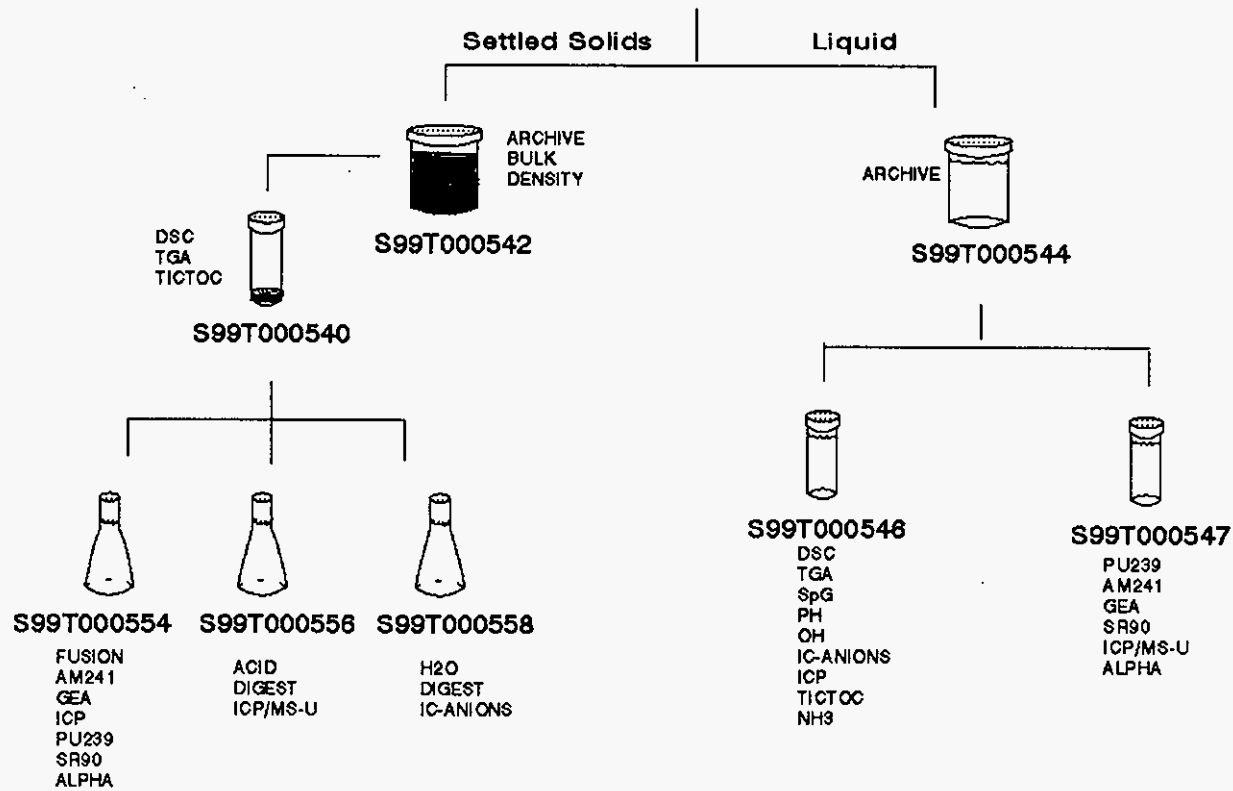
3U-99-1

S99T000532



3U-99-2

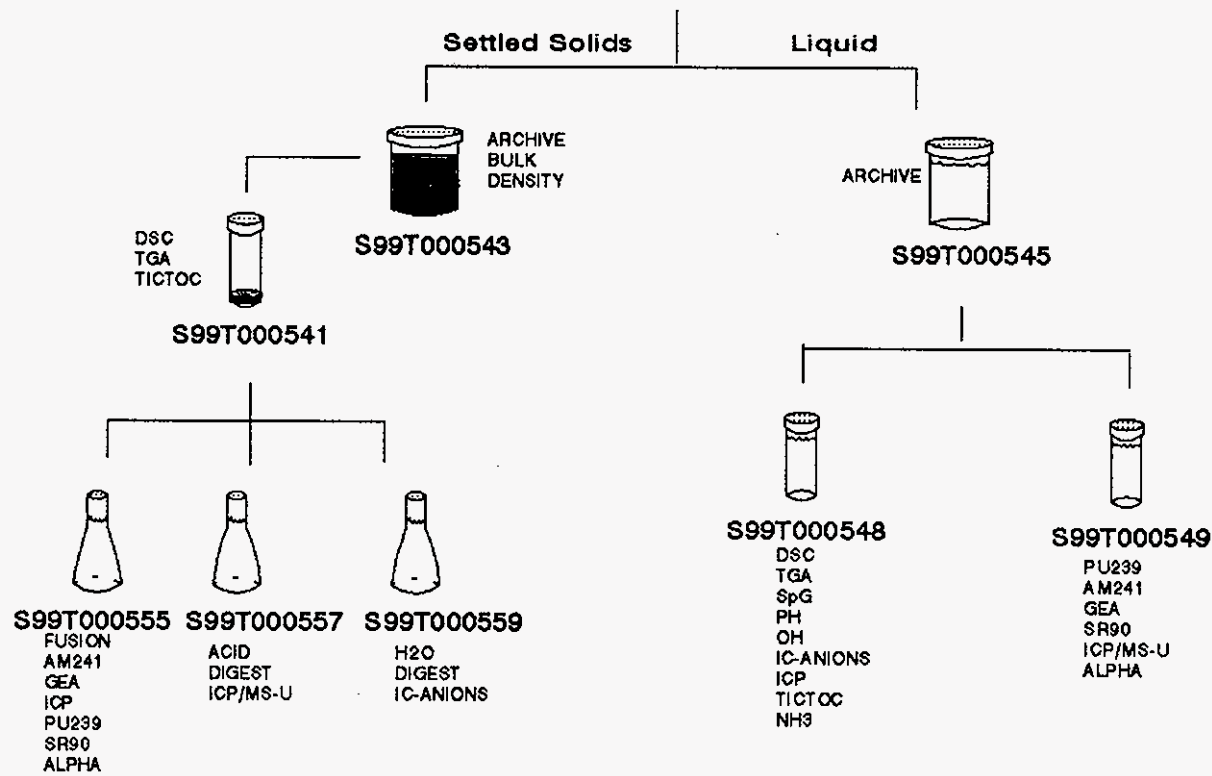
S99T000533



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3U-99-3

S99T000534



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ADDITIONAL DSC RESULTS FOR TANK U-103 GRAB SAMPLES

ATTACHMENT 2

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Attachment 2. Additional DSC Results for Tank 241-U-103 Grab Samples

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Energy Ratio *
S99T000537						
3U-99-1	Samp	72.17	247.6	1133.4	119.0	0.06
	Dup	66.91	248.3	996.2	118.1	0.07
S99T000546						
3U-99-2	Samp	94.80	249.5	972.4	119.8	0.10
	Dup	112.10	250.4	754.6	119.0	0.15
S99T000548						
3U-99-3	Samp	33.8	249.4	919.2	120.3	0.04
	Dup	36.1	249.1	1002.1	121.5	0.04

Energy Ratio = Exothermic Energy /Endothermic Energy

* - This ratio must be < 1 for Compatibility Energetics

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WASTE COMPATIBILITY CORROSION RULES

ATTACHMENT 3

HNH-1668 REV. 0

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Attachment 3. Waste Compatibility Corrosion Rules for 241-U-103 Grab Samples

Sample ID	Analyte	Result (ug/mL)	Result (M)	I_1 [NO ₃] ₁ ...	I_2 [OH] ₁ ...	I_3 [NO ₂] ₁ ...	I_4 [OH] ₁ + [NO ₂] ₁ ...
				≤ 1.0 M?	0.010 M \leq [OH] ≤ 8.0 M?	0.011 M \leq [NO ₂] ≤ 5.5 M	$[NO_3]/([OH] + [NO_2]) < 2.5$?
S99T000537 Supernatant Sample	NO ₃	1.69E+05	2.726				
	OH	2.72E+04	1.600				
	NO ₂	1.27E+05	2.761	1.0 M $<$ [NO ₃] $<$ 3.0 M?	0.1 M * [NO ₃] $<$ [OH] $<$ 10 M?		≥ 0.4 * [NO ₃]?
				YES	YES		YES
				3.0 M $<$ [NO ₃] ≤ 5.5 M?	0.3 \leq [OH] $<$ 10 M?		≥ 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	I_1 [NO ₃] ₁ ...	I_2 [OH] ₁ ...	I_3 [NO ₂] ₁ ...	I_4 [OH] ₁ + [NO ₂] ₁ ...
				≤ 1.0 M?	0.010 M \leq [OH] ≤ 8.0 M?	0.011 M \leq [NO ₂] ≤ 5.5 M	$[NO_3]/([OH] + [NO_2]) < 2.5$?
S99T000537 Supernatant Duplicate	NO ₃	1.70E+05	2.742				
	OH	2.67E+04	1.571				
	NO ₂	1.27E+05	2.761	1.0 M $<$ [NO ₃] $<$ 3.0 M?	0.1 M * [NO ₃] $<$ [OH] $<$ 10 M?		≥ 0.4 * [NO ₃]?
				YES	YES		YES
				3.0 M $<$ [NO ₃] ≤ 5.5 M?	0.3 \leq [OH] $<$ 10 M?		≥ 1.2 M?

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Attachment 3. Waste Compatibility Corrosion Rules for 241-U-103 Grab Samples

Sample ID	Analyte	Result (ug/mL)	Result (M)	I_1 [NO ₃] _T ...	I_2 [OH] _T ...	I_3 [NO ₂] _T ...	I_4 [OH] _T + [NO ₂] _T ...
				≤ 1.0 M?	0.010 M \leq [OH] ≤ 8.0 M?	0.011 M \leq [NO ₂] ≤ 5.5 M	$[NO_3]/([OH] + [NO_2]) < 2.5?$
S99T000546 Supernate Sample	NO ₃	1.43E+05	2.306				
	OH	3.26E+04	1.918				
	NO ₂	1.34E+05	2.913	1.0 M $<$ [NO ₃] ≤ 3.0 M?	0.1 M * [NO ₃] \leq [OH] < 10 M?		≥ 0.4 * [NO ₃]?
				YES	YES		YES
				3.0 M $<$ [NO ₃] ≤ 5.5 M?	0.3 \leq [OH] < 10 M?		≥ 1.2 M?

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Sample ID	Analyte	Result (ug/mL)	Result (M)	I_1 [NO ₃] _T ...	I_2 [OH] _T ...	I_3 [NO ₂] _T ...	I_4 [OH] _T + [NO ₂] _T ...
				≤ 1.0 M?	0.010 M \leq [OH] ≤ 8.0 M?	0.011 M \leq [NO ₂] ≤ 5.5 M	$[NO_3]/([OH] + [NO_2]) < 2.5?$
S99T000546 Supernate Duplicate	NO ₃	1.43E+05	2.306				
	OH	3.17E+04	1.865				
	NO ₂	1.35E+05	2.935	1.0 M $<$ [NO ₃] ≤ 3.0 M?	0.1 M * [NO ₃] \leq [OH] < 10 M?		≥ 0.4 * [NO ₃]?
				YES	YES		YES
				3.0 M $<$ [NO ₃] ≤ 5.5 M?	0.3 \leq [OH] < 10 M?		≥ 1.2 M?

Attachment 3. Waste Compatibility Corrosion Rules for 241-U-103 Grab Samples

Sample ID	Analyte	Result (ug/mL)	Result (M)
S99T000548	NO ₂	1.32E+05	2.129
	OH	3.19E+04	1.876
	NO ₃	1.38E+05	3.000
Supernate	OH	3.47E+04	2.041
Supernate	NO ₂	1.61E+05	3.500
Duplicate	NO ₂	1.61E+05	3.500
	OH	3.47E+04	2.041
	NO ₃	1.56E+05	2.516
Sample ID	Analyte	Result (ug/mL)	Result (M)
			⇒ 1.0 M?
			0.010 M ⇒ [OH] ⇒ 8.0 M?
			0.011 M ⇒ [NO ₂] ⇒ 5.5 M
			[NO ₂]/([OH] + [NO ₂]) < 2.5?
			1. [NO ₂]
			1. [OH] + [NO ₂]
			YES
			1.0 M < [NO ₂] ⇒ 3.0 M?
			0.1 M * [NO ₂] ⇒ [OH] < 10 M?
			YES
			3.0 M < [NO ₂] ⇒ 5.5 M?
			0.3 ⇒ [OH] < 10 M?
			⇒ 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)
S99T000548	NO ₂	1.56E+05	2.516
	OH	3.47E+04	2.041
	NO ₃	1.61E+05	3.500
Supernate	OH	3.47E+04	2.041
Supernate	NO ₂	1.61E+05	3.500
Duplicate	NO ₂	1.61E+05	3.500
	OH	3.47E+04	2.041
	NO ₃	1.56E+05	2.516
Sample ID	Analyte	Result (ug/mL)	Result (M)
			⇒ 1.0 M?
			0.010 M ⇒ [OH] ⇒ 8.0 M?
			0.011 M ⇒ [NO ₂] ⇒ 5.5 M
			[NO ₂]/([OH] + [NO ₂]) < 2.5?
			1. [NO ₂]
			1. [OH] + [NO ₂]
			YES
			1.0 M < [NO ₂] ⇒ 3.0 M?
			0.1 M * [NO ₂] ⇒ [OH] < 10 M?
			YES
			3.0 M < [NO ₂] ⇒ 5.5 M?
			0.3 ⇒ [OH] < 10 M?
			⇒ 1.2 M?

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SAMPLE DATA SUMMARY

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Table 1. Data Summary Report.
U-103 GRAB2

RISER: 13
SEGMENT #: 3U-99-1

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000537		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	1.48e+02	137.4	142.8	7.56	n/a	n/a	n/a
S99T000537		DSC Exotherm on Perkin Elmer	Joules/g	95.71	n/a	72.17	66.91	69.54	7.56	n/a	n/a	n/a
S99T000537		OH- by Pot. Titration	ug/mL	105.1	<2500.0	2.72e+04	2.67e+04	2.70e+04	1.86	n/a	2.50e+04	n/a
S99T000537		Specific Gravity	Sp.G.	98.63	n/a	1.423	1.459	1.441	2.50	n/a	1.00e-03	n/a
S99T000537		% Water by TGA on Perkin Elmer	%	98.96	n/a	51.34	51.28	51.31	0.12	n/a	n/a	n/a
S99T000537		TIC by Acid/Coulometry	ug/mL	99.50	4.100	3.31e+03	3.59e+03	3.45e+03	8.12	113.0	5.000	n/a
S99T000537		TOC by Persulfate/Coulometry	ug/mL	95.33	2.300	1.10e+04	1.15e+04	1.12e+04	4.44	126.0	40.00	n/a
S99T000537	D	Aluminium-ICP-Acid Dil.	ug/mL	98.80	<5.00e-02	3.69e+04	3.70e+04	3.70e+04	0.27	98.10	301.0	n/a
S99T000537	D	Chromium-ICP-Acid Dil.	ug/mL	98.80	<1.00e-02	1.08e+02	113.0	110.5	4.52	96.80	6.010	n/a
S99T000537	D	Iron-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	98.70	30.10	n/a
S99T000537	D	Manganese-ICP-Acid Dil.	ug/mL	95.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	90.80	6.010	n/a
S99T000537	D	Sodium-ICP-Acid Dil.	ug/mL	104.2	<1.00e-01	2.34e+05	2.29e+05	2.32e+05	2.16	105.0	601.0	n/a
S99T000537	D	Nickel-ICP-Acid Dil.	ug/mL	98.20	<2.00e-02	1.57e+02	159.0	158.0	1.27	94.10	12.00	n/a
S99T000537	D	Zirconium-ICP-Acid Dil.	ug/mL	97.00	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	95.80	6.010	n/a
S99T000537		Fluoride-IC-Dionex 4000/4500	ug/mL	103.8	<1.20e-02	1.12e+03	1.01e+03	1.06e+03	10.3	100.3	61.81	n/a
S99T000537		Chloride-IC-Dionex 4000/4500	ug/mL	109.1	<1.70e-02	1.04e+04	1.04e+04	1.04e+04	0.00	104.0	87.57	n/a
S99T000537		Nitrite-IC - Dionex 4000/4500	ug/mL	101.7	<1.08e-01	1.27e+05	1.27e+05	1.27e+05	0.00	97.76	556.3	n/a
S99T000537		Nitrate by IC-Dionex 4000/4500	ug/mL	100.3	<1.39e-01	1.69e+05	1.70e+05	1.69e+05	0.59	92.81	716.0	n/a
S99T000537		Phosphate-IC-Dionex 4000/4500	ug/mL	106.4	<1.20e-01	1.03e+03	767.0	899.0	29.3	102.4	618.1	n/a
S99T000537		Sulfate by IC-Dionex 4000/4500	ug/mL	103.6	<1.38e-01	3.96e+03	3.86e+03	3.91e+03	2.56	100.0	710.8	n/a
S99T000538		Strontium-89/90 High Level	uCi/mL	100.0	7.75e-04	8.980	9.080	9.030	1.11	n/a	6.14e-04	3.01E-01
S99T000538		Pu-239/240 by TRU-SPEC Resin	uCi/mL	111.9	<3.10e-05	4.58e-04	4.53e-04	4.56e-04	1.10	n/a	4.73e-05	2.55E+00
S99T000538	D	Uranium-233 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<4.86e-01	<4.86e-1	n/a	n/a	n/a	4.86e-01	n/a
S99T000538	D	Uranium-234 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<4.86e-01	<4.86e-1	n/a	n/a	n/a	4.86e-01	n/a
S99T000538	D	Uranium-235 by ICP/MS Acid Add	ug/mL	102.1	<1.20e-05	<4.86e-01	<4.86e-1	n/a	n/a	102.7	4.86e-01	n/a
S99T000538	D	Uranium-236 by ICP/MS Acid Add	ug/mL	n/a	<1.60e-05	<6.48e-01	<6.48e-1	n/a	n/a	n/a	6.48e-01	n/a
S99T000538	D	Uranium-238 by ICP/MS Acid Add	ug/mL	102.0	<1.20e-05	7.29e-01	5.87e-01	6.58e-01	21.6	102.5	4.86e-01	n/a
S99T000538		Cesium-137 by GEA	uCi/mL	103.0	<8.42e-03	4.19e+02	415.0	417.0	0.96	n/a	n/a	0.100
S99T000538		Am-241 by Extraction	uCi/mL	94.39	<6.38e-04	1.52e-02	1.62e-02	1.57e-02	6.37	n/a	1.00e-03	2.33E+00
S99T000538		Alpha in Liquid Samples	uCi/mL	91.57	<1.26e-02	<2.53e-02	2.91e-02	n/a	n/a	93.44	3.10e-02	1.67E+02

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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%
S99T000535		Bulk Density of Sample	g/mL	n/a	n/a	1.640	n/a	n/a	n/a	n/a	5.00e-01	n/a
S99T000539		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	68.50	86.26	77.38	23.0	n/a	n/a	n/a
S99T000539		DSC Exotherm on Perkin Elmer	Joules/g	97.40	n/a	41.32	52.03	46.67	22.9	n/a	n/a	n/a
S99T000539		% Water by TGA on Perkin Elmer	%	98.77	n/a	46.15	33.21	39.68	32.6	n/a	n/a	n/a
S99T000539		TIC by Acid/Coulometry	ug/g	98.84	4.100	2.40e+03	2.17e+03	2.28e+03	10.1	98.40	5.000	n/a
S99T000539		TOC by Persulfate/Coulometry	ug/g	99.00	15.30	5.54e+03	6.52e+03	6.03e+03	16.3	81.70	40.00	n/a
S99T000551	F	Strontium-89/90 High Level	uCi/g	99.88	<2.42e-02	7.080	7.290	7.185	2.92	n/a	3.10e-02	2.38E+00
S99T000551	F	Pu-239/240 by TRU-SPEC Resin	uCi/g	113.5	<1.24e-03	2.84e-03	3.04e-03	2.94e-03	6.80	n/a	1.00e-03	5.84E+00
S99T000551	F	Cesium-137 by GEA	uCi/g	100.2	<1.11e-01	1.41e+02	153.0	146.8	8.16	n/a	n/a	0.830
S99T000551	F	Am-241 by Extraction	uCi/g	100.0	<1.40e-03	1.81e-02	1.99e-02	1.90e-02	9.47	n/a	3.00e-03	2.88E+00

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Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000551	F		Alpha of Digested Solid	uCi/g	94.02	<6.31e-03	2.54e-02	2.92e-02	2.73e-02	13.9	77.89	8.00e-03	4.45E+01
S99T000552	A		Uranium-233 by ICP/MS AcidD159	ug/g	n/a	<1.20e-04	<4.91e-01	<4.89e-1	n/a	n/a	n/a	4.91e-01	n/a
S99T000552	A		Uranium-234 by ICP/MS AcidD159	ug/g	n/a	<1.20e-04	<4.91e-01	<4.89e-1	n/a	n/a	n/a	4.91e-01	n/a
S99T000552	A		Uranium-235 by ICP/MS AcidD159	ug/g	100.7	<1.20e-04	<4.91e-01	<4.89e-1	n/a	n/a	94.94	4.91e-01	n/a
S99T000552	A		Uranium-236 by ICP/MS AcidD159	ug/g	n/a	<1.60e-04	<6.55e-01	<6.52e-1	n/a	n/a	n/a	6.55e-01	n/a
S99T000552	A		Uranium-238 by ICP/MS AcidD159	ug/g	95.70	<1.20e-04	20.55	18.20	19.38	12.4	89.50	4.91e-01	n/a
S99T000552	A		Aluminium -ICP-Acid Digest	ug/g	92.80	1.30e-01	1.53e+04	1.31e+04	1.42e+04	15.5	-1.930e2	30.60	n/a
S99T000552	A		Chromium -ICP-Acid Digest	ug/g	91.00	<1.00e-02	5.04e+02	452.0	478.0	10.9	86.40	6.120	n/a
S99T000552	A		Iron -ICP-Acid Digest	ug/g	89.40	<5.00e-02	46.20	42.20	44.20	9.05	97.06	30.60	n/a
S99T000552	A		Manganese -ICP-Acid Digest	ug/g	86.60	<1.00e-02	10.90	9.660	10.28	12.1	88.02	6.120	n/a
S99T000552	A		Sodium -ICP-Acid Digest	ug/g	126.4	1.000	1.86e+05	1.91e+05	1.89e+05	2.65	180.8	61.20	n/a
S99T000552	A		Nickel -ICP-Acid Digest	ug/g	88.40	<2.00e-02	63.90	55.50	59.70	14.1	92.54	12.20	n/a
S99T000552	A		Zirconium -ICP-Acid Digest	ug/g	90.80	<1.00e-02	9.520	8.870	9.195	7.07	92.32	6.120	n/a
S99T000553	W		OH- by Pot. Titration	ug/g	102.6	<8033.0	1.04e+04	9.94e+03	1.02e+04	4.52	n/a	8.03e+03	n/a
S99T000553	W		pH of the Water Leach of Solid	pH	n/a	n/a	11.72	11.65	11.69	0.60	n/a	1.00e-02	n/a
S99T000553	W		Fluoride-IC-Dionex 4000/4500	ug/g	102.1	<1.20e-02	5.04e+02	457.0	480.4	9.78	107.9	94.83	n/a
S99T000553	W		Chloride-IC-Dionex 4000/4500	ug/g	104.0	<1.70e-02	4.21e+03	3.91e+03	4.06e+03	7.39	99.88	134.4	n/a
S99T000553	W		Nitrite-IC - Dionex 4000/4500	ug/g	97.20	5.63e-01	5.00e+04	4.56e+04	4.78e+04	9.21	101.5	853.6	n/a
S99T000553	W		Nitrate by IC-Dionex 4000/4500	ug/g	97.77	<1.39e-01	3.19e+05	3.28e+05	3.24e+05	2.78	89.21	1.10e+03	n/a
S99T000553	W		Phosphate-IC-Dionex 4000/4500	ug/g	102.0	<1.20e-01	4.16e+04	4.01e+04	4.09e+04	3.67	105.3	948.3	n/a
S99T000553	W		Sulfate by IC-Dionex 4000/4500	ug/g	101.2	<1.38e-01	1.26e+03	1.29e+03	1.28e+03	2.35	100.2	1.09e+03	n/a

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Table 1. Data Summary Report.
U-103 GRAB2

RISER: 13
SEGMENT #: 3U-99-1

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000537		Ammonia by ISE-Std Additions	ug/mL	101.7	<50.00	< 50.00	<5.00E+1	n/a	n/a	75.49	50.00	n/a

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29.1

Table 1. Data Summary Report.
U-103 GRAB2

RISER: 13
SEGMENT #: 3U-99-2

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000546		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	1.88e+02	222.0	204.9	16.7	n/a	n/a	n/a
S99T000546		DSC Exotherm on Perkin Elmer	Joules/g	95.71	n/a	94.80	112.1	103.4	16.7	n/a	n/a	n/a
S99T000546		OH- by Pot. Titration	ug/mL	105.1	<2500.0	3.26e+04	3.17e+04	3.22e+04	2.80	n/a	2.50e+03	n/a
S99T000546		Specific Gravity	Sp.G.	98.63	n/a	1.439	1.456	1.448	1.17	n/a	1.00e-03	n/a
S99T000546		% Water by TGA on Perkin Elmer	%	98.96	n/a	49.62	49.40	49.51	0.44	n/a	n/a	n/a
S99T000546		TIC by Acid/Coulometry	ug/mL	99.50	4.100	3.04e+03	3.09e+03	3.06e+03	1.63	n/a	5.000	n/a
S99T000546		TOC by Persulfate/Coulometry	ug/mL	95.33	2.300	1.29e+04	1.31e+04	1.30e+04	1.54	n/a	40.00	n/a
S99T000546	D	Aluminium-ICP-Acid Dil.	ug/mL	98.80	<5.00e-02	3.85e+04	4.24e+04	4.04e+04	9.64	n/a	30.10	n/a
S99T000546	D	Chromium-ICP-Acid Dil.	ug/mL	98.80	<1.00e-02	1.02e+02	114.0	108.0	11.1	n/a	6.010	n/a
S99T000546	D	Iron-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S99T000546	D	Manganese-ICP-Acid Dil.	ug/mL	95.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000546	D	Sodium-ICP-Acid Dil.	ug/mL	104.2	<1.00e-01	2.12e+05	2.34e+05	2.23e+05	9.87	n/a	60.10	n/a
S99T000546	D	Nickel-ICP-Acid Dil.	ug/mL	98.20	<2.00e-02	1.58e+02	174.0	166.0	9.64	n/a	12.00	n/a
S99T000546	D	Zirconium-ICP-Acid Dil.	ug/mL	97.00	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000546		Fluoride-IC-Dionex 4000/4500	ug/mL	103.8	<1.20e-02	1.26e+03	1.17e+03	1.22e+03	7.41	n/a	61.81	n/a
S99T000546		Chloride-IC-Dionex 4000/4500	ug/mL	109.1	<1.70e-02	1.11e+04	1.13e+04	1.12e+04	1.79	n/a	87.57	n/a
S99T000546		Nitrite-IC - Dionex 4000/4500	ug/mL	101.7	<1.08e-01	1.34e+05	1.35e+05	1.35e+05	0.74	n/a	556.3	n/a
S99T000546		Nitrate by IC-Dionex 4000/4500	ug/mL	100.3	<1.39e-01	1.43e+05	1.43e+05	1.43e+05	0.00	n/a	716.0	n/a
S99T000546		Phosphate-IC-Dionex 4000/4500	ug/mL	106.4	<1.20e-01	7.71e+02	780.0	775.5	1.16	n/a	618.1	n/a
S99T000546		Sulfate by IC-Dionex 4000/4500	ug/mL	103.6	<1.38e-01	2.50e+03	2.58e+03	2.54e+03	3.15	n/a	710.8	n/a
S99T000547		Strontium-89/90 High Level	uCi/mL	100.0	7.75e-04	10.80	11.10	10.95	2.74	n/a	6.02e-04	2.72E-01
S99T000547		Pu-239/240 by TRU-SPEC Resin	uCi/mL	111.9	<3.10e-05	4.43e-04	5.16e-04	4.80e-04	15.2	n/a	4.61e-05	2.58E+00
S99T000547	D	Uranium-233 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<4.86e-01	<4.86e-1	n/a	n/a	n/a	4.86e-01	n/a
S99T000547	D	Uranium-234 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<4.86e-01	<4.86e-1	n/a	n/a	n/a	4.86e-01	n/a
S99T000547	D	Uranium-235 by ICP/MS Acid Add	ug/mL	102.1	<1.20e-05	<4.86e-01	<4.86e-1	n/a	n/a	n/a	4.86e-01	n/a
S99T000547	D	Uranium-236 by ICP/MS Acid Add	ug/mL	n/a	<1.60e-05	<6.48e-01	<6.48e-1	n/a	n/a	n/a	6.48e-01	n/a
S99T000547	D	Uranium-238 by ICP/MS Acid Add	ug/mL	102.0	<1.20e-05	9.76e-01	1.010	9.93e-01	3.42	n/a	4.86e-01	n/a
S99T000547		Cesium-137 by GEA	uCi/mL	103.0	<8.42e-03	5.14e+02	515.0	514.5	0.19	n/a	n/a	0.0900
S99T000547		Am-241 by Extraction	uCi/mL	94.39	<6.38e-04	1.96e-02	1.95e-02	1.95e-02	0.51	n/a	2.00e-03	2.25E+00
S99T000547		Alpha in Liquid Samples	uCi/mL	91.57	<1.26e-02	2.08e-02	<1.54E-2	n/a	n/a	n/a	3.10e-02	1.26E+02

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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%
S99T000540		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	1.41e+02	95.32	118.1	38.5	n/a	n/a	n/a
S99T000540		DSC Exotherm on Perkin Elmer	Joules/g	97.40	n/a	72.69	49.20	60.95	38.5	n/a	n/a	n/a
S99T000540		% Water by TGA on Perkin Elmer	%	98.77	n/a	48.30	48.47	48.38	0.35	n/a	n/a	n/a
S99T000540		TIC by Acid/Coulometry	ug/g	100.5	3.00e-01	2.13e+03	2.02e+03	2.08e+03	5.30	n/a	5.000	n/a
S99T000540		TOC by Persulfate/Coulometry	ug/g	94.33	6.00e-01	9.86e+03	9.25e+03	9.56e+03	6.38	n/a	40.00	n/a
S99T000542		Bulk Density of Sample	g/mL	n/a	n/a	1.500	n/a	n/a	n/a	n/a	5.00e-01	n/a
S99T000554	F	Strontium-89/90 High Level	uCi/g	99.88	<2.42e-02	12.30	14.60	13.45	17.1	n/a	6.00e-02	2.52E+00
S99T000554	F	Pu-239/240 by TRU-SPEC Resin	uCi/g	113.5	<1.24e-03	2.95e-03	3.52e-03	3.24e-03	17.6	n/a	1.00e-03	6.79E+00
S99T000554	F	Cesium-137 by GEA	uCi/g	100.2	<1.11e-01	3.00e+02	313.0	306.4	4.24	n/a	n/a	0.560
S99T000554	F	Am-241 by Extraction	uCi/g	90.36	<1.59e-03	2.05e-02	2.92e-02	2.49e-02	35.0	n/a	3.00e-03	3.54E+00

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000554	F		Alpha of Digested Solid	uCi/g	94.02	<6.31e-03	4.56e-02	4.04e-02	4.30e-02	12.1	n/a	1.90e-02	5.54E+01
S99T000556	A		Uranium-233 by ICP/MS AcidD159	ug/g	n/a	<1.20e-04	<4.76e-01	<4.48e-1	n/a	n/a	n/a	4.76e-01	n/a
S99T000556	A		Uranium-234 by ICP/MS AcidD159	ug/g	n/a	<1.20e-04	<4.76e-01	<4.48e-1	n/a	n/a	n/a	4.76e-01	n/a
S99T000556	A		Uranium-235 by ICP/MS AcidD159	ug/g	100.7	<1.20e-04	<4.76e-01	<4.48e-1	n/a	n/a	n/a	4.76e-01	n/a
S99T000556	A		Uranium-236 by ICP/MS AcidD159	ug/g	n/a	<1.60e-04	<6.34e-01	<5.97e-1	n/a	n/a	n/a	6.34e-01	n/a
S99T000556	A		Uranium-238 by ICP/MS AcidD159	ug/g	95.70	<1.20e-04	28.79	26.30	27.55	9.07	n/a	4.76e-01	n/a
S99T000556	A		Aluminium -ICP-Acid Digest	ug/g	92.80	1.30e-01	2.19e+04	2.34e+04	2.26e+04	6.62	n/a	19.70	n/a
S99T000556	A		Chromium -ICP-Acid Digest	ug/g	91.00	<1.00e-02	5.61e+02	557.0	559.0	0.72	n/a	3.940	n/a
S99T000556	A		Iron -ICP-Acid Digest	ug/g	89.40	<5.00e-02	58.60	51.70	55.15	12.5	n/a	19.70	n/a
S99T000556	A		Manganese -ICP-Acid Digest	ug/g	86.60	<1.00e-02	16.30	16.10	16.20	1.23	n/a	3.940	n/a
S99T000556	A		Sodium -ICP-Acid Digest	ug/g	126.4	1.000	1.53e+05	1.58e+05	1.56e+05	3.22	n/a	39.40	n/a
S99T000556	A		Nickel -ICP-Acid Digest	ug/g	88.40	<2.00e-02	91.40	94.80	93.10	3.65	n/a	7.880	n/a
S99T000556	A		Zirconium -ICP-Acid Digest	ug/g	90.80	<1.00e-02	5.480	6.000	5.740	9.06	n/a	3.940	n/a
S99T000558	W		OH- by Pot. Titration	ug/g	102.6	<8033.0	1.66e+04	1.94e+04	1.80e+04	15.6	n/a	8.00e+03	n/a
S99T000558	W		pH of the Water Leach of Solid	pH	n/a	n/a	11.79	11.77	11.78	0.17	n/a	1.00e-02	n/a
S99T000558	W		Fluoride-IC-Dionex 4000/4500	ug/g	102.1	<1.20e-02	8.53e+02	904.0	878.7	5.81	n/a	94.51	n/a
S99T000558	W		Chloride-IC-Dionex 4000/4500	ug/g	104.0	<1.70e-02	7.95e+03	8.56e+03	8.26e+03	7.39	n/a	133.9	n/a
S99T000558	W		Nitrite-IC - Dionex 4000/4500	ug/g	97.20	5.63e-01	9.92e+04	1.05e+05	1.02e+05	5.68	n/a	850.8	n/a
S99T000558	W		Nitrate by IC-Dionex 4000/4500	ug/g	97.77	<1.39e-01	1.34e+05	1.35e+05	1.34e+05	0.74	n/a	1.10e+03	n/a
S99T000558	W		Phosphate-IC-Dionex 4000/4500	ug/g	102.0	<1.20e-01	2.08e+04	4.95e+03	1.29e+04	123	n/a	945.1	n/a
S99T000558	W		Sulfate by IC-Dionex 4000/4500	ug/g	101.2	<1.38e-01	1.56e+03	2.07e+03	1.82e+03	28.1	n/a	1.09e+03	n/a

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Table 1. Data Summary Report.
U-103 GRAB2

RISER: 13
SEGMENT #: 3U-99-2

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000546		Ammonia by ISE-Std Additions	ug/mL	82.11	<50.00	68.60	<5.00E+1	n/a	n/a	n/a	50.00	n/a

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Table 1. Data Summary Report.
U-103 GRAB2

RISER: 13
SEGMENT #: 3U-99-3

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S99T000548			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	66.24	70.60	68.42	6.37	n/a	n/a	n/a	n/a
S99T000548			DSC Exotherm on Perkin Elmer	Joules/g	95.71	n/a	33.82	36.05	34.94	6.38	n/a	n/a	n/a	n/a
S99T000548			OH- by Pot. Titration	ug/mL	105.1	<2500.0	3.19e+04	3.47e+04	3.33e+04	8.41	n/a	2.50e+03	n/a	n/a
S99T000548			Specific Gravity	Sp.G.	98.63	n/a	1.433	1.441	1.437	0.56	n/a	1.00e-03	n/a	n/a
S99T000548			% Water by TGA on Perkin Elmer	%	99.06	n/a	49.20	48.68	48.94	1.06	n/a	n/a	n/a	n/a
S99T000548			TIC by Acid/Coulometry	ug/mL	99.50	4.100	2.94e+03	2.77e+03	2.86e+03	5.95	n/a	5.000	n/a	n/a
S99T000548			TOC by Persulfate/Coulometry	ug/mL	95.33	2.300	1.31e+04	1.29e+04	1.30e+04	1.54	n/a	40.00	n/a	n/a
S99T000548	D		Aluminium-ICP-Acid Dil.	ug/mL	98.80	<5.00e-02	4.64e+04	4.42e+04	4.53e+04	4.86	n/a	30.10	n/a	n/a
S99T000548	D		Chromium-ICP-Acid Dil.	ug/mL	98.80	<1.00e-02	1.08e+02	105.0	106.5	2.82	n/a	6.010	n/a	n/a
S99T000548	D		Iron-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a	n/a
S99T000548	D		Manganese-ICP-Acid Dil.	ug/mL	95.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a	n/a
S99T000548	D		Sodium-ICP-Acid Dil.	ug/mL	104.2	<1.00e-01	2.45e+05	2.30e+05	2.38e+05	6.32	n/a	60.10	n/a	n/a
S99T000548	D		Nickel-ICP-Acid Dil.	ug/mL	98.20	<2.00e-02	1.87e+02	181.0	184.0	3.26	n/a	12.00	n/a	n/a
S99T000548	D		Zirconium-ICP-Acid Dil.	ug/mL	97.00	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a	n/a
S99T000548			Fluoride-IC-Dionex 4000/4500	ug/mL	103.8	<1.20e-02	8.65e+02	1.09e+03	977.5	23.0	n/a	61.81	n/a	n/a
S99T000548			Chloride-IC-Dionex 4000/4500	ug/mL	109.1	<1.70e-02	1.16e+04	1.35e+04	1.25e+04	15.1	n/a	87.57	n/a	n/a
S99T000548			Nitrite-IC - Dionex 4000/4500	ug/mL	101.7	<1.08e-01	1.38e+05	1.61e+05	1.49e+05	15.4	n/a	556.3	n/a	n/a
S99T000548			Nitrate by IC-Dionex 4000/4500	ug/mL	100.3	<1.39e-01	1.32e+05	1.56e+05	1.44e+05	16.7	n/a	716.0	n/a	n/a
S99T000548			Phosphate-IC-Dionex 4000/4500	ug/mL	106.4	<1.20e-01	<6.18e+02	<6.18e2	n/a	n/a	n/a	618.1	n/a	n/a
S99T000548			Sulfate by IC-Dionex 4000/4500	ug/mL	103.6	<1.38e-01	1.32e+03	1.84e+03	1.58e+03	32.9	n/a	710.8	n/a	n/a
S99T000549			Strontium-89/90 High Level	uCi/mL	100.0	7.75e-04	11.40	11.70	11.55	2.60	n/a	6.03e-04	2.65E-01	
S99T000549			Pu-239/240 by TRU-SPEC Resin	uCi/mL	111.9	<3.10e-05	5.14e-04	4.97e-04	5.06e-04	3.36	n/a	5.06e-05	2.49E+00	
S99T000549	D		Uranium-234 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<4.86e-01	<4.86e-1	n/a	n/a	n/a	4.86e-01	n/a	n/a
S99T000549	D		Uranium-235 by ICP/MS Acid Add	ug/mL	n/a	<1.20e-05	<4.86e-01	<4.86e-1	n/a	n/a	n/a	4.86e-01	n/a	n/a
S99T000549	D		Uranium-235 by ICP/MS Acid Add	ug/mL	102.1	<1.20e-05	<4.86e-01	<4.86e-1	n/a	n/a	n/a	4.86e-01	n/a	n/a
S99T000549	D		Uranium-236 by ICP/MS Acid Add	ug/mL	n/a	<1.60e-05	<6.48e-01	<6.48e-1	n/a	n/a	n/a	6.48e-01	n/a	n/a
S99T000549	D		Uranium-238 by ICP/MS Acid Add	ug/mL	102.0	<1.20e-05	1.458	1.360	1.409	7.09	n/a	4.86e-01	n/a	n/a
S99T000549			Cesium-137 by GEA	uCi/mL	103.0	<8.42e-03	5.61e+02	560.0	560.5	0.18	n/a	n/a	0.0900	
S99T000549			Am-241 by Extraction	uCi/mL	94.39	<6.38e-04	2.08e-02	2.06e-02	2.07e-02	0.97	n/a	2.00e-03	2.22E+00	
S99T000549			Alpha in Liquid Samples	uCi/mL	91.57	<1.26e-02	3.42e-02	2.29e-02	2.85e-02	39.6	n/a	3.10e-02	8.81E+01	

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%
S99T000541			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	2.09e+02	184.0	196.6	12.8	n/a	n/a	n/a	n/a
S99T000541			DSC Exotherm on Perkin Elmer	Joules/g	98.31	n/a	1.08e+02	94.74	101.2	12.8	n/a	n/a	n/a	n/a
S99T000541			% Water by TGA on Perkin Elmer	%	98.25	n/a	48.57	48.45	48.51	0.25	n/a	n/a	n/a	n/a
S99T000541			TIC by Acid/Coulometry	ug/g	100.5	3.00e-01	1.67e+03	1.80e+03	1.74e+03	7.49	n/a	5.000	n/a	n/a
S99T000541			TOC by Persulfate/Coulometry	ug/g	94.33	6.00e-01	8.89e+03	9.44e+03	9.16e+03	6.00	n/a	40.00	n/a	n/a
S99T000543			Bulk Density of Sample	g/mL	n/a	n/a	1.500	n/a	n/a	n/a	n/a	5.00e-01	n/a	n/a
S99T000555	F		Strontium-89/90 High Level	uCi/g	99.88	<2.42e-02	9.800	9.590	9.695	2.17	n/a	6.30e-02	2.89E+00	
S99T000555	F		Pu-239/240 by TRU-SPEC Resin	uCi/g	113.5	<1.24e-03	1.27e-03	1.76e-03	1.52e-03	32.3	n/a	1.00e-03	8.49E+00	
S99T000555	F		Cesium-137 by GEA	uCi/g	100.2	<1.11e-01	3.17e+02	292.0	304.5	8.21	n/a	n/a	0.560	
S99T000555	F		Am-241 by Extraction	uCi/g	90.36	<1.59e-03	1.76e-02	1.70e-02	1.73e-02	3.47	n/a	3.00e-03	2.93E+00	

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Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000555	F	Alpha of Digested Solid	uCi/g	94.02	<6.31e-03	4.87e-02	3.38e-02	4.12e-02	36.1	n/a	2.00e-02	5.54E+01
S99T000557	A	Uranium-233 by ICP/MS AcidD159	ug/g	n/a	<1.20e-04	<4.93e-01	<4.69e-1	n/a	n/a	n/a	4.93e-01	n/a
S99T000557	A	Uranium-234 by ICP/MS AcidD159	ug/g	n/a	<1.20e-04	<4.93e-01	<4.69e-1	n/a	n/a	n/a	4.93e-01	n/a
S99T000557	A	Uranium-235 by ICP/MS AcidD159	ug/g	100.7	<1.20e-04	<4.93e-01	<4.69e-1	n/a	n/a	n/a	4.93e-01	n/a
S99T000557	A	Uranium-236 by ICP/MS AcidD159	ug/g	n/a	<1.60e-04	<6.57e-01	<6.25e-1	n/a	n/a	n/a	6.57e-01	n/a
S99T000557	A	Uranium-238 by ICP/MS AcidD159	ug/g	95.70	<1.20e-04	45.36	20.90	33.13	73.9	n/a	4.93e-01	n/a
S99T000557	A	Aluminium -ICP-Acid Digest	ug/g	92.80	1.30e-01	2.42e+04	2.63e+04	2.52e+04	8.32	n/a	20.40	n/a
S99T000557	A	Chromium -ICP-Acid Digest	ug/g	91.00	<1.00e-02	9.31e+02	442.0	686.5	71.2	n/a	4.080	n/a
S99T000557	A	Iron -ICP-Acid Digest	ug/g	89.40	<5.00e-02	92.60	48.50	70.55	62.5	n/a	20.40	n/a
S99T000557	A	Manganese -ICP-Acid Digest	ug/g	86.60	<1.00e-02	29.80	13.80	21.80	73.4	n/a	4.080	n/a
S99T000557	A	Sodium -ICP-Acid Digest	ug/g	126.4	1.000	1.55e+05	1.47e+05	1.51e+05	5.30	n/a	40.80	n/a
S99T000557	A	Nickel -ICP-Acid Digest	ug/g	88.40	<2.00e-02	1.00e+02	110.0	105.0	9.52	n/a	8.160	n/a
S99T000557	A	Zirconium -ICP-Acid Digest	ug/g	90.80	<1.00e-02	6.980	<3.89e0	n/a	n/a	n/a	4.080	n/a
S99T000559	W	OH- by Pot. Titration	ug/g	102.6	<8033.0	1.62e+04	1.87e+04	1.74e+04	14.3	n/a	8.45e+03	n/a
S99T000559	W	pH of the Water Leach of Solid	pH	n/a	n/a	11.77	11.78	11.77	0.08	n/a	1.00e-02	n/a
S99T000559	W	Fluoride-IC-Dionex 4000/4500	ug/g	102.1	<1.20e-02	7.92e+02	793.0	792.5	0.13	n/a	99.79	n/a
S99T000559	W	Chloride-IC-Dionex 4000/4500	ug/g	104.0	<1.70e-02	7.20e+03	8.11e+03	7.66e+03	11.9	n/a	141.4	n/a
S99T000559	W	Nitrite-IC - Dionex 4000/4500	ug/g	97.20	5.63e-01	8.52e+04	9.96e+04	9.24e+04	15.6	n/a	898.3	n/a
S99T000559	W	Nitrate by IC-Dionex 4000/4500	ug/g	97.77	<1.39e-01	1.46e+05	1.12e+05	1.29e+05	26.4	n/a	1.16e+03	n/a
S99T000559	W	Phosphate-IC-Dionex 4000/4500	ug/g	102.0	<1.20e-01	2.49e+04	2.91e+04	2.70e+04	15.6	n/a	997.9	n/a
S99T000559	W	Sulfate by IC-Dionex 4000/4500	ug/g	101.2	<1.38e-01	1.37e+03	1.70e+03	1.53e+03	21.5	n/a	1.15e+03	n/a

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Table 1. Data Summary Report.
U-103 GRAB2

RISER: 13
SEGMENT #: 3U-99-3

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000548		Ammonia by ISE-Std Additions	ug/mL	82.11	<50.00	< 50.00	73.60	n/a	n/a	n/a	50.00	n/a

33.7

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HNF-1668 REV. 0

CHAIN OF CUSTODY

HNF-1668 REV. 0

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CHAIN-OF-CUSTODY RECORD FOR CPO

Sample Number 3U-99-1	(2) Supervisor/Sampler R.J. Proznik <i>[Signature]</i>	(4) Riser 13	(5) Cask/Pig Serial No. TF-6		
Shipment Description:		(7) Sampling Data			
A. Work Package Number WS-99-00056/0		- Lithium Bromide <input type="checkbox"/> Y <input type="checkbox"/> N			
B. Cask/Pig Seal Number 1624		Amount _____			
Date Sample Collected 3-12-99		Concentration _____			
D. Time Sample Collected 1107		- X-Ray 31299 <input type="checkbox"/> Y <input type="checkbox"/> N			
		- Partial Sample <input type="checkbox"/> Y <input type="checkbox"/> N			
		- Retrieved Partial Sample Stroke Length _____			

(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

(12) Laboratory Comments:

SQA T000532

(13) Field Comments:

(13) Relinquished By (Sign and PRINT) <i>[Signature]</i> JAMES SICKELS	(14) Received By (Sign and PRINT) <i>[Signature]</i> James S. Fedorak	(15) Date/Time 1335 3-15-99	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) <i>[Signature]</i> James S. Fedorak	(18) Received By (Sign and PRINT) <i>[Signature]</i> R.T. Steele	(19) Date/Time 14:37 3-15-99	(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

HNF-1668 REV. 0

03/16/99 10:34 PM

001

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CHAIN-OF-CUSTODY RECORD FOR CPO

Sample Number 3U-99-2	(2) Supervisor/Sampler <i>R.J. Praznik</i>	(9) Seal Intact Upon Release? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Bank 1.103	(4) Riser 13	(10) Seal Intact Upon Receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
(5) Cask/Pig Serial No. 31299 11618 TF-8		(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 6 & 6b) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Shipment Description:

A. Work Package Number WS99-00056/d

B. Cask/Pig Seal Number 11618

Date Sample Collected 3.12.99

D. Time Sample Collected 1111 hr

(7) Sampling Data

- Lithium Bromide	<input type="checkbox"/> Y <input type="checkbox"/> N
Amount	_____
Concentration	_____
- X-Ray	<input type="checkbox"/> <input type="checkbox"/>
- Partial Sample	<input type="checkbox"/> <input type="checkbox"/>
- Retrieved Partial Sample Stroke Length	_____

3.12.99

(12) Laboratory Comments:

599500533

(8) Field Comments:

(13) Relinquished By (Sign and PRINT) <i>James Sickels</i>	(14) Received By (Sign and PRINT) <i>James Sickels</i>	(15) Date/Time 1335 3-15-99	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) <i>James Sickels</i>	(18) Received By (Sign and PRINT) <i>R.T. Steele</i>	(19) Date/Time 1440 3-15-99	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT) <i>James Sickels</i>	(22) Received By (Sign and PRINT) <i>R.T. Steele</i>	(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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03/18/99 10:34 FAX

002

CHAIN-OF-CUSTODY RECORD FOR CPO

HNF-1668 REV. 0

599000534

(9) Seal Intact Upon Release? Yes No

(10) Seal Intact Upon Receipt? Yes No

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

(12) Laboratory Comments:

(2) Supervisor/Sampler: *K.J. Penzill*

(4) Fiber: 13

(5) Tank: U-103

(6) Cask/Pig Serial No: G-10

(17) Sampling Data

Y N

• Lithium Bromide Y N

• Amount

• Concentration: *3.12.99*

• X-Ray

• Partial Sample

• Retrieved Partial Sample Stroke Length

A. Work Package Number: *WS99-00056/d*

B. Cask/Pig Seal Number: *1619*

C. Date Sample Collected: *3.12.99*

D. Time Sample Collected: *1117 hr*

B) Field Comments:

Sample depth 35'-6", NOT ABLE TO

Sample to depth indicated on PM# CFE99-001

300

(13) Relinquished By (Sign and PRINT) <i>James Sicket</i>	(14) Received By (Sign and PRINT) <i>James Sicket</i>	(15) Date/Time <i>3-15-99</i>	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) <i>James Sicket</i>	(18) Received By (Sign and PRINT) <i>R.T. Steck</i>	(19) Date/Time <i>3-15-99</i>	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT) <i>James Sicket</i>	(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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SAMPLE HANDLING

HNF-1668 REV. 0

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LABCORE Data Entry Template for Worklist# 28815

Analyst: GAJ Instrument: NONE Book # _____

Method: AdminDataEntry Rev/Mod G-1

Worklist Comment: U103 FOR #BRKDWN1 RLC

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
99-00104	U-103 GRAB2	1 SAMPLE	S99T000532	0	@BRKDWN1 DOSERATE	LIQUID	N/A	N/A		mrads/hour
99000104	U-103 GRAB2	1 SAMPLE	S99T000532	0	@BRKDWN1 SEALNUM	LIQUID	N/A	1124		
99000104	U-103 GRAB2	1 SAMPLE	S99T000532	0	@BRKDWN1 ETCHNUM	LIQUID	N/A	3U-99-1		
99000104	U-103 GRAB2	1 SAMPLE	S99T000532	0	@BRKDWN1 APPEAR02	LIQUID	N/A	Opague		
99000104	U-103 GRAB2	1 SAMPLE	S99T000532	0	@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		ml
99000104	U-103 GRAB2	1 SAMPLE	S99T000532	0	@BRKDWN1 STLSD01	LIQUID	N/A	15		%
99000104	U-103 GRAB2	1 SAMPLE	S99T000532	0	@BRKDWN1 COLOR-01	LIQUID	N/A	4 Yellow		
99000104	U-103 GRAB2	1 SAMPLE	S99T000532	0	@BRKDWN1 ORGVOL02	LIQUID	N/A	0		ml

Final page for worklist # 28815

R. G. [Signature] 3-16-99
Analyst Signature Date

[Signature] 4/2/99
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 Data Entry Template for Worklist# 28816

Analyst: GAJ Instrument: NONE Book # _____

Method: AdminDataEntry Rev/Mod 6-1

Worklist Comment: U103 FOR #BRKDOWN1 RLC

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
99000104	U-103 GRAB2	1	SAMPLE	S99T000533	0		@BRKDOWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
99000104	U-103 GRAB2	1	SAMPLE	S99T000533	0		@BRKDOWN1 SEALNUM	LIQUID	N/A	11618		
99000104	U-103 GRAB2	1	SAMPLE	S99T000533	0		@BRKDOWN1 ETCHNUM	LIQUID	N/A	34.992		
99000104	U-103 GRAB2	1	SAMPLE	S99T000533	0		@BRKDOWN1 APPEAR02	LIQUID	N/A	Opaque		
99000104	U-103 GRAB2	1	SAMPLE	S99T000533	0		@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
99000104	U-103 GRAB2	1	SAMPLE	S99T000533	0		@BRKDOWN1 STLSLD01	LIQUID	N/A	30		%
99000104	U-103 GRAB2	1	SAMPLE	S99T000533	0		@BRKDOWN1 COLOR-01	LIQUID	N/A	4. Yellow		
99000104	U-103 GRAB2	1	SAMPLE	S99T000533	0		@BRKDOWN1 ORGVOL02	LIQUID	N/A	0		mL

Final page for worklist # 28816

O. Mag 3-16-99
Analyst Signature Date

DK Williams 4/2/99
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 Data Entry Template for Worklist# 28818

Analyst: GAJ Instrument: NONE Book # _____

Method: AdminDataEntry Rev/Mod G-1

Worklist Comment: U103 FOR #BRKDWN1 RLC

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
99000104	U-103 GRAB2	1 SAMPLE	S99T000534	0	@BRKDWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
99000104	U-103 GRAB2	1 SAMPLE	S99T000534	0	@BRKDWN1 SEALNUM	LIQUID	N/A	1619		
99000104	U-103 GRAB2	1 SAMPLE	S99T000534	0	@BRKDWN1 ETCHNUM	LIQUID	N/A	3U-99-3		
99000104	U-103 GRAB2	1 SAMPLE	S99T000534	0	@BRKDWN1 APPEAR02	LIQUID	N/A	Opague		
99000104	U-103 GRAB2	1 SAMPLE	S99T000534	0	@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
99000104	U-103 GRAB2	1 SAMPLE	S99T000534	0	@BRKDWN1 STLSLD01	LIQUID	N/A	30		%
99000104	U-103 GRAB2	1 SAMPLE	S99T000534	0	@BRKDWN1 COLOR-01	LIQUID	N/A	4-Yellow		
99000104	U-103 GRAB2	1 SAMPLE	S99T000534	0	@BRKDWN1 ORGVOL02	LIQUID	N/A	0		mL

Final page for worklist # 28818

GAJ 3-16-99
Analyst Signature Date

AK Wollan 4/2/99
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.

HNF-1668 REV. 0

SAMPLE PREPARATIONS

HNF-1668 REV. 0

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worklistrpt Version 2.1 05/15/95
04/07/99 11:24

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Page: 1

LABCORE Data Entry Template for Worklist# 29212

Analyst: RRO Instrument: FUS01 Book # NA

Method: LA-549-141 Rev/Mod G-0

Worklist Comment: U103 GRAB2, 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
99000104	U-103 GRAB2	2 SAMPLE	S99T000551	0 F	FUSION01	SOLID	<u>N/A</u>	<u>2.0904</u>		g/L
			<u>15226</u>					<u>.250L</u>		
99000104	U-103 GRAB2	3 SAMPLE	S99T000551	0	DOSE-02	SOLID	<u>N/A</u>	<u>25.9</u>		mrad/hour
99000104	U-103 GRAB2	4 DUP	S99T000551	0 F	FUSION01	SOLID	<u>2.0904</u>	<u>2.3236</u>	N/A	g/L
			<u>15809</u>					<u>.250L</u>		
99000104	U-103 GRAB2	5 DUP	S99T000551	0	DOSE-02	SOLID	<u>25.9</u>	<u>33.4</u>	N/A	mrad/hour
99000104	U-103 GRAB2	6 SAMPLE	S99T000554	0 F	FUSION01	SOLID	<u>N/A</u>	<u>2.1180</u>		g/L
			<u>15295</u>					<u>.250L</u>		
99000104	U-103 GRAB2	7 SAMPLE	S99T000554	0	DOSE-02	SOLID	<u>N/A</u>	<u>60</u>		mrad/hour
99000104	U-103 GRAB2	8 DUP	S99T000554	0 F	FUSION01	SOLID	<u>2.1180</u>	<u>2.1112</u>	N/A	g/L
			<u>15278</u>					<u>.250L</u>		
99000104	U-103 GRAB2	9 DUP	S99T000554	0	DOSE-02	SOLID	<u>60</u>	<u>66</u>	N/A	mrad/hour
99000104	U-103 GRAB2	10 SAMPLE	S99T000555	0 F	FUSION01	SOLID	<u>N/A</u>	<u>2.0412</u>		g/L
			<u>15103</u>					<u>.250L</u>		
99000104	U-103 GRAB2	11 SAMPLE	S99T000555	0	DOSE-02	SOLID	<u>N/A</u>	<u>49</u>		mrad/hour
99000104	U-103 GRAB2	12 DUP	S99T000555	0 F	FUSION01	SOLID	<u>2.0412</u>	<u>2.1896</u>	N/A	g/L
			<u>15474</u>					<u>.250L</u>		
99000104	U-103 GRAB2	13 DUP	S99T000555	0	DOSE-02	SOLID	<u>49</u>	<u>49</u>	N/A	mrad/hour

Final page for worklist # 29212

Robin R. O'Dell 4/24/99
Analyst Signature Date

Sylvia Co. Cham 4/27/99
Analyst Signature Date

S99T000539 → S99T000551
S99T000540 → S99T000554
S99T000541 → S99T000555

Data Entry Comments:

Hpt Kathy ALLESSIA
20 ml HNO₃ Added

Faxed to
373-1180

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

LABCORE Data Entry Template for Worklist# 29213

Analyst: PRZ Instrument: H2O01 Book # N/A

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

Worklist Comment: U103 GRAB2, 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
99000104	U-103 GRAB2	2 SAMPLE	S99T000553	0 W	H2ODIG01	SOLID	N/A	<u>5.187</u>		g/L
		<u>.51875</u>	<u>→ .100L</u>							
99000104	U-103 GRAB2	3 SAMPLE	S99T000553	0	DOSE-02	SOLID	N/A	<u>43</u>		mrad/hour
99000104	U-103 GRAB2	4 DUP	S99T000553	0 W	H2ODIG01	SOLID	<u>5.187</u>	<u>5.072</u>	N/A	g/L
		<u>.50725</u>	<u>→ .100L</u>							
99000104	U-103 GRAB2	5 DUP	S99T000553	0	DOSE-02	SOLID	<u>43</u>	<u>45</u>	N/A	mrad/hour
99000104	U-103 GRAB2	6 SAMPLE	S99T000558	0 W	H2ODIG01	SOLID	N/A	<u>5.206</u>		g/L
		<u>.52065</u>	<u>→ .100L</u>							
99000104	U-103 GRAB2	7 SAMPLE	S99T000558	0	DOSE-02	SOLID	N/A	<u>75</u>		mrad/hour
99000104	U-103 GRAB2	8 DUP	S99T000558	0 W	H2ODIG01	SOLID	<u>5.206</u>	<u>4.967</u>	N/A	g/L
		<u>.49675</u>	<u>→ .100L</u>							
99000104	U-103 GRAB2	9 DUP	S99T000558	0	DOSE-02	SOLID	<u>75</u>	<u>75</u>	N/A	mrad/hour
99000104	U-103 GRAB2	10 SAMPLE	S99T000559	0 W	H2ODIG01	SOLID	N/A	<u>4.930</u>		g/L
		<u>.49305</u>	<u>→ .100L</u>							
99000104	U-103 GRAB2	11 SAMPLE	S99T000559	0	DOSE-02	SOLID	N/A	<u>66</u>		mrad/hour
99000104	U-103 GRAB2	12 DUP	S99T000559	0 W	H2ODIG01	SOLID	<u>4.930</u>	<u>5.164</u>	N/A	g/L
		<u>.51645</u>	<u>→ .100L</u>							
99000104	U-103 GRAB2	13 DUP	S99T000559	0	DOSE-02	SOLID	<u>66</u>	<u>66</u>	N/A	mrad/hour

Final page for worklist # 29213

[Signature] 4/14/99
Analyst Signature Date

Analyst Signature Date

S99T000539 → S99T000553
S99T000540 → S99T000558
S99T000541 → S99T000559

Data Entry Comments:

DATA ENTRY HPT - LOREN MARLIN
4-12-99

Validated by:
[Signature]
04/12/99

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.

LABCORE Data Entry Template for Worklist# 29211

Analyst: AP2 Instrument: ACD01 Book # WNC-1A WNC-2 * 2.5 ml's each into
 Method: LA-505-163 Rev/Mod B-1 50 ml's final volume
 Worklist Comment: U103 GRAB2, ACIDIG01 skm DL = 20x

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				ACIDIG01	SOLID	<u>1</u>	<u>.050</u>	N/A	g/L
		2	STD-PREP				ACIDIG01	SOLID	<u>20</u>	<u>20</u>	N/A	g/L
99000104	U-103 GRAB2	3	SAMPLE	S99T000552	0	A	ACIDIG01	SOLID	N/A	<u>4.91</u>		g/L
				<u>.2455g</u>								
99000104	U-103 GRAB2	4	SAMPLE	S99T000552	0		DOSE-02	SOLID	N/A	<u>15</u>		mrad/hour
99000104	U-103 GRAB2	5	DUP	S99T000552	0	A	ACIDIG01	SOLID	<u>4.91</u>	<u>4.932</u>	N/A	g/L
				<u>.2466g</u>								
99000104	U-103 GRAB2	6	DUP	S99T000552	0		DOSE-02	SOLID	<u>15</u>	<u>15</u>	N/A	mrad/hour
99000104	U-103 GRAB2	7	SPK	S99T000552	0	A	ACIDIG01	SOLID	<u>1</u>	<u>5.38</u>	N/A	g/L
				<u>.2690g</u>								
99000104	U-103 GRAB2	8	SPK	S99T000552	0		DOSE-02	SOLID	<u>15</u>	<u>15</u>	N/A	mrad/hour
99000104	U-103 GRAB2	9	SAMPLE	S99T000556	0	A	ACIDIG01	SOLID	N/A	<u>5.072</u>		g/L
				<u>.2536g</u>								
99000104	U-103 GRAB2	10	SAMPLE	S99T000556	0		DOSE-02	SOLID	N/A	<u>25</u>		mrad/hour
99000104	U-103 GRAB2	11	DUP	S99T000556	0	A	ACIDIG01	SOLID	<u>5.072</u>	<u>5.386</u>	N/A	g/L
				<u>.2693g</u>								
99000104	U-103 GRAB2	12	DUP	S99T000556	0		DOSE-02	SOLID	<u>25</u>	<u>31</u>	N/A	mrad/hour
99000104	U-103 GRAB2	13	SAMPLE	S99T000557	0	A	ACIDIG01	SOLID	N/A	<u>4.896</u>		g/L
				<u>.2448g</u>								
99000104	U-103 GRAB2	14	SAMPLE	S99T000557	0		DOSE-02	SOLID	N/A	<u>40</u>		mrad/hour
99000104	U-103 GRAB2	15	DUP	S99T000557	0	A	ACIDIG01	SOLID	<u>4.896</u>	<u>5.142</u>	N/A	g/L
				<u>.2571g</u>								
99000104	U-103 GRAB2	16	DUP	S99T000557	0		DOSE-02	SOLID	<u>40</u>	<u>27</u>	N/A	mrad/hour

S99T000539 → S99T000552
 S99T000540 → S99T000556
 S99T000541 → S99T000557

Data Entry Comments:

DATA ENTRY 4-12-99
Jh. Howell
 29211/APR.CSV

Validated by:
Paul M. Long
 04/12/99

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.

LABCORE Data Entry Template for Worklist# 29211

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
-------	---------	--------	---------	-----	------	--------	--------	-------	----	------

Final page for worklist # 29211



4/12/99

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

NPT. LOREN MAKIN

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-1668 REV. 0

BULK DENSITY

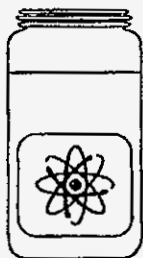
HNF-1668 REV. 0

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BULK DENSITY WORKSHEET

Date: 3-17-99
P.C.: Steer
Phone: _____
Group#: _____

Tank: U-103 Grab
Core: 3u-99-1
Seg.: Solids
Auger: _____
Sample ID: _____



LabCore# S99T000535 Data entry initials _____
Jar #: 15612
Jar/Vial Size: _____ mL
Initial Wt.: _____ g
Final Wt.: _____ g
Net Wt.: _____ g 3-17-99

Cone# 535
Final Vol.: 8.0 mL
Final Wt.: 20.77 g
Initial Wt.: 7.66 g
Net Wt.: 13.11 g

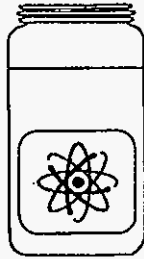
Bulk Density 1.64 g/mL

Appearance/Narrative:

BULK DENSITY WORKSHEET

Date: 3-17-99
P.C.: Steer
Phone: _____
Group#: _____

Tank: U-103 Grab
Core: 311-99-2
Seg: Solids
Auger: _____
Sample ID: _____



LabCore# 599T000542 Data entry initials _____

Jar #: 15613
Jar/Vial Size: 2 mL
Initial Wt.: _____ g
Final Wt.: 2 g
Net Wt.: _____ g

82
3-17-99

Cone# 542
Final Vol.: 11.0 mL
Final Wt.: 24.23 g
Initial Wt.: 7.74 g
Net Wt.: 16.49 g

Bulk Density 1.50 g/mL

Appearance/Narrative:

53

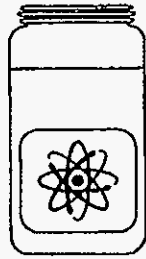
BULK DENSITY WORKSHEET

Date: 3-17-99
P.C.: Steer
Phone: _____
Group#: _____

Tank: U-10.79 grab
Core: 3U-99-B
Seg.: Solids
Auger: _____
Sample ID: _____

6/3/99

54



LabCore# 599T000543 Data entry initials _____

Jar #: 15614
Jar/Vial Size: _____ mL
Initial Wt.: _____ g
Final Wt.: _____ g
Net Wt.: _____ g

3-17-99

Cone# 543
Final Vol.: 10.0 mL
Final Wt.: 22.79 g
Initial Wt.: 7.76 g
Net Wt.: 15.03 g

Bulk Density 1.50 g/mL

Appearance/Narrative:

HNF-1668 REV. 0

INORGANIC ANALYSIS

HNF-1668 REV. 0

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HNF-1668 REV. 0

LBCORE Completed Worklist Report for Worklist# 29200

Analyst: jmv

Instrument: DSC03

Book#: 12N14B

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

Worklist Comment: U103 GRAB2, DSC-03, Run under nitrogen. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	DSC-03	LIQUID	28.45	27.23	95.712 % Recovery	
2 SAMPLE	S99T000537	0	DSC-03	LIQUID	N/A	72.17	Joules/g	
3 DUP	S99T000537	0	DSC-03	LIQUID	72.17	66.91	7.564 RPD	
4 SAMPLE	S99T000546	0	DSC-03	LIQUID	N/A	94.80	Joules/g	
5 DUP	S99T000546	0	DSC-03	LIQUID	94.80	112.1	16.723 RPD	

Final page for worklist# 29200

Analyst Signature _____ Date _____

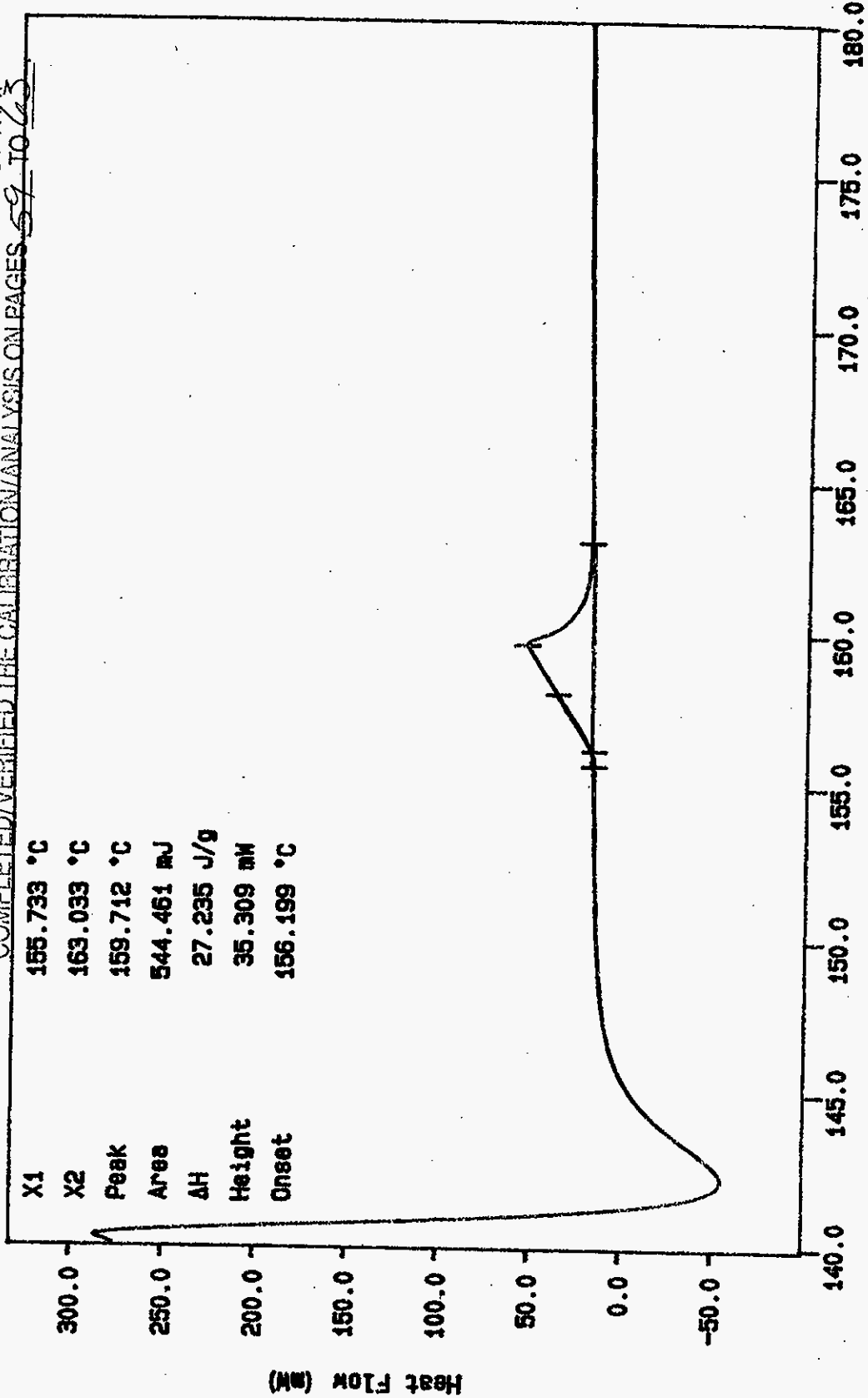
Mary Tracy 4-13-99
Analyst Signature Date

J. M. Helton 4/15/99
Reviewer Signature Date

Curve 1: DSC
File Info: IND0408 Thu Apr 8 09:50:05 1999
Sample Weight: 19.991 mg
STD 12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 59 TO 63

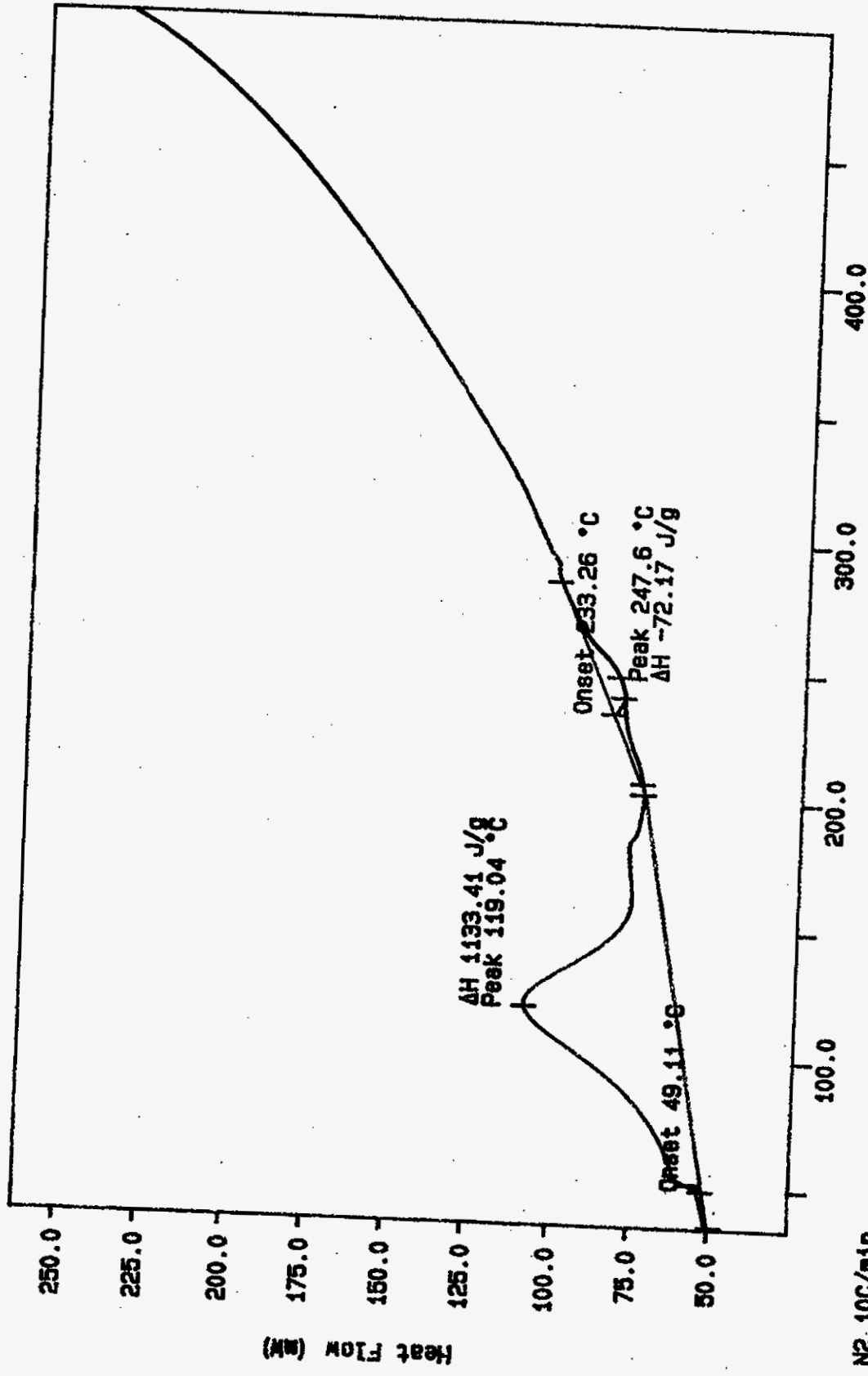
X1	155.733 °C
X2	163.033 °C
Peak	159.712 °C
Area	544.461 mJ
ΔH	27.235 J/g
Height	35.309 mM
Onset	156.199 °C



N2, EXOTHERM DOWN
TEMPERATURE TIMES: 0.0 min RATE: 10.0 C/min

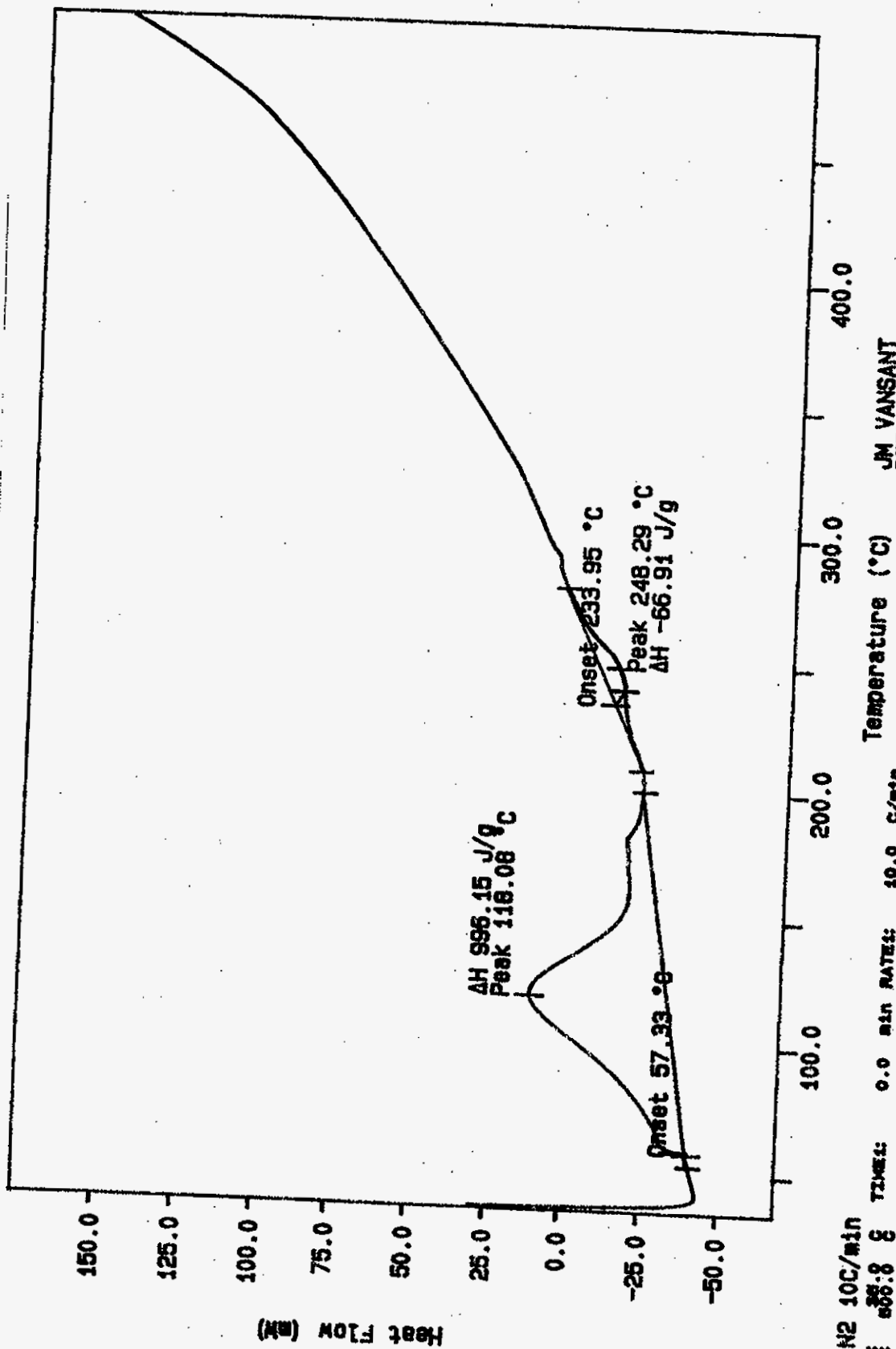
JM VANSANT
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Apr 8 10:40:39 1999

Curve 1: DSC
File info: SAM040801 Thu Apr 8 13:01:06 1999
Sample Weight: 15.100 mg
S99T000537



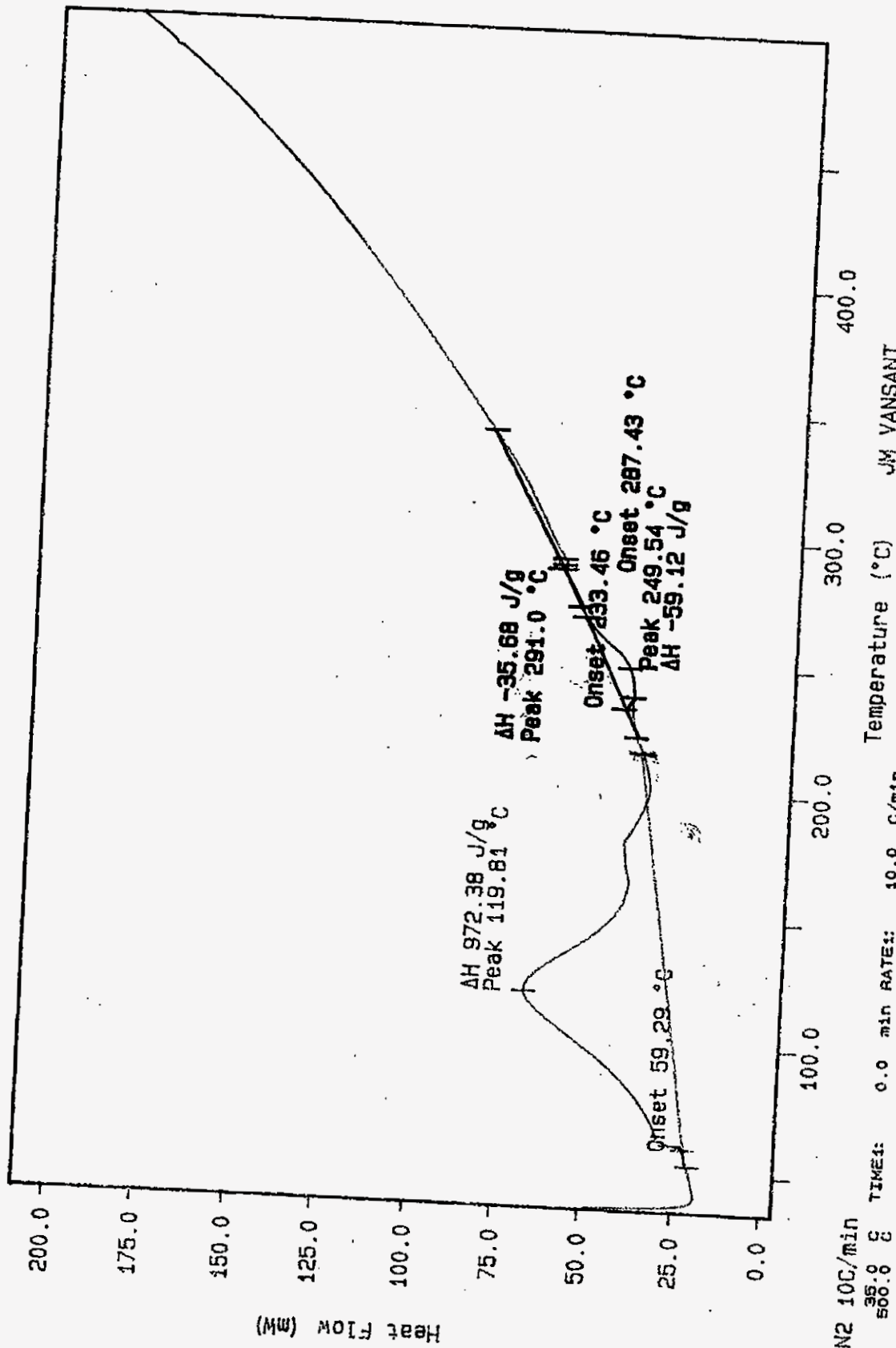
N2 10C/min
TEMP# 68:8 8
TIME# 0.0 min RATE# 10.0 C/min
JM VANSANT
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Apr 8 13:06:36 1999

Curve 1: DSC
File info: SAM040803 Thu Apr 8 14:01:14 1999
Sample Weight: 15.970 mg
S99T000537DUP



N2 10C/min
 TIME: 05.8 s
 TIME: 0.0 min RATE: 10.0 C/min
 JM VANSANT
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Apr 8 14:07:03 1999

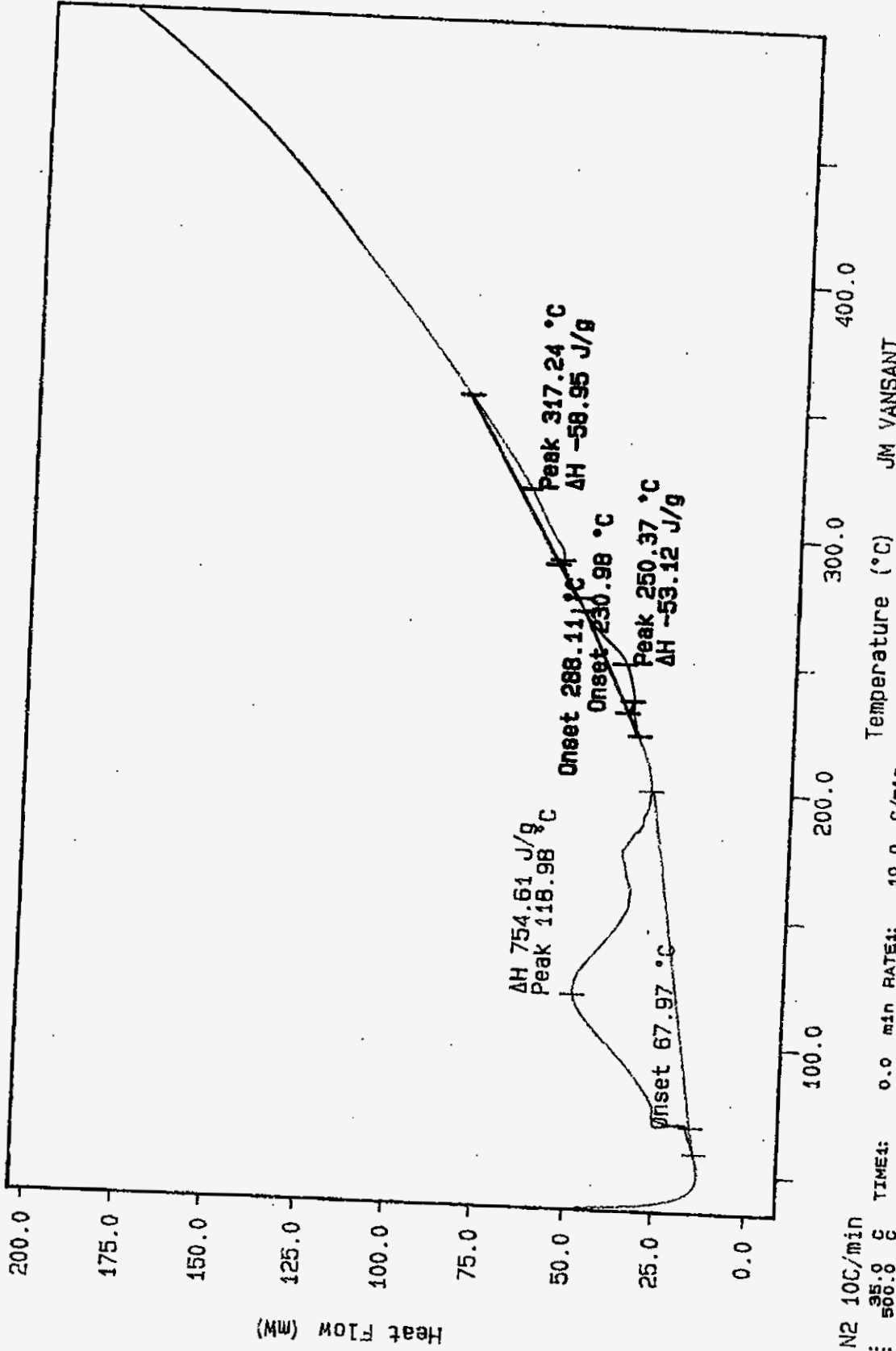
Curve 1: DSC
File info: SAM040804 Thu Apr 8 14:56:57 1999
Sample Weight: 15.030 mg
S99T000546



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

JM VANSANT
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Apr 13 08:38:48 1999

Curve 1: DSC
File info: SAM040B05 Thu Apr 8 15:46:47 1999
Sample Weight: 15.380 mg
S99T000546DUP



N2 10C/min
 TEMP1: 35.0 °C
 TEMP2: 500.0 °C
 TIME1: 0.0 min
 RATE1: 10.0 C/min
 Temperature (°C)

JIM VANSANT
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Tue Apr 13 08:46:26 1999

LABCORE Completed Worklist Report for Worklist# 29201

Analyst: slh

Instrument: DSC03

Book#: 12N14B

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

Worklist Comment: U103 GRAB2, DSC-03, Run under nitrogen. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	DSC-03	LIQUID	28.45	27.23	95.712 % Recovery	
2 SAMPLE	S99T000548	0	DSC-03	LIQUID	N/A	33.82	Joules/g	
3 DUP	S99T000548	0	DSC-03	LIQUID	33.82	36.05	6.383 RPD	

Final page for worklist# 29201

Analyst Signature

Date

John W. ... 4-29-99
Analyst Signature Date

Michael ... 4/30/99
Reviewer Signature Date

worklistrpt Version 2.1 05/15/95
04/07/99 11:11

HNF-1668 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 29201

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

Method: LA-514-114 Rev/Mod D2

Worklist Comment: U103 GRAB2, 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>27.23</u>	N/A	Joules/g
99000104	U-103 GRAB2	2 SAMPLE	S99T000548	0	DSC-03	LIQUID	<u>N/A</u>	<u>33.82</u>		Joules/g
99000104	U-103 GRAB2	3 DUP	S99T000548	0	DSC-03	LIQUID	<u>33.82</u>	<u>36.05</u>	N/A	Joules/g

Final page for worklist # 29201

Sandra P. Hood Boatright
 Analyst Signature Date
4-19-99

 Analyst Signature Date

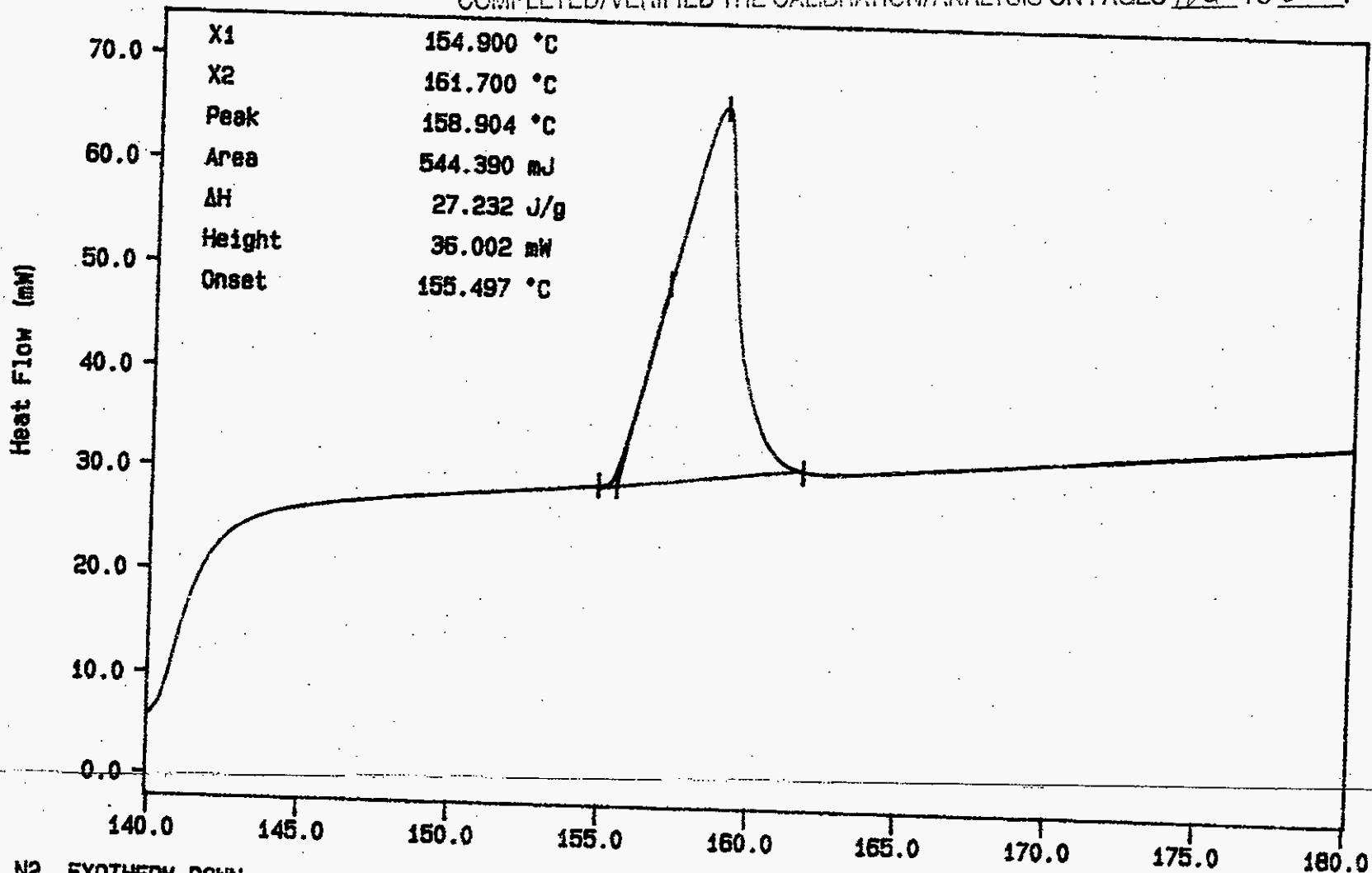
Data Entry Comments:

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.

Curve 1: DSC
File info: IND041902 Mon Apr 19 14:59:28 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.

66



HNF-1668 REV. 0

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

Temperature (°C)

SL HOOD BOATRIGT
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 19 15:04:03 1999

Jeffrey Boatright

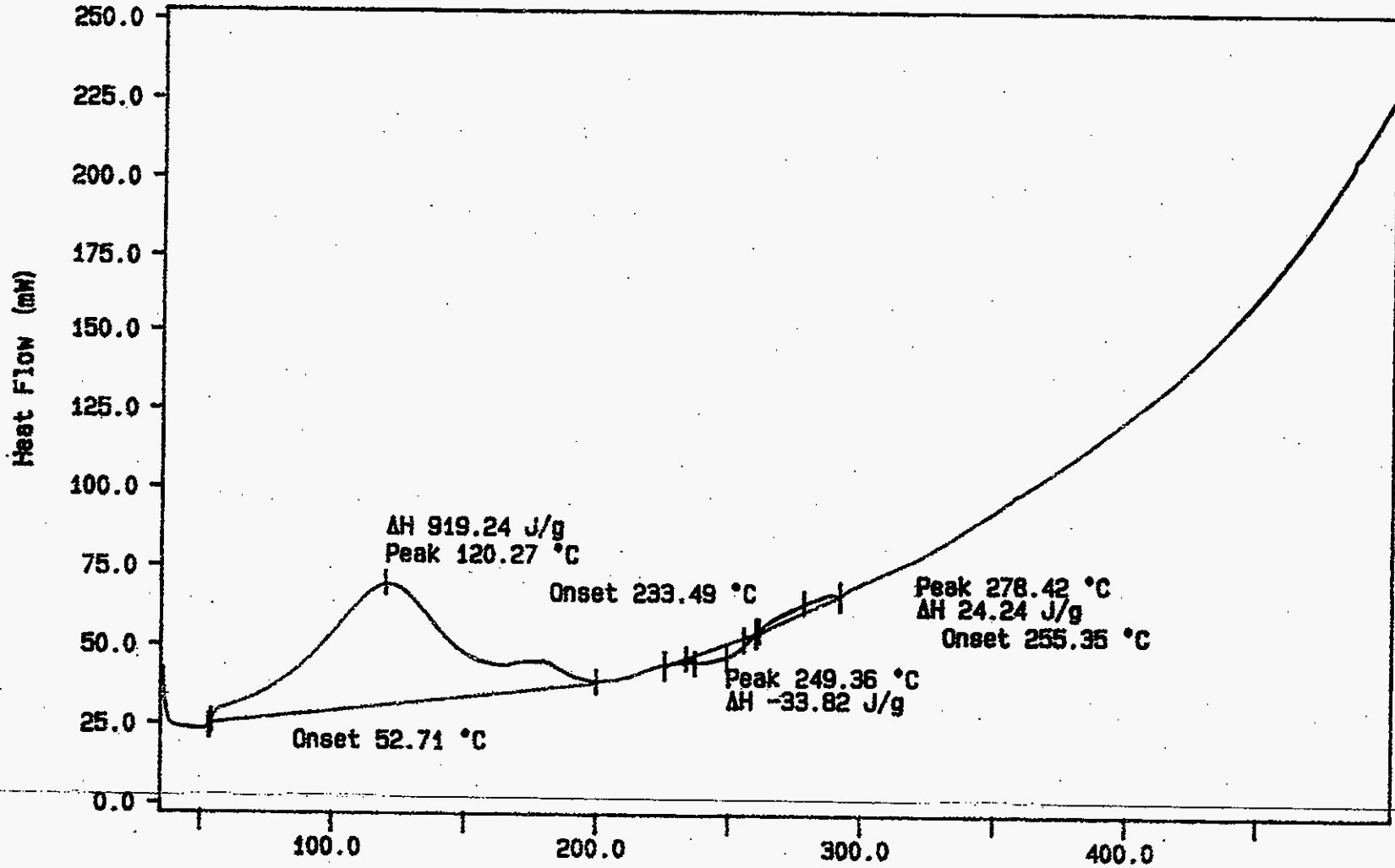
Curve 1: DSC

File info: SAM041901 Mon Apr 19 15:54:23 1999

Sample Weight: 15.580 mg

S99T000548

67



N2 10C/min

TEMP1: 35.0 C
TEMP2: 500.0 C

TIME1: 0.0 min RATE1: 10.0 C/min

Temperature (°C)

SL HOOD BOATRIGT
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 19 15:56:47 1999

HNF-1668 REV.0

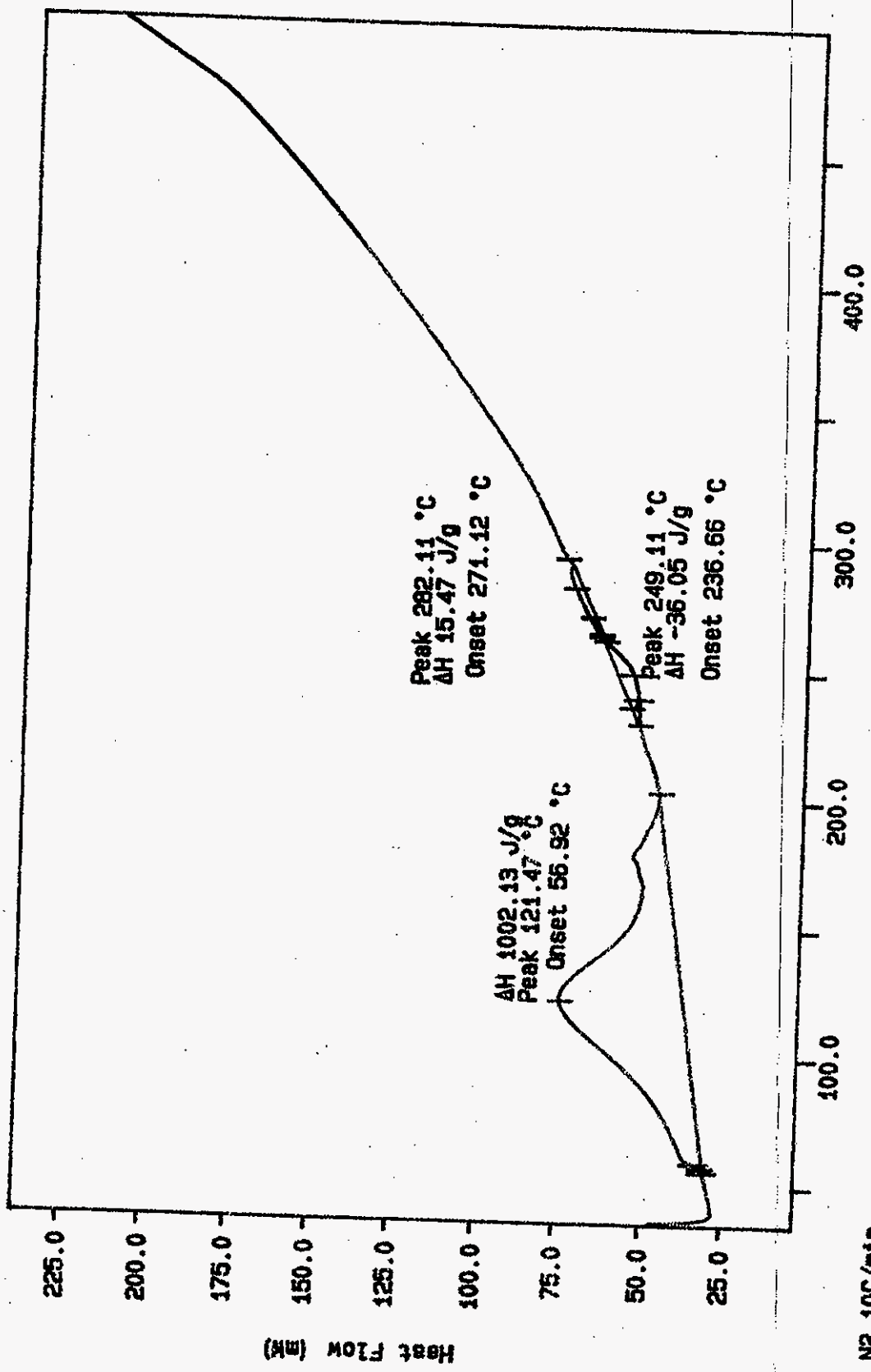
04/23/99 10:21 AM 3721143

2B HALL

021

HNF-1668 REV. 0

Curve 1: DSC
 File info: SAM041902 Mon Apr 19 16:56:19 1999
 Sample Weight: 13.900 mg
 S99T000548 DLP



N2 10C/min
 TEMPERATURE 25.0 C
 TIME: 000.8 S
 RATE: 0.0 min RATE: 10.0 C/min
 Temperature (°C)
 SL HOOD BOATRIGT
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Apr 29 09:21:07 1999

LABCORE Completed Worklist Report for Worklist# 29202

Analyst: jmv

Instrument: DSC03

Book#: 12N14B

Method: LA-514-114 Rev/Mod _____

Worklist Comment: U103 GRAB2, DSC-03, Run under nitrogen. skm

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0		DSC-03	SOLID	28.45	27.71	97.399	% Recovery
2 SAMPLE	S99T000539	0		DSC-03	SOLID	N/A	41.32		Joules/g
3 DUP	S99T000539	0		DSC-03	SOLID	41.32	52.03	22.946	RPD
4 SAMPLE	S99T000540	0		DSC-03	SOLID	N/A	72.69		Joules/g
5 DUP	S99T000540	0		DSC-03	SOLID	72.69	49.20	38.543	RPD

Final page for worklist# 29202

Analyst Signature _____ Date _____

Mary Inam 4-13-99
Analyst Signature _____ Date _____

Machelor 4/15/99
Reviewer Signature _____ Date _____

worklistrpt Version 2.1 05/15/95
04/07/99 11:13

HNF-1668 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 29202Analyst: SMV Instrument: DSC0 3 Book # 12N14-8Method: LA-514-114 Rev/Mod D-2

Worklist Comment: U103 GRAB2, 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>27.71</u>	<u>N/A</u>	Joules/g
99000104	U-103 GRAB2	2 SAMPLE	S99T000539	0	DSC-03	SOLID	<u>N/A</u>	<u>41.32</u>		Joules/g
99000104	U-103 GRAB2	3 DUP	S99T000539	0	DSC-03	SOLID	<u>41.32</u>	<u>52.03</u>	<u>N/A</u>	Joules/g
99000104	U-103 GRAB2	4 SAMPLE	S99T000540	0	DSC-03	SOLID	<u>N/A</u>	<u>72.69</u>		Joules/g
99000104	U-103 GRAB2	5 DUP	S99T000540	0	DSC-03	SOLID	<u>72.69</u>	<u>49.20</u>	<u>N/A</u>	Joules/g

Final page for worklist # 29202

SMV 4-12-99
Analyst Signature Date

SMV 4-13-99
Analyst Signature Date

Data Entry Comments:

High RPD both samples due to sample inhomogeneities. Rerun only at customer request. 4/13/99

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.

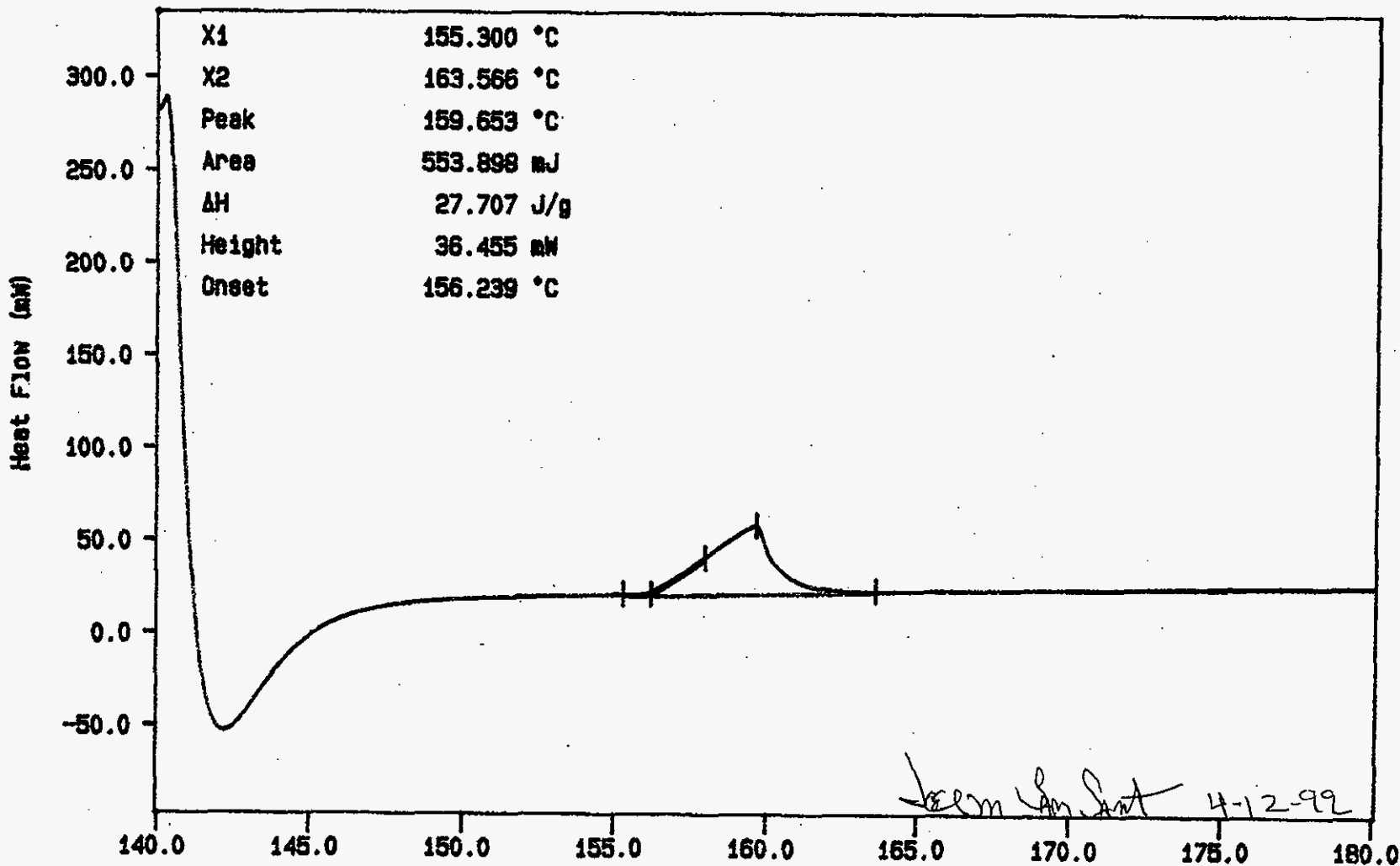
Curve 1: DSC

File info: ind0412 Mon Apr 12 09: 10: 39 1999

Sample Weight: 19.991 mg

STD 12N14-B

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



Joem Van Sant 4-12-99

N2, EXOTHERM DOWN
TEMP: 149.8 °C TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

ja vansant
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 09: 23: 39 1999

HNF-1668 REV. 0

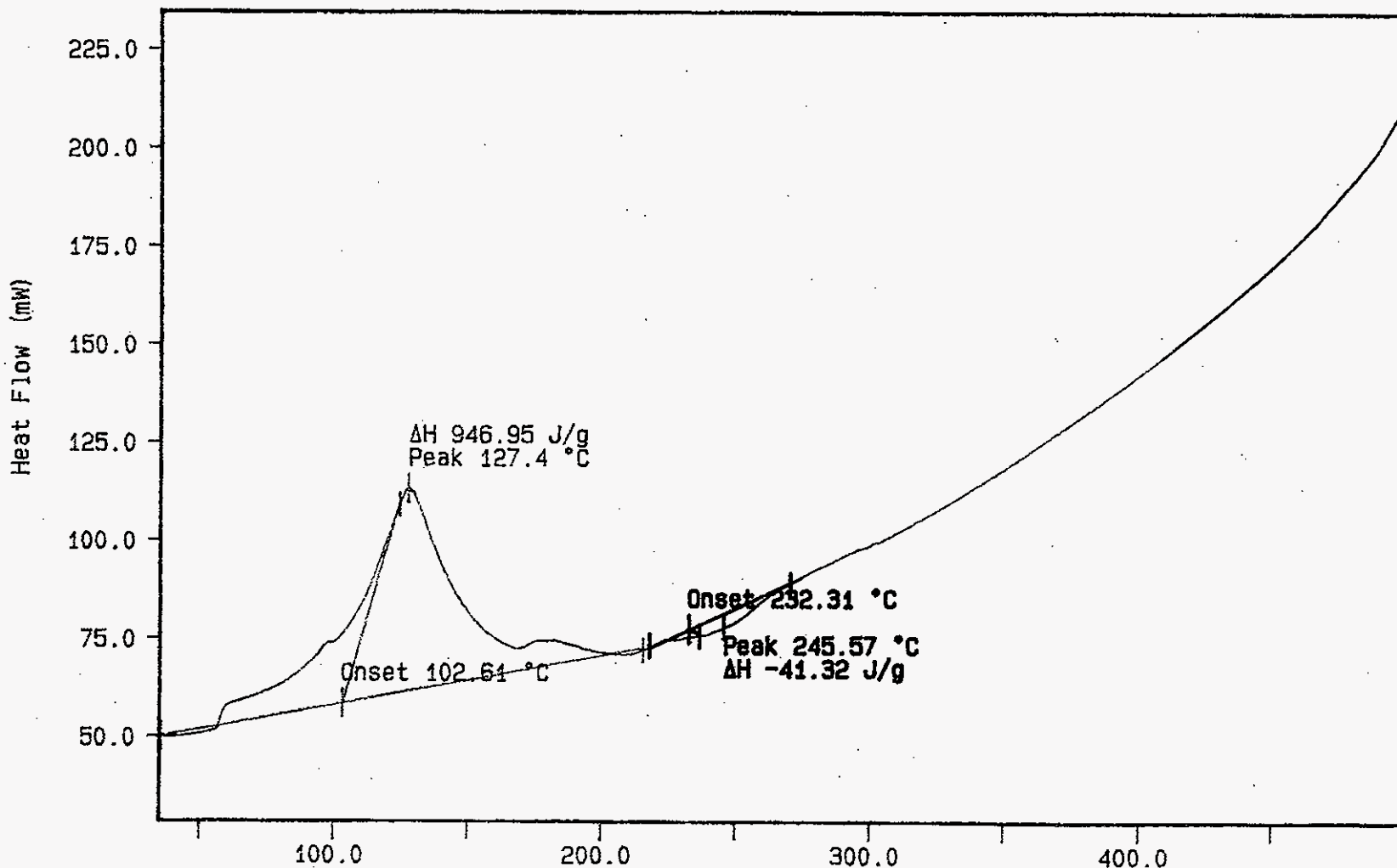
Curve 1: DSC

File info: SAM041203 Mon Apr 12 14:04:10 1999

Sample Weight: 14.760 mg

S99T000539

72



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

Temperature (°C)

jm vansant
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 14:06:05 1999

HNF-1668 REV. 0

0004

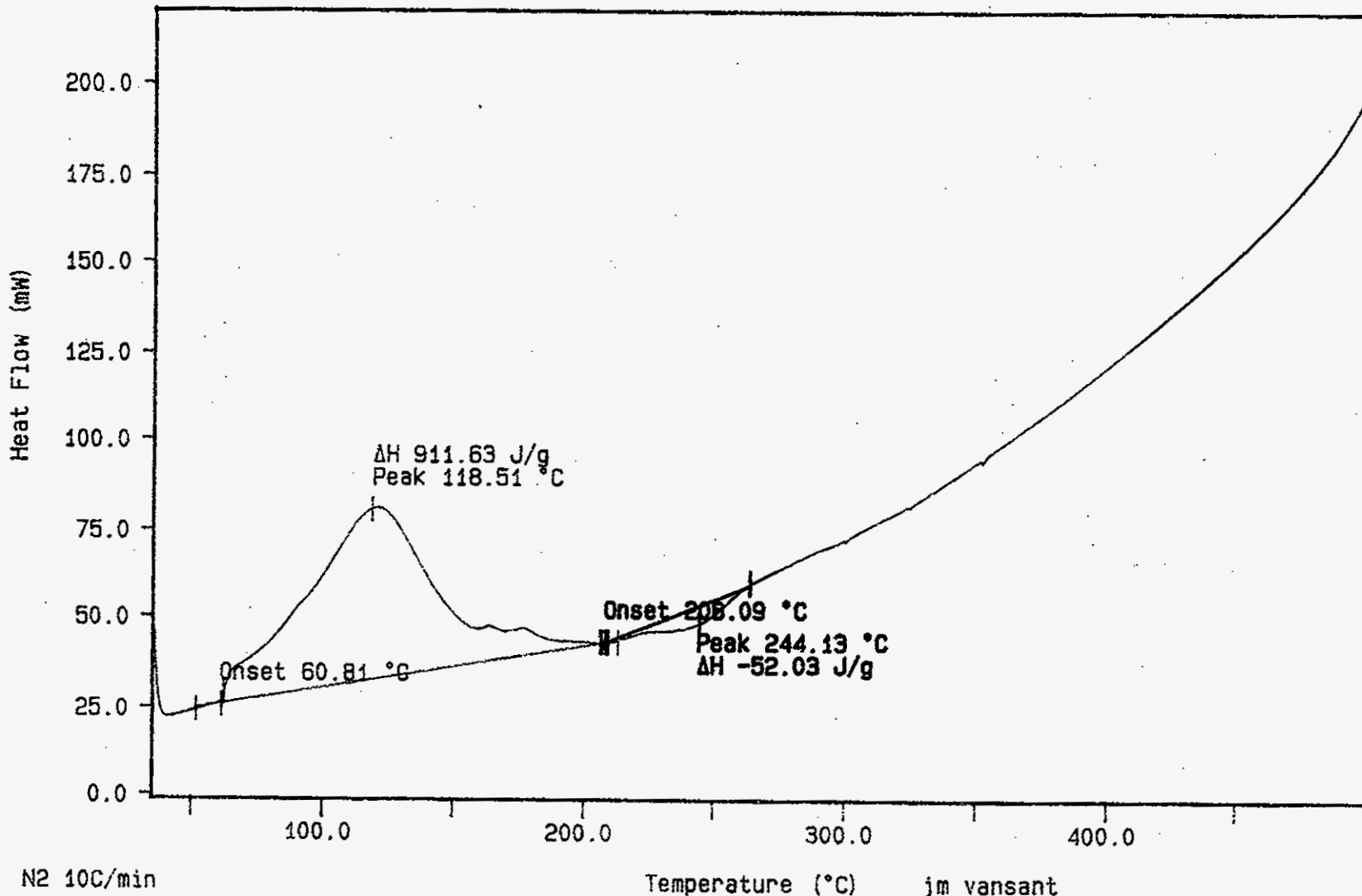
Curve 1: DSC

File info: SAM041204 Mon Apr 12 14:57:02 1999

Sample Weight: 18.960 mg

S99T000539DUP

72

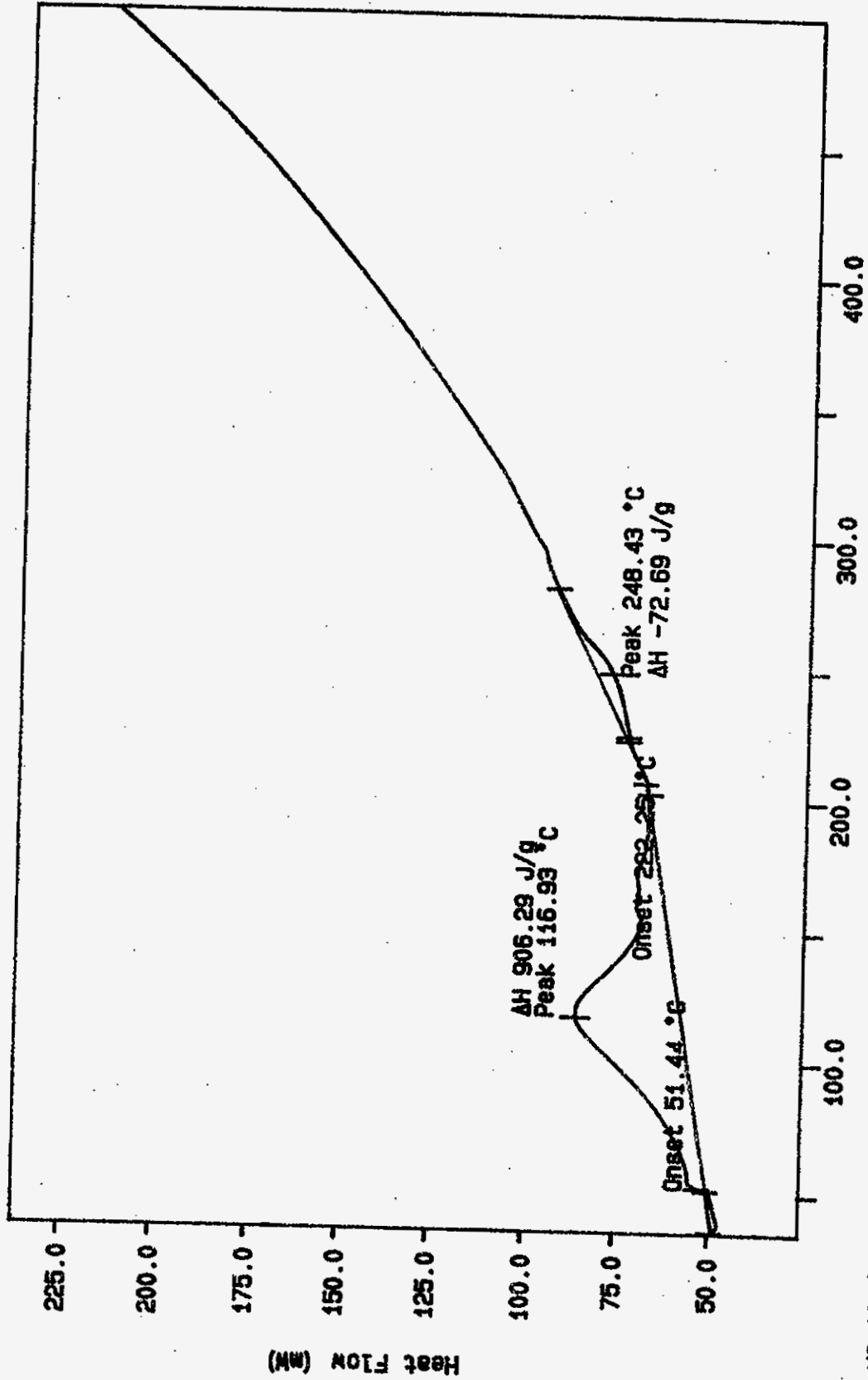


N2 10C/min
 TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
 TEMP2: 500.0 C

jm vansant
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Apr 12 15:09:57 1999

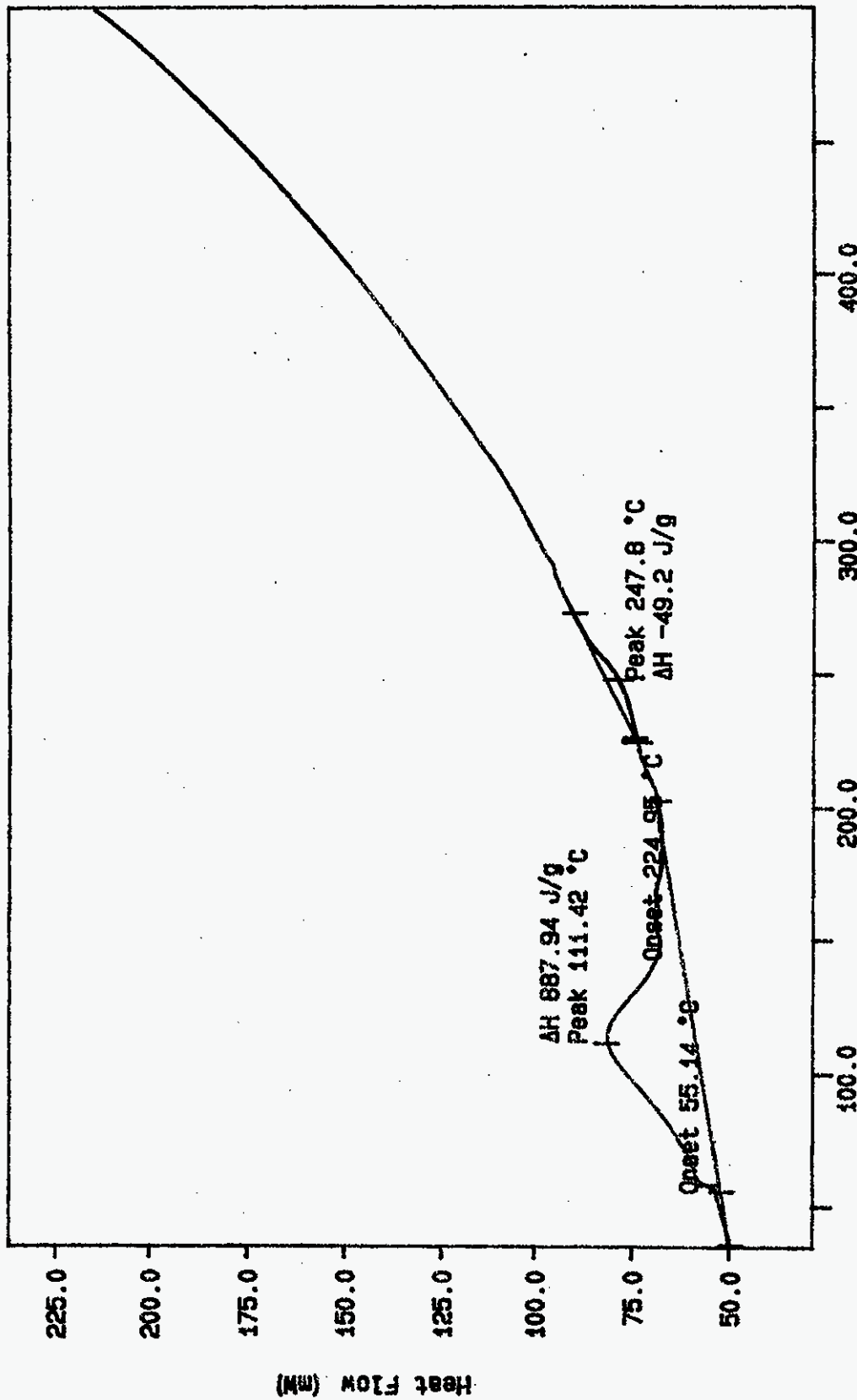
HNF-1668 REV. 0

Curve 1: DSC
File info: sam04i201 Mon Apr 12 10:31:31 1999
Sample Weight: 11.120 mg
999t00053918
540



N2 10C/min
 THERM: 35.0 C
 TIME: 0.0 min RATE: 10.0 C/min
 1M VANSANT
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Apr 12 10:54:11 1999

Curve 1: DSC
File info: SAM041202 Mon Apr 12 11:42:59 1999
Sample Weight: 9.470 mg
S99T000540DUP



75
N2 10C/min
TEMP: 35.8 C
TEMP: 300.8 C
TIME: 0.0 min RATE: 10.0 C/min
Temperature (°C)
jm vasant
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 13:15:14 1999

LABCORE Completed Worklist Report for Worklist# 29203

Analyst: jis

Instrument: DSC03

Book#: 12N14B

Method: LA-514-114 Rev/Mod _____

Worklist Comment: U103 GRAB2, DSC-03, Run under nitrogen. skm

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		DSC-03	SOLID	28.45	27.97	98.313	% Recovery
2	SAMPLE	S99T000541	0		DSC-03	SOLID	N/A	107.7		Joules/g
3	DUP	S99T000541	0		DSC-03	SOLID	107.7	94.74	12.804	RPD

Final page for worklist# 29203

Analyst Signature

Date

Mary Strang 4-12-99
Analyst Signature Date

B. Acholor 4/13/99
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 29203

Analyst: JIS Instrument: DSC0 3 Book # 12N14-R

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

Worklist Comment: U103 GRAB2, 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>27.97</u>	<u>N/A</u>	Joules/g
99000104	U-103 GRAB2	2 SAMPLE	S99T000541	0	DSC-03	SOLID	<u>N/A</u>	<u>107.7</u>		Joules/g
99000104	U-103 GRAB2	3 DUP	S99T000541	0	DSC-03	SOLID	<u>107.7</u>	<u>94.74</u>	<u>N/A</u>	Joules/g

Final page for worklist # 29203

Jeff Salzman
Analyst Signature Date 04-09-99

Mary Tracy
Analyst Signature Date 4-12-99

Data Entry Comments:

needs to be plotted

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.

