244. (2)

AUG 13 1997

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT 620416

2. To: (Receiving Organization) Distribution		3. From: (Originating Organization) Production Planning and Control		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: 244-TX/Waste Management/PPC/AS		6. Design Authority/ Design Agent/Cog. Engr.: Ruth A. Esch		7. Purchase Order No.: N/A	
8. Originator Remarks: This document is being released into the supporting document system for retrievability purposes.				9. Equip./Component No.: N/A	
				10. System/Bldg./Facility: 244-TX	
11. Receiver Remarks: 11A. Design Baseline Document? ☐ Yes ☒ No For release.				12. Major Assm. Dwg. No.: N/A	
				13. Permit/Permit Application No.: N/A	
				14. Required Response Date: 08/15/97	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	HNF-SD-WM-DP-251	N/A	0	Double-Contained Receiver Tank 244-TX, Grab Samples, 244-TX-97-1 through 244TX-97-3 Analytical Results for the Final Report	Q	2	1	1

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

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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

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

EDT/ECN: EDT-620416 UC: 2070
Org Code: 7576B Charge Code: MD378
B&R Code: EW 3120074 Total Pages: 335

Key Words: Double Contained, Receiver, Tank, 244-TX, Grab Samples, 244TX-97-1, 244TX-97-3, Analytical Results, Final Report

Abstract: N/A

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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 grab 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 $\mu\text{g/mL}$ 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

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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 $\mu\text{Ci/mL}$ and the criticality prevention concern level of 0.80 $\mu\text{Ci/mL}$ stated in the TSAP (Sasaki, 1997) and the Compatibility DQO (Fowler, 1995).

²⁴¹Am - Americium-241 - Criticality Decision Rule

²⁴¹Am 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 $\mu\text{Ci/mL}$. 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.

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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 $\mu\text{g OH}^-$ 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.

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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

NH₃ - Ammonia

The NH₃ 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.

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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 $\mu g/mL$ 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 $\pm 10\%$ of the undiluted sample result. The results of this comparison are presented in Table 4 and indicate the accuracy of this analysis was acceptable.

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Table 4: ICP Serial Dilution for Sodium

Sample ID	Sample Result ($\mu\text{g/mL}$)	Serial Dilution Result ($\mu\text{g/mL}$)	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.

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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 (²⁴¹Am) 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
⁹⁰Sr = strontium 90
²⁴¹Am = americium 241
^{239/240}Pu = plutonium 239/240

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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.

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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

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ATTACHMENT 1

TX-244 SAMPLE BREAKDOWN

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Attachment 1

TX-244 GRAB SAMPLE BREAKDOWN

Riser 8

337 in.
244-TX-97-1
S97T001211

402 in.
244-TX-97-2
S97T001212

421 in.
244-TX-97-3
S97T001213

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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			BSC 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	%	99.36	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	4.000	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

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

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

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

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	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	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	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	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	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	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	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	n/a
S97T001291			Aluminum-ICP-Acid Dil.	ug/mL	99.20	<5.00e-02	10.50	7.270	8.885	36.4	95.20	5.050	n/a	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	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	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	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	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	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	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	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	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	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	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	n/a
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	n/a
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	n/a
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	n/a
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	n/a

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ATTACHMENT 2

WASTE COMPATIBILITY CORROSION RULES FOR
DCRT 244-TX

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

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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]...
S97T001286 Sample				$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 8.0 \text{ M?}$	$0.011 \text{ M} \leq [\text{NO}_2] \leq 5.5 \text{ M}$	
	NO ₃	5.21E+04	0.840	YES	NO	YES	
	OH	0.00	0.00				
	NO ₂	1.91E+03	0.042	$1.0 \text{ M} < [\text{NO}_3] \leq 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO}_3] \leq [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO}_3]?$
				$3.0 \text{ M} < [\text{NO}_3] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is [NO ₃]...	Is [OH]...	Is [NO ₂]...	Is [OH] + [NO ₂]...
S97T001286 Duplicate				$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 8.0 \text{ M?}$	$0.011 \text{ M} \leq [\text{NO}_2] \leq 5.5 \text{ M}$	
	NO ₃	5.17E+04	0.834	YES	NO	YES	
	OH	0.00	0.00				
	NO ₂	1.92E+03	0.042	$1.0 \text{ M} < [\text{NO}_3] \leq 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO}_3] \leq [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO}_3]?$
				$3.0 \text{ M} < [\text{NO}_3] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$

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]...
				$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 8.0 \text{ M?}$	$0.011 \text{ M} \leq [\text{NO}_2] \leq 5.5 \text{ M}$	
S97T001290	NO ₃	5.32E+04	0.858	YES	NO	YES	
Sample	OH	0.00	0.00				
	NO ₂	1.98E+03	0.043	$1.0 \text{ M} \leq [\text{NO}_3] \leq 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO}_3] \leq [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO}_3]?$
				$3.0 \text{ M} < [\text{NO}_3] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is [NO ₃]...	Is [OH]...	Is [NO ₂]...	Is [OH] + [NO ₂]...
				$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 8.0 \text{ M?}$	$0.011 \text{ M} \leq [\text{NO}_2] \leq 5.5 \text{ M}$	
S97T001290	NO ₃	5.17E+04	0.834	YES	NO	YES	
Duplicate	OH	0.00	0.00				
	NO ₂	1.91E+03	0.042	$1.0 \text{ M} \leq [\text{NO}_3] \leq 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO}_3] \leq [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO}_3]?$
				$3.0 \text{ M} < [\text{NO}_3] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$

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]...
				$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 8.0 \text{ M?}$	$0.011 \text{ M} \leq [\text{NO}_2] \leq 5.5 \text{ M}$	
S97T001291 Sample	NO ₃	5.28E+04	0.852	YES	NO	YES	
	OH	0.00	0.00				
	NO ₂	1.94E+03	0.042	$1.0 \text{ M} < [\text{NO}_3] \leq 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO}_3] \leq [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO}_3]?$
				$3.0 \text{ M} < [\text{NO}_3] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$

Sample ID	Analyte	Result (ug/mL)	Result (M)	Is [NO ₃]...	Is [OH]...	Is [NO ₂]...	Is [OH] + [NO ₂]...
				$\leq 1.0 \text{ M?}$	$0.010 \text{ M} \leq [\text{OH}] \leq 8.0 \text{ M?}$	$0.011 \text{ M} \leq [\text{NO}_2] \leq 5.5 \text{ M}$	
S97T001291 Duplicate	NO ₃	5.33E+04	0.860	YES	NO	YES	
	OH	0.00	0.00				
	NO ₂	1.90E+03	0.041	$1.0 \text{ M} < [\text{NO}_3] \leq 3.0 \text{ M?}$	$0.1 \text{ M} * [\text{NO}_3] \leq [\text{OH}] < 10 \text{ M?}$		$\geq 0.4 * [\text{NO}_3]?$
				$3.0 \text{ M} < [\text{NO}_3] \leq 5.5 \text{ M?}$	$0.3 \leq [\text{OH}] < 10 \text{ M?}$		$\geq 1.2 \text{ M?}$

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CHAIN OF CUSTODY FORMS

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

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CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

(1) Shipment Number 200E-08-TF (2) Sample Number 244-TX-9712 (3) Supervisor RJ PRAZNIK
 (4) Tank 244-TX (5) Riser 8 (6) Cask/PIG Shipping Container Serial Number 6003A

Radiation Survey Date For Cask/PIG:		(7) FIELD	(31) LABORATORY	(8) Shipment Description
Over Top Dose Rate		<u>2.005 mSv</u>	<u>2.005 mSv/hr</u>	A. Work Package Number <u>WS-97-00125/W</u>
Side Dose Rate		<u>2.005 mSv</u>	<u>2.005 mSv/hr</u>	B. Cask/PIG Seal Number <u>12356</u>
Bottom Dose Rate		<u>2.005 mSv</u>	<u>2.005 mSv/hr</u>	C. Date and Time Sample <u>1124hr/5-29-97</u>
Smearable Contamination		<u>2.334 Bq</u>	<u>2.334 Bq/LAW</u>	Removed from Tank <u>100%</u>
		<u>2.16.7 Bq</u>	<u>2.16.7 Bq/LAW</u>	D. Expected Liquid Content <u>0%</u>
		(Alpha)	(Alpha)	E. Expected Solid Content <u>20.5 mch</u>
		(Beta-Gamma)	(Beta-Gamma)	F. Dose Rate Through Drill String (Auger)/On Contact (GRAB) <u>125ml</u>
ACT*	<u>Kum</u>	(Signature)	ACT* <u>PLS</u>	G. Expected Sample Length (Auger)/Volume (GRAB)

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

(9) Field Comments	(32) Laboratory Comments
	<u>507T001212</u>

(1) Point of Origin	(12) Destination	(13) Sender Name (Sign and PRINT)	(14) Date/Time	(15) Sender Comments
<u>44-TX-8</u>	<u>222-S</u>	<u>RJ Praznik</u>	<u>5/29/97</u>	
(16) Relinquished By (Sign and PRINT)	(17) Received By (Sign and PRINT)	(18) Date/Time	(19) Date/Time	(20) Receiver Comments
<u>RJ Praznik</u>	<u>James L. Praznik</u>	<u>5/29/97</u>	<u>5/29/97</u>	
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Date/Time	(24) Receiver Comments
<u>James L. Praznik</u>	<u>PL Chumbley</u>	<u>5/29/97</u>	<u>5/29/97</u>	
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Date/Time	(28) Receiver Comments

(16) Seal Intact Upon Release?	(29) Seal Intact Upon Receipt?	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-6001-328 (01/96)

MAY 30 1997-12:17PM WHC 222S LAB ROOM 2F BACKSIDE
 HNF-SD-WM-DP-251, REV. 0

No. 3442 P. 3/4

CHAIN-OF-CUSTODY RECORD FOR AUGER/GRAB SAMPLING

May. 30. 1997 12:16PM WHC 222S LAB ROOM 2F BACKSIDE No. 3442 P. 2/4

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

Shipment Number 00E-08-TP (2) Sample Number 244-TX-97-3 (3) Supervisor R.D. PERZNIK
 Tank 244-TX (5) Riser B (6) Cask/PIG Shipping Container Serial Number 6003D

(7) FIELD		(31) LABORATORY		(8) Shipment Description	
Over Top Dose Rate	<u>2.005 msv</u>	(14) Sample Name (Sign and PRINT)	<u>2.005msv/hr</u>	A. Work Package Number	<u>WS-97-00125/w</u>
Side Dose Rate	<u>2.005 msv</u>	(18) Received By (Sign and PRINT)	<u>2.005 msv/hr</u>	B. Cask/PIG Seal Number	<u>17358</u>
Bottom Dose Rate	<u>2.005 msv</u>	(21) Received By (Sign and PRINT)	<u>2.334 Bg/LAW</u>	C. Date and Time Sample	<u>11/28/hr / 5:29/97</u>
Sneareable Contamination	<u>2.334 Bg</u>	(24) Relinquished By (Sign and PRINT)	<u>2.334 Bg/LAW</u>	D. Expected Liquid Content	<u>100%</u>
	<u>2.16.7 Bg</u>	(26) Received By (Sign and PRINT)	<u>2.16.7 Bg/LAW</u>	E. Expected Solid Content	<u>0%</u>
ACT* <u>[Signature]</u>	(Beta-Gamma)			F. Dose Rate Through Drill String (Auger/On Contact) (GRAB)	<u>2.05 msk</u>
ACT* <u>[Signature]</u>	(Alpha)			G. Expected Sample Length (Auger/Volume) (GRAB)	<u>175 msk</u>

INFORMATION (include statement of laboratory tests to be performed.)

29

(32) Laboratory Comments		(14) Date/Time		(15) Sender Comments	
<u>5977001213</u>		(14) Date/Time	<u>5/27/1120</u>	(15) Sender Comments	
		(18) Date/Time	<u>5/27/1139</u>	(20) Receiver Comments	
		(21) Date/Time	<u>5/27/1139</u>	(24) Receiver Comments	
		(26) Date/Time	<u>5/27/1139</u>	(28) Receiver Comments	
(30) Seal Data Consistent with this Record?		(30) Seal Data Consistent with this Record?			

BC-6001-326 (01/95)

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

SAMPLE HANDLING

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

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LABCORE Data Entry Template for Worklist# 18500

Analyst: ADD Instrument: NONE Book # _____Method: LA-519-151 Rev/Mod F-0

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	^{more 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 STLSD01	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	^{more 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 STLSD01	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	^{more 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	@BRKDOWN1 ETCHNUM	LIQUID	N/A	244-TX-97-3		
97000388	TX-244	GRAB1	3	SAMPLE	S97T001213	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	Complete		
97000388	TX-244	GRAB1	3	SAMPLE	S97T001213	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
97000388	TX-244	GRAB1	3	SAMPLE	S97T001213	0	@BRKDOWN1 STLSLD01	LIQUID	N/A	< 1		%
97000388	TX-244	GRAB1	3	SAMPLE	S97T001213	0	@BRKDOWN1 COLOR-01	LIQUID	N/A	Yellow-clear		
97000388	TX-244	GRAB1	3	SAMPLE	S97T001213	0	@BRKDOWN1 ORGVOL02	LIQUID	N/A	NONE		mL

Final page for worklist # 18500

Analyst Signature Date 6-6-97

Analyst Signature Date 6/6/97

Validated by H. Lapins 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.

