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Double-Contained Receiver Tank 244-TX, Grab Samples, 244TX-97-1 through 244TX-97-3 Analytical Results for the Final Report

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ANALYTICAL SERVICES

DOUBLE-CONTAINED RECEIVER TANK 244-TX, GRAB SAMPLES, 244TX-97-1 THROUGH 244TX-97-3 ANALYTICAL RESULTS FOR THE FINAL REPORT

Project Coordinator: RUTH A. ESCH

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

by

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NARRATIVE

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222-S ANALYTICAL SERVICES

DOUBLE-CONTAINED RECEIVER TANK 244-TX, GRAB SAMPLES, 244TX-97-1 THROUGH 244TX-97-3 ANALYTICAL RESULTS FOR THE FINAL REPORT

This document is the final report for the double-contained receiver tank (DCRT) 244-TX grab samples. Three grabs samples were collected from riser 8 on May 29, 1997. Analyses were performed in accordance with the *Compatibility Grab Sampling and Analysis Plan* (TSAP) (Sasaki, 1997) and the *Data Quality Objectives for Tank Farms Waste Compatibility Program* (DQO) (Fowler, 1995). The analytical results are presented in Table 1.

An immediate notification was made to East Tank Farms Shift Operations concerning low hydroxide levels in all three samples (Sasaki 1997a).

Appearance and Sample Handling

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

Table 2 provides the appearance information. Since there was only a trace amount of solids in each of the samples, the percent settled solids determination was not performed. Two 20-mL aliquots were removed from each parent jar and submitted to the laboratory for analysis. An additional 10-mL portion was taken from each parent to perform an acidified ammonia analysis.

Table 2: Appearance Information for DCRT 244-TX Grab Samples

Sample Number	Date Sampled	Date Received	Sampling Depth (in.)*	% Settled Solids	Sample Description
244TX-97-1	5/29/97	5/30/97	337	Trace	Clear yellow liquid; no organic layer; trace amount of tan powdery solids
244TX-97-2	5/29/97	5/30/97	402	Trace	Clear yellow liquid; no organic layer; trace amount of tan powdery solids
244TX-97-3	5/29/97	5/30/97	421	Trace	Clear yellow liquid; no organic layer; trace amount of tan powdery solids

* Sample depth is measured from the top of the riser to the mouth of the sample bottle; data obtained from Process Memo # CFE-97-004

Analytical Results Summary

The data summary report (Table 1) included in this report compiles the analytical results that comply with the applicable DQO. The aliquot class (A#) column indicates the type of preparation performed prior to analysis. A "D" indicates that an acid dilution was made and a blank indicates a direct sample analysis.

Compatibility Program Concerns

DSC - Differential Scanning Calorimetry - Energetics Decision Rule

The DSC analyses were performed in duplicate on direct sample aliquots. The standard recoveries and relative percent difference (RPD) between the sample and duplicate results for this analysis were within the required limits.

There was no exothermic energy observed in any of the subsamples submitted for analysis. The dry weight correction was not performed since all of the reported results were 0.0 Joules/gram. No results exceeded the notification limit of 480 Joules/g (dry weight).

For waste compatibility energetics decision concerns, the exotherm/endotherm ratio calculation was not performed because there was no exothermic energy observed.

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

The analyses were performed on direct sample aliquots. The standard recoveries, appropriate spike recoveries and RPDs for nitrate (NO_3^-), nitrite (NO_2^-) and hydroxide (OH^-) were all within the required limits.

The results with respect to the waste compatibility corrosion rules are presented in Attachment 2. The NO_3^-, OH^-, and NO_2^- results are reported in μg/mL and molarity (M) units. The spreadsheet compares the results to the concentration ranges specified in the waste compatibility DQO. A "YES" will appear in the appropriate space for the condition that is met. Only one of three sets of conditions must be met for OH^- and NO_2^- based on the range that the NO_3^- concentration falls in. If "NO" appears in the space under a condition, that condition is not met and a notification is required.

An immediate notification was made to East Tank Farms Shift Operations concerning low hydroxide levels in all three samples. The presence of phosphate and carbonate in the sample matrix had a buffering effect so that the free hydroxide analysis could not be performed. A caustic demand analysis was requested to determine the amount of hydroxide that would need to be added to the tank to bring it back within the operating specifications. The notification was

made based on pH less than 12 for all three samples. A pH of 12 is equivalent to a free hydroxide concentration of 0.01 M. According to the DQO, when the nitrate level is less than or equal to 1.0 M, as it is in these samples, the hydroxide concentration must be greater than or equal to 0.01 M for corrosion control.

Density - Flammable Gas Accumulation Decision Rule

The specific gravity (Sp.G.) of the liquid portion of the waste is used for determination of the potential to cause an accumulation of flammable gases. The flammable gas decision rule requires that the weighted mean Sp.G. not exceed 1.41. This is not considered an action limit and does not require notification to Tank Farms Shift Operations if it is exceeded. The analysis was performed on direct sample aliquots. The results ranged from 1.054 to 1.094 for weighted mean of 1.075. The standard recovery and RPDs were within the required limits.

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

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

The results were below both the immediate notification limit of 61.5 μCi/mL and the criticality prevention concern level of 0.80 μCi/mL stated in the TSAP (Sasaki, 1997) and the Compatibility DQO (Fowler, 1995).

^{241}Am - Americium-241 - Criticality Decision Rule

^{241}Am analysis is also used to evaluate criticality safety for waste transfers. The analysis was performed on direct sample aliquots. The results ranged from 9.73e-6 to 1.53e-5 μCi/mL. The standard recovery and RPD for this analysis were within the required limits.

Inorganic Analyses

TGA - Thermogravimetric Analysis

TGA analyses were performed on direct sample aliquots. Standard recoveries and RPDs were within the required limits. The percent moisture of the samples was reported as the total weight loss that occurred below 200°C. This weight loss occurred in one step for all three samples. The results ranged from 90.15 to 90.58 % moisture.

pH

The pH analysis was performed on direct sample aliquots. The precision and accuracy criteria were met. The results ranged from 9.42 to 9.48.

Caustic Demand

The caustic demand analysis was performed on direct sample aliquots. The standard recovery criterion was met for all three samples.

Caustic demand analysis was performed to determine the buffering capacity to calculate the amount of caustic required to bring the hydroxide concentration above 0.01 M. This calculation is provided below. The results ranged from 0.143 to 0.152 μg OH^- consumed/mL of waste material.

The volume of caustic needed to adjust the OH^- concentration in the tank can be calculated using the equation:

$$V_{sp} = \frac{C_b + C_t}{C_{sp} - C_t}$$

Where:

V_{sp} = Volume of spiking solution to add per unit volume of waste
C_b = Buffering capacity (caustic demand result from summary report)
C_t = Target hydroxide concentration (e.g. 0.01 M)
C_{sp} = Concentration of spiking solution (e.g. 19 M sodium hydroxide)

The caustic demand analysis was performed two times. The first analysis results were all near or below the detection limit. A rerun was requested with a larger sample size to obtain a lower detection limit. One sample, 244-TX-97-1 (S97T001292), had insufficient sample to perform the rerun and the original results were reported. Sample 244-TX-97-3 (S97T001294) did not have enough material to perform a duplicate analysis on the rerun and only the sample result was reported. No further reanalyses were requested.

Table 3 was included to provide information for comparison of the results from both analysis runs. The raw data from both analyses are included in this document.

Table 3: Caustic Demand Results

Sample ID	Analysis Run	Result (M)	Duplicate (M)	Detection Limit (M)
244-TX-97-2 (S97T001293)	1	< 0.147	< 0.147	0.147
244-TX-97-2 (S97T001293)	2	0.148	0.143	0.0150
244-TX-97-3 (S97T001294)	1	0.148	<0.147	0.147
244-TX-97-3 (S97T001294)	2	0.152	N/A	0.0150

N/A - Data not available

NH_3 - Ammonia

The NH_3 analysis was performed both on a direct aliquot and on an acid dilution of the samples. The acidification was performed to preserve the ammonia in solution as the ammonium ion. The standard recovery, spike recovery and RPD criteria were met for both analyses, with the exception noted below.

The three direct sample aliquots were analyzed two times due to an error in the matrix spike. The reanalysis of sample 244-TX-97-2 (S97T001293) resulted in a high RPD (>20%). No further reruns were requested because the sample results from both runs were consistent.

The results for the nonacidified samples were approximately two times higher than the acidified sample results. The nonacidified sample results ranged from 582 to 1100 μg/mL and the acidified results ranged from 408 to 471 μg/mL. The addition of acid as a preservative is an approved method and is not thought to be the cause for the difference in results. No off-gassing was observed during the acidification process.

The procedure for acidification required a revision before these samples could be prepared for the ammonia analysis. Therefore, the samples were not acidified at the same time that the aliquots were taken for the direct analyses. The acidification actually took place approximately five days after the direct analysis was performed. It was believed that this delay would not cause significant loss of ammonia because the parent sample bottles from which the aliquots were taken were tightly sealed from the time that the direct analysis aliquots were removed.

Ammonia was detected in the method blank for the acidified sample analysis. However, the level of contamination was insignificant with respect to the sample results and does not affect the useability of these results. No further reruns were requested.

IC - Ion Chromatography

The ion chromatography (IC) analysis was performed on direct sample aliquots. The required analytes were fluoride (F^-), chloride (Cl^-), nitrate (NO_3^-), nitrite (NO_2^-), phosphate (PO_4^{-3}) and sulfate (SO_4^{-2}). The results for bromide (Br^-) and oxalate are considered "opportunistic" and are provided in Appendix A. There are no customer defined QC parameters for Br^- and oxalate and any anomalies in those results are not discussed.

The results for the NO_3^- and NO_2^- were discussed previously with respect to the corrosion rules, the standard recovery, spike recovery and RPDs for the remaining required analytes were all within the required limits.

Chloride was detected in the method blank for this analysis. However, the level of contamination was insignificant with respect to the sample results and does not affect the useability of these results. No reruns were requested.

ICP - Inductively Coupled Plasma Spectrophotometry

The ICP analysis was performed on acid diluted sample aliquots. Aluminum (Al), iron (Fe) and sodium (Na) were the only required analytes. The results for all other analytes are considered "opportunistic" and are provided in Appendix A. There are no customer defined QC parameters for the opportunistic analytes and any anomalies in those results are not discussed.

The standard recoveries, spike recoveries and RPDs met the requested criteria, with the exception noted below.

Sample 244-TX-97-3 (S97T001291) had a high RPD (>20%) for Al. The analyte concentration was two times the detection limit. When the analyte concentration is less than ten times the detection limit precision is reduced and the 20% RPD criterion is not applicable. The sample was reanalyzed once (results are presented in Table 1) and no further reanalyses were requested.

The Na results were more than four times the concentration of the spike added. Although the spike recovery was acceptable (103.0%), this may be only coincidental. Typically, with analyte concentrations higher than 1000 μg/mL it is difficult to add sufficient spike to perform a meaningful analysis. Therefore, the assessment of the accuracy of the measurement for this analyte was also made by comparison of the sample results to those of a serial dilution of the sample. The serial dilution was performed by preparing and analyzing an additional five-fold dilution of the sample. The result obtained from this analysis should be within ±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 for Sodium

Sample ID	Sample Result (μg/mL)	Serial Dilution Result (μg/mL)	Percent Difference (%)
244-TX-97-3 (S97T001291)	2.85e+04	2.92e+04	2.32

TIC/TOC - Total Inorganic/Organic Carbon

The TIC/TOC analysis was performed on direct sample aliquots using the persulfate oxidation method. The standard recovery, spike recovery and RPD criteria were met for this analysis. The results were less than the detection limit. No notifications were required.

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.

Radionuclide Analyses

GEA - Gamma Energy Analysis

GEA analysis was performed for ^{137}Cs on direct sample aliquots. The ^{60}Co results are considered "opportunistic" and are provided in Appendix A. There are no customer defined QC parameters for ^{60}Co and any anomalies in those results are not discussed. The standard recoveries and RPDs for ^{137}Cs were within the required limits.

^{90}Sr - Strontium-90

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

^{90}Sr was detected in the method blank for this analysis. However, the level of contamination was insignificant with respect to the sample results and does not affect the useability of these results. No reruns were requested.

Procedures

Table 5 lists the analytical procedures used for performing the analyses.

Table5: Analytical Procedures

Analysis	Preparation Procedure	Analysis Procedure
Inorganic Analyses		
DSC	Direct Analysis	LA-514-114 Rev. D-0
TGA	Direct Analysis	LA-514-114 Rev. D-0
Sp.G.	Direct Analysis	LA-510-112 Rev. D-1
pH	Direct Analysis	LA-212-106 Rev. B-0
OH^-	Direct Analysis	LA-211-102 Rev. C-0
Caustic Demand	Direct Analysis	LA-211-104 Rev. A-1
NH_3	Direct and LA-505-158 Rev. D-0 +	LA-631-001 Rev. C-0
IC	Direct Analysis	LA-533-105 Rev. D-1
ICP	Acid Dilution	LA-505-161 Rev. C-1
TIC/TOC	Direct Analysis	LA-342-100 Rev. E-0
Radionuclide Analyses		
GEA	Direct Analysis	LA-548-121 Rev. F-0
^{90}Sr	Direct Analysis	LA-220-101 Rev. E-1
^{241}Am	Direct Analysis	LA-953-104 Rev. B-0 †
$^{239/240}Pu$	Direct Analysis	LA-953-104 Rev. B-0 †

Notes: + - Acid dilution procedure

† - This procedure is a combination of the inactivated procedures LA-953-103 (^{241}Am) and LA-943-128 ($^{239/240}Pu$) listed in the TSAP.

Abbreviations:

DSC = differential scanning calorimetry
TGA = thermogravimetric analysis
Sp.G. = specific gravity
OH = hydroxide
IC = ion chromatography
ICP = inductively coupled plasma
TOC = total organic carbon
TIC = total inorganic carbon
GEA = gamma energy analysis
^{90}Sr = strontium 90
^{241}Am = americium 241
$^{239/240}Pu$ = plutonium 239/240

References

Fowler, K.D., 1995, *Data Quality Objectives for Tank Farms Waste Compatibility Program,* WHC-SD-WM-DQO-001, Rev. 1, Westinghouse Hanford Company, Richland, WA 99352.

Sasaki, L. M., 1997, *Compatibility Grab Sampling and Analysis Plan,* WHC-SD-TSAP-115, Rev. 0-F, Lockheed Martin Hanford Corporation, WA 99352

Sasaki, L. M., 1997a, *Immediate Notification: Notification Limit Exceeded for Hydroxide Concentration for Samples from Double-Contained Receiver Tank 244-TX,* (interoffice memo 74620-97-204 to J. G. Burton, June 12), Lockheed Martin Hanford Corporation, WA 99352

ATTACHMENT 1

TX-244 SAMPLE BREAKDOWN

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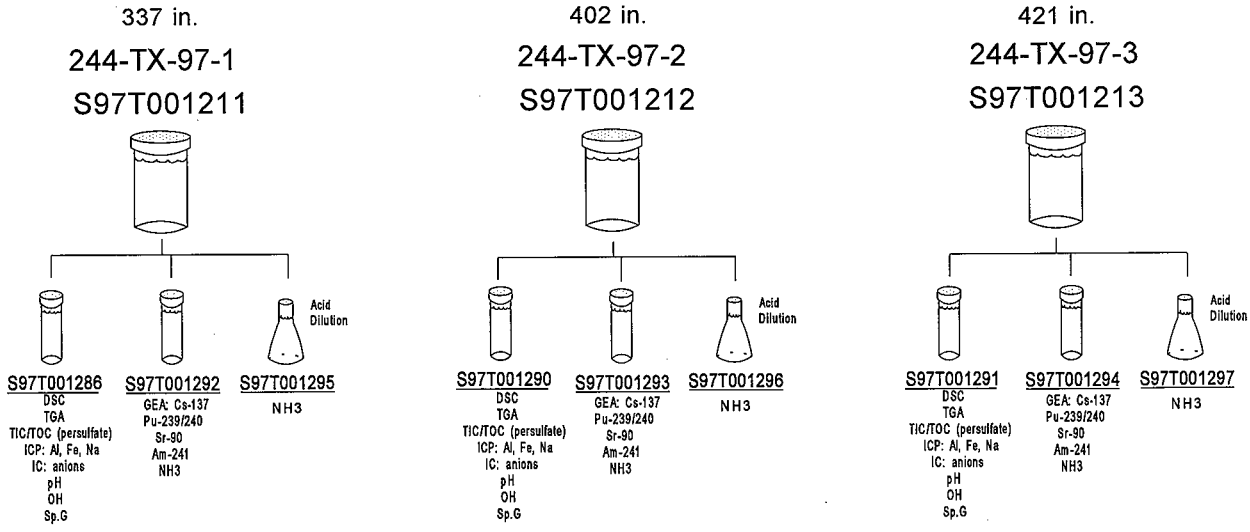
Attachment 1

TX-244 GRAB SAMPLE BREAKDOWN

Riser 8



SAMPLE DATA SUMMARY

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Table 1: Data Summary Report
TX-244 GRAB1

RISER: 8
SEGMENT #: 244-TX-97-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001211			Volume % Settled Solids	%	n/a	n/a	<1%	n/a	n/a	n/a	n/a	1.00e-01	n/a
S97T001286			DSC Exotherm on Perkin Elmer	Joules/g	94.59	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001286			OH- by Pot. Titration	ug/mL	97.59	<42.00	ph=6.83	ph=6.71	n/a	n/a	n/a	125.0	n/a
S97T001286			pH Direct	pH	100.0	n/a	9.420	9.420	9.420	0.00	n/a	1.00e-02	n/a
S97T001286			Specific Gravity	Sp.G.	99.32	n/a	1.078	1.065	1.071	1.21	n/a	1.00e-03	n/a
S97T001286			% Water by TGA on Perkin Elmer	%	99.56	n/a	90.16	90.36	90.26	0.22	n/a	n/a	n/a
S97T001286			TIC by Acid/Coulometry	ug/mL	98.84	4.700	1.07e+02	107.0	107.0	0.00	n/a	5.000	n/a
S97T001286			TOC by Persulfate/Coulometry	ug/mL	96.67	9.00e-01	< 40.00	<4.00E+1	n/a	n/a	n/a	40.00	n/a
S97T001286	D		Aluminium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	13.80	12.80	13.30	7.52	n/a	5.050	n/a
S97T001286	D		Iron-ICP-Acid Dil.	ug/mL	93.80	<5.00e-02	13.80	13.50	13.65	2.20	n/a	5.050	n/a
S97T001286	D		Sodium-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	2.82e+04	2.77e+04	2.80e+04	1.79	n/a	10.10	n/a
S97T001286			Fluoride-IC-Dionex 4000/4500	ug/mL	102.4	<1.20e-02	1.71e+03	1.68e+03	1.69e+03	1.77	n/a	25.45	n/a
S97T001286			Chloride-IC-Dionex 4000/4500	ug/mL	99.75	6.60e-02	6.03e+02	569.0	586.0	5.80	n/a	36.06	n/a
S97T001286			Nitrite-IC - Dionex 4000/4500	ug/mL	96.32	<1.08e-01	1.91e+03	1.92e+03	1.92e+03	0.52	n/a	229.1	n/a
S97T001286			Nitrate by IC-Dionex 4000/4500	ug/mL	95.62	<1.39e-01	5.21e+04	5.17e+04	5.19e+04	0.77	n/a	294.8	n/a
S97T001286			Phosphate-IC-Dionex 4000/4500	ug/mL	97.43	<1.20e-01	1.32e+04	1.30e+04	1.31e+04	1.53	n/a	254.5	n/a
S97T001286			Sulfate by IC-Dionex 4000/4500	ug/mL	95.40	<1.38e-01	3.12e+03	3.16e+03	3.14e+03	1.27	n/a	292.7	n/a
S97T001292			Ammonia by ISE-Std Additions	ug/mL	98.50	<1.000	5.80e+02	675.0	627.5	15.1	n/a	1.000	n/a
S97T001292			Caustic Demand	moles OH-/L	92.06	n/a	<1.47e-01	<1.47e-1	n/a	n/a	n/a	1.47e-01	n/a
S97T001292			Strontium-89/90 High Level	uCi/mL	98.80	8.97e-06	5.60e-04	6.08e-04	5.84e-04	8.22	n/a	9.87e-06	4.26E+00
S97T001292			Pu-239/240 by TRU-SPEC Resin	uCi/mL	100.9	<3.21e-06	4.26e-05	3.87e-05	4.06e-05	9.59	n/a	4.56e-06	2.12E+00
S97T001292			Cesium-137 by GEA	uCi/mL	104.6	<2.32e-05	4.08e-02	4.10e-02	4.09e-02	0.49	n/a	n/a	0.620
S97T001292			Am-241 by Extraction	uCi/mL	100.0	<6.84e-06	1.20e-05	1.43e-05	1.32e-05	17.5	n/a	7.89e-06	3.95E+00
S97T001295	D		Ammonia by ISE-Std Additions	ug/mL	108.5	7.80e-01	4.17e+02	441.0	429.0	5.59	n/a	6.000	n/a

Table 1: Data Summary Report
TX-244 GRAB1

RISER: 8
SEGMENT #: 244-TX-97-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001212			Volume % Settled Solids	%	n/a	n/a	<1%	n/a	n/a	n/a	n/a	1.00e-01	n/a
S97T001290			DSC Exotherm on Perkin Elmer	Joules/g	94.24	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001290			OH- by Pot. Titration	ug/mL	97.59	<42.00	ph=6.64	ph=6.60	n/a	n/a	n/a	125.0	n/a
S97T001290			pH Direct	pH	100.0	n/a	9.470	9.470	9.470	0.00	n/a	1.00e-02	n/a
S97T001290			Specific Gravity	Sp.G.	99.32	n/a	1.093	1.094	1.094	0.09	n/a	1.00e-03	n/a
S97T001290			% Water by TGA on Perkin Elmer	%	99.56	n/a	90.17	90.56	90.37	0.43	n/a	n/a	n/a
S97T001290			TIC by Acid/Coulometry	ug/mL	98.84	4.700	1.05e+02	104.0	104.5	0.96	98.60	5.000	n/a
S97T001290			TOC by Persulfate/Coulometry	ug/mL	96.67	9.00e-01	< 40.00	<4.00E+1	n/a	n/a	92.10	40.00	n/a
S97T001290	D		Aluminium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	12.40	13.60	13.00	9.23	n/a	5.050	n/a
S97T001290	D		Iron-ICP-Acid Dil.	ug/mL	93.80	<5.00e-02	13.40	13.40	13.40	0.00	n/a	5.050	n/a
S97T001290	D		Sodium-ICP-Acid Dil.	ug/mL	101.0	<1.00e-01	2.80e+04	2.82e+04	2.81e+04	0.71	n/a	10.10	n/a
S97T001290			Fluoride-IC-Dionex 4000/4500	ug/mL	102.4	<1.20e-02	1.64e+03	1.64e+03	1.64e+03	0.00	n/a	25.45	n/a
S97T001290			Chloride-IC-Dionex 4000/4500	ug/mL	99.75	6.60e-02	6.17e+02	607.0	612.0	1.63	n/a	36.06	n/a
S97T001290			Nitrite-IC - Dionex 4000/4500	ug/mL	96.32	<1.08e-01	1.98e+03	1.91e+03	1.95e+03	3.60	n/a	229.1	n/a
S97T001290			Nitrate by IC-Dionex 4000/4500	ug/mL	95.62	<1.39e-01	5.32e+04	5.17e+04	5.25e+04	2.86	n/a	294.8	n/a
S97T001290			Phosphate-IC-Dionex 4000/4500	ug/mL	97.43	<1.20e-01	1.30e+04	1.26e+04	1.28e+04	3.12	n/a	254.5	n/a
S97T001290			Sulfate by IC-Dionex 4000/4500	ug/mL	95.40	<1.38e-01	3.08e+03	3.07e+03	3.07e+03	0.33	n/a	292.7	n/a
S97T001293			Ammonia by ISE-Std Additions	ug/mL	98.50	<1.000	1.10e+03	795.0	947.5	32.2	n/a	1.000	n/a
S97T001293			Caustic Demand	moles OH-/L	107.9	n/a	1.48e-01	1.43e-01	1.45e-01	3.44	n/a	1.50e-02	n/a
S97T001293			Strontium-89/90 High Level	uCi/mL	104.2	4.97e-06	3.53e-04	3.40e-04	3.47e-04	3.75	n/a	4.28e-06	4.78E+00
S97T001293			Pu-239/240 by TRU-SPEC Resin	uCi/mL	100.9	<3.21e-06	4.03e-05	3.92e-05	3.97e-05	2.77	n/a	4.44e-06	2.18E+00
S97T001293			Cesium-137 by GEA	uCi/mL	104.6	<2.32e-05	4.06e-02	4.04e-02	4.05e-02	0.49	n/a	n/a	0.620
S97T001293			Am-241 by Extraction	uCi/mL	100.0	<6.84e-06	9.73e-06	1.03e-05	1.00e-05	5.69	n/a	6.42e-06	4.93E+00
S97T001296	D		Ammonia by ISE-Std Additions	ug/mL	108.5	7.80e-01	4.29e+02	453.0	441.0	5.44	n/a	6.000	n/a

Table 1: Data Summary Report
TX-244 GRAB1

RISER: 8
SEGMENT #: 244-TX-97-3

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001213			Volume % Settled Solids	%	n/a	n/a	<1%	n/a	n/a	n/a	n/a	1.00e-01	n/a
S97T001291			DSC Exotherm on Perkin Elmer	Joules/g	94.24	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001291			OH- by Pot. Titration	ug/mL	97.59	<42.00	ph=6.52	ph=6.57	n/a	n/a	n/a	125.0	n/a
S97T001291			pH Direct	pH	100.0	n/a	9.480	9.470	9.475	0.11	n/a	1.00e-02	n/a
S97T001291			Specific Gravity	Sp.G.	99.32	n/a	1.054	1.065	1.059	1.04	n/a	1.00e-03	n/a
S97T001291			% Water by TGA on Perkin Elmer	%	99.56	n/a	90.15	90.58	90.37	0.48	n/a	n/a	n/a
S97T001291			TIC by Acid/Coulometry	ug/mL	95.85	4.100	98.30	98.00	98.15	0.31	97.50	5.000	n/a
S97T001291			TOC by Persulfate/Coulometry	ug/mL	91.33	4.800	< 40.00	<4.00E+1	n/a	n/a	90.00	40.00	n/a
S97T001291	D		Aluminium-ICP-Acid Dil.	ug/mL	99.20	<5.00e-02	10.50	7.270	8.885	36.4	95.20	5.050	n/a
S97T001291	D		Iron-ICP-Acid Dil.	ug/mL	95.60	<5.00e-02	11.10	10.90	11.00	1.82	94.30	5.050	n/a
S97T001291	D		Sodium-ICP-Acid Dil.	ug/mL	99.60	<1.00e-01	2.85e+04	2.85e+04	2.85e+04	0.00	103.0	10.10	n/a
S97T001291			Fluoride-IC-Dionex 4000/4500	ug/mL	102.4	<1.20e-02	1.67e+03	1.68e+03	1.67e+03	0.60	104.4	25.45	n/a
S97T001291			Chloride-IC-Dionex 4000/4500	ug/mL	99.75	6.60e-02	6.03e+02	623.0	613.2	3.26	109.4	36.06	n/a
S97T001291			Nitrite-IC - Dionex 4000/4500	ug/mL	96.32	<1.08e-01	1.94e+03	1.90e+03	1.92e+03	2.08	100.2	229.1	n/a
S97T001291			Nitrate by IC-Dionex 4000/4500	ug/mL	95.62	<1.39e-01	5.28e+04	5.33e+04	5.31e+04	0.94	91.58	294.8	n/a
S97T001291			Phosphate-IC-Dionex 4000/4500	ug/mL	97.43	<1.20e-01	1.30e+04	1.29e+04	1.30e+04	0.77	97.43	254.5	n/a
S97T001291			Sulfate by IC-Dionex 4000/4500	ug/mL	95.40	<1.38e-01	2.96e+03	3.05e+03	3.01e+03	3.00	99.05	292.7	n/a
S97T001294			Ammonia by ISE-Std Additions	ug/mL	98.50	<1.000	8.45e+02	905.0	875.0	6.86	121.0	1.000	n/a
S97T001294			Caustic Demand	moles OH-/L	107.9	n/a	1.52e-01	n/a	n/a	n/a	n/a	1.50e-02	n/a
S97T001294			Strontium-89/90 High Level	uCi/mL	104.2	4.97e-06	5.05e-04	4.67e-04	4.86e-04	7.82	n/a	4.25e-06	3.96E+00
S97T001294			Pu-239/240 by TRU-SPEC Resin	uCi/mL	100.9	<3.21e-06	5.69e-05	4.98e-05	5.33e-05	13.3	n/a	5.15e-06	1.79E+00
S97T001294			Cesium-137 by GEA	uCi/mL	104.6	<2.32e-05	4.10e-02	4.13e-02	4.12e-02	0.73	n/a	n/a	0.620
S97T001294			Am-241 by Extraction	uCi/mL	100.0	<6.84e-06	1.30e-05	1.26e-05	1.28e-05	3.12	n/a	7.37e-06	3.5E+00
S97T001297	D		Ammonia by ISE-Std Additions	ug/mL	108.5	7.80e-01	4.08e+02	471.0	439.5	14.3	120.4	6.000	n/a

ATTACHMENT 2

WASTE COMPATIBILITY CORROSION RULES FOR DCRT 244-TX

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Attachment 2

Waste Compatibility Corrosion Rules for DCRT 244-TX

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is $[NO_3]$...	Is [OH]...	Is $[NO_2]$...	Is [OH] + $[NO_2]$...
				<=1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= $[NO_2]$ <= 5.5 M	
S97T001286 Sample	NO_3	5.21E+04	0.840	YES	NO	YES	
	OH	0.00	0.00				
	NO_2	1.91E+03	0.042	1.0 M < $[NO_3]$ <= 3.0 M?	0.1 M * $[NO_3]$ <= [OH] < 10 M?		>= 0.4 * $[NO_3]$?
				3.0 M < $[NO_3]$ <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is $[NO_3]$...	Is [OH]...	Is $[NO_2]$...	Is [OH] + $[NO_2]$...
				<= 1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= $[NO_2]$ <= 5.5 M	
S97T001286 Duplicate	NO_3	5.17E+04	0.834	YES	NO	YES	
	OH	0.00	0.00				
	NO_2	1.92E+03	0.042	1.0 M < $[NO_3]$ <= 3.0 M?	0.1 M * $[NO_3]$ <= [OH] < 10 M?		>= 0.4 * $[NO_3]$?
				3.0 M < $[NO_3]$ <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Attachment 2

Waste Compatibility Corrosion Rules for DCRT 244-TX

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is $[NO_3]$...	Is [OH]...	Is $[NO_2]$...	Is [OH] + $[NO_2]$...
				<=1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= $[NO_2]$ <= 5.5 M	
S97T001290 Sample	NO_3	5.32E+04	0.858	YES	NO	YES	
	OH	0.00	0.00				
	NO_2	1.98E+03	0.043	1.0 M < $[NO_3]$ <= 3.0 M?	0.1 M * $[NO_3]$ <= [OH] < 10 M?		>= 0.4 * $[NO_3]$?
				3.0 M < $[NO_3]$ <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is $[NO_3]$...	Is [OH]...	Is $[NO_2]$...	Is [OH] + $[NO_2]$...
				<= 1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= $[NO_2]$ <= 5.5 M	
S97T001290 Duplicate	NO_3	5.17E+04	0.834	YES	NO	YES	
	OH	0.00	0.00				
	NO_2	1.91E+03	0.042	1.0 M < $[NO_3]$ <= 3.0 M?	0.1 M * $[NO_3]$ <= [OH] < 10 M?		>= 0.4 * $[NO_3]$?
				3.0 M < $[NO_3]$ <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Attachment 2

Waste Compatibility Corrosion Rules for DCRT 244-TX

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is $[NO_3]$...	Is [OH]...	Is $[NO_2]$...	Is [OH] + $[NO_2]$...
				<=1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= $[NO_2]$ <= 5.5 M	
S97T001291 Sample	NO_3	5.28E+04	0.852	YES	NO	YES	
	OH	0.00	0.00				
	NO_2	1.94E+03	0.042	1.0 M < $[NO_3]$ <= 3.0 M?	0.1 M * $[NO_3]$ <= [OH] < 10 M?		>= 0.4 * $[NO_3]$?
				3.0 M < $[NO_3]$ <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is $[NO_3]$...	Is [OH]...	Is $[NO_2]$...	Is [OH] + $[NO_2]$...
				<= 1.0 M?	0.010 M <= [OH] <= 8.0 M?	0.011 M <= $[NO_2]$ <= 5.5 M	
S97T001291 Duplicate	NO_3	5.33E+04	0.860	YES	NO	YES	
	OH	0.00	0.00				
	NO_2	1.90E+03	0.041	1.0 M < $[NO_3]$ <= 3.0 M?	0.1 M * $[NO_3]$ <= [OH] < 10 M?		>= 0.4 * $[NO_3]$?
				3.0 M < $[NO_3]$ <= 5.5 M?	0.3 <= [OH] < 10 M?		>= 1.2 M?

CHAIN OF CUSTODY FORMS

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CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E08-TF (2) Sample Number 244-TX-97-1 (3) Supervisor R.J. PRAZNIK

(4) Tank 244-TX (5) Riser 8 (6) Cask/PIG Shipping Container Serial Number 6003D

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	< .005 mSv	< .005 msv/hr
Side Dose Rate	< .005 mSv	< .005 msv/hr
Bottom Dose Rate	< .005 mSv	< .005 msv/hr
Smearable Contamination	< .334 Bq (Alpha)	< .334 Bq/LAW (Alpha)
	< 16.7 Bq (Beta-Gamma)	< 16.7 Bq/LAW (Beta-Gamma)
RCT*	(Signature)	RCT* (Signature)

(8) Shipment Description	
A. Work Package Number	WS-97-00125/W
B. Cask/PIG Seal Number	12355
C. Date and Time Sample Removed from Tank	5-29-97/1120 hrs
D. Expected Liquid Content	100%
E. Expected Solid Content	0%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	< 0.5 mR/hr
G. Expected Sample Length (Auger)/ Volume (GRAB)	125ml

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

27

(30) Field Comments

(32) Laboratory Comments

S97T00121

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
244-TX Riser 8	222-S	RJ Praznik	5-30-97/0910	

(17) Relinquished By (Sign and PRINT)	(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
RJ Praznik	James R. Fisher	5-30-97/0920	

(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
James R. Fisher	R.L. Chambers / RL Chambers	5-30-97/1100	

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

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
		Shipment No.	Seal No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

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

BC-6001-326 (01/96)

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-08-TF (2) Sample Number 244.TX.97.2 (3) Supervisor RJ PRAZNIK

(4) Tank 244-TX (5) Riser 8 (6) Cask/PIG Shipping Container Serial Number 6003A

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	<.005 mSv	<.005 mSv/hr
Side Dose Rate	<.005 mSv	<.005 mSv/hr
Bottom Dose Rate	<.005 mSv	<.005 mSv/hr
Smearable Contamination (Alpha)	<.334 Bq	<.334 Bq/LAW
(Beta-Gamma)	<16.7 Bq	<16.7 Bq/LAW
RCT* (Signature)	[signature]	RCT* (Signature) [signature]

(8) Shipment Description	
A. Work Package Number	WS-97-00125/W
B. Cask/PIG Seal Number	12356
C. Date and Time Sample Removed from Tank	1124hr/5-29-97
D. Expected Liquid Content	100%
E. Expected Solid Content	0%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	<0.5mR/h
G. Expected Sample Length (Auger)/ Volume (GRAB)	125ml

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

28

(30) Field Comments

(32) Laboratory Comments

S97T001212

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
244-TX Riser 8	222-S	RJ Praznik	53097/0910	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
RJ Praznik		James Rucker	5-30-97/0930	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
James Rucker		RL Chamberlain	5-30-97/1102	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
		Shipment No.	Seal No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

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

BC-6001-326 (01/96)

May. 30. 1997 12:17PM WHC 222S LAB ROOM 2F BACKSIDE No. 3442 P. 3/4

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 00E-08-TP (2) Sample Number 244-TX-97-3 (3) Supervisor R.J. Franzwik

(4) Tank 244-TX (5) Riser B (6) Cask/PIG Shipping Container Serial Number 6003D

Radiation Survey Data For Cask/PIG:	(7) FIELD	(31) LABORATORY
Over Top Dose Rate	< .005 mSv	< .005 msv/hr
Side Dose Rate	< .005 mSv	< .005 msv/hr
Bottom Dose Rate	< .005 mSv	< .005 msv/hr
Smearable Contamination (Alpha)	< .334 Bq	< .334 Bq/LAW
(Beta-Gamma)	< 16.7 Bq	< 16.7 Bq/LAW
RCT* (Signature)	Kevin Ochs	

(8) Shipment Description

A. Work Package Number	WS-97-00125/W
B. Cask/PIG Seal Number	12358
C. Date and Time Sample Removed from Tank	1128hr / 5-29-97
D. Expected Liquid Content	100%
E. Expected Solid Content	0%
F. Dose Rate Through Drill String (Auger)/On Contact (GRAB)	< 0.15 mR/h
G. Expected Sample Length (Auger)/ Volume (GRAB)	125 ml

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

29

(10) Field Comments

(32) Laboratory Comments

S97T001213

(11) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
244-TX riser 8	222-S	Robert J. Franzwik	5/30/97 1120	
(17) Relinquished By (Sign and PRINT)		(18) Received By (Sign and PRINT)	(19) Date/Time	(20) Receiver Comments
RJ Franzwik		James R. Chambers	5/30/97 1139	
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
James R. Chambers		RL Strauss RL Chambers	5-30-97 1205	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	(30) Seal Data Consistent with this Record?		
		Shipment No.	Seal No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

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

BC-6001-326 (01/96)

SAMPLE HANDLING

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worklistrpt Version 2.1 05/15/95
06/05/97 13:05

LABCORE Data Entry Template for Worklist# 18500

Analyst: ADP **Instrument:** NONE _____ **Book #** _____

Method: LA-519-151 Rev/Mod F-Ø

Worklist Comment: TX-244 GRAB1, @BRKDWN1 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
97000388	TX-244 GRAB1	1 SAMPLE	S97T001211	0		@BRKDWN1 DOSERATE	LIQUID	N/A	1.0		mrad/hour
97000388	TX-244 GRAB1	1 SAMPLE	S97T001211	0		@BRKDWN1 SEALNUM	LIQUID	N/A	12355		
97000388	TX-244 GRAB1	1 SAMPLE	S97T001211	0		@BRKDWN1 ETCHNUM	LIQUID	N/A	RWE 6/6/97 ~~N/A~~ 244-TX-97-1		
97000388	TX-244 GRAB1	1 SAMPLE	S97T001211	0		@BRKDWN1 APPEAR02	LIQUID	N/A	complete		
97000388	TX-244 GRAB1	1 SAMPLE	S97T001211	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
97000388	TX-244 GRAB1	1 SAMPLE	S97T001211	0		@BRKDWN1 STLSLD01	LIQUID	N/A	trace <1		%
97000388	TX-244 GRAB1	1 SAMPLE	S97T001211	0		@BRKDWN1 COLOR-01	LIQUID	N/A	Yellow/Clear		
97000388	TX-244 GRAB1	1 SAMPLE	S97T001211	0		@BRKDWN1 ORGVOL02	LIQUID	N/A	None		mL
97000388	TX-244 GRAB1	2 SAMPLE	S97T001212	0		@BRKDWN1 DOSERATE	LIQUID	N/A	1.5		mrad/hour
97000388	TX-244 GRAB1	2 SAMPLE	S97T001212	0		@BRKDWN1 SEALNUM	LIQUID	N/A	12356		
97000388	TX-244 GRAB1	2 SAMPLE	S97T001212	0		@BRKDWN1 ETCHNUM	LIQUID	N/A	RWE 6/6/97 ~~N/A~~ 244-TX-97-2		
97000388	TX-244 GRAB1	2 SAMPLE	S97T001212	0		@BRKDWN1 APPEAR02	LIQUID	N/A	complete		
97000388	TX-244 GRAB1	2 SAMPLE	S97T001212	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
97000388	TX-244 GRAB1	2 SAMPLE	S97T001212	0		@BRKDWN1 STLSLD01	LIQUID	N/A	<1		%
97000388	TX-244 GRAB1	2 SAMPLE	S97T001212	0		@BRKDWN1 COLOR-01	LIQUID	N/A	YELLOW - CLEAR		
97000388	TX-244 GRAB1	2 SAMPLE	S97T001212	0		@BRKDWN1 ORGVOL02	LIQUID	N/A	NONE		mL
97000388	TX-244 GRAB1	3 SAMPLE	S97T001213	0		@BRKDWN1 DOSERATE	LIQUID	N/A	RWE 6/6/97 ~~1.5~~ 1.0		mrad/hour
97000388	TX-244 GRAB1	3 SAMPLE	S97T001213	0		@BRKDWN1 SEALNUM	LIQUID	N/A	12358		

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# 18500

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
97000388	TX-244 GRAB1	3	SAMPLE	S97T001213	0		@BRKDWN1 ETCHNUM	LIQUID	N/A	244-TX-97-3		
97000388	TX-244 GRAB1	3	SAMPLE	S97T001213	0		@BRKDWN1 APPEAR02	LIQUID	N/A	Complete		
97000388	TX-244 GRAB1	3	SAMPLE	S97T001213	0		@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
97000388	TX-244 GRAB1	3	SAMPLE	S97T001213	0		@BRKDWN1 STLSLD01	LIQUID	N/A	<1		%
97000388	TX-244 GRAB1	3	SAMPLE	S97T001213	0		@BRKDWN1 COLOR-01	LIQUID	N/A	YELLOW-CLEAR		
97000388	TX-244 GRAB1	3	SAMPLE	S97T001213	0		@BRKDWN1 ORGVOL02	LIQUID	N/A	NONE		mL

Final page for worklist # 18500

Anthony Pierantoni 6-6-97
Analyst Signature Date

Susan Bee 6/06/97
Analyst Signature Date

Validated by N Lagrino 6-9-97

Data Entry Comments:

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

SAMPLE PREPARATIONS

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worklistrpt Version 2.1 05/15/95
06/23/97 10:07

LABCORE Data Entry Template for Worklist# 18786

Analyst: RK **Instrument:** ACD01 **Book #** N/A

Method: LA-505-158 Rev/Mod D-Ø

Worklist Comment: TX244 GRAB1, ACIDIL01 skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				ACIDIL01	LIQUID	1	1	N/A	DF
97000388	TX-244 GRAB1	2	SAMPLE	S97T001295	0	D	ACIDIL01	LIQUID	N/A	1.20		DF
97000388	TX-244 GRAB1	3	SAMPLE	S97T001295	0	D	DOSE-02	LIQUID	N/A	<.5		mrad/hour
97000388	TX-244 GRAB1	4	SAMPLE	S97T001296	0	D	ACIDIL01	LIQUID	N/A	1.20		DF
97000388	TX-244 GRAB1	5	SAMPLE	S97T001296	0	D	DOSE-02	LIQUID	N/A	<.5		mrad/hour
97000388	TX-244 GRAB1	6	SAMPLE	S97T001297	0	D	ACIDIL01	LIQUID	N/A	1.20		DF
97000388	TX-244 GRAB1	7	SAMPLE	S97T001297	0	D	DOSE-02	LIQUID	N/A	<.5		mrad/hour

Final page for worklist # 18786

Rob King 6/23/97
Analyst Signature **Date**

Linda Marsh 6-23-97
Analyst Signature **Date**

S97T001211 → S97T001295
" 1212 → " 1296
" 1213 → " 1297

Reviewed By
MCH 6/23/97

Data Entry Comments:

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

Preserved Subsample Information Worksheet

Tank/Project: TX-244 GRAB 1

Date: 6/23/97 **(Date of Breakdown)**

ACIDDIL WL# 18786

I. Preservative for Ammonia analysis:

A. Obtain historical results for the following analytes:

1. Al	0.114	M	[(μg/mL)/26,981]
2. OH^-	1.706	M	[(μg/mL)/17,000]
3. CO_3^{2-}	<0.008	M	[(μg/mL)/60,009]
4. NO_2^-	0.132	M	[(μg/mL)/46,006]
5. PO_4^{3-}	0.263	M	[(μg/mL)/94,971]

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

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

moles (HCl) = 1 mL (smp)[4(M Al) + M OH^- + M CO_3^{2-} + M NO_2^- + M PO_4^{3-}] x 1E-03

3. moles (HCl) = 0.0026 moles

g (HCl) = (moles HCl x 36.46 g/mole) / 0.37 (for 37% HCl)

4. g (HCl) = 0.253 g

mL (HCl)/1 mL (smp) = g (HCl)/ 1.18 g/mole (HCl)

5. mL (HCl)/1 mL (smp) = 0.214 mL

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

1. mL (HCl) x (desired samp vol) ≈ 2 mL (to nearsest mL)

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

LAD 8/6/97

Preserved Subsample Information Worksheet

E. Record requested volumes:

1. Volume HCl 2 mL
2. Volume Water N/A mL
3. Volume Sample to add 10 mL

F. Prepare a prep blank - requested volumes:

1. Volume Hcl 2 mL
2. Volume Water N/A mL
3. Additional Vol. Water 10 mL

WED 4/16/97

Preserved Subsample Information Worksheet

II. Determine dilution factor for sample:

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

Sample ID: 244-TX-97-1
LABCORE #: 597T001295

1. Weight ~~cone~~ beaker + sample 12.86 g
2. Tare weight of ~~cone~~ beaker. RAE 6/23/97 2.51 g
3. Net weight sample (1 - 2) 10.35 g
4. Volume sample 10 mL
5. Bulk Density (3 ÷ 4) ~~1.035~~ 1.04 RAE 6/23/97 g/mL

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

C. Wgt. Samp = (Wgt. vial + HCl + water + samp) - (Wgt. vial + HCl + water)
Wgt. Samp = 10.30 g

D. Final Vol. Samp = Wgt. Samp/Bulk Density = 9.90 mL

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

Dilution Factor (DF) = 1.20

F. Report DF in LabCore as ACIDIL01 test results.

LAD 6/26/97

Preserved Subsample Information Worksheet

III. Determine dilution factor for sample:

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

Sample ID: 244-TX-97-2
LABCORE #: 597T001296

1. Weight cone + sample 12.88 g
2. Tare weight of ~~cone~~ beaker 2.50 g
   rec 6/23/97
3. Net weight sample (1 - 2) 10.38 g
4. Volume sample 10 mL
5. Bulk Density (3 ÷ 4) 1.04 g/mL

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

C. Wgt. Samp = (Wgt. vial + HCl + water + samp) - (Wgt. vial + HCl + water)
Wgt. Samp = 10.35 g

D. Final Vol. Samp = Wgt. Samp/Bulk Density = 9.95 mL

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

Dilution Factor (DF) = 1.20

F. Report DF in LabCore as ACIDIL01 test results.

LAD 8/6/97

Preserved Subsample Information Worksheet

IV. Determine dilution factor for sample:

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

Sample ID: 244-TX-97-3
LABCORE #: S97T00 1297

1. Weight cone + sample 12.87 g
2. Tare weight of ~~cone~~ beaker 6/23/97 2.51 g
3. Net weight sample (1 - 2) 10.36 g
4. Volume sample 10 mL
5. Bulk Density (3 ÷ 4) 1.04 g/mL

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

C. Wgt. Samp = (Wgt. vial + HCl + water + samp) - (Wgt. vial + HCl + water)
Wgt. Samp = 10.34 g

D. Final Vol. Samp = Wgt. Samp/Bulk Density = 9.94 mL

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

Dilution Factor (DF) = 1.20

F. Report DF in LabCore as ACIDIL01 test results.

6/26/97 LAD

PRESERVED PREP BLANK WORKSHEET

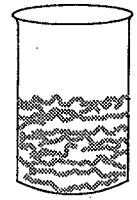
Date: 6/23/97

Project: TX-244 GRAB 1

P.C. R-Esch

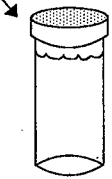
Phone# 373-4314

Add Preservative to vial
BEFORE loading into hotcell



Demineralized Water

Vol. Water 10 mL



Start Time: N/A
End Time: N/A

Tests:

Type of Preservative:*
HCl

Vol. of Preservative:*
2 mL

Vol. of Water:*
N/A

Jar#: PREP BLNK
Jar/Vial Size: 20 mL
Wgt Jar + P + W: 16.89 g
Initial Weight Jar: 14.63 g
Net Wgt P + W: 2.26 g

Label vial as PREP BLANK

Jar#: PREP BLNK
Wgt J + P + W + Samp: 26.66 g
Wgt J + P + W 16.89 g
Net Wgt Samp: 9.77 g

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

PRESERVED SUBSAMPLE WORKSHEET

Date: 6/23/97

Project: TX-244 GRAB1

P.C. R. Esch

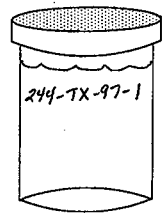
Phone# 373-4314

Add Preservative to vial
BEFORE loading into hotcell

Type of Preservative:*
HCl

Vol. of Preservative:*
2 mL

Vol. of Water:*
N/A



LABCORE # S97T001211

Jar#: PARENT

Jar/Vial Size: 125 mL

Initial Weight: _____ g

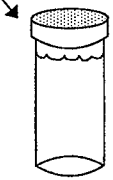
Final Weight: _____ g

Net Weight: _____ g

(after final subsample taken)

N/A
RE
6/23/97

Vol. Sample 10 mL



Start Time: N/A
End Time: N/A

Tests:
DOSE-02
ACIDIC01

Jar#: 1295

Jar/Vial Size: 20 mL

Wgt Jar + P + W: 17.42 g

Initial Weight Jar: 15.17 g

Net Wgt P + W: 2.25 g

LABCORE # S97T001295

Jar#: 1295

Wgt J + P + W + Samp: 27.72 g

Wgt J + P + W 17.42 g

Net Wgt Samp: 10.30 g

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

PRESERVED SUBSAMPLE WORKSHEET

Date: 6/23/97

Project: TX-244 GRAB 1

P.C. R. Esch

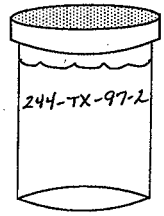
Phone# 373-4314

Add Preservative to vial
BEFORE loading into hotcell

Type of Preservative:*
HCl

Vol. of Preservative:*
2 mL

Vol. of Water:*
N/A



LABCORE # S97T001212

Jar#: PARENT

Jar/Vial Size: 125 mL

Initial Weight: _____ g

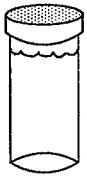
Final Weight: _____ g

Net Weight: _____ g

N/A RDE 6/23/97

(after final subsample taken)

Vol. Sample 10 mL



Start Time: N/A
End Time: N/A

Tests: RDE 6/23/97
~~DOSE-Ø2~~ DOSE-Ø2
ACDL-Ø1

LABCORE # S97T001296

Jar#: 1296

Wgt J + P + W + Samp: 27.90 g

Wgt J + P + W 17.55 g

Net Wgt Samp: 10.35 g

Jar#: 1296

Jar/Vial Size: 20 mL

Wgt Jar + P + W: ~~15.30~~ 17.55 g 6/23/97

Initial Weight Jar: 15.30 g

Net Wgt P + W: 2.25 g

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

PRESERVED SUBSAMPLE WORKSHEET

Date: 6/23/97

Project: TX-244 GRAB1

P.C. R. Esch

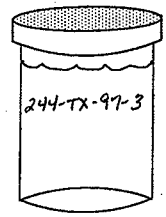
Phone# 373-4314

Add Preservative to vial
BEFORE loading into hotcell

Type of Preservative:* HCl

Vol. of Preservative:* 2 mL

Vol. of Water:* N/A



LABCORE # S97T001213

Jar#: PARENT

Jar/Vial Size: 125 mL

Initial Weight: _____ g

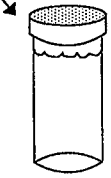
Final Weight: _____ g

Net Weight: _____ g

(after final subsample taken)

N/A
KEE
6/23/97

Vol. Sample 10 mL



Start Time: N/A
End Time: N/A

Tests: KEE 6/23/97
~~DOSE-01~~ DOSE-02
ACIDIC 01

LABCORE # S97T001297

Jar#: 1297

Wgt J + P + W + Samp: 27.77 g

Wgt J + P + W 17.43 g

Net Wgt Samp: 10.34 g

Jar#: 1297

Jar/Vial Size: 20 mL

Wgt Jar + P + W: 17.43 g

Initial Weight Jar: 15.16 g

Net Wgt P + W: 2.27 g

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

INORGANIC ANALYSIS

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worklistrpt Version 2.1 05/15/95
06/06/97 14:27

LABCORE Data Entry Template for Worklist# 18529

Analyst: EAL **Instrument:** DSC0 3 **Book #** 12N14-B

Method: LA-514-114 Rev/Mod DO

Worklist Comment: TX-244 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	LIQUID	28.45	26.81	N/A	Joules/g
97000388	TX-244 GRAB1	2	SAMPLE	S97T001286	0		DSC-03	LIQUID	N/A	0		Joules/g
97000388	TX-244 GRAB1	3	DUP	S97T001286	0		DSC-03	LIQUID	0	0	N/A	Joules/g
97000388	TX-244 GRAB1	4	SAMPLE	S97T001290	0		DSC-03	LIQUID	N/A	0		Joules/g
97000388	TX-244 GRAB1	5	DUP	S97T001290	0		DSC-03	LIQUID	0	0	N/A	Joules/g
97000388	TX-244 GRAB1	6	SAMPLE	S97T001291	0		DSC-03	LIQUID	N/A	0		Joules/g
97000388	TX-244 GRAB1	7	DUP	S97T001291	0		DSC-03	LIQUID	0	0	N/A	Joules/g

Final page for worklist # 18529

A. Lambel 06.07.97
Analyst Signature **Date**

6-9-97
Analyst Signature **Date**

Validated/Rejected 6/12/97 Bachelor

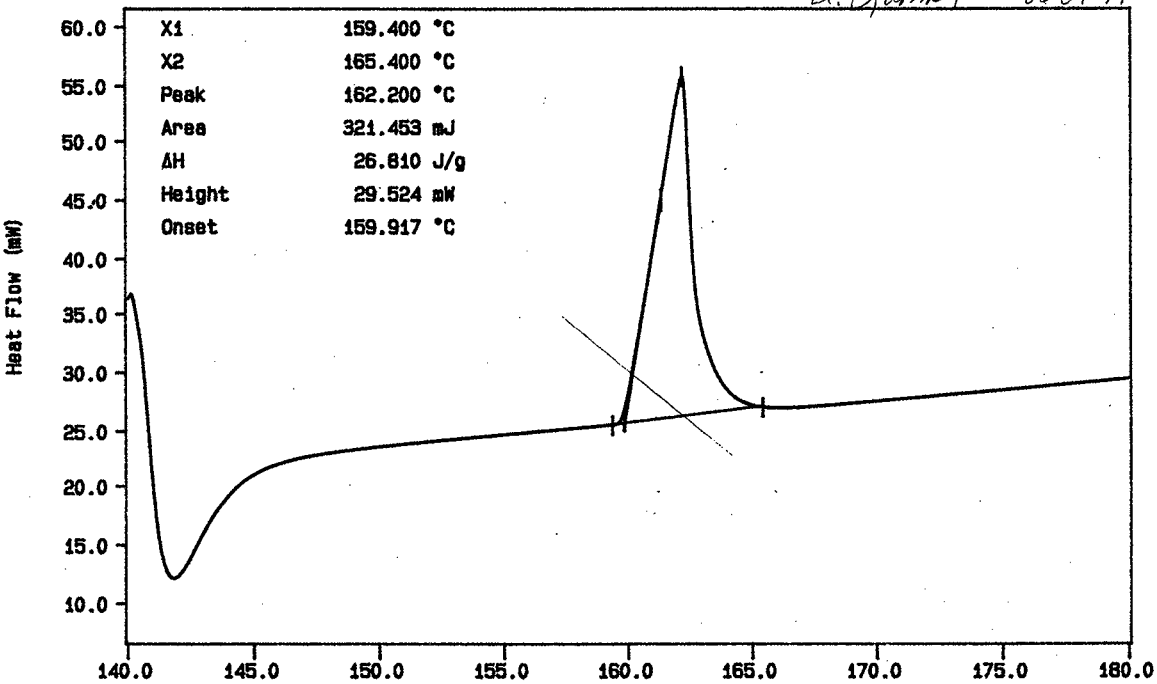
Data Entry Comments:
Instrument response problem S97T001286. Rerun sample. 6/9/97

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

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 49 TO 55.