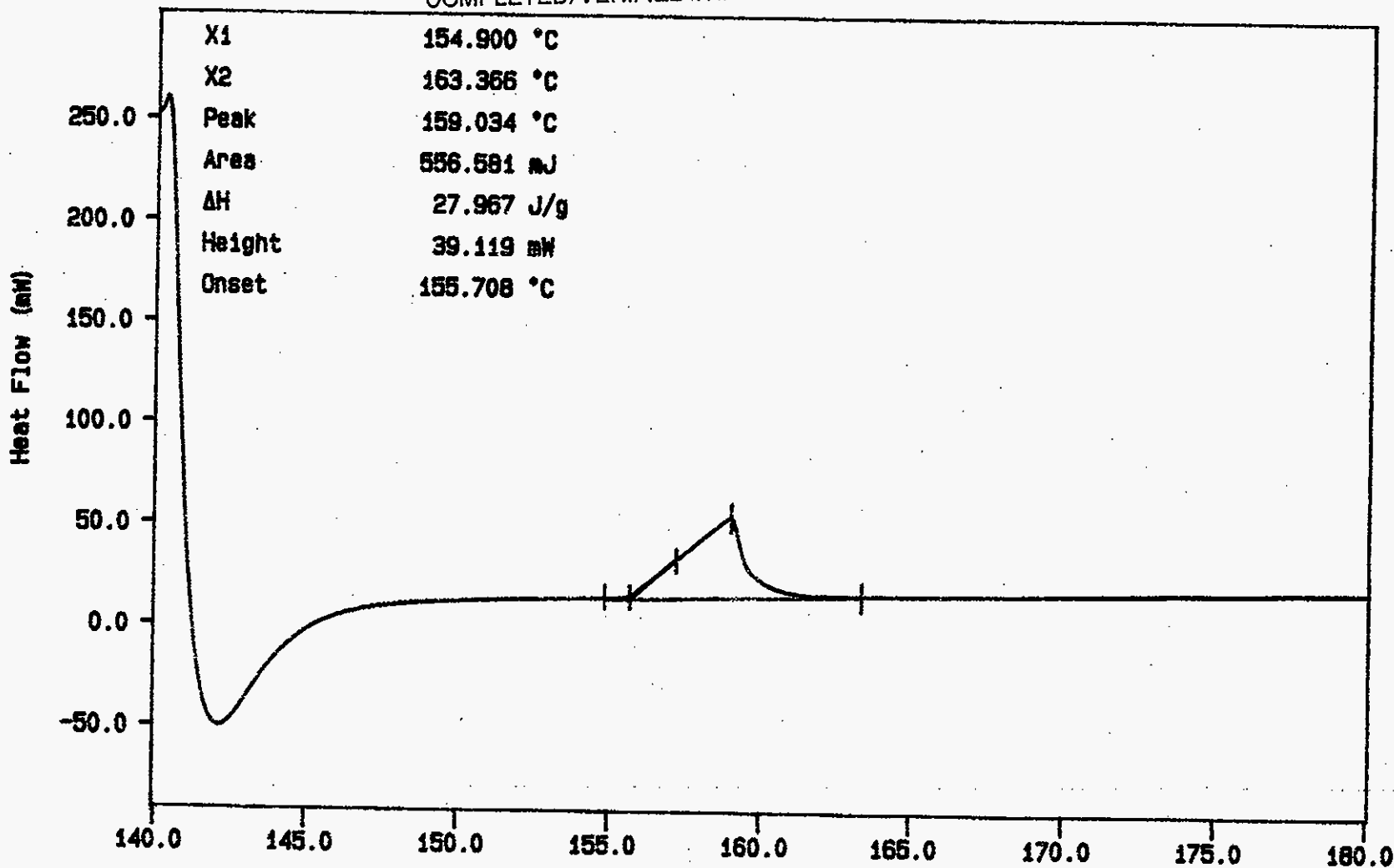
Curve 1: DSC

File info: IND040901 Fri Apr 9 08:40:56 1999

Sample Weight: 19.901 mg

STD 12N14-B

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



78

HNF-1668 REV. 0

N2, EXOTHERM DOWN

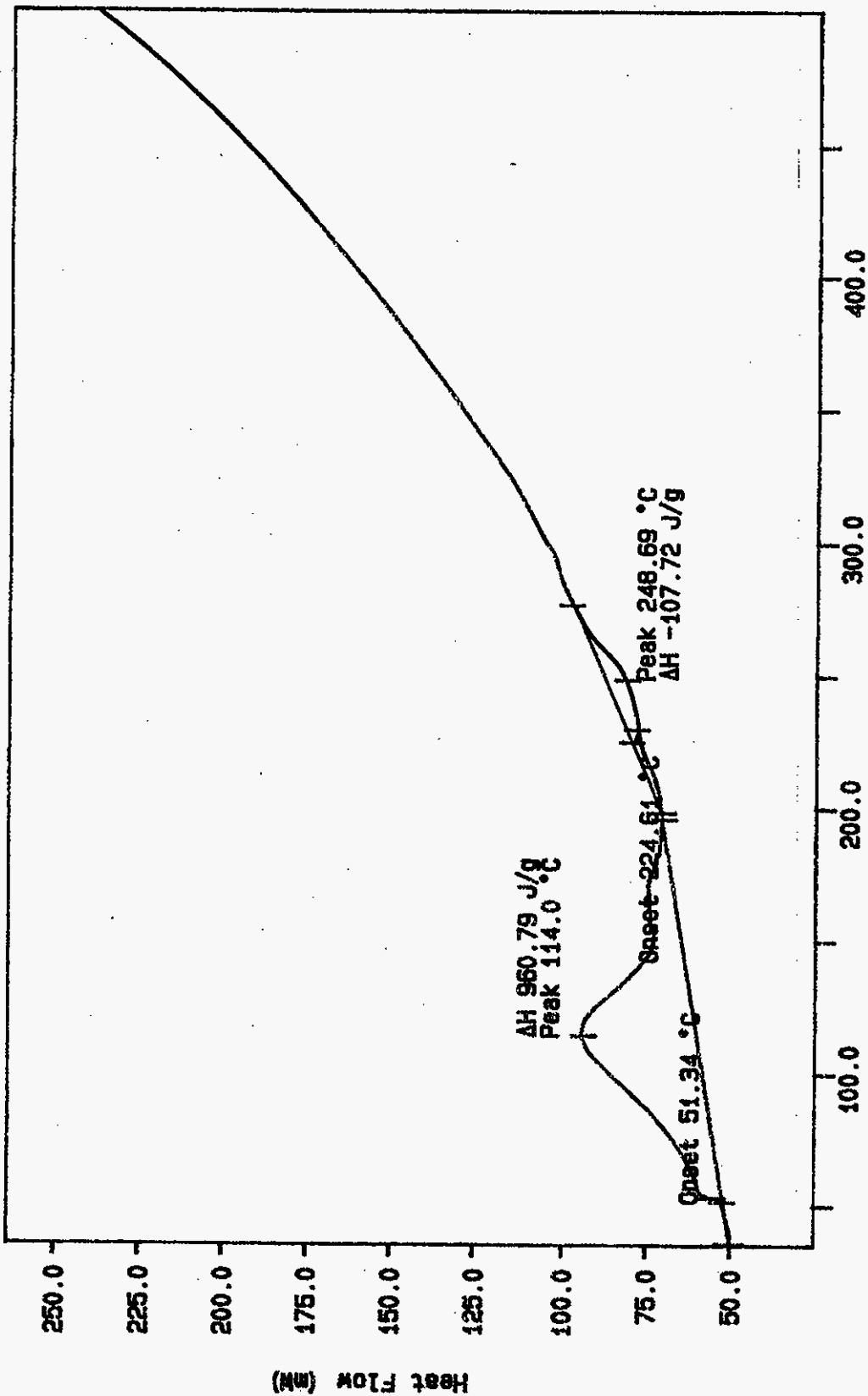
Temperature (°C)

TEMP: 138.8 °C TIME: 0.0 min RATE: 10.0 C/min

JI SOLBRACK *Jiff Solbrack*
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 10:02:05 1999

HNF-1668 REV. 0

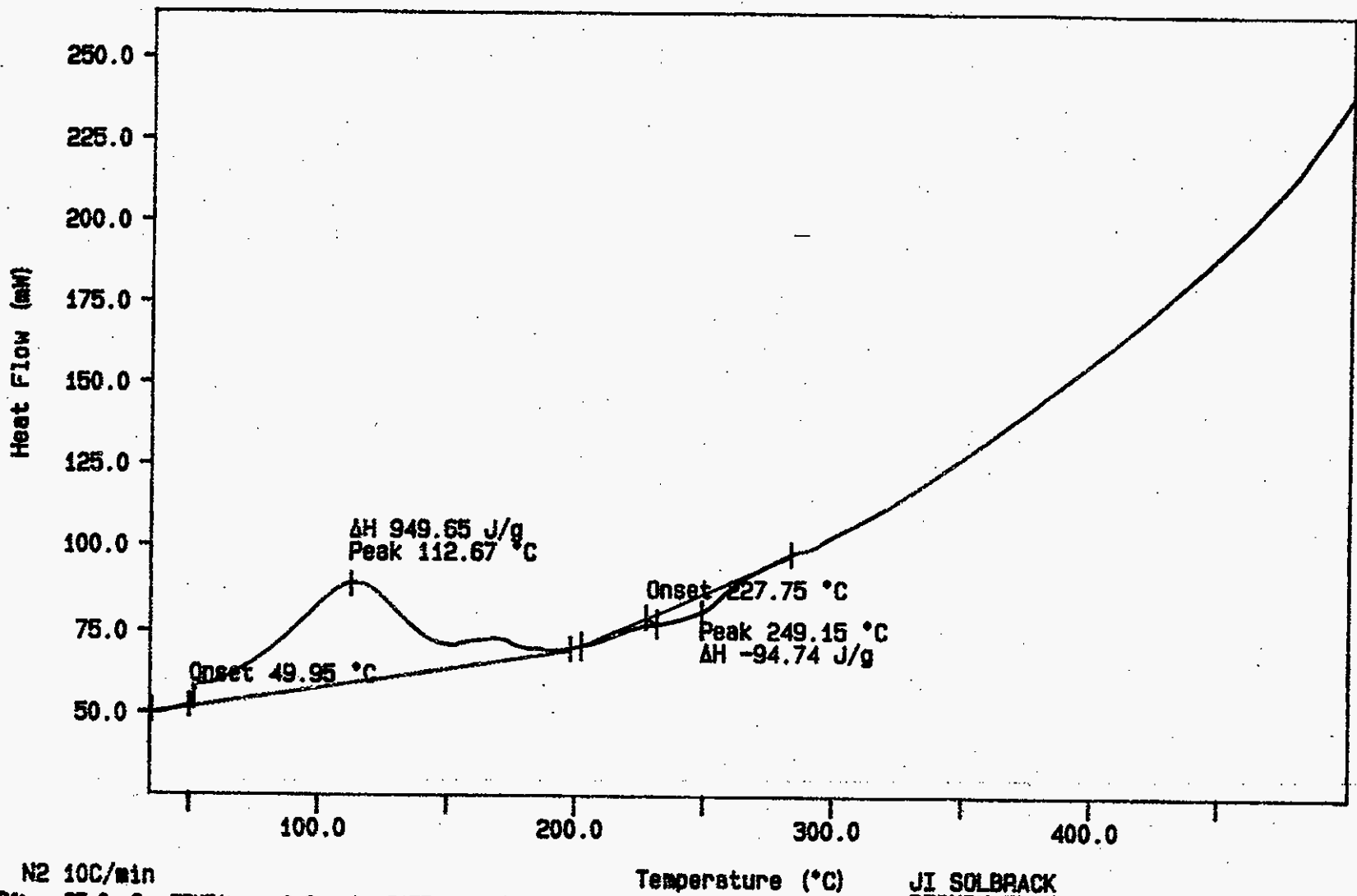
Curve 1: DSC
 File info: SAM040902 Fri Apr 9 11:41:54 1999
 Sample Weight: 13.250 mg
 S99T000541



N2 10C/min
 TEMPERATURE 280.8 °C
 TIME 000.8 s
 RATE 10.0 C/min
 JI SOLBRACK
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Apr 12 10:04:33 1999

Curve 1: DSC
File info: SAM040903 Fri Apr 9 14: 43: 17 1999
Sample Weight: 11.660 mg
S99T000541DUP

80



N2 10C/min
TIME: 25.0 C
TIME: 53.0 C
TIME: 0.0 min RATE: 10.0 C/min

JI SOLBRACK
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 10:06:50 1999

HNF-1668 REV. 0

LABCORE Completed Worklist Report for Worklist# 29349

Analyst: ppb

Instrument: DSC0

Book#: _____

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

Worklist Comment: U103 GRAB2 DSC-02 SOLID MF

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	SAMPLE	S99T000539	0		DSC-02	SOLID	N/A	68.50		Joules/g Dry
2	DUP	S99T000539	0		DSC-02	SOLID	68.50	86.26	22.952	RPD
3	SAMPLE	S99T000540	0		DSC-02	SOLID	N/A	140.8		Joules/g Dry
4	DUP	S99T000540	0		DSC-02	SOLID	140.8	95.32	38.523	RPD
5	SAMPLE	S99T000541	0		DSC-02	SOLID	N/A	209.17		Joules/g Dry
6	DUP	S99T000541	0		DSC-02	SOLID	209.17	184.00	12.804	RPD

Final page for worklist# 29349

Analyst Signature

Date

Analyst Signature

Date


Reviewer/Signature

5/24/99
Date

HNF-1668 REV. 0

LABCORE Completed Worklist Report for Worklist# 29349

Analyst: ppb

Instrument: DSC0

Book#: _____

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

Worklist Comment: U103 GRAB2 DSC-02 SOLID MF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 SAMPLE	S99T000539	0	DSC-02	SOLID	N/A	49.10 68.50		Joules/g Dry
2 DUP	S99T000539	0	DSC-02	SOLID	65.10	61.98 86.26	22-953 RPD	22.952
3 SAMPLE	S99T000540	0	DSC-02	SOLID	N/A	118.63 140.8		Joules/g Dry
4 DUP	S99T000540	0	DSC-02	SOLID	118.63	80.29 95.32	38-548 RPD	38.523
5 SAMPLE	S99T000541	0	DSC-02	SOLID	N/A	209.17		Joules/g Dry
6 DUP	S99T000541	0	DSC-02	SOLID	209.17	184.00	12.804 RPD	

[Handwritten Signature]
5/25/99

Final page for worklist# 29349

Analyst Signature

Date

[Handwritten Signature]

4-27-99

Reviewer Signature

Date

Analyst Signature

Date

[Handwritten Signature] 4-21-99

LABCORE Completed Worklist Report for Worklist# 29671

Analyst: jmf

Instrument: DSC0

Book#: _____

Method: LA-514-113 Rev/Mod _____

Worklist Comment: u103 dry dsc jis

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	SAMPLE	S99T000537	0		DSC-02	LIQUID	N/A	148.22		Joules/g Dry
2	DUP	S99T000537	0		DSC-02	LIQUID	148.22	137.42	7.562	RPD
3	SAMPLE	S99T000546	0		DSC-02	LIQUID	N/A	187.76		Joules/g Dry
4	DUP	S99T000546	0		DSC-02	LIQUID	187.76	222.02	16.721	RPD
5	SAMPLE	S99T000548	0		DSC-02	LIQUID	N/A	66.24		Joules/g Dry
6	DUP	S99T000548	0		DSC-02	LIQUID	66.24	70.60	6.372	RPD

Final page for worklist# 29671

Analyst Signature Date

Analyst Signature Date

 5/24/99

Reviewer Signature Date

LABCORE Completed Worklist Report for Worklist# 29671

Analyst: jmf

Instrument: DSCO

Book#: _____

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

Worklist Comment: u103 dry dsc jis

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 SAMPLE	S99T000537	0	DSC-02	LIQUID	N/A	148.22		Joules/g Dry
2 DUP	S99T000537	0	DSC-02	LIQUID	148.22	137.42	7.562	RPD
3 SAMPLE	S99T000546	0	DSC-02	LIQUID	N/A	187.76		Joules/g Dry
4 DUP	S99T000546	0	DSC-02	LIQUID	187.76	222.02	16.721	RPD
5 SAMPLE	S99T000548	0	DSC-02	LIQUID	N/A	56.61 66.24		Joules/g Dry
6 DUP	S99T000548	0	DSC-02	LIQUID	56.61	60.34 70.60	6.372	RPD 6.372

[Handwritten signature]
5/25/99

Final page for worklist# 29671

Analyst Signature _____ Date _____

[Handwritten signature] 05-11-99
Analyst Signature Date

[Handwritten signature] 5-11-99
Reviewer Signature Date

LABCORE Completed Worklist Report for Worklist# 29204

Analyst: jis

Instrument: TGA03

Book#: 117N8A

Method: LA-514-114 Rev/Mod _____

Worklist Comment: U103 GRAB2, 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	58.78	98.956	% Recovery
2	SAMPLE	S99T000537	0		TGA-03	LIQUID	N/A	51.34		%
3	DUP	S99T000537	0		TGA-03	LIQUID	51.34	51.28	0.117	RPD
4	SAMPLE	S99T000546	0		TGA-03	LIQUID	N/A	49.62		%
5	DUP	S99T000546	0		TGA-03	LIQUID	49.62	49.40	0.444	RPD

Final page for worklist# 29204

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

LABCORE Data Entry Template for Worklist# 29204

Analyst: JKS Instrument: TGA0 3 Book # 12N14-8

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

Worklist Comment: U103 GRAB2, TGA-03, Run under nitrogen. skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	5.94E+1 <u>28.45</u>	58.76 <u>27.25</u>	416100 N/A	%
99000104	U-103 GRAB2	2 SAMPLE	S99T000537	0	TGA-03	LIQUID	N/A	<u>51.34</u>		%
99000104	U-103 GRAB2	3 DUP	S99T000537	0	TGA-03	LIQUID	<u>51.34</u>	<u>51.28</u>	N/A	%
99000104	U-103 GRAB2	4 SAMPLE	S99T000546	0	TGA-03	LIQUID	N/A	<u>49.62</u>		%
99000104	U-103 GRAB2	5 DUP	S99T000546	0	TGA-03	LIQUID	<u>49.62</u>	<u>49.40</u>	N/A	%

Final page for worklist # 29204

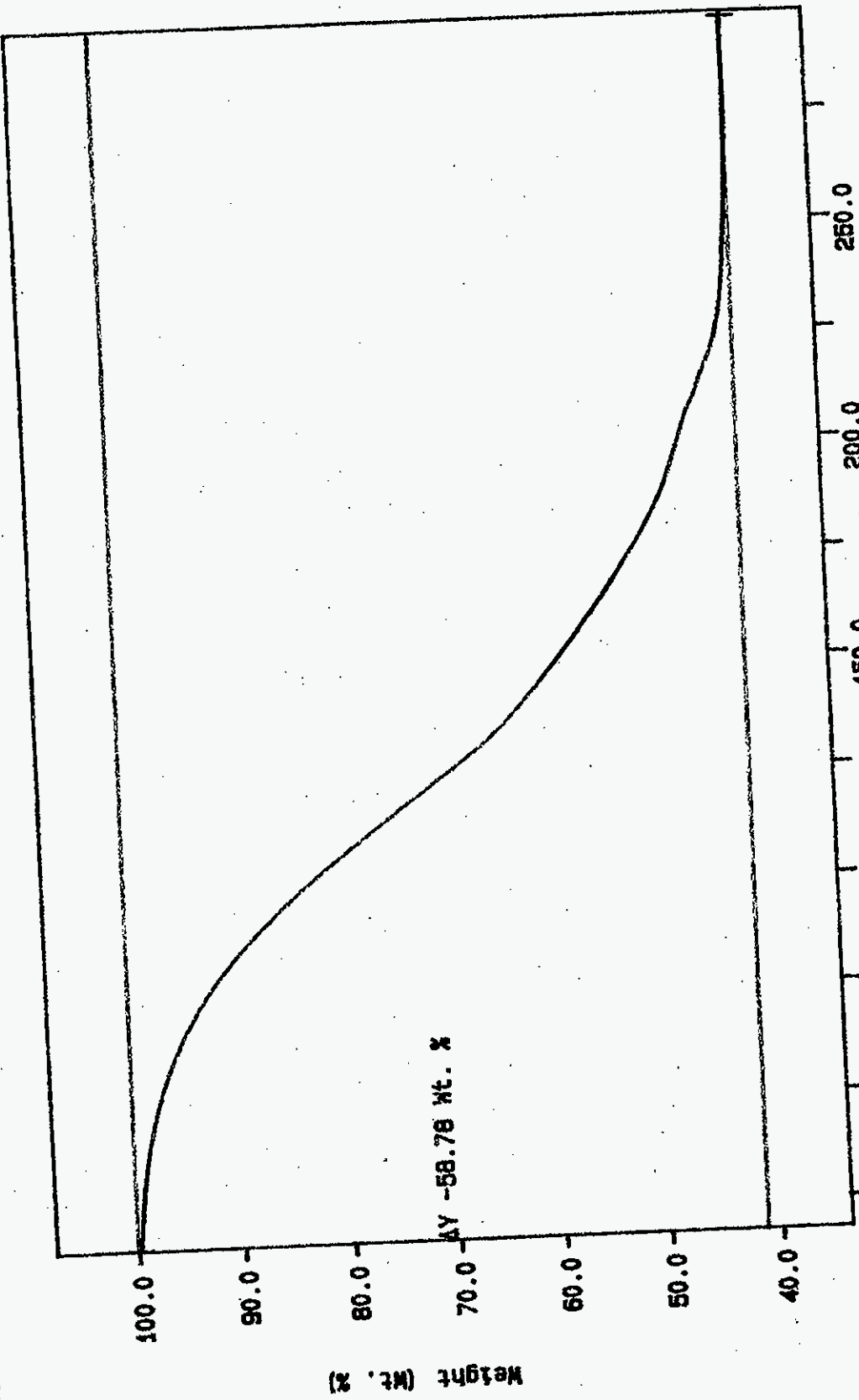
Jeff Solbreid 04-15-99
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

Curve 1: TGA Thu Apr 15 09: 04: 35 1999
File info: TER0415
Sample Weight: 14.895 mg
117N8-A
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 87 TO 91



10C/MIN N2
 38.8 g
 306.8 g
 0.0 min RATE: 10.0 C/MIN
 TIME: 09: 43: 08 1999
 Temperature (°C)
 JI SOLBRACK
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Med Apr 21 09: 43: 08 1999

Ji Solbrack

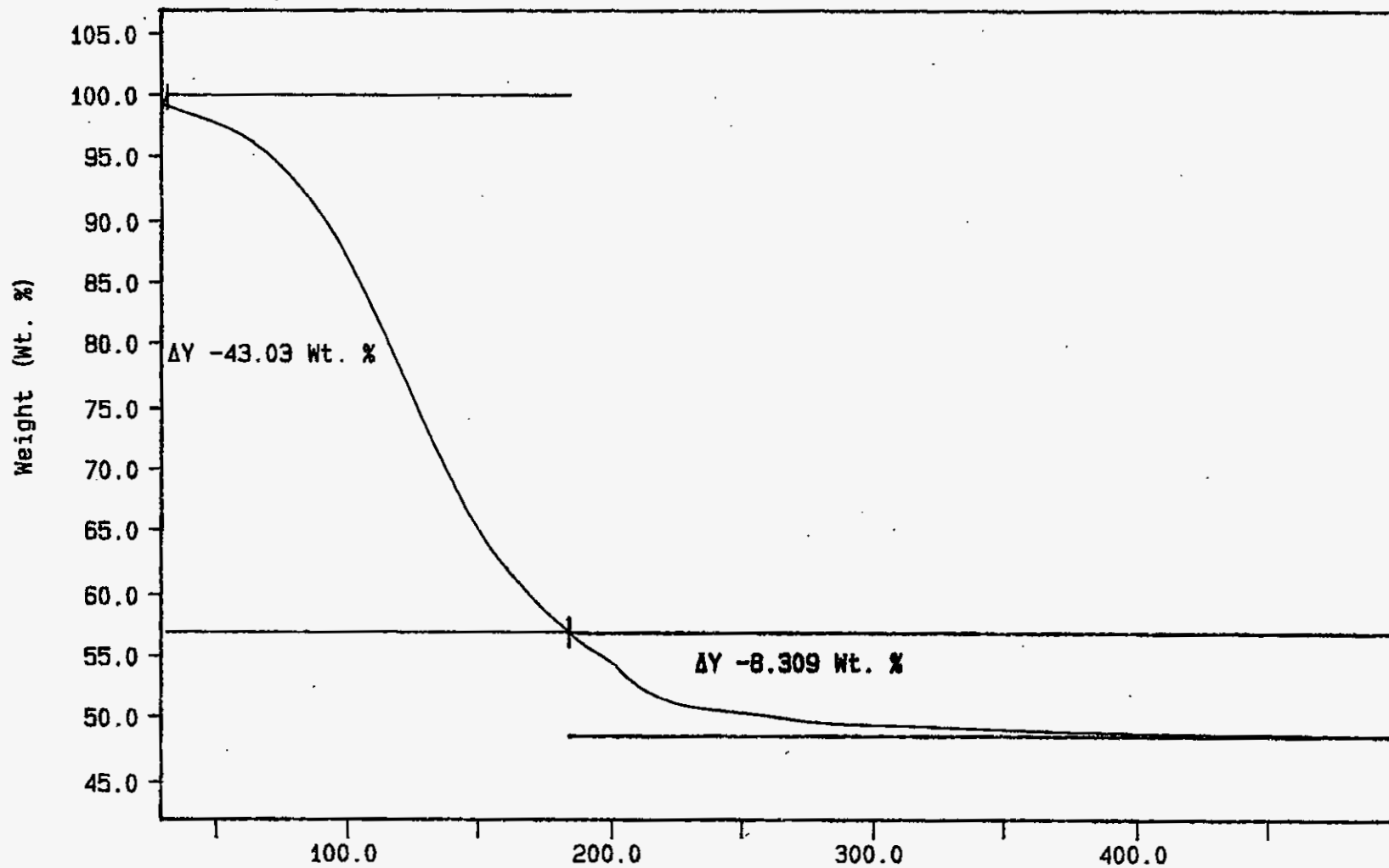
Curve 1: TGA

File info: SAM041503 Thu Apr 15 12: 23: 39 1999

Sample Weight: 14.410 mg

S99T000537

88



10C/MIN N2

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

TEMP2: 500.0 C

Temperature (°C)

J1 SOLBRACK
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Apr 15 14: 22: 16 1999

HNF-1668 REV. 0

Curve 1: TGA

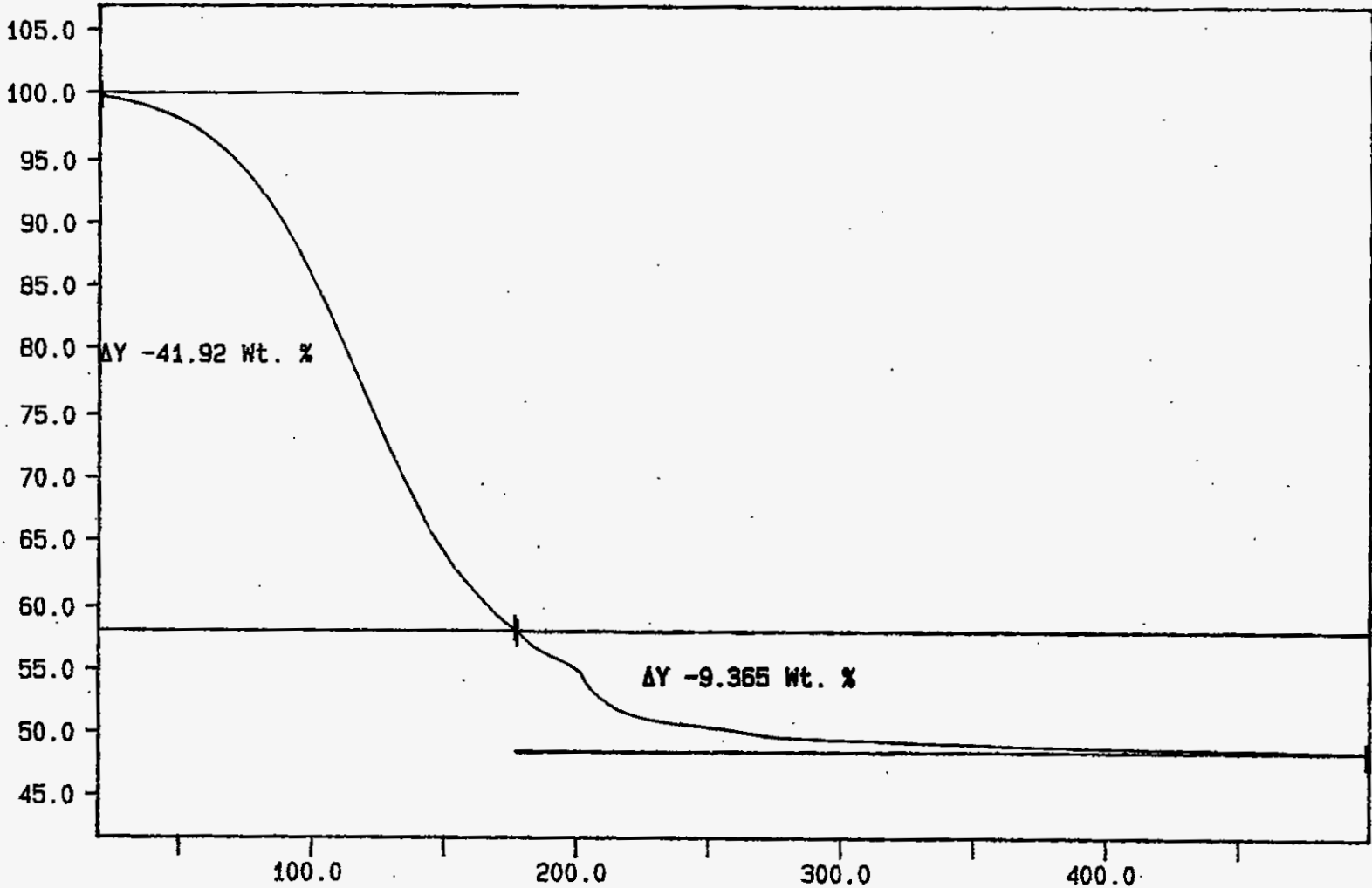
File info: SAM041504 Thu Apr 15 15: 13: 12 1999

Sample Weight: 14.075 mg

S99T000537DUP

68

Weight (Wt. %)



10C/MIN N2

Temperature (°C)

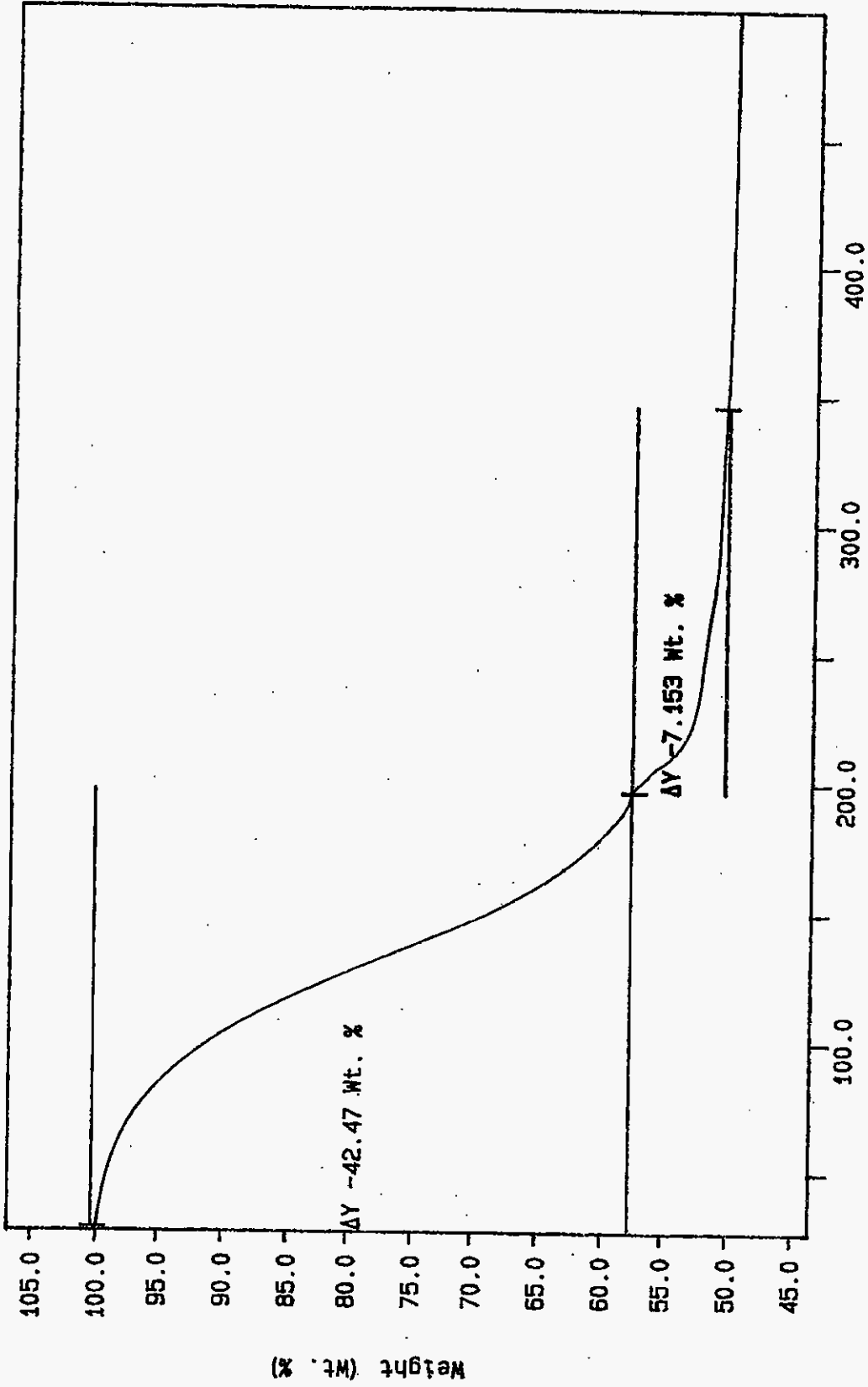
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min

TEMP2: 500.0 C

J1 SOLBRACK
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Apr 15 15: 17: 16 1999

HNF-1668 REV. 0

Curve 1: T6A
File info: SAM041505 Thu Apr 15 16: 20: 52 1999
Sample Weight: 16.170 mg
S99T000546



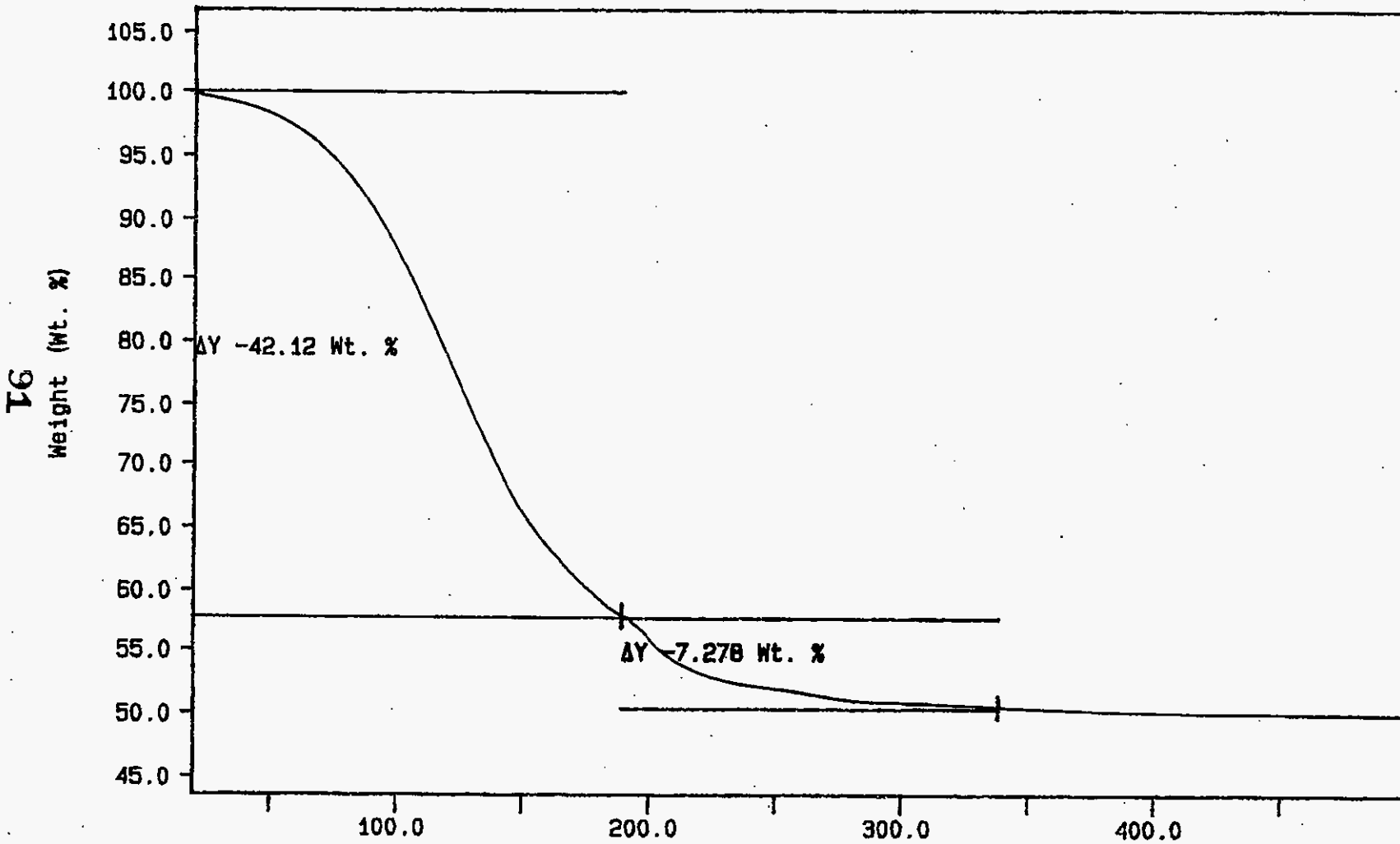
10C/MIN N2
TEMP1: 35.0 C
TEMP2: 500.0 C
TIME1: 0.0 min
RATE1: 10.0 C/min
JI SOLBRACK
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Apr 15 18:38:49 1999

Curve 1: TGA

File info: SAM041506 Thu Apr 15 19:31:53 1999

Sample Weight: 14.678 mg

S99T000546 DUP



HNF-1668 REV. 0

10C/MIN N2

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

J1 SOLBRACK
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Apr 15 19:35:37 1999

LABCORE Completed Worklist Report for Worklist# 29205

Analyst: rdm

Instrument: TGA03

Book#: 117N8A

Method: LA-514-114 Rev/Mod _____

Worklist Comment: U103 GRAB2, 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	58.84	99.057 % Recovery	
2 SAMPLE	S99T000548	0	TGA-03	LIQUID	N/A	49.20	%	
3 DUP	S99T000548	0	TGA-03	LIQUID	49.20	48.68	1.063 RPD	

Final page for worklist# 29205

Analyst Signature

Date

Analyst Signature

Date


Reviewer Signature

Date

5/24/99

LABCORE Completed Worklist Report for Worklist# 29205

Analyst: rdm

Instrument: TGA03

Book#: 117N8A

Method: LA-514-114 Rev/Mod _____

Worklist Comment: U103 GRAB2, 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	58.84	99.057 % Recovery	
2	SAMPLE	S99T000548	0		TGA-03	LIQUID	N/A	40.21 49.20	%	
3	DUP	S99T000548	0		TGA-03	LIQUID	40.21	40.21 48.68	0.224 RPD	1.063

John
5/27/99

Final page for worklist# 29205

Analyst Signature	Date	<i>John</i>	Date
			4-20-99
Reviewer Signature	Date	<i>[Signature]</i>	Date
			4-21-99

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

LABCORE Data Entry Template for Worklist# 29205

Analyst: RCM Instrument: TGA0 3 Book # 117N/A

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

Worklist Comment: U103 GRAB2, 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>58.84</u>	N/A	%
99000104	U-103 GRAB2	2 SAMPLE	S99T000548 0		TGA-03	LIQUID	<u>N/A</u>	<u>49.20</u> <u>40.21 m/c</u>	<u>5/24/99</u>	%
99000104	U-103 GRAB2	3 DUP	S99T000548 0		TGA-03	LIQUID	<u>40.21</u> <u>49.20</u>	<u>40.30</u> <u>48.68 m/c</u>	N/A	%

Final page for worklist # 29205

RCM
Analyst Signature
4/17/99
Date

Analyst Signature

Date

Data Entry Comments:

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

Curve 1: TGA

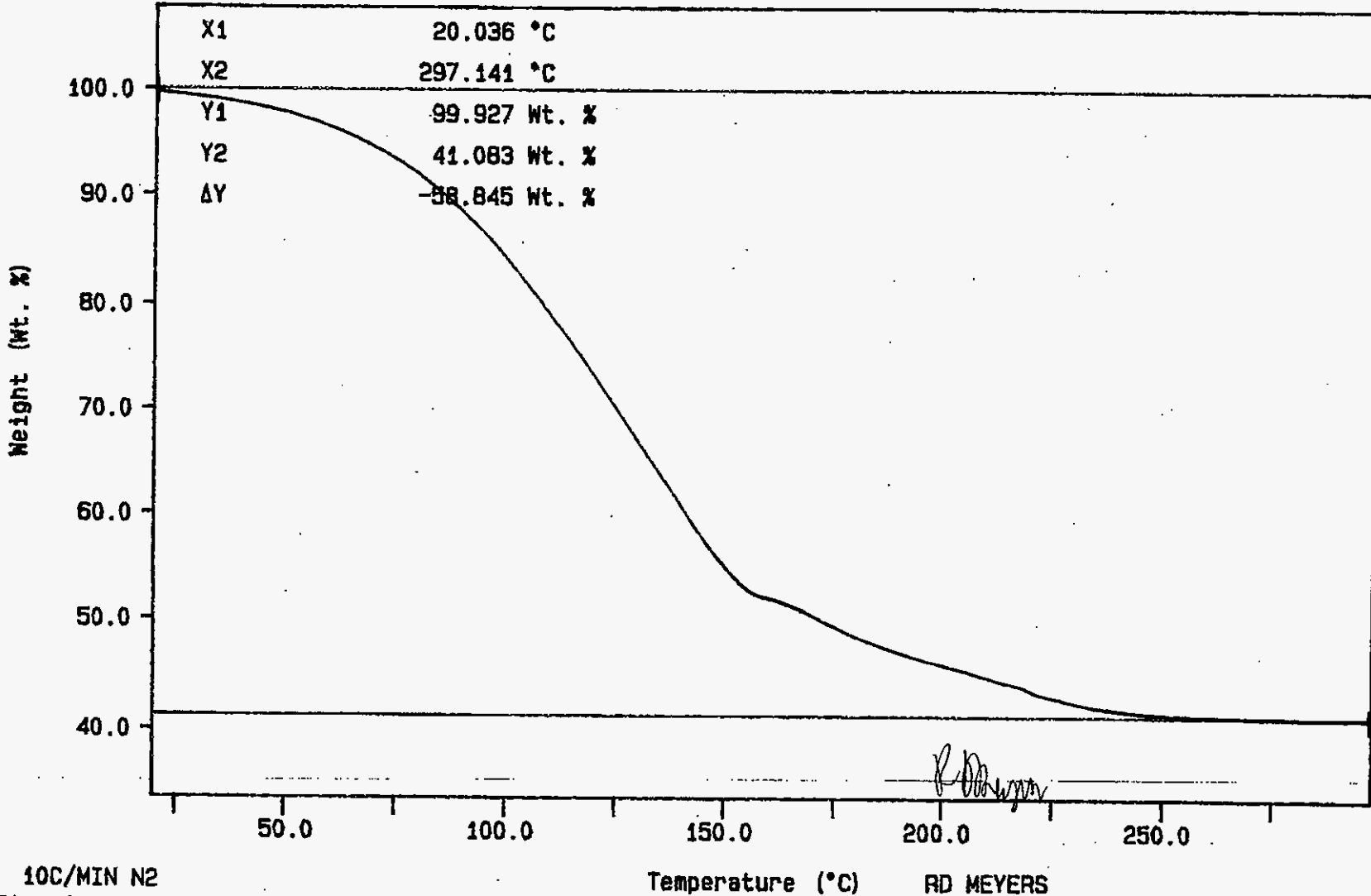
File info: TER041601 Fri Apr 16 18:52:57 1999

Sample Weight: 14.088 mg

117NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 95 TO 97.

95



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

Temperature (°C)

R. Meyers
RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Apr 16 18:56:23 1999

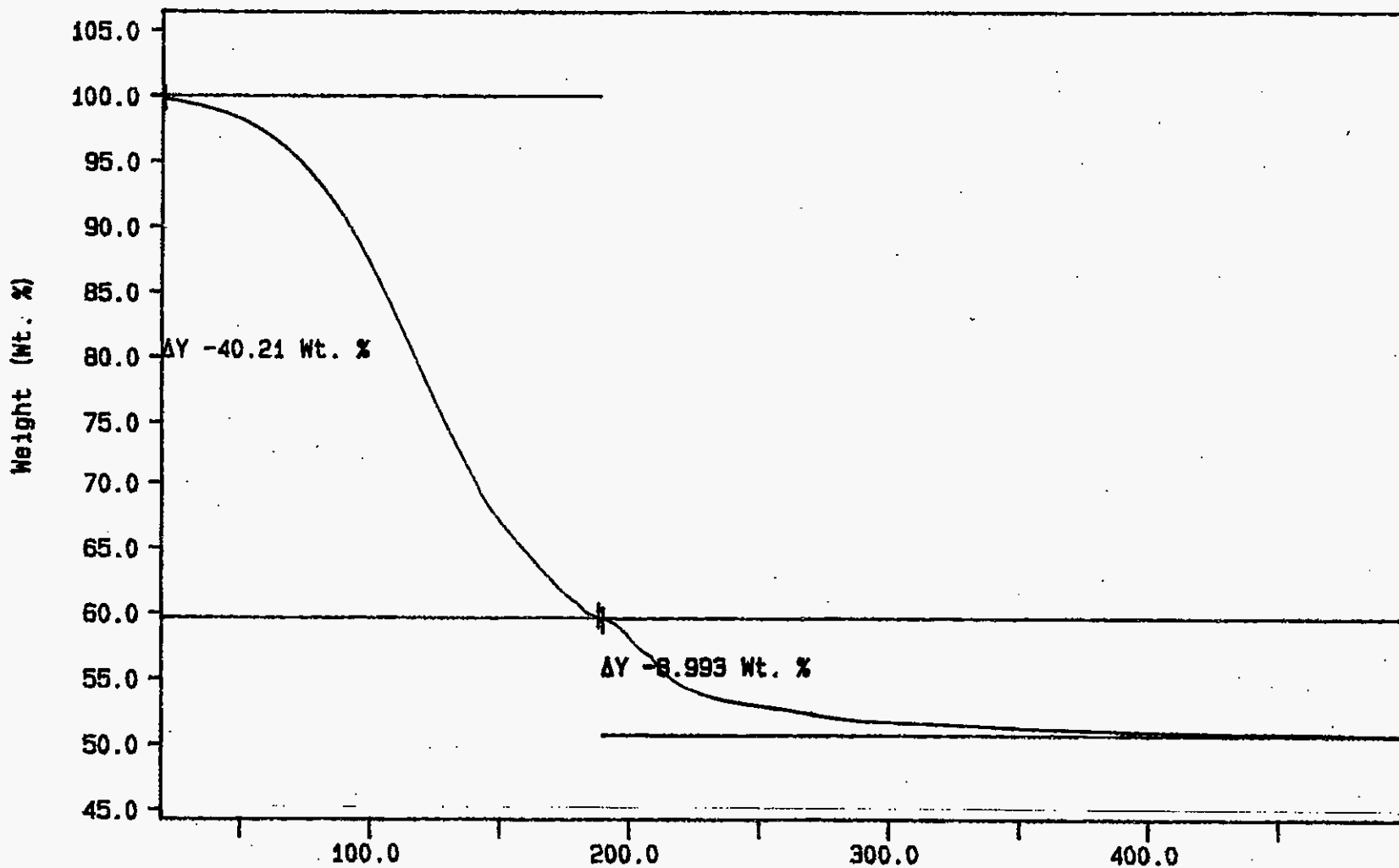
HNF-1668 REV. 0

Curve 1: TGA

File info: SAM041605 Fri Apr 16 20: 11: 03 1999

Sample Weight: 13.024 mg

S99T000548



10C/MIN N2

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

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Apr 16 20: 17: 19 1999

96

HNF-1668 REV. 0

04/19/99 09:22 FAX 3721143

2B HALL

003/004

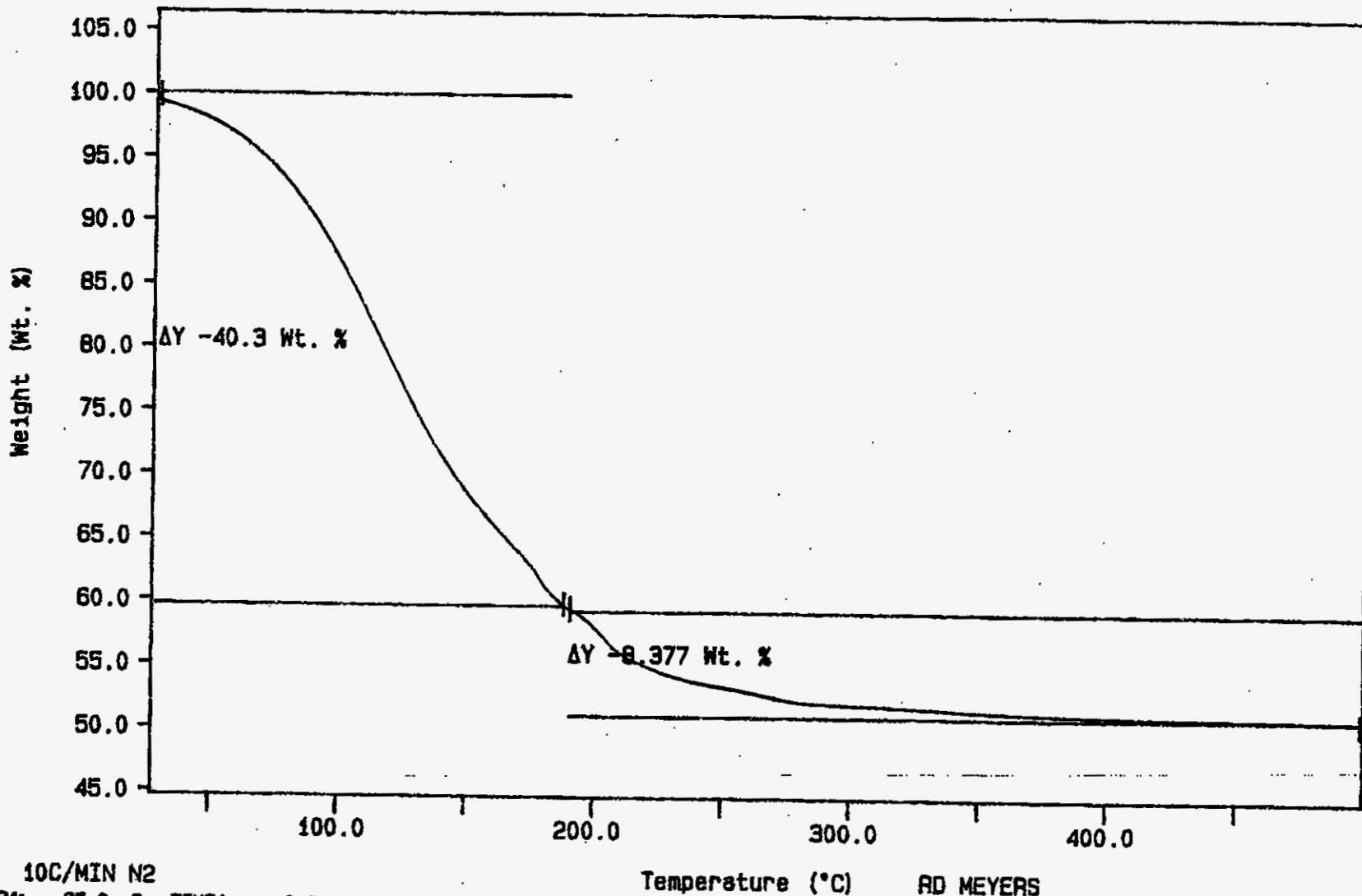
Curve 1: TGA

File info: SAM041606 Fri Apr 16 21: 18: 10 1999

Sample Weight: 14.098 mg

S99T000548DUP

97



10C/MIN N2

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

Temperature (°C)

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Apr 16 22: 01: 22 1999

LABCORE Completed Worklist Report for Worklist# 29206

Analyst: jmv

Instrument: TGA03

Book#: 117N8A

Method: LA-514-114 Rev/Mod _____

Worklist Comment: U103 GRAB2, 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	58.67	98.771 % Recovery	
2 SAMPLE	S99T000539	0	TGA-03	SOLID	N/A	46.15	%	
3 DUP	S99T000539	0	TGA-03	SOLID	46.15	33.21	32.611 RPD	
4 SAMPLE	S99T000540	0	TGA-03	SOLID	N/A	48.30	%	
5 DUP	S99T000540	0	TGA-03	SOLID	48.30	48.47	0.351 RPD	

Final page for worklist# 29206

Analyst Signature

Date

Analyst Signature

Date


Reviewer Signature

5/24/99
Date

LBCORE Completed Worklist Report for Worklist# 29206

Analyst: jmv

Instrument: TGA03

Book#: 117N8A

Method: LA-514-114 Rev/Mod _____

Worklist Comment: U103 GRAB2, 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	58.67	98.771 % Recovery	
2 SAMPLE	S99T000539	0	TGA-03	SOLID	N/A	39.85 46.15	%	
3 DUP	S99T000539	0	TGA-03	SOLID	39.85	33.21 33.21	18.177 RPD	32.611
4 SAMPLE	S99T000540	0	TGA-03	SOLID	N/A	39.70 48.30	%	
5 DUP	S99T000540	0	TGA-03	SOLID	39.70	37.75	5.036 RPD	0.351

Final page for worklist# 29206

Analyst Signature _____ Date _____

Mary Frances 4-13-99
Analyst Signature _____ Date _____

B. Machelo 4/15/99
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 29206

Analyst: JMV Instrument: TGA0 3 Book # 117XB.A

Method: LA-514-114 Rev/Mod D2

Worklist Comment: U103 GRAB2, TGA-03, Run under nitrogen. skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	SOLID	59.4	58.67	N/A	%
99000104	U-103 GRAB2	2 SAMPLE	S99T000539	0	TGA-03	SOLID	N/A	46.15 39.85	m/L 5/24/99	%
99000104	U-103 GRAB2	3 DUP	S99T000539	0	TGA-03	SOLID	46.15 39.85	33.21	m/L 5/24/99	%
99000104	U-103 GRAB2	4 SAMPLE	S99T000540	0	TGA-03	SOLID	N/A	48.30 39.70	m/L 5/24/99	%
99000104	U-103 GRAB2	5 DUP	S99T000540	0	TGA-03	SOLID	48.30 39.70	48.47 37.75	m/L 5/24/99 N/A	%

Final page for worklist # 29206

JMV 4-12-99
Analyst Signature Date

Mary Jones 4-13-99
Analyst Signature Date

Data Entry Comments:

High RPD S99T000539 due to sample inhomogeneities. Rerun only at customer request MB 4/13/99

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.

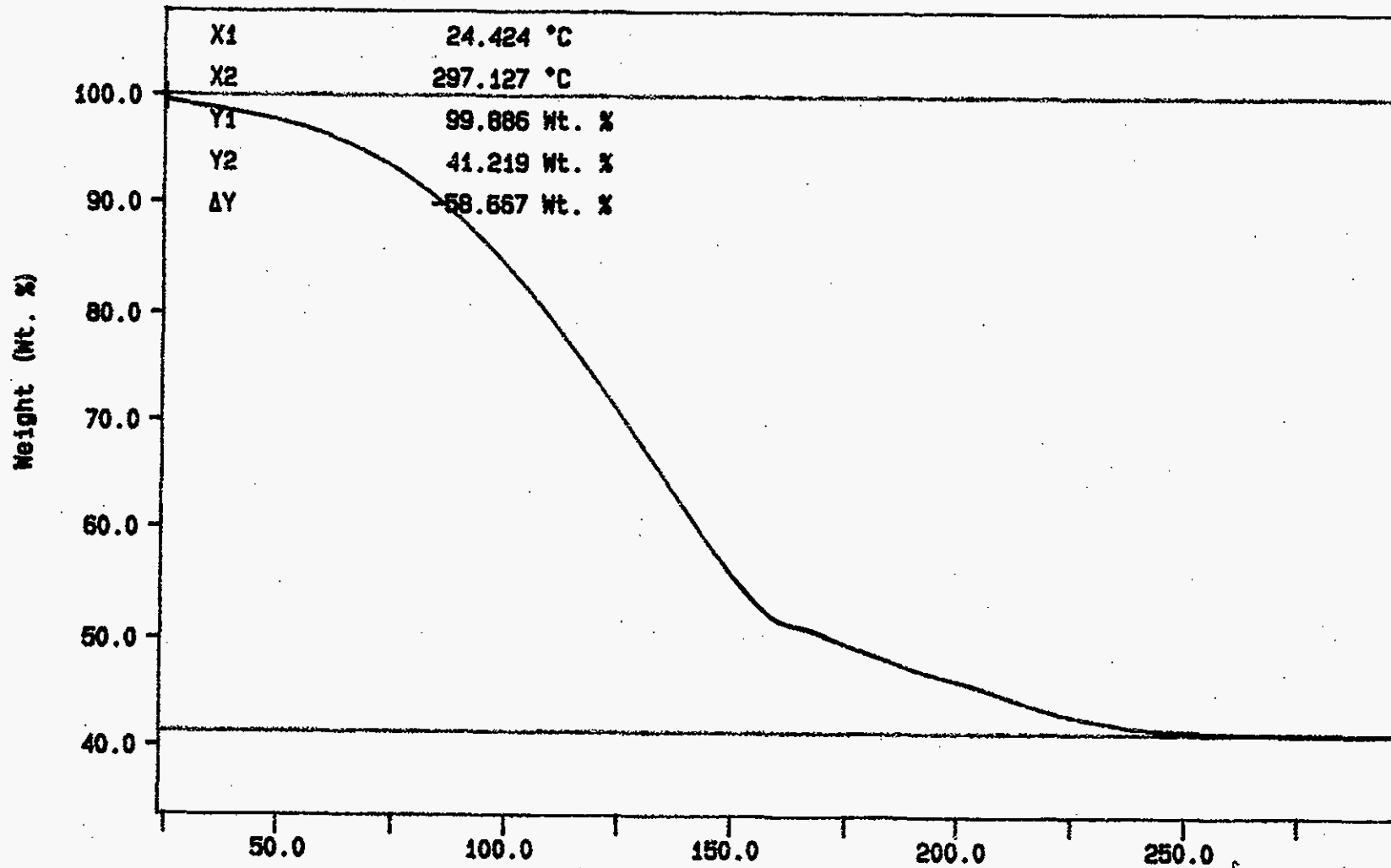
Curve 1: TGA

File info: ter0412 Mon Apr 12 09:31:59 1999

Sample Weight: 15.770 mg

117NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 101 TO 105.



101

HNF-1668 REV. 0

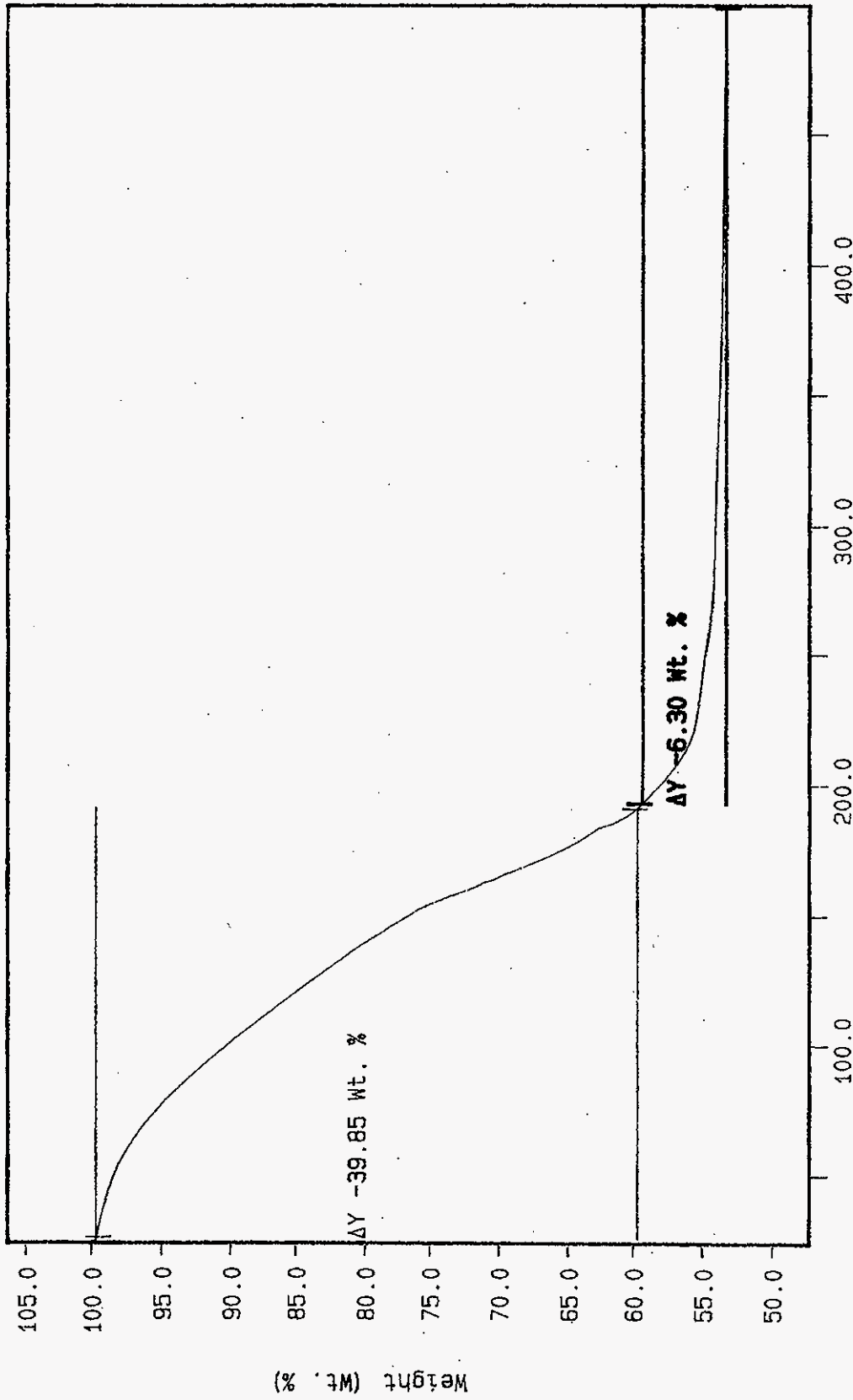
10C/MIN N2

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

Temperature (°C)

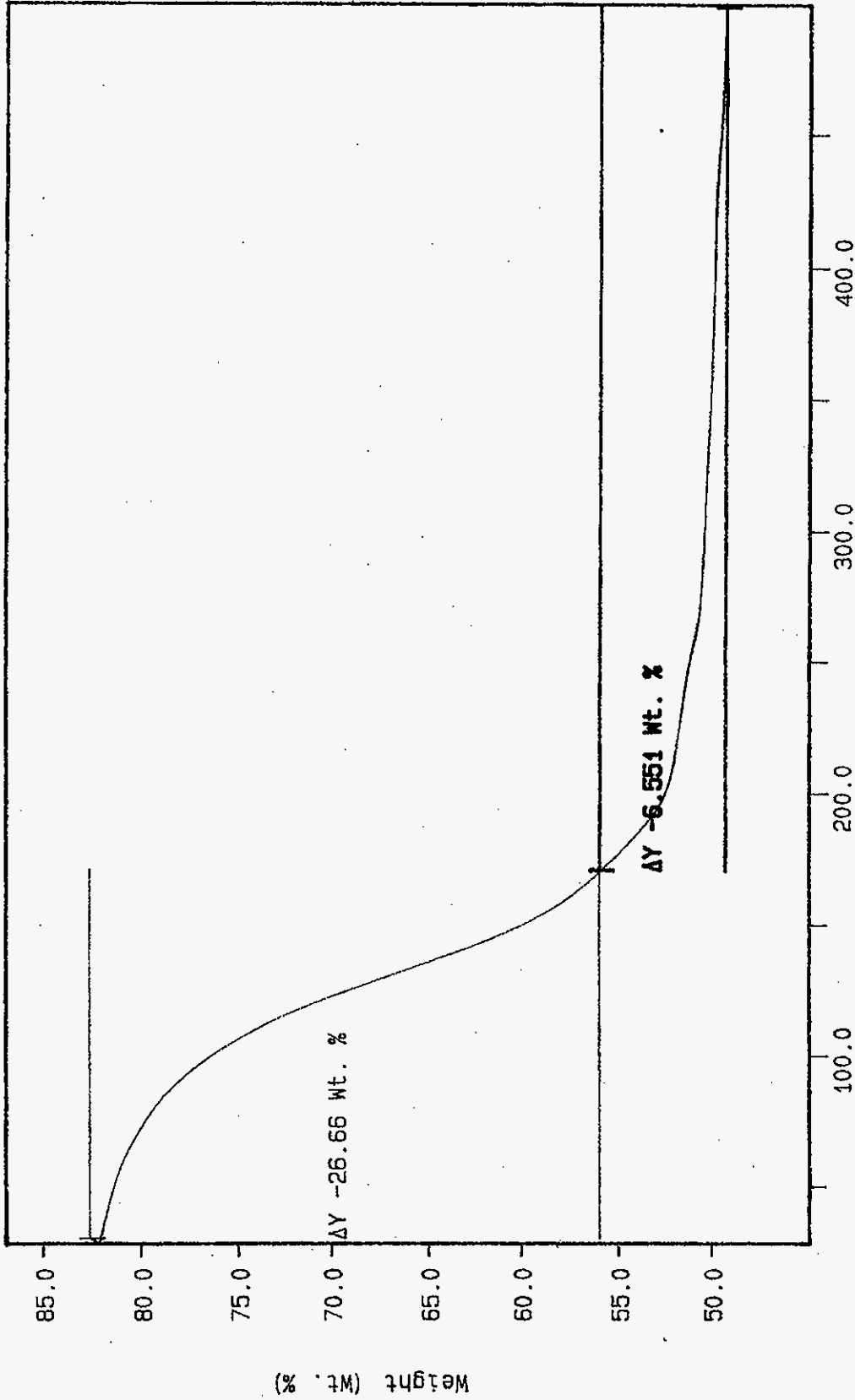
in vasant *in vasant*
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 09:34:30 1999

Curve 1: TGA
File info: sam041201 Mon Apr 12 10: 40: 46 1999
Sample Weight: 18.518 mg
S99T00054118
539



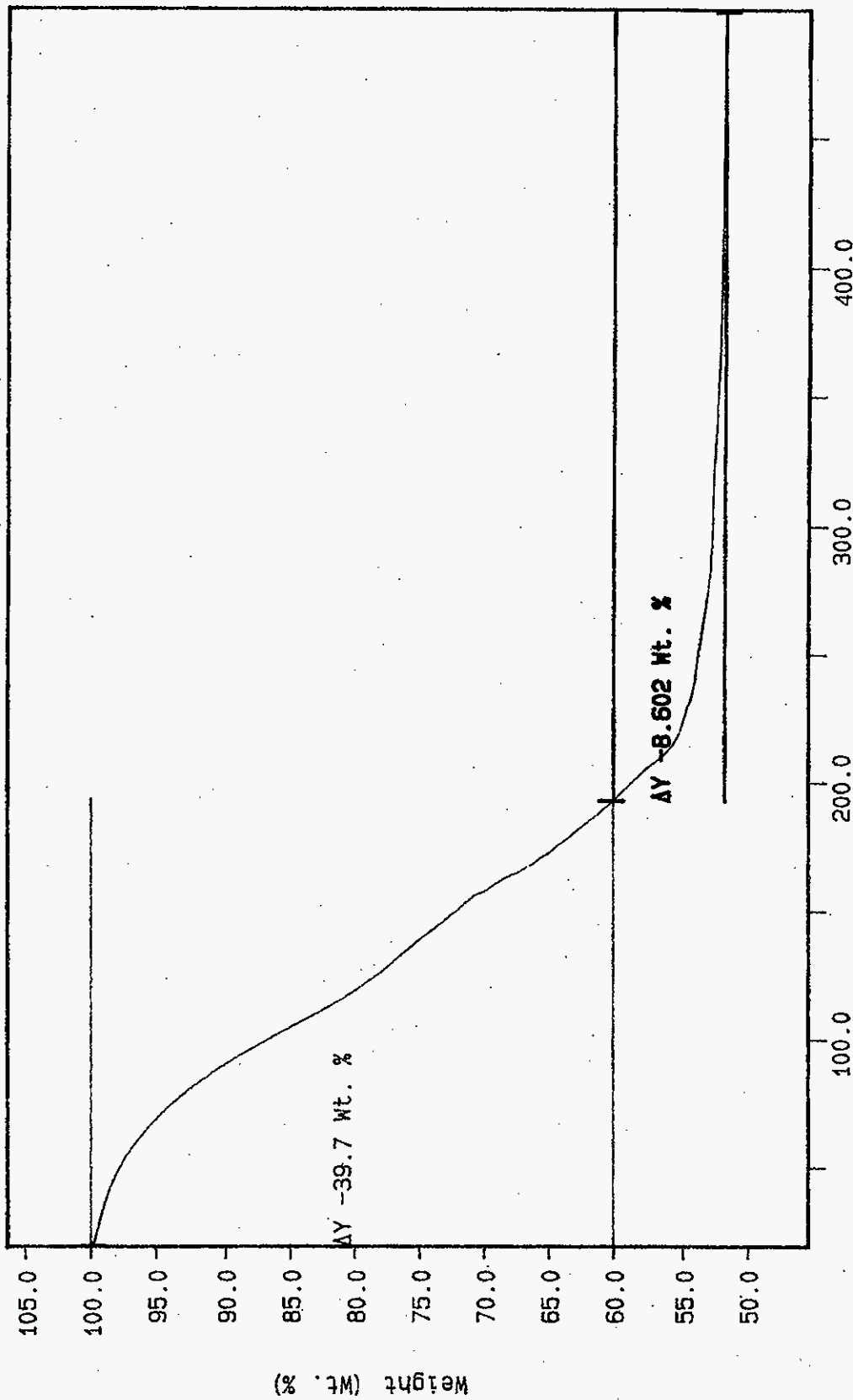
10C/MIN N2
TEMP: 35.0 C
TEMP: 500.0 C
TIME: 0.0 min
RATE: 10.0 C/min
im vasant
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 13: 36: 49 1999

Curve 1: TGA
File info: SAM041202 Mon Apr 12 11:46:28 1999
Sample Weight: 12.903 mg
S99T000539DUP



100/MIN N2
TEMP1: 35.0 C
TEMP2: 500.0 C
TIME1: 0.0 min
RATE1: 10.0 C/min
jm vasant
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 13:39:04 1999

Curve 1: TGA
File info: SAM041203 Mon Apr 12 13:58:49 1999
Sample Weight: 14.177 mg
S99T000540



10C/MIN N2
TEMP1: 35.0 C
TEMP2: 500.0 C
TIME1: 0.0 min RATE1: 10.0 C/min
jm vasant
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 14:01:13 1999

Curve 1: TGA

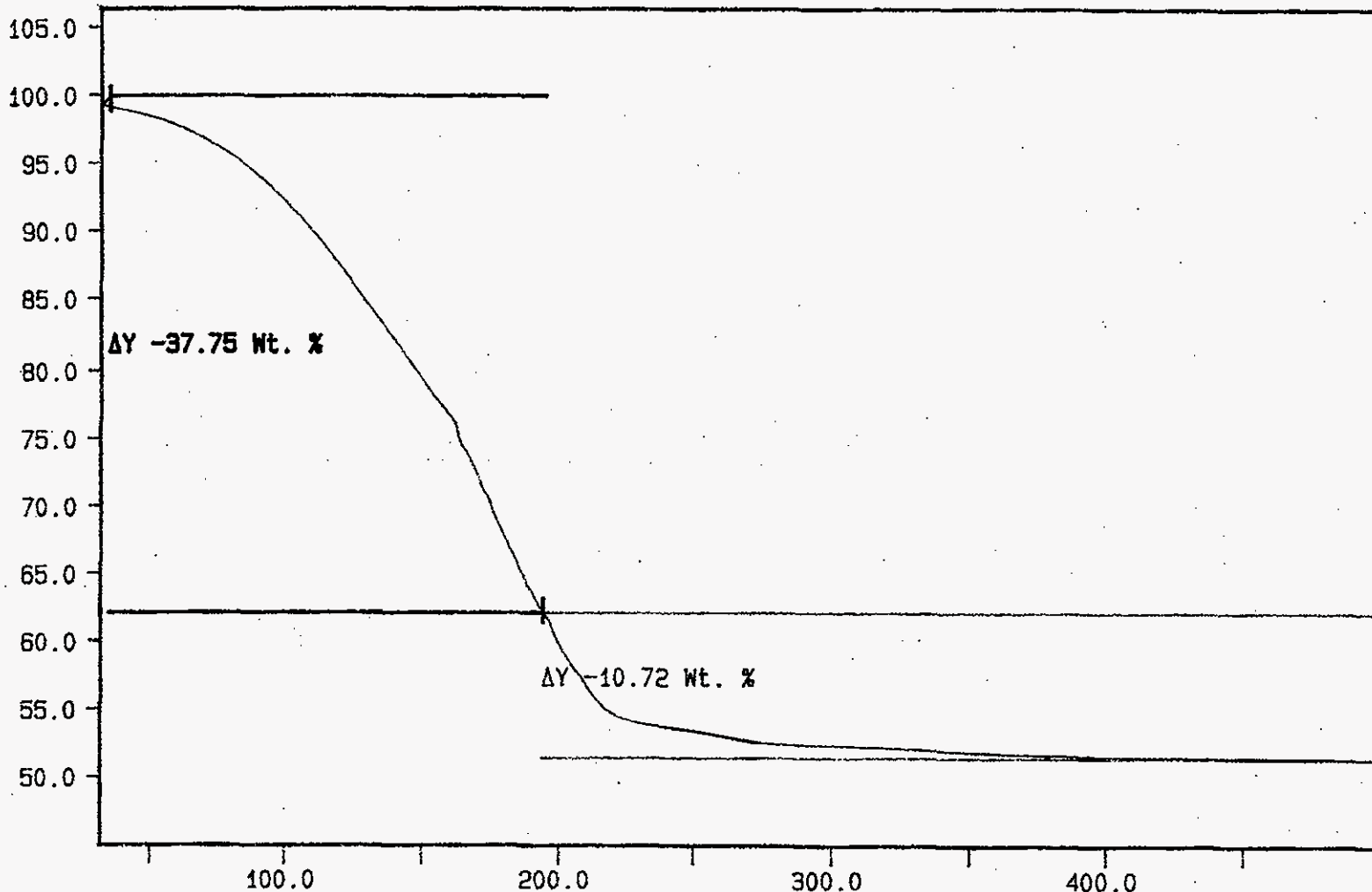
File info: SAM041204 Mon Apr 12 15:03:40 1999

Sample Weight: 28.929 mg

S99T000540DUP

105

Weight (Wt. %)



10C/MIN N2

Temperature (°C)

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

jm vansant
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 15:07:09 1999

HNF-1668 REV.0

LABCORE Completed Worklist Report for Worklist# 29207

Analyst: jis

Instrument: TGA03

Book#: 117N8A

Method: LA-514-114 Rev/Mod _____

Worklist Comment: U103 GRAB2, 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	58.36	98.249 % Recovery	
2 SAMPLE	S99T000541	0	TGA-03	SOLID	N/A	48.57	%	
3 DUP	S99T000541	0	TGA-03	SOLID	48.57	48.45	0.247 RPD	

Final page for worklist# 29207

Analyst Signature _____ Date _____

Mary Frank 4-12-99
Analyst Signature _____ Date _____

D. Nichols 4/13/99
Reviewer Signature _____ Date _____

HNF-1668 REV. 0

worklistrpt Version 2.1 05/15/95
04/07/99 11:17

Page: 1

LABCORE Data Entry Template for Worklist# 29207

Analyst: JIS Instrument: TGA0 3 Book # 117N8-A

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

Worklist Comment: U103 GRAB2, 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>58.36</u>	<u>N/A</u>	%
99000104	U-103 GRAB2	2 SAMPLE	S99T000541	0	TGA-03	SOLID	<u>N/A</u>	<u>48.57</u>		%
99000104	U-103 GRAB2	3 DUP	S99T000541	0	TGA-03	SOLID	<u>48.57</u>	<u>48.45</u>	<u>N/A</u>	%

Final page for worklist # 29207

Jeff Solbeck
Analyst Signature Date 04-09-99

Mary Fran
Analyst Signature Date 4-12-99

Data Entry Comments: Need to be Plotted

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

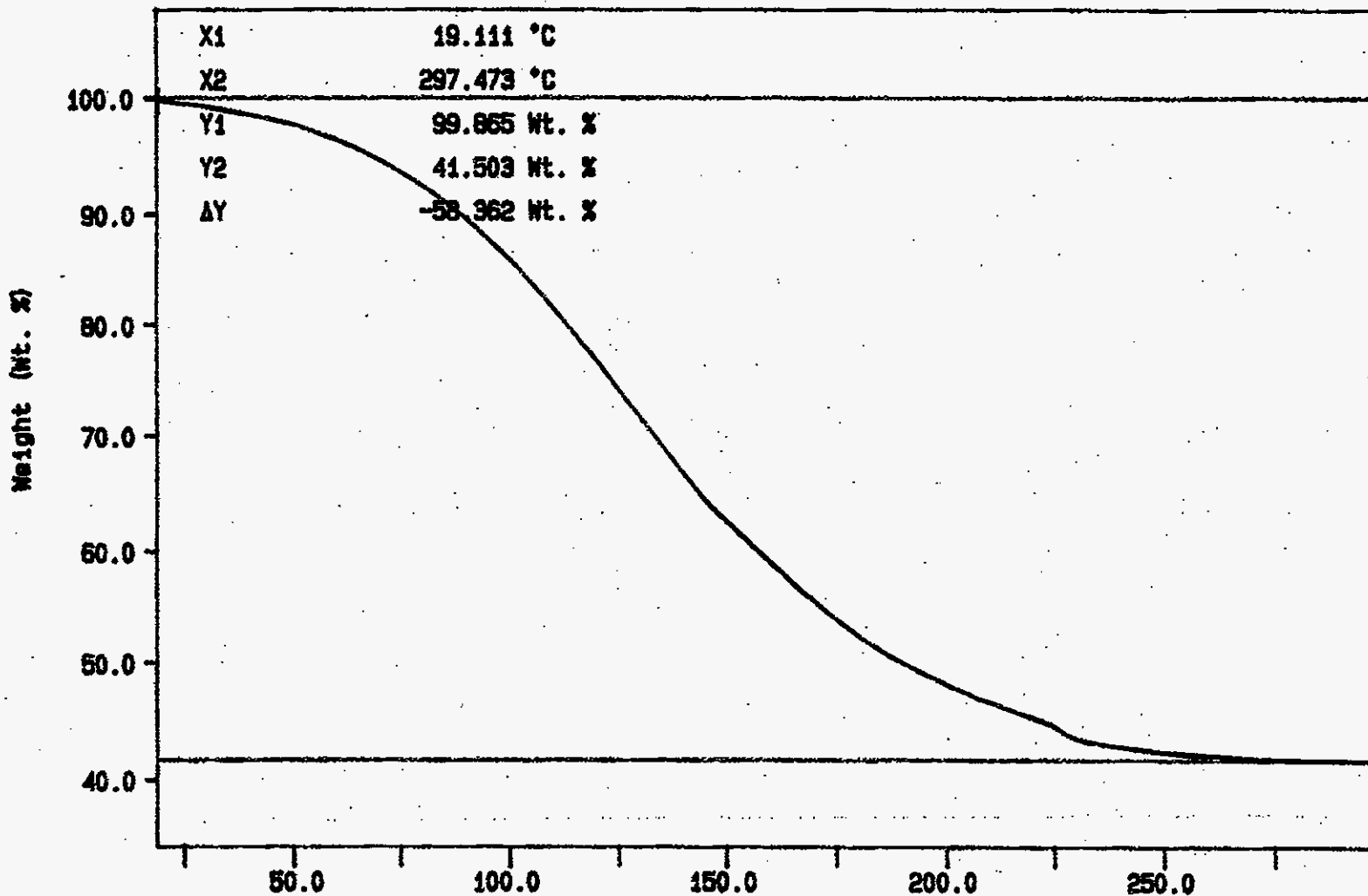
File info: TER040901 Fri Apr 9 09:18:35 1999

Sample Weight: 20.200 mg

117N8-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 108 TO 110.

108



10C/MIN N2

TEMP: 25.0 °C
TEMP: 350.0 °C

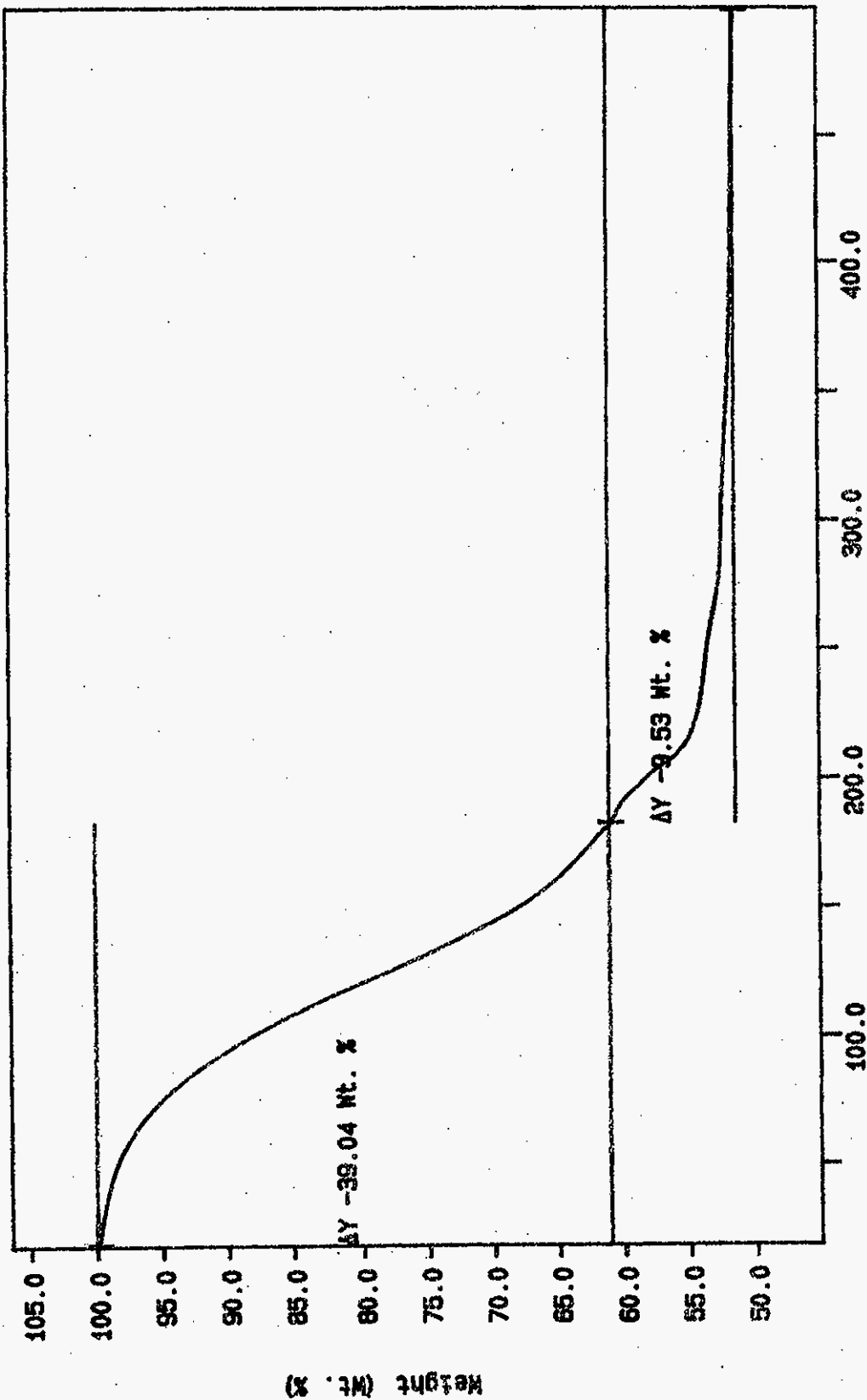
TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

JI SOLBRACK *J. Solbrack*
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Apr 12 09:55:18 1999

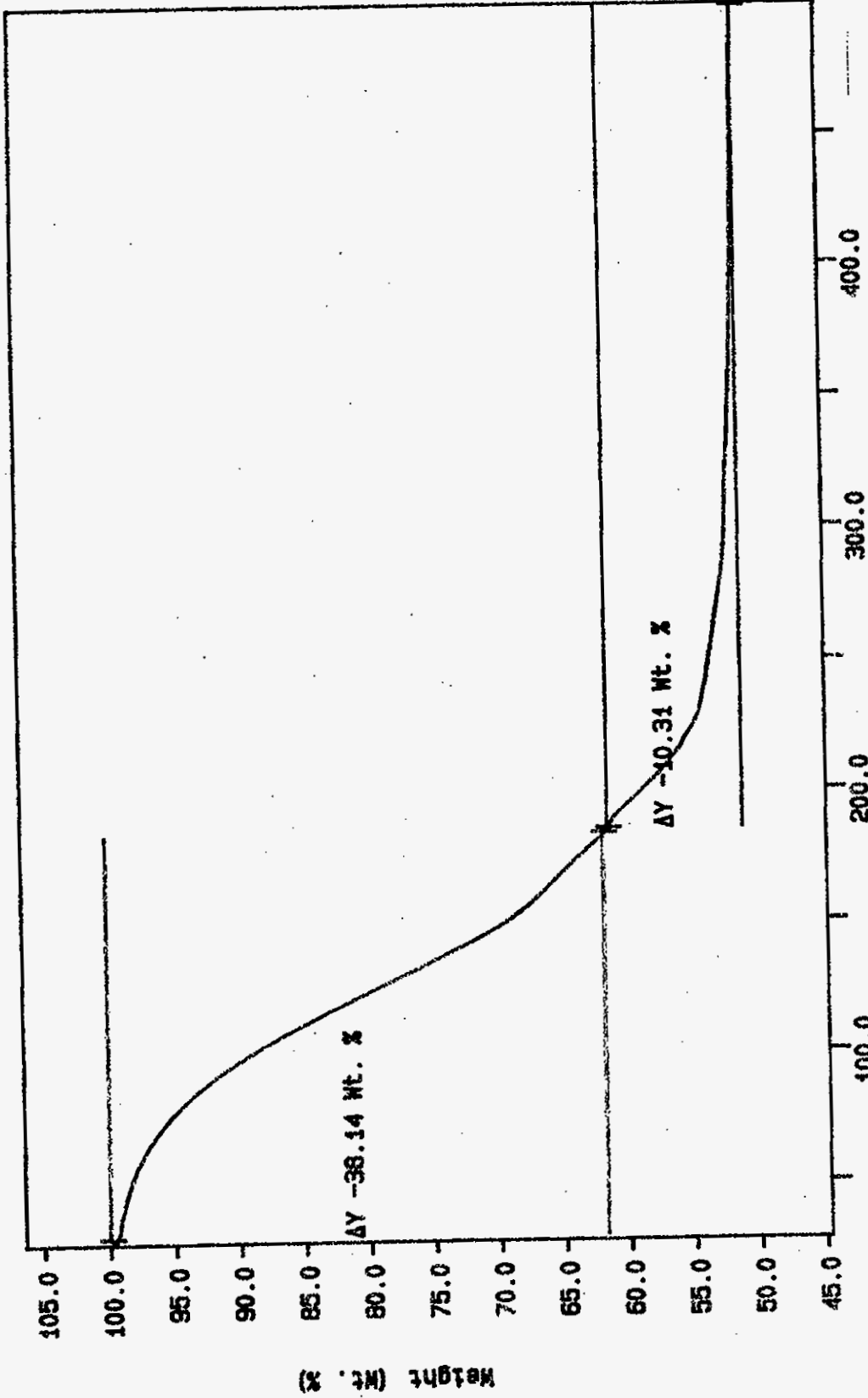
HNF-1668 REV. 0

Curve 1: T6A
File info: SAM040902 Fri Apr 9 11:04:54 1999
Sample Weight: 15.315 mg
S99T000541



10C/MIN N2
 TEMP: 35.8 C
 TIME: 600.8 S
 0.0 MIN RATE: 10.0 C/min
 Temperature (°C)
 JI SOLBRACK
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Mon Apr 12 13:25:54 1999

Curve 1: T6A
File Info: SAM040903 Fri Apr 9 12:11:19 1999
Sample Weight: 16.250 g
S99T000541DUP



10C/MIN N2
 TEMP: 38.0 C
 TIME: 500.0 S
 RATE: 0.0 MIN RATES: 10.0 C/MIN
 Temperature (°C)
 JI SOLBRACK
 PERKIN-ELMER
 7 Series Thermal Analysis System
 MON APR 12 13:27:44 1999

LABCORE Completed Worklist Report for Worklist# 29208

Analyst: jis

Instrument: BA001

Book#: 134N16C

Method: LA-510-112 Rev/Mod _____

Worklist Comment: U103 GRAB2, SPG-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	SPG-01	LIQUID	1.3779	1.359	98.628 % Recovery	
2 SAMPLE	S99T000537	0	SPG-01	LIQUID	N/A	1.423	1.00e-003	Sp.G.
3 DUP	S99T000537	0	SPG-01	LIQUID	1.423	1.459	2.498 RPD	
4 SAMPLE	S99T000546	0	SPG-01	LIQUID	N/A	1.439	1.00e-003	Sp.G.
5 DUP	S99T000546	0	SPG-01	LIQUID	1.439	1.456	1.174 RPD	
6 SAMPLE	S99T000548	0	SPG-01	LIQUID	N/A	1.433	1.00e-003	Sp.G.
7 DUP	S99T000548	0	SPG-01	LIQUID	1.433	1.441	0.557 RPD	

Final page for worklist# 29208

Analyst Signature

Date

Jeff Sollbrad 4-26-99
Analyst Signature Date

[Signature] 4/26/99
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 29208

Analyst: JIS Instrument: BA001 Book # 134N16-C

Method: LA-510-112 Rev/Mod E-O

Worklist Comment: U103 GRAB2, 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.
99000104	U-103 GRAB2	2 SAMPLE	S99T000537	0	SPG-01	LIQUID	N/A			Sp.G.
99000104	U-103 GRAB2	3 DUP	S99T000537	0	SPG-01	LIQUID			N/A	Sp.G.
99000104	U-103 GRAB2	4 SAMPLE	S99T000546	0	SPG-01	LIQUID	N/A			Sp.G.
99000104	U-103 GRAB2	5 DUP	S99T000546	0	SPG-01	LIQUID			N/A	Sp.G.
99000104	U-103 GRAB2	6 SAMPLE	S99T000548	0	SPG-01	LIQUID	N/A			Sp.G.
99000104	U-103 GRAB2	7 DUP	S99T000548	0	SPG-01	LIQUID			N/A	Sp.G.

Final page for worklist # 29208

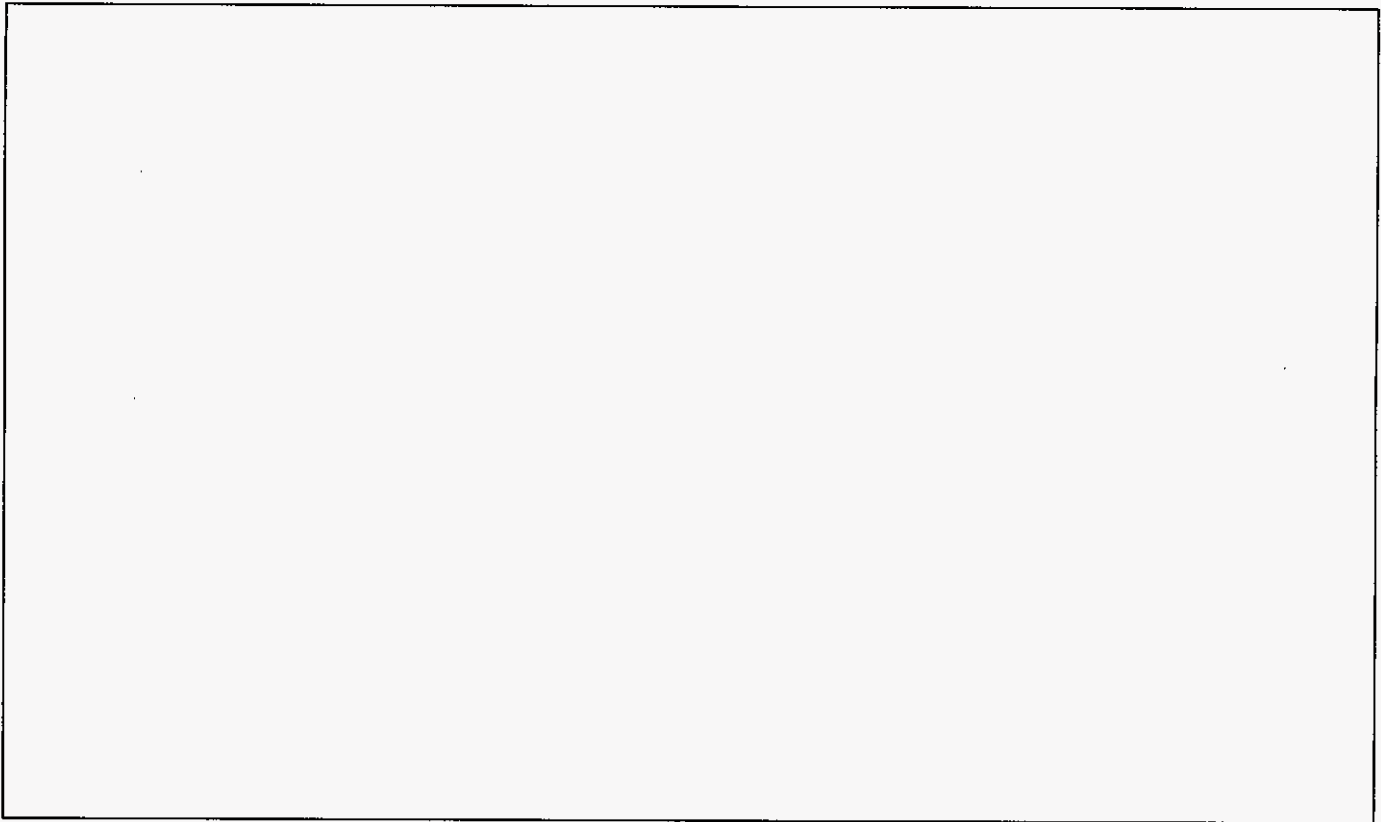
Jeff Solbraid 4-22-99
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER



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

Type		STD	REPLICATE
STD	Gross Weight (W2)	1.4811	1.4221
Work List	Tare Weight (W1)	1.3453	1.2860
29208	Weight of Solution (W2-W1)	0.1358	0.13607
Test Code	Volume of Solution μ L	100.0000	100.0000
SPG-01	Specific Gravity	1.3580	1.3607
Matrix	Specific Gravity (Average)	1.3594	
LIQUID			
Sample#			
STD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
JIS	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
04/22/99	v RESULT v		
Time	Specific Gravity Average =	1.359	
02:30 PM			

Data Entry by:	Date: 04/26/99
Approved by: <i>NA</i>	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAM	REPLICATE
SAM	Gross Weight (W2)	1.4659	
Work List	Tare Weight (W1)	1.3235	
29208	Weight of Solution (W2-W1)	0.14235	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4235	NA
Matrix			
LIQUID			
Sample #			
S99T000537			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
JIS	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
04/22/99	v RESULT v		
Time	Specific Gravity =	1.423	
02:30 PM			

Data Entry by:	Date: 04/26/99
Approved by: <i>NA</i>	Date:

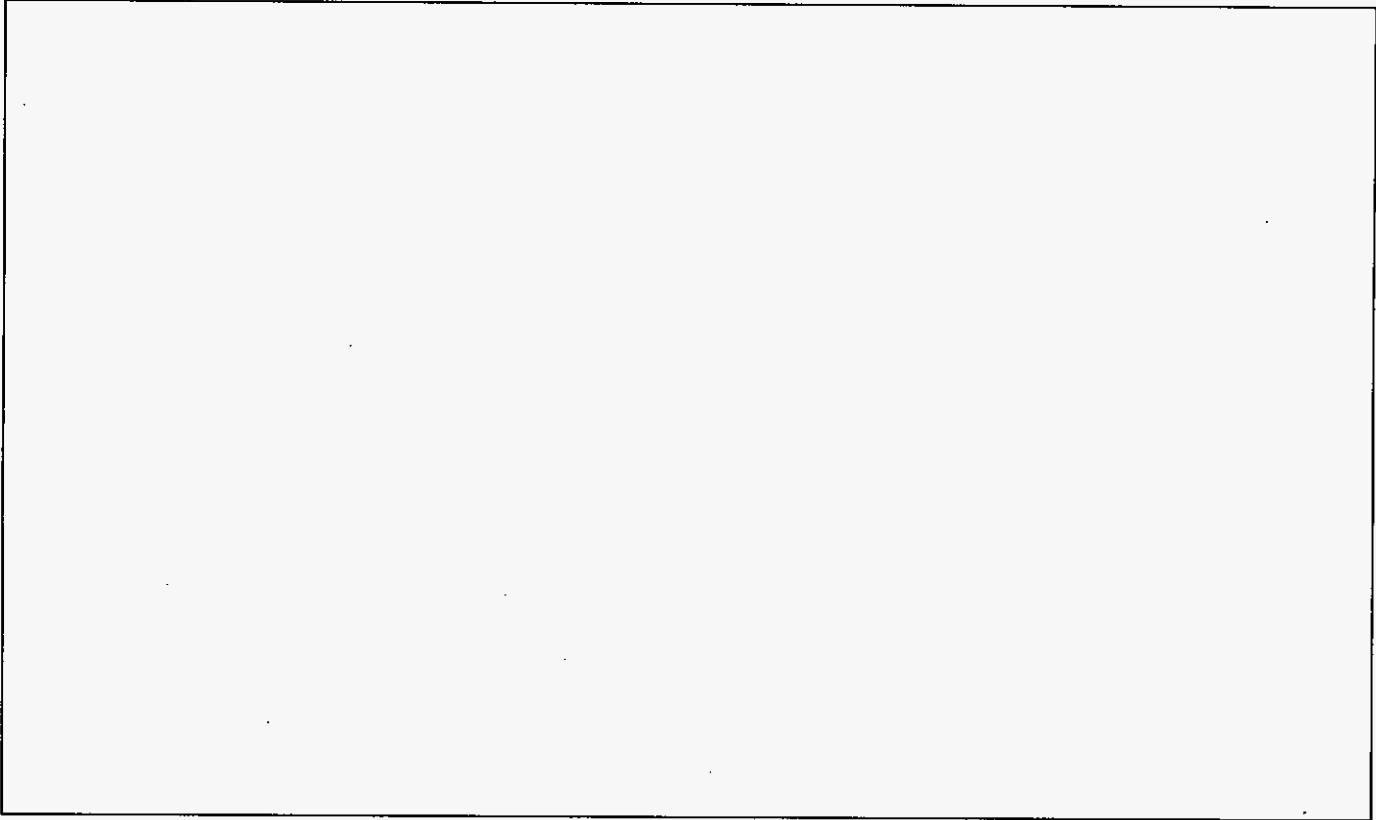
PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUP	REPLICATE
Type			
DUP	Gross Weight (W2)	1.4847	
Work List	Tare Weight (W1)	1.3389	
29208	Weight of Solution (W2-W1)	0.14587	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4587	NA
Matrix			
LIQUID			
Sample #			
S99T000537			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
JIS	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
04/22/99	v RESULT v		
Time	Specific Gravity =	1.459	
02:30 PM			

Data Entry by:	Date: 04/26/99
Approved by: <i>NA</i>	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER



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

Type		SAM	REPLICATE
SAM	Gross Weight (W2)	1.4152	
Work List	Tare Weight (W1)	1.2713	
29208	Weight of Solution (W2-W1)	0.14392	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4392	NA
Matrix			
LIQUID			
Sample #			
S99T000546			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
JIS	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
04/22/99	v RESULT v		
Time	Specific Gravity =	1.439	
02:30 PM			

Data Entry by:	Date: 04/26/99
Approved by: <i>NA</i>	Date:

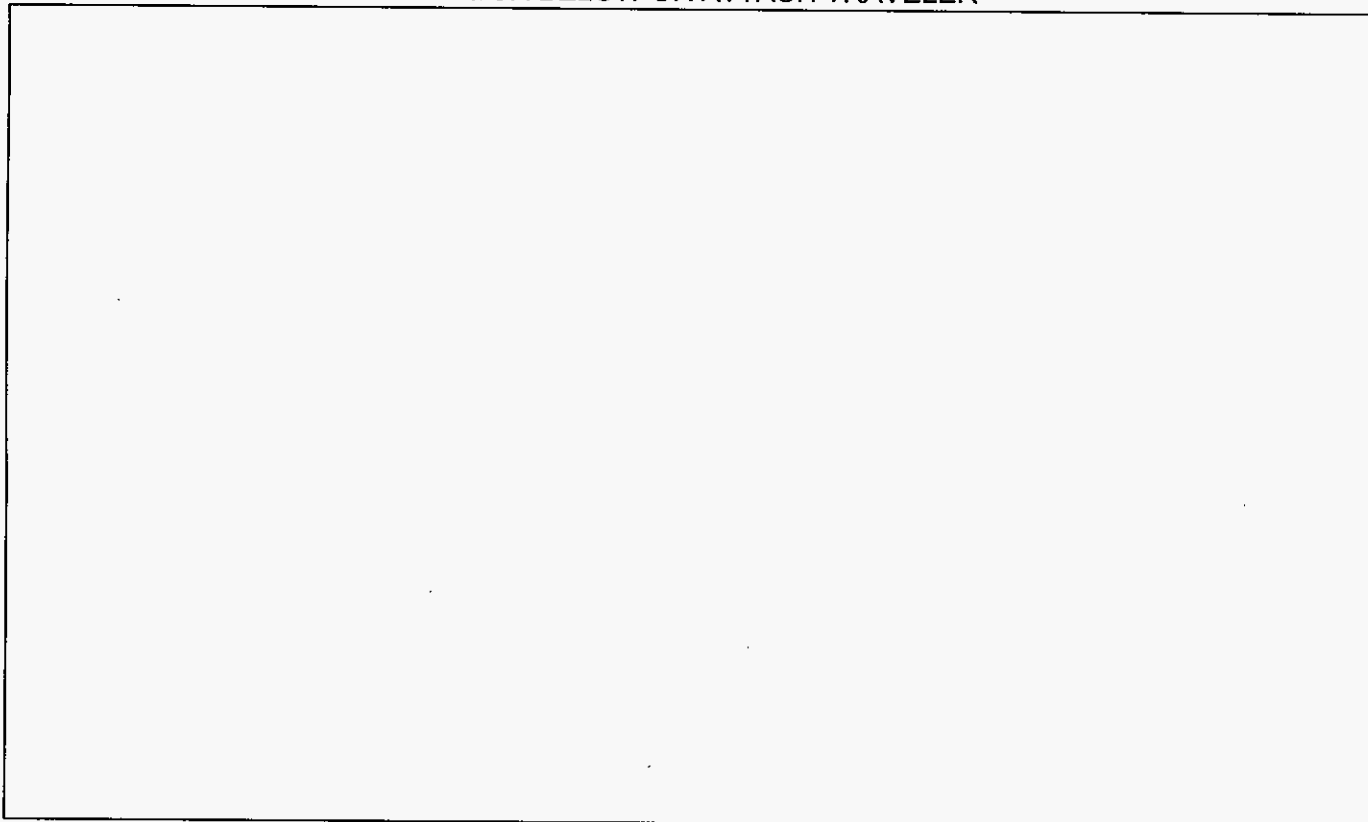
PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUP	REPLICATE
Type			
DUP	Gross Weight (W2)	1.4648	
Work List	Tare Weight (W1)	1.3192	
29208	Weight of Solution (W2-W1)	0.14561	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4561	NA
Matrix			
LIQUID			
Sample #			
S99T000546			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
JIS	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date	v RESULT v		
04/22/99	Specific Gravity =	1.456	
Time			
02:30 PM			

Data Entry by:	Date: 04/26/99
Approved by: NA	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER



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

Type		SAM	REPLICATE
SAM	Gross Weight (W2)	1.4677	
Work List	Tare Weight (W1)	1.3245	
29208	Weight of Solution (W2-W1)	0.14326	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4326	NA
Matrix			
LIQUID			
Sample #			
S99T000548			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
JIS			
Date			
04/22/99			
Time	v RESULT v		
02:30 PM	Specific Gravity =	1.433	

Data Entry by:	Date: 04/26/99
Approved by: <i>NA</i>	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUP	REPLICATE
Type			
DUP	Gross Weight (W2)	1.4882	
Work List	Tare Weight (W1)	1.3441	
29208	Weight of Solution (W2-W1)	0.14413	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4413	NA
Matrix			
LIQUID			
Sample #			
S99T000548			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
JIS	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g}/\text{mL}]$		
Date			
04/22/99	v RESULT v		
Time	Specific Gravity =	1.441	
02:30 PM			

Data Entry by:	Date: 04/26/99
Approved by:	Date:

LABCORE Completed Worklist Report for Worklist# 29289

Analyst: krm

Instrument: PH01 > 7

Book#: _____

Method: LA-212-106 Rev/Mod C-3

Worklist Comment: U103 GRAB2, @pH-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STDPH		0	PH-01	LIQUID	8.0 ^{Star}	7.98	7.980	pH
2 SAMPLE	S99T000553	0 W	PH-01	SOLID	N/A	11.72	1.00e-002	pH
3 DUP	S99T000553	0 W	PH-01	SOLID	11.72	11.65	0.599	RPD
4 SAMPLE	S99T000558	0 W	PH-01	SOLID	N/A	11.79	1.00e-002	pH
5 DUP	S99T000558	0 W	PH-01	SOLID	11.79	11.77	0.170	RPD
6 SAMPLE	S99T000559	0 W	PH-01	SOLID	N/A	11.77	1.00e-002	pH
7 DUP	S99T000559	0 W	PH-01	SOLID	11.77	11.78	0.085	RPD

Final page for worklist# 29289

Analyst Signature _____ Date _____

Gregory Tracy 4-16-99
Analyst Signature Date

[Signature] 4/19/99
Reviewer Signature Date

worklistrpt Version 2.1 05/15/95
04/13/99 12:31

HNF-1668 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 29289

Analyst: KRM Instrument: PH01 Book # 18N19G


Method: LA-212-106 Rev/Mod C-3

Worklist Comment: U103 GRAB2, @pH-01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STDPH			PH-01	LTIQUID	8.0	7.98	N/A	pH
99000104	U-103 GRAB2	2 SAMPLE	S99T000553	0 W	PH-01	SOLID	N/A	11.72		pH
99000104	U-103 GRAB2	3 DUP	S99T000553	0 W	PH-01	SOLID		11.65	N/A	pH
99000104	U-103 GRAB2	4 SAMPLE	S99T000558	0 W	PH-01	SOLID	N/A	11.79		pH
99000104	U-103 GRAB2	5 DUP	S99T000558	0 W	PH-01	SOLID		11.77	N/A	pH
99000104	U-103 GRAB2	6 SAMPLE	S99T000559	0 W	PH-01	SOLID	N/A	11.77		pH
99000104	U-103 GRAB2	7 DUP	S99T000559	0 W	PH-01	SOLID		11.78	N/A	pH

Final page for worklist # 29289


Analyst Signature 4-14-99
Date


Analyst Signature 4-16-99
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.

LABCORE Completed Worklist Report for Worklist# 29209

Analyst: jmv

Instrument: PH01

Book#: 33N15A

Method: LA-211-102 Rev/Mod _____

Worklist Comment: U103 GRAB2, 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	<2500		ug/mL
2 STD		0	OH-01	LIQUID	1.56e4	1.64e4	105.128 % Recovery	
3 SAMPLE	S99T000537	0	OH-01	LIQUID	N/A	2.72e4	25000.000	ug/mL
4 DUP	S99T000537	0	OH-01	LIQUID	2.72e4	2.67e4	1.855 RPD	
5 SAMPLE	S99T000546	0	OH-01	LIQUID	N/A	3.26e4	2500.000	ug/mL
6 DUP	S99T000546	0	OH-01	LIQUID	3.26e4	3.17e4	2.799 RPD	
7 SAMPLE	S99T000548	0	OH-01	LIQUID	N/A	3.19e4	2500.000	ug/mL
8 DUP	S99T000548	0	OH-01	LIQUID	3.19e4	3.47e4	8.408 RPD	

Final page for worklist# 29209

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

LABCORE Data Entry Template for Worklist# 29209

Analyst: DMV Instrument: PH01 Book # 33015 A

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

Worklist Comment: U103 GRAB2, 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
99000104	U-103 GRAB2	3 SAMPLE	S99T000537	0	OH-01	LIQUID	N/A			ug/mL
99000104	U-103 GRAB2	4 DUP	S99T000537	0	OH-01	LIQUID			N/A	ug/mL
99000104	U-103 GRAB2	5 SAMPLE	S99T000546	0	OH-01	LIQUID	N/A			ug/mL
99000104	U-103 GRAB2	6 DUP	S99T000546	0	OH-01	LIQUID			N/A	ug/mL
99000104	U-103 GRAB2	7 SAMPLE	S99T000548	0	OH-01	LIQUID	N/A			ug/mL
99000104	U-103 GRAB2	8 DUP	S99T000548	0	OH-01	LIQUID			N/A	ug/mL

Final page for worklist # 29209

Cheryl L. D. S 4-8-99
Analyst Signature Date

Mary Franz 4-9-99
Analyst Signature Date

Data Entry Comments:

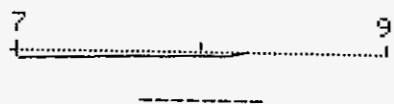
Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

537

537 DUP

date 99-04-08 time 10:59
 GET pH 12 # 241
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 8.24
 stop volt.reached
 =====

date 99-04-08 time 10:59
 GET pH 12 # 241
 .10ml/div ΔpH=1/div
 start V .000 ml

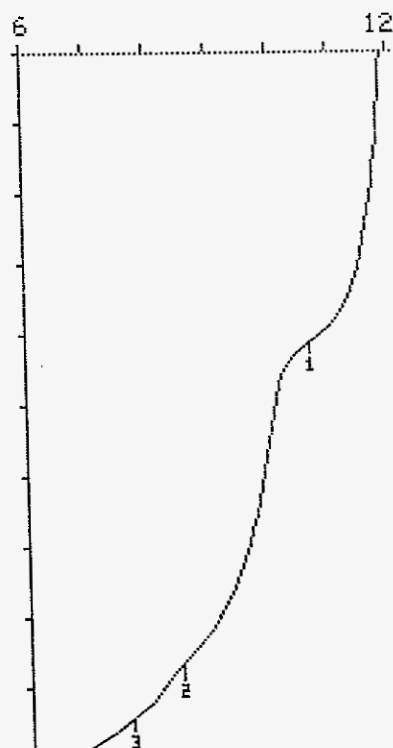


date 99-04-08 time 12:26
 GET pH 12 # 243
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.88

	V/ml	pH
EP1	.413	10.66
EP2	.867	8.48
EP3	.943	7.67

 stop volt.reached
 =====

date 99-04-08 time 12:28
 GET pH 12 # 243
 .10ml/div ΔpH=1/div
 start V .000 ml

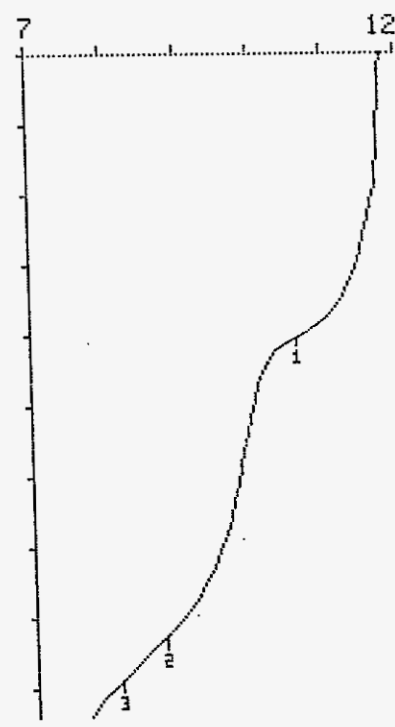


date 99-04-08 time 12:35
 GET pH 12 # 244
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.75

	V/ml	pH
EP1	.406	10.62
EP2	.827	8.75
EP3	.887	8.16

 manual stop
 =====

date 99-04-08 time 12:35
 GET pH 12 # 244
 .10ml/div ΔpH=1/div
 start V .000 ml

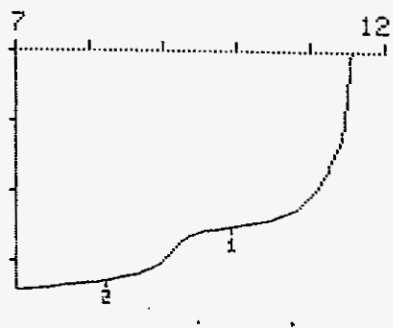


date 99-04-08 time 11:02
 GET pH 12 # 242
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.51

	V/ml	pH
EP1	.250	9.92
EP2	.327	8.20

 stop volt.reached
 =====

date 99-04-08 time 11:04
 GET pH 12 # 242
 .10ml/div ΔpH=1/div
 start V .000 ml

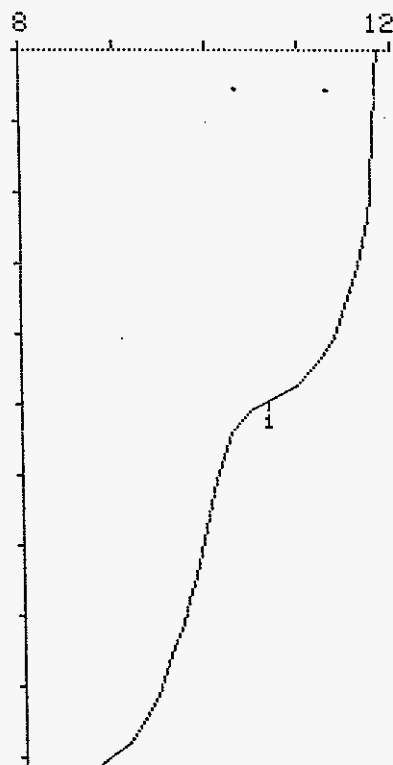


546

date 99-04-08 time 12:42
 GET pH 12 # 245
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.80
 V/ml pH
 EPI .496 10.67
 manual stop
 =====

5

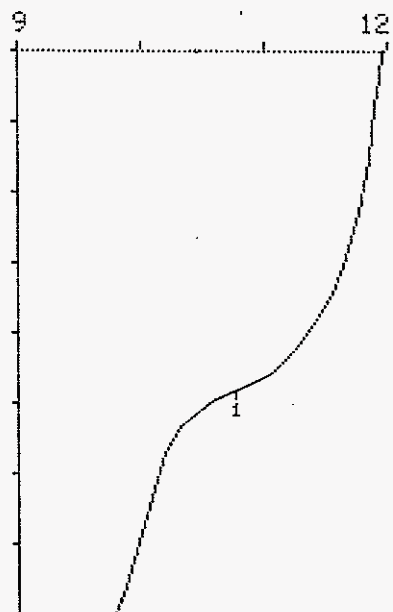
date 99-04-08 time 12:43
 GET pH 12 # 245
 .10ml/div ΔpH=1/div
 start V .000 ml



546 DUP

date 99-04-08 time 12:48
 GET pH 12 # 246
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.93
 V/ml pH
 EPI .482 10.76
 manual stop
 =====

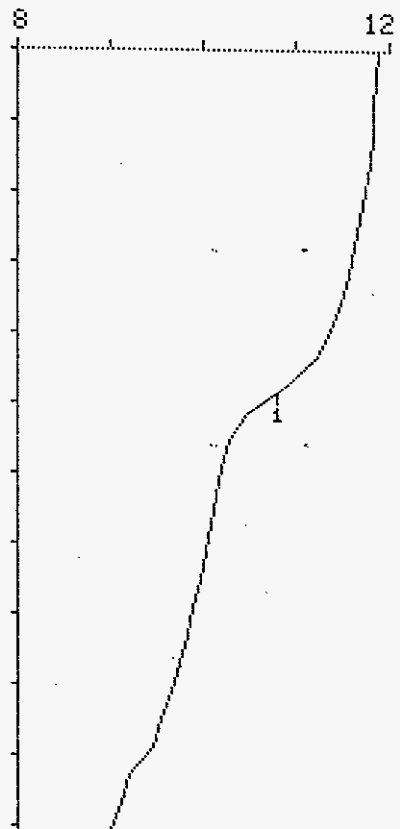
date 99-04-08 time 12:48
 GET pH 12 # 246
 .10ml/div ΔpH=1/div
 start V .000 ml



548

date 99-04-08 time 12:55
 GET pH 12 # 247
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.84
 V/ml pH
 EPI .485 10.79
 manual stop
 =====

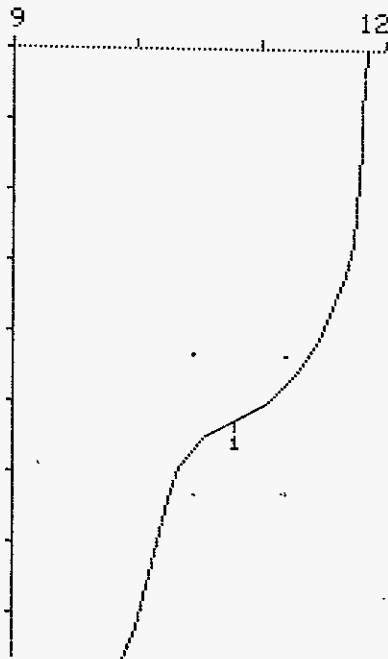
date 99-04-08 time 12:56
 GET pH 12 # 247
 .10ml/div ΔpH=1/div
 start V .000 ml



548 Dup

date 99-04-08 time 13:01
GET pH 12 # 248
Id.#1 497-2
Id.#2 .1934
pH(init) 11.80
V/ml pH
EP1 .528 10.78
manual stop
=====

date 99-04-08 time 13:01
GET pH 12 # 248
.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	0.050
BLNK	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.000
29209	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	0.00E+00
Matrix	Concentration of Sample in PPM	0.00E+00
LIQUID		
Sample #		
BLNK	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	2.50E+03
Analyst		
JMV	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
04/08/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
02:00 PM		
		BLNK
	Concentration of Sample (MOLARITY)	0.00E+00
	Concentration of Sample in PPM	<2500

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	0.250
29209	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	9.67E-01
Matrix	Concentration of Sample in PPM	1.64E+04
LIQUID		
Sample #		
STD		
Instrument Code		
PH01	Detection Limit (PPM)	
Analyst		
JMV	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
04/08/99		
Time		
02:00 PM		
		STD
	Concentration of Sample (MOLARITY)	9.67E-01
	Concentration of Sample in PPM	1.64E+04

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

		SAMPLE
Type	Sample Size (mL) SS	0.050
SAMPLE	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.413
29209	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.60E+00
Matrix	Concentration of Sample in PPM	2.72E+04
LIQUID		
Sample #		
S99T000537	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	2.50E+03
Analyst		
JMV	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
04/08/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
02:00 PM		
		SAMPLE
	Concentration of Sample (MOLARITY)	1.60E+00
	Concentration of Sample in PPM	2.72E+04

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

OH (AUTO) : LA-211-102 (D-1)		DUP
Type	Sample Size (mL) SS	0.050
DUP	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.406
29209	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.57E+00
Matrix	Concentration of Sample in PPM	2.67E+04
LIQUID		
Sample#		
S99T000537	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	2.50E+03
Analyst		
JMV	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
04/08/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
02:00 PM		DUP
	Concentration of Sample (MOLARITY)	1.57E+00
	Concentration of Sample in PPM	2.67E+04

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

		SAMPLE
Type	Sample Size (mL) SS	0.050
SAMPLE	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.496
29209	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.92E+00
Matrix	Concentration of Sample in PPM	3.26E+04
LIQUID		
Sample #		
S99T000546	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	2.50E+03
Analyst		
JMV	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
04/08/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
02:00 PM		
		SAMPLE
	Concentration of Sample (MOLARITY)	1.92E+00
	Concentration of Sample in PPM	3.26E+04

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

		DUP
Type	Sample Size (mL) SS	0.050
DUP	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.482
29209	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.86E+00
Matrix	Concentration of Sample in PPM	3.17E+04
LIQUID		
Sample #		
S99T000546	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	2.50E+03
Analyst		
JMV	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
04/08/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
02:00 PM		
		DUP
	Concentration of Sample (MOLARITY)	1.86E+00
	Concentration of Sample in PPM	3.17E+04

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

		SAMPLE
Type	Sample Size (mL) SS	0.050
SAMPLE	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.485
29209	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	1.88E+00
Matrix	Concentration of Sample in PPM	3.19E+04
LIQUID		
Sample #		
S99T000548	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	2.50E+03
Analyst		
JMV	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
04/08/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
02:00 PM		
		SAMPLE
Concentration of Sample (MOLARITY)		1.88E+00
Concentration of Sample in PPM		3.19E+04

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

OH (AUTO) : LA-211-102 (D-1)		DUP
Type	Sample Size (mL) SS	0.050
DUP	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.528
29209	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample (MOLARITY)	2.04E+00
Matrix	Concentration of Sample in PPM	3.47E+04
LIQUID		
Sample #		
S99T000548	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	2.50E+03
Analyst		
JMV	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
04/08/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
02:00 PM		DUP
	Concentration of Sample (MOLARITY)	2.04E+00
	Concentration of Sample in PPM	3.47E+04

LABCORE Completed Worklist Report for Worklist# 29288

Analyst: jmv

Instrument: PH01

Book#: 33N15A

Method: LA-211-102 Rev/Mod _____

Worklist Comment: U103 GRAB2, OH-01, STD= 0.050mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK-PREP	0		OH-01	SOLID	1	<8033		ug/g
2 STD	0		OH-01	SOLID	1.56e4	1.60e4	102.564	% Recovery
3 SAMPLE	S99T000553	0 W	OH-01	SOLID	N/A	1.04e4	8030.000	ug/g
4 DUP	S99T000553	0 W	OH-01	SOLID	1.04e4	9.94e3	4.523	RPD
5 SAMPLE	S99T000558	0 W	OH-01	SOLID	N/A	1.66e4	8000.000	ug/g
6 DUP	S99T000558	0 W	OH-01	SOLID	1.66e4	1.94e4	15.556	RPD
7 SAMPLE	S99T000559	0 W	OH-01	SOLID	N/A	1.62e4	8450.000	ug/g
8 DUP	S99T000559	0 W	OH-01	SOLID	1.62e4	1.87e4	14.327	RPD

Final page for worklist# 29288

Analyst Signature Date

Mary Franz 4-16-99

Analyst Signature Date

MLA 4/19/99

Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 29288

Analyst: DMV Instrument: PH01 Book # 33015.A

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

Worklist Comment: U103 GRAB2, OH-01, STD = 0.050mL skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				OH-01	SOLID			N/A	ug/g
		2	STD				OH-01	SOLID			N/A	ug/g
99000104	U-103 GRAB2	3	SAMPLE	S99T000553	0	W	OH-01	SOLID	N/A			ug/g
99000104	U-103 GRAB2	4	DUP	S99T000553	0	W	OH-01	SOLID			N/A	ug/g
99000104	U-103 GRAB2	5	SAMPLE	S99T000558	0	W	OH-01	SOLID	N/A			ug/g
99000104	U-103 GRAB2	6	DUP	S99T000558	0	W	OH-01	SOLID			N/A	ug/g
99000104	U-103 GRAB2	7	SAMPLE	S99T000559	0	W	OH-01	SOLID	N/A			ug/g
99000104	U-103 GRAB2	8	DUP	S99T000559	0	W	OH-01	SOLID			N/A	ug/g

Final page for worklist # 29288

Joel M. V. S. 4-15-99
Analyst Signature Date

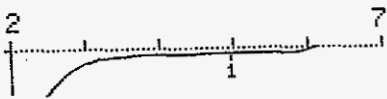
Wayne J. Tracy 4-16-99
Analyst Signature Date

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.