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

SAMPLE PREPARATIONS

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

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LABCORE Data Entry Template for Worklist# 18786

Analyst: TRK 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	4.5		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	4.5		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	4.5		mrad/hour

Final page for worklist # 18786

Analyst Signature TRK Date 6/23/97

Analyst Signature Jessie March Date 6-23-97

Reviewed By MCH 6/25/97

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

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 WorksheetTank/Project: TX-244 GRAB 1Date: 6/23/97 (Date of Breakdown)

ACIDIL WL# 18786

I. Preservative for Ammonia analysis:

A. Obtain historical results for the following analytes:

1. Al	<u>0.114</u>	M	[($\mu\text{g/mL}$)/26,981]
2. OH ⁻	<u>1.706</u>	M	[($\mu\text{g/mL}$)/17,000]
3. CO ₃ ²⁻	<u><0.008</u>	M	[($\mu\text{g/mL}$)/60,009]
4. NO ₂ ⁻	<u>0.132</u>	M	[($\mu\text{g/mL}$)/46,006]
5. PO ₄ ³⁻	<u>0.263</u>	M	[($\mu\text{g/mL}$)/94,971]

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

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

$$\text{moles (HCl)} = 1 \text{ mL (smp)} [4(\text{M Al}) + \text{M OH}^- + \text{M CO}_3^{2-} + \text{M NO}_2^- + \text{M PO}_4^{3-}] \times 1\text{E-}03$$

$$3. \quad \text{moles (HCl)} = \underline{0.0026} \text{ moles}$$

$$\text{g (HCl)} = (\text{moles HCl} \times 36.46 \text{ g/mole}) / 0.37 \text{ (for 37\% HCl)}$$

$$4. \quad \text{g (HCl)} = \underline{0.253} \text{ g}$$

$$\text{mL (HCl)/1 mL (smp)} = \text{g (HCl)} / 1.18 \text{ g/mole (HCl)}$$

$$5. \quad \text{mL (HCl)/1 mL (smp)} = \underline{0.214} \text{ mL}$$

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

$$1. \quad \text{mL (HCl)} \times (\text{desired samp vol}) = \underline{2} \text{ mL (to nearest mL)}$$

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.

1 LAD
8/16/97

Preserved Subsample Information Worksheet

E. Record requested volumes:

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

F. Prepare a prep blank - requested volumes:

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

LKD
2/16/97

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-97-1LABCORE #: 597T 001295

1.	Weight ^{beaker} cone + sample	<u>12.86</u> g
2.	Tare weight of ^{beaker} cone	<u>2.51</u> g
3.	Net weight sample (1 - 2)	<u>10.35</u> g
4.	Volume sample	<u>10</u> mL
5.	Bulk Density (3 ÷ 4)	<u>1.04</u> g/mL
- 10.35* *202 6/23/97*

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

C. $\text{Wgt. Samp} = (\text{Wgt. vial} + \text{HCl} + \text{water} + \text{samp}) - (\text{Wgt. vial} + \text{HCl} + \text{water})$
 Wgt. Samp = 10.30 g

D. Final Vol. Samp = $\text{Wgt. Samp} / \text{Bulk Density} =$ 9.90 mL

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

Dilution Factor (DF) = 1.20

- F. Report DF in LabCore as ACIDIL01 test results.

34 *1.20* *6/23/97*

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-97-2LABCORE #: 597T001296

1. Weight cone + sample 12.88 g
2. Tare weight of cone ^{weaker}_{weaker} 2.50 g
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) = $\frac{\text{Final Vol. Samp.} + \text{Vol. HCl} + \text{Vol. Water}}{\text{Final Vol. Samp}}$

$$\text{Dilution Factor (DF)} = \underline{1.20}$$

- F. Report DF in LabCore as ACIDIL01 test results.

4
LAD 8/6/87

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-97-3LABCORE #: 597001297

1. Weight cone + sample 12.87 g
2. Tare weight of cone ^{balance} 2.51 g
_{4/23/97}
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. $\text{Wgt. Samp} = (\text{Wgt. vial} + \text{HCl} + \text{water} + \text{samp}) - (\text{Wgt. vial} + \text{HCl} + \text{water})$
 $\text{Wgt. Samp} = \underline{10.34}$ g

D. $\text{Final Vol. Samp} = \text{Wgt. Samp} / \text{Bulk Density} = \underline{9.94}$ mL

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

Dilution Factor (DF) = 1.20

- F. Report DF in LabCore as ACIDIL01 test results.

5-4/26/97
LAD

PRESERVED PREP BLANK WORKSHEET

Date: 6/23/97

Project: TX-244 GRAB1

P.C. R-ESch

Phone# 313-4314

Add Preservative to vial
BEFORE loading into hotcell

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

Demineralized Water

Vol. Water 10 mL

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

Tests:

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 # 597T001211

Jar#: PARENT

Jar/Vial Size: 125 mL

Initial Weight: g

Final Weight: g

Net Weight: g

(after final subsample taken)

N/A
PCE
6/23/97

Vol. Sample 10 mL

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

Tests:

DOSE-02
ACID-LV1

LABCORE # 597T001295

Jar#: 1295

Wgt J + P + W + Samp: 27.72 g

Wgt J + P + W 17.42 g

Net Wgt Samp: 10.30 g

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

* 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. S. de

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

Vol. Sample 10 mL

LABCORE # 597T001212

Jar#: PARENT

Jar/Vial Size: 125 mL

Initial Weight: g

Final Weight: g

Net Weight: g

(after final subsample taken)

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

Tests: DOE 6/23/97
DOSE - 02
ACN 01

LABCORE # 597T001296

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: 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)

Vol. Sample 10 mL

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

Tests: me 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.

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

INORGANIC ANALYSIS

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

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LABCORE Data Entry Template for Worklist# 18529

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

Method: LA-514-114 Rev/Mod DD

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	<u>28.45</u>	<u>26.81</u>	<u>N/A</u>	Joules/g
97000388	TX-244 GRAB1	2	SAMPLE	S97T001286	0		DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000388	TX-244 GRAB1	3	DUP	S97T001286	0		DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g
97000388	TX-244 GRAB1	4	SAMPLE	S97T001290	0		DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000388	TX-244 GRAB1	5	DUP	S97T001290	0		DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g
97000388	TX-244 GRAB1	6	SAMPLE	S97T001291	0		DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000388	TX-244 GRAB1	7	DUP	S97T001291	0		DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 18529

A. Lambiel 6/6/97
Analyst Signature Date

R. Jones 6-9-97
Analyst Signature Date

Validated/Rejected 6/12/97 Bachelor

Data Entry Comments:

Instrument response problem S97T001286. Rerun sample. DB 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 060797

49

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

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

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

N2 10C/min

TEMP: 30.0 °C
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jun 9 09:38:25 1997

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

Curve 1: DSC

File info: SAM060702 Sat Jun 7 09:12:40 1997

Sample Weight: 17.140 mg

S97T001286 DUP

N2 10C/min

TEMP1: 25.0 °C
TEMP2: 500.0 °C

TIME1: 0.0 min RATE1: 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

N2 10C/min

TEMP: 25.0 °C
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°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

N2 10C/min

TEMP: 35.0 °C
TEMP: 300.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 12:17:49 1997

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

Curve 1: DSC

File info: SAM060705 Sat Jun 7 13:07:09 1997

Sample Weight: 15.120 mg

S97T001291

N2 10C/min

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

Temperature (°C)

EA LABEL

PERKIN-ELMER

7 Series Thermal Analysis System

Sat Jun 7 13:19:41 1997

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

Curve 1: DSC

File info: SAM060706 Sat Jun 7 14:09:05 1997

Sample Weight: 15.070 mg

S97T001291 DUP

N2 10C/min

TEMP: 25.0 °C TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 14:56:46 1997

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

LABCORE Data Entry Template for Worklist# 18632

Analyst:

Rm

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

Analyst Signature

Date

Validated 6/14/97

6/15/97

Rachelor

Analyst Signature

Date

Susan Bee 6/17/97

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.

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.

1 12N14-B: IND061502

Heat Flow (mW)

N2, EXOTHERM DOWN

TEMP1: 140.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min
TEMP2: 180.0 °C

Temperature (°C)

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

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

Curve 1: DSC

File info: SAM061404 Sat Jun 14 23:31:54 1997

Sample Weight: 9.210 mg

S97T001286

N2 10C/min

TEMP: 33.0 °C

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jun 16 15:53:40 1997

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

Curve 1: DSC

File info: SAM061501 Sun Jun 15 01:31:25 1997

Sample Weight: 11.860 mg

S97T001286DUP

N2 10C/min

TEMP1: 25.0 °C
TEMP2: 500.0 °C
TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Mon Jun 16 15:59:03 1997

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

LABCORE Data Entry Template for Worklist# 18528

Analyst: EDL Instrument: TGAO 03 Book # 97N8-A

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

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	<u>59.4</u>	<u>59.14</u>	N/A	%
97000388	TX-244 GRAB1	2	SAMPLE	S97T001286	0		TGA-03	LIQUID	<u>N/A</u>	<u>90.16</u>		%
97000388	TX-244 GRAB1	3	DUP	S97T001286	0		TGA-03	LIQUID	<u>90.16</u>	<u>90.36</u>	N/A	%
97000388	TX-244 GRAB1	4	SAMPLE	S97T001290	0		TGA-03	LIQUID	<u>N/A</u>	<u>90.17</u>		%
97000388	TX-244 GRAB1	5	DUP	S97T001290	0		TGA-03	LIQUID	<u>90.17</u>	<u>90.56</u>	N/A	%
97000388	TX-244 GRAB1	6	SAMPLE	S97T001291	0		TGA-03	LIQUID	<u>N/A</u>	<u>90.15</u>		%
97000388	TX-244 GRAB1	7	DUP	S97T001291	0		TGA-03	LIQUID	<u>90.15</u>	<u>90.58</u>	N/A	%

Final page for worklist # 18528

A. Lambil 06/07/97
Analyst Signature Date
Validated 6/12/97 Bachelor

[Signature] 6-8-97
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.

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
TEMP: 35.0 °C
TIME: 00:00
TIME: 0.0 min RATE: 10.0 °C/min

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 06:16:54 1997

Curve 1: TGA

File info: SAM060701 Sat Jun 7 07:10:45 1997

Sample Weight: 12.865 mg

S97T001286

10C/MIN N2

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

EA LABEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 08:17:50 1997

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

Curve 1: TGA

File info: SAM060702 Sat Jun 7 09:08:35 1997

Sample Weight: 16.300 mg

S97T001286 DUP

10C/MIN N2

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

Temperature (°C)

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Set Jun 7 09:09:52 1997

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

Curve 1: TGA

File info: SAM060703 Sat Jun 7 10:10:10 1997

Sample Weight: 15.438 mg

S97T001290

10C/MIN N2

TEMP: 25.0 C TIME: 0.0 min RATE: 10.0 C/min

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Set Jun 7 10:25:18 1997

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

Curve 1: TGA

File info: SAM060704 Sat Jun 7 11:17:05 1997

Sample Weight: 16.591 mg

S97T001290 DUP

10C/MIN N2

TEMP: 35.0 °C
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 12:12:03 1997

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

Curve 1: TGA

File info: SAM060705 Sat Jun 7 13:02:55 1997

Sample Weight: 16.465 mg

S97T001291

10C/MIN N2

TEMP: 55.8 °C TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

EA LAMBEL
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jun 7 13:29:04 1997

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

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

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	<u>1.391</u>	<u>1.388</u>	<u>N/A</u>	Sp.G.
97000388	TX-244 GRAB1	2	SAMPLE	S97T001286	0		SPG-01	LIQUID	<u>N/A</u>	<u>1.078</u>	<u>0.01</u>	Sp.G.
97000388	TX-244 GRAB1	3	DUP	S97T001286	0		SPG-01	LIQUID	<u>1.078</u>	<u>1.065</u>	<u>N/A</u>	Sp.G.
97000388	TX-244 GRAB1	4	SAMPLE	S97T001290	0		SPG-01	LIQUID	<u>N/A</u>	<u>1.093</u>	<u>0.01</u>	Sp.G.
97000388	TX-244 GRAB1	5	DUP	S97T001290	0		SPG-01	LIQUID	<u>1.093</u>	<u>1.094</u>	<u>N/A</u>	Sp.G.
97000388	TX-244 GRAB1	6	SAMPLE	S97T001291	0		SPG-01	LIQUID	<u>N/A</u>	<u>1.054</u>	<u>0.01</u>	Sp.G.
97000388	TX-244 GRAB1	7	DUP	S97T001291	0		SPG-01	LIQUID	<u>1.054</u>	<u>1.065</u>	<u>N/A</u>	Sp.G.