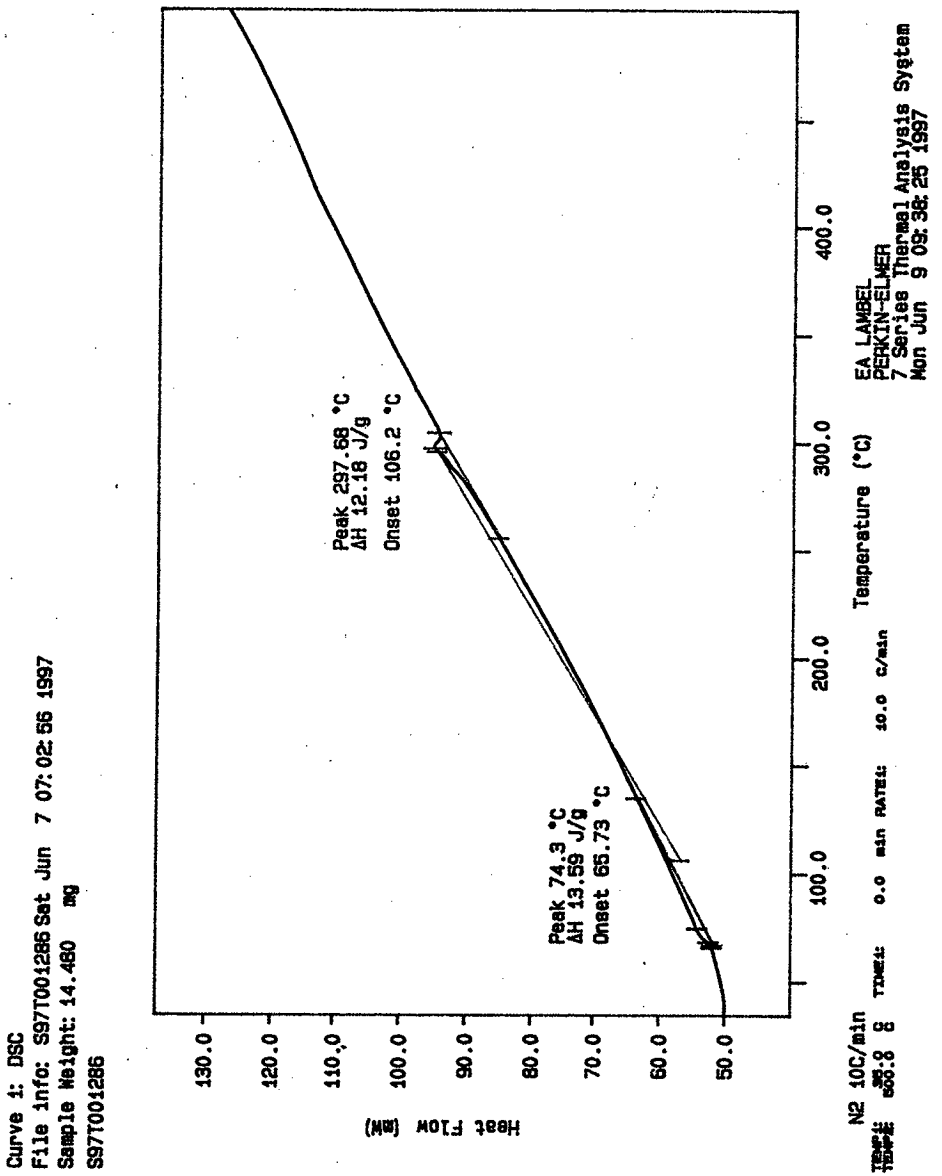
Curve 1: DSC
File info: IND060701 Sat Jun 7 05:47:01 1997
Sample Weight: 11.990 mg
12N14-B

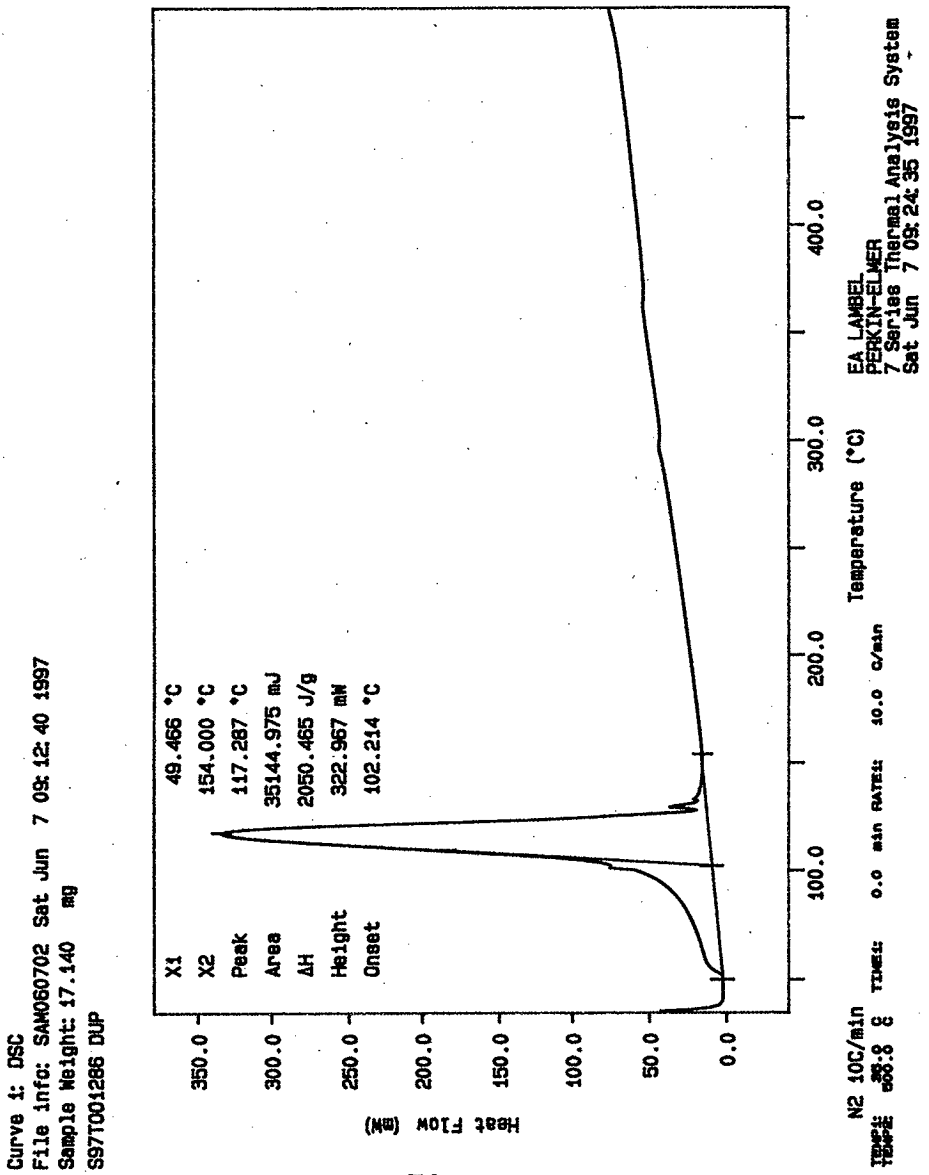
A. Lambel 06.07.97

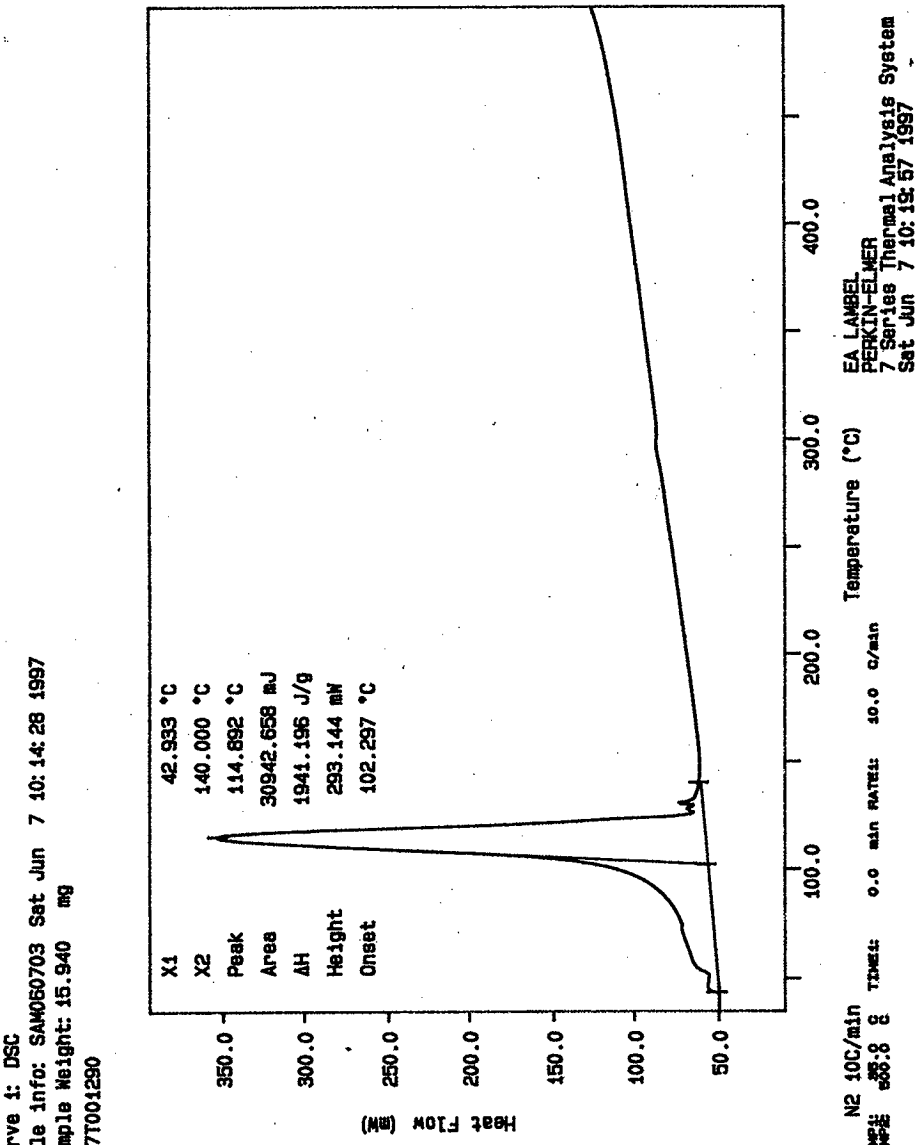


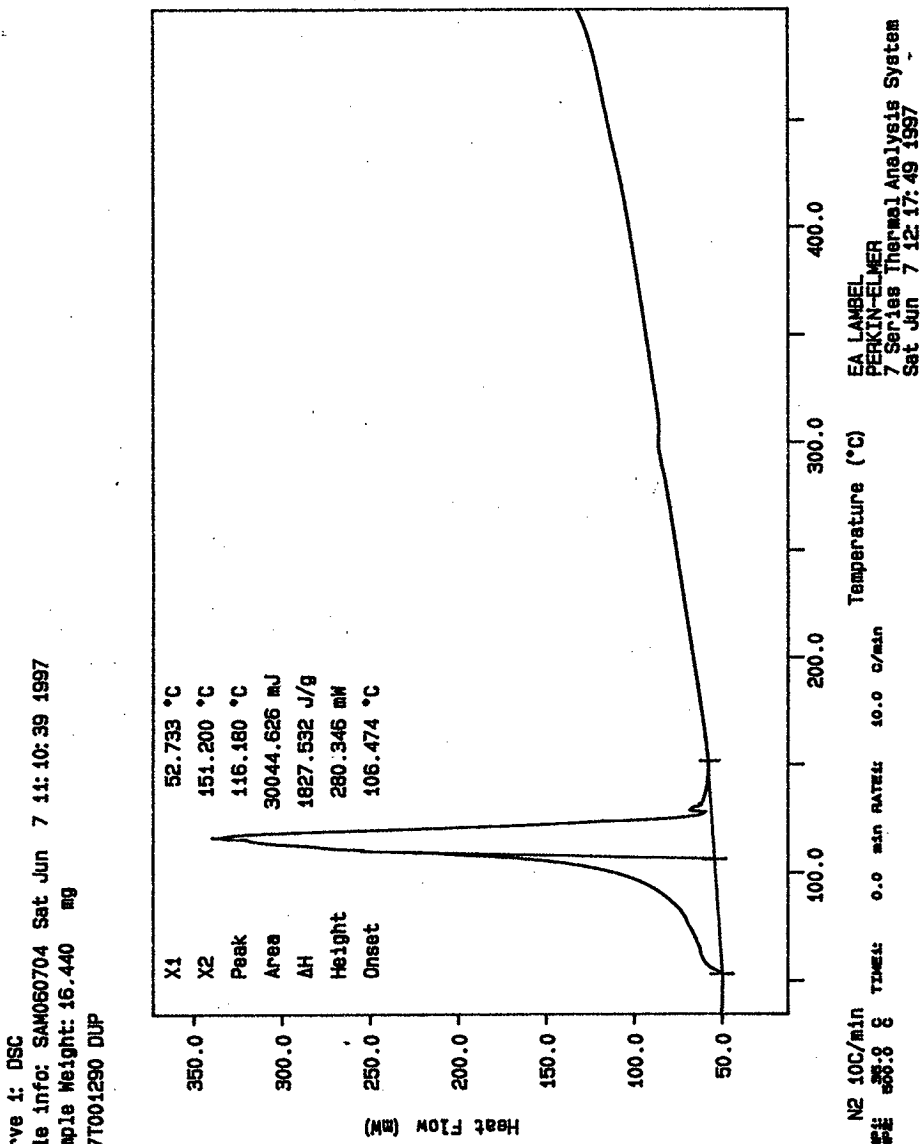
N2, EXOTHERM DOWN
TEMP1: 140.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 180.0 C

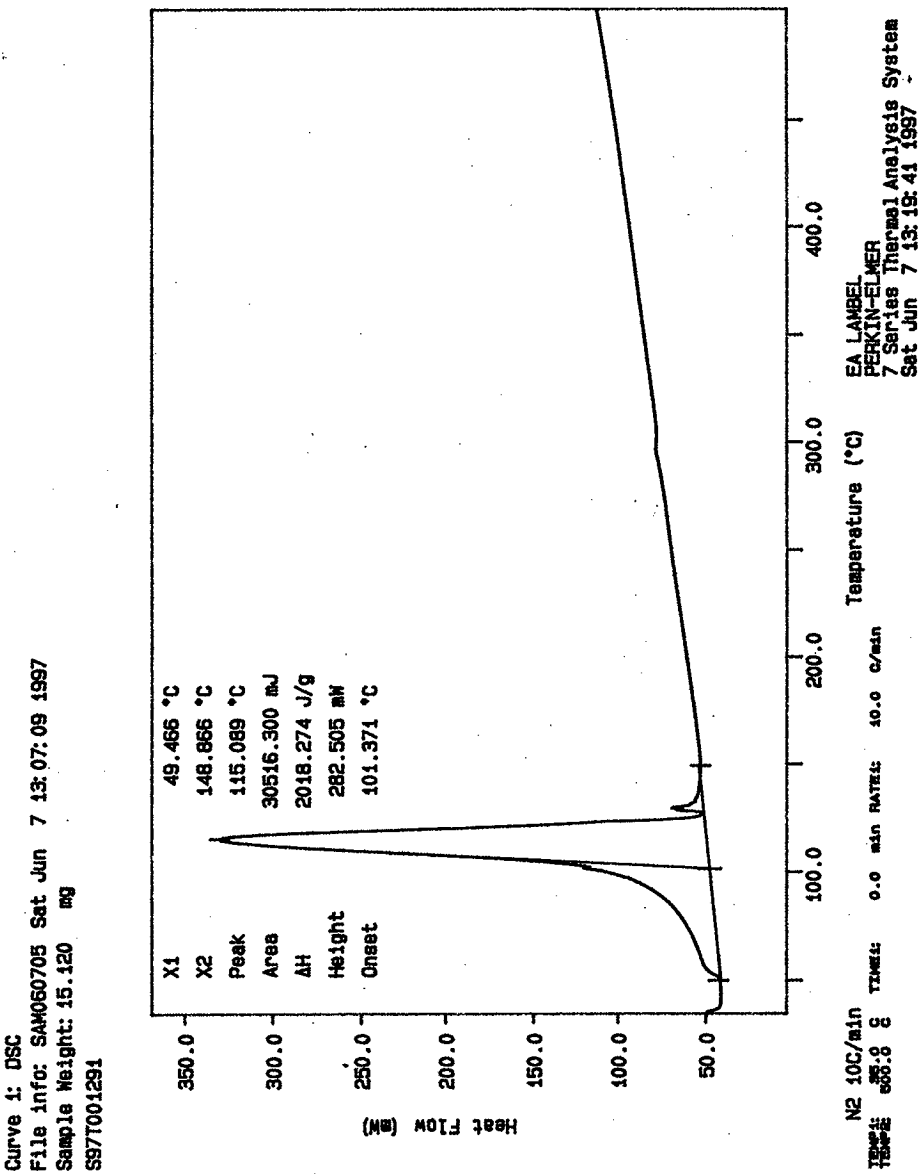
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 05:55:41 1997

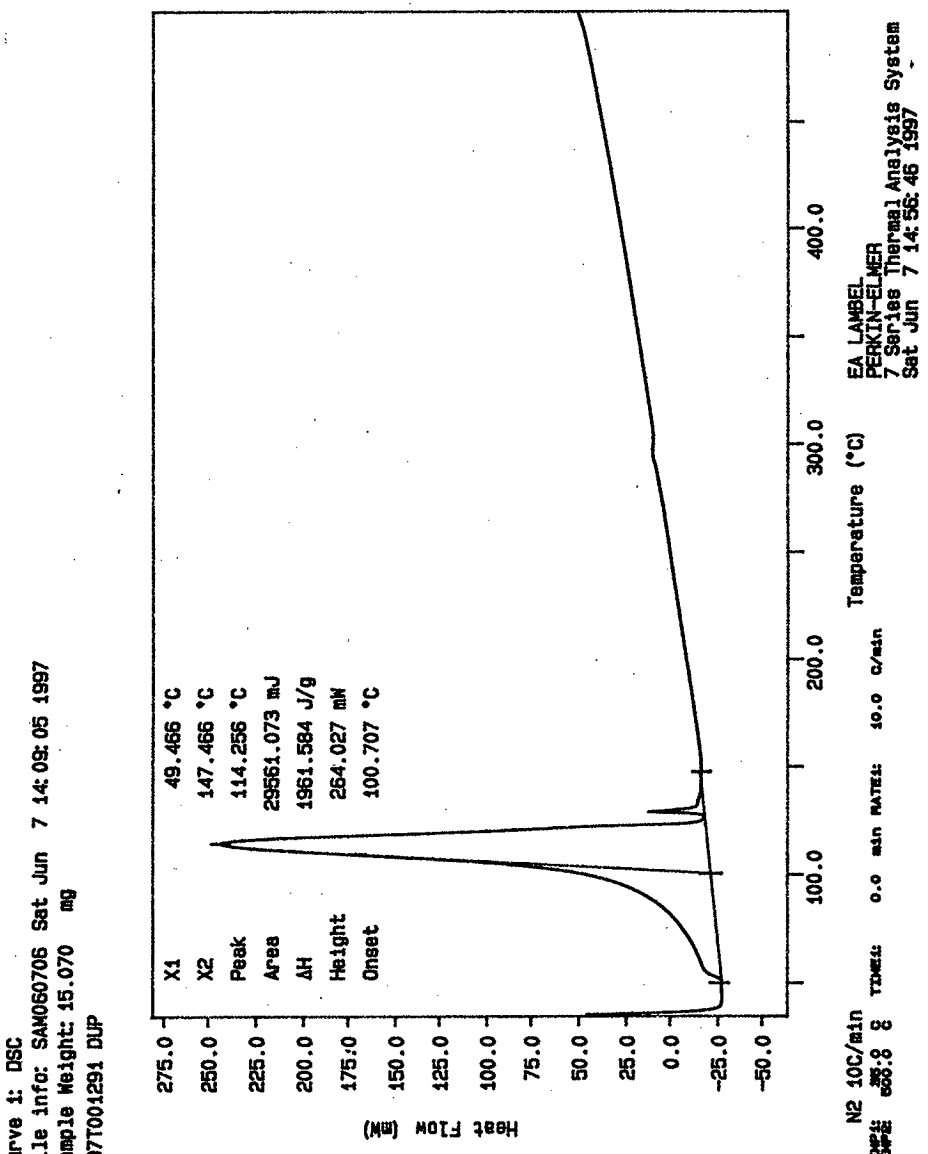

Curve 1: DSC
File info: S97T001286 Sat Jun 7 07:02:56 1997
Sample Weight: 14.480 mg
S97T001286
Peak 297.68 °C
ΔH 12.18 J/g
Onset 106.2 °C
Peak 74.3 °C
ΔH 13.59 J/g
Onset 65.73 °C
130.0
120.0
110.0
100.0
90.0
80.0
70.0
60.0
50.0
Heat Flow (mW)
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMP: 25.0 C
TEMP: 600.0 C
TIME: 0.0 min RATE: 10.0 C/min
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jun 9 09:38:25 1997


Curve 1: DSC
File info: SAM060702 Sat Jun 7 09:12:40 1997
Sample Weight: 17.140 mg
S97T001286 DUP
X1 49.466 °C
X2 154.000 °C
Peak 117.287 °C
Area 35144.975 mJ
ΔH 2050.465 J/g
Height 322.967 mW
Onset 102.214 °C
Heat Flow (mW)
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMP: 25.0 C
TEMP: 600.0 C
TIME: 0.0 min RATE: 10.0 C/min
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 09:24:35 1997


Curve 1: DSC
File info: SAM060703 Sat Jun 7 10:14:28 1997
Sample Weight: 15.940 mg
S97T001290
X1 42.933 °C
X2 140.000 °C
Peak 114.892 °C
Area 30942.658 mJ
ΔH 1941.196 J/g
Height 293.144 mW
Onset 102.297 °C
Heat Flow (mW)
350.0
300.0
250.0
200.0
150.0
100.0
50.0
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMP1: 25.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 10:19:57 1997


Curve 1: DSC
File info: SAM060704 Sat Jun 7 11:10:39 1997
Sample Weight: 16.440 mg
S97T001290 DUP
X1 52.733 °C
X2 151.200 °C
Peak 116.180 °C
Area 30044.626 mJ
ΔH 1827.532 J/g
Height 280.346 mW
Onset 106.474 °C
Heat Flow (mW)
350.0
300.0
250.0
200.0
150.0
100.0
50.0
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMPE 35.0 C TIME: 0.0 min RATE: 10.0 C/min
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 12:17:49 1997


Curve 1: DSC
File info: SAM060705 Sat Jun 7 13:07:09 1997
Sample Weight: 15.120 mg
S97T001291
X1 49.466 °C
X2 148.866 °C
Peak 115.089 °C
Area 30516.300 mJ
ΔH 2018.274 J/g
Height 282.505 mW
Onset 101.371 °C
Heat Flow (mW)
350.0
300.0
250.0
200.0
150.0
100.0
50.0
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMP: 35.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMP: 500.0 C
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 13:19:41 1997


Curve 1: DSC
File info: SAM060706 Sat Jun 7 14:09:05 1997
Sample Weight: 15.070 mg
S97T001291 DUP
X1 49.466 °C
X2 147.466 °C
Peak 114.256 °C
Area 29561.073 mJ
ΔH 1961.584 J/g
Height 264.027 mW
Onset 100.707 °C
Heat Flow (mW)
275.0
250.0
225.0
200.0
175.0
150.0
125.0
100.0
75.0
50.0
25.0
0.0
-25.0
-50.0
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMP: 35.0 C
TEMP: 500.0 C
TIME: 0.0 min RATE: 10.0 C/min
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 14:56:46 1997

LABCORE Data Entry Template for Worklist# 18632

Analyst: [illegible] **Instrument:** DSC0 3 **Book #** 12N4B

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

Worklist Comment: Rerun #1 due to instrument response. Run under N2. -ppb

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-03	LIQUID	28.45	26.91	N/A	Joules/g
97000388	TX-244 GRAB1	2	SAMPLE	S97T001286	0		DSC-03	LIQUID	N/A	0		Joules/g
97000388	TX-244 GRAB1	3	DUP	S97T001286	0		DSC-03	LIQUID	0	0	N/A	Joules/g

Final page for worklist # 18632

[illegible] 6/16/97
Analyst Signature Date

Susan Bee 6/17/97
Analyst Signature Date

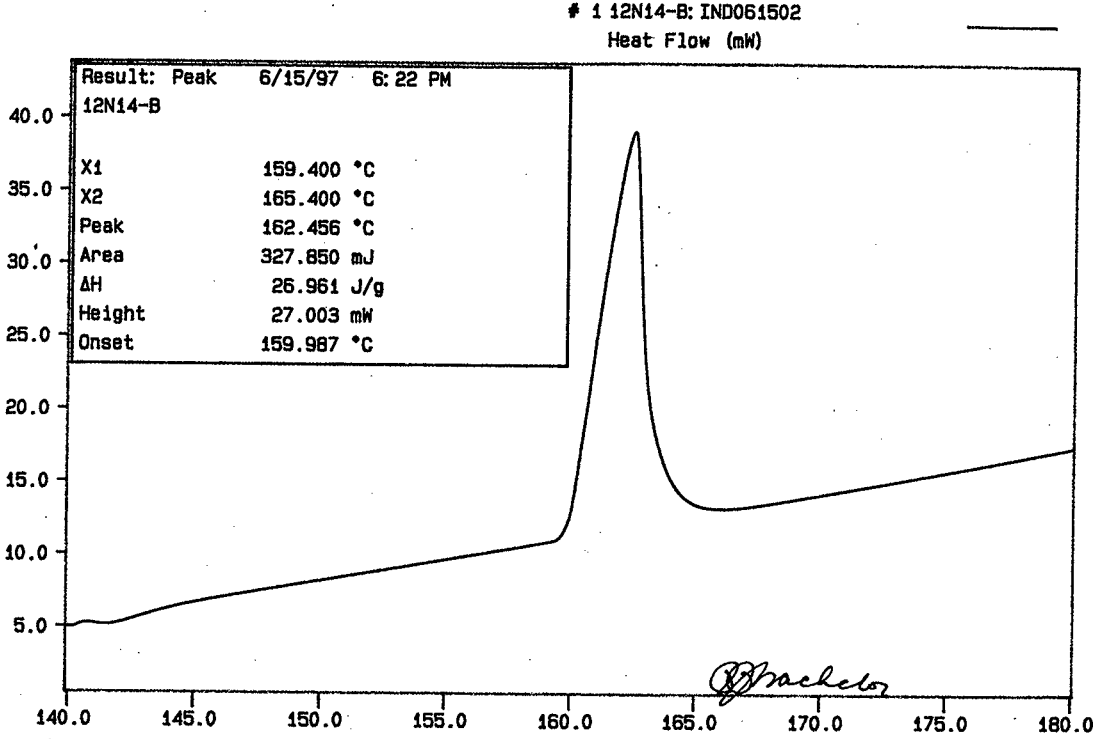
Validated 6/18/97 [illegible]

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.

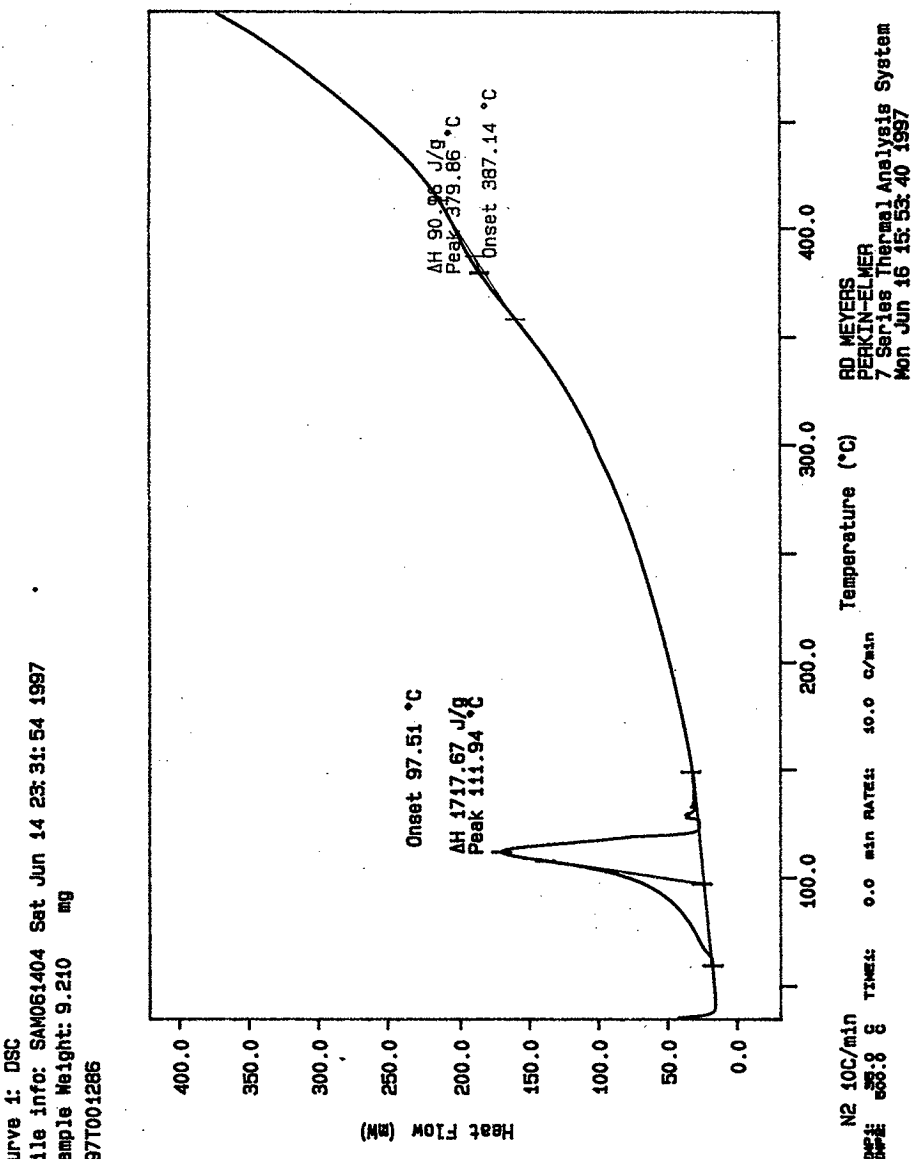
Curve 1: DSC
File info: IND061502 Sun Jun 15 18:17:21 1997
Sample Weight: 12.160 mg
12N14-B

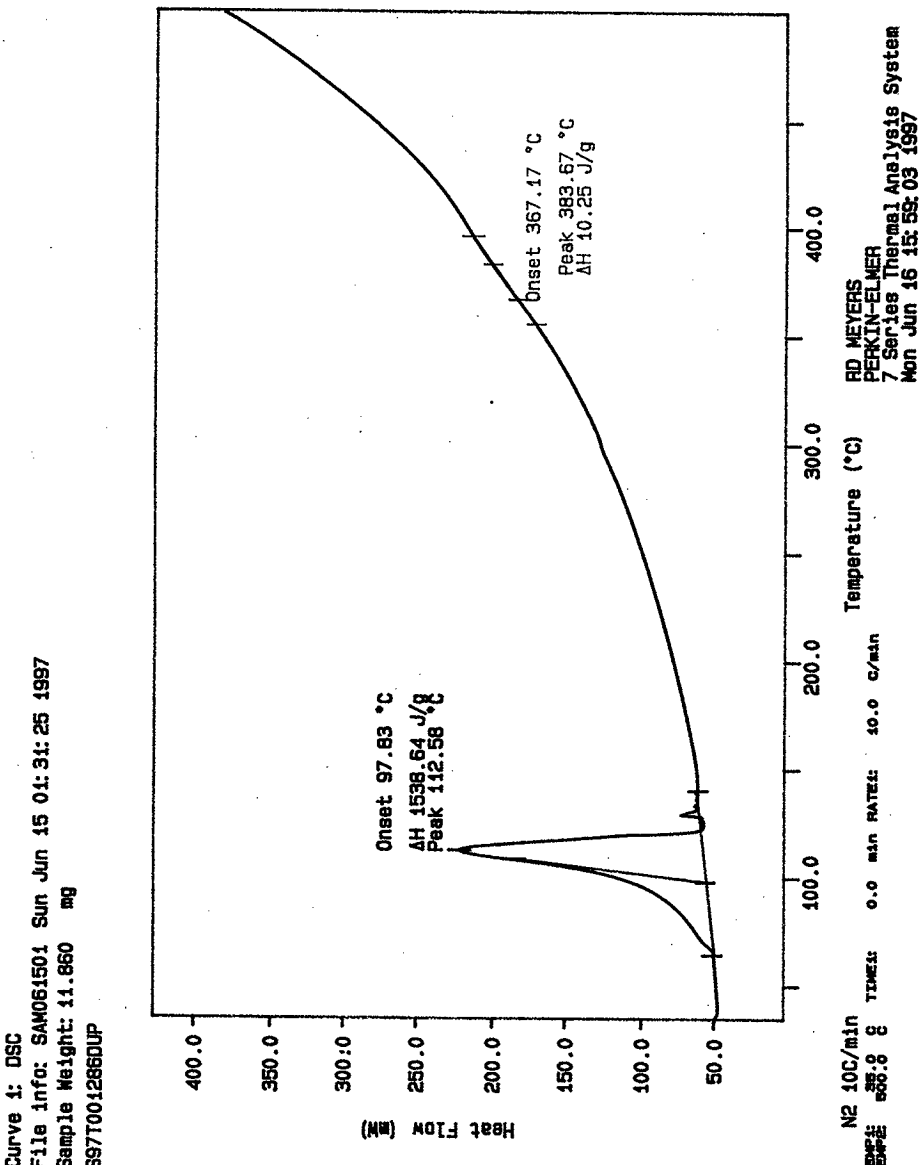
SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 57 TO 59.



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

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Jun 15 20:59:57 1997


Curve 1: DSC
File info: SAM061404 Sat Jun 14 23:31:54 1997
Sample Weight: 9.210 mg
S97T001286
Onset 97.51 °C
ΔH 1717.67 J/g
Peak 111.94 °C
ΔH 90.86 J/g
Peak 379.86 °C
Onset 387.14 °C
Heat Flow (mW)
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMPERATURE 500.0 C TIME: 0.0 min RATE: 10.0 C/min
RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jun 16 15:53:40 1997


Curve 1: DSC
File info: SAM061501 Sun Jun 15 01:31:25 1997
Sample Weight: 11.860 mg
S97T0012860UP
Onset 97.83 °C
ΔH 1538.64 J/g
Peak 112.58 °C
Onset 367.17 °C
Peak 383.67 °C
ΔH 10.25 J/g
Heat Flow (mW)
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
100.0
200.0
300.0
400.0
Temperature (°C)
N2 10C/min
TEMP1: 35.0 C
TEMP2: 500.0 C
TIME1: 0.0 min RATE1: 10.0 C/min
RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jun 16 15:59:03 1997

LABCORE Data Entry Template for Worklist# 18528

Analyst: EDL **Instrument:** TGA0 03 **Book #** 97N8-A

Method: LA-514-114 Rev/Mod D.0

Worklist Comment: TX-244 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-03	LIQUID	59.4	59.14	N/A	%
97000388	TX-244 GRAB1	2	SAMPLE	S97T001286	0		TGA-03	LIQUID	N/A	90.16		%
97000388	TX-244 GRAB1	3	DUP	S97T001286	0		TGA-03	LIQUID	90.16	90.36	N/A	%
97000388	TX-244 GRAB1	4	SAMPLE	S97T001290	0		TGA-03	LIQUID	N/A	90.17		%
97000388	TX-244 GRAB1	5	DUP	S97T001290	0		TGA-03	LIQUID	90.17	90.56	N/A	%
97000388	TX-244 GRAB1	6	SAMPLE	S97T001291	0		TGA-03	LIQUID	N/A	90.15		%
97000388	TX-244 GRAB1	7	DUP	S97T001291	0		TGA-03	LIQUID	90.15	90.58	N/A	%

Final page for worklist # 18528

A Lambiel 06.07.97
Analyst Signature **Date**

[illegible] 6-8-97
Analyst Signature **Date**

Validated 6/12/97 [illegible] Bachelor

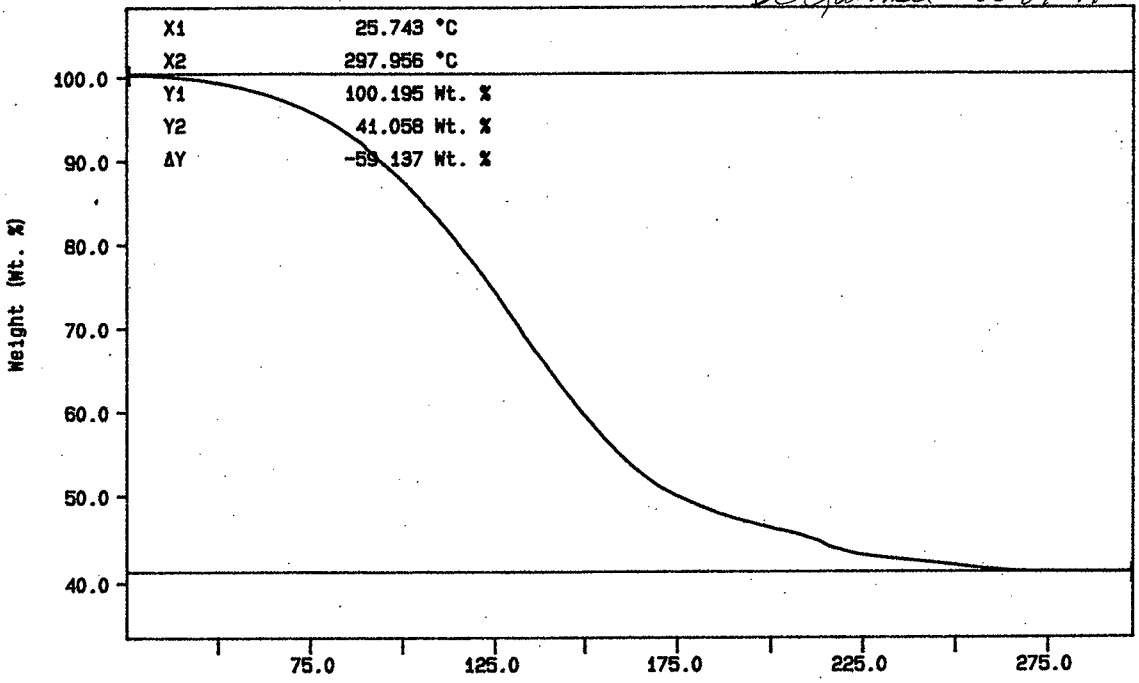
Data Entry Comments:

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.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 61 TO 67.

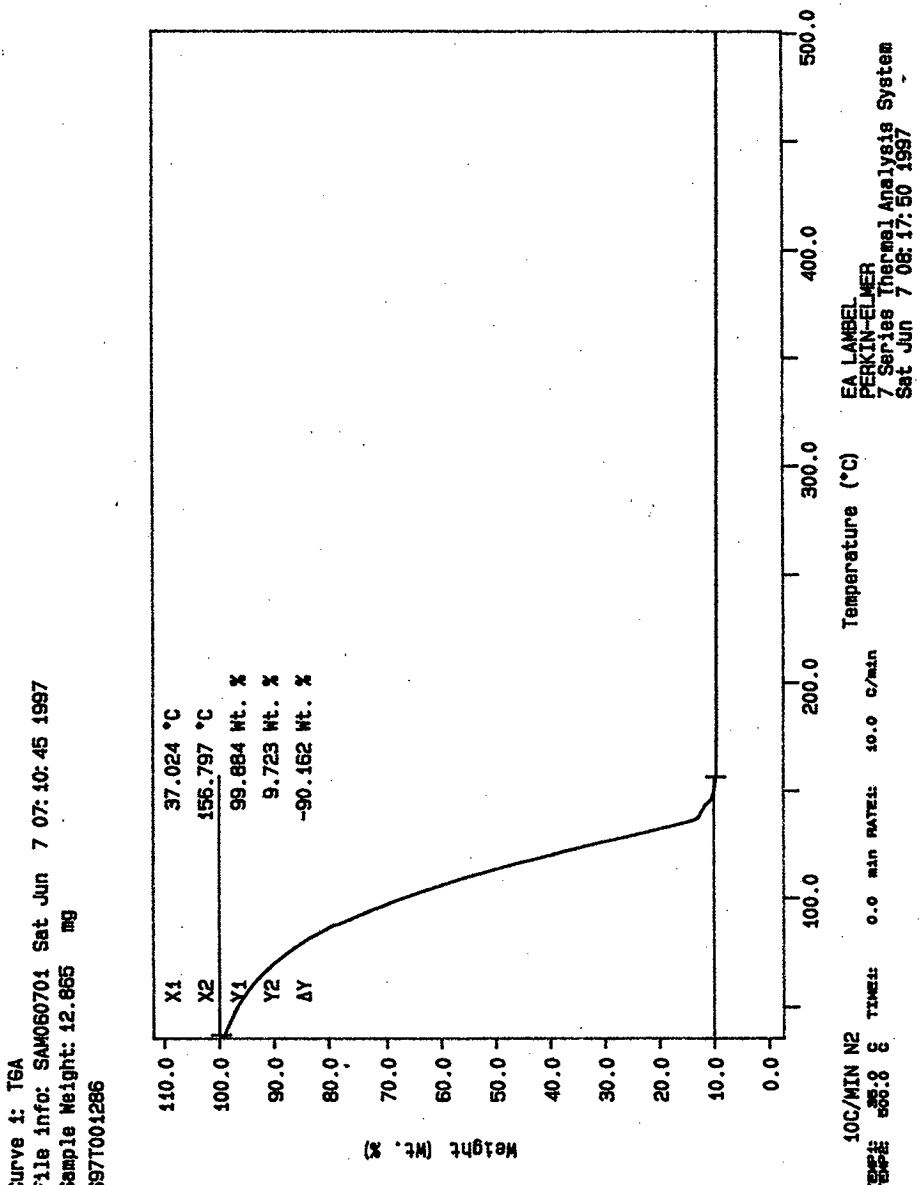
Curve 1: TGA
File info: TER060701 Sat Jun 7 06:07:31 1997
Sample Weight: 22.747 mg
97N8-A

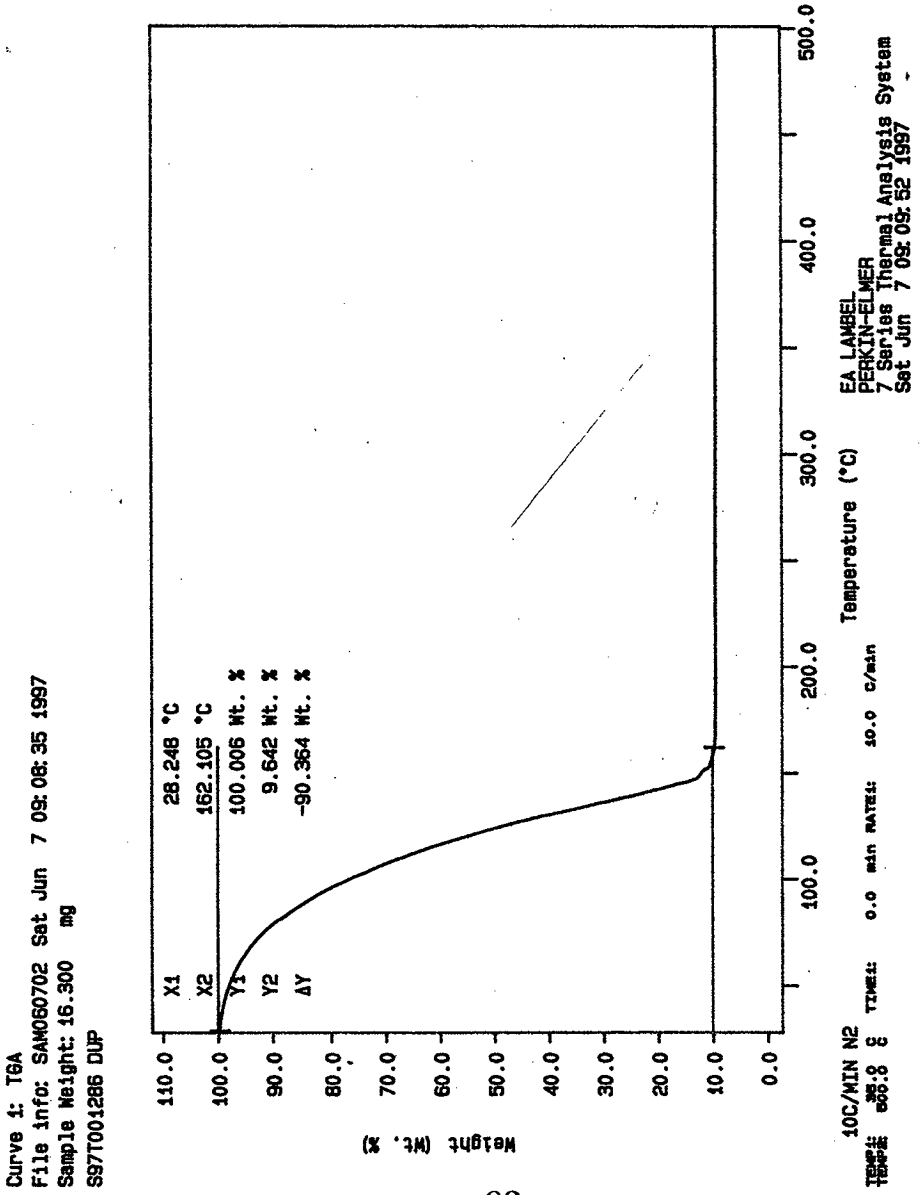
A Lambel 06-07-97

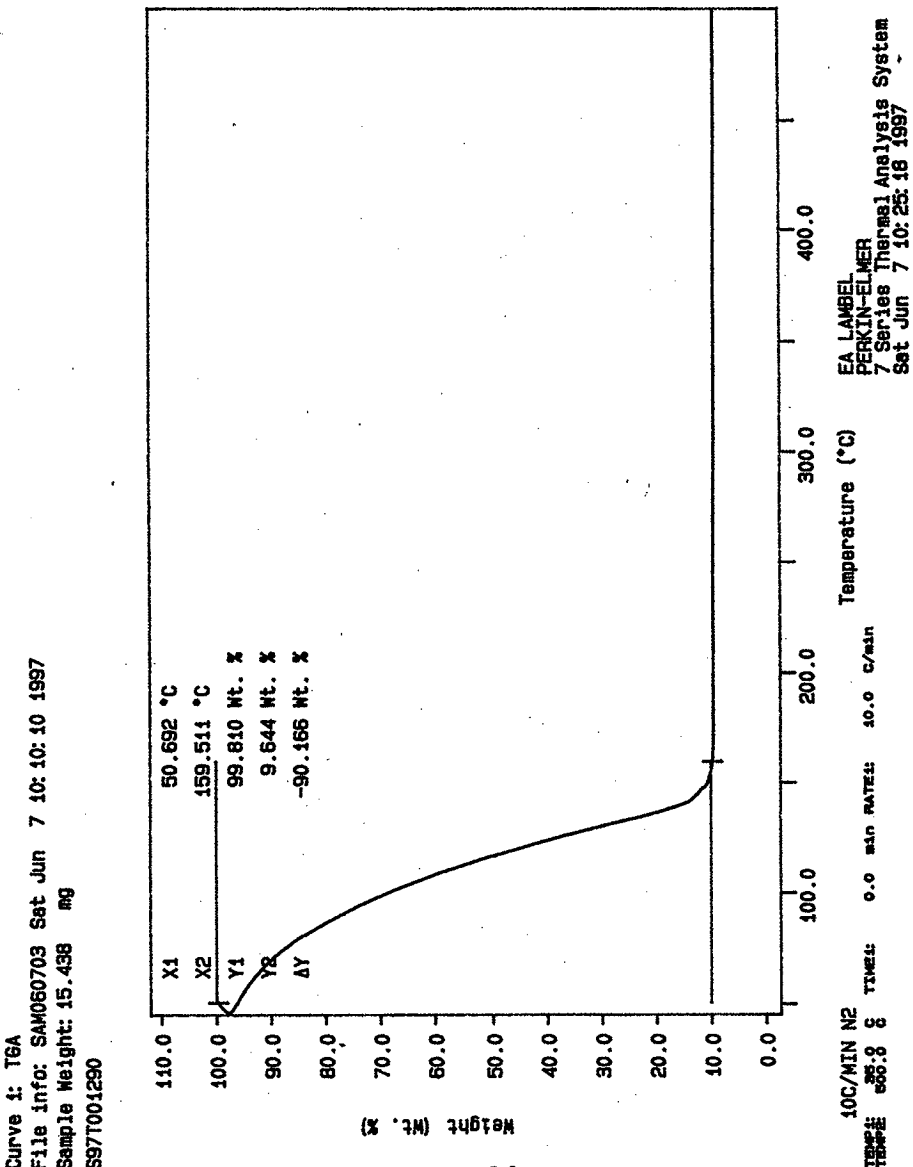


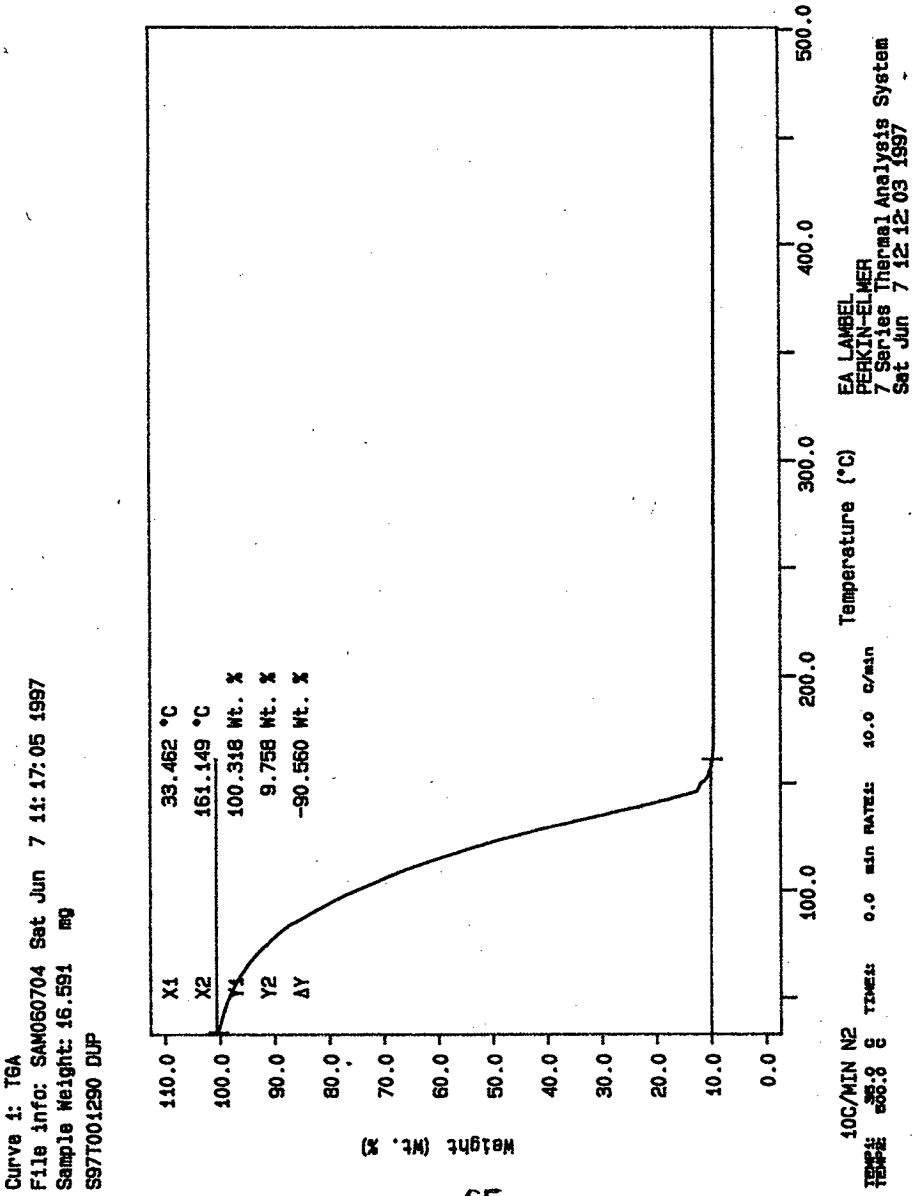
10C/MIN N2
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 300.0 C

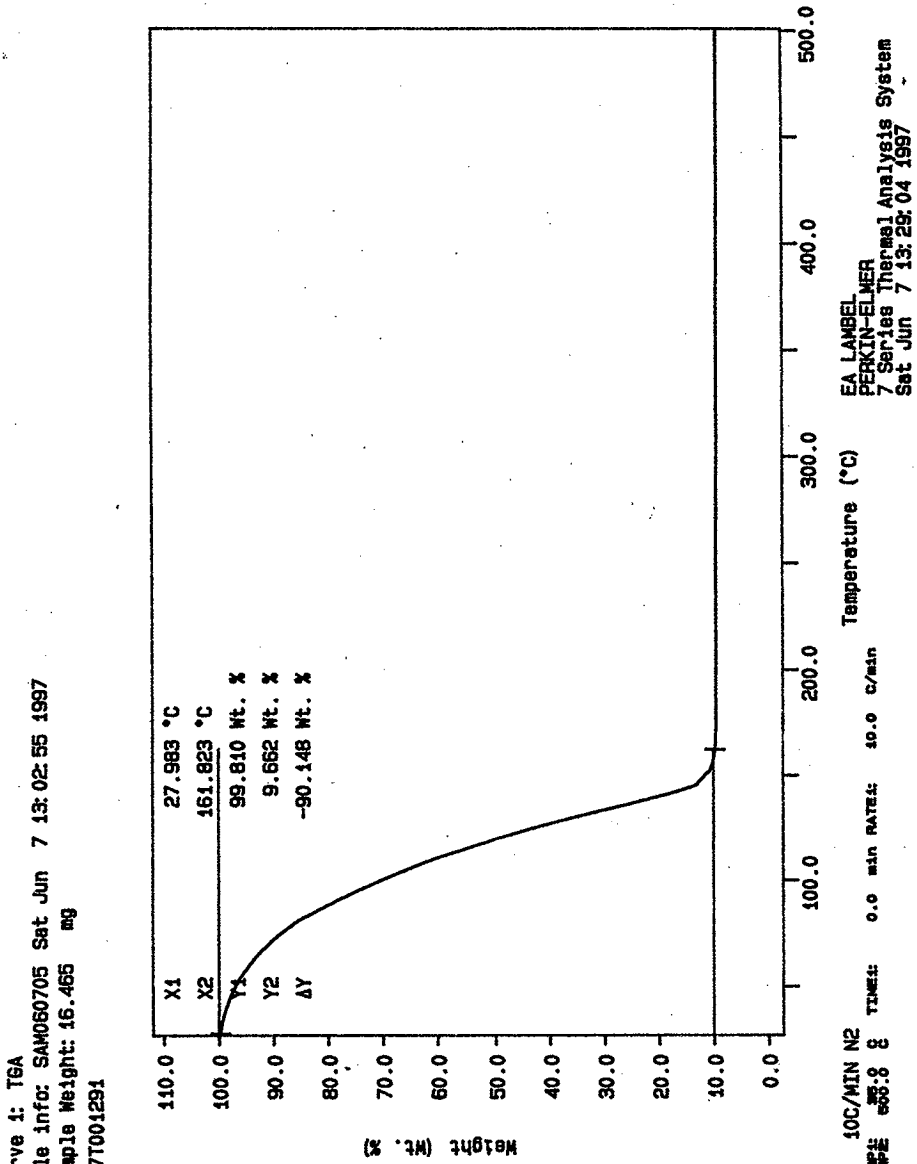
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 06:18:54 1997


Curve 1: TGA
File info: SAM060701 Sat Jun 7 07:10:45 1997
Sample Weight: 12.865 mg
S97T001286
X1 37.024 °C
X2 156.797 °C
Y1 99.884 Wt. %
Y2 9.723 Wt. %
ΔY -90.162 Wt. %
Weight (Wt. %)
110.0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
100.0
200.0
300.0
400.0
500.0
Temperature (°C)
10C/MIN N2
TEMP: 35.0 C
TEMP: 500.0 C
TIME: 0.0 min RATE: 10.0 C/min
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 08:17:50 1997

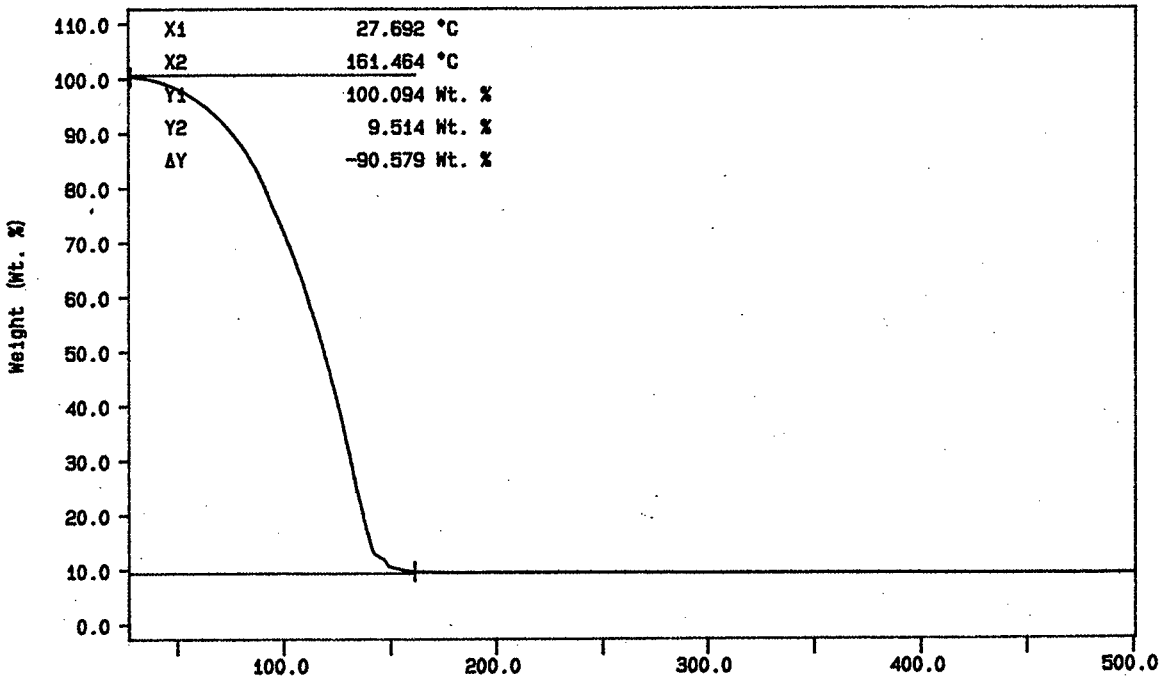

Curve 1: TGA
File info: SAM060702 Sat Jun 7 09:08:35 1997
Sample Weight: 16.300 mg
S97T001286 DUP
X1 28.248 °C
X2 162.105 °C
Y1 100.006 Wt. %
Y2 9.642 Wt. %
ΔY -90.364 Wt. %
Weight (Wt. %)
110.0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
100.0
200.0
300.0
400.0
500.0
Temperature (°C)
10C/MIN N2
TEMP: 35.0 C
TEMP: 600.0 C
TIME: 0.0 min RATE: 10.0 C/min
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 09:09:52 1997


Curve 1: TGA
File info: SAM060703 Sat Jun 7 10:10:10 1997
Sample Weight: 15.438 mg
S97T001290
X1 50.692 °C
X2 159.511 °C
Y1 99.810 Wt. %
Y2 9.644 Wt. %
ΔY -90.166 Wt. %
Weight (Wt. %)
110.0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
100.0
200.0
300.0
400.0
Temperature (°C)
10C/MIN N2
TEMP: 35.0 C
TEMP2: 600.0 C
TIME1: 0.0 min RATE1: 10.0 C/min
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 10:25:18 1997


Curve 1: TGA
File info: SAM060704 Sat Jun 7 11:17:05 1997
Sample Weight: 16.591 mg
S97T001290 DUP
X1 33.462 °C
X2 161.149 °C
Y1 100.318 Wt. %
Y2 9.758 Wt. %
ΔY -90.560 Wt. %
Weight (Wt. %)
110.0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
100.0
200.0
300.0
400.0
500.0
Temperature (°C)
10C/MIN N2
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 12:12:03 1997


Curve 1: TGA
File info: SAM060705 Sat Jun 7 13:02:55 1997
Sample Weight: 16.465 mg
S97T001291
X1 27.983 °C
X2 161.823 °C
Y1 99.810 Wt. %
Y2 9.662 Wt. %
ΔY -90.148 Wt. %
Weight (Wt. %)
110.0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
100.0
200.0
300.0
400.0
500.0
Temperature (°C)
10C/MIN N2
TEMPE: 25.0 C TIME: 0.0 min RATE: 10.0 C/min
TEMPE 500.0 C
EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 13:29:04 1997

Curve 1: TGA
File info: SAM060706 Sat Jun 7 14:19:58 1997
Sample Weight: 15.143 mg
S97T001291 DUP



10C/MIN N2
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 14:51:07 1997

worklistrpt Version 2.1 05/15/95
06/06/97 14:27

LABCORE Data Entry Template for Worklist# 18530

Analyst: ADP **Instrument:** BA001 **Book #** 133N16A

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

Worklist Comment: TX-244 SPG. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				SPG-01	LIQUID	1.391	1.388	N/A	Sp.G.
97000388	TX-244 GRAB1	2	SAMPLE	S97T001286	0		SPG-01	LIQUID	N/A	1.078	0.01	Sp.G.
97000388	TX-244 GRAB1	3	DUP	S97T001286	0		SPG-01	LIQUID	1.078	1.065	N/A	Sp.G.
97000388	TX-244 GRAB1	4	SAMPLE	S97T001290	0		SPG-01	LIQUID	N/A	1.093	0.01	Sp.G.
97000388	TX-244 GRAB1	5	DUP	S97T001290	0		SPG-01	LIQUID	1.093	1.094	N/A	Sp.G.
97000388	TX-244 GRAB1	6	SAMPLE	S97T001291	0		SPG-01	LIQUID	N/A	1.054	0.01	Sp.G.
97000388	TX-244 GRAB1	7	DUP	S97T001291	0		SPG-01	LIQUID	1.054	1.065	N/A	Sp.G.