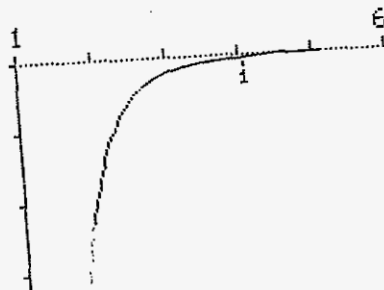
Blank
 date 99-04-15 time 08:50
 GET pH 12 # 112
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 6.13
 V/ml [redacted] pH
 EP1 4.96
 manual stop
 =====

date 99-04-15 time 08:50
 GET pH 12 # 112
 .10ml/div ΔpH=1/div
 start V .000 ml



Prep Blank
 date 99-04-15 time 09:05
 GET pH 12 # 114
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 5.11
 V/ml [redacted] pH
 EP1 [redacted]
 manual stop
 =====

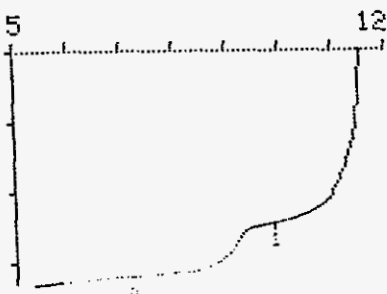
date 99-04-15 time 09:05
 GET pH 12 # 114
 .10ml/div ΔpH=1/div
 start V .000 ml



date 99-04-15 time 09:05
 pH(S) 1 7.00
 t.cal. 23.0 °C
 slope(rel) .985
 U(as) 37.6 mV
 electr. input 1
 =====

Std
 date 99-04-15 time 08:54
 GET pH 12 # 113
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.51
 V/ml [redacted] pH
 EP1 9.88
 EP2 .320 7.21
 stop volt.reached
 =====

date 99-04-15 time 08:56
 GET pH 12 # 113
 .10ml/div ΔpH=1/div
 start V .000 ml



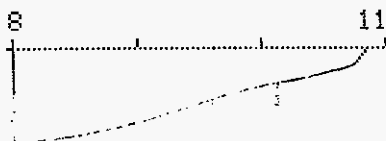
Lee 6/15/99

553

~~533~~

date 99-04-15 time 09:08
 GET pH 12 # 115
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 10.82
 V/ml [redacted] pH
 EP1 10.13
 manual stop
 =====

date 99-04-15 time 09:08
 GET pH 12 # 115
 .10ml/div ΔpH=1/div
 start V .000 ml



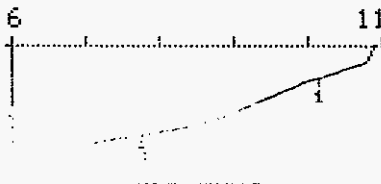
Lee 6/15/99

553

533 Dup.

date 99-04-15 time 09:15
 GET pH 12 # 117
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 10.86
 V/ml [redacted] pH
 EP1 10.14
 EP2 .126 7.76
 stop volt. reached
 =====

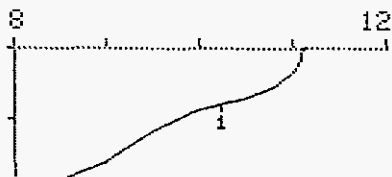
date 99-04-15 time 09:16
 GET pH 12 # 117
 .10ml/div ΔpH=1/div
 start V .000 ml



558

date 99-04-15 time 09:19
 GET pH 12 # 118
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.00
 EP1 pH 10.23
 manual stop
 =====

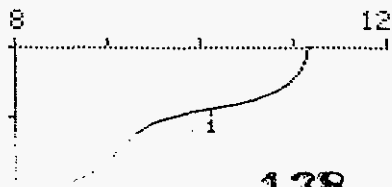
date 99-04-15 time 09:20
 GET pH 12 # 118
 .10ml/div ΔpH=1/div
 start V .000 ml



558 Dup

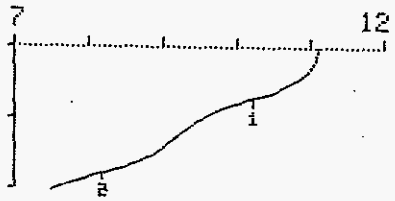
date 99-04-15 time 09:25
 GET pH 12 # 119
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.13
 EP1 pH 10.10
 manual stop
 =====

date 99-04-15 time 09:25
 GET pH 12 # 119
 .10ml/div ΔpH=1/div
 start V .000 ml



559
 date 99-04-15 time 09:30
 GET pH 12 # 120
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.08
 V/ml pH
 EP1 10.20
 EP2 .198 8.16
 manual stop
 =====

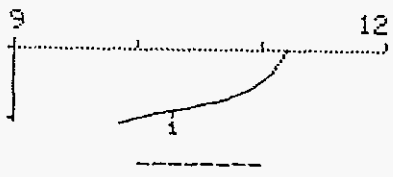
date 99-04-15 time 09:31
 GET pH 12 # 120
 .10ml/div ΔpH=1/div
 start V .000 ml



559 Dup

date 99-04-15 time 09:34
 GET pH 12 # 121
 Id.#1 497-2
 Id.#2 .1934
 pH(init) 11.14
 V/ml pH
 EP1 10.27
 manual stop
 =====

date 99-04-15 time 09:34
 GET pH 12 # 121
 .10ml/div ΔpH=1/div
 start V .000 ml



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

OH (AUTO) : LA-211-102 (D-1)		BLNK-PREP
Type	Sample Size (mL) SS	3.000
BLNK-PREP	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.009
29288	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code	***Enter Digest Factor (DDF) in g/L***	5.187
OH-01	Concentration of Sample Prep (MOLARITY)	5.80E-04
Matrix	Concentration of Sample in PPM	1.90E+03
SOLID		
Sample #		
BLNK-PREP	Detection Limit= $((125\mu\text{g} / \text{SS}) * \text{DF}) * 1000 / \text{DDF}$	
Instrument Code		
PH01	Detection Limit (PPM)	8.03E+03
Analyst		
JMV	OH Molarity = $((\text{mL HNO}_3) * (\text{M HNO}_3)) / \text{Sample Size in mL} * \text{Dilution Factor}$	
Date		
04/15/99	OH in $\mu\text{g/g} = (\text{OH MOLARITY}) * (17\text{g/mole}) * (1000000 \mu\text{g/g}) / \text{DDF}$	
Time		
10:00 AM		BLNK-PREP
	Concentration of Sample in PPM	<8033
	The Result is < Detection Limit	

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	0.244
29288	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code		
OH-01	Concentration of Sample Prep (MOLARITY)	9.44E-01
Matrix	Concentration of Sample in PPM	1.60E+04
SOLID		
Sample #		
STD		
Instrument Code		
PH01	Detection Limit (PPM)	
Analyst		
JMV	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date		
04/15/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time		
10:00 AM		
		STD
	Concentration of Sample in PPM	1.60E+04

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

		SAMPLE
Type	Sample Size (mL) SS	3.000
SAMPLE	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.049
29288	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code	***Enter Digest Factor (DDF) in g/L***	5.187
OH-01	Concentration of Sample Prep (MOLARITY)	3.16E-03
Matrix	Concentration of Sample in PPM	1.04E+04
SOLID		
Sample #		
S99T000553	Detection Limit= $((125\mu\text{g} / \text{SS}) * \text{DF}) * 1000 / \text{DDF}$	
Instrument Code		
PH01	Detection Limit (PPM)	8.03E+03
Analyst		
JMV	OH Molarity = $((\text{mL HNO}_3) * (\text{M HNO}_3)) / \text{Sample Size in mL} * \text{Dilution Factor}$	
Date		
04/15/99	OH in $\mu\text{g/g} = (\text{OH MOLARITY}) * (17\text{g/mole}) * (1000000 \mu\text{g/g}) / \text{DDF}$	
Time		
10:00 AM		
		SAMPLE
	Concentration of Sample in PPM	1.04E+04

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

		DUP
Type	Sample Size (mL) SS	3.000
DUP	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.046
29288	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code	***Enter Digest Factor (DDF) in g/L***	5.072
OH-01	Concentration of Sample Prep (MOLARITY)	2.97E-03
Matrix	Concentration of Sample in PPM	9.94E+03
SOLID		
Sample #		
S99T000553	Detection Limit= $((125\mu\text{g} / \text{SS}) * \text{DF}) * 1000 / \text{DDF}$	
Instrument Code		
PH01	Detection Limit (PPM)	8.22E+03
Analyst		
JMV	OH Molarity = $((\text{mL HNO}_3) * (\text{M HNO}_3)) / \text{Sample Size in mL} * \text{Dilution Factor}$	
Date		
04/15/99	OH in $\mu\text{g/g} = (\text{OH MOLARITY}) * (17\text{g/mole}) * (1000000 \mu\text{g/g}) / \text{DDF}$	
Time		
10:00 AM		DUP
	Concentration of Sample in PPM	9.94E+03

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

		SAMPLE
Type	Sample Size (mL) SS	3.000
SAMPLE	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.079
29288	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code	***Enter Digest Factor (DDF) in g/L***	5.206
OH-01	Concentration of Sample Prep (MOLARITY)	5.09E-03
Matrix	Concentration of Sample in PPM	1.66E+04
SOLID		
Sample#		
S99T000558	Detection Limit= $((125\mu\text{g} / \text{SS}) * \text{DF}) * 1000 / \text{DDF}$	
Instrument Code		
PH01	Detection Limit (PPM)	8.00E+03
Analyst		
JMV	OH Molarity = $((\text{mL HNO}_3) * (\text{M HNO}_3)) / \text{Sample Size in mL} * \text{Dilution Factor}$	
Date		
04/15/99	OH in $\mu\text{g/g}$ = $(\text{OH MOLARITY}) * (17\text{g/mole}) * (1000000 \mu\text{g/g}) / \text{DDF}$	
Time		
10:00 AM		
		SAMPLE
	Concentration of Sample in PPM	1.66E+04

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

		DUP
Type	Sample Size (mL) SS	3.000
DUP	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.088
29288	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code	***Enter Digest Factor (DDF) in g/L***	4.967
OH-01	Concentration of Sample Prep (MOLARITY)	5.67E-03
Matrix	Concentration of Sample in PPM	1.94E+04
SOLID		
Sample#		
S99T000558	Detection Limit= $((125\mu\text{g} / \text{SS}) * \text{DF}) * 1000 / \text{DDF}$	
Instrument Code		
PH01	Detection Limit (PPM)	8.39E+03
Analyst		
JMV	OH Molarity = $((\text{mL HNO}_3) * (\text{M HNO}_3)) / \text{Sample Size in mL} * \text{Dilution Factor}$	
Date		
04/15/99	OH in $\mu\text{g/g}$ = $(\text{OH MOLARITY}) * (17\text{g/mole}) * (1000000 \mu\text{g/g}) / \text{DDF}$	
Time		
10:00 AM		DUP
	Concentration of Sample in PPM	1.94E+04

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

OH (AUTO) : LA-211-102 (D-1)		SAMPLE
Type	Sample Size (mL) SS	3.000
SAMPLE	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.073
29288	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code	***Enter Digest Factor (DDF) in g/L ***	4.93
OH-01	Concentration of Sample Prep (MOLARITY)	4.71E-03
Matrix	Concentration of Sample in PPM	1.62E+04
SOLID		
Sample #		
S99T000559	Detection Limit= $((125\mu\text{g} / \text{SS}) * \text{DF}) * 1000 / \text{DDF}$	
Instrument Code		
PH01	Detection Limit (PPM)	8.45E+03
Analyst		
JMV	OH Molarity = $((\text{mL HNO}_3) * (\text{M HNO}_3)) / \text{Sample Size in mL} * \text{Dilution Factor}$	
Date		
04/15/99	OH in $\mu\text{g/g}$ = $(\text{OH MOLARITY}) * (17\text{g/mole}) * (1000000 \mu\text{g/g}) / \text{DDF}$	
Time		
10:00 AM		
		SAMPLE
	Concentration of Sample in PPM	1.62E+04

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

		DUP
Type	Sample Size (mL) SS	3.000
DUP	Concentration of Titrant (Molarity)	0.1934
Work List	Titrant volume at end-point in mL	0.088
29288	*** Enter Dilution Factor (DF) or 1 ***	1
Test Code	***Enter Digest Factor (DDF) in g/L***	5.164
OH-01	Concentration of Sample Prep (MOLARITY)	5.67E-03
Matrix	Concentration of Sample in PPM	1.87E+04
SOLID		
Sample #		
S99T000559	Detection Limit= $((125\mu\text{g} / \text{SS}) * \text{DF}) * 1000 / \text{DDF}$	
Instrument Code		
PH01	Detection Limit (PPM)	8.07E+03
Analyst		
JMV	OH Molarity = $((\text{mL HNO}_3) * (\text{M HNO}_3)) / \text{Sample Size in mL} * \text{Dilution Factor}$	
Date		
04/15/99	OH in $\mu\text{g/g} = (\text{OH MOLARITY}) * (17\text{g/mole}) * (1000000 \mu\text{g/g}) / \text{DDF}$	
Time		
10:00 AM		
		DUP
	Concentration of Sample in PPM	1.87E+04

LABCORE Completed Worklist Report for Worklist# 30128

Analyst: krm

Instrument: NH301

Book#: _____

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

Worklist Comment: U103 GRAB2, NH3-01 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	4.15E+2	101.716 % Recovery	
3 SAMPLE	S99T000537	0	NH3-01	LIQUID	N/A	< 5.00E+01	50.000	ug/mL
4 DUP	S99T000537	0	NH3-01	LIQUID	<5.00E+1	<5.00E+1		RPD
5 SPK	S99T000537	0	NH3-01	LIQUID	2.04E+02	1.54E+02	75.490 % Recovery	
6 STD		0	NH3-01	LIQUID	4.08E+02	5.24E+2	128.431 % Recovery	

Final page for worklist# 30128

Analyst Signature

Date

Analyst Signature

Date


Reviewer Signature

6/14/99
Date

worklistrpt Version 2.1 05/15/95
06/09/99 13:12

HNF-1668 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 30128

Analyst: KRM Instrument: NH301 Book # 59219A

Method: LA-631-001 Rev/Mod _____

Worklist Comment: U103 GRAB2, NH3-01 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
99000104	U-103 GRAB2	3 SAMPLE	S99T000537	0	NH3-01	LIQUID	N/A			ug/mL
99000104	U-103 GRAB2	4 DUP	S99T000537	0	NH3-01	LIQUID			N/A	ug/mL
99000104	U-103 GRAB2	5 SPK	S99T000537	0	NH3-01	LIQUID			N/A	ug/mL
99000104	U-103 GRAB2	6 SAMPLE	S99T000546	0	NH3-01	LIQUID	N/A			ug/mL
99000104	U-103 GRAB2	7 DUP	S99T000546	0	NH3-01	LIQUID			N/A	ug/mL
99000104	U-103 GRAB2	8 SAMPLE	S99T000548	0	NH3-01	LIQUID	N/A			ug/mL
99000104	U-103 GRAB2	9 DUP	S99T000548	0	NH3-01	LIQUID			N/A	ug/mL
		10 STD			NH3-01	LIQUID			N/A	ug/mL

Final page for worklist # 30128

[Signature] 6-10-99
Analyst Signature Date

[Signature] 6/14/99
Analyst Signature Date

Data Entry Comments: ONLY DID 999T000537

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.

147.2

WORKBOOK PAGE: BLANK1

AMMONIA (NH3) : LA-631-001 (0-0) ^D MAD U103 GRAB2 LIQUIDS/SOLIDS

			BLNK
Type	Instrument Data (µg/mL)	ID	0.000
BLNK	Blank Result from the Instrument (µg/mL)	BR	0.026
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30128	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			
99002459			
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			
06/14/99			
Analysis Date			
06/10/99			
Analysis Time			
04:00 PM			
Sample Point	NH3 Concentration (µg/mL)		< 5.00E+01
U103 GRAB2			

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

SAMPLE.WB1 REV 1.0

631001ML

147.3

WORKBOOK PAGE: STD2

AMMONIA (NH3) : LA-631-001 (C-0) ^D _{12/15/99} LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	ID 8.320
STD	Blank Result from the Instrument (µg/mL)	BR 0.026
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
30128	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		
99002459		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 4.15E+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		
06/14/99		
Analysis Date	QC ACTUAL (µg)	4.08E+02
06/10/99	QC FOUND (µg)	4.15E+02
Analysis Time		
04:00 PM		
Sample Point		
U103 GRAB2		

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

SAMPLE.WB1 REV 1.0

631001ML

147.4

WORKBOOK PAGE: SAM3

AMMONIA (NH3) : LA-631-001 ^D(C-0) ^{6/15/99}_(M)

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID 0.462
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 0.026
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
30128	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		
99002459		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 5.00E+01
Sample #		
S99T000537	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		
06/14/99		
Analysis Date		
06/10/99		
Analysis Time		
04:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 5.00E+01
U103 GRAB2		

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

SAMPLE.WB1 REV 1.0

631001ML

147.5

AMMONIA (NH3) : LA-631-001

D
Q-0
15-99

LIQUIDS/SOLIDS

DUP

Type	Instrument Data (µg/mL)	ID	0.745
DUP	Blank Result from the Instrument (µg/mL)	BR	0.026
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30128	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			
99002459			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	< 5.00E+01
Sample #			
S99T000537	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			
06/14/99			
Analysis Date			
06/10/99			
Analysis Time			
04:00 PM			
Sample Point	NH3 Concentration (µg/mL)		< 5.00E+01
U103 GRAB2			

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

147.6

AMMONIA (NH3) : LA-631-001 (0-0) ^D _{U1519}

LIQUIDS/SOLIDS

		SPK
Type	Instrument Data (µg/mL)	ID 6.620
SPK	Blank Result from the Instrument (µg/mL)	BR 0.026
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
30128	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 0.500
LIQUID		
Batch Number		
99002459		
Rerun	Sample Instrument Data (µg/mL)	SAM ID 0.462
0	Sample Volume of Sample (mL)	SAM VSAM 0.500
Sample Prep	Sample Final Volume (mL)	SAM FVOL 25.0
N/A		
Sample #		
S99T000537		
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		
06/14/99		
Analysis Date	QC ACTUAL (µg)	2.04E+02
06/10/99	QC FOUND (µg)	1.54E+02
Analysis Time		
04:00 PM		
Sample Point		
U103 GRAB2		

Analyst:	KRM Date: 06/14/99
Signature of Chemist:	MJL Date:

147.7

AMMONIA (NH3) : LA-631-001

D *MAJ* *U15199*

LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	10.500
STD	Blank Result from the Instrument (µg/mL)	0.026
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	0.500
30128	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	25.0
Test Code	LCS Standard Book Number	59N19A
NH3-01	LCS Standard Concentration (µg/mL)	4.08E+02
Matrix		
LIQUID		
Batch Number		
99002459		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	5.24E+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		
06/14/99		
Analysis Date	QC ACTUAL (µg)	4.08E+02
06/10/99	QC FOUND (µg)	5.24E+02
Analysis Time		
04:00 PM		
Sample Point		
U103 GRAB2		

Analyst:	KRM	Date: 06/14/99
Signature of Chemist:	<i>MA</i>	MJL Date:

147, 8

SAMPLE VOL= 25.000 AT 10:28. 06-10-99
ENTERED

HNF-1668 REV. 0

EMF=-66.1 mV AT 10:28. 06-10-99

EMF=-66.2 mV AT 10:29. 06-10-99

EMF=-66.2 mV AT 10:29. 06-10-99
ENTEREDSTD CONCEN= 997 AT 10:31. 06-10-99
ENTEREDSTD VOL= .25000 AT 10:31. 06-10-99
ENTERED

EMF=-84.7 mV AT 10:33. 06-10-99

EMF=-84.9 mV AT 10:33. 06-10-99

EMF=-85.4 mV AT 10:34. 06-10-99

EMF=-85.7 mV AT 10:35. 06-10-99

EMF=-85.8 mV AT 10:35. 06-10-99

EMF=-85.9 mV AT 10:36. 06-10-99

EMF=-86.0 mV AT 10:36. 06-10-99

EMF=-86.1 mV AT 10:37. 06-10-99

EMF=-86.2 mV AT 10:37. 06-10-99

EMF=-86.2 mV AT 10:37. 06-10-99
ENTEREDSTD VOL= 2.5000 AT 10:38. 06-10-99
ENTERED

EMF=-130.6 mV AT 10:41. 06-10-99

EMF=-130.9 mV AT 10:41. 06-10-99

EMF=-131.4 mV AT 10:43. 06-10-99

EMF=-131.6 mV AT 10:43. 06-10-99

EMF=-131.7 mV AT 10:43. 06-10-99
ENTERED1:NH3 SLOPE=-59.2 mV/DEC
AT 10:43. 06-10-99

1:NH3 CONCEN= 8.32

DOUBLE KNOWN ADDITION SELECTED
AT 10:44. 06-10-99

STD

HNF-1668 REV. 0

DOUBLE KNOWN ADDITION SELECTED
AT 08:19. 06-10-99

SAMPLE VOL= 25.000 AT 09:44. 06-10-99
ENTERED

EMF= 73.3 mV AT 09:44. 06-10-99

EMF= 73.4 mV AT 09:45. 06-10-99

EMF= 73.4 mV AT 09:45. 06-10-99
ENTERED

STD CONCN= 997 AT 09:48. 06-10-99
ENTERED

STD VOL= .25000 AT 09:48. 06-10-99
ENTERED

EMF=-77.9 mV AT 09:51. 06-10-99

EMF=-78.1 mV AT 09:52. 06-10-99

EMF=-78.4 mV AT 09:52. 06-10-99

EMF=-78.7 mV AT 09:53. 06-10-99

EMF=-78.8 mV AT 09:53. 06-10-99

EMF=-78.9 mV AT 09:54. 06-10-99

EMF=-79.0 mV AT 09:54. 06-10-99

EMF=-79.0 mV AT 09:54. 06-10-99
ENTERED

STD VOL= 2.5000 AT 09:55. 06-10-99
ENTERED

EMF=-137.1 mV AT 09:58. 06-10-99

EMF=-137.5 mV AT 09:59. 06-10-99

EMF=-137.8 mV AT 10:00. 06-10-99

EMF=-137.9 mV AT 10:00. 06-10-99

EMF=-138.0 mV AT 10:01. 06-10-99

EMF=-138.0 mV AT 10:01. 06-10-99
ENTERED

BCK

1:NH3 SLOPE=-59.0 mV/DEC
AT 10:01. 06-10-99

1:NH3 CONCN= .0259

DOUBLE KNOWN ADDITION SELECTED
AT 10:07. 06-10-99

HNF-1668 REV. 0

SAMPLE VOL= 25.000 AT 13:30, 06-10-99
ENTERED

EMF=-1.8 mV AT 13:30, 06-10-99

EMF=-1.8 mV AT 13:30, 06-10-99

EMF=-1.8 mV AT 13:30, 06-10-99
ENTERED

STD CONC= 997 AT 13:40, 06-10-99
ENTERED

STD VOL= .25000 AT 13:40, 06-10-99
ENTERED

EMF=-81.1 mV AT 13:40, 06-10-99

EMF=-81.2 mV AT 13:40, 06-10-99

EMF=-81.2 mV AT 13:40, 06-10-99
ENTERED

STD VOL= 2.5000 AT 13:41, 06-10-99
ENTERED

EMF=-138.1 mV AT 13:44, 06-10-99

EMF=-138.3 mV AT 13:44, 06-10-99

EMF=-138.6 mV AT 13:45, 06-10-99

EMF=-138.7 mV AT 13:45, 06-10-99

EMF=-138.8 mV AT 13:45, 06-10-99

EMF=-138.9 mV AT 13:46, 06-10-99

EMF=-139.0 mV AT 13:47, 06-10-99

EMF=-139.0 mV AT 13:47, 06-10-99
ENTERED

1:NH3 SLOPE=-58.8 mV/DEC
AT 13:47, 06-10-99

1:NH3 CONC= .462

DOUBLE KNOWN ADDITION SELECTED
AT 13:47, 06-10-99

9995 537

SAMPLE VOL= 25.000 AT 14:36, 06-10-99
ENTERED

EMF=-1.5 mV AT 14:37, 06-10-99

EMF=-1.6 mV AT 14:37, 06-10-99

EMF=-1.7 mV AT 14:38, 06-10-99

EMF=-1.7 mV AT 14:38, 06-10-99
ENTERED

STD CONCEN= 997 AT 14:52, 06-10-99
ENTERED

STD VOL= .25000 AT 14:52, 06-10-99
ENTERED

EMF=-71.0 mV AT 14:52, 06-10-99

EMF=-71.3 mV AT 14:52, 06-10-99

EMF=-71.6 mV AT 14:53, 06-10-99

EMF=-71.9 mV AT 14:53, 06-10-99

EMF=-72.2 mV AT 14:54, 06-10-99
ENTERED

STD VOL= 2.5000 AT 15:03, 06-10-99
ENTERED

EMF=-131.4 mV AT 15:03, 06-10-99

EMF=-131.5 mV AT 15:03, 06-10-99

EMF=-131.6 mV AT 15:04, 06-10-99

EMF=-131.6 mV AT 15:04, 06-10-99
ENTERED

1:NH3 SLOPE=-61.1 mV/DEC
AT 15:04, 06-10-99

1:NH3 CONCEN= .745

DOUBLE KNOWN ADDITION SELECTED
AT 15:04, 06-10-99

537 Dup

147.12

HNF-1668 REV. 0

SAMPLE VOL= 25.000 AT 15:35, 06-10-99
ENTERED

EMF=-65.3 mV AT 15:35, 06-10-99

EMF=-65.4 mV AT 15:36, 06-10-99

EMF=-65.4 mV AT 15:36, 06-10-99
ENTERED

STD CONC= 997 AT 15:36, 06-10-99
ENTERED

STD VOL= .25000 AT 15:51, 06-10-99
ENTERED

EMF=-88.8 mV AT 15:51, 06-10-99

EMF=-88.9 mV AT 15:51, 06-10-99

EMF=-88.9 mV AT 15:51, 06-10-99
ENTERED

STD VOL= 2.5000 AT 16:04, 06-10-99
ENTERED

EMF=-136.7 mV AT 16:05, 06-10-99

EMF=-136.8 mV AT 16:05, 06-10-99

EMF=-136.8 mV AT 16:05, 06-10-99
ENTERED

1:NH3 SLOPE=-59.5 mV/DEC
AT 16:05, 06-10-99

1:NH3 CONC= 6.62

DOUBLE KNOWN ADDITION SELECTED
AT 16:05, 06-10-99

537 SPK

HNF-1668 REV. 0

SAMPLE VOL= 25.000 AT 16:44, 06-10-99
ENTERED

EMF=-78.2 mV AT 16:45, 06-10-99

EMF=-78.3 mV AT 16:45, 06-10-99

EMF=-78.4 mV AT 16:46, 06-10-99

EMF=-78.4 mV AT 16:46, 06-10-99

ENTERED

STD CONC= 997 AT 16:49, 06-10-99

ENTERED

STD VOL= .25000 AT 16:49, 06-10-99

ENTERED

EMF=-95.0 mV AT 16:50, 06-10-99

EMF=-95.5 mV AT 16:51, 06-10-99

EMF=-95.6 mV AT 16:52, 06-10-99

EMF=-95.6 mV AT 16:52, 06-10-99

ENTERED

STD VOL= 2.5000 AT 17:01, 06-10-99

ENTERED

EMF=-139.3 mV AT 17:01, 06-10-99

EMF=-139.4 mV AT 17:02, 06-10-99

EMF=-139.4 mV AT 17:02, 06-10-99

ENTERED

1:NH3 SLOPE=-60.2 mV/DEC

AT 17:02, 06-10-99

1:NH3 CONC= 10.5

DOUBLE KNOWN ADDITION SELECTED

AT 17:02, 06-10-99

LABCORE Completed Worklist Report for Worklist# 30149

Analyst: slh

Instrument: NH301

Book#: _____

Method: LA-631-001 Rev/Mod _____

Worklist Comment: U103 GRAB2 NH3-01 MF

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	3.35E+2	82.108 % Recovery	
3 SAMPLE	S99T000546	0	NH3-01	LIQUID	N/A	6.86E+01	50.000	ug/ml.
4 DUP	S99T000546	0	NH3-01	LIQUID	6.86E+1	<5.00E+1		RPD
5 SAMPLE	S99T000548	0	NH3-01	LIQUID	N/A	<5.00E+01	50.000	ug/ml.
6 DUP	S99T000548	0	NH3-01	LIQUID	<5.00E+1	7.36E+1		RPD
7 STD		0	NH3-01	LIQUID	4.08E+02	3.78E+2	92.647 % Recovery	

Final page for worklist# 30149

Analyst Signature _____ Date _____

Mary Frank 6/15/99
Analyst Signature Date

[Signature] 6/15/99
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 30149

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

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

Worklist Comment: U103 GRAB2 NH3-01 MF

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			NH3-01	LIQUID		
2 STD			NH3-01	LIQUID		
3 SAMPLE	S99T000546 0		NH3-01	LIQUID	99000104	U-103 GRAB2
	Analytes Requested: NH3-01					
4 DUP	S99T000546 0		NH3-01	LIQUID		
5 SAMPLE	S99T000548 0		NH3-01	LIQUID	99000104	U-103 GRAB2
	Analytes Requested: NH3-01					
6 DUP	S99T000548 0		NH3-01	LIQUID		
7 STD			NH3-01	LIQUID		

Final page for worklist # 30149

Signature

Date

6-14-99

Signature

Date

6/15/99

Data Entry Comments:

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

147, 16

WORKBOOK PAGE: BLANK1

AMMONIA (NH3) : LA-631-001 (C-0) *D* *140* *U15199*

LIQUIDS/SOLIDS

BLNK

Type	Instrument Data (µg/mL)	ID	0.000
BLNK	Blank Result from the Instrument (µg/mL)	BR	0.008
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30149	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			
99002483			
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			
06/15/99			
Analysis Date			
06/14/99			
Analysis Time			
04:40 AM			
Sample Point	NH3 Concentration (µg/mL)		< 5.00E+01
U103 GRAB2			

Analyst:	SLH	Date:	06/15/99
Signature of Chemist:	<i>NA</i>	MJL	Date:

147.17

AMMONIA (NH3) : LA-631-001 (C-0) *6-15-99*

LIQUIDS/SOLIDS

6.71

Type	Instrument Data (µg/mL)	ID	6.710
STD	Blank Result from the Instrument (µg/mL)	BR	0.008
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30149	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			
99002483			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	3.35E+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			
06/15/99			
Analysis Date	QC ACTUAL (µg)		4.08E+02
06/14/99	QC FOUND (µg)		3.35E+02
Analysis Time			
04:40 AM			
Sample Point			
U103 GRAB2			

Analyst:	SLH Date: 06/15/99
Signature of Chemist: <i>NA</i>	MJL Date:

147.18

AMMONIA (NH3) : LA-631-001 (0-0) *WD 6/15/99*

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID 1.380
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 0.008
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
30149	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		
99002483		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 6.86E+01
Sample #		
S99T000546	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		
06/15/99		
Analysis Date		
06/14/99		
Analysis Time		
04:40 AM		
Sample Point	NH3 Concentration (µg/mL)	6.86E+01
U103 GRAB2		

Analyst:	SLH Date: 06/15/99
Signature of Chemist: <i>SLH</i>	MJL Date:

147.19

WORKBOOK PAGE: DUP4

AMMONIA (NH3) : LA-631-001

D
(C-0) 6-15-99
ML

LIQUIDS/SOLIDS

DUP

Type	Instrument Data (µg/mL)	ID	0.539
DUP	Blank Result from the Instrument (µg/mL)	BR	0.008
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30149	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			
99002483			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	< 5.00E+01
Sample #			
S99T000546	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			
06/15/99			
Analysis Date			
06/14/99			
Analysis Time			
04:40 AM			
Sample Point	NH3 Concentration (µg/mL)		< 5.00E+01
U103 GRAB2			

Analyst:	SLH	Date:	06/15/99
Signature of Chemist:	<i>NA</i>	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

147.20

WORKBOOK PAGE: SAM5

AMMONIA (NH3) : LA-631-001

P
(C-0) 147
1-15-99

LIQUIDS/SOLIDS

			SAMPLE
Type	Instrument Data (µg/mL)	ID	0.881
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.008
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30149	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			
99002483			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	< 5.00E+01
Sample #			
S99T000548	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			
06/15/99			
Analysis Date			
06/14/99			
Analysis Time			
04:40 AM			
Sample Point	NH3 Concentration (µg/mL)		< 5.00E+01
U103 GRAB2			

Analyst:		SLH Date: 06/15/99
Signature of Chemist:	<i>NA</i>	MJL Date:

147.21

WORKBOOK PAGE: DUP6

AMMONIA (NH3) : LA-631-001 (C-0) ^D ₁₁₅₄₄ LIQUIDS/SOLIDS DUP

Type	Instrument Data (µg/mL)	ID	1.480
DUP	Blank Result from the Instrument (µg/mL)	BR	0.008
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
30149	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			
99002483			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	7.36E+01
Sample #			
S99T000548	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			
06/15/99			
Analysis Date			
06/14/99			
Analysis Time			
04:40 AM			
Sample Point	NH3 Concentration (µg/mL)		7.36E+01
U103 GRAB2			

Analyst:	<i>SLH</i>	SLH Date: 06/15/99
Signature of Chemist:	<i>MJL</i>	MJL Date:

147, 22

WORKBOOK PAGE: ST_END7

AMMONIA (NH3) : LA-631-001 (C-0) ^{MD} ₆₋₁₅₋₉₉ LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	ID 7.560
STD	Blank Result from the Instrument (µg/mL)	BR 0.008
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
30149	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		
99002483		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 3.78E+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		
06/15/99		
Analysis Date	QC ACTUAL (µg)	4.08E+02
06/14/99	QC FOUND (µg)	3.78E+02
Analysis Time		
04:40 AM		
Sample Point		
U103 GRAB2		

Analyst:	SLH Date: 06/15/99
Signature of Chemist: <i>NA</i>	MJL Date:

SAMPLE.WB1 REV 1.0

631001ML

147.23

DOUBLE KNOWN ADDITION SELECTED
AT 06:22, 06-14-99

SAMPLE VOL = 25.000 AT 06:22, 06-14-99
ENTERED

EMF = 100.3 mV AT 06:29, 06-14-99

EMF = 95.8 mV AT 06:30, 06-14-99

EMF = 99.4 mV AT 06:30, 06-14-99

EMF = 99.1 mV AT 06:30, 06-14-99

EMF = 98.8 mV AT 06:31, 06-14-99

EMF = 98.8 mV AT 06:31, 06-14-99
ENTERED

STD CONCN = 997 AT 06:31, 06-14-99

ENTERED

STD VOL = 25000 AT 06:31, 06-14-99
ENTERED

EMF = 83.2 mV AT 06:35, 06-14-99

EMF = 83.4 mV AT 06:36, 06-14-99

EMF = 83.6 mV AT 06:36, 06-14-99

EMF = 84.1 mV AT 06:37, 06-14-99

EMF = 84.1 mV AT 06:37, 06-14-99
ENTERED

STD VOL = 25000 AT 06:37, 06-14-99

ENTERED

EMF = 142.1 mV AT 06:40, 06-14-99

EMF = 142.3 mV AT 06:40, 06-14-99

EMF = 142.7 mV AT 06:41, 06-14-99

EMF = 143.0 mV AT 06:42, 06-14-99

EMF = 143.0 mV AT 06:42, 06-14-99
ENTERED

1: NMS SLOPE = -58.9 mV/DEC

1: NMS CONCN = 1.00775

BK WL 30149 147.24

1:NH3 SLOPE=-53.6 mV/DEC
AT 09:54, 06-14-99

HNF-1668 REV. 0

1:NH3 CONCEN= 5.44

DOUBLE KNOWN ADDITION SELECTED
AT 10:26, 06-14-99

SAMPLE VOL= 25.000 AT 10:26, 06-14-99
ENTERED

EMF=-48.1 mV AT 10:30, 06-14-99

EMF=-48.5 mV AT 10:30, 06-14-99

EMF=-49.0 mV AT 10:31, 06-14-99

EMF=-49.4 mV AT 10:31, 06-14-99

EMF=-49.7 mV AT 10:31, 06-14-99

EMF=-49.9 mV AT 10:32, 06-14-99
ENTERED

STD CONCEN= 997 AT 10:32, 06-14-99
ENTERED

STD VOL= .25000 AT 10:32, 06-14-99
ENTERED

EMF=-71.4 mV AT 10:34, 06-14-99

EMF=-71.9 mV AT 10:35, 06-14-99

EMF=-72.2 mV AT 10:35, 06-14-99

EMF=-72.4 mV AT 10:35, 06-14-99

EMF=-72.7 mV AT 10:36, 06-14-99

EMF=-72.8 mV AT 10:36, 06-14-99
ENTERED

STD VOL= 2.5000 AT 10:37, 06-14-99
ENTERED

EMF=-118.5 mV AT 10:39, 06-14-99

EMF=-118.8 mV AT 10:39, 06-14-99

EMF=-119.1 mV AT 10:39, 06-14-99

EMF=-119.4 mV AT 10:40, 06-14-99

EMF=-119.6 mV AT 10:40, 06-14-99

EMF=-119.8 mV AT 10:41, 06-14-99
ENTERED

1:NH3 SLOPE=-58.6 mV/DEC
AT 10:41, 06-14-99

WL30149

60055
59N19-A

147.25

STD

6.71 1:NH3 CONCEN

DOUBLE KNOWN ADDITION SELECTED
AT 11:06. 06-14-99

SAMPLE VOL= 25.000 AT 11:07. 06-14-99
ENTERED

EMF= 7.2 mV AT 11:09. 06-14-99

EMF= 7.2 mV AT 11:10. 06-14-99

EMF= 7.3 mV AT 11:10. 06-14-99

EMF= 7.3 mV AT 11:11. 06-14-99

EMF= 7.3 mV AT 11:12. 06-14-99
ENTERED

STD CONCEN= 997 AT 11:12. 06-14-99
ENTERED

STD VOL= .25000 AT 11:12. 06-14-99
ENTERED

EMF=-48.0 mV AT 11:15. 06-14-99

EMF=-48.7 mV AT 11:16. 06-14-99

EMF=-49.0 mV AT 11:16. 06-14-99

EMF=-49.3 mV AT 11:17. 06-14-99

EMF=-49.6 mV AT 11:17. 06-14-99

EMF=-49.9 mV AT 11:17. 06-14-99

EMF=-49.9 mV AT 11:17. 06-14-99
ENTERED

STD VOL= 2.5000 AT 11:18. 06-14-99
ENTERED

EMF=-108.3 mV AT 11:21. 06-14-99

EMF=-108.6 mV AT 11:21. 06-14-99

EMF=-108.9 mV AT 11:22. 06-14-99

EMF=-109.2 mV AT 11:22. 06-14-99

EMF=-109.5 mV AT 11:22. 06-14-99

EMF=-109.6 mV AT 11:23. 06-14-99
ENTERED

1:NH3 SLOPE=-62.9 mV/DEC
AT 11:23. 06-14-99

1:NH3 CONCEN= 1.35

147.26 599T000546

500ml 35
sam

LE SAMPLE LOCATION SELECTED 3:22, 06-14-99
ENTERED

EMF= 0 mV AT 13:26, 06-14-99

EMF=-0.7 mV AT 13:26, 06-14-99

EMF=-1.1 mV AT 13:27, 06-14-99

EMF=-1.3 mV AT 13:27, 06-14-99

EMF=-1.6 mV AT 13:28, 06-14-99

EMF=-1.8 mV AT 13:28, 06-14-99

EMF=-1.9 mV AT 13:28, 06-14-99

ENTERED

STD CONC= 997 AT 13:29, 06-14-99

ENTERED

STD VOL= .25000 AT 13:29, 06-14-99

ENTERED

EMF=-77.8 mV AT 13:31, 06-14-99

EMF=-78.1 mV AT 13:32, 06-14-99

EMF=-78.4 mV AT 13:32, 06-14-99

EMF=-78.7 mV AT 13:33, 06-14-99

EMF=-78.8 mV AT 13:33, 06-14-99

ENTERED

STD VOL= 2.5000 AT 13:33, 06-14-99

ENTERED

EMF=-136.6 mV AT 13:35, 06-14-99

EMF=-136.9 mV AT 13:36, 06-14-99

EMF=-137.2 mV AT 13:37, 06-14-99

EMF=-137.3 mV AT 13:37, 06-14-99

EMF=-137.4 mV AT 13:37, 06-14-99

ENTERED

1:NH3 SLOPE=-59.8 mV/DEC

AT 13:37, 06-14-99

1:NH3 CONC= 1.539

S99T000 546 Dup
.500ml
35

147.27

DOUBLE KNOWN ADDITION SELECTED
AT 14:00, 06-14-99

SAMPLE VOL= 25.000 AT 14:01, 06-14-99
ENTERED

EMF= 3.5 mV AT 14:02, 06-14-99

EMF= 8.9 mV AT 14:05, 06-14-99

EMF= 9.2 mV AT 14:06, 06-14-99

EMF= 9.5 mV AT 14:06, 06-14-99

EMF= 9.8 mV AT 14:07, 06-14-99

EMF= 9.9 mV AT 14:07, 06-14-99
ENTERED

STD CONC= 997 AT 14:07, 06-14-99
ENTERED

STD VOL= .25000 AT 14:07, 06-14-99
ENTERED

EMF=-56.2 mV AT 14:10, 06-14-99

EMF=-56.6 mV AT 14:11, 06-14-99

EMF=-57.1 mV AT 14:11, 06-14-99

EMF=-57.3 mV AT 14:11, 06-14-99

EMF=-57.6 mV AT 14:12, 06-14-99

EMF=-57.6 mV AT 14:12, 06-14-99
ENTERED

STD VOL= 2.5000 AT 14:12, 06-14-99
ENTERED

EMF=-116.7 mV AT 14:16, 06-14-99

EMF=-117.0 mV AT 14:16, 06-14-99

EMF=-117.2 mV AT 14:16, 06-14-99

EMF=-117.5 mV AT 14:17, 06-14-99

EMF=-117.6 mV AT 14:17, 06-14-99

EMF=-117.7 mV AT 14:17, 06-14-99
ENTERED

1:NH3 SLOPE=-62.1 mV/DEC
AT 14:17, 06-14-99

1:NH3 CONC= .881

STARTED 548 .500m
147.28 Jim

DOUBLE KNOWN ADDITION SELECTED
AT 14:40, 06-14-99

SAMPLE VOL= 25.000 AT 14:40, 06-14-99
ENTERED

EMF= 3.8 mV AT 14:42, 06-14-99

EMF= 3.7 mV AT 14:43, 06-14-99

EMF= 3.7 mV AT 14:44, 06-14-99

EMF= 3.6 mV AT 14:45, 06-14-99

EMF= 3.5 mV AT 14:46, 06-14-99

EMF= 3.5 mV AT 14:46, 06-14-99
ENTERED

STD CONCEN= 997 AT 14:47, 06-14-99
ENTERED

STD VOL= .25000 AT 14:47, 06-14-99
ENTERED

EMF=-51.0 mV AT 14:51, 06-14-99

EMF=-51.3 mV AT 14:51, 06-14-99

EMF=-51.6 mV AT 14:51, 06-14-99

EMF=-51.9 mV AT 14:52, 06-14-99

EMF=-52.2 mV AT 14:52, 06-14-99

EMF=-52.2 mV AT 14:52, 06-14-99
ENTERED

STD VOL= 2.5000 AT 14:53, 06-14-99
ENTERED

EMF=-110.7 mV AT 14:56, 06-14-99

EMF=-111.0 mV AT 14:57, 06-14-99

EMF=-111.3 mV AT 14:57, 06-14-99

EMF=-111.6 mV AT 14:57, 06-14-99

EMF=-111.8 mV AT 14:58, 06-14-99
ENTERED

1:NH3 SLOPE=-63.0 mV/DEC
AT 14:58, 06-14-99

1:NH3 CONCEN= 1.48

899T000548 Dup .500ml

147.29

DOUBLE KNOWN ADDITION SELECTED
AT 16:14, 06-14-99

SAMPLE VOL= 25.000 AT 16:14, 06-14-99
ENTERED

EMF=-36.1 mV AT 16:17, 06-14-99

EMF=-36.5 mV AT 16:17, 06-14-99

EMF=-37.0 mV AT 16:18, 06-14-99

EMF=-37.5 mV AT 16:18, 06-14-99

EMF=-37.7 mV AT 16:18, 06-14-99

EMF=-37.8 mV AT 16:19, 06-14-99
ENTERED

STD CONC= 997 AT 16:19, 06-14-99
ENTERED

STD VOL= .25000 AT 16:19, 06-14-99
ENTERED

EMF=-58.6 mV AT 16:22, 06-14-99

EMF=-59.0 mV AT 16:22, 06-14-99

EMF=-59.2 mV AT 16:23, 06-14-99

EMF=-59.5 mV AT 16:23, 06-14-99

EMF=-59.7 mV AT 16:23, 06-14-99
ENTERED

STD VOL= 2.5000 AT 16:24, 06-14-99
ENTERED

EMF=-105.7 mV AT 16:27, 06-14-99

EMF=-106.2 mV AT 16:28, 06-14-99

EMF=-106.5 mV AT 16:28, 06-14-99

EMF=-106.9 mV AT 16:28, 06-14-99

EMF=-107.3 mV AT 16:29, 06-14-99

EMF=-107.3 mV AT 16:29, 06-14-99
ENTERED

1:NH3 SLOPE=-60.7 mV/DEC
AT 16:29, 06-14-99

1:NH3 CONC= 7.56

NL 30149

*End STD .500ml
59NF-A*

147,30

LABCORE Completed Worklist Report for Worklist# 29236

Analyst: kjt Instrument: IC40S2 Book#: 75N21B

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

Worklist Comment: U103 GRAB2/TX-113 IC-01

M.D. 4/15/99

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

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	CCB	F	0	0	IC-GC	F	<1.20e-2	1	<1.20e-2	ug/ml
1	CCB	CL	0	0	IC-GC	CL	<1.70e-2	1	<1.70e-2	ug/ml
1	CCB	NO2	0	0	IC-GC	NO2	<1.08e-1	1	<1.08e-1	ug/ml
1	CCB	BR	0	0	IC-GC	BR	<1.25e-1	1	<1.25e-1	ug/ml
1	CCB	NO3	0	0	IC-GC	NO3	<1.39e-1	1	<1.39e-1	ug/ml
1	CCB	P04	0	0	IC-GC	P04	<1.20e-1	1	<1.20e-1	ug/ml
1	CCB	S04	0	0	IC-GC	S04	<1.38e-1	1	<1.38e-1	ug/ml
1	CCB	OxALATe2	0	0	IC-GC	OxALATe2	<1.05e-1	1	<1.05e-1	ug/ml
2	LCS-INST	F	0	0	IC-GC	F	5.84e1	103.767 % Recovery		
2	LCS-INST	CL	0	0	IC-GC	CL	8.06e1	109.057 % Recovery		
2	LCS-INST	NO2	0	0	IC-GC	NO2	5.36e2	101.679 % Recovery		
2	LCS-INST	BR	0	0	IC-GC	BR	5.76e2	100.174 % Recovery		
2	LCS-INST	NO3	0	0	IC-GC	NO3	5.84e2	100.342 % Recovery		
2	LCS-INST	P04	0	0	IC-GC	P04	5.44e2	106.434 % Recovery		
2	LCS-INST	S04	0	0	IC-GC	S04	6.42e2	103.583 % Recovery		
2	LCS-INST	OxALATe2	0	0	IC-GC	OxALATe2	5.21e2	106.910 % Recovery		
3	CCV	F	0	0	IC-GC	F	6.40e1	102.188 % Recovery		
3	CCV	CL	0	0	IC-GC	CL	8.95e1	99.888 % Recovery		
3	CCV	NO2	0	0	IC-GC	NO2	5.29e2	97.732 % Recovery		
3	CCV	BR	0	0	IC-GC	BR	6.30e2	101.270 % Recovery		
3	CCV	NO3	0	0	IC-GC	NO3	7.00e2	105.000 % Recovery		
3	CCV	P04	0	0	IC-GC	P04	6.35e2	102.677 % Recovery		
3	CCV	S04	0	0	IC-GC	S04	7.00e2	101.000 % Recovery		
3	CCV	OxALATe2	0	0	IC-GC	OxALATe2	5.38e2	104.833 % Recovery		
4	SAMPLE	F-02	0	0	IC-01	F-02	1.115e+03	61.810 ug/ml		
4	SAMPLE	CL-02	0	0	IC-01	CL-02	1.042e+04	87.570 ug/ml		
4	SAMPLE	NO2-02	0	0	IC-01	NO2-02	1.273e+05	556.300 ug/ml		
4	SAMPLE	BR-02	0	0	IC-01	BR-02	6.439e+02	643.900 ug/ml		
4	SAMPLE	NO3-02	0	0	IC-01	NO3-02	1.685e+05	716.000 ug/ml		
4	SAMPLE	P04-02	0	0	IC-01	P04-02	1.031e+03	618.100 ug/ml		
4	SAMPLE	S04-02	0	0	IC-01	S04-02	3.961e+03	710.800 ug/ml		
4	SAMPLE	OxALATe2	0	0	IC-01	OxALATe2	N/A	540.900 ug/ml		
5	DUP	F-02	0	0	IC-01	F-02	1.12e+03	10.329 RPD		
5	DUP	CL-02	0	0	IC-01	CL-02	1.04e+04	0.000 RPD		
5	DUP	NO2-02	0	0	IC-01	NO2-02	1.27e+05	0.000 RPD		
5	DUP	BR-02	0	0	IC-01	BR-02	<6.44e2	0.590 RPD		
5	DUP	NO3-02	0	0	IC-01	NO3-02	1.69e+05	29.271 RPD		
5	DUP	P04-02	0	0	IC-01	P04-02	1.03e+03	2.558 RPD		
5	DUP	S04-02	0	0	IC-01	S04-02	3.96e+03	2.558 RPD		
5	DUP	OxALATe2	0	0	IC-01	OxALATe2	<5.41e2	100.342 % Recovery		
6	SPK	F-02	0	0	IC-01	F-02	5.84e1			

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

LABCORE Completed Worklist Report for Worklist# 29236

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SPK	S99T000537	0	@IC-01	CL-02	LIQUID	8.06e1	8.38e+01	103.970 % Recovery
6 SPK	S99T000537	0	@IC-01	NO2-02	LIQUID	5.36e2	5.24e+02	97.761 % Recovery
6 SPK	S99T000537	0	@IC-01	BR-02	LIQUID	5.76e2	5.39e+02	93.576 % Recovery
6 SPK	S99T000537	0	@IC-01	NO3-02	LIQUID	5.84e2	5.42e+02	92.808 % Recovery
6 SPK	S99T000537	0	@IC-01	PO4-02	LIQUID	5.44e2	5.57e+02	102.390 % Recovery
6 SPK	S99T000537	0	@IC-01	SO4-02	LIQUID	6.42e2	6.42e+02	100.000 % Recovery
6 SPK	S99T000537	0	@IC-01	OXALATE2	LIQUID	5.21e2	5.24e+02	100.576 % Recovery
7 SAMPLE	S99T000546	0	@IC-01	F-02	LIQUID	N/A	1.262e+03	61.810 ug/mL
7 SAMPLE	S99T000546	0	@IC-01	CL-02	LIQUID	N/A	1.108e+04	87.570 ug/mL
7 SAMPLE	S99T000546	0	@IC-01	NO2-02	LIQUID	N/A	1.340e+05	556.300 ug/mL
7 SAMPLE	S99T000546	0	@IC-01	BR-02	LIQUID	N/A <	6.439e+02	643.900 ug/mL
7 SAMPLE	S99T000546	0	@IC-01	NO3-02	LIQUID	N/A	1.426e+05	716.000 ug/mL
7 SAMPLE	S99T000546	0	@IC-01	PO4-02	LIQUID	N/A	7.710e+02	618.100 ug/mL
7 SAMPLE	S99T000546	0	@IC-01	SO4-02	LIQUID	N/A	2.498e+03	710.800 ug/mL
7 SAMPLE	S99T000546	0	@IC-01	OXALATE2	LIQUID	N/A <	5.409e+02	540.900 ug/mL
8 DUP	S99T000546	0	@IC-01	F-02	LIQUID	1.26e+03	1.17e+03	7.407 RPD
8 DUP	S99T000546	0	@IC-01	CL-02	LIQUID	1.11e+04	1.13e+04	1.786 RPD
8 DUP	S99T000546	0	@IC-01	NO2-02	LIQUID	1.34e+05	1.35e+05	0.743 RPD
8 DUP	S99T000546	0	@IC-01	BR-02	LIQUID	<6.44e2	<6.44e2	RPD
8 DUP	S99T000546	0	@IC-01	NO3-02	LIQUID	1.43e+05	1.43e+05	0.000 RPD
8 DUP	S99T000546	0	@IC-01	PO4-02	LIQUID	7.71e+02	7.80e+02	1.161 RPD
8 DUP	S99T000546	0	@IC-01	SO4-02	LIQUID	2.50e+03	2.58e+03	3.150 RPD
8 DUP	S99T000546	0	@IC-01	OXALATE2	LIQUID	<5.41e2	<5.41e2	RPD
9 SAMPLE	S99T000548	0	@IC-01	F-02	LIQUID	N/A	8.649e+02	61.810 ug/mL
9 SAMPLE	S99T000548	0	@IC-01	CL-02	LIQUID	N/A	1.156e+04	87.570 ug/mL
9 SAMPLE	S99T000548	0	@IC-01	NO2-02	LIQUID	N/A	1.375e+05	556.300 ug/mL
9 SAMPLE	S99T000548	0	@IC-01	BR-02	LIQUID	N/A <	6.439e+02	643.900 ug/mL
9 SAMPLE	S99T000548	0	@IC-01	NO3-02	LIQUID	N/A	1.319e+05	716.000 ug/mL
9 SAMPLE	S99T000548	0	@IC-01	PO4-02	LIQUID	N/A <	6.181e+02	618.100 ug/mL
9 SAMPLE	S99T000548	0	@IC-01	SO4-02	LIQUID	N/A	1.316e+03	710.800 ug/mL
9 SAMPLE	S99T000548	0	@IC-01	OXALATE2	LIQUID	N/A <	5.409e+02	540.900 ug/mL
10 DUP	S99T000548	0	@IC-01	F-02	LIQUID	8.65e+02	1.09e+03	23.018 RPD
10 DUP	S99T000548	0	@IC-01	CL-02	LIQUID	1.16e+04	1.35e+04	15.139 RPD
10 DUP	S99T000548	0	@IC-01	NO2-02	LIQUID	1.38e+05	1.61e+05	15.385 RPD
10 DUP	S99T000548	0	@IC-01	BR-02	LIQUID	<6.44e2	<6.44e2	RPD
10 DUP	S99T000548	0	@IC-01	NO3-02	LIQUID	1.32e+05	1.56e+05	16.667 RPD
10 DUP	S99T000548	0	@IC-01	PO4-02	LIQUID	<6.18e2	<6.18e2	RPD
10 DUP	S99T000548	0	@IC-01	SO4-02	LIQUID	1.32e+03	1.84e+03	32.911 RPD
10 DUP	S99T000548	0	@IC-01	OXALATE2	LIQUID	<5.41e2	<5.41e2	RPD
11 BLNK-PREP		0	@IC-01	F-02	SOLID	1	<1.20e-2	ug/g
11 BLNK-PREP		0	@IC-01	CL-02	SOLID	1	<1.70e-2	ug/g
11 BLNK-PREP		0	@IC-01	NO2-02	SOLID	1	3.49e-01	0.349 ug/g
11 BLNK-PREP		0	@IC-01	BR-02	SOLID	1	<1.25e-1	ug/g
11 BLNK-PREP		0	@IC-01	NO3-02	SOLID	1	2.14e-01	0.214 ug/g
11 BLNK-PREP		0	@IC-01	PO4-02	SOLID	1	<1.20e-1	ug/g
11 BLNK-PREP		0	@IC-01	SO4-02	SOLID	1	<1.38e-1	ug/g
11 BLNK-PREP		0	@IC-01	OXALATE2	SOLID	1	<1.05e-1	ug/g
12 SAMPLE	S99T000309	0 W	@IC-01	NO3-02	SOLID	N/A	4.731e+05	2854.000 ug/g
13 DUP	S99T000309	0 W	@IC-01	F-02	SOLID	7	2.21e+04	RPD

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

LABCORE Completed Worklist Report for Worklist# 29236

Seq Type	Sample#	RA	Test	Matrix	Actual	Found	DL or Yield	Unit
13 DUP	S99T000309	0 W @IC-01	CL-02	SOLID	?	6.27e+02		RPD
13 DUP	S99T000309	0 W @IC-01	NO2-02	SOLID	?	3.64e+03		RPD
13 DUP	S99T000309	0 W @IC-01	BR-02	SOLID	?	<2.55e3		RPD
13 DUP	S99T000309	0 W @IC-01	NO3-02	SOLID	4.73e+05	4.78e+05	1.052	RPD
13 DUP	S99T000309	0 W @IC-01	PO4-02	SOLID	?	3.76e+04		RPD
13 DUP	S99T000309	0 W @IC-01	SO4-02	SOLID	?	9.44e+04		RPD
13 DUP	S99T000309	0 W @IC-01	OXALATE2	SOLID	?	<2.14e3		RPD

Final page for worklist# 29236

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Jan M. Lutz 4/15/99

Reviewer Signature Date

04/14/99 14:43

HNF-1668 REV. 0

Page: 1

ws2

LABCORE Data Entry Template for Worklist# 29236

Analyst: KST Instrument: IC 4000sys2 Book# 75W211B ^{KST 4-14-99}
 Method: LA-533-105 Rev/Mod F-O 74W21B

Worklist Comment: U103 GRAB2,TK-113 IC-01

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	SAMPLE	S99T000537 0			@IC-01	LIQUID	99000104	U-103 GRAB2
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02								
5	DUP	S99T000537 0			@IC-01	LIQUID		
6	SPK	S99T000537 0			@IC-01	LIQUID		
7	SAMPLE	S99T000546 0			@IC-01	LIQUID	99000104	U-103 GRAB2
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02								
8	DUP	S99T000546.0			@IC-01	LIQUID		
9	SAMPLE	S99T000548 0			@IC-01	LIQUID	99000104	U-103 GRAB2
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02								
10	DUP	S99T000548 0			@IC-01	LIQUID		
11	BLNK-PREP				@IC-01	SOLID		
12	SAMPLE	S99T000309 0 W			@IC-01	SOLID	98000476	TX-113
Analytes Requested: NO3-02								
13	DUP	S99T000309 0 W			@IC-01	SOLID		

Data Entry Comments:

uploaded 4-15-99

John Wansell

Validated 4/15/99 JM Enye

29236APR.CSV

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

04/14/99 14:43

Page: 2

ws2

LABCORE Data Entry Template for Worklist# 29236

S Type	Sample#	R A	Test	Matrix	Group#	Project
--------	---------	-----	------	--------	--------	---------

Final page for worklist # 29236

K.S. Romo 4-14-99
 Signature Date

Signature Date

Data Entry Comments:

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

HNF-1668 REV. 0

```

=====
Sample Name: CCB                               Date: 04/14/1999 09:18:58
Data File  : C:\DX\DATA\99041431.D01
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 1           Detector: CDM-1
Analyst    : JMF for KDT                   Column: AG4A/AS4A anion column
              4/19/99
=====

```

```

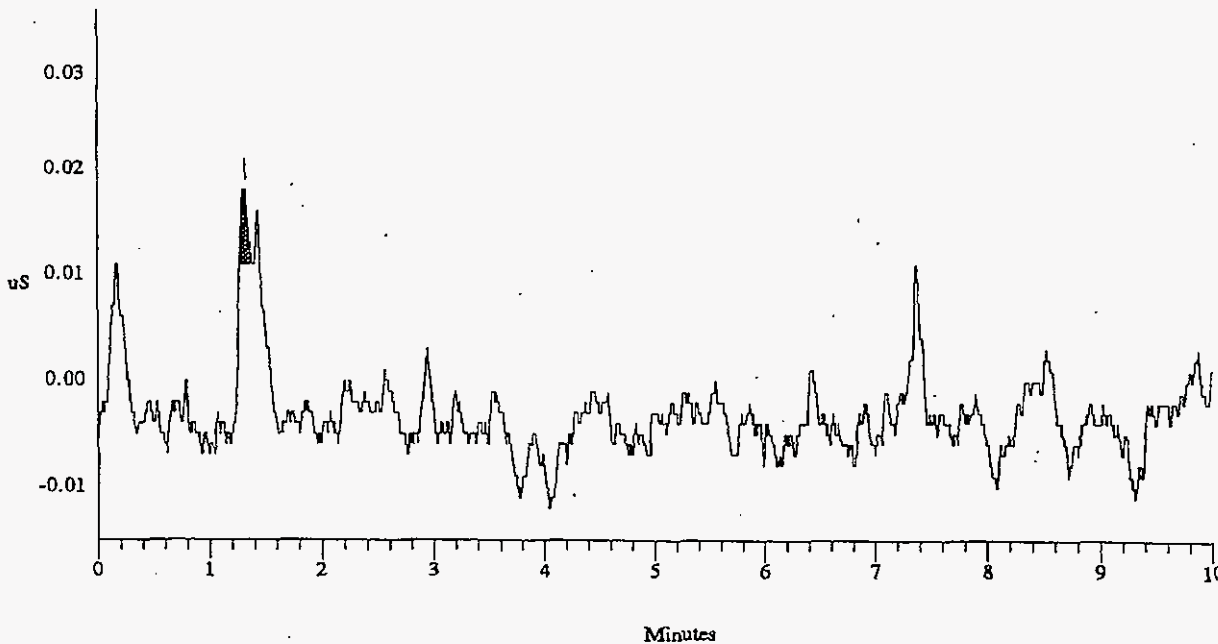
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           1    3000  5Hz   0.00 10.00           30
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
Totals			0.000	0	0		

File: 99041431.D01 Sample: CCB



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 153 TO 163.

151 9-14-99

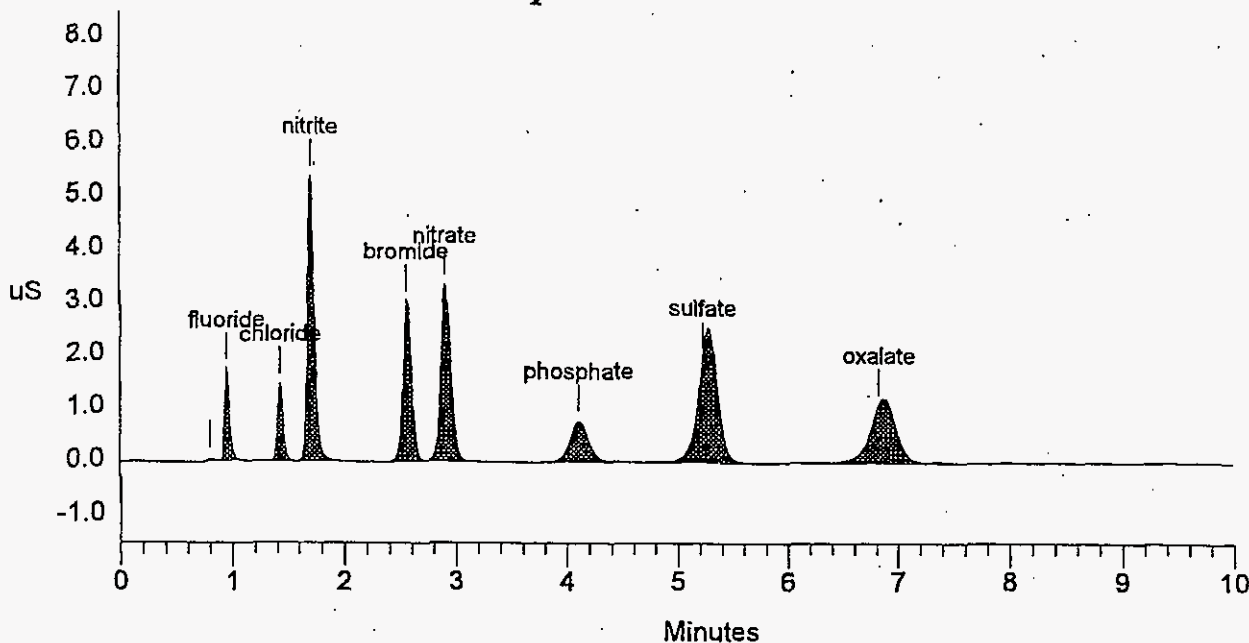
Sample Name: ICV 57N21B 75021B Date: 04/14/1999 09:33:28
 Data File : C:\DX\DATA\99041431.D02
 Method : C:\DX\METHOD\4000SYS2.MET
 ACI Address: 1 System: 2 Inject#: 2 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	53	198	2	
2	0.95	fluoride	103.8% 60.604	1720	5384	2	-0.35
3	1.43	chloride	109.1% 87.942	1467	5223	1	-0.47
4	1.71	nitrite	101.6% 544.783	5379	22405	1	-1.54
5	2.56	bromide	101.2% 576.958	3028	16032	1	-0.78
6	2.91	nitrate	100.4% 586.339	3332	20911	1	-1.13
7	4.11	phosphate	106.5% 579.204	771	8959	1	-3.60
8	5.23	sulfate	103.5% 664.511	1978	29993	1	-5.83
9	6.83	oxalate	106.9% 556.965	1096	19553	1	-5.84
Totals			3657.307	18826.	128658		

File: 99041431.D02 Sample: ICV 57N21B



HNF-1668 REV. 0

```

=====
Sample Name: CCV 74N21B                               Date: 04/14/1999 09:47:04
Data File  : C:\DX\DATA\99041431.D03
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 3                   Detector: CDM-1
Analyst    :                                           Column: AG4A/AS4A anion column
=====
    
```

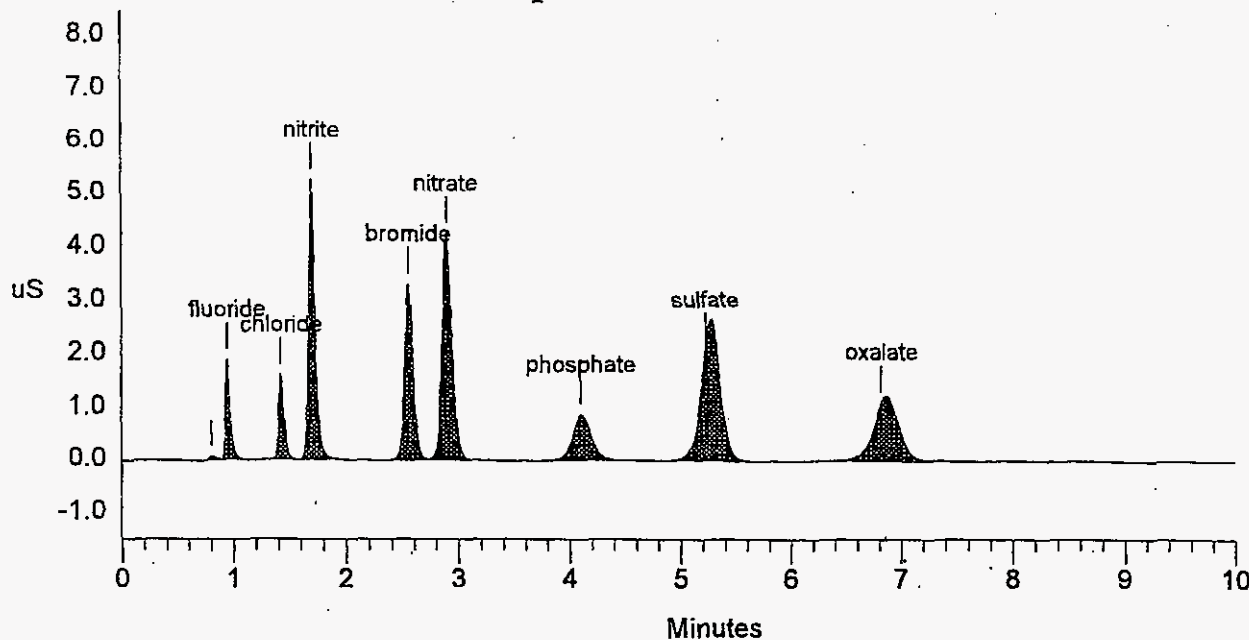
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	64	256	2	
2	0.95	fluoride	102.29%	65.405	1887	2	-0.35
3	1.43	chloride	99.99%	89.427	1614	1	-0.47
4	1.71	nitrite	97.89%	517.435	5278	1	-1.54
5	2.56	bromide	101.29%	637.554	3311	1	-0.78
6	2.90	nitrate	104.99%	734.649	4259	1	-1.36
7	4.11	phosphate	102.78%	652.460	880	1	-3.60
8	5.23	sulfate	100.99%	706.554	2111	1	-5.83
9	6.83	oxalate	104.89%	563.821	1120	1	-5.84
Totals			3967.303	20524	138539		

File: 99041431.D03 Sample: CCV 74N21B



HNF-1668 REV. 0

```

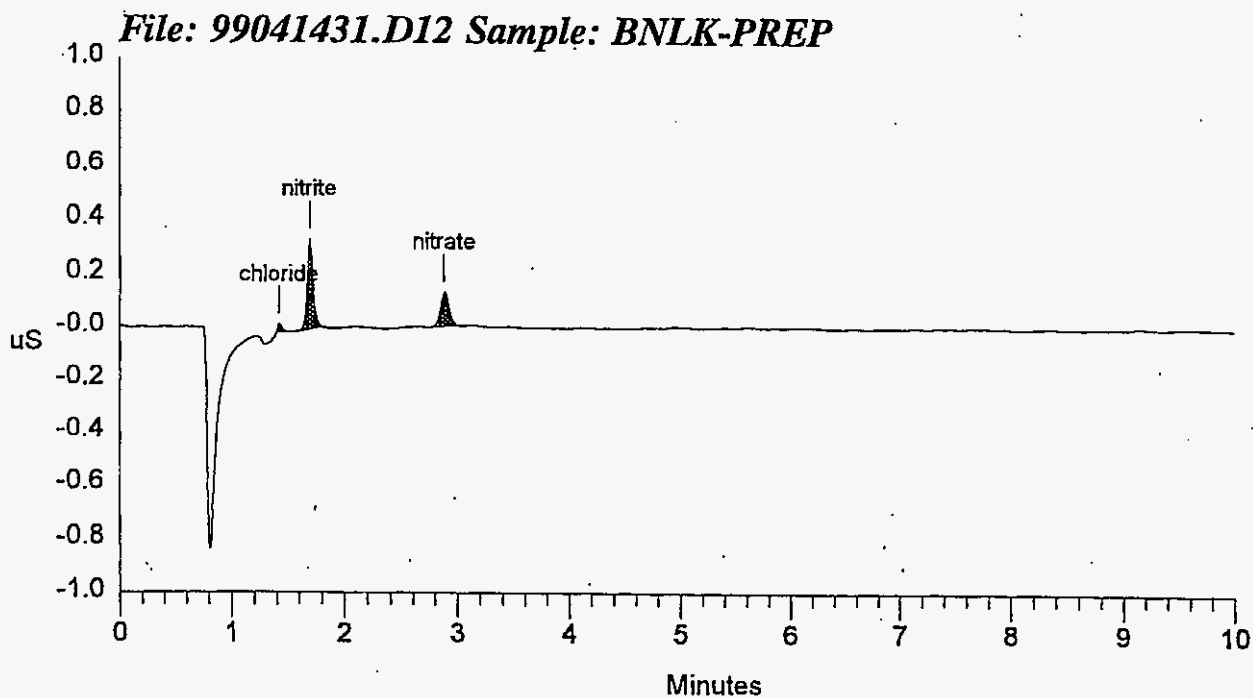
=====
Sample Name: BNLK-PREP                               Date: 04/14/1999 14:00:37
Data File  : C:\DX\DATA\99041431.D12
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 12                 Detector: CDM-1
Analyst    :                                         Column: AG4A/AS4A anion column
=====
    
```

```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.42	chloride	0.001	32	78	1	-0.93
2	1.69	nitrite	0.349	333	1228	1	-2.31
3	2.88	nitrate	0.214	128	696	1	-2.04
Totals			0.564	492	2002		



HNF-1668 REV. 0

Data Reprocessed On 04/14/1999 11:19:07

```

=====
Sample Name: S99T000537                               Date: 04/14/1999 10:25:38
Data File  : C:\DX\DATA\99041431.D05
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 5                   Detector: CDM-1
Analyst    :                                           Column: AG4A/AS4A anion column
=====
    
```

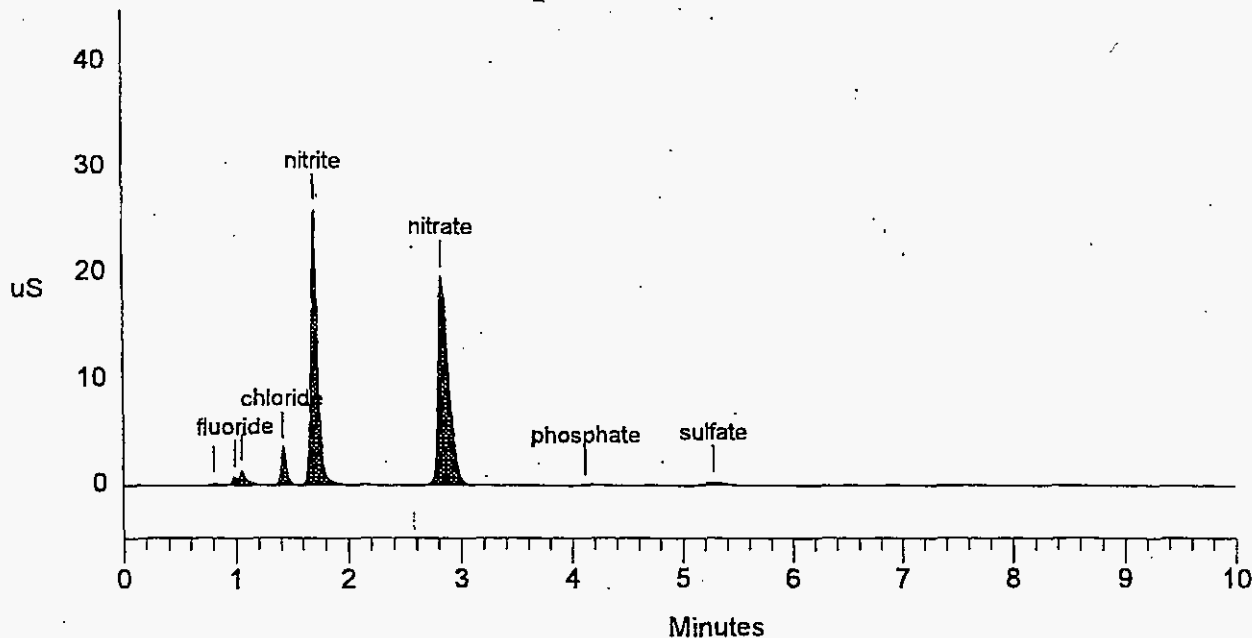
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	214	948	2	
2	0.99	fluoride	1115.234	802	1921	2	4.56
3	1.05		0.000	1391	6034	2	
4	1.42	chloride	10418.350	3478	12254	1	-0.93
5	1.71	nitrite	127269.748	25948	108015	1	-1.54
6	2.83	nitrate	168475.559	19711	128592	1	-3.63
7	4.12	phosphate	1031.241	28	236	1	-3.29
8	5.28	sulfate	3960.935	301	3611	1	-4.86
Totals			312271.068	51872	261611		

File: 99041431.D05 Sample: S99T000537



HNF-1668 REV. 0

```

=====
Sample Name: S99T000537 DUP                               Date: 04/14/1999 10:38:37
Data File  : C:\DX\DATA\99041431.D06
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 6                       Detector: CDM-1
Analyst    :                                             Column: AG4A/AS4A anion column
=====
    
```

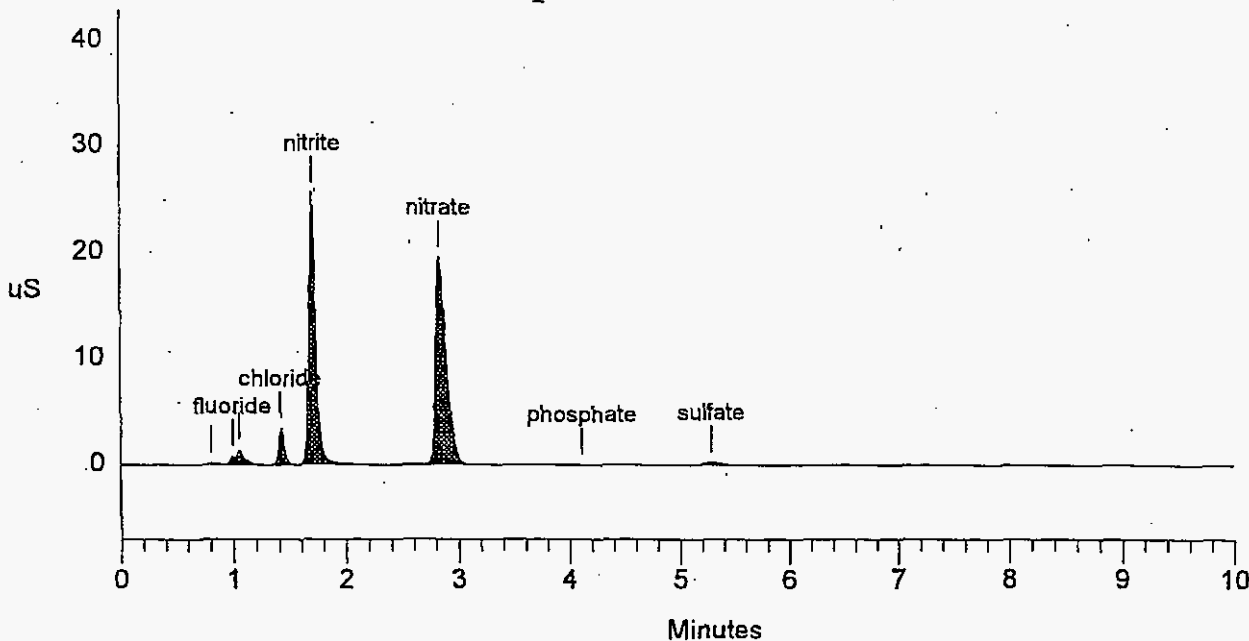
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	215	994	2	
2	0.99	fluoride	1006.851	807	1733	2	4.56
3	1.05		0.000	1448	6716	2	
4	1.42	chloride	10394.083	3445	12224	1	-0.93
5	1.71	nitrite	126717.242	25652	107517	1	-1.54
6	2.83	nitrate	169659.444	19509	129604	1	-3.85
7	4.11	phosphate	766.638	20	156	1	-3.60
8	5.28	sulfate	3858.842	293	3522	1	-4.86
Totals			312403.100	51390	262466		

File: 99041431.D06 Sample: S99T000537 DUP



Data Reprocessed On 04/15/1999 09:29:14

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=====
Sample Name: S99T000537 SPK                               Date: 04/14/1999 10:59:31
Data File  : F:\DATA\99041431.D07
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 7                       Detector: CDM-1
Analyst    :                                               Column: AG4A/AS4A anion column
=====
    
```

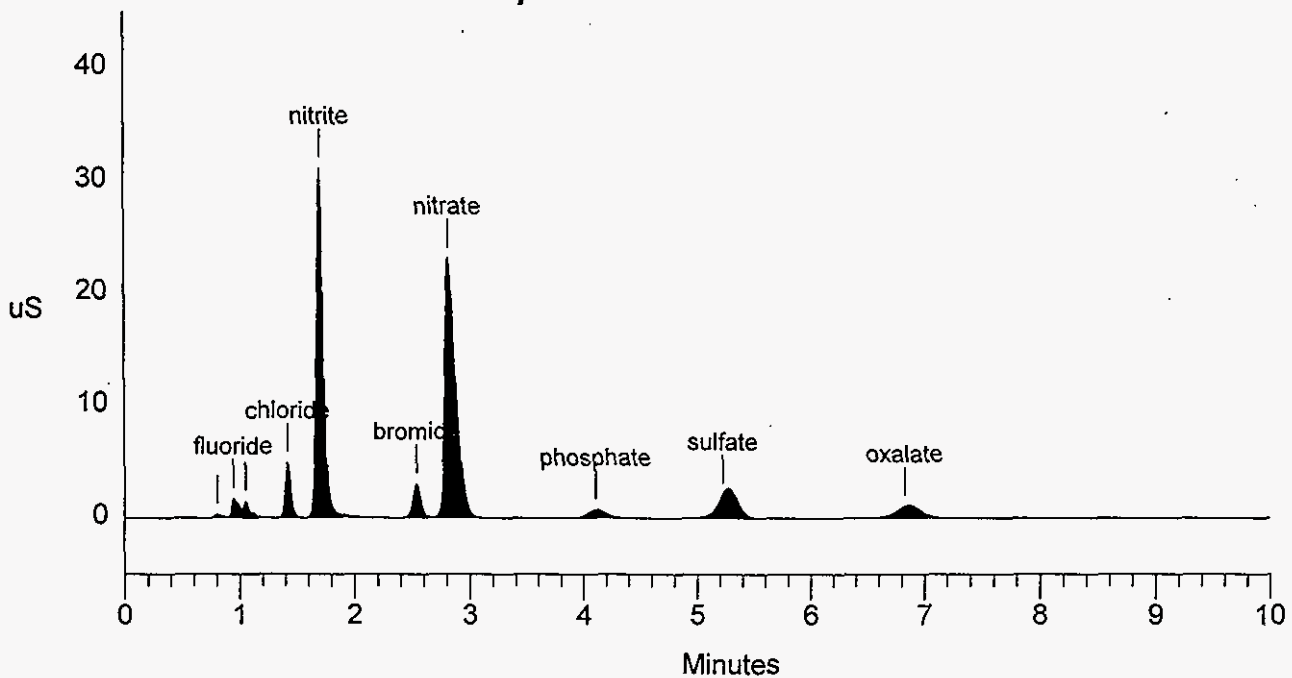
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	267	1180	2	
2	0.95	fluoride	4075.840	1701	7128	2	-0.35
3	1.05		0.000	1478	6480	2	
4	1.42	chloride	14649.506	4945	17435	1	-0.93
5	1.71	nitrite	153758.144	31171	132198	1	-1.54
6	2.54	bromide	27231.194	3001	14819	1	-1.55
7	2.81	nitrate	195830.543	23080	152478	1	0.12
8	4.11	phosphate	29185.952	768	8849	1	-3.60
9	5.23	sulfate	36394.344	2165	32233	1	-5.83
10	6.83	oxalate	26463.193	1083	18219	1	-5.84
Totals			487588.714	69661	391018		

File: 99041431.D07 Sample: S99T000537 SPK



HNF-1668 REV. 0

```

=====
Sample Name: S99T000546                               Date: 04/14/1999 11:18:12
Data File  : C:\DX\DATA\99041431.D08
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 8                   Detector: CDM-1
Analyst    :                                           Column: AG4A/AS4A anion column
=====
    
```

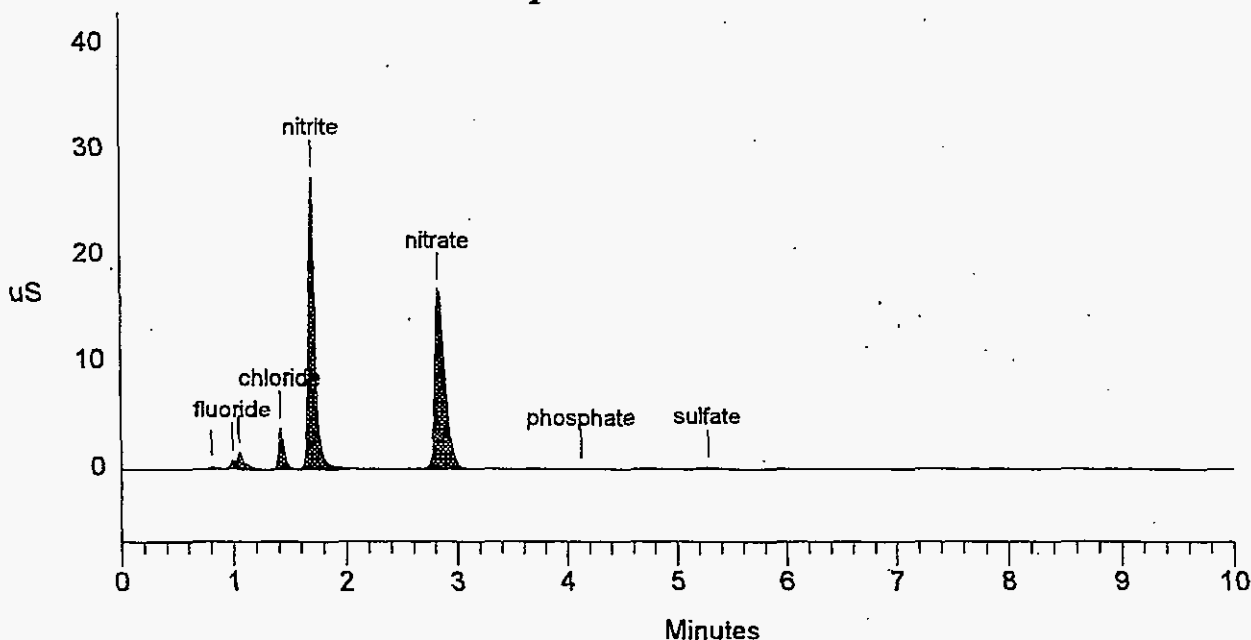
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	209	955	2	
2	0.99	fluoride	1262.073	865	2177	2	4.56
3	1.05		0.000	1539	6626	2	
4	1.42	chloride	11079.853	3813	13054	1	-0.93
5	1.71	nitrite	133957.498	27524	114059	1	-1.54
6	2.83	nitrate	142584.292	16750	106913	1	-3.63
7	4.13	phosphate	770.960	21	157	1	-3.13
8	5.28	sulfate	2498.451	201	2340	1	-4.86
Totals			292153.127	50922	246282		

File: 99041431.D08 Sample: S99T000546



Data Reprocessed On 04/15/1999 09:31:21

```

=====
Sample Name: S99T000546 DUP                      Date: 04/14/1999 13:18:06
Data File  : F:\DATA\99041431.D09
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 9              Detector: CDM-1
Analyst    :                                     Column: AG4A/AS4A anion column
=====
    
```

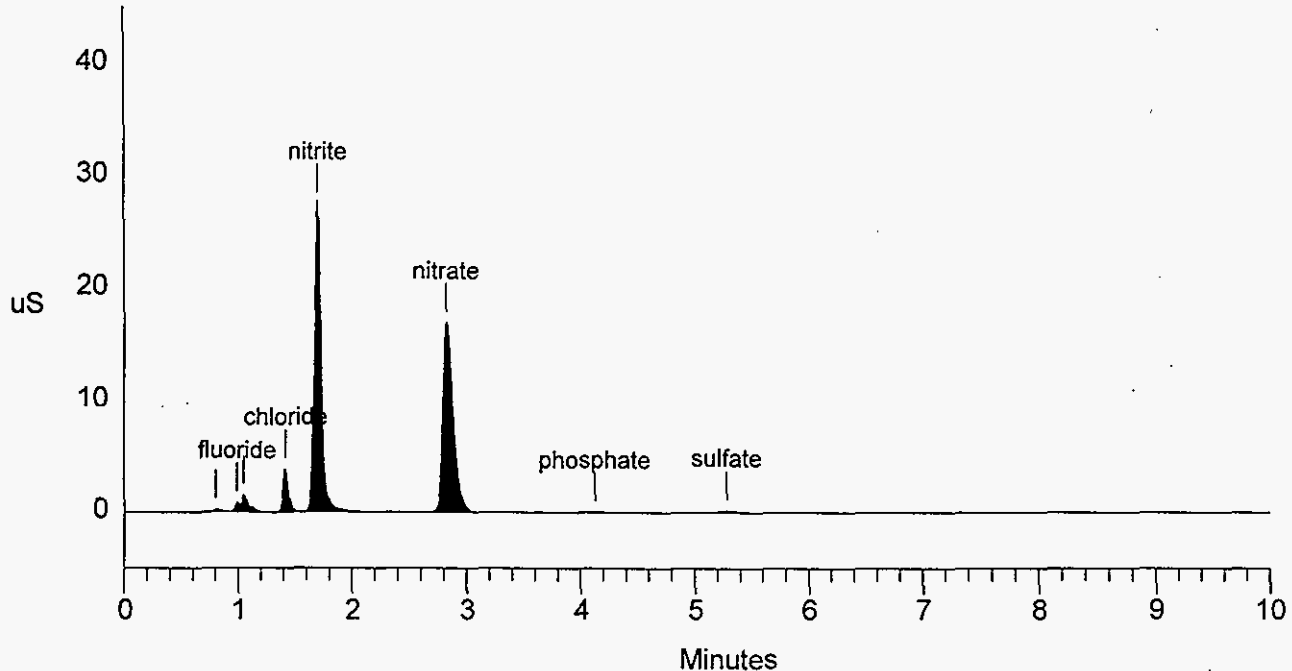
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-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           5151  3000  5Hz   0.00 10.00      30
    
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	207	941	2	
2	0.99	fluoride	1165.203	861	2008	2	4.56
3	1.05		0.000	1535	6585	2	
4	1.42	chloride	11280.914	3865	13298	1	-0.93
5	1.70	nitrite	135238.662	27436	115222	1	-1.92
6	2.82	nitrate	143339.291	16861	107533	1	0.00
7	4.13	phosphate	780.269	22	160	1	-3.13
8	5.28	sulfate	2578.681	195	2410	1	-4.86
Totals			294383.020	50982	248157		

File: 99041431.D09 Sample: S99T000546 DUP



HNF-1668 REV.0

Data Reprocessed On 04/14/1999 14:12:41

```

=====
Sample Name: S99T000548                               Date: 04/14/1999 13:32:22
Data File  : C:\DX\DATA\99041431.D10
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 10                 Detector: CDM-1
Analyst    :                                           Column: AG4A/AS4A anion column
=====
    
```

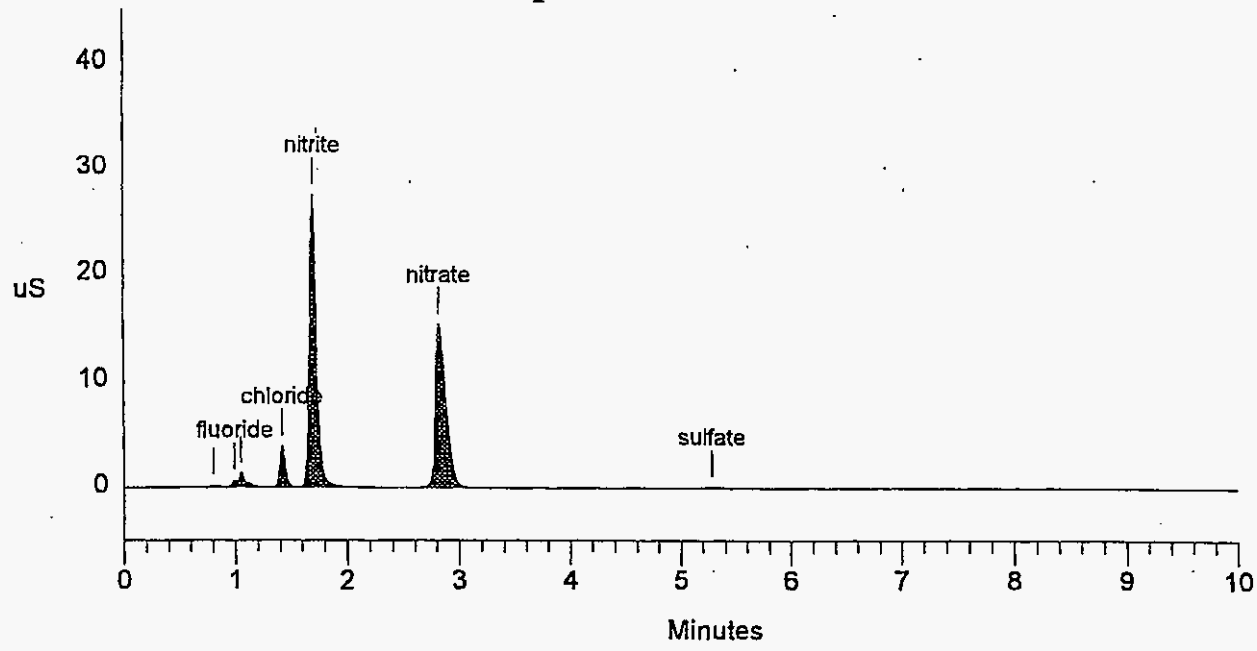
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	196	951	2	
2	0.99	fluoride	864.876	701	1486	2	4.56
3	1.05		0.000	1407	6253	2	
4	1.42	chloride	11561.951	3889	13640	1	-0.93
5	1.70	nitrite	137453.284	27562	117235	1	-1.92
6	2.82	nitrate	131857.789	15276	98171	1	0.00
7	5.28	sulfate	1315.992	112	1313	1	-4.86
Totals			283053.893	49142	239049		

File: 99041431.D10 Sample: S99T000548



Data Reprocessed On 04/14/1999 14:11:31 HNF-1668 REV. 0

```

=====
Sample Name: S99T000548 DUP                               Date: 04/14/1999 13:46:37
Data File  : C:\DX\DATA\99041431.D11
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 11                      Detector: CDM-1
Analyst    :                                             Column: AG4A/AS4A anion column
=====
    
```

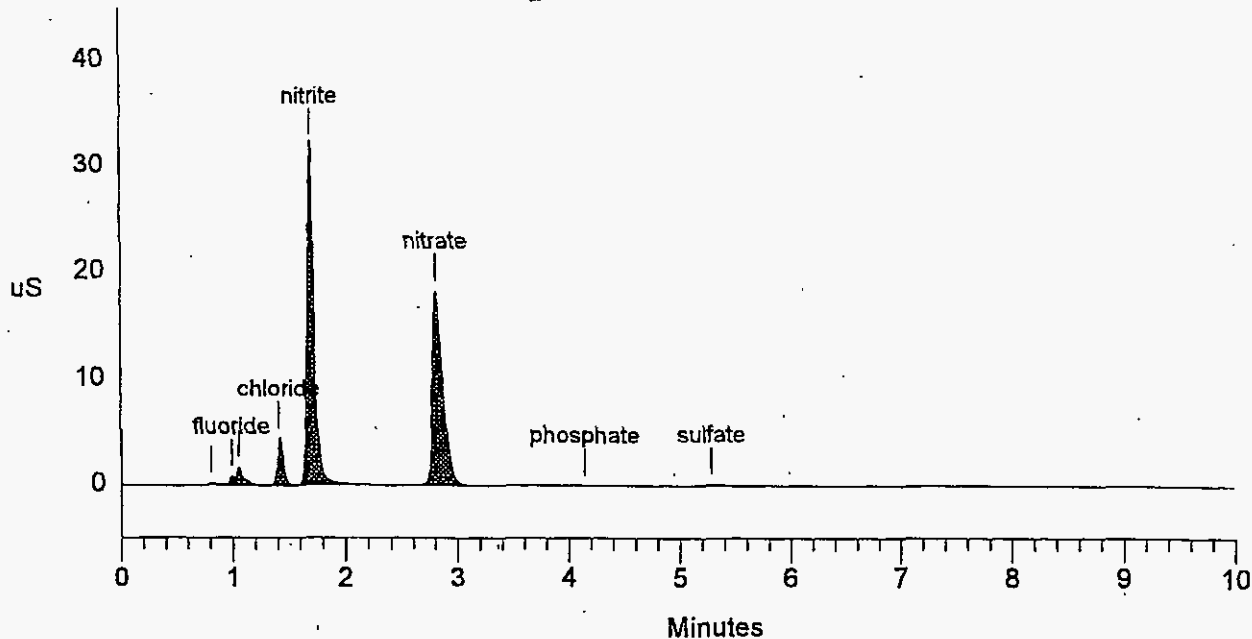
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=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           5151  3000  5Hz   0.00 10.00           30
    
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	232	1106	2	
2	0.99	fluoride	1089.326	857	1876	2	3.86
3	1.05		0.000	1717	7647	2	
4	1.41	chloride	13496.230	4414	16008	1	-1.40
5	1.70	nitrite	161071.143	32011	138991	1	-1.92
6	2.81	nitrate	156190.191	18250	118199	1	-0.12
7	4.14	phosphate	543.858	14	89	1	-2.82
8	5.28	sulfate	1843.855	144	1771	1	-4.86
Totals			334234.602	57641	285689		

File: 99041431.D11 Sample: S99T000548 DUP



LABCORE Completed Worklist Report for Worklist# 29287

Analyst: adp

Instrument: IC40S2

Book#: 75N21B

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

Worklist Comment: U103 GRAB2, @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	5.96e+01	102.055 % Recovery	
2	LCS-INST	0	@IC-QC	CL	QC		8.06e1	8.38e+01	103.970 % Recovery	
2	LCS-INST	0	@IC-QC	NO2	QC		5.36e2	5.21e+02	97.201 % Recovery	
2	LCS-INST	0	@IC-QC	BR	QC		5.76e2	5.61e+02	97.396 % Recovery	
2	LCS-INST	0	@IC-QC	NO3	QC		5.84e2	5.71e+02	97.774 % Recovery	
2	LCS-INST	0	@IC-QC	PO4	QC		5.44e2	5.55e+02	102.022 % Recovery	
2	LCS-INST	0	@IC-QC	SO4	QC		6.42e2	6.50e+02	101.246 % Recovery	
2	LCS-INST	0	@IC-QC	OXALATE2	QC		5.21e2	5.44e+02	104.415 % Recovery	
3	CCV	0	@IC-QC	F	QC		6.40e1	6.67e+01	104.219 % Recovery	
3	CCV	0	@IC-QC	CL	QC		8.95e1	9.27e+01	103.575 % Recovery	
3	CCV	0	@IC-QC	NO2	QC		5.29e2	5.26e+02	99.433 % Recovery	
3	CCV	0	@IC-QC	BR	QC		6.30e2	6.29e+02	99.841 % Recovery	
3	CCV	0	@IC-QC	NO3	QC		7.00e2	7.40e+02	105.714 % Recovery	
3	CCV	0	@IC-QC	PO4	QC		6.35e2	6.81e+02	107.244 % Recovery	
3	CCV	0	@IC-QC	SO4	QC		7.00e2	7.12e+02	101.714 % Recovery	
3	CCV	0	@IC-QC	OXALATE2	QC		5.38e2	5.81e+02	107.993 % 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	<1.70e-2		ug/g
4	BLNK-PREP	0	@IC-01	NO2-02	SOLID		1	5.63e-01	0.563	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	S99T000553	0	W	@IC-01	F-02	SOLID	N/A	5.038e+02	94.830 ug/g
5	SAMPLE	S99T000553	0	W	@IC-01	CL-02	SOLID	N/A	4.208e+03	134.400 ug/g
5	SAMPLE	S99T000553	0	W	@IC-01	NO2-02	SOLID	N/A	5.003e+04	853.600 ug/g
5	SAMPLE	S99T000553	0	W	@IC-01	BR-02	SOLID	N/A	9.880e+02	988.100 ug/g
5	SAMPLE	S99T000553	0	W	@IC-01	NO3-02	SOLID	N/A	3.190e+05	1099.000 ug/g
5	SAMPLE	S99T000553	0	W	@IC-01	PO4-02	SOLID	N/A	4.164e+04	948.300 ug/g
5	SAMPLE	S99T000553	0	W	@IC-01	SO4-02	SOLID	N/A	1.265e+03	1091.000 ug/g
5	SAMPLE	S99T000553	0	W	@IC-01	OXALATE2	SOLID	N/A	8.300e+02	829.800 ug/g
6	DUP	S99T000553	0	W	@IC-01	F-02	SOLID	5.04e+02	4.57e+02	9.781 RPD

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

LABCORE Completed Worklist Report for Worklist# 29287

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
6	DUP	S99T000553	0	W	@IC-01	CL-02	SOLID	4.21e+03	3.91e+03	7.389 RPD
6	DUP	S99T000553	0	W	@IC-01	NO2-02	SOLID	5.00e+04	4.56e+04	9.205 RPD
6	DUP	S99T000553	0	W	@IC-01	BR-02	SOLID	<9.88e2	<1.01e3	RPD
6	DUP	S99T000553	0	W	@IC-01	NO3-02	SOLID	3.19e+05	3.28e+05	2.782 RPD
6	DUP	S99T000553	0	W	@IC-01	PO4-02	SOLID	4.16e+04	4.01e+04	3.672 RPD
6	DUP	S99T000553	0	W	@IC-01	SO4-02	SOLID	1.26e+03	1.29e+03	2.353 RPD
6	DUP	S99T000553	0	W	@IC-01	OXALATE2	SOLID	<8.30e2	<8.49e2	RPD
7	SPK	S99T000553	0	W	@IC-01	F-02	SOLID	5.84e1	6.30e+01	107.877 % Recovery
7	SPK	S99T000553	0	W	@IC-01	CL-02	SOLID	8.06e1	8.05e+01	99.876 % Recovery
7	SPK	S99T000553	0	W	@IC-01	NO2-02	SOLID	5.36e2	5.44e+02	101.493 % Recovery
7	SPK	S99T000553	0	W	@IC-01	BR-02	SOLID	5.76e2	5.48e+02	95.139 % Recovery
7	SPK	S99T000553	0	W	@IC-01	NO3-02	SOLID	5.84e2	5.21e+02	89.212 % Recovery
7	SPK	S99T000553	0	W	@IC-01	PO4-02	SOLID	5.44e2	5.73e+02	105.331 % Recovery
7	SPK	S99T000553	0	W	@IC-01	SO4-02	SOLID	6.42e2	6.43e+02	100.156 % Recovery
7	SPK	S99T000553	0	W	@IC-01	OXALATE2	SOLID	5.21e2	5.36e+02	102.879 % Recovery
8	SAMPLE	S99T000558	0	W	@IC-01	F-02	SOLID	N/A	8.534e+02	94.510 ug/g
8	SAMPLE	S99T000558	0	W	@IC-01	CL-02	SOLID	N/A	7.954e+03	133.900 ug/g
8	SAMPLE	S99T000558	0	W	@IC-01	NO2-02	SOLID	N/A	9.922e+04	850.800 ug/g
8	SAMPLE	S99T000558	0	W	@IC-01	BR-02	SOLID	N/A <	9.844e+02	984.400 ug/g
8	SAMPLE	S99T000558	0	W	@IC-01	NO3-02	SOLID	N/A	1.339e+05	1095.000 ug/g
8	SAMPLE	S99T000558	0	W	@IC-01	PO4-02	SOLID	N/A	2.077e+04	945.100 ug/g
8	SAMPLE	S99T000558	0	W	@IC-01	SO4-02	SOLID	N/A	1.560e+03	1087.000 ug/g
8	SAMPLE	S99T000558	0	W	@IC-01	OXALATE2	SOLID	N/A <	8.269e+02	827.000 ug/g
9	DUP	S99T000558	0	W	@IC-01	F-02	SOLID	8.53e+02	9.04e+02	5.805 RPD
9	DUP	S99T000558	0	W	@IC-01	CL-02	SOLID	7.95e+03	8.56e+03	7.389 RPD
9	DUP	S99T000558	0	W	@IC-01	NO2-02	SOLID	9.92e+04	1.05e+05	5.681 RPD
9	DUP	S99T000558	0	W	@IC-01	BR-02	SOLID	<9.84e2	<1.03e3	RPD
9	DUP	S99T000558	0	W	@IC-01	NO3-02	SOLID	1.34e+05	1.35e+05	0.743 RPD
9	DUP	S99T000558	0	W	@IC-01	PO4-02	SOLID	2.08e+04	4.95e+03	123.107 RPD
9	DUP	S99T000558	0	W	@IC-01	SO4-02	SOLID	1.56e+03	2.07e+03	28.099 RPD
9	DUP	S99T000558	0	W	@IC-01	OXALATE2	SOLID	<8.27e2	<8.67e2	RPD
10	SAMPLE	S99T000559	0	W	@IC-01	F-02	SOLID	N/A	7.921e+02	99.790 ug/g
10	SAMPLE	S99T000559	0	W	@IC-01	CL-02	SOLID	N/A	7.205e+03	141.400 ug/g
10	SAMPLE	S99T000559	0	W	@IC-01	NO2-02	SOLID	N/A	8.520e+04	898.300 ug/g
10	SAMPLE	S99T000559	0	W	@IC-01	BR-02	SOLID	N/A <	1.040e+03	1039.000 ug/g
10	SAMPLE	S99T000559	0	W	@IC-01	NO3-02	SOLID	N/A	1.464e+05	1156.000 ug/g
10	SAMPLE	S99T000559	0	W	@IC-01	PO4-02	SOLID	N/A	2.493e+04	997.900 ug/g
10	SAMPLE	S99T000559	0	W	@IC-01	SO4-02	SOLID	N/A	1.367e+03	1148.000 ug/g
10	SAMPLE	S99T000559	0	W	@IC-01	OXALATE2	SOLID	N/A <	8.732e+02	873.300 ug/g
11	DUP	S99T000559	0	W	@IC-01	F-02	SOLID	7.92e+02	7.93e+02	0.126 RPD
11	DUP	S99T000559	0	W	@IC-01	CL-02	SOLID	7.20e+03	8.11e+03	11.888 RPD
11	DUP	S99T000559	0	W	@IC-01	NO2-02	SOLID	8.52e+04	9.96e+04	15.584 RPD
11	DUP	S99T000559	0	W	@IC-01	BR-02	SOLID	<1.04e3	<9.92e2	RPD
11	DUP	S99T000559	0	W	@IC-01	NO3-02	SOLID	1.46e+05	1.12e+05	26.357 RPD
11	DUP	S99T000559	0	W	@IC-01	PO4-02	SOLID	2.49e+04	2.91e+04	15.556 RPD
11	DUP	S99T000559	0	W	@IC-01	SO4-02	SOLID	1.37e+03	1.70e+03	21.498 RPD
11	DUP	S99T000559	0	W	@IC-01	OXALATE2	SOLID	<8.73e2	<8.34e2	RPD

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

LABCORE Completed Worklist Report for Worklist# 29287

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

Final page for worklist# 29287

Analyst Signature Date

Analyst Signature Date

James M. Seay 4/15/99
Reviewer Signature Date

04/13/99 12:27
ws2

HNF-1668 REV. 0

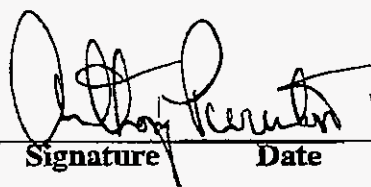
Page: 1

LABCORE Data Entry Template for Worklist# 29287

Analyst: AMP Instrument: IC 4052 Book# 75N21-ALCS
74N21-A-CCV
 Method: LA-533-105 Rev/Mod F-0
 Worklist Comment: U103 GRAB2, @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	S99T000553 0 W	@IC-01	SOLID	99000104	U-103 GRAB2
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
6	DUP	S99T000553 0 W	@IC-01	SOLID		
7	SPK	S99T000553 0 W	@IC-01	SOLID		
8	SAMPLE	S99T000558 0 W	@IC-01	SOLID	99000104	U-103 GRAB2
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
9	DUP	S99T000558 0 W	@IC-01	SOLID		
10	SAMPLE	S99T000559 0 W	@IC-01	SOLID	99000104	U-103 GRAB2
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
11	DUP	S99T000559 0 W	@IC-01	SOLID		

Final page for worklist # 29287

 04/15/99
 Signature Date

 Signature Date

Data Entry Comments:
uploaded 4-15-99
John Wainell
29287APR.CSV
Samples may be non-homogeneous - may need reprep. Validated by M. Gray 4/15/99

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

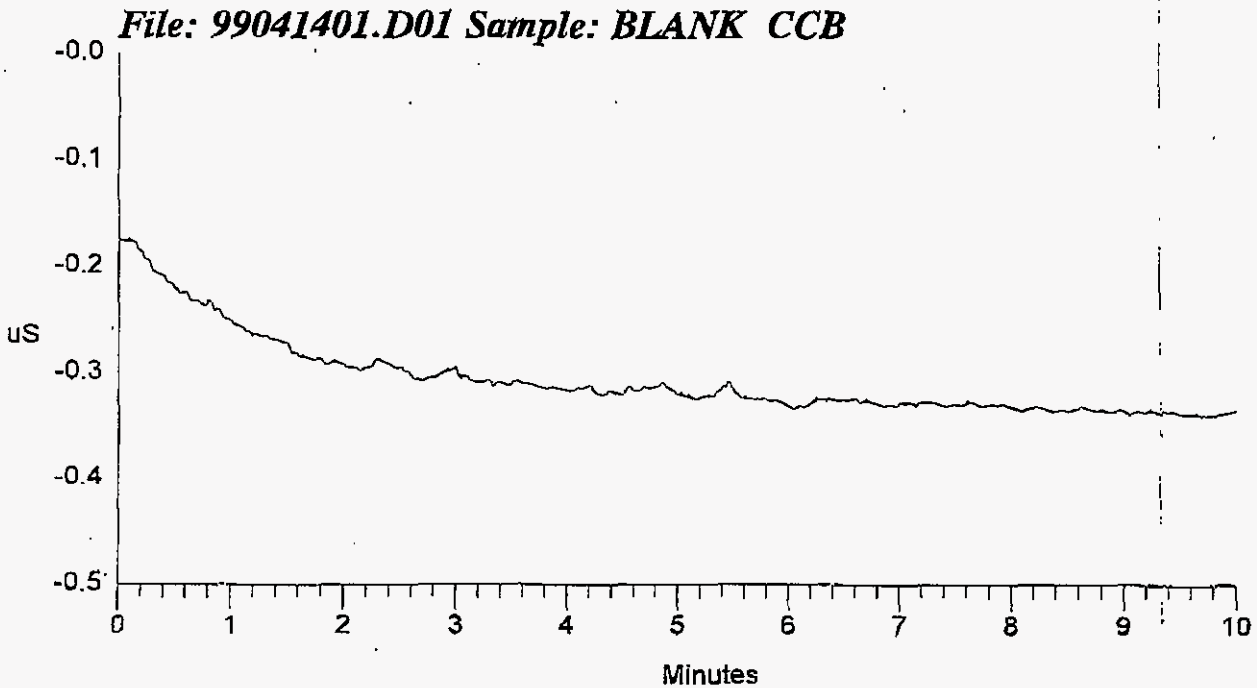
HNF-1668 REV. 0

Sample Name: BLANK CCB Date: 04/15/1999 00:51:26
 Data File : C:\DX\DATA\99041401.D01
 Method : C:\DX\METHOD\400ASYS2.MET
 ACI Address: 1 System: 2 Inject#: 1 Detector: CDM-1
 Analyst : *MP for ADP* Column: AG4A/AS4A anion column
4/19/99

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
Totals			0.000	0	0		



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 168 TO 178.

Sample Name: 75N21-B LCS Date: 04/15/1999 01:03:53
 Data File : C:\DX\DATA\99041401.D02
 Method : C:\DX\METHOD\400ASYS2.MET
 ACI Address: 1 System: 2 Inject#: 2 Detector: CDM-1
 Analyst : *Anthony Perrotto* Column: AG4A/AS4A anion column

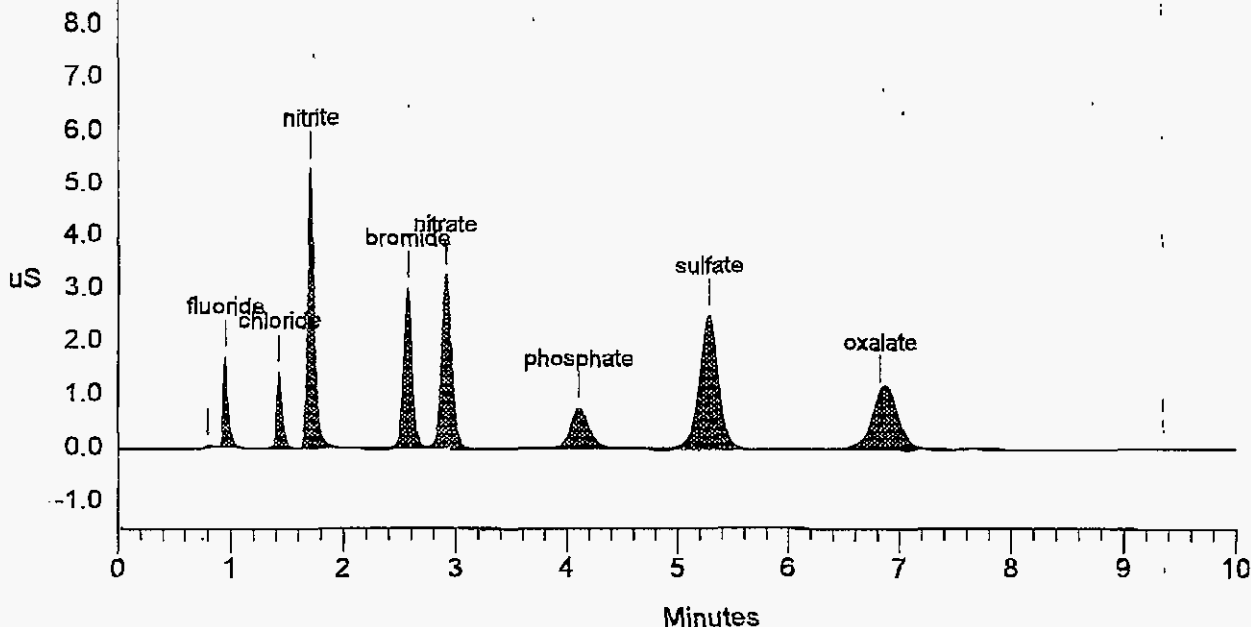
0415-99

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.80		0.000	53	198	2	
2	0.95	fluoride	59.627	1707	5296	2	0.35
3	1.43	chloride	83.809	1454	4978	1	-0.47
4	1.71	nitrite	521.281	5315	21419	1	-1.54
5	2.57	bromide	561.275	3002	15589	1	-0.52
6	2.91	nitrate	571.298	3270	20365	1	-1.13
7	4.11	phosphate	555.413	742	8581	1	-3.60
8	5.28	sulfate	649.688	2509	29318	1	-4.86
9	6.83	oxalate	543.677	1075	19087	1	-5.84
Totals			3546.068	19126	124830		

File: 99041401.D02 Sample: 75N21-B LCS



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=====
Sample Name: 74N21-B CCV                               Date: 04/15/1999 01:16:23
Data File  : C:\DX\DATA\99041401.D03
Method     : C:\DX\METHOD\400ASYS2.MET
ACI Address: 1 System: 2 Inject#: 3                    Detector: CDM-1
Analyst    :                                           Column: AG4A/AS4A anion column
=====
    
```

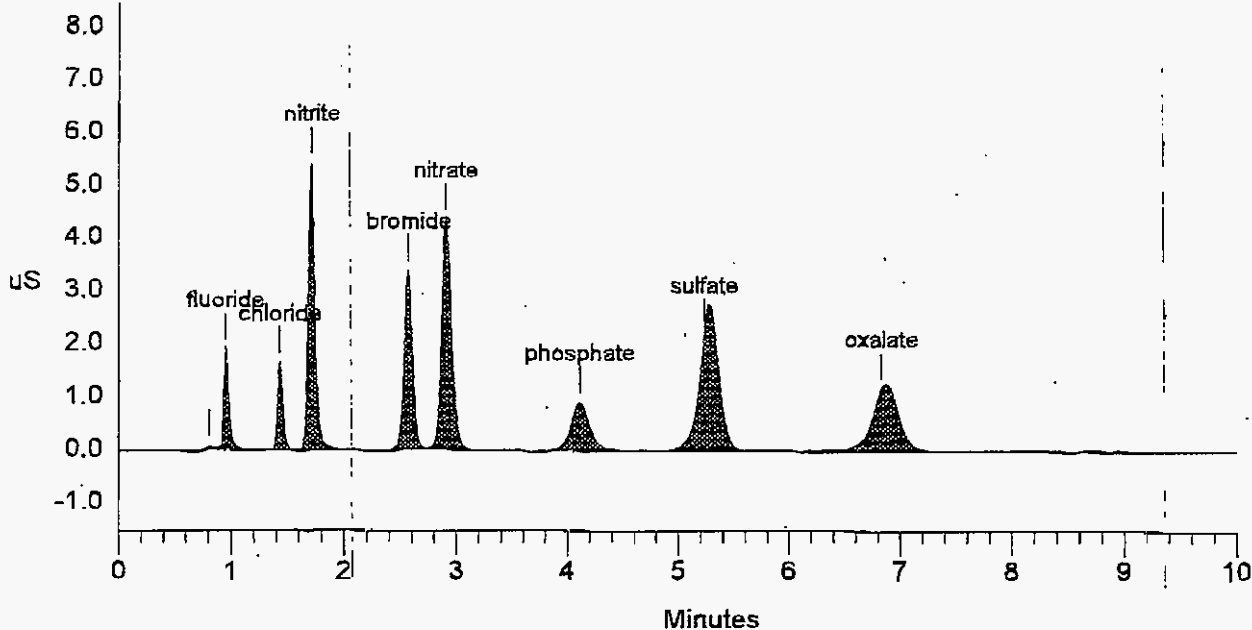
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-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           101    3000  5Hz   0.00 10.00           30
    
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	64	226	2	
2	0.95	fluoride	66.724	1874	5935	2	-0.35
3	1.43	chloride	92.705	1635	5506	1	-0.47
4	1.71	nitrite	525.808	5411	21609	1	-1.54
5	2.57	bromide	629.260	3370	17510	1	-0.52
6	2.90	nitrate	739.523	4336	26504	1	-1.36
7	4.11	phosphate	681.415	906	10587	1	-3.60
8	5.23	sulfate	711.777	2162	32149	1	-5.83
9	6.83	oxalate	580.941	1164	20394	1	-5.84
Totals			4028.153	20922	140419		

File: 99041401.D03 Sample: 74N21-B CCV




```

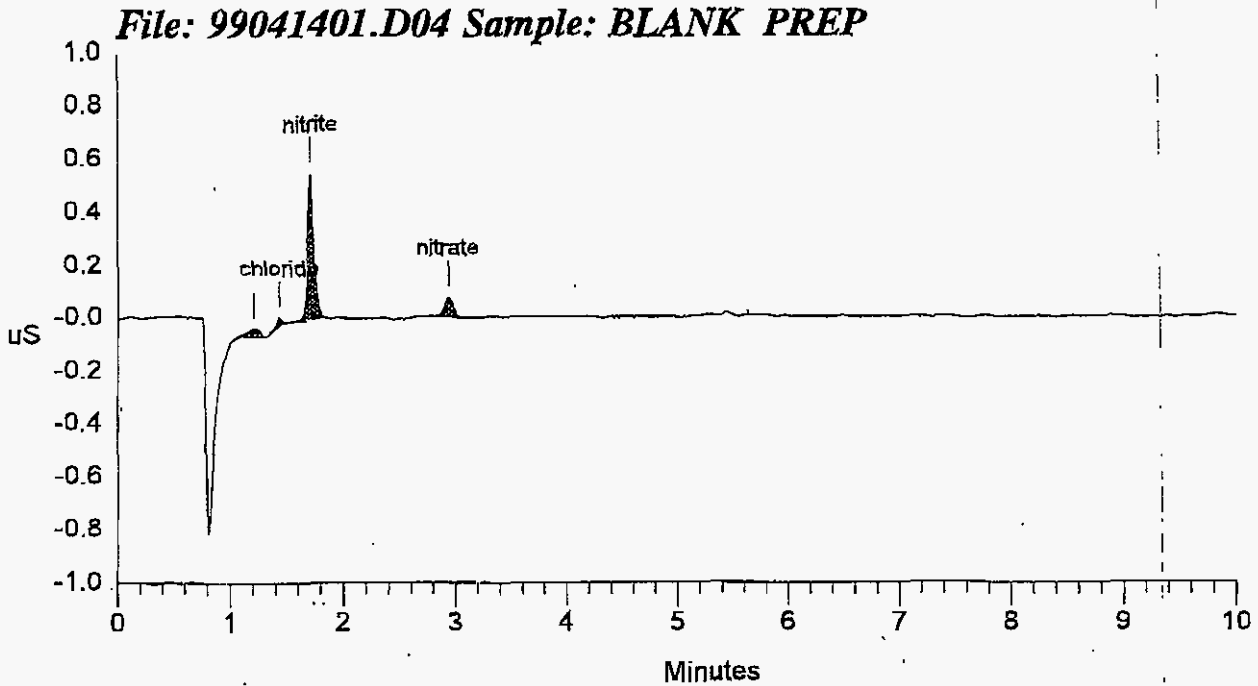
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Sample Name: BLANK PREP                               Date: 04/15/1999 01:28:51
Data File  : C:\DX\DATA\99041401.D04
Method     : C:\DX\METHOD\400ASYS2.MET
ACI Address: 1 System: 2 Inject#: 4                   Detector: CDM-1
Analyst    :                                           Column: AG4A/AS4A anion column
=====
    
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.20		0.000	34	300	1	
2	1.43	chloride	0.007	33	114	1	0.00
3	1.71	nitrite	0.563	551	2117	1	-1.54
4	2.93	nitrate	0.134	77	410	1	-0.23
Totals			0.704	695	2941		



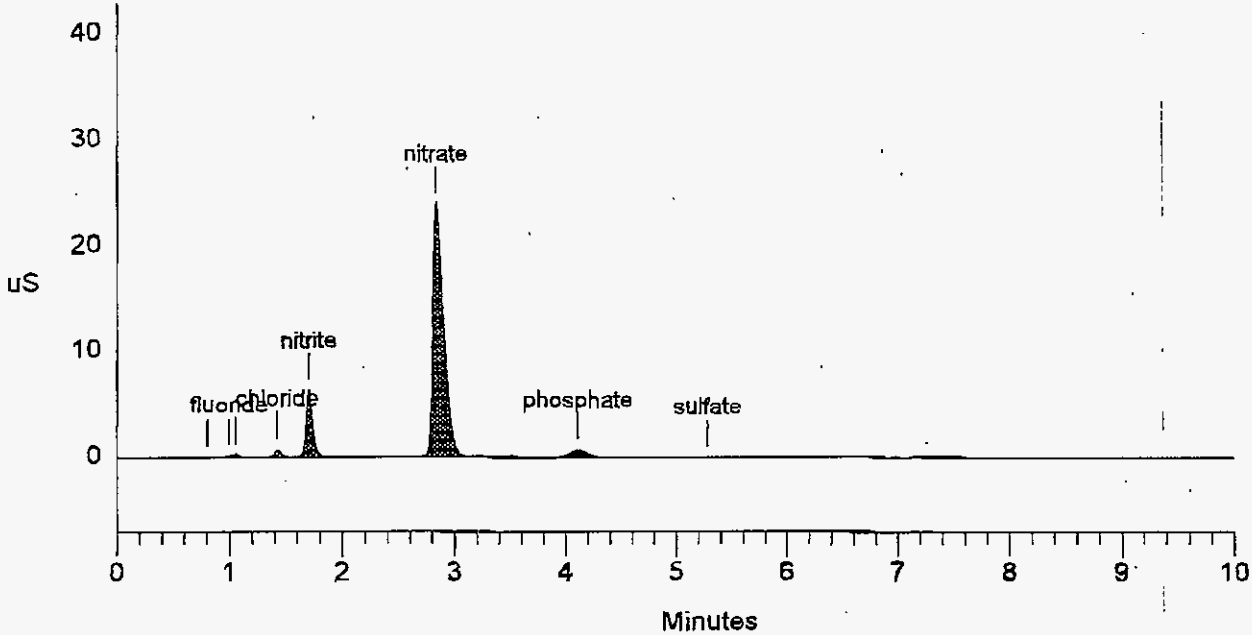
Sample Name: S99T000553 SAM Date: 04/15/1999 01:41:21
 Data File : C:\DX\DATA\99041401.D05
 Method : C:\DX\METHOD\400ASYS2.MET
 ACI Address: 1 System: 2 Inject#: 5 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration Volume Dilution Points Rate Start Stop Area Reject
 External 1 41 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	118	553	2	
2	0.99	fluoride	2.613	222	555	2	4.56
3	1.05		0.000	372	1681	2	
4	1.42	chloride	21.827	876	3206	1	-0.93
5	1.70	nitrite	259.518	6390	26383	1	-1.92
6	2.83	nitrate	1654.478	24018	163336	1	-3.85
7	4.11	phosphate	215.995	696	8212	1	-3.60
8	5.28	sulfate	6.562	73	887	1	-4.86
Totals			2160.993	32764	204813		

File: 99041401.D05 Sample: S99T000553 SAM



HNF-1668 REV. 0

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=====
Sample Name: S99T000553 DUP                               Date: 04/15/1999 01:53:49
Data File  : C:\DX\DATA\99041401.D06
Method     : C:\DX\METHOD\400ASYS2.MET
ACI Address: 1 System: 2 Inject#: 6                       Detector: CDM-1
Analyst    :                                               Column: AG4A/AS4A anion column
=====
    
```