Final page for worklist # 18530

Anthony Purnetto 6-8-97
Analyst Signature Date

Spencer Bee 6/9/97
Analyst Signature Date

Approved RW Schneider 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 μ L	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 = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity Average =	1.388	
11:20 AM			

Data Entry by:	<i>Sue Bee</i>	Date:	06/09/97
Approved by:	<i>Rw Schmitt</i>	Date:	6/9/97

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 = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
06/08/97	$\checkmark$ RESULT $\checkmark$		
Time	Specific Gravity =	1.078	
11:20 AM			

Data Entry by:	<i>Sire Bee</i>	Date:	06/09/97
Approved by:	<i>RW Schreder</i>	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)	1.9118	
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 = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity =	1.065	
11:20 AM			

Data Entry by:	<i>Sue Bee</i>	Date:	06/09/97
Approved by:	<i>RW Schmidt</i>	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)	1.9545	
Work List	Tare Weight (W1)	1.8727	
18530	Weight of Solution (W2-W1)	0.0818	0
Test Code	Volume of Solution μ L	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	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
ADP			
Date			
06/08/97	$\checkmark$ RESULT $\checkmark$		
Time	Specific Gravity =	1.093	
11:20 AM			

Data Entry by:	Sue Bee	Date:	06/09/97
Approved by:	Rw Schmitt	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)	1.9207	
Work List	Tare Weight (W1)	1.8388	
18530	Weight of Solution (W2-W1)	0.0819	0
Test Code	Volume of Solution μ L	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 = $[(W2-W1) \times 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} \times 1.000 \text{ g/mL}]$		
Date			
06/08/97	ν RESULT ν		
Time	Specific Gravity =	1.094	
11:20 AM			

Data Entry by:	<i>Sue Bee</i>	Date:	06/09/97
Approved by:	<i>R.W. Schradin</i>	Date:	6/9/97

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 = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity =	1.054	
11:20 AM			

Data Entry by:	<i>Cue Ree</i>	Date:	06/09/97
Approved by:	<i>RW Schneider</i>	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)	1.9160	
Work List	Tare Weight (W1)	1.8363	
18530	Weight of Solution (W2-W1)	0.0797	0
Test Code	Volume of Solution μ L	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 = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
06/08/97	v RESULT v		
Time	Specific Gravity =	1.065	
11:20 AM			

Data Entry by:	<i>Sue Bee</i>	Date:	06/09/97
Approved by:	<i>Paul Schneider</i>	Date:	6/9/97

LABCORE Data Entry Template for Worklist# 18525

Analyst: gll Instrument: PH01 Book # 18N9-D

Method: LA-212-106 Rev/Mod B.O

Worklist Comment: TX-244 PH. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STDPH				PH-01	LIQUID	<u>8.00</u>	<u>8.00</u>	<u>N/A</u>	pH
97000388	TX-244 GRAB1	2	SAMPLE	S97T001286	0		PH-01	LIQUID	<u>N/A</u>	<u>9.42</u>	<u>0.01</u>	pH
97000388	TX-244 GRAB1	3	DUP	S97T001286	0		PH-01	LIQUID	<u>9.43</u>	<u>9.42</u>	<u>N/A</u>	pH
97000388	TX-244 GRAB1	4	SAMPLE	S97T001290	0		PH-01	LIQUID	<u>N/A</u>	<u>9.47</u>	<u>0.01</u>	pH
97000388	TX-244 GRAB1	5	DUP	S97T001290	0		PH-01	LIQUID	<u>9.47</u>	<u>9.47</u>	<u>N/A</u>	pH
97000388	TX-244 GRAB1	6	SAMPLE	S97T001291	0		PH-01	LIQUID	<u>N/A</u>	<u>9.48</u>	<u>0.01</u>	pH
97000388	TX-244 GRAB1	7	DUP	S97T001291	0		PH-01	LIQUID	<u>9.48</u>	<u>9.47</u>	<u>N/A</u>	pH

Final page for worklist # 18525

A. Lampel 06/07/97
Analyst Signature Date

Susan Bee 6/07/97
Analyst Signature Date

Approved RW Schroeder 6/7/97

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.

LABCORE Data Entry Template for Worklist# 18524

Analyst: ABE 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	<u>1.66⁵⁰⁴</u>	<u>1.62⁵⁰⁴</u>	<u>N/A</u>	ug/mL
		2 BLNK			OH-01	LIQUID	<u>1</u>	<u>2.42</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	3 SAMPLE	S97T001286	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=6.83</u>		ug/mL
97000388	TX-244 GRAB1	4 DUP	S97T001286	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=6.71</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	5 SAMPLE	S97T001290	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=6.64</u>		ug/mL
97000388	TX-244 GRAB1	6 DUP	S97T001290	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=6.60</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	7 SAMPLE	S97T001291	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=6.52</u>		ug/mL
97000388	TX-244 GRAB1	8 DUP	S97T001291	0	OH-01	LIQUID	<u>N/A</u>	<u>PH=6.57</u>	<u>N/A</u>	ug/mL

Final page for worklist # 18524

ABE 6-9-97
Analyst Signature Date

R. 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 exists. 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 Δ pH=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 Δ pH=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 Δ pH=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 Δ pH=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 Δ pH=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 Δ pH=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   dPH=1/div
start V     .000 ml

```

C00= .500ml

```

date 97-06-09 time 12:06
GET pH      12 # 156
Id.#1      1291-04
Id.#2      .2005
pH(init)   6.57
stop volt.reached
=====

```