Final page for worklist # 18530

Anthony Pumuto 6-8-97
Analyst Signature **Date**

Susan Bu 6/09/97
Analyst Signature **Date**

Approved RW Schroeder 6/9/97

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		STD	REPLICATE
STD	Gross Weight (W2)	1.9252	1.9809
Work List	Tare Weight (W1)	1.8209	1.8774
18530	Weight of Solution (W2-W1)	0.1043	0.1035
Test Code	Volume of Solution µL	74.8300	74.8300
SPG-01	Specific Gravity	1.3938	1.3831
Matrix	Specific Gravity (Average)	1.3885	
LIQUID			
Sample #			
STD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity Average =	1.388	
11:20 AM			

Data Entry by:	Sue Bee	Date:	06/09/97
Approved by:	RW Schwerdt	Date:	6/9/97

Form 510112L1 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9283	
Work List	Tare Weight (W1)	1.8476	
18530	Weight of Solution (W2-W1)	0.0807	0
Test Code	Volume of Solution µL	74.8300	
SPG-01	Specific Gravity	1.0784	NA
Matrix			
LIQUID			
Sample #			
S97T001286			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity =	1.078	
11:20 AM			

Data Entry by:	Sue Bee	Date:	06/09/97
Approved by:	RW Schroeder	Date:	6/9/97

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9118	
Work List	Tare Weight (W1)	1.8321	
18530	Weight of Solution (W2-W1)	0.0797	0
Test Code	Volume of Solution µL	74.8300	
SPG-01	Specific Gravity	1.0651	NA
Matrix			
LIQUID			
Sample #			
S97T001286 DUP			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity =	1.065	
11:20 AM			

Data Entry by:	Sue Bee	Date:	06/09/97
Approved by:	RW Schroeder	Date:	6/9/97

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9545	
Work List	Tare Weight (W1)	1.8727	
18530	Weight of Solution (W2-W1)	0.0818	0
Test Code	Volume of Solution µL	74.8300	
SPG-01	Specific Gravity	1.0931	NA
Matrix			
LIQUID			
Sample #			
S97T001290			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity =	1.093	
11:20 AM			

Data Entry by:	Sue Bee	Date:	06/09/97
Approved by:	Ru Schneider	Date:	6/9/97

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9207	
Work List	Tare Weight (W1)	1.8388	
18530	Weight of Solution (W2-W1)	0.0819	0
Test Code	Volume of Solution µL	74.8300	
SPG-01	Specific Gravity	1.0945	NA
Matrix			
LIQUID			
Sample #			
S97T001290 DUP			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity =	1.094	
11:20 AM			

Data Entry by:	Sue Bee	Date:	06/09/97
Approved by:	RW Schrader	Date:	6/9/97

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9572	
Work List	Tare Weight (W1)	1.8783	
18530	Weight of Solution (W2-W1)	0.0789	0
Test Code	Volume of Solution µL	74.8300	
SPG-01	Specific Gravity	1.0544	NA
Matrix			
LIQUID			
Sample #			
S97T001291			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity =	1.054	
11:20 AM			

Data Entry by:	Sue Bee	Date:	06/09/97
Approved by:	RW Schroeder	Date:	6/9/97

Form 510112L1 Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9160	
Work List	Tare Weight (W1)	1.8363	
18530	Weight of Solution (W2-W1)	0.0797	0
Test Code	Volume of Solution µL	74.8300	
SPG-01	Specific Gravity	1.0651	NA
Matrix			
LIQUID			
Sample #			
S97T001291 DUP			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
ADP	Specific Gravity = [(W2-W1) * 1000 µL/mL] / [Vol. of Solution µL * 1.000 g/mL]		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity =	1.065	
11:20 AM			

Data Entry by:	Sue Bee	Date:	06/09/97
Approved by:	RW Johnsedler	Date:	6/9/97

Form 510112L1 Rev. 1.1

worklistrpt Version 2.1 05/15/95
06/06/97 14:23

LABCORE Data Entry Template for Worklist# 18525

Analyst: [illegible] **Instrument:** PH01 _____ **Book #** 18NA-D

Method: LA-212-106 Rev/Mod B·0

Worklist Comment: TX-244 PH. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STDPH				PH-01	LIQUID	8.00	8.00	N/A	pH
97000388	TX-244 GRAB1	2	SAMPLE	S97T001286	0		PH-01	LIQUID	N/A	9.42	0.01	pH
97000388	TX-244 GRAB1	3	DUP	S97T001286	0		PH-01	LIQUID	9.42	9.42	N/A	pH
97000388	TX-244 GRAB1	4	SAMPLE	S97T001290	0		PH-01	LIQUID	N/A	9.47	0.01	pH
97000388	TX-244 GRAB1	5	DUP	S97T001290	0		PH-01	LIQUID	9.47	9.47	N/A	pH
97000388	TX-244 GRAB1	6	SAMPLE	S97T001291	0		PH-01	LIQUID	N/A	9.48	0.01	pH
97000388	TX-244 GRAB1	7	DUP	S97T001291	0		PH-01	LIQUID	9.48	9.47	N/A	pH

Final page for worklist # 18525

A. Lambel 06·07·97
Analyst Signature **Date**

Susan Bee 6/07/97
Analyst Signature **Date**

Approved RW Schroeder 6/9/97

Data Entry Comments:

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

worklistrpt Version 2.1 05/15/95
06/06/97 14:23

LABCORE Data Entry Template for Worklist# 18524

Analyst: DBS **Instrument:** PH01 **Book #** 101 N8-A

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

Worklist Comment: TX-244 OH, STD SS=.050ML. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				OH-01	LIQUID	1.66E04	1.62E04	N/A	ug/mL
		2	BLNK				OH-01	LIQUID	1	<42	N/A	ug/mL
97000388	TX-244 GRAB1	3	SAMPLE	S97T001286	0		OH-01	LIQUID	N/A	PH=6.83		ug/mL
97000388	TX-244 GRAB1	4	DUP	S97T001286	0		OH-01	LIQUID	N/A	PH=6.71	N/A	ug/mL
97000388	TX-244 GRAB1	5	SAMPLE	S97T001290	0		OH-01	LIQUID	N/A	PH=6.64		ug/mL
97000388	TX-244 GRAB1	6	DUP	S97T001290	0		OH-01	LIQUID	N/A	PH=6.60	N/A	ug/mL
97000388	TX-244 GRAB1	7	SAMPLE	S97T001291	0		OH-01	LIQUID	N/A	PH=6.52		ug/mL
97000388	TX-244 GRAB1	8	DUP	S97T001291	0		OH-01	LIQUID	N/A	PH=6.57	N/A	ug/mL

Final page for worklist # 18524

DB Griffin 6-9-97
Analyst Signature **Date**

RC Jones 6-9-97
Analyst Signature **Date**

Approved RW Schroeder 6/9/97

0.2005 M HNO3

These samples are likely buffered by carbonate and/or phosphate. No free OH exsists. A caustic demand test is recommended if waste is to be treated for storage. RWS 6/9/97

Data Entry Comments: All samples: PH too low to get a good reading. (even at .050ml SS)

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.

Std.

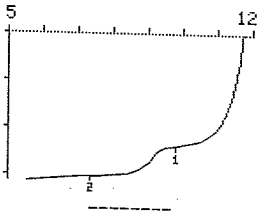
C00= .050ml

date 97-06-09 time 10:59
GET pH 12 # 147
Id.#1 0000
Id.#2 .2005
pH(init) 11.71

	V/ml	pH
EP1	.238	9.82
EP2	.304	7.37

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

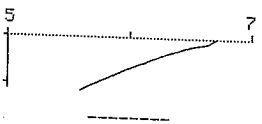
date 97-06-09 time 11:09
GET pH 12 # 147
.10ml/div ΔpH=1/div
start V .000 ml



C00= 1.0ml

date 97-06-09 time 11:50
GET pH 12 # 152
Id.#1 1286 -Dup
Id.#2 .2005
pH(init) 6.71
stop volt.reached
========

date 97-06-09 time 11:51
GET pH 12 # 152
.10ml/div ΔpH=1/div
start V .000 ml



Blank

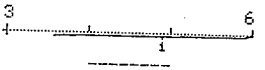
C00= 3.00ml

date 97-06-09 time 10:50
GET pH 12 # 146
Id.#1 0000
Id.#2 .2005
pH(init) 6.00

	V/ml	pH
EP1	.006	4.89

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

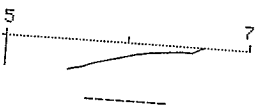
date 97-06-09 time 10:51
GET pH 12 # 146
.10ml/div ΔpH=1/div
start V .000 ml



C00= .500ml

date 97-06-09 time 11:56
GET pH 12 # 153
Id.#1 1290
Id.#2 .2005
pH(init) 6.64
stop volt.reached
========

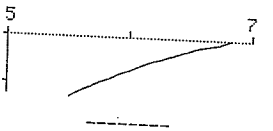
date 97-06-09 time 11:56
GET pH 12 # 153
.10ml/div ΔpH=1/div
start V .000 ml



C00= 1.0ml

date 97-06-09 time 11:39
GET pH 12 # 149
Id.#1 1286
Id.#2 .2005
pH(init) 6.83
stop volt.reached
========

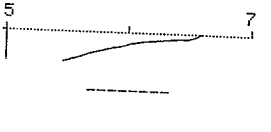
date 97-06-09 time 11:39
GET pH 12 # 149
.10ml/div ΔpH=1/div
start V .000 ml



C00= .500ml

date 97-06-09 time 11:59
GET pH 12 # 154
Id.#1 1290-Dup
Id.#2 .2005
pH(init) 6.60
stop volt.reached
========

date 97-06-09 time 11:59
GET pH 12 # 154
.10ml/div ΔpH=1/div
start V .000 ml



C00= .500ml

date 97-06-09 time 12:04
GET pH 12 # 155
Id.#1 1291
Id.#2 .2005
pH(init) 6.52
stop volt.reached
========

date 97-06-09 time 12:04
GET pH 12 # 155
.10ml/div ΔpH=1/div
start V .000 ml

5 7

C00= .500ml

date 97-06-09 time 12:06
GET pH 12 # 156
Id.#1 1291-Dup
Id.#2 .2005
pH(init) 6.57
stop volt.reached
========

date 97-06-09 time 12:07
GET pH 12 # 156
.10ml/div ΔpH=1/div
start V .000 ml

5 7

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		STANDARD
Type	Sample Size (mL) SS	0.050
STANDARD	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.238
18524	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.54E-01
OH-01	OH in Sample in µg/mL (PPM)	1.62E+04
Matrix		
LIQUID		
Sample #		
101N8A		
Instrument Code		
PH01		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DGG		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
06/09/97		
Time		STANDARD
11:00 AM	Concentration of OH in Sample (Molarity)	9.54E-01
	OH in Sample in µg/mL (PPM)	1.62E+04

Data Entry by:	[signature]	Date:	06/09/97
Approved by:	[signature]	Date:	6/9/97

Form 211102_1 Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		BLANK
Type	Sample Size (mL) SS	3.000
BLANK	Concentration of HNO3 (Molarity)	0.2005
Work List	HNO3 Titrant at OH end-point in mL	0.006
18524	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	4.01E-04
OH-01	OH in Sample in µg/mL (PPM)	6.82E+00
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
BLANK		
Instrument Code	Detection Limit (µg/mL)	4.17E+01
PH01		
Analyst	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
DGG		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
06/09/97		
Time		BLANK
11:00 AM	Concentration of OH in Sample (Molarity)	4.01E-04
	OH in Sample in µg/mL (PPM)	<42

The Result is < Detection Limit

Data Entry by:		Date:	06/09/97
Approved by:	Bill Schneider	Date:	6/9/97

Form 211102_1 Rev. 1.3 Page 1 of 1

worklistrpt Version 2.1 05/15/95
06/19/97 14:03

LABCORE Data Entry Template for Worklist# 18739

Analyst: JdS **Instrument:** PH01 **Book #** STD 139N163

Method: LA-211-104 Rev/Mod ~~A2~~ A-1 (RAE 7/5/97) SPK 95N8A 1.0057 M

Worklist Comment: TX244 GRAB 1, OHDEMAND Std: 0.050mL skm Caustic Demand Std. SKM

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				OHDEMAND	LIQUID	1	O.K.	N/A	moles OH-/L
		2	STD				OHDEMAND	LIQUID	3.302e-1	3.04e-1	N/A	moles OH-/L
97000388	TX-244 GRAB1	3	SAMPLE	S97T001292	0		OHDEMAND	LIQUID	N/A	<1.47e-1	1.47e-1	moles OH-/L
97000388	TX-244 GRAB1	4	DUP	S97T001292	0		OHDEMAND	LIQUID	<1.47e-1	<1.47e-1	N/A	moles OH-/L
97000388	TX-244 GRAB1	5	SAMPLE	S97T001293	0		OHDEMAND	LIQUID	N/A	<1.47e-1	1.47e-1	moles OH-/L
97000388	TX-244 GRAB1	6	DUP	S97T001293	0		OHDEMAND	LIQUID	<1.47e-1	<1.47e-1	N/A	moles OH-/L
97000388	TX-244 GRAB1	7	SAMPLE	S97T001294	0		OHDEMAND	LIQUID	N/A	1.48e-1	1.47e-1	moles OH-/L
97000388	TX-244 GRAB1	8	DUP	S97T001294	0		OHDEMAND	LIQUID	1.48e-1	<1.47e-1	N/A	moles OH-/L

Final page for worklist # 18739

JdS 6/21/97
Analyst Signature **Date**

RL Stub 6-24-97
Analyst Signature **Date** RWS 6/25/97

Samples S97T001293 & S97T001294

RW Schroeder 6/25/97

Results rejected due to poor resolution.
Reanalysis requested on larger sample size. RWS 6/25/97
WL # 18924

There was insufficient sample to rerun S97T001292. Based on rerun results of the other two samples, these original results for #1292 were accepted. RAE 7/30/97

Data Entry Comments: Sample size = .050 ml in all samples, spk volume = (95N8A) .050 ml in all samples. STD (139N163) sample size was .050 ml

~~NaOH~~ HNO3 titrant = .1994 M
JdS 6/22/97

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

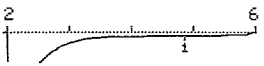
BLK

date 23:21
GET pH 210
Id.#1
Id.#2 .1994
pH(init) 5.95

V/ml	pH
.009	4.85

volt.reached
========

97-06-21 time 23:
GET pH 12 # 2
.10ml/div ΔpH=1/
start V .000 ml



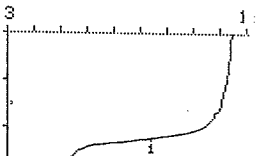
S97T1292 DUP
S.S. .050 ml

date 97-06-21 time 23:45
GET pH 12 # 212
Id.#1 1
Id.#2 .1994
pH(init) 11.40

V/ml	pH
.222	8.40
.285	4.48

al stop
========

97-06-21 time 23:46
pH 12 # 212
.10ml/div ΔpH=1/div
start V .000 ml



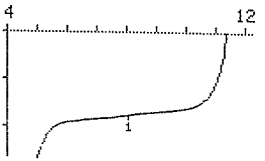
STD 139NGB
.050 ml

date 97-06-21 time 19:15
GET pH 12 # 197
Id.#1 1
Id.#2 .1994
(init) 11.33

V/ml	pH
.176	8.0

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

date 97-06-21 time 19:15
GET pH 12 # 197
.10ml/div ΔpH=1/div
start V .000 ml



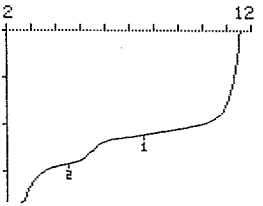
S97T1293
S.S. .050 ml

date 97-06-21 time 23:59
GET pH 12 # 213
Id.#1 1
Id.#2 .1994
pH(init) 11.53

V/ml	pH
.222	7.54
.285	4.47

nual stop
========

date 97-06-21 time 23:5
GET pH 12 # 21
.10ml/div ΔpH=1/div
start V .000 ml



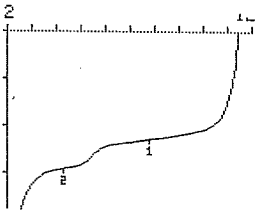
S97T1292 SS .050mL

dat 3:33
GET 12 # 211
Id.#1 1
Id.#2 .1994
pH(init) 11.40

V/ml	pH
.229	7.76
.292	4.28

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

ate 97-06-21 time 23:
ET pH 12 # 2
10ml/div ΔpH=1/
tart V .000 ml



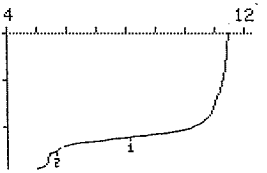
S97T1293 DUP
SS .050 ml

date 97-06-22 time 00:05
GET pH 12 # 214
Id.#1 1
Id.#2 .1994
pH(init) 11.42

V/ml	pH
.221	8.13
.251	5.66

op volt.reached
========

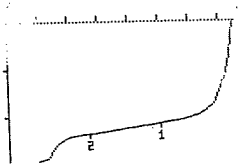
ate 97-06-22 time
ET pH 12 #
.10ml/div ΔpH=1/
start V .000 ml



S9TT 1294
S.S. .050 ml

```
date 97-06-22 time 00:12
GET pH          12  #  215
Id.#1            1
Id.#2        .1994
pH(init)     11.43
            V/ml          pH
EP1         .215        9.04
EP2         .236        6.72
stop volt.reached
         ========
```

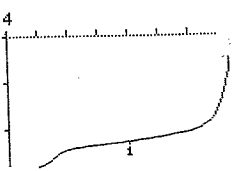
```
date 97-06-22 time 00:13
GET pH          12  #  215
.0ml/div        ΔpH=1/di
art V    .000 ml
```



~~S9TT 660~~ 55 6/21/97
S9TT 1294DUP
S.S. .050 ml

```
date 97-06-22 time 00:19
GET pH          12  #  216
Id.#1            1
Id.#2        .1994
pH(init)     11.42
            V/ml          pH
EP1         .226        8.01
stop volt.reached
         ========
```

```
e 97-06-22 time 00
T pH            12  #
.0ml/div        ΔpH=1/
art V    .000 ml
```



LA-211-104 (A-1) Caustic Demand

		STD	REPLICATE
TYPE	Sample Size in mL (SS)	0.050	
STD	Volume of Hydroxide Spiking Std in mL (V1)	0.050	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
18739	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.176	
OHDEMAND	mol/L	3.04E-01	N/A
MATRIX	Result mol/L =	3.04E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-01	
STD			
INSTRUMENT CODE	Sample Result =	3.04E-01	
PH01			
PREPARED BY			
GJH			
CHEMIST			
RWS			
ANALYST			
JDS			
DATE COMPLETED			
06/22/97			
ANALYSIS DATE			
06/21/97			
ANALYSIS TIME			
04:58 PM			
SAMPLE POINT			
AY-101			

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking Std
mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)
mmol hydroxide consumed = OHcons = OHsp - OHd
Buffering Capacity (M) = OHcons / sample volume (mL)
Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	GJH	Date:	06/22/97
Signature of Chemist:	RW Schroeder	Date:	6/24/97

LA-211-104 (A-1)

Caustic Demand

		BLANK	REPLICATE
Sample Size in mL (SS)		0.050	
Volume of Hydroxide Spiking Std in mL (V1)		0.050	
Hydroxide Spiking Std Molarity (M1)		1.0057	
HNO3 Titrant Molarity (M2)		0.1994	
Titrant End Point in mL (V2)		0.009	
mol/L		9.70E-01	N/A
	Result mol/L =	9.70E-01	
	Detection Limit =	1.47E-01	
	Sample Result =	9.70E-01	

TYPE	BLANK
WORKLIST	18739
TEST CODE	OHDEMAND
MATRIX	LIQUID
SAMPLE #	BLNK
INSTRUMENT CODE	PH01
PREPARED BY	GJH
CHEMIST	RWS
ANALYST	JDS
DATE COMPLETED	06/22/97
ANALYSIS DATE	06/21/97
ANALYSIS TIME	04:58 PM
SAMPLE POINT	AY-101

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking Std
mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)
mmol hydroxide consumed = OHcons = OHsp - OHd
Buffering Capacity (M) = OHcons / sample volume (mL)
Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

BLANK = O.K. (No free OH)

Data Entered by:	GJH	Date:	06/22/97
Signature of Chemist:	RW Schroeder	Date:	6/24/97

LA-211-104 (A-1) Caustic Demand

		SAMPLE	REPLICATE
TYPE	Sample Size in mL (SS)	0.050	
SAMPLE	Volume of Hydroxide Spiking Std in mL (V1)	0.050	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
18739	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.229	
OHDEMAND	mol/L	9.24E-02	N/A
MATRIX	Result mol/L =	9.24E-02	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-01	
S97T001292			
INSTRUMENT CODE	Sample Result =	< 0.147	
PH01			
PREPARED BY			
GJH			
CHEMIST	mol/L = ((M1*V1) - (M2*V2)) / SS		
RWS			
ANALYST	mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking Std		
JDS	mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)		
DATE COMPLETED	mmol hydroxide consumed = OHcons = OHsp - OHd		
06/22/97	Buffering Capacity (M) = OHcons / sample volume (mL)		
ANALYSIS DATE	Buffering Capacity (moles/kg) = OHcons/Sample mass (g)		
06/21/97			
ANALYSIS TIME			
04:58 PM			
SAMPLE POINT			
AY-101			

Data Entered by:	GJH	Date:	06/22/97
Signature of Chemist:	RW Schmeltz	Date:	6/24/97

LA-211-104 (A-1) Caustic Demand

		DUPLICATE	REPLICATE
Sample Size in mL (SS)		0.050	
Volume of Hydroxide Spiking Std in mL (V1)		0.050	
Hydroxide Spiking Std Molarity (M1)		1.0057	
HNO3 Titrant Molarity (M2)		0.1994	
Titrant End Point in mL (V2)		0.222	
mol/L		1.20E-01	N/A
	Result mol/L =	1.20E-01	
	Detection Limit =	1.47E-01	
	Sample Result =	< 0.147	

TYPE	DUPLICATE
WORKLIST	18739
TEST CODE	OHDEMAND
MATRIX	LIQUID
SAMPLE #	S97T001292
INSTRUMENT CODE	PH01
PREPARED BY	GJH
CHEMIST	RWS
ANALYST	JDS
DATE COMPLETED	06/22/97
ANALYSIS DATE	06/21/97
ANALYSIS TIME	04:58 PM
SAMPLE POINT	AY-101

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking Std
mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)
mmol hydroxide consumed = OHcons = OHsp - OHd
Buffering Capacity (M) = OHcons / sample volume (mL)
Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	GJH	Date:	06/22/97
Signature of Chemist:	Ruth Schroeder	Date:	6/27/97

LA-211-104 (A-1) Caustic Demand

		SAMPLE	REPLICATE
TYPE	Sample Size in mL (SS)	0.050	
SAMPLE	Volume of Hydroxide Spiking Std in mL (V1)	0.050	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
18739	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.222	
OHDEMAND	mol/L	1.20E-01	N/A
MATRIX	Result mol/L =	1.20E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-01	
S97T001293			
INSTRUMENT CODE	Sample Result =	< 0.147	
PH01			
PREPARED BY			
GJH			
CHEMIST	mol/L = ((M1*V1) - (M2*V2)) / SS		
RWS			
ANALYST	mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking Std		
JDS	mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)		
DATE COMPLETED	mmol hydroxide consumed = OHcons = OHsp - OHd		
06/22/97	Buffering Capacity (M) = OHcons / sample volume (mL)		
ANALYSIS DATE	Buffering Capacity (moles/kg) = OHcons/Sample mass (g)		
06/21/97			
ANALYSIS TIME			
04:58 PM			
SAMPLE POINT			
AY-101			

Data Entered by:	GJH	Date:	06/22/97
Signature of Chemist:	Rus Schroeder	Date:	6/24/97

LA-211-104 (A-1) **Caustic Demand**

		DUPLICATE	REPLICATE
TYPE	Sample Size in mL (SS)	0.050	
DUPLICATE	Volume of Hydroxide Spiking Std in mL (V1)	0.050	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
18739	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.221	
OHDEMAND	mol/L	1.24E-01	N/A
MATRIX	Result mol/L =	1.24E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-01	
S97T001293			
INSTRUMENT CODE	Sample Result =	< 0.147	
PH01			
PREPARED BY			
GJH			
CHEMIST	mol/L = ((M1*V1) - (M2*V2)) / SS		
RWS			
ANALYST	mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking Std		
JDS	mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)		
DATE COMPLETED	mmol hydroxide consumed = OHcons = OHsp - OHd		
06/22/97	Buffering Capacity (M) = OHcons / sample volume (mL)		
ANALYSIS DATE	Buffering Capacity (moles/kg) = OHcons/Sample mass (g)		
06/21/97			
ANALYSIS TIME			
04:58 PM			
SAMPLE POINT			
AY-101			

Data Entered by:	GJH	Date:	06/22/97
Signature of Chemist:	RW Schroeder	Date:	6/24/97

LA-211-104 (A-1) Caustic Demand

		SAMPLE	REPLICATE
TYPE	Sample Size in mL (SS)	0.050	
SAMPLE	Volume of Hydroxide Spiking Std in mL (V1)	0.050	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
18739	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.215	
OHDEMAND	mol/L	1.48E-01	N/A
MATRIX	Result mol/L =	1.48E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-01	
S97T001294			
INSTRUMENT CODE	Sample Result =	1.48E-01	
PH01			
PREPARED BY			
GJH			
CHEMIST	mol/L = ((M1*V1) - (M2*V2)) / SS		
RWS			
ANALYST	mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking Std		
JDS	mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)		
DATE COMPLETED	mmol hydroxide consumed = OHcons = OHsp - OHd		
06/22/97	Buffering Capacity (M) = OHcons / sample volume (mL)		
ANALYSIS DATE	Buffering Capacity (moles/kg) = OHcons/Sample mass (g)		
06/21/97			
ANALYSIS TIME			
04:58 PM			
SAMPLE POINT			
AY-101			

Data Entered by:	GJH	Date:	06/22/97
Signature of Chemist:	RWSchroeder	Date:	6/24/97

LA-211-104 (A-1) Caustic Demand

		DUPLICATE	REPLICATE
TYPE	Sample Size in mL (SS)	0.050	
DUPLICATE	Volume of Hydroxide Spiking Std in mL (V1)	0.050	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
18739	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.226	
OHDEMAND	mol/L	1.04E-01	N/A
MATRIX	Result mol/L =	1.04E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-01	
S97T001294			
INSTRUMENT CODE	Sample Result =	< 0.147	
PH01			
PREPARED BY			
GJH			
CHEMIST	mol/L = ((M1*V1) - (M2*V2)) / SS		
RWS			
ANALYST	mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking Std		
JDS	mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)		
DATE COMPLETED	mmol hydroxide consumed = OHcons = OHsp - OHd		
06/22/97	Buffering Capacity (M) = OHcons / sample volume (mL)		
ANALYSIS DATE	Buffering Capacity (moles/kg) = OHcons/Sample mass (g)		
06/21/97			
ANALYSIS TIME			
04:58 PM			
SAMPLE POINT			
AY-101			

Data Entered by:	GJH	Date:	06/22/97
Signature of Chemist:	RWSchroeder	Date:	6/24/97

worklistrpt Version 2.1 05/15/95
07/01/97 08:22

LABCORE Data Entry Template for Worklist# 18924

Analyst: JdS **Instrument:** PH01 **Book #** 139N16B LCS 95N8A SPK

Method: LA-211-104 Rev/Mod A-1

Worklist Comment: OHDEMAND TX244 * RERUN * Use 0.500mL sample size

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				OHDEMAND	LIQUID	3.30e-1	3.56e-1	N/A	moles OH-/L
97000388	TX-244 GRAB1	2	SAMPLE	S97T001293	0		OHDEMAND	LIQUID	N/A	1.48e-1	1.47e-2	moles OH-/L
97000388	TX-244 GRAB1	3	DUP	S97T001293	0		OHDEMAND	LIQUID	1.48e-1	1.43e-1	N/A	moles OH-/L
97000388	TX-244 GRAB1	4	SAMPLE	S97T001294	0		OHDEMAND	LIQUID	N/A	1.52e-1	1.47e-2	moles OH-/L

Final page for worklist # 18924

Analyst Signature **Date**

R.W. Schroeder 7/1/97
Analyst Signature **Date**

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 18924

Analyst: JdS **Instrument:** PH01 **Book#** 139N16B STD 95N8A SPK

Method: LA-211-104 Rev/Mod A-1

Worklist Comment: OHDEMAND TX244 * RERUN * Use 0.500mL sample size

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				OHDEMAND	LIQUID		
2	SAMPLE	S97T001292	0		OHDEMAND	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: OHDEMAND						
3	DUP	S97T001292	0		OHDEMAND	LIQUID		
4	SAMPLE	S97T001293	0		OHDEMAND	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: OHDEMAND						
5	DUP	S97T001293	0		OHDEMAND	LIQUID		
6	SAMPLE	S97T001294	0		OHDEMAND	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: OHDEMAND						
7	DUP	S97T001294	0		OHDEMAND	LIQUID		

Final page for worklist # 18924

JdS 6/25/97
Analyst Signature **Date**

Analyst Signature **Date**

use 0.500 Sample Size and ~~0.050mL~~ 0.100 mL spike volumes

Changed spk volume because run @ .050 PH was only 9.5.. USED .100 ml of spk

(Titrant) = HNO_3 .1994 m

Data Entry Comments: USED .100 spk

INSUFFICIANT SAMPLE FOR 1292, ONLY ENOUGH SAMPE TO RUN 1294 ONCE (NO DUP)

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

calibration data
date 97-06-26
pH(S) 1 7.00
pH(S) 2 10.00
t.cal. 22.0 °C
slope(rel) .999
U(as) -14.9 mV
electr. input 1
========

STD
139N16B .050ml

date 97-06-26 time 07:51
GET pH 12 # 269
Id.#1 11899
Id.#2 .1994
pH(init) 11.52

	V/ml	pH
EP1	.163	8.41
EP2	.315	4.33

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

~~S97K~~ 35 6/25/97 35 .500 ml
S97T1293

date 97-06-26 time 08:35
GET pH 12 # 274
Id.#1 11899
Id.#2 .1994
pH(init) 11.39

	V/ml	pH
EP1	.132	10.28
EP2	.165	9.66
EP3	.230	8.35
EP4	.329	6.51

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

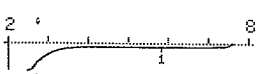
BLK

date 97-06-26 time 07:39
GET pH 12 # 268
Id.#1 11899
Id.#2 .1994
pH(init) 7.58

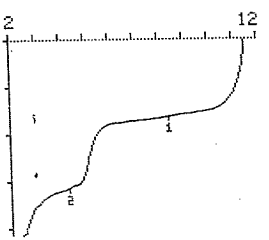
	V/ml	pH
EP1	.008	5.85

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

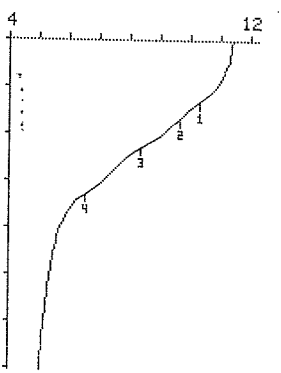
date 97-06-26 time 07:40
GET pH 12 # 268
.10ml/div ΔpH=1/div
start V .000 ml



date 97-06-26 time 07:55
GET pH 12 # 269
.10ml/div ΔpH=1/div
start V .000 ml



date 97-06-26 time 08:36
GET pH 12 # 274
.10ml/div ΔpH=1/div
start V .000 ml



597T 1293 Dup
SS. .500

date 97-06-26 time 08:45
GET pH 12 # 275
Id.#1 11899
Id.#2 .1994
pH(init) 11.38

	V/ml	pH
EP1	.147	10.32
EP2	.250	8.37
EP3	.338	6.78

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

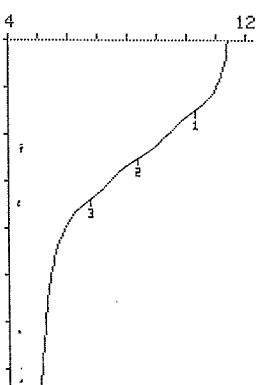
597T 1294
.SS 0.500 ml

date 97-06-26 time 10:35
GET pH 12 # 276
Id.#1 11899
Id.#2 .1994
pH(init) 11.65

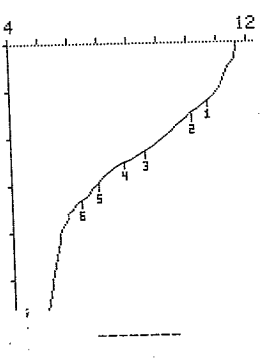
	V/ml	pH
EP1	.123	10.66
EP2	.148	10.11
EP3	.228	8.50
EP4	.252	7.83
EP5	.293	6.94
EP6	.332	6.34

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

date 97-06-26 time 08:45
GET pH 12 # 275
.10ml/div ΔpH=1/div
start V .000 ml



date 97-06-26 time 10:36
GET pH 12 # 276
.10ml/div ΔpH=1/div
start V .000 ml



LA -211-104 (A-1)

Caustic Demand

		STANDARD	REPLICATE
TYPE	Sample Size in mL (SS)	0.050	
STANDARD	Volume of Hydroxide Spiking Std in mL (V1)	0.050	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
18924	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.163	
OH-01	mol/L	3.56E-01	N/A
MATRIX	Result mol/L =	3.56E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-01	
139N16B			
INSTRUMENT CODE	Sample Result =	3.56E-01	
PREPARED BY			
RWS			
CHEMIST			
RWS			
ANALYST			
JDS			
DATE COMPLETED			
07/01/97			
ANALYSIS DATE			
06/25/97			
ANALYSIS TIME			
SAMPLE POINT			
TX244			

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking St
mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)
mmol hydroxide consumed = OHcons = OHsp - OHd
Buffering Capacity (M) = OHcons / sample volume (mL)
Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	RWS	Date:	07/01/97
Signature of Chemist:	RW Edwards	Date:	7/1/97

LA -211-104 (A-1) **Caustic Demand**

		SAMPLE	REPLICATE
TYPE	Sample Size in mL (SS)	0.500	
SAMPLE	Volume of Hydroxide Spiking Std in mL (V1)	0.100	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
18924	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.132	
OH-01	mol/L	1.48E-01	N/A
MATRIX	Result mol/L =	1.48E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-02	
S97T001293			
INSTRUMENT CODE	Sample Result =	1.48E-01	
PREPARED BY			
RWS			
CHEMIST			
RWS			
ANALYST			
JDS			
DATE COMPLETED			
07/01/97			
ANALYSIS DATE			
06/25/97			
ANALYSIS TIME			
SAMPLE POINT			
TX244			

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking St
mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)
mmol hydroxide consumed = OHcons = OHsp - OHd
Buffering Capacity (M) = OHcons / sample volume (mL)
Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	RWS	Date:	07/01/97
Signature of Chemist:	RW Schneider	Date:	7/1/97

LA -211-104 (A-1) Caustic Demand

		DUPLICATE	REPLICATE
TYPE	Sample Size in mL (SS)	0.500	
DUPLICATE	Volume of Hydroxide Spiking Std in mL (V1)	0.100	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
18924	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.147	
OH-01	mol/L	1.43E-01	N/A
MATRIX	Result mol/L =	1.43E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-02	
S97T001293			
INSTRUMENT CODE	Sample Result =	1.43E-01	
PREPARED BY			
RWS			
CHEMIST			
RWS			
ANALYST			
JDS			
DATE COMPLETED			
07/01/97			
ANALYSIS DATE			
06/25/97			
ANALYSIS TIME			
SAMPLE POINT			
TX244			

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking St
mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)
mmol hydroxide consumed = OHcons = OHsp - OHd
Buffering Capacity (M) = OHcons / sample volume (mL)
Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	RWS	Date:	07/01/97
Signature of Chemist:	RW Schroeder	Date:	7/1/97

LA -211-104 (A-1)

Caustic Demand

		SAMPLE	REPLICATE
TYPE	Sample Size in mL (SS)	0.500	
SAMPLE	Volume of Hydroxide Spiking Std in mL (V1)	0.100	
WORKLIST	Hydroxide Spiking Std Molarity (M1)	1.0057	
18924	HNO3 Titrant Molarity (M2)	0.1994	
TEST CODE	Titrant End Point in mL (V2)	0.123	
OH-01	mol/L	1.52E-01	N/A
MATRIX	Result mol/L =	1.52E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-02	
S97T001294			
INSTRUMENT CODE	Sample Result =	1.52E-01	
PREPARED BY			
RWS			
CHEMIST			
RWS			
ANALYST			
JDS			
DATE COMPLETED			
07/01/97			
ANALYSIS DATE			
06/25/97			
ANALYSIS TIME			
SAMPLE POINT			
TX244			

mol/L = ((M1*V1) - (M2*V2)) / SS

mmol hydoxide spiked = OHsp =Hydroxide Spiking Std. Conc (M) X Vol. Spiking St
mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)
mmol hydroxide consumed = OHcons = OHsp - OHd
Buffering Capacity (M) = OHcons / sample volume (mL)
Buffering Capacity (moles/kg) = OHcons/Sample mass (g)

Data Entered by:	RWS	Date:	07/01/97
Signature of Chemist:	RW Schroeder	Date:	7/1/97

LABCORE Data Entry Template for Worklist# 18652

Analyst: KGH **Instrument:** NH301 _____ **Book #** 31N19-C

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

Worklist Comment: TX-244 NH3, STD SS=1.0ML, (RERUN). RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				NH3-01	LIQUID	4.01e2	4.30e2	N/A	ug/mL
		2	BLNK				NH3-01	LIQUID	1	<1.00	N/A	ug/mL
97000388	TX-244 GRAB1	3	SAMPLE	S97T001292	0		NH3-01	LIQUID	N/A	5.80e2	1.00	ug/mL
97000388	TX-244 GRAB1	4	DUP	S97T001292	0		NH3-01	LIQUID	5.80e2	6.75e2	N/A	ug/mL
97000388	TX-244 GRAB1	5	SAMPLE	S97T001293	0		NH3-01	LIQUID	N/A	1.10e3	1.00	ug/mL
97000388	TX-244 GRAB1	6	DUP	S97T001293	0		NH3-01	LIQUID	1.10e3	7.95e2	N/A	ug/mL
97000388	TX-244 GRAB1	7	SAMPLE	S97T001294	0		NH3-01	LIQUID	N/A	8.45e2	1.00	ug/mL
97000388	TX-244 GRAB1	8	DUP	S97T001294	0		NH3-01	LIQUID	8.45e2	9.05e2	N/A	ug/mL
97000388	TX-244 GRAB1	9	SPK	S97T001294	0		NH3-01	LIQUID	100	~~302~~ 121	RWS 7/1/97 N/A	ug/mL
		10	STD				NH3-01	LIQUID	4.01e2	3.95e2	N/A	ug/mL

Final page for worklist # 18652

Kristin Hughes 6/17/97
Analyst Signature **Date**

A Lambel 6.17.97
Analyst Signature **Date**

Approved RW Schroeder 7/1/97

Bypassed high RPD due to insufficient sample for reanalysis.
RWS ~~7~~ 7/1/97
RWS

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.

DOUBLE KNOWN ADDITION SELECTED
AT 10:52, 06-17-97

SAMPLE VOL= 25.000 AT 10:53, 06-17-97
ENTERED

EMF= 44.8 mV AT 10:55, 06-17-97

EMF= 44.6 mV AT 10:55, 06-17-97

EMF= 44.5 mV AT 10:56, 06-17-97

EMF= 44.5 mV AT 10:56, 06-17-97
ENTERED

STD CONCN= 1000 AT 10:56, 06-17-97
ENTERED

STD VOL= .25000 AT 10:57, 06-17-97
ENTERED

EMF= 33.1 mV AT 10:59, 06-17-97

EMF= 32.9 mV AT 10:59, 06-17-97

EMF= 32.8 mV AT 10:59, 06-17-97

EMF= 32.8 mV AT 11:00, 06-17-97
ENTERED

STD VOL= 2.5000 AT 11:00, 06-17-97
ENTERED

EMF=-4.7 mV AT 11:02, 06-17-97

EMF=-5.1 mV AT 11:03, 06-17-97

EMF=-5.4 mV AT 11:04, 06-17-97

EMF=-5.4 mV AT 11:04, 06-17-97

EMF=-5.3 mV AT 11:05, 06-17-97

EMF=-5.3 mV AT 11:06, 06-17-97

EMF=-5.1 mV AT 11:07, 06-17-97

EMF=-5.0 mV AT 11:07, 06-17-97
ENTERED

STD Good

31N19.C

WL#18652
6·17·97

BLK

DOUBLE KNOWN ADDITION SELECTED
AT 09:47, 06-17-97

SAMPLE VOL= 25.000 AT 09:48, 06-17-97
ENTERED

EMF= 264.4 mV AT 09:48, 06-17-97

EMF= 264.2 mV AT 09:49, 06-17-97

EMF= 264.1 mV AT 09:50, 06-17-97

EMF= 264.1 mV AT 09:50, 06-17-97
ENTERED

STD CONCN= 1000 AT 09:51, 06-17-97
ENTERED

STD VOL= .25000 AT 09:52, 06-17-97
ENTERED

EMF= 58.1 mV AT 09:57, 06-17-97

EMF= 57.5 mV AT 09:57, 06-17-97

EMF= 57.3 mV AT 09:57, 06-17-97

EMF= 57.2 mV AT 09:57, 06-17-97
ENTERED

STD VOL= 2.5000 AT 09:58, 06-17-97
ENTERED

EMF=-1.6 mV AT 10:01, 06-17-97

EMF=-1.9 mV AT 10:02, 06-17-97

EMF=-1.9 mV AT 10:02, 06-17-97
ENTERED

1:NH3 SLOPE=-59.1 mV/DEC
AT 10:02, 06-17-97

1:NH3 CONCN= .00312

1:NH3 SLOPE=-60.1 mV/DEC
AT 11:07, 06-17-97

1:NH3 CONCN= 17.2

1292 SAM

DOUBLE KNOWN ADDITION SELECTED
AT 11:08, 06-17-97

SAMPLE VOL= 25.000 AT 13:32, 06-17-97
ENTERED

EMF= 52.8 mV AT 13:36, 06-17-97

EMF= 51.9 mV AT 13:37, 06-17-97

EMF= 51.7 mV AT 13:38, 06-17-97

EMF= 51.6 mV AT 13:38, 06-17-97
ENTERED

STD CONCN= 1000 AT 13:38, 06-17-97
ENTERED

STD VOL= .25000 AT 13:38, 06-17-97
ENTERED

EMF= 36.5 mV AT 13:41, 06-17-97

EMF= 36.3 mV AT 13:42, 06-17-97
ENTERED

STD VOL= 2.5000 AT 13:42, 06-17-97
ENTERED

EMF=-4.2 mV AT 13:45, 06-17-97

EMF=-4.5 mV AT 13:45, 06-17-97

EMF=-4.6 mV AT 13:45, 06-17-97
ENTERED

1:NH3 SLOPE=-57.7 mV/DEC
AT 13:46, 06-17-97

1:NH3 CONCN= 11.6

1292 DUP

ENTERED

DOUBLE KNOWN ADDITION SELECTED
AT 14:17, 06-17-97

SAMPLE VOL= 25.000 AT 14:21, 06-17-97
ENTERED

EMF= 53.1 mV AT 14:24, 06-17-97

EMF= 52.6 mV AT 14:25, 06-17-97

EMF= 52.4 mV AT 14:25, 06-17-97
ENTERED

STD CONCN= 1000 AT 14:26, 06-17-97
ENTERED

STD VOL= .25000 AT 14:26, 06-17-97
ENTERED

EMF= 38.2 mV AT 14:28, 06-17-97

EMF= 38.1 mV AT 14:29, 06-17-97
ENTERED

STD VOL= 2.5000 AT 14:29, 06-17-97
ENTERED

EMF=-2.6 mV AT 14:32, 06-17-97

EMF=-2.9 mV AT 14:33, 06-17-97

EMF=-3.0 mV AT 14:33, 06-17-97
ENTERED

1:NH3 SLOPE=-60.5 mV/DEC
AT 14:33, 06-17-97

1:NH3 CONCN= 13.5

1293 ~~DLP~~ SAM

```
DOUBLE KNOWN ADDITION SELECTED
 AT 14:34, 06-17-97

SAMPLE VOL= 25.000 AT 14:35, 06-17-97
ENTERED

EMF= 45.1 mV AT 14:39, 06-17-97

EMF= 45.6 mV AT 14:39, 06-17-97

EMF= 45.7 mV AT 14:39, 06-17-97
ENTERED

STD CONCN= 1000 AT 14:39, 06-17-97
ENTERED

STD VOL= .25000 AT 14:40, 06-17-97
ENTERED

EMF= 35.1 mV AT 14:42, 06-17-97

EMF= 35.1 mV AT 14:42, 06-17-97
ENTERED

STD VOL= 2.5000 AT 14:43, 06-17-97
ENTERED

EMF=-3.2 mV AT 14:46, 06-17-97

EMF=-3.3 mV AT 14:46, 06-17-97
ENTERED

1:NH3 SLOPE=-66.8 mV/DEC
 AT 14:46, 06-17-97

1:NH3 CONCN= 22.0
```

1293 DUP

DOUBLE KNOWN ADDITION SELECTED
AT 14:47, 06-17-97

SAMPLE VOL= 25.000 AT 14:48, 06-17-97
ENTERED

EMF= 49.9 mV AT 14:51, 06-17-97

EMF= 50.3 mV AT 14:52, 06-17-97

EMF= 50.6 mV AT 14:52, 06-17-97

EMF= 50.7 mV AT 14:52, 06-17-97
ENTERED

STD CONCN= 1000 AT 14:53, 06-17-97
ENTERED

STD VOL= .25000 AT 14:53, 06-17-97
ENTERED

EMF= 37.7 mV AT 14:55, 06-17-97

EMF= 37.6 mV AT 14:55, 06-17-97
ENTERED

STD VOL= 2.5000 AT 14:56, 06-17-97
ENTERED

EMF=-2.8 mV AT 14:58, 06-17-97

EMF=-3.1 mV AT 14:58, 06-17-97

EMF=-3.2 mV AT 14:59, 06-17-97
ENTERED

1:NH3 SLOPE=-63.2 mV/DEC
AT 14:59, 06-17-97

1:NH3 CONCN= 15.9

1294 Sam

DOUBLE KNOWN ADDITION SELECTED
AT 15:00, 06-17-97

SAMPLE VOL= 25.000 AT 15:00, 06-17-97
ENTERED

EMF= 50.3 mV AT 15:05, 06-17-97

EMF= 50.4 mV AT 15:05, 06-17-97
ENTERED

STD CONCN= 1000 AT 15:05, 06-17-97
ENTERED

STD VOL= .25000 AT 15:06, 06-17-97
ENTERED

EMF= 38.0 mV AT 15:07, 06-17-97

EMF= 37.7 mV AT 15:08, 06-17-97

EMF= 37.7 mV AT 15:08, 06-17-97
ENTERED

STD VOL= 2.5000 AT 15:09, 06-17-97
ENTERED

EMF=-2.9 mV AT 15:11, 06-17-97

EMF=-3.0 mV AT 15:12, 06-17-97
ENTERED

1:NH3 SLOPE=-64.4 mV/DEC
AT 15:12, 06-17-97

1:NH3 CONCN= 16.9

12921 DUP

DOUBLE KNOWN ADDITION SELECTED
AT 15:13, 06-17-97

SAMPLE VOL= 25.000 AT 15:14, 06-17-97
ENTERED

EMF= 50.5 mV AT 15:18, 06-17-97

EMF= 50.9 mV AT 15:18, 06-17-97
ENTERED

STD CONCN= 1000 AT 15:18, 06-17-97
ENTERED

~~STD VOL= .25000 AT 15:18, 06-17-97~~
ENTERED

EMF= 38.5 mV AT 15:20, 06-17-97

EMF= 38.4 mV AT 15:21, 06-17-97
ENTERED

STD VOL= 2.5000 AT 15:21, 06-17-97
ENTERED

EMF=-2.7 mV AT 15:24, 06-17-97

EMF=-3.0 mV AT 15:25, 06-17-97
ENTERED

1:NH3 SLOPE=-67.1 mV/DEC
AT 15:25, 06-17-97

1:NH3 CONCN= 18.1

12914 Sp

DOUBLE KNOWN ADDITION SELECTED
AT 15:25, 06-17-97

SAMPLE VOL= 25.000 AT 15:26, 06-17-97
ENTERED

EMF= 29.8 mV AT 15:28, 06-17-97

EMF= 30.3 mV AT 15:29, 06-17-97

EMF= 30.3 mV AT 15:29, 06-17-97
ENTERED

STD CONCN= 1000 AT 15:29, 06-17-97
ENTERED

STD VOL= .25000 AT 15:29, 06-17-97
ENTERED

EMF= 25.0 mV AT 15:31, 06-17-97

EMF= 24.9 mV AT 15:31, 06-17-97
ENTERED

STD VOL= 2.5000 AT 15:32, 06-17-97
ENTERED

EMF=-5.5 mV AT 15:35, 06-17-97

EMF=-5.7 mV AT 15:35, 06-17-97
ENTERED

1:NH3 SLOPE=-94.0 mV/DEC

AT 15:35, 06-17-97

1:NH3 CONCN= 65.4

13N19-C Std wt#1857

DOUBLE KNOWN ADDITION SELECTED
AT 16:29, 06-17-97

SAMPLE VOL= 25.000 AT 16:29, 06-17-97
ENTERED

EMF= 47.8 mV AT 16:34, 06-17-97

EMF= 47.7 mV AT 16:34, 06-17-97
ENTERED

STD CONCN= 1000 AT 16:34, 06-17-97
ENTERED

STD VOL= .25000 AT 16:34, 06-17-97
ENTERED

EMF= 35.1 mV AT 16:36, 06-17-97

EMF= 35.2 mV AT 16:36, 06-17-97
ENTERED

STD VOL= 2.5000 AT 16:37, 06-17-97
ENTERED

EMF=-3.5 mV AT 16:39, 06-17-97

EMF=-3.6 mV AT 16:39, 06-17-97
ENTERED

1:NH3 SLOPE=-60.0 mV/DEC
AT 16:40, 06-17-97

1:NH3 CONCN= 15.8

WORKBOOK PAGE: STD1

C-O RWS 6/30/97
~~C-O~~ RWS 6/30/97

AMMONIA (NH3) : LA-631-001 (~~B-2~~) LIQUIDS/SOLIDS

			STD
Type	Instrument Data (µg/mL)	ID	17.200
STD	Blank Result from the Instrument (µg/mL)	BR	0.0031
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	LCS Standard Book Number	LCS	31N19C
	LCS Standard Concentration (µg/mL)	STD VAL	4.01E+02
Matrix			
Batch Number			
97002724			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	4.30E+02
Sample #			
	Method Detection Limit (µg/mL)	1.00	
Instrument Code			
NH301			
Prepared By			
LCM	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
KGH	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100		
Date Complete			
06/27/97			
Analysis Date			
06/17/97			
Analysis Time	LCS Standard % Recovery	107%	
Sample Point	NH3 Concentration (µg/mL)	4.30E+02	
TX-244 GRAB 1			

Analyst:		KGH	Date: 06/27/97
Signature of Chemist:	RW Schroeder	RWS	Date: 6/30/97

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: BLANK2

AMMONIA (NH3) : LA-631-001 ~~(B-2)~~ C-0 RWS 6/30/97 LIQUIDS/SOLIDS

				BLNK
Type	Instrument Data (µg/mL)	ID		0.000
BLNK	Blank Result from the Instrument (µg/mL)	BR		0.0031
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM		0.5
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL		25.0
Test Code				
Matrix				
LIQUID				
Batch Number				
97002724				
Rerun				
0				
Sample Prep				
N/A	NH3 Concentration (µg/mL)	NH3 CONC	<	1.00E+00
Sample #				
	Method Detection Limit (µg/mL)	1.00		
Instrument Code				
NH301				
Prepared By				
LCM	NH3 Concentration (µg/mL) = (BR) * (FVOL / VSAM)			
Chemist				
RWS				
Analyst				
KGH				
Date Complete				
06/27/97				
Analysis Date				
06/17/97				
Analysis Time				
Sample Point	NH3 Concentration (µg/mL)		<	1.00E+00
TX-244 GRAB 1				

Analyst:	KGH	Date:	06/27/97
Signature of Chemist: R.W. Schroeder	RWS	Date:	6/30/97

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: SAM3

AMMONIA (NH3) : LA-631-001 (~~B-2~~) C-0 RWS 6/30/97 LIQUIDS/SOLIDS

			SAMPLE
Type	Instrument Data (µg/mL)	ID	11.600
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.0031
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.5
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
Matrix			
LIQUID			
Batch Number			
97002724			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	5.80E+02
Sample #			
S97T001292	Method Detection Limit (µg/mL)	1.00	
Instrument Code			
NH301			
Prepared By			
LCM	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
KGH			
Date Complete			
06/27/97			
Analysis Date			
06/17/97			
Analysis Time			
Sample Point	NH3 Concentration (µg/mL)		5.80E+02
TX-244 GRAB 1			

Analyst:		KGH	Date: 06/27/97
Signature of Chemist:	RW Schroeder	RWS	Date: 6/30/97

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: DUP4

AMMONIA (NH3) : LA-631-001 ~~(B-2)~~ C-0 RWS 6/30/97 LIQUIDS/SOLIDS

			DUP
Type	Instrument Data (µg/mL)	ID	13.500
DUP	Blank Result from the Instrument (µg/mL)	BR	0.0031
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.5
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
Matrix			
LIQUID			
Batch Number	Sample Concentration (µg/mL)	SAM CONC	2.90E+02
97002724			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	6.75E+02
Sample #			
S97T001292	**Method Detection Limit (µg/mL)**	**1.00**	
Instrument Code			
NH301	**RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 10**		
Prepared By			
LCM	**NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)**		
Chemist			
RWS			
Analyst			
KGH			
Date Complete			
06/27/97			
Analysis Date			
06/17/97			
Analysis Time			
	RPD (DUP & SAM)	RWS 6/30/97	~~80%~~ 15%
Sample Point	**NH3 Concentration (µg/mL)**		6.75E+02
TX-244 GRAB 1			

Analyst:		KGH	Date: 06/27/97
Signature of Chemist:	D.W. Schroeder	RWS	Date: 6/30/97

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: SAM5

AMMONIA (NH3) : LA-631-001 ~~(B-2)~~ C-0 RWS 6/30/97 LIQUIDS/SOLIDS

			SAMPLE
Type	Instrument Data (µg/mL)	ID	22.000
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.0031
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.5
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
Matrix			
LIQUID			
Batch Number			
97002724			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	1.10E+03
Sample #			
S97T001293	Method Detection Limit (µg/mL)	1.00	
Instrument Code			
NH301			
Prepared By			
LCM	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
KGH			
Date Complete			
06/27/97			
Analysis Date			
06/17/97			
Analysis Time			
Sample Point	NH3 Concentration (µg/mL)		1.10E+03
TX-244 GRAB 1			

Analyst:	KGH	Date:	06/27/97
Signature of Chemist: RW Schroeder	RWS	Date:	6/30/97

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: DUP6

AMMONIA (NH3) : LA-631-001-~~(B-2)~~ C-0 RWS 6/30/97 LIQUIDS/SOLIDS

			DUP
Type	Instrument Data (µg/mL)	ID	15.900
DUP	Blank Result from the Instrument (µg/mL)	BR	0.0031
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.5
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
Matrix			
LIQUID			
Batch Number	Sample Concentration (µg/mL)	SAM CONC	5.50E+02
97002724			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	7.95E+02
Sample #			
S97T001293	**Method Detection Limit (µg/mL)**	**1.00**	
Instrument Code			
NH301	**RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 10**		
Prepared By			
LCM	**NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)**		
Chemist			
RWS			
Analyst			
KGH			
Date Complete			
06/27/97			
Analysis Date			
06/17/97			
Analysis Time			
	RPD (DUP & SAM)	RWS 6/30/97	~~36%~~ 32 %
Sample Point	**NH3 Concentration (µg/mL)**		7.95E+02
TX-244 GRAB 1			

Analyst:		KGH	Date: 06/27/97
Signature of Chemist:	RW Schroeder	RWS	Date: 6/30/97

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: SAM7

C-O RWS 6/30/97

AMMONIA (NH3) : LA-631-001 ~~(B-2)~~ LIQUIDS/SOLIDS

			SAMPLE
Type	Instrument Data (µg/mL)	ID	16.900
SAMPLE	Blank Result from the Instrument (µg/mL)	BR	0.0031
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.5
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
Matrix			
LIQUID			
Batch Number			
97002724			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	8.45E+02
Sample #			
S97T001294	Method Detection Limit (µg/mL)	1.00	
Instrument Code			
NH301			
Prepared By			
LCM	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
KGH			
Date Complete			
06/27/97			
Analysis Date			
06/17/97			
Analysis Time			
Sample Point	NH3 Concentration (µg/mL)		8.45E+02
TX-244 GRAB 1			

Analyst:	KGH	Date:	06/27/97
Signature of Chemist:	RWS Schroeder	Date:	6/30/97

SAMPLE.WB1 REV XX 37810NML

WORKBOOK PAGE: DUP8

AMMONIA (NH3) : LA-631-001 (B-2) LIQUIDS/SOLIDS

			DUP
Type	Instrument Data (µg/mL)	ID	18.100
DUP	Blank Result from the Instrument (µg/mL)	BR	0.0031
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.5
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
Matrix			
LIQUID			
Batch Number	Sample Concentration (µg/mL)	SAM CONC	4.22E+02
97002724			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	9.05E+02
Sample #			
S97T001294	Method Detection Limit (µg/mL)	1.00	
Instrument Code			
NH301	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 10		
Prepared By			
LCM	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
KGH			
Date Complete			
06/27/97			
Analysis Date			
06/17/97			
Analysis Time			
	RPD (DUP & SAM)	6.86	~~73%~~ RWS 6/30/97
Sample Point	NH3 Concentration (µg/mL)		9.05E+02
TX-244 GRAB 1			

Analyst:		KGH	Date: 06/27/97
Signature of Chemist:	RW Schroeder	RWS	Date: 6/30/97

SAMPLE.WB1 REV XX 37810NML

A	A	B	C	D	E
1					
2	**AMMONIA (NH3) : LA-631-001 ~~(B-2)~~ C-0 RWS 7/1/97**		**LIQUIDS/SOLIDS**		**spike**
3	Type	Instrument Data (µg/mL)	ID		65.400
4	**spike**	Blank Result from the Instrument (µg/mL)	BR		0.0031
5	Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM		0.5
6	**18652**	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL		25.0
7	Test Code	Spike Book Number	SPK		
8		Spike Value (µg/mL)	SPK VAL		1.00E+03
9	Matrix	Vol of Spike Standard Used (mL)	VOL SPK		1.000
10	**LIQUID**				
11	Batch Number				
12	**97002724**				
13	Rerun	Sample Instrument Data (µg/mL)	SAM ID		16.9
14	**0**	Sample Volume of Sample (mL)	SAM VSAM		0.5
15	Sample Prep	Sample Final Volume (mL)	SAM FVOL		25.0
16	N/A	NH3 Concentration (µg/mL)	NH3 CONC		0.00E+00
17	Sample #				
18	**S97001293**	**Detection Limit (µg/mL)**	**0.00**		
19	Instrument Code				
20	NH3-01	**Detection Limit = .2 * (FVOL/VSAM) * DDF**			
21	Prepared By				
22	RWS	**NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)**			
23	Chemist				
24	RWS	**QC ACTUAL = SPK VAL**			
25	Analyst	**QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / VOL SPK**			
26	KGH	**Spike % Recovery =**			
27	Date Complete	**((((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / (SPK VAL * VOL SPK)) * 100**			
28	**07/01/97**				
29	Analysis Date	**QC ACTUAL (µg)**			**1.00E+03**
30	06/17/97	**QC FOUND (µg)**			**1.21E+03**
31	Analysis Time				
32					
33	Sample Point	**NH3 Concentration (µg/mL)**			**0.00E+00**
34	TX-244 GRAB 1				
35					
36					
37	Analyst:		KGH	Date: 07/01/97	
38	Signature of Chemist:	RW Schroeder	RWS	Date: ~~6/~~ 7-1-97	
39	SAMPLE.WB1 REV 1.0	631001ML		RWS 7/1/97	