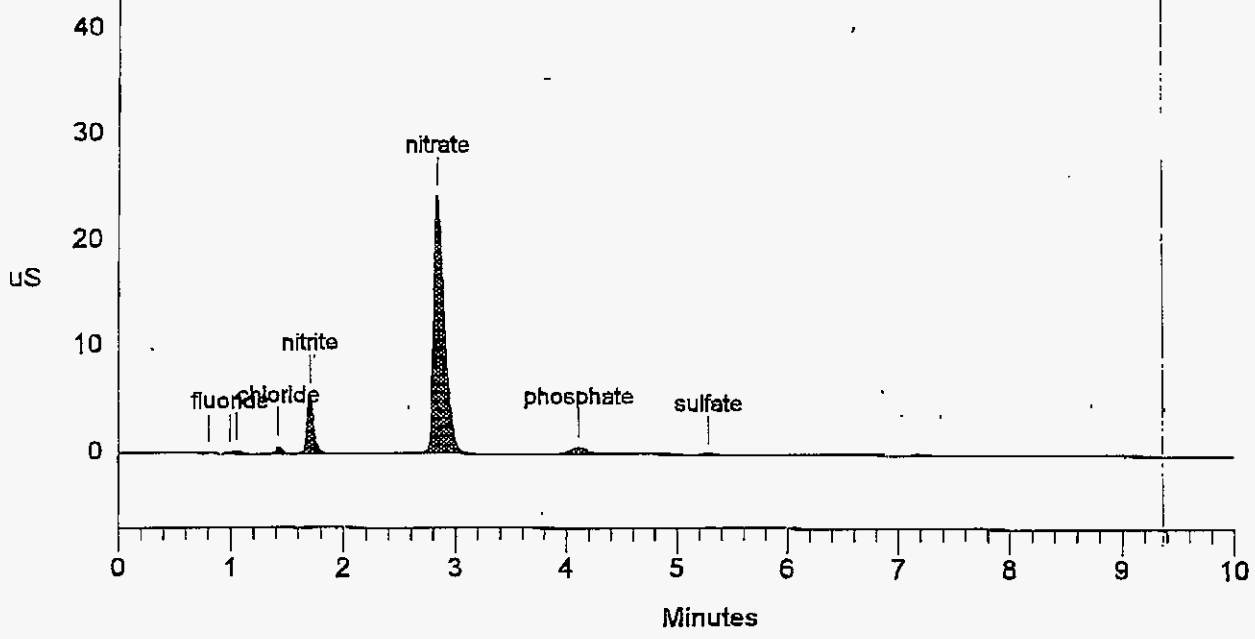
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-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           41    3000 5Hz   0.00 10.00           30
    
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	116	538	2	
2	0.99	fluoride	2.317	199	491	2	4.56
3	1.05		0.000	336	1517	2	
4	1.42	chloride	19.811	819	2915	1	-0.93
5	1.70	nitrite	231.480	5800	23475	1	-1.92
6	2.83	nitrate	1664.727	24422	164512	1	-3.85
7	4.11	phosphate	203.323	675	7718	1	-3.60
8	5.28	sulfate	6.545	69	885	1	-4.86
Totals			2128.203	32437	202050		

File: 99041401.D06 Sample: S99T000553 DUP



Data Reprocessed On 04/15/1999 09:12:58

```

=====
Sample Name: S99T000553  SPK                               Date: 04/15/1999 02:06:17
Data File  : F:\DATA\99041401.D07
Method     : C:\DX\METHOD\400ASYS2.MET
ACI Address: 1 System: 2 Inject#: 7                       Detector: CDM-1
Analyst    :                                             Column: AG4A/AS4A anion column
=====
    
```

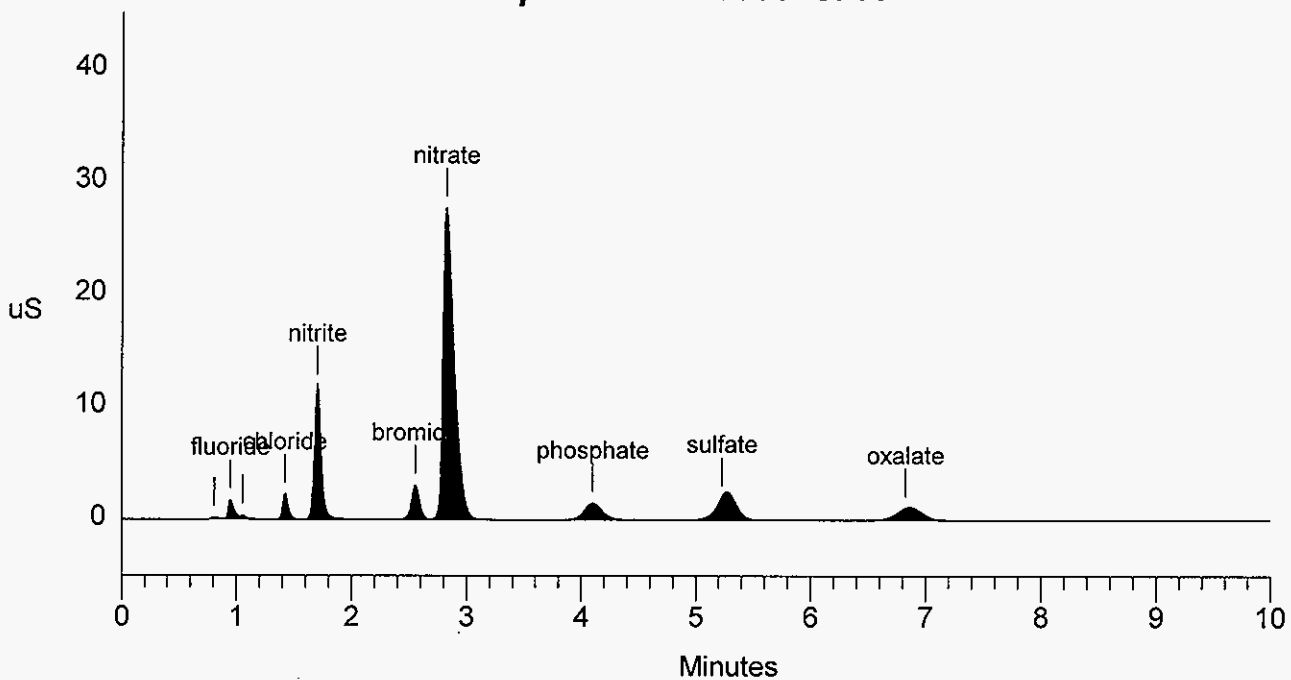
```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           41  3000  5Hz  0.00 10.00           30
    
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	168	691	2	
2	0.95	fluoride	27.815	1739	6097	2	-0.35
3	1.05		0.000	401	1725	2	
4	1.42	chloride	54.042	2266	7922	1	-0.93
5	1.70	nitrite	477.209	11881	49262	1	-1.92
6	2.55	bromide	219.026	3061	14977	1	-1.03
7	2.82	nitrate	1862.913	27690	187815	1	0.00
8	4.10	phosphate	445.126	1504	17309	1	-3.76
9	5.23	sulfate	263.705	2042	29314	1	-5.83
10	6.83	oxalate	214.541	1100	18555	1	-5.84
Totals			3564.377	51852	333670		

File: 99041401.D07 Sample: S99T000553 SPK



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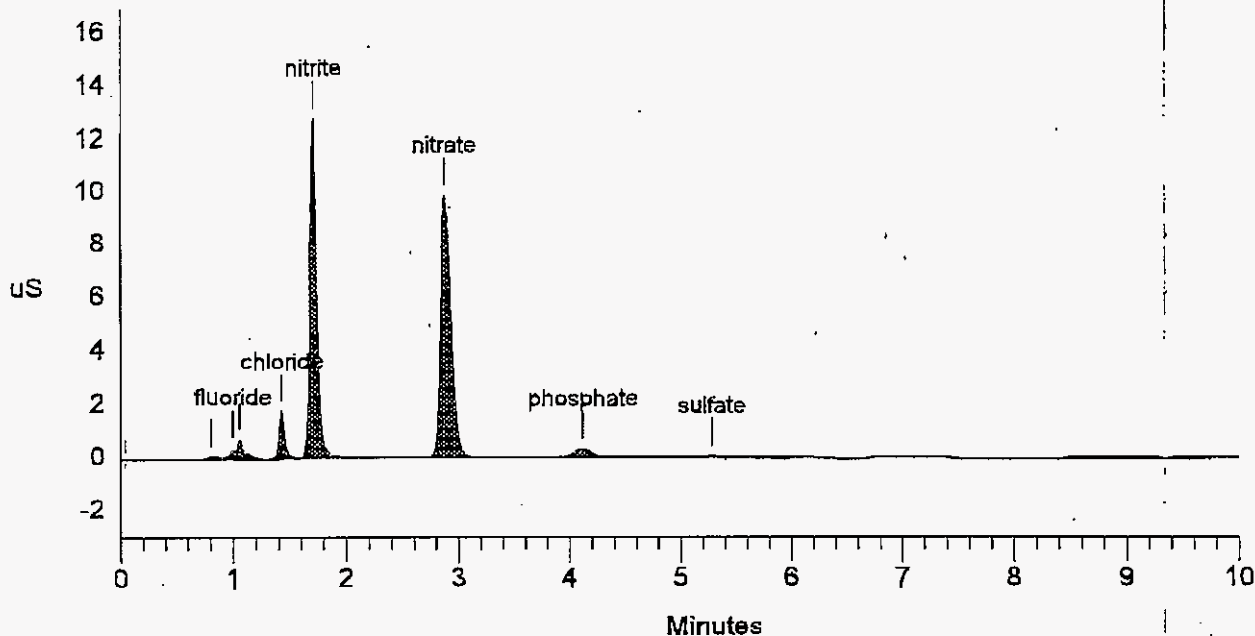
Sample Name: S99T000558 SAM Date: 04/15/1999 02:18:46
 Data File : C:\DX\DATA\99041401.D08
 Method : C:\DX\METHOD\400ASYS2.MET
 ACI Address: 1 System: 2 Inject#: 8 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	41	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret. Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	119	588	2	
2	0.99	fluoride	4.443	416	954	2	4.56
3	1.05		0.000	730	3186	2	
4	1.43	chloride	41.410	1777	6059	1	-0.47
5	1.71	nitrite	516.539	12840	53454	1	-1.54
6	2.87	nitrate	696.906	9899	63393	1	-2.27
7	4.11	phosphate	108.121	351	4040	1	-3.44
8	5.28	sulfate	8.123	78	1057	1	-4.86
Totals			1375.541	26210	132730		

File: 99041401.D08 Sample: S99T000558 SAM



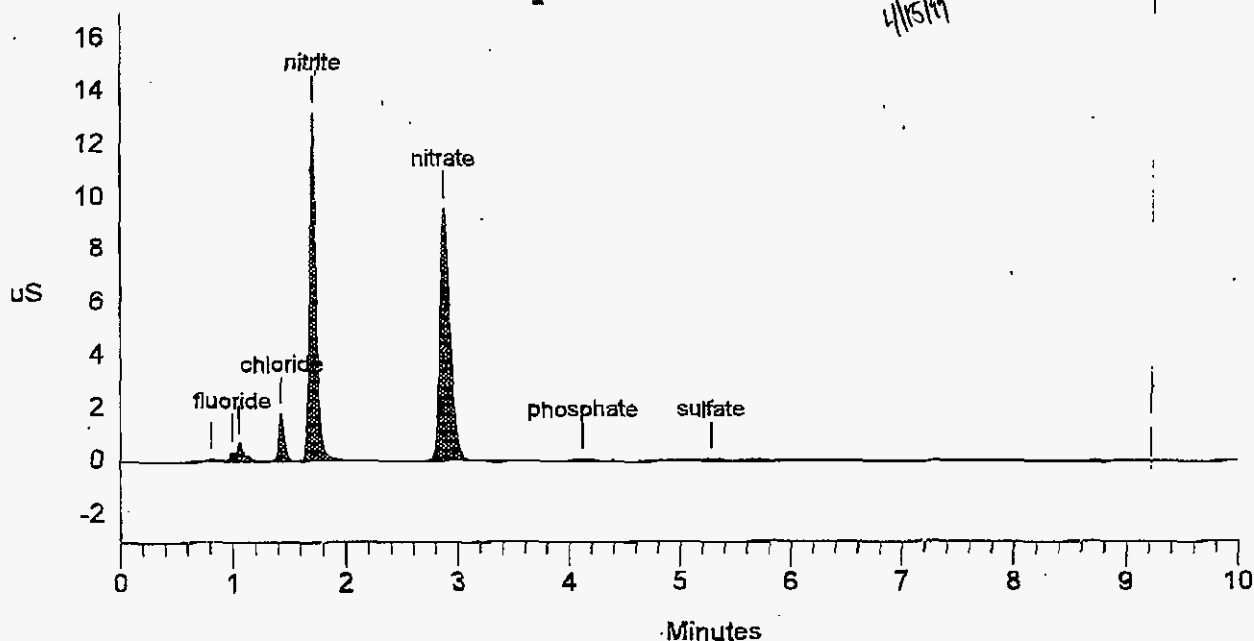
Sample Name: S99T000558 ^{4/15/99} SAM DUP Date: 04/15/1999 02:31:15
 Data File : C:\DX\DATA\99041401.D09
 Method : C:\DX\METHOD\400ASYS2.MET
 ACI Address: 1 System: 2 Inject#: 9 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
external	1	41	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	105	499	2	
2	0.99	fluoride	4.489	417	964	2	4.56
3	1.05		0.000	742	3208	2	
4	1.43	chloride	42.536	1830	6225	1	-0.47
5	1.71	nitrite	522.224	13219	54061	1	-1.54
6	2.87	nitrate	672.356	9596	61046	1	-2.27
7	4.12	phosphate	24.604	79	856	1	-3.29
8	5.28	sulfate	10.288	79	1293	1	-4.86
Totals			1276.497	26066	128152		

File: 99041401.D09 Sample: S99T000558 ^{4/15/99} SAM DUP



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=====
Sample Name: S99T000559 SAM                      Date: 04/15/1999 02:43:42
Data File  : C:\DX\DATA\99041401.D10
Method     : C:\DX\METHOD\400ASYS2.MET
ACI Address: 1 System: 2 Inject#: 10              Detector: CDM-1
Analyst    :                                     Column: AG4A/AS4A anion column
=====

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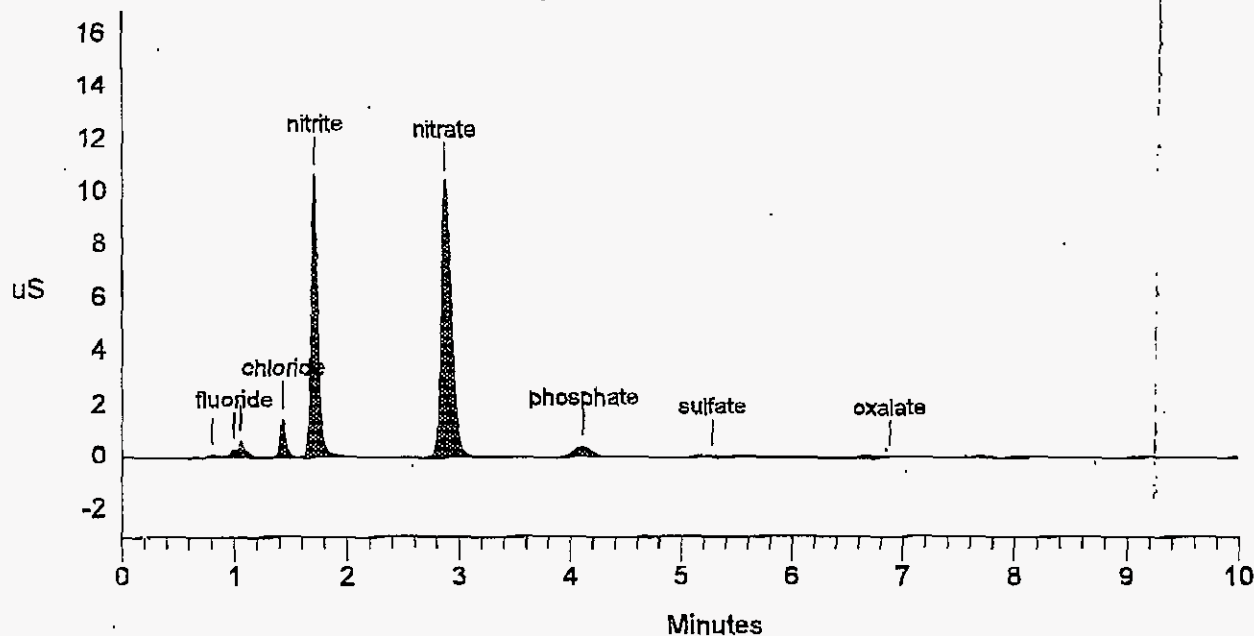
-----
alibration Volume Dilution Points Rate Start Stop Area Reject
-----
external          1          41   3000 5Hz   0.00 10.00          30
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	107	500	2	
2	0.99	fluoride	3.905	339	836	2	4.56
3	1.05		0.000	598	2576	2	
4	1.43	chloride	35.523	1530	5197	1	-0.47
5	1.71	nitrite	420.052	10718	43204	1	-1.54
6	2.87	nitrate	721.910	10479	65794	1	-2.49
7	4.11	phosphate	122.922	410	4609	1	-3.44
8	5.28	sulfate	6.741	74	906	1	-4.86
9	6.88	oxalate	2.122	24	398	1	-5.10
Totals			1313.176	24279	124019		

File: 99041401.D10 Sample: S99T000559 SAM



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=====
Sample Name: S99T000559  DUP                               Date: 04/15/1999 02:56:08
Data File   : C:\DX\DATA\99041401.D11
Method      : C:\DX\METHOD\400ASYS2.MET
ACI Address : 1 System: 2 Inject#: 11                      Detector: CDM-1
Analyst     :                                             Column: AG4A/AS4A anion column
=====