```

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

```

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		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		
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:	<i>RS</i>	Date:	06/09/97
Approved by:	<i>RW Schneider</i>	Date:	6/9/97

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 #		
BLANK		
Instrument Code		
PH01	Detection Limit = 125µg / SS * DF	
Analyst	Detection Limit (µg/mL)	4.17E+01
DGG	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
06/09/97		
Time		
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:	<i>[Signature]</i>	Date:	06/09/97
Approved by:	<i>[Signature]</i>	Date:	6/9/97

LABCORE Data Entry Template for Worklist# 18739

Analyst: JLS Instrument: PH01 Book # STD 139N163
Method: LA-211-104 Rev/Mod AZ A-1 ^{pre 3/2/97} 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	<u>1</u>	<u>0.K.</u>	<u>N/A</u>	moles OH-/L
		2 STD			OHDEMAND	LIQUID	<u>3.30e-1</u>	<u>3.04e-1</u>	<u>N/A</u>	moles OH-/L
97000388	TX-244 GRAB1	3 SAMPLE	S97T001292	0	OHDEMAND	LIQUID	<u>N/A</u>	<u><1.47e-1</u>	<u>1.47e-1</u>	moles OH-/L
97000388	TX-244 GRAB1	4 DUP	S97T001292	0	OHDEMAND	LIQUID	<u><1.47e-1</u>	<u><1.47e-1</u>	<u>N/A</u>	moles OH-/L
97000388	TX-244 GRAB1	5 SAMPLE	S97T001293	0	OHDEMAND	LIQUID	<u>N/A</u>	<u><1.47e-1</u>	<u>1.47e-1</u>	moles OH-/L
97000388	TX-244 GRAB1	6 DUP	S97T001293	0	OHDEMAND	LIQUID	<u><1.47e-1</u>	<u><1.47e-1</u>	<u>N/A</u>	moles OH-/L
97000388	TX-244 GRAB1	7 SAMPLE	S97T001294	0	OHDEMAND	LIQUID	<u>N/A</u>	<u>1.48e-1</u>	<u>1.47e-1</u>	moles OH-/L
97000388	TX-244 GRAB1	8 DUP	S97T001294	0	OHDEMAND	LIQUID	<u>1.48e-1</u>	<u><1.47e-1</u>	<u>N/A</u>	moles OH-/L

Final page for worklist # 18739

JLS 6/21/97
Analyst Signature Date

RWS 6-24-97
Analyst Signature Date ^{REVS 6/25/97}

Samples S97T001293 & S97T001294

RWS 6/25/97

Results rejected due to poor resolution.

Reanalysis requested on larger sample size. RWS

WL#18924

6/25/97

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

Data Entry Comments: Sample size = .050 ml in all samples, spk volume =

.050 ml in all samples. STD Sample size was .050 ml ^(139N163)

NaOH HNO₃ titrant = .1994 m

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
 EP1 .009 4.85
 stop volt.reached
 =====

date 97-06-21 time 23:21
 GET pH 12 # 210
 .10ml/div d_{pH}=1/c
 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
 EP1 .222 8.40
 EP2 .285 4.48
 al stop
 =====

date 97-06-21 time 23:46
 GET pH 12 # 212
 .10ml/div d_{pH}=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
 pH(init) 11.33
 V/ml pH
 P1 .176 8.0
 stop volt.reached
 =====

date 97-06-21 time 19:15
 GET pH 12 # 197
 .10ml/div d_{pH}=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
 P1 .222 7.54
 P2 .285 4.47
 manual stop
 =====

date 97-06-21 time 23:59
 GET pH 12 # 213
 .10ml/div d_{pH}=1/div
 start V .000 ml

S97T1292 S.S. .050 mL
 date 3:33
 GET pH 12 # 211
 Id.#1 1
 Id.#2 .1994
 pH(init) 11.40
 V/ml pH
 EP1 .229 7.76
 EP2 .292 4.28
 stop volt.reached
 =====

date 97-06-21 time 23:33
 GET pH 12 # 211
 .10ml/div d_{pH}=1/c
 start V .000 ml

S97T1293 Dup
 S.S. .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
 EP1 .221 8.13
 EP2 .251 5.66
 stop volt.reached
 =====

date 97-06-22 time 00:05
 GET pH 12 # 214
 .10ml/div d_{pH}=1/c
 start V .000 ml

S97T 1294
S.S. 0.50 ml

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

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 $\Delta pH=1/di$
start V .000 ml

~~S97T 400~~ S.S. 0.47
S97T 1294DP
S.S. 0.50 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
=====

date 97-06-22 time 00
GET pH 12 #
.10ml/div $\Delta pH=1/di$
start 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			

$$\text{mol/L} = ((M1 \cdot V1) - (M2 \cdot V2)) / SS$$

mmol hydroxide 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:	<i>RWS</i>	Date:	6/24/97

LA-211-104 (A-1)

Caustic Demand

		BLANK	REPLICATE
TYPE	Sample Size in mL (SS)	0.050	
BLANK	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)	0.009	
OHDEMAND	mol/L	9.70E-01	N/A
MATRIX	Result mol/L =	9.70E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-01	
BLNK			
INSTRUMENT CODE	Sample Result =	9.70E-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 = $((M1 \cdot V1) - (M2 \cdot V2)) / SS$

mmol hydroxide 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:	<i>RW Schneider</i>	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			
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 hydroxide 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:	<i>R. Schneider</i>	Date:	6/24/97

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

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)	0.222	
OHDEMAND	mol/L	1.20E-01	N/A
MATRIX	Result mol/L =	1.20E-01	
LIQUID			
SAMPLE #	Detection Limit =	1.47E-01	
S97T001292			
INSTRUMENT CODE	Sample Result =	< 0.147	
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			

$$\text{mol/L} = ((M1 \cdot V1) - (M2 \cdot V2)) / SS$$

mmol hydroxide 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:	<i>RWS</i>	Date:	6/22/97

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			
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 hydroxide 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:	<i>R. W. Schroeder</i>	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	$\text{mol/L} = ((M1 \cdot V1) - (M2 \cdot V2)) / SS$		
RWS			
ANALYST	mmol hydroxide 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:	<i>R. J. Schroeder</i>	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 hydroxide 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:	<i>G. J. H.</i>	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			
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 hydroxide 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:	<i>[Signature]</i>	Date:	6/24/97

LABCORE Data Entry Template for Worklist# 18924

Analyst: JdS **Instrument:** PH01 **Book #** 139N16B Lcs
95N8A SK

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	<u>3.30e-1</u>	<u>3.56e-1</u>	<u>N/A</u>	moles OH-/L
97000388	TX-244 GRAB1	2	SAMPLE	S97T001293	0		OHDEMAND	LIQUID	<u>N/A</u>	<u>1.48e-1</u>	<u>1.47e-2</u>	moles OH-/L
97000388	TX-244 GRAB1	3	DUP	S97T001293	0		OHDEMAND	LIQUID	<u>1.48e-1</u>	<u>1.43e-1</u>	<u>N/A</u>	moles OH-/L
97000388	TX-244 GRAB1	4	SAMPLE	S97T001294	0		OHDEMAND	LIQUID	<u>N/A</u>	<u>1.52e-1</u>	<u>1.47e-2</u>	moles OH-/L

Final page for worklist # 18924

Analyst Signature _____ **Date** _____

R. Schneider 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: JLS Instrument: PH01 Book# 139A/68 STD

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

JLS Spk 6/25/97
Analyst Signature Date

Analyst Signature Date

USE 0.500 Sample Size and ~~0.500mL~~^{0.100mL} spike volumes

changed spk volume because run @ .050 PH was only 9.5... USED .100mL of spk

(Titrant) = HNO_3 .1994M

Data Entry Comments: USED .100 spk

INSUFFICIENT SAMPLE FOR 1292, ONLY ENOUGH SAMPLE 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
 139 N16B .050 ml
 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
 =====

35 025157
 597K 55.500 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
 =====

B1K

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 07:55
 GET pH 12 # 269
 .10ml/div Δ pH=1/div
 start V .000 ml

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

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

S97T 1293Dyf
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
=====

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

S97T 1294
SS Q500W

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 10:36
GET pH 12 # 276
.10ml/div dPH=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			

$$\text{mol/L} = ((M1 \cdot V1) - (M2 \cdot V2)) / SS$$

mmol hydroxide 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:	<i>RWS</i>	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			

$$\text{mol/L} = ((M1 \cdot V1) - (M2 \cdot V2)) / SS$$

mmol hydroxide 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:	<i>RWS</i>	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	mol/L = $((M1 \cdot V1) - (M2 \cdot V2)) / SS$		
RWS			
ANALYST	mmol hydroxide spiked = OHsp = Hydroxide Spiking Std. Conc (M) X Vol. Spiking St		
JDS	mmol hydroxide detected = OHd = Titrant Conc. (M) X Titrant Vol (mL)		
DATE COMPLETED	mmol hydroxide consumed = OHcons = OHsp - OHd		
07/01/97	Buffering Capacity (M) = OHcons / sample volume (mL)		
ANALYSIS DATE	Buffering Capacity (moles/kg) = OHcons/Sample mass (g)		
06/25/97			
ANALYSIS TIME			
SAMPLE POINT			
TX244			

Data Entered by:	RWS	Date:	07/01/97
Signature of Chemist:	<i>RWS</i>	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			

$$\text{mol/L} = ((M1 \cdot V1) - (M2 \cdot V2)) / SS$$

mmol hydroxide 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:	<i>RWS</i>	Date:	7/1/97

LABCORE Data Entry Template for Worklist# 18652

Analyst: HCN Instrument: NH301 Book # 31A19-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	<u>4.01e2</u>	<u>4.30e2</u>	<u>N/A</u>	ug/mL
		2	BLNK				NH3-01	LIQUID	<u>1</u>	<u><1.00</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	3	SAMPLE	S97T001292	0		NH3-01	LIQUID	<u>N/A</u>	<u>5.80e2</u>	<u>1.00</u>	ug/mL
97000388	TX-244 GRAB1	4	DUP	S97T001292	0		NH3-01	LIQUID	<u>5.80e2</u>	<u>6.75e2</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	5	SAMPLE	S97T001293	0		NH3-01	LIQUID	<u>N/A</u>	<u>1.10e3</u>	<u>1.00</u>	ug/mL
97000388	TX-244 GRAB1	6	DUP	S97T001293	0		NH3-01	LIQUID	<u>1.10e3</u>	<u>7.95e2</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	7	SAMPLE	S97T001294	0		NH3-01	LIQUID	<u>N/A</u>	<u>8.45e2</u>	<u>1.00</u>	ug/mL
97000388	TX-244 GRAB1	8	DUP	S97T001294	0		NH3-01	LIQUID	<u>8.45e2</u>	<u>9.05e2</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	9	SPK	S97T001294	0		NH3-01	LIQUID	<u>100</u>	<u>121</u>	<u>RWS 7/1/97</u>	ug/mL
		10	STD				NH3-01	LIQUID	<u>4.01e2</u>	<u>3.95e2</u>	<u>N/A</u>	ug/mL

Final page for worklist # 18652

Analyst Signature [Signature] Date 6/17/97

Analyst Signature [Signature] Date 6/17/97

Approved RWS [Signature] 7/1/97

Bypassed high RPD due to insufficient sample for reanalysis,

RWS 7/1/97

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 10:52, 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 CONC= 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

31W19.C

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 CONC= 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 CONC= .00312

WL#18652

6.17.97

BLK

1:NH3 SLOPE=-60.1 mV/DEC
AT 11:08, 06-17-97

1:NH3 CONCEN= 17.2 $\uparrow$

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 CONCEN= 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 CONCEN= 11.6

ENTERED

1292 Dup

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

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

1293 ~~DEP~~ SAM

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 CONC= 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 CONC= 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 CONC= 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 CONC= 15.9