WORKBOOK PAGE: ST_END10

AMMONIA (NH3) : LA-631-001 ~~(B-2)~~ C-0 RWS 6/30/97 LIQUIDS/SOLIDS

			STD
Type	Instrument Data (µg/mL)	ID	15.800
STD	Blank Result from the Instrument (µg/mL)	BR	0.0031
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	1.0
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code	LCS Standard Book Number	LCS	31N19C
	LCS Standard Concentration (µg/mL)	STD VAL	4.01E+02
Matrix			
Batch Number			
97002724			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	3.95E+02
Sample #			
	Method Detection Limit (µg/mL)	1.00	
Instrument Code			
NH301			
Prepared By			
LCM	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
KGH	LCS Standard % Recovery = (NH3 CONC / STD VAL) * 100		
Date Complete			
06/27/97			
Analysis Date			
06/17/97			
Analysis Time	LCS Standard % Recovery		98%
Sample Point	NH3 Concentration (µg/mL)		3.95E+02
TX-244 GRAB 1			

Analyst:	KGH	Date:	06/27/97
Signature of Chemist: DW Schroeder	RWS	Date:	6/30/97

SAMPLE.WB1 REV XX 37810NML

LABCORE Data Entry Template for Worklist# 19115

Analyst: KJH **Instrument:** NH301 _____ **Book #** 3/NH-C

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

HNF-SD-WM-DP-251, REV. 0

Worklist Comment: TX244 GRAB1 NH3-01 *RERUN*

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				NH3-01	LIQUID	4.01e2	4.35e2	N/A	ug/mL
		2	BLNK-PREP				NH3-01	LIQUID	1	7.80e-1	N/A	ug/mL
97000388	TX-244 GRAB1	3	SAMPLE	S97T001295	0	D	NH3-01	LIQUID	N/A	4.17e2	6.00	ug/mL
97000388	TX-244 GRAB1	4	DUP	S97T001295	0	D	NH3-01	LIQUID	4.17e2	4.41e2	N/A	ug/mL
97000388	TX-244 GRAB1	5	SAMPLE	S97T001296	0	D	NH3-01	LIQUID	N/A	4.29e2	6.00	ug/mL
97000388	TX-244 GRAB1	6	DUP	S97T001296	0	D	NH3-01	LIQUID	4.29e2	4.53e2	N/A	ug/mL
97000388	TX-244 GRAB1	7	SAMPLE	S97T001297	0	D	NH3-01	LIQUID	N/A	4.08e2	6.00	ug/mL
97000388	TX-244 GRAB1	8	DUP	S97T001297	0	D	NH3-01	LIQUID	4.08e2	4.71e2	N/A	ug/mL
97000388	TX-244 GRAB1	9	SPK	S97T001297	0	D	NH3-01	LIQUID	4.01e2	4.83e2	N/A	ug/mL
		10	STD				NH3-01	LIQUID	~~4.45e2~~ 4.01e2 RWS 7/18/97	4.45e2	N/A	ug/mL

Final page for worklist # 19115

Dimitri Hughes 7-14-97
Analyst Signature **Date**

Susan Bu 7/21/97
Analyst Signature **Date**

Approved RW Schwedler 7/21/97

Data Entry Comments:

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

DOUBLE KNOWN ADDITION SELECTED
AT 10:51, 07-14-97

SAMPLE VOL= 25.000 AT 10:53, 07-14-97
ENTERED

EMF= 36.2 mV AT 10:54, 07-14-97

EMF= 36.1 mV AT 10:54, 07-14-97

EMF= 36.2 mV AT 10:54, 07-14-97

EMF= 36.4 mV AT 10:55, 07-14-97

EMF= 36.4 mV AT 10:55, 07-14-97
ENTERED

STD CONCN= 1000 AT 10:55, 07-14-97
ENTERED

STD VOL= .25000 AT 10:56, 07-14-97
ENTERED

EMF= 24.8 mV AT 10:56, 07-14-97

EMF= 24.7 mV AT 10:57, 07-14-97

EMF= 24.8 mV AT 10:57, 07-14-97

EMF= 24.8 mV AT 10:57, 07-14-97
ENTERED

STD VOL= 2.5000 AT 10:58, 07-14-97
ENTERED

EMF=-12.6 mV AT 10:58, 07-14-97

EMF=-13.0 mV AT 10:59, 07-14-97

EMF=-12.9 mV AT 10:59, 07-14-97

EMF=-12.9 mV AT 11:00, 07-14-97
ENTERED

1:NH3 SLOPE=-60.2 mV/DEC
AT 11:00, 07-14-97

1:NH3 CONCN= 17.4 — 0.00055 x 25 df. = 435/401 x100 = 108.5%

SAMPLE VOL= 25.000 AT 10:40, 07-14-97
ENTERED

EMF= 294.8 mV AT 10:43, 07-14-97

EMF= 295.8 mV AT 10:44, 07-14-97

EMF= 296.1 mV AT 10:44, 07-14-97

EMF= 296.3 mV AT 10:45, 07-14-97

EMF= 296.4 mV AT 10:45, 07-14-97

EMF= 296.4 mV AT 10:45, 07-14-97
ENTERED

STD CONCN= 1000 AT 10:46, 07-14-97
ENTERED

STD VOL= .25000 AT 10:46, 07-14-97
ENTERED

EMF= 51.0 mV AT 10:48, 07-14-97

EMF= 50.5 mV AT 10:48, 07-14-97

EMF= 50.4 mV AT 10:49, 07-14-97

EMF= 50.3 mV AT 10:49, 07-14-97
ENTERED

STD VOL= 2.5000 AT 10:49, 07-14-97
ENTERED

EMF=-7.2 mV AT 10:50, 07-14-97

EMF=-7.5 mV AT 10:51, 07-14-97

EMF=-7.6 mV AT 10:51, 07-14-97

EMF=-7.6 mV AT 10:51, 07-14-97
ENTERED

1:NH3 SLOPE=-57.9 mV/DEC
AT 10:51, 07-14-97

1:NH3 CONCN= .00055

Prep Blk

DOUBLE KNOWN ADDITION SELECTED
AT 11:02, 07-14-97

SAMPLE VOL= 25.000 AT 11:11, 07-14-97
ENTERED

EMF= 105.8 mV AT 11:15, 07-14-97

EMF= 105.8 mV AT 11:16, 07-14-97

EMF= 100.2 mV AT 11:19, 07-14-97

EMF= 100.2 mV AT 11:19, 07-14-97

EMF= 100.4 mV AT 11:19, 07-14-97
ENTERED

STD CONCN= 1000 AT 11:20, 07-14-97
ENTERED

STD VOL= .25000 AT 11:20, 07-14-97
ENTERED

EMF= 34.7 mV AT 11:21, 07-14-97

EMF= 34.4 mV AT 11:21, 07-14-97

EMF= 34.2 mV AT 11:21, 07-14-97

EMF= 34.2 mV AT 11:22, 07-14-97
ENTERED

STD VOL= 2.5000 AT 11:22, 07-14-97
ENTERED

EMF=-19.1 mV AT 11:22, 07-14-97

EMF=-19.3 mV AT 11:23, 07-14-97

EMF=-19.2 mV AT 11:23, 07-14-97

EMF=-19.2 mV AT 11:24, 07-14-97
ENTERED

1:NH3 SLOPE=-54.7 mV/DEC
AT 11:24, 07-14-97

1:NH3 CONCN= .651 – .00055 x 1d.f. = .650 ppm x 1.2 prep factor = .780

STM
1295

DOUBLE KNOWN ADDITION SELECTED
AT 11:24, 07-14-97

SAMPLE VOL= 25.000 AT 13:22, 07-14-97
ENTERED

EMF= 37.1 mV AT 13:23, 07-14-97

EMF= 36.9 mV AT 13:24, 07-14-97

EMF= 36.8 mV AT 13:24, 07-14-97

EMF= 36.8 mV AT 13:25, 07-14-97

EMF= 36.8 mV AT 13:25, 07-14-97
ENTERED

STD CONCN= 1000 AT 13:25, 07-14-97
ENTERED

STD VOL= .25000 AT 13:26, 07-14-97
ENTERED

EMF= 23.8 mV AT 13:26, 07-14-97

EMF= 23.8 mV AT 13:27, 07-14-97

EMF= 23.8 mV AT 13:27, 07-14-97
ENTERED

STD VOL= 2.5000 AT 13:27, 07-14-97
ENTERED

EMF=-13.8 mV AT 13:28, 07-14-97

EMF=-14.2 mV AT 13:29, 07-14-97

EMF=-14.1 mV AT 13:29, 07-14-97
ENTERED

1:NH3 SLOPE=-56.3 mV/DEC
AT 13:29, 07-14-97

1:NH3 CONCN= 13.9 ÷ .00055 x 25 x 1.2 = 417 ppm

1295 Dup

DOUBLE KNOWN ADDITION SELECTED
AT 13:29, 07-14-97

SAMPLE VOL= 25.000 AT 13:31, 07-14-97
ENTERED

EMF= 35.4 mV AT 13:31, 07-14-97

EMF= 34.8 mV AT 13:32, 07-14-97

EMF= 35.2 mV AT 13:32, 07-14-97

EMF= 35.1 mV AT 13:33, 07-14-97

EMF= 35.2 mV AT 13:33, 07-14-97
ENTERED

STD CONCN= 1000 AT 13:33, 07-14-97
ENTERED

STD VOL= .25000 AT 13:33, 07-14-97
ENTERED

EMF= 23.0 mV AT 13:34, 07-14-97

EMF= 23.1 mV AT 13:34, 07-14-97

EMF= 23.3 mV AT 13:35, 07-14-97
ENTERED

STD VOL= 2.5000 AT 13:35, 07-14-97
ENTERED

EMF=-12.6 mV AT 13:36, 07-14-97

EMF=-12.5 mV AT 13:37, 07-14-97

EMF=-12.4 mV AT 13:37, 07-14-97

EMF=-12.4 mV AT 13:37, 07-14-97
ENTERED

1:NH3 SLOPE=-54.0 mV/DEC
AT 13:37, 07-14-97

1:NH3 CONCN= 14.7 ~.00055 x 25 x 1.2 = 441 ppm

1296 SAM

DOUBLE KNOWN ADDITION SELECTED
AT 13:37, 07-14-97

SAMPLE VOL= 25.000 AT 13:39, 07-14-97
ENTERED

EMF= 36.5 mV AT 13:40, 07-14-97

EMF= 36.0 mV AT 13:40, 07-14-97

EMF= 36.2 mV AT 13:40, 07-14-97

EMF= 36.5 mV AT 13:41, 07-14-97

EMF= 36.6 mV AT 13:41, 07-14-97
ENTERED

STD CONCN= 1000 AT 13:41, 07-14-97
ENTERED

STD VOL= .25000 AT 13:41, 07-14-97
ENTERED

EMF= 24.0 mV AT 13:42, 07-14-97

EMF= 24.3 mV AT 13:42, 07-14-97

EMF= 24.3 mV AT 13:43, 07-14-97
ENTERED

STD VOL= 2.5000 AT 13:43, 07-14-97
ENTERED

EMF=-12.2 mV AT 13:44, 07-14-97

EMF=-12.1 mV AT 13:44, 07-14-97

EMF=-12.1 mV AT 13:44, 07-14-97
ENTERED

1:NH3 SLOPE=-54.5 mV/DEC
AT 13:44, 07-14-97

1:NH3 CONCN= ~~14.3~~ .00055 X 25 X 1.2 = 429

1296 Dup

DOUBLE KNOWN ADDITION SELECTED
AT 13:45, 07-14-97

SAMPLE VOL= 25.000 AT 13:46, 07-14-97
ENTERED

~~EMF= 36.9 mV AT 13:47, 07-14-97~~

EMF= 36.9 mV AT 13:47, 07-14-97

EMF= 38.0 mV AT 13:50, 07-14-97

EMF= 38.3 mV AT 13:50, 07-14-97

EMF= 38.5 mV AT 13:51, 07-14-97

EMF= 38.6 mV AT 13:51, 07-14-97
ENTERED

STD CONCN= 1000 AT 13:51, 07-14-97
ENTERED

STD VOL= .25000 AT 13:51, 07-14-97
ENTERED

EMF= 25.6 mV AT 13:52, 07-14-97

EMF= 25.6 mV AT 13:53, 07-14-97

EMF= 25.7 mV AT 13:54, 07-14-97
ENTERED

STD VOL= 2.5000 AT 13:54, 07-14-97
ENTERED

EMF=-13.3 mV AT 13:55, 07-14-97

EMF=-13.4 mV AT 13:55, 07-14-97

EMF=-13.4 mV AT 13:55, 07-14-97
ENTERED

1:NH3 SLOPE=-59.5 mV/DEC
AT 13:55, 07-14-97

1:NH3 CONCN= 15.1 - .00055 x 25 x 1.2 = 453 ppm

1297 SAM

DOUBLE KNOWN ADDITION SELECTED
AT 13:55, 07-14-97

SAMPLE VOL= 25.000 AT 13:57, 07-14-97
ENTERED

EMF= 36.9 mV AT 13:57, 07-14-97

EMF= 36.9 mV AT 13:58, 07-14-97

EMF= 37.2 mV AT 13:59, 07-14-97

EMF= 37.5 mV AT 14:00, 07-14-97

EMF= 37.6 mV AT 14:00, 07-14-97

EMF= 37.6 mV AT 14:00, 07-14-97
ENTERED

STD CONCN= 1000 AT 14:01, 07-14-97
ENTERED

STD VOL= .25000 AT 14:01, 07-14-97
ENTERED

EMF= 24.8 mV AT 14:01, 07-14-97

EMF= 24.8 mV AT 14:02, 07-14-97

EMF= 24.8 mV AT 14:02, 07-14-97
ENTERED

STD VOL= 2.5000 AT 14:03, 07-14-97
ENTERED

EMF=-11.9 mV AT 14:03, 07-14-97

EMF=-12.1 mV AT 14:03, 07-14-97

EMF=-12.1 mV AT 14:04, 07-14-97
ENTERED

1:NH3 SLOPE=-54.4 mV/DEC
AT 14:04, 07-14-97

1:NH3 CONCN= 13.6 $-.00055 \times 25 \times 1.2 = 408$ ppm

1297 Dup

DOUBLE KNOWN ADDITION SELECTED
AT 14:05, 07-14-97

SAMPLE VOL= 25.000 AT 14:05, 07-14-97
ENTERED

EMF= 36.6 mV AT 14:06, 07-14-97

EMF= 36.7 mV AT 14:06, 07-14-97

EMF= 36.9 mV AT 14:07, 07-14-97

EMF= 37.2 mV AT 14:08, 07-14-97

EMF= 37.2 mV AT 14:08, 07-14-97
ENTERED

STD CONCN= 1000 AT 14:09, 07-14-97
ENTERED

STD VOL= .25000 AT 14:09, 07-14-97
ENTERED

EMF= 24.6 mV AT 14:10, 07-14-97

EMF= 24.6 mV AT 14:10, 07-14-97

EMF= 24.6 mV AT 14:10, 07-14-97
ENTERED

STD VOL= 2.5000 AT 14:11, 07-14-97
ENTERED

EMF=-14.2 mV AT 14:11, 07-14-97

EMF=-14.3 mV AT 14:12, 07-14-97

EMF=-14.4 mV AT 14:12, 07-14-97
ENTERED

1:NH3 SLOPE=-60.2 mV/DEC
AT 14:12, 07-14-97

1:NH3 CONCN= 15.7 $\rightarrow 0.00055 \times 25 \times 1.2 = 471$ ppm

1297 SpK

DOUBLE KNOWN ADDITION SELECTED
AT 14:14, 07-14-97

SAMPLE VOL= 25.000 AT 14:14, 07-14-97
ENTERED

EMF= 18.0 mV AT 14:15, 07-14-97

EMF= 17.9 mV AT 14:15, 07-14-97

EMF= 18.0 mV AT 14:15, 07-14-97

EMF= 18.6 mV AT 14:17, 07-14-97

EMF= 18.7 mV AT 14:17, 07-14-97
ENTERED

STD CONCN= 1000 AT 14:17, 07-14-97
ENTERED

STD VOL= .25000 AT 14:17, 07-14-97
ENTERED

EMF= 11.8 mV AT 14:17, 07-14-97

EMF= 11.9 mV AT 14:18, 07-14-97

EMF= 12.0 mV AT 14:18, 07-14-97

EMF= 12.0 mV AT 14:18, 07-14-97
ENTERED

STD VOL= 2.5000 AT 14:19, 07-14-97
ENTERED

EMF=-17.0 mV AT 14:19, 07-14-97

EMF=-17.1 mV AT 14:20, 07-14-97

EMF=-17.1 mV AT 14:20, 07-14-97
ENTERED

1:NH3 SLOPE=-60.5 mV/DEC
AT 14:20, 07-14-97

1:NH3 CONCN= 32.9

std

DOUBLE KNOWN ADDITION SELECTED
AT 14:20, 07-14-97

SAMPLE VOL= 25.000 AT 14:22, 07-14-97
ENTERED

EMF= 34.3 mV AT 14:22, 07-14-97

EMF= 34.4 mV AT 14:23, 07-14-97

EMF= 34.6 mV AT 14:24, 07-14-97

EMF= 34.8 mV AT 14:24, 07-14-97

EMF= 34.8 mV AT 14:24, 07-14-97
ENTERED

STD CONCN= 1000 AT 14:25, 07-14-97
ENTERED

STD VOL= .25000 AT 14:25, 07-14-97
ENTERED

EMF= 23.1 mV AT 14:25, 07-14-97

EMF= 23.2 mV AT 14:27, 07-14-97

EMF= 23.3 mV AT 14:27, 07-14-97

EMF= 23.4 mV AT 14:27, 07-14-97
ENTERED

STD VOL= 2.5000 AT 14:28, 07-14-97
ENTERED

EMF=-14.0 mV AT 14:28, 07-14-97

EMF=-14.0 mV AT 14:29, 07-14-97

EMF=-14.0 mV AT 14:29, 07-14-97
ENTERED

1:NH3 SLOPE=-60.1 mV/DEC
AT 14:29, 07-14-97

1:NH3 CONCN= 17.8 $- 0.00055 \times 25 \times 1.2 = 445/401 \times 100 = 111$

DOUBLE KNOWN ADDITION SELECTED
AT 14:30, 07-14-97

A	A	B	C	D	E	F
1						
2	**AMMONIA (NH3) : LA-631-001 (C-0)**		**LIQUIDS/SOLIDS**		**SPIKE**	
3	Type	Instrument Data (µg/mL)	ID		32.900	
4	SPIKE	Blank Result from the Instrument (µg/mL)	BR		0.0006	
5	Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM		1.0	
6	19115	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL		25.0	
7	Test Code	Spike Book Number	SPK		31N19C	
8	NH3-01	Spike Value (µg/mL)	SPK VAL		4.01E+02	
9	Matrix	Vol of Spike Standard Used (mL)	VOL SPK		1.000	
10	LIQUID					
11	Batch Number					
12						
13	Rerun	Sample Instrument Data (µg/mL)	SAM ID		13.6	
14	0	Sample Volume of Sample (mL)	SAM VSAM		1.0	
15	Sample Prep	Sample Final Volume (mL)	SAM FVOL		25.0	
16	ACIDIL	NH3 Concentration (µg/mL)	NH3 CONC		8.22E+02	
17	Sample #					
18	S97T001297	**Method Detection Limit (µg/mL)**	**1.00**			
19	Instrument Code					
20						
21	Prepared By					
22	RWS	**NH3 Concentration (µg/mL) = (BR) * (FVOL / VSAM)**				
23	Chemist					
24	RWS	**QC ACTUAL = SPK VAL**				
25	Analyst	**QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM))**				
26	KGH	**Spike % Recovery =**				
27	Date Complete	**((((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM)) / (SPK VAL * VOL SPK)) * 100**				
28	07/18/97					
29	Analysis Date	**QC ACTUAL (µg)**			**4.01E+02**	
30	07/14/97	**QC FOUND (µg)**			**4.83E+02**	
31	Analysis Time	**Spike % Recovery**			**120%**	
32						
33	Sample Point	**NH3 Concentration (µg/mL)**			**8.22E+02**	
34	TX244 GRAB					
35						
36						
37	Analyst:		KGH	Date:	07/18/97	
38	Signature of Chemist:	RW Schroeder	RWS	Date:	7/18/97	
39	SAMPLE.WB1 REV XX		37810NML			

LABCORE Completed Worklist Report for Worklist# 18527

Analyst: eal **Instrument:** IC01 **Book#** 6/1/20B

Method: IA-533-105 Rev/Mod D-1

Worklist Comment: TX-244 IC. RCJ

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		6.60e-02	0.066	ug/mL
1	CCB		0	@IC-QC	NO2	QC	1		<1.08e-1		ug/mL
1	CCB		0	@IC-QC	BR	QC	1		<1.25e-1		ug/mL
1	CCB		0	@IC-QC	NO3	QC	1		<1.39e-1		ug/mL
1	CCB		0	@IC-QC	PO4	QC	1		<1.20e-1		ug/mL
1	CCB		0	@IC-QC	SO4	QC	1		<1.38e-1		ug/mL
1	CCB		0	@IC-QC	OXALATE2	QC	1		<1.05e-1		ug/mL
2	CCV		0	@IC-QC	F	QC	5.90e01		6.04e01	102.373	% Recovery
2	CCV		0	@IC-QC	CL	QC	7.90e01		7.88e+01	99.747	% Recovery
2	CCV		0	@IC-QC	NO2	QC	5.44e02		5.24e+02	96.324	% Recovery
2	CCV		0	@IC-QC	BR	QC	5.89e02		5.84e+02	99.151	% Recovery
2	CCV		0	@IC-QC	NO3	QC	5.94e02		5.68e+02	95.623	% Recovery
2	CCV		0	@IC-QC	PO4	QC	5.45e02		5.31e+02	97.431	% Recovery
2	CCV		0	@IC-QC	SO4	QC	6.31e02		6.02e+02	95.404	% Recovery
2	CCV		0	@IC-QC	OXALATE2	QC	5.36e02		5.37e+02	100.187	% Recovery
3	SAMPLE	S97T001286	0	@IC-01	F-02	LIQUID	N/A		1.709e+03	25.450	ug/mL
3	SAMPLE	S97T001286	0	@IC-01	CL-02	LIQUID	N/A		6.029e+02	36.060	ug/mL
3	SAMPLE	S97T001286	0	@IC-01	NO2-02	LIQUID	N/A		1.910e+03	229.100	ug/mL
3	SAMPLE	S97T001286	0	@IC-01	BR-02	LIQUID	N/A	<	2.651e+02	265.100	ug/mL
3	SAMPLE	S97T001286	0	@IC-01	NO3-02	LIQUID	N/A		5.206e+04	294.800	ug/mL
3	SAMPLE	S97T001286	0	@IC-01	PO4-02	LIQUID	N/A		1.315e+04	254.500	ug/mL
3	SAMPLE	S97T001286	0	@IC-01	SO4-02	LIQUID	N/A		3.122e+03	292.700	ug/mL
3	SAMPLE	S97T001286	0	@IC-01	OXALATE2	LIQUID	N/A	<	2.227e+02	222.700	ug/mL
4	DUP	S97T001286	0	@IC-01	F-02	LIQUID	1.71e+03		1.68e+03	1.770	RPD
4	DUP	S97T001286	0	@IC-01	CL-02	LIQUID	6.03e+02		5.69e+02	5.802	RPD
4	DUP	S97T001286	0	@IC-01	NO2-02	LIQUID	1.91e+03		1.92e+03	0.522	RPD
4	DUP	S97T001286	0	@IC-01	BR-02	LIQUID	<2.65e2		<2.65e2		RPD
4	DUP	S97T001286	0	@IC-01	NO3-02	LIQUID	5.21e+04		5.17e+04	0.771	RPD
4	DUP	S97T001286	0	@IC-01	PO4-02	LIQUID	1.32e+04		1.30e+04	1.527	RPD
4	DUP	S97T001286	0	@IC-01	SO4-02	LIQUID	3.12e+03		3.16e+03	1.274	RPD
4	DUP	S97T001286	0	@IC-01	OXALATE2	LIQUID	<2.23e2		<2.23e2		RPD
5	SAMPLE	S97T001290	0	@IC-01	F-02	LIQUID	N/A		1.638e+03	25.450	ug/mL
5	SAMPLE	S97T001290	0	@IC-01	CL-02	LIQUID	N/A		6.171e+02	36.060	ug/mL
5	SAMPLE	S97T001290	0	@IC-01	NO2-02	LIQUID	N/A		1.984e+03	229.100	ug/mL
5	SAMPLE	S97T001290	0	@IC-01	BR-02	LIQUID	N/A	<	2.651e+02	265.100	ug/mL
5	SAMPLE	S97T001290	0	@IC-01	NO3-02	LIQUID	N/A		5.322e+04	294.800	ug/mL
5	SAMPLE	S97T001290	0	@IC-01	PO4-02	LIQUID	N/A		1.305e+04	254.500	ug/mL
5	SAMPLE	S97T001290	0	@IC-01	SO4-02	LIQUID	N/A		3.079e+03	292.700	ug/mL
5	SAMPLE	S97T001290	0	@IC-01	OXALATE2	LIQUID	N/A	<	2.227e+02	222.700	ug/mL
6	DUP	S97T001290	0	@IC-01	F-02	LIQUID	1.64e+03		1.64e+03	0.000	RPD

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

LABCORE Completed Worklist Report for Worklist# 18527

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
6	DUP	S97T001290	0	@IC-01	CL-02	LIQUID	6.17e+02	6.07e+02	1.634	RPD
6	DUP	S97T001290	0	@IC-01	NO2-02	LIQUID	1.98e+03	1.91e+03	3.599	RPD
6	DUP	S97T001290	0	@IC-01	BR-02	LIQUID	<2.65e2	<2.65e2		RPD
6	DUP	S97T001290	0	@IC-01	NO3-02	LIQUID	5.32e+04	5.17e+04	2.860	RPD
6	DUP	S97T001290	0	@IC-01	PO4-02	LIQUID	1.30e+04	1.26e+04	3.125	RPD
6	DUP	S97T001290	0	@IC-01	SO4-02	LIQUID	3.08e+03	3.07e+03	0.325	RPD
6	DUP	S97T001290	0	@IC-01	OXALATE2	LIQUID	<2.23e2	<2.23e2		RPD
7	SAMPLE	S97T001291	0	@IC-01	F-02	LIQUID	N/A	1.668e+03	25.450	ug/mL
7	SAMPLE	S97T001291	0	@IC-01	CL-02	LIQUID	N/A	6.034e+02	36.060	ug/mL
7	SAMPLE	S97T001291	0	@IC-01	NO2-02	LIQUID	N/A	1.937e+03	229.100	ug/mL
7	SAMPLE	S97T001291	0	@IC-01	BR-02	LIQUID	N/A <	2.651e+02	265.100	ug/mL
7	SAMPLE	S97T001291	0	@IC-01	NO3-02	LIQUID	N/A	5.285e+04	294.800	ug/mL
7	SAMPLE	S97T001291	0	@IC-01	PO4-02	LIQUID	N/A	1.304e+04	254.500	ug/mL
7	SAMPLE	S97T001291	0	@IC-01	SO4-02	LIQUID	N/A	2.964e+03	292.700	ug/mL
7	SAMPLE	S97T001291	0	@IC-01	OXALATE2	LIQUID	N/A <	2.227e+02	222.700	ug/mL
8	DUP	S97T001291	0	@IC-01	F-02	LIQUID	1.67e+03	1.68e+03	0.597	RPD
8	DUP	S97T001291	0	@IC-01	CL-02	LIQUID	6.03e+02	6.23e+02	3.263	RPD
8	DUP	S97T001291	0	@IC-01	NO2-02	LIQUID	1.94e+03	1.90e+03	2.083	RPD
8	DUP	S97T001291	0	@IC-01	BR-02	LIQUID	<2.65e2	<2.65e2		RPD
8	DUP	S97T001291	0	@IC-01	NO3-02	LIQUID	5.28e+04	5.33e+04	0.943	RPD
8	DUP	S97T001291	0	@IC-01	PO4-02	LIQUID	1.30e+04	1.29e+04	0.772	RPD
8	DUP	S97T001291	0	@IC-01	SO4-02	LIQUID	2.96e+03	3.05e+03	2.995	RPD
8	DUP	S97T001291	0	@IC-01	OXALATE2	LIQUID	<2.23e2	<2.23e2		RPD
9	SPK	S97T001291	0	@IC-01	F-02	LIQUID	5.90e01	6.16e+01	104.407	% Recovery
9	SPK	S97T001291	0	@IC-01	CL-02	LIQUID	7.90e01	8.64e+01	109.367	% Recovery
9	SPK	S97T001291	0	@IC-01	NO2-02	LIQUID	5.44e02	5.45e+02	100.184	% Recovery
9	SPK	S97T001291	0	@IC-01	BR-02	LIQUID	5.89e02	5.36e+02	91.002	% Recovery
9	SPK	S97T001291	0	@IC-01	NO3-02	LIQUID	5.94e02	5.44e+02	91.582	% Recovery
9	SPK	S97T001291	0	@IC-01	PO4-02	LIQUID	5.45e02	5.31e+02	97.431	% Recovery
9	SPK	S97T001291	0	@IC-01	SO4-02	LIQUID	6.31e02	6.25e+02	99.049	% Recovery
9	SPK	S97T001291	0	@IC-01	OXALATE2	LIQUID	5.36e02	5.55e+02	103.545	% Recovery

Final page for worklist# 18527

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

Jason M. Fuge 6/12/97
Reviewer Signature **Date**

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

06/06/97 14:25
A-0004-1

LABCORE Data Entry Template for Worklist# 18527

Analyst: EAL **Instrument:** IC0 1 **Book#** 61N20.B

Method: LA-533-105 Rev/Mod D.1

Worklist Comment: TX-244 IC. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S97T001286	0		@IC-01	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested:				BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
4	DUP	S97T001286	0		@IC-01	LIQUID		
5	SAMPLE	S97T001290	0		@IC-01	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested:				BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
6	DUP	S97T001290	0		@IC-01	LIQUID		
7	SAMPLE	S97T001291	0		@IC-01	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested:				BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02			
8	DUP	S97T001291	0		@IC-01	LIQUID		
9	SPK	S97T001291	0		@IC-01	LIQUID		

Final page for worklist # 18527

A Lambel 06.07.97
Analyst Signature **Date**

Analyst Signature **Date**

uploaded 6-10-97
John Wanell
18527JUN.CSV
Validated 6/11/97 JM Fuge

Data Entry Comments:

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

Sample Name: INST. BLANK Date: 06/07/1997 07:18:46
Data File : C:\DX\DATA\97060701.D01
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 1 Detector:CDM-1
Analyst : JM Lewis Column: AG4A/AS4A anion column

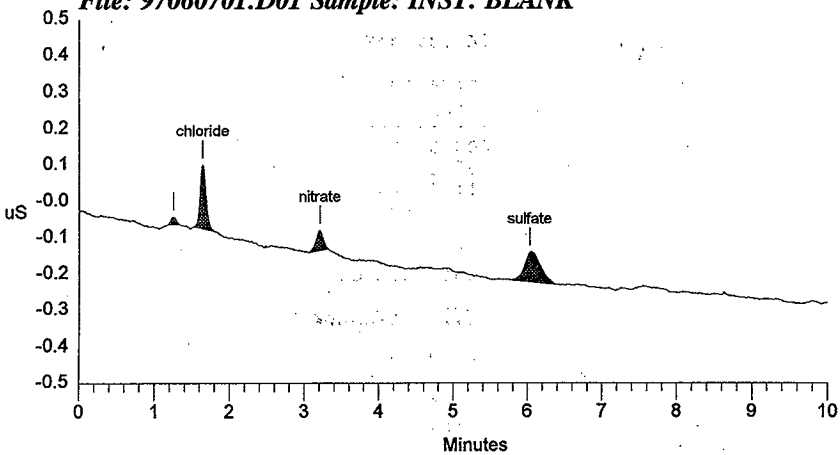
for SAL 6/12/97

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	1.25		0.000	21	104	1	
2	1.64	chloride	0.066	174	921	1	2.93
3	3.21	nitrate	0.119	54	368	1	-1.33
4	6.03	sulfate	0.040	80	1257	1	0.00
		Totals	0.224	330	2650		

File: 97060701.D01 Sample: INST. BLANK



SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 138 TO 146.

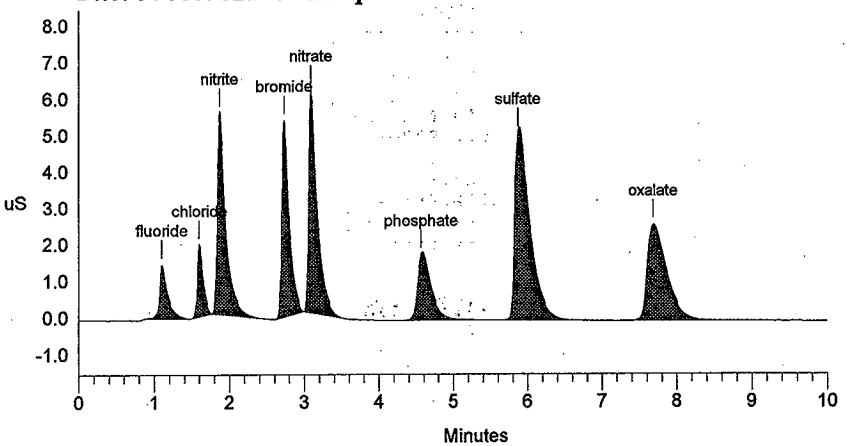
```
==============================================================================
| Sample Name: 61N20-B STD.                    Date: 06/07/1997 07:34:47      |
| Data File  : C:\DX\DATA\97060701.D02                                        |
| Method     : C:\DX\METHOD\KIT.MET                                           |
| ACI Address: 1  System: 1  Inject#: 2                   Detector:CDM-1      |
| Analyst    :                 Column: AG4A/AS4A anion column                |
==============================================================================
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.10	fluoride	60.412	1467	10934	1	-1.79
2	1.59	chloride	78.774	1946	10285	1	0.00
3	1.87	nitrite	523.804	5523	41352	1	-3.11
4	2.73	bromide	584.091	5390	36510	1	-0.12
5	3.09	nitrate	567.718	6094	47220	1	-5.03
6	4.56	phosphate	530.776	1787	23521	1	-1.16
7	5.87	sulfate	601.788	5135	73855	1	-2.65
8	7.68	oxalate	537.421	2632	47522	1	-2.04
		Totals	3484.784	29973	291198		

File: 97060701.D02 Sample: 61N20-B STD.



Data Reprocessed On 06/09/1997 15:52:21

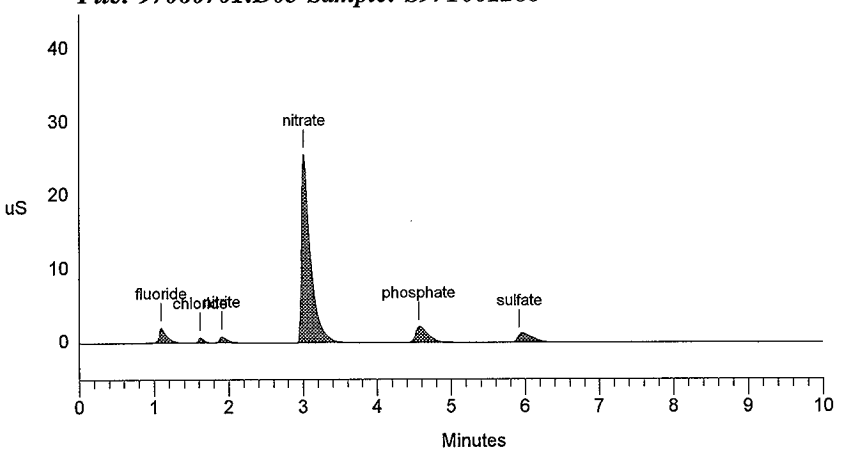
Sample Name: S97T001286	Date: 06/07/1997 07:46:18
Data File : F:\DATA\97060701.D03	
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 3	Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column	

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.09	fluoride	1709.472	2018	15017	1	-2.38
2	1.61	chloride	602.876	702	3752	1	1.26
3	1.91	nitrite	1909.520	844	6465	1	-1.04
4	3.01	nitrate	52064.931	25667	219750	1	0.11
5	4.56	phosphate	13150.592	2157	27881	1	-1.16
6	5.92	sulfate	3121.558	1028	18615	1	-1.77
		Totals	72558.948	32415	291480		

File: 97060701.D03 Sample: S97T001286



Data Reprocessed On 06/09/1997 15:54:41

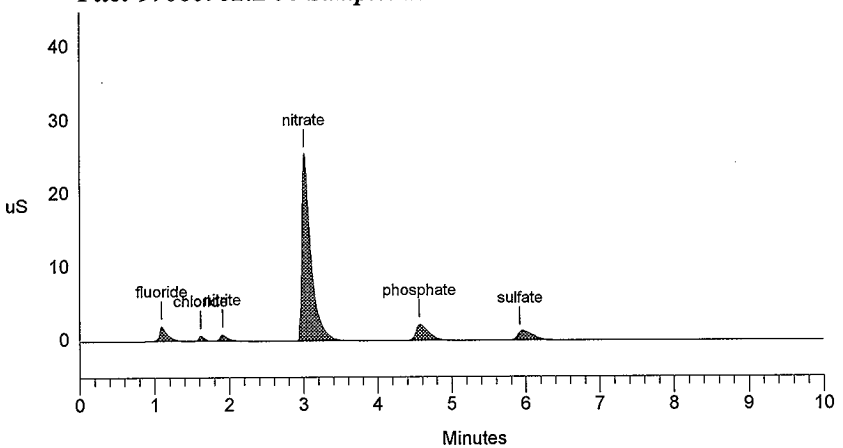
Sample Name: S97T001286 DUP Date: 06/07/1997 07:57:15
Data File : F:\DATA\97060701.D04
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 4 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.09	fluoride	1678.765	1999	14731	1	-2.38
2	1.61	chloride	568.922	692	3543	1	1.26
3	1.91	nitrite	1922.766	838	6515	1	-1.04
4	3.01	nitrate	51675.187	25485	217978	1	-0.11
5	4.56	phosphate	12971.393	2177	27490	1	-1.16
6	5.92	sulfate	3162.526	1080	18850	1	-1.77
		Totals	71979.559	32271	289108		

File: 97060701.D04 Sample: S97T001286 DUP



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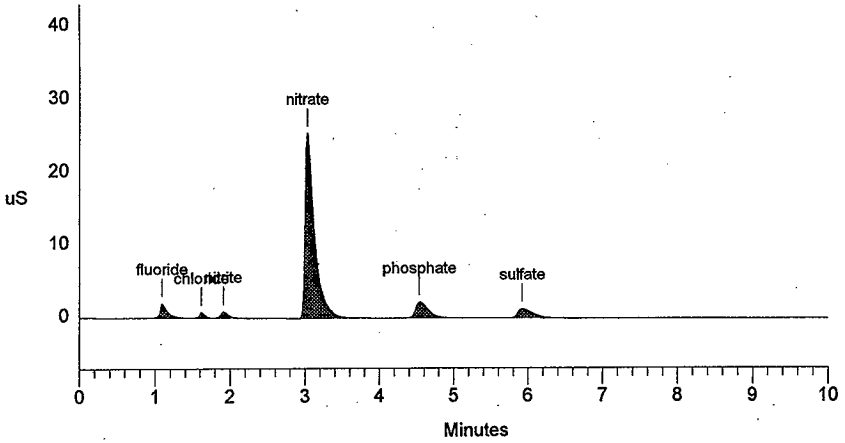
==============================================================================
| Sample Name: S97T001290                    Date: 06/07/1997 09:34:23        |
| Data File  : C:\DX\DATA\97060701.D05                                        |
| Method     : C:\DX\METHOD\KIT.MET                                           |
| ACI Address: 1  System: 1  Inject#: 5                   Detector:CDM-1      |
| Analyst    :                Column: AG4A/AS4A anion column                  |
==============================================================================
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.09	fluoride	1637.537	1987	14348	1	-2.38
2	1.61	chloride	617.111	746	3839	1	1.26
3	1.91	nitrite	1983.935	870	6748	1	-1.04
4	3.03	nitrate	53223.632	25446	225032	1	-6.87
5	4.53	phosphate	13049.953	2173	27661	1	-1.73
6	5.92	sulfate	3078.597	1277	18369	1	-1.77
		Totals	73590.765	32499	295997		

File: 97060701.D05 Sample: S97T001290



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==============================================================================
| Sample Name: S97T001290 DUP                    Date: 06/07/1997 09:45:22    |
| Data File  : C:\DX\DATA\97060701.D06                                        |
| Method     : C:\DX\METHOD\KIT.MET                                           |
| ACI Address: 1  System: 1  Inject#: 6                   Detector:CDM-1      |
| Analyst    :                 Column: AG4A/AS4A anion column                |
==============================================================================
```
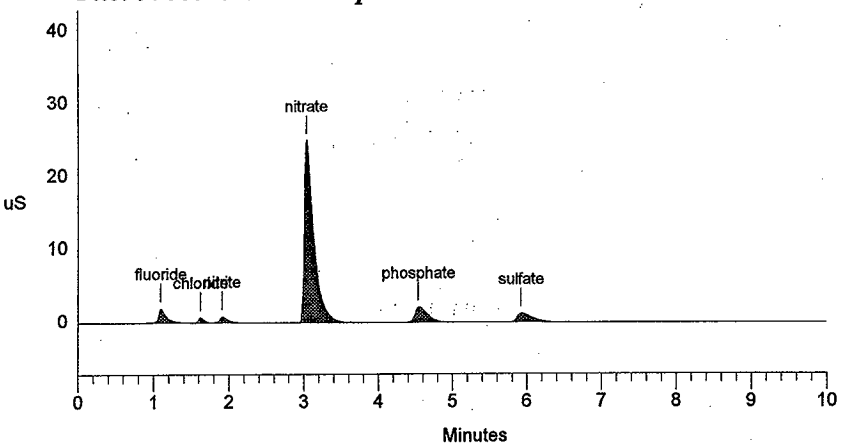

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	2121	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.09	fluoride	1636.741	1985	14340	1	-2.38
2	1.62	chloride	607.480	743	3780	1	1.67
3	1.91	nitrite	1907.940	849	6459	1	-1.04
4	3.03	nitrate	51720.092	24993	218182	1	-6.67
5	4.53	phosphate	12607.896	2125	26698	1	-1.73
6	5.92	sulfate	3071.989	1260	18331	1	-1.77
		Totals	71552.137	31954	287791		