```

```

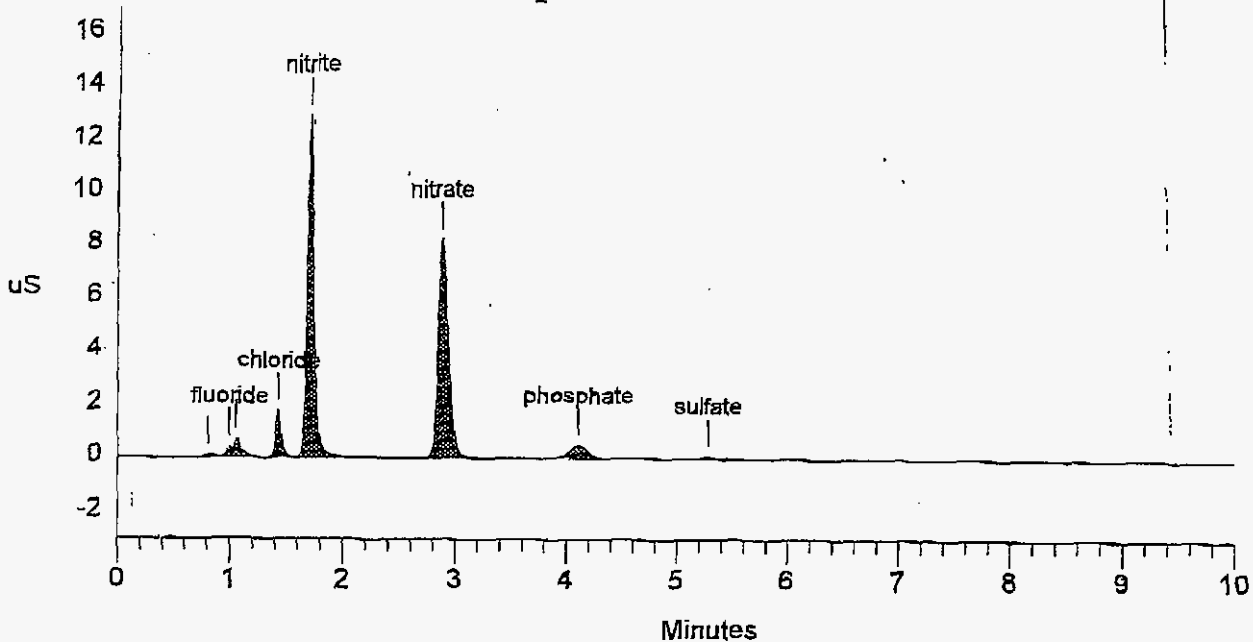
-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External           1           41   3000  5Hz   0.00 10.00           30
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.81		0.000	121	585	2	
2	0.99	fluoride	4.097	416	878	2	4.56
3	1.05		0.000	735	3395	2	
4	1.43	chloride	41.889	1794	6130	1	-0.47
5	1.71	nitrite	514.122	12983	53196	1	-1.54
6	2.88	nitrate	579.477	8265	52245	1	-2.04
7	4.11	phosphate	150.464	496	5670	1	-3.60
8	5.28	sulfate	8.791	94	1130	1	-4.86
Totals			1298.841	24903	123228		

File: 99041401.D11 Sample: S99T000559 DUP



LBCORE Data Entry Template for Worklist# 29004

04/27/99 07:03
ws2

Analyst: D.K. Sato Instrument: ICPQX² SP 04/26/99 Book# 79B48A

Method: LA-505-151/161 Rev/Mod C-3
SP 04/26/99

Worklist Comment: ICP U-103 (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	S99T000537 0 D	@ICP-D01	LIQUID		
7	SAMPLE	S99T000537 0 D	@ICP-D01	LIQUID	99000104	U-103 GRAB2
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	S99T000537 0 D	@ICP-D01	LIQUID		
9	SPK-POST (1ppm)	S99T000537 0 D	@ICP-D01	LIQUID		
10	CCV	Sample X Sample 4x(10ppm) SP 04/26/99	@ICP-QC	QC		
11	CCB		@ICP-QC	QC		
12	SAMPLE	S99T000546 0 D	@ICP-D01	LIQUID	99000104	U-103 GRAB2
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 & Validated by:
Sam H. Pang
 04/28/99

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

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03/30/99 15:59

Page: 2

ws2

LABCORE Data Entry Template for Worklist# 29004

S Type	Sample#	R A	Test	Matrix	Group#	Project
13 DUP	S99T000546	0 D	@ICP-D01	LIQUID		
14 SAMPLE	S99T000548	0 D	@ICP-D01	LIQUID	99000104	U-103 GRAB2
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	S99T000548	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 # 29004

Signature	Date	
<i>JX</i>	04-26-99	
S99T000537.L	025-15-28	DF 3005
S99T000537	025-15	601
S99T000537.D	025-15	601
S99T000537.Q	025-15	601
S99T000537.X	025-15-19	6010
S99T000537.QX	025-15-19	6010
S99T000546	025-15	DF 601
S99T000546	025-15	601
S99T000548	025-15	DF 601
S99T000548.D	025-15	601

Signature Date

Data Entry Comments:

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

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Analysis Report

Summary

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page 1.

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	9426A	ICP2	04/26/99	11:33	DKS	Q	CONC
2	ICB	9426A	ICP2	04/26/99	11:38	DKS	Q	CONC
3	LLS	9426A	ICP2	04/26/99	11:40	DKS	Q	CONC
4	ICSA	9426A	ICP2	04/26/99	11:43	DKS	Q	CONC
5	ICSAB	9426A	ICP2	04/26/99	11:46	DKS	Q	CONC
6	S99T000537_L	9426A	ICP2	04/26/99	11:50	DKS	S	CONC
7	S99T000537	9426A	ICP2	04/26/99	11:53	DKS	S	CONC
8	S99T000537_D	9426A	ICP2	04/26/99	11:56	DKS	S	CONC
9	S99T000537_A	9426A	ICP2	04/26/99	11:59	DKS	S	CONC
10	S99T000537_X	9426A	ICP2	04/26/99	12:05	DKS	S	CONC
11	S99T000537_AX	9426A	ICP2	04/26/99	12:08	DKS	S	CONC
12	CCV	9426A	ICP2	04/26/99	12:16	DKS	Q	CONC
13	CCB	9426A	ICP2	04/26/99	12:20	DKS	Q	CONC
14	S99T000546	9426A	ICP2	04/26/99	12:24	DKS	S	CONC
15	S99T000546_D	9426A	ICP2	04/26/99	12:27	DKS	S	CONC
16	S99T000548	9426A	ICP2	04/26/99	12:30	DKS	S	CONC
17	S99T000548_D	9426A	ICP2	04/26/99	12:33	DKS	S	CONC
18	ICSA	9426A	ICP2	04/26/99	12:37	DKS	Q	CONC
19	ICSAB	9426A	ICP2	04/26/99	12:40	DKS	Q	CONC
20	CCV	9426A	ICP2	04/26/99	12:43	DKS	Q	CONC
21	CCB	9426A	ICP2	04/26/99	12:48	DKS	Q	CONC

JK *[Signature]*

6-103

04-26-99

5997006537

Worklist # 19004

5997000546

5997000548

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 181 TO 188.

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Analysis Report

Averages

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.8776	4.9412	4.9617	5.1340	4.8750	4.9633
2	ICB	-.00085	-.00587	-.00191	.00082	-.00006	.00004
3	LLS	.01966	.10497	.19837	.10449	.09758	.00998
4	ICSA	-.00248	247.21	-.01023	.00260	.00022	.00011
5	ICSAB	.94349	249.19	.00861	.00806	.45696	.45519
6	S99T000537_L	16.748	37477.	-11.172	92.387	-.13349	.29784
7	S99T000537	16.553	36615.	-26.607	85.748	-.03706	.30567
8	S99T000537_D	17.325	37007.	-26.537	86.577	.03793	.30665
9	S99T000537_A	545.95	34548.	561.15	675.65	551.74	577.64
10	S99T000537_X	8.3316	36878.	-53.923	101.59	-.73926	.00247
11	S99T000537_AX	56256.	95815.	58838.	59963.	59928.	58629.
12	CCV	4.8591	4.9160	4.9396	5.1043	4.8893	4.9292
13	CCB	.00000	-.00202	.00028	.00277	-.00004	-.00003
14	S99T000546	15.353	38462.	-23.781	90.747	.01953	.29434
15	S99T000546_D	17.395	42401.	-30.721	97.073	.08079	.29405
16	S99T000548	17.546	46384.	-36.815	102.56	-.01924	.37670
17	S99T000548_D	16.207	44178.	-27.521	98.576	.01567	.35157
18	ICSA	-.00428	244.28	.01935	.00238	.00009	.00007
19	ICSAB	.93121	245.60	.00934	.00536	.45363	.45208
20	CCV	4.8340	4.8390	4.9020	5.0472	4.7914	4.8991
21	CCB	-.00174	-.00918	-.00370	.00001	-.00004	-.00001

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.0125	5.0335	5.0045	5.0256	4.9375	4.9367
2	ICB	-.00891	.01284	-.00078	-.01124	-.00047	-.00071
3	LLS	.21509	.21259	.01060	.20829	.03923	.02092
4	ICSA	.06572	255.88	-.00567	.01541	.00021	-.00157
5	ICSAB	.00580	257.35	.91973	.01790	.46015	.46630
6	S99T000537_L	1.2774	163.23	5.0637	-5.3100	.27276	105.52
7	S99T000537	6.1975	168.49	6.0488	2.5270	1.5577	107.87
8	S99T000537_D	6.3183	149.79	6.0516	3.6891	2.9015	113.28
9	S99T000537_A	585.60	769.95	600.10	582.71	585.97	689.71
10	S99T000537_X	45.675	154.84	7.6989	-71.532	-1.9932	106.70
11	S99T000537_AX	59994.	58956.	58698.	59446.	58936.	59195.
12	CCV	4.9398	5.0553	4.9965	5.0093	4.9320	4.9319
13	CCB	.01277	.01302	-.00015	-.00094	.00099	.00045
14	S99T000546	-2.5055	145.61	6.3102	-.21825	2.0438	101.75
15	S99T000546_D	1.7745	159.16	6.6912	3.3186	2.9479	113.85
16	S99T000548	-5.0760	169.96	6.8206	1.6602	2.6978	108.14
17	S99T000548_D	2.5448	166.11	6.8036	2.3436	3.1977	105.46
18	ICSA	-.00363	257.29	-.00664	.00553	.00114	-.00193
19	ICSAB	.00707	256.62	.91448	.00520	.45482	.46288
20	CCV	4.9017	5.0963	5.0014	4.9284	4.9235	4.9253
21	CCB	.00451	.01288	-.00031	-.00311	-.00216	-.00002

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Analysis Report

Averages

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#	Sample Name	Cu	Su	Fe	K	La	Li
1	ICV	5.3532	.02686	5.0110	5.1209	5.0679	5.1386
2	ICB	-.00005	-.00082	.00048	.17948	-.00061	-.00094
3	LLS	.01820	.00081	.10093	Q.79699	.10231	.02097
4	ICSA	-.00188	.24574	97.385	.39761	-.00537	.00273
5	ICSAB	.48208	.25027	98.061	.38369	-.00587	.99779
6	S99T000537_L	13.008	-2.6469	7.3532	5053.6	.87105	-3.6894
7	S99T000537	12.808	.09999	7.5868	4333.1	1.1820	-.51189
8	S99T000537_D	13.496	-.33154	7.5038	4511.6	1.4024	-.56820
9	S99T000537_A	628.06	3.9706	593.41	4640.2	590.68	577.49
10	S99T000537_X	10.137	3.7604	-.15162	4863.0	-8.8012	-2.8495
11	S99T000537_AX	59237.	333.73	58789.	63811.	59421.	61056.
12	CCV	5.3247	.02743	4.9907	5.1903	5.0594	5.1480
13	CCB	.00070	.00060	-.00048	.23005	-.00108	.00018
14	S99T000546	13.090	.85403	7.9888	4469.8	1.1185	.05547
15	S99T000546_D	15.112	.56937	8.2648	4931.5	1.4505	.11232
16	S99T000548	15.509	.26009	9.2362	5218.2	.74027	-.28460
17	S99T000548_D	15.084	1.7581	8.3502	5009.8	1.1218	.67929
18	ICSA	-.00089	.24160	97.498	.32122	-.00747	.00330
19	ICSAB	.47346	.24775	97.409	.13778	-.00705	.98085
20	CCV	5.2268	.02997	4.9578	5.0975	4.9662	5.0015
21	CCB	-.00094	.00099	-.00102	.07754	-.00094	.00037

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.0028	4.7632	5.0143	5.2134	5.0597	4.9118
2	ICB	-.00510	-.00006	.00045	.02005	-.00259	.00012
3	LLS	.20425	.01933	-.10222	.22756	-.20396	.04230
4	ICSA	252.16	-.00884	-.01080	193.77	.01204	-.00551
5	ICSAB	253.25	.42216	-.01007	195.74	.01543	.91378
6	S99T000537_L	8.2017	-.46521	115.02	240510.	1.3891	160.20
7	S99T000537	4.4887	.30374	117.02	226830.	5.6567	157.39
8	S99T000537_D	8.7250	.44087	119.00	229180.	7.7449	158.54
9	S99T000537_A	574.51	545.95	703.99	210710.	594.46	722.91
10	S99T000537_X	-62.875	1.0043	105.78	234120.	3.7746	155.06
11	S99T000537_AX	58804.	58898.	59417.	297130.	59475.	58990.
12	CCV	4.9509	4.7549	5.0124	5.1697	5.0453	4.8937
13	CCB	-.00085	.00027	.00010	.00902	.00241	-.00197
14	S99T000546	6.4991	.82606	120.16	212150.	6.7874	158.30
15	S99T000546_D	4.8404	.85668	131.63	233930.	9.9777	174.29
16	S99T000548	6.2385	.55760	142.09	245390.	6.7604	187.00
17	S99T000548_D	3.4361	.74413	137.33	230190.	10.091	180.67
18	ICSA	250.29	-.00855	-.00910	189.12	.01549	-.00697
19	ICSAB	250.28	.41874	-.00891	191.27	.01090	.91326
20	CCV	4.9020	4.7326	4.9960	5.0128	4.9540	4.9236
21	CCB	-.00607	.00038	-.00035	.00268	-.00021	-.00271

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Analysis Report

Averages

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#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.0211	4.9427	4.9225	5.0105	4.8970	5.3020
2	ICB	.00680	.00096	-.02340	.00156	.01578	-.00461
3	LLS	.39501	.20768	.17874	.10234	.22132	.15155
4	ICSA	-.03146	.06534	-.03805	.01277	-.03091	-.01076
5	ICSAB	-.02420	1.0151	-.03064	-.00275	-.05228	-.01323
6	S99T000537_L	574.67	58.243	2376.5	19.374	19.387	64.966
7	S99T000537	576.57	44.331	2382.6	1.6064	35.478	63.219
8	S99T000537_D	587.60	44.260	2397.1	7.1642	37.406	58.515
9	S99T000537_A	1145.2	625.92	2797.2	597.44	633.94	691.75
10	S99T000537_X	654.42	76.950	2262.8	-.55202	210.88	166.77
11	S99T000537_AX	59698.	59115.	61476.	59274.	58895.	59628.
12	CCV	4.9925	4.9470	4.9208	4.9917	4.8933	5.2846
13	CCB	.00616	.00785	-.02086	.00159	.01562	.00289
14	S99T000546	554.01	45.913	1853.7	4.3171	47.534	66.610
15	S99T000546_D	617.06	57.172	2047.5	-3.4605	45.746	69.646
16	S99T000548	627.76	53.923	1964.4	3.0211	51.626	70.884
17	S99T000548_D	607.70	59.748	1895.1	-1.4562	62.425	73.151
18	ICSA	-.01941	.07130	-.04716	.00573	-.02951	-.00663
19	ICSAB	-.02114	1.0071	-.03622	.01462	-.02691	-.01059
20	CCV	4.9786	4.9593	4.8951	4.9640	4.8660	5.2706
21	CCB	.01883	-.00408	-.01952	.00529	.03850	.00344

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	5.0502	4.9465	.37913	5.0790	4.8514	10.238
2	ICB	-.00933	-.00009	.00093	.00058	.01091	-.02360
3	LLS	.20202	.02002	.01627	.02035	.41136	.50195
4	ICSA	-.00878	.00164	.09916	.00217	-.08978	.15572
5	ICSAB	-.01832	.00168	.11212	.00295	-.04255	.12610
6	S99T000537_L	-37.189	.00521	7.4099	.03715	26.285	-124.21
7	S99T000537	-3.7959	.45366	.05707	.16952	7.2465	.49993
8	S99T000537_D	-6.2907	.43590	6.3713	.45677	-1.8056	-7.7948
9	S99T000537_A	589.70	572.33	39.365	590.78	569.11	1208.3
10	S99T000537_X	32.220	.94174	-75.298	-1.1744	-67.495	117.70
11	S99T000537_AX	59672.	59276.	4332.6	59407.	59258.	119250.
12	CCV	5.0407	4.9250	.38841	5.0587	4.8817	10.229
13	CCB	.00348	.00002	.00273	.00015	.02247	.02186
14	S99T000546	2.5780	.50970	-.31587	.25215	10.813	25.651
15	S99T000546_D	1.4392	.58580	-1.3276	.59677	5.1850	25.927
16	S99T000548	-2.3836	.54893	.41783	.34558	7.1186	5.4171
17	S99T000548_D	10.632	.67861	-3.9518	.58455	1.8369	56.668
18	ICSA	-.00469	.00159	.09432	.00245	-.05841	.15459
19	ICSAB	-.01056	.00158	.08926	.00185	-.07041	.13774
20	CCV	4.9437	4.8414	.37365	4.9985	4.8737	10.059
21	CCB	.00700	.00012	-.00221	-.00031	.02311	.04607

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#	Sample Name	V	Y	Zn	Zr
1	ICV	4.9854	.01206	4.9622	4.8549
2	ICB	-.00132	-.00046	-.00005	-.00128
3	LLS	.09975	.00057	.02021	.01770
4	ICSA	-.00541	.01053	-.00645	-.00353
5	ICSAB	.46084	.01015	.98562	-.00522
6	S99T000537_L	-6.8961	-2.0719	-3.8306	-5.4472
7	S99T000537	-1.0449	.04700	-1.9227	-.95219
8	S99T000537_D	-1.1744	-.13833	-1.9771	-1.5382
9	S99T000537_A	586.35	1.8945	592.26	575.81
10	S99T000537_X	1.1029	1.8386	-6.2690	6.6291
11	S99T000537_AX	59241.	150.93	58994.	59041.
12	CCV	4.9735	.01238	4.9497	4.8402
13	CCB	.00068	.00046	.00033	-.00002
14	S99T000546	.16944	.65011	-.33024	.28526
15	S99T000546_D	-.03366	.50835	-.72880	.10228
16	S99T000548	-.64607	.32820	-2.5175	-.38099
17	S99T000548_D	1.2989	1.1563	-2.4933	1.3738
18	ICSA	-.00440	.01093	-.00683	-.00214
19	ICSAB	.45752	.01031	.97954	-.00269
20	CCV	4.9403	.01324	4.9633	4.7863
21	CCB	.00202	.00060	.00015	.00094

JK
04-26-99

File #: 990423B.TXT

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Page: 1

LABCORE Data Entry Template for Worklist# 29197

Analyst: JK Seb Instrument: ICP01 2 4-13-99 Book# 798486

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-103 GRAB2 (SOLID ACID DIGEST)

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	PREPSTD TJA		@ICP-A01	SOLID		
7	PREPBLK TJA		@ICP-A01	SOLID		
8	SERDIL	S99T000552 0 A	@ICP-A01	SOLID		
9	SAMPLE	S99T000552 0 A	@ICP-A01	SOLID	99000104	U-103 GRAB2
Analytes Requested: AG-A-01 , AL-A-01 , AS-A-01 , B-A-01 , BA-A-01 , BE-A-01 , BI-A-01 , CA-A-01 , CD-A-01 , CE-A-01 , CO-A-01 , CR-A-01 , CU-A-01 , FE-A-01 , K-A-01 , LA-A-01 , LI-A-01 , MG-A-01 , MN-A-01 , MO-A-01 , NA-A-01 , ND-A-01 , NI-A-01 , P-A-01 , PB-A-01 , S-A-01 , SB-A-01 , SE-A-01 , SI-A-01 , SM-A-01 , SR-A-01 , TI-A-01 , TL-A-01 , U-A-01 , V-A-01 , ZN-A-01 , ZR-A-01						
10	DUP	S99T000552 0 A	@ICP-A01	SOLID		
11	SPK-PREDIG	S99T000552 0 A	@ICP-A01	SOLID		
12	CCV	<i>Sample X Spike @X (10 ppm) 4-13-99</i>	@ICP-QC	QC		
13	CCB		@ICP-QC	QC		
14	SAMPLE	S99T000556 0 A	@ICP-A01	SOLID	99000104	U-103 GRAB2
Analytes Requested: AG-A-01 , AL-A-01 , AS-A-01 , B-A-01 , BA-A-01 , BE-A-01 , BI-A-01 , CA-A-01 , CD-A-01 , CE-A-01 , CO-A-01 , CR-A-01 , CU-A-01 , FE-A-01 , K-A-01 , LA-A-01 , LI-A-01 ,						

Data Entry Comments:

Uploaded + Validated by: Salt N. Long 04/26/99

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

04/07/99 10:33

ws2

LABCORE Data Entry Template for Worklist# 29197

S Type	Sample#	R	A	Test	Matrix	Group#	Project
				MG-A-01 ,	MN-A-01 ,	MO-A-01 ,	NA-A-01 , ND-A-01 , NI-A-01 ,
				P-A-01 ,	PB-A-01 ,	S-A-01 ,	SB-A-01 , SE-A-01 , SI-A-01 ,
				SM-A-01 ,	SR-A-01 ,	TI-A-01 ,	TL-A-01 , U-A-01 , V-A-01 ,
				ZN-A-01 ,	ZR-A-01		
15 DUP	S99T000556	0	A	@ICP-A01	SOLID		
16 SAMPLE	S99T000557	0	A	@ICP-A01	SOLID	99000104	U-103 GRAB2
	Analytes Requested:						
				AG-A-01 ,	AL-A-01 ,	AS-A-01 ,	B-A-01 , BA-A-01 ,
				BE-A-01 ,	BI-A-01 ,	CA-A-01 ,	CD-A-01 , CE-A-01 , CO-A-01 ,
				CR-A-01 ,	CU-A-01 ,	FE-A-01 ,	K-A-01 , LA-A-01 , LI-A-01 ,
				MG-A-01 ,	MN-A-01 ,	MO-A-01 ,	NA-A-01 , ND-A-01 , NI-A-01 ,
				P-A-01 ,	PB-A-01 ,	S-A-01 ,	SB-A-01 , SE-A-01 , SI-A-01 ,
				SM-A-01 ,	SR-A-01 ,	TI-A-01 ,	TL-A-01 , U-A-01 , V-A-01 ,
				ZN-A-01 ,	ZR-A-01		
17 DUP	S99T000557	0	A	@ICP-A01	SOLID		
18 ICSA				@ICP-QC	QC		
19 ICSAB				@ICP-QC	QC		
20 CCV				@ICP-QC	QC		
21 CCB				@ICP-QC	QC		

Final page for worklist # 29197

Signature	Date
<i>DK</i>	04-23-99
Preps 7d/TJA	Direct, DF 1
Prepb 1K/TJA	Direct 1
5997000552-L	3-6-2-8, DF 15
5997000552	3-6 3
5997000552-D	3-6 3
5997000552-5	3-6 3
5997000552-X	3-6-1-9 30
5997000552-QX	3-6-1-9 30

Signature	Date
5997000556	4-4, DF 2
5997000556-D	4-4 2
5997000557	4-4, DF 2
5997000557-D	4-4 2

Data Entry Comments:

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

599T000 552

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Post Spike:

$$Al = \frac{\left(\frac{364.10}{30}\right) - \left(\frac{77.143}{30}\right)}{10} \times 100 = 95.65\%$$

$$K = \frac{\left(\frac{304.80}{30}\right) - \left(\frac{16.209}{30}\right)}{10} \times 100 = 96.20\%$$

$$Na = \frac{\left(\frac{1235.3}{30}\right) - \left(\frac{929.03}{30}\right)}{10} \times 100 = 102.09\%$$

$$P = \frac{\left(\frac{358.72}{30}\right) - \left(\frac{66.335}{30}\right)}{10} \times 100 = 97.46\%$$

$$Al = 75.140 \frac{\mu g}{ml} \times \frac{1}{4.910 \frac{g}{L} \times \frac{1L}{1000 ml}} = 1.53 \text{e} + 4 \frac{\mu g}{g}$$

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Analysis Report Summary Fri 04-23-99 01:25:42 PM page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	990423B	ICP2	04/23/99	11:50	DKS	Q	CONC
2	ICB	990423B	ICP2	04/23/99	11:54	DKS	Q	CONC
3	LLS	990423B	ICP2	04/23/99	11:58	DKS	Q	CONC
4	ICSA	990423B	ICP2	04/23/99	12:00	DKS	Q	CONC
5	ICSAB	990423B	ICP2	04/23/99	12:03	DKS	Q	CONC
6	PREPSTDTJA	990423B	ICP2	04/23/99	12:10	DKS	Q	CONC
7	PREPBLKTJA	990423B	ICP2	04/23/99	12:14	DKS	Q	CONC
8	S99T000552_L	990423B	ICP2	04/23/99	12:17	DKS	S	CONC
9	S99T000552	990423B	ICP2	04/23/99	12:20	DKS	S	CONC
10	S99T000552_D	990423B	ICP2	04/23/99	12:23	DKS	S	CONC
11	S99T000552_S	990423B	ICP2	04/23/99	12:26	DKS	S	CONC
12	S99T000552_X	990423B	ICP2	04/23/99	12:33	DKS	S	CONC
13	S99T000552_AX	990423B	ICP2	04/23/99	12:36	DKS	S	CONC
14	CCV	990423B	ICP2	04/23/99	12:47	DKS	Q	CONC
15	CCB	990423B	ICP2	04/23/99	12:51	DKS	Q	CONC
16	S99T000556	990423B	ICP2	04/23/99	12:55	DKS	S	CONC
17	S99T000556_D	990423B	ICP2	04/23/99	12:58	DKS	S	CONC
18	S99T000557	990423B	ICP2	04/23/99	13:01	DKS	S	CONC
19	S99T000557_D	990423B	ICP2	04/23/99	13:04	DKS	S	CONC
20	ICSA	990423B	ICP2	04/23/99	13:10	DKS	Q	CONC
21	ICSAB	990423B	ICP2	04/23/99	13:15	DKS	Q	CONC
22	CCV	990423B	ICP2	04/23/99	13:18	DKS	Q	CONC
23	CCB	990423B	ICP2	04/23/99	13:22	DKS	Q	CONC

JK AD
 04-23-99
 Worklist # 29197

u-103
 599T000552
 599T000556
 599T000557

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 189 TO 193.

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Analysis Report

Averages

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.9161	4.8597	5.0144	5.1337	4.8665	4.9683
2	ICB	-.00224	-.00316	-.00832	.00418	-.00016	-.00003
3	LLS	.02156	.10446	.21556	.10194	.09679	.00990
4	ICSA	-.00261	245.71	.06221	.00540	.00017	.00011
5	ICSAB	.93959	242.51	.04237	.00379	.45586	.45494
6	PREPSTDTJA	.84051	4.6435	4.4788	5.4420	4.6377	4.7284
7	PREPBLKTJA	.00017	Q.13018	.00985	Q.56446	.00048	.00008
8	S99T000552_L	.04117	79.508	-.06822	.88777	-.00005	.00119
9	S99T000552	.06480	75.140	-.02666	.82751	.00141	.00071
10	S99T000552_D	.07348	64.529	-.02676	.83168	.00160	.00076
11	S99T000552_S <i>4-23-99</i>	.95527	72.713	4.7810	5.6704	4.5033	4.7120
12	S99T000552_X	.11160	77.143	.40744	1.0891	.00702	.00283
13	S99T000552_AX	266.73	364.10	296.51	296.62	295.45	293.87
14	CCV	4.8457	4.7569	4.9355	5.0489	4.7839	4.8991
15	CCB	.00291	.00640	.01213	.00252	.00005	.00005
16	S99T000556	.06151	111.17	-.05397	.75109	.00256	.00106
17	S99T000556_D	.05984	125.85	-.07884	.79911	.00242	.00110
18	S99T000557	.05609	118.60	-.05408	.78968	.00394	.00101
19	S99T000557_D	.05104	135.35	-.05177	.85660	.00192	.00114
20	ICSA	-.00183	234.84	.07046	.00092	.00027	.00011
21	ICSAB	.92742	236.33	.05563	.00767	.44201	.45175
22	CCV	4.8078	4.6792	4.9496	5.0056	4.6536	4.9010
23	CCB	.00096	.00649	.01372	.00336	.00008	.00000

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	4.9832	5.1575	5.0672	5.0578	4.9726	4.9760
2	ICB	-.02262	.01154	-.00145	-.01501	-.00144	-.00122
3	LLS	.19650	.21872	.01064	.21136	.04030	.02175
4	ICSA	.00837	258.47	-.00611	.01022	-.00014	-.00308
5	ICSAB	.01250	258.48	.92714	.02250	.45914	.46927
6	PREPSTDTJA	4.4510	4.8702	4.4707	4.8239	4.4916	4.5481
7	PREPBLKTJA	-.01491	Q.12197	.00020	.00720	.00083	.00317
8	S99T000552_L	.12645	.50464	-.00803	-.14631	.02240	2.6447
9	S99T000552	.04271	.47916	.01472	.03117	.00290	2.4727
10	S99T000552_D	.08532	.42054	.01282	.03810	.01001	2.2280
11	S99T000552_S <i>4-23-99</i>	4.5999	5.4430	4.8204	4.7434	4.7405	7.0317
12	S99T000552_X	-.16371	.66648	.03223	.45933	.03398	2.6110
13	S99T000552_AX	297.20	300.92	296.87	296.14	295.18	299.24
14	CCV	4.9172	5.1431	5.0263	4.9608	4.9262	4.9291
15	CCB	.00081	.01752	.00022	.00613	.00193	.00071
16	S99T000556	.02601	.64875	.02064	.01974	.00703	2.8443
17	S99T000556_D	-.06245	.66425	.02134	.00530	.00455	3.0009
18	S99T000557	-.00200	.61954	.02240	.02238	.00978	4.5558
19	S99T000557_D	.00181	.66981	.02124	-.00566	.00646	2.2733
20	ICSA	-.01552	259.45	-.00502	.02639	-.00055	-.00268
21	ICSAB	.01679	258.73	.92806	.01334	.45937	.46373
22	CCV	4.8670	5.1694	5.0518	4.8480	4.9291	4.9233
23	CCB	.01406	.01807	.00050	.00560	-.00003	-.00043

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Averages

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#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.0550	.02777	4.8570	5.0427	5.0887	4.9743
2	ICB	-.00065	-.00039	-.00042	-.15372	-.00181	-.00028
3	LLS	.01782	.00143	.09760	Q.78593	.10212	.02072
4	ICSA	-.00554	.24806	95.358	-.12695	-.00573	.00229
5	ICSAB	.45113	.24710	94.821	.30799	-.00384	.96819
6	PREPSTD TJA	4.3590	.02194	4.4749	4.8806	4.8263	4.7623
7	PREPBLKTJA	.00301	-.00603	.03390	-.00914	.00091	-.00438
8	S99T000552_L	.01845	-.00070	.21521	6.8642	-.01965	-.00429
9	S99T000552	.02113	-.00645	.22682	9.0803	.00578	-.00342
10	S99T000552_D	.02255	-.00561	.20824	8.7455	.01087	-.00400
11	S99T000552_S <i>4/23/99</i>	4.3994	.02643	5.1012	12.609	4.7789	4.5981
12	S99T000552_X	.01914	.05706	.23810	16.209	.06861	.03432
13	S99T000552_AX	275.62	1.7062	284.13	304.80	295.21	292.76
14	CCV	4.9452	.02897	4.7924	5.1553	4.9856	4.9150
15	CCB	.00017	.00294	-.00053	.05379	.00045	.00162
16	S99T000556	.02987	.00346	.29720	12.850	.00733	.00171
17	S99T000556_D	.02846	.00497	.27842	13.854	.00396	.00400
18	S99T000557	.02809	.00290	.45321	13.075	.00856	.00171
19	S99T000557_D	.03688	.00384	.24952	14.995	.00336	.00171
20	ICSA	-.00517	.23327	93.667	.37534	-.00512	.00525
21	ICSAB	.43549	.23926	93.910	.00677	-.00586	.90699
22	CCV	4.8437	.03044	4.7611	4.7882	4.8778	4.5607
23	CCB	-.00082	.00304	.00072	.07107	.00166	.00200

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.2006	4.8077	5.0366	5.0311	4.9471	4.9389
2	ICB	-.01428	.00005	.00009	.01881	-.00441	-.00867
3	LLS	.21133	.01919	.10191	.23032	.19986	.04026
4	ICSA	266.66	-.00989	-.00796	193.23	.00490	-.01231
5	ICSAB	263.87	.42189	-.00862	190.06	.01079	.91534
6	PREPSTD TJA	4.7156	4.3285	4.6043	6.3168	4.7542	4.4237
7	PREPBLKTJA	.03421	-.00032	.00064	Q1.0007	-.00099	-.00248
8	S99T000552_L	-.01064	.05915	.25359	974.91	-.03491	.29684
9	S99T000552	.04634	.05339	.23433	914.00	.00744	.31380
10	S99T000552_D	.09343	.04766	.20331	941.74	.03085	.27376
11	S99T000552_S <i>4/23/99</i>	4.8884	4.4588	5.1196	1010.5	4.6918	4.9701
12	S99T000552_X	.58741	.07030	.32787	929.03	.02172	.37606
13	S99T000552_AX	304.90	294.51	294.69	1235.3	287.61	294.82
14	CCV	5.1092	4.7327	4.9849	4.9152	4.8377	4.8803
15	CCB	.00792	.00055	.00061	-.03696	.00277	-.00560
16	S99T000556	.10609	.08244	.34741	773.98	.02494	.46349
17	S99T000556_D	.04907	.08645	.38276	852.13	.01594	.51063
18	S99T000557	.04592	.14611	.35531	761.09	.03818	.49088
19	S99T000557_D	.03840	.07115	.42443	757.64	.03092	.56753
20	ICSA	259.57	-.00865	-.00934	177.99	.00774	-.01247
21	ICSAB	259.98	.41802	-.00897	179.50	.00805	.90560
22	CCV	5.0559	4.7147	4.9562	4.5685	4.7264	4.8897
23	CCB	.00515	.00052	.00286	-.04300	-.00086	-.00080

HNF-1668 REV. 0

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#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.0085	4.9985	4.8536	5.0812	4.7753	5.4896
2	ICB	-.00116	-.00726	.00217	-.00060	-.00252	.00160
3	LLS	.39845	.20982	.19804	.09747	.19365	.15716
4	ICSA	-.04587	.05659	-.02806	.01495	-.11637	-.00922
5	ICSAB	-.03476	1.0365	-.01937	-.00006	-.10349	-.00577
6	PREPSTDTJA	4.4852	4.3687	4.3723	4.4633	4.3697	9.2751
7	PREPBLKTJA	.03261	.01236	Q.06538	.00665	-.00441	Q1.5683
8	S99T000552_L	67.638	.14778	4.7939	-.02665	.17116	1.6720
9	S99T000552	63.880	.10630	4.5496	.03689	.01158	1.4222
10	S99T000552_D	57.489	.16819	3.8940	.04742	.04926	.98638
11	S99T000552_S <i>4-23-99</i>	61.083	4.8885	8.8589	4.9177	4.6699	7.0305
12	S99T000552_X	66.335	.30906	4.9720	.05023	.62618	2.1255
13	S99T000552_AX	358.72	299.41	292.60	296.58	287.30	306.34
14	CCV	4.9722	4.9821	4.8087	4.9711	4.7331	5.4227
15	CCB	.01302	.00832	.00151	.00429	.03407	.01125
16	S99T000556	61.505	.22115	4.9525	.04663	.04865	1.0951
17	S99T000556_D	64.685	.21017	5.5963	.02111	.08274	1.3825
18	S99T000557	57.424	.22895	5.5013	.04633	.07181	.90908
19	S99T000557_D	27.028	.21151	5.7856	-.00291	.09454	1.3271
20	ICSA	-.02985	.06792	-.02128	.01311	-.07299	.00614
21	ICSAB	-.02473	1.0370	-.04880	.00186	-.06617	.00557
22	CCV	4.9546	4.9911	4.8143	4.9799	4.7533	5.4161
23	CCB	.00695	-.00215	.00195	.01082	.03856	.01006

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.9055	4.9264	.18772	5.0623	4.7761	9.7578
2	ICB	-.00450	-.00006	-.01031	-.00047	.00901	-.01878
3	LLS	.19633	.01976	.00904	.02024	.40332	.47687
4	ICSA	-.02247	.00155	.04781	.00100	-.07715	.04042
5	ICSAB	-.01699	.00155	.06111	.00251	-.09155	.05210
6	PREPSTDTJA	4.7002	4.7543	.16978	4.7252	4.3229	9.0657
7	PREPBLKTJA	-.05056	-.00047	.01180	.00094	-.02443	-.19659
8	S99T000552_L	-.04076	.00048	-.12761	-.00482	-.50479	-.19760
9	S99T000552	-.06626	.00107	.01544	.00180	-.02902	-.23842
10	S99T000552_D	-.05042	.00107	.03824	.00538	-.02034	-.17804
11	S99T000552_S <i>4-23-99</i>	4.6253	4.6813	.16331	4.8501	4.5505	8.9165
12	S99T000552_X	.43850	.00662	.19020	.00482	-.09733	1.8086
13	S99T000552_AX	286.59	292.71	11.008	293.08	290.96	558.09
14	CCV	4.8080	4.8295	.17969	4.9915	4.7513	9.5835
15	CCB	.02206	.00028	-.00265	.00026	-.00073	.09354
16	S99T000556	.00545	.00282	.00559	.00319	-.01562	.09385
17	S99T000556_D	.02419	.00333	-.00630	.00169	.01276	.14573
18	S99T000557	.00852	.00378	.00193	.00431	-.02370	.17174
19	S99T000557_D	.00865	.00301	-.01349	.00283	-.02037	.09137
20	ICSA	.00961	.00144	.06262	.00122	-.10356	.10574
21	ICSAB	.00065	.00147	.05274	.00176	-.05259	.08211
22	CCV	4.6971	4.7247	.18432	4.9199	4.7443	9.3524
23	CCB	.01976	.00025	-.00041	-.00001	-.00925	.08358

Analysis Report

Averages

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#	Sample Name	V	Y	Zn	Zr
1	ICV	4.9693	.01227	4.7061	4.8491
2	ICB	-.00088	-.00069	.00000	.00037
3	LLS	.09949	.00042	.01960	.01850
4	ICSA	-.00764	.00933	-.00731	-.00984
5	ICSAB	.45739	.00987	.92872	-.00990
6	PREPSTD TJA	4.5089	.00809	4.0677	4.5371
7	PREPBLK TJA	-.00847	-.00408	Q.01235	-.00500
8	S99T000552_L	.00028	-.00580	.00889	.06543
9	S99T000552	-.00564	-.00319	.00246	.04676
10	S99T000552_D	-.00357	-.00251	.00356	.04375
11	S99T000552_S <i>4-23-99</i>	4.6309	.01247	4.4565	4.6686
12	S99T000552_X	.08669	.02751	.01566	.09527
13	S99T000552_AX	292.32	.77410	276.67	291.57
14	CCV	4.8984	.01289	4.6649	4.7669
15	CCB	.00381	.00153	.00081	.00298
16	S99T000556	.00784	.00420	.00879	.02777
17	S99T000556_D	.01046	.00590	.00199	.03231
18	S99T000557	.00871	.00699	.00904	.03416
19	S99T000557_D	.00446	.00436	-.00156	.01713
20	ICSA	-.00089	.01166	-.00618	-.00679
21	ICSAB	.45494	.01112	.92705	-.00697
22	CCV	4.8702	.01378	4.6863	4.7153
23	CCB	.00371	.00114	.00103	.00220

JK
04-23-99

LABCORE Completed Worklist Report for Worklist# 29644

Analyst: bjb

Instrument: ICPMS1

Book#: 990420-1

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

Worklist Comment: ICP/MS U-103 (SOLID ACID DIGEST) Iso-U

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	ICV	0		EMSU-QC U235	QC	0.000142	1.43e-04	100.704	% Recovery
1	ICV	0		EMSU-QC U238	QC	0.020	2.00e-02	100.000	% Recovery
2	ICB	0		EMSU-QC U233	QC	1	<1.20e-5		ug/mL
2	ICB	0		EMSU-QC U234	QC	1	<1.20e-5		ug/mL
2	ICB	0		EMSU-QC U235	QC	1	<1.20e-5		ug/mL
2	ICB	0		EMSU-QC U236	QC	1	<1.60e-5		ug/mL
2	ICB	0		EMSU-QC U238	QC	1	<1.20e-5		ug/mL
3	STD-PREP	0		EMSU-A1 U238-A1	SOLID	10.0	9.57e+00	95.700	% Recovery
4	BLNK-PREP	0		EMSU-A1 U233-A1	SOLID	1	<1.20e-4		ug/g
4	BLNK-PREP	0		EMSU-A1 U234-A1	SOLID	1	<1.20e-4		ug/g
4	BLNK-PREP	0		EMSU-A1 U235-A1	SOLID	1	<1.20e-4		ug/g
4	BLNK-PREP	0		EMSU-A1 U236-A1	SOLID	1	<1.60e-4		ug/g
4	BLNK-PREP	0		EMSU-A1 U238-A1	SOLID	1	<1.20e-4		ug/g
5	SAMPLE	S99T000552	0	A	EMSU-A1 U233-A1	SOLID	<u>N/A</u> <	4.912e-01	0.491 ug/g
5	SAMPLE	S99T000552	0	A	EMSU-A1 U234-A1	SOLID	<u>N/A</u> <	4.912e-01	0.491 ug/g
5	SAMPLE	S99T000552	0	A	EMSU-A1 U235-A1	SOLID	<u>N/A</u> <	4.912e-01	0.491 ug/g
5	SAMPLE	S99T000552	0	A	EMSU-A1 U236-A1	SOLID	<u>N/A</u> <	6.550e-01	0.655 ug/g
5	SAMPLE	S99T000552	0	A	EMSU-A1 U238-A1	SOLID	<u>N/A</u> <	2.055e+01	0.491 ug/g
6	DUP	S99T000552	0	A	EMSU-A1 U233-A1	SOLID	<4.91e-1	<4.89e-1	RPD
6	DUP	S99T000552	0	A	EMSU-A1 U234-A1	SOLID	<4.91e-1	<4.89e-1	RPD
6	DUP	S99T000552	0	A	EMSU-A1 U235-A1	SOLID	<4.91e-1	<4.89e-1	RPD
6	DUP	S99T000552	0	A	EMSU-A1 U236-A1	SOLID	<6.55e-1	<6.52e-1	RPD
6	DUP	S99T000552	0	A	EMSU-A1 U238-A1	SOLID	2.06e+01	1.82e+01	12.371 RPD
7	SPK	S99T000552	0	A	EMSU-A1 U235-A1	SOLID	14.22	1.35e+01	94.937 % Recovery
7	SPK	S99T000552	0	A	EMSU-A1 U238-A1	SOLID	2000.00	1.79e+03	89.500 % Recovery
8	SAMPLE	S99T000556	0	A	EMSU-A1 U233-A1	SOLID	<u>N/A</u> <	4.756e-01	0.476 ug/g
8	SAMPLE	S99T000556	0	A	EMSU-A1 U234-A1	SOLID	<u>N/A</u> <	4.756e-01	0.476 ug/g
8	SAMPLE	S99T000556	0	A	EMSU-A1 U235-A1	SOLID	<u>N/A</u> <	4.756e-01	0.476 ug/g
8	SAMPLE	S99T000556	0	A	EMSU-A1 U236-A1	SOLID	<u>N/A</u> <	6.341e-01	0.634 ug/g
8	SAMPLE	S99T000556	0	A	EMSU-A1 U238-A1	SOLID	<u>N/A</u> <	2.879e+01	0.476 ug/g
9	DUP	S99T000556	0	A	EMSU-A1 U233-A1	SOLID	<4.76e-1	<4.48e-1	RPD
9	DUP	S99T000556	0	A	EMSU-A1 U234-A1	SOLID	<4.76e-1	<4.48e-1	RPD
9	DUP	S99T000556	0	A	EMSU-A1 U235-A1	SOLID	<4.76e-1	<4.48e-1	RPD
9	DUP	S99T000556	0	A	EMSU-A1 U236-A1	SOLID	<6.34e-1	<5.97e-1	RPD
9	DUP	S99T000556	0	A	EMSU-A1 U238-A1	SOLID	2.88e+01	2.63e+01	9.074 RPD
10	SAMPLE	S99T000557	0	A	EMSU-A1 U233-A1	SOLID	<u>N/A</u> <	4.926e-01	0.493 ug/g
10	SAMPLE	S99T000557	0	A	EMSU-A1 U234-A1	SOLID	<u>N/A</u> <	4.926e-01	0.493 ug/g
10	SAMPLE	S99T000557	0	A	EMSU-A1 U235-A1	SOLID	<u>N/A</u> <	4.926e-01	0.493 ug/g
10	SAMPLE	S99T000557	0	A	EMSU-A1 U236-A1	SOLID	<u>N/A</u> <	6.569e-01	0.657 ug/g
10	SAMPLE	S99T000557	0	A	EMSU-A1 U238-A1	SOLID	<u>N/A</u> <	4.536e+01	0.493 ug/g
11	DUP	S99T000557	0	A	EMSU-A1 U233-A1	SOLID	<4.93e-1	<4.69e-1	RPD

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

LABCORE Completed Worklist Report for Worklist# 29644

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
11 DUP	S99T000557	0	A	@MSU-A1 U234-A1	SOLID	<4.93e-1	<4.69e-1		RPD
11 DUP	S99T000557	0	A	@MSU-A1 U235-A1	SOLID	<4.93e-1	<4.69e-1		RPD
11 DUP	S99T000557	0	A	@MSU-A1 U236-A1	SOLID	<6.57e-1	<6.25e-1		RPD
11 DUP	S99T000557	0	A	@MSU-A1 U238-A1	SOLID	4.54e+01	2.09e+01	73.906	RPD
12 CCV		0		@MSU-QC U235	QC	0.000142	1.59e-04	111.972	% Recovery
12 CCV		0		@MSU-QC U238	QC	0.020	2.19e-02	109.500	% Recovery
13 CCB		0		@MSU-QC U233	QC	1	<1.20e-5		ug/mL
13 CCB		0		@MSU-QC U234	QC	1	<1.20e-5		ug/mL
13 CCB		0		@MSU-QC U235	QC	1	<1.20e-5		ug/mL
13 CCB		0		@MSU-QC U236	QC	1	<1.60e-5		ug/mL
13 CCB		0		@MSU-QC U238	QC	1	<1.20e-5		ug/mL

Final page for worklist# 29644

Analyst Signature

Date

Analyst Signature

Date

Saul M. Pang 05/10/99

Reviewer Signature

Date

04/13/99 10:27

ws2

FILE 5458
FILE 849

FILE U0509A.TVT

29644 Page: 1

LABCORE Data Entry Template for Worklist# 29284

5-7-99

Analyst: *SPK* Instrument: ICP01 Book# *990420-1*

Method: LA-505-151/161 Rev/Mod *A-2*

Worklist Comment: ICP/MS U-103 (SOLID ACID DIGEST)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	STD-PREP		@MSU-A1	SOLID		
4	BLNK-PREP		@MSU-A1	SOLID		
5	SAMPLE	S99T000552 0 A	@MSU-A1	SOLID	99000104	U-103 GRAB2
Analytes Requested: U233-A1 , U234-A1 , U235-A1 , U236-A1 , U238-A1						
6	DUP	S99T000552 0 A	@MSU-A1	SOLID		
7	SPK	S99T000552 0 A	@MSU-A1	SOLID		
8	SAMPLE	S99T000556 0 A	@MSU-A1	SOLID	99000104	U-103 GRAB2
Analytes Requested: U233-A1 , U234-A1 , U235-A1 , U236-A1 , U238-A1						
9	DUP	S99T000556 0 A	@MSU-A1	SOLID		
10	SAMPLE	S99T000557 0 A	@MSU-A1	SOLID	99000104	U-103 GRAB2
Analytes Requested: U233-A1 , U234-A1 , U235-A1 , U236-A1 , U238-A1						
11	DUP	S99T000557 0 A	@MSU-A1	SOLID		
12	CCV		@ICP-QC	QC		
13	CCB		@ICP-QC	QC		

29644 5/10/99

Final page for worklist # 29284

Signature	Date	DF	Signature	Date	DF
<i>SPK</i>	<i>5-7-99</i>				
<i>PREP STD</i>	<i>05-1-10-1</i>	<i>201</i>	<i>S99T000552</i>	<i>05-1-10-1</i>	<i>201</i>
<i>PREP BLK</i>	<i>1-1-99</i>	<i>10</i>	<i>556-D</i>		
<i>S99T000552</i>	<i>05-1-10-1</i>	<i>201</i>	<i>S99T000557</i>		
<i>552-D</i>	<i>05-1-10-1</i>	<i>201</i>	<i>557-D</i>		
Data Entry Comments:					
<i>552-S</i>	<i>05-1-10-1</i>	<i>201</i>			

SCANS = 990552, 990556, 990557, 990557d

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

Analysis Report

05/07/99 09:28:47

page 1

Method: MS_TUNE Sample Name: ms-tune

Operator: bjg

Comment:

Run Time: 05/07/99 09:27 Type: Unk

Mode: INT

Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	75020.
Stddev	474.
%RSD	.6326

#1	74670.
#2	75290.
#3	75310.
#4	74640.
#5	75420.
#6	75880.
#7	74900.
#8	75170.
#9	74540.
#10	74360.

EJ Gault
 5-7-99
 U-103
 AND BEST
 .05-1-10-1
 599T000552, 556-57
 W.L.# 29284
 FILE# 00507A.TRT

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 197 TO 217.

Analysis Report

05/07/99 09:33:14

page 1

Method: ISOU

Sample Name: BLANK

Operator:

Comment:

Run Time: 05/07/99 09:31 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	6.686	7.205	6.520	7.066	8.498
Stddev	.843	.644	.598	1.000	.817
%RSD	12.61	8.938	9.172	14.15	9.618
#1	5.739	6.987	7.236	7.111	9.232
#2	7.639	7.764	6.136	7.889	9.016
#3	5.977	6.476	7.098	7.596	8.468
#4	7.419	6.811	5.959	5.351	8.635
#5	6.656	7.987	6.172	7.382	7.140

Int. Std.	Ir [193]
Line	193/pulse
Units	Cts/S
Avg	4.0517
Stddev	.0646
%RSD	1.5944

#1	4.0076
#2	3.9929
#3	4.0151
#4	4.1112
#5	4.1318

Method : ISOU

Standardzn Report

05/07/99 09:33:20

page 1

El Name	Slope	Y-int	Correlation	Date Stdized
U_ [233]	789.6879	6.6859	1.0000000	05/07/99 09:33:12

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	6.6859
100ppb U.	0.711	0.711	0	0	568.15

U [233]
0
(S) IR⁶³⁰⁰¹⁰
Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_ [234]	788.9582	7.2047	1.0000000	05/07/99 09:33:12

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	7.2047
100ppb U	0.711	0.711	0	0	568.15

U [234]
0
(S) IR⁶³⁰⁰¹⁰
Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_ [235]	789.9208	6.5202	1.0000000	05/07/99 09:33:12

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	6.5202
100ppb U	0.711	0.711	0	0	568.15

U [235]
0
(S) IR⁶³⁰⁰¹⁰
Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_ [236]	789.1533	7.0659	1.0000000	05/07/99 09:33:12

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	7.0659
100ppb U	0.711	0.711	0	0	568.15

U [236]
0
(S) IR⁶³⁰⁰¹⁰
Concentration

Method : ISOU

Standardzn Report

05/07/99 09:33:20

page 2

El Name	Slope	Y-int	Correlation	Date Stdized
U_[238]	726.4683	8.4982	1.0000000	05/07/99 09:33:12

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.4982
100ppb U	99.3	99.3	0	0	72147

U [238]

0

79370010
(S) IR

Concentration

Method: ISOU Sample Name: 100ppb U

Operator:

Comment:

Run Time: 05/07/99 09:35 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	552.7	552.7	552.7	552.7	72660.
Stddev	5.3	5.3	5.3	5.3	1135.
%RSD	.9654	.9654	.9654	.9654	1.562
#1	561.5	561.5	561.5	561.5	73190.
#2	551.5	551.5	551.5	551.5	74370.
#3	547.5	547.5	547.5	547.5	72300.
#4	549.8	549.8	549.8	549.8	71930.
#5	553.3	553.3	553.3	553.3	71530.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	4.0776
Stddev	.0336
%RSD	.82268

#1	4.0581
#2	4.0371
#3	4.1167
#4	4.0689
#5	4.1072

Method : ISOU

Standardzn Report

05/07/99 09:38:15

page 1

El Name	Slope	Y-int	Correlation	Date Stdized
U_ [233]	767.9697	6.6859	1.0000000	05/07/99 09:36:53

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	6.6859
100ppb U	0.711	0.711	0	0	552.71

U [233]

0

(S) IR⁶¹⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_ [234]	767.2400	7.2047	1.0000000	05/07/99 09:36:53

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	7.2047
100ppb U	0.711	0.711	0	0	552.71

U [234]

0

(S) IR⁶¹⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_ [235]	768.2026	6.5202	1.0000000	05/07/99 09:36:53

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	6.5202
100ppb U	0.711	0.711	0	0	552.71

U [235]

0

(S) IR⁶¹⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_ [236]	767.4351	7.0659	1.0000000	05/07/99 09:36:53

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	7.0659
100ppb U	0.711	0.711	0	0	552.71

U [236]

0

(S) IR⁶¹⁰⁰¹⁰

Concentration

Method : ISOU

Standardzn Report

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El Name	Slope	Y-int	Correlation	Date Stdized
U_[238]	731.6638	8.4982	1.0000000	05/07/99 09:36:53

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S)IR
Blank	0	0	0	0	8.4982
100ppb U	99.3	99.3	0	0	72663

U [238]
 0
 7993010
 (S)IR Concentration

Analysis Report

05/07/99 09:44:03

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Method: ISOU Sample Name: blank

Operator: bjg

Comment: background

Run Time: 05/07/99 09:42 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	.0001	-.0001	.0008	.0002	-.0002
Stddev	.0008	.0009	.0010	.0013	.0014
%RSD	537.9	656.8	119.5	750.1	701.0

#1	.0010	.0002	.0018	.0002	.0012
#2	.0006	-.0006	-.0003	-.0002	.0008
#3	-.0010	-.0009	.0009	.0016	-.0014
#4	-.0001	.0013	.0017	.0010	.0004
#5	.0002	-.0006	-.0001	-.0017	-.0019

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	4.1510
Stddev	.0454
%RSD	1.0925

#1	4.1648
#2	4.1365
#3	4.1479
#4	4.2153
#5	4.0903

Analysis Report

05/07/99 09:47:18

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Method: ISOU Sample Name: icv

Operator: bjg

Comment: iso-u lcs

Run Time: 05/07/99 09:46 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	.0001	.0013	.1429	.0025	20.03
Stddev	.0010	.0009	.0034	.0016	.19
%RSD	1136.	70.64	2.383	61.63	.9272

#1	-.0002	.0001	.1445	.0050	19.91
#2	-.0005	.0024	.1378	.0015	19.97
#3	-.0001	.0017	.1425	.0017	19.83
#4	-.0007	.0014	.1425	.0013	20.22
#5	.0019	.0008	.1470	.0030	20.23

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	4.1888
Stddev	.0292
%RSD	.69782

#1	4.2082
#2	4.1922
#3	4.2239
#4	4.1518
#5	4.1681

Method: ISOU Sample Name: icb
Comment: 2% hno3
Run Time: 05/07/99 09:52 Type: Unk

Operator: bjg

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	.0010	.0006	.0005	-.0004	-.0008
Stddev	.0014	.0012	.0008	.0012	.0009
%RSD	144.7	199.1	182.2	263.3	107.9

#1	.0009	.0018	.0003	.0006	-.0007
#2	.0033	.0010	.0000	-.0002	-.0007
#3	.0009	.0013	-.0006	-.0023	-.0017
#4	.0002	-.0013	.0014	.0005	.0005
#5	-.0004	.0001	.0012	-.0008	-.0015

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	4.1617
Stddev	.0677
%RSD	1.6261

#1	4.1988
#2	4.0624
#3	4.1389
#4	4.1658
#5	4.2426

Analysis Report

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Method: ISOU Sample Name: prepstd

Operator: bjg

Comment: 201 df

Run Time: 05/07/99 09:56 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	.0003	.0038	.3494	.0059	47.60
Stddev	.0007	.0015	.0083	.0013	.98
%RSD	290.0	39.90	2.366	21.81	2.054
#1	.0002	.0034	.3475	.0080	47.13
#2	-.0011	.0051	.3470	.0062	46.96
#3	-.0006	.0034	.3384	.0056	47.51
#4	-.0006	.0017	.3608	.0047	47.08
#5	.0008	.0056	.3532	.0050	49.31

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	4.1478
Stddev	.0582
%RSD	1.4019

#1	4.1758
#2	4.1853
#3	4.1745
#4	4.1581
#5	4.0453

Analysis Report

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Method: ISOU Sample Name: prepblk Operator: bjg
 Comment: 10 df
 Run Time: 05/07/99 10:03 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	.0024	.0001	.0013	.0008	.0027
Stddev	.0017	.0005	.0010	.0008	.0035
%RSD	71.79	405.9	74.73	96.63	132.0

#1	.0025	.0001	.0001	.0004	.0031
#2	.0008	.0008	.0019	.0012	.0086
#3	.0027	.0001	.0019	-.0004	.0013
#4	.0009	-.0005	.0004	.0016	-.0005
#5	.0051	.0002	.0022	.0015	.0009

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	4.0577
Stddev	.0504
%RSD	1.2413

#1	4.0030
#2	4.0220
#3	4.1249
#4	4.0460
#5	4.0926

Method: ISOU Sample Name: s99t000552 Operator: bjg
 Comment: 201 df
 Run Time: 05/07/99 10:05 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0008	.0002	.0042	.0000	.5021
Stddev	.0008	.0007	.0020	.0013	.0218
%RSD	105.7	392.0	48.14	45590.	4.342
#1	-.0006	.0000	.0022	.0022	.4965
#2	.0014	.0010	.0064	-.0008	.4972
#3	.0010	.0007	.0044	-.0007	.5376
#4	.0007	-.0004	.0058	.0001	.5011
#5	.0015	-.0005	.0020	-.0008	.4780

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.9172
Stddev	.1267
%RSD	3.2348
#1	3.9473
#2	3.8830
#3	3.7377
#4	3.9282
#5	4.0899

Analysis Report

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Method: ISOU Sample Name: s99t000552_d Operator: bjg
 Comment: 201 df
 Run Time: 05/07/99 10:10 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0006	-.0008	.0042	.0006	.4456
Stddev	.0009	.0018	.0017	.0022	.0188
%RSD	156.6	240.3	40.54	364.8	4.209

#1	.0005	-.0011	.0014	-.0026	.4134
#2	-.0001	-.0036	.0043	-.0006	.4514
#3	-.0004	.0000	.0045	.0029	.4626
#4	.0020	.0013	.0047	.0022	.4487
#5	.0010	-.0004	.0061	.0012	.4519

Int. Std.	Ir(193)
Line	193/pulse
Units	Cts/S
Avg	3.7602
Stddev	.1238
%RSD	3.2923

#1	3.9406
#2	3.7241
#3	3.5966
#4	3.7859
#5	3.7535

Analysis Report

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.page 1

Method: ISOU

Sample Name: s99t000552_s

Operator: bjg

Comment: 201 df

Run Time: 05/07/99 10:12 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	.0011	.0033	.3605	.0053	48.58
Stddev	.0008	.0015	.0134	.0027	.51
%RSD	74.93	46.37	3.724	50.99	1.048

#1	.0015	.0050	.3772	.0039	48.34
#2	.0015	.0011	.3675	.0053	48.51
#3	.0011	.0033	.3423	.0088	48.33
#4	-.0003	.0043	.3627	.0067	48.24
#5	.0017	.0026	.3528	.0017	49.47

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.7930
Stddev	.0703
%RSD	1.8543

#1	3.7144
#2	3.7790
#3	3.9035
#4	3.8068
#5	3.7612

Method: ISOU Sample Name: s99t000556 Operator: bjg
 Comment: 201 df
 Run Time: 05/07/99 10:19 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0010	.0030	.0065	.0012	.7264
Stddev	.0018	.0015	.0025	.0015	.0564
%RSD	185.3	49.46	38.67	123.2	7.758

#1	.0035	.0014	.0035	-.0006	.6617
#2	-.0014	.0040	.0072	-.0001	.6712
#3	.0018	.0051	.0045	.0023	.7757
#4	.0008	.0023	.0076	.0030	.7454
#5	.0003	.0023	.0098	.0015	.7782

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.6900
Stddev	.0637
%RSD	2.3672

#1	2.7160
#2	2.7791
#3	2.6056
#4	2.6747
#5	2.6746

Method: ISOU Sample Name: s99t000556_d Operator: bfg
 Comment: 201 df
 Run Time: 05/07/99 10:24 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	.0000	.0056	-.0005	.7043
Stddev	.0011	.002	.0012	.0022	.0580
%RSD	159.6	5645.	21.05	470.0	8.230

#1	.0022	.0004	.0067	.0010	.7776
#2	.0013	-.0018	.0064	-.0042	.6589
#3	-.0003	-.0029	.0054	.0000	.6609
#4	-.0004	.0023	.0056	.0009	.7566
#5	.0007	.0018	.0037	.0000	.6672

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.0776
Stddev	.1488
%RSD	4.8361

#1	2.9932
#2	3.2686
#3	3.1886
#4	2.9016
#5	3.0361

Analysis Report

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page 1

Method: ISOU

Sample Name: s99t000557

Operator: bjg

Comment: 201 df

Run Time: 05/07/99 10:26 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0011	-.0009	.0089	-.0008	1.105
Stddev	.0019	.0015	.0013	.0014	.039
%RSD	175.8	159.7	15.20	183.1	3.556

#1	-.0008	-.0007	.0073	-.0003	1.084
#2	.0034	-.0013	.0105	-.0020	1.149
#3	-.0008	.0014	.0083	-.0009	1.117
#4	.0013	-.0013	.0100	.0014	1.127
#5	.0021	-.0027	.0081	-.0021	1.049

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.3514
Stddev	.1111
%RSD	3.3163

#1	3.2950
#2	3.3228
#3	3.2118
#4	3.4452
#5	3.4821

Method: ISOU Sample Name: s99t000557_d Operator: bjg
 Comment: 201 df
 Run Time: 05/07/99 10:29 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	.0003	-.0007	.0028	.0002	.5334
Stddev	.0015	.0033	.0033	.0016	.0354
%RSD	533.8	452.6	119.0	1023.	6.641

#1	.0024	-.0020	.0014	.0007	.5210
#2	-.0019	-.0032	.0009	.0000	.5061
#3	.0000	-.0021	.0000	-.0021	.5324
#4	.0004	.0051	.0083	.0022	.5943
#5	.0006	-.0014	.0032	-.0001	.5131

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.2200
Stddev	.2525
%RSD	7.8405

#1	3.3477
#2	3.4545
#3	3.2283
#4	2.7950
#5	3.2744

Analysis Report

05/07/99 10:34:54

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Method: ISOU Sample Name: ccv

Operator: bjg

Comment: iso-u lcs

Run Time: 05/07/99 10:33 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	.0011	.1592	.0014	21.89
Stddev	.0018	.0025	.0193	.0012	2.03
%RSD	376.1	227.8	12.13	86.49	9.266

#1	.0037	.0022	.1744	.0026	22.14
#2	-.0002	.0030	.1812	.0017	24.85
#3	-.0009	-.0019	.1325	-.0005	19.23
#4	.0003	-.0012	.1516	.0022	21.16
#5	-.0004	.0036	.1561	.0010	22.08

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.2673
Stddev	.2281
%RSD	6.9807

#1	3.0472
#2	3.0575
#3	3.5906
#4	3.2686
#5	3.3726

Analysis Report

HNF-1668 REV. 0

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Method: ISOU Sample Name: ccb

Operator: bjg

Comment: 2% hnc3

Run Time: 05/07/99 10:36 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0006	-.0007	.0005	-.0011	-.0007
Stddev	.0008	.0021	.0020	.0031	.0034
%RSD	131.8	317.2	418.4	293.0	506.4

#1	-.0007	-.0025	-.0010	-.0013	-.0030
#2	.0009	-.0011	-.0018	-.0052	.0029
#3	.0014	-.0026	.0029	-.0021	.0004
#4	.0004	.0023	.0004	-.0001	-.0052
#5	.0010	.0007	.0018	.0034	.0016

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.7150
Stddev	.6677
%RSD	24.594

#1	3.8940
#2	2.4440
#3	2.3950
#4	2.5708
#5	2.2713

LABCORE Completed Worklist Report for Worklist# 29664

Analyst: bjg

Instrument: ICPMS1

Book#: 990570-1

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

Worklist Comment: ICP/MS U-103 (DIRECT)

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	ICV		0		EMSU-QC U235	QC	0.000142	1.45e-04	102.113	% Recovery
1	ICV		0		EMSU-QC U238	QC	0.020	2.04e-02	102.000	% Recovery
2	ICB		0		EMSU-QC U233	QC	1	<1.20e-5		ug/mL
2	ICB		0		EMSU-QC U234	QC	1	<1.20e-5		ug/mL
2	ICB		0		EMSU-QC U235	QC	1	<1.20e-5		ug/mL
2	ICB		0		EMSU-QC U236	QC	1	<1.60e-5		ug/mL
2	ICB		0		EMSU-QC U238	QC	1	<1.20e-5		ug/mL
3	SAMPLE	S99T000538	0	D	EMSU-D1 U233-D1	LIQUID	N/A <	4.860e-01	0.486	ug/mL
3	SAMPLE	S99T000538	0	D	EMSU-D1 U234-D1	LIQUID	N/A <	4.860e-01	0.486	ug/mL
3	SAMPLE	S99T000538	0	D	EMSU-D1 U235-D1	LIQUID	N/A <	4.860e-01	0.486	ug/mL
3	SAMPLE	S99T000538	0	D	EMSU-D1 U236-D1	LIQUID	N/A <	6.480e-01	0.648	ug/mL
3	SAMPLE	S99T000538	0	D	EMSU-D1 U238-D1	LIQUID	N/A	7.290e-01	0.486	ug/mL
4	DUP	S99T000538	0	D	EMSU-D1 U233-D1	LIQUID	<4.86e-1	<4.86e-1		RPD
4	DUP	S99T000538	0	D	EMSU-D1 U234-D1	LIQUID	<4.86e-1	<4.86e-1		RPD
4	DUP	S99T000538	0	D	EMSU-D1 U235-D1	LIQUID	<4.86e-1	<4.86e-1		RPD
4	DUP	S99T000538	0	D	EMSU-D1 U236-D1	LIQUID	<6.48e-1	<6.48e-1		RPD
4	DUP	S99T000538	0	D	EMSU-D1 U238-D1	LIQUID	7.29e-01	5.87e-01	21.581	RPD
5	SPK-POST	S99T000538	0	D	EMSU-D1 U235-D1	LIQUID	0.0001422	1.46e-04	102.672	% Recovery
5	SPK-POST	S99T000538	0	D	EMSU-D1 U238-D1	LIQUID	0.020	2.05e-02	102.500	% Recovery
6	SAMPLE	S99T000547	0	D	EMSU-D1 U233-D1	LIQUID	N/A <	4.860e-01	0.486	ug/mL
6	SAMPLE	S99T000547	0	D	EMSU-D1 U234-D1	LIQUID	N/A <	4.860e-01	0.486	ug/mL
6	SAMPLE	S99T000547	0	D	EMSU-D1 U235-D1	LIQUID	N/A <	4.860e-01	0.486	ug/mL
6	SAMPLE	S99T000547	0	D	EMSU-D1 U236-D1	LIQUID	N/A <	6.480e-01	0.648	ug/mL
6	SAMPLE	S99T000547	0	D	EMSU-D1 U238-D1	LIQUID	N/A	9.761e-01	0.486	ug/mL
7	DUP	S99T000547	0	D	EMSU-D1 U233-D1	LIQUID	<4.86e-1	<4.86e-1		RPD
7	DUP	S99T000547	0	D	EMSU-D1 U234-D1	LIQUID	<4.86e-1	<4.86e-1		RPD
7	DUP	S99T000547	0	D	EMSU-D1 U235-D1	LIQUID	<4.86e-1	<4.86e-1		RPD
7	DUP	S99T000547	0	D	EMSU-D1 U236-D1	LIQUID	<6.48e-1	<6.48e-1		RPD
7	DUP	S99T000547	0	D	EMSU-D1 U238-D1	LIQUID	9.76e-01	1.01e+00	3.424	RPD
8	SAMPLE	S99T000549	0	D	EMSU-D1 U233-D1	LIQUID	N/A <	4.860e-01	0.486	ug/mL
8	SAMPLE	S99T000549	0	D	EMSU-D1 U234-D1	LIQUID	N/A <	4.860e-01	0.486	ug/mL
8	SAMPLE	S99T000549	0	D	EMSU-D1 U235-D1	LIQUID	N/A <	4.860e-01	0.486	ug/mL
8	SAMPLE	S99T000549	0	D	EMSU-D1 U236-D1	LIQUID	N/A <	6.480e-01	0.648	ug/mL
8	SAMPLE	S99T000549	0	D	EMSU-D1 U238-D1	LIQUID	N/A	1.458e+00	0.486	ug/mL
9	DUP	S99T000549	0	D	EMSU-D1 U233-D1	LIQUID	<4.86e-1	<4.86e-1		RPD
9	DUP	S99T000549	0	D	EMSU-D1 U234-D1	LIQUID	<4.86e-1	<4.86e-1		RPD
9	DUP	S99T000549	0	D	EMSU-D1 U235-D1	LIQUID	<4.86e-1	<4.86e-1		RPD
9	DUP	S99T000549	0	D	EMSU-D1 U236-D1	LIQUID	<6.48e-1	<6.48e-1		RPD
9	DUP	S99T000549	0	D	EMSU-D1 U238-D1	LIQUID	1.46e+00	1.36e+00	7.092	RPD
10	CCV		0		EMSU-QC U235	QC	0.000142	1.48e-04	104.225	% Recovery
10	CCV		0		EMSU-QC U238	QC	0.020	2.04e-02	102.000	% Recovery

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

LABCORE Completed Worklist Report for Worklist# 29664

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
11	CCB	0		@MSU-QC U233	QC	1	<1.20e-5		ug/mL
11	CCB	0		@MSU-QC U234	QC	1	<1.20e-5		ug/mL
11	CCB	0		@MSU-QC U235	QC	1	<1.20e-5		ug/mL
11	CCB	0		@MSU-QC U236	QC	1	<1.60e-5		ug/mL
11	CCB	0		@MSU-QC U238	QC	1	<1.20e-5		ug/mL

Final page for worklist# 29664

Analyst Signature

Date

Analyst Signature

Date

Saul M. Long 05/10/99

Reviewer Signature Date

04/13/99 10:42
ws2

FILED UOSWANTPT

29664 Page: 1

LABCORE Data Entry Template for Worklist# 29285

5/10/99

Analyst: *SPG* Instrument: ICP01 Book# 890540-1

Method: LA-505-151/161 Rev/Mod A-1

Worklist Comment: ICP/MS U-103 (DIRECT)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	SAMPLE	S99T000538 0 D	@MSU-D1	LIQUID	99000104	U-103 GRAB2
Analytes Requested: U233-D1 , U234-D1 , U235-D1 , U236-D1 , U238-D1						
4	DUP	S99T000538 0 D	@MSU-D1	LIQUID		
5	SPK-POST	S99T000538 0 D	@MSU-D1	LIQUID		
6	SAMPLE	S99T000547 0 D	@MSU-D1	LIQUID	99000104	U-103 GRAB2
Analytes Requested: U233-D1 , U234-D1 , U235-D1 , U236-D1 , U238-D1						
7	DUP	S99T000547 0 D	@MSU-D1	LIQUID		
8	SAMPLE	S99T000549 0 D	@MSU-D1	LIQUID	99000104	U-103 GRAB2
Analytes Requested: U233-D1 , U234-D1 , U235-D1 , U236-D1 , U238-D1						
9	DUP	S99T000549 0 D	@MSU-D1	LIQUID		
10	CCV		@ICP-QC	QC		
11	CCB		@ICP-QC	QC		

Final page for worklist # 29285

29664 *5/10/99*

SPG
Signature _____ Date 5-10-99

Signature _____ Date _____

S99T000538
538-D
538-A
547
547-D
549
549-D

1-10-1 - 1021 - 10-1



Data Entry Comments: *549-D*

Method: MS_TUNE Sample Name: ms-tune Operator: bjb
 Comment:
 Run Time: 05/10/99 12:05 Type: Unk Mode: INT Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	51130.
Stddev	645.
%RSD	1.261
#1	50000.
#2	51370.
#3	50040.
#4	51210.
#5	51440.
#6	51720.
#7	51320.
#8	50850.
#9	51620.
#10	51780.

[Handwritten Signature]

5-10-99

U-003

588700538, 547, 549

1-10-025-10-1

W. L. A. 29285

FILE # U0510A.TST

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 221 TO 239.

Analysis Report

Method: ISOU Sample Name: BLANK

Operator:

Comment:

Run Time: 05/10/99 12:08 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	7.985	8.116	8.867	8.698	9.317
Stddev	1.406	.612	1.221	1.380	.702
%RSD	17.61	7.540	13.77	15.86	7.529
#1	7.782	7.944	8.916	9.565	10.38
#2	6.704	7.685	10.46	6.540	8.666
#3	7.797	8.609	9.583	9.583	9.583
#4	7.274	8.890	7.920	8.082	8.728
#5	10.37	7.452	7.452	9.721	9.235

Int. Std.	Ir [193]
Line	193/pulse
Units	Cts/S
Avg	3.0800
Stddev	.0134
%RSD	.43614
#1	3.0842
#2	3.0580
#3	3.0783
#4	3.0933
#5	3.0862

El Name	Slope	Y-int	Correlation	Date Stdized
U_[233]	766.1428	7.9848	1.0000000	05/10/99 12:09:41

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	7.9848
100ppb U	0.711	0.711	0	0	552.71

U [233]
0
(S) IR ⁶¹⁰⁰¹⁰ Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_[234]	765.9584	8.1159	1.0000000	05/10/99 12:09:41

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.1159
100ppb U	0.711	0.711	0	0	552.71

U [234]
0
(S) IR ⁶¹⁰⁰¹⁰ Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_[235]	764.9016	8.8673	1.0000000	05/10/99 12:09:41

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.8673
100ppb U	0.711	0.711	0	0	552.71

U [235]
0
(S) IR ⁶¹⁰⁰¹⁰ Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_[236]	765.1395	8.6981	1.0000000	05/10/99 12:09:41

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.6981
100ppb U	0.711	0.711	0	0	552.71

U [236]
0
(S) IR ⁶¹⁰⁰¹⁰ Concentration

Method : ISOU

Standardzn Report

05/10/99 12:12:13

page 2

El Name	Slope	Y-int	Correlation	Date Stdized
U_[238]	731.6556	9.3175	1.0000000	05/10/99 12:09:41

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	9.3175
100ppb U	99.3	99.3	0	0	72663

U [238]
 0
 79930WIO
 (S) IR
 Concentration

Method: ISOU Sample Name: 100ppb U Operator:
 Comment:
 Run Time: 05/10/99 12:12 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	531.0	531.0	531.0	531.0	67950.
Stddev	6.9	6.9	6.9	6.9	1253.
%RSD	1.308	1.308	1.308	1.308	1.844
#1	524.3	524.3	524.3	524.3	65980.
#2	523.6	523.6	523.6	523.6	68920.
#3	533.0	533.0	533.0	533.0	68700.
#4	534.2	534.2	534.2	534.2	67410.
#5	539.9	539.9	539.9	539.9	68740.

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.0373
Stddev	.0377
%RSD	1.2405
#1	3.0900
#2	3.0443
#3	3.0346
#4	3.0336
#5	2.9841

Method : ISOU

Standardzn Report

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page 1

El Name	Slope	Y-int	Correlation	Date Stdized
U_[233]	735.5826	7.9848	1.0000000	05/10/99 12:13:44

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	7.9848
100ppb U	0.711	0.711	0	0	530.98

U [233]

0
(S) IR⁵⁹⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_[234]	735.3982	8.1159	1.0000000	05/10/99 12:13:44

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.1159
100ppb U	0.711	0.711	0	0	530.98

U [234]

0
(S) IR⁵⁹⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_[235]	734.3414	8.8673	1.0000000	05/10/99 12:13:44

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.8673
100ppb U	0.711	0.711	0	0	530.98

U [235]

0
(S) IR⁵⁹⁰⁰¹⁰

Concentration

El Name	Slope	Y-int	Correlation	Date Stdized
U_[236]	734.5793	8.6981	1.0000000	05/10/99 12:13:44

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	8.6981
100ppb U	0.711	0.711	0	0	530.98

U [236]

0
(S) IR⁵⁹⁰⁰¹⁰

Concentration

Method : ISOU

Standardzn Report

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page 2

El Name	Slope	Y-int	Correlation	Date Stdized
U_[238]	684.2045	9.3175	1.0000000	05/10/99 12:13:44

Standard Name	Concentration		Difference		Signal
	Stated	Found	Conc	%	(S) IR
Blank	0	0	0	0	9.3175
100ppb U	99.3	99.3	0	0	67951

U [238]

0
74750W10
(S) IR

Concentration

Method: ISOU Sample Name: blank

Operator: bjg

Comment: background

Run Time: 05/10/99 12:44 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	.0002	.0000	-.0014	-.0010
Stddev	.0016	.0007	.0010	.0017	.0019
%RSD	177.0	356.9	75440.	125.8	184.4

#1	.0010	-.0003	-.0009	-.0011	.0016
#2	.0016	.0010	-.0001	-.0023	.0002
#3	-.0011	.0008	.0011	-.0037	-.0014
#4	.0000	.0005	.0010	-.0003	-.0030
#5	.0030	-.0008	-.0011	.0007	-.0026

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.9987
Stddev	.0136
%RSD	.45255

#1	2.9846
#2	3.0060
#3	2.9988
#4	3.0172
#5	2.9869

Method: ISOU Sample Name: icv

Operator: bjg

Comment: iso-u lcs

Run Time: 05/10/99 12:53 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	-.0001	.0003	.1445	.0002	20.37
Stddev	.0015	.0012	.0043	.0012	.61
%RSD	2326.	425.7	2.951	709.3	2.982
#1	.0018	.0000	.1441	-.0008	19.41
#2	-.0023	.0000	.1382	.0020	20.84
#3	.0007	.0014	.1471	-.0008	20.77
#4	-.0002	.0014	.1495	-.0003	20.70
#5	-.0002	-.0015	.1439	.0006	20.13

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	3.0067
Stddev	.0559
%RSD	1.8600
#1	3.0700
#2	2.9549
#3	3.0107
#4	2.9455
#5	3.0522

Analysis Report

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page 1

Method: ISOU Sample Name: icb
 Comment: 2% hno3
 Run Time: 05/10/99 12:59 Type: Unk

Operator: bjg
 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	.0000	-.0002	-.0006
Stddev	.0020	.0026	.0015	.0008	.0025
%RSD	875.2	3279.	7253.	360.4	395.2
#1	.0020	.0041	-.0011	.0010	-.0016
#2	-.0023	-.0009	.0021	-.0006	-.0042
#3	.0024	.0003	.0005	-.0009	.0001
#4	-.0006	-.0027	.0003	-.0007	.0027
#5	-.0003	-.0012	-.0017	.0001	-.0003

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.9376
Stddev	.0706
%RSD	2.4017

#1	2.9679
#2	3.0252
#3	2.8670
#4	2.8628
#5	2.9650

Method: ISOU Sample Name: s99t000538 Operator: bjg
 Comment: 40501 df
 Run Time: 05/10/99 13:06 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	-.0008	.0014	-.0031	-.0007	.0180
Stddev	.0016	.0015	.0016	.0009	.0011
%RSD	214.8	110.3	49.58	125.2	5.988
#1	-.0023	-.0002	-.0046	-.0004	.0172
#2	.0016	.0028	-.0023	-.0018	.0191
#3	-.0008	-.0003	-.0050	-.0008	.0172
#4	-.0022	.0020	-.0013	-.0009	.0172
#5	-.0001	.0025	-.0025	.0005	.0192

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.9769
Stddev	.0681
%RSD	2.2885

#1	3.0856
#2	2.9921
#3	2.9662
#4	2.9200
#5	2.9207

Method: ISOU Sample Name: s99t000538_d Operator: bjg
 Comment: 40501 df
 Run Time: 05/10/99 13:12 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	.0006	.0004	-.0022	-.0019	.0145
Stddev	.0029	.0011	.0028	.0023	.0027
%RSD	456.6	282.0	128.6	123.7	18.41

#1	.0037	-.0004	-.0047	-.0017	.0121
#2	-.0021	-.0006	-.0045	-.0004	.0184
#3	-.0022	.0005	.0004	-.0054	.0153
#4	.0003	.0004	.0013	.0008	.0120
#5	.0035	.0021	-.0035	-.0028	.0148

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.7904
Stddev	.0639
%RSD	2.2908

#1	2.7586
#2	2.8043
#3	2.8337
#4	2.8581
#5	2.6972

Method: ISOU Sample Name: s99t000538_a Operator: bjg
 Comment: 40501 df
 Run Time: 05/10/99 13:16 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0000	.0002	.1460	.0003	20.49
Stddev	.002	.0010	.0051	.0020	.44
%RSD	4275.	510.7	3.522	778.2	2.145

#1	-.0013	.0014	.1524	-.0017	20.54
#2	.0020	-.0013	.1434	.0015	20.92
#3	-.0018	.0006	.1453	.0028	19.94
#4	.0005	.0004	.1394	.0003	20.16
#5	.0004	-.0001	.1497	-.0017	20.90

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.6520
Stddev	.0382
%RSD	1.4410

#1	2.6246
#2	2.6496
#3	2.6956
#4	2.6843
#5	2.6057

Method: ISOU Sample Name: s99t000547 Operator: bjg
 Comment: 40501 df
 Run Time: 05/10/99 13:25 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	.0002	-.0021	-.0008	.0241
Stddev	.0023	.0009	.0017	.0013	.0063
%RSD	270.7	500.7	79.38	172.1	26.17

#1	.0034	.0015	-.0028	.0002	.0291
#2	-.0027	-.0007	-.0025	-.0020	.0153
#3	.0025	.0006	.0001	.0011	.0271
#4	.0006	-.0003	-.0011	-.0016	.0196
#5	.0005	-.0001	-.0044	-.0014	.0292

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.7569
Stddev	.0570
%RSD	2.0679

#1	2.7208
#2	2.8331
#3	2.6909
#4	2.7943
#5	2.7451

Method: ISOU Sample Name: s99t000547_d Operator: bjg
 Comment: 40501 df
 Run Time: 05/10/99 13:29 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	-.0021	-.0018	-.0025	-.0009	.0249
Stddev	.0015	.0024	.0023	.0027	.0027
%RSD	75.23	133.9	93.45	312.2	10.64
#1	-.0032	-.0016	.0008	-.0021	.0270
#2	-.0035	.0009	-.0029	.0003	.0270
#3	-.0012	-.0005	-.0052	-.0049	.0265
#4	.0002	-.0021	-.0013	.0017	.0229
#5	-.0025	-.0055	-.0038	.0008	.0213

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.5910
Stddev	.1018
%RSD	3.9275

#1	2.5919
#2	2.6803
#3	2.4618
#4	2.5211
#5	2.7000

Analysis Report

05/10/99 13:32:41

page 1

Method: ISOU Sample Name: s99t000549 Operator: bjg
 Comment: 40501 df
 Run Time: 05/10/99 13:31 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	-.0010	-.0012	-.0013	-.0005	.0360
Stddev	.0017	.0016	.0020	.0017	.0041
%RSD	178.5	131.4	157.6	322.4	11.29
#1	-.0001	-.0008	.0012	.0021	.0325
#2	.0013	.0009	.0004	-.0004	.0357
#3	-.0032	-.0037	-.0025	-.0014	.0422
#4	-.0018	-.0015	-.0018	-.0005	.0324
#5	-.0009	-.0011	-.0036	-.0024	.0370

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.6434
Stddev	.1029
%RSD	3.8922

#1	2.7279
#2	2.6219
#3	2.4857
#4	2.6388
#5	2.7427

Method: ISOU Sample Name: s99t000549_d Operator: bjg
 Comment: 40501 df
 Run Time: 05/10/99 13:34 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	.0000	-.0006	-.0011	-.0012	.0336
Stddev	.003	.0024	.0015	.0021	.0041
%RSD	18690.	395.3	144.6	178.7	12.22

#1	-.0027	-.0034	.0004	.0016	.0343
#2	-.0014	-.0006	-.0019	-.0004	.0329
#3	-.0019	-.0007	-.0013	-.0008	.0395
#4	.0044	.0033	-.0031	-.0024	.0336
#5	.0015	-.0017	.0005	-.0040	.0279

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.7550
Stddev	.0728
%RSD	2.6429

#1	2.8348
#2	2.7355
#3	2.6436
#4	2.7997
#5	2.7616

Analysis Report

05/10/99 13:38:30

page 1

Method: ISOU Sample Name: ccv

Operator: bjg

Comment: iso-u lcs

Run Time: 05/10/99 13:37 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	-.0006	.0005	.1476	.0003	20.44
Stddev	.0011	.0018	.0050	.0018	.52
%RSD	191.4	355.0	3.418	653.0	2.553
#1	-.0023	.0020	.1426	.0002	20.82
#2	.0009	.0000	.1451	-.0003	20.38
#3	-.0005	-.0024	.1508	-.0019	20.02
#4	-.0006	.0015	.1449	.0005	19.88
#5	-.0005	.0014	.1548	.0030	21.12

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.7148
Stddev	.0589
%RSD	2.1707

#1	2.7125
#2	2.7815
#3	2.7462
#4	2.7109
#5	2.6230

Method: ISOU Sample Name: ccb

Operator: bjg

Comment: 2% hno3

Run Time: 05/10/99 13:39 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0014	-.0009	-.0009	-.0010	.0005
Stddev	.0016	.0016	.0014	.0034	.0027
%RSD	115.0	184.5	155.5	342.4	583.2

#1	.0004	.0007	-.0003	-.0047	.0001
#2	.0006	-.0022	.0009	-.0025	-.0005
#3	.0029	.0010	-.0005	-.0005	.0050
#4	-.0003	-.0017	-.0020	.0043	-.0005
#5	.0032	-.0023	-.0027	-.0015	-.0018

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	2.8747
Stddev	.1038
%RSD	3.6096

#1	2.7705
#2	2.8386
#3	2.8226
#4	2.9009
#5	3.0405

LABCORE Completed Worklist Report for Worklist# 29198

Analyst: krm

Instrument: CARB2

Book#: _____

Method: LA-342-100 Rev/Mod _____

Worklist Comment: U103 GRAB2, @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	4.10E+0	4.100	ug/mL
1 BLNK		0	@TICTOC1 TOC-02	LIQUID	1	2.30E+0	2.300	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	2.86E+3	95.333	% Recovery
3 SAMPLE	S99T000537	0	@TICTOC1 TIC-02	LIQUID	N/A	3.31E+03	5.000	ug/mL
3 SAMPLE	S99T000537	0	@TICTOC1 TOC-02	LIQUID	N/A	1.10E+04	40.000	ug/mL
4 DUP	S99T000537	0	@TICTOC1 TIC-02	LIQUID	3.31E+3	3.59E+3	8.116	RPD
4 DUP	S99T000537	0	@TICTOC1 TOC-02	LIQUID	1.10E+4	1.15E+4	4.444	RPD
5 SPK	S99T000537	0	@TICTOC1 TIC-02	LIQUID	1.00E+02	1.13E+02	113.000	% Recovery
5 SPK	S99T000537	0	@TICTOC1 TOC-02	LIQUID	1.00E+02	1.26E+02	126.000	% Recovery
6 SAMPLE	S99T000546	0	@TICTOC1 TIC-02	LIQUID	N/A	3.04E+03	5.000	ug/mL
6 SAMPLE	S99T000546	0	@TICTOC1 TOC-02	LIQUID	N/A	1.29E+04	40.000	ug/mL
7 DUP	S99T000546	0	@TICTOC1 TIC-02	LIQUID	3.04E+3	3.09E+3	1.631	RPD
7 DUP	S99T000546	0	@TICTOC1 TOC-02	LIQUID	1.29E+4	1.31E+4	1.538	RPD
8 SAMPLE	S99T000548	0	@TICTOC1 TIC-02	LIQUID	N/A	2.94E+03	5.000	ug/mL
8 SAMPLE	S99T000548	0	@TICTOC1 TOC-02	LIQUID	N/A	1.31E+04	40.000	ug/mL
9 DUP	S99T000548	0	@TICTOC1 TIC-02	LIQUID	2.94E+3	2.77E+3	5.954	RPD
9 DUP	S99T000548	0	@TICTOC1 TOC-02	LIQUID	1.31E+4	1.29E+4	1.538	RPD

Final page for worklist# 29198

Analyst Signature Date

Mary Tracy 4-14-99

Analyst Signature Date

[Signature] 4/14/99

Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 29198

Analyst: KRM Instrument: CARB2 Book# 25N12E
34N12A

Method: LA-342-100 Rev/Mod F-2

Worklist Comment: U103 GRAB2, @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	S99T000537 0	@TICTOC1	LIQUID	99000104	U-103 GRAB2
Analytes Requested: TIC-02 , TOC-02						
4	DUP	S99T000537 0	@TICTOC1	LIQUID		
5	SPK	S99T000537 0	@TICTOC1	LIQUID		
6	SAMPLE	S99T000546 0	@TICTOC1	LIQUID	99000104	U-103 GRAB2
Analytes Requested: TIC-02 , TOC-02						
7	DUP	S99T000546 0	@TICTOC1	LIQUID		
8	SAMPLE	S99T000548 0	@TICTOC1	LIQUID	99000104	U-103 GRAB2
Analytes Requested: TIC-02 , TOC-02						
9	DUP	S99T000548 0	@TICTOC1	LIQUID		

Final page for worklist # 29198

[Signature] 4-13-99
Signature Date

[Signature] 4-14-99
Signature Date

Data Entry Comments:

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

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

Sample: BASE1

Date: 04/13/99

Time: 05:35:37

Sample Size = 1 uL
 Dil Factor = 1
 Blank ID # = BASE1
 Blank Value = N/A

Analyst : KR MONTEITH
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.50	80.00
3	1.50	0.90	44.44
4	2.00	1.40	35.71
5	2.50	1.90	26.32
6	3.00	2.30	17.39
7	3.50	2.70	14.81
8	4.00	3.10	12.90
9	4.50	3.40	8.82
10	5.00	3.60	5.56
11	5.50	4.00	10.00
12	6.00	4.30	6.98
13	6.50	4.70	8.51
14	7.00	5.00	6.00
15	7.50	5.30	5.66
16	8.00	5.70	7.02
17	8.50	6.00	5.00
18	9.00	6.40	6.25
19	9.50	6.70	4.48
20	10.00	7.00	4.29
21	10.50	7.30	4.11
22	11.00	7.70	5.19

BLANK VALUE = 7.7 micrograms carbon

BLANK FACTOR = 7.7 / 10.9978 = +7.0E-01 ug/min Carbon

Sample Run By:



KR MONTEITH

00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 242 TO 269.

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

Sample: BASE1

Date: 04/13/99

Time: 05:48:25

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE1
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.90	73.68
3	1.50	6.30	69.84
4	2.00	10.60	40.57
5	2.50	14.50	26.90
6	3.00	16.10	9.94
7	3.50	17.40	7.47
8	4.00	18.20	4.40
9	4.50	19.00	4.21
10	5.00	19.80	4.04
11	5.50	20.30	2.46
12	6.00	20.90	2.87
13	6.50	21.40	2.34
14	7.00	21.80	1.83
15	7.50	22.20	1.80
16	8.00	22.50	1.33
17	8.50	23.00	2.17
18	9.00	23.30	1.29
19	9.50	23.70	1.69
20	10.00	24.00	1.25
21	10.50	24.40	1.64
22	11.00	24.80	1.61

BLANK VALUE = 24.8 micrograms carbon

BLANK FACTOR = 24.8 / 10.99786 = +2.25E+00 ug/min Carbon

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

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD1 Date: 04/13/99 Time: 06:01:50

Sample Size = 1000 uL
Dil Factor = 1
Blank ID # =
Blank Value = .7 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	4.60	0.00
2	1.01	116.50	96.05
3	1.51	296.30	60.68
4	2.00	435.70	31.99
5	2.50	515.60	15.50
6	3.00	554.90	7.08
7	3.50	575.30	3.55
8	4.00	586.20	1.86
9	4.50	592.30	1.03
10	5.00	596.00	0.62
11	5.50	598.60	0.43
12	6.00	600.20	0.27
13	6.50	601.60	0.23
14	7.00	602.60	0.17
15	7.50	603.20	0.10
16	8.00	604.00	0.13
17	8.50	604.60	0.10
18	9.00	605.10	0.08
19	9.50	605.60	0.08
20	10.00	606.20	0.10
21	10.50	606.70	0.08
22	11.00	607.10	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 7.698504 micrograms carbon

BLANK FACTOR = 7.698504 / 10.99786 = +7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(607.1 - 7.699167) (1) / (1000) = +5.994E-01 g/L Carbon
(607.1 - 7.699167) (1) / (1000) (12) = +4.995E-02 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD1

Date: 04/13/99

Time: 06:21:48

Sample Size = 200 uL

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.25 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.40	0.00
2	1.01	5.80	93.10
3	1.50	125.80	95.39
4	2.00	356.20	64.68
5	2.50	491.00	27.45
6	3.00	537.10	8.58
7	3.50	559.80	4.06
8	4.00	572.10	2.15
9	4.50	578.90	1.17
10	5.00	582.90	0.69
11	5.50	585.80	0.50
12	6.00	587.90	0.36
13	6.50	589.40	0.25
14	7.00	590.60	0.20
15	7.50	591.60	0.17
16	8.00	592.30	0.12
17	8.50	593.10	0.13
18	9.00	594.00	0.15
19	9.50	594.40	0.07
20	10.00	595.10	0.12
21	10.50	595.70	0.10
22	11.00	596.20	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 24.74519 micrograms carbon

BLANK FACTOR = 24.74519 / 10.99786 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(596.2 - 24.74554) (1)/(200) = +2.857E+00 g/L Carbon
 (596.2 - 24.74554) (1)/(200) (12) = +2.381E-01 Molar Carbon

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

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK1

Date: 04/13/99

Time: 06:41:47

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .7 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.50	0.70	0.00
2	1.01	2.90	75.86
3	1.50	4.20	30.95
4	2.00	5.00	16.00
5	2.50	5.50	9.09
6	3.00	5.90	6.78
7	3.50	6.30	6.35
8	4.00	6.80	7.35
9	4.50	7.10	4.23
10	5.00	7.60	6.58
11	5.50	7.90	3.80
12	6.00	8.20	3.66
13	6.50	8.60	4.65
14	7.00	8.90	3.37
15	7.50	9.40	5.32
16	8.00	9.70	3.09
17	8.50	10.10	3.96
18	9.00	10.50	3.81
19	9.50	10.80	2.78
20	10.00	11.10	2.70
21	10.50	11.50	3.48
22	11.00	11.80	2.54

USER INPUT BLANK VALUE

BLANK VALUE = 7.698504 micrograms carbon

BLANK FACTOR = 7.698504 / 10.99786 = +7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(11.8 - 7.697906) (1)/(1) = +4.10E+00 g/L Carbon
(11.8 - 7.697906) (1)/(1) (12) = +3.42E-01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0.

Sample: BLK1 Date: 04/13/99 Time: 06:57:40

Sample Size = 1 uL Analyst : KR MONTEITH
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 2.25 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.60	75.00
3	1.50	7.00	77.14
4	2.00	11.70	40.17
5	2.50	15.60	25.00
6	3.00	18.20	14.29
7	3.50	19.80	8.08
8	4.00	20.70	4.35
9	4.50	21.50	3.72
10	5.04	22.30	3.59
11	5.54	22.70	1.76
12	6.04	23.20	2.16
13	6.54	23.70	2.11
14	7.04	24.10	1.66
15	7.53	24.60	2.03
16	8.03	24.90	1.20
17	8.53	25.30	1.58
18	9.03	25.80	1.94
19	9.53	26.00	0.77
20	10.03	26.40	1.52
21	10.53	26.70	1.12
22	11.03	27.10	1.48

USER INPUT BLANK VALUE

BLANK VALUE = 24.74519 micrograms carbon

BLANK FACTOR = 24.74519 / 10.99786 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(27.1 - 24.82347) (1)/(1) = +2.28E+00 g/L Carbon
(27.1 - 24.82347) (1)/(1)(12) = +1.90E-01 Molar Carbon

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

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T537

Date: 04/13/99

Time: 07:11:37

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .7 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	=== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	2.10	61.90
3	1.50	46.00	95.43
4	2.00	148.10	68.94
5	2.50	235.70	37.17
6	3.00	281.10	16.15
7	3.50	302.00	6.92
8	4.00	314.70	4.04
9	4.50	321.60	2.15
10	5.00	325.80	1.29
11	5.50	329.00	0.97
12	6.00	330.90	0.57
13	6.50	332.30	0.42
14	7.00	333.50	0.36
15	7.50	334.60	0.33
16	8.00	335.50	0.27
17	8.50	336.10	0.18
18	9.00	336.80	0.21
19	9.50	337.40	0.18
20	10.00	338.00	0.18
21	10.50	338.70	0.21
22	11.00	339.20	0.15

USER INPUT BLANK VALUE

BLANK VALUE = 7.698504 micrograms carbon

BLANK FACTOR = 7.698504 / 10.99786 = +7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(339.2 - 7.69859) (1)/(1) = +3.315E+02 g/L Carbon
(339.2 - 7.69859) (1)/(1) (12) = +2.763E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T537

Date: 04/13/99

Time: 07:25:13

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.25 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.70	0.00
2	1.01	19.20	96.35
3	1.50	156.50	87.73
4	2.00	500.20	68.71
5	2.50	825.90	39.44
6	3.00	948.50	12.93
7	3.50	1006.90	5.80
8	4.00	1045.70	3.71
9	4.50	1069.30	2.21
10	5.00	1084.70	1.42
11	5.50	1095.00	0.94
12	6.00	1101.90	0.63
13	6.50	1106.70	0.43
14	7.00	1110.70	0.36
15	7.50	1113.50	0.25
16	8.00	1115.70	0.20
17	8.50	1117.30	0.14
18	9.00	1119.10	0.16
19	9.50	1120.20	0.10
20	10.00	1121.30	0.10
21	10.50	1122.20	0.08
22	11.00	1123.30	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 24.74519 micrograms carbon

BLANK FACTOR = 24.74519 / 10.99786 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(1123.3 - 24.74547) (1)/(1) = +1.0986E+03 g/L Carbon
(1123.3 - 24.74547) (1)/(1) (12) = +9.1546E+01 Molar Carbon

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

Sample Run By:

KR MONTEITH

00000

248.1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T537 DUP Date: 04/13/99 Time: 09:33:01

Sample Size = 1 uL Analyst : KR MONTEITH
 Dil Factor = 1 Min Readings = 22
 Blank ID # = Max Readings = 22
 Blank Value = .7 ug/minute C % Difference = 10

== Reading	=== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.40	75.00
3	1.50	21.80	98.17
4	2.00	127.10	82.85
5	2.50	232.80	45.40
6	3.00	293.80	20.76
7	3.50	324.00	9.32
8	4.00	340.30	4.79
9	4.50	349.00	2.49
10	5.00	354.60	1.58
11	5.50	357.70	0.87
12	6.00	359.90	0.61
13	6.50	361.40	0.42
14	7.00	362.50	0.30
15	7.50	363.40	0.25
16	8.00	364.30	0.25
17	8.50	364.70	0.11
18	9.00	365.20	0.14
19	9.50	365.70	0.14
20	10.00	366.20	0.14
21	10.50	366.60	0.11
22	11.00	367.00	0.11

USER INPUT BLANK VALUE

BLANK VALUE = 7.698504 micrograms carbon

BLANK FACTOR = 7.698504 / 10.99786 = +7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(367 - 7.69859) (1)/(1) = +3.593E+02 g/L Carbon
 (367 - 7.69859) (1)/(1) (12) = +2.994E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T537 DUP Date: 04/13/99 Time: 09:47:10

Sample Size = 1 uL Analyst : KR MONTEITH
 Dil Factor = 1 Min Readings = 22
 Blank ID # = Max Readings = 22
 Blank Value = 2.25 ug/minute C % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	2.90	0.00
2	1.01	112.10	97.41
3	1.51	484.70	76.87
4	2.00	847.60	42.82
5	2.50	984.20	13.88
6	3.00	1055.00	6.71
7	3.50	1098.00	3.92
8	4.00	1125.80	2.47
9	4.50	1141.70	1.39
10	5.00	1151.90	0.89
11	5.50	1158.40	0.56
12	6.00	1162.90	0.39
13	6.50	1166.10	0.27
14	7.00	1168.50	0.21
15	7.50	1170.20	0.15
16	8.00	1171.80	0.14
17	8.50	1172.90	0.09
18	9.00	1173.90	0.09
19	9.50	1174.70	0.07
20	10.00	1175.50	0.07
21	10.50	1176.20	0.06
22	11.00	1176.70	0.04

USER INPUT BLANK VALUE

BLANK VALUE = 24.74519 micrograms carbon

BLANK FACTOR = 24.74519 / 10.99786 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(1176.7 - 24.74547) (1)/(1) = +1.1520E+03 g/L Carbon
 (1176.7 - 24.74547) (1)/(1) (12) = +9.5996E+01 Molar Carbon

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

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T537 SPK

Date: 04/13/99

Time: 10:01:26

Sample Size = 1 uL

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .7 ug/minute C

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.20	50.00
3	1.51	42.00	97.14
4	2.00	228.70	81.64
5	2.50	423.60	46.01
6	3.00	535.30	20.87
7	3.50	594.30	9.93
8	4.00	627.60	5.31
9	4.50	647.00	3.00
10	5.00	657.50	1.60
11	5.50	663.50	0.90
12	6.00	667.50	0.60
13	6.50	669.90	0.36
14	7.00	671.50	0.24
15	7.50	672.90	0.21
16	8.00	674.00	0.16
17	8.50	674.80	0.12
18	9.00	675.70	0.13
19	9.50	676.30	0.09
20	10.00	676.90	0.09
21	10.50	677.60	0.10
22	11.00	678.10	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 7.698504 micrograms carbon

BLANK FACTOR = 7.698504 / 10.99786 = +7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(678.1 - 7.699145) (1)/(1) = +6.704E+02 g/L Carbon
 (678.1 - 7.699145) (1)/(1) (12) = +5.587E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T546

Date: 04/13/99

Time: 10:27:12

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .7 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time =====	Coulometer =====	% Difference ==
1	0.51	0.80	0.00
2	1.01	1.50	46.67
3	1.51	8.00	81.25
4	2.00	65.20	87.73
5	2.50	157.90	58.71
6	3.00	224.30	29.60
7	3.50	259.90	13.70
8	4.00	279.60	7.05
9	4.50	290.50	3.75
10	5.00	296.70	2.09
11	5.50	300.20	1.17
12	6.00	302.60	0.79
13	6.50	304.40	0.59
14	7.00	305.80	0.46
15	7.50	306.70	0.29
16	8.00	307.50	0.26
17	8.50	308.30	0.26
18	9.00	309.00	0.23
19	9.50	309.80	0.26
20	10.00	310.20	0.13
21	10.50	310.90	0.23
22	11.00	311.40	0.16

USER INPUT BLANK VALUE

BLANK VALUE = 7.698504 micrograms carbon

BLANK FACTOR = 7.698504 / 10.99786 = +7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(311.4 - 7.69859) (1)/(1) =

+3.037E+02 g/L Carbon

(311.4 - 7.69859) (1)/(1) (12) =

+2.531E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T546

Date: 04/13/99

Time: 10:39:39

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.25 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	4.90	85.71
3	1.51	105.00	95.33
4	2.00	470.30	77.67
5	2.50	909.30	48.28
6	3.00	1083.50	16.08
7	3.50	1166.20	7.09
8	4.00	1217.10	4.18
9	4.50	1250.60	2.68
10	5.00	1270.50	1.57
11	5.50	1282.60	0.94
12	6.00	1290.50	0.61
13	6.50	1295.60	0.39
14	7.00	1299.30	0.28
15	7.50	1302.20	0.22
16	8.00	1304.20	0.15
17	8.50	1305.90	0.13
18	9.03	1307.40	0.11
19	9.53	1308.60	0.09
20	10.03	1309.60	0.08
21	10.53	1310.60	0.08
22	11.03	1311.30	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 24.74519 micrograms carbon

BLANK FACTOR = 24.74519 / 10.99786 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(1311.3 - 24.82127) (1)/(1) = +1.2865E+03 g/L Carbon
 (1311.3 - 24.82127) (1)/(1) (12) = +1.0721E+02 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T546 DUP Date: 04/13/99 Time: 10:52:33

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .7 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.60	0.00
2	1.01	1.40	57.14
3	1.51	18.50	92.43
4	2.00	97.90	81.10
5	2.50	184.70	47.00
6	3.00	238.60	22.59
7	3.50	270.00	11.63
8	4.00	287.30	6.02
9	4.50	296.90	3.23
10	5.00	302.40	1.82
11	5.50	305.80	1.11
12	6.00	308.00	0.71
13	6.50	309.70	0.55
14	7.00	311.00	0.42
15	7.50	312.10	0.35
16	8.00	313.00	0.29
17	8.50	313.80	0.25
18	9.00	314.60	0.25
19	9.50	315.20	0.19
20	10.00	316.00	0.25
21	10.50	316.40	0.13
22	11.00	317.00	0.19

USER INPUT BLANK VALUE

BLANK VALUE = 7.698504 micrograms carbon

BLANK FACTOR = 7.698504 / 10.99786 = +7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(317 - 7.69859) (1)/(1) =
(317 - 7.69859) (1)/(1) (12) =

+3.093E+02 g/L Carbon
+2.578E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T548

Date: 04/13/99

Time: 11:17:13

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .7 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	2.00	60.00
3	1.51	18.70	89.30
4	2.00	81.20	76.97
5	2.50	161.60	49.75
6	3.00	219.00	26.21
7	3.50	252.20	13.16
8	4.00	270.10	6.63
9	4.50	280.10	3.57
10	5.00	285.80	1.99
11	5.50	289.20	1.18
12	6.00	291.70	0.86
13	6.50	293.30	0.55
14	7.00	294.70	0.48
15	7.50	295.90	0.41
16	8.00	296.80	0.30
17	8.50	297.70	0.30
18	9.00	298.50	0.27
19	9.50	299.30	0.27
20	10.00	300.00	0.23
21	10.50	300.60	0.20
22	11.00	301.30	0.23

USER INPUT BLANK VALUE

BLANK VALUE = 7.698504 micrograms carbon

BLANK FACTOR = 7.698504 / 10.99786 = +7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(301.3 - 7.698504) (1)/(1) = +2.936E+02 g/L Carbon
(301.3 - 7.698504) (1)/(1) (12) = +2.447E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T548

Date: 04/13/99

Time: 11:29:02

Sample Size = 1 uL

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.25 ug/minute C

% Difference = 10

== Reading ==	=== Analysis Time ===	==== Coulometer ====	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	2.90	68.97
3	1.51	78.30	96.30
4	2.00	389.60	79.90
5	2.50	859.90	54.69
6	3.00	1068.20	19.50
7	3.50	1161.10	8.00
8	4.00	1220.20	4.84
9	4.50	1258.10	3.01
10	5.00	1283.50	1.98
11	5.50	1298.70	1.17
12	6.00	1307.70	0.69
13	6.50	1313.40	0.43
14	7.00	1318.00	0.35
15	7.50	1321.00	0.23
16	8.00	1323.50	0.19
17	8.50	1325.20	0.13
18	9.00	1327.00	0.14
19	9.50	1328.20	0.09
20	10.00	1329.30	0.08
21	10.50	1330.20	0.07
22	11.00	1331.10	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 24.74519 micrograms carbon

BLANK FACTOR = 24.74519 / 10.99786 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(1331.1 - 24.74739) (1)/(1) = +1.3064E+03 g/L Carbon
 (1331.1 - 24.74739) (1)/(1) (12) = +1.0886E+02 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T548 DUP

Date: 04/13/99

Time: 11:41:02

Sample Size = 1 uL

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .7 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.90	0.00
2	1.00	1.80	50.00
3	1.50	10.10	82.18
4	2.00	60.10	83.19
5	2.50	135.40	55.61
6	3.00	197.50	31.44
7	3.50	232.80	15.16
8	4.00	252.10	7.66
9	4.50	262.90	4.11
10	5.00	268.90	2.23
11	5.50	272.80	1.43
12	6.00	275.30	0.91
13	6.50	277.10	0.65
14	7.00	278.50	0.50
15	7.50	279.70	0.43
16	8.00	280.70	0.36
17	8.50	281.60	0.32
18	9.00	282.50	0.32
19	9.50	283.30	0.28
20	10.00	283.80	0.18
21	10.50	284.60	0.28
22	11.00	285.20	0.21

USER INPUT BLANK VALUE

BLANK VALUE = 7.698504 micrograms carbon

BLANK FACTOR = 7.698504 / 10.99786 = +7.0E-01 ug/min Carbon

SAMPLE RESULTS:

(285.2 - 7.697906) (1)/(1) = +2.775E+02 g/L Carbon
 (285.2 - 7.697906) (1)/(1) (12) = +2.313E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T548 DUP Date: 04/13/99 Time: 11:52:55

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.25 ug/minute C

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	3.30	72.73
3	1.51	84.30	96.09
4	2.01	421.60	80.00
5	2.51	878.50	52.01
6	3.00	1065.40	17.54
7	3.50	1152.90	7.59
8	4.00	1209.00	4.64
9	4.50	1246.40	3.00
10	5.00	1269.90	1.85
11	5.50	1283.40	1.05
12	6.00	1291.90	0.66
13	6.50	1297.50	0.43
14	7.00	1301.70	0.32
15	7.50	1304.60	0.22
16	8.00	1307.00	0.18
17	8.50	1309.00	0.15
18	9.00	1310.50	0.11
19	9.50	1312.00	0.11
20	10.00	1313.20	0.09
21	10.50	1314.20	0.08
22	11.00	1315.10	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 24.74519 micrograms carbon

BLANK FACTOR = 24.74519 / 10.99786 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(1315.1 - 24.74725) (1) / (1) =

+1.2904E+03 g/L Carbon

(1315.1 - 24.74725) (1) / (1) (12) =

+1.0753E+02 Molar Carbon

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

Sample Run By:

KR MONTEITH

00000

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)	11.8	27.1
29198	µg of Carbon from Baseline (C2)	7.7	24.8
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
99001506			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
BLNK			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
04/14/99			
Analysis Date			
04/13/99			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
04:02 PM		5	40
Sample Point	µg of Carbon	4.10E+00	2.30E+00
U103 GRAB2			

Data Entered By:	MF	Date:	04/14/99
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)	607.1	596.2
29198	µg of Carbon from Baseline (C2)	7.7	24.8
Test Code	Standard Book Number	25N12E	34N12A
@TIC/TOC1	Standard Value (µg/ml)	602	3000
Matrix			
LIQUID			
Batch Number			
99001506			
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			
KRM			
Date Complete			
04/14/99			
Analysis Date			
04/13/99			
Analysis Time	Method Detection Limit in µg/mL	5	40
04:02 PM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.99E+02	2.86E+03
U103 GRAB2	Percent Standard Recovery	99.6	95.2

Data Entered By:	MF	Date:	04/14/99
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)	339.2	1123.3
29198	µg of Carbon from Baseline (C2)	7.7	24.8
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
99001506			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S99T000537			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
04/14/99			
Analysis Date			
04/13/99			
Analysis Time	Method Detection Limit in µg/mL	5	40
04:02 PM			
Sample Point	µg of Carbon/mL	3.31E+03	1.10E+04
U103 GRAB2			

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:	04/14/99
Signature of Chemist:	<i>NA</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)	367	1176.7
29198	µg of Carbon from Baseline (C2)	7.7	24.8
Test Code	Known µg of C from Original Sample	3.31E+3	1.10E+4
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
99001506			
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 #			
S99T000537			
Instrument Code			
CARB2			
Prepared By			
MF			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
04/14/99			
Analysis Date			
04/13/99			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
04:02 PM		5	40
Sample Point	µg of Carbon/mL	3.59E+03	1.15E+04
U103 GRAB2			

Data Entered By:	MF	Date:	04/14/99
Signature of Chemist:	<i>NA</i>	Date:	

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)	339.2	1123.3
29198	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)	678.1	1500.2
LIQUID	Spike Book Number	25N12E	34N12A
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	3000
99001506	µg C in baseline (BL)	7.7	24.8

Rerun
0

Sample Prep
N/A

Sample # S99T000537
 Percent Spike Recovery = ((C2-BL) - (C1-BL) * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100

Instrument Code CARB2
 QC Actual in µg/mL = Spike Value (µg/mL)
 QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100

Prepared By
MF


Chemist
MJL

Analyst
KRM

Date Complete
04/14/99

Analysis Date
04/13/99

Analysis Time		TIC	TOC
04:02 PM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	6.78E+02	3.77E+03
U103 GRAB2	Percent Spike Recovery	112.6	125.6

Data Entered By:	MF	Date:	04/14/99
Signature of Chemist:		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)	311.4	1311.3
29198	µg of Carbon from Baseline	(C2)	7.7	24.8
Test Code				
@TICTOC1				

Matrix	LIQUID
Batch Number	99001506
Rerun	0
Sample Prep	N/A
Sample #	S99T000546
Instrument Code	CARB2
Prepared By	MF
Chemist	MJL
Analyst	KRM
Date Complete	04/14/99
Analysis Date	04/13/99
Analysis Time	04:02 PM
Sample Point	U103 GRAB2

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	3.04E+03	1.29E+04

Data Entered By:	MF	Date:	04/14/99
Signature of Chemist:	<i>MF</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)	317	1336.6
29198	µg of Carbon from Baseline (C2)	7.7	24.8
Test Code	Known µg of C from Original Sample	3.04E+3	1.29E+4
@TICTOC1			

Matrix	LIQUID
Batch Number	99001506
Rerun	0
Sample Prep	N/A
Sample #	S99T000546
Instrument Code	CARB2
Prepared By	MF
Chemist	MJL
Analyst	KRM
Date Complete	04/14/99
Analysis Date	04/13/99
Analysis Time	04:02 PM
Sample Point	U103 GRAB2

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	3.09E+03	1.31E+04

Data Entered By:	MF	Date:	04/14/99
Signature of Chemist:	<i>NA</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)	301.3	1331.1
29198	µg of Carbon from Baseline	(C2)	7.7	24.8
Test Code				
@TICTOC1				

Matrix	
LIQUID	
Batch Number	
99001506	
Rerun	
0	
Sample Prep	
N/A	
Sample #	
S99T000548	
Instrument Code	
CARB2	
Prepared By	
MF	
Chemist	
MJL	
Analyst	
KRM	
Date Complete	
04/14/99	
Analysis Date	
04/13/99	
Analysis Time	
04:02 PM	
Sample Point	
U103 GRAB2	

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	2.94E+03	1.31E+04

Data Entered By:	MF	Date:	04/14/99
Signature of Chemist:	<i>MA</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)	285.2	1315.1
29198	µg of Carbon from Baseline (C2)	7.7	24.8
Test Code	Known µg of C from Original Sample	2.94E+3	1.31E+4
@TICTOC1			

Matrix	LIQUID
Batch Number	99001506
Rerun	0
Sample Prep	N/A
Sample #	S99T000548
Instrument Code	CARB2
Prepared By	MF
Chemist	MJL
Analyst	KRM
Date Complete	04/14/99
Analysis Date	04/13/99
Analysis Time	04:02 PM
Sample Point	U103 GRAB2

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	2.77E+03	1.29E+04

Data Entered By:	MF	Date:	04/14/99
Signature of Chemist:	<i>MF</i>	Date:	

LABCORE Completed Worklist Report for Worklist# 29199

Analyst: pjm

Instrument: CARB2

Book#: _____

Method: LA-342-100 Rev/Mod

Worklist Comment: U103 GRAB2, @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	SOLID	1	3.00E-1	0.300	ug/g
1	BLNK		0		@TICTOC1 TOC-02	SOLID	1	6.00E-1	0.600	ug/g
2	STD		0		@TICTOC1 TIC-02	SOLID	6.02E+02	6.05E+2	100.498	% Recovery
2	STD		0		@TICTOC1 TOC-02	SOLID	3.00E+03	2.83E+3	94.333	% Recovery
3	SAMPLE	S99T000539	0		@TICTOC1 TIC-02	SOLID	N/A	1.87E+03	5.000	ug/g
3	SAMPLE	S99T000539	0		@TICTOC1 TOC-02	SOLID	N/A	5.87E+03	40.000	ug/g
4	DUP	S99T000539	0		@TICTOC1 TIC-02	SOLID	1.87E+3	1.68E+3	10.704	RPD
4	DUP	S99T000539	0		@TICTOC1 TOC-02	SOLID	5.87E+3	5.38E+3	8.711	RPD
5	SPK	S99T000539	0		@TICTOC1 TIC-02	SOLID	1.00E+02	9.52E+01	95.200	% Recovery
5	SPK	S99T000539	0		@TICTOC1 TOC-02	SOLID	1.00E+02	7.32E+01	73.200	% Recovery
6	SAMPLE	S99T000540	0		@TICTOC1 TIC-02	SOLID	N/A	2.13E+03	5.000	ug/g
6	SAMPLE	S99T000540	0		@TICTOC1 TOC-02	SOLID	N/A	9.86E+03	40.000	ug/g
7	DUP	S99T000540	0		@TICTOC1 TIC-02	SOLID	2.13E+3	2.02E+3	5.301	RPD
7	DUP	S99T000540	0		@TICTOC1 TOC-02	SOLID	9.86E+3	9.25E+3	6.384	RPD
8	SAMPLE	S99T000541	0		@TICTOC1 TIC-02	SOLID	N/A	1.67E+03	5.000	ug/g
8	SAMPLE	S99T000541	0		@TICTOC1 TOC-02	SOLID	N/A	8.89E+03	40.000	ug/g
9	DUP	S99T000541	0		@TICTOC1 TIC-02	SOLID	1.67E+3	1.80E+3	7.493	RPD
9	DUP	S99T000541	0		@TICTOC1 TOC-02	SOLID	8.89E+3	9.44E+3	6.001	RPD

Final page for worklist# 29199

Analyst Signature _____ Date _____

[Signature] 4-19-99
Analyst Signature Date

[Signature] 4/21/99
Reviewer Signature Date

Sample S99T000539 will be re-run due to spk failure. mgl.

04/07/99 11:09
ws2

LABCORE Data Entry Template for Worklist# 29199

Analyst: BM Instrument: CARB2 _____ Book# TIC 25N12E

Method: LA-342-100 Rev/Mod F-2 TOC 34N12A

Worklist Comment: U103 GRAB2, @TICTOC1, STD: TIC=1.0mL, TOC=0.200mL skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	SOLID		
2	STD				@TICTOC1	SOLID		
3	SAMPLE	S99T000539 0			@TICTOC1	SOLID	99000104	U-103 GRAB2
Analytes Requested: TIC-02 , TOC-02								
4	DUP	S99T000539 0			@TICTOC1	SOLID		
5	SPK	S99T000539 0			@TICTOC1	SOLID		
6	SAMPLE	S99T000540 0			@TICTOC1	SOLID	99000104	U-103 GRAB2
Analytes Requested: TIC-02 , TOC-02								
7	DUP	S99T000540 0			@TICTOC1	SOLID		
8	SAMPLE	S99T000541 0			@TICTOC1	SOLID	99000104	U-103 GRAB2
Analytes Requested: TIC-02 , TOC-02								
9	DUP	S99T000541 0			@TICTOC1	SOLID		

Final page for worklist # 29199

BM 4/17/99
Signature Date

Signature Date

Data Entry Comments:

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

HNF-1668 REV. 0

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

Sample: BASE-2

Date: 04/17/99

Time: 09:37:20

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	1.10	36.36
5	2.00	1.50	26.67
6	2.50	2.00	25.00
7	3.00	2.30	13.04
8	3.50	2.90	20.69
9	4.00	3.20	9.37
10	4.50	3.60	11.11
11	5.00	3.90	7.69
12	5.50	4.40	11.36
13	6.00	4.70	6.38
14	6.50	5.10	7.84
15	7.00	5.60	8.93
16	7.50	6.00	6.67
17	8.00	6.40	6.25
18	8.50	6.80	5.88
19	9.00	7.40	8.11
20	9.50	7.60	2.63
21	10.00	7.90	3.80
22	10.50	8.40	5.95

BLANK VALUE = 8.4 micrograms carbon
BLANK FACTOR = 8.4 / 10.49902 =

+8.0E-01 ug/min Carbon

Sample Run By:

PJ McCown 4/17/99
PJ MCCOWN 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 272 TO 294

HNF-1668 REV. 0

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

Sample: BASE-2

Date: 04/17/99

Time: 10:01:45

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	0.50	100.00
3	1.00	0.90	44.44
4	1.50	3.10	70.97
5	2.00	8.70	64.37
6	2.50	14.20	38.73
7	3.00	18.20	21.98
8	3.50	20.70	12.08
9	4.00	21.50	3.72
10	4.50	22.90	6.11
11	5.00	23.80	3.78
12	5.50	24.60	3.25
13	6.00	25.00	1.60
14	6.50	25.60	2.34
15	7.00	26.20	2.29
16	7.50	26.70	1.87
17	8.00	27.20	1.84
18	8.50	27.80	2.16
19	9.00	28.20	1.42
20	9.50	28.70	1.74
21	10.00	29.10	1.37
22	10.50	29.70	2.02

BLANK VALUE = 29.7 micrograms carbon
BLANK FACTOR = 29.7 / 10.49805 = +2.83E+00 ug/min Carbon

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

Sample Run By: PJ McCown 4/17/99
PJ MCCOWN 00000

HNF-1668 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD-2

Date: 04/17/99

Time: 10:18:13

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = .8 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	0.30	100.00
3	1.00	9.10	96.70
4	1.50	102.80	91.15
5	2.00	274.10	62.50
6	2.50	426.30	35.70
7	3.00	524.40	18.71
8	3.50	573.90	8.63
9	4.00	595.20	3.58
10	4.50	602.70	1.24
11	5.00	606.00	0.54
12	5.50	607.10	0.18
13	6.00	608.10	0.16
14	6.50	609.00	0.15
15	7.00	609.60	0.10
16	7.50	610.40	0.13
17	8.00	611.00	0.10
18	8.50	611.50	0.08
19	9.00	612.10	0.10
20	9.50	612.60	0.08
21	10.00	613.10	0.08
22	10.50	613.60	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 8.398438 micrograms carbon

BLANK FACTOR = 8.398438 / 10.49805 = +8.0E-01 ug/min Carbon

SAMPLE RESULTS:

(613.6 - 8.397754) (1) / (1000) = +6.052E-01 g/L Carbon
 (613.6 - 8.397754) (1) / (1000) (12) = +5.043E-02 Molar Carbon

Sample Run By: PJ McCown 4/17/99
PJ MCCOWN 00000

1.0ML 25N12E

HNF-1668 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD-2

Date: 04/17/99

Time: 10:31:06

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.83 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	0.90	55.56
4	1.50	3.50	74.29
5	2.00	17.30	79.77
6	2.50	87.30	80.18
7	3.00	256.30	65.94
8	3.50	443.90	42.26
9	4.00	533.30	16.76
10	4.50	566.80	5.91
11	5.00	581.30	2.49
12	5.50	586.40	0.87
13	6.00	588.90	0.42
14	6.50	590.50	0.27
15	7.00	591.60	0.19
16	7.50	592.50	0.15
17	8.00	593.50	0.17
18	8.50	594.00	0.08
19	9.00	594.80	0.13
20	9.50	595.30	0.08
21	10.00	595.90	0.10
22	10.50	596.60	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 29.70947 micrograms carbon

BLANK FACTOR = 29.70947 / 10.49805 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:

(596.6 - 29.7093) (1) / (200) = +2.834E+00 g/L Carbon
 (596.6 - 29.7093) (1) / (200) (12) = +2.362E-01 Molar Carbon

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

Sample Run By:

PJ McCown 4/17/99
 PJ MCCOWN 00000

-200mL 34N12A

HNF-1668 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLNK-2

Date: 04/17/99

Time: 10:54:56

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .8 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	0.70	42.86
4	1.50	1.10	36.36
5	2.00	1.50	26.67
6	2.50	1.90	21.05
7	3.00	2.30	17.39
8	3.50	2.70	14.81
9	4.00	3.20	15.63
10	4.50	3.50	8.57
11	5.00	3.90	10.26
12	5.50	4.30	9.30
13	6.00	4.70	8.51
14	6.50	5.00	6.00
15	7.00	5.40	7.41
16	7.50	5.80	6.90
17	8.00	6.20	6.45
18	8.50	6.50	4.62
19	9.00	6.90	5.80
20	9.50	7.30	5.48
21	10.00	7.70	5.19
22	10.50	8.10	4.94

USER INPUT BLANK VALUE

BLANK VALUE = 8.398438 micrograms carbon

BLANK FACTOR = 8.398438 / 10.49805 = +8.0E-01 ug/min Carbon

SAMPLE RESULTS:

(8.1 - 8.399219) (1)/(1) = < 5.00 E-3 g/L Carbon
 (8.1 - 8.399219) (1)/(1) (12) = < 4.17 E-4 Molar Carbon

Sample Run By:

PJ
 PJ MCCOWN

00000

HNF-1668 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLNK-2

Date: 04/17/99

Time: 11:08:11

Sample Size = 1 uL

Analyst : PJ MCCOWN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.83 ug/minute C

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference	==
1	0.08	0.00	0.00	
2	0.51	0.60	100.00	
3	1.01	0.80	25.00	
4	1.50	2.70	70.37	
5	2.00	7.60	64.47	
6	2.50	12.50	39.20	
7	3.00	16.70	25.15	
8	3.50	19.60	14.80	
9	4.00	21.80	10.09	
10	4.50	23.10	5.63	
11	5.00	24.30	4.94	
12	5.50	25.20	3.57	
13	6.00	25.80	2.33	
14	6.50	26.50	2.64	
15	7.00	27.00	1.85	
16	7.50	27.50	1.82	
17	8.00	28.00	1.79	
18	8.50	28.60	2.10	
19	9.00	29.10	1.72	
20	9.50	29.50	1.36	
21	10.00	29.90	1.34	
22	10.50	30.30	1.32	

USER INPUT BLANK VALUE

BLANK VALUE = 29.70947 micrograms carbon

BLANK FACTOR = 29.70947 / 10.49805 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:

(30.3 - 29.71206) (1)/(1) = +5.88E-01 g/L Carbon
 (30.3 - 29.71206) (1)/(1) (12) = +4.90E-02 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

PJ MCCOWN

00000

HNF-1668 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000540

Date: 04/17/99

Time: 14:00:34

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .8 ug/minute C

Analyst : PJ MCCOWN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.00	60.00
3	1.51	5.10	80.39
4	2.00	44.30	88.49
5	2.50	122.30	63.78
6	3.00	191.00	35.97
7	3.50	230.10	16.99
8	4.00	249.50	7.78
9	4.50	258.30	3.41
10	5.00	262.70	1.67
11	5.50	265.00	0.87
12	6.00	266.30	0.49
13	6.50	267.90	0.60
14	7.00	269.00	0.41
15	7.50	270.10	0.41
16	8.00	270.90	0.30
17	8.50	272.10	0.44
18	9.00	272.90	0.29
19	9.50	273.70	0.29
20	10.00	274.50	0.29
21	10.50	275.30	0.29
22	11.00	276.20	0.33

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+8.0E-01 ug/min Carbon

SAMPLE RESULTS:

(276.2 - 8.799072) (1) / (1) =

+2.674E+02 g/L Carbon

(276.2 - 8.799072) (1) / (1) (12) =

+2.228E+01 Molar Carbon

Sample Run By:

PJM
PJ MCCOWN

00000

1257g

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000540

Date: 04/17/99

Time: 14:14:59

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.83 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

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

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.70	0.00
2	1.01	1.40	50.00
3	1.51	9.00	84.44
4	2.00	78.60	88.55
5	2.50	310.00	74.65
6	3.00	719.10	56.89
7	3.50	988.00	27.22
8	4.00	1108.30	10.85
9	4.50	1170.00	5.27
10	5.00	1209.10	3.23
11	5.50	1231.80	1.84
12	6.00	1244.50	1.02
13	6.50	1251.70	0.58
14	7.00	1256.00	0.34
15	7.50	1259.30	0.26
16	8.00	1261.20	0.15
17	8.50	1263.20	0.16
18	9.00	1264.80	0.13
19	9.50	1266.20	0.11
20	10.00	1267.30	0.09
21	10.50	1268.20	0.07
22	11.00	1269.30	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+2.8E+00 ug/min Carbon

SAMPLE RESULTS:

(1269.3 - 31.12154) (1)/(1) =

+1.2382E+03 g/L Carbon

(1269.3 - 31.12154) (1)/(1) (12) =

+1.0318E+02 Molar Carbon

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

Sample Run By:

PJM
PJ MCCOWN

00000

0.1257g

HNF-1668 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 540 DUP

Date: 04/17/99

Time: 14:27:35

Sample Size = 1 uL

Analyst : PJ MCCOWN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .8 ug/minute C

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	1.40	42.86
3	1.50	4.50	68.89
4	2.00	30.30	85.15
5	2.50	102.30	70.38
6	3.00	179.80	43.10
7	3.50	225.90	20.41
8	4.00	250.90	9.96
9	4.50	261.50	4.05
10	5.00	266.90	2.02
11	5.50	269.30	0.89
12	6.00	271.00	0.63
13	6.50	272.70	0.62
14	7.00	273.60	0.33
15	7.50	274.70	0.40
16	8.00	275.80	0.40
17	8.50	276.70	0.33
18	9.00	277.60	0.32
19	9.50	278.50	0.32
20	10.00	279.60	0.39
21	10.50	280.10	0.18
22	11.00	280.90	0.28

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+8.0E-01 ug/min Carbon

SAMPLE RESULTS:

(280.9 - 8.798388) (1) / (1) =

+2.721E+02 g/L Carbon

(280.9 - 8.798388) (1) / (1) (12) =

+2.268E+01 Molar Carbon

Sample Run By:

PJ
PJ MCCOWN

00000

.1348g

280

HNF-1668 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 540 DUP

Date: 04/17/99

Time: 14:44:41

Sample Size = 1 uL

Analyst : PJ MCCOWN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.83 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.80	0.00
2	1.01	1.60	50.00
3	1.50	9.60	83.33
4	2.00	79.80	87.97
5	2.50	309.20	74.19
6	3.00	714.30	56.71
7	3.50	984.90	27.47
8	4.00	1109.40	11.22
9	4.50	1173.00	5.42
10	5.00	1212.50	3.26
11	5.50	1237.00	1.98
12	6.00	1250.80	1.10
13	6.50	1257.70	0.55
14	7.00	1262.40	0.37
15	7.50	1265.90	0.28
16	8.00	1268.60	0.21
17	8.50	1270.40	0.14
18	9.00	1272.20	0.14
19	9.50	1273.70	0.12
20	10.00	1274.90	0.09
21	10.50	1275.90	0.08
22	11.00	1276.80	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+2.8E+00 ug/min Carbon

SAMPLE RESULTS:

(1276.8 - 31.12672) (1) / (1) =

+1.2457E+03 g/L Carbon

(1276.8 - 31.12672) (1) / (1) (12) =

+1.0381E+02 Molar Carbon

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

Sample Run By: *PJM*

PJ MCCOWN

00000

1348g

HNF-1668 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000541

Date: 04/17/99

Time: 14:57:13

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .8 ug/minute C

Analyst : PJ MCCOWN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time =====	Coulometer =====	% Difference ==
1	0.51	0.80	0.00
2	1.04	1.40	42.86
3	1.54	5.30	73.58
4	2.04	38.30	86.16
5	2.54	103.90	63.14
6	3.04	161.60	35.71
7	3.54	196.30	17.68
8	4.04	213.70	8.14
9	4.54	221.20	3.39
10	5.04	224.80	1.60
11	5.54	227.30	1.10
12	6.04	228.70	0.61
13	6.54	230.10	0.61
14	7.03	231.20	0.48
15	7.53	232.50	0.56
16	8.03	233.50	0.43
17	8.53	234.60	0.47
18	9.03	235.40	0.34
19	9.53	236.30	0.38
20	10.03	237.40	0.46
21	10.53	238.40	0.42
22	11.03	238.90	0.21

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+8.0E-01 ug/min Carbon

SAMPLE RESULTS:

(238.9 - 8.824707) (1) / (1) =

+2.301E+02 g/L Carbon

(238.9 - 8.824707) (1) / (1) (12) =

+1.917E+01 Molar Carbon

Sample Run By:

PJ MCCOWN

00000

.1382g

HNF-1668 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000541

Date: 04/17/99

Time: 15:10:33

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.83 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	1.60	56.25
3	1.51	9.70	83.51
4	2.00	73.70	86.84
5	2.50	255.60	71.17
6	3.00	616.80	58.56
7	3.50	915.60	32.63
8	4.00	1057.60	13.43
9	4.50	1132.10	6.58
10	5.00	1178.40	3.93
11	5.50	1208.10	2.46
12	6.00	1226.60	1.51
13	6.50	1235.70	0.74
14	7.00	1241.60	0.48
15	7.50	1245.80	0.34
16	8.00	1248.80	0.24
17	8.50	1251.30	0.20
18	9.00	1252.80	0.12
19	9.50	1254.50	0.14
20	10.00	1255.80	0.10
21	10.50	1257.00	0.10
22	11.00	1258.00	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+2.8E+00 ug/min Carbon

SAMPLE RESULTS:

(1258 - 31.1243) (1) / (1) =

+1.2269E+03 g/L Carbon

(1258 - 31.1243) (1) / (1) (12) =

+1.0224E+02 Molar Carbon

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

Sample Run By:

PJm
PJ MCCOWN

00000

.1382g

HNF-1668 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 541 DUP

Date: 04/17/99

Time: 15:22:32

Sample Size = 1 uL

Analyst : PJ MCCOWN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .8 ug/minute C

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference
1	0.51	0.80	0.00
2	1.01	1.60	50.00
3	1.50	4.10	60.98
4	2.00	26.00	84.23
5	2.50	88.60	70.65
6	3.00	159.70	44.52
7	3.50	204.40	21.87
8	4.00	228.00	10.35
9	4.50	239.00	4.60
10	5.00	243.90	2.01
11	5.50	246.40	1.01
12	6.00	248.20	0.73
13	6.50	249.90	0.68
14	7.00	251.40	0.60
15	7.50	252.50	0.44
16	8.00	253.70	0.47
17	8.50	255.00	0.51
18	9.00	255.80	0.31
19	9.50	256.90	0.43
20	10.00	257.90	0.39
21	10.50	258.80	0.35
22	11.00	259.80	0.38

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+8.0E-01 ug/min Carbon

SAMPLE RESULTS:

(259.8 - 8.799072) (1) / (1) =

+2.510E+02 g/L Carbon

(259.8 - 8.799072) (1) / (1) (12) =

+2.092E+01 Molar Carbon

Sample Run By:

PJ MCCOWN

00000

-1397g

HNF-1668 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 541 DUP

Date: 04/17/99

Time: 15:35:38

Sample Size = 1 uL

Analyst : PJ MCCOWN

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.83 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	1.00	0.00
2	1.01	1.90	47.37
3	1.51	22.30	91.48
4	2.00	156.00	85.71
5	2.50	546.20	71.44
6	3.00	944.10	42.15
7	3.50	1129.90	16.44
8	4.00	1215.00	7.00
9	4.50	1266.60	4.07
10	5.00	1297.30	2.37
11	5.50	1315.50	1.38
12	6.00	1324.80	0.70
13	6.50	1330.40	0.42
14	7.00	1334.50	0.31
15	7.50	1337.30	0.21
16	8.00	1339.40	0.16
17	8.50	1341.20	0.13
18	9.00	1342.90	0.13
19	9.50	1344.50	0.12
20	10.00	1345.70	0.09
21	10.50	1346.90	0.09
22	11.00	1348.00	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+2.8E+00 ug/min Carbon

SAMPLE RESULTS:

(1348 - 31.12672) (1)/(1) = +1.3169E+03 g/L Carbon
 (1348 - 31.12672) (1)/(1) (12) = +1.0974E+02 Molar Carbon

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

Sample Run By: *PJ*

PJ MCCOWN

00000

.1397g

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
WorkList	µg of Carbon in Sample (C1)	8.1	30.3
29199	µg of Carbon from Baseline (C2)	8.4	29.7
Test Code	µg of Carbon = C1-C2		
@TICTOC1			
Matrix			
SOLID			
Batch Number			
99001507			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
BLNK			
Instrument Code			
CARB2			
Prepared By			
JMV			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
04/19/99			
Analysis Date			
04/17/99			
Analysis Time	Method Detection Limit in ug/g	5	40
04:30 PM			
Sample Point	µg of Carbon	3.00E-01	6.00E-01
U-103 GRAB2			


Data Entered By:	JMV	Date:	04/19/99
Signature of Chemist:	<i>[Signature]</i>	Date:	

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (F-2)

LIQUIDS

		TIC	TOC
Type STD	Sample Size in mL (SS)	1.0000	0.2000
	Dilution Factor (DF)	1	1
Worklist 29199	Final Coulometer Reading in µg (C1)	613.6	596.6
	µg of Carbon from Baseline (C2)	8.4	29.7
Test Code @TICTOC1	Standard Book Number	25N12E	34N12A
	Standard Value (µg/ml)	602	3000
Matrix LIQUID			
Batch Number 99001507			
Rerun 0	QC Actual in µg/mL = Standard Value (µg/mL)		
Sample Prep N/A	QC Found in µg/mL = (C1 - C2) * DF / SS		
	QC Found in µg/mL for TIC = 5 if C1 < C2		
Sample # STD	QC Found in µg/mL for TOC = 40 if C1 < C2		
Instrument Code CARB2	% Recovery = QC Found / QC Actual * 100		
Prepared By JMV			
Chemist MJL			
Analyst PJM			
Date Complete 04/19/99			
Analysis Date 04/17/99			
Analysis Time 04:30 PM	Method Detection Limit in µg/mL	5	40
Sample Point U-103 GRAB2	QC Actual in µg/mL	6.02E+02	3.00E+03
	QC Found in µg/mL	6.05E+02	2.83E+03
	Percent Standard Recovery	100.5	94.5

Data Entered By:	JMV	Date:	04/19/99
Signature of Chemist:		Date:	

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1231	0.1231
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	238.3	751.7
29199	µg of Carbon from Baseline (C2)	8.4	29.7
Test Code			
@TICTOC1			

Matrix	SOLID
Batch Number	99001507
Rerun	0
Sample Prep	N/A
Sample #	S99T000539
Instrument Code	CARB2
Prepared By	JMV
Chemist	MJL
Analyst	PJM
Date Complete	04/19/99
Analysis Date	04/17/99
Analysis Time	04:30 PM
Sample Point	U-103 GRAB2

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

	TIC	TOC
Method Detection Limit in µg/g	5	40
µg of Carbon/g	1.87E+03	5.87E+03

Data Entered By:	JMV	Date:	04/19/99
Signature of Chemist:	<i>[Signature]</i>	Date:	

WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1329	0.1329
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	232.2	745
29199	µg of Carbon from Baseline (C2)	8.4	29.7
Test Code	Known µg of C from Original Sample	1.87E+3	5.87E+3
@TICTOC1			
Matrix			
SOLID			
Batch Number			
99001507			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S99T000539			
Instrument Code			
CARB2			
Prepared By			
JMV			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
04/19/99			
Analysis Date			
04/17/99			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
04:30 PM		5	40
Sample Point	µg of Carbon/g	1.68E+03	5.38E+03
U-103 GRAB2			

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

Data Entered By:	JMV	Date:	04/19/99
Signature of Chemist:	<i>[Signature]</i>	Date:	

WORKBOOK PAGE: SPIKE5

TIC/TOC : LA-342-100 (F-2)

SOLIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.1231	0.1231
Work List	Final Coulometer Reading in µg (C1)	238.3	751.7
29199	Spiked Vial Data		
Test Code	Sample Size in g (SPK SS)	0.1133	0.1133
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	506.4	913.9
SOLID	Spike Book Number	25N12E	34N12A
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	3000
99001507	µg C in baseline (BL)	8.4	29.7

Rerun
0

Sample Prep
N/A

Sample #
S99T000539

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

Instrument Code
CARB2

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

Prepared By
JMV

Chemist
MJL

Analyst
PJM

Date Complete
04/19/99

Analysis Date
04/17/99

Analysis Time
04:30 PM

	TIC	TOC
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	5.73E+02	2.20E+03
Percent Spike Recovery	95.2	73.2

Sample Point
U-103 GRAB2

Data Entered By:	JMV	Date:	04/19/99
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: SAM6

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1257	0.1257
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	276.2	1269.3
29199	µg of Carbon from Baseline (C2)	8.4	29.7
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
99001507			
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 #			
S99T000540			
Instrument Code			
CARB2			
Prepared By			
JMV			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
04/19/99			
Analysis Date			
04/17/99			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
04:30 PM		5	40
Sample Point	µg of Carbon/g	2.13E+03	9.86E+03
U-103 GRAB2			

Data Entered By:	JMV	Date:	04/19/99
Signature of Chemist:	<i>N/A</i>	Date:	

WORKBOOK PAGE: DUP7

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1348	0.1348
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	280.9	1276.8
29199	µg of Carbon from Baseline (C2)	8.4	29.7
Test Code	Known µg of C from Original Sample	2.13E+3	9.86E+3
@TICTOC1			

Matrix	SOLID
Batch Number	99001507
Rerun	0
Sample Prep	N/A
Sample #	S99T000540
Instrument Code	CARB2
Prepared By	JMV
Chemist	MJL
Analyst	PJM
Date Complete	04/19/99
Analysis Date	04/17/99
Analysis Time	04:30 PM
Sample Point	U-103 GRAB2

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

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon/g	2.02E+03	9.25E+03

Data Entered By:	JMV	Date:	04/19/99
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: SAM8

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1382	0.1382
SAMPLE	Dilution Factor (DF)	1	1
WorkList	µg of Carbon in Sample (C1)	238.9	1258
29199	µg of Carbon from Baseline (C2)	8.4	29.7
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
99001507			
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 #			
S99T000541			
Instrument Code			
CARB2			
Prepared By			
JMV			
Chemist			
MJL			
Analyst			
PJM			
Date Complete			
04/19/99			
Analysis Date			
04/17/99			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
04:30 PM		5	40
Sample Point	µg of Carbon/g	1.67E+03	8.89E+03
U-103 GRAB2			

Data Entered By:	JMV	Date:	04/19/99
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: DUP9

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1397	0.1397
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	259.8	1348
29199	µg of Carbon from Baseline (C2)	8.4	29.7
Test Code	Known µg of C from Original Sample	1.67E+3	8.89E+3
@TICTOC1			

Matrix	SOLID
Batch Number	99001507
Rerun	0
Sample Prep	N/A
Sample #	S99T000541
Instrument Code	CARB2
Prepared By	JMV
Chemist	MJL
Analyst	PJM
Date Complete	04/19/99
Analysis Date	04/17/99
Analysis Time	04:30 PM
Sample Point	U-103 GRAB2

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

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon/g	1.80E+03	9.44E+03

Data Entered By:	JMV	Date:	04/19/99
Signature of Chemist:	<i>JMV</i>	Date:	

LABCORE Completed Worklist Report for Worklist# 29399

Analyst: jds

Instrument: CARB1

Book#: _____

Method: LA-342-100 Rev/Mod _____

Worklist Comment: TX-113 & U103 RERUN JMV

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK		0	@TICTOC1 TIC-02	SOLID	1	4.10E+0	4.100	ug/g
1 BLNK		0	@TICTOC1 TOC-02	SOLID	1	0.00E+0	0.000	ug/g
2 STD		0	@TICTOC1 TIC-02	SOLID	6.02E+02	5.95E+2	98.837	% Recovery
2 STD		0	@TICTOC1 TOC-02	SOLID	3.00E+03	2.97E+3	99.000	% Recovery
3 SAMPLE	S99T000560	0	@TICTOC1 TIC-02	SOLID	N/A	3.35E+04	5.000	ug/g
3 SAMPLE	S99T000560	0	@TICTOC1 TOC-02	SOLID	N/A	3.66E+02	40.000	ug/g
4 DUP	S99T000560	0	@TICTOC1 TIC-02	SOLID	3.35E+4	2.19E+4	41.877	RPD
4 DUP	S99T000560	0	@TICTOC1 TOC-02	SOLID	3.66E+2	3.48E+2	5.042	RPD
5 TRIPL	S99T000560	0	@TICTOC1 TIC-02	SOLID	3.35E+4	2.31E+4	36.749	RPD
5 TRIPL	S99T000560	0	@TICTOC1 TOC-02	SOLID	3.66E+2	<4.00E+1		RPD
6 SPK	S99T000560	0	@TICTOC1 TIC-02	SOLID	1.00E+02	0.00E+00	0.000	% Recovery
6 SPK	S99T000560	0	@TICTOC1 TOC-02	SOLID	1.00E+02	4.00E+01	40.000	% Recovery
7 SAMPLE	S99T000539	0	@TICTOC1 TIC-02	SOLID	N/A	2.40E+03	5.000	ug/g
7 SAMPLE	S99T000539	0	@TICTOC1 TOC-02	SOLID	N/A	5.54E+03	40.000	ug/g
8 DUP	S99T000539	0	@TICTOC1 TIC-02	SOLID	2.40E+3	2.17E+3	10.066	RPD
8 DUP	S99T000539	0	@TICTOC1 TOC-02	SOLID	5.54E+3	6.52E+3	16.252	RPD
9 SPK	S99T000539	0	@TICTOC1 TIC-02	SOLID	1.00E+02	9.84E+01	98.400	% Recovery
9 SPK	S99T000539	0	@TICTOC1 TOC-02	SOLID	1.00E+02	8.17E+01	81.700	% Recovery

Final page for worklist# 29399

Analyst Signature Date

J. J. Sant 4-27-99

Analyst Signature Date

[Signature] 4/28/99

Reviewer Signature Date

HNF-1668 REV. 0

04/22/99 12:12
ws2

Page: 1

LABCORE Data Entry Template for Worklist# 29399

Analyst: Jds Instrument: CARB2 Book# 25N12E
34H12A

Method: LA-342-100 Rev/Mod F-2

Worklist Comment: TX-113 & U103 RERUN JMV

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	SOLID		
2	STD				@TICTOC1	SOLID		
3	SAMPLE	S99T000560 0			@TICTOC1	SOLID	98000476	TX-113
Analytes Requested: TIC-02 , TOC-02								
4	DUP	S99T000560 0			@TICTOC1	SOLID		
5	SPK	S99T000560 0			@TICTOC1	SOLID		
6	SAMPLE	S99T000539 0			@TICTOC1	SOLID	99000104	U-103 GRAB2
Analytes Requested: TIC-02 , TOC-02								
7	DUP	S99T000539 0			@TICTOC1	SOLID		
8	SPK	S99T000539 0			@TICTOC1	SOLID		

Final page for worklist # 29399