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

1294 Sam

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 CONC= 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 CONC= 16.9

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

1294 Dup

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

~~STD VOL= 25.000 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 CONC= 18.1

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 CONC= 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 CONC= 65.4

129/19/97

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

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 CONC= 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 CONC= 15.8

13N19-C
Std wt 18.53

WORKBOOK PAGE: STD1

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:	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

Type	Instrument Data (µg/mL)	ID	BLNK
BLNK	Blank Result from the Instrument (µg/mL)	BR	0.000
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.0031
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	0.5
Test Code			25.0
Matrix			
LIQUID			
Batch Number			
97002724			
Rerun			
0			
Sample Prep			
N/A	NH ₃ Concentration (µg/mL)	NH ₃ CONC	< 1.00E+00
Sample #	Method Detection Limit (µg/mL)		1.00
Instrument Code			
NH301			
Prepared By			
LCM	NH ₃ Concentration (µg/mL) = (BR) * (FVOL / VSAM)		
Chemist			
RWS			
Analyst			
KGH			
Date Complete			
06/27/97			
Analysis Date			
06/17/97			
Analysis Time			
Sample Point	NH ₃ Concentration (µg/mL)		< 1.00E+00
TX-244 GRAB 1			

Analyst:

KGH Date: 06/27/97

Signature of Chemist:

RWS

RWS Date: 6/30/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: SAM3

AMMONIA (NH3) : LA-631-001 (B-2)

C-D 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:

RWS Date: 6/30/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: DUP4

AMMONIA (NH3) : LA-631-001 (B-2) ^{C-0} ^{Pass} ^{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	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 10		
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			
	RPD (DUP & SAM)	^{Pass} 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:	<i>D. J. Schroeder</i> 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:	RWS Date: 6/30/97

SAMPLE.WB1 REV XX

37810NML

WORKBOOK PAGE: DUP6

AMMONIA (NH3) : LA-631-001-(B-2) ^{G-O} <i>RWS 6/30/97</i>		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	RPD (DUP & SAM) = Absolute Val. ((NH3 CONC - SAM CONC) / ((NH3 CONC + SAM CONC) / 2)) * 10		
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			
	RPD (DUP & SAM)	<i>RWS 6/30/97</i>	<i>36% 32%</i>
Sample Point	NH3 Concentration (µg/mL)		7.95E+02
TX-244 GRAB 1			

Analyst:	KGH Date: 06/27/97
Signature of Chemist:	<i>RWS 6/30/97</i> RWS Date: 6/30/97

SAMPLE WB1 REV XX

37810NML

WORKBOOK PAGE: SAM7

AMMONIA (NH3) : LA-631-001 (B-2)

C-D RWS 6/30/97

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 Signature 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:	<i>Peter Schneider</i> 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)		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:		RWS	Date: 7-1-97	
39	SAMPLE.WB1 REV 1.0		631001ML		

WORKBOOK PAGE: ST_END10

AMMONIA (NH3) : LA-631-001 (B-2)

C-0
RWS
6/30/97

LIQUIDS/SOLIDS

Type	Instrument Data (µg/mL)	ID	STD
STD	Blank Result from the Instrument (µg/mL)	BR	15.800
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.0031
18652	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	1.0
Test Code	LCS Standard Book Number	LCS	25.0
	LCS Standard Concentration (µg/mL)	STD VAL	31N19C
Matrix			4.01E+02
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:

RWS Date: 6/30/97

SAMPLE WB1 REV XX

37810NML

LABCORE Data Entry Template for Worklist# 19115

Analyst: KCH Instrument: NH301 Book # 3119C

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	<u>4.01e2</u>	<u>4.35e2</u>	<u>N/A</u>	ug/mL
		2 BLNK-PREP			NH3-01	LIQUID	<u>1</u>	<u>7.80e-1</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	3 SAMPLE	S97T001295	0 D	NH3-01	LIQUID	<u>N/A</u>	<u>4.17e2</u>	<u>6.00</u>	ug/mL
97000388	TX-244 GRAB1	4 DUP	S97T001295	0 D	NH3-01	LIQUID	<u>4.17e2</u>	<u>4.41e2</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	5 SAMPLE	S97T001296	0 D	NH3-01	LIQUID	<u>N/A</u>	<u>4.29e2</u>	<u>6.00</u>	ug/mL
97000388	TX-244 GRAB1	6 DUP	S97T001296	0 D	NH3-01	LIQUID	<u>4.29e2</u>	<u>4.53e2</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	7 SAMPLE	S97T001297	0 D	NH3-01	LIQUID	<u>N/A</u>	<u>4.08e2</u>	<u>6.00</u>	ug/mL
97000388	TX-244 GRAB1	8 DUP	S97T001297	0 D	NH3-01	LIQUID	<u>4.08e2</u>	<u>4.71e2</u>	<u>N/A</u>	ug/mL
97000388	TX-244 GRAB1	9 SPK	S97T001297	0 D	NH3-01	LIQUID	<u>4.01e2</u> <u>4.01e2</u>	<u>4.83e2</u>	<u>N/A</u>	ug/mL
		10 STD			NH3-01	LIQUID	<u>4.45e2</u>	<u>4.45e2</u>	<u>N/A</u>	ug/mL

RWS 7/18/97

Final page for worklist # 19115

[Signature] 7-14-97
Analyst Signature Date

[Signature] 7/21/97
Analyst Signature Date
Approved RW Schueller 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.

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

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 CONC= 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 CONC= 17.4 - $0.00055 \times 25 \text{ df} = 435/401 \times 100 = 108.5\%$

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 CONC= 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 CONC= .00055

B.I.
K

Prep BHK

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 CONC= 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 CONC= .651 - $.00055 \times \text{I.d.f.} = .650 \text{ ppm} \times 1.2 \text{ prep factor} = .780$

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 CONC= 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 CONC= $13.9 \times .00055 \times 25 \times 1.2 = 417$ ppm

STM
1295

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 CONC= 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 CONC= 14.7 $-.00055 \times 25 \times 1.2 = 441 \text{ ppm}$

1295
Dup

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

1296 SAM

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 CONC= 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 CONC= 14.3

$$-0.00055 \times 25 \times 1.2 = 429$$

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 CONC= 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 CONC= 15.1 - $.00055 \times 25 \times 1.2 = 453$ ppm

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

1297 5AM

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 CONC= 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 CONC= 13.6 - .00055 x 25 x 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 CONC= 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 CONC= 15.7 $-0.00055 \times 25 \times 1.2 = 471$ ppm

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

1297 SpK

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 CONC= 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 CONC= 32.9

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

std

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 CONC= 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 CONC= 17.8 - 0.00055 X 25 X 2 = 445/40 X 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:	<i>RW Schroeder</i>	RWS	Date:	7/18/97	
39	SAMPLE.WB1 REV XX					

37810NML

LABCORE Completed Worklist Report for Worklist# 18527

Analyst: eal

Instrument: IC01

Book# 61A1620B

Method: 1A-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 P04	QC	1	<1.20e-1		ug/mL
1	CCB	0	@IC-QC S04	QC	1	<1.38e-1		ug/mL
1	CCB	0	@IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2	CCV	0	@IC-QC F	QC	5.90e01	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 P04	QC	5.45e02	5.31e+02	97.431 %	Recovery
2	CCV	0	@IC-QC S04	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	@IC-01 F-02	LIQUID	N/A	1.709e+03	25.450	ug/mL
3	SAMPLE	S97T001286	@IC-01 CL-02	LIQUID	N/A	6.029e+02	36.060	ug/mL
3	SAMPLE	S97T001286	@IC-01 NO2-02	LIQUID	N/A	1.910e+03	229.100	ug/mL
3	SAMPLE	S97T001286	@IC-01 BR-02	LIQUID	N/A	2.651e+02	265.100	ug/mL
3	SAMPLE	S97T001286	@IC-01 NO3-02	LIQUID	N/A	5.206e+04	294.800	ug/mL
3	SAMPLE	S97T001286	@IC-01 P04-02	LIQUID	N/A	1.315e+04	254.500	ug/mL
3	SAMPLE	S97T001286	@IC-01 S04-02	LIQUID	N/A	3.122e+03	292.700	ug/mL
3	SAMPLE	S97T001286	@IC-01 OXALATE2	LIQUID	N/A	2.227e+02	222.700	ug/mL
4	DUP	S97T001286	@IC-01 F-02	LIQUID	1.71e+03	1.68e+03	1.770	RPD
4	DUP	S97T001286	@IC-01 CL-02	LIQUID	6.03e+02	5.69e+02	5.802	RPD
4	DUP	S97T001286	@IC-01 NO2-02	LIQUID	1.91e+03	1.92e+03	0.522	RPD
4	DUP	S97T001286	@IC-01 BR-02	LIQUID	<2.65e2	<2.65e2		RPD
4	DUP	S97T001286	@IC-01 NO3-02	LIQUID	5.21e+04	5.17e+04	0.771	RPD
4	DUP	S97T001286	@IC-01 P04-02	LIQUID	1.32e+04	1.30e+04	1.527	RPD
4	DUP	S97T001286	@IC-01 S04-02	LIQUID	3.12e+03	3.1e+03	1.274	RPD
4	DUP	S97T001286	@IC-01 OXALATE2	LIQUID	<2.23e2	<2.23e2		RPD
5	SAMPLE	S97T001290	@IC-01 F-02	LIQUID	N/A	1.638e+03	25.450	ug/mL
5	SAMPLE	S97T001290	@IC-01 CL-02	LIQUID	N/A	6.171e+02	36.060	ug/mL
5	SAMPLE	S97T001290	@IC-01 NO2-02	LIQUID	N/A	1.984e+03	229.100	ug/mL
5	SAMPLE	S97T001290	@IC-01 BR-02	LIQUID	N/A	2.651e+02	265.100	ug/mL
5	SAMPLE	S97T001290	@IC-01 NO3-02	LIQUID	N/A	5.322e+04	294.800	ug/mL
5	SAMPLE	S97T001290	@IC-01 P04-02	LIQUID	N/A	1.305e+04	254.500	ug/mL
5	SAMPLE	S97T001290	@IC-01 S04-02	LIQUID	N/A	3.079e+03	292.700	ug/mL
5	SAMPLE	S97T001290	@IC-01 OXALATE2	LIQUID	N/A	2.227e+02	222.700	ug/mL
6	DUP	S97T001290	@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 DUF	S97T001290	0	@IC-01	CL-02	LIQUID	6.17e+02	6.07e+02	1.634 RPD
6 DUF	S97T001290	0	@IC-01	NO2-02	LIQUID	1.98e+03	1.91e+03	3.599 RPD
6 DUF	S97T001290	0	@IC-01	BR-02	LIQUID	<2.65e2	<2.65e2	RPD
6 DUF	S97T001290	0	@IC-01	NO3-02	LIQUID	5.32e+04	5.17e+04	2.860 RPD
6 DUF	S97T001290	0	@IC-01	PO4-02	LIQUID	1.30e+04	1.26e+04	3.125 RPD
6 DUF	S97T001290	0	@IC-01	SO4-02	LIQUID	3.08e+03	3.07e+03	0.325 RPD
6 DUF	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 DUF	S97T001291	0	@IC-01	F-02	LIQUID	1.67e+03	1.68e+03	0.597 RPD
8 DUF	S97T001291	0	@IC-01	CL-02	LIQUID	6.03e+02	6.23e+02	3.263 RPD
8 DUF	S97T001291	0	@IC-01	NO2-02	LIQUID	1.94e+03	1.90e+03	2.083 RPD
8 DUF	S97T001291	0	@IC-01	BR-02	LIQUID	<2.65e2	<2.65e2	RPD
8 DUF	S97T001291	0	@IC-01	NO3-02	LIQUID	5.28e+04	5.33e+04	0.943 RPD
8 DUF	S97T001291	0	@IC-01	PO4-02	LIQUID	1.30e+04	1.29e+04	0.772 RPD
8 DUF	S97T001291	0	@IC-01	SO4-02	LIQUID	2.96e+03	3.05e+03	2.995 RPD
8 DUF	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 _____

John M. Lyle
Reviewer Signature Date 6/12/97

LABCORE Data Entry Template for Worklist# 18527

Analyst: EDL Instrument: IC0 1 Book# 61N20B

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 06-04-97
Analyst Signature Date

Analyst Signature Date

uploaded 6-10-97

John Wansell

18527JUN.CSV

Validated 6/11/97 gm Lyle

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 Jones* Column: AG4A/AS4A anion column

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.25		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