File: 97060701.D06 Sample: S97T001290 DUP



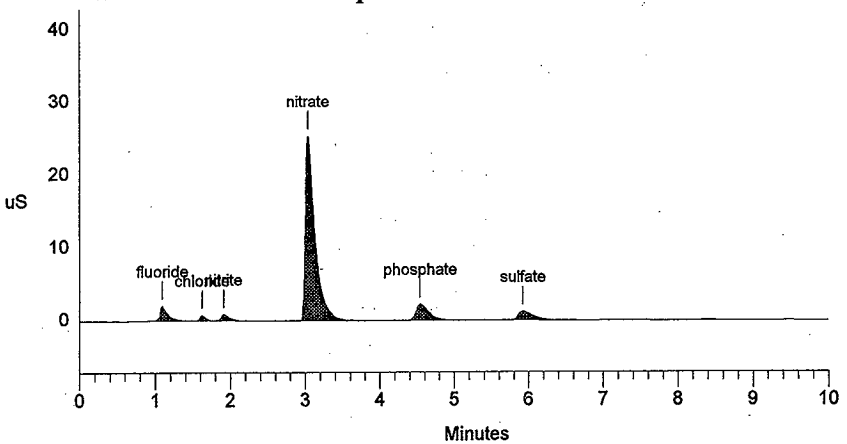
```
==============================================================================
| Sample Name: S97T001291                    Date: 06/07/1997 10:00:16        |
| Data File  : C:\DX\DATA\97060701.D07                                        |
| Method     : C:\DX\METHOD\KIT.MET                                           |
| ACI Address: 1  System: 1  Inject#: 7                   Detector:CDM-1      |
| Analyst    :                Column: AG4A/AS4A anion column                  |
==============================================================================
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.09	fluoride	1668.016	2041	14631	1	-2.38
2	1.62	chloride	603.445	736	3755	1	1.67
3	1.91	nitrite	1936.802	852	6569	1	-1.04
4	3.03	nitrate	52850.329	25386	223329	1	-6.67
5	4.53	phosphate	13040.461	2237	27641	1	-1.73
6	5.92	sulfate	2963.571	1230	17709	1	-1.77
		Totals	73062.623	32482	293634		

File: 97060701.D07 Sample: S97T001291



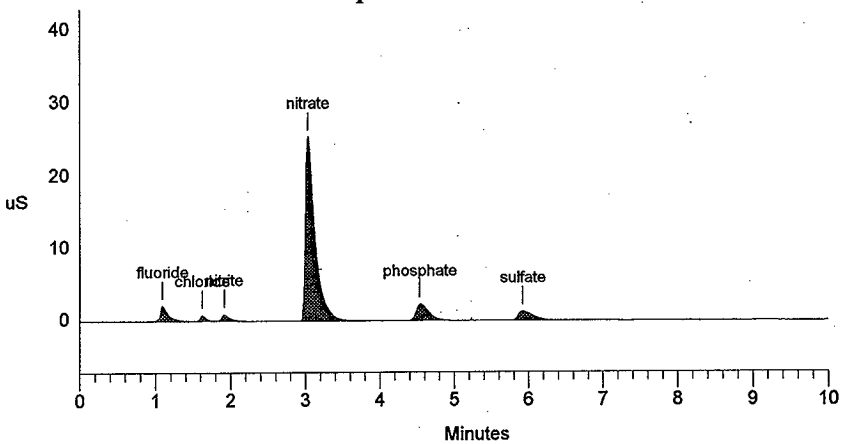
```
==============================================================================
| Sample Name: S97T001291 DUP                    Date: 06/07/1997 10:11:10    |
| Data File  : C:\DX\DATA\97060701.D08                                        |
| Method     : C:\DX\METHOD\KIT.MET                                           |
| ACI Address: 1  System: 1  Inject#: 8                    Detector:CDM-1     |
| Analyst    :                Column: AG4A/AS4A anion column                 |
==============================================================================
```

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.09	fluoride	1682.022	2042	14762	1	-2.38
2	1.62	chloride	622.853	752	3875	1	1.67
3	1.91	nitrite	1903.647	844	6443	1	-0.69
4	3.03	nitrate	53321.761	25342	225481	1	-6.67
5	4.53	phosphate	12864.600	2208	27257	1	-1.73
6	5.92	sulfate	3049.512	1249	18202	1	-1.77
		Totals	73444.394	32436	296019		

File: 97060701.D08 Sample: S97T001291 DUP



Data Reprocessed On 06/09/1997 15:57:08

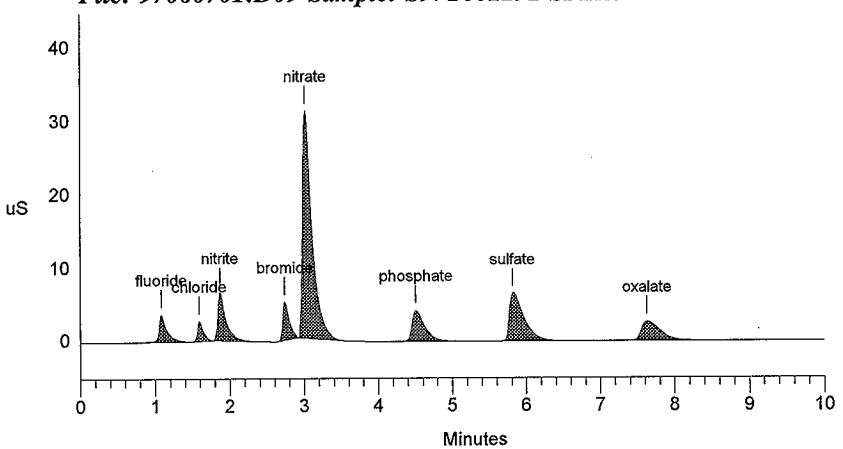
Sample Name: S97T001291 SPIKE Date: 06/07/1997 10:23:59
Data File : F:\DATA\97060701.D09
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 9 Detector:CDM-1
Analyst : Column: AG4A/AS4A anion column

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.08	fluoride	2912.491	3705	26384	1	-3.57
2	1.59	chloride	2349.166	2734	14684	1	-0.42
3	1.87	nitrite	12939.639	6598	48895	1	-3.11
4	2.73	bromide	10832.984	5241	32134	1	0.12
5	3.01	nitrate	63847.303	30967	274380	1	0.11
6	4.51	phosphate	23757.652	4253	51382	1	-2.31
7	5.81	sulfate	15597.001	6523	91311	1	-3.54
8	7.63	oxalate	11210.097	2649	47199	1	-2.72
		Totals	143446.333	62670	586369		

File: 97060701.D09 Sample: S97T001291 SPIKE



LABCORE Data Entry Template for Worklist# 18671

Analyst: DK Soto **Instrument:** ICP02 _____ **Book#** 67848a

Method: LA-505-~~151~~/161 Rev/Mod C-1
DK 7-8-97

Worklist Comment: TX-244 (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	SAMPLE	S97T001286	0	D	@ICP-D01	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested:			AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01			
7	DUP	S97T001286	0	D	@ICP-D01	LIQUID		
8	SAMPLE	S97T001290	0	D	@ICP-D01	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested:			AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01			
9	DUP	S97T001290	0	D	@ICP-D01	LIQUID		
10	ICSA				@ICP-QC	QC		
11	ICSAB				@ICP-QC	QC		
12	CCV				@ICP-QC	QC		

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 18671

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
13	CCB				@ICP-QC	QC		

Final page for worklist # 18671

Analyst Signature: JK Lado Date: 04-04-15-97

Reviewed and validated by:
Analyst Signature: [illegible] Date: 7/9/97

597T001286	.1-10	JF	101
597T001286_D	.1-10		101
597T001290	.1-10		101
597T001290_D	.1-10		101

Data Entry Comments:

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

Analysis Report Summary Fri 06-13-97 01:06:48 PM page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	970613B	ICP2	06/13/97	12:04	DKS	Q	CONC
2	ICB	970613B	ICP2	06/13/97	12:08	DKS	Q	CONC
3	LLS	970613B	ICP2	06/13/97	12:11	DKS	Q	CONC
4	ICSA	970613B	ICP2	06/13/97	12:14	DKS	Q	CONC
5	ICSAB	970613B	ICP2	06/13/97	12:17	DKS	Q	CONC
6	S97T0001286	970613B	ICP2	06/13/97	12:21	DKS	S	CONC
7	S97T001286_D	970613B	ICP2	06/13/97	12:24	DKS	S	CONC
8	S97T001290	970613B	ICP2	06/13/97	12:27	DKS	S	CONC
9	S97T001290_D	970613B	ICP2	06/13/97	12:30	DKS	S	CONC
10	CCV	970613B	ICP2	06/13/97	12:35	DKS	Q	CONC
11	CCB	970613B	ICP2	06/13/97	12:40	DKS	Q	CONC
~~12~~	~~S97T001291~~	970613B	ICP2	06/13/97	12:43	DKS	S	CONC
~~13~~	~~S97T001291_D~~	970613B	ICP2	06/13/97	12:46	DKS	S	CONC
14	ICSA	970613B	ICP2	06/13/97	12:51	DKS	Q	CONC
15	ICSAB	970613B	ICP2	06/13/97	12:54	DKS	Q	CONC
16	CCV_1	970613B	ICP2	06/13/97	12:58	DKS	Q	CONC
17	CCB_1	970613B	ICP2	06/13/97	13:03	DKS	Q	CONC

7/2/97

JK
06-13-97
TX-244

S97T001286
S97T001286 90 6-13-97
S97T001291

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 149 TO 152

Analysis Report Averages Fri 06-13-97 01:06:48 PM page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.866	4.856	5.150	4.962	4.912	5.079
2	ICB	.0011	.0250	.0019	-.0005	.0001	.0005
3	LLS	.0237	.1222	.2018	.1023	.0983	.0107
4	ICSA	.0030	239.0	-.0066	-.0040	.0003	.0003
5	ICSAB	.9618	241.1	.0051	-.0017	.4664	.4841
6	S97T0001286	2.297	13.76	.4213	2.132	.0266	.0395
7	S97T001286_D	2.218	12.84	1.466	2.133	.0267	.0396
8	S97T001290	2.166	12.36	.5853	2.335	.0119	.0352
9	S97T001290_D	2.222	13.60	1.715	1.879	.0302	.0486
10	CCV	4.903	4.900	5.223	5.012	4.994	5.135
11	CCB	.0014	.0204	.0006	.0005	.0002	.0003
~~12~~	~~S97T001291~~	2.168	12.70	-.1460	2.436	.0261	.0307
~~13~~	~~S97T001291_D~~	2.208	12.85	.2831	2.132	.0185	.0441
14	ICSA	.0031	246.0	-.0147	-.0059	.0002	.0007
15	ICSAB	.9686	245.3	.0141	-.0043	.4774	.4956
16	CCV_1	4.951	4.901	5.257	5.049	4.961	5.165
17	CCB_1	.0004	.0123	-.0004	.0015	.0001	.0001

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.066	5.077	4.970	4.905	5.071	4.965
2	ICB	.0244	.0027	.0010	.0047	.0016	.0018
3	LLS	.2363	.2251	.0113	.2103	.0454	.0220
4	ICSA	-.0254	256.2	.0017	.0264	.0029	-.0009
5	ICSAB	.0014	257.6	.9403	.0201	.4742	.4726
6	S97T0001286	44.11	1.060	.1022	1.707	.5757	79.92
7	S97T001286_D	42.93	.6039	.2017	1.570	.3887	78.53
8	S97T001290	44.68	.4295	.1644	.8233	.4694	79.40
9	S97T001290_D	45.78	.5427	.1023	1.230	.4687	80.04
10	CCV	5.065	5.162	5.010	4.970	5.106	5.002
11	CCB	.0378	.0048	-.0001	.0094	.0028	.0012
~~12~~	~~S97T001291~~	43.34	.3909	.0459	.6182	.5084	80.23
~~13~~	~~S97T001291_D~~	44.64	.2721	-.0046	.9547	.3216	80.31
14	ICSA	-.0023	258.6	.0030	.0184	.0032	-.0005
15	ICSAB	.0193	259.1	.9490	.0154	.4758	.4762
16	CCV_1	5.028	5.266	5.070	4.939	5.172	5.066
17	CCB_1	.0053	.0044	-.0003	.0077	.0030	.0006

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	4.821	.0033	4.688	4.989	4.990	4.803
2	ICB	.0009	-.0002	.0014	.0587	.0008	.0007
3	LLS	.0177	.0006	.0950	Q.6574	.1023	.0207
4	ICSA	-.0091	-.0240	92.95	.2460	-.0023	.0038
5	ICSAB	.4352	-.0214	93.48	.1892	-.0032	1.008
6	S97T0001286	-.1558	.0191	13.78	136.0	.2605	.4046
7	S97T001286_D	-.0729	.0280	13.50	126.9	.1808	.4045
8	S97T001290	-.2098	.0156	13.43	109.9	.0597	.3930
9	S97T001290_D	-.1691	-.0007	13.37	101.9	.1667	.4393
10	CCV	4.885	.0029	4.735	4.895	5.062	4.883
11	CCB	.0008	-.0003	.0017	-.0108	.0012	.0002

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#	Sample Name	Cu	Eu	Fe	K	La	Li
12	~~S97T001291~~	-.1073	-.0165	13.77	110.0	.0824	.3583
13	~~S97T001291_D~~	-.1983	-.0304	13.91	112.5	.0814	.3815
14	ICSA	-.0079	-.0197	94.81	.3684	-.0034	.0028
15	ICSAB	.4482	-.0197	94.71	.2448	-.0029	1.033
16	CCV_1	4.839	.0041	4.767	4.948	5.023	4.823
17	CCB_1	-.0003	-.0002	.0011	.2554	.0007	.0005

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#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.971	4.880	5.046	5.047	4.950	4.946
2	ICB	.0032	.0002	.0017	.0075	.0005	-.0006
3	LLS	.2115	.0196	.1022	.1992	.1983	.0384
4	ICSA	249.0	-.0054	-.0110	189.9	.0013	-.0089
5	ICSAB	250.7	.4467	-.0099	190.5	.0005	.9219
6	S97T0001286	1.990	.1053	.2313	28240.	.0364	-.1798
7	S97T001286_D	1.757	.1051	.1372	27710.	.0429	.4906
8	S97T001290	1.094	.1053	.4197	27980.	.0740	-.5091
9	S97T001290_D	1.643	.0950	.4007	28170.	.0709	.2374
10	CCV	5.022	4.925	5.108	5.074	5.031	4.976
11	CCB	.0101	.0000	.0013	.0231	.0023	-.0056
~~12~~	~~S97T001291~~	.3832	.0886	.2118	28620.	.1703	.0602
~~13~~	~~S97T001291_D~~	1.591	.0856	.2681	28780.	-.1020	-.4958
14	ICSA	255.5	-.0060	-.0062	197.9	.0006	-.0148
15	ICSAB	254.7	.4500	-.0045	195.1	.0013	.9199
16	CCV_1	5.033	4.976	5.143	5.022	4.991	5.047
17	CCB_1	.0074	-.0000	.0019	.0215	-.0000	-.0018

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#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	4.873	4.956	4.857	4.811	4.680	4.849
2	ICB	-.0138	.0016	-.0027	.0022	.0223	.0005
3	LLS	.3656	.2112	.1995	.1074	.2219	.1931
4	ICSA	-.0158	.0532	-.0553	.0065	.0657	.0120
5	ICSAB	.0125	.9993	-.0491	.0147	.0531	.0113
6	S97T0001286	4411.	1.037	1013.	.5966	2.574	11.40
7	S97T001286_D	4339.	-.5636	997.7	.2878	2.467	11.35
8	S97T001290	4360.	.5600	1007.	.9561	3.809	10.90
9	S97T001290_D	4362.	1.210	1010.	.8564	4.349	10.95
10	CCV	4.914	4.954	4.887	4.830	4.730	4.889
11	CCB	-.0158	.0132	-.0116	-.0042	.0249	-.0012
~~12~~	~~S97T001291~~	4431.	-.7319	1015.	.0084	3.377	11.23
~~13~~	~~S97T001291_D~~	4410.	.8068	1013.	.5874	3.257	11.39
14	ICSA	-.0047	.0620	-.0496	.0128	.0357	.0091
15	ICSAB	-.0046	1.013	-.0353	.0104	.0431	.0039
16	CCV_1	5.034	5.030	4.993	4.848	4.792	4.945
17	CCB_1	-.0203	-.0239	-.0037	-.0077	.0207	-.0003

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Analysis Report Averages Fri 06-13-97 01:06:48 PM page 4

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.890	4.924	.1262	4.931	4.873	9.628
2	ICB	.0007	.0000	.0095	-.0002	.0017	.0028
3	LLS	.2002	.0200	.0105	.0206	.4026	.4947
4	ICSA	.0009	.0016	.0057	.0017	.0571	.0260
5	ICSAB	-.0049	.0017	.0058	.0017	.0547	.0124
6	S97T0001286	.2899	.0269	1.396	.0486	.3775	9.129
7	S97T001286_D	.3303	.0269	1.914	.0743	.8553	9.448
8	S97T001290	.4517	.0269	1.005	.0234	.6832	9.540
9	S97T001290_D	.2168	.0223	1.462	.0487	1.112	9.214
10	CCV	4.952	4.992	.1277	4.975	4.904	9.764
11	CCB	-.0008	-.0001	.0070	.0005	-.0099	-.0097
~~12~~	~~S97T001291~~	-.0458	.0177	.6341	.0694	1.418	8.501
~~13~~	~~S97T001291_D~~	-.1586	.0179	1.186	.0007	.5986	7.059
14	ICSA	-.0130	.0018	.0085	.0019	.0599	-.0170
15	ICSAB	-.0117	.0017	.0030	.0010	.0295	-.0271
16	CCV_1	4.916	4.959	.1236	4.972	4.854	9.683
17	CCB_1	-.0020	-.0001	.0087	-.0002	-.0047	-.0008

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.036	.0066	4.841	4.943
2	ICB	.0001	.0001	.0014	-.0004
3	LLS	.1010	.0007	.0207	.0195
4	ICSA	.0014	.0076	.0071	-.0018
5	ICSAB	.4671	.0072	.9374	-.0030
6	S97T0001286	.0695	.0199	.2362	.2279
7	S97T001286_D	.1050	.0276	.2871	.2233
8	S97T001290	.1440	.0118	.2340	.3245
9	S97T001290_D	.1248	.0119	.3913	.2229
10	CCV	5.087	.0066	4.870	5.003
11	CCB	-.0007	-.0002	.0006	-.0009
~~12~~	~~S97T001291~~	.0170	.0043	.1022	.2173
~~13~~	~~S97T001291_D~~	-.0562	-.0188	.1949	.1098
14	ICSA	-.0017	.0068	.0080	-.0045
15	ICSAB	.4714	.0069	.9401	-.0038
16	CCV_1	5.119	.0071	4.951	5.000
17	CCB_1	.0002	-.0001	-.0007	-.0010

JK Lab
06-13-97

LABCORE Data Entry Template for Worklist# 19654

Analyst: DKS **Instrument:** ICP01 2 8/5/97 **Book#** 67848B

Method: LA-505-151/161 8/5/97 Rev/Mod C-2

Worklist Comment: ICP TX-244

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	S97T001291	0	D	@ICP-D01	LIQUID		
7	SAMPLE	S97T001291	0	D	@ICP-D01	LIQUID	97000388	TX-244 GRAB1

Analytes Requested: AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01

8	DUP	S97T001291	0	D	@ICP-D01	LIQUID		
9	SPK	S97T001291	0	D	@ICP-D01	LIQUID		
10	ICSA				@ICP-QC	QC		
11	ICSAB				@ICP-QC	QC		
12	CCV				@ICP-QC	QC		
13	CCB				@ICP-QC	QC		

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 19654

S Type	Sample#	R	A	Test	Matrix	Group#	Project

Final page for worklist # 19654

for: Saul R. Parng
D. K. Sato 8/5/97
Analyst Signature Date

Reviewed & Validated by:
Saul R. Parng 8/5/97
Analyst Signature Date

Data Entry Comments:

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

TX-244 Grab 8-5-97
File #: 97080SG.TXT

ICV
ICB
LS
ICSA
ICSAB
597T00129L_L , .1-10-1-8 , JF 505
597T00129L .1-10 101
597T00129L_D .1-10 101
597T00129L_Q .1-10 101 , .1ml sample + 2.02 ml SSTS + 7.98 ml HNO_3
597T00129L_X .1-10-1-9 1010
597T00129L_QX .1-10-1-9 1010 , 1ml sample + 1ml each XWHC 28+35 + 7 ml HNO_3
ICSA
ICSAB
CCV
CCB

Analysis Report Summary Tue 08-05-97 09:52:25 AM page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	970805A	ICP2	08/05/97	08:44	DKS	Q	CONC
2	ICB	970805A	ICP2	08/05/97	08:48	DKS	Q	CONC
3	LLS	970805A	ICP2	08/05/97	08:51	DKS	Q	CONC
4	ICSA	970805A	ICP2	08/05/97	08:54	DKS	Q	CONC
5	ICSAB	970805A	ICP2	08/05/97	08:58	DKS	Q	CONC
6	S97T001291_L	970805A	ICP2	08/05/97	09:04	DKS	S	CONC
7	S97T001291_	970805A	ICP2	08/05/97	09:07	DKS	S	CONC
8	S97T001291_D	970805A	ICP2	08/05/97	09:11	DKS	S	CONC
9	S97T001291_A	970805A	ICP2	08/05/97	09:15	DKS	S	CONC
10	S97T001291_X	970805A	ICP2	08/05/97	09:19	DKS	S	CONC
11	S97T001291_AX	970805A	ICP2	08/05/97	09:23	DKS	S	CONC
12	ICSA	970805A	ICP2	08/05/97	09:37	DKS	Q	CONC
13	ICSAB	970805A	ICP2	08/05/97	09:40	DKS	Q	CONC
14	CCV	970805A	ICP2	08/05/97	09:44	DKS	Q	CONC
15	CCB	970805A	ICP2	08/05/97	09:49	DKS	Q	CONC

JK Lab
08-05-97

TX-244 GRAB 597T001291

Spike:

$$Na = \frac{\left(\frac{28600}{101}\right) - \left(\frac{28490}{101}\right)}{1} \times 100 = 108.9\%$$

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 156 TO 159.

Analysis Report Averages Tue 08-05-97 09:52:25 AM page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	5.093	4.964	5.235	5.061	5.118	5.196
2	ICB	.0007	.0092	.0066	.0034	.0000	.0001
3	LLS	.0219	.1114	.2077	.1061	.1013	.0108
4	ICSA	.0009	243.0	-.0786	.0010	.0001	.0002
5	ICSAB	.9629	243.1	-.0958	-.0013	.4735	.4795
6	S97T001291_L	2.198	14.07	4.799	4.653	.0154	.0424
7	S97T001291_	2.033	10.51	.1690	3.284	.0038	.0209
8	S97T001291_D	2.073	7.272	-.3197	3.186	.0114	-.0175
9	S97T001291_A	95.74	106.6	107.0	104.2	100.5	104.1
10	S97T001291_X	2.884	18.82	14.85	5.875	-.0459	.2552
11	S97T001291_AX	9668.	9877.	10170.	10070.	10220.	10100.
12	ICSA	.0029	242.7	-.0627	-.0079	.0002	.0003
13	ICSAB	.9709	242.7	-.0441	-.0024	.4746	.4837
14	CCV	5.148	5.008	5.299	5.136	5.186	5.302
15	CCB	-.0011	.0072	-.0016	.0019	-.0000	.0002

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.144	5.133	5.116	5.075	5.065	5.149
2	ICB	-.0028	-.0005	.0000	-.0013	.0009	.0004
3	LLS	Q.1138	.2046	.0099	.2023	.0408	.0209
4	ICSA	-.0279	252.1	.0009	.0079	-.0005	-.0034
5	ICSAB	-.0464	252.4	.9362	-.0002	.4689	.4665
6	S97T001291_L	29.33	-2.067	-.1834	-2.143	-.2630	79.45
7	S97T001291_	35.26	1.551	-.1362	-.1577	-.1288	78.77
8	S97T001291_D	29.71	-.0056	-.0143	.5687	-.0113	78.94
9	S97T001291_A	135.9	104.7	103.0	100.9	102.1	182.2
10	S97T001291_X	28.98	-4.773	.9505	-2.006	-.9228	80.69
11	S97T001291_AX	10250.	10370.	10100.	10160.	10080.	10220.
12	ICSA	-.0445	256.5	.0016	.0095	.0004	-.0034
13	ICSAB	-.0043	259.4	.9485	.0015	.4739	.4752
14	CCV	5.204	5.336	5.192	5.126	5.146	5.246
15	CCB	-.0319	-.0049	-.0016	-.0075	-.0012	.0004

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	4.889	.0053	4.781	4.907	5.154	5.140
2	ICB	.0009	-.0005	.0014	.0128	.0002	-.0002
3	LLS	.0178	.0005	.0915	.5098	.1018	.0210
4	ICSA	-.0088	.0037	92.77	-.0052	-.0049	.0023
5	ICSAB	.4411	.0059	92.68	.0949	-.0052	1.013
6	S97T001291_L	.4867	-.2711	11.48	98.41	-.5202	.2229
7	S97T001291_	-.0994	.0081	11.09	124.4	-.0736	.3116
8	S97T001291_D	-.1118	.0334	10.88	123.2	.1426	.3672
9	S97T001291_A	97.68	.0912	106.4	215.2	102.8	104.3
10	S97T001291_X	1.059	-.6818	10.85	45.78	-1.039	-.1106
11	S97T001291_AX	9149.	9.770	9478.	10150.	10110.	10050.
12	ICSA	-.0081	-.0019	93.42	.0646	-.0047	.0030
13	ICSAB	.4393	-.0054	93.79	.1673	-.0051	.9969
14	CCV	4.926	.0059	4.868	5.053	5.191	5.195
15	CCB	.0005	.0001	-.0004	-.0160	-.0014	.0001

Analysis Report Averages Tue 08-05-97 09:52:25 AM page 3

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.204	5.033	5.078	4.982	5.179	5.123
2	ICB	.0038	-.0001	.0027	.0015	-.0009	.0021
3	LLS	.2084	.0202	.1027	.2143	.2030	.0451
4	ICSA	251.6	-.0057	-.0071	196.3	-.0009	-.0080
5	ICSAB	251.9	.4458	-.0137	197.2	-.0042	.9335
6	S97T001291_L	2.622	-.0338	.1840	29150.	.3588	2.344
7	S97T001291_	.2134	.0866	.1330	28490.	.2370	.4437
8	S97T001291_D	.5653	.0591	.0971	28460.	.3002	.7136
9	S97T001291_A	102.8	98.99	103.2	28600.	103.1	103.4
10	S97T001291_X	.1151	-.0609	.7283	29270.	.4564	9.876
11	S97T001291_AX	10460.	10120.	10080.	38800.	9868.	10150.
12	ICSA	251.7	-.0056	-.0089	195.2	.0017	-.0065
13	ICSAB	252.0	.4513	-.0084	194.9	-.0017	.9463
14	CCV	5.250	5.100	5.154	5.002	5.210	5.226
15	CCB	-.0090	.0000	.0035	-.0004	.0006	.0033

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.164	5.148	5.027	4.824	4.899	4.920
2	ICB	.0102	.0030	-.0126	.0072	-.0076	.0072
3	LLS	.4225	.2207	.2094	.1018	.2093	.1574
4	ICSA	-.0129	.0319	-.0465	.0126	.0107	.0060
5	ICSAB	.0092	.9974	-.0444	.0098	.0002	.0051
6	S97T001291_L	4526.	-3.302	1022.	-2.162	3.173	8.707
7	S97T001291_	4472.	-.9343	1021.	-.0917	-.8643	9.480
8	S97T001291_D	4511.	-1.023	1030.	-.1836	1.311	9.991
9	S97T001291_A	4574.	103.0	1119.	98.16	99.00	110.4
10	S97T001291_X	4466.	-.0387	1007.	4.342	2.613	15.56
11	S97T001291_AX	14310.	10210.	10830.	10170.	9868.	10210.
12	ICSA	-.0040	.0199	-.0514	.0113	.0245	.0069
13	ICSAB	.0286	1.009	-.0573	.0026	.0345	.0089
14	CCV	5.106	5.232	5.034	4.862	4.967	4.977
15	CCB	.0018	-.0109	-.0103	-.0013	.0200	.0038

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.992	5.014	.1386	4.919	4.894	9.670
2	ICB	-.0062	-.0001	.0050	-.0002	-.0091	-.0188
3	LLS	.2029	.0204	.0032	.0203	.3939	.5034
4	ICSA	-.0078	.0017	-.0043	.0009	.0191	.0328
5	ICSAB	-.0094	.0017	-.0138	.0008	.0344	.0217
6	S97T001291_L	-1.746	-.0221	.3450	.2285	.1638	-.1336
7	S97T001291_	.1118	.0037	-.0090	.0652	-2.126	7.537
8	S97T001291_D	.4335	.0125	.3132	.0888	-.6976	9.634
9	S97T001291_A	98.69	99.82	3.575	98.88	95.58	200.3
10	S97T001291_X	-6.727	-.1317	1.941	-.2242	-3.802	-15.64
11	S97T001291_AX	9797.	10070.	304.1	10030.	9975.	19140.
12	ICSA	-.0091	.0016	-.0006	.0016	.0188	-.0003
13	ICSAB	-.0041	.0017	.0010	.0009	.0413	-.0011
14	CCV	5.019	5.072	.1470	4.986	4.987	9.737
15	CCB	.0004	-.0000	-.0025	.0000	-.0211	-.0002

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#	Sample Name	V	Y	Zn	Zr
1	ICV	4.977	.0077	4.872	4.955
2	ICB	-.0012	-.0002	.0003	-.0003
3	LLS	.1029	.0006	.0209	.0214
4	ICSA	-.0008	.0073	.0071	-.0020
5	ICSAB	.4638	.0073	.9347	-.0017
6	S97T001291_L	-.5414	-.0791	.3481	-.0239
7	S97T001291_	.0377	-.0111	.0469	.3567
8	S97T001291_D	.1228	.0276	.0332	.3306
9	S97T001291_A	100.1	.1602	99.64	98.95
10	S97T001291_X	-1.414	-.3099	1.568	-.4544
11	S97T001291_AX	10010.	13.39	9531.	9969.
12	ICSA	-.0005	.0074	.0067	-.0023
13	ICSAB	.4698	.0077	.9468	-.0016
14	CCV	5.054	.0079	4.949	5.000
15	CCB	.0000	.0000	-.0004	.0002

08-05-97

LABCORE Completed Worklist Report for Worklist# 18526

Analyst: slh **Instrument:** CARB2 **Book#** 25N12A TIC 26N12A TOC

Method: LA 342-100Rev/Mod E-0

Worklist Comment: TX-244 TICTOC. RCJ

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK		0		@TICTOC1 TIC-02	LIQUID	1	4.70E+0	4.700	ug/mL
1	BLNK		0		@TICTOC1 TOC-02	LIQUID	1	9.00E-1	0.900	ug/mL
2	STD		0		@TICTOC1 TIC-02	LIQUID	6.02E+02	5.95E+2	98.837	% Recovery
2	STD		0		@TICTOC1 TOC-02	LIQUID	3.00E+03	2.90E+3	96.667	% Recovery
3	SAMPLE	S97T001286	0		@TICTOC1 TIC-02	LIQUID	N/A	1.07E+02	5.000	ug/mL
3	SAMPLE	S97T001286	0		@TICTOC1 TOC-02	LIQUID	N/A <	4.00E+01	40.000	ug/mL
4	DUP	S97T001286	0		@TICTOC1 TIC-02	LIQUID	1.07E+2	1.07E+2	0.000	RPD
4	DUP	S97T001286	0		@TICTOC1 TOC-02	LIQUID	<4.00E+1	<4.00E+1		RPD
5	SAMPLE	S97T001290	0		@TICTOC1 TIC-02	LIQUID	N/A	1.05E+02	5.000	ug/mL
5	SAMPLE	S97T001290	0		@TICTOC1 TOC-02	LIQUID	N/A <	4.00E+01	40.000	ug/mL
6	DUP	S97T001290	0		@TICTOC1 TIC-02	LIQUID	1.05E+2	1.04E+2	0.957	RPD
6	DUP	S97T001290	0		@TICTOC1 TOC-02	LIQUID	<4.00E+1	<4.00E+1		RPD
7	SPK	S97T001290	0		@TICTOC1 TIC-02	LIQUID	1.00E+02	9.86E+01	98.600	% Recovery
7	SPK	S97T001290	0		@TICTOC1 TOC-02	LIQUID	1.00E+02	9.21E+01	92.100	% Recovery

Final page for worklist# 18526

Analyst Signature Date

RL Stotts 6-19-97
Analyst Signature Date

RW Schroeder 6/20/97
Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 18526

Analyst: _____ **Instrument:** CARB2 _____ **Book#** 25N12-A TIC
26N12-A TOC

Method: LA-342-100 Rev/Mod _____

Worklist Comment: TX-244 TICTOC. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	LIQUID		
2	STD				@TICTOC1	LIQUID		
3	SAMPLE	S97T001286	0		@TICTOC1	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested:	TIC-02 , TOC-02						
4	DUP	S97T001286	0		@TICTOC1	LIQUID		
5	SAMPLE	S97T001290	0		@TICTOC1	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested:	TIC-02 , TOC-02						
6	DUP	S97T001290	0		@TICTOC1	LIQUID		
7	SPK	S97T001290	0		@TICTOC1	LIQUID		

Final page for worklist # 18526

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

Data Entry Comments:

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

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 2 Date: 06/12/97 Time: 21:48:55

Sample Size = 1000 uL
Dil Factor = 1
Blank ID # =
Blank Value = .36 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	3.20	90.63
3	1.50	57.30	94.42
4	2.00	181.80	68.48
5	2.50	311.90	41.71
6	3.00	416.20	25.06
7	3.50	487.40	14.61
8	4.00	535.00	8.90
9	4.50	563.10	4.99
10	5.00	578.50	2.66
11	5.50	586.40	1.35
12	6.00	590.40	0.68
13	6.50	593.20	0.47
14	7.00	594.40	0.20
15	7.50	595.40	0.17
16	8.00	596.10	0.12
17	8.50	596.60	0.08
18	9.00	597.00	0.07
19	9.50	597.50	0.08
20	10.00	597.90	0.07
21	10.50	598.30	0.07
22	11.00	598.60	0.05

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.6E-01 ug/min Carbon

SAMPLE RESULTS:
(598.6 - 3.959297)(1)/(1000) = +5.946E-01 g/L Carbon
(598.6 - 3.959297)(1)/(1000)(12) = +4.955E-02 Molar Carb

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 162 TO 184.

Sample Run By: SL Hood Boatright
SL HOOD 00002

25N12-A 1ml

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 2 Date: 06/12/97 Time: 22:02:09

Sample Size = 200 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.79 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.90	55.56
3	1.51	8.30	89.16
4	2.00	44.70	81.43
5	2.50	116.90	61.76
6	3.01	221.50	47.22
7	3.50	341.70	35.18
8	4.00	444.30	23.09
9	4.50	513.80	13.53
10	5.00	556.30	7.64
11	5.50	581.00	4.25
12	6.00	593.80	2.16
13	6.50	600.20	1.07
14	7.00	603.80	0.60
15	7.50	605.80	0.33
16	8.00	607.30	0.25
17	8.50	608.20	0.15
18	9.00	608.80	0.10
19	9.50	609.40	0.10
20	10.00	609.90	0.08
21	10.50	610.30	0.07
22	11.00	610.80	0.08

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:
(610.8 - 30.68898)(1)/(200) = +2.901E+00 g/L Carbon
(610.8 - 30.68898)(1)/(200)(12) = +2.417E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: SL Hood Boatright
SL HOOD 00002

.200ml ~~1.000ml~~ 26N12-A
SLH 6-13-97

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

Sample: BASE 2 Date: 06/12/97 Time: 19:35:14

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

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.10	100.00
3	1.01	0.30	66.67
4	1.50	0.40	25.00
5	2.00	0.60	33.33
6	2.50	0.90	33.33
7	3.00	1.20	25.00
8	3.50	1.40	14.29
9	4.00	1.60	12.50
10	4.50	1.80	11.11
11	5.00	1.90	5.26
12	5.50	2.20	13.64
13	6.00	2.30	4.35
14	6.50	2.50	8.00
15	7.00	2.60	3.85
16	7.50	2.80	7.14
17	8.00	3.00	6.67
18	8.50	3.10	3.23
19	9.00	3.20	3.13
20	9.50	3.50	8.57
21	10.00	3.60	2.78
22	10.50	3.80	5.26

BLANK VALUE = 3.8 micrograms carbon
BLANK FACTOR = 3.8 / 10.49817 = +3.6E-01 ug/min Carbon

Sample Run By: _____
SL HOOD 00002

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

Sample: BASE 2 Date: 06/12/97 Time: 21:17:22

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

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	2.10	80.95
4	2.00	7.10	70.42
5	2.51	12.50	43.20
6	3.00	17.30	27.75
7	3.50	20.90	17.22
8	4.00	23.50	11.06
9	4.50	24.90	5.62
10	5.00	25.90	3.86
11	5.50	26.70	3.00
12	6.00	27.40	2.55
13	6.50	27.80	1.44
14	7.00	28.30	1.77
15	7.50	28.70	1.39
16	8.00	29.00	1.03
17	8.50	29.40	1.36
18	9.00	29.60	0.68
19	9.50	29.90	1.00
20	10.00	30.20	0.99
21	10.50	30.50	0.98
22	11.00	30.70	0.65

BLANK VALUE = 30.7 micrograms carbon
BLANK FACTOR = 30.7 / 10.99768 = +2.79E+00 ug/min Carbon

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

Sample Run By: _____
SL HOOD 00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK Date: 06/12/97 Time: 22:28:29

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .36 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.00	40.00
3	1.51	1.50	33.33
4	2.01	2.50	40.00
5	2.50	3.30	24.24
6	3.00	3.90	15.38
7	3.50	4.30	9.30
8	4.00	4.60	6.52
9	4.50	5.00	8.00
10	5.00	5.20	3.85
11	5.50	5.60	7.14
12	6.00	5.90	5.08
13	6.50	6.20	4.84
14	7.00	6.40	3.13
15	7.50	6.70	4.48
16	8.00	6.90	2.90
17	8.50	7.20	4.17
18	9.00	7.50	4.00
19	9.50	7.80	3.85
20	10.00	8.10	3.70
21	10.50	8.40	3.57
22	11.00	8.50	1.18

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.6E-01 ug/min Carbon

SAMPLE RESULTS:
(8.5 - 3.959297)(1)/(1) = +4.5E+00 g/L Carbon
(8.5 - 3.959297)(1)/(1)(12) = +3.8E-01 Molar Carbon

Sample Run By: _____
SL HOOD 00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK Date: 06/12/97 Time: 22:42:53

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.79 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.04	0.60	50.00
3	1.54	2.70	77.78
4	2.04	8.80	69.32
5	2.54	14.50	39.31
6	3.04	18.90	23.28
7	3.54	21.70	12.90
8	4.04	23.40	7.26
9	4.54	24.80	5.65
10	5.04	25.60	3.13
11	5.54	26.20	2.29
12	6.04	26.80	2.24
13	6.54	27.20	1.47
14	7.04	27.50	1.09
15	7.54	27.90	1.43
16	8.04	28.30	1.41
17	8.54	28.50	0.70
18	9.04	28.70	0.70
19	9.54	29.10	1.37
20	10.03	29.30	0.68
21	10.53	29.60	1.01
22	11.03	29.80	0.67

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:
(29.8 - 30.78332)(1)/(1) = < 5.00 E-3 g/L Carbon
(29.8 - 30.78332)(1)/(1)(12) = < 4.17 E-4 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01286 Date: 06/12/97 Time: 22:57:01

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .36 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.60	83.33
3	1.51	4.40	86.36
4	2.00	21.80	79.82
5	2.50	49.30	55.78
6	3.00	72.50	32.00
7	3.50	87.50	17.14
8	4.00	96.30	9.14
9	4.50	100.50	4.18
10	5.00	103.00	2.43
11	5.50	104.60	1.53
12	6.00	105.60	0.95
13	6.50	106.40	0.75
14	7.00	106.90	0.47
15	7.50	107.50	0.56
16	8.00	108.00	0.46
17	8.50	108.40	0.37
18	9.00	108.80	0.37
19	9.50	109.30	0.46
20	10.00	109.50	0.18
21	10.50	110.00	0.45
22	11.00	110.30	0.27

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.6E-01 ug/min Carbon

SAMPLE RESULTS:
(110.3 - 3.959297)(1)/(1) = +1.063E+02 g/L Carbon
(110.3 - 3.959297)(1)/(1)(12) = +8.862E+00 Molar Carb

Sample Run By: _____
SL HOOD 00002

1ml = 1.06859

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01286 Date: 06/12/97 Time: 23:10:01

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.79 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.00	60.00
3	1.51	5.10	80.39
4	2.00	12.70	59.84
5	2.50	20.90	39.23
6	3.00	28.20	25.89
7	3.50	34.40	18.02
8	4.00	39.20	12.24
9	4.50	43.20	9.26
10	5.00	45.70	5.47
11	5.50	47.70	4.19
12	6.00	49.10	2.85
13	6.50	50.00	1.80
14	7.00	50.80	1.57
15	7.50	51.50	1.36
16	8.00	52.10	1.15
17	8.50	52.60	0.95
18	9.00	53.10	0.94
19	9.50	53.50	0.75
20	10.00	54.00	0.93
21	10.50	54.40	0.74
22	11.00	54.80	0.73

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:
(54.8 - 30.68693)(1)/(1) = +2.41E+01 g/L Carbon
(54.8 - 30.68693)(1)/(1)(12) = +2.01E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

1ml = 1.0685g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01286 DUP Date: 06/12/97 Time: 23:22:41

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .36 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	0.90	44.44
3	1.50	4.10	78.05
4	2.00	22.10	81.45
5	2.50	48.20	54.15
6	3.00	72.20	33.24
7	3.50	87.80	17.77
8	4.00	96.10	8.64
9	4.50	100.80	4.66
10	5.00	103.30	2.42
11	5.50	104.70	1.34
12	6.00	105.80	1.04
13	6.50	106.70	0.84
14	7.00	107.10	0.37
15	7.50	107.70	0.56
16	8.00	108.30	0.55
17	8.50	108.60	0.28
18	9.00	109.10	0.46
19	9.50	109.40	0.27
20	10.00	109.80	0.36
21	10.50	110.20	0.36
22	11.00	110.60	0.36

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.6E-01 ug/min Carbon

SAMPLE RESULTS:
(110.6 - 3.959561)(1)/(1) = +1.066E+02 g/L Carbon
(110.6 - 3.959561)(1)/(1)(12) = +8.887E+00 Molar Carbon

Sample Run By: _____
SL HOOD 00002

1ml = 1.066g

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01286 DUP Date: 06/12/97 Time: 23:35:56

Sample Size = 1 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 2.79 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.10	54.55
3	1.50	5.30	79.25
4	2.01	12.40	57.26
5	2.50	19.80	37.37
6	3.01	26.90	26.39
7	3.50	32.70	17.74
8	4.00	37.40	12.57
9	4.50	40.90	8.56
10	5.00	43.70	6.41
11	5.50	45.40	3.74
12	6.00	46.90	3.20
13	6.50	48.00	2.29
14	7.00	48.90	1.84
15	7.50	49.70	1.61
16	8.00	50.20	1.00
17	8.50	50.70	0.99
18	9.00	51.30	1.17
19	9.50	51.70	0.77
20	10.00	52.10	0.77
21	10.50	52.50	0.76
22	11.00	53.00	0.94

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:
(53 - 30.68659)(1)/(1) = +2.23E+01 g/L Carbon
(53 - 30.68659)(1)/(1)(12) = +1.86E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

1ml = 1.0666g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01290 Date: 06/12/97 Time: 23:48:45

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .36 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.00	40.00
3	1.51	4.70	78.72
4	2.00	22.70	79.30
5	2.50	49.50	54.14
6	3.00	72.60	31.82
7	3.50	86.70	16.26
8	4.00	94.50	8.25
9	4.50	99.00	4.55
10	5.00	101.10	2.08
11	5.50	102.40	1.27
12	6.00	103.40	0.97
13	6.50	104.20	0.77
14	7.00	104.70	0.48
15	7.50	105.50	0.76
16	8.00	105.90	0.38
17	8.50	106.40	0.47
18	9.00	106.70	0.28
19	9.50	107.10	0.37
20	10.00	107.60	0.46
21	10.50	107.90	0.28
22	11.00	108.40	0.46

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.6E-01 ug/min Carbon

SAMPLE RESULTS:
(108.4 - 3.959605)(1)/(1) = +1.044E+02 g/L Carbon
(108.4 - 3.959605)(1)/(1)(12) = +8.703E+00 Molar Carbon

Sample Run By: _____
SL HOOD 00002

1ml = 1.0731g

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01290 Date: 06/13/97 Time: 01:06:44

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.79 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	0.90	33.33
3	1.51	2.10	57.14
4	2.00	6.10	65.57
5	2.50	12.20	50.00
6	3.00	18.50	34.05
7	3.50	25.00	26.00
8	4.00	29.90	16.39
9	4.50	33.90	11.80
10	5.00	36.50	7.12
11	5.50	38.60	5.44
12	6.00	39.90	3.26
13	6.50	41.10	2.92
14	7.00	42.10	2.38
15	7.50	42.70	1.41
16	8.00	43.30	1.39
17	8.50	43.80	1.14
18	9.00	44.30	1.13
19	%-1430.50	44.80	1.12
20	%-1430.00	45.20	0.88
21	%-1429.50	45.70	1.09
22	%-1429.00	46.10	0.87

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:
(46.1 --3986.913)(1)/(1) = +4.03E+03 g/L Carbon
(46.1 --3986.913)(1)/(1)(12) = +3.36E+02 Molar Carb
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Recalculate

Sample Run By: SL HOOD 00002

1ml = 1.073/g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01290 DUP Date: 06/13/97 Time: 01:21:17

Sample Size = 1 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .36 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.00	0.80	50.00
3	1.50	4.80	83.33
4	2.00	23.70	79.75
5	2.50	50.40	52.98
6	3.00	71.70	29.71
7	3.50	85.40	16.04
8	4.00	93.40	8.57
9	4.50	97.70	4.40
10	5.00	100.30	2.59
11	5.50	101.70	1.38
12	6.00	102.60	0.88
13	6.50	103.30	0.68
14	7.00	104.10	0.77
15	7.50	104.60	0.48
16	8.00	105.10	0.48
17	8.50	105.70	0.57
18	9.00	106.00	0.28
19	9.50	106.50	0.47
20	10.00	106.90	0.37
21	10.50	107.40	0.47
22	11.03	107.70	0.28

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.6E-01 ug/min Carbon

SAMPLE RESULTS:
(107.7 - 3.971462)(1)/(1) = +1.037E+02 g/L Carbon
(107.7 - 3.971462)(1)/(1)(12) = +8.644E+00 Molar Carb

Sample Run By: _____
SL HOOD 00002

ml = 1.06 kg

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01290 DUP Date: 06/13/97 Time: 01:34:24

Sample Size = 1 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 2.79 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	1.60	87.50
3	1.51	8.20	80.49
4	2.01	18.70	56.15
5	2.50	27.70	32.49
6	3.00	35.00	20.86
7	3.50	40.10	12.72
8	4.00	43.70	8.24
9	4.50	46.50	6.02
10	5.00	48.30	3.73
11	5.50	49.80	3.01
12	6.00	51.00	2.35
13	6.50	51.90	1.73
14	7.00	52.60	1.33
15	7.50	53.40	1.50
16	8.00	53.90	0.93
17	8.50	54.30	0.74
18	9.00	54.90	1.09
19	9.50	55.40	0.90
20	10.00	55.90	0.89
21	10.50	56.30	0.71
22	11.00	56.60	0.53

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:
(56.6 - 30.68674)(1)/(1) = +2.59E+01 g/L Carbon
(56.6 - 30.68674)(1)/(1)(12) = +2.16E+00 Molar Carb
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

1ml = 1.06665

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01290 SPK Date: 06/13/97 Time: 02:57:03

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .36 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.00	1.10	36.36
3	1.50	18.80	94.15
4	2.04	102.00	81.57
5	2.54	207.50	50.84
6	3.04	288.90	28.18
7	3.54	340.20	15.08
8	4.04	368.70	7.73
9	4.54	383.70	3.91
10	5.04	390.80	1.82
11	5.53	394.80	1.01
12	6.03	397.00	0.55
13	6.54	398.60	0.40
14	7.03	399.50	0.23
15	7.53	400.40	0.22
16	8.03	401.10	0.17
17	8.53	401.80	0.17
18	9.03	402.50	0.17
19	9.53	403.00	0.12
20	10.03	403.50	0.12
21	10.53	404.00	0.12
22	11.03	404.40	0.10

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.6E-01 ug/min Carbon

SAMPLE RESULTS:
(404.4 - 3.971096)(1)/(1) = +4.004E+02 g/L Carbon
(404.4 - 3.971096)(1)/(1)(12) = +3.337E+01 Molar Carb

Sample Run By: _____
SL HOOD 00002

SS 1ml = 1.0778g
+ .500ml spike
25N12A

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01290 SPK Date: 06/13/97 Time: 03:10:58

Sample Size = 1 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 2.79 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.30	61.54
3	1.50	9.80	86.73
4	2.00	32.20	69.57
5	2.50	74.00	56.49
6	3.00	140.30	47.26
7	3.50	209.60	33.06
8	4.00	260.90	19.66
9	4.50	291.40	10.47
10	5.00	308.40	5.51
11	5.50	317.00	2.71
12	6.00	321.90	1.52
13	6.50	324.80	0.89
14	7.00	326.60	0.55
15	7.50	327.80	0.37
16	8.00	328.80	0.30
17	8.50	329.70	0.27
18	9.00	330.50	0.24
19	9.50	331.30	0.24
20	10.00	331.70	0.12
21	10.50	332.30	0.18
22	11.00	332.80	0.15

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:
(332.8 - 30.68438)(1)/(1) = +3.021E+02 g/L Carbon
(332.8 - 30.68438)(1)/(1)(12) = +2.518E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

SS 1ml = 1.0778g
+ .100ml spike
26N12-A

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type: BLNK	Sample Size in mL	(SS)	0.0000	0.0000
	Dilution Factor	(DF)	1	1
Work List: 18526	µg of Carbon in Sample	(C1)	8.5	29.8
	µg of Carbon from Baseline	(C2)	3.8	30.7

Test Code: @TICTOC1

Matrix: LIQUID

Batch Number: 97002582

Rerun: 0

µg of Carbon = |C1-C2|

Sample Prep: N/A

Sample #: BLNK

Instrument Code: CARB2

Prepared By: RTS

Chemist: RWS

Analyst: SLH

Date Complete: 06/19/97

Analysis Date: 06/13/97

Analysis Time:

Sample Point: TX-244

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon	4.70E+00	9.00E-01

Data Entered By: RTS Date: 06/19/97

Signature of Chemist: RW Schroeder Date: 6/20/97

BLANK.WB1 REV 1.0 342100ML

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	1.0000	0.2000
STD	Dilution Factor	(DF)	1	1
Work List	Final Coulometer Reading in µg	(C1)	598.6	610.8
18526	µg of Carbon from Baseline	(C2)	3.8	30.7
Test Code	Standard Book Number		25N12A	26N12A
@TICTOC1	Standard Value (µg/ml)		602	3000

Matrix: LIQUID
Batch Number: 97002582
Rerun: 0
Sample Prep: N/A
Sample #:
Instrument Code: CARB2
Prepared By: RTS
Chemist: RWS
Analyst: SLH
Date Complete: 06/19/97
Analysis Date: 06/13/97
Analysis Time:
Sample Point: TX-244

QC Actual in µg/mL = Standard Value (µg/mL)
QC Found in µg/mL = (C1 - C2) * DF / SS
QC Found in µg/mL for TIC = 5 if C1 < C2
QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in µg/mL	5	40
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	5.95E+02	2.90E+03
Percent Standard Recovery	98.8	96.7

Data Entered By: RTS Date: 06/19/97
Signature of Chemist: RW Schroeder Date: 6/20/97

STANDARD.WB1 REV 1.0 342100ML

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	1.0000	1.0000
SAMPLE	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	110.3	54.8
18526	µg of Carbon from Baseline	(C2)	3.8	30.7
Test Code				
@TICTOC1				

Matrix	LIQUID
Batch Number	97002582
Rerun	0
Sample Prep	N/A
Sample #	S97T001286
Instrument Code	CARB2
Prepared By	RTS
Chemist	RWS
Analyst	SLH
Date Complete	06/19/97
Analysis Date	06/13/97
Analysis Time	
Sample Point	TX-244

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

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

		TIC	TOC
Method Detection Limit in µg/mL		5	40
µg of Carbon/mL Note:	<	1.07E+02	2.41E+01

Data Entered By:	RTS	Date:	06/19/97
Signature of Chemist:	RW Schroeder	Date:	6/20/97

SAMPLE.WB1 REV 1.0 342100ML

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WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	1.0000	1.0000
DUP	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	110.6	53
18526	µg of Carbon from Baseline	(C2)	3.8	30.7
Test Code	Known µg of C from Original Sample		1.07E+2	<2.41E+1
@TICTOC1				

Matrix	LIQUID
Batch Number	97002582
Rerun	0
Sample Prep	N/A
Sample #	S97T001286
Instrument Code	CARB2
Prepared By	RTS
Chemist	RWS
Analyst	SLH
Date Complete	06/19/97
Analysis Date	06/13/97
Analysis Time	
Sample Point	TX-244

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

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

			TIC	TOC
Method Detection Limit in µg/mL			5	40
µg of Carbon/mL	Note:	<	1.07E+02	2.23E+01

Data Entered By:	RTS	Date:	06/19/97
Signature of Chemist:	Ruu Schroeder	Date:	6/20/97

SAMPLE.WB1 REV 1.0 342100ML

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WORKBOOK PAGE: SAM5

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	1.0000	1.0000
SAMPLE	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	108.4	46.1
18526	µg of Carbon from Baseline	(C2)	3.8	30.7
Test Code				
@TICTOC1				

Matrix	LIQUID
Batch Number	97002582
Rerun	0
Sample Prep	N/A
Sample #	S97T001290
Instrument Code	CARB2
Prepared By	RTS
Chemist	RWS
Analyst	SLH
Date Complete	06/19/97
Analysis Date	06/13/97
Analysis Time	
Sample Point	TX-244

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

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

		TIC	TOC
Method Detection Limit in µg/mL		5	40
µg of Carbon/mL	Note: <	1.05E+02	1.54E+01

Data Entered By:	RTS	Date:	06/19/97
Signature of Chemist:	RW Schroeder	Date:	6/20/97

SAMPLE.WB1 REV 1.0 342100ML

WORKBOOK PAGE: DUP6

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	1.0000	1.0000
DUP	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	107.7	56.6
18526	µg of Carbon from Baseline	(C2)	3.8	30.7
Test Code	Known µg of C from Original Sample		1.05E+02	1.54E+01
@TICTOC1				

Matrix: LIQUID

Batch Number: 97002582

Rerun: 0

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

Sample Prep: N/A

Sample #: S97T001290

Instrument Code: CARB2

Prepared By: RTS

Chemist: RWS

Analyst: SLH

Date Complete: 06/19/97

Analysis Date: 06/13/97

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

Analysis Time:

Sample Point: TX-244

			TIC	TOC
Method Detection Limit in µg/mL			5	40
µg of Carbon/mL	Note:	<	1.04E+02	2.59E+01

Data Entered By:	RTS	Date:	06/19/97
Signature of Chemist:	RWSchroeder	Date:	6/20/97

SAMPLE.WB1 REV 1.0 342100ML

I:\342100\OUT\18526.WB1 06/19/97 11:34:19

WORKBOOK PAGE: SPIKE7

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type	**Sample Vial Data**			
SPK	Sample Volume in mL	(SS)	1.0000	1.0000
Work List	Final Coulometer Reading in µg	(C1)	107.7	56.6
18526	**Spiked Vial Data**			
Test Code	Sample Volume in mL	(SPK SS)	1.0000	1.0000
@TICTOC1	Amount of Spike Std. in mL	(SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg	(C2)	404.4	332.8
LIQUID	Spike Book Number		25N12A	26N12A
Batch Number	Spike Standard Value in µg/ml	(SPK CONC)	602	3000
97002582				
Rerun				
0				
Sample Prep				
N/A				
Sample #	**Percent Spike Recovery = (C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 1**			
S97T001290				
Instrument Code	**QC Actual in µg/mL = Spike Value (µg/mL)**			
CARB2	**QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100**			
Prepared By				
RTS				
Chemist				
RWS				
Analyst				
SLH				
Date Complete				
06/19/97				
Analysis Date				
06/13/97				
Analysis Time			TIC	TOC
	QC Actual in µg/mL		6.02E+02	3.00E+03
Sample Point	**QC Found in µg/mL**		5.93E+02	2.76E+03
TX-244	**Percent Spike Recovery**		98.6	92.1

Data Entered By:	RTS	Date:	06/19/97
Signature of Chemist:	RW Schroeder	Date:	6/20/97

SPIKE.WB1 REV 1.1 342100ML

I:\342100\OUT\18526.WB1 06/19/97 11:34:22

LABCORE Completed Worklist Report for Worklist# 18735

Analyst: slh **Instrument:** CARB2 **Book#** 25N12A TIC 26N12A TOC

Method: LA-342-100 Rev/Mod E-0

Worklist Comment: tx 244 grab1 for @TICTOC1 rts

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@TICTOC1 TIC-02	LIQUID	6.02E+02	5.77E+2	95.847	% Recovery
1	STD		0		@TICTOC1 TOC-02	LIQUID	3.00E+03	2.74E+3	91.333	% Recovery
2	BLNK		0		@TICTOC1 TIC-02	LIQUID	1	4.10E+0	4.100	ug/mL
2	BLNK		0		@TICTOC1 TOC-02	LIQUID	1	4.80E+0	4.800	ug/mL
3	SAMPLE	S97T001291	0		@TICTOC1 TIC-02	LIQUID	N/A	9.83E+01	5.000	ug/mL
3	SAMPLE	S97T001291	0		@TICTOC1 TOC-02	LIQUID	N/A <	4.00E+01	40.000	ug/mL
4	DUP	S97T001291	0		@TICTOC1 TIC-02	LIQUID	9.83E+1	9.80E+1	0.306	RPD
4	DUP	S97T001291	0		@TICTOC1 TOC-02	LIQUID	<4.00E+1	<4.00E+1		RPD
5	SPK	S97T001291	0		@TICTOC1 TIC-02	LIQUID	1.00E+02	9.75E+01	97.500	% Recovery
5	SPK	S97T001291	0		@TICTOC1 TOC-02	LIQUID	1.00E+02	9.00E+01	90.000	% Recovery

Final page for worklist# 18735

Analyst Signature Date

Analyst Signature Date 6/19/97

Reviewer Signature Date 6/20/97

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

LABCORE Data Entry Template for Worklist# 18735

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

Method: LA-342-100 Rev/Mod _____

Worklist Comment: tx 244 grab1 for @TICTOC1 rts

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@TICTOC1	LIQUID		
2	BLNK				@TICTOC1	LIQUID		
3	SAMPLE	S97T001291	0		@TICTOC1	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: TIC-02 , TOC-02						
4	DUP	S97T001291	0		@TICTOC1	LIQUID		
5	SPK	S97T001291	0		@TICTOC1	LIQUID		

Final page for worklist # 18735

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

Data Entry Comments:

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

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 2 Date: 06/11/97 Time: 22:57:38

Sample Size = 1000 uL
Dil Factor = 1
Blank ID # =
Blank Value = .38 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.80	0.00
2	1.01	55.50	96.76
3	1.51	198.40	72.03
4	2.00	340.90	41.80
5	2.50	441.80	22.84
6	3.00	504.30	12.39
7	3.50	539.30	6.49
8	4.00	558.00	3.35
9	4.50	567.70	1.71
10	5.00	572.30	0.80
11	5.50	575.00	0.47
12	6.00	576.40	0.24
13	6.50	577.40	0.17
14	7.00	578.10	0.12
15	7.50	578.70	0.10
16	8.00	579.10	0.07
17	8.50	579.60	0.09
18	9.00	579.90	0.05
19	9.50	580.20	0.05
20	10.00	580.50	0.05
21	10.50	580.90	0.07
22	11.00	581.20	0.05

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.8E-01 ug/min Carbon

SAMPLE RESULTS:
(581.2 - 4.179814)(1)/(1000) = +5.770E-01 g/L Carbon
(581.2 - 4.179814)(1)/(1000)(12) = +4.809E-02 Molar Carb

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 187 TO 203.

Sample Run By: SL Hood Boatright
SL HOOD 00002

25N12-A
1.000 mL

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

Sample: BASE 2 Date: 06/11/97 Time: 21:50:10

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

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.40	0.00
4	2.01	0.70	42.86
5	2.51	1.10	36.36
6	3.01	1.30	15.38
7	3.51	1.50	13.33
8	4.00	1.70	11.76
9	4.50	1.90	10.53
10	5.00	2.00	5.00
11	5.50	2.20	9.09
12	6.00	2.40	8.33
13	6.50	2.50	4.00
14	7.00	2.70	7.41
15	7.50	2.80	3.57
16	8.00	3.10	9.68
17	8.50	3.20	3.13
18	9.00	3.40	5.88
19	9.50	3.60	5.56
20	10.00	3.80	5.26
21	10.50	4.00	5.00
22	11.00	4.20	4.76

BLANK VALUE = 4.2 micrograms carbon
BLANK FACTOR = 4.2 / 10.99988 = +3.8E-01 ug/min Carbon

Sample Run By: _____
SL HOOD 00002

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

Sample: BASE 2 Date: 06/11/97 Time: 22:12:21

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

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.70	71.43
3	1.51	4.20	83.33
4	2.01	11.60	63.79
5	2.51	17.80	34.83
6	3.01	23.80	25.21
7	3.50	27.00	11.85
8	4.00	29.70	9.09
9	4.50	31.00	4.19
10	5.00	32.20	3.73
11	5.50	32.90	2.13
12	6.00	33.40	1.50
13	6.50	33.90	1.47
14	7.00	34.20	0.88
15	7.50	34.60	1.16
16	8.00	34.90	0.86
17	8.50	35.20	0.85
18	9.00	35.50	0.85
19	9.50	35.80	0.84
20	10.00	36.00	0.56
21	10.50	36.30	0.83
22	11.00	36.60	0.82

BLANK VALUE = 36.6 micrograms carbon
BLANK FACTOR = 36.6 / 11.00049 = +3.33E+00 ug/min Carbon

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

Sample Run By: _____
SL HOOD 00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 06/11/97 Time: 23:17:09

Sample Size = 200 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.33 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.00	1.70	88.24
3	1.50	21.20	91.98
4	2.00	83.40	74.58
5	2.50	187.60	55.54
6	3.00	318.50	41.10
7	3.50	434.00	26.61
8	4.00	504.80	14.03
9	4.50	542.30	6.91
10	5.00	561.90	3.49
11	5.50	571.20	1.63
12	6.00	576.00	0.83
13	6.50	578.00	0.35
14	7.00	579.70	0.29
15	7.50	580.70	0.17
16	8.00	581.60	0.15
17	8.50	582.20	0.10
18	9.00	582.80	0.10
19	9.50	583.40	0.10
20	10.00	583.80	0.07
21	10.50	584.40	0.10
22	11.00	584.80	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:
(584.8 - 36.62593)(1)/(200) = +2.741E+00 g/L Carbon
(584.8 - 36.62593)(1)/(200)(12) = +2.284E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

25N12-A
.200 ml

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK Date: 06/11/97 Time: 23:50:08

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .38 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.60	66.67
3	1.51	1.70	64.71
4	2.00	2.80	39.29
5	2.50	3.40	17.65
6	3.00	3.90	12.82
7	3.50	4.20	7.14
8	4.00	4.50	6.67
9	4.50	4.90	8.16
10	5.00	5.20	5.77
11	5.50	5.40	3.70
12	6.00	5.70	5.26
13	6.50	6.00	5.00
14	7.00	6.20	3.23
15	7.50	6.50	4.62
16	8.00	6.80	4.41
17	8.50	7.00	2.86
18	9.00	7.20	2.78
19	9.50	7.60	5.26
20	10.00	7.80	2.56
21	10.50	8.10	3.70
22	11.00	8.30	2.41

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.8E-01 ug/min Carbon

SAMPLE RESULTS:
(8.3 - 4.179583)(1)/(1) = +4.1E+00 g/L Carbon
(8.3 - 4.179583)(1)/(1)(12) = +3.4E-01 Molar Carbon

Sample Run By: _____
SL HOOD 00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK Date: 06/12/97 Time: 01:05:05

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.33 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.00	60.00
3	1.50	5.50	81.82
4	2.00	12.10	54.55
5	2.50	17.80	32.02
6	3.00	21.30	16.43
7	3.50	24.00	11.25
8	4.00	25.50	5.88
9	4.50	26.70	4.49
10	5.00	27.40	2.55
11	5.50	28.20	2.84
12	6.00	28.50	1.05
13	6.50	28.90	1.38
14	7.00	29.40	1.70
15	7.50	29.80	1.34
16	%-1432.00	30.00	0.67
17	%-1431.50	30.30	0.99
18	%-1431.00	30.70	1.30
19	%-1430.50	30.90	0.65
20	%-1430.00	31.20	0.96
21	%-1429.50	31.50	0.95
22	%-1429.00	31.80	0.94

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:
(31.8 --4758.577)(1)/(1) = +4.79E+03 g/L Carbon
(31.8 --4758.577)(1)/(1)(12) = +3.99E+02 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001291 Date: 06/12/97 Time: 02:10:25

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .38 ug/minute C

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

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.40	0.00
2	1.01	0.70	42.86
3	1.50	3.40	79.41
4	2.00	17.60	80.68
5	2.50	43.60	59.63
6	3.00	67.00	34.93
7	3.50	82.70	18.98
8	4.00	92.80	10.88
9	4.50	98.10	5.40
10	5.00	100.80	2.68
11	5.50	102.80	1.95
12	6.00	104.00	1.15
13	6.50	104.80	0.76
14	7.00	105.50	0.66
15	7.50	106.40	0.85
16	8.00	106.70	0.28
17	8.50	107.30	0.56
18	9.00	107.70	0.37
19	9.50	108.20	0.46
20	10.00	108.70	0.46
21	10.50	109.10	0.37
22	11.00	109.50	0.37

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.8E-01 ug/min Carbon

SAMPLE RESULTS:
(109.5 - 4.179173)(1)/(1) = +1.053E+02 g/L Carbon
(109.5 - 4.179173)(1)/(1)(12) = +8.777E+00 Molar Carbon

Sample Run By: _____
SL HOOD 00002

1ml = 1.07143

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T001291 Date: 06/12/97 Time: 02:30:09

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.33 ug/minute C

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

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.00	60.00
3	1.51	4.60	78.26
4	2.00	11.90	61.34
5	2.50	19.30	38.34
6	3.00	26.90	28.25
7	3.50	34.20	21.35
8	4.00	41.00	16.59
9	4.50	46.40	11.64
10	5.00	50.40	7.94
11	5.50	53.20	5.26
12	6.00	55.00	3.27
13	6.50	56.50	2.65
14	7.00	57.50	1.74
15	7.50	58.30	1.37
16	8.00	59.10	1.35
17	8.50	59.40	0.51
18	9.00	59.90	0.83
19	9.50	60.50	0.99
20	10.00	60.90	0.66
21	10.50	61.30	0.65
22	11.00	61.80	0.81

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:
(61.8 - 36.62004)(1)/(1) = +2.52E+01 g/L Carbon
(61.8 - 36.62004)(1)/(1)(12) = +2.10E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

1ml = 1.074g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01291 DUP Date: 06/12/97 Time: 02:46:56

Sample Size = 1 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .38 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	0.80	25.00
3	1.50	2.90	72.41
4	2.00	16.40	82.32
5	2.50	41.00	60.00
6	3.00	64.00	35.94
7	3.50	81.00	20.99
8	4.00	91.50	11.48
9	4.50	97.20	5.86
10	5.00	100.30	3.09
11	5.50	102.60	2.24
12	6.00	103.60	0.97
13	6.50	104.60	0.96
14	7.00	105.30	0.66
15	7.50	106.10	0.75
16	8.00	106.50	0.38
17	8.50	107.20	0.65
18	9.00	107.70	0.46
19	9.50	108.10	0.37
20	10.00	108.50	0.37
21	10.50	109.00	0.46
22	11.00	109.40	0.37

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.8E-01 ug/min Carbon

SAMPLE RESULTS:
(109.4 - 4.178864)(1)/(1) = +1.052E+02 g/L Carbon
(109.4 - 4.178864)(1)/(1)(12) = +8.768E+00 Molar Carb

Sample Run By: _____
SL HOOD 00002

lml = 1.0731g

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01291 DUP Date: 06/12/97 Time: 03:00:56

Sample Size = 1 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 3.33 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.20	100.00
3	1.00	0.70	71.43
4	1.50	3.70	81.08
5	2.00	9.20	59.78
6	2.50	15.10	39.07
7	3.00	21.90	31.05
8	3.50	28.50	23.16
9	4.00	34.20	16.67
10	4.50	39.10	12.53
11	5.00	42.50	8.00
12	5.50	44.70	4.92
13	6.00	46.80	4.49
14	6.50	48.20	2.90
15	7.00	49.40	2.43
16	7.50	50.40	1.98
17	8.00	51.10	1.37
18	8.50	51.80	1.35
19	9.00	52.50	1.33
20	9.50	52.90	0.76
21	10.00	53.50	1.12
22	10.50	54.00	0.93

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:
(54 - 34.9556)(1)/(1) = +1.90E+01 g/L Carbon
(54 - 34.9556)(1)/(1)(12) = +1.59E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

1ml =1.0731g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01291 SPK Date: 06/12/97 Time: 03:16:55

Sample Size = 1 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .38 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	0.90	44.44
3	1.51	8.70	89.66
4	2.01	64.50	86.51
5	2.51	157.10	58.94
6	3.01	242.80	35.30
7	3.51	305.20	20.45
8	4.00	344.90	11.51
9	4.50	369.30	6.61
10	5.00	382.10	3.35
11	5.50	389.20	1.82
12	6.00	393.10	0.99
13	6.50	395.60	0.63
14	7.00	397.10	0.38
15	7.50	398.20	0.28
16	8.00	399.10	0.23
17	8.50	399.90	0.20
18	9.00	400.60	0.17
19	9.50	401.20	0.15
20	10.00	401.70	0.12
21	10.50	402.30	0.15
22	11.00	402.60	0.07

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.8E-01 ug/min Carbon

SAMPLE RESULTS:
(402.6 - 4.179873)(1)/(1) = +3.984E+02 g/L Carbon
(402.6 - 4.179873)(1)/(1)(12) = +3.320E+01 Molar Carb

Sample Run By: _____
SL HOOD 00002

1ml 7.0683
+ spike 25N12-A
.200ml

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S97T01291 SPK Date: 06/12/97 Time: 03:52:01

Sample Size = 1 uL Analyst : SL HOOD
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 3.33 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.20	66.67
3	1.51	18.40	93.48
4	2.00	72.00	74.44
5	2.50	144.30	50.10
6	3.00	209.40	31.09
7	3.50	257.20	18.58
8	4.00	287.20	10.45
9	4.50	304.90	5.81
10	5.00	314.50	3.05
11	5.50	319.80	1.66
12	6.00	322.80	0.93
13	6.50	324.90	0.65
14	7.00	326.10	0.37
15	7.50	327.20	0.34
16	8.00	328.20	0.30
17	8.50	328.90	0.21
18	9.00	329.40	0.15
19	9.50	330.00	0.18
20	10.00	330.40	0.12
21	10.50	331.00	0.18
22	11.00	331.50	0.15

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:
(331.5 - 36.62614)(1)/(1) = +2.949E+02 g/L Carbon
(331.5 - 36.62614)(1)/(1)(12) = +2.457E+01 Molar Carb
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: _____
SL HOOD 00002

1ml = 1.0683g
.500ml spike 26N12-A

WORKBOOK PAGE: STD1

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	1.0000	0.2000
STD	Dilution Factor	(DF)	1	1
Work List	Final Coulometer Reading in µg	(C1)	581.2	584.2
18735	µg of Carbon from Baseline	(C2)	4.2	36.6
Test Code	Standard Book Number		25N12A	26N12A
@TICTOC1	Standard Value (µg/ml)		602	3000

Matrix
LIQUID
Batch Number
97002806
Rerun
0
Sample Prep
N/A
Sample #
STD
Instrument Code
CARB2
Prepared By
RT
Chemist
RWS
Analyst
SLH
Date Complete
06/19/97
Analysis Date
06/12/97
Analysis Time
Sample Point
TX-244

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

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

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

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

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in µg/mL	5	40
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	5.77E+02	2.74E+03
Percent Standard Recovery	95.8	91.3

Data Entered By:	RT	Date:	06/19/97
Signature of Chemist:	[signature]	Date:	6/20/97

STANDARD.WB1 REV 1.0 342100ML

WORKBOOK PAGE: BLANK2

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type: BLNK	Sample Size in mL	(SS)	0.0000	0.0000
	Dilution Factor	(DF)	1	1
Work List: 18735	µg of Carbon in Sample	(C1)	8.3	31.8
	µg of Carbon from Baseline	(C2)	4.2	36.6

Test Code: @TICTOC1

Matrix: LIQUID

Batch Number: 97002806

Rerun: 0

µg of Carbon = |C1-C2|

Sample Prep: N/A

Sample #: BLNK

Instrument Code: CARB2

Prepared By: RT

Chemist: RWS

Analyst: SLH

Date Complete: 06/19/97

Analysis Date: 06/12/97

Analysis Time:

Sample Point: TX-244

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon	4.10E+00	4.80E+00

Data Entered By:	RT	Date:	06/19/97
Signature of Chemist:	RW Schroeder	Date:	6/20/97

BLANK.WB1 REV 1.0 342100ML

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	1.0714	1.0714
SAMPLE	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	109.5	61.8
18735	µg of Carbon from Baseline	(C2)	4.2	36.6
Test Code				
@TICTOC1				

Matrix	LIQUID
Batch Number	97002806
Rerun	0
Sample Prep	N/A
Sample #	S97T001291
Instrument Code	CARB2
Prepared By	RT
Chemist	RWS
Analyst	SLH
Date Complete	06/19/97
Analysis Date	06/12/97
Analysis Time	
Sample Point	TX-244

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

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

		TIC	TOC
Method Detection Limit in µg/mL		5	40
µg of Carbon/mL Note:	<	9.83E+01	2.35E+01

Data Entered By:	RT	Date:	06/19/97
Signature of Chemist:	RW Schroeder	Date:	6/20/97

SAMPLE.WB1 REV 1.0 342100ML

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WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (E-0) LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	1.0731	1.0731
DUP	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	109.4	54
18735	µg of Carbon from Baseline	(C2)	4.2	36.6
Test Code	Known µg of C from Original Sample		9.83E+1	<2.35E+1
@TICTOC1				

Matrix	LIQUID
Batch Number	97002806
Rerun	0
Sample Prep	N/A
Sample #	S97T001291
Instrument Code	CARB2
Prepared By	RT
Chemist	RWS
Analyst	SLH
Date Complete	06/19/97
Analysis Date	06/12/97
Analysis Time	
Sample Point	TX-244

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

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

			TIC	TOC
Method Detection Limit in µg/mL			5	40
µg of Carbon/mL	Note:	<	9.80E+01	1.62E+01

Data Entered By:	RT	Date:	06/19/97
Signature of Chemist:	RW Schroeder	Date:	6/20/97

SAMPLE.WB1 REV 1.0 342100ML

WORKBOOK PAGE: SPIKE5

TIC/TOC : LA-342-100 (E-0) LIQUIDS

Type	Sample Vial Data		TIC	TOC
SPK	Sample Volume in mL	(SS)	1.0714	1.0714
Work List	Final Coulometer Reading in µg	(C1)	109.5	61.8
18735	**Spiked Vial Data**			
Test Code	Sample Volume in mL	(SPK SS)	1.0683	1.0683
@TICTOC1	Amount of Spike Std. in mL	(SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg	(C2)	402.6	331.5
LIQUID	Spike Book Number		25N12A	26N12A
Batch Number	Spike Standard Value in µg/ml	(SPK CONC)	602	3000
97002806				
Rerun				
0				
Sample Prep				
N/A				
Sample #	Percent Spike Recovery = (C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 1			
S97T001291				
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)			
CARB2	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100			
Prepared By				
RT				
Chemist				
RWS				
Analyst				
SLH				
Date Complete				
06/19/97				
Analysis Date				
06/12/97				
Analysis Time			TIC	TOC
	QC Actual in µg/mL		6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL		5.87E+02	2.70E+03
TX-244	Percent Spike Recovery		97.5	90.0

Data Entered By:	RT	Date:	06/19/97
Signature of Chemist:	RW Schroeder	Date:	6/20/97

SPIKE.WB1 REV 1.1 342100ML

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RADIOCHEMICAL ANALYSIS

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LABCORE Completed RadChem Report for Worklist#: 18521

Analyst: smf **Instrument:** GEA03 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: TX-244 GEA, 1ML SAMPLE SIZE ON ALL. RCJ

Seq	Type	Sample#	R	A	Test	Matrix	Actual		Found	DL or Yield	Unit
1	BLNK		0	@GEA-01	CO60-02	LIQUID	1		<1.01e-5		uCi/mL
1	BLNK		0	@GEA-01	CS13702	LIQUID	1		<2.32e-5		uCi/mL
2	STD		0	@GEA-01	CO60-02	LIQUID	6.378e-03		6.56e-03	102.854	% Recovery
2	STD		0	@GEA-01	CO60-02E	LIQUID	1		2.35	2.350	% Ct Error
2	STD		0	@GEA-01	CS13702	LIQUID	5.793e-03		6.06e-03	104.609	% Recovery
2	STD		0	@GEA-01	CS13702E	LIQUID	1		3.11	3.110	% Ct Error
3	SAMPLE	S97T001292	0	@GEA-01	CO60-02	LIQUID	N/A	<	1.315e-05	131.5e-007	uCi/mL
3	SAMPLE	S97T001292	0	@GEA-01	CO60-02E	LIQUID	N/A		n/a	0.0e+000	% Ct. Error
3	SAMPLE	S97T001292	0	@GEA-01	CS13702	LIQUID	N/A		4.080e-02	0.0e+000	uCi/mL
3	SAMPLE	S97T001292	0	@GEA-01	CS13702E	LIQUID	N/A		0.620	0.0e+000	% Ct. Error
4	DUP	S97T001292	0	@GEA-01	CO60-02	LIQUID	<1.31e-5		<1.36e-5		RPD
4	DUP	S97T001292	0	@GEA-01	CO60-02E	LIQUID	1		n/a		% Ct Error
4	DUP	S97T001292	0	@GEA-01	CS13702	LIQUID	4.08e-02		4.10e-02	0.489	RPD
4	DUP	S97T001292	0	@GEA-01	CS13702E	LIQUID	1		0.620	0.620	% Ct Error
5	SAMPLE	S97T001293	0	@GEA-01	CO60-02	LIQUID	N/A	<	1.368e-05	136.8e-007	uCi/mL
5	SAMPLE	S97T001293	0	@GEA-01	CO60-02E	LIQUID	N/A		n/a	0.0e+000	% Ct. Error
5	SAMPLE	S97T001293	0	@GEA-01	CS13702	LIQUID	N/A		4.060e-02	0.0e+000	uCi/mL
5	SAMPLE	S97T001293	0	@GEA-01	CS13702E	LIQUID	N/A		0.620	0.0e+000	% Ct. Error
6	DUP	S97T001293	0	@GEA-01	CO60-02	LIQUID	<1.37e-5		<1.36e-5		RPD
6	DUP	S97T001293	0	@GEA-01	CO60-02E	LIQUID	1		n/a		% Ct Error
6	DUP	S97T001293	0	@GEA-01	CS13702	LIQUID	4.06e-02		4.04e-02	0.494	RPD
6	DUP	S97T001293	0	@GEA-01	CS13702E	LIQUID	1		0.620	0.620	% Ct Error
7	SAMPLE	S97T001294	0	@GEA-01	CO60-02	LIQUID	N/A	<	1.340e-05	134.0e-007	uCi/mL
7	SAMPLE	S97T001294	0	@GEA-01	CO60-02E	LIQUID	N/A		n/a	0.0e+000	% Ct. Error
7	SAMPLE	S97T001294	0	@GEA-01	CS13702	LIQUID	N/A		4.100e-02	0.0e+000	uCi/mL
7	SAMPLE	S97T001294	0	@GEA-01	CS13702E	LIQUID	N/A		0.620	0.0e+000	% Ct. Error
8	DUP	S97T001294	0	@GEA-01	CO60-02	LIQUID	<1.34e-5		<1.03e-5		RPD
8	DUP	S97T001294	0	@GEA-01	CO60-02E	LIQUID	1		n/a		% Ct Error
8	DUP	S97T001294	0	@GEA-01	CS13702	LIQUID	4.10e-02		4.13e-02	0.729	RPD
8	DUP	S97T001294	0	@GEA-01	CS13702E	LIQUID	1		0.620	0.620	% Ct Error

Comments Section:

Comments for sample# S97T001292 **and test** @GEA-01 .
DL=0 => n/a.

Comments for sample# S97T001293 **and test** @GEA-01 .
DL=0 => n/a.

Comments for sample# S97T001294 **and test** @GEA-01 .

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

LABCORE Completed RadChem Report for Worklist#: 18521

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

DL=0 => n/a.

Final page for worklist# 18521

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

11 Jun 97

Reviewer Signature **Date**

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

LABCORE Data Entry Template for Worklist# 18521

Analyst: SMF **Instrument:** GEA00 3 **Book#** 75 B56

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

Worklist Comment: TX-244 GEA, 1ML SAMPLE SIZE ON ALL. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@GEA-01	LIQUID		
2	STD				@GEA-01	LIQUID		
3	SAMPLE	S97T001292	0		@GEA-01	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested:	CO60-02 , CO60-02E, CS13702 , CS13702E						
4	DUP	S97T001292	0		@GEA-01	LIQUID		
5	SAMPLE	S97T001293	0		@GEA-01	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested:	CO60-02 , CO60-02E, CS13702 , CS13702E						
6	DUP	S97T001293	0		@GEA-01	LIQUID		
7	SAMPLE	S97T001294	0		@GEA-01	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested:	CO60-02 , CO60-02E, CS13702 , CS13702E						
8	DUP	S97T001294	0		@GEA-01	LIQUID		

Final page for worklist # 18521

Susie M. Dalton 6-9-97
Analyst Signature Date

Sharon L Holden 6-9-97
Analyst Signature Date

Data Entry Comments:

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