Jds 4/24/99
Signature Date

Signature Date

Data Entry Comments: Did not run sample # S99T000560
ran a trip on 560 TIC ONLY

Jds 4/23/99

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

HNF-1668 REV. 0

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

Sample: BASE

Date: 04/18/99

Time: 01:47:46

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	0.51	0.20	0.00
2	1.01	0.50	60.00
3	1.51	0.90	44.44
4	2.00	1.10	18.18
5	2.50	1.40	21.43
6	3.00	1.70	17.65
7	3.50	2.00	15.00
8	4.00	2.30	13.04
9	4.50	2.50	8.00
10	5.00	2.90	13.79
11	5.50	3.20	9.37
12	6.00	3.40	5.88
13	6.50	3.70	8.11
14	7.00	4.00	7.50
15	7.50	4.30	6.98
16	8.00	4.50	4.44
17	8.50	4.80	6.25
18	9.00	5.10	5.88
19	9.50	5.40	5.56
20	10.00	5.60	3.57
21	10.50	5.90	5.08
22	11.00	6.20	4.84

BLANK VALUE = 6.2 micrograms carbon

BLANK FACTOR = 6.2 / 10.99783 =

+5.6E-01

ug/min Carbon

Sample Run By:


 JD SPELLMAN

11111

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 297 TO 315.

HNF-1668 REV. 0

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

Sample: BASE

Date: 04/18/99

Time: 02:03:24

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	0.51	0.30	0.00
2	1.01	2.10	85.71
3	1.51	5.20	59.62
4	2.00	8.40	38.10
5	2.50	11.00	23.64
6	3.00	12.90	14.73
7	3.50	14.40	10.42
8	4.00	15.60	7.69
9	4.50	16.30	4.29
10	5.00	17.10	4.68
11	5.50	17.70	3.39
12	6.00	18.40	3.80
13	6.50	18.90	2.65
14	7.00	19.40	2.58
15	7.50	19.90	2.51
16	8.00	20.30	1.97
17	8.50	20.90	2.87
18	9.00	21.30	1.88
19	9.50	21.70	1.84
20	10.00	22.20	2.25
21	10.50	22.40	0.89
22	11.00	22.80	1.75

BLANK VALUE = 22.8 micrograms carbon

BLANK FACTOR = 22.8 / 10.99884 = +2.07E+00 ug/min Carbon

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

Sample Run By:

JD SPELLMAN

11111

HNF-1668 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 04/18/99

Time: 02:21:10

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .56 ug/minute C

Analyst : JD SPELLMAN
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.50	0.00
2	1.01	25.50	98.04
3	1.51	158.20	83.88
4	2.00	325.10	51.34
5	2.50	448.80	27.56
6	3.00	518.60	13.46
7	3.50	554.50	6.47
8	4.00	573.20	3.26
9	4.50	583.00	1.68
10	5.00	588.40	0.92
11	5.50	591.90	0.59
12	6.00	593.90	0.34
13	6.50	595.50	0.27
14	7.00	596.40	0.15
15	7.50	597.40	0.17
16	8.00	597.90	0.08
17	8.50	598.60	0.12
18	9.00	599.00	0.07
19	9.50	599.50	0.08
20	10.00	599.90	0.07
21	10.50	600.40	0.08
22	11.00	600.80	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 6.15935 micrograms carbon

BLANK FACTOR = 6.15935 / 10.99884 = +5.6E-01 ug/min Carbon

SAMPLE RESULTS:

(600.8 - 6.158787) (1) / (1) = +5.946E+02 g/L Carbon
(600.8 - 6.158787) (1) / (1) (12) = +4.955E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

11111

HNF-1668 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 04/18/99

Time: 02:39:59

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.07 ug/minute C.

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	2.20	0.00
2	1.01	11.10	80.18
3	1.51	19.30	42.49
4	2.00	47.40	59.28
5	2.50	149.20	68.23
6	3.00	340.90	56.23
7	3.50	495.20	31.16
8	4.00	554.80	10.74
9	4.50	581.30	4.56
10	5.00	594.30	2.19
11	5.50	601.30	1.16
12	6.00	605.60	0.71
13	6.50	608.60	0.49
14	7.00	610.50	0.31
15	7.50	612.00	0.25
16	8.00	612.90	0.15
17	8.50	613.90	0.16
18	9.00	614.60	0.11
19	9.50	615.40	0.13
20	10.00	616.00	0.10
21	10.50	616.60	0.10
22	11.00	617.10	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 22.7676 micrograms carbon

BLANK FACTOR = 22.7676 / 10.99884 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(617.1 - 22.76757) (1)/(1) = +5.943E+02 g/L Carbon
(617.1 - 22.76757) (1)/(1) (12) = +4.953E+01 Molar Carbon

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

Sample Run By:

JD SPELLMAN

11111

HNF-1668 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 04/18/99

Time: 02:51:39

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .56 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.00	1.00	50.00
3	1.51	1.50	33.33
4	2.00	2.00	25.00
5	2.50	2.50	20.00
6	3.00	3.00	16.67
7	3.50	3.50	14.29
8	4.00	4.00	12.50
9	4.50	4.40	9.09
10	5.00	4.90	10.20
11	5.50	5.30	7.55
12	6.00	5.80	8.62
13	6.50	6.30	7.94
14	7.00	6.70	5.97
15	7.50	7.20	6.94
16	8.00	7.60	5.26
17	8.50	8.10	6.17
18	9.00	8.50	4.71
19	9.50	9.00	5.56
20	10.00	9.50	5.26
21	10.50	9.90	4.04
22	11.00	10.30	3.88

USER INPUT BLANK VALUE

BLANK VALUE = 6.15935 micrograms carbon

BLANK FACTOR = 6.15935 / 10.99884 = +5.6E-01 ug/min Carbon

SAMPLE RESULTS:

(10.3 - 6.158889) (1)/(1)	=	+4.14E+00	g/L Carbon
(10.3 - 6.158889) (1)/(1) (12)	=	+3.45E-01	Molar Carbon

Sample Run By:

JD SPELLMAN

11111

HNF-1668 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 04/18/99

Time: 03:05:09

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.07 ug/minute C

Analyst : JD SPELLMAN
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.60	0.00
2	1.01	4.90	87.76
3	1.50	12.60	61.11
4	2.00	20.00	37.00
5	2.50	24.80	19.35
6	3.00	27.30	9.16
7	3.50	29.00	5.86
8	4.00	30.30	4.29
9	4.50	31.00	2.26
10	5.00	31.80	2.52
11	5.50	32.40	1.85
12	6.00	33.00	1.82
13	6.50	33.60	1.79
14	7.00	34.30	2.04
15	7.50	34.80	1.44
16	8.00	35.40	1.69
17	8.50	35.80	1.12
18	9.03	36.30	1.38
19	9.53	36.80	1.36
20	10.03	37.30	1.34
21	10.53	37.70	1.06
22	11.03	38.10	1.05

USER INPUT BLANK VALUE

BLANK VALUE = 22.7676 micrograms carbon

BLANK FACTOR = 22.7676 / 10.99884 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(38.1 - 22.83968) (1)/(1) = +1.53E+01 g/L Carbon
(38.1 - 22.83968) (1)/(1) (12) = +1.27E+00 Molar Carbon

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

Sample Run By:

JD SPELLMAN

11111

HNF-1668 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000539

Date: 04/18/99

Time: 07:40:47

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .56 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.70	0.00
2	1.01	20.30	96.55
3	1.50	93.10	78.20
4	2.00	163.30	42.99
5	2.50	208.20	21.57
6	3.00	232.80	10.57
7	3.50	247.00	5.75
8	4.00	254.50	2.95
9	4.50	258.60	1.59
10	5.00	261.10	0.96
11	5.50	263.00	0.72
12	6.00	264.00	0.38
13	6.50	265.10	0.41
14	7.00	265.80	0.26
15	7.50	266.50	0.26
16	8.00	267.20	0.26
17	8.50	267.90	0.26
18	9.00	268.40	0.19
19	9.50	269.00	0.22
20	10.00	269.50	0.19
21	10.50	270.10	0.22
22	11.00	270.50	0.15

USER INPUT BLANK VALUE

BLANK VALUE = 6.15935 micrograms carbon

BLANK FACTOR = 6.15935 / 10.99884 = +5.6E-01 ug/min Carbon

SAMPLE RESULTS:

(270.5 - 6.15935) (1)/(1) = +2.643E+02 g/L Carbon
 (270.5 - 6.15935) (1)/(1) (12) = +2.203E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

11111

HNF-1668 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000539

Date: 04/18/99

Time: 07:53:45

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.07 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	157.00	0.00
2	1.01	344.20	54.39
3	1.50	455.70	24.47
4	2.01	529.00	13.86
5	2.51	570.10	7.21
6	3.00	592.20	3.73
7	3.50	603.90	1.94
8	4.00	610.90	1.15
9	4.50	615.60	0.76
10	5.00	618.50	0.47
11	5.50	620.70	0.35
12	6.00	622.70	0.32
13	6.50	624.40	0.27
14	7.00	625.60	0.19
15	7.50	626.70	0.18
16	8.00	627.70	0.16
17	8.50	628.70	0.16
18	9.00	629.40	0.11
19	9.50	630.20	0.13
20	10.00	630.90	0.11
21	10.50	631.50	0.10
22	11.03	631.80	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 22.7676 micrograms carbon

BLANK FACTOR = 22.7676 / 10.99884 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(631.8 - 22.83791) (1)/(1) = +6.090E+02 g/L Carbon
 (631.8 - 22.83791) (1)/(1) (12) = +5.075E+01 Molar Carbon

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

Sample Run By:

JD SPELLMAN

11111

HNF-1668 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000539DUP Date: 04/18/99 Time: 08:05:05

Sample Size = 1 uL	Analyst : JD SPELLMAN
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = .56 ug/minute C	% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	3.60	83.33
3	1.50	40.50	91.11
4	2.00	108.90	62.81
5	2.50	162.30	32.90
6	3.00	195.10	16.81
7	3.50	214.30	8.96
8	4.00	228.60	6.26
9	4.50	237.20	3.63
10	5.00	242.50	2.19
11	5.50	245.60	1.26
12	6.00	247.80	0.89
13	6.50	249.40	0.64
14	7.00	250.50	0.44
15	7.50	251.40	0.36
16	8.00	252.20	0.32
17	8.50	252.90	0.28
18	9.00	253.40	0.20
19	9.50	254.00	0.24
20	10.00	254.60	0.24
21	10.50	255.00	0.16
22	11.00	255.50	0.20

USER INPUT BLANK VALUE

BLANK VALUE = 6.15935 micrograms carbon

BLANK FACTOR = 6.15935 / 10.99884 = +5.6E-01 ug/min Carbon

SAMPLE RESULTS:

(255.5 - 6.158804) (1)/(1) =	+2.493E+02	g/L Carbon
(255.5 - 6.158804) (1)/(1) (12) =	+2.078E+01	Molar Carbon

Sample Run By:

JD SPELLMAN

11111

HNF-1668 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000539DUP Date: 04/18/99 Time: 08:19:14

Sample Size = 1 uL Analyst : JD SPELLMAN
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 2.07 ug/minute C % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	3.00	0.00
2	1.01	68.20	95.60
3	1.50	193.30	64.72
4	2.00	430.10	55.06
5	2.50	583.60	26.30
6	3.00	655.30	10.94
7	3.50	699.10	6.27
8	4.00	725.60	3.65
9	4.50	740.50	2.01
10	5.00	749.30	1.17
11	5.50	754.90	0.74
12	6.00	759.00	0.54
13	6.50	761.80	0.37
14	7.00	763.80	0.26
15	7.50	765.40	0.21
16	8.00	767.00	0.21
17	8.50	768.30	0.17
18	9.00	769.40	0.14
19	9.50	770.30	0.12
20	10.00	771.30	0.13
21	10.50	772.00	0.09
22	11.00	772.80	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 22.7676 micrograms carbon

BLANK FACTOR = 22.7676 / 10.99884 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(772.8 - 22.76551) (1)/(1) = +7.500E+02 g/L Carbon
(772.8 - 22.76551) (1)/(1) (12) = +6.250E+01 Molar Carbon

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

Sample Run By:

JD SPELLMAN

11111

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T0539SPK

Date: 04/18/99

Time: 08:38:22

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .56 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.80	77.78
3	1.50	60.60	97.03
4	2.00	235.40	74.26
5	2.50	396.20	40.59
6	3.00	493.80	19.77
7	3.50	548.80	10.02
8	4.00	580.60	5.48
9	4.50	597.90	2.89
10	5.00	606.90	1.48
11	5.50	612.00	0.83
12	6.00	615.20	0.52
13	6.50	617.40	0.36
14	7.00	618.90	0.24
15	7.50	620.00	0.18
16	8.00	621.10	0.18
17	8.50	621.90	0.13
18	9.00	622.70	0.13
19	9.50	623.40	0.11
20	10.00	624.20	0.13
21	10.50	624.90	0.11
22	11.00	625.50	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 6.15935 micrograms carbon

BLANK FACTOR = 6.15935 / 10.99884 = +5.6E-01 ug/min Carbon

SAMPLE RESULTS:

(625.5 - 6.15935) (1)/(1) = +6.193E+02 g/L Carbon
 (625.5 - 6.15935) (1)/(1) (12) = +5.161E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

11111

HNF-1668 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S99T000539SPK

Date: 04/18/99

Time: 08:50:55

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.07 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	64.10	98.28
3	1.51	257.70	75.13
4	2.00	644.20	60.00
5	2.50	950.20	32.20
6	3.00	1074.50	11.57
7	3.50	1141.20	5.84
8	4.00	1183.70	3.59
9	4.50	1209.80	2.16
10	5.00	1224.50	1.20
11	5.50	1233.20	0.71
12	6.00	1239.20	0.48
13	6.50	1243.50	0.35
14	7.00	1246.30	0.22
15	7.50	1248.60	0.18
16	8.00	1250.50	0.15
17	8.50	1252.30	0.14
18	9.00	1253.70	0.11
19	9.50	1254.80	0.09
20	10.00	1255.90	0.09
21	10.50	1256.90	0.08
22	11.00	1257.90	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 22.7676 micrograms carbon

BLANK FACTOR = 22.7676 / 10.99884 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(1257.9 - 22.7676) (1)/(1) = +1.2351E+03 g/L Carbon
 (1257.9 - 22.7676) (1)/(1) (12) = +1.0293E+02 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

JD SPELLMAN

11111

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	10.3	38.1
29399	µg of Carbon from Baseline (C2)	6.2	22.8
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
99001717			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
blnk			
Instrument Code			
CARB1			
Prepared By			
JMV			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
04/04/27			
Analysis Date			
04/23/99			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
02:00 PM		5	40
Sample Point	µg of Carbon	TIC	TOC
TX 113		4.10E+00	1.53E+01

Data Entered By:	JMV	Date:	04/04/27
Signature of Chemist:	<i>N/A</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)	600.8	617.1
29399	µg of Carbon from Baseline (C2)	6.2	22.8
Test Code	Standard Book Number	25N12E	34N12A
@TICTOC1	Standard Value (µg/ml)	602	3000

Matrix	
LIQUID	
Batch Number	
99001717	
Rerun	
0	
Sample Prep	
N/A	
Sample #	
STD	
Instrument Code	
CARB1	
Prepared By	
JMV	
Chemist	
MJL	
Analyst	
JDS	
Date Complete	
04/04/27	
Analysis Date	
04/23/99	

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

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

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

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

% Recovery = QC Found / QC Actual * 100

		TIC	TOC
Analysis Time	Method Detection Limit in µg/mL	5	40
02:00 PM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.95E+02	2.97E+03
TX 113	Percent Standard Recovery	98.8	99.1

Data Entered By:	JMV	Date:	04/04/27
Signature of Chemist:	<i>NA</i>	Date:	

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM7

TIC/TOC : LA-342-100 (F-2)

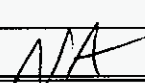
SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1100	0.1100
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	270.5	631.8
29399	µg of Carbon from Baseline (C2)	6.2	22.8
Test Code			
@TICTOC1			

Matrix	SOLID
Batch Number	99001717
Rerun	0
Sample Prep	N/A
Sample #	S99T000539
Instrument Code	CARB1
Prepared By	JMV
Chemist	MJL
Analyst	JDS
Date Complete	04/04/27
Analysis Date	04/23/99
Analysis Time	02:00 PM
Sample Point	TX 113

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

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon/g	2.40E+03	5.54E+03

Data Entered By:	JMV	Date:	04/04/27
Signature of Chemist:		Date:	

WORKBOOK PAGE: DUP8

TIC/TOC : LA-342-100 (F-2)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1151	0.1151
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	255.5	772.8
29399	µg of Carbon from Baseline (C2)	6.2	22.8
Test Code	Known µg of C from Original Sample	2.40E+3	5.54E+3
@TICTOC1			

Matrix	SOLID
Batch Number	99001717
Rerun	0
Sample Prep	N/A
Sample #	S99T000539
Instrument Code	CARB1
Prepared By	JMV
Chemist	MJL
Analyst	JDS
Date Complete	04/04/27
Analysis Date	04/23/99
Analysis Time	02:00 PM
Sample Point	TX 113

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

		TIC	TOC
Analysis Time	Method Detection Limit in ug/g	5	40
Sample Point	µg of Carbon/g	2.17E+03	6.52E+03

Data Entered By:	JMV	Date:	04/04/27
Signature of Chemist:	<i>N/A</i>	Date:	

WORKBOOK PAGE: SPIKE9

TIC/TOC : LA-342-100 (F-2)

SOLIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.1100	0.1100
Worklist	Final Coulometer Reading in µg (C1)	270.5	631.8
29399	Spiked Vial Data		
Test Code	Sample Size in g (SPK SS)	0.1345	0.1345
@TIC/TOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.200
Matrix	Final Coulometer Reading in µg (C2)	625.5	1257.9
SOLID	Spike Book Number	25N12E	34N12A
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	3000
99001717	µg C in baseline (BL)	6.2	22.8

Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = ((C2-BL) - (C1-BL) * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100		
S99T000539			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB1	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By	JMV		
Chemist	MJL		
Analyst	JDS		
Date Complete	04/04/27		
Analysis Date	04/23/99		
Analysis Time		TIC	TOC
02:00 PM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.92E+02	2.45E+03
TX 113	Percent Spike Recovery	98.4	81.7

Data Entered By:	JMV	Date:	04/04/27
Signature of Chemist:	<i>NA</i>	Date:	

**This document was too large to scan
as a single document; therefore, it has
been divided into smaller sections.**

Section 2 of 2

Document Information

Document #	HNF-1779	Revision	0
Title	TANK 241U103 GRAB SAMPLES 3U-99-1 & 3U-99-2 & 3U-99-3 ANALYTICAL RESULTS FOR THE FINAL REPORT		
Date	06/16/1999		
Originator	STEEN FH	Originator Co.	WMH
Recipient		Recipient Co.	
References	EDT-626140		
Keywords			
Projects			
Other Information	PAGES 314 THRU 582		

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This document also includes pages 12.1, 12.2, 29.1, 31.1, 33.1, 120.1, 147.1 through 147.30, 248.1 and 502.1.

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RADIOCHEMICAL ANALYSIS

HNF-1668 REV. 0

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LAD 5/11/99
HNF-1668 REV. 0

LABCORE Completed Worklist Report for Worklist# 29187

Analyst: gl1

Instrument: AB13

Book#: _____

Method: LA-508-101 Rev/Mod _____

Worklist Comment: U103 GRAB2, @ALPHA01, STD=1.0mL, SS by Ludlum. skm

Seq Type	Sample#	RA	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@ALPHA01 ALPHA01	LIQUID	2.61E-04	2.39E-4	91.571	% Recovery
1 STD		0	@ALPHA01 ALPHA01E	LIQUID	1.00	2.85E+00	2.850	% Ct. Error
2 BLNK		0	@ALPHA01 ALPHA01	LIQUID	1	<1.26E-2		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	5.80E-01	0.580	BLNK/BKG
4 SAMPLE	S99T000538	0	@ALPHA01 ALPHA01	LIQUID	N/A	< 2.53E-2	3.09e-002	uCi/mL
4 SAMPLE	S99T000538	0	@ALPHA01 ALPHA01E	LIQUID	N/A	1.67E+02		% Ct. Error
5 DUP	S99T000538	0	@ALPHA01 ALPHA01	LIQUID	<2.53E-2	2.91E-2		RPD
5 DUP	S99T000538	0	@ALPHA01 ALPHA01E	LIQUID	1.00	1.13E+02	113.000	% Ct. Error
6 SPK	S99T000538	0	@ALPHA01 ALPHA01	LIQUID	3.81E-02	3.56E-02	93.438	% Recovery
7 SAMPLE	S99T000547	0	@ALPHA01 ALPHA01	LIQUID	N/A	2.08E-02	3.09e-002	uCi/mL
7 SAMPLE	S99T000547	0	@ALPHA01 ALPHA01E	LIQUID	N/A	1.26E+02		% Ct. Error
8 DUP	S99T000547	0	@ALPHA01 ALPHA01	LIQUID	2.08E-2	<1.54E-2		RPD
8 DUP	S99T000547	0	@ALPHA01 ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
9 SAMPLE	S99T000549	0	@ALPHA01 ALPHA01	LIQUID	N/A	3.42E-02	3.09e-002	uCi/mL
9 SAMPLE	S99T000549	0	@ALPHA01 ALPHA01E	LIQUID	N/A	8.81E+01		% Ct. Error
10 DUP	S99T000549	0	@ALPHA01 ALPHA01	LIQUID	3.42E-2	2.29E-2	39.580	RPD
10 DUP	S99T000549	0	@ALPHA01 ALPHA01E	LIQUID	1.00	1.13E+02	113.000	% Ct. Error

Final page for worklist# 29187

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Relyea
Reviewer Signature _____ Date 9 Apr 99

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

LABCORE Data Entry Template for Worklist# 29187Analyst: gl Instrument: AB00 13 Book# 45857Method: LA-508-101 Rev/Mod G-0

Worklist Comment: U103 GRAB2, @ALPHA01, STD=1.0mL, SS by Ludlum. 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	S99T000538 0		@ALPHA01	LIQUID	99000104	U-103 GRAB2
	Analytes Requested: ALPHA01 , ALPHA01E					
5 DUP	S99T000538 0		@ALPHA01	LIQUID		
6 SPK	S99T000538 0		@ALPHA01	LIQUID		
7 SAMPLE	S99T000547 0		@ALPHA01	LIQUID	99000104	U-103 GRAB2
	Analytes Requested: ALPHA01 , ALPHA01E					
8 DUP	S99T000547 0		@ALPHA01	LIQUID		
9 SAMPLE	S99T000549 0		@ALPHA01	LIQUID	99000104	U-103 GRAB2
	Analytes Requested: ALPHA01 , ALPHA01E					
10 DUP	S99T000549 0		@ALPHA01	LIQUID		

Final page for worklist # 29187

Sheryl L. Plat 4-8-99
Signature Date

Sheryl L. Usher 4-9-99
Signature Date
Sylvia Z. Chaman 4/9/99

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

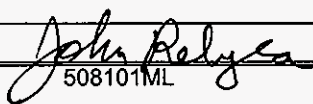
		STANDARD	REPLICATE
Type	DETECTOR NUMBER	13	13
STD	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	4736	4736
29187	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	45B57	45B57
Matrix	EFFICIENCY FACTOR (EFF)	0.2971	0.2971
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	157.637	157.637
Batch Number	Standard Value in $\mu\text{Ci/mL}$	2.61E-04	
99001498	Concentration in $\mu\text{Ci/L}$ =	2.39E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$ =	2.39E-01	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	2.3900E-01	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL29187-STD	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SLH2			
Chemist			
SAC	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	2.39E-04	DETECTION LEVEL
Analyst			
GLL			
Date Complete			7.57E-07
04/09/88	RELATIVE COUNTING ERROR =	2.9%	$\mu\text{Ci/mL}$
Analysis Date			
04/08/99			
Analysis Time			
01:20 PM			
Sample Point			
U-103 GRAB2			

Analyst:	SLH2	Date: 09-Apr-88
Signature of Chemist:	<i>John Peliza</i>	SAC Date: 9 Apr 99
STANDARD.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (G-0) LIQUIDS

		BLNK	REPLICATE
Type	DETECTOR NUMBER	13	13
BLNK	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	4	4
29187	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2971	0.2971
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.204	0.204
Batch Number			
99001498	Blank Concentration in µCi/L	< 1.26E+01	
Rerun	Replicate Concentration in µCi/L	< 1.26E+01	
0	Maximum Concentration in µCi/L	< 1.2640E+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)		
WL29187-BLNK	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		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SLH2			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Maximum) =	< 1.26E-02	DETECTION LEVEL
Analyst	LESS Than Value was Determined from Lc.		
GLL			3.09E-02
Date Complete	RELATIVE COUNTING ERROR	500.0%	µCi/mL
04/09/88			
Analysis Date			
04/08/99			
Analysis Time			
01:20 PM			
Sample Point			
U-103 GRAB2			

Analyst:	GLL	Date: 09-Apr-88
Signature of Chemist:		SAC Date: 9 Apr 99

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

AT : LA-508-101 (G-0) LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	13	13
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	16	12
29187	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2971	0.2971
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.303	0.409
Batch Number			
99001498	Blank Concentration in µCi/L	1.88E+01	
Rerun	Replicate Concentration in µCi/L	< 2.53E+01	
0	Maximum Concentration in µCi/L	< 2.5310E+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)		
S99T000538	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		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SLH2			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Maximum) =	< 2.53E-02	DETECTION LEVEL
Analyst	LESS THAN Value was Determined from Rs.		
GLL			
Date Complete			3.09E-02 µCi/mL
04/09/88	RELATIVE COUNTING ERROR	167.1%	
Analysis Date			
04/08/99			
Analysis Time			
01:20 PM			
Sample Point			
U-103 GRAB2			

Analyst:	GLL	Date: 09-Apr-88
Signature of Chemist:	<i>John Redgen</i>	SAC Date: 9 Apr 99
SAMPLE.WB1 Rev. 1.0	508101ML	

AT : LA-508-101 (G-0) LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	13	13
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	15	27
29187	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2971	0.2971
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.270	0.670
Batch Number			
99001498	Blank Concentration in µCi/L	1.67E+01	
Rerun	Replicate Concentration in µCi/L	4.14E+01	
0	Average Concentration in µCi/L	2.9077E+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)		
S99T000538	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		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SLH2			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Average) =	2.91E-02	DETECTION LEVEL
Analyst			
GLL			3.09E-02
Date Complete	RELATIVE COUNTING ERROR	113.2%	µCi/mL
04/09/88			
Analysis Date			
04/08/99			
Analysis Time			
01:20 PM			
Sample Point			
U-103 GRAB2			

Analyst:	GLL	Date: 09-Apr-88
Signature of Chemist:	SAC	Date: 9 Apr 99
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SPK6

AT : LA-508-101 (G-0) LA-508-113 (B-0) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	13	13
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	70080	70672
29187	COUNT TIME in MINUTES (CT)	30	30
AT or TB?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.250	0.250
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
99001498	SPIKE VALUE in µCi/mL (SVal)	3.8134E-02	3.8134E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2971	0.2971
0	SAMPLE + SPIKE µCi/mL (S+S)	1.45E+02	1.46E+02
Sample Prep	AVERAGE or MAXIMUM µCi/mL in SAMPLE	< 2.5310E-02	
N/A			
Sample #			
S99T000538	Rs (Sample Count Rate) = (TC / CT) - BKG		
Instrument Code	SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)		
WB27810	QC ACTUAL = SVal		
Prepared By	QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))		
SLH2	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100		
Chemist			
SAC			
Analyst			
GLL			
Date Complete	NOTE: Original Sample result was a LESS THAN value. Zero (0) was subtracted from the spiked value for QC found calculation.		
04/09/88			
Analysis Date			
04/08/99	QC ACTUAL =	3.81E-02	
Analysis Time	QC FOUND =	3.56E-02	
01:20 PM	AVG. PERCENT SPIKE RECOVERY =	93.3%	
Sample Point			
U-103 GRAB2			

Analyst:	SLH2	Date: 09-Apr-88
Signature of Chemist:	<i>John Pelyea</i>	SAC Date: 9 Apr 99

SPIKE.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: SAM7

AT : LA-508-101 (G-0) LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	13	13
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	20	14
29187	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2971	0.2971
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.437	0.237
Batch Number			
99001498	Blank Concentration in µCi/L	2.70E+01	
Rerun	Replicate Concentration in µCi/L	1.46E+01	
0	Average Concentration in µCi/L	2.0828E+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)		
S99T000547	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		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SLH2			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Average) =	2.08E-02	DETECTION LEVEL
Analyst			
GLL			3.09E-02
Date Complete			µCi/mL
04/09/88	RELATIVE COUNTING ERROR	126.2%	
Analysis Date			
04/08/99			
Analysis Time			
01:20 PM			
Sample Point			
U-103 GRAB2			

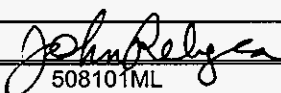
Analyst:	GLL	Date: 09-Apr-88
Signature of Chemist:	<i>John Relyea</i>	SAC Date: <i>9 Apr 99</i>

SAMPLE.WB1 Rev. 1.0

508101ML

AT : LA-508-101 (G-0) LIQUIDS

	DUP	REPLICATE	
Type	DETECTOR NUMBER	13	13
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	8	14
29187	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2971	0.2971
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.249	0.237
Batch Number			
99001498	Blank Concentration in µCi/L	< 1.54E+01	
Rerun	Replicate Concentration in µCi/L	1.46E+01	
0	Maximum Concentration in µCi/L	< 1.5403E+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)		
S99T000547	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		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SLH2			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Maximum) =	< 1.54E-02	DETECTION LEVEL
Analyst	LESS THAN Value was Determined from Rmax.		
GLL			3.09E-02
Date Complete	RELATIVE COUNTING ERROR	500.0%	µCi/mL
04/09/88			
Analysis Date			
04/08/99			
Analysis Time			
01:20 PM			
Sample Point			
U-103 GRAB2			

Analyst:	GLL	Date: 09-Apr-88
Signature of Chemist:		SAC Date: 9 Apr 99

WORKBOOK PAGE: SAM9

AT : LA-508-101 (G-0) LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	13	13
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	29	18
29187	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2971	0.2971
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.737	0.370
Batch Number			
99001498	Blank Concentration in µCi/L	4.56E+01	
Rerun	Replicate Concentration in µCi/L	2.29E+01	
0	Average Concentration in µCi/L	3.4232E+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)		
S99T000549	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		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SLH2			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Average) =	3.42E-02	DETECTION LEVEL
Analyst			
GLL			
Date Complete			3.09E-02
04/09/88	RELATIVE COUNTING ERROR	88.1%	µCi/mL
Analysis Date			
04/08/99			
Analysis Time			
01:20 PM			
Sample Point			
U-103 GRAB2			

Analyst:	GLL	Date: 09-Apr-88
Signature of Chemist:	<i>John Rejcek</i>	SAC Date: <i>9 Apr 99</i>

SAMPLE.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: DUP10

AT : LA-508-101 (G-0) LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	13	13
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	21	15
29187	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.23	0.23
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	10201	10201
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2971	0.2971
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.470	0.270
Batch Number			
99001498	Blank Concentration in µCi/L	2.91E+01	
Rerun	Replicate Concentration in µCi/L	1.67E+01	
0	Average Concentration in µCi/L	2.2890E+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)		
S99T000549	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		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SLH2			
Chemist			
SAC	ALPHA TOTAL in µCi/mL (Average) =	2.29E-02	DETECTION LEVEL
Analyst			
GLL			
Date Complete			3.09E-02
04/09/88	RELATIVE COUNTING ERROR	113.2%	µCi/mL
Analysis Date			
04/08/99			
Analysis Time			
01:20 PM			
Sample Point			
U-103 GRAB2			

Analyst:	GLL	Date: 09-Apr-88
Signature of Chemist:	<i>John Relyea</i>	SAC Date: 9 Apr 99

SAMPLE.WB1 Rev. 1.0

508101ML

HNF-1668 REV. 0

LABCORE Completed Worklist Report for Worklist# 29527

Analyst: scl

Instrument: AB16

Book#: _____

Method: LA-508-101 Rev/Mod _____

Worklist Comment: U-103 GRAB2, @ALPHA01, STD= 1.0mL, SS by Ludlum. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	0	@ALPHA01 ALPHA01	SOLID	2.51E-04	2.36E-4	94.024	% 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	<6.31E-3		uCi/g
2 BLNK-PREP	0	0	@ALPHA01 ALPHA01E	SOLID	1.00	3.03E+02	303.000	uCi/g
3 BLNK/BKG	0	0	@ALPHA01 ALPHA01	SOLID	1.00E+00	2.78E+00	2.780	BLNK/BKG
4 SAMPLE	S99T000551	0 F	@ALPHA01 ALPHA01	SOLID	N/A	2.54E-02	8.42e-003	uCi/g
4 SAMPLE	S99T000551	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	4.45E+01		% Ct. Error
5 DUP	S99T000551	0 F	@ALPHA01 ALPHA01	SOLID	2.54E-2	2.92E-2	13.919	RPD
5 DUP	S99T000551	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	4.45E+01	44.500	% Ct. Erro
6 SPK	S99T000551	0 F	@ALPHA01 ALPHA01	SOLID	3.813e-02	2.97E-02	77.891	% Recovery
7 SAMPLE	S99T000554	0 F	@ALPHA01 ALPHA01	SOLID	N/A	4.56E-02	1.91e-002	uCi/g
7 SAMPLE	S99T000554	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	5.54E+01		% Ct. Error
8 DUP	S99T000554	0 F	@ALPHA01 ALPHA01	SOLID	4.56E-2	4.04E-2	12.093	RPD
8 DUP	S99T000554	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	6.34E+01	63.400	% Ct. Erro
9 SAMPLE	S99T000555	0 F	@ALPHA01 ALPHA01	SOLID	N/A	4.87E-02	1.98e-002	uCi/g
9 SAMPLE	S99T000555	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	5.54E+01		% Ct. Error
10 DUP	S99T000555	0 F	@ALPHA01 ALPHA01	SOLID	4.87E-2	3.38E-2	36.121	RPD
10 DUP	S99T000555	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	6.34E+01	63.400	% Ct. Erro

Final page for worklist# 29527

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____


Reviewer Signature _____ Date 5 May 99

*Counting uncertainty is higher than the RPD,
results accepted. sc*

LABCORE Data Entry Template for Worklist# 29527

Analyst: S.L. Instrument: AB00 10 Book# 50857

Method: LA-508-101 Rev/Mod G-0

Worklist Comment: U-103 GRAB2, @ALPHA01, STD= 1.0mL, SS by Ludlum. 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	S99T000551	0	F	@ALPHA01	SOLID	99000104 U-103 GRAB2
Analytes Requested: ALPHA01 , ALPHA01E							
5	DUP	S99T000551	0	F	@ALPHA01	SOLID	
6	SPK	S99T000551	0	F	@ALPHA01	SOLID	
7	SAMPLE	S99T000554	0	F	@ALPHA01	SOLID	99000104 U-103 GRAB2
Analytes Requested: ALPHA01 , ALPHA01E							
8	DUP	S99T000554	0	F	@ALPHA01	SOLID	
9	SAMPLE	S99T000555	0	F	@ALPHA01	SOLID	99000104 U-103 GRAB2
Analytes Requested: ALPHA01 , ALPHA01E							
10	DUP	S99T000555	0	F	@ALPHA01	SOLID	

Final page for worklist # 29527

S.L. 5-3-99
 Signature Date

Anna E. Wright 5/5/99
 Signature Date
Sylvia Z. Whom 5/5/99

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
Worklist	GROSS COUNTS (GC)	4129	4313
29527	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	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	137.603	143.737
Batch Number	Standard Value in $\mu\text{Ci/mL}$	2.51E-04	
99001843	Concentration in $\mu\text{Ci/L}$ =	2.31E-01	
ReRun	Replicate Concentration in $\mu\text{Ci/L}$ =	2.41E-01	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	2.3617E-01	
Sample Prep	Rs (Sample Count Rate) = (TC / CT) - BKG		
N/A	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/ μCi)		
Sample #	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
WL29527-STD	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
WB27806			
Prepared By			
NEW			
Chemist			
SAC	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	2.36E-04	DETECTION LEVEL
Analyst			
SCL			4.00E-07 $\mu\text{Ci/mL}$
Date Complete			
05/05/99	RELATIVE COUNTING ERROR =	3.1%	
Analysis Date			
05/03/99			
Analysis Time			
02:05 PM			
Sample Point			
U-103 GRAB2			

Analyst:	NEW	Date: 05-May-99
Signature of Chemist: <i>SAC Cath</i>	SAC	Date: <i>5/14/99</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)	3	2
29527	COUNT TIME in MINUTES (CT)	30	30
AT or TB?	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	11	11
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0904	2.0904
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.179	0.130
Batch Number			
99001843	Blank Concentration in µCi/g	< 6.31E-03	
Rerun	Replicate Concentration in µCi/g	< 4.61E-03	
0	Maximum Concentration in µCi/g	< 6.3121E-03	
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)		
WL29527-BLK			
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			
NEW			
Chemist			
SAC	ALPHA TOTAL in µCi/g (Maximum) =	< 6.31E-03	DETECTION LEVEL
Analyst	LESS THAN Value was Determined from Rmax.		
SCL			8.42E-03
Date Complete	RELATIVE COUNTING ERROR	303.4%	µCi/g
05/05/99			
Analysis Date			
05/03/99			
Analysis Time			
02:05 PM			
Sample Point			
U-103 GRAB2			

Analyst:	SCL	Date: 05-May-99
Signature of Chemist:		Date: 5 May 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)	23	22
29527	COUNT TIME in MINUTES (CT)	30	30
AT FOR TB?	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	11	11
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0904	2.0904
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.737	0.703

Batch Number	
99001843	Blank Concentration in µCi/g 2.60E-02
Rerun	Replicate Concentration in µCi/g 2.49E-02
0	Average Concentration in µCi/g 2.5444E-02

Sample Prep
 FUSION01
Sample #
 S99T000551
Instrument Code
 WB27806
Prepared By
 NEW
Chemist
 SAC
 Rs (Sample Count Rate) = (TC / CT) - BKG
 ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)
 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.

SAC	ALPHA TOTAL in µCi/g (Average) =	2.54E-02	DETECTION LEVEL
Analyst			
SCL			
Date Complete	RELATIVE COUNTING ERROR	44.5%	8.42E-03 µCi/g
05/05/99			
Analysis Date			
05/03/99			
Analysis Time			
02:05 PM			
Sample Point			
U-103 GRAB2			

Analyst:	SCL	Date: 05-May-99
Signature of Chemist:	<i>SAC</i>	SAC Date: 5 May 99

SAMPLE.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: DUP5

AT : LA-508-101 (G-0) SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	16	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	22	35
29527	COUNT TIME in MINUTES (CT)	30	30
Alt or IB?	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	11	11
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.3236	2.3236
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.703	1.137
Batch Number			
99001843	Blank Concentration in $\mu\text{Ci/g}$	2.24E-02	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	3.61E-02	
0	Average Concentration in $\mu\text{Ci/g}$	2.9249E-02	

Sample Prep	FUSION01		
Sample #	S99T000551		
Instrument Code	WB27806		
Prepared By	NEW		
Chemist	SAC		
Analyst	SCL		
Date Complete	05/05/99		
Analysis Date	05/03/99		
Analysis Time	02:05 PM		
Sample Point	U-103 GRAB2		
	Rs (Sample Count Rate) = (TC / CT) - BKG		
	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL} * DF / (EFF * SS * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$		
	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.		
	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	2.92E-02	DETECTION LEVEL
	RELATIVE COUNTING ERROR	44.5%	7.57E-03 $\mu\text{Ci/g}$

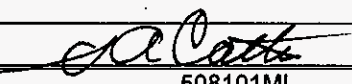
Analyst:	SCL	Date: 05-May-99
Signature of Chemist:	SAC	Date:

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPK6

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)	51863	54398
29527	COUNT TIME in MINUTES (CT)	30	30
AtortBy?	BACKGROUND in cpm (BKG)	0.03	0.03
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.250	0.250
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	11	11
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0904	2.0904
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
99001843	SPIKE VALUE in µCi/mL (SVal)	3.8129E-02	3.8129E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2683	0.2683
0	SAMPLE + SPIKE µCi/g (S+S)	6.11E+01	6.41E+01
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE	2.5444E-02	
FUSION01			
Sample #			
S99T000551	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))))		
NEW	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100		
Chemist			
SAC			
Analyst			
SCL			
Date Complete			
05/05/99			
Analysis Date			
05/03/99	QC ACTUAL =	3.81E-02	
Analysis Time	QC FOUND =	2.97E-02	
02:05 PM	AVG. PERCENT SPIKE RECOVERY =	77.9%	
Sample Point			
U-103 GRAB2			

Analyst:	NEW	Date: 05-May-99
Signature of Chemist:		SAC
SPIKE.WB1 Rev. 1.0	508101ML	Date:

AT : LA-508-101 (G-0) SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	21	15
29527	COUNT TIME in MINUTES (CT)	30	30
AT or TB?	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)	2.118	2.118
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.670	0.470

Batch Number	
99001843	Blank Concentration in $\mu\text{Ci/g}$ 5.36E-02
Rerun	Replicate Concentration in $\mu\text{Ci/g}$ 3.76E-02
0	Average Concentration in $\mu\text{Ci/g}$ 4.5635E-02

Sample Prep:
 FUSION01
 Sample # S99T000554
 Instrument Code WB27806
 Prepared By NEW
 Chemist SAC
 Rs (Sample Count Rate) = (TC / CT) - BKG
 ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)
 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.

SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	4.56E-02	DETECTION LEVEL
Analyst SCL			
Date Complete			1.91E-02
05/05/99	RELATIVE COUNTING ERROR	55.4%	$\mu\text{Ci/g}$
Analysis Date			
05/03/99			
Analysis Time			
02:05 PM			
Sample Point			
U-103 GRAB2			

Analyst:	SCL	Date: 05-May-99
Signature of Chemist:	<i>SCL</i>	SAC Date: <i>5 May 99</i>

AT : LA-508-101 (G-0) SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	16	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	20	12
29527	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	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)	2.1112	2.1112
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.637	0.370

Batch Number	
99001843	Blank Concentration in µCi/g 5.11E-02
Rerun	Replicate Concentration in µCi/g 2.97E-02
0	Average Concentration in µCi/g 4.0427E-02

Sample Prep: FUSION01
 Sample #: S99T000554
 Instrument Code: WB27806
 Prepared By: NEW
 Chemist: SAC

Rs (Sample Count Rate) = (TC / CT) - BKG
 ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)
 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.


ALPHA TOTAL in µCi/g (Average)	=	4.04E-02	DETECTION LEVEL
RELATIVE COUNTING ERROR		63.4%	
			1.91E-02 µCi/g

Analyst: SCL	Date: 05-May-99
Signature of Chemist: <i>[Signature]</i>	Date: 5 May 99

WORKBOOK PAGE: SAM9

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)	22	15
29527	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	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)	2.0412	2.0412
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.703	0.470
Batch Number			
99001843	Blank Concentration in µCi/g	5.84E-02	
Rerun	Replicate Concentration in µCi/g	3.90E-02	
0	Average Concentration in µCi/g	4.8736E-02	
Sample Prep	Rs (Sample Count Rate) = (TC / CT) - BKG		
FUSION01	ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)		
Sample #	S99T000555		
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	NEW		
Chemist	SAC		
Analyst	ALPHA TOTAL in µCi/g (Average) =	4.87E-02	DETECTION LEVEL
SCL			
Date Complete	RELATIVE COUNTING ERROR	55.4%	1.98E-02 µCi/g
05/05/99			
Analysis Date	05/03/99		
Analysis Time	02:05 PM		
Sample Point	U-103 GRAB2		

Analyst:	SCL	Date: 05-May-99
Signature of Chemist:		SAC Date: 5/11/99

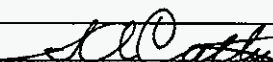
SAMPLE.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: DUP10

AT : LA-508-101 (G-0) SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	16	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	12	16
29527	COUNT TIME in MINUTES (CT)	30	30
AT or TB?	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)	2.1896	2.1896
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.370	0.503
Batch Number			
99001843	Blank Concentration in $\mu\text{Ci/g}$	2.87E-02	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	3.90E-02	
0	Average Concentration in $\mu\text{Ci/g}$	3.3817E-02	
Sample Prep	FUSION01		
Sample #	S99T000555		
Instrument Code	WB27806		
Prepared By	NEW		
Chemist	SAC		
Analyst	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =		3.38E-02
SCL			DETECTION LEVEL
Date Complete	RELATIVE COUNTING ERROR		1.85E-02 $\mu\text{Ci/g}$
05/05/99			63.4%
Analysis Date	05/03/99		
Analysis Time	02:05 PM		
Sample Point	U-103 GRAB2		

Analyst:	SCL	Date: 05-May-99
Signature of Chemist:		SAC Date: 5/16/99

SAMPLE.WB1 Rev. 1.0 508101ML

LABCORE Completed Worklist Report for Worklist# 29192

Analyst: gll

Instrument: GEA02

Book#: 46B57

Method: LA-548-121 Rev/Mod F-φ

Worklist Comment: U103 GRAB2, @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	5.344e-03	6.01e-03	112.463	% Recovery
1 STD		0	@GEA-01 CO60-02E	LIQUID	1	2.90	2.900	% Ct Error
1 STD		0	@GEA-01 CS13702	LIQUID	8.108e-03	8.35e-03	102.985	% Recovery
1 STD		0	@GEA-01 CS13702E	LIQUID	1	2.91	2.910	% Ct Error
2 BLNK		0	@GEA-01 CO60-02	LIQUID	1	<3.69e-3		uCi/mL
2 BLNK		0	@GEA-01 CS13702	LIQUID	1	<8.42e-3		uCi/mL
3 SAMPLE	S99T000538	0	@GEA-01 CO60-02	LIQUID	N/A	2.210e-02		uCi/mL
3 SAMPLE	S99T000538	0	@GEA-01 CO60-02E	LIQUID	N/A	18.2		% Ct Error
3 SAMPLE	S99T000538	0	@GEA-01 CS13702	LIQUID	N/A	4.190e+02		uCi/mL
3 SAMPLE	S99T000538	0	@GEA-01 CS13702E	LIQUID	N/A	0.100		% Ct Error
4 DUP	S99T000538	0	@GEA-01 CO60-02	LIQUID	2.21e-02	2.06e-02	7.026	RPD
4 DUP	S99T000538	0	@GEA-01 CO60-02E	LIQUID	1	18.9	18.900	% Ct Error
4 DUP	S99T000538	0	@GEA-01 CS13702	LIQUID	4.19e+02	4.15e+02	0.959	RPD
4 DUP	S99T000538	0	@GEA-01 CS13702E	LIQUID	1	0.100	0.100	% Ct Error
5 SAMPLE	S99T000547	0	@GEA-01 CO60-02	LIQUID	N/A	2.580e-02		uCi/mL
5 SAMPLE	S99T000547	0	@GEA-01 CO60-02E	LIQUID	N/A	19.0		% Ct Error
5 SAMPLE	S99T000547	0	@GEA-01 CS13702	LIQUID	N/A	5.140e+02		uCi/mL
5 SAMPLE	S99T000547	0	@GEA-01 CS13702E	LIQUID	N/A	0.0900		% Ct Error
6 DUP	S99T000547	0	@GEA-01 CO60-02	LIQUID	2.58e-02	2.40e-02	7.229	RPD
6 DUP	S99T000547	0	@GEA-01 CO60-02E	LIQUID	1	18.9	18.900	% Ct Error
6 DUP	S99T000547	0	@GEA-01 CS13702	LIQUID	5.14e+02	5.15e+02	0.194	RPD
6 DUP	S99T000547	0	@GEA-01 CS13702E	LIQUID	1	0.0900	0.090	% Ct Error
7 SAMPLE	S99T000549	0	@GEA-01 CO60-02	LIQUID	N/A	2.860e-02		uCi/mL
7 SAMPLE	S99T000549	0	@GEA-01 CO60-02E	LIQUID	N/A	14.9		% Ct Error
7 SAMPLE	S99T000549	0	@GEA-01 CS13702	LIQUID	N/A	5.610e+02		uCi/mL
7 SAMPLE	S99T000549	0	@GEA-01 CS13702E	LIQUID	N/A	0.0900		% Ct Error
8 DUP	S99T000549	0	@GEA-01 CO60-02	LIQUID	2.86e-02	2.87e-02	0.349	RPD
8 DUP	S99T000549	0	@GEA-01 CO60-02E	LIQUID	1	13.3	13.300	% Ct Error
8 DUP	S99T000549	0	@GEA-01 CS13702	LIQUID	5.61e+02	5.60e+02	0.178	RPD
8 DUP	S99T000549	0	@GEA-01 CS13702E	LIQUID	1	0.0900	0.090	% Ct Error

Comments Section:

Comments for sample# S99T000538 and test @GEA-01 .
DL=0 => n/a

Comments for sample# S99T000547 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S99T000549 and test @GEA-01 .

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

LABCORE Completed Worklist Report for Worklist# 29192

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

DL=0 => n/a.

Final page for worklist# 29192

Analyst Signature	Date	Analyst Signature	Date
-------------------	------	-------------------	------

	4-12-99		
Reviewer Signature	Date		

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

LABCORE Data Entry Template for Worklist# 29192

Analyst: gll Instrument: GEA00 2 Book# 46857

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

Worklist Comment: U103 GRAB2, @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	S99T000538 0		@GEA-01	LIQUID	99000104	U-103 GRAB2
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
4 DUP	S99T000538 0		@GEA-01	LIQUID		
5 SAMPLE	S99T000547 0		@GEA-01	LIQUID	99000104	U-103 GRAB2
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
6 DUP	S99T000547 0		@GEA-01	LIQUID		
7 SAMPLE	S99T000549 0		@GEA-01	LIQUID	99000104	U-103 GRAB2
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E						
8 DUP	S99T000549 0		@GEA-01	LIQUID		

Final page for worklist # 29192

gll 4-8-99
Signature Date

Sharon L. Holden 4-12-99
Signature Date

Data Entry Comments:

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

* 222-S Laboratory Counting Room 8-APR-1999 14:19:29.11 *

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

Worklist #: 29192
Sample ID: WL29192-STD
Sample Size: 1.00000E-03 L
Dilution Factor: 1.00000E+00

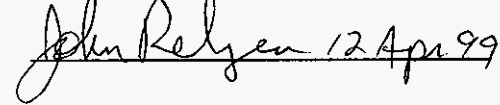
Removed by:



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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2289.cnf
Geometry: 42
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:50:23.55 sec
Dead Time: 0.8%

Verified by:



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

Sample Count Time: 8-APR-1999 13:28:36.59
Decayed to: 8-APR-1999 13:28:36.59
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: MB
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.60*	5743	1.47	1323.19	1316	15	2.9		CS-137	8.35
0	1173.08	2943	1.77	2346.21	2338	18	4.2		CO-60	5.84
0	1332.35	2809	1.84	2664.79	2655	20	4.0		CO-60	6.19

Summary of Nuclide Activity

Sample ID : WL29192-STD

Acquisition date : 8-APR-1999 13:28:36

Total number of lines in spectrum 3
 Number of unidentified lines 0
 Number of lines tentatively identified by NID 3 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
CO-60	5.27Y	1.00	6.014E+00	6.014E+00	0.174E+00	2.90	
CS-137	30.00Y	1.00	8.353E+00	8.353E+00	0.243E+00	2.91	
Total Activity :			1.437E+01	1.437E+01			

Grand Total Activity : 1.437E+01 1.437E+01

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

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

Minimum Detectable Activity Report

Sample ID : WL29192-STD

Acquisition date : 8-APR-1999 13:28:36

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	289.	477.59	7.3100E-01
NA-24	7.	1368.55	3.5290E-02
K-40	120.	1460.75	1.1976E+00
AR-41	22.	1293.60	6.1998E-02
SC-46	107.	1120.55	9.6952E-02
CR-51	318.	320.08	5.4111E-01
MN-54	160.	834.83	9.2763E-02
CO-56	165.	846.76	9.5229E-02
CO-58	164.	810.78	9.2178E-02
FE-59	147.	1099.25	1.9681E-01
ZN-65	130.	1115.55	2.0897E-01
SE-75	353.	264.66	8.3204E-02
KR-85	218.	514.00	1.6287E+01
SR-85	218.	514.01	7.3634E-02
Y-88	3.	1836.06	3.3677E-02
Y-91	47.	1204.67	2.3296E+01
NB-94	193.	871.09	1.0502E-01
ZRNB-95	124.	724.20	3.3016E-01
RU-103	250.	497.08	8.0448E-02
RURH-106	156.	621.93	1.4381E+00
AG-108m	128.	722.94	8.1432E-02
CD-109	319.	88.03	1.4375E+00
AG-110M	229.	657.76	9.5310E-02
SN-113	288.	391.69	9.7905E-02
TE-123m	343.	159.00	4.3383E-02
SB-124	156.	602.73	7.0955E-02
SB-125	305.	427.89	2.3827E-01
TE-125m	314.	109.27	1.3906E+01
I-129	318.	39.60	1.6513E+01
I-131	300.	364.48	7.3629E-02
XE-131m	359.	163.93	1.9138E+00
BA-133	286.	356.02	9.2033E-02
CS-134	158.	604.70	7.1770E-02
CS-136	142.	818.51	8.6327E-02
CS-138	11.	1435.86	9.0970E-02
CE-139	370.	165.85	4.7719E-02
BA-140	176.	537.31	2.7260E-01
LA-140	7.	1596.21	4.1999E-02
CE-141	400.	145.44	8.1124E-02
CE-144	370.	133.51	3.4370E-01
CEPR-144	370.	133.51	6.8670E-01
EU-152	362.	121.78	1.3750E-01
EU-154	30.	1274.51	1.7465E-01
EU-155	335.	86.54	1.6674E-01
HF-181	250.	482.18	8.8411E-02
TA-182	298.	67.75	2.2369E-01
HG-203	368.	279.20	6.3728E-02
BI-207	147.	569.70	6.5534E-02
TL-208	356.	277.36	8.0442E-01
PB-210	324.	46.50	1.1470E+01
BI-212	128.	727.18	1.1159E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL29192-STD

Acquisition date : 8-APR-1999 13:28:36

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	421.	238.63	1.1221E-01
BI-214	177.	609.31	1.6622E-01
PB-214	300.	351.92	2.8909E-01
RA-224	405.	240.99	1.2216E+00
RA-226	404.	186.10	1.1811E+00
AC-228	185.	911.21	4.0076E-01
TH-228	310.	84.37	4.3619E+00
TH-229	311.	88.47	2.0561E-01
U-232	286.	57.78	7.8383E+01
PA-233	327.	312.17	1.4002E-01
UTH-233	396.	245.34	4.4082E+01
PA-234M	159.	1001.03	1.6472E+01
TH-234	293.	63.29	2.9883E+00
U-235	411.	185.71	7.2478E-02
NP-237	335.	86.48	4.4205E-01
U-237	292.	59.54	4.0997E-01
NP-238	129.	984.45	3.4600E-01
NP-239	376.	106.12	1.9290E-01
PU-239	376.	129.30	6.0494E+02
AM-241	292.	59.54	3.9325E-01
AM-243	293.	74.67	1.1676E-01

* 222-S Laboratory Counting Room 8-APR-1999 17:55:12.20 *

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

Worklist #: 29192
Sample ID: WL29192-BLNK
Sample Size: 5.00000E-04 L
Dilution Factor: 1.01000E+02

Removed by:

Shale

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2290.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:30:38.78 sec
Dead Time: 0.4%

Verified by:

John Pelger 12 Apr 99

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

Sample Count Time: 8-APR-1999 15:24:05.62
Decayed to: 8-APR-1999 15:24:05.62
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: MB
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	984.42	18	0.70	1968.85	1966	7 67.1			

Summary of Nuclide Activity
Sample ID : WL29192-BLNK

Page : 2
Acquisition date : 8-APR-1999 15:24:05

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

**** There are no nuclides meeting summary criteria ****

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

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

Minimum Detectable Activity Report

Page : 3

Sample ID : WL29192-BLNK

Acquisition date : 8-APR-1999 15:24:05

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	91.	477.59	2.8361E+01
NA-24	26.	1368.55	4.2370E+00
K-40	315.	1460.75	1.2839E+02
AR-41	21.	1293.60	5.4498E+00
SC-46	57.	1120.55	4.8690E+00
CR-51	160.	320.08	2.6198E+01
MN-54	42.	834.83	3.3154E+00
CO-56	49.	846.76	3.6204E+00
CO-58	48.	810.78	3.4860E+00
FE-59	41.	1099.25	7.3003E+00
CO-60	23.	1332.50	3.6946E+00
ZN-65	35.	1115.55	7.6334E+00
SE-75	169.	264.66	3.9302E+00
KR-85	134.	514.00	8.6844E+02
SR-85	134.	514.01	3.9218E+00
Y-88	7.	1836.06	3.0227E+00
Y-91	32.	1204.67	1.3199E+03
NB-94	43.	871.09	3.4952E+00
ZRNB-95	51.	724.20	1.4648E+01
RU-103	90.	497.08	3.3206E+00
RURH-106	43.	621.93	5.3143E+01
AG-108m	52.	722.94	3.5959E+00
CD-109	197.	88.03	7.6611E+01
AG-110M	62.	657.76	3.4397E+00
SN-113	92.	391.69	3.8136E+00
TE-123m	214.	159.00	2.3253E+00
SB-124	58.	602.73	2.9899E+00
SB-125	103.	427.89	9.5443E+00
TE-125m	203.	109.27	7.5955E+02
I-129	146.	39.60	7.6430E+02
I-131	115.	364.48	3.1438E+00
XE-131m	220.	163.93	1.0184E+02
BA-133	118.	356.02	4.0535E+00
CS-134	57.	604.70	2.9972E+00
CS-136	35.	818.51	3.0297E+00
CS-137	321.	661.66	8.4207E+00
CS-138	13.	1435.86	1.3714E+01
CE-139	232.	165.85	2.5656E+00
BA-140	65.	537.31	1.1504E+01
LA-140	12.	1596.21	3.4899E+00
CE-141	212.	145.44	4.0191E+00
CE-144	212.	133.51	1.7679E+01
CEPR-144	212.	133.51	3.5321E+01
EU-152	224.	121.78	7.3370E+00
EU-154	24.	1274.51	1.0535E+01
EU-155	185.	86.54	8.4300E+00
HF-181	117.	482.18	4.1431E+00
TA-182	172.	67.75	1.1543E+01
HG-203	149.	279.20	2.7741E+00
BI-207	68.	569.70	3.0697E+00
TL-208	151.	277.36	3.5800E+01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL29192-BLNK

Acquisition date : 8-APR-1999 15:24:05

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	150.	46.50	5.3538E+02
BI-212	55.	727.18	5.0726E+01
PB-212	190.	238.63	5.1409E+00
BI-214	125.	609.31	9.4986E+00
PB-214	175.	351.92	3.3398E+01
RA-224	199.	240.99	5.8716E+01
RA-226	221.	186.10	5.9378E+01
AC-228	86.	911.21	1.8720E+01
TH-228	190.	84.37	2.3214E+02
TH-229	196.	88.47	1.1103E+01
U-232	157.	57.78	3.9611E+03
PA-233	138.	312.17	6.2255E+00
UTH-233	165.	245.34	1.9433E+03
PA-234M	38.	1001.03	5.6420E+02
TH-234	188.	63.29	1.6261E+02
U-235	214.	185.71	3.5569E+00
NP-237	183.	86.48	2.2212E+01
U-237	145.	59.54	1.9791E+01
NP-238	31.	984.45	1.2104E+01
NP-239	187.	106.12	9.3753E+00
PU-239	187.	129.30	2.9091E+04
AM-241	145.	59.54	1.8916E+01
AM-243	188.	74.67	6.3411E+00

* 222-S Laboratory Counting Room 9-APR-1999 11:23:38.39 *

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

Worklist #: 29192
Sample ID: S99T538-SAM
Sample Size: 5.00000E-04 L
Dilution Factor: 1.01000E+02

Removed by:

Em Bauldy

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2294.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:49:31.14 sec
Dead Time: 12%

Verified by:

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

Sample Count Time: 9-APR-1999 08:33:40.42
Decayed to: 9-APR-1999 08:33:40.42
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: EMB
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	185.46	1010	1.01	370.96	369	6116.0		U-235	50.8
								RA-226	836.
0	661.71*	4280427	1.52	1323.42	1315	17 0.1		CS-137	4.192E+05
0	1173.35	176	2.02	2346.75	2340	13 25.2		CO-60	23.5
0	1274.17	119	1.72	2548.41	2541	15 28.1			
0	1323.03	855	2.28	2646.14	2637	18 7.8			
0	1333.07	141	2.10	2666.22	2657	15 26.1		CO-60	20.9

Summary of Nuclide Activity
 Sample ID : S99T538-SAM

Page : 2
 Acquisition date : 9-APR-1999 08:33:40

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

Nuclide Type :

Nuclide	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	2.208E+01	2.208E+01	0.401E+01	18.18	
CS-137	30.00Y	1.00	4.192E+05	4.192E+05	0.004E+05	0.10	
RA-226	1600.00Y*****	1.00	8.355E+02	8.355E+02	9.692E+02	116.00	JJR
U-235	7.04E+08Y	1.00	5.081E+01	5.081E+01	5.894E+01	116.00	JJR
Total Activity :			4.201E+05	4.201E+05			12 Apr 99

Grand Total Activity : 4.201E+05 4.201E+05

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

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

Minimum Detectable Activity Report

Sample ID : S99T538-SAM

Acquisition date : 9-APR-1999 08:33:40

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	130897.	477.59	1.0143E+03
NA-24	19.	1368.55	3.7597E+00
K-40	317.	1460.75	1.2868E+02
AR-41	42.	1293.60	7.8321E+00
SC-46	170.	1120.55	8.1517E+00
CR-51	108275.	320.08	6.5273E+02
MN-54	344.	834.83	9.0198E+00
CO-56	319.	846.76	8.8012E+00
CO-58	413.	810.78	9.6808E+00
FE-59	132.	1099.25	1.2574E+01
ZN-65	141.	1115.55	1.4612E+01
SE-75	121766.	264.66	1.0108E+02
KR-85	66322.	514.00	1.8426E+04
SR-85	66316.	514.01	8.3351E+01
Y-88	9.	1836.06	3.3682E+00
Y-91	60.	1204.67	1.7602E+03
NB-94	276.	871.09	8.4013E+00
ZRNB-95	1854.	724.20	8.2811E+01
RU-103	81068.	497.08	9.4286E+01
RURH-106	27387.	621.93	1.2313E+03
AG-108m	1835.	722.94	2.0013E+01
CD-109	104594.	88.03	1.7001E+03
AG-110M	76542.	657.76	1.1317E+02
SN-113	117558.	391.69	1.2902E+02
TE-123m	122082.	159.00	5.3560E+01
SB-124	28158.	602.73	6.1626E+01
SB-125	134523.	427.89	3.2638E+02
TE-125m	111031.	109.27	1.7085E+04
I-129	99400.	39.60	1.9075E+04
I-131	110568.	364.48	9.2626E+01
XE-131m	121412.	163.93	2.3090E+03
BA-133	109162.	356.02	1.1724E+02
CS-134	27940.	604.70	6.1652E+01
CS-136	365.	818.51	9.1885E+00
CS-138	17.	1435.86	1.6876E+01
CE-139	121550.	165.85	5.6652E+01
BA-140	47833.	537.31	2.9102E+02
LA-140	15.	1596.21	3.8467E+00
CE-141	122616.	145.44	9.3160E+01
CE-144	122172.	133.51	4.0879E+02
CEPR-144	122171.	133.51	8.1684E+02
EU-152	119340.	121.78	1.6336E+02
EU-154	141.	1274.51	2.4075E+01
EU-155	103930.	86.54	1.9211E+02
HF-181	104851.	482.18	1.1781E+02
TA-182	98239.	67.75	2.6499E+02
HG-203	115484.	279.20	7.3938E+01
BI-207	31499.	569.70	6.1933E+01
TL-208	116521.	277.36	9.5268E+02
PB-210	98046.	46.50	1.3095E+04
BI-212	1743.	727.18	2.6772E+02

Minimum Detectable Activity Report (continued)

Sample ID : S99T538-SAM

Acquisition date : 9-APR-1999 08:33:40

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	135953.	238.63	1.3223E+02
BI-214	27685.	609.31	1.3460E+02
PB-214	109214.	351.92	8.9270E+02
RA-224	134428.	240.99	1.4709E+03
AC-228	258.	911.21	3.1698E+01
TH-228	103581.	84.37	5.2047E+03
TH-229	104754.	88.47	2.4659E+02
U-232	97089.	57.78	9.4256E+04
PA-233	109277.	312.17	1.6742E+02
UTH-233	131748.	245.34	5.2666E+04
PA-234M	182.	1001.03	1.1828E+03
TH-234	97372.	63.29	3.5543E+03
NP-237	103933.	86.48	5.0884E+02
U-237	97334.	59.54	4.9022E+02
NP-238	163.	984.45	2.6369E+01
NP-239	109253.	106.12	2.1803E+02
PU-239	121631.	129.30	7.1234E+05
AM-241	97334.	59.54	4.6823E+02
AM-243	100358.	74.67	1.4094E+02

 * 222-S Laboratory Counting Room 9-APR-1999 14:54:12.42 *

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

Worklist #: 29192
 Sample ID: S99T538-DUP
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Em Daeber

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2295.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:49:20.89 sec
 Dead Time: 11%

Verified by:

John Relyea 12 Apr 99

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

Sample Count Time: 9-APR-1999 12:04:26.07
 Decayed to: 9-APR-1999 12:04:26.07
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	29.89	932	1.34	59.85	57	6117.2		I-129	1.900E+04
0	185.77	1802	1.86	371.58	369	6 64.6		U-235	90.7
								RA-226	1.491E+03
0	476.46	3042	1.48	952.92	950	8 41.2		BE-7	1.831E+03
0	661.70*	4238576	1.52	1323.40	1315	17 0.1		CS-137	4.151E+05
0	1173.62	149	1.45	2347.29	2340	15 36.0		CO-60	19.8
0	1274.71	72	0.88	2549.50	2543	12 48.1			
2	1322.99	827	2.11	2646.06	2640	34 7.4	1.80E+00		
2	1332.42	141	2.21	2664.93	2640	34 22.2		CO-60	21.0

Summary of Nuclide Activity

Sample ID : S99T538-DUP

Acquisition date : 9-APR-1999 12:04:26

Total number of lines in spectrum 8
 Number of unidentified lines 1
 Number of lines tentatively identified by NID 7 87.50%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
BE-7	53.29D	1.00	1.830E+03	1.831E+03	0.754E+03	41.16	JTR
CO-60	5.27Y	1.00	2.063E+01	2.063E+01	0.390E+01	18.92	
I-129	5.73E+09D	1.00	1.900E+04	1.900E+04	2.226E+04	117.16	JTR
CS-137	30.00Y	1.00	4.151E+05	4.151E+05	0.004E+05	0.10	
RA-226	1600.00Y*****	1.00	1.491E+03	1.491E+03	0.963E+03	64.62	JTR
U-235	7.04E+08Y	1.00	9.068E+01	9.068E+01	5.859E+01	64.62	JTR
Total Activity :			4.376E+05	4.376E+05			12 Apr 99

Grand Total Activity : 4.376E+05 4.376E+05

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

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

Minimum Detectable Activity Report

Sample ID : S99T538-DUP

Acquisition date : 9-APR-1999 12:04:26

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NA-24	22.	1368.55	3.9694E+00
K-40	293.	1460.75	1.2386E+02
AR-41	47.	1293.60	8.2316E+00
SC-46	132.	1120.55	7.2054E+00
CR-51	107596.	320.08	6.5068E+02
MN-54	303.	834.83	8.4879E+00
CO-56	301.	846.76	8.5647E+00
CO-58	337.	810.78	8.7715E+00
FE-59	116.	1099.25	1.1833E+01
ZN-65	117.	1115.55	1.3367E+01
SE-75	119869.	264.66	1.0029E+02
KR-85	65436.	514.00	1.8303E+04
SR-85	65430.	514.01	8.2793E+01
Y-88	10.	1836.06	3.5132E+00
Y-91	55.	1204.67	1.6915E+03
NB-94	267.	871.09	8.2605E+00
ZRNB-95	1756.	724.20	8.0617E+01
RU-103	80099.	497.08	9.3722E+01
RURH-106	26742.	621.93	1.2168E+03
AG-108m	1770.	722.94	1.9658E+01
CD-109	103331.	88.03	1.6899E+03
AG-110M	76718.	657.76	1.1330E+02
SN-113	115977.	391.69	1.2816E+02
TE-123m	121006.	159.00	5.3324E+01
SB-124	27746.	602.73	6.1174E+01
SB-125	133401.	427.89	3.2502E+02
TE-125m	109902.	109.27	1.6998E+04
I-131	109424.	364.48	9.2146E+01
XE-131m	121153.	163.93	2.3065E+03
BA-133	108168.	356.02	1.1670E+02
CS-134	27615.	604.70	6.1294E+01
CS-136	375.	818.51	9.3067E+00
CS-138	15.	1435.86	1.6013E+01
CE-139	121108.	165.85	5.6549E+01
BA-140	47711.	537.31	2.9064E+02
LA-140	16.	1596.21	3.9364E+00
CE-141	121095.	145.44	9.2581E+01
CE-144	121152.	133.51	4.0708E+02
CEPR-144	121150.	133.51	8.1343E+02
EU-152	118321.	121.78	1.6266E+02
EU-154	122.	1274.51	2.2476E+01
EU-155	103041.	86.54	1.9129E+02
HF-181	103670.	482.18	1.1714E+02
TA-182	96804.	67.75	2.6305E+02
HG-203	115060.	279.20	7.3802E+01
BI-207	30992.	569.70	6.1435E+01
TL-208	115217.	277.36	9.4734E+02
PB-210	96719.	46.50	1.3006E+04
BI-212	1725.	727.18	2.6640E+02
PB-212	135037.	238.63	1.3178E+02
BI-214	27577.	609.31	1.3433E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T538-DUP

Acquisition date : 9-APR-1999 12:04:26

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-214	108255.	351.92	8.8794E+02
RA-224	133706.	240.99	1.4669E+03
AC-228	217.	911.21	2.9113E+01
TH-228	102759.	84.37	5.1841E+03
TH-229	103495.	88.47	2.4511E+02
U-232	96079.	57.78	9.3765E+04
PA-233	107745.	312.17	1.6625E+02
UTH-233	130515.	245.34	5.2419E+04
PA-234M	137.	1001.03	1.0330E+03
TH-234	96152.	63.29	3.5320E+03
NP-237	103030.	86.48	5.0663E+02
U-237	96349.	59.54	4.8773E+02
NP-238	124.	984.45	2.3105E+01
NP-239	108316.	106.12	2.1710E+02
PU-239	120494.	129.30	7.0901E+05
AM-241	96350.	59.54	4.6586E+02
AM-243	99292.	74.67	1.4019E+02

* 222-S Laboratory Counting Room 9-APR-1999 18:01:54.73 *

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

Worklist #: 29192
Sample ID: S99T547-SAM
Sample Size: 5.00000E-04 L
Dilution Factor: 1.01000E+02

Removed by:
Raymond

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2297.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:54:06.24 sec
Dead Time: 14%

Verified by:
John Relyea 12 Apr 99

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

Sample Count Time: 9-APR-1999 15:07:22.71
Decayed to: 9-APR-1999 15:07:22.71
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: EMB
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
4	474.86	1583	1.34	949.73	949	8	32.4	2.21E+00		
4	476.53	3149	1.72	953.05	949	8	45.0		BE-7	1.896E+03
0	661.73*	5250750	1.54	1323.44	1315	17	0.1		CS-137	5.143E+05
0	1173.25	158	1.80	2346.55	2340	17	41.4		CO-60	21.1
0	1274.72	116	2.14	2549.50	2542	14	34.5			
0	1323.04	1365	1.81	2646.16	2638	18	5.9			
0	1332.53	189	2.20	2665.14	2656	20	21.2		CO-60	28.0

Summary of Nuclide Activity

Sample ID : S99T547-SAM

Acquisition date : 9-APR-1999 15:07:22

Total number of lines in spectrum 7
 Number of unidentified lines 2
 Number of lines tentatively identified by NID 5 71.43%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr	2-Sigma Error	%Error	
			uCi/L	uCi/L			
BE-7	53.29D	1.00	1.894E+03	1.896E+03	0.853E+03	44.98	gtr
CO-60	5.27Y	1.00	2.582E+01	2.582E+01	0.490E+01	18.98	12 Apr 99
CS-137	30.00Y	1.00	5.143E+05	5.143E+05	0.005E+05	0.09	
Total Activity :			5.162E+05	5.162E+05			

Grand Total Activity : 5.162E+05 5.162E+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 : S99T547-SAM

Acquisition date : 9-APR-1999 15:07:22

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NA-24	33.	1368.55	4.7488E+00
K-40	326.	1460.75	1.3048E+02
AR-41	50.	1293.60	8.5477E+00
SC-46	202.	1120.55	8.8466E+00
CR-51	133545.	320.08	7.2481E+02
MN-54	476.	834.83	1.0567E+01
CO-56	483.	846.76	1.0772E+01
CO-58	597.	810.78	1.1585E+01
FE-59	165.	1099.25	1.3979E+01
ZN-65	179.	1115.55	1.6396E+01
SE-75	149644.	264.66	1.1204E+02
KR-85	81761.	514.00	2.0454E+04
SR-85	81748.	514.01	9.2523E+01
Y-88	5.	1836.06	2.6792E+00
Y-91	81.	1204.67	2.0311E+03
NB-94	400.	871.09	1.0059E+01
ZRNB-95	2782.	724.20	1.0120E+02
RU-103	100013.	497.08	1.0471E+02
RURH-106	33267.	621.93	1.3566E+03
AG-108m	2847.	722.94	2.4859E+01
CD-109	129183.	88.03	1.8891E+03
AG-110M	93196.	657.76	1.2485E+02
SN-113	144900.	391.69	1.4322E+02
TE-123m	149676.	159.00	5.9296E+01
SB-124	34751.	602.73	6.8439E+01
SB-125	166720.	427.89	3.6328E+02
TE-125m	136362.	109.27	1.8931E+04
I-129	122605.	39.60	2.1182E+04
I-131	136915.	364.48	1.0307E+02
XE-131m	150087.	163.93	2.5670E+03
BA-133	134808.	356.02	1.3026E+02
CS-134	34504.	604.70	6.8489E+01
CS-136	504.	818.51	1.0751E+01
CS-138	11.	1435.86	1.4314E+01
CE-139	150358.	165.85	6.2999E+01
BA-140	59871.	537.31	3.2552E+02
LA-140	16.	1596.21	3.9467E+00
CE-141	151388.	145.44	1.0350E+02
CE-144	150416.	133.51	4.5351E+02
CEPR-144	150412.	133.51	9.0621E+02
EU-152	147026.	121.78	1.8129E+02
EU-154	161.	1274.51	2.5632E+01
EU-155	128842.	86.54	2.1386E+02
HF-181	130397.	482.18	1.3136E+02
TA-182	121136.	67.75	2.9421E+02
HG-203	143486.	279.20	8.2403E+01
BI-207	39100.	569.70	6.8979E+01
TL-208	143612.	277.36	1.0575E+03
PB-210	120791.	46.50	1.4534E+04
BI-212	2582.	727.18	3.2506E+02
PB-212	168327.	238.63	1.4711E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T547-SAM

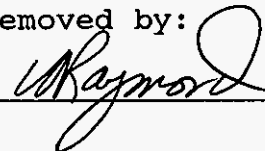
Acquisition date : 9-APR-1999 15:07:22

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-214	34646.	609.31	1.5051E+02
PB-214	134304.	351.92	1.0151E+03
RA-224	166658.	240.99	1.6380E+03
RA-226	191885.	186.10	1.6876E+03
AC-228	338.	911.21	3.6107E+01
TH-228	127544.	84.37	5.7745E+03
TH-229	129245.	88.47	2.7386E+02
U-232	118577.	57.78	1.0415E+05
PA-233	134431.	312.17	1.8567E+02
UTH-233	163273.	245.34	5.8620E+04
PA-234M	206.	1001.03	1.2547E+03
TH-234	120102.	63.29	3.9467E+03
U-235	189801.	185.71	1.0208E+02
NP-237	128782.	86.48	5.6631E+02
U-237	119615.	59.54	5.4343E+02
NP-238	236.	984.45	3.1470E+01
NP-239	134520.	106.12	2.4201E+02
PU-239	149827.	129.30	7.9048E+05
AM-241	119616.	59.54	5.1897E+02
AM-243	123412.	74.67	1.5627E+02

 * 222-S Laboratory Counting Room 9-APR-1999 21:36:47.87 *

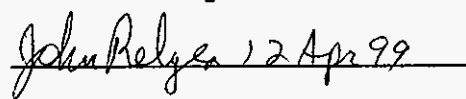
>>>>>>> SAMPLE INFORMATION <<<<<<<<<

Worklist #: 29192
 Sample ID: S99T000547-DUP
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:


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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2298.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:54:11.47 sec
 Dead Time: 14%

Verified by:


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

Sample Count Time: 9-APR-1999 18:37:40.13
 Decayed to: 9-APR-1999 18:37:40.13
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	186.62	1205	1.09	373.29	371	6109.3			U-235	60.6
									RA-226	997.
0	661.72*	5259450	1.54	1323.43	1315	17	0.1		CS-137	5.151E+05
0	1173.54	195	2.21	2347.13	2340	15	30.1		CO-60	26.0
0	1276.16	68	2.13	2552.39	2541	21	88.3			
0	1323.10	1374	1.83	2646.29	2636	20	6.3			
0	1332.70	155	1.93	2665.49	2658	16	24.3		CO-60	23.0
0	1764.42*	11	3.28	3529.08	3524	11142.4				

Summary of Nuclide Activity

Sample ID : S99T000547-DUP

Acquisition date : 9-APR-1999 18:37:40

Total number of lines in spectrum 7
 Number of unidentified lines 2
 Number of lines tentatively identified by NID 5 71.43%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma	Flags
			Uncorrected	Decay Corr				
			uCi/L	uCi/L				
CO-60	5.27Y	1.00	2.402E+01	2.402E+01	0.455E+01	18.94		
CS-137	30.00Y	1.00	5.151E+05	5.151E+05	0.005E+05	0.09		
RA-226	1600.00Y*****		9.967E+02	9.967E+02	10.89E+02	109.29		JJR
U-235	7.04E+08Y	1.00	6.062E+01	6.062E+01	6.625E+01	109.29		JJR
Total Activity :			5.162E+05	5.162E+05				12Apr99

Grand Total Activity : 5.162E+05 5.162E+05

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

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

Minimum Detectable Activity Report
 Sample ID : S99T000547-DUP

Page : 3
 Acquisition date : 9-APR-1999 18:37:40

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	161427.	477.59	1.1263E+03
NA-24	18.	1368.55	3.6232E+00
K-40	291.	1460.75	1.2360E+02
AR-41	47.	1293.60	8.3395E+00
SC-46	209.	1120.55	8.9939E+00
CR-51	134567.	320.08	7.2758E+02
MN-54	450.	834.83	1.0283E+01
CO-56	431.	846.76	1.0196E+01
CO-58	567.	810.78	1.1299E+01
FE-59	175.	1099.25	1.4382E+01
ZN-65	189.	1115.55	1.6821E+01
SE-75	150634.	264.66	1.1240E+02
KR-85	82015.	514.00	2.0486E+04
SR-85	82008.	514.01	9.2670E+01
Y-88	4.	1836.06	2.4969E+00
Y-91	64.	1204.67	1.8116E+03
NB-94	431.	871.09	1.0431E+01
ZRNB-95	2753.	724.20	1.0067E+02
RU-103	100277.	497.08	1.0485E+02
RURH-106	33833.	621.93	1.3681E+03
AG-108m	2785.	722.94	2.4591E+01
CD-109	129137.	88.03	1.8888E+03
AG-110M	94127.	657.76	1.2547E+02
SN-113	145388.	391.69	1.4346E+02
TE-123m	150897.	159.00	5.9537E+01
SB-124	34552.	602.73	6.8243E+01
SB-125	166809.	427.89	3.6338E+02
TE-125m	137049.	109.27	1.8978E+04
I-129	123660.	39.60	2.1272E+04
I-131	136358.	364.48	1.0286E+02
XE-131m	151287.	163.93	2.5772E+03
BA-133	134900.	356.02	1.3030E+02
CS-134	34617.	604.70	6.8600E+01
CS-136	557.	818.51	1.1287E+01
CS-138	18.	1435.86	1.7950E+01
CE-139	151332.	165.85	6.3203E+01
BA-140	59607.	537.31	3.2480E+02
LA-140	23.	1596.21	4.7122E+00
CE-141	151042.	145.44	1.0338E+02
CE-144	151607.	133.51	4.5530E+02
CEPR-144	151605.	133.51	9.0979E+02
EU-152	147990.	121.78	1.8189E+02
EU-154	146.	1274.51	2.4413E+01
EU-155	129076.	86.54	2.1405E+02
HF-181	130417.	482.18	1.3137E+02
TA-182	121428.	67.75	2.9456E+02
HG-203	143458.	279.20	8.2395E+01
BI-207	38907.	569.70	6.8809E+01
TL-208	143402.	277.36	1.0567E+03
PB-210	121137.	46.50	1.4555E+04
BI-212	2689.	727.18	3.3164E+02

Minimum Detectable Activity Report (continued)

Sample ID : S99T000547-DUP

Acquisition date : 9-APR-1999 18:37:40

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	168532.	238.63	1.4720E+02
BI-214	34551.	609.31	1.5031E+02
PB-214	134872.	351.92	1.0177E+03
RA-224	167126.	240.99	1.6403E+03
AC-228	331.	911.21	3.5735E+01
TH-228	128632.	84.37	5.7990E+03
TH-229	129361.	88.47	2.7398E+02
U-232	120034.	57.78	1.0478E+05
PA-233	134717.	312.17	1.8587E+02
UTH-233	162856.	245.34	5.8545E+04
PA-234M	180.	1001.03	1.1751E+03
TH-234	119791.	63.29	3.9416E+03
NP-237	129074.	86.48	5.6695E+02
U-237	119737.	59.54	5.4370E+02
NP-238	223.	984.45	3.0661E+01
NP-239	135014.	106.12	2.4245E+02
PU-239	151358.	129.30	7.9450E+05
AM-241	119737.	59.54	5.1924E+02
AM-243	124202.	74.67	1.5677E+02

* 222-S Laboratory Counting Room 10-APR-1999 00:42:40.62 *

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

Worklist #: 29192
Sample ID: S99T000549-SAM
Sample Size: 5.00000E-04 L
Dilution Factor: 1.01000E+02

Removed by:
W Raymond

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2299.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:56:26.03 sec
Dead Time: 15%

Verified by:
John Relyea 12 Apr 99

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

Sample Count Time: 9-APR-1999 21:45:48.97
Decayed to: 9-APR-1999 21:45:48.97
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: VR
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.72*	5729021	1.54	1323.44	1315	17	0.1		CS-137	5.611E+05
0	995.82	53	1.24	1991.66	1989	8	90.8			
0	1173.36	306	2.44	2346.77	2337	18	22.1		CO-60	40.9
0	1274.68	92	1.30	2549.43	2542	15	52.1			
0	1323.04	1603	2.17	2646.15	2636	21	5.8			
0	1332.52	169	1.97	2665.11	2659	13	19.3		CO-60	25.0
0	1460.94*	31	2.10	2922.00	2913	20	148.6		K-40	46.0

Summary of Nuclide Activity
 Sample ID : S99T000549-SAM

Page : 2
 Acquisition date : 9-APR-1999 21:45:48

Total number of lines in spectrum 7
 Number of unidentified lines 1
 Number of lines tentatively identified by NID 6 85.71%

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
K-40	1.28E+09Y	1.00	4.601E+01	4.601E+01	6.836E+01	148.57	148.57
CO-60	5.27Y	1.00	2.856E+01	2.856E+01	0.427E+01	14.94	14.94
CS-137	30.00Y	1.00	5.611E+05	5.611E+05	0.005E+05	0.09	0.09
Total Activity :			5.612E+05	5.612E+05			

Grand Total Activity : 5.612E+05 5.612E+05

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

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

Minimum Detectable Activity Report

Sample ID : S99T000549-SAM

Acquisition date : 9-APR-1999 21:45:48

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	176742.	477.59	1.1784E+03
NA-24	23.	1368.55	4.0310E+00
AR-41	62.	1293.60	9.5364E+00
SC-46	232.	1120.55	9.4607E+00
CR-51	145967.	320.08	7.5774E+02
MN-54	574.	834.83	1.1573E+01
CO-56	525.	846.76	1.1221E+01
CO-58	659.	810.78	1.2164E+01
FE-59	198.	1099.25	1.5273E+01
ZN-65	227.	1115.55	1.8363E+01
SE-75	164925.	264.66	1.1761E+02
KR-85	89554.	514.00	2.1405E+04
SR-85	89542.	514.01	9.6825E+01
Y-88	4.	1836.06	2.5098E+00
Y-91	113.	1204.67	2.3690E+03
NB-94	496.	871.09	1.1160E+01
ZRNB-95	3308.	724.20	1.1026E+02
RU-103	109495.	497.08	1.0955E+02
RURH-106	36808.	621.93	1.4268E+03
AG-108m	3317.	722.94	2.6813E+01
CD-109	141575.	88.03	1.9775E+03
AG-110M	102276.	657.76	1.3078E+02
SN-113	158546.	391.69	1.4981E+02
TE-123m	164517.	159.00	6.2162E+01
SB-124	38305.	602.73	7.1843E+01
SB-125	181384.	427.89	3.7890E+02
TE-125m	149608.	109.27	1.9827E+04
I-129	134370.	39.60	2.2173E+04
I-131	149153.	364.48	1.0758E+02
XE-131m	164904.	163.93	2.6907E+03
BA-133	147870.	356.02	1.3641E+02
CS-134	38234.	604.70	7.2084E+01
CS-136	616.	818.51	1.1856E+01
CS-138	26.	1435.86	2.1274E+01
CE-139	165400.	165.85	6.6071E+01
BA-140	65769.	537.31	3.4115E+02
LA-140	21.	1596.21	4.4745E+00
CE-141	165393.	145.44	1.0818E+02
CE-144	164854.	133.51	4.7475E+02
CEPR-144	164851.	133.51	9.4865E+02
EU-152	161228.	121.78	1.8983E+02
EU-154	166.	1274.51	2.6020E+01
EU-155	141330.	86.54	2.2397E+02
HF-181	142403.	482.18	1.3726E+02
TA-182	132726.	67.75	3.0794E+02
HG-203	156535.	279.20	8.6064E+01
BI-207	42378.	569.70	7.1805E+01
TL-208	157550.	277.36	1.1075E+03
PB-210	131842.	46.50	1.5184E+04
BI-212	3081.	727.18	3.5474E+02
PB-212	183971.	238.63	1.5378E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T000549-SAM

Acquisition date : 9-APR-1999 21:45:48

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-214	37510.	609.31	1.5659E+02
PB-214	147343.	351.92	1.0767E+03
RA-224	182255.	240.99	1.7131E+03
RA-226	209251.	186.10	1.7622E+03
AC-228	359.	911.21	3.7166E+01
TH-228	140018.	84.37	6.0498E+03
TH-229	141490.	88.47	2.8651E+02
U-232	130662.	57.78	1.0932E+05
PA-233	147774.	312.17	1.9466E+02
UTH-233	177942.	245.34	6.1193E+04
PA-234M	244.	1001.03	1.3606E+03
TH-234	131809.	63.29	4.1343E+03
U-235	207218.	185.71	1.0665E+02
NP-237	141285.	86.48	5.9312E+02
U-237	130694.	59.54	5.6804E+02
NP-238	285.	984.45	3.4497E+01
NP-239	147444.	106.12	2.5341E+02
PU-239	164504.	129.30	8.2823E+05
AM-241	130694.	59.54	5.4243E+02
AM-243	135625.	74.67	1.6381E+02

 * 222-S Laboratory Counting Room 10-APR-1999 04:20:12.05 *

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

Worklist #: 29192
 Sample ID: S99T000549-DUP
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Raymond

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2300.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:56:22.19 sec
 Dead Time: 15%

Verified by:

John Ralys 12 Apr 99

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

Sample Count Time: 10-APR-1999 01:23:23.23
 Decayed to: 10-APR-1999 01:23:23.23
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	31.69	1352	1.74	63.45	61	7105.5				
0	36.44*	1757	1.17	72.95	70	7	79.8			
0	186.28	1892	1.37	372.60	370	7	81.8		U-235	95.2
									RA-226	1.565E+03
0	661.72*	5716432	1.55	1323.43	1315	17	0.1		CS-137	5.599E+05
0	1173.45	246	2.35	2346.95	2342	10	18.6		CO-60	32.8
0	1274.56	177	2.04	2549.18	2541	17	23.2			
0	1323.03	1579	2.03	2646.14	2637	20	5.6			
0	1332.64	176	1.78	2665.37	2660	11	18.6		CO-60	26.1
0	1460.84*	27	1.92	2921.81	2915	15160.6			K-40	41.3
0	1765.93	18	1.92	3532.10	3523	13	94.3			

Summary of Nuclide Activity

Sample ID : S99T000549-DUP

Acquisition date : 10-APR-1999 01:23:23

Total number of lines in spectrum 10
 Number of unidentified lines 3
 Number of lines tentatively identified by NID 7 70.00%

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	
K-40	1.28E+09Y	1.00	4.128E+01	4.128E+01	6.630E+01	160.60	JFR
CO-60	5.27Y	1.00	2.868E+01	2.869E+01	0.380E+01	13.26	12 Apr 99
CS-137	30.00Y	1.00	5.599E+05	5.599E+05	0.005E+05	0.09	JFR
RA-226	1600.00Y	1.00	1.565E+03	1.565E+03	1.281E+03	81.83	JFR
U-235	7.04E+08Y	1.00	9.519E+01	9.519E+01	7.789E+01	81.83	JFR
Total Activity :			5.616E+05	5.616E+05			

Grand Total Activity : 5.616E+05 5.616E+05

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

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

Minimum Detectable Activity Report
 Sample ID : S99T000549-DUP

Page : 3
 Acquisition date : 10-APR-1999 01:23:23

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	175914.	477.59	1.1757E+03
NA-24	21.	1368.55	3.8708E+00
AR-41	53.	1293.60	8.8708E+00
SC-46	216.	1120.55	9.1261E+00
CR-51	145762.	320.08	7.5720E+02
MN-54	571.	834.83	1.1547E+01
CO-56	531.	846.76	1.1277E+01
CO-58	680.	810.78	1.2346E+01
FE-59	211.	1099.25	1.5733E+01
ZN-65	223.	1115.55	1.8224E+01
SE-75	164017.	264.66	1.1728E+02
KR-85	89084.	514.00	2.1349E+04
SR-85	89071.	514.01	9.6571E+01
Y-88	11.	1836.06	3.6989E+00
Y-91	101.	1204.67	2.2479E+03
NB-94	509.	871.09	1.1310E+01
ZRNB-95	3293.	724.20	1.1000E+02
RU-103	109080.	497.08	1.0934E+02
RURH-106	36983.	621.93	1.4302E+03
AG-108m	3333.	722.94	2.6877E+01
CD-109	141172.	88.03	1.9747E+03
AG-110M	103516.	657.76	1.3157E+02
SN-113	158684.	391.69	1.4987E+02
TE-123m	164190.	159.00	6.2101E+01
SB-124	37855.	602.73	7.1421E+01
SB-125	181663.	427.89	3.7919E+02
TE-125m	149203.	109.27	1.9800E+04
I-129	133721.	39.60	2.2119E+04
I-131	149342.	364.48	1.0764E+02
XE-131m	163637.	163.93	2.6803E+03
BA-133	147571.	356.02	1.3628E+02
CS-134	37743.	604.70	7.1622E+01
CS-136	588.	818.51	1.1595E+01
CS-138	18.	1435.86	1.8238E+01
CE-139	164049.	165.85	6.5801E+01
BA-140	65143.	537.31	3.3953E+02
LA-140	17.	1596.21	4.1488E+00
CE-141	165355.	145.44	1.0816E+02
CE-144	164150.	133.51	4.7374E+02
CEPR-144	164151.	133.51	9.4663E+02
EU-152	160085.	121.78	1.8916E+02
EU-154	194.	1274.51	2.8045E+01
EU-155	140674.	86.54	2.2345E+02
HF-181	142459.	482.18	1.3729E+02
TA-182	131837.	67.75	3.0691E+02
HG-203	156617.	279.20	8.6086E+01
BI-207	42550.	569.70	7.1950E+01
TL-208	157761.	277.36	1.1083E+03
PB-210	131514.	46.50	1.5165E+04
BI-212	3080.	727.18	3.5469E+02
PB-212	184164.	238.63	1.5387E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T000549-DUP

Acquisition date : 10-APR-1999 01:23:23

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-214	37713.	609.31	1.5701E+02
PB-214	147622.	351.92	1.0773E+03
RA-224	181568.	240.99	1.7098E+03
AC-228	378.	911.21	3.8085E+01
TH-228	139576.	84.37	6.0403E+03
TH-229	141548.	88.47	2.8657E+02
U-232	129467.	57.78	1.0882E+05
PA-233	146565.	312.17	1.9386E+02
UTH-233	178830.	245.34	6.1345E+04
PA-234M	259.	1001.03	1.4000E+03
TH-234	131590.	63.29	4.1308E+03
NP-237	140639.	86.48	5.9176E+02
U-237	130190.	59.54	5.6695E+02
NP-238	252.	984.45	3.2509E+01
NP-239	146680.	106.12	2.5275E+02
PU-239	164168.	129.30	8.2739E+05
AM-241	130190.	59.54	5.4139E+02
AM-243	135034.	74.67	1.6345E+02

HNF-1668 REV. 0
LABCORE Completed Worklist Report for Worklist# 29530

Analyst: scl

Instrument: GEA02

Book#: 46B57

Method: LA-548-121 Rev/Mod F-φ

Worklist Comment: U-103 GRAB2, @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	SOLID	5.302e-03	5.78e-03	109.015	% Recovery
1 STD		0		@GEA-01 CO60-02E	SOLID	1	2.87	2.870	% Ct Error
1 STD		0		@GEA-01 CS13702	SOLID	8.097e-03	8.11e-03	100.161	% Recovery
1 STD		0		@GEA-01 CS13702E	SOLID	1	2.96	2.960	% Ct Error
2 BLNK-PREP		0		@GEA-01 CO60-02	SOLID	1	<8.79e-2		uCi/g
2 BLNK-PREP		0		@GEA-01 CS13702	SOLID	1	<1.11e-1		uCi/g
3 SAMPLE	S99T000551	0	F	@GEA-01 CO60-02	SOLID	N/A	< 9.076e-02	9.08e-002	uCi/g
3 SAMPLE	S99T000551	0	F	@GEA-01 CO60-02E	SOLID	N/A	n/a		% Ct. Error
3 SAMPLE	S99T000551	0	F	@GEA-01 CS13702	SOLID	N/A	1.405e+02		uCi/g
3 SAMPLE	S99T000551	0	F	@GEA-01 CS13702E	SOLID	N/A	0.830		% Ct. Error
4 DUP	S99T000551	0	F	@GEA-01 CO60-02	SOLID	<9.08e-2	<7.76e-2		RPD
4 DUP	S99T000551	0	F	@GEA-01 CO60-02E	SOLID	1	n/a		% Ct Error
4 DUP	S99T000551	0	F	@GEA-01 CS13702	SOLID	1.41e+02	1.53e+02	8.163	RPD
4 DUP	S99T000551	0	F	@GEA-01 CS13702E	SOLID	1.00	0.750	0.750	% Ct Error
5 SAMPLE	S99T000554	0	F	@GEA-01 CO60-02	SOLID	N/A	< 8.647e-02	8.65e-002	uCi/g
5 SAMPLE	S99T000554	0	F	@GEA-01 CO60-02E	SOLID	N/A	n/a		% Ct. Error
5 SAMPLE	S99T000554	0	F	@GEA-01 CS13702	SOLID	N/A	2.998e+02		uCi/g
5 SAMPLE	S99T000554	0	F	@GEA-01 CS13702E	SOLID	N/A	0.560		% Ct. Error
6 DUP	S99T000554	0	F	@GEA-01 CO60-02	SOLID	<8.65e-2	<9.18e-2		RPD
6 DUP	S99T000554	0	F	@GEA-01 CO60-02E	SOLID	1	n/a		% Ct Error
6 DUP	S99T000554	0	F	@GEA-01 CS13702	SOLID	3.00e+02	3.13e+02	4.241	RPD
6 DUP	S99T000554	0	F	@GEA-01 CS13702E	SOLID	1.00	0.550	0.550	% Ct Error
7 SAMPLE	S99T000555	0	F	@GEA-01 CO60-02	SOLID	N/A	< 9.924e-02	9.92e-002	uCi/g
7 SAMPLE	S99T000555	0	F	@GEA-01 CO60-02E	SOLID	N/A	n/a		% Ct. Error
7 SAMPLE	S99T000555	0	F	@GEA-01 CS13702	SOLID	N/A	3.170e+02		uCi/g
7 SAMPLE	S99T000555	0	F	@GEA-01 CS13702E	SOLID	N/A	0.560		% Ct. Error
8 DUP	S99T000555	0	F	@GEA-01 CO60-02	SOLID	<9.92e-2	<8.22e-2		RPD
8 DUP	S99T000555	0	F	@GEA-01 CO60-02E	SOLID	1	n/a		% Ct Error
8 DUP	S99T000555	0	F	@GEA-01 CS13702	SOLID	3.17e+02	2.92e+02	8.210	RPD
8 DUP	S99T000555	0	F	@GEA-01 CS13702E	SOLID	1.00	0.560	0.560	% Ct Error

Comments Section:

Comments for sample# S99T000551 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S99T000554 and test @GEA-01 .
DL=0 => n/a.

Comments for sample# S99T000555 and test @GEA-01 .

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

LABCORE Completed Worklist Report for Worklist# 29530

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

DL=0 => n/a.

Final page for worklist# 29530

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

 _____
Reviewer Signature Date

5-3-99

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

LABCORE Data Entry Template for Worklist# 29530

Analyst: SL Instrument: GEA00 Book# 46157

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

Worklist Comment: U-103 GRAB2, @GEA-01, 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	S99T000551	0	F	@GEA-01	SOLID	99000104	U-103 GRAB2
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E							
4 DUP	S99T000551	0	F	@GEA-01	SOLID		
5 SAMPLE	S99T000554	0	F	@GEA-01	SOLID	99000104	U-103 GRAB2
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E							
6 DUP	S99T000554	0	F	@GEA-01	SOLID		
7 SAMPLE	S99T000555	0	F	@GEA-01	SOLID	99000104	U-103 GRAB2
Analytes Requested: CO60-02 , CO60-02E, CS13702 , CS13702E							
8 DUP	S99T000555	0	F	@GEA-01	SOLID		

Final page for worklist # 29530

See Lari 4-30-99
Signature Date

Signature Date

Data Entry Comments:

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

 * 222-S Laboratory Counting Room 30-APR-1999 17:23:45.08 *

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

Worklist #: 29530
 Sample ID: WL29530-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Em Barlev

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2476.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:23.73 sec
 Dead Time: 0.8%

Verified by:

John Relyea 3 May 99

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

Sample Count Time: 30-APR-1999 16:32:48.92
 Decayed to: 30-APR-1999 16:32:48.92
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.50*	5577	1.58	1322.98	1316	14	3.0		CS-137	8.11
0	1172.90	2934	1.81	2345.85	2338	17	4.1		CO-60	5.82
0	1332.13	2604	1.94	2664.33	2654	18	4.0		CO-60	5.74

Summary of Nuclide Activity

Sample ID : WL29530-STD

Acquisition date : 30-APR-1999 16:32:48

Total number of lines in spectrum 3
 Number of unidentified lines 0
 Number of lines tentatively identified by NID 3 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
CO-60	5.27Y	1.00	5.777E+00	5.777E+00	0.166E+00	2.87	
CS-137	30.00Y	1.00	8.112E+00	8.112E+00	0.240E+00	2.96	
Total Activity :			1.389E+01	1.389E+01			

Grand Total Activity : 1.389E+01 1.389E+01

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

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

Minimum Detectable Activity Report

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Sample ID : WL29530-STD

Acquisition date : 30-APR-1999 16:32:48

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	315.	477.59	7.6166E-01
NA-24	11.	1368.55	4.1646E-02
K-40	109.	1460.75	1.1452E+00
AR-41	25.	1293.60	6.6168E-02
SC-46	119.	1120.55	1.0181E-01
CR-51	312.	320.08	5.3578E-01
MN-54	136.	834.83	8.5823E-02
CO-56	152.	846.76	9.1655E-02
CO-58	131.	810.78	8.2724E-02
FE-59	156.	1099.25	2.0223E-01
ZN-65	137.	1115.55	2.1437E-01
SE-75	364.	264.66	8.4459E-02
KR-85	250.	514.00	1.7383E+01
SR-85	250.	514.01	7.8561E-02
Y-88	4.	1836.06	3.6141E-02
Y-91	41.	1204.67	2.2019E+01
NB-94	143.	871.09	9.1031E-02
ZRNB-95	106.	724.20	3.0635E-01
RU-103	211.	497.08	7.4062E-02
RURH-106	150.	621.93	1.4145E+00
AG-108m	116.	722.94	7.7805E-02
CD-109	295.	88.03	1.3844E+00
AG-110M	275.	657.76	1.0400E-01
SN-113	309.	391.69	1.0128E-01
TE-123m	377.	159.00	4.5454E-02
SB-124	153.	602.73	7.0449E-02
SB-125	275.	427.89	2.2653E-01
TE-125m	337.	109.27	1.4402E+01
I-129	334.	39.60	1.6907E+01
I-131	286.	364.48	7.1930E-02
XE-131m	359.	163.93	1.9136E+00
BA-133	284.	356.02	9.1710E-02
CS-134	147.	604.70	6.9444E-02
CS-136	151.	818.51	8.8918E-02
CS-138	15.	1435.86	1.0513E-01
CE-139	347.	165.85	4.6302E-02
BA-140	175.	537.31	2.7140E-01
LA-140	3.	1596.21	2.8297E-02
CE-141	419.	145.44	8.2942E-02
CE-144	377.	133.51	3.4687E-01
CEPR-144	377.	133.51	6.9301E-01
EU-152	319.	121.78	1.2924E-01
EU-154	34.	1274.51	1.8373E-01
EU-155	298.	86.54	1.5762E-01
HF-181	246.	482.18	8.7710E-02
TA-182	291.	67.75	2.2105E-01
HG-203	371.	279.20	6.3986E-02
BI-207	153.	569.70	6.6966E-02
TL-208	324.	277.36	7.6883E-01
PB-210	313.	46.50	1.1283E+01
BI-212	127.	727.18	1.1122E+00

HNF-1668 REV. 0

Minimum Detectable Activity Report (continued)

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Sample ID : WL29530-STD

Acquisition date : 30-APR-1999 16:32:48

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	425.	238.63	1.1274E-01
BI-214	194.	609.31	1.7392E-01
PB-214	290.	351.92	2.8436E-01
RA-224	396.	240.99	1.2087E+00
RA-226	415.	186.10	1.1970E+00
AC-228	194.	911.21	4.1044E-01
TH-228	321.	84.37	4.4314E+00
TH-229	306.	88.47	2.0417E-01
U-232	297.	57.78	7.9838E+01
PA-233	333.	312.17	1.4130E-01
UTH-233	394.	245.34	4.3947E+01
PA-234M	159.	1001.03	1.6471E+01
TH-234	325.	63.29	3.1421E+00
U-235	407.	185.71	7.2116E-02
NP-237	298.	86.48	4.1782E-01
U-237	388.	101.07	1.8524E-01
NP-238	128.	984.45	3.4474E-01
NP-239	342.	106.12	1.8438E-01
PU-239	359.	129.30	5.9123E+02
AM-241	283.	59.54	3.8705E-01
AM-243	287.	74.67	1.1564E-01

 * 222-S Laboratory Counting Room 30-APR-1999 20:58:12.82 *

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

Worklist #: 29530
 Sample ID: WL29530-BLK
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2477.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:30.95 sec
 Dead Time: 0.3%

Verified by:

John Relyea 3 May 99

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

Sample Count Time: 30-APR-1999 18:27:12.62
 Decayed to: 30-APR-1999 18:27:12.62
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	661.80*	48	1.81	1323.60	1318	14113.6		CS-137	0.230
0	1460.55*	40	1.89	2921.22	2913	18122.8		K-40	2.99

Summary of Nuclide Activity
 Sample ID : WL29530-BLK

Acquisition date : 30-APR-1999 18:27:12

Total number of lines in spectrum 2
 Number of unidentified lines 0
 Number of lines tentatively identified by NID 2 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma	Flags
			Uncorrected	Decay Corr				
			uCi/L	uCi/L				
K-40	1.28E+09Y	1.00	2.988E+00	2.988E+00	3.668E+00	122.77		HR
CS-137	30.00Y	1.00	2.305E-01	2.305E-01	2.618E-01	113.59		
Total Activity :			3.218E+00	3.218E+00				
Grand Total Activity :			3.218E+00	3.218E+00				

detection limit
 3 May 99

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Sample ID : WL29530-BLK

Acquisition date : 30-APR-1999 18:27:12

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	80.	477.59	1.3223E+00
NA-24	13.	1368.55	1.5303E-01
AR-41	19.	1293.60	2.5872E-01
SC-46	62.	1120.55	2.5095E-01
CR-51	128.	320.08	1.1640E+00
MN-54	42.	834.83	1.6523E-01
CO-56	39.	846.76	1.6125E-01
CO-58	50.	810.78	1.7510E-01
FE-59	49.	1099.25	3.9120E-01
CO-60	23.	1332.50	1.8380E-01
ZN-65	40.	1115.55	4.0039E-01
SE-75	160.	264.66	1.8923E-01
KR-85	101.	514.00	3.7576E+01
SR-85	101.	514.01	1.6966E-01
Y-88	6.	1836.06	1.4148E-01
Y-91	42.	1204.67	7.3598E+01
NB-94	34.	871.09	1.5415E-01
ZRNB-95	42.	724.20	6.6536E-01
RU-103	68.	497.08	1.4397E-01
RURH-106	60.	621.93	3.0488E+00
AG-108m	43.	722.94	1.6360E-01
CD-109	177.	88.03	3.6079E+00
AG-110M	73.	657.76	1.8443E-01
SN-113	109.	391.69	2.0484E-01
TE-123m	220.	159.00	1.1686E-01
SB-124	61.	602.73	1.5145E-01
SB-125	95.	427.89	4.5351E-01
TE-125m	214.	109.27	3.8530E+01
I-129	155.	39.60	3.8919E+01
I-131	117.	364.48	1.5711E-01
XE-131m	223.	163.93	5.0750E+00
BA-133	127.	356.02	2.0760E-01
CS-134	77.	604.70	1.6984E-01
CS-136	37.	818.51	1.5364E-01
CS-138	11.	1435.86	6.1603E-01
CE-139	203.	165.85	1.1895E-01
BA-140	68.	537.31	5.7893E-01
LA-140	15.	1596.21	1.8991E-01
CE-141	201.	145.44	1.9389E-01
CE-144	209.	133.51	8.7015E-01
CEPR-144	209.	133.51	1.7384E+00
EU-152	185.	121.78	3.3179E-01
EU-154	29.	1274.51	5.6859E-01
EU-155	201.	86.54	4.3467E-01
HF-181	85.	482.18	1.7613E-01
TA-182	195.	67.75	6.0708E-01
HG-203	151.	279.20	1.3838E-01
BI-207	77.	569.70	1.6108E-01
TL-208	177.	277.36	1.9158E+00
PB-210	158.	46.50	2.7190E+01
BI-212	50.	727.18	2.3986E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL29530-BLK

Acquisition date : 30-APR-1999 18:27:12

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	241.	238.63	2.8572E-01
BI-214	129.	609.31	4.7599E-01
PB-214	193.	351.92	1.7299E+00
RA-224	203.	240.99	2.9342E+00
RA-226	213.	186.10	2.8885E+00
AC-228	66.	911.21	8.1841E-01
TH-228	184.	84.37	1.1317E+01
TH-229	179.	88.47	5.2593E-01
U-232	151.	57.78	1.9234E+02
PA-233	138.	312.17	3.0828E-01
UTH-233	180.	245.34	1.0036E+02
PA-234M	44.	1001.03	2.9846E+01
TH-234	156.	63.29	7.3656E+00
U-235	210.	185.71	1.7440E-01
NP-237	201.	86.48	1.1498E+00
U-237	182.	101.07	4.2989E-01
NP-238	36.	984.45	6.4178E-01
NP-239	179.	106.12	4.5415E-01
PU-239	205.	129.30	1.5023E+03
AM-241	169.	59.54	1.0064E+00
AM-243	212.	74.67	3.3286E-01

 * 222-S Laboratory Counting Room 1-MAY-1999 03:02:12.77 *

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

Worklist #: 29530
 Sample ID: S99T551-SAM
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

Em Buela

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2480.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:31:12.47 sec
 Dead Time: 0.8%

Verified by:

John Relye 3 May 99

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

Sample Count Time: 1-MAY-1999 00:30:13.72
 Decayed to: 1-MAY-1999 00:30:13.72
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.50*	60654	1.47	1323.00	1315	15	0.8		CS-137	294.

Summary of Nuclide Activity

Sample ID : S99T551-SAM

Acquisition date : 1-MAY-1999 00:30:13

Total number of lines in spectrum 1
 Number of unidentified lines 0
 Number of lines tentatively identified by NID 1 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected	Decay Corr				
			uCi/L	uCi/L				
CS-137	30.00Y	1.00	2.941E+02	2.941E+02	0.024E+02	0.83		
Total Activity :			2.941E+02	2.941E+02				

Grand Total Activity : 2.941E+02 2.941E+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 : S99T551-SAM

Acquisition date : 1-MAY-1999 00:30:13

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	1865.	477.59	6.0645E+00
NA-24	14.	1368.55	1.6108E-01
K-40	293.	1460.75	6.1395E+00
AR-41	21.	1293.60	2.6767E-01
SC-46	68.	1120.55	2.6184E-01
CR-51	1693.	320.08	4.0896E+00
MN-54	34.	834.83	1.5071E-01
CO-56	37.	846.76	1.5815E-01
CO-58	54.	810.78	1.8218E-01
FE-59	29.	1099.25	3.0843E-01
CO-60	25.	1332.50	1.8973E-01
ZN-65	32.	1115.55	3.6082E-01
SE-75	1903.	264.66	6.3278E-01
KR-85	1004.	514.00	1.1404E+02
SR-85	1004.	514.01	5.1578E-01
Y-88	10.	1836.06	1.7674E-01
Y-91	38.	1204.67	7.0937E+01
NB-94	40.	871.09	1.6741E-01
ZRNB-95	56.	724.20	7.5528E-01
RU-103	1225.	497.08	5.8215E-01
RURH-106	428.	621.93	7.8081E+00
AG-108m	48.	722.94	1.7131E-01
CD-109	1618.	88.03	1.0600E+01
AG-110M	1581.	657.76	8.1512E-01
SN-113	1708.	391.69	7.7943E-01
TE-123m	1945.	159.00	3.3850E-01
SB-124	435.	602.73	3.8825E-01
SB-125	1975.	427.89	1.9802E+00
TE-125m	1750.	109.27	1.0746E+02
I-129	1523.	39.60	1.1841E+02
I-131	1614.	364.48	5.6074E-01
XE-131m	1926.	163.93	1.4556E+01
BA-133	1646.	356.02	7.2169E-01
CS-134	427.	604.70	3.8662E-01
CS-136	41.	818.51	1.6077E-01
CS-138	15.	1435.86	7.2796E-01
CE-139	1972.	165.85	3.6131E-01
BA-140	725.	537.31	1.8068E+00
LA-140	9.	1596.21	1.5405E-01
CE-141	1886.	145.44	5.7860E-01
CE-144	1886.	133.51	2.5439E+00
CEPR-144	1886.	133.51	5.0835E+00
EU-152	1863.	121.78	1.0224E+00
EU-154	24.	1274.51	5.2344E-01
EU-155	1627.	86.54	1.2051E+00
HF-181	1528.	482.18	7.1325E-01
TA-182	1564.	67.75	1.6763E+00
HG-203	1720.	279.20	4.5212E-01
BI-207	515.	569.70	4.0092E-01
TL-208	1723.	277.36	5.8047E+00
PB-210	1539.	46.50	8.2217E+01

Minimum Detectable Activity Report (continued)

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Sample ID : S99T551-SAM

Acquisition date : 1-MAY-1999 00:30:13

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	66.	727.18	2.7211E+00
PB-212	2184.	238.63	8.3870E-01
BI-214	546.	609.31	9.5556E-01
PB-214	1755.	351.92	5.0960E+00
RA-224	2086.	240.99	9.1604E+00
RA-226	2420.	186.10	9.4812E+00
AC-228	68.	911.21	8.3283E-01
TH-228	1628.	84.37	3.2711E+01
TH-229	1616.	88.47	1.5352E+00
U-232	1504.	57.78	5.8843E+02
PA-233	1657.	312.17	1.0333E+00
UTH-233	1995.	245.34	3.2450E+02
PA-234M	36.	1001.03	2.7370E+01
TH-234	1436.	63.29	2.1656E+01
U-235	2390.	185.71	5.7299E-01
NP-237	1627.	86.48	3.1913E+00
U-237	1689.	101.07	1.2740E+00
NP-238	38.	984.45	6.5699E-01
NP-239	1713.	106.12	1.3656E+00
PU-239	1899.	129.30	4.4582E+03
AM-241	1466.	59.54	2.8829E+00
AM-243	1578.	74.67	8.8598E-01

 * 222-S Laboratory Counting Room 1-MAY-1999 06:22:07.59 *

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

Worklist #: 29530
 Sample ID: S99T551-DUP
 Sample Size: 1.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

Shulala

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2481.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:31:15.96 sec
 Dead Time: 0.8%

Verified by:

John Relyea 3 May 99

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

Sample Count Time: 1-MAY-1999 03:50:04.53
 Decayed to: 1-MAY-1999 03:50:04.53
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.49*	73312	1.46	1322.98	1315	16	0.8		CS-137	355.
0	1460.48*	29	1.89	2921.07	2913	15142.9			K-40	2.17

Summary of Nuclide Activity

Sample ID : S99T551-DUP

Acquisition date : 1-MAY-1999 03:50:04

Total number of lines in spectrum 2
 Number of unidentified lines 0
 Number of lines tentatively identified by NID 2 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
K-40	1.28E+09Y	1.00	2.170E+00	2.170E+00	3.100E+00	142.85	JR
CS-137	30.00Y	1.00	3.555E+02	3.555E+02	0.027E+02	0.75	3 May 99
Total Activity :			3.576E+02	3.576E+02			

Grand Total Activity : 3.576E+02 3.576E+02

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

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

Minimum Detectable Activity Report

Sample ID : S99T551-DUP

Acquisition date : 1-MAY-1999 03:50:04

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	2147.	477.59	6.5009E+00
NA-24	14.	1368.55	1.6046E-01
AR-41	29.	1293.60	3.1224E-01
SC-46	47.	1120.55	2.2093E-01
CR-51	1972.	320.08	4.4094E+00
MN-54	43.	834.83	1.6626E-01
CO-56	50.	846.76	1.8110E-01
CO-58	36.	810.78	1.5068E-01
FE-59	50.	1099.25	3.9646E-01
CO-60	22.	1332.50	1.8033E-01
ZN-65	29.	1115.55	3.4760E-01
SE-75	2185.	264.66	6.7752E-01
KR-85	1200.	514.00	1.2449E+02
SR-85	1199.	514.01	5.6288E-01
Y-88	8.	1836.06	1.6138E-01
Y-91	37.	1204.67	6.9922E+01
NB-94	45.	871.09	1.7620E-01
ZRNB-95	71.	724.20	8.4501E-01
RU-103	1479.	497.08	6.3852E-01
RURH-106	477.	621.93	8.2270E+00
AG-108m	65.	722.94	1.9787E-01
CD-109	1887.	88.03	1.1436E+01
AG-110M	1930.	657.76	8.9959E-01
SN-113	2052.	391.69	8.5332E-01
TE-123m	2206.	159.00	3.6023E-01
SB-124	574.	602.73	4.4462E-01
SB-125	2300.	427.89	2.1347E+00
TE-125m	1979.	109.27	1.1420E+02
I-129	1835.	39.60	1.2982E+02
I-131	1936.	364.48	6.1330E-01
XE-131m	2268.	163.93	1.5783E+01
BA-133	1902.	356.02	7.7502E-01
CS-134	551.	604.70	4.3777E-01
CS-136	54.	818.51	1.8367E-01
CS-138	18.	1435.86	7.8010E-01
CE-139	2225.	165.85	3.8347E-01
BA-140	890.	537.31	1.9977E+00
LA-140	10.	1596.21	1.5808E-01
CE-141	2308.	145.44	6.3922E-01
CE-144	2188.	133.51	2.7370E+00
CEPR-144	2188.	133.51	5.4694E+00
EU-152	2304.	121.78	1.1353E+00
EU-154	29.	1274.51	5.7171E-01
EU-155	1864.	86.54	1.2885E+00
HF-181	1816.	482.18	7.7652E-01
TA-182	1856.	67.75	1.8239E+00
HG-203	2096.	279.20	4.9847E-01
BI-207	586.	569.70	4.2674E-01
TL-208	2085.	277.36	6.3775E+00
PB-210	1865.	46.50	9.0393E+01
BI-212	71.	727.18	2.8192E+00

Minimum Detectable Activity Report (continued)

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Sample ID : S99T551-DUP

Acquisition date : 1-MAY-1999 03:50:04

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	2450.	238.63	8.8758E-01
BI-214	591.	609.31	9.9349E-01
PB-214	1953.	351.92	5.3746E+00
RA-224	2405.	240.99	9.8267E+00
RA-226	2812.	186.10	1.0211E+01
AC-228	75.	911.21	8.7142E-01
TH-228	1882.	84.37	3.5134E+01
TH-229	1880.	88.47	1.6544E+00
U-232	1774.	57.78	6.3819E+02
PA-233	1913.	312.17	1.1091E+00
UTH-233	2259.	245.34	3.4501E+02
PA-234M	39.	1001.03	2.8461E+01
TH-234	1746.	63.29	2.3845E+01
U-235	2795.	185.71	6.1914E-01
NP-237	1865.	86.48	3.4137E+00
U-237	1971.	101.07	1.3747E+00
NP-238	30.	984.45	5.8915E-01
NP-239	2022.	106.12	1.4821E+00
PU-239	2277.	129.30	4.8755E+03
AM-241	1736.	59.54	3.1330E+00
AM-243	1894.	74.67	9.6953E-01

* 222-S Laboratory Counting Room 1-MAY-1999 09:01:10.55 *

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

Worklist #: 29530
Sample ID: S99T554-SAM
Sample Size: 1.00000E-04 L
Dilution Factor: 1.00000E+00

Removed by:

J. Kelly

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2482.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:31:33.33 sec
Dead Time: 1.0%

Verified by:

John Relyea 3 May 99

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

Sample Count Time: 1-MAY-1999 06:29:07.84
Decayed to: 1-MAY-1999 06:29:07.84
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: SLH2
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.48*	130963	1.47	1322.96	1315	16	0.6		CS-137	635.

Summary of Nuclide Activity

Sample ID : S99T554-SAM

Acquisition date : 1-MAY-1999 06:29:07

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr	2-Sigma Error	%Error	
			uCi/L	uCi/L			
CS-137	30.00Y	1.00	6.350E+02	6.350E+02	0.036E+02	0.56	
Total Activity :			6.350E+02	6.350E+02			

Grand Total Activity : 6.350E+02 6.350E+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 : S99T554-SAM

Acquisition date : 1-MAY-1999 06:29:07

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	3903.	477.59	8.7372E+00
NA-24	21.	1368.55	1.9047E-01
K-40	288.	1460.75	6.0808E+00
AR-41	14.	1293.60	2.2290E-01
SC-46	55.	1120.55	2.3670E-01
CR-51	3312.	320.08	5.6974E+00
MN-54	40.	834.83	1.6216E-01
CO-56	33.	846.76	1.4890E-01
CO-58	36.	810.78	1.5001E-01
FE-59	24.	1099.25	2.8535E-01
CO-60	23.	1332.50	1.8314E-01
ZN-65	34.	1115.55	3.7309E-01
SE-75	3854.	264.66	8.9704E-01
KR-85	2137.	514.00	1.6544E+02
SR-85	2138.	514.01	7.4848E-01
Y-88	9.	1836.06	1.6669E-01
Y-91	38.	1204.67	7.0415E+01
NB-94	49.	871.09	1.8326E-01
ZRNB-95	48.	724.20	7.0225E-01
RU-103	2491.	497.08	8.2588E-01
RURH-106	847.	621.93	1.0894E+01
AG-108m	57.	722.94	1.8508E-01
CD-109	3291.	88.03	1.5054E+01
AG-110M	3492.	657.76	1.2059E+00
SN-113	3613.	391.69	1.1286E+00
TE-123m	3806.	159.00	4.7179E-01
SB-124	848.	602.73	5.3800E-01
SB-125	4126.	427.89	2.8509E+00
TE-125m	3619.	109.27	1.5390E+02
I-129	3207.	39.60	1.7104E+02
I-131	3464.	364.48	8.1779E-01
XE-131m	3827.	163.93	2.0442E+01
BA-133	3456.	356.02	1.0410E+00
CS-134	831.	604.70	5.3506E-01
CS-136	37.	818.51	1.5434E-01
CS-138	21.	1435.86	8.3851E-01
CE-139	3815.	165.85	5.0069E-01
BA-140	1517.	537.31	2.5965E+00
LA-140	17.	1596.21	2.0155E-01
CE-141	3863.	145.44	8.2475E-01
CE-144	3806.	133.51	3.5993E+00
CEPR-144	3806.	133.51	7.1925E+00
EU-152	3871.	121.78	1.4677E+00
EU-154	26.	1274.51	5.4055E-01
EU-155	3312.	86.54	1.7117E+00
HF-181	3194.	482.18	1.0265E+00
TA-182	3163.	67.75	2.3738E+00
HG-203	3549.	279.20	6.4680E-01
BI-207	993.	569.70	5.5272E-01
TL-208	3637.	277.36	8.3982E+00
PB-210	3114.	46.50	1.1645E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T554-SAM

Acquisition date : 1-MAY-1999 06:29:07

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	47.	727.18	2.3318E+00
PB-212	4337.	238.63	1.1777E+00
BI-214	955.	609.31	1.2565E+00
PB-214	3452.	351.92	7.1343E+00
RA-224	4168.	240.99	1.2901E+01
RA-226	4863.	186.10	1.3394E+01
AC-228	81.	911.21	9.0391E-01
TH-228	3361.	84.37	4.6792E+01
TH-229	3263.	88.47	2.1725E+00
U-232	3032.	57.78	8.3168E+02
PA-233	3234.	312.17	1.4376E+00
UTH-233	4219.	245.34	4.6997E+02
PA-234M	44.	1001.03	3.0032E+01
TH-234	3168.	63.29	3.2009E+01
U-235	4821.	185.71	8.1104E-01
NP-237	3313.	86.48	4.5344E+00
U-237	3416.	101.07	1.8041E+00
NP-238	33.	984.45	6.1521E-01
NP-239	3508.	106.12	1.9460E+00
PU-239	3922.	129.30	6.3805E+03
AM-241	3087.	59.54	4.1637E+00
AM-243	3270.	74.67	1.2700E+00

* 222-S Laboratory Counting Room 1-MAY-1999 11:41:18.94 *

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

Worklist #: 29530
Sample ID: S99T554-DUP
Sample Size: 1.00000E-04 L
Dilution Factor: 1.00000E+00

Removed by:

John Miller

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2483.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:31:32.32 sec
Dead Time: 1.0%

Verified by:

John Relyea 30 May 99

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

Sample Count Time: 1-MAY-1999 09:09:18.31
Decayed to: 1-MAY-1999 09:09:18.31
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: SLH2
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.48*	136106	1.48	1322.96	1315	16	0.6		CS-137	660.
0	1460.32*	38	2.00	2920.77	2911	18112.0			K-40	2.84

Summary of Nuclide Activity

Sample ID : S99T554-DUP

Acquisition date : 1-MAY-1999 09:09:18

Total number of lines in spectrum 2
 Number of unidentified lines 0
 Number of lines tentatively identified by NID 2 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			uCi/L	uCi/L			
K-40	1.28E+09Y	1.00	2.839E+00	2.839E+00	3.179E+00	112.00	0.55
CS-137	30.00Y	1.00	6.599E+02	6.599E+02	0.037E+02	0.55	3 May 99
Total Activity :			6.627E+02	6.627E+02			

Grand Total Activity : 6.627E+02 6.627E+02

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

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

Minimum Detectable Activity Report

Sample ID : S99T554-DUP

Acquisition date : 1-MAY-1999 09:09:18

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	4105.	477.59	8.9580E+00
NA-24	14.	1368.55	1.6110E-01
AR-41	25.	1293.60	2.9308E-01
SC-46	49.	1120.55	2.2440E-01
CR-51	3502.	320.08	5.8569E+00
MN-54	47.	834.83	1.7316E-01
CO-56	40.	846.76	1.6324E-01
CO-58	44.	810.78	1.6580E-01
FE-59	34.	1099.25	3.3143E-01
CO-60	26.	1332.50	1.9374E-01
ZN-65	31.	1115.55	3.5521E-01
SE-75	3832.	264.66	8.9452E-01
KR-85	2198.	514.00	1.6773E+02
SR-85	2197.	514.01	7.5860E-01
Y-88	8.	1836.06	1.5823E-01
Y-91	38.	1204.67	7.0957E+01
NB-94	53.	871.09	1.8941E-01
ZRNB-95	72.	724.20	8.5000E-01
RU-103	2599.	497.08	8.4340E-01
RURH-106	931.	621.93	1.1415E+01
AG-108m	66.	722.94	1.9899E-01
CD-109	3452.	88.03	1.5414E+01
AG-110M	3703.	657.76	1.2415E+00
SN-113	3775.	391.69	1.1534E+00
TE-123m	3968.	159.00	4.8164E-01
SB-124	923.	602.73	5.6092E-01
SB-125	4336.	427.89	2.9216E+00
TE-125m	3634.	109.27	1.5422E+02
I-129	3207.	39.60	1.7105E+02
I-131	3592.	364.48	8.3265E-01
XE-131m	3911.	163.93	2.0664E+01
BA-133	3475.	356.02	1.0439E+00
CS-134	894.	604.70	5.5473E-01
CS-136	58.	818.51	1.8871E-01
CS-138	17.	1435.86	7.6159E-01
CE-139	3904.	165.85	5.0647E-01
BA-140	1585.	537.31	2.6530E+00
LA-140	14.	1596.21	1.8505E-01
CE-141	4049.	145.44	8.4420E-01
CE-144	4001.	133.51	3.6896E+00
CEPR-144	4001.	133.51	7.3731E+00
EU-152	3964.	121.78	1.4850E+00
EU-154	39.	1274.51	6.5236E-01
EU-155	3568.	86.54	1.7762E+00
HF-181	3313.	482.18	1.0452E+00
TA-182	3189.	67.75	2.3835E+00
HG-203	3836.	279.20	6.7214E-01
BI-207	1021.	569.70	5.6023E-01
TL-208	3766.	277.36	8.5448E+00
PB-210	3276.	46.50	1.1941E+02
BI-212	70.	727.18	2.8006E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T554-DUP

Acquisition date : 1-MAY-1999 09:09:18

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	4395.	238.63	1.1854E+00
BI-214	1003.	609.31	1.2868E+00
PB-214	3632.	351.92	7.3154E+00
RA-224	4385.	240.99	1.3230E+01
RA-226	5134.	186.10	1.3759E+01
AC-228	84.	911.21	9.1619E-01
TH-228	3542.	84.37	4.8028E+01
TH-229	3405.	88.47	2.2187E+00
U-232	3170.	57.78	8.5028E+02
PA-233	3372.	312.17	1.4678E+00
UTH-233	4355.	245.34	4.7744E+02
PA-234M	41.	1001.03	2.8884E+01
TH-234	3251.	63.29	3.2418E+01
U-235	5119.	185.71	8.3548E-01
NP-237	3566.	86.48	4.7031E+00
U-237	3541.	101.07	1.8364E+00
NP-238	41.	984.45	6.7785E-01
NP-239	3653.	106.12	1.9856E+00
PU-239	3821.	129.30	6.2986E+03
AM-241	3234.	59.54	4.2605E+00
AM-243	3362.	74.67	1.2876E+00

* 222-S Laboratory Counting Room 1-MAY-1999 15:56:32.72 *

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

Worklist #: 29530
Sample ID: S99T555-SAM
Sample Size: 1.00000E-04 L
Dilution Factor: 1.00000E+00

Removed by:

Shilala

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2485.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:31:35.77 sec
Dead Time: 1.1%

Verified by:

John Ralyea 3 May 99

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

Sample Count Time: 1-MAY-1999 13:24:26.13
Decayed to: 1-MAY-1999 13:24:26.13
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: SLH2
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.50*	133473	1.48	1322.99	1315	16	0.6		CS-137	647.
0	1460.47*	52	2.37	2921.05	2912	16	84.8		K-40	3.85
0	1764.29*	16	1.89	3528.82	3520	14	107.3			

Summary of Nuclide Activity

Sample ID : S99T555-SAM

Acquisition date : 1-MAY-1999 13:24:26

Total number of lines in spectrum 3
 Number of unidentified lines 0
 Number of lines tentatively identified by NID 3 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
K-40	1.28E+09Y	1.00	3.848E+00	3.848E+00	3.264E+00	84.82	
CS-137	30.00Y	1.00	6.471E+02	6.471E+02	0.036E+02	0.56	<i>3 May 99</i>
Total Activity :			6.510E+02	6.510E+02			

Grand Total Activity : 6.510E+02 6.510E+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 : S99T555-SAM

Acquisition date : 1-MAY-1999 13:24:26

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	3996.	477.59	8.8388E+00
NA-24	21.	1368.55	1.8975E-01
AR-41	26.	1293.60	2.9547E-01
SC-46	50.	1120.55	2.2609E-01
CR-51	3473.	320.08	5.8329E+00
MN-54	53.	834.83	1.8346E-01
CO-56	43.	846.76	1.6898E-01
CO-58	46.	810.78	1.6853E-01
FE-59	27.	1099.25	2.9941E-01
CO-60	29.	1332.50	2.0257E-01
ZN-65	31.	1115.55	3.5545E-01
SE-75	3810.	264.66	8.9197E-01
KR-85	2120.	514.00	1.6478E+02
SR-85	2120.	514.01	7.4534E-01
Y-88	6.	1836.06	1.4403E-01
Y-91	36.	1204.67	6.8542E+01
NB-94	41.	871.09	1.6952E-01
ZRNB-95	70.	724.20	8.4118E-01
RU-103	2540.	497.08	8.3394E-01
RURH-106	913.	621.93	1.1301E+01
AG-108m	61.	722.94	1.9129E-01
CD-109	3397.	88.03	1.5291E+01
AG-110M	3510.	657.76	1.2089E+00
SN-113	3761.	391.69	1.1513E+00
TE-123m	3921.	159.00	4.7876E-01
SB-124	937.	602.73	5.6500E-01
SB-125	4167.	427.89	2.8646E+00
TE-125m	3477.	109.27	1.5088E+02
I-129	3116.	39.60	1.6863E+02
I-131	3533.	364.48	8.2576E-01
XE-131m	3896.	163.93	2.0626E+01
BA-133	3384.	356.02	1.0303E+00
CS-134	936.	604.70	5.6717E-01
CS-136	34.	818.51	1.4802E-01
CS-138	12.	1435.86	6.5024E-01
CE-139	3844.	165.85	5.0256E-01
BA-140	1550.	537.31	2.6236E+00
LA-140	11.	1596.21	1.6639E-01
CE-141	3977.	145.44	8.3673E-01
CE-144	3920.	133.51	3.6525E+00
CEPR-144	3920.	133.51	7.2984E+00
EU-152	3843.	121.78	1.4623E+00
EU-154	20.	1274.51	4.7797E-01
EU-155	3437.	86.54	1.7436E+00
HF-181	3269.	482.18	1.0382E+00
TA-182	3170.	67.75	2.3763E+00
HG-203	3769.	279.20	6.6633E-01
BI-207	988.	569.70	5.5123E-01
TL-208	3788.	277.36	8.5686E+00
PB-210	3058.	46.50	1.1541E+02
BI-212	74.	727.18	2.8744E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T555-SAM

Acquisition date : 1-MAY-1999 13:24:26

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	4336.	238.63	1.1775E+00
BI-214	961.	609.31	1.2600E+00
PB-214	3475.	351.92	7.1599E+00
RA-224	4249.	240.99	1.3025E+01
RA-226	5072.	186.10	1.3676E+01
AC-228	76.	911.21	8.7538E-01
TH-228	3398.	84.37	4.7045E+01
TH-229	3365.	88.47	2.2058E+00
U-232	3056.	57.78	8.3500E+02
PA-233	3465.	312.17	1.4876E+00
UTH-233	4219.	245.34	4.7000E+02
PA-234M	30.	1001.03	2.5268E+01
TH-234	3061.	63.29	3.1469E+01
U-235	4996.	185.71	8.2552E-01
NP-237	3439.	86.48	4.6195E+00
U-237	3441.	101.07	1.8107E+00
NP-238	40.	984.45	6.7003E-01
NP-239	3688.	106.12	1.9948E+00
PU-239	3951.	129.30	6.4042E+03
AM-241	3063.	59.54	4.1476E+00
AM-243	3345.	74.67	1.2843E+00

* 222-S Laboratory Counting Room 1-MAY-1999 21:44:39.01 *

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

Worklist #: 29530
Sample ID: S99T555-DUP
Sample Size: 1.00000E-04 L
Dilution Factor: 1.00000E+00

Removed by:

Em. Barla

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2486.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:31:32.69 sec
Dead Time: 1.0%

Verified by:

John Ralston 3 May 99

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

Sample Count Time: 1-MAY-1999 19:12:37.09
Decayed to: 1-MAY-1999 19:12:37.09
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: EMB
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.52*	131896	1.47	1323.03	1315	16	0.6		CS-137	639.
0	1460.60*	37	1.72	2921.33	2912	17110.4			K-40	2.79

Summary of Nuclide Activity

Sample ID : S99T555-DUP

Acquisition date : 1-MAY-1999 19:12:37

Total number of lines in spectrum 2
 Number of unidentified lines 0
 Number of lines tentatively identified by NID 2 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean		Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
			Uncorrected uCi/L	Decay Corr uCi/L			
K-40	1.28E+09Y	1.00	2.792E+00	2.792E+00	3.082E+00	110.39	JTR 3 May 99
CS-137	30.00Y	1.00	6.395E+02	6.395E+02	0.036E+02	0.56	
Total Activity :			6.423E+02	6.423E+02			

Grand Total Activity : 6.423E+02 6.423E+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 : S99T555-DUP

Acquisition date : 1-MAY-1999 19:12:37

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	4030.	477.59	8.8767E+00
NA-24	20.	1368.55	1.8805E-01
AR-41	27.	1293.60	3.0229E-01
SC-46	62.	1120.55	2.5097E-01
CR-51	3411.	320.08	5.7810E+00