```

=====
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

```

=====
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: JK Seto Instrument: ICP02 Book# 678489
Method: LA-505-151/161 Rev/Mod C-1
Worklist Comment: JK 78-77 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	Date
<i>[Signature]</i>	07 06-15-97
5977001284	.1-10 JF 101
5977001284	.1-10 101
5977001290	.1-10 101
5977001290	.1-10 101

Reviewed and Validated by:
[Signature] 7/9/97
Analyst Signature Date

Data Entry Comments:

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

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

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

JK

06-13-97

TX-244

S97T001286

S97T001286 90 6-8-97

S97T001291

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 149 TO 152

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Analysis Report

Averages

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#	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	.4293	.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

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

Analysis Report

Averages

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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

#	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

#	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

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

Analysis Report

Averages

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#	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	.2239
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 100
06-13-97

LABCORE Data Entry Template for Worklist# 19654

Analyst: DKS Instrument: ICPQ²_{8/1/97} Book# 67848B

Method: LA-505-151/161 Rev/Mod C-2
8/1/97

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:

08/05/97 10:44
A-0004-1**LABCORE Data Entry Template for Worklist# 19654**

S Type	Sample#	R A Test	Matrix	Group#	Project
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Final page for worklist # 19654for: *Saul H. Pang**D. K. Sato**8/5/97*

Analyst Signature

Date

Reviewed & Validated by:

Saul H. Pang *8/5/97*

Analyst Signature

DateData Entry Comments:

TX-244 Grab
File # 9708050. TXT

8-5-97

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

ZCU

ICB

LS

ICSE

ICSEB

597700129-L, 1-10-28, JF 505

597700129I, 1-10, 101

597700129-D, 1-10, 101

597700129-Q, 1-10, 101, 1ml sample + 2.02 ml SST5 + 7.48 ml H₂O₃

597700129-Y, 1-10-19, 1010

597700129-QX, 1-10-19, 1010, 1ml sample + 1ml each K₂H₂O₄ 28+35 + 7ml H₂O₃

ZUSG

ICSEB

ZCU

ICB

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

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
08-05-97

TX-244 GRAB 577T001291

Spide:

$$Na = \left(\frac{28600}{101} \right) - \left(\frac{28490}{101} \right) \times 100 = 108.9\%$$

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 156 TO 159.

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

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	Ga	Gd	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

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

Analysis Report

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#	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	.4438	-.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	-1.336
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	-1.317	1.941	-.2242	-3.802	-15.64
11	S97T001291_AX	9797.	10070.	304.1	10030.	9875.	19140.
12	ICSA	-.0091	.0016	-.0006	.0016	.0188	-.0003
13	ICSAB	-.0041	.0017	.0010	.0009	.0413	-.0111
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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Analysis Report

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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	CGV	5.054	.0079	4.949	5.000
15	CCB	.0000	.0000	-.0004	.0002

[Handwritten signature]
08-05-97

LABCORE Completed Worklist Report for Worklist# 18526

Analyst: slh

Instrument: CARB2

Book# 25N12A TIC
26N12A TOC

Method: LA 342-100 Rev/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 _____

RJL 6-19-97
Analyst Signature _____ Date _____

RW Schneider 6/20/97
Reviewer Signature _____ Date _____

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 Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 162 TO 184.

Sample Run By:

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 *SL Hood Boatright*

00002

200ml = 25ml x 8
= 1.000ml
SLH
6-13-97

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

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	0.30	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 Carbon

Sample Run By:

SL HOOD

00002

1ml = 1.0685g

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

Incl = 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

Incl = 1.066E+02

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TIC/TOC REV 2.0

Sample: S97T01286 DUP

Date: 06/12/97

Time: 23:35:56

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	0.50	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

Incl = 1.0666g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TIC/TOC 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

Incl = 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 Carbon

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

Recalculate

Sample Run By:

SL HOOD

00002

Inl = 1.0731g

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

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	0.40	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 Carbon

Sample Run By:

SL HOOD

00002

ml = 1.0666g

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

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	0.20	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 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: 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 Carbon

Sample Run By:

SL HOOD

00002

SS Incl = 1.0778g

176

+ .500 ml spike
25012A

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

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	0.50	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
26/12-A

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

			TIC	TOC
Type	Sample Size in mL	(SS)	0.0000	0.0000
BLNK	Dilution Factor	(DF)	1	1
Work List	µg of Carbon in Sample	(C1)	8.5	29.8
18526	µg of Carbon from Baseline	(C2)	3.8	30.7

Test Code
@TIC/TOC1

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

Method Detection Limit in µg/mL

Sample Point
TX-244

µg of Carbon

TIC	TOC
5	40
4.70E+00	9.00E-01

Data Entered By:
Signature of Chemist:

BLANK.WB1 REV 1.0

342100ML

RTS

Date: 06/19/97

Date: 6/20/97

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 ($\mu\text{g}/\text{ml}$)	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

QC Actual in $\mu\text{g}/\text{mL}$ = Standard Value ($\mu\text{g}/\text{mL}$)QC Found in $\mu\text{g}/\text{mL}$ = (C1 - C2) * DF / SSQC Found in $\mu\text{g}/\text{mL}$ for TIC = 5 if C1 < C2QC Found in $\mu\text{g}/\text{mL}$ for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

		TIC	TOC
Analysis Time	Method Detection Limit in $\mu\text{g}/\text{mL}$	5	40
	QC Actual in $\mu\text{g}/\text{mL}$	6.02E+02	3.00E+03
Sample Point	QC Found in $\mu\text{g}/\text{mL}$	5.95E+02	2.90E+03
TX-244	Percent Standard Recovery	98.8	96.7

Data Entered By:	RTS	Date:	06/19/97
Signature of Chemist:	<i>RWS</i>	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			
@TIC/TOC1			
Matrix			
LIQUID			
Batch Number			
97002582			
Rerun	µg of Carbon/mL = (C1-C2) * DF / SS		
0	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T001286			
Instrument Code			
CARB2			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
06/19/97			
Analysis Date	NOTE: FOR TOC: The Reported Result is < 40.		
06/13/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
		5	40
Sample Point	µg of Carbon/mL Note: <	1.07E+02	2.41E+01
TX-244			

Data Entered By:	RTS	Date:	06/19/97
Signature of Chemist:	<i>RWS</i>	Date:	6/20/97

SAMPLE.WB1 REV 1.0

342100ML

180

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	µg of Carbon/mL = (C1-C2) * DF / SS		
0	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T001286			
Instrument Code			
CARB2			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
06/19/97			
Analysis Date	NOTE: FOR TOC: The Reported Result is < 40.		
06/13/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
		5	40
Sample Point	µg of Carbon/mL Note: <	1.07E+02	2.23E+01
TX-244			

Data Entered By:

RTS

Date: 06/19/97

Signature of Chemist:

342100ML

Date: 6/20/97

SAMPLE.WB1 REV 1.0

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	µg of Carbon/mL = (C1-C2) * DF / SS			
0	µg of Carbon/mL for TIC = 5 if C1 < C2			
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2			
N/A				
Sample #				
S97T001290				
Instrument Code				
CARB2				
Prepared By				
RTS				
Chemist				
RWS				
Analyst				
SLH				
Date Complete				
06/19/97				
Analysis Date	NOTE: FOR TOC: The Reported Result is	< 40.		
06/13/97				
Analysis Time	Method Detection Limit in µg/mL		TIC	TOC
			5	40
Sample Point	µg of Carbon/mL	Note: <	1.05E+02	1.54E+01
TX-244				

Data Entered By:

RTS

Date: 06/19/97

Signature of Chemist:

RWS

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
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

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

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

		TIC	TOC
Analysis Time	Method Detection Limit in µg/mL	5	40
Sample Point	µg of Carbon/mL Note: <	1.04E+02	2.59E+01
TX-244			

Data Entered By:	RTS	Date:	06/19/97
Signature of Chemist:	<i>R. W. Schneider</i>	Date:	6/20/97

WORKBOOK PAGE: SPIKE7

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	1.0000	1.0000
Work List	Final Coulometer Reading in µg (C1)	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 Schneider

Date: 6/20/97

SPIKE.WB1 REV 1.1

342100ML

LABCORE Completed Worklist Report for Worklist# 18735

Analyst: slh

Instrument: CARB2

Book# 25N12A TIC

Method: LA-342-100 Rev/Mod E-0

26N12A TOC

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 slh Date 6/19/97

Reviewer Signature R. Schneider Date 6/20/97

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 Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 187 TO 203.

Sample Run By:

SL HOOD

00002

25ND-A
1.000ml

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 uL

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

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	1.00	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 = 1.0714g

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TIC/TOC 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

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	0.60	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 Carbon

Sample Run By:

SL HOOD

00002

Inl =
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

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	0.08	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

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	0.50	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 Carbon

Sample Run By:

SL HOOD

00002

1ml 7.0688
+ spike 25N/2-A
2000ml

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TIC/TOC REV 2.0

Sample: S97T01291 SPK

Date: 06/12/97

Time: 03:52:01

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	1.20	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 Carbon

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

Sample Run By:

SL HOOD

00002

1ml
= 1.0683g
.500g + 5pk 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	QC Actual in µg/mL = Standard Value (µg/mL)		
N/A	QC Found in µg/mL = (C1 - C2) * DF / SS		
Sample #	QC Found in µg/mL for TIC = 5 if C1 < C2		
STD	QC Found in µg/mL for TOC = 40 if C1 < C2		
Instrument Code	% Recovery = QC Found / QC Actual * 100		
CARB2			
Prepared By			
RT			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
06/19/97			
Analysis Date			
06/12/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.77E+02	2.74E+03
TX-244	Percent Standard Recovery	95.8	91.3

Data Entered By:	RT	Date:	06/19/97
Signature of Chemist:	<i>RWS</i>	Date:	6/20/97

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: BLANK2

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	8.3	31.8
18735	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

Method Detection Limit in µg/mL

Sample Point
TX-244

µg of Carbon

TIC	TOC
5	40
4.10E+00	4.80E+00

Data Entered By:	RT	Date:	06/19/97
Signature of Chemist:	<i>RWS</i>	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	µg of Carbon/mL = (C1-C2) * DF / SS		
0	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T001291			
Instrument Code			
CARB2			
Prepared By			
RT			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
06/19/97			
Analysis Date	NOTE: FOR TOC: The Reported Result is < 40.		
06/12/97			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
		5	40
Sample Point	µg of Carbon/mL Note: <	9.83E+01	2.35E+01
TX-244			

Data Entered By:	RT	Date:	06/19/97
Signature of Chemist:	<i>RW Acharya</i>	Date:	6/20/97

SAMPLE.WB1 REV 1.0

342100ML

201

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	µg of Carbon/mL = (C1-C2) * DF / SS		
0	µg of Carbon/mL for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/mL for TOC = 40 if C1 < C2		
N/A			
Sample #			
S97T001291			
Instrument Code			
CARB2			
Prepared By			
RT			
Chemist			
RWS			
Analyst			
SLH			
Date Complete			
06/19/97			
Analysis Date	NOTE: FOR TOC: The Reported Result is < 40.		
06/12/97			
Analysis Time	Method Detection Limit in µg/mL	5	40
Sample Point	µg of Carbon/mL Note: <	9.80E+01	1.62E+01
TX-244			

Data Entered By:

RT

Date: 06/19/97

Signature of Chemist:

RWS

Date: 6/20/97

SAMPLE.WB1 REV 1.0

342100ML

202

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:

RWS

Date: 6/20/97

SPIKE.WB1 REV 1.1

342100ML

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

RADIOCHEMICAL ANALYSIS

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

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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	0	@GEA-01 CO60-02	LIQUID	1	<1.01e-5		uCi/mL
1 BLNK	0	0	@GEA-01 CS13702	LIQUID	1	<2.32e-5		uCi/mL
2 STD	0	0	@GEA-01 CO60-02	LIQUID	6.378e-03	6.56e-03	102.854	% Recovery
2 STD	0	0	@GEA-01 CO60-02B	LIQUID	1	2.35	2.350	% Ct Error
2 STD	0	0	@GEA-01 CS13702	LIQUID	5.793e-03	6.06e-03	104.609	% Recovery
2 STD	0	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 .

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 _____

LABCORE Data Entry Template for Worklist# 18521

Analyst: SMF Instrument: GEA00 3 Book# 76 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

Lucie M. Dalton 6-9-97
Analyst Signature Date

Sharon L. Hale 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
 Sample Size: 3.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

SLC

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

Detector ID: GEA3
 File Number: NI3AC:1.cnf 363222.cnf 2
 Geometry: 42 SLN
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:00.42 sec
 Dead Time: 0.0%

Verified by:

SLC 6/10/97

>>>>>>> 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

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

>>>>>>> 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	661.86*	62	1.57	1323.90	1317	14	61.6		CS-137	2.324E-02

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	AB
Total Activity :			2.324E-02	2.324E-02			6/10/97

Grand Total Activity : 2.324E-02 2.324E-02

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

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	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

Removed by:

SLH

>>>>>>> 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%

Verified by:

SLH 6/10/97

>>>>>>> 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

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

>>>>>>> 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	661.91*	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

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

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

Minimum Detectable Activity Report (continued)

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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

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

 * 222-S Laboratory Counting Room 9-JUN-1997 16:55:25.19 *

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

Worklist #: 18521
 Sample ID: S97T1292-SAM
 Sample Size: 3.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Shubert

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

Detector ID: GEA3
 File Number: dka300:[spec.GEA3]3g3224.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:13.83 sec
 Dead Time: 0.5%

Verified by:

Shubert 6/10/97

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

Sample Count Time: 9-JUN-1997 16:04:29.98
 Decayed to: 9-JUN-1997 16:04:29.98
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA3]3GBACK