```
*******************************************************************************
* 222-S Laboratory Counting Room     9-JUN-1997 15:09:15.25                   *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              18521
Sample ID:               WL18521-BLNK                    Removed by:
Sample Size:             3.00000E-03 L
Dilution Factor:         1.00000E+00                     SLLeh

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3                            Verified by:
File Number:             ~~NI3AC:1.cnf~~ 3G3222.CNF 2    MJ Fitts 6/10/97
Geometry:                42                              SLH
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:00.42 sec
Dead Time:               0.0%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       9-JUN-1997 13:57:40.08
Decayed to:              9-JUN-1997 13:57:40.08
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 MB
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:28:40.20
*******************************************************************************
```

HNF-SD-WM-DP-251, REV. 0

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.86*	62	1.57	1323.90	1317	14	61.6		CS-137	2.324E-02

Summary of Nuclide Activity
Sample ID : WL18521-BLNK

Acquisition date : 9-JUN-1997 13:57:40

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~CS-137~~	~~30.00Y~~	~~1.00~~	~~2.324E-02~~	~~2.324E-02~~	~~1.431E-02~~	~~61.58~~	
			---	---			
	Total Activity :		2.324E-02	2.324E-02			
	Grand Total Activity :		2.324E-02	2.324E-02			

6/10/97

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : WL18521-BLNK Acquisition date : 9-JUN-1997 13:57:40

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	34.	477.59	7.0348E-02
NA-22	7.	1274.53	8.3306E-03
NA-24	6.	1368.55	8.4488E-03
K-40	112.	1460.75	3.0442E-01
CR-51	44.	320.08	5.9471E-02
MN-54	15.	834.83	8.2113E-03
CO-56	14.	846.76	7.9988E-03
CO-57	67.	122.06	5.0627E-03
CO-58	22.	810.78	9.4489E-03
FE-59	13.	1099.25	1.7097E-02
CO-60	10.	1332.50	1.0111E-02
SE-75	55.	264.66	9.9311E-03
SR-85	59.	514.01	1.0346E-02
Y-88	2.	1836.06	6.9788E-03
NB-94	17.	871.09	8.9353E-03
ZRNB-95	13.	724.18	1.5245E-02
RU-103	36.	497.08	8.5078E-03
RURH-106	14.	621.93	1.2419E-01
AG-108m	14.	722.94	7.5821E-03
CD-109	70.	88.03	1.7059E-01
AG-110M	26.	657.76	8.9150E-03
SN-113	46.	391.69	1.1200E-02
TE-123m	74.	159.00	5.4531E-03
SB-124	29.	602.73	8.4749E-03
SB-125	52.	427.89	2.7528E-02
TE-125m	85.	109.27	1.8425E+00
I-131	39.	364.48	7.7582E-03
CS-134	23.	604.70	7.5790E-03
BA-140	29.	537.31	3.0638E-02
LA-140	6.	1596.21	1.0188E-02
CEPR-144	74.	133.51	7.9967E-02
EU-152	6.	1408.01	4.1088E-02
EU-154	7.	1274.51	2.4203E-02
EU-155	61.	105.31	2.1042E-02
HG-203	46.	279.20	6.8306E-03
TL-208	52.	277.36	9.2684E-02
BI-212	17.	727.18	1.1585E-01
PB-212	65.	238.63	1.3282E-02
BI-214	56.	609.31	2.5070E-02
PB-214	70.	351.92	3.9929E-02
RA-224	58.	240.99	1.3992E-01
RA-226	88.	186.10	1.5586E-01
AC-228	40.	911.21	5.0887E-02
TH-228	70.	84.37	5.2614E-01
TH-229	69.	88.47	2.4588E-02
PA-233	65.	312.17	1.8361E-02
UTH-233	68.	245.34	5.6534E+00
PA-234M	18.	1001.03	1.7464E-02
TH-234	66.	63.29	3.4511E-01
U-235	87.	185.71	9.3992E-03
NP-237	80.	86.48	5.4620E-02

Minimum Detectable Activity Report (continued)

Sample ID : WL18521-BLNK Acquisition date : 9-JUN-1997 13:57:40

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	62.	106.12	2.0134E-02
PU-239	80.	129.30	7.2357E+01
AM-241	57.	59.54	5.6655E-02
AM-243	87.	74.67	1.6315E-02

```
*******************************************************************************
* 222-S Laboratory Counting Room     9-JUN-1997 16:01:55.41                   *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              18521
Sample ID:               WL18521-STD
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             dka300:[spec.GEA3]3g3223.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:02.70 sec
Dead Time:               0.1%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       9-JUN-1997 15:11:13.84
Decayed to:              9-JUN-1997 15:11:13.84
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 SLH2
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:28:40.20
*******************************************************************************
```

Removed by:

Verified by: 6/10/97

HNF-SD-WM-DP-251, REV. 0

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.91*	5362	1.54	1324.00	1317	15	3.1		CS-137	6.06
0	1173.07	4176	1.95	2346.41	2339	17	3.4		CO-60	6.59
0	1332.14	3732	1.96	2664.65	2655	18	3.3		CO-60	6.53

Summary of Nuclide Activity
Sample ID : WL18521-STD

Acquisition date : 9-JUN-1997 15:11:13

Total number of lines in spectrum	3	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	3	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.00	6.558E+00	6.558E+00	0.154E+00	2.35	
CS-137	30.00Y	1.00	6.061E+00	6.061E+00	0.189E+00	3.11	
		Total Activity :	1.262E+01	1.262E+01			
		Grand Total Activity :	1.262E+01	1.262E+01			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : WL18521-STD
Acquisition date : 9-JUN-1997 15:11:13

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	318.	477.59	6.0648E-01
NA-22	35.	1274.53	5.0952E-02
NA-24	11.	1368.55	3.3590E-02
K-40	131.	1460.75	9.8388E-01
CR-51	322.	320.08	4.5902E-01
MN-54	241.	834.83	8.8021E-02
CO-56	212.	846.76	8.3751E-02
CO-57	374.	122.06	3.4477E-02
CO-58	192.	810.78	7.7377E-02
FE-59	198.	1099.25	1.7969E-01
SE-75	417.	264.66	7.7981E-02
SR-85	267.	514.01	6.3687E-02
Y-88	9.	1836.06	3.7230E-02
NB-94	224.	871.09	8.8308E-02
ZRNB-95	152.	724.18	1.4297E-01
RU-103	266.	497.08	6.5395E-02
RURH-106	183.	621.93	1.2085E+00
AG-108m	157.	722.94	6.9838E-02
CD-109	305.	88.03	1.0337E+00
AG-110M	216.	657.76	7.1951E-02
SN-113	308.	391.69	8.2427E-02
TE-123m	390.	159.00	3.6213E-02
SB-124	178.	602.73	5.8978E-02
SB-125	305.	427.89	1.9137E-01
TE-125m	377.	109.27	1.1263E+01
I-131	325.	364.48	6.3225E-02
CS-134	184.	604.70	6.0171E-02
BA-140	203.	537.31	2.2843E-01
LA-140	5.	1596.21	2.7801E-02
CEPR-144	373.	133.51	5.2089E-01
EU-152	14.	1408.01	1.7398E-01
EU-154	35.	1274.51	1.4764E-01
EU-155	336.	105.31	1.4226E-01
HG-203	389.	279.20	5.6229E-02
TL-208	375.	277.36	7.1014E-01
BI-212	154.	727.18	9.4968E-01
PB-212	500.	238.63	1.0594E-01
BI-214	215.	609.31	1.4198E-01
PB-214	362.	351.92	2.6225E-01
RA-224	443.	240.99	1.1092E+00
RA-226	433.	186.10	1.0017E+00
AC-228	281.	911.21	3.8405E-01
TH-228	331.	84.37	3.3151E+00
TH-229	313.	88.47	1.5178E-01
PA-233	369.	312.17	1.2564E-01
UTH-233	423.	245.34	4.0640E+01
PA-234M	199.	1001.03	1.5903E-01
TH-234	293.	63.29	2.1039E+00
U-235	430.	185.71	6.0692E-02
NP-237	319.	86.48	3.1740E-01
NP-239	333.	106.12	1.3459E-01

Sample ID : WL18521-STD Acquisition date : 9-JUN-1997 15:11:13

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	392.	129.30	4.6437E+02
AM-241	331.	59.54	3.9376E-01
AM-243	339.	74.67	9.3676E-02

```
*******************************************************************************
* 222-S Laboratory Counting Room     9-JUN-1997 16:55:25.19                   *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              18521
Sample ID:               S97T1292-SAM                    Removed by:
Sample Size:             3.00000E-03 L
Dilution Factor:         1.00000E+00                     _____

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3                            Verified by:
File Number:             dka300:[spec.GEA3]3g3224.cnf    _____ 6/10/97
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:13.83 sec
Dead Time:               0.5%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       9-JUN-1997 16:04:29.98          HNF-SD-WM-DP-251, REV. 0
Decayed to:              9-JUN-1997 16:04:29.98
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 SLH2
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:28:40.20
*******************************************************************************
```

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.87*	108149	1.56	1323.92	1315	17	0.6		CS-137	40.7

Summary of Nuclide Activity
Sample ID : S97T1292-SAM

Acquisition date : 9-JUN-1997 16:04:29

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	4.075E+01	4.075E+01	0.025E+01	0.62	
		Total Activity :	4.075E+01	4.075E+01			
		Grand Total Activity :	4.075E+01	4.075E+01			

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : S97T1292-SAM
Acquisition date : 9-JUN-1997 16:04:29

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	3305.	477.59	6.3772E-01
NA-22	10.	1274.53	9.7945E-03
NA-24	7.	1368.55	9.3555E-03
K-40	117.	1460.75	3.1069E-01
CR-51	2580.	320.08	4.2460E-01
MN-54	25.	834.83	1.0175E-02
CO-56	23.	846.76	9.8806E-03
CO-57	2768.	122.06	3.0684E-02
CO-58	30.	810.78	1.0805E-02
FE-59	18.	1099.25	1.9603E-02
CO-60	18.	1332.50	1.3149E-02
SE-75	2864.	264.66	6.6981E-02
SR-85	1658.	514.01	5.1856E-02
Y-88	1.	1836.06	5.5301E-03
NB-94	20.	871.09	9.5977E-03
ZRNB-95	25.	724.18	2.0615E-02
RU-103	2054.	497.08	5.9185E-02
RURH-106	577.	621.93	7.0283E-01
AG-108m	29.	722.94	1.0584E-02
CD-109	2238.	88.03	9.1484E-01
AG-110M	1335.	657.76	5.8292E-02
SN-113	2849.	391.69	8.1769E-02
TE-123m	2843.	159.00	3.1991E-02
SB-124	631.	602.73	3.6265E-02
SB-125	3200.	427.89	2.0220E-01
TE-125m	2490.	109.27	9.4804E+00
I-131	2726.	364.48	5.9814E-02
CS-134	637.	604.70	3.6609E-02
BA-140	1225.	537.31	1.8254E-01
LA-140	2.	1596.21	6.5638E-03
CEPR-144	2837.	133.51	4.6977E-01
EU-152	11.	1408.01	5.2504E-02
EU-154	10.	1274.51	2.8456E-02
EU-155	2445.	105.31	1.2549E-01
HG-203	2730.	279.20	4.8772E-02
TL-208	2806.	277.36	6.3518E-01
BI-212	24.	727.18	1.3417E-01
PB-212	3163.	238.63	8.7497E-02
BI-214	632.	609.31	7.9952E-02
PB-214	2737.	351.92	2.3624E-01
RA-224	3193.	240.99	9.7598E-01
RA-226	3672.	186.10	9.5482E-01
AC-228	33.	911.21	4.6938E-02
TH-228	2309.	84.37	2.8609E+00
TH-229	2241.	88.47	1.3267E-01
PA-233	2597.	312.17	1.0911E-01
UTH-233	3110.	245.34	3.6110E+01
PA-234M	15.	1001.03	1.6124E-02
TH-234	2221.	63.29	1.8906E+00
U-235	3630.	185.71	5.7703E-02
NP-237	2224.	86.48	2.7392E-01

Sample ID : S97T1292-SAM Acquisition date : 9-JUN-1997 16:04:29

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	2440.	106.12	1.1910E-01
PU-239	2843.	129.30	4.0929E+02
AM-241	2159.	59.54	3.2896E-01
AM-243	2249.	74.67	7.8903E-02

```
*******************************************************************************
* 222-S Laboratory Counting Room    9-JUN-1997 17:51:00.78                    *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:             18521
Sample ID:              S97T01292-DUP
Sample Size:            3.00000E-03 L
Dilution Factor:        1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:            GEA3
File Number:            dka300:[spec.GEA3]3g3225.cnf
Geometry:               42
Count Time:             0 00:50:00.00 sec
Real Time:              0 00:50:13.93 sec
Dead Time:              0.5%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:      9-JUN-1997 17:00:05.60
Decayed to:             9-JUN-1997 17:00:05.60
Standard Deviations:    2
Analysis Library:       ENVGEA
Analyst:                SLH2
Background Subtract:    DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:  15-MAR-1994 10:28:40.20
*******************************************************************************
```

Removed by: TE Wright

Verified by: LZ Fitts 10 Jun 97

HNF-SD-WM-DP-251, REV. 0

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.88*	108870	1.57	1323.93	1315	18	0.6		CS-137	41.0
0	1173.37	15	1.28	2347.00	2341	9	80.8			
0	1460.20*	16	1.53	2920.89	2912	15	155.1		K-40	9.210E-02

Summary of Nuclide Activity
Sample ID : S97T01292-DUP Acquisition date : 9-JUN-1997 17:00:05

Total number of lines in spectrum	3	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	3	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~K-40~~	~~1.28E+09Y~~	~~1.00~~	~~9.210E-02~~	~~9.210E-02~~	~~14.29E-02~~	~~155.12~~	~~[illegible]~~
CS-137	30.00Y	1.00	4.102E+01	4.102E+01	0.025E+01	0.62	6/10/97
		Total Activity :	4.111E+01	4.111E+01			
		Grand Total Activity :	4.111E+01	4.111E+01			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	3358.	477.59	6.4277E-01
NA-22	9.	1274.53	9.4445E-03
NA-24	4.	1368.55	7.2864E-03
CR-51	2550.	320.08	4.2209E-01
MN-54	22.	834.83	9.6807E-03
CO-56	26.	846.76	1.0555E-02
CO-57	2797.	122.06	3.0844E-02
CO-58	19.	810.78	8.8875E-03
FE-59	17.	1099.25	1.9170E-02
CO-60	20.	1332.50	1.3602E-02
SE-75	2954.	264.66	6.8014E-02
SR-85	1687.	514.01	5.2304E-02
Y-88	6.	1836.06	1.0599E-02
NB-94	20.	871.09	9.6122E-03
ZRNB-95	31.	724.18	2.2775E-02
RU-103	1995.	497.08	5.8336E-02
RURH-106	625.	621.93	7.3081E-01
AG-108m	33.	722.94	1.1251E-02
CD-109	2223.	88.03	9.1165E-01
AG-110M	1380.	657.76	5.9251E-02
SN-113	2886.	391.69	8.2297E-02
TE-123m	2880.	159.00	3.2194E-02
SB-124	654.	602.73	3.6894E-02
SB-125	3382.	427.89	2.0780E-01
TE-125m	2557.	109.27	9.6068E+00
I-131	2633.	364.48	5.8804E-02
CS-134	632.	604.70	3.6465E-02
BA-140	1213.	537.31	1.8165E-01
LA-140	5.	1596.21	9.2671E-03
CEPR-144	2847.	133.51	4.7065E-01
EU-152	10.	1408.01	5.0568E-02
EU-154	9.	1274.51	2.7338E-02
EU-155	2391.	105.31	1.2412E-01
HG-203	2798.	279.20	4.9373E-02
TL-208	2877.	277.36	6.4306E-01
BI-212	29.	727.18	1.4540E-01
PB-212	3255.	238.63	8.8748E-02
BI-214	593.	609.31	7.7497E-02
PB-214	2673.	351.92	2.3349E-01
RA-224	3140.	240.99	9.6790E-01
RA-226	3692.	186.10	9.5743E-01
AC-228	26.	911.21	4.2155E-02
TH-228	2331.	84.37	2.8745E+00
TH-229	2233.	88.47	1.3244E-01
PA-233	2561.	312.17	1.0837E-01
UTH-233	3100.	245.34	3.6050E+01
PA-234M	18.	1001.03	1.7444E-02
TH-234	2149.	63.29	1.8598E+00
U-235	3624.	185.71	5.7655E-02
NP-237	2238.	86.48	2.7478E-01
NP-239	2407.	106.12	1.1831E-01

Sample ID : S97T01292-DUP Acquisition date : 9-JUN-1997 17:00:05

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	2861.	129.30	4.1053E+02
AM-241	2211.	59.54	3.3288E-01
AM-243	2258.	74.67	7.9052E-02

```
*******************************************************************************
* 222-S Laboratory Counting Room    9-JUN-1997 19:35:54.77                    *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              18521
Sample ID:               S97T1293-SAM
Sample Size:             3.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             dka300:[spec.GEA3]3g3226.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:13.81 sec
Dead Time:               0.5%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       9-JUN-1997 18:45:03.36
Decayed to:              9-JUN-1997 18:45:03.36
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 NEW
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:28:40.20
*******************************************************************************
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Removed by: RC Wright

Verified by: 10 Jun 97

HNF-SD-WM-DP-251, REV. 0

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.87*	107864	1.57	1323.92	1315	18	0.6		CS-137	40.6

Summary of Nuclide Activity
Sample ID : S97T1293-SAM Acquisition date : 9-JUN-1997 18:45:03

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	4.064E+01	4.064E+01	0.025E+01	0.62	
		Total Activity :	4.064E+01	4.064E+01			
		Grand Total Activity :	4.064E+01	4.064E+01			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : S97T1293-SAM Acquisition date : 9-JUN-1997 18:45:03

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	3426.	477.59	6.4917E-01
NA-22	13.	1274.53	1.1016E-02
NA-24	7.	1368.55	9.0157E-03
K-40	133.	1460.75	3.3010E-01
CR-51	2507.	320.08	4.1857E-01
MN-54	24.	834.83	9.9461E-03
CO-56	19.	846.76	9.0389E-03
CO-57	2717.	122.06	3.0403E-02
CO-58	24.	810.78	9.8818E-03
FE-59	15.	1099.25	1.8206E-02
CO-60	20.	1332.50	1.3677E-02
SE-75	2876.	264.66	6.7110E-02
SR-85	1713.	514.01	5.2699E-02
Y-88	4.	1836.06	9.0275E-03
NB-94	28.	871.09	1.1028E-02
ZRNB-95	30.	724.18	2.2275E-02
RU-103	1998.	497.08	5.8394E-02
RURH-106	594.	621.93	7.1293E-01
AG-108m	28.	722.94	1.0357E-02
CD-109	2215.	88.03	9.1017E-01
AG-110M	1371.	657.76	5.9059E-02
SN-113	2929.	391.69	8.2899E-02
TE-123m	2809.	159.00	3.1797E-02
SB-124	631.	602.73	3.6255E-02
SB-125	3267.	427.89	2.0426E-01
TE-125m	2463.	109.27	9.4310E+00
I-131	2723.	364.48	5.9785E-02
CS-134	598.	604.70	3.5483E-02
BA-140	1169.	537.31	1.7843E-01
LA-140	7.	1596.21	1.0404E-02
CEPR-144	2811.	133.51	4.6765E-01
EU-152	13.	1408.01	5.6286E-02
EU-154	13.	1274.51	3.1922E-02
EU-155	2401.	105.31	1.2436E-01
HG-203	2799.	279.20	4.9385E-02
TL-208	2765.	277.36	6.3058E-01
BI-212	23.	727.18	1.3052E-01
PB-212	3251.	238.63	8.8689E-02
BI-214	656.	609.31	8.1426E-02
PB-214	2585.	351.92	2.2966E-01
RA-224	3245.	240.99	9.8385E-01
RA-226	3644.	186.10	9.5128E-01
AC-228	27.	911.21	4.2824E-02
TH-228	2291.	84.37	2.8498E+00
TH-229	2254.	88.47	1.3305E-01
PA-233	2629.	312.17	1.0977E-01
UTH-233	3168.	245.34	3.6443E+01
PA-234M	21.	1001.03	1.8579E-02
TH-234	2118.	63.29	1.8465E+00
U-235	3596.	185.71	5.7434E-02
NP-237	2176.	86.48	2.7095E-01

Sample ID : S97T1293-SAM Acquisition date : 9-JUN-1997 18:45:03

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	2383.	106.12	1.1771E-01
PU-239	2689.	129.30	3.9815E+02
AM-241	2202.	59.54	3.3220E-01
AM-243	2268.	74.67	7.9222E-02

```
*******************************************************************************
* 222-S Laboratory Counting Room     9-JUN-1997 22:58:32.29                   *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              18521
Sample ID:               S97T1293-DUP
Sample Size:             3.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             dka300:[spec.GEA3]3g3227.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:13.74 sec
Dead Time:               0.5%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       9-JUN-1997 22:07:41.32
Decayed to:              9-JUN-1997 22:07:41.32
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 NEW
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:28:40.20
*******************************************************************************
```

Removed by: N E Wright

Verified by: 10Jun97

HNF-SD-WM-DP-251, REV. 0

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.90*	107116	1.55	1323.99	1315	18	0.6		CS-137	40.4
0	1332.63	12	1.58	2665.63	2662	8	81.6			
0	1763.83*	7	1.69	3528.51	3522	11	153.6			

Summary of Nuclide Activity
Sample ID : S97T1293-DUP

Acquisition date : 9-JUN-1997 22:07:41

Total number of lines in spectrum	3	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	3	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	4.036E+01	4.036E+01	0.025E+01	0.62	
		Total Activity :	4.036E+01	4.036E+01			
		Grand Total Activity :	4.036E+01	4.036E+01			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : S97T1293-DUP Acquisition date : 9-JUN-1997 22:07:41

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	3338.	477.59	6.4087E-01
NA-22	13.	1274.53	1.1016E-02
NA-24	6.	1368.55	8.4541E-03
K-40	126.	1460.75	3.2205E-01
CR-51	2637.	320.08	4.2916E-01
MN-54	30.	834.83	1.1077E-02
CO-56	18.	846.76	9.0057E-03
CO-57	2627.	122.06	2.9905E-02
CO-58	25.	810.78	1.0008E-02
FE-59	16.	1099.25	1.8711E-02
CO-60	20.	1332.50	1.3646E-02
SE-75	2898.	264.66	6.7370E-02
SR-85	1654.	514.01	5.1788E-02
Y-88	4.	1836.06	8.8541E-03
NB-94	22.	871.09	9.8808E-03
ZRNB-95	30.	724.18	2.2312E-02
RU-103	2026.	497.08	5.8787E-02
RURH-106	571.	621.93	6.9888E-01
AG-108m	25.	722.94	9.9656E-03
CD-109	2270.	88.03	9.2129E-01
AG-110M	1266.	657.76	5.6789E-02
SN-113	2739.	391.69	8.0184E-02
TE-123m	2797.	159.00	3.1733E-02
SB-124	594.	602.73	3.5196E-02
SB-125	3250.	427.89	2.0374E-01
TE-125m	2535.	109.27	9.5662E+00
I-131	2650.	364.48	5.8992E-02
CS-134	585.	604.70	3.5093E-02
BA-140	1148.	537.31	1.7681E-01
LA-140	4.	1596.21	8.5966E-03
CEPR-144	2785.	133.51	4.6555E-01
EU-152	10.	1408.01	5.0568E-02
EU-154	13.	1274.51	3.1922E-02
EU-155	2446.	105.31	1.2550E-01
HG-203	2781.	279.20	4.9224E-02
TL-208	2746.	277.36	6.2834E-01
BI-212	39.	727.18	1.6525E-01
PB-212	3236.	238.63	8.8487E-02
BI-214	686.	609.31	8.3190E-02
PB-214	2539.	351.92	2.2762E-01
RA-224	3220.	240.99	9.8002E-01
RA-226	3526.	186.10	9.3582E-01
AC-228	45.	911.21	5.3726E-02
TH-228	2287.	84.37	2.8479E+00
TH-229	2272.	88.47	1.3357E-01
PA-233	2586.	312.17	1.0889E-01
UTH-233	3156.	245.34	3.6372E+01
PA-234M	18.	1001.03	1.7414E-02
TH-234	2215.	63.29	1.8879E+00
U-235	3464.	185.71	5.6384E-02
NP-237	2240.	86.48	2.7484E-01

Sample ID : S97T1293-DUP Acquisition date : 9-JUN-1997 22:07:41

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	2391.	106.12	1.1793E-01
PU-239	2736.	129.30	4.0156E+02
AM-241	2135.	59.54	3.2720E-01
AM-243	2268.	74.67	7.9228E-02

```
*******************************************************************************
* 222-S Laboratory Counting Room   10-JUN-1997 02:06:57.88                    *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              18521
Sample ID:               S97T1294-SAM
Sample Size:             3.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:             GEA3
File Number:             dka300:[spec.GEA3]3g3228.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:13.91 sec
Dead Time:               0.5%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       10-JUN-1997 01:15:44.65
Decayed to:              10-JUN-1997 01:15:44.65
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 NEW
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:28:40.20
*******************************************************************************
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Removed by: NE Wright

Verified by: [illegible] 10 Jun 97

HNF-SD-WM-DP-251, REV. 0

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.89*	108767	1.55	1323.95	1315	18	0.6		CS-137	41.0
0	1460.36*	19	2.02	2921.20	2913	16	147.9		K-40	0.110

Summary of Nuclide Activity
Sample ID : S97T1294-SAM

Acquisition date : 10-JUN-1997 01:15:44

Total number of lines in spectrum	2	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	2	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~K-40~~	~~1.28E+09Y~~	~~1.00~~	~~1.097E-01~~	~~1.097E-01~~	~~1.623E-01~~	~~147.92~~	~~[illegible]~~
CS-137	30.00Y	1.00	4.098E+01	4.098E+01	0.025E+01	0.62	
		Total Activity :	4.109E+01	4.109E+01			
		Grand Total Activity :	4.109E+01	4.109E+01			

[illegible] 6/10/97

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : S97T1294-SAM Acquisition date : 10-JUN-1997 01:15:44

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	3410.	477.59	6.4762E-01
NA-22	6.	1274.53	7.7045E-03
NA-24	9.	1368.55	1.0027E-02
CR-51	2617.	320.08	4.2759E-01
MN-54	22.	834.83	9.5641E-03
CO-56	29.	846.76	1.1078E-02
CO-57	2706.	122.06	3.0342E-02
CO-58	25.	810.78	9.9074E-03
FE-59	19.	1099.25	2.0052E-02
CO-60	19.	1332.50	1.3402E-02
SE-75	3005.	264.66	6.8586E-02
SR-85	1705.	514.01	5.2569E-02
Y-88	2.	1836.06	6.7304E-03
NB-94	17.	871.09	8.9040E-03
ZRNB-95	34.	724.18	2.3621E-02
RU-103	2034.	497.08	5.8898E-02
RURH-106	629.	621.93	7.3318E-01
AG-108m	29.	722.94	1.0601E-02
CD-109	2284.	88.03	9.2411E-01
AG-110M	1346.	657.76	5.8527E-02
SN-113	2844.	391.69	8.1691E-02
TE-123m	2777.	159.00	3.1620E-02
SB-124	609.	602.73	3.5637E-02
SB-125	3350.	427.89	2.0683E-01
TE-125m	2415.	109.27	9.3398E+00
I-131	2745.	364.48	6.0019E-02
CS-134	618.	604.70	3.6064E-02
BA-140	1184.	537.31	1.7957E-01
LA-140	6.	1596.21	1.0122E-02
CEPR-144	2761.	133.51	4.6350E-01
EU-152	6.	1408.01	4.1088E-02
EU-154	6.	1274.51	2.2319E-02
EU-155	2412.	105.31	1.2464E-01
HG-203	2707.	279.20	4.8575E-02
TL-208	2746.	277.36	6.2843E-01
BI-212	27.	727.18	1.3961E-01
PB-212	3256.	238.63	8.8755E-02
BI-214	631.	609.31	7.9900E-02
PB-214	2639.	351.92	2.3202E-01
RA-224	3114.	240.99	9.6397E-01
RA-226	3805.	186.10	9.7184E-01
AC-228	37.	911.21	4.9385E-02
TH-228	2389.	84.37	2.9094E+00
TH-229	2292.	88.47	1.3416E-01
PA-233	2719.	312.17	1.1162E-01
UTH-233	3069.	245.34	3.5875E+01
PA-234M	18.	1001.03	1.7215E-02
TH-234	2143.	63.29	1.8575E+00
U-235	3746.	185.71	5.8612E-02
NP-237	2287.	86.48	2.7771E-01
NP-239	2393.	106.12	1.1797E-01

Sample ID : S97T1294-SAM Acquisition date : 10-JUN-1997 01:15:44

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	2789.	129.30	4.0541E+02
AM-241	2117.	59.54	3.2578E-01
AM-243	2258.	74.67	7.9060E-02