MN-54	40.	834.83	1.6200E-01
CO-56	57.	846.76	1.9252E-01
CO-58	39.	810.78	1.5584E-01
FE-59	35.	1099.25	3.3503E-01
CO-60	22.	1332.50	1.8002E-01
ZN-65	37.	1115.55	3.8828E-01
SE-75	3822.	264.66	8.9335E-01
KR-85	2053.	514.00	1.6217E+02
SR-85	2052.	514.01	7.3341E-01
Y-88	9.	1836.06	1.6844E-01
Y-91	39.	1204.67	7.1281E+01
NB-94	37.	871.09	1.6204E-01
ZRNB-95	40.	724.20	6.5111E-01
RU-103	2508.	497.08	8.2866E-01
RURH-106	903.	621.93	1.1242E+01
AG-108m	46.	722.94	1.6827E-01
CD-109	3256.	88.03	1.4975E+01
AG-110M	3306.	657.76	1.1736E+00
SN-113	3549.	391.69	1.1187E+00
TE-123m	3820.	159.00	4.7263E-01
SB-124	933.	602.73	5.6400E-01
SB-125	4087.	427.89	2.8374E+00
TE-125m	3538.	109.27	1.5220E+02
I-129	3184.	39.60	1.7044E+02
I-131	3534.	364.48	8.2595E-01
XE-131m	3896.	163.93	2.0625E+01
BA-133	3396.	356.02	1.0321E+00
CS-134	878.	604.70	5.4968E-01
CS-136	34.	818.51	1.4812E-01
CS-138	10.	1435.86	6.1307E-01
CE-139	3920.	165.85	5.0746E-01
BA-140	1491.	537.31	2.5742E+00
LA-140	5.	1596.21	1.1994E-01
CE-141	3948.	145.44	8.3376E-01
CE-144	3959.	133.51	3.6703E+00
CEPR-144	3959.	133.51	7.3346E+00
EU-152	3813.	121.78	1.4568E+00
EU-154	20.	1274.51	4.8093E-01
EU-155	3287.	86.54	1.7055E+00
HF-181	3220.	482.18	1.0306E+00
TA-182	3065.	67.75	2.3369E+00
HG-203	3732.	279.20	6.6306E-01
BI-207	926.	569.70	5.3402E-01
TL-208	3711.	277.36	8.4829E+00
PB-210	3076.	46.50	1.1574E+02
BI-212	48.	727.18	2.3577E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S99T555-DUP

Acquisition date : 1-MAY-1999 19:12:37

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	4279.	238.63	1.1698E+00
BI-214	972.	609.31	1.2671E+00
PB-214	3515.	351.92	7.1984E+00
RA-224	4273.	240.99	1.3061E+01
RA-226	4941.	186.10	1.3499E+01
AC-228	83.	911.21	9.1325E-01
TH-228	3390.	84.37	4.6993E+01
TH-229	3334.	88.47	2.1959E+00
U-232	3135.	57.78	8.4556E+02
PA-233	3407.	312.17	1.4752E+00
UTH-233	4080.	245.34	4.6226E+02
PA-234M	30.	1001.03	2.5351E+01
TH-234	3126.	63.29	3.1798E+01
U-235	4879.	185.71	8.1584E-01
NP-237	3289.	86.48	4.5182E+00
U-237	3402.	101.07	1.8005E+00
NP-238	37.	984.45	6.4616E-01
NP-239	3467.	106.12	1.9349E+00
PU-239	3962.	129.30	6.4128E+03
AM-241	3047.	59.54	4.1367E+00
AM-243	3169.	74.67	1.2504E+00

LABCORE Completed Worklist Report for Worklist# 29188

Analyst: scl

Instrument: AB12

Book#: _____

Method: LA-220-101 Rev/Mod _____

Worklist Comment: U103 GRAB2, @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	8.39E-04	8.39E-4	100.000	% Recovery
1 STD	0	@SR90-01	SR90-01C	LIQUID	100	9.03E+01	90.300	% Recovery
1 STD	0	@SR90-01	SR90-01E	LIQUID	1.00	2.21E+00	2.210	% Ct. Error
2 BLNK	0	@SR90-01	SR90-01	LIQUID	1	7.75E-4	7.750e-004	uCi/mL
2 BLNK	0	@SR90-01	SR90-01C	LIQUID	100	9.11E+01	91.100	% Recovery
2 BLNK	0	@SR90-01	SR90-01E	LIQUID	1.00	6.38E+01	63.800	uCi/mL
3 BLNK/BKG	0	@SR90-01	SR90-01	LIQUID	1	1.69E+00	1.690	BLNK/BKG
4 SAMPLE	S99T000538	0	@SR90-01	SR90-01	N/A	8.98E+00	6.14e-004	uCi/mL
4 SAMPLE	S99T000538	0	@SR90-01	SR90-01C	N/A	8.96E+01		% Recovery
4 SAMPLE	S99T000538	0	@SR90-01	SR90-01E	N/A	3.01E-01		% Ct. Error
5 DUP	S99T000538	0	@SR90-01	SR90-01	8.98E+0	9.08E+0	1.107	RPD
5 DUP	S99T000538	0	@SR90-01	SR90-01C	100	9.08E+01	90.800	% Recovery
5 DUP	S99T000538	0	@SR90-01	SR90-01E	1.00	2.97E-01	0.297	% Ct. Err
6 SAMPLE	S99T000547	0	@SR90-01	SR90-01	N/A	1.08E+01	6.02e-004	uCi/mL
6 SAMPLE	S99T000547	0	@SR90-01	SR90-01C	N/A	9.07E+01		% Recovery
6 SAMPLE	S99T000547	0	@SR90-01	SR90-01E	N/A	2.72E-01		% Ct. Error
7 DUP	S99T000547	0	@SR90-01	SR90-01	1.08E+1	1.11E+1	2.740	RPD
7 DUP	S99T000547	0	@SR90-01	SR90-01C	100	8.97E+01	89.700	% Recovery
7 DUP	S99T000547	0	@SR90-01	SR90-01E	1.00	2.70E-01	0.270	% Ct. Err
8 SAMPLE	S99T000549	0	@SR90-01	SR90-01	N/A	1.14E+01	6.03e-004	uCi/mL
8 SAMPLE	S99T000549	0	@SR90-01	SR90-01C	N/A	9.04E+01		% Recovery
8 SAMPLE	S99T000549	0	@SR90-01	SR90-01E	N/A	2.65E-01		% Ct. Error
9 DUP	S99T000549	0	@SR90-01	SR90-01	1.14E+1	1.17E+1	2.597	RPD
9 DUP	S99T000549	0	@SR90-01	SR90-01C	100	9.06E+01	90.600	% Recovery
9 DUP	S99T000549	0	@SR90-01	SR90-01E	1.00	2.61E-01	0.261	% Ct. Err

Final page for worklist# 29188

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

 14 Apr 99
Reviewer Signature _____ Date _____

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

LABCORE Data Entry Template for Worklist# 29188

Analyst: S.L Instrument: AB00 12 Book# 46857

Method: LA-220-101 Rev/Mod E-4

Worklist Comment: U103 GRAB2, @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	S99T000538 0		@SR90-01	LIQUID	99000104	U-103 GRAB2
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 DUP	S99T000538 0		@SR90-01	LIQUID		
6 SAMPLE	S99T000547 0		@SR90-01	LIQUID	99000104	U-103 GRAB2
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7 DUP	S99T000547 0		@SR90-01	LIQUID		
8 SAMPLE	S99T000549 0		@SR90-01	LIQUID	99000104	U-103 GRAB2
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
9 DUP	S99T000549 0		@SR90-01	LIQUID		

Final page for worklist # 29188

Sue Li 4-13-99
 Signature Date

Sharon L. Uddell 4-14-99
 Signature Date
Sylvia Z. Chuane 4/14/99

Data Entry Comments:

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

4/14/99

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)	8057	GROSS WEIGHT (W2)	7.1488
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.0585
29188	BACKGROUND in cpm (BKG)	5.4	NET WEIGHT (W3)	0.0903
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	12.22
@SR90-01	DILUTION FACTOR (DF)	1		
Matrix	DIGEST DILUTION FACTOR DDF	1		
LIQUID	SAMPLE COUNT RATE (Rs)	800.30	SR-90 EFFICIENCY FACTO (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.40	Y-90 EFFICIENCY FACTOR (C2)	0.4660
99001503	TIME OF SEPARATION (ST)	11:03	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)	04/13/99	DETECTION LIMIT (Ld)	2.89
0	TIME OF COUNT (TOC)	23:16	Sr-89/90 CONC. in µCi/L	8.3943E-01
Sample Prep	DATE OF COUNT (DOC)	04/13/99		
N/A	STANDARD BOOK #	46B57		
Sample #	STANDARD VALUE in µCi/mL	8.3876E-04		
WL29188-STD				
Instrument Code				
WB27811				
Prepared By	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)			
SLH2	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			
Chemist	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)			
SAC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))			
Analyst	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT))*1.96			
SCL	Percent Carrier Recovery = (Net Weight / Expected weight) * 100			
Date Complete	NOTE: Expected weight = CVA * 0.1			
04/14/99	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
Analysis Date	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
04/13/99	Sr-89/90 CONCENTRATION	8.39E-04	µCi/mL	DETECTION LEVEL 3.03E-06 µCi/L
Analysis Time	RELATIVE COUNTING ERROR	2.2%		
02:45 PM	PERCENT CARRIER RECOVERY	90.3%		
Sample Point				
U-103 GRAB2				

Analyst:	SCL	Date:	14-Apr-99
Signature of Chemist:	SAC	Date:	14-Apr-99

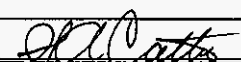
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HNF-1668 REV. 0

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		12	CARRIER ADDED in mL	(CVA) 1.000
BLNK	TOTAL COUNTS (TC)		91	GROSS WEIGHT (W2)	7.4312
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT (W1)	7.3401
29188	BACKGROUND in cpm (BKG)		5.4	NET WEIGHT (W3)	0.0911
Test Code	SAMPLE VOLUME in mL (SS)		0.500	DELTA TIME (HOURS) (DT)	12.45
@SR90-01	DILUTION FACTOR (DF)		101		
Matrix	DIGEST DILUTION FACTOR (DDF)		1		
LIQUID	SAMPLE COUNT RATE (Rs)		3.70	SR-90 EFFICIENCY FACTOR (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)		1.40	Y-90 EFFICIENCY FACTOR (C2)	0.4660
99001503	TIME OF SEPARATION (ST)		11:03	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)		04/13/99	DETECTION LIMIT (Ld)	2.89
0	TIME OF COUNT (TOC)		23:30	Sr-89/90 CONC in µCi/L 7.7538E-01	
Sample Prep	DATE OF COUNT (DOC)		04/13/99		
N/A					
Sample #					
WL29188-BLNK					

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)				
SLH2	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				
04/14/99					
Analysis Date					
04/13/99	Sr-89/90 CONCENTRATION		7.75E-04	µCi/mL	DETECTION LEVEL 6.06E-04 µCi/mL
Analysis Time					
02:45 PM	RELATIVE COUNTING ERROR		63.8%		
Sample Point					
U-103 GRAB2	PERCENT CARRIER RECOVERY		91.1%		

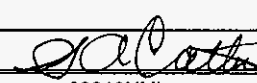
Analyst:	SCL	Date:	14-Apr-99
Signature of Chemist:		SAC	Date: 14 April 99

BLANK.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM4 4 ^{12:00} 04/13/99
 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)	422964	GROSS WEIGHT	(W2)	7.1380
WorkList	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0484
29188	BACKGROUND in cpm	(BKG)	5.4	NET WEIGHT	(W3)	0.0896
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	12.78
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	42291.00	Sr-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.40	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
99001503	TIME OF SEPARATION	(ST)	11:03	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	04/13/99	DETECTION LIMIT	(Ld)	2.89
0	TIME OF COUNT	(TOC)	23:50	Sr-89/90 CONC in µCi/L 8.9834E+03		
Sample Prep	DATE OF COUNT	(DOC)	04/13/99			
N/A						
Sample #						
S99T000538						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*REC*2220000					
SLH2	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					
04/14/99						
Analysis Date						DETECTION LEVEL
04/13/99	Sr-89/90 CONCENTRATION		8.98E+00	µCi/mL		
Analysis Time						
02:45 PM	RELATIVE COUNTING ERROR		0.3%			6.14E-04
Sample Point						µCi/mL
U-103 GRAB2	PERCENT CARRIER RECOVERY		89.6%			

Analyst:	SCL	Date:	14-Apr-99
Signature of Chemist:		SAC	Date: 14 Apr 99

SAMPLE.WB1 REV 2.0

22010NML

04/17/99

WORKBOOK PAGE: DUP5 4
 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)


					DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS	(TC)	434449	GROSS WEIGHT	(W2) 7.1299
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.0391
29188	BACKGROUND in cpm	(BKG)	5.4	NET WEIGHT	(W3) 0.0908
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT) 13.03
@SR90-01	DILUTION FACTOR	DF	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	43439.50	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.40	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
99001503	TIME OF SEPARATION	(ST)	11:03	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	04/13/99	DETECTION LIMIT	(Ld) 2.89
0	TIME OF COUNT	(TOC)	00:05	Sr-89/90 CONC in µCi/L 9.0847E+03	
Sample Prep	DATE OF COUNT	(DOC)	04/14/99		
N/A					
Sample #					
S99T000538					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)				
SLH2	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				
04/14/99					
Analysis Date					DETECTION LEVEL
04/13/99	Sr-89/90 CONCENTRATION	9.08E+00	µCi/mL		
Analysis Time					
02:45 PM	RELATIVE COUNTING ERROR	0.3%	6.05E-04 µCi/mL		
Sample Point					DETECTION LEVEL
U-103 GRAB2	PERCENT CARRIER RECOVERY	90.8%			

Analyst:	SCL	Date:	14-Apr-99
Signature of Chemist:	<i>SAC</i>	Date:	14 Apr 99

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM6 ⁴ _{6/17/99}
 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)	519088	GROSS WEIGHT	(W2)	7.1550
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0643
29188	BACKGROUND in cpm	(BKG)	5.4	NET WEIGHT	(W3)	0.0907
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	13.62
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	51903.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.40	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
99001503	TIME OF SEPARATION	(ST)	11:08	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	04/13/99	DETECTION LIMIT	(Ld)	2.89
0	TIME OF COUNT	(TOC)	00:45	Sr-89/90 CONC in µCi/L 1.0809E+04		
Sample Prep	DATE OF COUNT	(DOC)	04/14/99			
N/A						
Sample #						
S99T000547						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
SLH2	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					
04/14/99						
Analysis Date						DETECTION LEVEL
04/13/99	Sr-89/90 CONCENTRATION		1.08E+01		µCi/mL	
Analysis Time						
02:45 PM	RELATIVE COUNTING ERROR		0.3%			6.02E-04
Sample Point						µCi/mL
U-103 GRAB2	PERCENT CARRIER RECOVERY		90.7%			

Analyst:	SCL	Date:	14-Apr-99
Signature of Chemist:		SAC	Date: 14 Apr 99

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP7 *4 MD 6-7-99*
 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)	526838	GROSS WEIGHT	(W2)	1.000
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT	(W1)	7.1282
29188	BACKGROUND in cpm (BKG)	5.4	NET WEIGHT	(W3)	7.0385
Test Code	SAMPLE VOLUME in mL (SS)	0.500	DELTA TIME (HOURS)	(DT)	0.0897
@SR90-01	DILUTION FACTOR (DF)	101			13.70
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	52678.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.40	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
99001503	TIME OF SEPARATION (ST)	11:08	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)	04/13/99	DETECTION LIMIT	(Ld)	2.89
0	TIME OF COUNT (TOC)	00:50	Sr-89/90 CONC in µCi/L		1.1085E+04
Sample Prep	DATE OF COUNT (DOC)	04/14/99			
N/A					
Sample #					
S99T000547					

Instrument Code: WB27811
Prepared By: SLH2
Chemist: SAC
Analyst: SCL
Date Complete: 04/14/99

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
 Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
 $RS * DF * DDF / ((C1 + C2 * (1 - e^{(-\text{natural log } 2) / 64.2 * DT})) * SS * REC * 2220000)$
 NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
 Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT)) * 1.96
 Percent Carrier Recovery = (Net Weight / Expected weight) * 100
 NOTE: Expected weight = CVA * 0.1
 Detection Levels and Less Than Values are determined from Procedure LA-508-002.
 Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100


Analysis Date	Sr-89/90 CONCENTRATION	1.11E+01	µCi/mL	DETECTION LEVEL
04/13/99	RELATIVE COUNTING ERROR	0.3%		6.08E-04
02:45 PM	PERCENT CARRIER RECOVERY	89.7%		µCi/mL
Sample Point				
U-103 GRAB2				

Analyst: SCL **Date:** 14-Apr-99
Signature of Chemist: *[Signature]* **SAC** **Date:** *14 Apr 99*

WORKBOOK PAGE: SAM8

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

						SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS (TC)		548415	GROSS WEIGHT (W2)		7.1332
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT (W1)		7.0428
29188	BACKGROUND in cpm (BKG)		5.4	NET WEIGHT (W3)		0.0904
Test Code	SAMPLE VOLUME in mL (SS)		0.500	DELTA TIME (HOURS) (DT)		13.87
@SR90-01	DILUTION FACTOR (DF)		101			
Matrix	DIGEST DILUTION FACTOR (DDF)		1			
LIQUID	SAMPLE COUNT RATE (Rs)		54836.10	SR-90 EFFICIENCY FACTOR (C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)		1.40	Y-90 EFFICIENCY FACTOR (C2)		0.4660
99001503	TIME OF SEPARATION (ST)		11:08	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)		04/13/99	DETECTION LIMIT (Ld)		2.89
0	TIME OF COUNT (TOC)		01:00	Sr-89/90 CONC in µCi/L 1.1432E+04		
Sample Prep	DATE OF COUNT (DOC)		04/14/99			
N/A						
Sample #						
S99T000549						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))) * SS*REC*2220000)					
SLH2	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					
04/14/99						
Analysis Date						DETECTION LEVEL
04/13/99	Sr-89/90 CONCENTRATION		1.14E+01	µCi/mL		
Analysis Time						
02:45 PM	RELATIVE COUNTING ERROR		0.3%		6.03E-04	
Sample Point						µCi/mL
U-103 GRAB2	PERCENT CARRIER RECOVERY		90.4%			

Analyst:	SCL	Date:	14-Apr-99
Signature of Chemist:		SAC	Date: 14 Apr 99

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP9 ⁴
 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS (TC)		564517	GROSS WEIGHT (W2)	7.1587
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT (W1)	7.0681
29188	BACKGROUND in cpm (BKG)		5.4	NET WEIGHT (W3)	0.0906
Test Code	SAMPLE VOLUME in mL (SS)		0.500	DELTA TIME (HOURS) (DT)	14.12
@SR90-01	DILUTION FACTOR (DF)		101		
Matrix	DIGEST DILUTION FACTOR (DDF)		1		
LIQUID	SAMPLE COUNT RATE (Rs)		56446.30	SR-90 EFFICIENCY FACTOR (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)		1.40	Y-90 EFFICIENCY FACTOR (C2)	0.4660
99001503	TIME OF SEPARATION (ST)		11:08	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)		04/13/99	DETECTION LIMIT (Ld)	2.89
0	TIME OF COUNT (TOC)		01:15	Sr-89/90 CONC in µCi/L	1.1716E+04
Sample Prep	DATE OF COUNT (DOC)		04/14/99		
N/A					
Sample #					
S99T000549					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)				
SLH2	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				
04/14/99					
Analysis Date					
04/13/99	Sr-89/90 CONCENTRATION		1.17E+01	µCi/mL	DETECTION LEVEL 6.00E-04 µCi/mL
Analysis Time					
02:45 PM	RELATIVE COUNTING ERROR		0.3%		
Sample Point					
U-103 GRAB2	PERCENT CARRIER RECOVERY		90.6%		

Analyst:	SCL	Date:	14-Apr-99
Signature of Chemist:	<i>[Signature]</i>	Date:	14 Apr 99

SAMPLE.WB1 REV 2.0

22010NML

LABCORE Completed Worklist Report for Worklist# 29528

Analyst: scl

Instrument: AB12

Book#: _____

Method: LA-220-101 Rev/Mod _____

Worklist Comment: U-103 GRAB2, @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	SOLID	8.38E-04	8.37E-4	99.881	% Recovery
1 STD	0		@SR90-01 SR90-01C	SOLID	100	9.06E+01	90.600	% Recovery
1 STD	0		@SR90-01 SR90-01E	SOLID	1.00	2.14E+00	2.140	% Ct. Error
2 BLNK-PREP	0		@SR90-01 SR90-01	SOLID	1	<2.42E-2		uCi/g
2 BLNK-PREP	0		@SR90-01 SR90-01C	SOLID	100	9.00E+01	90.000	% Recovery
2 BLNK-PREP	0		@SR90-01 SR90-01E	SOLID	1.00	2.75E+02	275.000	uCi/g
3 BLNK/BKG	0		@SR90-01 SR90-01	SOLID	1	1.14E+00	1.140	BLNK/BKG
4 SAMPLE	S99T000551	0 F	@SR90-01 SR90-01	SOLID	N/A	7.08E+00	3.11e-002	uCi/g
4 SAMPLE	S99T000551	0 F	@SR90-01 SR90-01C	SOLID	N/A	9.04E+01		% Recovery
4 SAMPLE	S99T000551	0 F	@SR90-01 SR90-01E	SOLID	N/A	2.38E+00		% Ct. Error
5 DUP	S99T000551	0 F	@SR90-01 SR90-01	SOLID	7.08E+0	7.29E+0	2.923	RPD
5 DUP	S99T000551	0 F	@SR90-01 SR90-01C	SOLID	100	9.04E+01	90.400	% Recovery
5 DUP	S99T000551	0 F	@SR90-01 SR90-01E	SOLID	1.00	2.22E+00	2.220	% Cnt Err
6 SAMPLE	S99T000554	0 F	@SR90-01 SR90-01	SOLID	N/A	1.23E+01	6.04e-002	uCi/g
6 SAMPLE	S99T000554	0 F	@SR90-01 SR90-01C	SOLID	N/A	9.13E+01		% Recovery
6 SAMPLE	S99T000554	0 F	@SR90-01 SR90-01E	SOLID	N/A	2.52E+00		% Ct. Error
7 DUP	S99T000554	0 F	@SR90-01 SR90-01	SOLID	1.23E+1	1.46E+1	17.100	RPD
7 DUP	S99T000554	0 F	@SR90-01 SR90-01C	SOLID	100	9.09E+01	90.900	% Recovery
7 DUP	S99T000554	0 F	@SR90-01 SR90-01E	SOLID	1.00	2.32E+00	2.320	% Cnt Err
8 SAMPLE	S99T000555	0 F	@SR90-01 SR90-01	SOLID	N/A	9.80E+00	6.27e-002	uCi/g
8 SAMPLE	S99T000555	0 F	@SR90-01 SR90-01C	SOLID	N/A	9.10E+01		% Recovery
8 SAMPLE	S99T000555	0 F	@SR90-01 SR90-01E	SOLID	N/A	2.89E+00		% Ct. Error
9 DUP	S99T000555	0 F	@SR90-01 SR90-01	SOLID	9.80E+0	9.59E+0	2.166	RPD
9 DUP	S99T000555	0 F	@SR90-01 SR90-01C	SOLID	100	9.09E+01	90.900	% Recovery
9 DUP	S99T000555	0 F	@SR90-01 SR90-01E	SOLID	1.00	2.82E+00	2.820	% Cnt Err

Final page for worklist# 29528

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

[Signature]
Reviewer Signature _____ Date 5/7/99

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

LABCORE Data Entry Template for Worklist# 29528

Analyst: S.L Instrument: AB00 12 Book# 46857

Method: LA-220-101 Rev/Mod E-4

Worklist Comment: U-103 GRAB2, @SR90-01, STD= 1.0mL, SS by Ludlum. 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	S99T000551	0 F	@SR90-01	SOLID	99000104	U-103 GRAB2
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 DUP	S99T000551	0 F	@SR90-01	SOLID		
6 SAMPLE	S99T000554	0 F	@SR90-01	SOLID	99000104	U-103 GRAB2
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7 DUP	S99T000554	0 F	@SR90-01	SOLID		
8 SAMPLE	S99T000555	0 F	@SR90-01	SOLID	99000104	U-103 GRAB2
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
9 DUP	S99T000555	0 F	@SR90-01	SOLID		

Final page for worklist # 29528

Sue L 5-3-99

 Signature Date

Nora C. Wright 5/4/99

 Signature Date
Sylvia Z Chon 5/4/99

Data Entry Comments:

05/07/99

HNF-1668 REV. 0

WORKBOOK PAGE: STD1 4

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)	8600	GROSS WEIGHT (W2)	7.1540
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.0634
29528	BACKGROUND in cpm (BKG)	5.9	NET WEIGHT (W3)	0.0906
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	19.65
@SR90-01	DILUTION FACTOR (DF)	1		
Matrix	DIGEST DILUTION FACTOR DDF	1		
LIQUID	SAMPLE COUNT RATE (Rs)	854.10	SR-90 EFFICIENCY FACTO (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	1.46	Y-90 EFFICIENCY FACTOR (C2)	0.4660
99001847	TIME OF SEPARATION (ST)	13:22	Rmax	N/A
Rerun	DATE OF SEPARATION (SD)	05/03/99	DETECTION LIMIT (Ld)	3.02
0	TIME OF COUNT (TOC)	09:01	Sr-89/90 CONC. in µCi/L	8.3743E-01
Sample Prep	DATE OF COUNT (DOC)	05/04/99		
N/A	STANDARD BOOK #	46B57		
Sample #	STANDARD VALUE in µCi/mL	8.3767E-04		
WL29528-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			
NEW	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.			
05/04/99	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
Analysis Date				DETECTION LEVEL 2.96E-06 µCi/L
05/03/99	Sr-89/90 CONCENTRATION	8.37E-04	µCi/mL	
Analysis Time				
03:15 PM	RELATIVE COUNTING ERROR	2.1%		
Sample Point				
U-103 GRAB2	PERCENT CARRIER RECOVERY	90.6%		

Analyst:	SCL	Date:	04-May-99
Signature of Chemist:	<i>Da Catlow</i>	Date:	5/2/99

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)	67	GROSS WEIGHT	(W2)	7.1507
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0607
29528	BACKGROUND in cpm	(BKG)	5.9	NET WEIGHT	(W3)	0.0900
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	19.88
@SR90-01	DILUTION FACTOR	DF	11			
Matrix	DIGEST FACTOR (g/L)	(D g/L)	2.0904			
SOLID	SAMPLE COUNT RATE	(Rs)	0.80	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.46	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
99001847	TIME OF SEPARATION	(ST)	13:22	Rmax		2.34
Retun	DATE OF SEPARATION	(SD)	05/03/99	DETECTION LIMIT	(Ld)	3.02
0	TIME OF COUNT	(TOC)	09:15	Sr-89/90 CONC in µCi/g	<	2.4221E-02
Sample Prep	DATE OF COUNT	(DOC)	05/04/99			
N/A						
Sample #						
WL29528-BLK						

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)
NEW	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
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
05/04/99	
Analysis Date	
05/03/99	Sr-89/90 CONCENTRATION < 2.42E-02 µCi/g
Analysis Time	LESS THAN Value was Determined from Rmax.
03:15 PM	RELATIVE COUNTING ERROR 275.0%
Sample Point	
U-103 GRAB2	PERCENT CARRIER RECOVERY 90.0%

DETECTION LEVEL
3.13E-02 µCi/g

Analyst: SCL Date: 04-May-99
 Signature of Chemist: *Sa Carter* SAC Date: *5/11/99*

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)	6935	GROSS WEIGHT	(W2)	7.1465
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0561
29528	BACKGROUND in cpm	(BKG)	5.9	NET WEIGHT	(W3)	0.0904
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	20.13
@SR90-01	DILUTION FACTOR	DF	11			
Matrix	DIGEST FACTOR (g/L)	(D g/L)	2.0904			
SOLID	SAMPLE COUNT RATE	(Rs)	687.60	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.46	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
99001847	TIME OF SEPARATION	(ST)	13:22	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/03/99	DETECTION LIMIT	(Ld)	3.02
0	TIME OF COUNT	(TOC)	09:30	Sr-89/90 CONC in µCi/g 7.0836E+00		
Sample Prep	DATE OF COUNT	(DOC)	05/04/99			
FUSION01						
Sample #						
S99T000551						
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)					
NEW	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
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					
05/04/99						
Analysis Date						DETECTION LEVEL
05/03/99	Sr-89/90 CONCENTRATION		7.08E+00		µCi/g	
Analysis Time						
03:15 PM	RELATIVE COUNTING ERROR		2.4%			3.11E-02
Sample Point						µCi/g
U-103 GRAB2	PERCENT CARRIER RECOVERY		90.4%			

Analyst:	SCL	Date:	04-May-99
Signature of Chemist:	<i>MaCottu</i>	SAC	Date: 5 May 99

SAMPLE.WB1 REV 2.0

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WORKBOOK PAGE: DUP5

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
DUP	TOTAL COUNTS (TC)		7942	GROSS WEIGHT (W2)	7.1710
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT (W1)	7.0806
29528	BACKGROUND in cpm (BKG)		5.9	NET WEIGHT (W3)	0.0904
Test Code	SAMPLE VOLUME in mL (SS)		0.500	DELTA TIME (HOURS) (DT)	20.47
@SR90-01	DILUTION FACTOR (DF)		11		
Matrix	DIGEST FACTOR (g/L) (D g/L)		2.3236		
SOLID	SAMPLE COUNT RATE (Rs)		788.30	SR-90 EFFICIENCY FACTOR (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)		1.46	Y-90 EFFICIENCY FACTOR (C2)	0.4660
99001847	TIME OF SEPARATION (ST)		13:22	Rmax	N/A
Retun	DATE OF SEPARATION (SD)		05/03/99	DETECTION LIMIT (Ld)	3.02
0	TIME OF COUNT (TOC)		09:50	Sr-89/90 CONC in µCi/g	7.2867E+00
Sample Prep	DATE OF COUNT (DOC)		05/04/99		
FUSION01					
Sample #					
S99T000551					

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)			
NEW	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))			
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96			
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100			
Analyst	NOTE: Expected weight = CVA * 0.1			
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			
05/04/99				
Analysis Date				DETECTION LEVEL
05/03/99	Sr-89/90 CONCENTRATION	7.29E+00	µCi/g	
Analysis Time	RELATIVE COUNTING ERROR	2.2%		
03:15 PM			2.79E-02 µCi/g	
Sample Point				
U-103 GRAB2	PERCENT CARRIER RECOVERY	90.4%		

Analyst:	SCL	Date:	04-May-99
Signature of Chemist:	SAC	Date:	5 May 99

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM6

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

						SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS (TC)		6225	GROSS WEIGHT	(W2)	7.1452
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT	(W1)	7.0539
29528	BACKGROUND in cpm (BKG)		5.9	NET WEIGHT	(W3)	0.0913
Test Code	SAMPLE VOLUME in mL (SS)		0.250	DELTA TIME (HOURS)	(DT)	20.82
@SR90-01	DILUTION FACTOR (DF)		11			
Matrix	DIGEST FACTOR (g/L) (D g/L)		2.118			
SOLID	SAMPLE COUNT RATE (Rs)		616.60	SR-90 EFFICIENCY FACTOR (C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)		1.46	Y-90 EFFICIENCY FACTOR (C2)		0.4660
99001847	TIME OF SEPARATION (ST)		13:27	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)		05/03/99	DETECTION LIMIT (Ld)		3.02
0	TIME OF COUNT (TOC)		10:16	Sr-89/90 CONC in µCi/g 1.2348E+01		
Sample Prep	DATE OF COUNT (DOC)		05/04/99			
FUSION01						
Sample #						
S99T000554						
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)					
NEW	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
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					
05/04/99						
Analysis Date						DETECTION LEVEL
05/03/99	Sr-89/90 CONCENTRATION		1.23E+01		µCi/g	
Analysis Time						
03:15 PM	RELATIVE COUNTING ERROR		2.5%		6.04E-02 µCi/g	
Sample Point						
U-103 GRAB2	PERCENT CARRIER RECOVERY		91.3%			

Analyst:	SCL	Date:	04-May-99
Signature of Chemist:	<i>[Signature]</i>	SAC	Date: <i>[Signature]</i>

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP7

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS (TC)		7305	GROSS WEIGHT	(W2)	7.1542
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT	(W1)	7.0633
29528	BACKGROUND in cpm (BKG)		5.9	NET WEIGHT	(W3)	0.0909
Test Code	SAMPLE VOLUME in mL (SS)		0.250	DELTA TIME (HOURS)	(DT)	21.10
@SR90-01	DILUTION FACTOR (DF)		11			
Matrix	DIGEST FACTOR (g/L) (D g/L)		2.1112			
SOLID	SAMPLE COUNT RATE (Rs)		724.60	SR-90 EFFICIENCY FACTOR (C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)		1.46	Y-90 EFFICIENCY FACTOR (C2)		0.4660
99001847	TIME OF SEPARATION (ST)		13:27	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)		05/03/99	DETECTION LIMIT (Ld)		3.02
0	TIME OF COUNT (TOC)		10:33	Sr-89/90 CONC in µCi/g 1.4590E+01		
Sample Prep	DATE OF COUNT (DOC)		05/04/99			
FUSION01						
Sample #						
S99T000554						

Instrument Code: WB27811
 Prepared By: NEW
 Chemist: SAC
 Analyst: SCL
 Date Complete: 05/04/99
 Analysis Date: 05/03/99
 Analysis Time: 03:15 PM
 Sample Point: U-103 GRAB2

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
 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
 $RS * 1000 * DF / ((C1 + C2 * (1 - e^{-\ln(2) / 64.2 * DT})) * SS * (Dg/L) * REC * 2220000)$
 NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
 Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT)) * 1.96
 Percent Carrier Recovery = (Net Weight / Expected weight) * 100
 NOTE: Expected weight = CVA * 0.1
 Detection Levels and Less Than Values are determined from Procedure LA-508-002.
 Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

			DETECTION LEVEL
Sr-89/90 CONCENTRATION	1.46E+01	µCi/g	
RELATIVE COUNTING ERROR	2.3%		6.08E-02 µCi/g
PERCENT CARRIER RECOVERY	90.9%		

Analyst: SCL Date: 04-May-99
 Signature of Chemist: *SAC* SAC Date: *5/14/99*

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM8 ⁴ ^{LAD} ^{6/17/99}
 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS (TC)		4777	GROSS WEIGHT (W2)		7.1328
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT (W1)		7.0418
29528	BACKGROUND in cpm (BKG)		5.9	NET WEIGHT (W3)		0.0910
Test Code	SAMPLE VOLUME in mL (SS)		0.250	DELTA TIME (HOURS) (DT)		21.33
@SR90-01	DILUTION FACTOR (DF)		11			
Matrix	DIGEST FACTOR (g/L) (D g/L)		2.0412			
SOLID	SAMPLE COUNT RATE (Rs)		471.80	SR-90 EFFICIENCY FACTOR (C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)		1.46	Y-90 EFFICIENCY FACTOR (C2)		0.4660
99001847	TIME OF SEPARATION (ST)		13:27	Rmax		N/A
Regrin	DATE OF SEPARATION (SD)		05/03/99	DETECTION LIMIT (Ld)		3.02
0	TIME OF COUNT (TOC)		10:47	Sr-89/90 CONC in µCi/g		9.7967E+00
Sample Prep	DATE OF COUNT (DOC)		05/04/99			
FUSION01						
Sample #						
S99T000555						

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)					
NEW	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
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					
05/04/99						
Analysis Date						
05/03/99	Sr-89/90 CONCENTRATION		9.80E+00		µCi/g	DETECTION LEVEL 6.27E-02 µCi/g
Analysis Time	RELATIVE COUNTING ERROR		2.9%			
03:15 PM						
Sample Point	PERCENT CARRIER RECOVERY		91.0%			
U-103 GRAB2						

Analyst:	SCL	Date:	04-May-99
Signature of Chemist:	<i>SCL</i>	Date:	5 May 99

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: DUP9 ⁴
 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

						DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	5013	GROSS WEIGHT	(W2)	7.1115
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0206
29528	BACKGROUND in cpm	(BKG)	5.9	NET WEIGHT	(W3)	0.0909
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	21.53
@SR90-01	DILUTION FACTOR	DF	11			
Matrix	DIGEST FACTOR (g/L)	(D g/L)	2.1896			
SOLID	SAMPLE COUNT RATE	(Rs)	495.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.46	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
99001847	TIME OF SEPARATION	(ST)	13:27	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/03/99	DETECTION LIMIT	(Ld)	3.02
0	TIME OF COUNT	(TOC)	10:59	Sr-89/90 CONC in µCi/g 9.5852E+00		
Sample Prep	DATE OF COUNT	(DOC)	05/04/99			
FUSION01						
Sample #						
S99T000555						
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)					
NEW	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
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					
05/04/99						
Analysis Date						DETECTION LEVEL
05/03/99	Sr-89/90 CONCENTRATION		9.59E+00		µCi/g	
Analysis Time						
03:15 PM	RELATIVE COUNTING ERROR		2.8%		5.84E-02 µCi/g	
Sample Point						
U-103 GRAB2	PERCENT CARRIER RECOVERY		90.9%			

Analyst:	SCL	Date:	04-May-99
Signature of Chemist:	<i>[Signature]</i>	SAC	Date: <i>[Signature]</i>

SAMPLE.WB1 REV 2.0

22010NML

LABCORE Completed Worklist Report for Worklist# 29189

Analyst: gll

Instrument: AB18

Book#: _____

Method: LA-953-104 Rev/Mod _____

Worklist Comment: U103 GRAB2, @AM24101, STD=1.0mL, SS by Ludlum. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@AM24101 AM24101	LIQUID	1.07E-04	1.01E-4	94.393	% Recovery
1 STD	0		@AM24101 AM24101E	LIQUID	1.0	1.91E+00	1.910	% Ct. Error
1 STD	0		@AM24101 AM24101T	LIQUID	100.	8.50E+01	85.000	% Recovery
2 BLNK	0		@AM24101 AM24101	LIQUID	1	<6.38E-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	9.37E+01	93.700	% Recovery
3 SAMPLE	S99T000538	0	@AM24101 AM24101	LIQUID	N/A	1.52E-02	1.45e-003	uCi/mL
3 SAMPLE	S99T000538	0	@AM24101 AM24101E	LIQUID	N/A	2.33E+00		% Ct. Error
3 SAMPLE	S99T000538	0	@AM24101 AM24101T	LIQUID	N/A	9.60E+01		% Recovery
4 DUP	S99T000538	0	@AM24101 AM24101	LIQUID	1.52E-2	1.62E-2	6.369	RPD
4 DUP	S99T000538	0	@AM24101 AM24101E	LIQUID	1.0	2.17E+00	2.170	% Ct. Error
4 DUP	S99T000538	0	@AM24101 AM24101T	LIQUID	100.0	9.93E+01	99.300	% Recovery
5 SAMPLE	S99T000547	0	@AM24101 AM24101	LIQUID	N/A	1.96E-02	1.57e-003	uCi/mL
5 SAMPLE	S99T000547	0	@AM24101 AM24101E	LIQUID	N/A	2.25E+00		% Ct. Error
5 SAMPLE	S99T000547	0	@AM24101 AM24101T	LIQUID	N/A	1.01E+02		% Recovery
6 DUP	S99T000547	0	@AM24101 AM24101	LIQUID	1.96E-2	1.95E-2	0.512	RPD
6 DUP	S99T000547	0	@AM24101 AM24101E	LIQUID	1.0	2.21E+00	2.210	% Ct. Error
6 DUP	S99T000547	0	@AM24101 AM24101T	LIQUID	100.0	9.78E+01	97.800	% Recovery
7 SAMPLE	S99T000549	0	@AM24101 AM24101	LIQUID	N/A	2.08E-02	1.66e-003	uCi/mL
7 SAMPLE	S99T000549	0	@AM24101 AM24101E	LIQUID	N/A	2.22E+00		% Ct. Error
7 SAMPLE	S99T000549	0	@AM24101 AM24101T	LIQUID	N/A	9.94E+01		% Recovery
8 DUP	S99T000549	0	@AM24101 AM24101	LIQUID	2.08E-2	2.06E-2	0.966	RPD
8 DUP	S99T000549	0	@AM24101 AM24101E	LIQUID	1.0	2.17E+00	2.170	% Ct. Error
8 DUP	S99T000549	0	@AM24101 AM24101T	LIQUID	100.0	9.54E+01	95.400	% Recovery

Final page for worklist# 29189

Analyst Signature

Date

Analyst Signature

Date

John Relyea
Reviewer Signature Date 22 Apr 99

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

LABCORE Data Entry Template for Worklist# 29189

Analyst: gll Instrument: AM01 #18 Book# 46B57

Method: LA-953-104 Rev/Mod B-1

Worklist Comment: U103 GRAB2, @AM24101, STD=1.0mL, SS by Ludlum. skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	LIQUID		
2 BLNK			@AM24101	LIQUID		
3 SAMPLE	S99T000538 0		@AM24101	LIQUID	99000104	U-103 GRAB2
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S99T000538 0		@AM24101	LIQUID		
5 SAMPLE	S99T000547 0		@AM24101	LIQUID	99000104	U-103 GRAB2
Analytes Requested: AM24101 , AM24101E, AM24101T						
6 DUP	S99T000547 0		@AM24101	LIQUID		
7 SAMPLE	S99T000549 0		@AM24101	LIQUID	99000104	U-103 GRAB2
Analytes Requested: AM24101 , AM24101E, AM24101T						
8 DUP	S99T000549 0		@AM24101	LIQUID		

Final page for worklist # 29189

RP O'Neil ⁴⁻²¹⁻⁹⁹
Signature Date

MB 4-22-99
Signature Date

Ray Lott 4/21/99

MB 4/22/99

Data Entry Comments:

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0) ^{LAD} _{11/18/99} LIQUID

Type	Date Counted	APR-21-99	Am 241 AEA Frac. (C241)	0.437
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.439
Worklist	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
29189	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	3532
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	43.76
LIQUID	Detector Number	18	Am 243 cpm	43.91
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
99001500	Standard Book No	46B57	AEA Count Time (min)	480
Rerun	Standard Value in µCi/mL	1.070E-04	Am 241 µCi/L =	1.0134E-01
0			Cm 243/244 µCi/L =	< 1.3633E-02

Sample Prep	N/A
Sample Number	WL29189-STD
Instrument Code	WB27809
Prepared By	EMB
Chemist	JFR
Analyst	GLL
Date Complete	04/22/99
Analysis Date	04/21/99
Analysis Time	02:30 PM
Sample Point	U-103 GRAB2

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 =	1.01E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error =	1.9%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		
Cm 243/244 µCi/mL <	1.36E-05	
Relative Counting Error =	100.0%	Am 241
Am 243 Tracer Recovery =	85.0%	1.36E-05
		Cm 243/244

Analyst:	GLL	Date:	04/22/99
Signature of Chemist:	<i>John Polyan</i>	Date:	02 Apr 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)) ¹ 04/21/99 LIQUID / SO

Type	Date Counted	APR-21-99	Am 241 AEA Frac. (C241)	BLNK
BLNK	Sample Volume in mL (SS)	0.500	Am 243 AEA Frac. (C243)	0.86
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0
29189	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	996
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	18	Am 243 cpm	23.3
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	0
99001500			AEA Count Time (min)	480
Rerun			Am 241 µCi/L =	< 6.3797E-01
0			Cm 243/244 µCi/L =	< 6.3797E-01

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

Prepared By	EMB	NOTE: Am-241 Result is a LESS THAN Value.	DETECTION LEVELS in µCi/mL
Chemist	JFR	Am 241 µCi/mL = < 6.38E-04	
Analyst	GLL	Relative Counting Error = 100.0%	
Date Complete	04/22/99	NOTE: Cm-243/244 Result is a LESS THAN Value.	
Analysis Date	04/21/99	Cm 243/244 µCi/mL < 6.38E-04	Am 241
Analysis Time	02:30 PM	Relative Counting Error = 100.0%	6.38E-04
Sample Point	U-103 GRAB2	Am 243 Tracer Recovery = 93.7%	Cm 243/244
			6.38E-04

Analyst:	GLL	Date:	04/22/99
Signature of Chemist:	<i>John Relyea</i>	JFR	Date: 22 Apr 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) LIQUID / SO SAMPLE

Type	Date Counted	APR-21-99	Am 241 AEA Frac. (C241)	0.547
SAMPLE	Sample Volume in mL (SS)	0.500	Am 243 AEA Frac. (C243)	0.37
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.015
29189	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2367
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	36.47
LIQUID	Detector Number	18	Am 243 cpm	24.68
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	1
99001500			AEA Count Time (min)	480
Rerun			Am 241 µCi/L =	1.5201E+01
0			Cm 243/244 µCi/L =	< 1.4470E+00
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	JFR	Am 241 µCi/mL =	1.52E-02	DETECTION LEVELS in µCi/mL
Analyst	GLL	Relative Counting Error =	2.3%	
Date Complete	04/22/99	NOTE: Cm-243/244 Result is a LESS THAN Value.		
Analysis Date	04/21/99	Cm 243/244 µCi/mL <	1.45E-03	
		Relative Counting Error =	9.1%	Cm 243/244
		Am 243 Tracer Recovery =	96.0%	1.45E-03

Analyst: GLL Date: 04/22/99
 Signature of Chemist: *John Relyea* JFR Date: 22 Apr 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) ¹⁴⁰ ₁₄₁ 1999 LIQUID / SO DUP

Type	Date Counted	APR-21-99	Am 241 AEA Frac. (C241)	0.589
DUP	Sample Volume in mL (SS)	0.500	Am 243 AEA Frac. (C243)	0.374
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.015
29189	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2421
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	43.75
LIQUID	Detector Number	18	Am 243 cpm	27.79
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	1.12
99001500			AEA Count Time (min)	480
Retain			Am 241 µCi/L =	1.6193E+01
0			Cm 243/244 µCi/L =	< 1.3846E+00
Sample Prep				
N/A				
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
S99T000538	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
WB27809	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By	EMB			
Chemist	JFR			
Analyst	Am 241 µCi/mL = 1.62E-02		DETECTION LEVELS in µCi/mL	
GLL	Relative Counting Error = 2.2%			
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
04/22/99	Cm 243/244 µCi/mL < 1.38E-03			
Analysis Date	Relative Counting Error = 8.6%		Am 241	
04/21/99	Am 243 Tracer Recovery = 99.3%		1.38E-03	
Analysis Time	02:30 PM			
Sample Point	U-103 GRAB2			

Analyst:	GLL	Date:	04/22/99
Signature of Chemist:	<i>John Relyea</i>	JFR	Date: 22 Apr 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) ¹ LIQUID / SO SAMPLE

Type	Date Counted	APR-21-99	Am 241 AEA Frac. (C241)	0.624
SAMPLE	Sample Volume in mL (SS)	0.500	Am 243 AEA Frac. (C243)	0.328
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.015
29189	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2800
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	46.02
LIQUID	Detector Number	18	Am 243 cpm	24.2
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	1.14
99001500			AEA Count Time (min)	480
Retrun			Am 241 µCi/L =	1.9561E+01
0			Cm 243/244 µCi/L =	< 1.5674E+00

Sample Prep	N/A
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
S99T000547	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
WB27809	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV
Prepared By	EMB
Chemist	JFR

Analyst	Am 241 µCi/mL = 1.96E-02	DETECTION LEVELS in µCi/mL
GLL	Relative Counting Error = 2.2%	
Data Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.	
04/22/99	Cm 243/244 µCi/mL < 1.57E-03	
Analysis Date	Relative Counting Error = 8.6%	Am 241 1.57E-03
04/21/99	Am 243 Tracer Recovery = 100.7%	Cm 243/244 1.57E-03
Analysis Time	02:30 PM	
Sample Point	U-103 GRAB2	

Analyst:	GLL	Date:	04/22/99
Signature of Chemist:	<i>John Dolyea</i>	JFR	Date: 02 Apr 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) ¹⁰²⁻⁴⁹ LIQUID / SO DUP

Type	Date Counted	APR-21-99	Am 241 AEA Frac. (C241)	0.62
DUP	Sample Volume in mL (SS)	0.500	Am 243 AEA Frac. (C243)	0.327
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.014
29189	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2726
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	47.55
LIQUID	Detector Number	18	Am 243 cpm	25.07
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	1.11
99001500			AEA Count Time (min)	480
Rerun			Am 241 µCi/L =	1.9495E+01
0			Cm 243/244 µCi/L =	< 1.6082E+00
Sample Prep				
N/A				
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
S99T000547	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
WB27809	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By				
EMB				
Chemist				
JFR	Am 241 µCi/mL =	1.95E-02	DETECTION LEVELS in µCi/mL	
Analyst	Relative Counting Error =	2.2%		
GLL	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Date Complete	Cm 243/244 µCi/mL	< 1.61E-03	1.61E-03	
04/22/99	Relative Counting Error =	8.7%	Cm 243/244	
Analysis Date	Am 243 Tracer Recovery =	97.8%	1.61E-03	
04/21/99				
Analysis Time				
02:30 PM				
Sample Point				
U-103 GRAB2				

Analyst:	GLL	Date:	04/22/99
Signature of Chemist:	<i>John Relyea</i>	Date:	22 Apr 99

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) ^{AD 1/1/99} LIQUID / SO				SAMPLE
Type	Date Counted	APR-21-99	Am 241 AEA Frac. (C241)	0.632
SAMPLE	Sample Volume in mL (SS)	0.500	Am 243 AEA Frac. (C243)	0.312
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.014
29189	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2904
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	49.08
LIQUID	Detector Number	18	Am 243 cpm	24.22
Batch Numbers	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	1.06
99001500			AEA Count Time (min)	480
Rerun			Am 241 µCi/L =	2.0828E+01
0			Cm 243/244 µCi/L =	< 1.6582E+00

Sample Prep	N/A		
Sample Number	S99T000549		
Instrument Code	WB27809		
Prepared By	EMB		
Chemist	JFR		
Analyst	GLL		
Date Complete	04/22/99		
Analysis Date	04/21/99		
Analysis Time	02:30 PM		
Sample Point	U-103 GRAB2		

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 =	2.08E-02	Am 241	1.66E-03
Relative Counting Error =	2.2%	Cm 243/244	1.66E-03
NOTE: Cm-243/244 Result is a LESS THAN Value.			
Cm 243/244 µCi/mL	< 1.66E-03		
Relative Counting Error =	8.9%		
Am 243 Tracer Recovery =	99.4%		

Analyst:	GLL	Date:	04/22/99
Signature of Chemist:	<i>John Pelyea</i>	Date:	22 Apr 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) ^{1/27/99} LIQUID / SO DUP

Type	Date Counted	APR-21-99	Am 241 AEA Frac. (C241)	0.637
DUP	Sample Volume in mL (SS)	0.500	Am 243 AEA Frac. (C243)	0.318
Work List	Sample D.F. (DF)	101	Cm 243/244 AEA Frac. (Cm)	0.014
29189	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2735
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	51
LIQUID	Detector Number	18	Am 243 cpm	25.43
Batch Number	Detector Efficiency (DetEff)	0.2686	Cm 243/244 cpm	1.14
99001500			AEA Count Time (min)	480
Rerun			Am 241 µCi/L =	2.0596E+01
0			Cm 243/244 µCi/L =	< 1.6950E+00
Sample Prep				
N/A				
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
S99T000549	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))			
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100			
WB27809	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV			
Prepared By				
EMB				
Chemist				
JFR	Am 241 µCi/mL =	2.06E-02	DETECTION LEVELS in µCi/mL	
Analyst	Relative Counting Error =	2.2%		
GLL	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Date Complete	Cm 243/244 µCi/mL	< 1.69E-03	1.69E-03	
Analysis Date	Relative Counting Error =	8.6%	Cm 243/244	
04/21/99	Am 243 Tracer Recovery =	95.4%	1.69E-03	
Analysis Time				
02:30 PM				
Sample Point				
U-103 GRAB2				

Analyst:	GLL	Date:	04/22/99
Signature of Chemist:	<i>John Relyea</i>	JFR	Date: 22 Apr 99
SAMPLE.WB1 REV 1.2	953103ML		

HNF-1668 REV. 0

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL29189-STD-AM
 File ID: 13a1359.CNF

Counted on: 4/21/99 @21:24
 Detector: AEA13
 Geometry number: 1
 Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1565.0	1565.0	303.057	303.057	12.000	4.888	6.000	2.566
2	1657.0	1657.0	257.148	257.145	12.000	3.865	6.000	1.983
3	24.3	24.3	174.006	174.002	122.000	1.000	61.000	0.100
4	4.7	4.7	160.815	160.072	10.000	0.797	5.000	0.020
5?	5.0	5.0	132.297	131.879	10.000	2.267	5.000	0.324
6?	4.6	4.6	104.544	104.119	12.000	0.606	6.000	0.092
7?	3.7	3.7	82.870	82.226	6.000	2.632	3.000	0.280

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	Pu238	0.437	5.487	5.475	0.012	0.02	43.76	1.4	245.3	0.111E-03	
	Am241		5.479	5.475	0.004				187.9	0.847E-04	
2	Am243	0.439	5.266	5.264	0.002	0.02	43.91	1.4	179.1	0.807E-04	
3	Pu242	0.019	4.891	4.881	0.010	0.00	1.94	6.4	7.8	0.353E-05	
4		????		4.817			0.97	14.4			
5		????		4.688			0.30	40.0			
6		????		4.560			0.25	39.5			
7		????		4.459			0.27	34.6			
Totals:		0.896	<--valid peaks only-->					89.60			

DETECTOR CALIBRATION

Energy(MEV) = 4.081 + (0.0046)*Channel
 Energy range (MeV): 4.081 TO 6.436
 Efficiency = 0.2477 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48028.0	100.000
Smoothed	48028.1	100.000
Composite fit	43871.4	91.345
Residuals	4156.6	8.655

Raw Data Dump for AEA Spectrum: 13a1359.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	2.	9.	2.	4.	2.	7.
21	2.	4.	4.	6.	9.	6.	4.	9.	6.	8.
31	10.	3.	7.	3.	6.	4.	4.	8.	8.	5.
41	9.	4.	7.	6.	10.	9.	5.	8.	6.	4.
51	10.	10.	6.	4.	8.	7.	9.	8.	5.	13.
61	4.	7.	9.	7.	9.	13.	7.	3.	12.	14.
71	6.	10.	8.	9.	9.	9.	4.	10.	9.	13.
81	9.	9.	13.	14.	5.	11.	12.	8.	5.	10.
91	9.	12.	6.	12.	13.	14.	12.	7.	12.	7.
101	13.	9.	11.	11.	13.	13.	9.	8.	9.	8.
111	5.	9.	6.	5.	26.	18.	17.	13.	11.	15.
121	12.	10.	17.	9.	14.	14.	13.	15.	6.	16.
131	16.	19.	21.	12.	15.	12.	19.	8.	11.	18.
141	17.	13.	16.	20.	13.	18.	12.	21.	19.	15.
151	17.	17.	17.	20.	21.	18.	20.	11.	22.	24.
161	18.	22.	20.	17.	19.	19.	17.	17.	14.	21.
171	21.	23.	24.	26.	26.	22.	16.	24.	18.	21.
181	26.	22.	18.	28.	25.	26.	22.	28.	24.	35.
191	21.	40.	26.	31.	28.	28.	33.	35.	27.	19.
201	36.	25.	35.	24.	40.	45.	43.	34.	39.	49.
211	51.	46.	41.	36.	50.	48.	55.	64.	51.	52.
221	50.	67.	55.	56.	75.	94.	102.	91.	104.	90.
231	106.	106.	131.	124.	127.	179.	167.	172.	184.	243.
241	230.	259.	306.	318.	351.	419.	498.	561.	663.	677.
251	760.	889.	1050.	1262.	1503.	1811.	1956.	2038.	1659.	1005.
261	489.	308.	196.	169.	177.	169.	169.	165.	163.	127.
271	136.	118.	129.	110.	117.	99.	85.	112.	102.	117.
281	120.	132.	178.	168.	166.	186.	223.	268.	320.	303.
291	336.	429.	488.	534.	624.	637.	759.	857.	1029.	1196.
301	1449.	1646.	1936.	1826.	1424.	968.	594.	436.	349.	324.
311	229.	215.	158.	120.	115.	63.	46.	18.	5.	3.
321	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	1.	0.	0.	0.	0.	1.	0.	3.	1.	1.
351	2.	0.	0.	1.	1.	1.	0.	0.	1.	1.
361	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.
371	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL29189-BLK-AM
 File ID: 14a1450.CNF

Counted on: 4/21/99 @21:25
 Detector: AEA14
 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	761.5	761.5	253.881	253.881	12.000	4.711	6.000	2.001
2	13.5	13.5	189.989	189.538	82.000	1.000	41.000	0.100
3?	2.6	2.6	172.546	172.036	6.000	0.397	3.000	0.224

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	0.860	5.266	5.262	0.0040	0.02	23.30	1.9	96.9	0.437E-04
2		0.040		4.966		0.00	1.08	8.7	4.5	0.201E-05
3		????		4.886			0.04	175.		
Totals:		0.900	<--valid peaks only-->				24.38			

DETECTOR CALIBRATION

Energy (MEV) = 4.094 + (0.0046)*Channel
 Energy range (MeV): 4.094 TO 6.450
 Efficiency = 0.2428 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13004.0	100.000
Smoothed	13004.0	100.000
Composite fit	11725.9	90.171
Residuals	1278.1	9.829

Analyzed by: _____
 VR

Spectrum 14a1450.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5247.6

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Raw Data Dump for AEA Spectrum: 14a1450.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	2.	2.	0.	1.	2.	0.
21	1.	0.	2.	1.	0.	2.	0.	3.	1.	0.
31	0.	2.	2.	1.	3.	2.	0.	0.	2.	0.
41	0.	3.	0.	4.	4.	1.	1.	1.	0.	2.
51	0.	0.	6.	4.	2.	0.	0.	0.	1.	1.
61	1.	2.	1.	2.	0.	2.	2.	0.	4.	1.
71	1.	1.	1.	4.	2.	2.	2.	2.	0.	1.
81	1.	3.	3.	6.	0.	2.	3.	4.	6.	2.
91	3.	2.	5.	7.	3.	2.	4.	3.	2.	3.
101	3.	1.	4.	6.	5.	4.	6.	1.	5.	1.
111	5.	3.	3.	2.	7.	3.	2.	4.	3.	5.
121	1.	3.	4.	10.	1.	4.	0.	3.	5.	5.
131	5.	3.	3.	6.	9.	8.	3.	5.	3.	5.
141	7.	7.	11.	0.	4.	7.	2.	7.	3.	3.
151	10.	9.	6.	6.	4.	3.	5.	4.	7.	7.
161	7.	4.	6.	12.	11.	7.	12.	5.	10.	9.
171	7.	16.	9.	12.	7.	11.	3.	12.	11.	9.
181	10.	8.	12.	11.	13.	13.	14.	16.	14.	13.
191	15.	14.	14.	11.	10.	15.	11.	15.	13.	14.
201	17.	22.	16.	24.	28.	16.	22.	27.	24.	19.
211	31.	22.	22.	26.	24.	34.	39.	43.	32.	36.
221	31.	46.	37.	32.	49.	52.	47.	53.	64.	76.
231	69.	59.	81.	84.	98.	131.	120.	126.	145.	176.
241	159.	222.	259.	297.	343.	371.	448.	449.	534.	569.
251	718.	751.	806.	851.	883.	723.	493.	297.	158.	103.
261	71.	58.	72.	50.	44.	35.	48.	32.	25.	28.
271	14.	15.	5.	1.	1.	2.	0.	3.	0.	0.
281	1.	2.	1.	3.	0.	3.	2.	4.	4.	2.
291	3.	1.	1.	2.	2.	7.	2.	9.	12.	6.
301	9.	6.	3.	3.	0.	2.	0.	0.	0.	1.
311	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
321	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
341	0.	0.	0.	0.	0.	1.	1.	1.	2.	0.
351	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
361	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 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
 S99T000538-SAM-A
 File ID: 15a1520.CNF

Counted on: 4/21/99 @21:26
 Detector: AEA15
 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	25.3	25.3	369.627	369.627	12.000	3.286	6.000	0.838
2	1020.3	1020.3	300.286	300.285	12.000	6.527	6.000	2.391
3	713.2	713.2	254.041	254.010	12.000	5.628	6.000	2.051

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	0.015	5.795	5.794	0.0010	0.02	1.00	8.9	4.1	0.185E-05
	Cm243		5.779	5.794	-0.015				5.6	0.254E-05
2	Pu238	0.547	5.487	5.476	0.0110	0.03	36.47	1.5	208.2	0.938E-04
	Am241		5.479	5.476	0.003				159.4	0.718E-04
3	Am243	0.370	5.266	5.263	0.0030	0.03	24.68	1.8	102.5	0.461E-04
Totals:		0.931	<--valid peaks only-->				62.14			

DETECTOR CALIBRATION

Energy (MEV) = 4.094 + (0.0046)*Channel
 Energy range (MeV): 4.094 TO 6.449
 Efficiency = 0.2433 CPM/DPM
 (Data reduction compression factor: 1.)

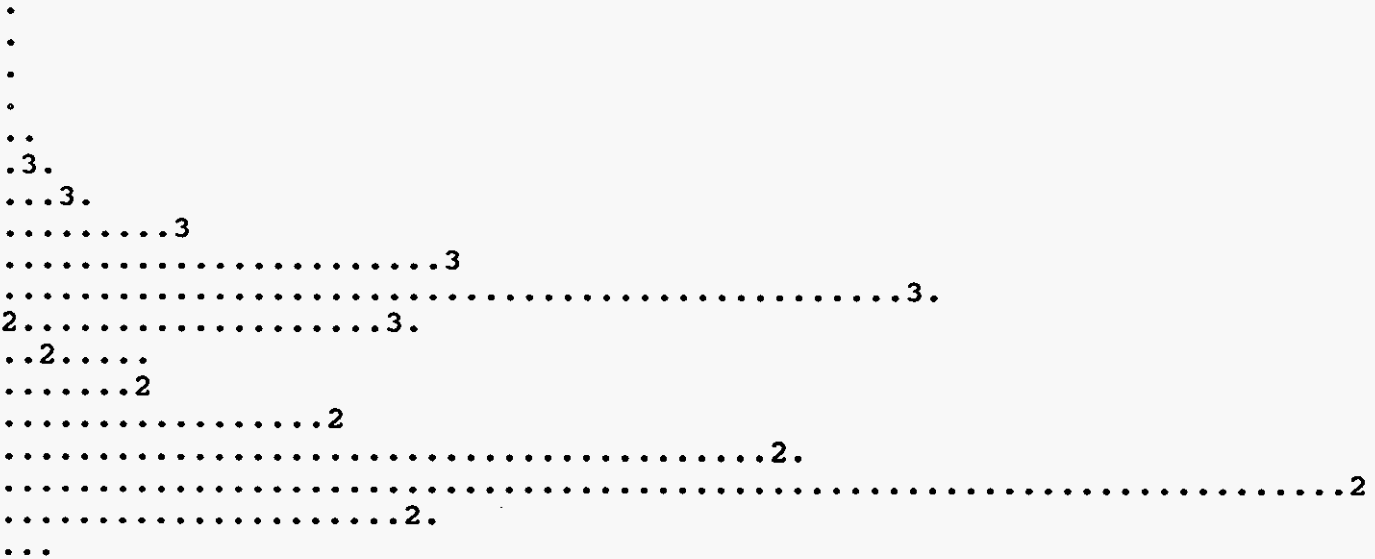
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	32031.0	100.000
Smoothed	32031.0	100.000
Composite fit	29833.3	93.139
Residuals	2197.7	6.861

Analyzed by: _____
 VR

Spectrum 15a1520.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 7230.6



1
1
1
1
1
1

Raw Data Dump for AEA Spectrum: 15a1520.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	2.	3.	1.	0.	2.	2.
21	2.	3.	2.	0.	2.	2.	4.	1.	1.	2.
31	2.	2.	2.	1.	1.	2.	0.	1.	0.	3.
41	3.	0.	4.	1.	3.	2.	1.	1.	6.	1.
51	2.	4.	3.	3.	3.	2.	0.	2.	4.	2.
61	1.	2.	1.	2.	3.	2.	1.	2.	2.	2.
71	3.	4.	2.	2.	1.	3.	5.	3.	3.	3.
81	3.	3.	0.	3.	0.	2.	3.	5.	6.	0.
91	5.	1.	2.	8.	4.	5.	1.	2.	6.	5.
101	2.	2.	2.	4.	5.	3.	5.	5.	4.	3.
111	8.	3.	3.	6.	1.	1.	5.	3.	6.	4.
121	2.	6.	6.	4.	8.	3.	4.	3.	7.	6.
131	9.	7.	7.	2.	4.	11.	6.	6.	2.	6.
141	5.	3.	4.	4.	8.	6.	6.	3.	5.	7.
151	3.	9.	10.	2.	11.	9.	14.	3.	7.	7.
161	4.	6.	9.	14.	8.	5.	3.	7.	4.	7.
171	13.	10.	10.	17.	10.	14.	14.	10.	11.	18.
181	12.	12.	15.	19.	13.	17.	16.	19.	12.	16.
191	16.	17.	18.	13.	18.	22.	19.	18.	20.	20.
201	18.	20.	20.	22.	27.	25.	24.	28.	31.	22.
211	30.	29.	47.	39.	34.	43.	41.	32.	36.	49.
221	48.	47.	56.	53.	63.	63.	65.	78.	63.	77.
231	86.	96.	105.	108.	114.	134.	140.	170.	188.	222.
241	232.	245.	269.	351.	335.	369.	434.	470.	522.	608.
251	655.	709.	814.	798.	776.	744.	592.	363.	225.	155.
261	117.	87.	105.	79.	101.	124.	111.	91.	96.	91.
271	75.	95.	88.	91.	96.	114.	115.	115.	137.	169.
281	153.	189.	194.	192.	257.	288.	348.	360.	392.	438.
291	517.	553.	628.	664.	675.	773.	937.	992.	1061.	1119.
301	1166.	1046.	862.	590.	395.	293.	215.	193.	158.	140.
311	108.	88.	45.	36.	28.	9.	4.	3.	1.	0.
321	2.	1.	0.	0.	0.	1.	2.	1.	2.	0.
331	1.	0.	1.	4.	3.	1.	1.	2.	4.	0.
341	0.	1.	4.	0.	2.	2.	6.	3.	5.	8.
351	7.	4.	8.	7.	8.	12.	15.	15.	16.	15.
361	23.	18.	21.	18.	18.	20.	23.	23.	30.	26.
371	29.	29.	7.	4.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
391	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
411	0.	0.	0.	0.	1.	0.	1.	0.	0.	1.
421	2.	2.	2.	1.	2.	4.	6.	1.	4.	2.
431	0.	4.	5.	3.	4.	11.	3.	1.	4.	2.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 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
 S99T000538-DUP-A
 File ID: 16a1631.CNF

Counted on: 4/21/99 @21:27
 Detector: AEA16
 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	35.7	35.7	367.828	367.828	10.000	4.073	5.000	1.553
2	1349.4	1349.4	299.101	299.101	14.000	7.198	7.000	3.483
3	892.2	892.2	253.092	253.082	12.000	5.283	6.000	2.292

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	0.015	5.795	5.782	0.013	0.02	1.12	8.4	4.2	0.190E-05	
	Cm243		5.779	5.782	-0.003				5.8	0.261E-05	
2	Am241	0.589	5.479	5.466	0.013	0.03	43.75	1.4	175.3	0.790E-04	
	Pu238		5.487	5.466	0.021				228.9	0.103E-03	
3	Am243	0.374	5.266	5.254	0.012	0.02	27.79	1.7	105.7	0.476E-04	
Totals:		0.979	<--valid peaks only-->					72.67			

DETECTOR CALIBRATION

Energy(MEV) = 4.090 + (0.0046)*Channel
 Energy range (MeV): 4.090 TO 6.445
 Efficiency = 0.2655 CPM/DPM
 (Data reduction compression factor: 1.)

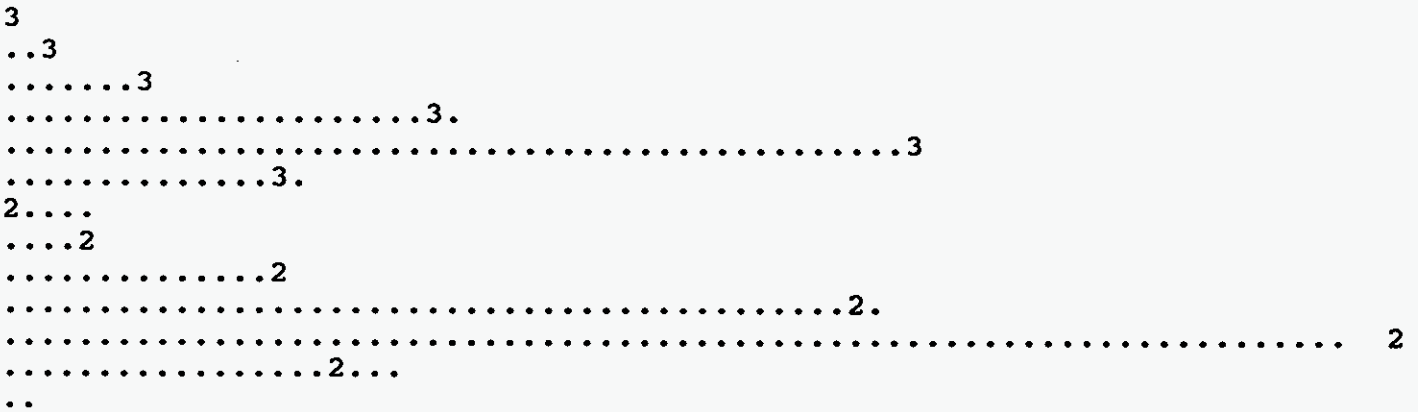
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	35631.0	100.000
Smoothed	35631.0	100.000
Composite fit	34884.1	97.904
Residuals	746.9	2.096

Analyzed by: _____
 VR

Spectrum 16a1631.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 9092.9



1
1
1
1

Raw Data Dump for AEA Spectrum: 16a1631.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	2.	1.	0.	0.	0.	0.
21	0.	1.	1.	0.	1.	0.	1.	1.	0.	0.
31	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.
41	0.	0.	1.	0.	0.	0.	2.	1.	2.	1.
51	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.
61	0.	1.	1.	0.	1.	0.	0.	1.	0.	0.
71	1.	1.	1.	0.	3.	0.	0.	0.	0.	1.
81	0.	3.	0.	1.	0.	1.	1.	0.	1.	2.
91	0.	1.	1.	0.	1.	2.	1.	2.	1.	0.
101	1.	1.	2.	2.	1.	1.	1.	0.	1.	2.
111	1.	2.	0.	0.	2.	0.	1.	0.	0.	3.
121	3.	2.	1.	2.	2.	2.	2.	0.	1.	2.
131	3.	0.	0.	2.	1.	2.	0.	0.	2.	2.
141	1.	0.	0.	2.	2.	3.	1.	3.	0.	5.
151	1.	0.	2.	1.	1.	1.	0.	3.	1.	0.
161	3.	1.	0.	3.	0.	2.	1.	9.	5.	2.
171	3.	1.	3.	2.	5.	4.	2.	6.	2.	2.
181	1.	2.	1.	2.	4.	5.	1.	0.	6.	4.
191	2.	3.	7.	5.	2.	6.	7.	5.	12.	7.
201	3.	10.	6.	6.	2.	6.	6.	5.	5.	6.
211	6.	12.	10.	12.	13.	17.	11.	14.	18.	13.
221	18.	18.	20.	18.	20.	34.	39.	32.	47.	43.
231	51.	75.	98.	82.	111.	113.	127.	141.	186.	236.
241	254.	294.	363.	379.	470.	531.	586.	702.	689.	799.
251	859.	980.	986.	1003.	941.	657.	434.	222.	151.	125.
261	111.	99.	81.	97.	94.	84.	77.	76.	68.	49.
271	47.	45.	45.	49.	72.	57.	84.	86.	92.	126.
281	132.	160.	211.	224.	226.	319.	374.	430.	485.	662.
291	688.	776.	837.	900.	1042.	1161.	1372.	1409.	1537.	1512.
301	1303.	1079.	751.	526.	414.	345.	279.	254.	196.	167.
311	133.	81.	54.	39.	13.	1.	2.	1.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	0.	2.	0.
331	1.	0.	0.	1.	0.	2.	0.	1.	2.	0.
341	1.	0.	1.	4.	1.	3.	7.	2.	4.	3.
351	5.	7.	3.	6.	14.	8.	14.	19.	13.	25.
361	30.	31.	29.	19.	35.	31.	47.	25.	48.	30.
371	29.	12.	3.	2.	1.	1.	0.	0.	1.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	0.	1.	2.	3.	0.
421	2.	2.	1.	1.	5.	2.	2.	4.	4.	3.
431	7.	10.	9.	4.	3.	7.	7.	5.	2.	1.
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.	0.
471	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	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
 S99T000547-SAM-A
 File ID: 17a1773.CNF

Counted on: 4/21/99 @21:28
 Detector: AEA17
 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	32.4	32.4	369.678	369.678	8.000	4.029	4.000	1.276
2	1440.6	1440.6	300.913	300.913	12.000	6.332	6.000	2.894
3	807.4	807.4	254.787	254.771	12.000	4.714	6.000	2.086

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	0.015	5.795	5.795	0.0000	0.02	1.14	8.4	4.7	0.212E-05	
	Cm243		5.779	5.795	-0.016				6.4	0.290E-05	
2	Pu238	0.624	5.487	5.478	0.0090	0.03	46.02	1.3	264.2	0.119E-03	
	Am241		5.479	5.478	0.001				202.4	0.912E-04	
3	Am243	0.328	5.266	5.266	0.0000	0.02	24.20	1.8	101.1	0.455E-04	
Totals:		0.967	<--valid peaks only-->					71.36			

DETECTOR CALIBRATION

Energy (MEV) = 4.094 + (0.0046)*Channel
 Energy range (MeV): 4.094 TO 6.449
 Efficiency = 0.2419 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

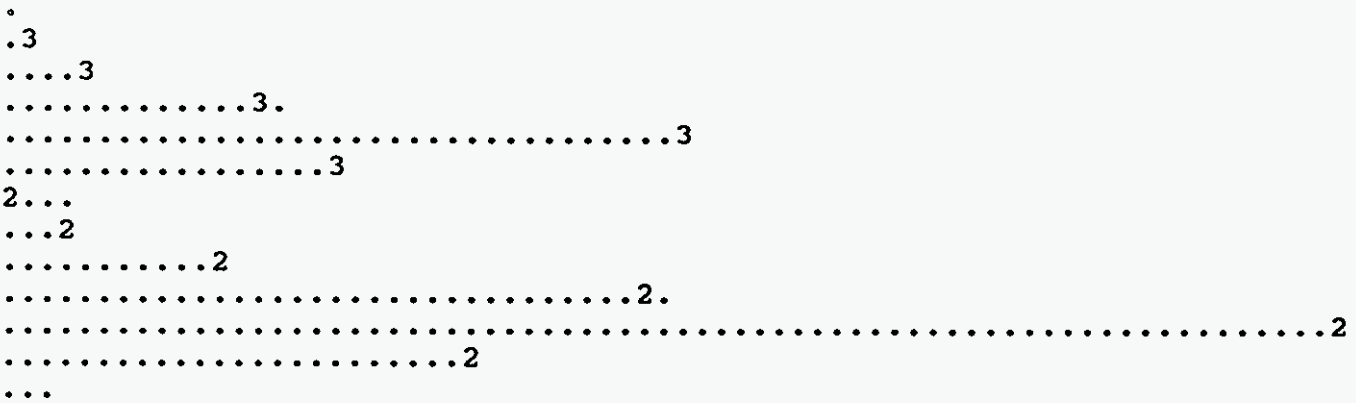
Item	Total	% Recovery
Raw spectrum	35420.0	100.000
Smoothed	35420.0	100.000
Composite fit	34256.1	96.714
Residuals	1163.9	3.286

Analyzed by: _____
 VR

Spectrum 17a1773.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 10211.8



1
1
1
1

Raw Data Dump for AEA Spectrum: 17a1773.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	2.	0.	1.	0.	0.
21	1.	1.	0.	2.	0.	1.	1.	0.	0.	2.
31	1.	0.	0.	0.	0.	1.	0.	0.	0.	1.
41	0.	0.	0.	0.	2.	2.	2.	2.	1.	1.
51	2.	1.	0.	1.	2.	2.	0.	3.	2.	1.
61	3.	2.	2.	2.	1.	1.	1.	0.	0.	1.
71	2.	3.	0.	2.	1.	1.	1.	0.	2.	3.
81	3.	2.	2.	2.	0.	1.	1.	0.	4.	2.
91	0.	2.	4.	5.	2.	2.	0.	0.	1.	0.
101	0.	4.	3.	2.	1.	1.	1.	1.	1.	0.
111	2.	2.	2.	1.	1.	0.	3.	2.	3.	3.
121	1.	3.	1.	2.	2.	3.	0.	2.	3.	0.
131	3.	3.	1.	0.	2.	9.	3.	3.	4.	2.
141	2.	3.	2.	5.	2.	2.	4.	9.	3.	3.
151	4.	5.	2.	3.	5.	2.	0.	1.	6.	4.
161	2.	3.	3.	5.	2.	4.	3.	3.	2.	0.
171	1.	0.	2.	5.	6.	5.	8.	4.	5.	0.
181	4.	5.	5.	3.	5.	8.	6.	5.	4.	8.
191	4.	3.	6.	3.	7.	10.	7.	8.	7.	11.
201	4.	15.	7.	8.	6.	7.	9.	6.	17.	12.
211	7.	10.	13.	20.	10.	11.	13.	11.	26.	24.
221	19.	18.	25.	17.	31.	24.	42.	32.	43.	51.
231	49.	51.	57.	69.	73.	88.	92.	118.	122.	167.
241	184.	178.	227.	284.	320.	360.	413.	433.	545.	597.
251	647.	685.	804.	886.	933.	898.	770.	507.	288.	176.
261	109.	96.	75.	94.	68.	71.	67.	59.	69.	57.
271	55.	68.	53.	48.	58.	60.	83.	93.	82.	102.
281	140.	131.	173.	191.	230.	276.	316.	334.	439.	501.
291	574.	649.	719.	841.	892.	1033.	1160.	1340.	1444.	1563.
301	1598.	1608.	1398.	1051.	677.	465.	359.	292.	238.	205.
311	164.	132.	85.	61.	36.	21.	11.	3.	0.	0.
321	0.	0.	0.	0.	1.	0.	0.	1.	2.	0.
331	1.	0.	0.	0.	1.	0.	1.	1.	1.	1.
341	0.	0.	3.	1.	2.	5.	3.	7.	5.	1.
351	5.	3.	5.	5.	7.	13.	12.	11.	20.	19.
361	15.	21.	25.	17.	32.	31.	24.	37.	34.	28.
371	41.	31.	22.	8.	4.	2.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	1.	1.	0.	0.	1.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.
411	0.	1.	0.	2.	0.	0.	1.	1.	2.	3.
421	1.	1.	1.	1.	3.	1.	4.	3.	6.	5.
431	2.	6.	3.	7.	3.	9.	4.	5.	10.	9.
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.	0.
471	0.	0.	0.	0.	1.	0.	0.	1.	2.	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
 S99T000547-DUP-A
 File ID: 18a1838.CNF

Counted on: 4/21/99 @21:29
 Detector: AEA18
 Geometry number: 1
 Count time: 28802. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	40.3	40.3	368.395	368.395	12.000	3.925	6.000	1.876
2	1600.4	1600.4	299.604	299.604	12.000	6.138	6.000	3.283
3	872.9	872.9	253.725	253.717	12.000	4.794	6.000	2.339

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	Cm244	0.014	5.795	5.783	0.012	0.02	1.11	8.5	4.8	0.216E-05
	Cm243		5.779	5.783	-0.004				6.6	0.296E-05
2	Pu238	0.620	5.487	5.466	0.021	0.03	47.55	1.3	285.2	0.128E-03
	Am241		5.479	5.466	0.013				218.4	0.984E-04
3	Am243	0.327	5.266	5.255	0.011	0.02	25.07	1.8	109.3	0.493E-04
Totals:		0.961	<--valid peaks only-->				73.73			

DETECTOR CALIBRATION

Energy (MEV) = 4.088 + (0.0046)*Channel
 Energy range (MeV): 4.088 TO 6.443
 Efficiency = 0.2316 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	36832.0	100.000
Smoothed	36832.0	100.000
Composite fit	35393.6	96.095
Residuals	1438.4	3.905

Analyzed by: _____

VR

Spectrum 18a1838.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 10860.4

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1

Raw Data Dump for AEA Spectrum: 18a1838.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	2.	0.	2.	1.	1.
21	1.	2.	3.	0.	1.	1.	0.	2.	2.	0.
31	2.	0.	1.	0.	0.	1.	0.	3.	0.	2.
41	0.	1.	2.	2.	2.	2.	1.	2.	0.	2.
51	0.	0.	1.	2.	3.	1.	4.	2.	0.	0.
61	0.	0.	3.	2.	0.	2.	1.	0.	2.	0.
71	1.	2.	1.	2.	2.	4.	2.	1.	2.	2.
81	2.	1.	0.	1.	1.	5.	0.	1.	1.	1.
91	1.	1.	3.	2.	1.	1.	1.	2.	0.	1.
101	4.	3.	0.	3.	2.	0.	2.	2.	1.	2.
111	1.	1.	1.	2.	3.	3.	2.	3.	1.	1.
121	2.	1.	2.	4.	2.	0.	2.	2.	1.	3.
131	3.	2.	5.	1.	3.	1.	1.	2.	4.	3.
141	2.	0.	1.	4.	3.	6.	3.	4.	3.	1.
151	1.	4.	3.	2.	5.	2.	4.	2.	3.	5.
161	4.	3.	2.	2.	2.	2.	4.	0.	3.	1.
171	3.	2.	4.	4.	3.	4.	4.	3.	6.	5.
181	4.	2.	5.	6.	3.	4.	3.	5.	5.	5.
191	7.	2.	6.	7.	2.	2.	2.	10.	9.	7.
201	6.	4.	3.	7.	10.	8.	6.	10.	8.	8.
211	9.	11.	9.	11.	13.	10.	17.	12.	11.	18.
221	16.	20.	16.	20.	21.	32.	30.	31.	45.	47.
231	35.	68.	60.	69.	72.	90.	92.	122.	135.	165.
241	194.	193.	278.	310.	357.	398.	460.	567.	626.	733.
251	796.	860.	977.	992.	961.	829.	543.	294.	151.	111.
261	111.	69.	91.	72.	68.	74.	70.	57.	69.	58.
271	63.	63.	44.	55.	62.	78.	73.	99.	89.	116.
281	145.	160.	152.	198.	235.	312.	354.	404.	478.	550.
291	648.	759.	819.	971.	1063.	1279.	1445.	1697.	1798.	1819.
301	1775.	1381.	972.	667.	501.	353.	295.	282.	237.	150.
311	157.	89.	61.	49.	24.	13.	3.	2.	1.	0.
321	0.	1.	0.	0.	0.	0.	2.	2.	0.	1.
331	0.	0.	2.	1.	0.	2.	0.	2.	1.	1.
341	0.	1.	3.	1.	3.	1.	3.	2.	3.	3.
351	4.	4.	8.	6.	7.	9.	11.	19.	11.	16.
361	17.	25.	28.	26.	37.	33.	38.	48.	48.	43.
371	29.	17.	14.	6.	1.	0.	0.	0.	0.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
411	0.	1.	1.	0.	1.	1.	1.	0.	1.	2.
421	2.	1.	2.	5.	3.	2.	2.	4.	5.	2.
431	2.	5.	4.	8.	8.	6.	11.	4.	4.	6.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 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
 S99T000549-SAM-A
 File ID: 19a1962.CNF

Counted on: 4/21/99 @21:31
 Detector: AEA19
 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	38.2	38.2	369.234	369.234	12.000	3.358	6.000	1.472
2	1648.3	1648.3	300.711	300.711	12.000	6.014	6.000	3.146
3	883.4	883.4	254.984	254.975	12.000	4.425	6.000	2.281

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid	Count	%err	Activity
			Exp. Obs. Diff.	Rate	@95	d/m uCi/ea
1	Cm244	0.014	5.795 5.784 0.011	1.06	8.7	4.5 0.202E-05
	Cm243		5.779 5.784 -.005			6.1 0.276E-05
2	Pu238	0.632	5.487 5.469 0.018	49.08	1.3	287.1 0.129E-03
	Am241		5.479 5.469 0.010			219.9 0.991E-04
3	Am243	0.312	5.266 5.258 0.008	24.22	1.8	103.0 0.464E-04
Totals:		0.958	<--valid peaks only-->		74.35	

DETECTOR CALIBRATION

Energy (MEV) = 4.086 + (0.0046)*Channel
 Energy range (MeV): 4.086 TO 6.441
 Efficiency = 0.2374 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	37256.0	100.000
Smoothed	37256.0	100.000
Composite fit	35692.4	95.803
Residuals	1563.6	4.197

Analyzed by: _____
 VR

Spectrum 19a1962.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11487.2

3
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2...
..2
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1
1
1

Raw Data Dump for AEA Spectrum: 19a1962.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.
21	1.	0.	1.	0.	0.	0.	1.	0.	0.	1.
31	0.	1.	1.	0.	1.	0.	1.	0.	0.	0.
41	2.	0.	0.	1.	0.	0.	0.	3.	0.	2.
51	1.	1.	1.	4.	1.	0.	1.	1.	0.	0.
61	2.	2.	2.	0.	1.	0.	1.	0.	0.	0.
71	0.	2.	0.	0.	1.	2.	1.	1.	0.	0.
81	0.	1.	1.	2.	0.	2.	0.	1.	0.	3.
91	0.	3.	1.	0.	1.	0.	1.	1.	1.	1.
101	0.	1.	4.	1.	2.	1.	1.	1.	2.	1.
111	1.	2.	3.	1.	2.	2.	1.	1.	3.	3.
121	0.	1.	3.	2.	1.	2.	2.	1.	1.	2.
131	1.	0.	2.	3.	4.	2.	2.	1.	0.	1.
141	1.	1.	3.	4.	5.	0.	6.	2.	2.	2.
151	4.	2.	2.	5.	1.	4.	2.	0.	3.	3.
161	7.	1.	2.	1.	1.	4.	3.	0.	4.	7.
171	3.	3.	5.	4.	6.	1.	3.	5.	3.	2.
181	6.	3.	3.	1.	3.	3.	6.	5.	7.	4.
191	3.	5.	6.	4.	8.	6.	9.	8.	5.	8.
201	5.	2.	8.	7.	5.	8.	9.	13.	10.	6.
211	9.	10.	13.	9.	20.	18.	10.	17.	11.	19.
221	19.	18.	24.	18.	20.	25.	41.	35.	39.	39.
231	52.	45.	52.	61.	65.	80.	87.	111.	105.	127.
241	145.	168.	191.	221.	272.	329.	381.	434.	475.	544.
251	634.	791.	852.	934.	1039.	1027.	822.	583.	347.	171.
261	112.	93.	76.	92.	93.	89.	75.	69.	72.	72.
271	64.	46.	59.	44.	67.	66.	87.	79.	97.	117.
281	120.	143.	165.	180.	211.	266.	272.	359.	435.	482.
291	527.	674.	796.	900.	983.	1050.	1289.	1550.	1671.	1863.
301	1880.	1793.	1524.	1047.	687.	485.	386.	317.	256.	219.
311	174.	136.	88.	78.	47.	27.	10.	2.	1.	0.
321	0.	0.	0.	1.	0.	1.	1.	0.	0.	2.
331	0.	1.	1.	2.	0.	0.	1.	0.	0.	1.
341	3.	1.	4.	1.	3.	0.	2.	2.	2.	5.
351	6.	5.	6.	7.	7.	10.	12.	9.	10.	19.
361	20.	18.	27.	22.	21.	31.	38.	38.	46.	40.
371	48.	21.	13.	7.	1.	0.	0.	1.	0.	0.
381	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
411	0.	0.	0.	0.	0.	2.	1.	1.	2.	0.
421	2.	3.	1.	5.	2.	1.	3.	4.	4.	4.
431	3.	7.	2.	6.	8.	8.	8.	9.	2.	2.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
481	0.	2.	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
 S99T000549-DUP-A
 File ID: 20a2038.CNF

Counted on: 4/21/99 @21:31
 Detector: AEA20
 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	40.3	40.3	370.632	370.632	10.000	3.183	5.000	1.334
2	1722.0	1722.0	301.100	301.100	12.000	5.958	6.000	3.138
3	913.7	913.7	254.725	254.718	12.000	4.671	6.000	2.407

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	0.014	5.779	5.800	-.021	0.01	1.14	8.4	6.5	0.293E-05
	Cm244		5.795	5.800	-.005				4.7	0.214E-05
2	Pu238	0.637	5.487	5.480	0.007	0.03	51.00	1.3	295.2	0.133E-03
	Am241		5.479	5.480	-.001				226.1	0.102E-03
3	Am243	0.318	5.266	5.267	-.001	0.02	25.43	1.8	107.1	0.482E-04
Totals:		0.969	<--valid peaks only-->				77.56			

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	38427.0	100.000
Smoothed	38427.0	100.000
Composite fit	37230.3	96.886
Residuals	1196.8	3.114

Analyzed by: _____
 VR

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 11942.2

3
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1
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1

Raw Data Dump for AEA Spectrum: 20a2038.CNF

HNF-1668 REV.0

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
21	0.	1.	0.	1.	1.	0.	1.	1.	1.	2.
31	0.	1.	3.	0.	0.	0.	0.	0.	0.	0.
41	1.	1.	2.	1.	1.	0.	1.	1.	0.	2.
51	1.	0.	0.	0.	0.	1.	1.	0.	0.	1.
61	1.	2.	1.	0.	0.	0.	0.	2.	2.	1.
71	1.	0.	1.	1.	0.	2.	2.	0.	0.	2.
81	2.	0.	2.	0.	0.	1.	0.	0.	1.	0.
91	3.	2.	2.	2.	0.	2.	1.	1.	2.	1.
101	2.	0.	1.	0.	0.	1.	0.	1.	0.	1.
111	1.	0.	2.	1.	1.	0.	0.	2.	0.	2.
121	1.	3.	1.	1.	1.	0.	2.	0.	2.	2.
131	3.	0.	1.	3.	1.	3.	3.	2.	3.	2.
141	0.	4.	2.	2.	0.	2.	3.	1.	5.	2.
151	3.	4.	5.	0.	0.	1.	0.	2.	4.	4.
161	2.	4.	2.	2.	1.	1.	2.	1.	1.	1.
171	1.	2.	2.	2.	3.	2.	2.	4.	1.	3.
181	2.	3.	3.	1.	2.	5.	1.	3.	6.	6.
191	5.	4.	0.	4.	2.	5.	5.	3.	5.	3.
201	9.	1.	4.	3.	3.	5.	7.	5.	6.	7.
211	3.	5.	3.	4.	8.	10.	6.	8.	5.	15.
221	9.	8.	11.	19.	19.	15.	28.	27.	19.	27.
231	40.	28.	47.	51.	70.	83.	71.	88.	114.	126.
241	155.	195.	233.	275.	332.	339.	405.	501.	503.	579.
251	752.	782.	902.	1075.	1055.	1004.	840.	560.	325.	155.
261	119.	91.	88.	90.	82.	79.	68.	73.	67.	62.
271	58.	49.	55.	53.	48.	42.	62.	78.	93.	94.
281	112.	127.	145.	157.	202.	226.	303.	356.	415.	470.
291	572.	629.	787.	888.	995.	1086.	1280.	1471.	1682.	1872.
301	1955.	1985.	1720.	1206.	849.	562.	452.	329.	271.	253.
311	206.	166.	139.	96.	57.	37.	16.	3.	0.	0.
321	0.	1.	0.	1.	0.	0.	0.	0.	1.	2.
331	0.	1.	0.	1.	0.	1.	1.	0.	1.	1.
341	1.	0.	1.	1.	2.	3.	3.	2.	3.	3.
351	1.	1.	3.	4.	11.	6.	11.	11.	14.	12.
361	14.	18.	25.	29.	22.	30.	37.	33.	32.	41.
371	53.	41.	32.	22.	6.	2.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	2.	0.	0.	0.	1.	0.	0.	1.	0.	0.
401	1.	0.	0.	1.	0.	0.	1.	1.	0.	0.
411	0.	1.	2.	0.	0.	1.	0.	0.	0.	0.
421	3.	2.	2.	4.	3.	2.	3.	4.	4.	1.
431	5.	3.	3.	5.	9.	7.	8.	4.	7.	8.
441	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

HNF-1668 REV. 0

LABCORE Completed Worklist Report for Worklist# 29529

Analyst: rro

Instrument: AB13

Book#: _____

Method: LA-953-104 Rev/Mod _____

Worklist Comment: U-103 GRAB2, @AM24101, STD= 1.0mL, SS by Ludlum. skm

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	2.30E+00	2.300	% Ct Error
1 STD		0	@AM24101 AM24101T	SOLID	100.	8.53E+01	85.300	% Recovery
2 BLNK-PREP		0	@AM24101 AM24101	SOLID	1	<1.40E-3		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.	9.09E+01	90.900	% Recovery
3 SAMPLE	S99T000551	0 F	@AM24101 AM24101	SOLID	N/A	1.81E-02	2.94e-003	uCi/g
3 SAMPLE	S99T000551	0 F	@AM24101 AM24101E	SOLID	N/A	2.88E+00		% Ct. Error
3 SAMPLE	S99T000551	0 F	@AM24101 AM24101T	SOLID	N/A	7.92E+01		% Recovery
4 DUP	S99T000551	0 F	@AM24101 AM24101	SOLID	1.81E-2	1.99E-2	9.474	RPD
4 DUP	S99T000551	0 F	@AM24101 AM24101E	SOLID	1.0	2.82E+00	2.820	% Ct Error
4 DUP	S99T000551	0 F	@AM24101 AM24101T	SOLID	100.0	8.21E+01	82.100	% Recovery
6 DUP	S99T000554	0 F	@AM24101 AM24101	SOLID	2.00E-2	3.40E-2	51.852	RPD
6 DUP	S99T000554	0 F	@AM24101 AM24101E	SOLID	1.0	2.45E+00	2.450	% Ct Error
6 DUP	S99T000554	0 F	@AM24101 AM24101T	SOLID	100.0	8.15E+01	81.500	% Recovery
8 DUP	S99T000555	0 F	@AM24101 AM24101	SOLID	2.95E-2	2.12E-2	32.742	RPD
8 DUP	S99T000555	0 F	@AM24101 AM24101E	SOLID	1.0	2.99E+00	2.990	% Ct Error
8 DUP	S99T000555	0 F	@AM24101 AM24101T	SOLID	100.0	7.09E+01	70.900	% Recovery

Final page for worklist# 29529

Analyst Signature

Date

Analyst Signature

Date

John Polyzos
 Reviewer Signature Date 6 May 99

Samples S99T000554 and 555
 were rejected for high RPD. They
 will be rerun. JFR

LABCORE Data Entry Template for Worklist# 29529

Analyst: RR0 Instrument: AM01 Book# 46B57

Method: LA-953-104 Rev/Mod B-1

Worklist Comment: U-103 GRAB2, @AM24101, STD= 1.0mL, SS by Ludlum. skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	SOLID		
2 BLNK-PREP			@AM24101	SOLID		
3 SAMPLE	S99T000551	0 F	@AM24101	SOLID	99000104	U-103 GRAB2
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S99T000551	0 F	@AM24101	SOLID		
5 SAMPLE	S99T000554	0 F	@AM24101	SOLID	99000104	U-103 GRAB2
Analytes Requested: AM24101 , AM24101E, AM24101T						
6 DUP	S99T000554	0 F	@AM24101	SOLID		
7 SAMPLE	S99T000555	0 F	@AM24101	SOLID	99000104	U-103 GRAB2
Analytes Requested: AM24101 , AM24101E, AM24101T						
8 DUP	S99T000555	0 F	@AM24101	SOLID		

Final page for worklist # 29529

RR O'Dell 5-3-99
Signature Date

Sue Z Chen 5/5/99
Signature Date
MB 5/5/99

Data Entry Comments:

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0) ^{1/1} ^{AD-7-99} LIQUID

Type	Date Counted	MAY-04-99	Am 241 AEA Frac. (C241)	STD
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.481
WorkList	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0.457
29529	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	0
TestCode	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	4012
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	30
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	0.13
LIQUID	Detector Number	13	Am 243 cpm	31.04
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	29.48
99001844	Standard Book No	46B57	AEA Count Time (min)	0
Rerun	Standard Value in µCi/mL	1.070E-04	Am 241 µCi/L =	480
0			Cm 243/244 µCi/L =	1.0715E-01
Sample Prep				< 1.3053E-02
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	JFR	Am 241 µCi/mL =	1.07E-04	DETECTION LEVELS in µCi/mL
Analyst	RRO	Relative Counting Error =	2.3%	
Date Complete	05/05/99	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Analysis Date	05/03/99	Cm 243/244 µCi/mL <	1.31E-05	Cm 243/244
Analysis Time	03:10 PM	Relative Counting Error =	100.0%	1.31E-05
Sample Point	U-103 GRAB2	Am 243 Tracer Recovery =	85.3%	

Analyst:	RRO	Date:	05/05/99
Signature of Chemist:	JFR	Date:	6 May 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) ¹⁻⁷⁻⁹⁴ LIQUID / SO

				BLNK-PREP
Type	Date Counted	MAY-04-99	Am 241 AEA Frac. (C241)	0
BLNK-PREP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.958
Worklist	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
29529	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	1022
Test Code	Digest Grams of Solids/L (Dg/L)	2.090	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
SOLID	Detector Number	13	Am 243 cpm	22.65
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	0
99001844			AEA Count Time (min)	480
Remin			Am 241 µCi/g =	< 1.3985E-03
0			Cm 243/244 µCi/g =	< 1.3985E-03

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

Chemist	NOTE: Am-241 Result is a LESS THAN Value.		
JFR	Am241 µCi/g =	< 1.40E-03	DETECTION LEVELS in µCi/g
Analyst	Relative Counting Error =	100.0%	
RRO			Am 241
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		
05/05/99	Cm 243/244 µCi/g	< 1.40E-03	1.40E-03
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244
05/03/99	Am 243 Tracer Recovery =	90.9%	1.40E-03

Analysis Time
03:10 PM

Sample Point
U-103 GRAB2

Analyst:	RRO	Date:	05/05/99
Signature of Chemist:	<i>John Polyea</i>	JFR	Date: 6 May 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) LIQUID / SO

				SAMPLE
Type	Date Counted	MAY-04-99	Am 241 AEA Frac. (C241)	0.389
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.522
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
29529	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	1633
Test Code	Digest Grams of Solids/L (Dg/L)	2.090	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	16.87
SOLID	Detector Number	13	Am 243 cpm	22.61
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	0
99001844			AEA Count Time (min)	480
Refin			Am 241 $\mu\text{Ci/g}$ =	1.8146E-02
0			Cm 243/244 $\mu\text{Ci/g}$ =	< 2.9437E-03

Am-241 $\mu\text{Ci/g}$ = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/ μCi)]
 Cm-243/244 $\mu\text{Ci/g}$ = (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

Chemist	JFR	Am241 $\mu\text{Ci/g}$ =	1.81E-02	DETECTION LEVELS in $\mu\text{Ci/g}$ Am 241 2.94E-03 Cm 243/244 2.94E-03
Analyst	RRO	Relative Counting Error =	2.9%	
Date Complete	05/05/99	NOTE: Cm-243/244 Result is a LESS THAN Value.		
Analysis Date	05/03/99	Am 243 Tracer Recovery =	79.2%	

Analyst:	RRO	Date:	05/05/99
Signature of Chemist:	<i>John Relyea</i>	Date:	6 May 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) ^{1/29/99} LIQUID / SO DUP

Type	Date Counted	MAY-04-99	Am 241 AEA Frac. (C241)	0.429
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.472
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
29529	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	1870
Test Code	Digest Grams of Solids/L (Dg/L)	2.324	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	19.26
SOLID	Detector Number	13	Am 243 cpm	21.2
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	0
99001844			AEA Count Time (min)	480
Retin			Am 241 µCi/g =	1.9910E-02
0			Cm 243/244 µCi/g =	< 2.8277E-03

Sample Prep	FUSION01			
Sample Number	S99T000551			
Instrument Code	WB27810			
Prepared By	SZC			
Chemist	JFR			

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

Am241 µCi/g =	1.99E-02	DETECTION LEVELS in µCi/g
Relative Counting Error =	2.8%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/g	< 2.83E-03	2.83E-03
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	82.1%	2.83E-03

Analysis Time	03:10 PM
Sample Point	U-103 GRAB2

Analyst:	RRO	Date:	05/05/99
Signature of Chemist:	<i>John Deluca</i>	JFR	Date: <i>6 May 99</i>

SAMPLE.WB1 REV 1.2 953103ML

HNF-1668 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
 WL29529-STD
 File ID: 10a1034.CNF

Counted on: 5/ 4/99 @ 3:20
 Detector: AEA10
 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	701.9	701.9	298.877	298.877	14.000	6.362	7.000	1.599
2	683.9	683.9	252.902	252.797	12.000	5.109	6.000	1.262

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea	
1	Pu238	0.481	5.487	5.465	0.022	0.03	31.04	1.6	187.8	0.846E-04	
	Am241		5.479	5.465	0.014				143.9	0.648E-04	
2	Am243	0.457	5.266	5.253	0.013	0.02	29.48	1.7	129.7	0.584E-04	
Totals:		0.938	<--valid peaks only-->					60.52			

DETECTOR CALIBRATION

Energy(MEV) = 4.090 + (0.0046)*Channel
 Energy range (MeV): 4.090 TO 6.446
 Efficiency = 0.2295 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	30957.0	100.000
Smoothed	30957.0	100.000
Composite fit	29049.5	93.838
Residuals	1907.5	6.162

Analyzed by: _____
 EMB

Spectrum 10a1034.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5217.4

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Raw Data Dump for AEA Spectrum: 10a1034.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	4.	3.	3.	3.	4.	4.
21	7.	2.	2.	2.	2.	0.	5.	5.	1.	1.
31	6.	2.	2.	2.	9.	3.	2.	1.	2.	2.
41	5.	4.	1.	0.	3.	2.	2.	1.	3.	2.
51	2.	3.	3.	1.	2.	3.	3.	3.	3.	1.
61	7.	3.	3.	4.	2.	6.	5.	1.	6.	5.
71	4.	11.	7.	1.	4.	10.	2.	2.	4.	4.
81	3.	2.	2.	7.	4.	10.	3.	2.	9.	6.
91	4.	2.	3.	5.	9.	6.	8.	5.	7.	3.
101	3.	3.	4.	4.	3.	6.	4.	3.	11.	8.
111	9.	7.	5.	5.	8.	6.	6.	5.	2.	7.
121	6.	10.	9.	9.	7.	2.	6.	10.	8.	5.
131	10.	6.	5.	6.	11.	8.	6.	8.	5.	12.
141	6.	9.	11.	6.	3.	13.	10.	11.	11.	9.
151	9.	19.	19.	16.	13.	10.	12.	13.	14.	7.
161	10.	19.	8.	13.	17.	13.	15.	18.	21.	12.
171	24.	17.	17.	19.	16.	23.	15.	20.	21.	11.
181	17.	29.	22.	21.	23.	22.	32.	30.	16.	20.
191	21.	28.	24.	28.	35.	37.	30.	43.	38.	34.
201	36.	35.	40.	37.	42.	38.	43.	51.	46.	49.
211	56.	56.	57.	49.	68.	58.	73.	70.	79.	94.
221	83.	90.	92.	81.	104.	115.	126.	136.	159.	152.
231	166.	193.	181.	201.	235.	225.	261.	295.	295.	332.
241	326.	361.	420.	451.	504.	541.	549.	625.	623.	708.
251	651.	753.	778.	762.	719.	555.	372.	187.	131.	116.
261	110.	93.	90.	101.	87.	100.	101.	109.	97.	119.
271	106.	119.	113.	144.	121.	139.	134.	156.	186.	195.
281	231.	224.	227.	285.	313.	319.	342.	418.	425.	454.
291	475.	511.	557.	575.	591.	692.	676.	736.	740.	793.
301	680.	550.	370.	228.	162.	132.	101.	60.	74.	62.
311	34.	23.	24.	12.	7.	4.	0.	0.	0.	1.
321	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
331	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
341	0.	2.	2.	0.	1.	0.	0.	1.	0.	1.
351	0.	0.	1.	0.	2.	0.	1.	0.	0.	1.
361	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 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
 WL29529-BLK
 File ID: 11a1118.CNF

Counted on: 5/ 4/99 @ 3:21
 Detector: AEA11
 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	313.8	313.8	254.073	254.073	12.000	6.124	6.000	0.783
2?	8.6	8.6	158.211	158.211	10.000	0.000	5.000	4.608
3?	8.6	8.6	152.529	152.147	10.000	4.230	5.000	1.764
4?	6.8	6.8	129.344	129.001	10.000	2.140	5.000	5.130
5	6.4	6.4	122.404	121.830	8.000	0.973	4.000	0.176

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	Am243	0.958	5.266	5.254	0.012	20.03	22.65	1.9	95.7	0.431E-04
2		????		4.813			0.00	1000.		
3		????		4.785			0.26	35.8		
4		????		4.679			0.10	60.5		
5	Np237	0.013	4.640	4.646	-.006	0.00	0.30	22.6	20.9	0.943E-05
Totals:		0.970	<--valid peaks only-->				22.95			

DETECTOR CALIBRATION

Energy (MEV) = 4.086 + (0.0046)*Channel
 Energy range (MeV): 4.086 TO 6.441
 Efficiency = 0.2391 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11351.0	100.000
Smoothed	11351.0	100.000
Composite fit	11188.8	98.571
Residuals	162.2	1.429

Analyzed by: _____

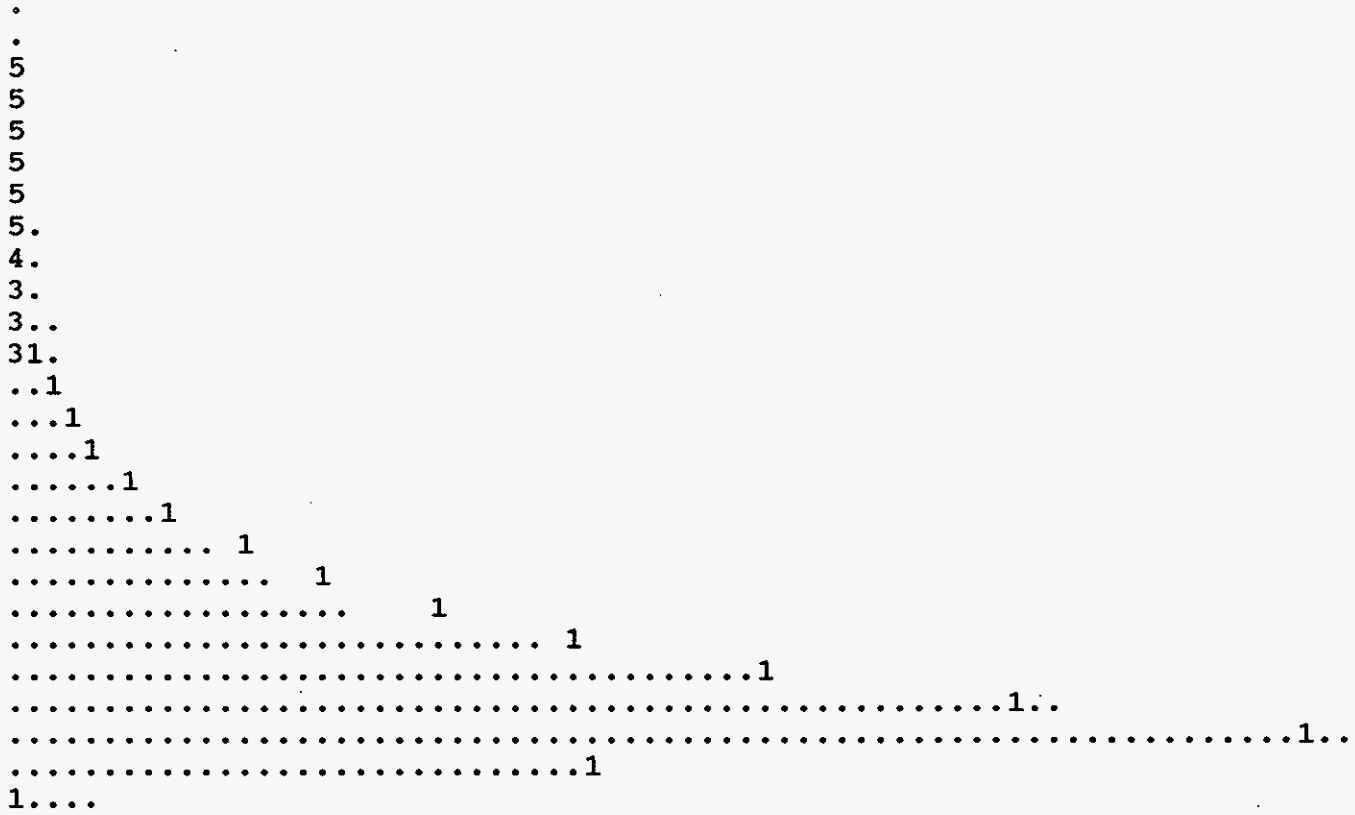
EMB

Spectrum 11a1118.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.:

2377.5



Raw Data Dump for AEA Spectrum: 11a1118.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	2.	3.	2.	2.	6.	2.
21	3.	2.	1.	5.	1.	1.	1.	1.	2.	2.
31	3.	4.	0.	3.	2.	5.	1.	2.	4.	4.
41	1.	2.	4.	2.	2.	2.	3.	2.	5.	0.
51	4.	0.	6.	3.	2.	4.	2.	5.	5.	4.
61	3.	2.	7.	3.	3.	4.	6.	7.	4.	4.
71	4.	4.	6.	4.	7.	2.	6.	6.	4.	3.
81	5.	3.	4.	1.	3.	3.	3.	5.	3.	2.
91	3.	2.	7.	4.	3.	4.	4.	6.	5.	4.
101	3.	7.	6.	13.	6.	5.	6.	4.	3.	8.
111	8.	5.	4.	8.	9.	6.	7.	6.	8.	5.
121	10.	12.	14.	9.	6.	5.	6.	7.	15.	10.
131	10.	4.	8.	10.	5.	11.	5.	11.	9.	9.
141	11.	6.	11.	11.	11.	10.	13.	14.	17.	13.
151	20.	20.	17.	20.	16.	11.	9.	15.	16.	14.
161	13.	8.	13.	17.	15.	24.	14.	15.	16.	30.
171	26.	20.	20.	19.	27.	18.	16.	23.	20.	24.
181	20.	29.	33.	26.	32.	48.	30.	25.	31.	20.
191	30.	41.	38.	34.	37.	47.	39.	53.	51.	44.
201	47.	52.	45.	51.	42.	59.	64.	55.	64.	58.
211	56.	67.	46.	62.	67.	68.	91.	77.	87.	79.
221	71.	76.	84.	96.	123.	115.	111.	139.	125.	127.
231	130.	135.	132.	172.	143.	164.	190.	206.	203.	203.
241	220.	232.	218.	243.	230.	261.	274.	291.	308.	289.
251	280.	316.	319.	292.	347.	308.	317.	198.	92.	66.
261	41.	33.	32.	25.	29.	18.	19.	20.	16.	11.
271	5.	4.	4.	2.	3.	0.	0.	0.	1.	0.
281	0.	0.	1.	2.	2.	0.	3.	2.	0.	1.
291	0.	0.	0.	2.	3.	3.	4.	1.	1.	3.
301	2.	1.	2.	5.	2.	1.	0.	0.	0.	0.
311	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	1.	1.	0.	0.	0.
351	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
361	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	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
 S99T551-SAM
 File ID: 13a1374.CNF

Counted on: 5/ 4/99 @ 3:22
 Detector: AEA13
 Geometry number: 1
 Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	244.7	244.7	299.741	299.741	12.000	8.663	6.000	1.233
2	324.6	324.6	254.042	253.387	18.000	8.449	9.000	1.181
3	10.8	10.8	126.262	126.049	140.000	1.000	70.000	0.100
4?	4.5	4.5	110.860	110.552	6.000	0.617	3.000	0.896
5	3.5	3.5	102.591	101.944	10.000	1.383	5.000	0.022

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	Am241	0.389	5.479	5.463	0.016	0.04	16.87	2.2	72.4	0.326E-04
	Pu238		5.487	5.463	0.024				94.5	0.426E-04
2	Am243	0.522	5.266	5.250	0.016	0.04	22.61	2.1	92.1	0.415E-04
3	Np237	0.019	4.640	4.664	-.024	0.00	0.84	10.8	56.8	0.256E-04
4	????			4.593			0.05	170.		
5		0.014		4.553		0.01	0.61	16.1	2.5	0.111E-05
Totals:		0.944	<--valid peaks only-->				40.93			

DETECTOR CALIBRATION

Energy(MEV) = 4.084 + (0.0046)*Channel
 Energy range (MeV): 4.084 TO 6.440
 Efficiency = 0.2479 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20807.0	100.000
Smoothed	20807.0	100.000
Composite fit	19671.0	94.540
Residuals	1136.0	5.460

Analyzed by: _____

Raw Data Dump for AEA Spectrum: 13a1374.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	6.	4.	1.	3.	3.	3.
21	6.	4.	8.	2.	2.	2.	3.	5.	2.	4.
31	2.	5.	8.	4.	2.	3.	5.	3.	5.	6.
41	3.	7.	6.	6.	4.	7.	4.	6.	5.	4.
51	4.	9.	5.	2.	5.	5.	5.	8.	5.	5.
61	6.	6.	7.	6.	6.	2.	3.	4.	9.	6.
71	8.	1.	11.	7.	6.	7.	8.	8.	4.	12.
81	6.	4.	9.	5.	17.	8.	7.	5.	9.	8.
91	9.	6.	9.	7.	7.	4.	5.	9.	6.	8.
101	13.	11.	13.	9.	10.	8.	8.	7.	13.	11.
111	18.	14.	11.	5.	10.	8.	6.	6.	12.	12.
121	12.	15.	9.	11.	10.	20.	9.	15.	9.	11.
131	10.	7.	15.	7.	18.	18.	13.	10.	9.	10.
141	23.	22.	19.	16.	24.	13.	15.	16.	24.	8.
151	20.	21.	18.	17.	19.	18.	18.	24.	22.	20.
161	20.	14.	22.	23.	34.	25.	25.	28.	18.	19.
171	25.	22.	24.	24.	32.	28.	25.	41.	29.	42.
181	23.	41.	32.	33.	47.	41.	37.	31.	41.	38.
191	49.	36.	62.	44.	35.	51.	55.	47.	54.	58.
201	65.	57.	66.	60.	78.	52.	61.	71.	68.	70.
211	68.	77.	83.	60.	79.	94.	93.	125.	97.	115.
221	108.	99.	111.	128.	106.	115.	123.	137.	157.	146.
231	162.	161.	155.	173.	191.	208.	194.	238.	208.	256.
241	255.	255.	253.	287.	292.	323.	333.	326.	342.	375.
251	343.	391.	373.	366.	356.	379.	384.	297.	238.	145.
261	96.	95.	81.	72.	66.	67.	80.	83.	80.	83.
271	105.	95.	87.	90.	97.	100.	103.	91.	103.	108.
281	123.	132.	141.	128.	134.	145.	168.	183.	179.	191.
291	193.	225.	184.	205.	251.	216.	240.	236.	265.	235.
301	272.	242.	206.	157.	124.	95.	59.	52.	32.	37.
311	28.	20.	18.	13.	5.	8.	2.	1.	0.	1.
321	0.	2.	2.	2.	0.	1.	1.	1.	0.	3.
331	1.	2.	1.	0.	1.	0.	1.	4.	2.	3.
341	2.	0.	2.	0.	3.	2.	3.	2.	6.	4.
351	3.	4.	3.	2.	1.	5.	4.	3.	1.	2.
361	5.	3.	7.	6.	7.	6.	5.	5.	12.	7.
371	3.	0.	3.	2.	1.	0.	0.	0.	1.	0.
381	0.	1.	0.	0.	0.	0.	2.	0.	0.	0.
391	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	1.	2.	0.	0.	0.	1.	0.	1.
431	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.
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.	0.
471	0.	0.	0.	0.	1.	1.	0.	0.	2.	0.
481	2.	1.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T551-DUP
 File ID: 6a6388.CNF

Counted on: 5/ 4/99 @13:27
 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	282.4	282.4	296.497	296.497	16.000	9.009	8.000	1.310
2	331.7	331.7	250.861	250.684	12.000	6.225	6.000	0.930
3	10.5	10.5	108.409	108.193	188.000	1.000	94.000	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	Am241	0.429	5.479	5.463	0.016	0.04	19.26	2.0	89.8	0.404E-04
	Pu238		5.487	5.463	0.024				117.2	0.528E-04
2	Am243	0.472	5.266	5.253	0.013	0.03	21.20	2.1	93.8	0.423E-04
3		0.018		4.597		0.00	0.81	10.4	3.5	0.159E-05
Totals:		0.918	<--valid peaks only-->				41.26			

DETECTOR CALIBRATION

Energy(MEV) = 4.100 + (0.0046)*Channel
 Energy range (MeV): 4.100 TO 6.455
 Efficiency = 0.2282 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21567.0	100.000
Smoothed	21567.0	100.000
Composite fit	19807.1	91.840
Residuals	1759.9	8.160

Analyzed by: _____
 SZC

Raw Data Dump for AEA Spectrum: 6a6388.CNF

HNF-1668 REV. 0

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	4.	8.
21	6.	1.	2.	3.	3.	4.	5.	7.	7.	3.
31	4.	3.	1.	3.	6.	3.	6.	3.	5.	2.
41	7.	8.	11.	4.	8.	9.	6.	7.	3.	7.
51	6.	6.	3.	4.	6.	3.	10.	4.	4.	7.
61	5.	2.	8.	2.	7.	8.	2.	3.	6.	1.
71	10.	4.	4.	5.	7.	12.	3.	5.	6.	7.
81	5.	6.	6.	3.	6.	12.	4.	10.	11.	7.
91	9.	6.	10.	7.	6.	10.	6.	10.	9.	8.
101	9.	8.	7.	9.	11.	15.	11.	9.	13.	14.
111	8.	10.	6.	12.	9.	16.	9.	13.	8.	17.
121	13.	9.	6.	15.	11.	10.	12.	13.	18.	12.
131	20.	11.	12.	10.	15.	12.	15.	19.	14.	18.
141	10.	18.	16.	17.	17.	16.	24.	15.	10.	22.
151	14.	25.	19.	18.	14.	27.	14.	18.	16.	26.
161	24.	25.	25.	19.	27.	24.	21.	34.	18.	27.
171	21.	23.	28.	25.	31.	27.	37.	20.	44.	31.
181	41.	26.	34.	41.	38.	47.	29.	41.	35.	46.
191	39.	42.	44.	55.	64.	47.	64.	45.	62.	65.
201	58.	61.	41.	64.	61.	66.	76.	74.	76.	65.
211	72.	93.	74.	73.	82.	103.	108.	108.	89.	127.
221	126.	128.	131.	113.	133.	150.	132.	144.	152.	165.
231	170.	187.	196.	192.	240.	217.	215.	245.	233.	266.
241	296.	269.	287.	352.	350.	316.	342.	315.	383.	364.
251	417.	403.	359.	320.	240.	168.	131.	112.	102.	93.
261	96.	82.	93.	89.	110.	87.	104.	109.	112.	82.
271	88.	126.	99.	132.	112.	112.	152.	140.	138.	150.
281	156.	159.	163.	200.	204.	208.	223.	245.	250.	224.
291	230.	260.	245.	267.	300.	307.	286.	289.	280.	251.
301	183.	110.	88.	69.	55.	48.	41.	34.	29.	19.
311	19.	9.	8.	9.	2.	5.	4.	1.	3.	3.
321	4.	6.	3.	1.	6.	5.	3.	6.	4.	6.
331	4.	4.	1.	4.	6.	2.	3.	3.	8.	3.
341	6.	5.	5.	4.	5.	8.	6.	9.	6.	11.
351	7.	2.	6.	5.	4.	5.	8.	6.	10.	10.
361	9.	5.	8.	5.	3.	8.	8.	4.	4.	4.
371	2.	4.	1.	1.	1.	2.	0.	0.	2.	3.
381	0.	0.	1.	3.	2.	2.	1.	4.	1.	0.
391	1.	2.	3.	1.	2.	1.	2.	3.	2.	1.
401	1.	1.	1.	0.	2.	3.	0.	1.	1.	3.
411	3.	1.	1.	1.	1.	2.	1.	1.	2.	0.
421	1.	1.	1.	1.	2.	4.	1.	5.	3.	0.
431	0.	5.	2.	4.	1.	3.	5.	3.	1.	2.
441	0.	1.	1.	0.	0.	0.	1.	0.	0.	0.
451	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
461	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	2.	0.	0.	0.	0.	1.	3.	1.	1.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 29632

Analyst: rro

Instrument: AB21

Book#: _____

Method: LA-953-104 Rev/Mod _____

Worklist Comment: Rerun of WL 29529,U-103 Grab2, mcb

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@AM24101 AM24101	SOLID	1.07E-04	9.668E-05	90.355 %	Recovery
1 STD		0	@AM24101 AM24101E	SOLID	1.0	2.24E+00	2.240 %	Ct Error
1 STD		0	@AM24101 AM24101T	SOLID	100.	8.87E+01	88.700 %	Recovery
2 BLNK-PREP		0	@AM24101 AM24101	SOLID	1	<1.59E-3		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.	8.65E+01	86.500 %	Recovery
3 SAMPLE	S99T000554	0 F	@AM24101 AM24101	SOLID	N/A	2.05E-02	2.98e-003	uCi/g
3 SAMPLE	S99T000554	0 F	@AM24101 AM24101E	SOLID	N/A	3.54E+00		% Ct. Error
3 SAMPLE	S99T000554	0 F	@AM24101 AM24101T	SOLID	N/A	8.59E+01		% Recovery
4 DUP	S99T000554	0 F	@AM24101 AM24101	SOLID	2.05E-2	2.92E-2	35.010	RPD
4 DUP	S99T000554	0 F	@AM24101 AM24101E	SOLID	1.0	2.47E+00	2.470 %	Ct Error
4 DUP	S99T000554	0 F	@AM24101 AM24101T	SOLID	100.0	8.75E+01	87.500 %	Recovery
5 SAMPLE	S99T000555	0 F	@AM24101 AM24101	SOLID	N/A	1.76E-02	3.25e-003	uCi/g
5 SAMPLE	S99T000555	0 F	@AM24101 AM24101E	SOLID	N/A	2.93E+00		% Ct. Error
5 SAMPLE	S99T000555	0 F	@AM24101 AM24101T	SOLID	N/A	7.47E+01		% Recovery
6 DUP	S99T000555	0 F	@AM24101 AM24101	SOLID	1.76E-2	1.70E-2	3.468	RPD
6 DUP	S99T000555	0 F	@AM24101 AM24101E	SOLID	1.0	2.82E+00	2.820 %	Ct Error
6 DUP	S99T000555	0 F	@AM24101 AM24101T	SOLID	100.0	8.57E+01	85.700 %	Recovery

Final page for worklist# 29632

Analyst Signature

Date

Analyst Signature

Date


Reviewer Signature


Date

Sample S99T000554 RPD still high, this is the second analysis, therefore, the results are accepted.

LABCORE Data Entry Template for Worklist# 29632

Analyst: RRO Instrument: AM01 21 Book# 46B57

Method: LA-953-104 Rev/Mod B-1

Worklist Comment: Rerun of WL 29529,U-103 Grab2, mcb

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24101	SOLID		
2 BLNK-PREP			@AM24101	SOLID		
3 SAMPLE	S99T000554	0 F	@AM24101	SOLID	99000104	U-103 GRAB2
Analytes Requested: AM24101 , AM24101E, AM24101T						
4 DUP	S99T000554	0 F	@AM24101	SOLID		
5 SAMPLE	S99T000555	0 F	@AM24101	SOLID	99000104	U-103 GRAB2
Analytes Requested: AM24101 , AM24101E, AM24101T						
6 DUP	S99T000555	0 F	@AM24101	SOLID		

Final page for worklist # 29632

RRO
Signature Date

Newright 5/13/99
Signature Date
W Raymond 5.14.99

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0) *nd 6-7-99* LIQUID

Type	Date Counted	MAY-12-99	Am 241 AEA Frac. (C241)	0.604
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.318
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
29632	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	3137
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	46.42
LIQUID	Detector Number	21	Am 243 cpm	24.43
Batch Number	Detector Efficiency (DetEff)	0.3315	Cm 243/244 cpm	0
99001953	Standard Book No	46B57	AEA Count Time (min)	480
Rerun	Standard Value in µCi/mL	1.070E-04	Am 241 µCi/L =	9.6680E-02
0			Cm 243/244 µCi/L =	< 9.0245E-03

Sample Prep	N/A
Sample Number	WL29632-STD
Instrument Code	WC16105
Prepared By	NEW
Chemist	JFR
Analyst	RRO
Date Complete	05/13/99
Analysis Date	05/11/99
Analysis Time	03:00 PM
Sample Point	U-103 GRAB2

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 =	9.67E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error =	2.2%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 9.02E-06	9.02E-06
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	88.7%	9.02E-06

Analyst:	RRO	Date:	05/13/99
Signature of Chemist:	<i>JFR</i>	Date:	<i>11/21/99</i>

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

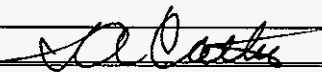
Am 241 and Cm 243/244: LA-953-103 (VOID) or LA-953-104(B-0) ¹ ₇₉₉ LIQUID / SO

Type	Date Counted		Am 241 AEA Frac. (C241)	BLNK-PREP
BLNK-PREP	Sample Volume in mL (SS)	MAY-12-99	1.000	0
Work List	Sample D.F. (DF)			0.873
29632	Tracer Volume in mL (SPKV)		1	0
Test Code	Digest Grams of Solids/L (Dg/L)	0.100		1116
@AM24101	Tracer Book No.	2.118		30
Matrix	Am-243 Tracer Value (dpm/mL)	10B59		0.1
SOLID	Detector Number	1130		0
Batch Number	Detector Efficiency (DetEff)	21		20.3
99001953		0.3315		0
Rerun			AEA Count Time (min)	480
0			Am 241 µCi/g =	< 1.5919E-03
Sample Prep			Cm 243/244 µCi/g =	< 1.5919E-03
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

Chemist	NOTE: Am-241 Result is a LESS THAN Value.		DETECTION LEVELS in µCi/g
JFR	Am241 µCi/g =	< 1.59E-03	
Analyst	Relative Counting Error =	100.0%	Am 241
RRO			1.59E-03
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		Cm 243/244
05/13/99	Cm 243/244 µCi/g	< 1.59E-03	1.59E-03
Analysis Date	Relative Counting Error =	100.0%	
05/11/99	Am 243 Tracer Recovery =	86.5%	

Analysis Time
03:00 PM
Sample Point
U-103 GRAB2

Analyst:	RRO	Date:	05/13/99
Signature of Chemist:		JFR	Date: 14 May 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) *by JFR* LIQUID / SO

				SAMPLE	
Type	Date Counted	MAY-12-99	Am 241 AEA Frac. (C241)	0.401	
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.47	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
29632	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2056	
Test Code	Digest Grams of Solids/L (Dg/L)	2.118	AT Count Time (min) (TC)	30	
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.1	
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	11.82	
SOLID	Detector Number	21	Am 243 cpm	13.87	
Batch Number	Detector Efficiency (DetEff)	0.3315	Cm 243/244 cpm	0	
99001953			AEA Count Time (min)	480	
Rerun			Am 241 $\mu\text{Ci/g}$ =	2.0504E-02	
1			Cm 243/244 $\mu\text{Ci/g}$ =	< 2.9776E-03	

Sample Prep: FUSION01
 Sample Number: S99T000554
 Instrument Code: WC16105
 Prepared By: NEW
 Chemist: JFR

Am-241 $\mu\text{Ci/g}$ = (C241) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/ μCi)]
 Cm-243/244 $\mu\text{Ci/g}$ = (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

Am241 $\mu\text{Ci/g}$ =	2.05E-02	DETECTION LEVELS in $\mu\text{Ci/g}$
Relative Counting Error =	3.5%	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.	Am 241
05/13/99	Cm 243/244 $\mu\text{Ci/g}$ < 2.98E-03	2.98E-03
Analysis Date	Relative Counting Error = 100.0%	Cm 243/244
05/11/99	Am 243 Tracer Recovery = 85.9%	2.98E-03

Analysis Time: 03:00 PM
 Sample Point: U-103 GRAB2

Analyst:	RRO	Date:	05/13/99
Signature of Chemist:	<i>JFR</i>	Date:	<i>15 May 99</i>

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) *LA-953-104* LIQUID / SO DUP

Type	Date Counted	MAY-12-99	Am 241 AEA Frac. (C241)	0.485
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.401
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
29632	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2456
Test Code	Digest Grams of Solids/L (Dg/L)	2.111	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	29
SOLID	Detector Number	21	Am 243 cpm	24.01
Batch Number	Detector Efficiency (DetEff)	0.3315	Cm 243/244 cpm	0
99001953			AEA Count Time (min)	480
Rerun			Am 241 µCi/g =	2.9160E-02
1			Cm 243/244 µCi/g =	< 3.4345E-03

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)]
S99T000554	Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
Instrument Code	
WC16105	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
NEW	
Chemist	

JFR	Am241 µCi/g =	2.92E-02	DETECTION LEVELS in µCi/g
Analyst	Relative Counting Error =	2.5%	
RRO			Am 241
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		3.43E-03
05/13/99	Cm 243/244 µCi/g	< 3.43E-03	Cm 243/244
Analysis Date	Relative Counting Error =	100.0%	3.43E-03
05/11/99	Am 243 Tracer Recovery =	87.5%	
Analysis Time			
03:00 PM			
Sample Point			
U-103 GRAB2			

Analyst:	RRO	Date:	05/13/99
Signature of Chemist:	<i>JFR</i>	Date:	<i>14 May 99</i>

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) ^{LD 17-99} LIQUID / SO SAMPLE

Type	Date Counted	MAY-12-99	Am 241 AEA Frac. (C241)	0.362
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.514
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
29632	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	1636
Test Code	Digest Grams of Solids/L (Dg/L)	2.041	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	15.94
SOLID	Detector Number	21	Am 243 cpm	22.61
Batch Number	Detector Efficiency (DetEff)	0.3315	Cm 243/244 cpm	0
99001953			AEA Count Time (min)	480
Retun			Am 241 µCi/g =	1.7562E-02
1			Cm 243/244 µCi/g =	< 3.2477E-03

Sample Prep	FUSION01			
Sample Number	S99T000555			
Instrument Code	WC16105			
Prepared By	NEW			
Chemist	JFR			
Analyst	RRO			
Date Complete	05/13/99			
Analysis Date	05/11/99			
Analysis Time	03:00 PM			
Sample Point	U-103 GRAB2			

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

Am241 µCi/g =	1.76E-02	DETECTION LEVELS in µCi/g
Relative Counting Error =	2.9%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/g	< 3.25E-03	3.25E-03
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	74.7%	3.25E-03

Analyst:	RRO	Date:	05/13/99
Signature of Chemist:	<i>[Signature]</i>	Date:	12/21/99
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) LIQUID / SO DUP

Type	Date Counted	MAY-12-99	Am 241 AEA Frac. (C241)	0.394
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.54
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
29632	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	1787
Test Code	Digest Grams of Solids/L (Dg/L)	2.190	AT Count Time (min) (TC)	30
@AM24101	Tracer Book No.	10B59	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1130	Am 241 cpm	17.44
SOLID	Detector Number	21	Am 243 cpm	23.91
Batch Number	Detector Efficiency (DetEff)	0.3315	Cm 243/244 cpm	0
99001953			AEA Count Time (min)	480
Rerun			Am 241 µCi/g =	1.6961E-02
1			Cm 243/244 µCi/g =	< 2.5109E-03

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)]
S99T000555	Cm-243/244 µCi/g = (Cm) (Am-243 Tracer Value) (SPKV) (1000mL/L) (DF) / [(C243) (SS) (D g/L) (2220000dpm/µCi)]
Instrument Code	
WC16105	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
NEW	
Chemist	

JFR	Am241 µCi/g =	1.70E-02	DETECTION LEVELS in µCi/g
Analyst	Relative Counting Error =	2.8%	
RRO			
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		
05/13/99	Cm 243/244 µCi/g	< 2.51E-03	Am 241
Analysis Date	Relative Counting Error =	100.0%	2.51E-03
05/11/99	Am 243 Tracer Recovery =	85.7%	Cm 243/244
			2.51E-03
Analysis Time			
03:00 PM			
Sample Point			
U-103 GRAB2			

Analyst:	RRO	Date:	05/13/99
Signature of Chemist:	JFR	Date:	11/24/99

SAMPLE.WB1 REV 1.2 953103ML

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
 WL29632-STD
 File ID: 10a1042.CNF

Counted on: 5/12/99 @11:37
 Detector: AEA10
 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	998.8	998.8	299.080	299.080	14.000	7.111	7.000	1.706
2	501.7	501.7	253.351	253.179	14.000	6.061	7.000	1.303
3	21.1	21.1	173.415	172.668	108.000	436.134	54.000	140.956
4?	0.9	0.1	166.692	167.000	4.000	0.100	2.000	0.100
5?	1.4	1.4	163.565	162.000	4.000	0.000	2.000	1.843
6?	1.4	1.4	154.394	154.046	4.000	0.000	2.000	3.758
7?	0.7	0.1	139.772	139.772	4.000	0.100	2.000	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	Pu238	0.604	5.487	5.466	0.021	0.03	46.42	1.3	522.4	0.235E-03	
	Am241		5.479	5.466	0.013				400.2	0.180E-03	
2	Am243	0.318	5.266	5.255	0.011	0.03	24.43	2.0	200.0	0.901E-04	
3	Np237	0.057	4.769	4.885	-.116	2.01	4.39	14.9	40.9	0.184E-04	
	Pu242		4.891	4.885	0.006				35.6	0.160E-04	
4		????		4.859			0.00	*****			
5		????		4.836			0.00	4088.			
6		????		4.799			0.00	1000.			
7		????		4.733			0.00	9691.			
Totals:		0.979	<--valid peaks only-->					75.23			

DETECTOR CALIBRATION

Energy(MEV) = 4.090 + (0.0046)*Channel
 Energy range (MeV): 4.090 TO 6.446
 Efficiency = 0.1234 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	36910.0	100.000
Smoothed	36910.0	100.000
Composite fit	36120.3	97.860

Residuals

789.7

2.140

Analyzed by: _____

MB

Spectrum 10a1042.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 6864.2

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3.2..
3....2.
3.....2.
3.....2.
31.....2...
3.1.....2.....
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Raw Data Dump for AEA Spectrum: 10a1042.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	3.	5.	3.	3.	3.	2.
21	2.	6.	2.	2.	4.	1.	5.	4.	2.	8.
31	8.	5.	3.	2.	6.	1.	4.	6.	4.	4.
41	6.	3.	9.	5.	3.	3.	3.	4.	4.	3.
51	2.	7.	6.	5.	3.	8.	6.	5.	6.	5.
61	5.	1.	4.	6.	7.	10.	6.	4.	4.	7.
71	0.	7.	8.	6.	4.	8.	5.	3.	6.	8.
81	3.	7.	6.	5.	10.	12.	5.	5.	1.	8.
91	14.	7.	10.	7.	7.	4.	6.	7.	13.	8.
101	8.	9.	5.	6.	6.	15.	4.	7.	10.	8.
111	14.	6.	12.	16.	7.	16.	6.	12.	12.	10.
121	14.	7.	11.	11.	8.	13.	11.	12.	11.	12.
131	16.	15.	8.	13.	17.	16.	10.	13.	22.	9.
141	17.	14.	15.	13.	13.	16.	14.	16.	19.	18.
151	24.	19.	19.	25.	26.	16.	18.	27.	14.	24.
161	16.	29.	26.	19.	26.	18.	28.	27.	19.	20.
171	25.	17.	31.	26.	21.	24.	18.	26.	25.	23.
181	26.	25.	36.	30.	27.	26.	39.	38.	34.	45.
191	30.	31.	35.	58.	41.	47.	49.	38.	39.	36.
201	57.	56.	42.	65.	69.	49.	58.	56.	55.	57.
211	62.	73.	72.	80.	80.	64.	91.	85.	95.	90.
221	90.	94.	114.	107.	102.	127.	138.	126.	146.	128.
231	164.	147.	189.	210.	183.	188.	242.	227.	261.	251.
241	279.	302.	348.	353.	400.	417.	417.	448.	449.	498.
251	549.	539.	599.	608.	568.	507.	379.	224.	193.	163.
261	166.	140.	158.	143.	167.	165.	171.	170.	163.	175.
271	175.	192.	169.	211.	201.	252.	262.	264.	245.	281.
281	312.	348.	384.	382.	433.	478.	515.	564.	599.	639.
291	658.	716.	787.	868.	870.	866.	959.	1033.	1102.	1065.
301	1010.	825.	642.	402.	274.	217.	162.	163.	144.	114.
311	89.	47.	31.	21.	12.	3.	3.	0.	1.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
341	1.	1.	1.	1.	0.	0.	3.	0.	1.	1.
351	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
361	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	0.	0.	1.	1.	0.	0.	0.	1.	2.
481	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

HNF-1668 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
 WL29632-BLNK
 File ID: 11a1127.CNF

Counted on: 5/12/99 @11:37
 Detector: AEA11
 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	562.5	562.5	253.835	253.835	12.000	4.769	6.000	1.521

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	0.873	5.266	5.259	0.0070	0.02	20.30	2.0	87.2	0.393E-04
Totals:		0.873	<--valid peaks only-->				20.30			

DETECTOR CALIBRATION

Energy(MEV) = 4.091 + (0.0046)*Channel
 Energy range (MeV): 4.091 TO 6.446
 Efficiency = 0.2351 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11158.0	100.000
Smoothed	11158.0	100.000
Composite fit	9743.6	87.324
Residuals	1414.4	12.676

Analyzed by: _____

MB

Spectrum 11a1127.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 3963.9

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Raw Data Dump for AEA Spectrum: 11a1127.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	0.	1.	0.	0.	2.
21	1.	3.	0.	1.	1.	1.	2.	0.	4.	0.
31	2.	1.	2.	4.	1.	2.	1.	0.	2.	0.
41	0.	3.	1.	3.	1.	0.	1.	0.	1.	0.
51	1.	0.	1.	6.	3.	3.	7.	0.	2.	1.
61	2.	3.	1.	1.	1.	2.	0.	4.	2.	2.
71	0.	4.	2.	2.	2.	2.	3.	1.	0.	2.
81	2.	3.	2.	1.	6.	2.	1.	2.	2.	0.
91	2.	2.	3.	3.	0.	2.	1.	1.	1.	4.
101	2.	2.	0.	2.	3.	0.	3.	5.	0.	3.
111	3.	3.	2.	2.	6.	3.	3.	1.	0.	1.
121	1.	6.	4.	3.	6.	3.	4.	2.	1.	2.
131	3.	4.	4.	4.	6.	1.	4.	3.	5.	5.
141	5.	4.	7.	4.	4.	3.	2.	7.	3.	5.
151	4.	9.	7.	3.	3.	6.	5.	2.	7.	4.
161	7.	2.	9.	9.	12.	10.	5.	6.	8.	3.
171	4.	14.	10.	11.	2.	8.	8.	8.	10.	10.
181	9.	12.	7.	9.	12.	13.	11.	8.	5.	16.
191	14.	17.	15.	17.	14.	10.	17.	21.	18.	15.
201	15.	21.	19.	18.	24.	23.	27.	29.	21.	16.
211	21.	34.	32.	25.	34.	32.	40.	36.	41.	47.
221	42.	48.	58.	56.	52.	64.	77.	64.	98.	91.
231	92.	105.	114.	118.	114.	126.	144.	151.	184.	170.
241	185.	193.	245.	255.	320.	341.	351.	375.	417.	479.
251	477.	587.	577.	619.	649.	513.	440.	209.	108.	58.
261	48.	41.	41.	38.	40.	37.	34.	19.	20.	22.
271	20.	9.	3.	2.	0.	2.	1.	1.	0.	1.
281	2.	1.	0.	1.	2.	2.	1.	2.	2.	1.
291	4.	6.	1.	1.	5.	5.	6.	2.	3.	0.
301	3.	2.	3.	2.	0.	0.	0.	1.	0.	0.
311	1.	0.	2.	0.	0.	1.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
331	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
341	2.	0.	0.	2.	1.	2.	0.	0.	0.	2.
351	1.	1.	0.	0.	1.	1.	0.	1.	0.	1.
361	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	1.	0.	1.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	1.	1.	0.	1.	0.	1.	2.	1.	0.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

HNF-1668 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
 S99T554-SAM(AM)
 File ID: 12a1207.CNF

Counted on: 5/12/99 @11:38
 Detector: AEA12
 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	224.9	224.9	299.214	299.214	12.000	6.196	6.000	1.201
2	258.6	258.6	252.703	252.595	12.000	5.735	6.000	1.066
3	16.5	16.5	187.780	187.265	56.000	135.426	28.000	50.409
4	7.7	7.7	151.119	150.288	20.000	2.545	10.000	0.077

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	0.401	5.487	5.472	0.015	0.03	11.82	2.6	73.3	0.330E-04
	Am241		5.479	5.472	0.007				56.2	0.253E-04
2	Am243	0.470	5.266	5.258	0.008	0.03	13.87	2.5	62.6	0.282E-04
3	Np237	0.065	4.769	4.958	-.189	0.62	1.91	18.2	9.8	0.442E-05
	Pu242		4.891	4.958	-.067				8.5	0.384E-05
4	Np237	0.048	4.769	4.787	-.018	0.01	1.43	8.3	7.3	0.330E-05
Totals:		0.984	<--valid peaks only-->				29.02			

DETECTOR CALIBRATION

Energy (MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2239 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	14158.0	100.000
Smoothed	14158.0	100.000
Composite fit	13931.4	98.400
Residuals	226.6	1.600

Analyzed by: _____

MB

Raw Data Dump for AEA Spectrum: 12a1207.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	2.	1.	6.	2.	2.	2.
21	1.	0.	4.	4.	1.	2.	2.	4.	3.	1.
31	1.	2.	8.	3.	2.	5.	1.	0.	5.	5.
41	2.	3.	3.	1.	3.	2.	5.	6.	2.	3.
51	1.	4.	2.	7.	7.	4.	6.	6.	4.	2.
61	2.	7.	3.	3.	8.	2.	5.	2.	6.	4.
71	7.	1.	3.	3.	6.	4.	2.	5.	2.	6.
81	6.	5.	3.	5.	5.	5.	2.	3.	3.	6.
91	4.	5.	5.	9.	5.	5.	6.	5.	4.	8.
101	8.	3.	9.	9.	3.	8.	8.	7.	5.	6.
111	9.	3.	3.	5.	7.	5.	12.	4.	9.	5.
121	7.	7.	9.	5.	8.	11.	8.	4.	3.	6.
131	6.	7.	12.	11.	6.	14.	13.	8.	11.	7.
141	9.	12.	8.	14.	7.	15.	13.	7.	13.	15.
151	13.	14.	14.	13.	4.	10.	5.	11.	8.	14.
161	9.	15.	11.	16.	15.	20.	11.	17.	7.	13.
171	17.	25.	17.	15.	17.	15.	22.	23.	17.	25.
181	17.	19.	17.	20.	17.	28.	31.	32.	22.	24.
191	26.	19.	26.	19.	30.	31.	27.	42.	35.	36.
201	28.	34.	38.	36.	38.	49.	44.	44.	31.	56.
211	38.	53.	53.	42.	47.	49.	67.	62.	57.	75.
221	58.	62.	78.	58.	73.	67.	81.	76.	81.	85.
231	101.	107.	108.	115.	110.	137.	135.	148.	147.	162.
241	142.	177.	186.	179.	215.	211.	245.	256.	240.	243.
251	262.	294.	308.	292.	268.	208.	132.	103.	78.	50.
261	45.	52.	57.	67.	64.	60.	78.	49.	68.	53.
271	54.	61.	42.	62.	75.	69.	74.	85.	74.	77.
281	76.	93.	85.	124.	104.	130.	114.	141.	161.	170.
291	164.	162.	170.	180.	190.	209.	196.	252.	212.	259.
301	226.	200.	131.	81.	52.	38.	34.	33.	27.	20.
311	20.	12.	15.	3.	1.	0.	0.	1.	0.	0.
321	0.	0.	0.	0.	0.	1.	1.	1.	0.	1.
331	0.	2.	1.	1.	2.	0.	0.	1.	1.	0.
341	2.	1.	0.	1.	1.	1.	2.	2.	2.	3.
351	0.	4.	1.	4.	0.	1.	4.	2.	4.	1.
361	5.	4.	6.	5.	1.	0.	3.	3.	6.	5.
371	3.	3.	1.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	2.	0.	1.
411	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	1.	1.	3.	0.	0.
431	0.	1.	1.	0.	0.	1.	0.	1.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	0.	0.	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
 S99T000554-DUP-A
 File ID: 13a1386.CNF

Counted on: 5/12/99 @11:51
 Detector: AEA13
 Geometry number: 1
 Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1?	11.8	11.8	369.991	369.991	12.000	4.425	6.000	6.224
2?	8.2	8.2	363.097	361.429	6.000	2.067	3.000	0.430
3	604.8	604.8	300.880	300.879	12.000	6.329	6.000	1.405
4	481.4	481.4	255.254	255.151	12.000	5.347	6.000	1.083
5	13.5	13.5	131.732	131.690	190.000	1.000	95.000	0.100
6	9.3	9.3	126.344	126.000	186.000	1.000	93.000	0.100

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1		????		5.787		0.25	17.9		
2		????		5.748		0.36	17.6		
3	Pu238	0.485	5.487	5.469	0.0180.03	29.00	1.7	162.1	
	Am241		5.479	5.469	0.010			124.2	
4	Am243	0.401	5.266	5.259	0.0070.02	24.01	1.9	97.6	
5		0.018		4.691	0.00	1.06	8.8	4.3	
6	Np237	0.012	4.640	4.665	-.0250.00	0.72	16.4	48.4	
Totals:		0.915	<--valid peaks only-->			54.79			

DETECTOR CALIBRATION

Energy(MEV) = 4.085 + (0.0046)*Channel

Energy range (MeV): 4.085 TO 6.440

Efficiency = 0.2485 CPM/DPM

(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28731.0	100.000
Smoothed	28731.0	100.000
Composite fit	26595.0	92.566
Residuals	2136.0	7.434

Spectrum 13a1386.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 4362.2



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Raw Data Dump for AEA Spectrum: 13a1386.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	4.	5.	1.	4.	6.
21	5.	6.	4.	7.	3.	4.	3.	5.	4.	6.
31	2.	3.	2.	4.	2.	2.	6.	9.	2.	11.
41	9.	8.	8.	6.	5.	4.	7.	4.	2.	5.
51	5.	3.	2.	6.	2.	6.	4.	3.	5.	7.
61	3.	7.	13.	9.	6.	6.	3.	5.	6.	5.
71	5.	4.	5.	9.	4.	6.	7.	9.	3.	9.
81	11.	6.	4.	8.	11.	9.	10.	11.	6.	3.
91	7.	6.	6.	11.	8.	8.	4.	11.	7.	12.
101	10.	7.	7.	10.	7.	7.	10.	9.	7.	14.
111	10.	13.	13.	13.	10.	16.	9.	9.	13.	11.
121	16.	8.	17.	9.	10.	12.	15.	12.	6.	15.
131	12.	18.	15.	7.	18.	6.	13.	10.	15.	11.
141	10.	13.	17.	13.	12.	21.	16.	18.	12.	20.
151	16.	24.	12.	19.	17.	19.	22.	16.	22.	20.
161	23.	25.	20.	16.	19.	23.	21.	36.	18.	21.
171	19.	25.	22.	29.	22.	33.	32.	26.	31.	29.
181	32.	26.	37.	29.	29.	32.	40.	33.	32.	32.
191	36.	34.	44.	36.	33.	40.	49.	44.	46.	57.
201	61.	45.	50.	58.	54.	62.	49.	48.	58.	52.
211	72.	84.	68.	81.	66.	77.	81.	86.	88.	84.
221	94.	104.	105.	106.	116.	114.	116.	107.	146.	147.
231	121.	157.	158.	142.	176.	182.	203.	220.	214.	241.
241	233.	304.	297.	286.	342.	323.	392.	381.	398.	389.
251	436.	472.	494.	503.	569.	581.	535.	443.	311.	167.
261	147.	115.	135.	110.	112.	124.	133.	131.	125.	136.
271	128.	127.	133.	132.	157.	167.	159.	156.	170.	183.
281	213.	220.	192.	193.	251.	289.	266.	257.	321.	332.
291	382.	409.	438.	433.	453.	512.	528.	545.	557.	629.
301	665.	677.	565.	459.	321.	193.	150.	122.	92.	71.
311	56.	62.	36.	32.	24.	9.	4.	3.	1.	1.
321	1.	0.	0.	2.	2.	4.	2.	1.	3.	2.
331	1.	1.	0.	6.	3.	3.	3.	2.	3.	1.
341	1.	4.	4.	3.	0.	6.	5.	4.	6.	7.
351	4.	2.	1.	11.	8.	9.	4.	6.	8.	11.
361	9.	9.	13.	14.	7.	8.	6.	11.	11.	16.
371	10.	12.	8.	8.	2.	0.	0.	0.	0.	1.
381	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
401	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	1.	1.	1.	0.
421	2.	1.	1.	0.	1.	1.	0.	0.	2.	1.
431	2.	1.	0.	0.	1.	2.	0.	1.	1.	2.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
471	0.	0.	0.	0.	0.	0.	0.	0.	2.	1.
481	2.	0.	0.	1.	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
 S99T000555-SAM-A
 File ID: 14a1476.CNF

Counted on: 5/12/99 @11:52
 Detector: AEA14
 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	304.3	304.3	299.527	299.527	14.000	7.359	7.000	1.487
2	455.7	455.7	253.567	253.461	12.000	5.743	6.000	1.188
3	13.6	13.6	136.628	136.557	150.000	1.000	75.000	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	0.362	5.487	5.469	0.018	0.03	15.94	2.2	90.1	0.406E-04	
	Am241		5.479	5.469	0.010				69.0	0.311E-04	
2	Am243	0.514	5.266	5.257	0.009	0.03	22.61	2.0	92.9	0.419E-04	
3		0.024		4.719		0.00	1.07	8.8	4.4	0.197E-05	
Totals:		0.901	<--valid peaks only-->					39.62			

DETECTOR CALIBRATION

Energy (MEV) = 4.091 + (0.0046)*Channel
 Energy range (MeV): 4.091 TO 6.446
 Efficiency = 0.2457 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21123.0	100.000
Smoothed	21123.0	100.000
Composite fit	19022.7	90.057
Residuals	2100.3	9.943

Analyzed by: _____

NEW

Spectrum 14a1476.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 3529.3