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

>>>>>>> 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

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

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

Minimum Detectable Activity Report (continued)

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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

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

 * 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

Removed by:

Remington

>>>>>>> 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%

Verified by:

AK Fitts 10 Jun 97

>>>>>>> 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

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

>>>>>>> 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	661.88*	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	151	55.1		K-40	9.210E-02

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	AK
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
"E" = Manually edited

"M" = Manually accepted
"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

Minimum Detectable Activity Report (continued)

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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

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

 * 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

Removed by:

RC Wright

>>>>>>> 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%

Verified by:

Jeff H 10 Jun 97

>>>>>>> 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

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

>>>>>>> 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*	107864	1.57	1323.92	1315	18	0.6		CS-137	40.6

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	2-Sigma Error	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/L	uCi/L					
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
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Flags: "K" = Keyline not found
"E" = Manually edited

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	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

Minimum Detectable Activity Report (continued)

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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

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

 * 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

Removed by:

N. Wright

>>>>>>> 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%

Verified by:

ZZ Little 10 Jun 97

>>>>>>> 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

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

>>>>>>> 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	661.90*	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	111	53.6			

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
"E" = Manually edited

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

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

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

 * 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

Removed by:

Re Wright

>>>>>>> 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%

Verified by:

AK Little 10 Jun 97

>>>>>>> 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

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

>>>>>>> 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	661.89*	108767	1.55	1323.95	1315	18	0.6		CS-137	41.0
0	1460.36*	19	2.02	2921.20	2913	161	47.9		K-40	0.110

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	6/10/97
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

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

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	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

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

 * 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

Removed by:

R

>>>>>>> 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%

Verified by:

RJH 10 Jun 97

>>>>>>> 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

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

>>>>>>> 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	661.88*	109497	1.56	1323.94	1315	18	0.6		CS-137	41.3

Total number of lines in spectrum	1	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	1	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	2-Sigma Error	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/L	uCi/L					
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
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Flags: "K" = Keyline not found
"E" = Manually edited

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

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	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

Minimum Detectable Activity Report (continued)

Page : 4

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

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

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	0	SR90-01 SR90-01 LIQUID		1	4.97E-6	49.700E-007	uCi/mL
1 BLNK	0	0	SR90-01 SR90-01C LIQUID		100	8.71E+01	87.100	% Recovery
1 BLNK	0	0	SR90-01 SR90-01E LIQUID		1.00	7.30E+01	73.000	uCi/mL
2 STD	0	0	SR90-01 SR90-01 LIQUID		1.67E-03	1.74E-3	104.192	% Recovery
2 STD	0	0	SR90-01 SR90-01C LIQUID		100	8.71E+01	87.100	% Recovery
2 STD	0	0	SR90-01 SR90-01E LIQUID		1.00	1.52E+00	1.520	% Ct. Error
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	% Ct. Error
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	% Ct. Error
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	% Ct. Error

Final page for worklist# 18520

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

[Signature]
Reviewer Signature _____ Date *12 Jun 97*

Sample S97T001292 will be rerun due to high RPD.

Rerun on wt# 18631 wt# 6/27/97

LABCORE Data Entry Template for Worklist# 18520

Analyst: KBC Instrument: AB00 Book# 75B56

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

Analyst Signature [Signature] Date 6-11-97

Analyst Signature [Signature] Date 6-11-97

Data Entry Comments:

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

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

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	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 4.37E-06 µCi/mL
06/10/97	Sr-89/90 CONCENTRATION	4.97E-06	µCi/mL		
Analysis Time					
11:00 PM	RELATIVE COUNTING ERROR	73.0%			
Sample Point					
TX-244 GRAB1	PERCENT CARRIER RECOVERY	87.1%			

Analyst:	KRQ	Date:	11-Jun-97
Signature of Chemist:	SAC	Date:	12 Jun 97

BLANK.WB1 REV 2.0

22010NML

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
Re-run	DATE OF SEPARATION (SD)	06/10/97	DETECTION LIMIT (Ld)	2.11
0	TIME OF COUNT (TOC)	04:20	Sr-89/90 CONC. in $\mu\text{Ci/L}$	1.7389E+00
Sample Prep	DATE OF COUNT (DOC)	06/11/97		
N/A	STANDARD BOOK #	75B56		
Sample #	STANDARD VALUE in $\mu\text{Ci/mL}$	1.6700E-03		
WL18520				
Instrument Code				
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)			
Prepared By	Sr-89/90 CONC in $\mu\text{Ci/mL}$ REPLACE RS WITH RMAX IF RS<Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0			
SEH	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/(64.2*DT))))*SS*REC*2220000)			
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))			
SAC	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)			
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100			
KRQ	NOTE: Expected weight = CVA * 0.1			
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
06/11/97	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
Analysis Date	Sr-89/90 CONCENTRATION	1.74E-03	$\mu\text{Ci/mL}$	DETECTION LEVEL 2.19E-06 $\mu\text{Ci/L}$
Analysis Time				
11:00 PM	RELATIVE COUNTING ERROR	1.5%		
Sample Point				
TX-244 GRAB1	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

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

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					DETECTION LEVEL 4.35E-06 µCi/mL
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%			

Analyst:	KRQ	Date:	11-Jun-97
Signature of Chemist:	<i>SA Cuth</i>	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
Re-run	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	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 4.28E-06 µCi/mL
06/10/97	Sr-89/90 CONCENTRATION	6.20E-04	µCi/mL		
Analysis Time					
11:00 PM	RELATIVE COUNTING ERROR	3.6%			
Sample Point					
TX-244 GRAB1	PERCENT CARRIER RECOVERY	87.5%			

Analyst:	KRQ	Date:	11-Jun-97
Signature of Chemist: <i>Lo Carter</i>	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)	10:46	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	06/10/97	DETECTION LIMIT	(Ld) 2.11
0	TIME OF COUNT	(TOC)	08:36	Sr-89/90 CONC in $\mu\text{Ci/L}$	3.5293E-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 $\mu\text{Ci/L}$ Replace RS with RMAX if $RS \leq Lc$ and $RS = 0$ or Replace RS with Lc if $RS < 0$				
Prepared By	RS*DF*DDF/((C1+C2*(1-e 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 4.28E-06 $\mu\text{Ci/mL}$
06/10/97	Sr-89/90 CONCENTRATION	3.53E-04	$\mu\text{Ci/mL}$		
Analysis Time					
11:00 PM	RELATIVE COUNTING ERROR	4.8%			
Sample Point					
TX-244 GRAB1	PERCENT CARRIER RECOVERY	87.3%			

Analyst:	KRQ	Date:	11-Jun-97
Signature of Chemist:		SAC	Date: 11 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 $\mu\text{Ci/L}$		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 $\mu\text{Ci/L}$ Replace RS with RMAX if $RS \leq Lc$ and $RS \geq 0$ 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 4.24E-06 $\mu\text{Ci/mL}$
06/10/97	Sr-89/90 CONCENTRATION		3.40E-04	$\mu\text{Ci/mL}$		
Analysis Time						
11:00 PM	RELATIVE COUNTING ERROR		4.8%			
Sample Point						
TX-244 GRAB1	PERCENT CARRIER RECOVERY		87.9%			

Analyst:	KRQ	Date:	11-Jun-97
Signature of Chemist:		SAC	Date: 12 June 97

SAMPLE.WB1 REV 2.0

22010NML

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
WorkList	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
IRerun	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						
S977001294						
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	5.05E-04	µCi/mL			
Analysis Time						
11:00 PM	RELATIVE COUNTING ERROR	4.0%				
Sample Point						4.25E-06
TX-244 GRAB1	PERCENT CARRIER RECOVERY	87.6%				µCi/mL

Analyst:	KRQ	Date:	11-Jun-97
Signature of Chemist:	SAC	Date:	12 Jun 97

SAMPLE.WB1 REV 2.0

22010NML

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)	0.600	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
Re-run	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 4.27E-06 µCi/mL
06/10/97	Sr-89/90 CONCENTRATION	4.67E-04	µCi/mL		
Analysis time					
11:00 PM	RELATIVE COUNTING ERROR	4.1%			
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. Error
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	% Ct. Err

Final page for worklist# 18631

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

 Reviewer Signature

 Date

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

LABCORE Data Entry Template for Worklist# 18631

Analyst: CPJ 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

CPJ 6/13/97
Analyst Signature Date

CPJ 6/13/97
Analyst Signature Date
MTB 6/13/97

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

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	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0				
CJO	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)				
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
SLF	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)				
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
CRJ	NOTE: Expected weight = CVA * 0.1				
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
06/13/97	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
Analysis Date					
06/13/97	Sr-89/90 CONCENTRATION	1.65E-03	µCi/mL	DETECTION LEVEL 4.98E-06 µCi/L	
Analysis Time					
11:05 AM	RELATIVE COUNTING ERROR	1.7%			
Sample Point					
TX-244 GRAB1	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

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

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

WORKBOOK PAGE: BLANK2						BLNK
LA-220-101 / D-1		Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)				
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
Reran	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						
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	Sr-89/90 CONCENTRATION		8.97E-06		µCi/mL	
Analysis Time						
11:05 AM	RELATIVE COUNTING ERROR		84.9%		9.91E-06	
Sample Point						
TX-244 GRAB1	PERCENT CARRIER RECOVERY		89.8%		µCi/mL	
				DETECTION LEVEL		

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)

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						DETECTION LEVEL 9.87E-06 µCi/mL
06/13/97	Sr-89/90 CONCENTRATION	5.60E-04	µCi/mL			
Analysis Time						
11:05 AM	RELATIVE COUNTING ERROR	4.3%				
Sample Point						µCi/mL
TX-244 GRAB1	PERCENT CARRIER RECOVERY	90.0%				

Analyst:	CRJ	Date:	13-Jun-97
Signature of Chemist:	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)

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						
06/13/97	Sr-89/90 CONCENTRATION		6.08E-04	µCi/mL		
Analysis Time						
11:05 AM	RELATIVE COUNTING ERROR		4.0%			
Sample Point						
TX-244 GRAB1	PERCENT CARRIER RECOVERY		89.6%			

DETECTION
LEVEL

9.72E-06
µCi/mL

Analyst:	CRJ	Date:	13-Jun-97
Signature of Chemist:	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-8

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	6.17E+01	61.700 % 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			% 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	8.60E+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

Reviewer Signature

Date

06/10/97 09:34
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 18583

Analyst: KNT Instrument: AM01 13 Book# 75B56Method: 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

[Signature] 6/18/97
Analyst Signature Date
C.J. Quinn 6/18/97

Rerun: WL#18518, Std was 130% (max 125% acceptable)
② two APD's over Limit, ③ Blank was hot, 3 times
detection limit. JFRelson 10 June 97

Data Entry Comments:

S97T001294 Sam 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.
reced 6/17/97

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 $\mu\text{Ci/mL}$	1.030E-04	Am 241 $\mu\text{Ci/L}$ =	1.0301E-01	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 1.1911E-02	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
WL18583-STD	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB27810	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
MCB					
Chemist					
JFR	Am 241 $\mu\text{Ci/mL}$ =	1.03E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	1.6%			
KNT					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241	
06/18/97	Cm 243/244 $\mu\text{Ci/mL}$	< 1.19E-05		1.19E-05	
Analysis Date	Relative Counting Error =	100.0%		Cm 243/244	
06/17/97	Am 243 Tracer Recovery =	92.8%		1.19E-05	
Analysis Time					
04:35 AM					
Sample Point					
TX-244 GRAB1					

Analyst:	KNT	Date:	06/18/97
Signature of Chemist:	JFR	Date:	19 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

BLNK

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 $\mu\text{Ci/L}$ =	< 6.8449E-03	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 6.8449E-03	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
WL18583-BLNK	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB27810	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
MCB					
Chemist	NOTE: Am-241 Result is a LESS THAN Value.				
JFR	Am 241 $\mu\text{Ci/mL}$ =	< 6.84E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	100.0%			
KNT					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
06/18/97	Cm 243/244 $\mu\text{Ci/mL}$	< 6.84E-06	Am 241		
Analysis Date	Relative Counting Error =	100.0%	6.84E-06		
06/17/97	Am 243 Tracer Recovery =	81.7%	Cm 243/244		
Analysis Time			6.84E-06		
04:35 AM					
Sample Point					
TX-244 GRAB1					

Analyst:	KNT	Date:	06/18/97
Signature of Chemist:	JFR	Date:	17 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

				LIQUID / SOLI	SAMPLE			
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 $\mu\text{Ci/L}$ =		1.2033E-02			
0			Cm 243/244 $\mu\text{Ci/L}$ =		< 7.8931E-03			
Sample Prep								
N/A								
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))							
S97T001292	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))							
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100							
WB27810	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV							
Prepared By								
MCB								
Chemist								
JFR	Am 241 $\mu\text{Ci/mL}$ =	1.20E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$					
Analyst	Relative Counting Error =	4.0%						
KNT								
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.							
06/18/97	Cm 243/244 $\mu\text{Ci/mL}$	< 7.89E-06	Am 241					
Analysis Date	Relative Counting Error =	100.0%	7.89E-06					
06/17/97	Am 243 Tracer Recovery =	81.1%	Cm 243/244					
Analysis Time								
04:35 AM								
Sample Point								
TX-244 GRAB1								

Analyst:	KNT	Date:	06/18/97