```
*******************************************************************************
* 222-S Laboratory Counting Room   10-JUN-1997 04:12:35.88                    *
*******************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:             18521
Sample ID:              S97T1294-DUP
Sample Size:            3.00000E-03 L
Dilution Factor:        1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:            GEA3
File Number:            dka300:[spec.GEA3]3g3229.cnf
Geometry:               42
Count Time:             0 00:50:00.00 sec
Real Time:              0 00:50:13.94 sec
Dead Time:              0.5%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:      10-JUN-1997 03:21:36.38
Decayed to:             10-JUN-1997 03:21:36.38
Standard Deviations:    2
Analysis Library:       ENVGEA
Analyst:                NEW
Background Subtract:    DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:      11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:  15-MAR-1994 10:28:40.20
*******************************************************************************
```

Removed by: R

Verified by: 10 Jun 97

HNF-SD-WM-DP-251, REV. 0

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.88*	109497	1.56	1323.94	1315	18	0.6		CS-137	41.3

Summary of Nuclide Activity
Sample ID : S97T1294-DUP

Acquisition date : 10-JUN-1997 03:21:36

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	4.125E+01	4.125E+01	0.025E+01	0.62	
		Total Activity :	4.125E+01	4.125E+01			
		Grand Total Activity :	4.125E+01	4.125E+01			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
Sample ID : S97T1294-DUP Acquisition date : 10-JUN-1997 03:21:36

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	3363.	477.59	6.4317E-01
NA-22	13.	1274.53	1.0945E-02
NA-24	3.	1368.55	6.5300E-03
K-40	112.	1460.75	3.0442E-01
CR-51	2601.	320.08	4.2623E-01
MN-54	24.	834.83	1.0069E-02
CO-56	36.	846.76	1.2172E-02
CO-57	2772.	122.06	3.0708E-02
CO-58	20.	810.78	8.9743E-03
FE-59	19.	1099.25	2.0179E-02
CO-60	10.	1332.50	1.0343E-02
SE-75	2913.	264.66	6.7542E-02
SR-85	1643.	514.01	5.1622E-02
Y-88	2.	1836.06	6.7304E-03
NB-94	17.	871.09	8.8827E-03
ZRNB-95	24.	724.18	2.0396E-02
RU-103	2106.	497.08	5.9922E-02
RURH-106	594.	621.93	7.1275E-01
AG-108m	25.	722.94	9.9013E-03
CD-109	2263.	88.03	9.1973E-01
AG-110M	1357.	657.76	5.8758E-02
SN-113	2827.	391.69	8.1449E-02
TE-123m	2890.	159.00	3.2251E-02
SB-124	659.	602.73	3.7027E-02
SB-125	3364.	427.89	2.0724E-01
TE-125m	2516.	109.27	9.5298E+00
I-131	2708.	364.48	5.9622E-02
CS-134	644.	604.70	3.6787E-02
BA-140	1128.	537.31	1.7531E-01
LA-140	7.	1596.21	1.0340E-02
CEPR-144	2737.	133.51	4.6152E-01
EU-152	14.	1408.01	5.9499E-02
EU-154	13.	1274.51	3.1755E-02
EU-155	2443.	105.31	1.2544E-01
HG-203	2748.	279.20	4.8937E-02
TL-208	2776.	277.36	6.3176E-01
BI-212	34.	727.18	1.5590E-01
PB-212	3320.	238.63	8.9614E-02
BI-214	683.	609.31	8.3029E-02
PB-214	2614.	351.92	2.3092E-01
RA-224	3295.	240.99	9.9129E-01
RA-226	3648.	186.10	9.5172E-01
AC-228	31.	911.21	4.5397E-02
TH-228	2301.	84.37	2.8559E+00
TH-229	2259.	88.47	1.3321E-01
PA-233	2599.	312.17	1.0916E-01
UTH-233	3151.	245.34	3.6343E+01
PA-234M	19.	1001.03	1.7883E-02
TH-234	2219.	63.29	1.8897E+00
U-235	3575.	185.71	5.7265E-02
NP-237	2307.	86.48	2.7892E-01

Sample ID : S97T1294-DUP Acquisition date : 10-JUN-1997 03:21:36

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	2422.	106.12	1.1866E-01
PU-239	2756.	129.30	4.0301E+02
AM-241	2194.	59.54	3.3162E-01
AM-243	2336.	74.67	8.0385E-02

LABCORE Completed RadChem Report for Worklist#: 18520

Analyst: krq **Instrument:** AB12 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: TX-244 SR, DETERMINE SS USING LUDLUM. RCJ

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK			0	@SR90-01 SR90-01	LIQUID	1	4.97E-6	49.700e-007	uCi/mL
1	BLNK			0	@SR90-01 SR90-01C	LIQUID	100	8.71E+01	87.100	% Recovery
1	BLNK			0	@SR90-01 SR90-01E	LIQUID	1.00	7.30E+01	73.000	uCi/mL
2	STD			0	@SR90-01 SR90-01	LIQUID	1.67E-03	1.74E-3	104.192	% Recovery
2	STD			0	@SR90-01 SR90-01C	LIQUID	100	8.71E+01	87.100	% Recovery
2	STD			0	@SR90-01 SR90-01E	LIQUID	1.00	1.52E+00	1.520	% Ct. Erro
3	SAMPLE	S97T001292		0	@SR90-01 SR90-01	LIQUID	N/A	3.77E-04	435.0e-008	uCi/mL
3	SAMPLE	S97T001292		0	@SR90-01 SR90-01C	LIQUID	N/A	8.62E+01	0.0e+000	% Recovery
3	SAMPLE	S97T001292		0	@SR90-01 SR90-01E	LIQUID	N/A	4.66E+00	0.0e+000	% Ct. Error
4	DUP	S97T001292		0	@SR90-01 SR90-01	LIQUID	3.77E-4	6.20E-4	48.746	RPD
4	DUP	S97T001292		0	@SR90-01 SR90-01C	LIQUID	100	8.75E+01	87.500	% Recovery
4	DUP	S97T001292		0	@SR90-01 SR90-01E	LIQUID	1.00	3.58E+00	3.580	% Cnt Err
5	SAMPLE	S97T001293		0	@SR90-01 SR90-01	LIQUID	N/A	3.53E-04	428.0e-008	uCi/mL
5	SAMPLE	S97T001293		0	@SR90-01 SR90-01C	LIQUID	N/A	8.73E+01	0.0e+000	% Recovery
5	SAMPLE	S97T001293		0	@SR90-01 SR90-01E	LIQUID	N/A	4.78E+00	0.0e+000	% Ct. Error
6	DUP	S97T001293		0	@SR90-01 SR90-01	LIQUID	3.53E-4	3.40E-4	3.752	RPD
6	DUP	S97T001293		0	@SR90-01 SR90-01C	LIQUID	100	8.79E+01	87.900	% Recovery
6	DUP	S97T001293		0	@SR90-01 SR90-01E	LIQUID	1.00	4.84E+00	4.840	% Cnt Err
7	SAMPLE	S97T001294		0	@SR90-01 SR90-01	LIQUID	N/A	5.05E-04	425.0e-008	uCi/mL
7	SAMPLE	S97T001294		0	@SR90-01 SR90-01C	LIQUID	N/A	8.76E+01	0.0e+000	% Recovery
7	SAMPLE	S97T001294		0	@SR90-01 SR90-01E	LIQUID	N/A	3.96E+00	0.0e+000	% Ct. Error
8	DUP	S97T001294		0	@SR90-01 SR90-01	LIQUID	5.05E-4	4.67E-4	7.819	RPD
8	DUP	S97T001294		0	@SR90-01 SR90-01C	LIQUID	100	8.69E+01	86.900	% Recovery
8	DUP	S97T001294		0	@SR90-01 SR90-01E	LIQUID	1.00	4.13E+00	4.130	% Cnt Err

Final page for worklist# 18520

Analyst Signature Date

Analyst Signature Date

SA Catto 12 Jun 97
Reviewer Signature Date

Sample S97T001292 will be rerun due to high RPD.

Rerun on wl# 18631 rcc 6/27/97

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

LABCORE Data Entry Template for Worklist# 18520

Analyst: [signature] **Instrument:** AB00 _____ **Book#** 75B54

Method: LA-220-101 Rev/Mod E-1

Worklist Comment: TX-244 SR, DETERMINE SS USING LUDLUM. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@SR90-01	LIQUID		
2	STD				@SR90-01	LIQUID		
3	SAMPLE	S97T001292	0		@SR90-01	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
4	DUP	S97T001292	0		@SR90-01	LIQUID		
5	SAMPLE	S97T001293	0		@SR90-01	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
6	DUP	S97T001293	0		@SR90-01	LIQUID		
7	SAMPLE	S97T001294	0		@SR90-01	LIQUID	97000388	TX-244 GRAB1
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
8	DUP	S97T001294	0		@SR90-01	LIQUID			

Final page for worklist # 18520

[signature] Analyst Signature Date

[signature] 6-11-97 Analyst Signature Date

Sharon L Uahl 6-11-97

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						BLNK
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLNK	TOTAL COUNTS	(TC)	52	GROSS WEIGHT	(W2)	7.6059
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5188
18520	BACKGROUND in cpm	(BKG)	2.8	NET WEIGHT	(W3)	0.0871
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	17.75
@SR90-01	DILUTION FACTOR	DF	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	2.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.01	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
97002577	TIME OF SEPARATION	(ST)	10:45	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/97	DETECTION LIMIT	(Ld)	2.11
0	TIME OF COUNT	(TOC)	04:30	Sr-89/90 CONC in µCi/L		4.9721E-03
Sample Prep	DATE OF COUNT	(DOC)	06/11/97			
N/A						
Sample #						
WL18520						

Instrument Code: WB27811

Prepared By: SEH

Chemist: SAC

Analyst: KRQ

Date Complete: 06/11/97

Analysis Date: 06/10/97

Analysis Time: 11:00 PM

Sample Point: TX-244 GRAB1

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	4.97E-06	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	73.0%		4.37E-06 µCi/mL
PERCENT CARRIER RECOVERY	87.1%		

Analyst:		KRQ	Date:	11-Jun-97
Signature of Chemist:	S A Catto	SAC	Date:	12 Jun 97

BLANK.WB1 REV 2.0 22010NML

WORKBOOK PAGE: STD2

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

							STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
STD	TOTAL COUNTS	(TC)	16792	GROSS WEIGHT	(W2)		7.6194
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.5323
18520	BACKGROUND in cpm	(BKG)	2.8	NET WEIGHT	(W3)		0.0871
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		17.58
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	1676.40	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.01	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
97002577	TIME OF SEPARATION	(ST)	10:45	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/97	DETECTION LIMIT	(Ld)		2.11
0	TIME OF COUNT	(TOC)	04:20	Sr-89/90 CONC. in µCi/L			1.7389E+00
Sample Prep	DATE OF COUNT	(DOC)	06/11/97				
N/A	STANDARD BOOK #		75B56				
Sample #	STANDARD VALUE in µCi/mL		1.6700E-03				
WL18520							
Instrument Code							
WB27811							
Prepared By							
SEH							
Chemist							
SAC							
Analyst							
KRQ							
Date Complete							
06/11/97							
Analysis Date							
06/10/97							
Analysis Time							
11:00 PM							
Sample Point							
TX-244 GRAB1							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

RS*DF*DDF*1000/(((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.74E-03	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	1.5%		2.19E-06 µCi/L
PERCENT CARRIER RECOVERY	87.1%		

Analyst:	KRQ	Date:	11-Jun-97
Signature of Chemist:	SAC	Date:	12 Jun 97

STANDARD.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM3

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	1855	GROSS WEIGHT	(W2)	7.6185
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5323
18520	BACKGROUND in cpm	(BKG)	2.8	NET WEIGHT	(W3)	0.0862
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	19.42
@SR90-01	DILUTION FACTOR	DF	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	182.70	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.01	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
97002577	TIME OF SEPARATION	(ST)	10:45	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/97	DETECTION LIMIT	(Ld)	2.11
0	TIME OF COUNT	(TOC)	06:10	Sr-89/90 CONC in µCi/L		3.7726E-01
Sample Prep	DATE OF COUNT	(DOC)	06/11/97			
N/A						
Sample #						
S97T001292						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
KRQ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/11/97	
Analysis Date	
06/10/97	Sr-89/90 CONCENTRATION 3.77E-04 µCi/mL
Analysis Time	
11:00 PM	RELATIVE COUNTING ERROR 4.7%
Sample Point	
TX-244 GRAB1	PERCENT CARRIER RECOVERY 86.2%

DETECTION LEVEL

4.35E-06 µCi/mL

Analyst:	KRQ	Date:	11-Jun-97
Signature of Chemist:	SAC	Date:	12 Jun 97

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: DUP4

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	3080	GROSS WEIGHT	(W2)		7.5861
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.4986
18520	BACKGROUND in cpm	(BKG)	2.8	NET WEIGHT	(W3)		0.0875
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		19.67
@SR90-01	DILUTION FACTOR	DF	1				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	305.20	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.01	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
97002577	TIME OF SEPARATION	(ST)	10:45	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/97	DETECTION LIMIT	(Ld)		2.11
0	TIME OF COUNT	(TOC)	06:25	Sr-89/90 CONC in µCi/L			6.1961E-01
Sample Prep	DATE OF COUNT	(DOC)	06/11/97				
N/A							
Sample #							
S97T001292							
Instrument Code							
WB27811							
Prepared By							
SEH							
Lab Chemist							
SAC							
Analyst							
KRQ							
Date Complete							
06/11/97							
Analysis Date							
06/10/97							
Analysis Time							
11:00 PM							
Sample Point							
TX-244 GRAB1							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	6.20E-04	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	3.6%		4.28E-06 µCi/mL
PERCENT CARRIER RECOVERY	87.5%		

Analyst:	KRQ	Date:	11-Jun-97
Signature of Chemist: SA Catto	SAC	Date:	12 Jun 97

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM5

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	1765	GROSS WEIGHT	(W2)		7.6034
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.5161
18520	BACKGROUND in cpm	(BKG)	2.8	NET WEIGHT	(W3)		0.0873
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		19.85
@SR90-01	DILUTION FACTOR	DF	1				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	173.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.01	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
97002577	TIME OF SEPARATION	(ST)	10:45	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/97	DETECTION LIMIT	(Ld)		2.11
0	TIME OF COUNT	(TOC)	06:36	Sr-89/90 CONC in µCi/L			3.5293E-01
Sample Prep	DATE OF COUNT	(DOC)	06/11/97				
N/A							
Sample #							
S97T001293							
Instrument Code							
WB27811							
Prepared By							
SEH							
Chemist							
SAC							
Analyst							
KRQ							
Date Complete							
06/11/97							
Analysis Date							
06/10/97							
Analysis Time							
11:00 PM							
Sample Point							
TX-244 GRAB1							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

				DETECTION LEVEL
	Sr-89/90 CONCENTRATION	3.53E-04	µCi/mL	
	RELATIVE COUNTING ERROR	4.8%		4.28E-06 µCi/mL
	PERCENT CARRIER RECOVERY	87.3%		

Analyst:		KRQ	Date:	11-Jun-97
Signature of Chemist:	SACatts	SAC	Date:	12 Jun 97

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: DUP6

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	1719	GROSS WEIGHT	(W2)	7.6035
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5156
18520	BACKGROUND in cpm	(BKG)	2.8	NET WEIGHT	(W3)	0.0879
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	20.17
@SR90-01	DILUTION FACTOR	DF	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	169.10	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.01	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
97002577	TIME OF SEPARATION	(ST)	10:45	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/97	DETECTION LIMIT	(Ld)	2.11
0	TIME OF COUNT	(TOC)	06:55	Sr-89/90 CONC in µCi/L		3.4038E-01
Sample Prep	DATE OF COUNT	(DOC)	06/11/97			
N/A						
Sample #						
S97T001293						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
KRQ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/11/97	

Analysis Date				DETECTION LEVEL
06/10/97	Sr-89/90 CONCENTRATION	3.40E-04	µCi/mL	
Analysis Time				
11:00 PM	RELATIVE COUNTING ERROR	4.8%		4.24E-06 µCi/mL
Sample Point				
TX-244 GRAB1	PERCENT CARRIER RECOVERY	87.9%		

Analyst:		KRQ	Date:	11-Jun-97
Signature of Chemist:		SAC	Date:	12 Jun 97

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM7

HNF-SD-WM-DP-251, REV. 0

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	2533	GROSS WEIGHT	(W2)	7.5820
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.4944
18520	BACKGROUND in cpm	(BKG)	2.8	NET WEIGHT	(W3)	0.0876
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	20.42
@SR90-01	DILUTION FACTOR	DF	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	250.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.01	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
97002577	TIME OF SEPARATION	(ST)	10:45	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/97	DETECTION LIMIT	(Ld)	2.11
0	TIME OF COUNT	(TOC)	07:10	Sr-89/90 CONC in µCi/L		5.0495E-01
Sample Prep	DATE OF COUNT	(DOC)	06/11/97			
N/A						
Sample #						
S97T001294						
Instrument Code						
WB27811						
Prepared By						
SEH						
Chemist						
SAC						
Analyst						
KRQ						
Date Complete						
06/11/97						
Analysis Date						
06/10/97						
Analysis Time						
11:00 PM						
Sample Point						
TX-244 GRAB1						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

			DETECTION LEVEL
Sr-89/90 CONCENTRATION	5.05E-04	µCi/mL	
RELATIVE COUNTING ERROR	4.0%		4.25E-06 µCi/mL
PERCENT CARRIER RECOVERY	87.6%		

Analyst:		KRQ	Date:	11-Jun-97
Signature of Chemist:		SAC	Date:	12 Jun 97

SAMPLE.WB1 REV 2.0 22010NML

I:\22010N\OUT\18520.WB1 06/11/97 08:16:46

WORKBOOK PAGE: DUP8

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	2333	GROSS WEIGHT	(W2)	7.5965
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.5096
18520	BACKGROUND in cpm	(BKG)	2.8	NET WEIGHT	(W3)	0.0869
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	20.67
@SR90-01	DILUTION FACTOR	DF	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	230.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.01	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
97002577	TIME OF SEPARATION	(ST)	10:45	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/97	DETECTION LIMIT	(Ld)	2.11
0	TIME OF COUNT	(TOC)	07:25	Sr-89/90 CONC in µCi/L		4.6746E-01
Sample Prep	DATE OF COUNT	(DOC)	06/11/97			
N/A						
Sample #						
S97T001294						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
KRQ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/11/97	

Analysis Date				DETECTION LEVEL
06/10/97	Sr-89/90 CONCENTRATION	4.67E-04	µCi/mL	
Analysis Time				
11:00 PM	RELATIVE COUNTING ERROR	4.1%		4.27E-06 µCi/mL
Sample Point				
TX-244 GRAB1	PERCENT CARRIER RECOVERY	86.9%		

Analyst:		KRQ	Date:	11-Jun-97
Signature of Chemist:		SAC	Date:	12 Jun 97

SAMPLE.WB1 REV 2.0 22010NML

LABCORE Completed RadChem Report for Worklist#: 18631

Analyst: crj **Instrument:** AB10 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: RR#1. TX-244. Use 0.500 mL. sac

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@SR90-01	SR90-01	LIQUID	1.67E-03	1.65E-3	98.802	% Recovery
1	STD		0	@SR90-01	SR90-01C	LIQUID	100	8.95E+01	89.500	% Recovery
1	STD		0	@SR90-01	SR90-01E	LIQUID	1.00	1.70E+00	1.700	% Ct. Erro
2	BLNK		0	@SR90-01	SR90-01	LIQUID	1	8.97E-6	89.700e-007	uCi/mL
2	BLNK		0	@SR90-01	SR90-01C	LIQUID	100	8.98E+01	89.800	% Recovery
2	BLNK		0	@SR90-01	SR90-01E	LIQUID	1.00	8.49E+01	84.900	uCi/mL
3	BLNK/BKG		0	@SR90-01	SR90-01	LIQUID	1	1.34E+00	1.340	BLNK/BKG
4	SAMPLE	S97T001292	0	@SR90-01	SR90-01	LIQUID	N/A	5.60E-04	987.0e-008	uCi/mL
4	SAMPLE	S97T001292	0	@SR90-01	SR90-01C	LIQUID	N/A	9.00E+01	0.0e+000	% Recovery
4	SAMPLE	S97T001292	0	@SR90-01	SR90-01E	LIQUID	N/A	4.26E+00	0.0e+000	% Ct. Error
5	DUP	S97T001292	0	@SR90-01	SR90-01	LIQUID	5.60E-4	6.08E-4	8.219	RPD
5	DUP	S97T001292	0	@SR90-01	SR90-01C	LIQUID	100	8.96E+01	89.600	% Recovery
5	DUP	S97T001292	0	@SR90-01	SR90-01E	LIQUID	1.00	4.04E+00	4.040	% Cnt Err

Final page for worklist# 18631

Analyst Signature Date

Analyst Signature Date

S A Catto 16 Jun 97

Reviewer Signature Date

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

LABCORE Data Entry Template for Worklist# 18631

Analyst: CRJ **Instrument:** AB00 10 **Book#** 75B56

Method: LA-220-101 Rev/Mod E-1

Worklist Comment: RR#1. TX-244. Use 0.500 mL. sac

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	LIQUID		
2	BLNK				@SR90-01	LIQUID		
3	BLNK/BKG				@SR90-01	LIQUID		
4	SAMPLE	S97T001292	0		@SR90-01	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5	DUP	S97T001292	0		@SR90-01	LIQUID		

Final page for worklist # 18631

Analyst Signature Date 6/13/97

Analyst Signature Date 6/13/97

6/13/97

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

							STANDARD
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
STD	TOTAL COUNTS	(TC)	13618	GROSS WEIGHT	(W2)		7.0850
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9955
18631	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)		0.0895
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		1.67
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	1350.80	SR-90 EFFICIENCY FACTO	(C1)		0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
97002699	TIME OF SEPARATION	(ST)	09:35	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/13/97	DETECTION LIMIT	(Ld)		4.09
0	TIME OF COUNT	(TOC)	11:15	Sr-89/90 CONC. in µCi/L			1.6456E+00
Sample Prep	DATE OF COUNT	(DOC)	06/13/97				
N/A	STANDARD BOOK #		75B56				
Sample #	STANDARD VALUE in µCi/mL		1.6696E-03				
WL18631							
Instrument Code							
WB26870							
Prepared By							
CJO							
Chemist							
SLF							
Analyst							
CRJ							
Date Complete							
06/13/97							
Analysis Date							
06/13/97							
Analysis Time							
11:05 AM							
Sample Point							
TX-244 GRAB1							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.65E-03	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	1.7%		4.98E-06 µCi/L
PERCENT CARRIER RECOVERY	89.5%		

Analyst:	CRJ	Date:	13-Jun-97
Signature of Chemist:	SLF	Date:	16 Jun 97

STANDARD.WB1 REV 2.0 22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							BLNK
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
BLNK	TOTAL COUNTS	(TC)	147	GROSS WEIGHT	(W2)		7.0961
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0063
18631	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)		0.0898
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		1.83
@SR90-01	DILUTION FACTOR	DF	1				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	3.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
97002699	TIME OF SEPARATION	(ST)	09:35	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/13/97	DETECTION LIMIT	(Ld)		4.09
0	TIME OF COUNT	(TOC)	11:25	Sr-89/90 CONC in µCi/L			8.9677E-03
Sample Prep	DATE OF COUNT	(DOC)	06/13/97				
N/A							
Sample #							
WL18631							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Instrument Code	Prepared By	Chemist	Analyst	Date Complete	Analysis Date	Analysis Time	Sample Point
WB26870	CJO	SLF	CRJ	06/13/97	06/13/97	11:05 AM	TX-244 GRAB1

Sr-89/90 CONCENTRATION	8.97E-06	µCi/mL
RELATIVE COUNTING ERROR	84.9%	
PERCENT CARRIER RECOVERY	89.8%	

DETECTION LEVEL: 9.91E-06 µCi/mL

Analyst:	CRJ	Date:	13-Jun-97
Signature of Chemist:	SLF	Date:	16 Jun 97

BLANK.WB1 REV 2.0 22010NML

WORKBOOK PAGE: SAM4

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	2432	GROSS WEIGHT	(W2)		7.1363
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0463
18631	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)		0.0900
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		2.00
@SR90-01	DILUTION FACTOR	DF	1				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	232.20	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
97002699	TIME OF SEPARATION	(ST)	09:35	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/13/97	DETECTION LIMIT	(Ld)		4.09
0	TIME OF COUNT	(TOC)	11:35	Sr-89/90 CONC in µCi/L			5.6046E-01
Sample Prep	DATE OF COUNT	(DOC)	06/13/97				
N/A							
Sample #							
S97T001292							

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)
CJO	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
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/13/97	
Analysis Date	
06/13/97	
Analysis Time	
11:05 AM	
Sample Point	
TX-244 GRAB1	

Sr-89/90 CONCENTRATION	5.60E-04	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	4.3%		9.87E-06 µCi/mL
PERCENT CARRIER RECOVERY	90.0%		

Analyst:		CRJ	Date:	13-Jun-97
Signature of Chemist:	SA Carter	SLF	Date:	16 Jun 97

SAMPLE.WB1 REV 2.0 22010NML

WORKBOOK PAGE: DUP5

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	2667	GROSS WEIGHT	(W2)		7.1322
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0426
18631	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)		0.0896
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		3.67
@SR90-01	DILUTION FACTOR	DF	1				
Matrix	DIGEST DILUTION FACTOR	(DDF)	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	255.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
97002699	TIME OF SEPARATION	(ST)	09:35	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/13/97	DETECTION LIMIT	(Ld)		4.09
0	TIME OF COUNT	(TOC)	13:15	Sr-89/90 CONC in µCi/L			6.0840E-01
Sample Prep	DATE OF COUNT	(DOC)	06/13/97				
N/A							
Sample #							
S97T001292							

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB26870	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)
CJO	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
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/13/97	

Analysis Date				DETECTION LEVEL
06/13/97	Sr-89/90 CONCENTRATION	6.08E-04	µCi/mL	
Analysis Time				
11:05 AM	RELATIVE COUNTING ERROR	4.0%		9.72E-06 µCi/mL
Sample Point				
TX-244 GRAB1	PERCENT CARRIER RECOVERY	89.6%		

Analyst:		CRJ	Date:	13-Jun-97
Signature of Chemist:	S A Cattes	SLF	Date:	16 Jun 97

SAMPLE.WB1 REV 2.0 22010NML

LABCORE Completed Worklist Report for Worklist# 18583

Analyst: knt **Instrument:** AB13 **Book#** 75B56

Method: LA-953-104 Rev/Mod B-0

Worklist Comment: Rerun from WL#18518, use 1 ml for all samples/jfr 10Jun97.

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@AM24101	AM24101		LIQUID	1.03E-04	1.03E-4	100.000	% Recovery
1	STD		0	@AM24101	AM24101T		LIQUID	100.	9.28E+01	92.800	% Recovery
1	STD		0	@AM24101	AM24101E		LIQUID	1.0	1.63E+00	1.630	% Ct Error
2	BLNK		0	@AM24101	AM24101		LIQUID	1	<6.84E-6		uCi/mL
2	BLNK		0	@AM24101	AM24101T		LIQUID	100.0	8.17E+01	81.700	% Recovery
2	BLNK		0	@AM24101	AM24101E		LIQUID	1.0	1.00E+02	100.000	% Ct Error
3	SAMPLE	S97T001292	0	@AM24101	AM24101		LIQUID	N/A	1.20E-05	7.89e-006	uCi/mL
3	SAMPLE	S97T001292	0	@AM24101	AM24101E		LIQUID	N/A	3.95E+00		% Ct. Error
3	SAMPLE	S97T001292	0	@AM24101	AM24101T		LIQUID	N/A	8.11E+01		% Recovery
4	DUP	S97T001292	0	@AM24101	AM24101		LIQUID	1.20E-5	1.43E-5	17.490	RPD
4	DUP	S97T001292	0	@AM24101	AM24101T		LIQUID	100.0	8.08E+01	80.800	% Recovery
4	DUP	S97T001292	0	@AM24101	AM24101E		LIQUID	1.0	3.48E+00	3.480	% Ct Error
5	SAMPLE	S97T001293	0	@AM24101	AM24101		LIQUID	N/A	9.73E-06	6.42e-006	uCi/mL
5	SAMPLE	S97T001293	0	@AM24101	AM24101E		LIQUID	N/A	4.93E+00		% Ct. Error
5	SAMPLE	S97T001293	0	@AM24101	AM24101T		LIQUID	N/A	9.14E+01		% Recovery
6	DUP	S97T001293	0	@AM24101	AM24101		LIQUID	9.73E-6	1.03E-5	5.691	RPD
6	DUP	S97T001293	0	@AM24101	AM24101T		LIQUID	100.0	8.05E+01	80.500	% Recovery
6	DUP	S97T001293	0	@AM24101	AM24101E		LIQUID	1.0	4.06E+00	4.060	% Ct Error
7	SAMPLE	S97T001294	0	@AM24101	AM24101		LIQUID	N/A	1.30E-05	7.37e-006	uCi/mL
7	SAMPLE	S97T001294	0	@AM24101	AM24101E		LIQUID	N/A	3.5E+00		% Ct. Error
7	SAMPLE	S97T001294	0	@AM24101	AM24101T		LIQUID	N/A	8.68E+01		% Recovery
8	DUP	S97T001294	0	@AM24101	AM24101		LIQUID	1.30E-5	1.26E-5	3.125	RPD
8	DUP	S97T001294	0	@AM24101	AM24101T		LIQUID	100.0	8.68E+01	86.800	% Recovery
8	DUP	S97T001294	0	@AM24101	AM24101E		LIQUID	1.0	3.5E+00	3.500	% Ct Error

Final page for worklist# 18583

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

John Relyea 20 June 97
Reviewer Signature **Date**
Validated

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

LABCORE Data Entry Template for Worklist# 18583

Analyst: KNT **Instrument:** AM01 13 **Book#** 75B56

Method: LA-953-104 Rev/Mod B-0

Worklist Comment: Rerun from WL#18518, use 1 ml for all samples/jfr 10Jun97.

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AM24101	LIQUID		
2	BLNK				@AM24101	LIQUID		
3	SAMPLE	S97T001292	0		@AM24101	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: AM24101 , AM24101E, AM24101T						
4	DUP	S97T001292	0		@AM24101	LIQUID		
5	SAMPLE	S97T001293	0		@AM24101	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: AM24101 , AM24101E, AM24101T						
6	DUP	S97T001293	0		@AM24101	LIQUID		
7	SAMPLE	S97T001294	0		@AM24101	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: AM24101 , AM24101E, AM24101T						
8	DUP	S97T001294	0		@AM24101	LIQUID		

Final page for worklist # 18583

Kim Thomas 6-17-97
Analyst Signature **Date**

6/18/97
Analyst Signature **Date**
C.J. Queen 6/18/97

Rerun: WL #18518, (1) Std was 130% (max 125% acceptable) (2) two RPD's over Limit, (3) Blank was hot, 3 times detection Limit. JJRelyea 10June97

Data Entry Comments: S97T001294 Samp and dup recounted on 6/19/97. The recount data was used in the calculation and included with this worklist. Original count is in file copy of document. rcash 8/7/97

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

WORKBOOK PAGE: STD1

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(A-0)) LIQUID

							STD
Type	Date Counted		JUN-17-97	Am 241 AEA Frac.		(C241)	0.466
STD	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.		(C243)	0.443
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.		(Cm)	0
18583	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			4132
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)		(TC)	30
@AM24101	Tracer Book No.		134B43	Background in cpm		(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	1087	Am 241 cpm			62.16
LIQUID	Detector Number		13	Am 243 cpm			59.09
Batch Number	Detector Efficiency	(DetEff)	0.3023	Cm 243/244 cpm			0
97002645	Standard Book No		75B56	AEA Count Time		(min)	480
Rerun	Standard Value in µCi/mL		1.030E-04	Am 241 µCi/L =			1.0301E-01
0				Cm 243/244 µCi/L =		<	1.1911E-02

Sample Prep
N/A
Sample Number
WL18583-STD
Instrument Code
WB27810
Prepared By
MCB
Chemist
JFR
Analyst
KNT
Date Complete
06/18/97
Analysis Date
06/17/97
Analysis Time
04:35 AM
Sample Point
TX-244 GRAB1

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

			DETECTION LEVELS in µCi/mL
Am 241 µCi/mL	=	1.03E-04	Am 241
Relative Counting Error	=	1.6%	1.19E-05
NOTE: Cm-243/244 Result is a LESS THAN Value.			
Cm 243/244 µCi/mL		< 1.19E-05	Cm 243/244
Relative Counting Error	=	100.0%	1.19E-05
Am 243 Tracer Recovery	=	92.8%	

Analyst:	KNT	Date:	06/18/97
Signature of Chemist: John Relyea	JFR	Date:	18 June 97

STANDARD.WB1 REV 1.2 953103ML

WORKBOOK PAGE: BLANK2

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(A-0)) LIQUID / SOLI

Type	Date Counted		JUN-17-97	Am 241 AEA Frac.	(C241)	0
BLNK	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.876
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
18583	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		1840
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		134B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	1087	Am 241 cpm		0
LIQUID	Detector Number		13	Am 243 cpm		53.07
Batch Number	Detector Efficiency	(DetEff)	0.3023	Cm 243/244 cpm		0
97002645				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =	<	6.8449E-03
0				Cm 243/244 µCi/L =	<	6.8449E-03
Sample Prep						
N/A						
Sample Number						
WL18583-BLNK						
Instrument Code						
WB27810						
Prepared By						
MCB						
Chemist						
JFR						
Analyst						
KNT						
Date Complete						
06/18/97						
Analysis Date						
06/17/97						
Analysis Time						
04:35 AM						
Sample Point						
TX-244 GRAB1						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

NOTE: Am-241 Result is a LESS THAN Value.

Am 241 µCi/mL =	< 6.84E-06	DETECTION LEVELS in µCi/mL
Relative Counting Error =	100.0%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 6.84E-06	6.84E-06
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	81.7%	6.84E-06

Analyst:		KNT	Date:	06/18/97
Signature of Chemist:	John Rabyen	JFR	Date:	19 June 97

BLANK.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM3

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(A-0)) LIQUID / SOLI

Type	Date Counted		JUN-17-97	Am 241 AEA Frac.	(C241)	0.094
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.765
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
18583	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		2092
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		134B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	1087	Am 241 cpm		5.75
LIQUID	Detector Number		13	Am 243 cpm		46.82
Batch Number	Detector Efficiency	(DetEff)	0.3023	Cm 243/244 cpm		0
97002645				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =		1.2033E-02
0				Cm 243/244 µCi/L =	<	7.8931E-03
Sample Prep						
N/A						

Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
S97T001292	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))
Instrument Code	
WB27810	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV
MCB	
Chemist	

JFR	Am 241 µCi/mL	=	1.20E-05	DETECTION LEVELS in µCi/mL
Analyst	Relative Counting Error	=	4.0%	
KNT				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
06/18/97	Cm 243/244 µCi/mL		< 7.89E-06	7.89E-06
Analysis Date	Relative Counting Error	=	100.0%	Cm 243/244
06/17/97	Am 243 Tracer Recovery	=	81.1%	7.89E-06
Analysis Time				
04:35 AM				
Sample Point				
TX-244 GRAB1				

Analyst:		KNT	Date:	06/18/97
Signature of Chemist:	John Rolyea	JFR	Date:	19 June 97

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP4

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(A-0)) LIQUID / SOLI

Type	Date Counted		JUN-17-97	Am 241 AEA Frac.	(C241)	0.116
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.793
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
18583	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		2012
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		134B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	1087	Am 241 cpm		7.56
LIQUID	Detector Number		13	Am 243 cpm		51.61
Batch Number	Detector Efficiency	(DetEff)	0.3023	Cm 243/244 cpm		0
97002645				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =		1.4325E-02
0				Cm 243/244 µCi/L =	<	7.6379E-03
Sample Prep						
N/A						
Sample Number						
S97T001292						
Instrument Code						
WB27810						
Prepared By						
MCB						
Chemist						
JFR						
Analyst						
KNT						
Date Complete						
06/18/97						
Analysis Date						
06/17/97						
Analysis Time						
04:35 AM						
Sample Point						
TX-244 GRAB1						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	1.43E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error =	3.5%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 7.64E-06	7.64E-06
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	80.8%	7.64E-06

Analyst:		KNT	Date:	06/18/97
Signature of Chemist:	John Relyea	JFR	Date:	19 June 97

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM5

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(A-0)) LIQUID / SOLI

Type	Date Counted		JUN-17-97	Am 241 AEA Frac.	(C241)	0.083
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.835
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
18583	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		2160
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		134B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	1087	Am 241 cpm		3.62
LIQUID	Detector Number		13	Am 243 cpm		36.54
Batch Number	Detector Efficiency	(DetEff)	0.3023	Cm 243/244 cpm		0
97002645				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =		9.7342E-03
0				Cm 243/244 µCi/L =	<	6.4164E-03
Sample Prep						
N/A						
Sample Number						
S97T001293						
Instrument Code						
WB27810						
Prepared By						
MCB						
Chemist						
JFR						
Analyst						
KNT						
Date Complete						
06/18/97						
Analysis Date						
06/17/97						
Analysis Time						
04:35 AM						
Sample Point						
TX-244 GRAB1						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	9.73E-06	DETECTION LEVELS in µCi/mL
Relative Counting Error =	4.9%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 6.42E-06	6.42E-06
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	91.4%	6.42E-06

Analyst:		KNT	Date:	06/18/97
Signature of Chemist:	John Relyea	JFR	Date:	19 June 97

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP6

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(A-0)) LIQUID / SOLI

Type	Date Counted		JUN-17-97	Am 241 AEA Frac.	(C241)	0.085
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.807
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
18583	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		1968
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		134B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	1087	Am 241 cpm		5.37
LIQUID	Detector Number		13	Am 243 cpm		50.96
Batch Number	Detector Efficiency	(DetEff)	0.3023	Cm 243/244 cpm		0
97002645				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =		1.0315E-02
0				Cm 243/244 µCi/L =	<	7.5403E-03
Sample Prep						
N/A						
Sample Number						
S97T001293						
Instrument Code						
WB27810						
Prepared By						
MCB						
Chemist						
JFR						
WORK Analyst						
KNT						
Date Complete						
06/18/97						
Analysis Date						
06/17/97						
Analysis Time						
04:35 AM						
Sample Point						
TX-244 GRAB1						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL	=	1.03E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	4.1%	
NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241
Cm 243/244 µCi/mL		< 7.54E-06	7.54E-06
Relative Counting Error	=	100.0%	Cm 243/244
Am 243 Tracer Recovery	=	80.5%	7.54E-06

Analyst:		KNT	Date:	06/18/97
Signature of Chemist:	John Relyea	JFR	Date:	17 June 97

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: SAM7

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(A-0))

LIQUID / SOLI

Type	Date Counted		JUN-17-97	Am 241 AEA Frac.		(C241)	0.102
SAMPLE	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.		(C243)	0.766
Work List	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.		(Cm)	0
18583	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts			2235
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)		(TC)	30
@AM24101	Tracer Book No.		134B43	Background in cpm		(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	1087	Am 241 cpm			7.41
LIQUID	Detector Number		13	Am 243 cpm			55.89
Batch Number	Detector Efficiency	(DetEff)	0.3023	Cm 243/244 cpm			0
97002645				AEA Count Time		(min)	480
Rerun				Am 241 µCi/L =			1.3040E-02
0				Cm 243/244 µCi/L =		<	7.3683E-03
Sample Prep							
N/A							
Sample Number							
S97T001294							
Instrument Code							
WB27810							
Prepared By							
MCB							
Chemist							
JFR							
Analyst							
KNT							
Date Complete							
06/18/97							
Analysis Date							
06/17/97							
Analysis Time							
04:35 AM							
Sample Point							
TX-244 GRAB1							

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	1.30E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error =	3.5%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241 7.37E-06
Cm 243/244 µCi/mL	< 7.37E-06	
Relative Counting Error =	100.0%	Cm 243/244 7.37E-06
Am 243 Tracer Recovery =	86.8%	

Analyst:	KNT	Date:	06/18/97
Signature of Chemist:	JFR	Date:	20 June 97

SAMPLE.WB1 REV 1.2 953103ML

WORKBOOK PAGE: DUP8

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(A-0))

LIQUID / SOLI

Type	Date Counted		JUN-17-97	Am 241 AEA Frac.	(C241)	0.098
DUP	Sample Volume in mL	(SS)	1.000	Am 243 AEA Frac.	(C243)	0.764
WorkList	Sample D.F.	(DF)	1	Cm 243/244 AEA Frac.	(Cm)	0
18583	Tracer Volume in mL	(SPKV)	0.200	Total AT Counts		2223
Test Code	Digest D.F.	(DDF)	1.000	AT Count Time (min)	(TC)	30
@AM24101	Tracer Book No.		134B43	Background in cpm	(Bkg)	0.07
Matrix	Am-243 Tracer Value	(dpm/mL)	1087	Am 241 cpm		6.78
LIQUID	Detector Number		13	Am 243 cpm		52.98
Batch Number	Detector Efficiency	(DetEff)	0.3023	Cm 243/244 cpm		0
97002645				AEA Count Time	(min)	480
Rerun				Am 241 µCi/L =		1.2561E-02
0				Cm 243/244 µCi/L =	<	7.4470E-03
Sample Prep						
N/A						
Sample Number						
S97T001294						
Instrument Code						
WB27810						
Prepared By						
MCB						
Chemist						
JFR						
Analyst						
KNT						
Date Complete						
06/18/97						
Analysis Date						
06/17/97						
Analysis Time						
04:35 AM						
Sample Point						
TX-244 GRAB1						

Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))

Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100

Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV

Am 241 µCi/mL =	1.26E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error =	3.6%	
NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Cm 243/244 µCi/mL	< 7.45E-06	7.45E-06
Relative Counting Error =	100.0%	Cm 243/244
Am 243 Tracer Recovery =	86.1%	7.45E-06

Analyst:	KNT	Date:	06/18/97
Signature of Chemist: John Kelyen	JFR	Date:	20 June 97

SAMPLE.WB1 REV 1.2 953103ML

222-S Analytical Laboraratory
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
WL18583-STD
File ID: 5a5298.CNF

Counted on: 6/17/97 @10: 7
Detector: AEA5
Geometry number: 1
Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1620.2	1620.2	300.774	300.774	16.000	9.167	8.000	3.497
2	1568.4	1568.4	254.789	254.762	14.000	7.803	7.000	2.813
3	34.1	34.1	170.988	170.958	116.000	1.000	58.000	0.100
4?	5.9	5.9	155.922	154.621	8.000	0.000	4.000	3.686
5?	5.9	5.9	148.285	147.396	8.000	3.813	4.000	0.542
6?	7.2	7.2	121.728	121.402	8.000	5.042	4.000	3.025
7?	6.8	6.8	110.451	108.629	12.000	3.465	6.000	0.992
8?	4.9	4.9	96.175	95.420	10.000	0.545	5.000	2.093

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	Am241	0.466	5.479	5.468	0.011	0.04	62.16	1.1	298.0	0.134E-03
	Pu238		5.487	5.468	0.019				389.1	0.175E-03
2	Am243	0.443	5.270	5.257	0.013	0.04	59.09	1.2	269.0	0.121E-03
3	Pu242	0.020	4.891	4.871	0.020	0.00	2.72	5.4	12.3	0.552E-05
4		????		4.796			0.00	1000.		
5		????		4.763			0.37	35.8		
6		????		4.643			0.19	53.5		
7		????		4.584			0.25	37.4		
8		????		4.524			0.04	178.		
Totals:		0.930	<--valid peaks only-->				123.97			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.2219 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	64014.0	100.000
Smoothed	64014.0	100.000

Composite fit	59923.5	93.610
Residuals	4090.5	6.390

Analyzed by: _____
EMB

Spectrum 5a5298.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11711.1

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Raw Data Dump for AEA Spectrum: 5a5298.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	2.	8.	5.	8.	3.	7.
21	3.	5.	3.	2.	4.	6.	5.	7.	3.	4.
31	3.	6.	10.	4.	1.	9.	6.	3.	9.	5.
41	9.	6.	10.	4.	8.	6.	3.	4.	6.	11.
51	11.	6.	6.	7.	12.	10.	4.	4.	8.	9.
61	8.	9.	7.	7.	11.	7.	10.	8.	5.	11.
71	9.	4.	8.	10.	16.	11.	10.	17.	9.	3.
81	10.	10.	10.	10.	8.	15.	4.	7.	12.	7.
91	8.	7.	8.	10.	11.	13.	13.	10.	8.	7.
101	8.	19.	8.	11.	14.	9.	18.	11.	20.	15.
111	14.	16.	15.	12.	15.	12.	11.	11.	13.	16.
121	22.	21.	21.	8.	19.	17.	17.	14.	19.	12.
131	21.	13.	12.	20.	13.	24.	19.	14.	17.	15.
141	21.	22.	26.	20.	19.	24.	23.	26.	26.	25.
151	19.	19.	22.	25.	24.	29.	25.	22.	27.	14.
161	25.	24.	18.	23.	32.	32.	32.	19.	26.	36.
171	40.	33.	29.	25.	27.	27.	32.	34.	34.	39.
181	36.	37.	33.	40.	43.	49.	48.	39.	66.	44.
191	45.	55.	49.	62.	44.	67.	54.	53.	71.	55.
201	53.	72.	65.	75.	74.	69.	98.	89.	72.	88.
211	100.	89.	82.	92.	111.	113.	86.	107.	141.	116.
221	118.	148.	173.	143.	144.	175.	174.	179.	214.	202.
231	211.	227.	269.	259.	289.	315.	342.	385.	391.	434.
241	475.	495.	558.	625.	668.	731.	876.	972.	1087.	1188.
251	1300.	1462.	1679.	1769.	1723.	1709.	1517.	1228.	948.	713.
261	510.	384.	318.	300.	243.	262.	239.	194.	224.	257.
271	224.	201.	190.	184.	211.	192.	231.	241.	201.	262.
281	271.	302.	350.	346.	362.	396.	475.	515.	591.	645.
291	667.	783.	916.	923.	1104.	1186.	1362.	1513.	1698.	1756.
301	1827.	1689.	1524.	1251.	1033.	798.	644.	539.	410.	372.
311	277.	234.	204.	144.	84.	57.	46.	16.	6.	4.
321	3.	0.	1.	0.	0.	2.	0.	1.	1.	0.
331	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	1.	1.	1.	0.	1.	0.	0.	2.
351	2.	0.	1.	2.	0.	2.	0.	0.	1.	0.
361	2.	0.	0.	0.	0.	1.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
431	0.	1.	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.	2.	0.	0.	0.	1.
481	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
WL18583-BLK
File ID: 6a6113.CNF

Counted on: 6/17/97 @10: 8
Detector: AEA6
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1238.3	1238.3	254.840	254.840	16.000	10.845	8.000	3.580
2	23.2	23.2	157.425	157.393	130.000	1.000	65.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am243	0.876	5.270	5.249	0.021	0.05	53.07	1.2	238.8	0.108E-03
2	Np237	0.030	4.769	4.801	-.032	0.00	1.84	6.6	9.4	0.425E-05
Totals:		0.906	<--valid peaks only-->				54.91			

DETECTOR CALIBRATION
Energy(MEV) = 4.077 + (0.0046)*Channel
Energy range (MeV): 4.077 TO 6.432
Efficiency = 0.2245 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29093.0	100.000
Smoothed	29093.8	100.003
Composite fit	26361.5	90.611
Residuals	2731.5	9.389

Analyzed by: _____
EMB

Spectrum 6a6113.CNF

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1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    8825.6

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Raw Data Dump for AEA Spectrum: 6a6113.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	3.	3.	7.	1.	4.	2.
21	5.	5.	4.	3.	3.	4.	3.	4.	1.	6.
31	3.	1.	0.	7.	4.	3.	8.	5.	2.	2.
41	1.	5.	4.	4.	2.	3.	7.	4.	4.	3.
51	6.	3.	3.	4.	2.	1.	6.	6.	2.	3.
61	3.	5.	5.	4.	3.	3.	2.	2.	5.	8.
71	7.	7.	3.	3.	7.	8.	5.	7.	4.	6.
81	6.	3.	8.	8.	6.	9.	9.	4.	5.	5.
91	4.	13.	5.	8.	6.	6.	7.	6.	3.	2.
101	10.	9.	2.	6.	3.	4.	7.	10.	7.	7.
111	8.	8.	8.	11.	10.	10.	9.	3.	11.	6.
121	7.	13.	8.	8.	5.	10.	9.	6.	10.	12.
131	9.	15.	9.	16.	8.	15.	10.	14.	13.	12.
141	17.	12.	14.	10.	14.	14.	13.	18.	9.	15.
151	6.	22.	17.	11.	14.	18.	18.	16.	20.	13.
161	11.	16.	15.	20.	22.	21.	32.	23.	17.	25.
171	27.	24.	17.	26.	22.	33.	32.	31.	26.	36.
181	28.	26.	29.	31.	28.	27.	30.	38.	42.	39.
191	41.	35.	24.	42.	37.	37.	45.	46.	42.	42.
201	47.	49.	47.	69.	52.	50.	63.	58.	72.	53.
211	73.	71.	72.	81.	76.	82.	102.	102.	105.	100.
221	114.	141.	110.	128.	133.	145.	147.	168.	150.	187.
231	181.	189.	213.	253.	251.	253.	305.	305.	328.	381.
241	389.	496.	477.	568.	662.	676.	700.	829.	949.	1002.
251	1178.	1216.	1254.	1316.	1344.	1295.	1174.	1081.	871.	759.
261	634.	494.	343.	288.	220.	161.	156.	109.	104.	85.
271	75.	70.	55.	36.	36.	11.	13.	10.	9.	7.
281	2.	2.	1.	1.	3.	4.	2.	7.	9.	4.
291	4.	5.	8.	8.	8.	7.	4.	7.	14.	8.
301	6.	10.	3.	6.	10.	2.	7.	5.	3.	1.
311	3.	3.	1.	0.	1.	2.	0.	0.	0.	1.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.
331	0.	0.	1.	0.	2.	1.	0.	0.	0.	1.
341	1.	1.	1.	0.	3.	3.	0.	2.	1.	0.
351	0.	0.	0.	1.	1.	0.	2.	0.	0.	1.
361	0.	0.	0.	1.	1.	0.	0.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
471	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
481	1.	2.	1.	0.	0.	1.	0.	0.	0.	1.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1292-SAM
File ID: 7a7846.CNF

Counted on: 6/17/97 @10: 8
Detector: AEA7
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	82.5	82.5	301.940	302.350	18.000	12.549	9.000	1.891
2	771.7	771.7	256.745	256.243	18.000	11.387	9.000	2.057

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	Am241	0.094	5.479	5.462	0.0170	06	5.75	3.7	31.6	0.142E-04
	Pu238		5.487	5.462	0.025				41.3	0.186E-04
2	Pu239	0.765	5.147	5.245	-.0980	05	46.82	1.3	242.0	0.109E-03
	Am243		5.270	5.245	0.025				244.4	0.110E-03
Totals:		0.858	<--valid peaks only-->				52.57			

DETECTOR CALIBRATION
Energy(MEV) = 4.041 + (0.0047)*Channel
Energy range (MeV): 4.041 TO 6.447
Efficiency = 0.1935 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29401.0	100.000
Smoothed	29401.4	100.001
Composite fit	25237.2	85.838
Residuals	4163.8	14.162

Analyzed by: _____
EMB

Spectrum 7a7846.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 5499.9

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Raw Data Dump for AEA Spectrum: 7a7846.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	8.	7.	5.	2.	9.	6.
21	8.	5.	2.	5.	5.	5.	4.	6.	4.	8.
31	2.	2.	6.	9.	7.	6.	8.	7.	5.	3.
41	6.	6.	9.	6.	11.	8.	9.	9.	2.	5.
51	10.	10.	9.	10.	10.	6.	4.	6.	10.	5.
61	6.	14.	12.	8.	13.	9.	12.	13.	11.	12.
71	13.	6.	11.	9.	11.	14.	14.	11.	8.	8.
81	8.	10.	12.	14.	9.	10.	10.	11.	12.	16.
91	12.	12.	14.	4.	15.	11.	15.	17.	17.	18.
101	12.	8.	15.	21.	17.	21.	9.	20.	9.	9.
111	14.	20.	16.	14.	22.	13.	8.	19.	18.	18.
121	17.	15.	15.	20.	21.	19.	18.	28.	29.	21.
131	25.	18.	24.	16.	22.	17.	26.	24.	23.	19.
141	20.	28.	32.	39.	25.	28.	35.	30.	29.	31.
151	38.	27.	30.	41.	32.	37.	38.	28.	41.	36.
161	39.	40.	33.	57.	53.	47.	39.	52.	46.	44.
171	42.	34.	49.	40.	47.	44.	64.	52.	45.	53.
181	63.	71.	58.	73.	70.	57.	64.	67.	60.	69.
191	68.	68.	81.	77.	76.	87.	95.	85.	103.	90.
201	84.	110.	109.	111.	84.	106.	116.	119.	130.	113.
211	142.	125.	132.	164.	129.	146.	138.	143.	142.	164.
221	170.	155.	174.	193.	198.	182.	227.	241.	227.	247.
231	238.	281.	268.	269.	292.	262.	332.	346.	365.	400.
241	372.	427.	395.	428.	477.	496.	493.	593.	634.	639.
251	678.	679.	740.	794.	801.	833.	824.	818.	690.	644.
261	553.	441.	374.	298.	247.	164.	139.	134.	93.	72.
271	64.	62.	64.	51.	49.	51.	52.	32.	37.	41.
281	39.	37.	39.	31.	35.	42.	33.	44.	48.	46.
291	57.	63.	52.	63.	58.	73.	79.	71.	76.	88.
301	76.	88.	87.	78.	57.	56.	54.	46.	38.	35.
311	18.	18.	8.	14.	6.	11.	1.	2.	0.	2.
321	1.	1.	0.	1.	1.	0.	0.	0.	0.	0.
331	0.	0.	1.	0.	0.	1.	0.	1.	0.	2.
341	0.	1.	0.	1.	0.	1.	2.	2.	0.	2.
351	1.	2.	0.	1.	2.	2.	1.	0.	1.	2.
361	0.	2.	2.	1.	1.	0.	0.	0.	0.	0.
371	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	1.	0.	0.	1.	0.	1.	0.	1.	0.
431	2.	0.	0.	0.	0.	0.	0.	1.	0.	0.
441	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	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.								

222-S Analytical Laboraratory
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1292-DUP
File ID: 8a8071.CNF

Counted on: 6/17/97 @10: 9
Detector: AEA8
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	66.1	66.1	294.815	295.538	18.000	13.748	9.000	1.093
2	619.5	619.5	248.014	247.231	24.000	17.112	12.000	2.132
3?	10.2	10.2	43.123	44.420	352.000	1.000	176.000	0.100
4?	2.9	2.9	32.358	30.048	8.000	1.509	4.000	0.516

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	Am241	0.116	5.479	5.479	0.000	0.06	7.56	3.3	38.7	0.174E-04
	Pu238		5.487	5.479	0.008				50.6	0.228E-04
2	Pu239	0.793	5.147	5.252	-.105	0.08	51.61	1.3	248.6	0.112E-03
	Am243		5.270	5.252	0.018				251.1	0.113E-03
3		????		4.299			0.58	12.3		
4		????		4.231			0.08	82.0		
Totals:		0.909	<--valid peaks only-->				59.17			

DETECTOR CALIBRATION
Energy(MEV) = 4.090 + (0.0047)*Channel
Energy range (MeV): 4.090 TO 6.496
Efficiency = 0.2076 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	31244.0	100.000
Smoothed	31244.0	100.000
Composite fit	28718.5	91.917
Residuals	2525.5	8.083

Analyzed by: _____
EMB

Spectrum 8a8071.CNF

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1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    4898.5

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Raw Data Dump for AEA Spectrum: 8a8071.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	8.	10.	8.	5.	13.	6.
21	7.	3.	11.	4.	7.	14.	7.	9.	11.	8.
31	14.	8.	12.	9.	5.	9.	8.	7.	10.	13.
41	13.	12.	5.	11.	11.	13.	7.	8.	7.	8.
51	7.	4.	12.	10.	9.	7.	11.	3.	5.	9.
61	16.	12.	15.	15.	12.	8.	15.	13.	12.	12.
71	14.	9.	10.	14.	8.	16.	16.	12.	12.	25.
81	18.	15.	17.	10.	13.	13.	9.	12.	14.	17.
91	23.	26.	21.	13.	10.	19.	8.	22.	22.	18.
101	18.	25.	19.	30.	24.	24.	24.	27.	23.	29.
111	20.	17.	23.	30.	15.	34.	22.	22.	37.	33.
121	30.	25.	28.	40.	31.	22.	28.	32.	30.	28.
131	35.	32.	30.	32.	40.	34.	39.	24.	31.	46.
141	44.	35.	43.	44.	34.	49.	49.	33.	36.	39.
151	53.	47.	49.	53.	45.	55.	55.	62.	56.	45.
161	49.	69.	69.	54.	76.	71.	75.	83.	68.	69.
171	66.	76.	77.	85.	66.	88.	107.	83.	116.	87.
181	82.	92.	99.	96.	105.	114.	118.	114.	110.	119.
191	135.	129.	139.	121.	140.	147.	133.	153.	159.	156.
201	165.	157.	178.	185.	159.	168.	195.	185.	212.	222.
211	196.	210.	234.	233.	221.	227.	252.	222.	277.	267.
221	263.	307.	301.	305.	302.	305.	349.	332.	375.	375.
231	360.	354.	395.	408.	438.	456.	507.	527.	503.	517.
241	606.	570.	664.	653.	616.	688.	646.	649.	638.	649.
251	580.	589.	486.	425.	363.	309.	267.	207.	185.	121.
261	116.	109.	70.	53.	49.	52.	55.	52.	52.	36.
271	38.	46.	43.	48.	43.	38.	40.	46.	51.	42.
281	43.	43.	48.	53.	60.	40.	48.	71.	50.	74.
291	61.	55.	57.	77.	67.	68.	61.	56.	58.	42.
301	41.	31.	30.	17.	17.	11.	5.	8.	9.	4.
311	2.	1.	4.	2.	1.	3.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	2.	0.
331	1.	0.	3.	1.	1.	1.	2.	3.	2.	0.
341	0.	3.	0.	1.	3.	2.	4.	0.	1.	0.
351	3.	0.	1.	3.	2.	1.	2.	1.	1.	0.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	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.	1.	0.	1.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
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.	1.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
481	0.	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 Laboraratory

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1293-SAM
File ID: 9a9982.CNF

Counted on: 6/17/97 @10: 9
Detector: AEA9
Geometry number: 1
Count time: 28802. Sec

PEAK ANALYSIS

Peak	Peak height		Peak center		FWHM		Tau	
ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	119.1	119.1	299.431	299.431	12.000	6.586	6.000	3.529
2	1276.1	1276.1	254.217	254.217	12.000	5.152	6.000	2.649

PEAK RESULTS
Peak Error Limit: 30%

Peak		AEA	Peak Centroid				Count	%err		Activity
ID	Isotope	Frac	Exp.	Obs.	Diff.	FWHM	Rate c/m	@95	d/m	uCi/ea
1	Pu238	0.083	5.487	5.490	-.0030	3.03	3.62	4.7	23.1	0.104E-04
	Am241		5.479	5.490	-.011				17.7	0.795E-05
2	Am243	0.835	5.270	5.277	-.0070	0.02	36.54	1.5	169.5	0.763E-04
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Totals:		0.918	<--valid peaks only-->				40.16			

DETECTOR CALIBRATION
Energy(MEV) = 4.082 + (0.0047)*Channel
Energy range (MeV): 4.082 TO 6.489
Efficiency = 0.2178 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	20998.0	100.000
Smoothed	20999.1	100.005
Composite fit	19277.0	91.804
Residuals	1721.0	8.196

Analyzed by: _____
EMB

Spectrum 9a9982.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 8553.5

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Raw Data Dump for AEA Spectrum: 9a9982.CNF

1	0.	0.	2.	0.	1.	0.	1.	1.	0.	2.
11	2.	1.	0.	1.	1.	0.	0.	1.	0.	1.
21	1.	1.	1.	1.	0.	0.	1.	0.	1.	2.
31	0.	1.	0.	2.	0.	3.	1.	1.	0.	1.
41	1.	3.	0.	2.	4.	0.	1.	1.	1.	0.
51	3.	0.	0.	4.	2.	1.	2.	1.	1.	2.
61	1.	0.	1.	2.	1.	0.	3.	0.	0.	2.
71	3.	0.	1.	0.	0.	4.	1.	0.	2.	0.
81	1.	2.	1.	3.	3.	3.	3.	0.	1.	5.
91	1.	1.	1.	1.	1.	2.	5.	3.	2.	0.
101	2.	0.	0.	3.	1.	3.	1.	1.	4.	1.
111	4.	1.	1.	2.	3.	0.	3.	2.	1.	3.
121	1.	2.	4.	5.	2.	3.	2.	5.	3.	4.
131	6.	3.	1.	4.	3.	3.	3.	3.	6.	5.
141	0.	1.	3.	4.	4.	7.	1.	0.	4.	6.
151	5.	4.	6.	3.	3.	3.	5.	4.	8.	4.
161	4.	5.	3.	9.	3.	4.	9.	5.	3.	4.
171	5.	9.	2.	2.	11.	4.	7.	8.	6.	11.
181	6.	10.	10.	4.	5.	8.	9.	9.	10.	8.
191	11.	17.	10.	9.	19.	13.	9.	13.	11.	13.
201	17.	10.	17.	12.	14.	22.	17.	29.	16.	22.
211	26.	19.	29.	25.	26.	21.	27.	25.	50.	25.
221	28.	30.	36.	41.	44.	51.	49.	57.	78.	75.
231	94.	95.	94.	81.	116.	129.	136.	164.	199.	227.
241	217.	318.	332.	383.	434.	527.	583.	701.	808.	907.
251	1003.	1272.	1381.	1461.	1491.	1271.	983.	683.	439.	252.
261	171.	119.	100.	80.	73.	56.	69.	51.	43.	38.
271	37.	22.	17.	18.	9.	14.	6.	5.	9.	13.
281	10.	13.	18.	15.	20.	24.	27.	26.	29.	46.
291	52.	45.	65.	60.	78.	90.	109.	143.	116.	155.
301	104.	99.	91.	65.	28.	30.	15.	31.	15.	19.
311	12.	10.	4.	8.	3.	2.	2.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
341	0.	0.	1.	1.	1.	2.	0.	3.	0.	0.
351	1.	1.	0.	0.	1.	0.	0.	0.	1.	0.
361	2.	1.	0.	0.	0.	0.	1.	0.	1.	0.
371	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	1.	1.	0.	0.	0.	0.	0.	0.
431	1.	0.	1.	1.	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.	1.	0.
461	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.
471	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1293-DUP
File ID: 10a1087.CNF

Counted on: 6/17/97 @10:11
Detector: AEA10
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	150.8	150.8	301.099	301.099	14.000	6.731	7.000	2.521
2	1583.9	1583.9	255.195	255.193	12.000	5.182	6.000	2.089
3	14.4	14.4	165.206	165.176	124.000	1.000	62.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu238	0.085	5.487	5.467	0.020	0.03	5.37	3.9	39.7	0.179E-04
	Am241		5.479	5.467	0.012				30.4	0.137E-04
2	Am243	0.807	5.270	5.255	0.015	0.02	50.96	1.3	274.1	0.123E-03
3		0.018		4.841		0.00	1.15	8.4	6.1	0.276E-05
Totals:		0.911	<--valid peaks only-->				57.48			

DETECTOR CALIBRATION
Energy(MEV) = 4.082 + (0.0046)*Channel
Energy range (MeV): 4.082 TO 6.437
Efficiency = 0.1878 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	30295.0	100.000
Smoothed	30298.5	100.011
Composite fit	27593.1	91.081
Residuals	2701.9	8.919

Analyzed by: _____
EMB

Spectrum 10a1087.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 10223.3

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Raw Data Dump for AEA Spectrum: 10a1087.CNF

1	0.	0.	1.	2.	3.	1.	1.	1.	1.	2.
11	1.	2.	0.	1.	1.	2.	3.	5.	3.	2.
21	2.	4.	0.	1.	5.	1.	0.	0.	3.	2.
31	1.	0.	5.	0.	3.	0.	6.	4.	4.	4.
41	3.	2.	1.	1.	3.	2.	1.	4.	5.	1.
51	5.	4.	3.	6.	3.	1.	4.	3.	2.	2.
61	2.	4.	4.	3.	4.	3.	4.	2.	2.	4.
71	1.	5.	4.	3.	2.	6.	4.	3.	1.	3.
81	6.	3.	4.	1.	3.	4.	1.	1.	5.	4.
91	8.	3.	2.	2.	5.	3.	7.	3.	4.	5.
101	2.	1.	5.	5.	4.	4.	4.	2.	4.	3.
111	4.	4.	5.	3.	6.	3.	1.	5.	4.	2.
121	6.	5.	4.	5.	5.	5.	12.	6.	7.	10.
131	8.	3.	6.	6.	5.	5.	8.	7.	5.	6.
141	7.	9.	7.	11.	5.	11.	13.	8.	6.	11.
151	12.	9.	8.	12.	4.	13.	7.	11.	10.	12.
161	11.	14.	9.	11.	15.	14.	9.	12.	11.	8.
171	12.	8.	13.	18.	12.	22.	16.	20.	18.	21.
181	15.	15.	15.	25.	19.	24.	24.	17.	26.	26.
191	25.	24.	29.	29.	29.	25.	31.	32.	26.	31.
201	31.	31.	31.	34.	46.	36.	42.	44.	48.	47.
211	46.	52.	56.	58.	64.	63.	69.	62.	69.	72.
221	72.	90.	85.	111.	103.	107.	101.	130.	125.	141.
231	145.	182.	191.	204.	221.	207.	227.	277.	323.	367.
241	388.	433.	481.	559.	636.	711.	711.	905.	917.	970.
251	1176.	1329.	1579.	1666.	1784.	1843.	1623.	1178.	855.	455.
261	301.	216.	181.	120.	142.	153.	143.	110.	109.	82.
271	61.	60.	39.	37.	19.	13.	19.	26.	22.	21.
281	17.	20.	32.	28.	35.	34.	50.	35.	52.	55.
291	65.	67.	87.	74.	105.	106.	117.	133.	138.	167.
301	165.	183.	134.	121.	92.	52.	43.	41.	21.	23.
311	23.	17.	17.	5.	8.	6.	1.	0.	0.	0.
321	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
331	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.
341	0.	0.	1.	1.	1.	0.	1.	2.	1.	0.
351	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
361	1.	0.	0.	0.	1.	0.	0.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	0.	0.	0.	0.	1.	0.	0.	1.
431	1.	0.	1.	0.	0.	1.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
461	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	1.	0.	1.	0.	0.	0.	1.	1.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.10

DATA REDUCTION REPORT

Recount, This Data Used JTR 20 Jun 97

SAMPLE
S97T1294-SAM
File ID: 5a5302.CNF

Counted on: 6/19/97 @ 9: 2
Detector: AEA5
Geometry number: 1
Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	155.0	155.0	300.383	300.383	20.000	12.347	10.000	3.479
2	1144.3	1144.3	254.109	254.096	18.000	12.455	9.000	3.375
3	12.4	12.4	100.500	100.498	250.000	1.000	125.000	0.100

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.102	5.479	5.459	0.020	0.06	7.41	3.3	36.3	0.163E-04
	Pu238		5.487	5.459	0.028				47.3	0.213E-04
2	Pu239	0.766	5.147	5.247	-.100	0.06	55.89	1.2	257.1	0.116E-03
	Am243		5.270	5.247	0.023				259.7	0.117E-03
3		0.013		4.540		0.00	0.94	9.2	4.3	0.194E-05
Totals:		0.881	<--valid peaks only-->				64.24			

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0046)*Channel
Energy range (MeV): 4.078 TO 6.433
Efficiency = 0.2174 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	35008.0	100.000
Smoothed	35008.0	100.000
Composite fit	30834.5	88.079
Residuals	4173.5	11.921

Analyzed by: _____
MB

Spectrum 5a5302.CNF

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1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    8392.7

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Raw Data Dump for AEA Spectrum: 5a5302.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	2.	1.	3.	3.	5.	4.
21	4.	7.	3.	5.	7.	5.	4.	6.	4.	6.
31	6.	3.	5.	3.	5.	6.	7.	8.	5.	6.
41	2.	10.	6.	11.	3.	10.	5.	6.	4.	7.
51	2.	6.	3.	5.	3.	7.	10.	6.	9.	4.
61	4.	6.	8.	9.	5.	7.	12.	9.	5.	5.
71	10.	3.	8.	14.	13.	2.	7.	9.	6.	8.
81	14.	10.	10.	11.	14.	12.	5.	9.	7.	9.
91	11.	9.	12.	8.	9.	10.	7.	12.	8.	13.
101	13.	13.	6.	11.	5.	9.	16.	10.	17.	11.
111	6.	17.	13.	12.	18.	12.	10.	17.	21.	14.