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Raw Data Dump for AEA Spectrum: 14a1476.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	1.	2.	5.	6.	2.	2.
21	4.	4.	3.	4.	5.	5.	4.	3.	6.	6.
31	3.	3.	0.	5.	6.	4.	4.	3.	1.	0.
41	5.	1.	4.	8.	0.	7.	8.	10.	2.	5.
51	2.	2.	2.	2.	3.	3.	5.	5.	4.	5.
61	4.	8.	6.	4.	6.	4.	4.	4.	9.	4.
71	5.	4.	7.	4.	8.	6.	6.	9.	2.	8.
81	4.	6.	10.	5.	6.	11.	4.	9.	8.	10.
91	2.	6.	5.	7.	4.	17.	4.	7.	6.	4.
101	9.	9.	7.	8.	9.	7.	9.	7.	8.	7.
111	5.	6.	9.	9.	12.	10.	13.	6.	9.	6.
121	16.	16.	8.	13.	11.	7.	12.	7.	11.	15.
131	12.	12.	11.	10.	12.	16.	15.	14.	10.	12.
141	12.	13.	17.	13.	14.	18.	11.	15.	19.	13.
151	8.	16.	18.	20.	18.	20.	20.	14.	20.	26.
161	15.	21.	18.	24.	20.	23.	22.	26.	28.	13.
171	16.	26.	21.	24.	32.	24.	25.	37.	23.	24.
181	34.	28.	35.	26.	28.	28.	24.	29.	29.	36.
191	28.	37.	37.	26.	41.	43.	37.	44.	39.	37.
201	44.	40.	55.	46.	56.	41.	39.	65.	72.	63.
211	73.	71.	74.	67.	81.	75.	80.	81.	80.	86.
221	70.	88.	110.	91.	98.	114.	109.	112.	159.	151.
231	130.	150.	169.	169.	197.	190.	211.	203.	224.	203.
241	241.	267.	293.	302.	320.	334.	393.	371.	403.	427.
251	496.	484.	448.	534.	506.	466.	342.	219.	146.	94.
261	92.	83.	92.	74.	75.	82.	74.	87.	76.	82.
271	72.	68.	80.	67.	91.	86.	82.	81.	104.	107.
281	112.	129.	128.	151.	125.	187.	156.	191.	171.	206.
291	213.	238.	221.	235.	263.	254.	282.	305.	306.	353.
301	303.	273.	240.	155.	100.	84.	55.	63.	50.	39.
311	23.	14.	14.	15.	3.	1.	2.	3.	0.	0.
321	0.	1.	2.	1.	3.	1.	2.	1.	1.	0.
331	0.	3.	1.	1.	0.	1.	1.	2.	0.	2.
341	4.	3.	1.	2.	5.	4.	1.	8.	4.	2.
351	3.	2.	4.	4.	4.	4.	6.	3.	6.	6.
361	7.	2.	5.	10.	9.	6.	6.	5.	4.	7.
371	5.	4.	2.	0.	0.	0.	0.	0.	0.	0.
381	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	2.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	2.	0.
421	2.	0.	1.	1.	3.	1.	1.	0.	1.	2.
431	0.	0.	1.	0.	3.	1.	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.	1.	0.	0.	0.
471	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.
481	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

HNF-1668 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
 S99T000555-DUP-A
 File ID: 15a1549.CNF

Counted on: 5/12/99 @11:53
 Detector: AEA15
 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	327.6	327.6	297.741	297.741	14.000	7.115	7.000	1.394
2	453.0	453.0	252.173	252.097	10.000	4.942	5.000	0.914

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid	Count	%err	Activity
			Exp. Obs. Diff. FWHM	Rate c/m	@95	d/m uCi/ea
1	Pu238	0.394	5.487 5.466 0.021	17.44	2.1	100.4 0.452E-04
	Am241		5.479 5.466 0.013			76.9 0.346E-04
2	Am243	0.540	5.266 5.256 0.010	23.91	1.9	100.1 0.451E-04
Totals:		0.933	<--valid peaks only-->	41.34		

DETECTOR CALIBRATION

Energy (MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2413 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	21267.0	100.000
Smoothed	21266.9	100.000
Composite fit	19848.9	93.332
Residuals	1418.1	6.668

Analyzed by: _____

NEW

Spectrum 15a1549.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 3454.0

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Raw 'Data' Dump for AEA Spectrum: 15a1549.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	2.	1.	3.	1.
21	0.	3.	6.	2.	0.	3.	1.	2.	2.	0.
31	0.	1.	2.	0.	1.	2.	3.	1.	3.	2.
41	2.	1.	4.	2.	2.	0.	3.	1.	3.	2.
51	1.	2.	1.	3.	1.	4.	1.	0.	0.	1.
61	2.	5.	4.	3.	1.	2.	1.	2.	3.	7.
71	8.	6.	2.	3.	3.	2.	2.	6.	3.	3.
81	1.	1.	1.	7.	3.	1.	2.	2.	4.	0.
91	0.	2.	3.	5.	5.	3.	4.	6.	4.	3.
101	5.	2.	10.	6.	4.	2.	3.	2.	3.	1.
111	9.	2.	4.	6.	6.	8.	7.	6.	7.	5.
121	6.	4.	4.	5.	4.	5.	4.	5.	10.	4.
131	10.	8.	8.	9.	8.	8.	9.	4.	15.	5.
141	11.	9.	7.	13.	7.	8.	9.	8.	8.	7.
151	8.	12.	8.	13.	8.	10.	12.	14.	12.	19.
161	13.	12.	18.	8.	12.	9.	18.	13.	13.	11.
171	14.	19.	17.	16.	19.	19.	19.	10.	27.	26.
181	17.	27.	21.	21.	30.	23.	30.	18.	18.	22.
191	37.	31.	44.	39.	26.	39.	50.	39.	30.	55.
201	59.	43.	63.	49.	53.	57.	53.	69.	65.	63.
211	76.	90.	67.	72.	94.	75.	79.	81.	91.	96.
221	118.	111.	111.	94.	137.	125.	145.	159.	158.	170.
231	165.	186.	203.	196.	205.	208.	233.	248.	252.	264.
241	293.	330.	348.	346.	396.	371.	366.	416.	427.	465.
251	522.	482.	530.	515.	428.	258.	146.	98.	85.	80.
261	83.	95.	70.	70.	93.	88.	96.	77.	92.	74.
271	110.	80.	88.	101.	96.	114.	135.	121.	123.	125.
281	152.	160.	152.	149.	172.	166.	177.	224.	252.	234.
291	228.	247.	249.	263.	305.	316.	351.	363.	357.	296.
301	258.	158.	148.	86.	62.	53.	56.	44.	34.	21.
311	12.	6.	4.	6.	3.	0.	1.	0.	0.	1.
321	0.	0.	1.	0.	1.	0.	0.	2.	1.	2.
331	1.	1.	1.	1.	1.	2.	3.	3.	6.	1.
341	7.	4.	2.	3.	4.	5.	4.	1.	3.	6.
351	4.	4.	5.	5.	7.	5.	4.	4.	6.	5.
361	11.	4.	6.	6.	2.	5.	3.	10.	6.	4.
371	5.	2.	0.	0.	0.	0.	0.	1.	0.	0.
381	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	1.	0.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
421	1.	1.	1.	1.	2.	1.	0.	1.	0.	2.
431	3.	0.	2.	3.	2.	4.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	1.	1.	1.	1.	0.	1.	1.
481	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 29191

Analyst: gll

Instrument: AB19

Book#: _____

Method: LA-953-104 Rev/Mod _____

Worklist Comment: U103 GRAB2, @PU23901, STD=1.0mL, SS by Ludlum. skm

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0		@PU23901 PU23901	LIQUID	1.26E-04	1.41E-4	111.905	% Recovery
1 STD		0		@PU23901 PU23901T	LIQUID	100	8.65E+01	86.500	% Recovery
1 STD		0		@PU23901 PU23901E	LIQUID	1.00	1.91E+00	1.910	% Ct Error
2 BLNK		0		@PU23901 PU23901	LIQUID	1	<3.10E-5		uCi/mL
2 BLNK		0		@PU23901 PU23901T	LIQUID	100	8.08E+01	80.800	% Recovery
2 BLNK		0		@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3 SAMPLE	S99T000538	0		@PU23901 PU23901	LIQUID	N/A	4.58E-04	4.73e-005	uCi/mL
3 SAMPLE	S99T000538	0		@PU23901 PU23901T	LIQUID	N/A	8.85E+01		% Recovery
3 SAMPLE	S99T000538	0		@PU23901 PU23901E	LIQUID	N/A	2.55E+00		% Ct Error
4 DUP	S99T000538	0		@PU23901 PU23901	LIQUID	4.58E-4	4.53E-4	1.098	RPD
4 DUP	S99T000538	0		@PU23901 PU23901T	LIQUID	100	8.66E+01	86.600	% Recovery
4 DUP	S99T000538	0		@PU23901 PU23901E	LIQUID	1.00	2.59E+00	2.590	% Ct Error
5 SAMPLE	S99T000547	0		@PU23901 PU23901	LIQUID	N/A	4.43E-04	4.61e-005	uCi/mL
5 SAMPLE	S99T000547	0		@PU23901 PU23901T	LIQUID	N/A	8.91E+01		% Recovery
5 SAMPLE	S99T000547	0		@PU23901 PU23901E	LIQUID	N/A	2.58E+00		% Ct Error
6 DUP	S99T000547	0		@PU23901 PU23901	LIQUID	4.43E-4	5.16E-4	15.224	RPD
6 DUP	S99T000547	0		@PU23901 PU23901T	LIQUID	100	8.03E+01	80.300	% Recovery
6 DUP	S99T000547	0		@PU23901 PU23901E	LIQUID	1.00	2.47E+00	2.470	% Ct Error
7 SAMPLE	S99T000549	0		@PU23901 PU23901	LIQUID	N/A	5.14E-04	5.06e-005	uCi/mL
7 SAMPLE	S99T000549	0		@PU23901 PU23901T	LIQUID	N/A	8.81E+01		% Recovery
7 SAMPLE	S99T000549	0		@PU23901 PU23901E	LIQUID	N/A	2.49E+00		% Ct Error
8 DUP	S99T000549	0		@PU23901 PU23901	LIQUID	5.14E-4	4.97E-4	3.363	RPD
8 DUP	S99T000549	0		@PU23901 PU23901T	LIQUID	100	7.86E+01	78.600	% Recovery
8 DUP	S99T000549	0		@PU23901 PU23901E	LIQUID	1.00	2.56E+00	2.560	% Ct Error

Final page for worklist# 29191

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Ralyea
Reviewer Signature _____ Date 12 Apr 99

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

LABCORE Data Entry Template for Worklist# 29191

Analyst: qu Instrument: PU01 Book# 46857

Method: LA-953-104 Rev/Mod B-1

Worklist Comment: U103 GRAB2, @PU23901, STD=1.0mL, SS by Ludlum. skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	LIQUID		
2 BLNK			@PU23901	LIQUID		
3 SAMPLE	S99T000538 0		@PU23901	LIQUID	99000104	U-103 GRAB2
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S99T000538 0		@PU23901	LIQUID		
5 SAMPLE	S99T000547 0		@PU23901	LIQUID	99000104	U-103 GRAB2
Analytes Requested: PU23901 , PU23901E, PU23901T						
6 DUP	S99T000547 0		@PU23901	LIQUID		
7 SAMPLE	S99T000549 0		@PU23901	LIQUID	99000104	U-103 GRAB2
Analytes Requested: PU23901 , PU23901E, PU23901T						
8 DUP	S99T000549 0		@PU23901	LIQUID		

Final page for worklist # 29191

qu 4-8-99
Signature Date

Sandra Z. Chuan 4/12/99
Signature Date
M. B. ... 4/12/99

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ¹ ₇₋₉₉ **LIQUID**

			STD
Type	DATE COUNTED	APR-09-99	PU 236 AEA FRAC (C236) 0.325
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) 0.602
29191	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS 4562
Test Code	DIGEST DILUTION FACTOR DDF	1.000	AT COUNT TIME (MIN) 30
@PU23901	TRACER BOOK NO	145B43	BACKGROUND in cpm (Bkg) 0.200
Matrix	DETECTOR NUMBER	19	PU 236 cpm 33.880
LIQUID	EFFICIENCY FACTOR EFF	0.338	PU 238 cpm 0.000
Batch Number	TRACER PREPARATION DATE	01/19/98	PU 239 cpm 62.780
99001502	TRACER PREPARATION VALUE (dpm/mL)	2270.000	AEA COUNT TIME 480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1687.863	Pu 239/240 µCi/L 1.4083E-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 #	WL29191		
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date		
WC16100	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]		
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV		
SZC	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]		
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)		
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]		
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100		
GLL			
Date Complete	Pu 239/240 µCi/mL	1.41E-04	DETECTION LEVELS in µCi/mL Pu 239/240 8.11E-06
Analysis Date	Relative Counting Error =	1.9%	
04/08/99			
Analysis Time			
03:15 PM			
Sample Point	Pu 236 Tracer Recovery =	86.5%	
U-103 GRAB			

Analyst:	GLL	Date:	12-Apr-99
Signature of Chemist:	<i>John Relyea</i>	Date:	12 Apr 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) ¹ ₆₋₇₋₉₉

LI BLNK

Type	DATE COUNTED	APR-19-99	PU 236 AEA FRAC (C236)	0.905
BLNK	SAMPLE VOLUME in mL SS	0.100	PU 238 AEA FRAC (C238)	0.000
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.000
29191	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	1523
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	145B43	BACKGROUND in cp (Bkg)	0.200
Matrix	DETECTOR NUMBER	19	PU 236 cpm	29.890
LIQUID	EFFICIENCY FACTOR EFF	0.3379	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE	01/19/98	PU 239 cpm	0.000
99001502	TRACER PREPARATION VALUE (dpm/mL)	2270.00	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1676.66	Pu 239/240 µCi/L =	< 3.099E-02
0	PU-238 TRACER VALUE (dpm/m)	0.00		

Sample Prep	
N/A	
Sample #	Decay Time = Date Counted - Tracer Preparation Date
WL29191	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)
WC16100	Pu 239/240 µCi/L = (C239) * (Pu 236 Decay Corr'd Value) * (SPKV) * (1000mL/L) * (DF) * (DDF) / [(C236) * (SS) * (D g/L) * (2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
SZC	Pu 238 µCi/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/µCi) * (D g/L) * (SS)]
Chemist	Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100
JFR	
Analyst	
GLL	
Date Complete	

04/12/99	Pu 239/240 µCi/mL	< 3.10E-05	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	= 100.0%	
04/08/99			Pu 239/240
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		3.10E-05
03:15 PM	Pu 238 µCi/mL	< 3.10E-05	Pu 238
Sample Point	Relative Counting Error	= 100.0%	3.10E-05
U-103 GRAB	Pu 236 Tracer Recovery	= 80.8%	

Analyst:	GLL	Date:	12-Apr-99
Signature of Chemist:	<i>John Relyea</i>	Date:	12 Apr 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) ¹ ₁₀₋₁₋₉₉ LIQUID /

				SAMPLE
Type	DATE COUNTED	APR-09-99	PU 236 AEA FRAC (C236)	0.545
SAMPLE	SAMPLE VOLUME in mL SS	0.100	PU 238 AEA FRAC (C238)	0.082
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.328
29191	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	2784
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	145B43	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	19	PU 236 cpm	32.650
LIQUID	EFFICIENCY FACTOR EFF	0.338	PU 238 cpm	4.920
Batch Number	TRACER PREPARATION DATE	01/19/98	PU 239 cpm	19.650
99001502	TRACER PREPARATION VALUE (dpm/mL)	2270.000	AEA COUNT TIME	480
Rein:	PU-236 DECAY CORR'D VALUE (dpm/mL)	1687.863	Pu 239/240 µCi/L	4.5757E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	N/A
Sample #	S99T000538
Instrument Code	WC16100
Prepared By	SZC
Chemist	JFR
Analyst	GLL
Date Complete	04/12/99

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	Analysis Time	Sample Point	Relative Counting Error	Pu 238 µCi/mL	Pu 236 Tracer Recovery	DETECTION LEVELS in µCi/mL
04/08/99	03:15 PM	U-103 GRAB	2.6%	1.14E-04	88.5%	Pu 239/240 4.73E-05
			4.3%			Pu 238 4.73E-05
			4.58E-04			

Analyst:	GLL	Date:	12-Apr-99
Signature of Chemist:	<i>John Relyea</i>	Date:	12 Apr 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) LIQUID /

				DUP
Type	DATE COUNTED	APR-09-99	PU 236 AEA FRAC (C236)	0.545
DUP	SAMPLE VOLUME in mL SS	0.100	PU 238 AEA FRAC (C238)	0.080
WORK USE	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.325
29191	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	2726
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	145B43	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	19	PU 236 cpm	32.050
LIQUID	EFFICIENCY FACTOR EFF	0.338	PU 238 cpm	4.680
Batch Number	TRACER PREPARATION DATE	01/19/98	PU 239 cpm	19.120
99001502	TRACER PREPARATION VALUE (dpm/mL)	2270.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1687.863	Pu 239/240 µCi/L	4.5339E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

S99T000538

Instrument Code

WC16100

Prepared By

SZC

Chemist

JFR

Analyst

GLL

Date Complete

04/12/99

Analysis Date

04/08/99

Analysis Time

03:15 PM

Sample Point

U-103 GRAB

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	4.53E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error =	2.6%	
Pu 238 µCi/mL	1.12E-04	Pu 239/240
Relative Counting Error =	4.4%	4.83E-05
Pu 236 Tracer Recovery =	86.6%	Pu 238
		4.83E-05

Analyst:	GLL	Date:	12-Apr-99
Signature of Chemist:	<i>John Relyea</i>	Date:	12 Apr 99

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ¹ _{12/4} LIQUID /

			SAMPLE	
Type	DATE COUNTED	APR-09-99	PU 236 AEA FRAC (C236)	0.556
SAMPLE	SAMPLE VOLUME in mL	SS 0.100	PU 238 AEA FRAC (C238)	0.104
Work List	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.324
29191	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2747
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	145B43	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	19	PU 236 cpm	32.540
LIQUID	EFFICIENCY FACTOR	EFF 0.338	PU 238 cpm	6.110
Batch Number	TRACER PREPARATION DATE	01/19/98	PU 239 cpm	18.960
99001502	TRACER PREPARATION VALUE (dpm/mL)	2270.000	AEA COUNT TIME	480
ReRun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1687.863	Pu 239/240 µCi/L	4.4305E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Rep	N/A
Sample #	S99T000547
Instrument Code	WC16100
Prepared By	SZC
Chemist	JFR
Analyst	GLL
Date Complete	04/12/99
Analysis Date	04/08/99
Analysis Time	03:15 PM
Sample Point	U-103 GRAB

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-238 Tracer Recovery / 100) * (2220000 dpm/µCi) * (D g/L) * (SS)]
 Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL	=	4.43E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	2.6%	
Pu 238 µCi/mL	=	1.42E-04	Pu 239/240
Relative Counting Error	=	3.9%	Pu 238
Pu 236 Tracer Recovery	=	89.1%	4.61E-05

Analyst:	GLL	Date:	12-Apr-99
Signature of Chemist:	<i>John Ralyon</i>	Date:	12 Apr 99

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0)

LIQUID /

DUP

Type	DATE COUNTED	APR-09-99	PU 236 AEA FRAC (C236)	0.514	
DUP	SAMPLE VOLUME in mL	SS	0.100	PU 238 AEA FRAC (C238)	0.076
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.349
29191	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	2679
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	145B43		BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	19		PU 236 cpm	32.460
LIQUID	EFFICIENCY FACTOR	EFF	0.338	PU 238 cpm	4.790
Batch Number	TRACER PREPARATION DATE	01/19/98		PU 239 cpm	22.050
99001502	TRACER PREPARATION VALUE (dpm/mL)	2270.000		AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1687.863		Pu 239/240 µCi/L	5.1623E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000			

Sample Prep

N/A

Sample #

S99T000547

Instrument Code

WC16100

Prepared By

SZC

Chemist

JFR

Analyst

GLL

Date Complete

04/12/99

Analysis Date

04/08/99

Analysis Time

03:15 PM

Sample Point

U-103 GRAB

Decay Time = Date Counted - Tracer Preparation Date
 Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of ((-ln2 * Decay Time)/1040.95)]
 Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
 Pu 239/240 µCi/L = (C239) (Pu 236 Decay Corr'd Value) (SPKV) (1000mL/L) (DF) (DDF) / [(C236) (SS) (D g/L) (2220000 dpm/µCi)]
 Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
 Pu 238 µCi/L = [(Pu 238 dpm) (DF) (DDF) (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/µCi) (D g/L) (SS)]
 Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL	5.16E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error =	2.5%	
Pu 238 µCi/mL	1.12E-04	Pu 239/240
Relative Counting Error =	4.4%	5.53E-05
Pu 236 Tracer Recovery =	80.3%	Pu 238
		5.53E-05

Analyst:	GLL	Date:	12-Apr-99
Signature of Chemist:	<i>John Relyea</i>	Date:	12 Apr 99

SAMPLE.WB1 REV 1.0

843128ML

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ^{1/10/99} LIQUID /				SAMPLE
Type	DATE COUNTED	APR-09-99	Pu 236 AEA FRAC (C236)	0.512
SAMPLE	SAMPLE VOLUME in mL SS	0.100	Pu 238 AEA FRAC (C238)	0.078
Worklist	SAMPLE DILUTION FACTOR DF	1.000	Pu 239 AEA FRAC (C239)	0.346
29191	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	2950
Test Code	DIGEST DILUTION FACTOR DDF	1.0000	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	145B43	BACKGROUND in cpm (Bkg)	0.200
Matrix	DETECTOR NUMBER	19	Pu 236 cpm	31.970
LIQUID	EFFICIENCY FACTOR EFF	0.338	Pu 238 cpm	4.900
Batch Number	TRACER PREPARATION DATE	01/19/98	Pu 239 cpm	21.620
99001502	TRACER PREPARATION VALUE (dpm/mL)	2270.000	AEA COUNT TIME	480
Reruns	PU-236 DECAY CORR'D VALUE (dpm/mL)	1687.863	Pu 239/240 µCi/L	5.1380E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	N/A
Sample #	S99T000549
Instrument Code	WC16100
Prepared By	SZC
Chemist	JFR
Analyst	GLL
Date Complete	04/12/99
Analysis Date	04/08/99
Analysis Time	03:15 PM
Sample Point	U-103 GRAB

Decay Time = Date Counted - Tracer Preparation Date
 Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]
 Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)
 Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
 Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)
 Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]
 Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL	5.14E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error =	2.5%	
Pu 238 µCi/mL	1.16E-04	Pu 239/240
Relative Counting Error =	4.3%	5.06E-05
Pu 236 Tracer Recovery =	88.1%	Pu 238
		5.06E-05

Analyst:	GLL	Date:	12-Apr-99
Signature of Chemist:	<i>John Rejcek</i>	Date:	12 Apr 99

WORKBOOK PAGE: DUP8

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) *AD 1-4* LIQUID /

				DUP	
Type	DATE COUNTED	APR-09-99	PU 236 AEA FRAC (C236)	0.511	
DUP	SAMPLE VOLUME in mL	SS 0.100	PU 238 AEA FRAC (C238)	0.086	
Work List	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.334	
29191	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2638	
Test Code	DIGEST DILUTION FACTOR	DDF 1.0000	AT COUNT TIME (MIN)	30	
@PU23901	TRACER BOOK NO	145B43	BACKGROUND in cpm (Bkg)	0.200	
Matrix	DETECTOR NUMBER	19	PU 236 cpm	30.790	
LIQUID	EFFICIENCY FACTOR	EFF 0.338	PU 238 cpm	5.210	
Batch Number	TRACER PREPARATION DATE	01/19/98	PU 239 cpm	20.160	
99001502	TRACER PREPARATION VALUE (dpm/mL)	2270.000	AEA COUNT TIME	480	
Remarks	PU-236 DECAY CORR'D VALUE (dpm/mL)	1687.863	Pu 239/240 µCi/L	4.9695E-01	
0	PU-238 TRACER VALUE (dpm/mL)	0.000			

Sample Prep	N/A
Sample #	S99T000549
Instrument Code	WC16100
Prepared By	SZC
Chemist	JFR
Analyst	GLL
Date Complete	04/12/99

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

			DETECTION LEVELS in µCi/mL	
Analysis Date	Pu 239/240 µCi/mL	4.97E-04	Pu 239/240	
04/08/99	Relative Counting Error =	2.6%	5.68E-05	
Analysis Time	Pu 238 µCi/mL	1.28E-04	Pu 238	
03:15 PM	Relative Counting Error =	4.2%	5.68E-05	
Sample Point	Pu 236 Tracer Recovery =	78.6%		
U-103 GRAB				

Analyst:	GLL	Date:	12-Apr-99
Signature of Chemist:	<i>John Relyea</i>	Date:	12 Apr 99

SAMPLE.WB1 REV 1.0 943128ML

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL29191-STD
 File ID: 1a1966.CNF

Counted on: 4/ 9/99 @ 9:15
 Detector: AEA1
 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?	13.1	13.1	478.244	478.244	18.000	6.651	9.000	8.062
2	1484.6	1484.6	364.952	364.952	10.000	2.444	5.000	1.349
3?	38.0	38.0	305.147	305.131	30.000	5.967	15.000	15.108
4	100.4	100.4	290.165	290.146	10.000	2.809	5.000	3.035
5?	23.4	23.4	272.687	272.540	12.000	3.826	6.000	2.876
6?	16.4	16.4	258.196	257.634	8.000	0.773	4.000	6.086
7	3187.2	3187.2	231.667	231.667	10.000	2.626	5.000	2.072

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		????		6.285			0.34	15.4			
2	Pu236	0.325	5.755	5.764	-0.0090	0.01	33.88	1.5	139.0	0.626E-04	
	Cm243		5.779	5.764	0.015				186.6	0.841E-04	
3		????		5.489			0.92	9.4			
4	Th228	0.018	5.400	5.420	-0.0200	0.01	1.83	6.9	10.4	0.468E-05	
5		????		5.339			0.53	14.5			
6		????		5.271			0.14	27.4			
7	Pu239	0.602	5.147	5.151	-0.0040	0.01	62.78	1.1	252.4	0.114E-03	
	Pu240		5.144	5.151	-0.007				252.4	0.114E-03	
Totals:		0.944	<--valid peaks only-->					98.49			

DETECTOR CALIBRATION

Energy(MEV) = 4.085 + (0.0046)*Channel
 Energy range (MeV): 4.085 TO 6.441
 Efficiency = 0.2487 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	50071.0	100.000
Smoothed	50071.0	100.000
Composite fit	48213.5	96.290

Residuals

HNF-1668 REV. 0
1857.5

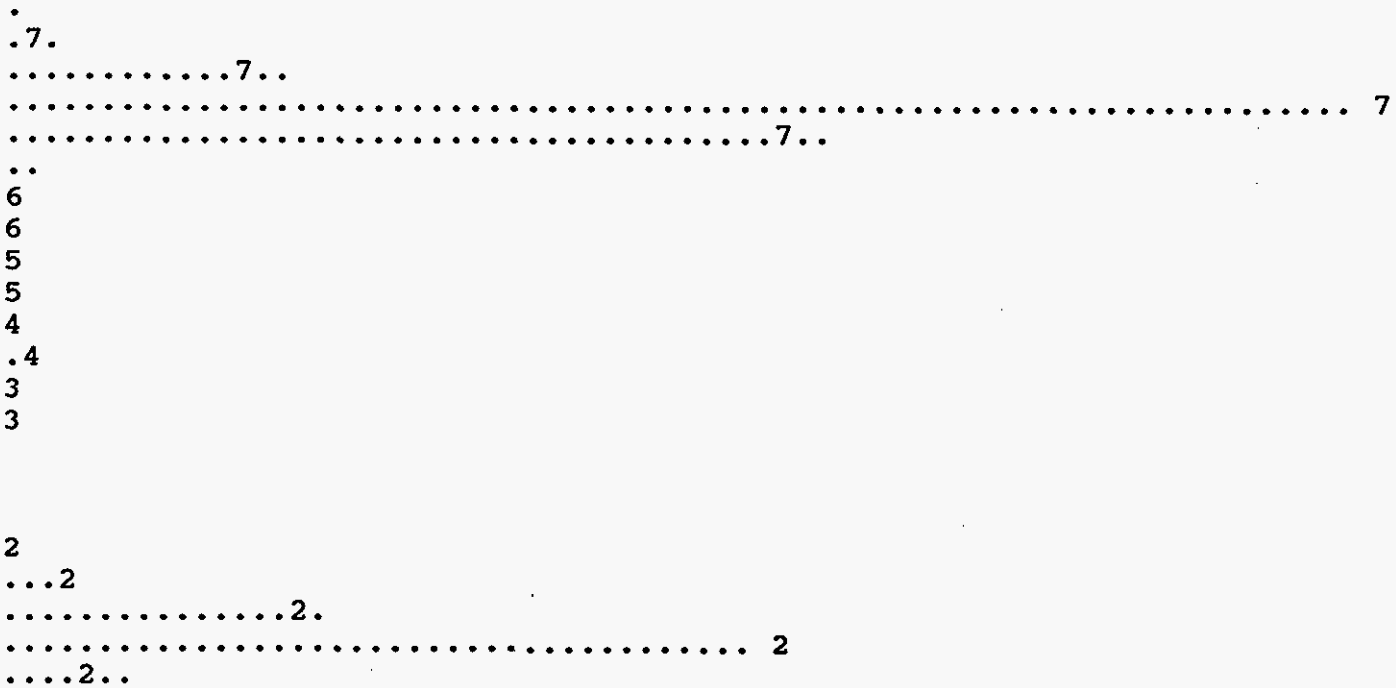
3.710

Analyzed by: _____

SZC

Spectrum 1a1966.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 16094.0



Raw Data Dump for AEA Spectrum: 1a1966.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.	0.	0.	1.	0.	0.	1.	0.
31	1.	0.	1.	1.	1.	0.	1.	1.	0.	1.
41	0.	0.	0.	1.	0.	0.	0.	2.	1.	0.
51	1.	2.	0.	0.	0.	0.	0.	0.	2.	0.
61	0.	0.	0.	0.	1.	0.	0.	2.	1.	0.
71	3.	2.	0.	0.	1.	1.	0.	0.	4.	0.
81	1.	1.	1.	0.	1.	0.	2.	2.	1.	1.
91	1.	2.	1.	0.	0.	1.	1.	1.	2.	2.
101	0.	1.	0.	0.	0.	1.	2.	1.	1.	1.
111	2.	1.	3.	1.	0.	1.	1.	3.	0.	3.
121	1.	2.	3.	1.	2.	3.	1.	0.	1.	0.
131	1.	1.	2.	1.	1.	2.	0.	2.	1.	1.
141	0.	4.	1.	3.	1.	2.	1.	2.	3.	1.
151	4.	2.	3.	3.	2.	2.	2.	1.	2.	4.
161	3.	1.	3.	5.	4.	5.	2.	3.	8.	4.
171	4.	2.	8.	2.	4.	4.	5.	6.	6.	8.
181	6.	3.	9.	8.	10.	12.	11.	10.	13.	14.
191	10.	15.	11.	18.	14.	12.	20.	10.	13.	27.
201	28.	28.	46.	37.	28.	37.	42.	47.	58.	49.
211	79.	72.	113.	128.	145.	179.	233.	306.	389.	485.
221	622.	665.	680.	660.	841.	1069.	1335.	1842.	2523.	3148.
231	3779.	4094.	3653.	2462.	1078.	296.	50.	6.	2.	5.
241	3.	9.	2.	6.	8.	2.	3.	2.	3.	1.
251	3.	7.	4.	6.	6.	9.	10.	14.	9.	12.
261	7.	4.	0.	6.	9.	5.	8.	15.	16.	21.
271	28.	24.	28.	34.	12.	16.	13.	10.	7.	6.
281	15.	15.	14.	17.	34.	54.	56.	90.	115.	133.
291	121.	99.	49.	23.	17.	19.	12.	15.	15.	17.
301	21.	16.	22.	26.	35.	37.	21.	21.	13.	13.
311	9.	7.	8.	9.	7.	2.	4.	6.	4.	6.
321	8.	5.	6.	6.	6.	5.	14.	6.	10.	13.
331	15.	10.	13.	16.	13.	18.	20.	24.	27.	24.
341	28.	32.	33.	55.	45.	71.	92.	111.	163.	154.
351	196.	292.	384.	500.	630.	688.	601.	529.	505.	571.
361	725.	959.	1302.	1656.	1890.	1880.	1256.	580.	187.	26.
371	5.	0.	1.	0.	2.	0.	2.	1.	1.	0.
381	0.	0.	1.	2.	1.	0.	0.	0.	0.	0.
391	3.	1.	0.	0.	3.	0.	0.	0.	0.	1.
401	0.	1.	0.	0.	1.	1.	2.	2.	0.	1.
411	2.	1.	0.	2.	1.	2.	0.	0.	2.	0.
421	1.	1.	1.	1.	0.	1.	3.	0.	8.	1.
431	2.	3.	0.	0.	0.	2.	1.	0.	1.	1.
441	1.	0.	0.	0.	1.	2.	0.	0.	0.	0.
451	1.	0.	0.	2.	0.	1.	1.	1.	2.	0.
461	0.	0.	0.	3.	1.	0.	0.	2.	0.	3.
471	1.	7.	9.	5.	10.	13.	18.	15.	16.	8.
481	15.	11.	10.	8.	2.	4.	1.	1.	0.	1.
491	0.	0.	0.	0.	0.	0.	2.	1.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL29191-BLNK
 File ID: 2a2056.CNF

Counted on: 4/ 9/99 @ 9:16
 Detector: AEA2
 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?	12.1	12.1	477.329	477.329	16.000	5.174	8.000	6.620
2	1236.0	1236.0	362.987	362.987	10.000	2.785	5.000	1.460
3?	61.0	61.0	300.710	300.647	8.000	0.000	4.000	3.686
4	79.0	79.0	287.764	287.763	10.000	3.906	5.000	4.143
5	20.7	20.7	270.462	270.325	10.000	3.144	5.000	2.001

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		????		6.289			0.28	17.0		
2	Pu236	0.905	5.755	5.763	-.0080	0.01	29.89	1.6	125.8	0.567E-04
	Cm243		5.779	5.763	0.016				168.9	0.761E-04
3		????		5.476			0.00	1000.		
4	Th228	0.050	5.400	5.417	-.0170	0.02	1.65	7.0	9.6	0.431E-05
5		0.014		5.337		0.01	0.47	15.1	1.9	0.875E-06
Totals:		0.969	<--valid peaks only-->				32.01			

DETECTOR CALIBRATION

Energy(MEV) = 4.093 + (0.0046)*Channel
 Energy range (MeV): 4.093 TO 6.448
 Efficiency = 0.2424 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	15861.0	100.000
Smoothed	15860.4	99.996
Composite fit	15500.8	97.729
Residuals	360.2	2.271

Analyzed by: _____

SZC

Spectrum 2a2056.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 7199.4

5
5
5
...4
.4.
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2
.. 2
.....2
.....2
.....2
..2....

Raw Data Dump for AEA Spectrum: 2a2056.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.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
41	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	1.	1.	0.	1.	1.	1.	1.	1.
71	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.
81	2.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
91	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
101	0.	0.	0.	0.	1.	0.	0.	0.	2.	0.	0.
111	1.	0.	0.	1.	2.	2.	0.	0.	2.	0.	0.
121	1.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	2.	1.	0.	0.	0.	0.	0.	0.	1.
141	0.	1.	0.	1.	0.	1.	1.	0.	0.	0.	0.
151	0.	0.	0.	0.	1.	0.	2.	1.	1.	1.	0.
161	0.	1.	0.	0.	1.	2.	0.	0.	1.	1.	1.
171	2.	1.	1.	0.	1.	0.	1.	0.	0.	0.	1.
181	0.	2.	0.	2.	0.	0.	1.	1.	1.	1.	0.
191	1.	0.	0.	4.	1.	2.	1.	1.	1.	1.	1.
201	2.	1.	0.	1.	0.	1.	0.	3.	3.	3.	0.
211	1.	0.	1.	1.	4.	0.	0.	1.	2.	2.	2.
221	1.	4.	0.	3.	2.	1.	3.	2.	3.	3.	3.
231	5.	4.	3.	1.	0.	2.	1.	3.	2.	2.	4.
241	2.	0.	1.	0.	1.	6.	2.	1.	3.	3.	2.
251	3.	3.	3.	3.	6.	3.	6.	2.	8.	7.	7.
261	3.	4.	4.	6.	6.	11.	10.	14.	32.	22.	22.
271	28.	25.	14.	5.	13.	10.	6.	10.	11.	12.	12.
281	21.	25.	31.	41.	65.	79.	96.	101.	89.	63.	63.
291	38.	22.	7.	20.	10.	16.	10.	12.	12.	15.	15.
301	15.	21.	12.	13.	12.	11.	11.	2.	5.	4.	4.
311	2.	5.	2.	2.	5.	4.	2.	2.	3.	2.	2.
321	4.	6.	1.	3.	6.	15.	9.	8.	9.	9.	9.
331	15.	8.	14.	10.	13.	13.	17.	20.	30.	21.	21.
341	23.	37.	56.	57.	61.	87.	111.	148.	181.	252.	252.
351	289.	459.	506.	573.	531.	502.	515.	592.	630.	879.	879.
361	1074.	1427.	1526.	1507.	1108.	631.	225.	58.	11.	2.	2.
371	2.	2.	1.	1.	0.	0.	0.	1.	2.	0.	0.
381	0.	0.	0.	1.	1.	2.	1.	1.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	2.	1.	1.	0.	0.
401	0.	0.	2.	0.	1.	1.	0.	0.	1.	0.	0.
411	0.	2.	0.	0.	0.	2.	0.	0.	1.	1.	1.
421	1.	0.	2.	0.	0.	1.	3.	1.	2.	2.	2.
431	1.	2.	5.	0.	2.	1.	1.	1.	0.	0.	0.
441	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	2.	1.	1.	0.	1.	0.	0.
461	2.	1.	1.	0.	0.	1.	0.	2.	2.	1.	1.
471	3.	4.	6.	9.	10.	18.	14.	14.	12.	7.	7.
481	14.	3.	3.	6.	1.	3.	0.	0.	0.	0.	0.
491	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.
511	0.	0.									

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T538-SAM
 File ID: 3a3445.CNF

Counted on: 4/ 9/99 @ 9:16
 Detector: AEA3
 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?	13.0	13.0	476.703	476.703	12.000	4.212	6.000	3.144
2	1291.7	1291.7	362.216	362.216	10.000	2.956	5.000	1.465
3	168.3	168.3	302.277	302.272	12.000	4.763	6.000	2.227
4	60.9	60.9	287.846	287.207	10.000	2.053	5.000	1.526
5?	18.1	18.1	270.720	270.070	10.000	2.518	5.000	1.095
6	825.2	825.2	228.935	228.935	12.000	3.785	6.000	2.443

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		????		6.280			0.30	16.2		
2	Pu236	0.545	5.755	5.753	0.002	0.01	32.65	1.6	145.3	0.655E-04
3	Pu238	0.082	5.487	5.477	0.010	0.02	4.92	4.0	29.8	0.134E-04
	Am241		5.479	5.477	0.002				22.9	0.103E-04
4	Th228	0.019	5.400	5.408	-0.008	0.01	1.15	12.7	7.1	0.318E-05
5		????		5.329			0.48	17.3		
6	Pu239	0.328	5.147	5.140	0.007	0.02	19.65	2.0	85.8	0.386E-04
	Pu240		5.144	5.140	0.004				85.8	0.386E-04
Totals:		0.974	<--valid peaks only-->				58.37			

DETECTOR CALIBRATION

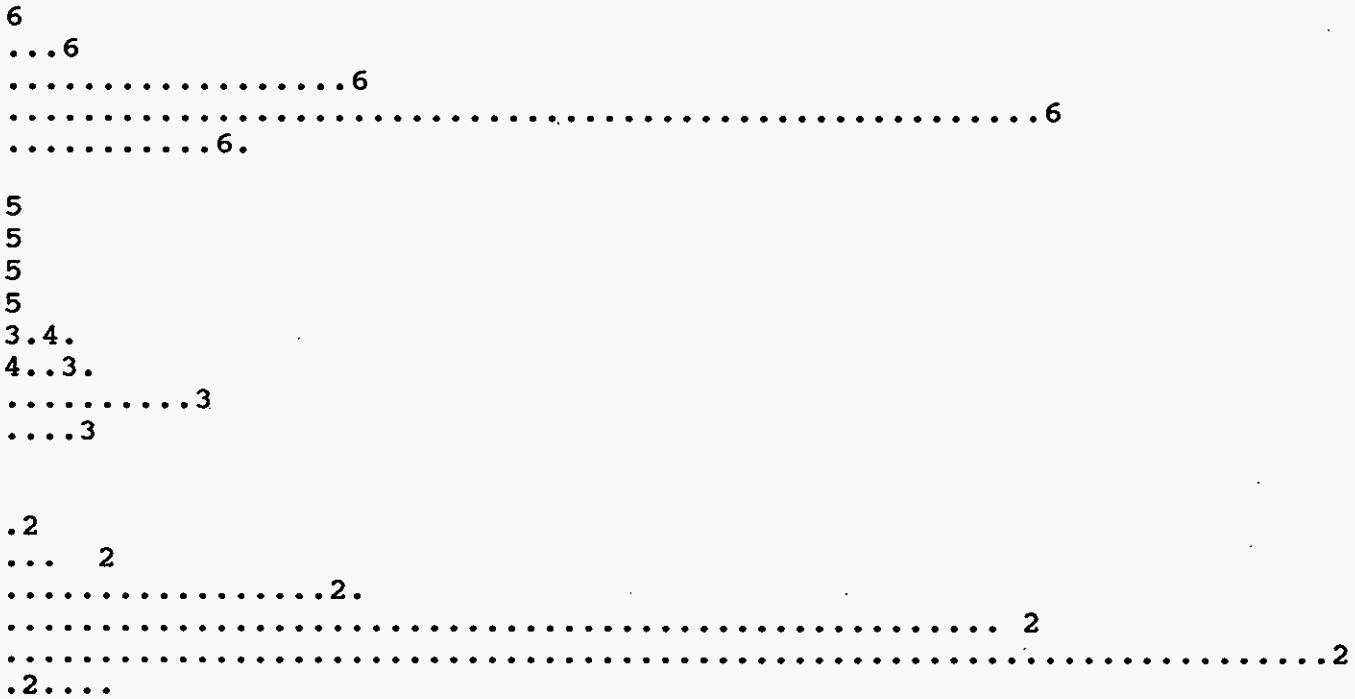
Energy (MEV) = 4.087 + (0.0046)*Channel
 Energy range (MeV): 4.087 TO 6.442
 Efficiency = 0.2292 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28775.0	100.000
Smoothed	28775.1	100.000
Composite fit	28397.4	98.688
Residuals	377.6	1.312

Spectrum 3a3445.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 7055.2



Raw Data Dump for AEA Spectrum: 3a3445.CNF

HNF-1668 REV. 0

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.	1.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
51	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
61	0.	0.	0.	0.	1.	0.	0.	0.	2.	0.
71	1.	0.	0.	0.	1.	0.	0.	0.	1.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	0.	0.	0.	0.	1.	2.	1.	0.	0.	0.
101	1.	0.	0.	0.	0.	0.	1.	0.	2.	3.
111	0.	0.	1.	1.	1.	0.	1.	1.	1.	0.
121	1.	1.	1.	3.	1.	1.	1.	0.	0.	0.
131	1.	1.	2.	1.	3.	1.	1.	5.	3.	2.
141	2.	3.	3.	4.	5.	7.	8.	3.	3.	5.
151	5.	7.	4.	2.	1.	3.	4.	1.	2.	1.
161	3.	3.	1.	2.	0.	3.	1.	1.	2.	6.
171	3.	2.	3.	1.	2.	4.	3.	3.	1.	1.
181	3.	0.	4.	2.	3.	4.	5.	3.	4.	4.
191	3.	2.	9.	7.	10.	8.	4.	5.	11.	12.
201	11.	12.	11.	11.	6.	10.	23.	24.	36.	37.
211	34.	42.	54.	81.	122.	106.	133.	174.	206.	250.
221	286.	288.	370.	443.	575.	656.	771.	979.	1001.	927.
231	741.	545.	290.	138.	73.	28.	3.	6.	2.	4.
241	5.	2.	0.	3.	2.	0.	2.	3.	3.	6.
251	7.	5.	6.	7.	9.	4.	7.	6.	6.	2.
261	4.	7.	11.	5.	8.	16.	15.	24.	25.	26.
271	30.	26.	18.	17.	13.	14.	12.	19.	27.	30.
281	25.	41.	47.	75.	71.	87.	109.	105.	102.	77.
291	51.	52.	59.	67.	69.	85.	89.	111.	113.	164.
301	187.	205.	184.	179.	126.	90.	51.	30.	23.	21.
311	15.	11.	8.	7.	4.	8.	4.	7.	6.	9.
321	8.	6.	4.	5.	11.	6.	15.	11.	12.	9.
331	24.	15.	15.	23.	25.	22.	19.	36.	34.	39.
341	46.	62.	65.	75.	100.	133.	154.	219.	265.	349.
351	468.	547.	558.	593.	544.	560.	611.	696.	908.	1105.
361	1385.	1590.	1568.	1316.	784.	366.	121.	21.	4.	6.
371	3.	2.	3.	0.	1.	1.	1.	0.	2.	1.
381	0.	0.	2.	0.	0.	1.	0.	3.	1.	0.
391	0.	1.	0.	0.	2.	0.	0.	0.	0.	0.
401	1.	1.	2.	0.	2.	0.	1.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	0.	1.	0.	2.
421	0.	1.	2.	1.	3.	3.	1.	0.	2.	4.
431	2.	1.	2.	2.	1.	2.	0.	0.	0.	0.
441	2.	0.	0.	1.	0.	0.	0.	1.	1.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	2.	1.	2.	2.	0.	3.	0.	4.	3.	6.
471	8.	8.	10.	9.	12.	20.	10.	14.	15.	4.
481	3.	3.	1.	2.	2.	1.	0.	1.	0.	0.
491	0.	1.	1.	0.	1.	1.	0.	0.	0.	0.
511	1.	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
 S99T538-DUP
 File ID: 4a4437.CNF

Counted on: 4/ 9/99 @ 9:17
 Detector: AEA4
 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	1350.8	1350.8	360.143	360.143	10.000	2.533	5.000	1.322
2	162.3	162.3	300.962	300.957	12.000	4.529	6.000	2.125
3	68.6	68.6	285.818	285.362	10.000	1.788	5.000	1.979
4?	18.4	18.4	269.049	268.354	10.000	3.622	5.000	1.670
5	858.6	858.6	227.724	227.724	10.000	3.332	5.000	2.313

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	0.545	5.755	5.745	0.010	0.01	32.05	1.6	144.4	0.650E-04
2	Pu238	0.080	5.487	5.473	0.014	0.02	4.68	4.1	28.7	0.129E-04
	Am241		5.479	5.473	0.006				22.0	0.990E-05
3	Th228	0.018	5.400	5.401	-.001	0.01	1.06	13.0	6.6	0.296E-05
4	????			5.323			0.51	16.4		
5	Pu239	0.325	5.147	5.136	0.011	0.02	19.12	2.0	84.4	0.380E-04
	Pu240		5.144	5.136	0.008				84.4	0.380E-04
Totals:		0.968	<--valid peaks only-->				56.90			

DETECTOR CALIBRATION

Energy (MEV) = 4.089 + (0.0046)*Channel
 Energy range (MeV): 4.089 TO 6.444
 Efficiency = 0.2265 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

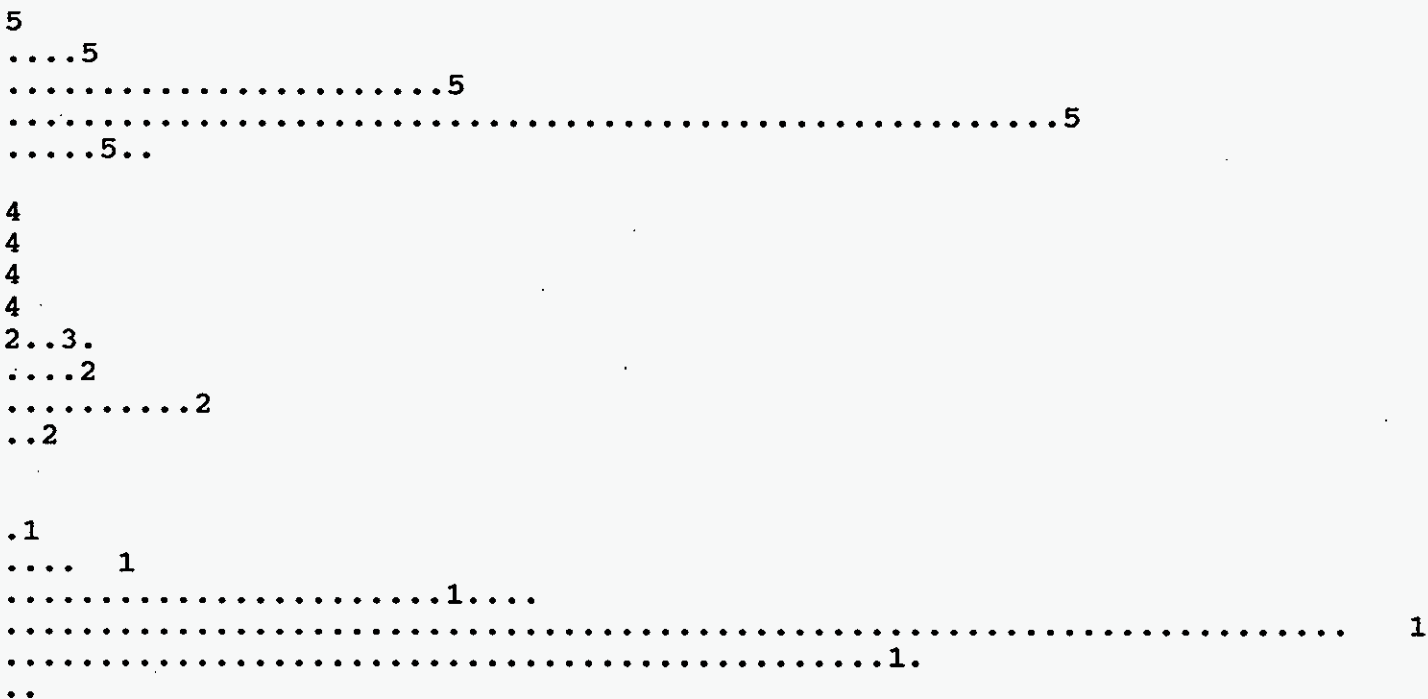
Item	Total	% Recovery
Raw spectrum	28226.0	100.000
Smoothed	28225.6	99.998
Composite fit	27559.7	97.639
Residuals	666.3	2.361

526 Analyzed by: _____

Spectrum 4a4437.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 6828.8



Raw Data Dump for AEA Spectrum: 4a4437.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.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	3.	1.	0.	0.	1.	0.	0.
41	2.	0.	0.	0.	1.	2.	1.	3.	1.	1.
51	0.	0.	0.	1.	0.	2.	1.	0.	0.	0.
61	1.	0.	0.	1.	0.	1.	0.	0.	0.	0.
71	0.	1.	0.	0.	0.	0.	1.	0.	0.	1.
81	0.	0.	0.	1.	0.	0.	1.	0.	1.	0.
91	0.	2.	0.	0.	2.	0.	0.	0.	0.	2.
101	1.	0.	0.	2.	1.	1.	0.	1.	0.	0.
111	2.	1.	1.	1.	2.	1.	2.	1.	5.	0.
121	0.	1.	2.	0.	0.	2.	2.	0.	4.	1.
131	1.	2.	1.	2.	2.	3.	0.	3.	0.	6.
141	1.	3.	6.	7.	9.	3.	6.	5.	8.	3.
151	4.	6.	5.	1.	2.	2.	1.	1.	2.	2.
161	2.	1.	1.	1.	3.	0.	1.	4.	3.	1.
171	0.	3.	1.	3.	3.	1.	1.	2.	4.	2.
181	1.	7.	2.	3.	2.	2.	4.	0.	3.	1.
191	4.	3.	6.	7.	10.	4.	7.	5.	7.	13.
201	10.	11.	11.	21.	16.	14.	19.	25.	28.	37.
211	49.	51.	66.	105.	124.	150.	184.	223.	224.	250.
221	238.	358.	439.	615.	669.	865.	970.	1065.	990.	691.
231	394.	233.	104.	39.	9.	2.	1.	1.	1.	2.
241	4.	2.	1.	3.	6.	5.	6.	2.	3.	7.
251	4.	3.	7.	7.	8.	7.	3.	2.	4.	6.
261	3.	12.	13.	12.	14.	22.	25.	20.	28.	22.
271	18.	23.	12.	6.	10.	18.	14.	22.	27.	20.
281	45.	44.	73.	79.	129.	118.	95.	70.	60.	39.
291	51.	57.	67.	64.	90.	76.	102.	138.	175.	204.
301	175.	189.	160.	124.	72.	32.	12.	19.	11.	7.
311	10.	9.	7.	4.	3.	2.	5.	2.	7.	4.
321	4.	7.	4.	6.	6.	8.	19.	11.	15.	21.
331	20.	15.	25.	21.	22.	29.	40.	25.	45.	51.
341	50.	85.	93.	116.	160.	173.	237.	379.	512.	561.
351	638.	606.	540.	474.	532.	677.	880.	1155.	1463.	1672.
361	1721.	1327.	677.	194.	38.	5.	4.	1.	7.	0.
371	2.	1.	0.	0.	0.	0.	0.	2.	0.	2.
381	0.	1.	1.	1.	0.	1.	1.	0.	0.	0.
391	0.	1.	2.	0.	0.	2.	2.	0.	1.	0.
401	0.	0.	0.	4.	0.	0.	0.	0.	0.	0.
411	0.	0.	3.	0.	1.	0.	2.	2.	0.	1.
421	1.	2.	3.	3.	2.	1.	2.	3.	2.	0.
431	0.	2.	0.	3.	3.	0.	2.	1.	1.	1.
441	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
451	0.	0.	0.	0.	1.	2.	0.	0.	0.	0.
461	1.	1.	2.	1.	2.	2.	3.	5.	4.	9.
471	6.	10.	7.	14.	11.	9.	9.	6.	6.	8.
481	0.	1.	1.	0.	1.	0.	0.	1.	0.	0.
491	0.	0.	2.	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
 S99T547-SAM
 File ID: 5a5361.CNF

Counted on: 4/ 9/99 @ 9:18
 Detector: AEA5
 Geometry number: 1
 Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1358.0	1358.0	364.171	364.171	10.000	2.547	5.000	1.309
2	149.5	149.5	304.621	304.616	10.000	4.351	5.000	1.119
3?	8.2	8.2	271.374	270.801	6.000	0.687	3.000	6.123
4	840.5	840.5	230.734	230.733	10.000	3.463	5.000	2.396

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	0.556	5.755	5.765	-.010	0.01	32.54	1.6	137.6	0.620E-04
	Cm243		5.779	5.765	0.014				184.7	0.832E-04
2	Pu238	0.104	5.487	5.491	-.004	0.02	6.11	3.6	35.2	0.158E-04
	Am241		5.479	5.491	-.012				26.9	0.121E-04
3		????		5.336			0.07	110.		
4	Pu239	0.324	5.147	5.151	-.004	0.02	18.96	2.1	78.5	0.354E-04
	Pu240		5.144	5.151	-.007				78.5	0.354E-04
Totals:		0.985	<--valid peaks only-->				57.61			

DETECTOR CALIBRATION

Energy (MEV) = 4.090 + (0.0046)*Channel
 Energy range (MeV): 4.090 TO 6.445
 Efficiency = 0.2414 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28087.0	100.000
Smoothed	28087.2	100.001
Composite fit	27690.1	98.587
Residuals	396.9	1.413

Analyzed by: _____

SZC

Spectrum 5a5361.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.:

8336.2

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Raw Data Dump for AEA Spectrum: 5a5361.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.	1.	0.
31	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
41	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
51	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
71	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
81	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
91	0.	1.	0.	1.	3.	1.	0.	0.	0.	1.
101	0.	1.	0.	1.	1.	0.	0.	0.	1.	2.
111	0.	2.	0.	0.	0.	1.	2.	1.	1.	1.
121	2.	2.	0.	1.	2.	2.	0.	1.	1.	0.
131	1.	1.	0.	1.	1.	0.	1.	2.	1.	4.
141	0.	2.	1.	2.	4.	1.	4.	8.	4.	4.
151	7.	4.	2.	5.	3.	2.	4.	3.	1.	1.
161	1.	0.	4.	0.	3.	1.	0.	1.	1.	1.
171	2.	1.	1.	4.	2.	2.	2.	1.	3.	4.
181	1.	5.	1.	1.	3.	5.	2.	2.	3.	0.
191	3.	2.	4.	5.	5.	6.	2.	3.	7.	5.
201	7.	13.	11.	7.	9.	12.	14.	17.	22.	29.
211	26.	38.	35.	36.	61.	66.	68.	117.	137.	196.
221	198.	258.	249.	282.	354.	418.	556.	682.	814.	1027.
231	1051.	904.	721.	431.	252.	104.	38.	7.	4.	0.
241	0.	2.	1.	1.	1.	1.	0.	4.	4.	2.
251	1.	4.	6.	6.	5.	5.	10.	6.	7.	5.
261	5.	3.	2.	3.	1.	9.	15.	19.	16.	24.
271	28.	30.	22.	10.	12.	16.	15.	12.	19.	20.
281	16.	18.	29.	27.	54.	63.	69.	103.	97.	114.
291	87.	46.	37.	42.	66.	57.	77.	66.	78.	89.
301	127.	131.	150.	172.	174.	162.	141.	69.	43.	41.
311	18.	15.	12.	10.	7.	8.	6.	3.	2.	4.
321	2.	5.	7.	6.	7.	6.	8.	9.	5.	6.
331	6.	13.	10.	15.	12.	15.	14.	18.	19.	25.
341	41.	24.	50.	51.	69.	78.	110.	118.	168.	209.
351	266.	339.	484.	603.	639.	603.	544.	476.	569.	718.
361	867.	1132.	1448.	1673.	1763.	1334.	675.	231.	43.	6.
371	7.	5.	3.	3.	1.	1.	0.	0.	2.	1.
381	0.	1.	0.	1.	0.	1.	0.	1.	0.	1.
391	2.	1.	1.	0.	0.	0.	0.	1.	0.	0.
401	1.	1.	1.	0.	0.	0.	1.	0.	1.	1.
411	1.	1.	2.	0.	0.	1.	0.	2.	0.	1.
421	3.	2.	1.	1.	1.	2.	0.	1.	1.	0.
431	0.	0.	3.	0.	0.	2.	0.	1.	0.	2.
441	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	2.	0.	0.
461	1.	0.	1.	0.	0.	1.	1.	3.	1.	0.
471	6.	3.	6.	8.	6.	9.	9.	11.	13.	8.
481	4.	2.	5.	2.	0.	0.	1.	0.	0.	1.
491	1.	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
 S99T547-DUP
 File ID: 6a6367.CNF

Counted on: 4/ 9/99 @ 9:19
 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	1509.9	1509.9	362.326	362.326	10.000	2.263	5.000	1.351
2	190.2	190.2	302.650	302.649	10.000	3.815	5.000	2.172
3	76.7	76.7	287.569	287.189	10.000	1.954	5.000	2.397
4?	22.9	22.9	269.917	269.760	10.000	3.296	5.000	2.280
5	1085.3	1085.3	228.911	228.911	10.000	3.109	5.000	2.620

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	0.514	5.755	5.757	-.0020	0.01	32.46	1.6	146.6	0.660E-04
2	Pu238	0.076	5.487	5.482	0.0050	0.02	4.79	4.1	29.4	0.133E-04
	Am241		5.479	5.482	-.003				22.5	0.102E-04
3	Th228	0.019	5.400	5.411	-.0110	0.01	1.18	11.5	7.4	0.332E-05
4	????			5.331			0.51	14.9		
5	Pu239	0.349	5.147	5.143	0.0040	0.01	22.05	1.9	97.6	0.440E-04
	Pu240		5.144	5.143	0.001				97.6	0.440E-04
Totals:		0.958	<--valid peaks only-->				60.48			

DETECTOR CALIBRATION

Energy (MEV) = 4.090 + (0.0046)*Channel
 Energy range (MeV): 4.090 TO 6.445
 Efficiency = 0.2260 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	30295.0	100.000
Smoothed	30294.7	99.999
Composite fit	29277.9	96.643
Residuals	1017.1	3.357

Spectrum 6a6367.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 7799.8

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 5
5..

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 3.2.
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Raw Data Dump for AEA Spectrum: 6a6367.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.	2.	0.	0.	0.	0.	1.	0.	2.
31	0.	1.	1.	0.	0.	1.	0.	0.	0.	0.
41	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
51	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.
61	1.	0.	1.	1.	0.	2.	0.	0.	0.	0.
71	0.	1.	0.	0.	0.	0.	0.	2.	0.	0.
81	0.	0.	0.	0.	0.	1.	0.	0.	0.	2.
91	0.	1.	1.	0.	2.	0.	1.	0.	0.	0.
101	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.
111	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.
121	1.	3.	3.	2.	1.	1.	0.	2.	1.	0.
131	1.	3.	0.	2.	1.	1.	5.	0.	1.	1.
141	3.	4.	1.	4.	3.	6.	6.	9.	4.	7.
151	5.	4.	4.	5.	3.	4.	1.	2.	5.	7.
161	2.	3.	2.	4.	3.	1.	1.	4.	0.	2.
171	1.	1.	2.	2.	2.	0.	2.	1.	5.	4.
181	4.	1.	3.	3.	0.	3.	5.	1.	1.	5.
191	1.	3.	7.	5.	2.	6.	11.	8.	9.	4.
201	13.	11.	5.	10.	11.	10.	18.	23.	12.	21.
211	25.	37.	42.	67.	72.	94.	153.	206.	189.	221.
221	231.	274.	346.	447.	586.	828.	1039.	1287.	1364.	1282.
231	923.	564.	286.	133.	35.	7.	0.	1.	2.	3.
241	3.	2.	4.	5.	3.	0.	2.	2.	4.	5.
251	3.	4.	4.	4.	9.	4.	10.	1.	0.	5.
261	4.	4.	4.	10.	10.	11.	13.	23.	30.	37.
271	22.	17.	22.	9.	8.	8.	16.	12.	13.	9.
281	23.	30.	34.	61.	74.	98.	124.	132.	96.	59.
291	49.	42.	57.	54.	71.	74.	82.	102.	101.	154.
301	200.	233.	231.	211.	157.	95.	49.	21.	27.	14.
311	15.	11.	6.	6.	9.	2.	7.	4.	3.	5.
321	7.	7.	2.	5.	6.	5.	6.	11.	8.	9.
331	7.	14.	16.	9.	16.	13.	18.	16.	13.	32.
341	28.	43.	49.	65.	81.	94.	127.	149.	222.	291.
351	424.	543.	692.	599.	525.	475.	500.	664.	842.	1148.
361	1455.	1955.	2064.	1508.	760.	223.	28.	2.	5.	4.
371	1.	0.	1.	4.	1.	1.	0.	1.	1.	2.
381	0.	0.	0.	1.	1.	0.	1.	2.	0.	1.
391	0.	1.	1.	1.	0.	1.	1.	0.	0.	1.
401	2.	0.	0.	1.	0.	0.	1.	1.	0.	1.
411	0.	0.	0.	3.	0.	0.	1.	0.	1.	0.
421	2.	1.	1.	1.	0.	0.	1.	2.	0.	0.
431	0.	1.	1.	0.	2.	1.	1.	3.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
451	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.
461	0.	1.	2.	1.	1.	1.	1.	3.	2.	5.
471	3.	7.	3.	5.	11.	10.	12.	10.	12.	8.
481	5.	9.	2.	0.	1.	2.	0.	0.	1.	0.
491	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T549-SAM
 File ID: 7a7385.CNF

Counted on: 4/ 9/99 @ 9:20
 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?	10.7	10.7	479.311	479.311	12.000	3.990	6.000	3.656
2	1499.2	1499.2	364.564	364.564	8.000	2.277	4.000	1.384
3	186.5	186.5	305.180	305.179	12.000	4.051	6.000	2.172
4	80.7	80.7	289.994	289.661	10.000	1.969	5.000	2.776
5?	21.7	21.7	272.126	271.938	12.000	3.760	6.000	2.265
6	1073.9	1073.9	231.275	231.275	12.000	3.111	6.000	2.700

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		????		6.292			0.23	18.6		
2	Pu236	0.512	5.755	5.764	-.0090	0.01	31.97	1.6	132.2	0.596E-04
	Cm243		5.779	5.764	0.015				177.5	0.800E-04
3	Pu238	0.078	5.487	5.491	-.0040	0.02	4.90	4.0	27.6	0.124E-04
	Am241		5.479	5.491	-.012				21.1	0.952E-05
4	Th228	0.019	5.400	5.420	-.0200	0.01	1.21	11.4	6.9	0.311E-05
5		????		5.338			0.53	14.8		
6	Pu239	0.346	5.147	5.151	-.0040	0.01	21.62	1.9	87.6	0.395E-04
	Pu240		5.144	5.151	-.007				87.6	0.395E-04
Totals:		0.956	<--valid peaks only-->				59.69			

DETECTOR CALIBRATION

Energy(MEV) = 4.087 + (0.0046)*Channel
 Energy range (MeV): 4.087 TO 6.443
 Efficiency = 0.2467 CPM/DPM
 (Data reduction compression factor: 1.)

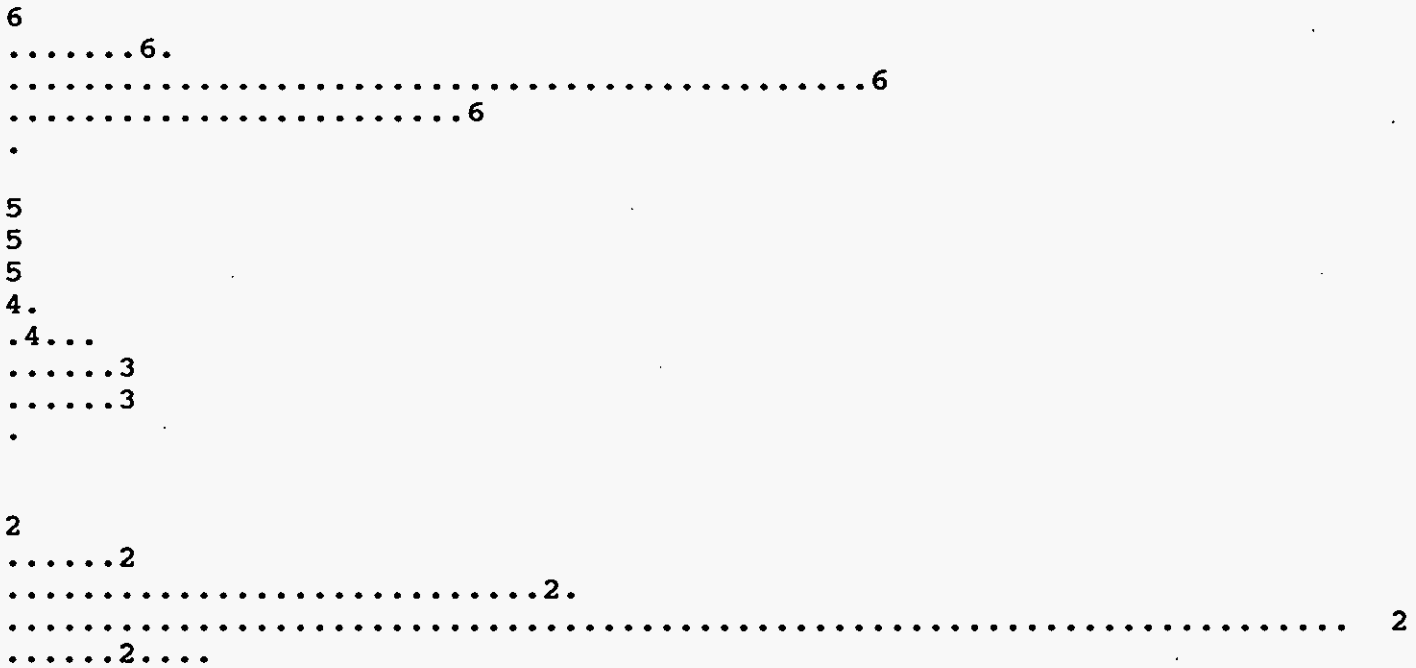
TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29970.0	100.000
Smoothed	29969.5	99.998
Composite fit	29025.8	96.849
Residuals	944.2	3.151

Spectrum 7a7385.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 8945.1



Raw Data Dump for AEA Spectrum: 7a7385.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.	0.	0.	0.	0.	0.	0.	0.
31	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
51	0.	1.	0.	1.	0.	0.	1.	0.	1.	0.
61	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
71	0.	0.	1.	1.	0.	1.	1.	1.	0.	0.
81	1.	0.	1.	0.	1.	0.	1.	0.	1.	1.
91	0.	2.	1.	0.	1.	2.	0.	0.	4.	1.
101	0.	0.	0.	0.	1.	3.	1.	0.	0.	1.
111	0.	1.	1.	3.	3.	0.	3.	1.	2.	1.
121	2.	3.	1.	2.	3.	0.	3.	4.	1.	2.
131	1.	2.	2.	1.	2.	1.	1.	0.	0.	1.
141	3.	2.	2.	5.	5.	1.	3.	4.	7.	9.
151	11.	9.	4.	4.	7.	2.	1.	3.	1.	3.
161	3.	2.	2.	1.	0.	3.	2.	2.	4.	0.
171	6.	1.	0.	2.	0.	3.	1.	2.	2.	2.
181	1.	3.	5.	3.	0.	3.	4.	1.	2.	2.
191	6.	4.	2.	3.	5.	1.	4.	6.	7.	4.
201	6.	10.	0.	5.	7.	10.	19.	8.	6.	17.
211	12.	17.	23.	30.	53.	49.	67.	81.	133.	157.
221	204.	198.	184.	244.	337.	397.	490.	724.	933.	1236.
231	1343.	1349.	1054.	680.	357.	191.	57.	7.	5.	5.
241	2.	0.	5.	6.	4.	4.	1.	4.	4.	1.
251	7.	2.	1.	5.	5.	8.	5.	8.	5.	4.
261	4.	0.	3.	3.	7.	9.	12.	9.	24.	18.
271	24.	31.	29.	17.	15.	10.	12.	10.	13.	11.
281	10.	17.	18.	20.	28.	52.	71.	77.	146.	122.
291	142.	70.	49.	52.	52.	70.	63.	74.	81.	88.
301	90.	137.	196.	189.	232.	211.	190.	129.	63.	34.
311	32.	22.	14.	25.	4.	11.	10.	6.	4.	3.
321	3.	5.	4.	0.	6.	1.	3.	2.	9.	5.
331	7.	8.	8.	14.	12.	13.	11.	11.	17.	12.
341	23.	24.	30.	40.	36.	58.	77.	88.	101.	148.
351	186.	288.	397.	569.	656.	613.	491.	434.	463.	589.
361	728.	954.	1459.	1897.	2025.	1670.	987.	293.	60.	10.
371	3.	4.	3.	3.	3.	0.	0.	0.	2.	0.
381	0.	0.	1.	1.	1.	1.	0.	0.	1.	0.
391	1.	1.	1.	1.	1.	2.	1.	0.	0.	0.
401	0.	1.	0.	1.	1.	1.	0.	1.	0.	1.
411	0.	0.	1.	0.	0.	0.	0.	2.	1.	0.
421	0.	1.	1.	1.	1.	2.	2.	2.	0.	0.
431	2.	0.	3.	0.	2.	0.	5.	3.	1.	4.
441	1.	0.	2.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	1.	0.	0.	0.	1.	0.	2.	0.
461	0.	0.	0.	0.	0.	2.	1.	2.	1.	3.
471	2.	5.	2.	2.	4.	7.	9.	13.	15.	11.
481	10.	9.	4.	3.	3.	1.	1.	2.	0.	1.
491	1.	0.	0.	0.	0.	0.	1.	0.	1.	0.
511	1.	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
 S99T549-DUP
 File ID: 8a3770.CNF

Counted on: 4/ 9/99 @ 9:21
 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	1477.1	1477.1	362.193	362.193	10.000	2.180	5.000	1.358
2	212.8	212.8	302.761	302.761	10.000	3.722	5.000	2.220
3	78.5	78.5	287.653	287.269	10.000	1.879	5.000	2.182
4?	27.1	27.1	270.184	270.039	10.000	2.561	5.000	1.982
5	989.5	989.5	229.288	229.288	12.000	3.054	6.000	2.506

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	0.511	5.755	5.761	-.0060	0.01	30.79	1.6	138.8	0.625E-04
	Cm243		5.779	5.761	0.018				186.4	0.840E-04
2	Pu238	0.086	5.487	5.488	-.0010	0.02	5.21	3.9	32.0	0.144E-04
	Am241		5.479	5.488	-.009				24.5	0.110E-04
3	Th228	0.020	5.400	5.417	-.0170	0.01	1.21	11.3	7.5	0.340E-05
4	????			5.337			0.53	14.0		
5	Pu239	0.334	5.147	5.150	-.0030	0.01	20.16	2.0	89.1	0.401E-04
	Pu240		5.144	5.150	-.006				89.1	0.401E-04
Totals:		0.952	<--valid peaks only-->				57.38			

DETECTOR CALIBRATION

Energy (MEV) = 4.095 + (0.0046)*Channel
 Energy range (MeV): 4.095 TO 6.450
 Efficiency = 0.2263 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	28942.0	100.000
Smoothed	28942.0	100.000
Composite fit	27799.3	96.052
Residuals	1142.7	3.948

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 7423.9

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.....5
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4
4
4
2.3.
3.2..
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....2.

..1
.....1....
..... 1
.....1
1....

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Raw Data Dump for AEA Spectrum: 8a3770.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.	2.	1.	1.	0.	0.
31	1.	1.	0.	0.	0.	0.	0.	2.	0.	0.
41	1.	0.	1.	0.	1.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
61	1.	2.	0.	0.	2.	0.	0.	0.	0.	0.
71	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.
81	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	0.	0.	2.	0.	0.	1.	0.	0.
101	1.	1.	0.	1.	0.	0.	1.	0.	1.	1.
111	0.	0.	1.	0.	1.	1.	0.	1.	4.	1.
121	2.	0.	2.	2.	2.	2.	5.	0.	1.	0.
131	2.	3.	0.	1.	2.	1.	0.	0.	2.	0.
141	0.	2.	6.	7.	6.	7.	5.	9.	8.	7.
151	6.	4.	4.	3.	8.	4.	2.	3.	0.	2.
161	2.	2.	0.	2.	1.	2.	0.	0.	3.	1.
171	2.	3.	0.	2.	1.	0.	2.	0.	4.	2.
181	2.	2.	4.	1.	2.	6.	5.	1.	3.	3.
191	4.	3.	5.	6.	6.	4.	2.	5.	4.	3.
201	7.	12.	10.	11.	14.	8.	21.	9.	12.	28.
211	29.	36.	55.	39.	73.	84.	123.	159.	198.	189.
221	216.	248.	295.	374.	458.	667.	849.	1110.	1238.	1257.
231	981.	599.	339.	145.	61.	14.	5.	1.	2.	3.
241	4.	2.	5.	2.	2.	4.	3.	2.	5.	5.
251	2.	4.	8.	4.	3.	12.	7.	2.	5.	2.
261	2.	4.	7.	4.	9.	12.	20.	26.	28.	41.
271	32.	26.	16.	7.	9.	9.	11.	13.	12.	20.
281	20.	24.	48.	47.	68.	91.	136.	129.	98.	62.
291	53.	42.	57.	76.	57.	83.	82.	93.	143.	177.
301	189.	269.	261.	241.	172.	116.	55.	30.	18.	22.
311	17.	13.	8.	8.	5.	1.	3.	4.	4.	2.
321	2.	5.	6.	9.	2.	7.	5.	8.	6.	11.
331	12.	10.	18.	18.	20.	16.	9.	31.	24.	35.
341	37.	40.	61.	69.	81.	81.	116.	164.	219.	278.
351	461.	570.	638.	589.	442.	431.	461.	567.	756.	1137.
361	1544.	1961.	1982.	1347.	625.	164.	31.	5.	3.	6.
371	3.	3.	3.	2.	0.	2.	0.	2.	0.	0.
381	1.	1.	0.	1.	1.	1.	1.	0.	1.	0.
391	0.	0.	0.	0.	0.	0.	1.	2.	3.	0.
401	0.	0.	0.	1.	1.	0.	0.	1.	0.	0.
411	3.	0.	1.	1.	1.	1.	0.	0.	1.	0.
421	0.	0.	1.	1.	2.	0.	1.	0.	0.	1.
431	0.	0.	3.	0.	1.	2.	0.	0.	1.	1.
441	0.	1.	0.	0.	0.	1.	0.	1.	0.	0.
451	0.	0.	1.	0.	0.	2.	1.	1.	0.	0.
461	0.	0.	0.	1.	2.	1.	0.	3.	0.	1.
471	4.	8.	3.	14.	13.	13.	9.	8.	3.	3.
481	5.	2.	6.	3.	0.	0.	0.	0.	1.	0.
491	0.	0.	1.	1.	0.	1.	0.	0.	1.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 29531

Analyst: rro

Instrument: AB18

Book#: _____

Method: LA-953-104 Rev/Mod _____

Worklist Comment: U-103 GRAB2, @PU23901, STD = 1.0mL, SS by Ludlum. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@PU23901 PU23901	SOLID	1.26E-04	1.43E-4	113.492 %	Recovery
1 STD		0	@PU23901 PU23901T	SOLID	100	8.95E+01	89.500 %	Recovery
1 STD		0	@PU23901 PU23901E	SOLID	1	1.94E+00	1.940 %	Ct Error
2 BLNK-PREP		0	@PU23901 PU23901	SOLID	1	<1.24E-3		uCi/g
2 BLNK-PREP		0	@PU23901 PU23901T	SOLID	100	9.39E+01	93.900 %	Recovery
2 BLNK-PREP		0	@PU23901 PU23901E	SOLID	1	1.00E+02	100.000	uCi/g
3 SAMPLE	S99T000551	0 F	@PU23901 PU23901	SOLID	N/A	2.84E-03	1.35E-003	uCi/g
3 SAMPLE	S99T000551	0 F	@PU23901 PU23901T	SOLID	N/A	9.44E+01		% Recovery
3 SAMPLE	S99T000551	0 F	@PU23901 PU23901E	SOLID	N/A	5.84E+00		% Ct. Error
4 DUP	S99T000551	0 F	@PU23901 PU23901	SOLID	2.84E-3	3.04E-3	6.803	RPD
4 DUP	S99T000551	0 F	@PU23901 PU23901T	SOLID	100	9.76E+01	97.600 %	Recovery
4 DUP	S99T000551	0 F	@PU23901 PU23901E	SOLID	1.00	5.26E+00	5.260 %	Ct Error
5 SAMPLE	S99T000554	0 F	@PU23901 PU23901	SOLID	N/A	2.95E-03	1.48E-003	uCi/g
5 SAMPLE	S99T000554	0 F	@PU23901 PU23901T	SOLID	N/A	8.39E+01		% Recovery
5 SAMPLE	S99T000554	0 F	@PU23901 PU23901E	SOLID	N/A	6.79E+00		% Ct. Error
6 DUP	S99T000554	0 F	@PU23901 PU23901	SOLID	2.95E-3	3.52E-3	17.620	RPD
6 DUP	S99T000554	0 F	@PU23901 PU23901T	SOLID	100	8.90E+01	89.000 %	Recovery
6 DUP	S99T000554	0 F	@PU23901 PU23901E	SOLID	1.00	5.28E+00	5.280 %	Ct Error
7 SAMPLE	S99T000555	0 F	@PU23901 PU23901	SOLID	N/A	1.27E-03	1.26E-003	uCi/g
7 SAMPLE	S99T000555	0 F	@PU23901 PU23901T	SOLID	N/A	9.75E+01		% Recovery
7 SAMPLE	S99T000555	0 F	@PU23901 PU23901E	SOLID	N/A	8.49E+00		% Ct. Error
8 DUP	S99T000555	0 F	@PU23901 PU23901	SOLID	1.27E-3	1.76E-3	32.343	RPD
8 DUP	S99T000555	0 F	@PU23901 PU23901T	SOLID	100	9.80E+01	98.000 %	Recovery
8 DUP	S99T000555	0 F	@PU23901 PU23901E	SOLID	1.00	7.02E+00	7.020 %	Ct Error

Final page for worklist# 29531

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Relyea
Reviewer Signature _____ Date *5 May 99*

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

HNF-1668 REV. 0
LABCORE Data Entry Template for Worklist# 29531

Analyst: RRU Instrument: PU01 R Book# 46B57

Method: LA-953-104 Rev/Mod B-1

Worklist Comment: U-103 GRAB2, @PU23901, STD= 1.0mL, SS by Ludlum. skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@PU23901	SOLID		
2 BLNK-PREP			@PU23901	SOLID		
3 SAMPLE	S99T000551	0 F	@PU23901	SOLID	99000104	U-103 GRAB2
Analytes Requested: PU23901 , PU23901E, PU23901T						
4 DUP	S99T000551	0 F	@PU23901	SOLID		
5 SAMPLE	S99T000554	0 F	@PU23901	SOLID	99000104	U-103 GRAB2
Analytes Requested: PU23901 , PU23901E, PU23901T						
6 DUP	S99T000554	0 F	@PU23901	SOLID		
7 SAMPLE	S99T000555	0 F	@PU23901	SOLID	99000104	U-103 GRAB2
Analytes Requested: PU23901 , PU23901E, PU23901T						
8 DUP	S99T000555	0 F	@PU23901	SOLID		

Final page for worklist # 29531

RR O'Dell 5-3-99
Signature Date

Nora E. Wright 5/4/99
Signature Date
Spera Z Chane 5/4/99

Data Entry Comments:

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

HNF-1668 REV. 0

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ^{6.1.1.1-99} LIQUID

Type	DATE COUNTED	MAY-04-99	PU 236 AEA FRAC (C236)	STD
STD	SAMPLE VOLUME in mL	SS	1.000	0.321
Work List:	SAMPLE DILUTION FACTOR	DF	1.000	0.000
29531	TRACER VOLUME in mL	SPKV	0.100	0.616
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	3731
@PU23901	TRACER BOOK NO	145B43	TOTAL AT COUNTS	30
Matrix:	DETECTOR NUMBER	18	AT COUNT TIME (MIN)	30
LIQUID	EFFICIENCY FACTOR	EFF	0.269	0.030
Batch Number	TRACER PREPARATION DATE	01/19/98	BACKGROUND in cpm (Bkg)	0.030
99001846	TRACER PREPARATION VALUE (dpm/mL)	2270.000	PU 236 cpm	32.160
Return	PU-236 DECAY CORR'D VALUE (dpm/mL)	1659.998	PU 238 cpm	0.000
0	PU-238 TRACER VALUE (dpm/mL)	0.000	PU 239 cpm	61.860
Sample Prep	STANDARD BOOK NO	46B57	AEA COUNT TIME	480
N/A	STANDARD VALUE in µCi/mL	1.260E-04	Pu 239/240 µCi/L	1.4349E-01
Sample #	WL29531-STD			
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date			
WB27809	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]			
Prepared By	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * 1/EFF * C236 * 100 / Pu-236 Decay Corr'd Value * SPKV			
NEW	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(2220000 dpm/µCi)]			
Chemist	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)			
JFR	Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery / 100)(2220000 dpm/µCi)(D g/L)(SS)]			
Analyst	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
RRO				
Date Complete	05/04/99		Pu 239/240 µCi/mL = 1.43E-04	
Analysis Date	05/03/99		DETECTION LEVELS in µCi/mL	
Analysis Time	03:10 PM		Pu 239/240 7.81E-06	
Sample Point	U-103 GRAB2		Pu 236 Tracer Recovery = 89.5%	

Analyst:	RRO	Date:	04-May-99
Signature of Chemist:	<i>John Deluca</i>	JFR	Date: 5 May 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) *11/10/99* L

Type	DATE COUNTED	MAY-04-99	PU 236 AEA FRAC (C236)	0.923	
BLNK-PREP	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)	0.000
29531	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1361
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.0904	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cp (Bkg)	0.030
Matrix	DETECTOR NUMBER		18	PU 236 cpm	25.190
SOLID	EFFICIENCY FACTOR	EFF	0.2686	PU 238 cpm	0.000
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm	0.000
99001846	TRACER PREPARATION VALUE (dpm/mL)		2270.00	AEA COUNT TIME	480
Regrn	PU-236 DECAY CORR'D VALUE (dpm/mL)		1660.00	Pu 239/240 µCi/g =	< 1.239E-03
0	PU-238 TRACER VALUE (dpm/mL)		0.00		

Sample Prep	N/A
Sample #	WL29531-BLK
Instrument Code	WB27809
Prepared By	NEW
Chemist	JFR
Analyst	RRO
Date Complete	05/04/99

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/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

Analysis Date	05/03/99	Pu 239/240 µCi/g	< 1.24E-03	DETECTION LEVELS in µCi/g
Analysis Time	03:10 PM	Relative Counting Error	= 100.0%	
Sample Point	U-103 GRAB2	NOTE: Pu 238 Result is a LESS THAN Value.		
		Pu 238 µCi/g	< 1.24E-03	
		Pu 236 Tracer Recovery	= 93.9%	

Analyst:	RRO	Date:	04-May-99
Signature of Chemist:	<i>John Relyea</i>	Date:	<i>5 May 99</i>

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ¹⁰⁷⁴⁴ LIQUID /

				SAMPLE	
Type	DATE COUNTED		MAY-04-99	PU 236 AEA FRAC (C236)	0.844
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.019
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.067
29531	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1497
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.0904	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER		18	PU 236 cpm	31.790
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm	0.710
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm	2.530
99001846	TRACER PREPARATION VALUE (dpm/mL)		2270.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		1659.998	Pu 239/240 µCi/g	2.8396E-03
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep
FUSION01
Sample #
S99T000551
Instrument Code
WB27809
Prepared By
NEW
Chemist
JFR
Analyst
RRO
Date Complete
05/04/99

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/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

Date Complete	Pu 239/240 µCi/g	2.84E-03	DETECTION LEVELS in µCi/g
05/04/99	Relative Counting Error =	5.8%	
05/03/99	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240
03:10 PM	Pu 238 µCi/g	< 1.35E-03	1.35E-03
Sample Point	Relative Counting Error =	10.7%	Pu 238
U-103 GRAB2	Pu 236 Tracer Recovery =	94.4%	1.35E-03

Analyst:	RRO	Date:	04-May-99
Signature of Chemist:	<i>John Rehyea</i>	Date:	<i>5 May 99</i>

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-~~0~~) ¹ ^{MD} ₁₋₁₋₉₉ LIQUID /

Type	DATE COUNTED	MAY-04-99	PU 236 AEA FRAC (C236)	DUP
DUP	SAMPLE VOLUME in mL SS	1.000	PU 238 AEA FRAC (C238)	0.847
Work List	SAMPLE DILUTION FACTOR DF	1.000	PU 239 AEA FRAC (C239)	0.016
29531	TRACER VOLUME in mL SPKV	0.100	TOTAL AT COUNTS	0.080
Test Code	DIGEST GRAMS of SOLIDS/L Dg/L	2.3236	AT COUNT TIME (MIN)	1542
@PU23901	TRACER BOOK NO	145B43	BACKGROUND in cpm (Bkg)	30
Matrix	DETECTOR NUMBER	18	PU 236 cpm	0.030
SOLID	EFFICIENCY FACTOR EFF	0.269	PU 238 cpm	33.720
Batch Number	TRACER PREPARATION DATE	01/19/98	PU 239 cpm	0.650
99001846	TRACER PREPARATION VALUE (dpm/mL)	2270.000	AEA COUNT TIME	3.170
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1659.998	Pu 239/240 µCi/g	480
0	PU-238 TRACER VALUE (dpm/mL)	0.000		3.0395E-03

Sample Prep
FUSION01
Sample #
S99T000551
Instrument Code
WB27809
Prepared By
NEW
Chemist
JFR
Analyst
RRO
Date Complete
05/04/99

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/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

Date Complete	Pu 239/240 µCi/g	3.04E-03	DETECTION LEVELS in µCi/g
05/04/99	Relative Counting Error =	5.3%	Pu 239/240
05/03/99	NOTE: Pu 238 Result is a LESS THAN Value.		1.17E-03
03:10 PM	Pu 238 µCi/g	< 1.17E-03	Pu 238
Sample Point	Relative Counting Error =	11.2%	1.17E-03
U-103 GRAB2	Pu 236 Tracer Recovery =	97.6%	

Analyst:	RRO	Date:	04-May-99
Signature of Chemist:	<i>John Relyea</i>	Date:	5 May 99

SAMPLE.WB1 REV 1.0 943128ML

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ¹⁰⁰ ₇₋₄₄ LIQUID /

Type	DATE COUNTED	MAY-04-99	PU 236 AEA FRAC (C236)	SAMPLE	0.850
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC (C238)	0.038
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC (C239)	0.071
29531	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS	1322
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.1180	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO		145B43	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER		18	PU 236 cpm	22.680
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm	1.020
Batch Number	TRACER PREPARATION DATE		01/19/98	PU 239 cpm	1.880
99001846	TRACER PREPARATION VALUE (dpm/mL)		2270.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		1659.998	Pu 239/240 µCi/g	2.9490E-03
0	PU-238 TRACER VALUE (dpm/mL)		0.000		

Sample Prep	FUSION01
Sample #	S99T000554
Instrument Code	WB27809
Prepared By	NEW
Chemist	JFR
Analyst	RRO
Date Complete	05/04/99
Analysis Date	05/03/99
Analysis Time	03:10 PM
Sample Point	U-103 GRAB2

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

05/04/99	Pu 239/240 µCi/g	2.95E-03	DETECTION LEVELS in µCi/g
05/03/99	Relative Counting Error =	6.8%	
03:10 PM	Pu 238 µCi/g	1.58E-03	Pu 239/240
U-103 GRAB2	Relative Counting Error =	9.1%	Pu 238
	Pu 236 Tracer Recovery =	83.9%	1.48E-03

Analyst:	RRO	Date:	04-May-99
Signature of Chemist:	<i>John Relyea</i>	Date:	5 May 99

SAMPLE.WB1 REV 1.0

943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ¹ ₁₋₂₋₉₉

LIQUID /

Type	DATE COUNTED	MAY-04-99	PU 236 AEA FRAC (C236)	DUP
DUP	SAMPLE VOLUME in mL	SS	1.000	0.826
WorkList	SAMPLE DILUTION FACTOR	DF	1.000	0.035
29531	TRACER VOLUME in mL	SPKV	0.100	0.082
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.1112	1442
@PU23901	TRACER BOOK NO	145B43	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER	18	PU 236 cpm	31.650
SOLID	EFFICIENCY FACTOR	EFF	0.269	1.340
Batch Number	TRACER PREPARATION DATE	01/19/98	PU 238 cpm	3.160
99001846	TRACER PREPARATION VALUE (dpm/mL)	2270.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1659.998	Pu 239/240 µCi/g	3.5161E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep	FUSION01
Sample #	S99T000554
Instrument Code	WB27809
Prepared By	NEW
Chemist	JFR
Analyst	RRO
Date Complete	05/04/99

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/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

Analysis Date	05/03/99	Pu 239/240 µCi/g	3.52E-03	DETECTION LEVELS in µCi/g
Analysis Time	03:10 PM	Relative Counting Error	= 5.3%	
Sample Point	U-103 GRAB2	Pu 238 µCi/g	1.50E-03	Pu 239/240
		Relative Counting Error	= 7.9%	1.45E-03
		Pu 236 Tracer Recovery	= 89.0%	Pu 238
				1.45E-03

Analyst:	RRO	Date:	04-May-99
Signature of Chemist:	<i>John Relyea</i>	Date:	5 May 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) ¹⁰⁰ ₁₂₋₉₉ LIQUID /				SAMPLE
Type	DATE COUNTED	MAY-04-99	PU 236 AEA FRAC (C236)	0.897
SAMPLE	SAMPLE VOLUME in mL	SS 1.000	PU 238 AEA FRAC (C238)	0.014
Work List	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.031
29531	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	1455
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L 2.0412	AT COUNT TIME (MIN)	30
@PU23901	TRACER BOOK NO	145B43	BACKGROUND in cpm (Bkg)	0.030
Matrix	DETECTOR NUMBER	18	PU 236 cpm	32.720
SOLID	EFFICIENCY FACTOR	EFF 0.269	PU 238 cpm	0.510
Batch Number	TRACER PREPARATION DATE	01/19/98	PU 239 cpm	1.150
99001846	TRACER PREPARATION VALUE (dpm/mL)	2270.000	AEA COUNT TIME	480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1659.998	Pu 239/240 µCi/g =	1.2660E-03
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep: FUSION01

Sample #: S99T000555

Instrument Code: WB27809

Prepared By: NEW

Chemist: JFR

Analyst: RRO

Date Complete: 05/04/99

Analysis Date: 05/03/99

Analysis Time: 03:10 PM

Sample Point: U-103 GRAB2

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

Date Complete	Pu 239/240 µCi/g	1.27E-03	DETECTION LEVELS in µCi/g
Analysis Date	Relative Counting Error =	8.5%	
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		
Sample Point	Relative Counting Error =	12.6%	
	Pu 238 µCi/g	< 1.26E-03	Pu 239/240
	Pu 236 Tracer Recovery =	97.5%	Pu 238
			1.26E-03

Analyst:	RRO	Date:	04-May-99
Signature of Chemist:	<i>John Relyea</i>	Date:	5 May 99

SAMPLE.WB1 REV 1.0 943128ML

Pu 238 and 239/240 : LA-943-128 (VOID) or LA-953-104(B-0) ¹²⁻⁹⁹ LIQUID /

Type	DATE COUNTED	MAY-04-99	PU 236 AEA FRAC (C236)	DUP
DUP	SAMPLE VOLUME in mL	SS	1.000	0.892
Work List	SAMPLE DILUTION FACTOR	DF	1.000	0.014
29531	TRACER VOLUME in mL	SPKV	0.100	0.046
Test Code	DIGEST GRAMS of SOLIDS/L	Dg/L	2.1896	TOTAL AT COUNTS
@PU23901	TRACER BOOK NO	145B43		1470
Matrix	DETECTOR NUMBER	18	BACKGROUND in cpm (Bkg)	0.030
SOLID	EFFICIENCY FACTOR	EFF	0.269	PU 236 cpm
Batch Number	TRACER PREPARATION DATE	01/19/98		33.140
99001846	TRACER PREPARATION VALUE (dpm/mL)	2270.000		PU 238 cpm
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)	1659.998		PU 239 cpm
0	PU-238 TRACER VALUE (dpm/mL)	0.000		1.710
			Pu 239/240 µCi/g =	1.7611E-03
Sample Prep				
FUSION01				
Sample #	Decay Time = Date Counted - Tracer Preparation Date			
S99T000555	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of {(-ln2 * Decay Time/1040.95)}]			
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)			
WB27809	Pu 239/240 µCi/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)			
NEW	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				
RRO				
Date Complete				
05/04/99	Pu 239/240 µCi/g	1.76E-03		
Analysis Date	Relative Counting Error	= 7.0%		
05/03/99				
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			
03:10 PM	Pu 238 µCi/g	< 1.17E-03		
Sample Point	Relative Counting Error	= 12.7%		
U-103 GRAB2	Pu 236 Tracer Recovery	= 98.0%		

DETECTION LEVELS in µCi/g
Pu 239/240
1.17E-03
Pu 238
1.17E-03

Analyst:	RRO	Date:	04-May-99
Signature of Chemist:	<i>John Relyea</i>	JFR	Date: 5 May 99

SAMPLE.WB1 REV 1.0 943128ML

HNF-1668 REV. 0

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 WL29531-STD
 File ID: 2a2045.CNF

Counted on: 5/ 4/99 @ 2:44
 Detector: AEA2
 Geometry number: 1
 Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	966.8	966.8	362.885	362.885	10.000	3.633	5.000	1.217
2?	39.6	39.6	302.499	301.490	12.000	0.416	6.000	0.232
3	69.5	69.5	287.776	287.590	10.000	3.288	5.000	1.747
4	18.0	18.0	272.413	271.271	10.000	3.414	5.000	0.415
5	2198.3	2198.3	229.061	229.060	12.000	3.759	6.000	1.691
6?	11.2	11.2	160.002	159.879	92.000	1.000	46.000	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	Pu236	0.321	5.755	5.761	-.0060	0.02	32.16	1.6	140.9	0.635E-04
	Cm243		5.779	5.761	0.018				189.2	0.852E-04
2		????		5.479			0.67	11.9		
3	Th228	0.017	5.400	5.415	-.0150	0.02	1.74	7.6	10.5	0.473E-05
4		0.013		5.340		0.02	1.29	9.5	5.5	0.249E-05
5	Pu239	0.616	5.147	5.145	0.0020	0.02	61.86	1.1	265.6	0.120E-03
	Pu240		5.144	5.145	-.001				265.6	0.120E-03
6		????		4.827			0.90	9.7		
Totals:		0.967	<--valid peaks only-->				97.05			

DETECTOR CALIBRATION

Energy(MEV) = 4.092 + (0.0046)*Channel
 Energy range (MeV): 4.092 TO 6.447
 Efficiency = 0.2329 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48175.0	100.000
Smoothed	48173.2	99.996
Composite fit	47343.2	98.273
Residuals	831.8	1.727

HNF-1668 REV. 0

Raw Data Dump for AEA Spectrum: 2a2045.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
21	1.	0.	0.	0.	2.	1.	0.	0.	3.	1.
31	1.	0.	1.	1.	2.	0.	2.	2.	1.	0.
41	3.	0.	0.	2.	0.	0.	2.	0.	2.	1.
51	0.	2.	1.	3.	2.	0.	0.	2.	2.	1.
61	0.	0.	1.	1.	0.	0.	1.	1.	3.	1.
71	2.	1.	2.	0.	0.	4.	0.	1.	2.	2.
81	2.	3.	1.	3.	1.	1.	1.	0.	0.	2.
91	3.	1.	2.	3.	3.	1.	3.	2.	2.	2.
101	1.	3.	2.	2.	1.	2.	1.	2.	2.	2.
111	3.	6.	4.	1.	0.	3.	2.	2.	2.	5.
121	2.	2.	2.	4.	2.	1.	2.	7.	3.	6.
131	4.	4.	4.	4.	3.	2.	4.	4.	4.	1.
141	5.	5.	5.	5.	2.	5.	6.	7.	5.	8.
151	6.	6.	5.	6.	7.	13.	6.	9.	11.	12.
161	13.	7.	9.	9.	5.	14.	15.	17.	11.	11.
171	19.	11.	14.	13.	13.	17.	9.	14.	18.	19.
181	14.	24.	19.	28.	34.	30.	35.	23.	39.	28.
191	53.	55.	60.	42.	64.	73.	71.	85.	90.	101.
201	119.	111.	122.	130.	148.	168.	185.	199.	245.	259.
211	306.	319.	375.	360.	482.	554.	613.	763.	784.	876.
221	926.	1093.	1096.	1321.	1522.	1750.	2135.	2378.	2611.	2516.
231	2113.	1542.	892.	439.	132.	34.	16.	13.	6.	8.
241	10.	8.	8.	4.	8.	7.	10.	1.	10.	8.
251	11.	12.	10.	16.	12.	13.	15.	15.	11.	18.
261	13.	10.	12.	10.	16.	20.	20.	22.	20.	27.
271	28.	28.	34.	24.	23.	22.	16.	27.	27.	22.
281	32.	37.	38.	55.	61.	79.	84.	95.	76.	70.
291	47.	25.	25.	13.	19.	14.	16.	24.	12.	17.
301	14.	27.	16.	22.	18.	15.	17.	17.	11.	10.
311	5.	13.	15.	13.	12.	16.	8.	17.	22.	17.
321	23.	16.	17.	27.	17.	26.	29.	29.	31.	31.
331	50.	53.	47.	54.	55.	63.	83.	81.	83.	102.
341	104.	123.	161.	158.	174.	185.	206.	254.	301.	332.
351	364.	488.	572.	593.	602.	583.	570.	617.	681.	782.
361	928.	1017.	1121.	1129.	879.	611.	322.	115.	38.	13.
371	8.	8.	2.	1.	4.	1.	2.	2.	1.	3.
381	3.	4.	1.	1.	4.	2.	1.	3.	4.	0.
391	0.	1.	0.	1.	1.	0.	0.	0.	0.	0.
401	1.	1.	0.	1.	1.	1.	1.	0.	0.	4.
411	2.	0.	2.	2.	0.	1.	0.	0.	2.	3.
421	2.	2.	1.	0.	2.	1.	0.	2.	1.	1.
431	2.	0.	1.	2.	2.	1.	2.	1.	0.	3.
441	1.	0.	1.	1.	1.	1.	0.	3.	1.	1.
451	0.	2.	0.	1.	1.	1.	3.	0.	3.	0.
461	2.	0.	2.	3.	0.	2.	1.	0.	0.	2.
471	2.	2.	2.	3.	1.	9.	5.	4.	7.	6.
481	7.	3.	4.	2.	2.	2.	0.	2.	1.	1.
491	3.	1.	0.	2.	0.	0.	3.	3.	1.	2.
511	1.	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
 WL29531-BLK
 File ID: 3a3466.CNF

Counted on: 5/ 4/99 @ 2:45
 Detector: AEA3
 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	607.0	607.0	360.025	360.025	12.000	3.908	6.000	0.962
2	41.6	41.6	285.672	285.563	10.000	3.954	5.000	1.541
3	12.6	12.6	267.790	266.696	12.000	3.902	6.000	0.748

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp. Obs. Diff.	Count Rate	%err @95	Activity uCi/ea	d/m
1	Pu236	0.923	5.755 5.752 0.0030.02	25.18	1.8	0.493E-04	109.4
2	Th228	0.047	5.400 5.409 -.0090.02	1.28	8.8	0.346E-05	7.7
3		0.023	5.323 0.02	0.63	15.4	0.120E-05	2.7
Totals:		0.993	<--valid peaks only-->	27.09			

DETECTOR CALIBRATION

Energy(MEV) = 4.096 + (0.0046)*Channel
 Energy range (MeV): 4.096 TO 6.451
 Efficiency = 0.2349 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	13105.0	100.000
Smoothed	13105.5	100.004
Composite fit	13008.4	99.263
Residuals	96.6	0.737

Analyzed by: _____

EMB

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 3883.4

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Raw Data Dump for AEA Spectrum: 3a3466.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
31	0.	0.	3.	0.	1.	0.	0.	0.	0.	0.	0.
41	0.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	4.	0.	0.	2.
71	0.	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.
81	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.
91	1.	0.	0.	0.	0.	1.	0.	1.	1.	1.	0.
101	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
111	0.	0.	1.	0.	0.	0.	1.	0.	1.	0.	0.
121	0.	1.	0.	1.	2.	0.	0.	3.	0.	0.	1.
131	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	2.
141	4.	1.	0.	1.	0.	1.	1.	2.	0.	0.	1.
151	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
161	0.	2.	0.	1.	1.	2.	0.	2.	0.	0.	0.
171	0.	3.	0.	3.	0.	1.	1.	1.	1.	1.	2.
181	0.	1.	0.	1.	0.	2.	0.	0.	0.	1.	0.
191	1.	0.	1.	2.	3.	1.	2.	2.	2.	2.	1.
201	3.	2.	3.	0.	0.	2.	2.	3.	1.	1.	3.
211	4.	4.	1.	2.	1.	3.	1.	6.	2.	2.	4.
221	2.	4.	6.	2.	5.	4.	2.	4.	3.	3.	1.
231	3.	6.	3.	1.	1.	5.	4.	7.	3.	3.	3.
241	7.	4.	6.	6.	6.	2.	2.	5.	7.	7.	8.
251	7.	8.	12.	11.	11.	14.	10.	5.	18.	18.	12.
261	9.	13.	17.	15.	19.	16.	25.	21.	21.	21.	14.
271	20.	15.	17.	20.	11.	13.	18.	30.	28.	28.	35.
281	30.	38.	32.	45.	48.	60.	41.	42.	31.	31.	12.
291	11.	14.	5.	9.	14.	8.	13.	14.	21.	21.	9.
301	23.	18.	13.	18.	25.	17.	18.	16.	20.	20.	24.
311	16.	34.	28.	26.	27.	23.	26.	35.	25.	25.	28.
321	39.	37.	42.	55.	43.	43.	65.	47.	56.	56.	67.
331	83.	95.	87.	84.	102.	111.	116.	129.	136.	136.	171.
341	148.	169.	207.	199.	238.	280.	263.	316.	367.	367.	463.
351	401.	417.	441.	400.	385.	437.	498.	589.	634.	634.	688.
361	683.	599.	452.	257.	107.	27.	5.	2.	2.	2.	4.
371	1.	1.	3.	1.	2.	1.	1.	2.	0.	0.	2.
381	2.	0.	0.	1.	1.	0.	0.	2.	1.	1.	0.
391	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
401	0.	0.	0.	0.	2.	2.	0.	0.	0.	0.	1.
411	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
421	1.	2.	0.	0.	0.	0.	0.	2.	1.	1.	1.
431	0.	0.	0.	0.	3.	0.	0.	1.	1.	1.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
451	0.	2.	0.	1.	1.	0.	0.	0.	0.	0.	1.
461	0.	1.	1.	0.	0.	2.	2.	3.	0.	0.	1.
471	6.	1.	6.	2.	8.	2.	2.	2.	4.	4.	1.
481	0.	2.	1.	0.	0.	0.	1.	1.	0.	0.	0.
491	0.	1.	0.	1.	1.	2.	0.	2.	1.	1.	0.
511	2.	0.									

HNF-1668 REV. 0

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S999T551-SAM
 File ID: 4a4457.CNF

Counted on: 5/ 4/99 @ 2:45
 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	1059.6	1059.6	359.574	359.574	10.000	3.043	5.000	1.139
2	31.0	31.0	300.831	300.630	32.000	5.362	16.000	16.039
3	74.4	74.4	285.382	285.354	10.000	3.376	5.000	1.279
4?	12.2	12.2	270.283	270.283	12.000	0.361	6.000	6.059
5?	12.2	12.2	266.806	265.266	6.000	1.210	3.000	0.527
6	95.9	95.9	227.173	227.168	12.000	3.614	6.000	1.811

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	0.844	5.755	5.741	0.014	0.01	31.79	1.6	138.5	0.624E-04	
2	Pu238	0.019	5.487	5.470	0.017	0.02	0.71	12.2	4.2	0.191E-05	
	Am241		5.479	5.470	0.009				3.2	0.146E-05	
3	Th228	0.060	5.400	5.400	0.000	0.02	2.26	6.2	13.6	0.612E-05	
4		????		5.331			0.07	94.1			
5		????		5.308			0.28	27.6			
6	Pu239	0.067	5.147	5.132	0.015	0.02	2.53	5.7	10.8	0.486E-05	
	Pu240		5.144	5.132	0.012				10.8	0.486E-05	
Totals:		0.991	<--valid peaks only-->					37.30			

DETECTOR CALIBRATION

Energy(MEV) = 4.087 + (0.0046)*Channel
 Energy range (MeV): 4.087 TO 6.443
 Efficiency = 0.2342 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18074.0	100.000
Smoothed	18073.3	99.996
Composite fit	18076.6	100.014
Residuals	-2.6	-0.014

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 6360.9

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HNF-1668 REV. 0

Raw Data Dump for AEA Spectrum: 4a4457.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.	0.	0.	0.	0.	0.	0.	1.
31	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	1.	1.	0.	0.	2.	1.	0.	0.	0.	0.
61	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
71	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	0.	2.	0.	0.	0.	1.	0.	0.
91	0.	1.	0.	0.	1.	0.	0.	1.	0.	0.
101	0.	0.	1.	0.	0.	0.	1.	1.	0.	2.
111	0.	4.	1.	1.	1.	1.	1.	0.	1.	0.
121	1.	1.	0.	4.	0.	0.	1.	1.	0.	0.
131	3.	1.	0.	0.	0.	1.	0.	0.	0.	1.
141	1.	1.	1.	1.	0.	1.	1.	1.	1.	2.
151	0.	2.	1.	1.	1.	2.	1.	0.	1.	2.
161	1.	0.	2.	1.	2.	1.	0.	1.	0.	2.
171	2.	1.	0.	1.	2.	5.	2.	0.	1.	0.
181	1.	1.	2.	2.	2.	3.	2.	1.	3.	2.
191	3.	3.	1.	5.	4.	4.	4.	5.	6.	4.
201	5.	4.	7.	9.	7.	6.	10.	7.	7.	9.
211	14.	15.	21.	19.	29.	18.	26.	45.	44.	35.
221	41.	57.	60.	74.	82.	99.	124.	108.	89.	67.
231	41.	14.	10.	4.	4.	4.	10.	0.	3.	3.
241	4.	6.	5.	2.	9.	5.	2.	5.	8.	3.
251	3.	9.	5.	12.	4.	12.	8.	8.	12.	18.
261	12.	11.	17.	23.	24.	27.	29.	16.	17.	30.
271	29.	17.	19.	23.	18.	26.	25.	35.	34.	36.
281	33.	46.	88.	72.	86.	91.	83.	55.	29.	16.
291	7.	13.	10.	21.	14.	20.	17.	24.	24.	33.
301	25.	35.	24.	17.	11.	13.	12.	5.	4.	3.
311	3.	11.	9.	9.	17.	12.	8.	11.	19.	10.
321	15.	16.	21.	22.	19.	28.	29.	25.	33.	42.
331	45.	44.	47.	52.	69.	95.	91.	89.	112.	122.
341	143.	159.	199.	196.	253.	281.	328.	408.	518.	610.
351	625.	612.	544.	569.	640.	736.	852.	1044.	1186.	1253.
361	1245.	845.	420.	147.	24.	6.	1.	4.	1.	1.
371	2.	3.	1.	3.	2.	1.	1.	1.	1.	0.
381	1.	2.	0.	1.	2.	3.	2.	1.	1.	4.
391	0.	0.	0.	3.	3.	1.	0.	1.	1.	1.
401	1.	0.	1.	1.	0.	0.	0.	0.	0.	0.
411	0.	0.	1.	0.	0.	0.	2.	2.	1.	1.
421	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	1.	1.	0.	0.	1.	2.	1.	1.	0.
441	2.	1.	0.	0.	1.	0.	0.	1.	0.	0.
451	1.	0.	0.	1.	1.	0.	3.	1.	1.	2.
461	3.	3.	2.	2.	2.	2.	2.	2.	4.	6.
471	4.	9.	6.	14.	6.	6.	11.	2.	1.	2.
481	0.	0.	1.	1.	2.	0.	0.	1.	0.	1.
491	0.	1.	0.	0.	1.	0.	1.	2.	1.	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
 S99T551-DUP
 File ID: 5a5382.CNF

Counted on: 5/ 4/99 @ 2:46
 Detector: AEA5
 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	1016.8	1016.8	362.337	362.337	10.000	3.622	5.000	1.217
2	28.5	28.5	303.836	303.383	30.000	5.179	15.000	15.100
3	74.8	74.8	287.233	287.209	12.000	4.382	6.000	2.886
4	23.3	23.3	270.587	269.696	12.000	4.904	6.000	1.689
5	109.5	109.5	229.015	229.006	12.000	4.332	6.000	1.968

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	0.847	5.755	5.760	-.0050	0.02	33.72	1.5	137.7	0.620E-04	
	Cm243		5.779	5.760	0.019				184.9	0.833E-04	
2	Pu238	0.016	5.487	5.489	-.0020	0.02	0.65	14.0	3.6	0.162E-05	
	Am241		5.479	5.489	-.010				2.7	0.124E-05	
3	Th228	0.046	5.400	5.415	-.0150	0.02	1.85	7.0	10.4	0.470E-05	
4		0.020		5.334	0.02		0.81	13.1	3.2	0.146E-05	
5	Pu239	0.080	5.147	5.147	0.0000	0.02	3.17	5.1	12.7	0.571E-05	
	Pu240		5.144	5.147	-.003				12.7	0.571E-05	
Totals:		1.009	<--valid peaks only-->				40.20				

DETECTOR CALIBRATION

Energy(MEV) = 4.094 + (0.0046)*Channel
 Energy range (MeV): 4.094 TO 6.449
 Efficiency = 0.2499 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	19116.0	100.000
Smoothed	19115.3	99.996
Composite fit	19297.6	100.950
Residuals	-181.6	-0.950

Spectrum 5a5382.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5965.2

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Raw Data Dump for AEA Spectrum: 5a5382.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.	0.	0.	0.	0.	1.
31	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	2.	0.	0.	0.
51	0.	0.	1.	0.	0.	1.	1.	0.	0.	0.
61	0.	0.	0.	2.	1.	0.	0.	0.	0.	0.
71	1.	0.	1.	1.	1.	1.	0.	0.	1.	0.
81	0.	0.	3.	3.	0.	0.	1.	0.	1.	2.
91	0.	1.	0.	0.	1.	0.	1.	0.	0.	0.
101	0.	1.	0.	2.	0.	1.	0.	1.	1.	0.
111	0.	0.	0.	0.	1.	0.	1.	0.	2.	0.
121	0.	1.	0.	1.	2.	2.	1.	2.	0.	0.
131	0.	1.	3.	1.	1.	1.	0.	1.	0.	0.
141	0.	0.	1.	2.	0.	0.	1.	1.	1.	0.
151	2.	2.	6.	2.	1.	2.	0.	1.	1.	1.
161	0.	1.	1.	1.	1.	0.	1.	1.	1.	4.
171	1.	3.	3.	1.	2.	2.	1.	3.	2.	2.
181	0.	3.	2.	1.	3.	6.	2.	4.	4.	1.
191	2.	4.	3.	3.	3.	4.	1.	6.	4.	6.
201	4.	7.	9.	5.	4.	10.	11.	11.	20.	23.
211	16.	11.	16.	20.	20.	34.	27.	37.	35.	37.
221	43.	55.	58.	68.	90.	91.	107.	107.	134.	126.
231	93.	84.	50.	34.	15.	5.	4.	3.	3.	3.
241	3.	4.	4.	3.	10.	9.	5.	5.	4.	2.
251	7.	8.	10.	9.	9.	10.	13.	8.	5.	17.
261	2.	12.	11.	13.	10.	22.	28.	21.	29.	38.
271	27.	20.	31.	24.	14.	26.	20.	14.	22.	38.
281	33.	31.	32.	49.	62.	89.	100.	87.	64.	62.
291	28.	28.	18.	15.	17.	25.	21.	18.	13.	25.
301	21.	15.	28.	31.	22.	26.	13.	12.	11.	9.
311	3.	15.	11.	13.	12.	21.	9.	11.	12.	10.
321	13.	15.	17.	18.	17.	20.	31.	23.	31.	32.
331	39.	47.	47.	43.	54.	61.	66.	73.	102.	91.
341	106.	111.	156.	152.	170.	194.	281.	294.	317.	396.
351	503.	555.	570.	617.	594.	613.	632.	719.	839.	894.
361	1025.	1168.	1198.	1064.	826.	444.	186.	53.	12.	6.
371	5.	5.	2.	2.	1.	1.	1.	3.	2.	2.
381	0.	4.	0.	0.	3.	0.	1.	2.	0.	3.
391	0.	0.	0.	0.	1.	0.	1.	1.	1.	1.
401	0.	0.	0.	2.	1.	2.	0.	1.	2.	1.
411	0.	0.	0.	2.	0.	1.	0.	2.	2.	0.
421	1.	0.	0.	2.	1.	1.	0.	0.	0.	1.
431	0.	1.	0.	3.	1.	1.	1.	2.	1.	1.
441	0.	1.	2.	1.	0.	0.	0.	2.	0.	0.
451	1.	1.	0.	1.	0.	0.	0.	0.	2.	1.
461	0.	2.	0.	1.	1.	1.	1.	2.	3.	3.
471	1.	1.	2.	5.	8.	8.	6.	8.	5.	8.
481	3.	2.	3.	1.	2.	4.	1.	1.	0.	2.
491	1.	0.	1.	1.	2.	2.	0.	1.	2.	1.
511	0.	0.								

222-S Analytical Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T554-SAM
 File ID: 6a6386.CNF

Counted on: 5/ 4/99 @ 2:46
 Detector: AEA6
 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	736.4	736.4	359.706	359.706	10.000	2.846	5.000	1.005
2	16.0	16.0	301.192	300.942	12.000	4.538	6.000	0.656
3	39.1	39.1	284.643	284.522	8.000	2.396	4.000	1.766
4	12.2	12.2	266.660	266.314	8.000	2.434	4.000	1.206
5	67.2	67.2	226.752	226.741	10.000	3.409	5.000	1.487

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	0.850	5.755	5.754	0.0010	10.01	22.68	1.9	117.7	0.530E-04
2	Pu238	0.038	5.487	5.484	0.0030	30.02	1.02	9.7	7.2	0.324E-05
	Am241		5.479	5.484	-0.005				5.5	0.248E-05
3	Th228	0.029	5.400	5.408	-0.0080	80.01	0.77	14.0	5.5	0.249E-05
4		0.011		5.324		0.01	0.29	25.6	1.5	0.675E-06
5	Pu239	0.071	5.147	5.142	0.0050	50.02	1.88	6.6	9.6	0.431E-05
	Pu240		5.144	5.142	0.002				9.6	0.431E-05

Totals: 0.999 <---valid peaks only--> 26.64

DETECTOR CALIBRATION

Energy(MEV) = 4.099 + (0.0046)*Channel
 Energy range (MeV): 4.099 TO 6.454
 Efficiency = 0.1966 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	12801.0	100.000
Smoothed	12800.7	99.997
Composite fit	12790.0	99.914
Residuals	11.0	0.086

Spectrum 6a6386.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 4299.8

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Raw Data Dump for AEA Spectrum: 6a6386.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
21	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	1.	0.	2.	0.	1.
51	1.	0.	1.	0.	0.	0.	0.	1.	0.	0.
61	0.	0.	0.	1.	0.	0.	0.	1.	1.	1.
71	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
81	1.	0.	0.	0.	0.	1.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
101	2.	1.	0.	2.	0.	0.	0.	1.	0.	1.
111	0.	1.	0.	2.	0.	1.	0.	2.	1.	0.
121	1.	0.	0.	0.	1.	0.	1.	1.	1.	1.
131	3.	0.	1.	0.	2.	3.	2.	0.	0.	1.
141	1.	0.	0.	0.	3.	0.	1.	2.	1.	0.
151	0.	1.	1.	0.	0.	3.	0.	1.	0.	1.
161	1.	2.	1.	2.	0.	2.	1.	2.	0.	3.
171	0.	3.	0.	0.	0.	3.	1.	0.	0.	1.
181	1.	1.	3.	2.	2.	1.	1.	3.	1.	5.
191	2.	2.	1.	3.	1.	7.	2.	1.	6.	5.
201	2.	5.	5.	6.	5.	7.	7.	12.	4.	11.
211	13.	12.	19.	15.	22.	28.	31.	27.	28.	38.
221	42.	38.	43.	61.	61.	66.	95.	62.	59.	43.
231	15.	6.	7.	4.	1.	4.	2.	6.	1.	5.
241	2.	1.	3.	6.	2.	3.	4.	4.	7.	4.
251	3.	5.	10.	9.	11.	1.	2.	8.	3.	14.
261	12.	8.	13.	13.	15.	19.	26.	16.	11.	12.
271	10.	9.	15.	10.	9.	16.	16.	20.	27.	23.
281	33.	47.	46.	48.	61.	56.	35.	21.	15.	10.
291	9.	11.	14.	8.	15.	12.	11.	15.	17.	17.
301	22.	21.	19.	12.	9.	9.	10.	9.	5.	6.
311	9.	7.	10.	2.	9.	9.	10.	12.	14.	26.
321	17.	14.	15.	16.	19.	16.	26.	27.	26.	27.
331	41.	42.	45.	47.	71.	51.	61.	69.	82.	85.
341	118.	130.	152.	159.	179.	208.	278.	308.	405.	421.
351	465.	430.	358.	364.	410.	470.	576.	688.	818.	873.
361	903.	593.	321.	69.	18.	5.	2.	3.	1.	1.
371	0.	0.	1.	1.	2.	1.	2.	0.	1.	0.
381	0.	1.	0.	1.	1.	0.	0.	0.	0.	0.
391	0.	1.	1.	1.	1.	0.	0.	2.	0.	1.
401	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
411	1.	0.	1.	0.	1.	0.	1.	0.	0.	1.
421	0.	1.	0.	0.	1.	2.	0.	1.	0.	0.
431	2.	1.	0.	0.	0.	0.	0.	0.	1.	0.
441	0.	0.	3.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.
461	0.	1.	0.	0.	2.	0.	0.	0.	2.	2.
471	1.	1.	2.	2.	3.	3.	3.	5.	2.	0.
481	1.	1.	0.	1.	2.	1.	1.	2.	0.	1.
491	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S99T554-DUP
 File ID: 7a7412.CNF

Counted on: 5/ 4/99 @ 2:47
 Detector: AEA7
 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	828.5	828.5	361.598	361.598	10.000	3.182	5.000	0.844
2	25.9	25.9	303.958	303.432	12.000	3.404	6.000	0.609
3	46.6	46.6	287.064	286.832	10.000	2.348	5.000	1.104
4	17.0	17.0	269.724	268.954	14.000	3.530	7.000	0.646
5	81.7	81.7	228.217	228.178	10.000	4.790	5.000	1.374

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	0.826	5.755	5.756	-0.0010	10.01	31.65	1.6	134.2	0.604E-04
2	Pu238	0.035	5.487	5.489	-0.0020	20.02	1.34	9.8	7.8	0.349E-05
	Am241		5.479	5.489	-0.010				5.9	0.268E-05
3	Th228	0.030	5.400	5.412	-0.0120	20.01	1.16	11.3	6.8	0.305E-05
4		0.023		5.330	0.02		0.87	13.2	3.6	0.163E-05
5	Pu239	0.082	5.147	5.143	0.0040	20.02	3.16	5.2	13.1	0.590E-05
	Pu240		5.144	5.143	0.001				13.1	0.590E-05

Totals: 0.997 <--valid peaks only--> 38.18

DETECTOR CALIBRATION

Energy(MEV) = 4.093 + (0.0046)*Channel
 Energy range (MeV): 4.093 TO 6.448
 Efficiency = 0.2407 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	18394.0	100.000
Smoothed	18393.1	99.995
Composite fit	18330.8	99.656
Residuals	63.2	0.344

Spectrum 7a7412.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 4579.1

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Raw Data Dump for AEA Spectrum: 7a7412.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.	1.	2.	0.	1.	0.	0.	1.
31	0.	0.	0.	1.	0.	1.	1.	0.	0.	0.
41	0.	0.	2.	0.	0.	3.	0.	0.	1.	0.
51	1.	1.	0.	0.	2.	0.	0.	0.	1.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
71	0.	1.	2.	0.	0.	0.	0.	1.	0.	0.
81	2.	2.	2.	0.	0.	0.	0.	1.	0.	0.
91	1.	2.	0.	1.	0.	1.	2.	1.	1.	1.
101	1.	2.	1.	0.	1.	0.	0.	1.	0.	2.
111	0.	0.	1.	0.	0.	0.	1.	1.	1.	1.
121	1.	0.	1.	1.	1.	0.	1.	1.	1.	0.
131	0.	1.	0.	1.	1.	1.	0.	1.	3.	0.
141	2.	2.	0.	2.	2.	3.	0.	4.	3.	2.
151	2.	3.	3.	1.	4.	1.	0.	3.	0.	5.
161	2.	0.	2.	2.	0.	1.	1.	1.	1.	2.
171	3.	3.	3.	3.	1.	5.	3.	3.	5.	5.
181	3.	2.	3.	6.	7.	3.	8.	5.	3.	7.
191	10.	9.	10.	3.	8.	9.	4.	12.	9.	8.
201	8.	17.	12.	9.	11.	15.	20.	15.	16.	20.
211	26.	30.	31.	17.	35.	30.	43.	58.	53.	45.
221	50.	60.	70.	73.	80.	80.	98.	82.	89.	98.
231	72.	45.	26.	15.	14.	8.	10.	2.	7.	5.
241	9.	4.	6.	6.	12.	11.	9.	10.	8.	13.
251	16.	7.	13.	20.	18.	9.	10.	16.	17.	12.
261	12.	10.	12.	26.	20.	18.	22.	36.	26.	35.
271	30.	22.	26.	17.	24.	23.	26.	25.	26.	27.
281	29.	40.	35.	47.	71.	60.	70.	76.	65.	32.
291	25.	17.	20.	21.	23.	21.	32.	28.	28.	27.
301	28.	40.	44.	39.	46.	34.	32.	29.	11.	25.
311	18.	22.	27.	29.	18.	29.	37.	28.	43.	28.
321	44.	49.	51.	48.	54.	48.	55.	68.	71.	75.
331	94.	87.	99.	113.	99.	110.	135.	122.	158.	152.
341	191.	208.	207.	258.	264.	276.	315.	321.	399.	405.
351	502.	521.	556.	513.	503.	542.	521.	644.	669.	792.
361	874.	985.	932.	717.	369.	127.	33.	6.	2.	1.
371	2.	5.	3.	3.	1.	0.	1.	0.	2.	2.
381	2.	1.	2.	0.	1.	0.	0.	2.	1.	0.
391	1.	1.	0.	2.	0.	0.	3.	2.	0.	1.
401	1.	1.	0.	0.	0.	1.	0.	1.	2.	1.
411	1.	0.	1.	0.	1.	1.	2.	0.	0.	2.
421	2.	1.	0.	0.	0.	1.	0.	2.	0.	0.
431	1.	0.	0.	1.	0.	0.	2.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
451	0.	0.	1.	0.	1.	0.	1.	2.	1.	0.
461	2.	2.	3.	1.	0.	1.	1.	0.	6.	1.
471	3.	2.	3.	4.	5.	7.	6.	5.	2.	3.
481	2.	2.	4.	0.	0.	0.	0.	1.	1.	0.
491	0.	2.	3.	0.	0.	2.	1.	2.	0.	1.
511	2.	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
 S99T555-SAM
 File ID: 8a8396.CNF

Counted on: 5/ 4/99 @ 2:47
 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	1105.1	1105.1	361.978	361.978	10.000	2.809	5.000	1.050
2	23.6	23.6	303.292	301.977	28.000	4.642	14.000	13.959
3	75.6	75.6	287.192	287.176	10.000	3.345	5.000	2.174
4	18.6	18.6	269.909	269.395	12.000	3.302	6.000	0.945
5	41.1	41.1	228.948	228.922	12.000	4.214	6.000	2.024

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	Pu236	0.897	5.755	5.758	-.0030	0.01	32.72	1.6	148.7	0.670E-04
2	Pu238	0.014	5.487	5.482	0.0050	0.02	0.51	14.8	3.1	0.141E-05
	Am241		5.479	5.482	-.003				2.4	0.108E-05
3	Th228	0.047	5.400	5.414	-.0140	0.02	1.73	7.1	10.9	0.489E-05
4		0.019		5.332	0.02		0.68	13.2	3.0	0.136E-05
5	Pu239	0.031	5.147	5.146	0.0010	0.02	1.15	8.5	5.1	0.230E-05
	Pu240		5.144	5.146	-.002				5.1	0.230E-05

Totals: 1.008 <--valid peaks only--> 36.78

DETECTOR CALIBRATION

Energy (MEV) = 4.093 + (0.0046)*Channel
 Energy range (MeV): 4.093 TO 6.448
 Efficiency = 0.2245 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17515.0	100.000
Smoothed	17512.6	99.986
Composite fit	17659.2	100.823
Residuals	-144.2	-0.823

Spectrum 8a8396.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 5752.2

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Raw Data Dump for AEA Spectrum: 8a8396.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	1.	1.	0.	1.	0.	0.	0.	0.	0.	2.
31	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
41	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.
51	0.	1.	0.	0.	1.	1.	0.	0.	0.	1.
61	0.	0.	2.	0.	0.	2.	0.	0.	0.	1.
71	0.	2.	0.	0.	0.	0.	0.	0.	0.	0.
81	0.	0.	2.	0.	0.	0.	0.	1.	0.	0.
91	0.	0.	0.	0.	0.	2.	1.	2.	0.	0.
101	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
111	1.	0.	1.	0.	0.	0.	0.	1.	1.	0.
121	1.	0.	0.	1.	1.	0.	0.	1.	0.	0.
131	0.	0.	2.	0.	1.	0.	0.	0.	0.	0.
141	0.	1.	0.	2.	0.	1.	3.	0.	0.	0.
151	0.	0.	2.	1.	0.	0.	1.	0.	2.	0.
161	2.	0.	0.	1.	2.	1.	1.	1.	0.	1.
171	0.	2.	0.	2.	2.	2.	0.	0.	2.	0.
181	1.	2.	0.	0.	0.	2.	0.	2.	0.	3.
191	4.	0.	1.	0.	3.	1.	0.	2.	0.	1.
201	1.	1.	2.	2.	5.	4.	4.	2.	2.	6.
211	8.	4.	8.	10.	13.	10.	19.	7.	16.	13.
221	14.	17.	17.	24.	30.	33.	45.	50.	47.	48.
231	40.	31.	18.	9.	3.	3.	7.	3.	3.	2.
241	4.	3.	2.	7.	1.	3.	3.	4.	7.	4.
251	7.	4.	11.	10.	6.	6.	14.	9.	11.	4.
261	10.	9.	13.	10.	11.	16.	14.	23.	29.	26.
271	23.	21.	16.	14.	12.	22.	7.	22.	21.	23.
281	32.	42.	47.	60.	65.	77.	93.	98.	68.	49.
291	24.	8.	11.	15.	14.	12.	11.	12.	12.	16.
301	17.	16.	18.	16.	18.	16.	13.	8.	6.	7.
311	8.	6.	14.	3.	3.	15.	12.	9.	17.	12.
321	12.	13.	19.	16.	17.	12.	30.	14.	25.	28.
331	28.	47.	33.	36.	38.	52.	64.	63.	77.	86.
341	103.	114.	134.	149.	190.	210.	234.	276.	337.	425.
351	548.	585.	668.	656.	594.	501.	625.	708.	813.	982.
361	1158.	1323.	1354.	1043.	532.	188.	41.	14.	4.	4.
371	2.	5.	2.	2.	0.	0.	2.	0.	1.	1.
381	1.	1.	1.	0.	3.	1.	0.	0.	0.	1.
391	1.	2.	0.	0.	1.	0.	0.	0.	1.	0.
401	1.	0.	2.	0.	1.	0.	0.	1.	0.	0.
411	2.	0.	0.	1.	0.	0.	1.	0.	0.	1.
421	1.	0.	0.	1.	0.	1.	0.	1.	0.	1.
431	1.	1.	0.	0.	0.	0.	0.	1.	0.	2.
441	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
451	0.	2.	0.	0.	1.	2.	0.	1.	0.	0.
461	0.	0.	0.	1.	0.	3.	2.	2.	1.	0.
471	2.	3.	1.	5.	2.	6.	6.	8.	5.	3.
481	1.	3.	2.	4.	1.	3.	2.	3.	1.	0.
491	3.	0.	1.	1.	0.	0.	0.	0.	0.	1.
511	2.	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
 S99T555-DUP
 File ID: 9a9296.CNF

Counted on: 5/ 4/99 @ 2:48
 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	1178.0	1178.0	360.012	360.012	10.000	3.114	5.000	1.304
2	37.2	37.2	299.785	299.632	8.000	0.538	4.000	0.431
3	74.9	74.9	285.054	284.995	10.000	2.869	5.000	1.369
4	57.9	57.9	226.647	226.646	12.000	3.949	6.000	1.655

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	0.892	5.755	5.758	-.0030	0.01	33.14	1.6	143.8	0.648E-04
2	Pu238	0.014	5.487	5.480	0.0070	0.00	0.50	13.1	3.0	0.134E-05
	Am241		5.479	5.480	-.001				2.3	0.102E-05
3	Th228	0.052	5.400	5.413	-.0130	0.01	1.92	6.7	11.5	0.518E-05
4	Pu239	0.046	5.147	5.144	0.0030	0.02	1.71	6.8	7.3	0.328E-05
	Pu240		5.144	5.144	0.000				7.3	0.328E-05
Totals:		1.003	<--valid peaks only-->				37.27			

DETECTOR CALIBRATION

Energy(MEV) = 4.102 + (0.0046)*Channel
 Energy range (MeV): 4.102 TO 6.457
 Efficiency = 0.2351 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	17842.0	100.000
Smoothed	17842.0	100.000
Composite fit	17891.3	100.276
Residuals	-49.3	-0.276

Analyzed by: _____

EMB

Spectrum 9a9296.CNF

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.: 6622.3

4
.4
..4

3
.3
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3
2

1
.. 1
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..

Raw Data Dump for AEA Spectrum: 9a9296.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.	0.	0.	0.	2.	0.	1.	0.
31	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
51	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
71	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
81	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
91	1.	0.	0.	0.	0.	0.	1.	0.	1.	0.
101	0.	0.	0.	0.	1.	1.	0.	0.	0.	1.
111	1.	1.	1.	0.	0.	0.	1.	0.	0.	0.
121	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.
131	0.	0.	1.	1.	0.	0.	2.	0.	0.	0.
141	0.	0.	0.	1.	1.	1.	0.	1.	2.	1.
151	0.	0.	0.	0.	0.	1.	0.	1.	0.	1.
161	1.	1.	0.	0.	1.	2.	0.	0.	0.	0.
171	0.	0.	0.	0.	1.	0.	0.	2.	0.	0.
181	0.	2.	1.	0.	1.	1.	1.	2.	1.	2.
191	1.	3.	1.	1.	2.	1.	3.	1.	1.	4.
201	4.	2.	2.	4.	2.	4.	8.	7.	3.	14.
211	8.	13.	17.	19.	21.	21.	26.	24.	28.	33.
221	27.	46.	50.	50.	46.	74.	63.	66.	48.	32.
231	15.	8.	3.	5.	2.	3.	3.	2.	2.	1.
241	3.	0.	4.	1.	4.	2.	5.	4.	7.	2.
251	8.	3.	7.	9.	8.	5.	9.	7.	9.	9.
261	6.	13.	18.	16.	17.	24.	22.	20.	15.	15.
271	19.	19.	15.	18.	19.	14.	16.	33.	32.	30.
281	63.	58.	58.	89.	99.	84.	73.	42.	22.	13.
291	11.	8.	8.	11.	14.	13.	10.	18.	20.	19.
301	21.	14.	15.	14.	4.	6.	3.	4.	4.	7.
311	5.	7.	4.	5.	4.	7.	5.	12.	4.	2.
321	8.	10.	14.	9.	19.	18.	28.	17.	25.	21.
331	30.	36.	24.	53.	34.	44.	52.	60.	67.	93.
341	114.	112.	170.	184.	199.	225.	344.	391.	473.	640.
351	609.	659.	552.	570.	631.	687.	845.	1130.	1288.	1424.
361	1362.	1141.	714.	290.	87.	18.	1.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	1.	0.	1.	0.	0.	0.	1.	1.	0.
431	1.	0.	0.	0.	1.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
451	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.
461	0.	1.	0.	0.	0.	2.	0.	1.	0.	5.
471	3.	2.	9.	4.	7.	6.	13.	3.	3.	1.
481	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

HNF-1668 REV. 0

OPPORTUNISTIC ANALYTES
APPENDIX A

HNF-1668 REV. 0

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Appendix A. Opportunistic Analyte Results.
U-103 GRAB2

RISER: 13
SEGMENT #: 3U-99-1

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S99T000537	D	Silver-ICP-Acid Dil.	ug/mL	97.60	<1.00e-02	16.60	17.30	16.95	4.13	88.10	6.010		n/a
S99T000537	D	Arsenic-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	93.40	60.10		n/a
S99T000537	D	Boron-ICP-Acid Dil.	ug/mL	102.6	<5.00e-02	85.70	86.60	86.15	1.04	98.20	30.10		n/a
S99T000537	D	Barium-ICP-Acid Dil.	ug/mL	97.60	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	91.80	30.10		n/a
S99T000537	D	Beryllium-ICP-Acid Dil.	ug/mL	99.20	<5.00e-03	< 3.010	<3.01e0	n/a	n/a	96.10	3.010		n/a
S99T000537	D	Bismuth-ICP-Acid Dil.	ug/mL	100.2	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	97.40	60.10		n/a
S99T000537	D	Calcium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	1.68e+02	150.0	159.0	11.3	100.0	60.10		n/a
S99T000537	D	Cadmium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-03	6.050	6.050	6.050	0.00	98.90	3.010		n/a
S99T000537	D	Cerium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	97.00	60.10		n/a
S99T000537	D	Cobalt-ICP-Acid Dil.	ug/mL	98.80	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	97.50	12.00		n/a
S99T000537	D	Copper-ICP-Acid Dil.	ug/mL	107.0	<1.00e-02	12.80	13.50	13.15	5.32	102.0	6.010		n/a
S99T000537	D	Potassium-ICP-Acid Dil.	ug/mL	102.4	<5.00e-01	4.86e+03	4.51e+03	4.68e+03	7.47	97.90	3.01e+03		n/a
S99T000537	D	Lanthanum-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	98.30	30.10		n/a
S99T000537	D	Lithium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	96.10	6.010		n/a
S99T000537	D	Magnesium-ICP-Acid Dil.	ug/mL	100.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	95.60	60.10		n/a
S99T000537	D	Molybdenum-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	1.17e+02	119.0	118.0	1.69	97.70	30.10		n/a
S99T000537	D	Neodymium-ICP-Acid Dil.	ug/mL	101.2	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	98.90	60.10		n/a
S99T000537	D	Phosphorus-ICP-Acid Dil.	ug/mL	100.4	<2.00e-01	5.77e+02	588.0	582.5	1.89	94.60	120.0		n/a
S99T000537	D	Lead-ICP-Acid Dil.	ug/mL	98.80	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	104.0	60.10		n/a
S99T000537	D	Sulfur-ICP-Acid Dil.	ug/mL	98.40	<1.00e-01	2.26e+03	2.40e+03	2.33e+03	6.01	98.30	601.0		n/a
S99T000537	D	Antimony-ICP-Acid Dil.	ug/mL	100.2	<6.00e-02	< 36.10	<3.61e1	n/a	n/a	99.40	36.10		n/a
S99T000537	D	Selenium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	105.0	60.10		n/a
S99T000537	D	Silicon-ICP-Acid Dil.	ug/mL	106.0	<5.00e-02	63.20	58.50	60.85	7.72	105.0	30.10		n/a
S99T000537	D	Samarium-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	98.10	60.10		n/a
S99T000537	D	Strontium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	95.20	6.010		n/a
S99T000537	D	Titanium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	98.30	6.010		n/a
S99T000537	D	Thallium-ICP-Acid Dil.	ug/mL	97.00	<2.00e-01	<1.20e+02	<1.20e2	n/a	n/a	94.70	120.0		n/a
S99T000537	D	Uranium-ICP-Acid Dil.	ug/mL	102.0	<5.00e-01	<3.01e+02	<3.01e2	n/a	n/a	100.5	301.0		n/a
S99T000537	D	Vanadium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	97.60	30.10		n/a
S99T000537	D	Zinc-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	98.60	6.010		n/a
S99T000537		Bromide by Ion Chromatograph	ug/mL	100.2	<1.25e-01	<6.44e+02	<6.44e2	n/a	n/a	93.58	643.9		n/a
S99T000537		Oxalate-IC-Dionex 4000/450	ug/mL	106.9	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	100.6	540.9		n/a
S99T000538		Cobalt-60 by GEA	uCi/mL	112.5	<3.69e-03	2.21e-02	2.06e-02	2.14e-02	7.03	n/a	n/a		18.2
S99T000538		Am-241 by Extraction	uCi/mL	94.39	<6.38e-04	1.52e-02	1.62e-02	1.57e-02	6.37	n/a	1.00e-03	2.33E+00	

577

HNF-1668 REV. 0

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%
S99T000551	F	Cobalt-60 by GEA	uCi/g	109.0	<8.79e-02	<9.08e-02	<7.76e-2	n/a	n/a	n/a	9.10e-02		n/a
S99T000552	A	Silver -ICP-Acid Digest	ug/g	84.10	<1.00e-02	13.20	14.90	14.05	12.1	88.23	6.120		n/a
S99T000552	A	Arsenic -ICP-Acid Digest	ug/g	89.60	<1.00e-01	< 61.10	<6.08e1	n/a	n/a	95.66	61.20		n/a
S99T000552	A	Boron -ICP-Acid Digest	ug/g	108.8	5.64e-01	1.69e+02	169.0	169.0	0.00	95.23	30.60		n/a
S99T000552	A	Barium -ICP-Acid Digest	ug/g	92.80	<5.00e-02	< 30.50	<3.04e1	n/a	n/a	90.06	30.60		n/a
S99T000552	A	Beryllium -ICP-Acid Digest	ug/g	94.60	<5.00e-03	< 3.050	<3.04e0	n/a	n/a	94.26	3.060		n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000552	A		Bismuth -ICP-Acid Digest	ug/g	89.00	<1.00e-01	< 61.10	<6.08e1	n/a	n/a	92.00	61.20	n/a
S99T000552	A		Calcium -ICP-Acid Digest	ug/g	97.40	1.22e-01	97.60	85.30	91.45	13.4	98.35	61.20	n/a
S99T000552	A		Cadmium -ICP-Acid Digest	ug/g	89.40	<5.00e-03	< 3.050	<3.04e0	n/a	n/a	96.41	3.060	n/a
S99T000552	A		Cerium -ICP-Acid Digest	ug/g	96.40	<1.00e-01	< 61.10	<6.08e1	n/a	n/a	94.90	61.20	n/a
S99T000552	A		Cobalt -ICP-Acid Digest	ug/g	89.80	<2.00e-02	< 12.20	<1.22e1	n/a	n/a	94.80	12.20	n/a
S99T000552	A		Copper -ICP-Acid Digest	ug/g	87.20	<1.00e-02	< 6.110	<6.08e0	n/a	n/a	88.02	6.120	n/a
S99T000552	A		Potassium -ICP-Acid Digest	ug/g	97.60	<5.00e-01	1.85e+03	1.77e+03	1.81e+03	4.42	53.15	306.0	n/a
S99T000552	A		Lanthanum -ICP-Acid Digest	ug/g	96.60	<5.00e-02	< 30.50	<3.04e1	n/a	n/a	95.55	30.60	n/a
S99T000552	A		Lithium -ICP-Acid Digest	ug/g	95.20	<1.00e-02	< 6.110	<6.08e0	n/a	n/a	92.00	6.120	n/a
S99T000552	A		Magnesium -ICP-Acid Digest	ug/g	94.40	<1.00e-01	< 61.10	<6.08e1	n/a	n/a	97.81	61.20	n/a
S99T000552	A		Molybdenum -ICP-Acid Digest	ug/g	92.00	<5.00e-02	47.70	41.20	44.45	14.6	97.27	30.60	n/a
S99T000552	A		Neodymium -ICP-Acid Digest	ug/g	95.00	<1.00e-01	< 61.10	<6.08e1	n/a	n/a	93.83	61.20	n/a
S99T000552	A		Phosphorus -ICP-Acid Digest	ug/g	89.80	<2.00e-01	1.30e+04	1.17e+04	1.24e+04	10.5	-1.790e2	122.0	n/a
S99T000552	A		Lead -ICP-Acid Digest	ug/g	87.40	<1.00e-01	< 61.10	<6.08e1	n/a	n/a	97.81	61.20	n/a
S99T000552	A		Sulfur -ICP-Acid Digest	ug/g	87.40	<1.00e-01	9.27e+02	790.0	858.5	16.0	77.47	61.20	n/a
S99T000552	A		Antimony -ICP-Acid Digest	ug/g	89.20	<6.00e-02	< 36.70	<3.65e1	n/a	n/a	98.35	36.60	n/a
S99T000552	A		Selenium -ICP-Acid Digest	ug/g	87.40	<1.00e-01	< 61.10	<6.08e1	n/a	n/a	93.40	61.20	n/a
S99T000552	A		Silicon -ICP-Acid Digest	ug/g	185.6	1.570	2.90e+02	200.0	245.0	36.7	109.8	30.60	n/a
S99T000552	A		Samarium -ICP-Acid Digest	ug/g	94.00	<1.00e-01	< 61.10	<6.08e1	n/a	n/a	92.54	61.20	n/a
S99T000552	A		Strontium -ICP-Acid Digest	ug/g	95.00	<1.00e-02	< 6.110	<6.08e0	n/a	n/a	93.61	6.120	n/a
S99T000552	A		Titanium-ICP-Acid Digest	ug/g	94.60	<1.00e-02	< 6.110	<6.08e0	n/a	n/a	96.95	6.120	n/a
S99T000552	A		Thallium -ICP-Acid Digest	ug/g	86.40	<2.00e-01	<1.22e+02	<1.22e2	n/a	n/a	91.03	122.0	n/a
S99T000552	A		Uranium -ICP-Acid Digest	ug/g	90.70	<5.00e-01	<3.05e+02	<3.04e2	n/a	n/a	89.31	306.0	n/a
S99T000552	A		Vanadium -ICP-Acid Digest	ug/g	90.20	<5.00e-02	< 30.50	<3.04e1	n/a	n/a	92.64	30.60	n/a
S99T000552	A		Zinc -ICP-Acid Digest	ug/g	81.40	1.20e-02	< 6.110	<6.08e0	n/a	n/a	89.09	6.120	n/a
S99T000553	W		Bromide by Ion Chromatograph	ug/g	97.40	<1.25e-01	<9.88e+02	<1.01e3	n/a	n/a	95.14	988.1	n/a
S99T000553	W		Oxalate-IC-Dionex 4000/4500	ug/g	104.4	<1.05e-01	<8.30e+02	<8.49e2	n/a	n/a	102.9	829.8	n/a

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Appendix A. Opportunistic Analyte Results.
U-103 GRAB2

RISER: 13
SEGMENT #: 3U-99-2

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S99T000546	D	Silver-ICP-Acid Dil.	ug/mL	97.60	<1.00e-02	15.40	17.40	16.40	12.2	n/a	6.010		n/a
S99T000546	D	Arsenic-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10		n/a
S99T000546	D	Boron-ICP-Acid Dil.	ug/mL	102.6	<5.00e-02	90.70	97.10	93.90	6.82	n/a	30.10		n/a
S99T000546	D	Barium-ICP-Acid Dil.	ug/mL	97.60	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10		n/a
S99T000546	D	Beryllium-ICP-Acid Dil.	ug/mL	99.20	<5.00e-03	< 3.010	<3.01e0	n/a	n/a	n/a	3.010		n/a
S99T000546	D	Bismuth-ICP-Acid Dil.	ug/mL	100.2	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10		n/a
S99T000546	D	Calcium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	1.46e+02	159.0	152.5	8.52	n/a	60.10		n/a
S99T000546	D	Cadmium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-03	6.310	6.690	6.500	5.85	n/a	3.010		n/a
S99T000546	D	Cerium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10		n/a
S99T000546	D	Cobalt-ICP-Acid Dil.	ug/mL	98.80	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	n/a	12.00		n/a
S99T000546	D	Copper-ICP-Acid Dil.	ug/mL	107.0	<1.00e-02	13.10	15.10	14.10	14.2	n/a	6.010		n/a
S99T000546	D	Potassium-ICP-Acid Dil.	ug/mL	102.4	<5.00e-01	4.47e+03	4.93e+03	4.70e+03	9.79	n/a	301.0		n/a
S99T000546	D	Lanthanum-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10		n/a
S99T000546	D	Lithium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010		n/a
S99T000546	D	Magnesium-ICP-Acid Dil.	ug/mL	100.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10		n/a
S99T000546	D	Molybdenum-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	1.20e+02	132.0	126.0	9.52	n/a	30.10		n/a
S99T000546	D	Neodymium-ICP-Acid Dil.	ug/mL	101.2	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10		n/a
S99T000546	D	Phosphorus-ICP-Acid Dil.	ug/mL	100.4	<2.00e-01	5.54e+02	617.0	585.5	10.8	n/a	120.0		n/a
S99T000546	D	Lead-ICP-Acid Dil.	ug/mL	98.80	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10		n/a
S99T000546	D	Sulfur-ICP-Acid Dil.	ug/mL	98.40	<1.00e-01	1.85e+03	2.05e+03	1.95e+03	10.3	n/a	60.10		n/a
S99T000546	D	Antimony-ICP-Acid Dil.	ug/mL	100.2	<6.00e-02	< 36.10	<3.61e1	n/a	n/a	n/a	36.10		n/a
S99T000546	D	Selenium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10		n/a
S99T000546	D	Silicon-ICP-Acid Dil.	ug/mL	106.0	<5.00e-02	66.60	69.60	68.10	4.41	n/a	30.10		n/a
S99T000546	D	Samarium-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10		n/a
S99T000546	D	Strontium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010		n/a
S99T000546	D	Titanium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010		n/a
S99T000546	D	Thallium-ICP-Acid Dil.	ug/mL	97.00	<2.00e-01	<1.20e+02	<1.20e2	n/a	n/a	n/a	120.0		n/a
S99T000546	D	Uranium-ICP-Acid Dil.	ug/mL	102.0	<5.00e-01	<3.01e+02	<3.01e2	n/a	n/a	n/a	301.0		n/a
S99T000546	D	Vanadium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10		n/a
S99T000546	D	Zinc-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010		n/a
S99T000546		Bromide by Ion Chromatograph	ug/mL	100.2	<1.25e-01	<6.44e+02	<6.44e2	n/a	n/a	n/a	643.9		n/a
S99T000546		Oxalate-IC-Dionex 4000/450	ug/mL	106.9	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	n/a	540.9		n/a
S99T000547		Cobalt-60 by GEA	uCi/mL	112.5	<3.69e-03	2.58e-02	2.40e-02	2.49e-02	7.23	n/a	n/a		19.0
S99T000547		Am-241 by Extraction	uCi/mL	94.39	<6.38e-04	1.96e-02	1.95e-02	1.95e-02	0.51	n/a	2.00e-03		2.25E+00

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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%
S99T000554	F	Cobalt-60 by GEA	uCi/g	109.0	<8.79e-02	<8.65e-02	<9.18e-2	n/a	n/a	n/a	8.60e-02		n/a
S99T000556	A	Silver -ICP-Acid Digest	ug/g	84.10	<1.00e-02	12.10	11.10	11.60	8.62	n/a	3.940		n/a
S99T000556	A	Arsenic -ICP-Acid Digest	ug/g	89.60	<1.00e-01	< 39.40	<3.71e1	n/a	n/a	n/a	39.40		n/a
S99T000556	A	Boron -ICP-Acid Digest	ug/g	108.8	5.64e-01	1.48e+02	148.0	148.0	0.00	n/a	19.70		n/a
S99T000556	A	Barium -ICP-Acid Digest	ug/g	92.80	<5.00e-02	< 19.70	<1.86e1	n/a	n/a	n/a	19.70		n/a
S99T000556	A	Beryllium -ICP-Acid Digest	ug/g	94.60	<5.00e-03	< 1.970	<1.86e0	n/a	n/a	n/a	1.970		n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000556	A		Bismuth -ICP-Acid Digest	ug/g	89.00	<1.00e-01	< 39.40	<3.71e1	n/a	n/a	n/a	39.40	n/a
S99T000556	A		Calcium -ICP-Acid Digest	ug/g	97.40	1.22e-01	1.28e+02	123.0	125.5	3.98	n/a	39.40	n/a
S99T000556	A		Cadmium -ICP-Acid Digest	ug/g	89.40	<5.00e-03	4.070	3.960	4.015	2.74	n/a	1.970	n/a
S99T000556	A		Cerium -ICP-Acid Digest	ug/g	96.40	<1.00e-01	< 39.40	<3.71e1	n/a	n/a	n/a	39.40	n/a
S99T000556	A		Cobalt -ICP-Acid Digest	ug/g	89.80	<2.00e-02	< 7.890	<7.43e0	n/a	n/a	n/a	7.880	n/a
S99T000556	A		Copper -ICP-Acid Digest	ug/g	87.20	<1.00e-02	5.890	5.280	5.585	10.9	n/a	3.940	n/a
S99T000556	A		Potassium -ICP-Acid Digest	ug/g	97.60	<5.00e-01	2.53e+03	2.57e+03	2.55e+03	1.57	n/a	197.0	n/a
S99T000556	A		Lanthanum -ICP-Acid Digest	ug/g	96.60	<5.00e-02	< 19.70	<1.86e1	n/a	n/a	n/a	19.70	n/a
S99T000556	A		Lithium -ICP-Acid Digest	ug/g	95.20	<1.00e-02	< 3.940	<3.71e0	n/a	n/a	n/a	3.940	n/a
S99T000556	A		Magnesium -ICP-Acid Digest	ug/g	94.40	<1.00e-01	< 39.40	<3.71e1	n/a	n/a	n/a	39.40	n/a
S99T000556	A		Molybdenum -ICP-Acid Digest	ug/g	92.00	<5.00e-02	68.50	71.10	69.80	3.72	n/a	19.70	n/a
S99T000556	A		Neodymium -ICP-Acid Digest	ug/g	95.00	<1.00e-01	< 39.40	<3.71e1	n/a	n/a	n/a	39.40	n/a
S99T000556	A		Phosphorus -ICP-Acid Digest	ug/g	89.80	<2.00e-01	1.21e+04	1.20e+04	1.20e+04	0.83	n/a	78.80	n/a
S99T000556	A		Lead -ICP-Acid Digest	ug/g	87.40	<1.00e-01	43.60	39.00	41.30	11.1	n/a	39.40	n/a
S99T000556	A		Sulfur -ICP-Acid Digest	ug/g	87.40	<1.00e-01	9.76e+02	1.04e+03	1.01e+03	6.35	n/a	39.40	n/a
S99T000556	A		Antimony -ICP-Acid Digest	ug/g	89.20	<6.00e-02	< 23.70	<2.23e1	n/a	n/a	n/a	23.60	n/a
S99T000556	A		Selenium -ICP-Acid Digest	ug/g	87.40	<1.00e-01	< 39.40	<3.71e1	n/a	n/a	n/a	39.40	n/a
S99T000556	A		Silicon -ICP-Acid Digest	ug/g	185.6	1.570	2.16e+02	257.0	236.5	17.3	n/a	19.70	n/a
S99T000556	A		Samarium -ICP-Acid Digest	ug/g	94.00	<1.00e-01	< 39.40	<3.71e1	n/a	n/a	n/a	39.40	n/a
S99T000556	A		Strontium -ICP-Acid Digest	ug/g	95.00	<1.00e-02	< 3.940	<3.71e0	n/a	n/a	n/a	3.940	n/a
S99T000556	A		Titanium-ICP-Acid Digest	ug/g	94.60	<1.00e-02	< 3.940	<3.71e0	n/a	n/a	n/a	3.940	n/a
S99T000556	A		Thallium -ICP-Acid Digest	ug/g	86.40	<2.00e-01	< 78.90	<7.43e1	n/a	n/a	n/a	78.80	n/a
S99T000556	A		Uranium -ICP-Acid Digest	ug/g	90.70	<5.00e-01	<1.97e+02	<1.86e2	n/a	n/a	n/a	197.0	n/a
S99T000556	A		Vanadium -ICP-Acid Digest	ug/g	90.20	<5.00e-02	< 19.70	<1.86e1	n/a	n/a	n/a	19.70	n/a
S99T000556	A		Zinc -ICP-Acid Digest	ug/g	81.40	1.20e-02	< 3.940	<3.71e0	n/a	n/a	n/a	3.940	n/a
S99T000558	W		Bromide by Ion Chromatograph	ug/g	97.40	<1.25e-01	<9.84e+02	<1.03e3	n/a	n/a	n/a	984.4	n/a
S99T000558	W		Oxalate-IC-Dionex 4000/4500	ug/g	104.4	<1.05e-01	<8.27e+02	<8.67e2	n/a	n/a	n/a	827.0	n/a

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Appendix A. Opportunistic Analyte Results.
U-103 GRAB2

RISER: 13
SEGMENT #: 3U-99-3

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000548	D	Silver-ICP-Acid Dil.	ug/mL	97.60	<1.00e-02	17.50	16.20	16.85	7.72	n/a	6.010	n/a
S99T000548	D	Arsenic-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000548	D	Boron-ICP-Acid Dil.	ug/mL	102.6	<5.00e-02	1.03e+02	98.60	100.8	4.37	n/a	30.10	n/a
S99T000548	D	Barium-ICP-Acid Dil.	ug/mL	97.60	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S99T000548	D	Beryllium-ICP-Acid Dil.	ug/mL	99.20	<5.00e-03	< 3.010	<3.01e0	n/a	n/a	n/a	3.010	n/a
S99T000548	D	Bismuth-ICP-Acid Dil.	ug/mL	100.2	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000548	D	Calcium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	1.70e+02	166.0	168.0	2.38	n/a	60.10	n/a
S99T000548	D	Cadmium-ICP-Acid Dil.	ug/mL	100.0	<5.00e-03	6.820	6.800	6.810	0.29	n/a	3.010	n/a
S99T000548	D	Cerium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000548	D	Cobalt-ICP-Acid Dil.	ug/mL	98.80	<2.00e-02	< 12.00	<1.20e1	n/a	n/a	n/a	12.00	n/a
S99T000548	D	Copper-ICP-Acid Dil.	ug/mL	107.0	<1.00e-02	15.50	15.10	15.30	2.61	n/a	6.010	n/a
S99T000548	D	Potassium-ICP-Acid Dil.	ug/mL	102.4	<5.00e-01	5.22e+03	5.01e+03	5.12e+03	4.11	n/a	301.0	n/a
S99T000548	D	Lanthanum-ICP-Acid Dil.	ug/mL	101.4	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S99T000548	D	Lithium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000548	D	Magnesium-ICP-Acid Dil.	ug/mL	100.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000548	D	Molybdenum-ICP-Acid Dil.	ug/mL	100.2	<5.00e-02	1.42e+02	137.0	139.5	3.58	n/a	30.10	n/a
S99T000548	D	Neodymium-ICP-Acid Dil.	ug/mL	101.2	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000548	D	Phosphorus-ICP-Acid Dil.	ug/mL	100.4	<2.00e-01	6.28e+02	608.0	618.0	3.24	n/a	120.0	n/a
S99T000548	D	Lead-ICP-Acid Dil.	ug/mL	98.80	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000548	D	Sulfur-ICP-Acid Dil.	ug/mL	98.40	<1.00e-01	1.96e+03	1.90e+03	1.93e+03	3.11	n/a	60.10	n/a
S99T000548	D	Antimony-ICP-Acid Dil.	ug/mL	100.2	<6.00e-02	< 36.10	<3.61e1	n/a	n/a	n/a	36.10	n/a
S99T000548	D	Selenium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 60.10	62.40	n/a	n/a	n/a	60.10	n/a
S99T000548	D	Silicon-ICP-Acid Dil.	ug/mL	106.0	<5.00e-02	70.90	73.20	72.05	3.19	n/a	30.10	n/a
S99T000548	D	Samarium-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	< 60.10	<6.01e1	n/a	n/a	n/a	60.10	n/a
S99T000548	D	Strontium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000548	D	Titanium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000548	D	Thallium-ICP-Acid Dil.	ug/mL	97.00	<2.00e-01	<1.20e+02	<1.20e2	n/a	n/a	n/a	120.0	n/a
S99T000548	D	Uranium-ICP-Acid Dil.	ug/mL	102.0	<5.00e-01	<3.01e+02	<3.01e2	n/a	n/a	n/a	301.0	n/a
S99T000548	D	Vanadium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-02	< 30.10	<3.01e1	n/a	n/a	n/a	30.10	n/a
S99T000548	D	Zinc-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	< 6.010	<6.01e0	n/a	n/a	n/a	6.010	n/a
S99T000548		Bromide by Ion Chromatograph	ug/mL	100.2	<1.25e-01	<6.44e+02	<6.44e2	n/a	n/a	n/a	643.9	n/a
S99T000548		Oxalate-IC-Dionex 4000/450	ug/mL	106.9	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	n/a	540.9	n/a
S99T000549		Cobalt-60 by GEA	uCi/mL	112.5	<3.69e-03	2.86e-02	2.87e-02	2.87e-02	0.35	n/a	n/a	14.9
S99T000549		Am-241 by Extraction	uCi/mL	94.39	<6.38e-04	2.08e-02	2.06e-02	2.07e-02	0.97	n/a	2.00e-03	2.22E+00

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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%
S99T000555	F	Cobalt-60 by GEA	uCi/g	109.0	<8.79e-02	<9.92e-02	<8.22e-2	n/a	n/a	n/a	9.90e-02	n/a
S99T000557	A	Silver -ICP-Acid Digest	ug/g	84.10	<1.00e-02	11.50	9.930	10.71	14.7	n/a	4.080	n/a
S99T000557	A	Arsenic -ICP-Acid Digest	ug/g	89.60	<1.00e-01	< 40.80	<3.89e1	n/a	n/a	n/a	40.80	n/a
S99T000557	A	Boron -ICP-Acid Digest	ug/g	108.8	5.64e-01	1.61e+02	167.0	164.0	3.66	n/a	20.40	n/a
S99T000557	A	Barium -ICP-Acid Digest	ug/g	92.80	<5.00e-02	< 20.40	<1.94e1	n/a	n/a	n/a	20.40	n/a
S99T000557	A	Beryllium -ICP-Acid Digest	ug/g	94.60	<5.00e-03	< 2.040	<1.94e0	n/a	n/a	n/a	2.040	n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S99T000557	A		Bismuth -ICP-Acid Digest	ug/g	89.00	<1.00e-01	< 40.80	<3.89e1	n/a	n/a	n/a	40.80	n/a
S99T000557	A		Calcium -ICP-Acid Digest	ug/g	97.40	1.22e-01	1.27e+02	130.0	128.5	2.33	n/a	40.80	n/a
S99T000557	A		Cadmium -ICP-Acid Digest	ug/g	89.40	<5.00e-03	4.580	4.130	4.355	10.3	n/a	2.040	n/a
S99T000557	A		Cerium -ICP-Acid Digest	ug/g	96.40	<1.00e-01	< 40.80	<3.89e1	n/a	n/a	n/a	40.80	n/a
S99T000557	A		Cobalt -ICP-Acid Digest	ug/g	89.80	<2.00e-02	< 8.170	<7.78e0	n/a	n/a	n/a	8.160	n/a
S99T000557	A		Copper -ICP-Acid Digest	ug/g	87.20	<1.00e-02	5.740	7.170	6.455	22.2	n/a	4.080	n/a
S99T000557	A		Potassium -ICP-Acid Digest	ug/g	97.60	<5.00e-01	2.67e+03	2.92e+03	2.80e+03	8.94	n/a	204.0	n/a
S99T000557	A		Lanthanum -ICP-Acid Digest	ug/g	96.60	<5.00e-02	< 20.40	<1.94e1	n/a	n/a	n/a	20.40	n/a
S99T000557	A		Lithium -ICP-Acid Digest	ug/g	95.20	<1.00e-02	< 4.080	<3.89e0	n/a	n/a	n/a	4.080	n/a
S99T000557	A		Magnesium -ICP-Acid Digest	ug/g	94.40	<1.00e-01	< 40.80	<3.89e1	n/a	n/a	n/a	40.80	n/a
S99T000557	A		Molybdenum -ICP-Acid Digest	ug/g	92.00	<5.00e-02	72.60	82.50	77.55	12.8	n/a	20.40	n/a
S99T000557	A		Neodymium -ICP-Acid Digest	ug/g	95.00	<1.00e-01	< 40.80	<3.89e1	n/a	n/a	n/a	40.80	n/a
S99T000557	A		Phosphorus -ICP-Acid Digest	ug/g	89.80	<2.00e-01	1.17e+04	5.26e+03	8.48e+03	75.9	n/a	81.60	n/a
S99T000557	A		Lead -ICP-Acid Digest	ug/g	87.40	<1.00e-01	46.80	41.10	43.95	13.0	n/a	40.80	n/a
S99T000557	A		Sulfur -ICP-Acid Digest	ug/g	87.40	<1.00e-01	1.12e+03	1.13e+03	1.12e+03	0.89	n/a	40.80	n/a
S99T000557	A		Antimony -ICP-Acid Digest	ug/g	89.20	<6.00e-02	< 24.50	<2.33e1	n/a	n/a	n/a	24.60	n/a
S99T000557	A		Selenium -ICP-Acid Digest	ug/g	87.40	<1.00e-01	< 40.80	<3.89e1	n/a	n/a	n/a	40.80	n/a
S99T000557	A		Silicon -ICP-Acid Digest	ug/g	185.6	1.570	1.86e+02	258.0	222.0	32.4	n/a	20.40	n/a
S99T000557	A		Samarium -ICP-Acid Digest	ug/g	94.00	<1.00e-01	< 40.80	<3.89e1	n/a	n/a	n/a	40.80	n/a
S99T000557	A		Strontium -ICP-Acid Digest	ug/g	95.00	<1.00e-02	< 4.080	<3.89e0	n/a	n/a	n/a	4.080	n/a
S99T000557	A		Titanium-ICP-Acid Digest	ug/g	94.60	<1.00e-02	< 4.080	<3.89e0	n/a	n/a	n/a	4.080	n/a
S99T000557	A		Thallium -ICP-Acid Digest	ug/g	86.40	<2.00e-01	< 81.70	<7.78e1	n/a	n/a	n/a	81.60	n/a
S99T000557	A		Uranium -ICP-Acid Digest	ug/g	90.70	<5.00e-01	<2.04e+02	<1.94e2	n/a	n/a	n/a	204.0	n/a
S99T000557	A		Vanadium -ICP-Acid Digest	ug/g	90.20	<5.00e-02	< 20.40	<1.94e1	n/a	n/a	n/a	20.40	n/a
S99T000557	A		Zinc -ICP-Acid Digest	ug/g	81.40	1.20e-02	< 4.080	<3.89e0	n/a	n/a	n/a	4.080	n/a
S99T000559	W		Bromide by Ion Chromatograph	ug/g	97.40	<1.25e-01	<1.04e+03	<9.92e2	n/a	n/a	n/a	1.04e+03	n/a
S99T000559	W		Oxalate-IC-Dionex 4000/4500	ug/g	104.4	<1.05e-01	<8.73e+02	<8.34e2	n/a	n/a	n/a	873.3	n/a

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