121	14.	17.	18.	20.	15.	17.	19.	21.	19.	13.
131	11.	21.	11.	20.	25.	26.	21.	20.	20.	23.
141	19.	24.	23.	24.	20.	21.	16.	27.	25.	22.
151	25.	25.	25.	27.	32.	22.	27.	26.	24.	22.
161	32.	32.	35.	26.	42.	34.	39.	44.	39.	29.
171	44.	38.	32.	34.	42.	36.	51.	41.	36.	52.
181	60.	43.	50.	54.	59.	55.	60.	67.	72.	63.
191	59.	61.	52.	71.	67.	76.	59.	54.	68.	82.
201	73.	98.	86.	87.	100.	96.	89.	91.	85.	120.
211	110.	127.	128.	146.	133.	150.	139.	137.	121.	143.
221	148.	181.	197.	170.	182.	193.	198.	226.	238.	235.
231	229.	273.	296.	302.	319.	357.	343.	374.	409.	444.
241	465.	533.	549.	590.	689.	708.	796.	905.	883.	1032.
251	1062.	1153.	1221.	1269.	1188.	1127.	1002.	956.	805.	678.
261	529.	479.	335.	276.	229.	170.	158.	132.	129.	111.
271	98.	69.	89.	57.	49.	48.	35.	48.	36.	40.
281	39.	48.	28.	55.	52.	61.	45.	61.	68.	72.
291	99.	81.	90.	110.	128.	139.	151.	138.	150.	183.
301	162.	140.	146.	127.	104.	87.	69.	67.	59.	45.
311	32.	28.	21.	20.	11.	15.	14.	3.	5.	2.
321	0.	2.	1.	1.	0.	0.	0.	1.	0.	0.
331	0.	0.	0.	0.	0.	1.	0.	5.	0.	1.
341	0.	3.	1.	0.	4.	3.	0.	0.	2.	0.
351	1.	1.	1.	0.	1.	2.	2.	3.	5.	1.
361	1.	1.	1.	0.	1.	0.	2.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	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.	1.	0.	0.	0.
421	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	1.	0.	2.	3.	0.	3.	0.
441	1.	0.	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.	1.	0.	0.	0.
471	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1294-DUP
File ID: 6a6117.CNF

Recount: this data used. JTR 20 June 97

Counted on: 6/19/97 @ 9: 2
Detector: AEA6
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	134.9	134.9	301.404	301.404	20.000	13.345	10.000	3.536
2	1114.1	1114.1	255.613	255.597	16.000	11.363	8.000	3.104
3	24.7	24.7	150.064	149.975	150.000	1.000	75.000	0.100
4	22.5	22.5	146.974	145.000	154.000	1.000	77.000	0.100
5?	0.0	0.1	137.623	137.623	0.000	0.100	0.000	0.100
6?	0.0	0.1	114.412	114.412	0.000	0.100	0.000	0.100
7?	1.9	1.9	95.292	93.471	10.000	1.258	5.000	0.072

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Am241	0.098	5.479	5.476	0.0030	0.06	6.78	3.4	32.5	0.147E-04
	Pu238		5.487	5.476	0.011				42.5	0.191E-04
2	Am243	0.764	5.270	5.261	0.0090	0.05	52.98	1.2	241.5	0.109E-03
3	Np237	0.028	4.769	4.764	0.0050	0.00	1.96	6.4	10.1	0.457E-05
4		0.026		4.741	0.00		1.78	9.7	8.0	0.362E-05
5		????		4.706			0.00	*****		
6		????		4.597			0.00	*****		
7		????		4.499			0.20	46.5		
Totals:		0.915	<--valid peaks only-->				63.49			

DETECTOR CALIBRATION
Energy(MEV) = 4.059 + (0.0047)*Channel
Energy range (MeV): 4.059 TO 6.466
Efficiency = 0.2216 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	33291.0	100.000
Smoothed	33292.9	100.006
Composite fit	30573.7	91.838
Residuals	2717.3	8.162

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                    Spectrum 6a6117.CNF
1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:    7785.9

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Raw Data Dump for AEA Spectrum: 6a6117.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	6.	8.	8.	4.	4.	3.
21	7.	0.	5.	9.	2.	7.	3.	1.	8.	8.
31	6.	5.	2.	4.	5.	4.	6.	4.	9.	4.
41	5.	2.	8.	5.	4.	2.	6.	4.	4.	8.
51	7.	7.	4.	2.	10.	4.	8.	5.	7.	9.
61	8.	8.	7.	8.	6.	8.	11.	13.	3.	8.
71	5.	9.	3.	8.	11.	9.	11.	10.	5.	11.
81	11.	9.	12.	7.	11.	6.	6.	5.	17.	7.
91	4.	15.	17.	11.	13.	12.	16.	8.	11.	12.
101	10.	4.	16.	7.	12.	10.	12.	12.	13.	7.
111	16.	12.	19.	12.	15.	16.	12.	13.	13.	4.
121	11.	13.	15.	13.	10.	19.	11.	14.	12.	13.
131	19.	20.	21.	16.	18.	22.	25.	22.	23.	18.
141	17.	25.	16.	20.	26.	21.	24.	21.	19.	28.
151	23.	22.	18.	23.	19.	25.	23.	30.	24.	28.
161	24.	25.	26.	29.	31.	21.	36.	28.	28.	43.
171	44.	38.	36.	29.	34.	36.	33.	39.	34.	38.
181	50.	53.	56.	56.	41.	48.	37.	54.	56.	51.
191	62.	69.	62.	61.	53.	69.	45.	80.	63.	80.
201	79.	68.	79.	83.	95.	72.	82.	104.	95.	96.
211	102.	88.	112.	121.	108.	104.	115.	142.	128.	131.
221	161.	130.	159.	160.	172.	175.	188.	175.	212.	205.
231	219.	222.	253.	246.	270.	346.	300.	337.	380.	404.
241	422.	445.	485.	506.	544.	615.	682.	713.	811.	871.
251	986.	1007.	1156.	1150.	1181.	1209.	1153.	1037.	954.	882.
261	693.	558.	414.	360.	257.	218.	151.	121.	109.	98.
271	94.	90.	72.	76.	63.	53.	44.	26.	32.	39.
281	34.	37.	38.	45.	41.	38.	54.	53.	59.	63.
291	77.	79.	68.	106.	99.	98.	110.	125.	131.	131.
301	160.	139.	119.	132.	108.	123.	93.	72.	44.	45.
311	47.	30.	25.	21.	13.	12.	15.	9.	5.	2.
321	2.	1.	2.	1.	0.	0.	0.	0.	0.	0.
331	0.	1.	0.	0.	2.	0.	1.	1.	0.	0.
341	0.	1.	0.	0.	0.	0.	0.	2.	0.	1.
351	0.	0.	3.	2.	2.	1.	0.	0.	3.	0.
361	3.	2.	0.	1.	0.	3.	0.	0.	1.	1.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	1.	0.	0.	0.	0.	0.	1.	1.	0.
441	0.	0.	2.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
481	0.	0.	1.	1.	0.	1.	0.	0.	0.	0.
491	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

LABCORE Completed Worklist Report for Worklist# 18584

Analyst: knt **Instrument:** AB18 **Book#** 75B56

Method: LA-953-104 Rev/Mod B-4

Worklist Comment: Rerun from WL#18519, use 1 ml for all samples. jfr 10Jun97

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@PU23901 PU23901	LIQUID	1.09E-04	1.10E-4	100.917	% Recovery
1	STD			0	@PU23901 PU23901E	LIQUID	1.00	1.54E+00	1.540	% Ct Error
1	STD			0	@PU23901 PU23901T	LIQUID	100	1.00E+02	100.000	% Recovery
2	BLNK			0	@PU23901 PU23901	LIQUID	1	<3.21E-6		uCi/mL
2	BLNK			0	@PU23901 PU23901T	LIQUID	100	1.07E+02	107.000	% Recovery
2	BLNK			0	@PU23901 PU23901E	LIQUID	1.00	1.00E+02	100.000	uCi/mL
3	SAMPLE	S97T001292		0	@PU23901 PU23901	LIQUID	N/A	4.26E-05	4.56e-006	uCi/mL
3	SAMPLE	S97T001292		0	@PU23901 PU23901T	LIQUID	N/A	1.10E+02		% Recovery
3	SAMPLE	S97T001292		0	@PU23901 PU23901E	LIQUID	N/A	2.12E+00		% Ct. Error
4	DUP	S97T001292		0	@PU23901 PU23901	LIQUID	4.26E-5	3.87E-5	9.594	RPD
4	DUP	S97T001292		0	@PU23901 PU23901T	LIQUID	100	1.03E+02	103.000	% Recovery
4	DUP	S97T001292		0	@PU23901 PU23901E	LIQUID	1.00	2.07E+00	2.070	% Ct Error
5	SAMPLE	S97T001293		0	@PU23901 PU23901	LIQUID	N/A	4.03E-05	4.44e-006	uCi/mL
5	SAMPLE	S97T001293		0	@PU23901 PU23901T	LIQUID	N/A	1.02E+02		% Recovery
5	SAMPLE	S97T001293		0	@PU23901 PU23901E	LIQUID	N/A	2.18E+00		% Ct. Error
6	DUP	S97T001293		0	@PU23901 PU23901	LIQUID	4.03E-5	3.92E-5	2.767	RPD
6	DUP	S97T001293		0	@PU23901 PU23901T	LIQUID	100	1.05E+02	105.000	% Recovery
6	DUP	S97T001293		0	@PU23901 PU23901E	LIQUID	1.00	2.10E+00	2.100	% Ct Error
7	SAMPLE	S97T001294		0	@PU23901 PU23901	LIQUID	N/A	5.69E-05	5.15e-006	uCi/mL
7	SAMPLE	S97T001294		0	@PU23901 PU23901T	LIQUID	N/A	9.69E+01		% Recovery
7	SAMPLE	S97T001294		0	@PU23901 PU23901E	LIQUID	N/A	1.79E+00		% Ct. Error
8	DUP	S97T001294		0	@PU23901 PU23901	LIQUID	5.69E-5	4.98E-5	13.308	RPD
8	DUP	S97T001294		0	@PU23901 PU23901T	LIQUID	100	1.02E+02	102.000	% Recovery
8	DUP	S97T001294		0	@PU23901 PU23901E	LIQUID	1.00	2.14E+00	2.140	% Ct Error

Final page for worklist# 18584

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

John Relyea 19 June 97
Reviewer Signature **Date**
Validated

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

LABCORE Data Entry Template for Worklist# 18584

Analyst: KNT **Instrument:** PU01 **Book#** 75B56

Method: LA-953-104 Rev/Mod B-0

Worklist Comment: Rerun from WL#18519, use 1 ml for all samples. jfr 10Jun97

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@PU23901	LIQUID		
2	BLNK				@PU23901	LIQUID		
3	SAMPLE	S97T001292	0		@PU23901	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: PU23901 , PU23901E, PU23901T						
4	DUP	S97T001292	0		@PU23901	LIQUID		
5	SAMPLE	S97T001293	0		@PU23901	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: PU23901 , PU23901E, PU23901T						
6	DUP	S97T001293	0		@PU23901	LIQUID		
7	SAMPLE	S97T001294	0		@PU23901	LIQUID	97000388	TX-244 GRAB1
		Analytes Requested: PU23901 , PU23901E, PU23901T						
8	DUP	S97T001294	0		@PU23901	LIQUID		

Final page for worklist # 18584

Kim Thomas 6-17-97
Analyst Signature **Date**

Sue E. Hogan 6-18-97
Analyst Signature **Date**
C.J. Opinen 6-18-97

Rerun: WL18519; Blank was Hot, 3 times detection Limit. JFR 10 June 97

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(A-0)) LIQUID

Type	DATE COUNTED		JUN-17-97	PU 236 AEA FRAC	(C236)	0.456
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)	0.492
18584	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		3990
Test Code	DIGEST DILUTION FACTOR	DDF	1.000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm	(Bkg)	0.130
Matrix	DETECTOR NUMBER		18	PU 236 cpm		64.840
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		1.560
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm		70.000
97002646	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2254.692	Pu 239/240 µCi/L		1.0958E-01
0	PU-238 TRACER VALUE (dpm/mL		0.000			
Sample Prep	STANDARD BOOK NO		75B56			
N/A	STANDARD VALUE in µCi/mL		1.090E-04			

Sample #	
WL18584	
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
SEH	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
KNT	
Date Complete	
06/18/97	
Analysis Date	
06/17/97	
Analysis Time	
04:35 AM	
Sample Point	
TX-244	

Pu 239/240 µCi/L		1.10E-04	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	1.5%	Pu 239/240 6.68E-06
Pu 236 Tracer Recovery	=	100.0%	

Analyst:	KNT	Date:	18-Jun-97	
Signature of Chemist:	JFR	Date:	19 June 97	

STANDARD.WB1 REV 1.0 943128ML

WORKBOOK PAGE: BLANK2

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(A-0)) LIQ

Type	DATE COUNTED		JUN-17-97	PU 236 AEA FRAC	(C236)	0.950
BLNK	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
18584	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2058
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cp	(Bkg)	0.130
Matrix	DETECTOR NUMBER		18	PU 236 cpm		64.630
LIQUID	EFFICIENCY FACTOR	EFF	0.2686	PU 238 cpm		0.000
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm		0.000
97002646	TRACER PREPARATION VALUE (dpm/mL)		2600.00	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2254.69	Pu 239/240 µCi/L =	<	3.207E-03
0	PU-238 TRACER VALUE	(dpm/m	0.00			

Sample Prep
N/A
Sample #
WL18584
Instrument Code
WB27809
Prepared By
SEH
Chemist
JFR
Analyst
KNT
Date Complete
06/18/97
Analysis Date
06/17/97
Analysis Time
04:35 AM
Sample Point
TX-244

Decay Time = Date Counted - Tracer Preparation Date

Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]

Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg)*C236*100/(Pu-236 Decay Corr'd Value * SPKV*EFF)

Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)

Pu 238 µCi/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/µCi)(D g/L)(SS)]

Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

Pu 239/240 µCi/mL		< 3.21E-06		DETECTION LEVELS in µCi/mL
Relative Counting Error	=	100.0%		
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240 3.21E-06
Pu 238 µCimL		< 3.21E-06		
Relative Counting Error	=	100.0%		Pu 238 3.21E-06
Pu 236 Tracer Recovery	=	107.4%		

Analyst:	KNT	Date:	18-Jun-97
Signature of Chemist: John Relyea	JFR	Date:	19 June 97

BLANK.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM3

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(A-0)) LIQUID / S

Type	DATE COUNTED		JUN-17-97	PU 236 AEA FRAC	(C236)	SAMPLE	
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.668	
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.014	
18584	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		0.280	
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		2984	
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm	(Bkg)	30	
Matrix	DETECTOR NUMBER		18	PU 236 cpm		0.130	
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		60.290	
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm		1.250	
97002646	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME		25.290	
Rerun	PU-236 DECAY CORR'D VALUE (dpm/mL)		2254.692	Pu 239/240 µCi/L		480	
0	PU-238 TRACER VALUE (dpm/mL)		0.000			4.2571E-02	

Sample Prep	
N/A	
Sample #/s	Decay Time = Date Counted - Tracer Preparation Date
S97T001292	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27809	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	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	
KNT	
Date Complete	

06/18/97	Pu 239/240 µCi/mL		4.26E-05	DETECTION LEVELS in µCi/mL
Analysis Date	Relative Counting Error	=	2.1%	
06/17/97				Pu 239/240
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.			4.56E-06
04:35 AM	Pu 238 µCimL		< 4.56E-06	Pu 238
Sample Point	Relative Counting Error	=	8.1%	4.56E-06
TX-244	Pu 236 Tracer Recovery	=	109.6%	

Analyst:		KNT	Date:	18-Jun-97
Signature of Chemist:	John Rabyen	JFR	Date:	19 June 97

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP4

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(A-0)) LIQUID / SOLI

							DUP
Type	DATE COUNTED		JUN-17-97	PU 236 AEA FRAC		(C236)	0.677
DUP	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC		(C238)	0.021
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.258
18584	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2757
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm		(Bkg)	0.130
Matrix	DETECTOR NUMBER		18	PU 236 cpm			67.730
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			2.080
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm			25.780
97002646	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2254.692	Pu 239/240 µCi/L			3.8705E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				

Sample Prep
N/A

Sample #
S97T001292

Instrument Code
WB27809

Prepared By
SEH

Chemist
JFR

Analyst
KNT

Date Complete
06/18/97

Analysis Date
06/17/97

Analysis Time
04:35 AM

Sample Point
TX-244

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
Pu 239/240 µCi/mL		3.87E-05		
Relative Counting Error	=	2.1%		
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238 µCimL		< 4.50E-06		4.50E-06
Relative Counting Error	=	6.3%		Pu 238
Pu 236 Tracer Recovery	=	102.6%		4.50E-06

Analyst:		KNT	Date:	18-Jun-97
Signature of Chemist:	John Relyea	JFR	Date:	19 June 97

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM5

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(A-0)) LIQUID / SOLI

Type	DATE COUNTED		JUN-17-97	PU 236 AEA FRAC	(C236)		SAMPLE
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)		0.686
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)		0.020
18584	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			0.272
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			2699
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm	(Bkg)		30
Matrix	DETECTOR NUMBER		18	PU 236 cpm			0.130
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			59.210
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm			1.690
97002646	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME			23.510
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2254.692	Pu 239/240 µCi/L			480
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				4.0270E-02

Sample Prep
N/A
Sample #
S97T001293
Instrument Code
WB27809
Prepared By
SEH
Chemist
JFR
Analyst
KNT
Date Complete
06/18/97
Analysis Date
06/17/97
Analysis Time
04:35 AM
Sample Point
TX-244

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		4.03E-05		DETECTION LEVELS in µCi/mL
Relative Counting Error	=	2.2%		
NOTE: Pu 238 Result is a LESS THAN Value.				Pu 239/240
Pu 238 µCimL		< 4.44E-06		4.44E-06
Relative Counting Error	=	7.0%		Pu 238
Pu 236 Tracer Recovery	=	101.8%		4.44E-06

Analyst:	KNT	Date:	18-Jun-97	
Signature of Chemist: John Relyea	JFR	Date:	19 June 97	

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP6

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(A-0)) LIQUID / SOLI

Type						DUP
DUP	DATE COUNTED		JUN-17-97	PU 236 AEA FRAC	(C236)	0.682
	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.017
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	0.263
18584	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		2790
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm	(Bkg)	0.130
Matrix	DETECTOR NUMBER		18	PU 236 cpm		65.220
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		1.650
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm		25.120
97002646	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME		480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2254.692	Pu 239/240 µCi/L		3.9166E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.000			

Sample Prep
N/A

Sample # — Decay Time = Date Counted - Tracer Preparation Date
S97T001293 — Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95}]

Instrument Code — Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27809 — Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]

Prepared By — Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH — 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
KNT

Date Complete
06/18/97

Analysis Date
06/17/97

Analysis Time
04:35 AM

Sample Point
TX-244

Pu 239/240 µCi/mL		3.92E-05	DETECTION LEVELS in µCi/mL
Relative Counting Error	=	2.1%	
NOTE: Pu 238 Result is a LESS THAN Value.			Pu 239/240
Pu 238 µCimL		< 4.47E-06	4.47E-06
Relative Counting Error	=	7.1%	Pu 238
Pu 236 Tracer Recovery	=	104.6%	4.47E-06

Analyst:		KNT	Date:	18-Jun-97
Signature of Chemist:	John Relyea	JFR	Date:	19 June 97

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: SAM7

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(A-0)) LIQUID / SOLI

Type	DATE COUNTED		JUN-17-97	PU 236 AEA FRAC	(C236)	SAMPLE	
SAMPLE	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC	(C238)	0.610	
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC	(C239)	~~0.037~~	JFR
18584	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS		0.342	
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)		2891	
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm	(Bkg)	30	
Matrix	DETECTOR NUMBER		18	PU 236 cpm		0.130	
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm		69.740	
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm		~~4.190~~	JFR
97002646	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME		39.130	
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2254.692	Pu 239/240 µCi/L		480	
0	PU-238 TRACER VALUE	(dpm/mL)	0.000			5.6942E-02	

Sample Prep	
N/A	
Sample #'s	Decay Time = Date Counted - Tracer Preparation Date
S97T001294	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value *[e to the power of {(-ln2 * Decay Time/1040.95)]
Instrument Code	Pu 236 Tracer Recovery = (Total AT Counts / TC -Bkg) *C236*100/(Pu-236 Decay Corr'd Value * SPKV * EFF)
WB27809	Pu 239/240 µCi/L = (C239)(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/µCi)]
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)
SEH	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	
KNT	
Date Complete	
06/18/97	
Analysis Date	
06/17/97	
Analysis Time	
04:35 AM	
Sample Point	
TX-244	

Pu 239/240 µCi/mL		5.69E-05		DETECTION LEVELS in µCi/mL
Relative Counting Error	=	1.8%		
				Pu 239/240
Pu 238 µCimL		~~6.16E-06~~ <SISEG		5.15E-06
Relative Counting Error	=	~~4.5%~~ 100%		Pu 238
Pu 236 Tracer Recovery	=	96.9%		5.15E-06

Analyst:	KNT	Date:	18-Jun-97
Signature of Chemist:	JFR	Date:	

SAMPLE.WB1 REV 1.0 943128ML

WORKBOOK PAGE: DUP8

Pu 238 and 239/240 : LA-943-128 (B-0) or LA-953-104(A-0)) LIQUID / SOLI

							DUP
Type	DATE COUNTED		JUN-17-97	PU 236 AEA FRAC		(C236)	0.646
DUP	SAMPLE VOLUME in mL	SS	1.000	PU 238 AEA FRAC		(C238)	0.017
Work List	SAMPLE DILUTION FACTOR	DF	1.000	PU 239 AEA FRAC		(C239)	0.317
18584	TRACER VOLUME in mL	SPKV	0.100	TOTAL AT COUNTS			2867
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)			30
@PU23901	TRACER BOOK NO		128B43	BACKGROUND in cpm		(Bkg)	0.130
Matrix	DETECTOR NUMBER		18	PU 236 cpm			52.860
LIQUID	EFFICIENCY FACTOR	EFF	0.269	PU 238 cpm			1.430
Batch Number	TRACER PREPARATION DATE		11/15/96	PU 239 cpm			25.960
97002646	TRACER PREPARATION VALUE (dpm/mL)		2600.000	AEA COUNT TIME			480
Rerun	PU-236 DECAY CORR'D VALUE	(dpm/mL)	2254.692	Pu 239/240 µCi/L			4.9838E-02
0	PU-238 TRACER VALUE	(dpm/mL)	0.000				

Sample Prep
N/A

Sample #
S97T001294

Instrument Code
WB27809

Prepared By
SEH

Chemist
JFR

Analyst
KNT

Date Complete
06/18/97

Analysis Date
06/17/97

Analysis Time
04:35 AM

Sample Point
TX-244

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
Pu 239/240 µCi/mL		4.98E-05		Pu 239/240
Relative Counting Error	=	2.1%		4.72E-06
NOTE: Pu 238 Result is a LESS THAN Value.				
Pu 238 µCimL		< 4.72E-06		Pu 238
Relative Counting Error	=	7.6%		4.72E-06
Pu 236 Tracer Recovery	=	101.8%		

Analyst:		KNT	Date:	18-Jun-97
Signature of Chemist:	John Robyen	JFR	Date:	19 June 97

SAMPLE.WB1 REV 1.0 943128ML

I:\943128\OUT\18584.WB1 06/18/97 09:26:14

222-S Analytical Laboraratory
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
WL18584-STD
File ID: 5a5300.CNF

Counted on: 6/17/97 @21:33
Detector: AEA5
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	2010.0	2010.0	361.558	361.558	12.000	5.045	6.000	1.999
2?	33.6	33.6	302.690	302.368	38.000	15.482	19.000	19.552
3	56.0	56.0	287.353	287.052	10.000	3.294	5.000	1.441
4?	14.5	14.5	270.391	269.492	12.000	2.857	6.000	0.622
5	2521.4	2521.4	228.798	228.797	12.000	4.806	6.000	2.536

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.456	5.755	5.737	0.0180	2.02	64.84	1.1	300.0	0.135E-03
2		????		5.465			1.32	10.2		
3	Th228	0.011	5.400	5.394	0.0060	2.02	1.56	8.1	9.9	0.447E-05
4		????		5.313			0.63	15.0		
5	Pu239	0.492	5.147	5.126	0.0210	2.02	70.00	1.1	317.5	0.143E-03
	Pu240		5.144	5.126	0.018				317.5	0.143E-03
Totals:		0.959	<--valid peaks only-->				136.39			

DETECTOR CALIBRATION
Energy(MEV) = 4.074 + (0.0046)*Channel
Energy range (MeV): 4.074 TO 6.429
Efficiency = 0.2205 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	68256.0	100.000
Smoothed	68256.0	100.000
Composite fit	66410.5	97.296
Residuals	1845.5	2.704

Analyzed by: _____
VR

Spectrum 5a5300.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 17497.3

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Raw Data Dump for AEA Spectrum: 5a5300.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	1.	1.	1.	2.
21	0.	2.	0.	0.	0.	1.	1.	1.	0.	0.
31	0.	1.	1.	0.	0.	2.	0.	0.	0.	1.
41	0.	0.	0.	3.	1.	1.	1.	0.	1.	1.
51	0.	0.	2.	1.	1.	0.	2.	1.	2.	0.
61	2.	0.	3.	2.	1.	1.	3.	2.	1.	0.
71	0.	2.	1.	1.	2.	0.	1.	0.	2.	4.
81	2.	0.	2.	1.	2.	1.	2.	3.	2.	2.
91	0.	4.	3.	2.	3.	2.	2.	0.	3.	1.
101	0.	0.	2.	2.	3.	1.	1.	1.	4.	0.
111	1.	0.	2.	0.	3.	4.	2.	1.	2.	3.
121	3.	0.	3.	1.	1.	2.	3.	0.	4.	2.
131	3.	5.	5.	3.	2.	3.	4.	5.	5.	4.
141	9.	3.	1.	4.	5.	3.	5.	6.	8.	6.
151	4.	5.	5.	9.	4.	9.	3.	10.	7.	9.
161	10.	13.	9.	12.	14.	20.	9.	17.	16.	12.
171	13.	17.	15.	19.	26.	13.	20.	25.	15.	33.
181	26.	34.	32.	20.	28.	33.	43.	41.	44.	35.
191	41.	51.	63.	55.	61.	72.	86.	84.	81.	82.
201	94.	99.	112.	123.	167.	130.	155.	163.	231.	232.
211	247.	281.	341.	400.	447.	506.	583.	704.	768.	891.
221	978.	1170.	1399.	1615.	1945.	2228.	2617.	2828.	2958.	2697.
231	2302.	1774.	1207.	715.	391.	151.	76.	30.	16.	8.
241	10.	4.	12.	3.	9.	5.	5.	4.	4.	5.
251	3.	8.	9.	9.	7.	14.	6.	6.	7.	11.
261	6.	8.	11.	11.	14.	16.	17.	21.	26.	25.
271	26.	22.	18.	16.	16.	16.	16.	32.	19.	24.
281	34.	27.	40.	49.	55.	69.	65.	79.	66.	32.
291	46.	26.	19.	19.	22.	15.	20.	20.	26.	28.
301	51.	22.	40.	39.	33.	22.	21.	21.	24.	23.
311	21.	20.	22.	21.	22.	41.	27.	28.	23.	32.
321	33.	41.	41.	45.	53.	42.	50.	56.	54.	70.
331	71.	91.	77.	100.	90.	108.	137.	139.	154.	174.
341	202.	202.	233.	259.	356.	345.	425.	532.	596.	783.
351	902.	1007.	1055.	1196.	1241.	1283.	1483.	1630.	1774.	2091.
361	2292.	2290.	2098.	1796.	1355.	884.	508.	244.	126.	47.
371	23.	9.	4.	5.	1.	2.	6.	0.	0.	1.
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.	0.	0.	0.
411	0.	0.	1.	1.	1.	0.	0.	0.	1.	1.
421	1.	0.	0.	0.	1.	1.	1.	0.	2.	0.
431	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
451	1.	0.	0.	1.	0.	1.	1.	1.	1.	0.
461	0.	2.	1.	2.	0.	6.	3.	1.	4.	4.
471	4.	7.	8.	9.	6.	7.	7.	4.	4.	4.
481	3.	2.	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 Laboraratory
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
WL18584-BLK-PU
File ID: 6a6115.CNF

Counted on: 6/17/97 @21:34
Detector: AEA6
Geometry number: 1
Count time: 28804. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1695.3	1695.3	362.900	362.900	16.000	8.528	8.000	3.153
2	49.5	49.5	288.647	288.479	18.000	15.035	9.000	4.601

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	Cm243	0.950	5.779	5.765	0.0140	4.04	64.63	1.1	397.2	0.179E-03
	Pu236		5.755	5.765	-.010				295.9	0.133E-03
2	Th228	0.035	5.400	5.415	-.0150	7.07	2.40	6.0	15.2	0.684E-05
	Am241		5.479	5.415	0.064				11.5	0.517E-05
Totals:		0.985	<--valid peaks only-->				67.04			

DETECTOR CALIBRATION
Energy(MEV) = 4.059 + (0.0047)*Channel
Energy range (MeV): 4.059 TO 6.465
Efficiency = 0.2229 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	32675.0	100.000
Smoothed	32692.7	100.054
Composite fit	32183.4	98.495
Residuals	491.6	1.505

Analyzed by: _____
VR

Spectrum 6a6115.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 12020.0

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2
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1
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Raw Data Dump for AEA Spectrum: 6a6115.CNF HNF-SD-WM-DP-251, REV. 0

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	2.	0.	0.
21	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
41	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
51	2.	1.	0.	0.	0.	0.	0.	1.	1.	0.
61	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.
71	0.	0.	0.	1.	0.	0.	0.	0.	1.	1.
81	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
91	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.
101	2.	0.	0.	0.	1.	0.	1.	0.	0.	1.
111	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
121	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
131	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.
141	0.	0.	1.	0.	1.	1.	1.	1.	1.	0.
151	0.	0.	0.	0.	1.	0.	0.	0.	0.	2.
161	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.
171	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.
181	0.	1.	0.	1.	2.	1.	0.	0.	0.	0.
191	0.	3.	1.	1.	1.	2.	0.	1.	0.	2.
201	0.	0.	1.	2.	2.	3.	0.	1.	0.	0.
211	3.	0.	1.	3.	1.	0.	0.	1.	0.	1.
221	2.	2.	2.	2.	4.	2.	3.	3.	3.	3.
231	5.	3.	6.	6.	2.	2.	2.	3.	4.	4.
241	2.	2.	4.	6.	4.	5.	3.	4.	3.	3.
251	10.	7.	5.	5.	9.	8.	14.	4.	7.	6.
261	9.	9.	14.	7.	7.	11.	17.	11.	16.	14.
271	21.	12.	18.	18.	20.	16.	17.	11.	27.	15.
281	27.	40.	31.	45.	43.	58.	41.	65.	47.	43.
291	59.	33.	36.	26.	21.	23.	19.	18.	15.	11.
301	22.	12.	28.	18.	28.	21.	23.	30.	13.	13.
311	25.	17.	21.	21.	24.	34.	30.	23.	38.	36.
321	19.	31.	22.	48.	53.	53.	45.	50.	56.	62.
331	82.	86.	82.	117.	103.	106.	124.	132.	147.	147.
341	183.	199.	219.	241.	299.	320.	419.	464.	499.	597.
351	671.	789.	819.	942.	1068.	1171.	1265.	1402.	1548.	1634.
361	1773.	1709.	1873.	1758.	1633.	1456.	1229.	969.	704.	538.
371	317.	208.	127.	72.	24.	21.	10.	5.	1.	1.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	1.	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.	2.
421	1.	1.	1.	0.	1.	0.	0.	0.	1.	1.
431	1.	1.	2.	0.	0.	0.	2.	0.	0.	0.
441	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	3.	1.	0.	1.	2.	2.	2.
471	2.	3.	2.	3.	7.	5.	7.	3.	5.	6.
481	10.	11.	7.	4.	5.	5.	0.	1.	0.	0.
491	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1292-SAM-PU
File ID: 7a7848.CNF

Counted on: 6/17/97 @21:35
Detector: AEA7
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1577.7	1577.7	362.638	362.638	16.000	9.314	8.000	3.626
2	36.8	36.8	306.636	306.272	34.000	11.661	17.000	17.517
3	46.5	46.5	290.233	289.560	16.000	8.126	8.000	2.288
4?	24.6	24.6	257.784	256.775	8.000	0.005	4.000	7.810
5	709.0	709.0	231.669	231.667	16.000	8.813	8.000	3.916

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	Cm243	0.668	5.779	5.761	0.0180	04	60.29	1.2	426.6	0.192E-03
	Pu236		5.755	5.761	-.006				317.8	0.143E-03
2	Am241	0.014	5.479	5.496	-.0170	05	1.25	10.4	6.9	0.310E-05
	Pu238		5.487	5.496	-.009				9.0	0.404E-05
3	Th228	0.022	5.400	5.418	-.0180	04	2.02	7.5	14.7	0.661E-05
4		????		5.264			0.01	256.		
5	Pu239	0.280	5.147	5.146	0.0010	04	25.29	1.8	130.6	0.588E-04
	Pu240		5.144	5.146	-.002				130.6	0.588E-04
		---					---			
Totals:		0.985	<--valid peaks only-->				88.84			

DETECTOR CALIBRATION
Energy(MEV) = 4.057 + (0.0047)*Channel
Energy range (MeV): 4.057 TO 6.463
Efficiency = 0.1936 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	43297.0	100.000
Smoothed	43298.9	100.004
Composite fit	42653.9	98.515
Residuals	643.1	1.485

Spectrum 7a7848.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 11236.8

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Raw Data Dump for AEA Spectrum: 7a7848.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	1.	1.	2.	0.
21	3.	0.	1.	1.	1.	1.	4.	1.	0.	1.
31	0.	2.	1.	1.	0.	0.	0.	0.	1.	0.
41	0.	0.	1.	1.	1.	0.	1.	1.	0.	0.
51	0.	0.	0.	0.	1.	1.	0.	1.	1.	0.
61	1.	1.	2.	0.	1.	0.	0.	1.	1.	0.
71	0.	0.	3.	1.	1.	0.	1.	0.	0.	0.
81	0.	0.	0.	0.	0.	2.	1.	2.	0.	1.
91	1.	1.	1.	0.	1.	0.	1.	0.	0.	1.
101	0.	2.	1.	2.	1.	1.	0.	1.	1.	1.
111	2.	0.	1.	1.	1.	0.	0.	5.	1.	1.
121	0.	0.	2.	0.	1.	2.	0.	1.	0.	2.
131	4.	2.	2.	3.	1.	4.	2.	1.	2.	3.
141	1.	1.	8.	3.	2.	1.	2.	3.	2.	5.
151	3.	2.	1.	3.	3.	0.	6.	2.	1.	4.
161	5.	4.	6.	6.	1.	3.	4.	5.	6.	3.
171	3.	3.	3.	7.	8.	6.	2.	11.	7.	7.
181	8.	11.	7.	7.	13.	9.	10.	17.	10.	15.
191	13.	21.	15.	19.	16.	31.	21.	24.	30.	28.
201	31.	29.	38.	37.	42.	36.	44.	54.	59.	48.
211	75.	74.	75.	107.	129.	128.	139.	143.	205.	224.
221	277.	325.	342.	410.	493.	523.	583.	620.	722.	731.
231	788.	772.	723.	684.	573.	498.	392.	296.	207.	146.
241	81.	55.	36.	17.	11.	7.	4.	10.	4.	7.
251	7.	5.	3.	6.	9.	13.	10.	11.	12.	11.
261	7.	6.	9.	11.	8.	19.	10.	8.	15.	11.
271	14.	18.	15.	20.	10.	24.	18.	19.	16.	19.
281	16.	24.	31.	42.	42.	37.	64.	40.	50.	51.
291	61.	35.	52.	36.	34.	42.	30.	30.	22.	42.
301	25.	29.	36.	26.	29.	41.	33.	41.	28.	25.
311	28.	24.	25.	20.	17.	18.	21.	31.	22.	24.
321	24.	27.	38.	39.	47.	40.	47.	45.	60.	60.
331	59.	63.	74.	80.	85.	105.	95.	115.	108.	108.
341	146.	163.	185.	245.	234.	303.	351.	387.	477.	551.
351	662.	785.	872.	915.	977.	1089.	1204.	1369.	1503.	1585.
361	1613.	1720.	1695.	1600.	1529.	1311.	1170.	867.	683.	468.
371	314.	229.	124.	75.	37.	13.	9.	1.	0.	0.
381	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
421	0.	1.	0.	0.	0.	1.	1.	0.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	1.	0.	0.	0.	0.	1.	2.	0.	0.	0.
461	0.	0.	0.	0.	0.	5.	4.	2.	3.	5.
471	8.	2.	5.	3.	5.	6.	4.	7.	3.	5.
481	4.	2.	3.	4.	0.	0.	2.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1292-DUP-PU
File ID: 9a9984.CNF

Counted on: 6/17/97 @21:36
Detector: AEA9
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	2212.0	2212.0	359.264	359.264	12.000	4.300	6.000	1.752
2	42.6	42.6	303.235	303.035	14.000	8.595	7.000	2.018
3	49.2	49.2	286.882	286.417	12.000	3.253	6.000	2.217
4?	16.8	16.8	267.966	267.267	12.000	3.591	6.000	2.635
5?	9.8	9.8	255.648	254.822	28.000	36.847	14.000	17.322
6	948.3	948.3	228.530	228.527	12.000	4.518	6.000	2.404

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.677	5.755	5.760	-.0050	02	67.73	1.1	327.1	0.147E-03
	Cm243		5.779	5.760	0.019				439.1	0.198E-03
2	Pu238	0.021	5.487	5.496	-.0090	04	2.08	7.0	13.6	0.615E-05
	Am241		5.479	5.496	-.017				10.5	0.471E-05
3	~~Th228~~	0.011	5.400	5.418	-.0180	02	1.10	12.0	7.3	0.329E-05
4	sd	????		5.328			0.37	22.4		
5		????		5.270			0.60	24.1		
6	Pu239	0.258	5.147	5.146	0.0010	02	25.78	1.8	122.0	0.550E-04
	Pu240		5.144	5.146	-.002				122.0	0.550E-04
Totals:		0.966	<--valid peaks only-->				96.68			

DETECTOR CALIBRATION
Energy(MEV) = 4.072 + (0.0047)*Channel
Energy range (MeV): 4.072 TO 6.478
Efficiency = 0.2113 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	48022.0	100.000
Smoothed	48023.7	100.004
Composite fit	46882.6	97.627
Residuals	1139.4	2.373

Spectrum 9a9984.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 14291.1

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Raw Data Dump for AEA Spectrum: 9a9984.CNF

1	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
11	1.	0.	0.	1.	0.	1.	1.	1.	1.	1.
21	1.	1.	2.	2.	0.	3.	0.	0.	2.	0.
31	1.	1.	2.	2.	1.	3.	1.	1.	1.	0.
41	2.	3.	5.	2.	4.	8.	3.	4.	8.	9.
51	7.	5.	10.	5.	4.	2.	3.	5.	2.	1.
61	1.	1.	3.	1.	2.	1.	2.	2.	0.	1.
71	0.	1.	1.	0.	1.	0.	1.	1.	1.	2.
81	0.	0.	1.	1.	1.	1.	1.	2.	1.	1.
91	0.	1.	1.	2.	0.	0.	0.	1.	0.	1.
101	3.	0.	1.	1.	1.	1.	1.	3.	0.	3.
111	2.	1.	1.	3.	1.	1.	0.	1.	1.	0.
121	3.	0.	3.	3.	3.	1.	4.	2.	1.	3.
131	1.	2.	2.	6.	4.	3.	3.	2.	1.	4.
141	2.	5.	6.	3.	4.	1.	3.	3.	1.	6.
151	0.	2.	5.	2.	0.	1.	7.	4.	4.	5.
161	0.	7.	5.	5.	3.	8.	7.	5.	8.	12.
171	10.	6.	10.	4.	10.	14.	12.	9.	4.	16.
181	8.	9.	16.	17.	16.	8.	17.	21.	15.	13.
191	13.	19.	30.	28.	21.	24.	30.	38.	33.	39.
201	39.	45.	53.	57.	63.	63.	64.	56.	71.	77.
211	100.	114.	121.	143.	179.	196.	252.	295.	307.	314.
221	382.	449.	500.	601.	724.	896.	1043.	1069.	1115.	993.
231	821.	583.	365.	188.	96.	50.	25.	6.	7.	6.
241	7.	4.	7.	5.	3.	3.	7.	5.	6.	15.
251	5.	9.	5.	14.	13.	13.	12.	12.	5.	5.
261	12.	10.	11.	15.	20.	16.	34.	25.	18.	19.
271	23.	18.	13.	13.	16.	22.	17.	23.	26.	29.
281	18.	49.	45.	65.	70.	82.	68.	63.	75.	44.
291	33.	26.	19.	27.	20.	36.	31.	33.	33.	32.
301	36.	54.	58.	48.	47.	34.	35.	20.	26.	26.
311	18.	24.	19.	21.	33.	28.	35.	27.	44.	37.
321	46.	51.	54.	60.	63.	58.	91.	85.	84.	86.
331	99.	106.	113.	128.	145.	169.	159.	164.	187.	215.
341	246.	296.	303.	433.	454.	599.	705.	797.	961.	1154.
351	1172.	1263.	1326.	1388.	1598.	1829.	2060.	2383.	2511.	2539.
361	2287.	1801.	1075.	596.	321.	124.	39.	14.	4.	0.
371	0.	1.	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.	1.	0.	1.	0.	0.
411	2.	1.	0.	0.	1.	0.	2.	0.	0.	1.
421	0.	0.	0.	2.	2.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
441	1.	0.	0.	0.	0.	1.	0.	1.	0.	1.
451	0.	0.	0.	2.	2.	0.	1.	3.	4.	3.
461	7.	7.	5.	6.	7.	6.	7.	5.	3.	6.
471	2.	5.	4.	1.	1.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1293-SAM-PU
File ID: 10a1089.CNF

Counted on: 6/17/97 @21:37
Detector: AEA10
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	2146.5	2146.5	361.781	361.781	10.000	3.385	5.000	1.513
2	32.4	32.4	304.141	304.021	8.000	4.156	4.000	0.762
3	48.1	48.1	287.959	287.702	8.000	2.194	4.000	1.930
4?	11.7	11.7	270.261	269.767	8.000	1.785	4.000	0.796
5	955.2	955.2	229.608	229.607	10.000	3.782	5.000	2.253

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff. FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.686	5.755	5.742	0.0130.02	59.21	1.2	297.6	0.134E-03
2	Pu238	0.020	5.487	5.476	0.0110.02	1.69	7.2	11.6	0.521E-05
	Am241		5.479	5.476	0.003			8.9	0.399E-05
3		????		5.401		0.86	14.2		
4		????		5.319		0.29	26.6		
5	Pu239	0.272	5.147	5.134	0.0130.02	23.51	1.8	115.8	0.522E-04
	Pu240		5.144	5.134	0.010			115.8	0.522E-04
Totals:		0.978	<--valid peaks only-->			84.42			

DETECTOR CALIBRATION
Energy(MEV) = 4.078 + (0.0046)*Channel
Energy range (MeV): 4.078 TO 6.433
Efficiency = 0.2030 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	41439.0	100.000
Smoothed	41439.0	100.000
Composite fit	41070.5	99.111
Residuals	368.5	0.889

Analyzed by: _____

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1 Legend:  Raw = .....  Modeled Peaks = 1,2,.., etc     Display Max.:   11503.5

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Raw Data Dump for AEA Spectrum: 10a1089.CNF

1	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
11	0.	1.	0.	0.	1.	1.	0.	0.	0.	1.
21	0.	1.	0.	0.	0.	1.	0.	1.	0.	0.
31	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.
41	0.	0.	1.	0.	0.	1.	1.	1.	2.	0.
51	1.	1.	1.	0.	0.	1.	2.	0.	4.	2.
61	3.	5.	2.	3.	7.	10.	6.	6.	8.	8.
71	7.	3.	2.	4.	2.	3.	0.	2.	0.	0.
81	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.
91	0.	0.	0.	0.	0.	1.	1.	0.	3.	3.
101	1.	0.	0.	0.	0.	0.	2.	1.	0.	2.
111	1.	1.	1.	0.	0.	0.	1.	2.	1.	3.
121	1.	1.	1.	0.	0.	1.	1.	2.	0.	1.
131	2.	1.	0.	2.	1.	2.	2.	1.	1.	0.
141	1.	0.	2.	3.	2.	1.	1.	1.	0.	1.
151	1.	2.	1.	1.	3.	1.	3.	1.	0.	0.
161	3.	2.	2.	2.	0.	1.	0.	3.	4.	0.
171	4.	0.	4.	8.	1.	4.	4.	3.	1.	3.
181	3.	8.	7.	6.	4.	7.	5.	7.	4.	5.
191	6.	5.	7.	8.	10.	10.	16.	5.	19.	24.
201	13.	22.	14.	28.	24.	33.	37.	34.	36.	51.
211	71.	67.	80.	103.	108.	165.	166.	178.	222.	267.
221	316.	320.	401.	482.	585.	723.	819.	982.	1128.	1152.
231	1012.	816.	541.	263.	119.	42.	15.	8.	3.	4.
241	3.	2.	1.	1.	3.	2.	5.	5.	1.	4.
251	5.	6.	8.	8.	8.	9.	7.	10.	6.	3.
261	6.	5.	10.	7.	14.	13.	15.	18.	16.	22.
271	23.	18.	10.	12.	8.	10.	15.	10.	13.	23.
281	15.	33.	34.	43.	56.	70.	55.	84.	59.	68.
291	36.	13.	14.	17.	17.	22.	20.	22.	29.	29.
301	34.	27.	39.	34.	41.	34.	30.	13.	5.	5.
311	9.	11.	8.	13.	13.	14.	12.	7.	13.	12.
321	17.	12.	22.	21.	26.	22.	27.	27.	15.	27.
331	33.	37.	46.	39.	52.	56.	84.	70.	75.	105.
341	119.	155.	169.	178.	234.	306.	339.	419.	598.	700.
351	831.	926.	1050.	1159.	1106.	1094.	1208.	1469.	1687.	2114.
361	2487.	2511.	2452.	1960.	1184.	521.	173.	46.	3.	0.
371	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.
411	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	1.	2.	1.	1.	0.	1.	0.	1.	1.	1.
431	0.	0.	0.	1.	0.	0.	0.	0.	1.	2.
441	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
451	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
461	1.	2.	1.	0.	1.	1.	0.	3.	2.	7.
471	6.	6.	9.	8.	3.	8.	5.	4.	7.	5.
481	3.	2.	0.	0.	1.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1293-DUP-PU
File ID: 11a1103.CNF

Counted on: 6/17/97 @21:37
Detector: AEA11
Geometry number: 1
Count time: 28801. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	2305.3	2305.3	362.927	362.927	12.000	3.890	6.000	1.759
2	39.1	39.1	305.449	305.302	14.000	8.185	7.000	2.430
3	46.3	46.3	288.965	288.641	10.000	3.140	5.000	2.070
4?	13.2	13.2	271.723	270.794	14.000	4.735	7.000	0.929
5	974.1	974.1	230.983	230.981	12.000	4.259	6.000	2.465

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	Cm244	0.682	5.795	5.776	0.019	0.02	65.22	1.1	318.0	0.143E-03
	Cm243		5.779	5.776	0.003				435.6	0.196E-03
2	Pu238	0.017	5.487	5.505	-.018	0.04	1.65	7.5	11.2	0.503E-05
	Am241		5.479	5.505	-.026				8.6	0.385E-05
3	~~Th228~~	~~0.011~~ N	5.400	5.427	-.027	0.01	1.04	11.4	7.1	0.320E-05
4		????		5.343			0.66	14.5		
5	Pu239	0.263	5.147	5.156	-.009	0.02	25.12	1.8	122.5	0.552E-04
	Pu240		5.144	5.156	-.012				122.5	0.552E-04
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Totals:		0.973	<--valid peaks only-->				93.02			

DETECTOR CALIBRATION
Energy(MEV) = 4.070 + (0.0047)*Channel
Energy range (MeV): 4.070 TO 6.476
Efficiency = 0.2051 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	45908.0	100.000
Smoothed	45907.8	100.000
Composite fit	44971.4	97.960
Residuals	936.6	2.040

Spectrum 11a1103.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 14430.9

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Raw Data Dump for AEA Spectrum: 11a1103.CNF

1	0.	0.	1.	0.	0.	0.	2.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	0.	1.	0.	1.
21	1.	3.	0.	3.	1.	0.	0.	2.	0.	0.
31	0.	1.	0.	0.	1.	0.	1.	1.	2.	2.
41	1.	1.	0.	1.	1.	0.	1.	0.	1.	2.
51	2.	1.	0.	1.	0.	1.	1.	3.	1.	1.
61	1.	3.	6.	3.	4.	3.	5.	8.	8.	7.
71	5.	3.	10.	2.	4.	5.	1.	0.	1.	3.
81	0.	2.	1.	2.	0.	0.	0.	1.	1.	1.
91	1.	2.	0.	2.	2.	0.	0.	0.	1.	1.
101	0.	0.	1.	0.	1.	0.	0.	0.	1.	2.
111	0.	2.	1.	2.	0.	0.	2.	1.	1.	2.
121	2.	1.	2.	1.	1.	2.	2.	4.	0.	2.
131	4.	2.	3.	1.	5.	1.	0.	2.	3.	1.
141	2.	0.	0.	1.	3.	3.	4.	0.	2.	1.
151	5.	5.	4.	2.	1.	2.	1.	0.	0.	3.
161	6.	2.	2.	3.	1.	4.	2.	3.	1.	3.
171	1.	4.	5.	2.	3.	4.	7.	6.	7.	2.
181	6.	6.	6.	8.	6.	5.	7.	11.	11.	12.
191	19.	14.	20.	7.	17.	14.	19.	22.	27.	21.
201	19.	26.	28.	39.	31.	41.	35.	43.	50.	50.
211	56.	69.	61.	93.	98.	122.	137.	164.	199.	248.
221	282.	292.	346.	401.	450.	571.	677.	873.	961.	1155.
231	1110.	1112.	941.	681.	409.	271.	100.	36.	18.	9.
241	3.	2.	3.	2.	5.	3.	10.	3.	1.	5.
251	4.	7.	8.	4.	9.	11.	8.	12.	12.	8.
261	5.	4.	4.	8.	12.	13.	12.	15.	18.	16.
271	25.	13.	26.	8.	19.	20.	13.	15.	13.	15.
281	27.	24.	23.	24.	48.	55.	55.	64.	70.	63.
291	53.	39.	31.	22.	16.	21.	19.	24.	20.	27.
301	29.	27.	38.	49.	47.	45.	40.	42.	27.	18.
311	13.	13.	9.	15.	12.	25.	21.	24.	16.	20.
321	19.	26.	30.	25.	41.	30.	29.	52.	40.	39.
331	58.	51.	60.	62.	61.	72.	80.	96.	100.	113.
341	141.	152.	169.	191.	223.	237.	312.	370.	433.	581.
351	702.	864.	961.	1090.	1122.	1222.	1279.	1396.	1579.	1903.
361	2236.	2554.	2720.	2566.	2207.	1461.	888.	450.	126.	55.
371	11.	1.	0.	0.	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.	1.	0.	0.	0.	0.	0.	0.
411	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
421	1.	0.	1.	0.	2.	0.	0.	1.	0.	1.
431	3.	2.	1.	1.	1.	0.	0.	0.	0.	1.
441	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
451	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	2.	3.	2.	4.	2.	0.	1.	3.
471	2.	6.	2.	7.	11.	11.	8.	4.	5.	6.
481	3.	1.	3.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

222-S Analytical Laboraratory
G E N E R A L A L P H A E N E R G Y A N A L Y S I S
Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1294-SAM-PU
File ID: 12a1252.CNF

Counted on: 6/17/97 @21:38
Detector: AEA12
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1355.3	1355.3	352.455	352.455	26.000	23.761	13.000	10.220
2	50.1	50.1	285.046	284.942	48.000	69.787	24.000	29.117
3?	18.7	18.7	259.555	259.555	10.000	0.011	5.000	19.668
4	792.7	792.7	221.912	221.910	24.000	21.715	12.000	9.603

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Cm243	0.610	5.779	5.766	0.013	0.11	69.74	1.1	454.9	0.205E-03
	Pu236		5.755	5.766	-.011				338.9	0.153E-03
2	Th228	0.037	5.400	5.442	-.042	0.33	4.19	6.5	28.1	0.127E-04
	Am241		5.479	5.442	0.037				21.2	0.957E-05
3		????		5.320			0.00	1382.		
4	Pu239	0.342	5.147	5.140	0.007	0.10	39.13	1.4	186.3	0.839E-04
	Pu240		5.144	5.140	0.004				186.3	0.839E-04
Totals:		0.989	<--valid peaks only-->				113.06			

DETECTOR CALIBRATION
Energy(MEV) = 4.075 + (0.0048)*Channel
Energy range (MeV): 4.075 TO 6.532
Efficiency = 0.2100 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	54862.0	100.000
Smoothed	54861.8	100.000
Composite fit	54277.0	98.934
Residuals	585.0	1.066

Analyzed by: _____
VR

Spectrum 12a1252.CNF

1 Legend: Raw = ... Modeled Peaks = 1,2,.., etc Display Max.: 9560.0

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Raw Data Dump for AEA Spectrum: 12a1252.CNF

1	0.	0.	0.	1.	0.	0.	3.	2.	2.	0.
11	1.	1.	0.	0.	2.	2.	0.	1.	1.	0.
21	0.	0.	2.	1.	1.	1.	1.	3.	0.	1.
31	1.	1.	2.	0.	2.	1.	1.	3.	1.	1.
41	0.	2.	1.	1.	2.	2.	2.	2.	1.	4.
51	2.	2.	0.	4.	9.	3.	6.	7.	3.	5.
61	3.	4.	5.	3.	5.	1.	6.	2.	2.	5.
71	2.	2.	1.	0.	2.	5.	1.	2.	2.	2.
81	3.	1.	1.	1.	1.	0.	0.	0.	1.	2.
91	0.	2.	0.	0.	1.	2.	0.	2.	2.	1.
101	2.	0.	2.	2.	1.	0.	1.	2.	1.	3.
111	2.	2.	1.	1.	0.	0.	6.	2.	1.	2.
121	4.	2.	0.	1.	2.	4.	2.	1.	2.	5.
131	1.	0.	3.	2.	3.	5.	3.	8.	7.	2.
141	4.	4.	1.	6.	4.	5.	2.	2.	1.	7.
151	0.	5.	3.	5.	2.	4.	4.	7.	10.	12.
161	6.	3.	9.	8.	6.	6.	4.	12.	13.	16.
171	6.	13.	17.	11.	7.	8.	16.	14.	20.	22.
181	23.	26.	24.	24.	40.	21.	29.	32.	27.	31.
191	45.	42.	43.	53.	54.	69.	78.	72.	93.	99.
201	109.	124.	163.	170.	175.	222.	248.	278.	313.	386.
211	377.	442.	521.	559.	619.	655.	701.	785.	837.	815.
221	837.	824.	800.	800.	743.	658.	597.	540.	549.	444.
231	418.	366.	317.	257.	238.	178.	165.	141.	92.	105.
241	80.	50.	50.	33.	34.	27.	12.	11.	19.	14.
251	19.	16.	10.	10.	17.	7.	9.	8.	17.	13.
261	12.	9.	14.	12.	9.	15.	25.	26.	20.	32.
271	46.	35.	30.	49.	50.	40.	35.	49.	60.	49.
281	49.	35.	41.	62.	50.	50.	47.	50.	45.	43.
291	45.	46.	34.	54.	39.	48.	35.	43.	28.	43.
301	33.	32.	32.	29.	38.	40.	39.	27.	31.	21.
311	43.	34.	39.	43.	61.	49.	51.	50.	65.	80.
321	64.	76.	86.	90.	96.	105.	131.	129.	146.	171.
331	196.	199.	252.	313.	329.	386.	419.	497.	528.	670.
341	722.	810.	838.	961.	999.	1107.	1222.	1245.	1379.	1396.
351	1399.	1416.	1423.	1329.	1335.	1231.	1170.	1045.	991.	925.
361	815.	674.	652.	510.	454.	345.	323.	281.	229.	164.
371	144.	112.	95.	81.	49.	32.	22.	27.	20.	10.
381	8.	8.	1.	1.	2.	3.	5.	2.	0.	1.
391	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
411	2.	1.	0.	1.	1.	0.	0.	0.	1.	1.
421	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
431	0.	0.	1.	0.	0.	0.	0.	0.	1.	1.
441	0.	1.	0.	0.	1.	0.	3.	1.	1.	0.
451	0.	2.	0.	1.	1.	1.	2.	2.	2.	1.
461	2.	4.	3.	6.	3.	9.	1.	6.	3.	2.
471	6.	6.	2.	3.	0.	1.	2.	2.	1.	2.
481	1.	2.	1.	2.	0.	0.	1.	3.	0.	0.
491	0.	1.	0.	1.	0.	0.	0.	0.	0.	1.
511	1.	0.								

222-S Analytical Laboraratory

G E N E R A L A L P H A E N E R G Y A N A L Y S I S

Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
S97T1294-DUP-PU
File ID: 13a1330.CNF

Counted on: 6/17/97 @21:39
Detector: AEA13
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height Initial	Peak height Final	Peak center Initial	Peak center Final	FWHM Initial	FWHM Final	Tau Initial	Tau Final
1	1987.0	1987.0	360.443	360.443	8.000	2.736	4.000	1.204
2	36.9	36.9	302.083	301.995	10.000	3.477	5.000	0.922
3	45.8	45.8	286.332	286.135	10.000	2.242	5.000	1.843
4?	10.9	10.9	268.899	268.454	10.000	2.504	5.000	0.693
5	1107.8	1107.8	228.344	228.343	10.000	3.304	5.000	2.018

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid Exp.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
1	Pu236	0.646	5.755	5.743	0.0120	01	52.86	1.2	214.1	0.965E-04
2	Pu238	0.017	5.487	5.474	0.0130	02	1.43	7.8	7.9	0.354E-05
	Am241		5.479	5.474	0.005				6.0	0.271E-05
3	~~Th228~~	~~0.010~~	5.400	5.401	-.0010	01	0.85	13.1	4.7	0.213E-05
4	SM	????		5.320			0.39	18.8		
5	Pu239	0.317	5.147	5.136	0.0110	02	25.96	1.8	103.1	0.464E-04
	Pu240		5.144	5.136	0.008				103.1	0.464E-04
Totals:		0.991	<--valid peaks only-->				81.09			

DETECTOR CALIBRATION
Energy(MEV) = 4.085 + (0.0046)*Channel
Energy range (MeV): 4.085 TO 6.440
Efficiency = 0.2519 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	39279.0	100.000
Smoothed	39279.3	100.001
Composite fit	39115.5	99.584
Residuals	163.5	0.416

Analyzed by: _____

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1 Legend:  Raw = ....  Modeled Peaks = 1,2,.., etc     Display Max.:   10383.8

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Raw Data Dump for AEA Spectrum: 13a1330.CNF

1	0.	0.	0.	0.	0.	0.	0.	2.	2.	1.
11	2.	0.	2.	0.	1.	0.	1.	1.	4.	1.
21	2.	0.	2.	0.	0.	1.	1.	0.	1.	0.
31	0.	0.	1.	2.	0.	1.	0.	0.	1.	0.
41	2.	1.	1.	1.	0.	0.	0.	2.	3.	1.
51	0.	2.	1.	2.	1.	2.	3.	2.	4.	1.
61	2.	5.	4.	3.	9.	4.	7.	9.	4.	5.
71	2.	2.	4.	1.	0.	0.	1.	0.	1.	1.
81	2.	1.	0.	1.	0.	0.	1.	0.	1.	0.
91	1.	1.	1.	0.	1.	0.	0.	2.	0.	0.
101	2.	0.	1.	0.	0.	0.	1.	1.	1.	1.
111	1.	1.	0.	4.	1.	0.	2.	0.	0.	2.
121	1.	0.	3.	2.	1.	2.	1.	2.	3.	2.
131	0.	1.	3.	2.	2.	0.	1.	3.	2.	2.
141	4.	2.	2.	1.	3.	4.	0.	4.	3.	1.
151	2.	3.	3.	2.	2.	4.	2.	3.	5.	2.
161	3.	3.	1.	3.	4.	2.	6.	5.	5.	4.
171	3.	4.	5.	1.	6.	6.	3.	8.	5.	4.
181	6.	8.	9.	7.	4.	10.	7.	9.	7.	8.
191	17.	10.	10.	10.	17.	14.	11.	17.	17.	13.
201	17.	22.	26.	28.	29.	38.	26.	46.	52.	52.
211	66.	98.	118.	103.	134.	201.	251.	282.	340.	342.
221	399.	457.	555.	644.	799.	1013.	1199.	1303.	1356.	1190.
231	800.	369.	185.	67.	21.	6.	0.	2.	0.	1.
241	2.	1.	1.	3.	2.	4.	0.	3.	4.	3.
251	6.	4.	5.	7.	9.	5.	9.	4.	8.	4.
261	4.	6.	19.	7.	7.	12.	14.	17.	18.	22.
271	7.	12.	13.	11.	3.	13.	14.	7.	27.	22.
281	32.	29.	44.	49.	57.	72.	74.	56.	38.	18.
291	19.	18.	24.	22.	23.	29.	22.	26.	30.	29.
301	35.	52.	41.	32.	28.	16.	7.	9.	5.	5.
311	5.	10.	7.	5.	11.	10.	10.	13.	12.	12.
321	10.	16.	22.	23.	17.	19.	25.	38.	26.	35.
331	35.	39.	35.	41.	58.	47.	63.	93.	93.	107.
341	139.	165.	169.	207.	261.	375.	425.	579.	685.	885.
351	1020.	1038.	885.	911.	948.	1067.	1352.	1624.	1957.	2286.
361	2521.	2173.	1436.	527.	138.	22.	1.	2.	0.	2.
371	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.
381	0.	1.	0.	2.	0.	0.	1.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
411	0.	0.	0.	1.	0.	1.	0.	0.	1.	1.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
451	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.
461	2.	0.	2.	1.	1.	0.	2.	2.	2.	4.
471	5.	10.	6.	3.	7.	7.	4.	4.	3.	0.
481	0.	0.	2.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	1.	1.	0.	0.	0.	2.	0.
511	1.	0.								

ATTACHMENT A

OPPORTUNISTIC ANALYTE RESULTS

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Appendix A: Opportunistic Analyte Results
TX-244 GRAB1

RISER: 8
SEGMENT #: 244-TX-97-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001286		D	Silver-ICP-Acid Dil.	ug/mL	97.40	<1.00e-02	2.300	2.220	2.260	3.54	n/a	1.010	n/a
S97T001286		D	Arsenic-ICP-Acid Dil.	ug/mL	103.0	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001286		D	Boron-ICP-Acid Dil.	ug/mL	99.20	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001286		D	Barium-ICP-Acid Dil.	ug/mL	98.20	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001286		D	Beryllium-ICP-Acid Dil.	ug/mL	101.6	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	n/a	5.05e-01	n/a
S97T001286		D	Bismuth-ICP-Acid Dil.	ug/mL	101.4	<1.00e-01	44.10	42.90	43.50	2.76	n/a	10.10	n/a
S97T001286		D	Calcium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001286		D	Cadmium-ICP-Acid Dil.	ug/mL	99.40	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	n/a	5.05e-01	n/a
S97T001286		D	Cerium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001286		D	Cobalt-ICP-Acid Dil.	ug/mL	101.4	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	n/a	2.020	n/a
S97T001286		D	Chromium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	79.90	78.50	79.20	1.77	n/a	1.010	n/a
S97T001286		D	Copper-ICP-Acid Dil.	ug/mL	96.40	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001286		D	Potassium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-01	1.36e+02	127.0	131.5	6.84	n/a	50.50	n/a
S97T001286		D	Lanthanum-ICP-Acid Dil.	ug/mL	99.80	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001286		D	Lithium-ICP-Acid Dil.	ug/mL	96.00	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001286		D	Magnesium-ICP-Acid Dil.	ug/mL	99.40	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001286		D	Manganese-ICP-Acid Dil.	ug/mL	97.60	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001286		D	Molybdenum-ICP-Acid Dil.	ug/mL	101.0	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001286		D	Neodymium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001286		D	Nickel-ICP-Acid Dil.	ug/mL	99.00	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	n/a	2.020	n/a
S97T001286		D	Phosphorus-ICP-Acid Dil.	ug/mL	97.40	<2.00e-01	4.41e+03	4.34e+03	4.38e+03	1.60	n/a	20.20	n/a
S97T001286		D	Lead-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001286		D	Sulfur-ICP-Acid Dil.	ug/mL	97.20	<1.00e-01	1.01e+03	998.0	1.00e+03	1.20	n/a	10.10	n/a
S97T001286		D	Antimony-ICP-Acid Dil.	ug/mL	96.20	<6.00e-02	< 6.060	<6.06e0	n/a	n/a	n/a	6.060	n/a
S97T001286		D	Selenium-ICP-Acid Dil.	ug/mL	93.60	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001286		D	Silicon-ICP-Acid Dil.	ug/mL	97.00	<5.00e-02	11.40	11.30	11.35	0.88	n/a	5.050	n/a
S97T001286		D	Samarium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001286		D	Strontium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001286		D	Titanium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001286		D	Thallium-ICP-Acid Dil.	ug/mL	97.40	<2.00e-01	< 20.20	<2.02e1	n/a	n/a	n/a	20.20	n/a
S97T001286		D	Uranium-ICP-Acid Dil.	ug/mL	96.30	<5.00e-01	< 50.50	<5.05e1	n/a	n/a	n/a	50.50	n/a
S97T001286		D	Vanadium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001286		D	Zinc-ICP-Acid Dil.	ug/mL	96.80	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001286		D	Zirconium-ICP-Acid Dil.	ug/mL	98.80	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001286			Bromide by Ion Chromatograph	ug/mL	99.15	<1.25e-01	<2.65e+02	<2.65e2	n/a	n/a	n/a	265.1	n/a
S97T001286			Oxalate-IC-Dionex 4000/450	ug/mL	100.2	<1.05e-01	<2.23e+02	<2.23e2	n/a	n/a	n/a	222.7	n/a
S97T001292			Cobalt-60 by GEA	uCi/mL	102.9	<1.01e-05	<1.31e-05	<1.36e-5	n/a	n/a	n/a	1.31e-05	n/a

Appendix A: Opportunistic Analyte Results
TX-244 GRAB1

RISER: 8
SEGMENT #: 244-TX-97-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001290		D	Silver-ICP-Acid Dil.	ug/mL	97.40	<1.00e-02	2.170	2.220	2.195	2.28	n/a	1.010	n/a
S97T001290		D	Arsenic-ICP-Acid Dil.	ug/mL	103.0	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290		D	Boron-ICP-Acid Dil.	ug/mL	99.20	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001290		D	Barium-ICP-Acid Dil.	ug/mL	98.20	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001290		D	Beryllium-ICP-Acid Dil.	ug/mL	101.6	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	n/a	5.05e-01	n/a
S97T001290		D	Bismuth-ICP-Acid Dil.	ug/mL	101.4	<1.00e-01	44.70	45.80	45.25	2.43	n/a	10.10	n/a
S97T001290		D	Calcium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290		D	Cadmium-ICP-Acid Dil.	ug/mL	99.40	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	n/a	5.05e-01	n/a
S97T001290		D	Cerium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290		D	Cobalt-ICP-Acid Dil.	ug/mL	101.4	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	n/a	2.020	n/a
S97T001290		D	Chromium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	79.40	80.00	79.70	0.75	n/a	1.010	n/a
S97T001290		D	Copper-ICP-Acid Dil.	ug/mL	96.40	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290		D	Potassium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-01	1.10e+02	102.0	106.0	7.55	n/a	50.50	n/a
S97T001290		D	Lanthanum-ICP-Acid Dil.	ug/mL	99.80	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001290		D	Lithium-ICP-Acid Dil.	ug/mL	96.00	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290		D	Magnesium-ICP-Acid Dil.	ug/mL	99.40	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290		D	Manganese-ICP-Acid Dil.	ug/mL	97.60	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290		D	Molybdenum-ICP-Acid Dil.	ug/mL	101.0	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001290		D	Neodymium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290		D	Nickel-ICP-Acid Dil.	ug/mL	99.00	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	n/a	2.020	n/a
S97T001290		D	Phosphorus-ICP-Acid Dil.	ug/mL	97.40	<2.00e-01	4.36e+03	4.36e+03	4.36e+03	0.00	n/a	20.20	n/a
S97T001290		D	Lead-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290		D	Sulfur-ICP-Acid Dil.	ug/mL	97.20	<1.00e-01	1.01e+03	1.01e+03	1.01e+03	0.00	n/a	10.10	n/a
S97T001290		D	Antimony-ICP-Acid Dil.	ug/mL	96.20	<6.00e-02	< 6.060	<6.06e0	n/a	n/a	n/a	6.060	n/a
S97T001290		D	Selenium-ICP-Acid Dil.	ug/mL	93.60	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290		D	Silicon-ICP-Acid Dil.	ug/mL	97.00	<5.00e-02	10.90	11.00	10.95	0.91	n/a	5.050	n/a
S97T001290		D	Samarium-ICP-Acid Dil.	ug/mL	97.80	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290		D	Strontium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290		D	Titanium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290		D	Thallium-ICP-Acid Dil.	ug/mL	97.40	<2.00e-01	< 20.20	<2.02e1	n/a	n/a	n/a	20.20	n/a
S97T001290		D	Uranium-ICP-Acid Dil.	ug/mL	96.30	<5.00e-01	< 50.50	<5.05e1	n/a	n/a	n/a	50.50	n/a
S97T001290		D	Vanadium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001290		D	Zinc-ICP-Acid Dil.	ug/mL	96.80	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290		D	Zirconium-ICP-Acid Dil.	ug/mL	98.80	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290			Bromide by Ion Chromatograph	ug/mL	99.15	<1.25e-01	<2.65e+02	<2.65e2	n/a	n/a	n/a	265.1	n/a
S97T001290			Oxalate-IC-Dionex 4000/450	ug/mL	100.2	<1.05e-01	<2.23e+02	<2.23e2	n/a	n/a	n/a	222.7	n/a
S97T001293			Cobalt-60 by GEA	uCi/mL	102.9	<1.01e-05	<1.37e-05	<1.36e-5	n/a	n/a	n/a	1.37e-05	n/a

Appendix A: Opportunistic Analyte Results
TX-244 GRAB1

RISER: 8
SEGMENT #: 244-TX-97-3

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001291		D	Silver-ICP-Acid Dil.	ug/mL	101.8	<1.00e-02	2.030	2.070	2.050	1.95	92.80	1.010	n/a
S97T001291		D	Arsenic-ICP-Acid Dil.	ug/mL	104.6	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	106.0	10.10	n/a
S97T001291		D	Boron-ICP-Acid Dil.	ug/mL	101.2	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	103.0	5.050	n/a
S97T001291		D	Barium-ICP-Acid Dil.	ug/mL	102.4	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	99.50	5.050	n/a
S97T001291		D	Beryllium-ICP-Acid Dil.	ug/mL	104.0	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	103.0	5.05e-01	n/a
S97T001291		D	Bismuth-ICP-Acid Dil.	ug/mL	102.8	<1.00e-01	35.30	29.70	32.50	17.2	99.70	10.10	n/a
S97T001291		D	Calcium-ICP-Acid Dil.	ug/mL	102.6	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	104.0	10.10	n/a
S97T001291		D	Cadmium-ICP-Acid Dil.	ug/mL	102.4	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	102.0	5.05e-01	n/a
S97T001291		D	Cerium-ICP-Acid Dil.	ug/mL	101.4	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	99.90	10.10	n/a
S97T001291		D	Cobalt-ICP-Acid Dil.	ug/mL	101.4	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	101.0	2.020	n/a
S97T001291		D	Chromium-ICP-Acid Dil.	ug/mL	103.0	<1.00e-02	78.80	78.90	78.85	0.13	102.0	1.010	n/a
S97T001291		D	Copper-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	96.70	1.010	n/a
S97T001291		D	Potassium-ICP-Acid Dil.	ug/mL	98.20	<5.00e-01	1.24e+02	123.0	123.5	0.81	89.90	50.50	n/a
S97T001291		D	Lanthanum-ICP-Acid Dil.	ug/mL	103.0	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	102.0	5.050	n/a
S97T001291		D	Lithium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	103.0	1.010	n/a
S97T001291		D	Magnesium-ICP-Acid Dil.	ug/mL	104.0	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	102.0	10.10	n/a
S97T001291		D	Manganese-ICP-Acid Dil.	ug/mL	100.6	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	98.00	1.010	n/a
S97T001291		D	Molybdenum-ICP-Acid Dil.	ug/mL	101.6	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	102.0	5.050	n/a
S97T001291		D	Neodymium-ICP-Acid Dil.	ug/mL	103.6	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	102.0	10.10	n/a
S97T001291		D	Nickel-ICP-Acid Dil.	ug/mL	102.4	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	102.0	2.020	n/a
S97T001291		D	Phosphorus-ICP-Acid Dil.	ug/mL	103.2	<2.00e-01	4.47e+03	4.51e+03	4.49e+03	0.89	101.0	20.20	n/a
S97T001291		D	Lead-ICP-Acid Dil.	ug/mL	103.0	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	102.0	10.10	n/a
S97T001291		D	Sulfur-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	1.02e+03	1.03e+03	1.02e+03	0.98	96.80	10.10	n/a
S97T001291		D	Antimony-ICP-Acid Dil.	ug/mL	96.40	<6.00e-02	< 6.060	<6.06e0	n/a	n/a	97.20	6.060	n/a
S97T001291		D	Selenium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	98.00	10.10	n/a
S97T001291		D	Silicon-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	9.480	9.990	9.735	5.24	99.90	5.050	n/a
S97T001291		D	Samarium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	97.70	10.10	n/a
S97T001291		D	Strontium-ICP-Acid Dil.	ug/mL	100.2	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	98.80	1.010	n/a
S97T001291		D	Titanium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	97.90	1.010	n/a
S97T001291		D	Thallium-ICP-Acid Dil.	ug/mL	97.80	<2.00e-01	< 20.20	<2.02e1	n/a	n/a	94.60	20.20	n/a
S97T001291		D	Uranium-ICP-Acid Dil.	ug/mL	96.70	<5.00e-01	< 50.50	<5.05e1	n/a	n/a	99.00	50.50	n/a
S97T001291		D	Vanadium-ICP-Acid Dil.	ug/mL	99.60	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	99.10	5.050	n/a
S97T001291		D	Zinc-ICP-Acid Dil.	ug/mL	97.40	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	98.70	1.010	n/a
S97T001291		D	Zirconium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	98.00	1.010	n/a
S97T001291			Bromide by Ion Chromatograph	ug/mL	99.15	<1.25e-01	<2.65e+02	<2.65e2	n/a	n/a	91.00	265.1	n/a
S97T001291			Oxalate-IC-Dionex 4000/450	ug/mL	100.2	<1.05e-01	<2.23e+02	<2.23e2	n/a	n/a	103.5	222.7	n/a
S97T001294			Cobalt-60 by GEA	uCi/mL	102.9	<1.01e-05	<1.34e-05	<1.03e-5	n/a	n/a	n/a	1.34e-05	n/a

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