Signature of Chemist:	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

DUP

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 $\mu\text{Ci/L}$ =	1.4325E-02	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.6379E-03	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S97T001292	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.56 * 100				
WB27810	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
MCB					
Chemist					
JFR	Am 241 $\mu\text{Ci/mL}$ =	1.43E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	3.5%			
KNT					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241	
06/18/97	Cm 243/244 $\mu\text{Ci/mL}$	< 7.64E-06		7.64E-06	
Analysis Date	Relative Counting Error =	100.0%		Cm 243/244	
06/17/97	Am 243 Tracer Recovery =	80.8%		7.64E-06	
Analysis Time					
04:35 AM					
Sample Point					
TX-244 GRAB1					

Analyst:	KNT	Date:	06/18/97
Signature of Chemist:	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

				LIQUID / SOLI	SAMPLE			
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 $\mu\text{Ci/L}$ =		9.7342E-03			
0			Cm 243/244 $\mu\text{Ci/L}$ =	<	6.4164E-03			
Sample Prep								
N/A								
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))							
S97T001293	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))							
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100							
WB27810								
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 $\mu\text{Ci/mL}$ =	9.73E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$					
Analyst	Relative Counting Error =	4.9%						
KNT								
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.							
06/18/97	Cm 243/244 $\mu\text{Ci/mL}$	< 6.42E-06	Am 241					
Analysis Date	Relative Counting Error =	100.0%	6.42E-06					
06/17/97	Am 243 Tracer Recovery =	91.4%	Cm 243/244					
Analysis Time								
04:35 AM								
Sample Point								
TX-244 GRAB1								

Analyst:	KNT	Date:	06/18/97
Signature of Chemist:	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

DUP

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	Cm 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 $\mu\text{Ci/L}$ =	1.0315E-02	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.5403E-03	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S97T001293	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB27810	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
MCB					
Chemist					
JFR	Am 241 $\mu\text{Ci/mL}$ =	1.03E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$		
WORK Analyst	Relative Counting Error =	4.1%			
KNT					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241	
06/18/97	Cm 243/244 $\mu\text{Ci/mL}$	< 7.54E-06		7.54E-06	
Analysis Date	Relative Counting Error =	100.0%		Cm 243/244	
06/17/97	Am 243 Tracer Recovery =	80.5%		7.54E-06	
Analysis Time					
04:35 AM					
Sample Point					
TX-244 GRAB1					

Analyst:	KNT	Date:	06/18/97
Signature of Chemist:	JFR	Date:	17 June 97

SAMPLE.WB1 REV 1.2

853103ML

WORKBOOK PAGE: SAM7

Am 241 and Cm 243/244: LA-953-103 (B-0) or LA-953-104(A-0)

LIQUID / SOLI

SAMPLE

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 $\mu\text{Ci/L}$ =	1.3040E-02	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.3683E-03	
Sample Prep					
N/A					
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
S97T001294	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.95 * 100				
WB27810	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
MCB					
Chemist					
JFR	Am 241 $\mu\text{Ci/mL}$ =	1.30E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	3.5%			
KNT					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241	
06/18/97	Cm 243/244 $\mu\text{Ci/mL}$	< 7.37E-06		7.37E-06	
Analysis Date	Relative Counting Error =	100.0%		Cm 243/244	
06/17/97	Am 243 Tracer Recovery =	86.8%		7.37E-06	
Analysis time					
04:35 AM					
Sample Point					
TX-244 GRAB1					

Analyst:	KNT	Date:	06/18/97
Signature of Chemist:	JFR	Date:	20 June 97
SAMPLE:WB1 REV 1.2	953103ML		

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

WORKBOOK PAGE: DUP8

Am 241 and Cm 243/244: LA-953-103 (B-O) or LA-953-104(A-O)

LIQUID / SOLI

DUP

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		
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	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		
Return			Am 241 $\mu\text{Ci/L}$ =	1.2561E-02		
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.4470E-03		
Sample Prep						
N/A						
Sample Number	Am-241 $\mu\text{Ci/L}$ = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
S97T001294	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))					
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100					
WB27810	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV					
Prepared By						
MCB						
Chemist						
JFR	Am 241 $\mu\text{Ci/mL}$ =	1.26E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$			
Analyst	Relative Counting Error =	3.6%				
KNT						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.					
06/18/97	Cm 243/244 $\mu\text{Ci/mL}$	< 7.45E-06	Am 241	7.45E-06		
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	7.45E-06		
06/17/97	Am 243 Tracer Recovery =	86.1%				
Analysis Time						
04:35 AM						
Sample Point						
TX-244 GRAB1						

Analyst:	KNT	Date:	06/18/97
Signature of Chemist:	JFR	Date:	20 June 97
SAMPLE.WB1 REV 1.2	963103ML		

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count Rate	%err	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	c/m	@95		
1	Am241	0.466	5.479	5.468	0.011	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	59.09	1.2	269.0	0.121E-03
3	Pu242	0.020	4.891	4.871	0.020	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
Residuals

59923.5
4090.5

93.610
6.390

Analyzed by:

EMB

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

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.
11	0.	0.	0.	1.	2.	8.	5.	8.	3.
21	3.	5.	3.	2.	4.	6.	5.	7.	3.
31	3.	6.	10.	4.	1.	9.	6.	3.	9.
41	9.	6.	10.	4.	8.	6.	3.	4.	6.
51	11.	6.	6.	7.	12.	10.	4.	4.	8.
61	8.	9.	7.	7.	11.	7.	10.	8.	5.
71	9.	4.	8.	10.	16.	11.	10.	17.	9.
81	10.	10.	10.	10.	8.	15.	4.	7.	12.
91	8.	7.	8.	10.	11.	13.	13.	10.	8.
101	8.	19.	8.	11.	14.	9.	18.	11.	20.
111	14.	16.	15.	12.	15.	12.	11.	11.	13.
121	22.	21.	21.	8.	19.	17.	17.	14.	19.
131	21.	13.	12.	20.	13.	24.	19.	14.	17.
141	21.	22.	26.	20.	19.	24.	23.	26.	26.
151	19.	19.	22.	25.	24.	29.	25.	22.	27.
161	25.	24.	18.	23.	32.	32.	32.	19.	26.
171	40.	33.	29.	25.	27.	27.	32.	34.	34.
181	36.	37.	33.	40.	43.	49.	48.	39.	66.
191	45.	55.	49.	62.	44.	67.	54.	53.	71.
201	53.	72.	65.	75.	74.	69.	98.	89.	72.
211	100.	89.	82.	92.	111.	113.	86.	107.	141.
221	118.	148.	173.	143.	144.	175.	174.	179.	214.
231	211.	227.	269.	259.	289.	315.	342.	385.	391.
241	475.	495.	558.	625.	668.	731.	876.	972.	1087.
251	1300.	1462.	1679.	1769.	1723.	1709.	1517.	1228.	948.
261	510.	384.	318.	300.	243.	262.	239.	194.	224.
271	224.	201.	190.	184.	211.	192.	231.	241.	201.
281	271.	302.	350.	346.	362.	396.	475.	515.	591.
291	667.	783.	916.	923.	1104.	1186.	1362.	1513.	1698.
301	1827.	1689.	1524.	1251.	1033.	798.	644.	539.	410.
311	277.	234.	204.	144.	84.	57.	46.	16.	6.
321	3.	0.	1.	0.	0.	2.	0.	1.	1.
331	0.	0.	1.	0.	0.	0.	0.	0.	0.
341	0.	0.	1.	1.	1.	0.	1.	0.	0.
351	2.	0.	1.	2.	0.	2.	0.	0.	1.
361	2.	0.	0.	0.	0.	1.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	1.	0.	0.
431	0.	1.	1.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	2.	0.	0.	0.
481	0.	0.	0.	1.	1.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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.	Obs.	Diff.	FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea	
1	Am243	0.876	5.270	5.249	0.021	10.05	53.07	1.2	238.8	0.108E-03	
2	Np237	0.030	4.769	4.801	-.032	20.00	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

[illegible]

Raw Data	Dump	for AEA	Spectrum:	6a6113.CNF					
1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	3.	3.	7.	1.	4.
21	5.	5.	4.	3.	3.	4.	3.	4.	1.
31	3.	1.	0.	7.	4.	3.	8.	5.	2.
41	1.	5.	4.	4.	2.	3.	7.	4.	4.
51	6.	3.	3.	4.	2.	1.	6.	6.	2.
61	3.	5.	5.	4.	3.	3.	2.	2.	5.
71	7.	7.	3.	3.	7.	8.	5.	7.	4.
81	6.	3.	8.	8.	6.	9.	9.	4.	5.
91	4.	13.	5.	8.	6.	6.	7.	6.	3.
101	10.	9.	2.	6.	3.	4.	7.	10.	7.
111	8.	8.	8.	11.	10.	10.	9.	3.	11.
121	7.	13.	8.	8.	5.	10.	9.	6.	10.
131	9.	15.	9.	16.	8.	15.	10.	14.	13.
141	17.	12.	14.	10.	14.	14.	13.	18.	9.
151	6.	22.	17.	11.	14.	18.	18.	16.	20.
161	11.	16.	15.	20.	22.	21.	32.	23.	17.
171	27.	24.	17.	26.	22.	33.	32.	31.	26.
181	28.	26.	29.	31.	28.	27.	30.	38.	42.
191	41.	35.	24.	42.	37.	37.	45.	46.	42.
201	47.	49.	47.	69.	52.	50.	63.	58.	72.
211	73.	71.	72.	81.	76.	82.	102.	102.	105.
221	114.	141.	110.	128.	133.	145.	147.	168.	150.
231	181.	189.	213.	253.	251.	253.	305.	305.	328.
241	389.	496.	477.	568.	662.	676.	700.	829.	949.
251	1178.	1216.	1254.	1316.	1344.	1295.	1174.	1081.	871.
261	634.	494.	343.	288.	220.	161.	156.	109.	104.
271	75.	70.	55.	36.	36.	11.	13.	10.	9.
281	2.	2.	1.	1.	3.	4.	2.	7.	9.
291	4.	5.	8.	8.	8.	7.	4.	7.	14.
301	6.	10.	3.	6.	10.	2.	7.	5.	3.
311	3.	3.	1.	0.	1.	2.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	1.	0.	0.
331	0.	0.	1.	0.	2.	1.	0.	0.	0.
341	1.	1.	1.	0.	3.	3.	0.	2.	1.
351	0.	0.	0.	1.	1.	0.	2.	0.	0.
361	0.	0.	0.	1.	1.	0.	0.	0.	1.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	1.
471	0.	0.	0.	0.	0.	1.	0.	0.	0.
481	1.	2.	1.	0.	0.	1.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count Rate	%err @95	d/m	Activity uCi/ea	
		Exp.	Obs.	Diff.	FWHM	c/m				
1	Am241	0.094	5.479	5.462	0.0170	0.06	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	0.05	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

[illegible]

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 Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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		Count Rate	%err	d/m	Activity
			Exp.	Obs. Diff.	c/m	@95		uCi/ea
1	Am241	0.116	5.479	5.479 0.0000.06	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 -.1050.08	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

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.
11	0.	0.	0.	1.	8.	10.	8.	5.	13.
21	7.	3.	11.	4.	7.	14.	7.	9.	11.
31	14.	8.	12.	9.	5.	9.	8.	7.	10.
41	13.	12.	5.	11.	11.	13.	7.	8.	7.
51	7.	4.	12.	10.	9.	7.	11.	3.	5.
61	16.	12.	15.	15.	12.	8.	15.	13.	12.
71	14.	9.	10.	14.	8.	16.	16.	12.	12.
81	18.	15.	17.	10.	13.	13.	9.	12.	14.
91	23.	26.	21.	13.	10.	19.	8.	22.	22.
101	18.	25.	19.	30.	24.	24.	24.	27.	23.
111	20.	17.	23.	30.	15.	34.	22.	22.	37.
121	30.	25.	28.	40.	31.	22.	28.	32.	30.
131	35.	32.	30.	32.	40.	34.	39.	24.	31.
141	44.	35.	43.	44.	34.	49.	49.	33.	36.
151	53.	47.	49.	53.	45.	55.	55.	62.	56.
161	49.	69.	69.	54.	76.	71.	75.	83.	68.
171	66.	76.	77.	85.	66.	88.	107.	83.	116.
181	82.	92.	99.	96.	105.	114.	118.	114.	110.
191	135.	129.	139.	121.	140.	147.	133.	153.	159.
201	165.	157.	178.	185.	159.	168.	195.	185.	212.
211	196.	210.	234.	233.	221.	227.	252.	222.	277.
221	263.	307.	301.	305.	302.	305.	349.	332.	375.
231	360.	354.	395.	408.	438.	456.	507.	527.	503.
241	606.	570.	664.	653.	616.	688.	646.	649.	638.
251	580.	589.	486.	425.	363.	309.	267.	207.	185.
261	116.	109.	70.	53.	49.	52.	55.	52.	52.
271	38.	46.	43.	48.	43.	38.	40.	46.	51.
281	43.	43.	48.	53.	60.	40.	48.	71.	50.
291	61.	55.	57.	77.	67.	68.	61.	56.	58.
301	41.	31.	30.	17.	17.	11.	5.	8.	9.
311	2.	1.	4.	2.	1.	3.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	2.
331	1.	0.	3.	1.	1.	1.	2.	3.	2.
341	0.	3.	0.	1.	3.	2.	4.	0.	1.
351	3.	0.	1.	3.	2.	1.	2.	1.	1.
361	0.	0.	0.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	1.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	1.	0.	0.	1.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	1.	0.	0.	1.	0.	0.	0.	0.	0.
481	0.	1.	1.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 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 ID	Peak height		Peak center		FWHM		Tau	
	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 ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err @95	d/m	Activity uCi/ea	
		Exp.	Obs.	Diff.	FWHM	c/m				
1	Pu238	0.083	5.487	5.490	-0.003	0.03	3.62	4.7	23.1	0.104E-04
	Am241		5.479	5.490	-0.011				17.7	0.795E-05
2	Am243	0.835	5.270	5.277	-0.007	0.02	36.54	1.5	169.5	0.763E-04
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

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 Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.					
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

1 Legend:

Raw = ..

Modeled Peaks = 1, 2, ..., etc

Display Max.:

10223.3

www.ck12.org

[illegible]

Raw Data Dump for AEA Spectrum:	10a1087.CNF	HNF-SD-WM-DP-251, REV. 0	
1	0.	1.	2.
11	1.	2.	3.
21	2.	4.	5.
31	1.	0.	6.
41	3.	2.	1.
51	5.	4.	3.
61	2.	4.	2.
71	1.	5.	4.
81	6.	3.	1.
91	8.	3.	5.
101	2.	1.	4.
111	4.	4.	3.
121	6.	5.	2.
131	8.	3.	10.
141	7.	9.	6.
151	12.	9.	11.
161	11.	14.	12.
171	12.	8.	8.
181	15.	15.	21.
191	25.	24.	26.
201	31.	31.	31.
211	46.	52.	47.
221	72.	90.	72.
231	145.	182.	141.
241	388.	433.	367.
251	1176.	1329.	970.
261	301.	216.	855.
271	61.	60.	109.
281	17.	20.	82.
291	65.	67.	21.
301	165.	183.	55.
311	23.	17.	167.
321	0.	0.	23.
331	0.	0.	0.
341	0.	0.	0.
351	1.	1.	0.
361	1.	0.	0.
371	0.	0.	0.
381	0.	0.	0.
391	1.	0.	0.
401	0.	0.	0.
411	0.	0.	0.
421	1.	0.	0.
431	1.	0.	1.
441	0.	0.	0.
451	0.	0.	0.
461	0.	0.	0.
471	0.	0.	0.
481	0.	1.	1.
491	0.	0.	0.
511	0.	0.	0.

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T1294-SAM
 File ID: 5a5302.CNF

Recount,
This Data used
JR 20 Jun 97

Counted on: 6/19/97 @ 9: 2
 Detector: AEA5
 Geometry number: 1
 Count time: 28800. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	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			FWHM	Count Rate c/m	%err @95	d/m	Activity uCi/ea	
			Exp.	Obs.	Diff.						
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	-1.000	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

www

[illegible]

Raw Data Dump for AEA Spectrum: 5a5302.CNF					HNF-SD-WM-DP-251, REV. 0				
1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	2.	1.	3.	3.	5.
21	4.	7.	3.	5.	7.	5.	4.	6.	4.
31	6.	3.	5.	3.	5.	6.	7.	8.	5.
41	2.	10.	6.	11.	3.	10.	5.	6.	4.
51	2.	6.	3.	5.	3.	7.	10.	6.	9.
61	4.	6.	8.	9.	5.	7.	12.	9.	5.
71	10.	3.	8.	14.	13.	2.	7.	9.	6.
81	14.	10.	10.	11.	14.	12.	5.	9.	7.
91	11.	9.	12.	8.	9.	10.	7.	12.	8.
101	13.	13.	6.	11.	5.	9.	16.	10.	17.
111	6.	17.	13.	12.	18.	12.	10.	17.	21.
121	14.	17.	18.	20.	15.	17.	19.	21.	19.
131	11.	21.	11.	20.	25.	26.	21.	20.	20.
141	19.	24.	23.	24.	20.	21.	16.	27.	25.
151	25.	25.	25.	27.	32.	22.	27.	26.	24.
161	32.	32.	35.	26.	42.	34.	39.	44.	39.
171	44.	38.	32.	34.	42.	36.	51.	41.	36.
181	60.	43.	50.	54.	59.	55.	60.	67.	72.
191	59.	61.	52.	71.	67.	76.	59.	54.	68.
201	73.	98.	86.	87.	100.	96.	89.	91.	85.
211	110.	127.	128.	146.	133.	150.	139.	137.	121.
221	148.	181.	197.	170.	182.	193.	198.	226.	238.
231	229.	273.	296.	302.	319.	357.	343.	374.	409.
241	465.	533.	549.	590.	689.	708.	796.	905.	883.
251	1062.	1153.	1221.	1269.	1188.	1127.	1002.	956.	805.
261	529.	479.	335.	276.	229.	170.	158.	132.	129.
271	98.	69.	89.	57.	49.	48.	35.	48.	36.
281	39.	48.	28.	55.	52.	61.	45.	61.	68.
291	99.	81.	90.	110.	128.	139.	151.	138.	150.
301	162.	140.	146.	127.	104.	87.	69.	67.	59.
311	32.	28.	21.	20.	11.	15.	14.	3.	5.
321	0.	2.	1.	1.	0.	0.	0.	1.	0.
331	0.	0.	0.	0.	0.	1.	0.	5.	0.
341	0.	3.	1.	0.	4.	3.	0.	0.	2.
351	1.	1.	1.	0.	1.	2.	2.	3.	5.
361	1.	1.	1.	0.	1.	0.	2.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	1.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	1.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	1.	0.	0.
421	0.	0.	1.	0.	0.	0.	0.	0.	0.
431	0.	0.	1.	1.	0.	2.	3.	0.	3.
441	1.	0.	1.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	1.	0.	0.
471	1.	0.	0.	0.	0.	0.	0.	0.	0.
481	3.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 S97T1294-DUP
 File ID: 6a6117.CNF

*Recount: this data
 used JFR 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	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/DFM
 (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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc

Display Max.:

7785.9

[illegible]

Raw Data Dump for AEA Spectrum:	6a6117.CNF								
1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	1.	6.	8.	8.	4.	4.
21	7.	0.	5.	9.	2.	7.	3.	1.	8.
31	6.	5.	2.	4.	5.	4.	6.	4.	9.
41	5.	2.	8.	5.	4.	2.	6.	4.	4.
51	7.	7.	4.	2.	10.	4.	8.	5.	7.
61	8.	8.	7.	8.	6.	8.	11.	13.	3.
71	5.	9.	3.	8.	11.	9.	11.	10.	5.
81	11.	9.	12.	7.	11.	6.	6.	5.	17.
91	4.	15.	17.	11.	13.	12.	16.	8.	11.
101	10.	4.	16.	7.	12.	10.	12.	12.	13.
111	16.	12.	19.	12.	15.	16.	12.	13.	13.
121	11.	13.	15.	13.	10.	19.	11.	14.	12.
131	19.	20.	21.	16.	18.	22.	25.	22.	23.
141	17.	25.	16.	20.	26.	21.	24.	21.	19.
151	23.	22.	18.	23.	19.	25.	23.	30.	24.
161	24.	25.	26.	29.	31.	21.	36.	28.	28.
171	44.	38.	36.	29.	34.	36.	33.	39.	34.
181	50.	53.	56.	56.	41.	48.	37.	54.	56.
191	62.	69.	62.	61.	53.	69.	45.	80.	63.
201	79.	68.	79.	83.	95.	72.	82.	104.	95.
211	102.	88.	112.	121.	108.	104.	115.	142.	128.
221	161.	130.	159.	160.	172.	175.	188.	175.	212.
231	219.	222.	253.	246.	270.	346.	300.	337.	380.
241	422.	445.	485.	506.	544.	615.	682.	713.	811.
251	986.	1007.	1156.	1150.	1181.	1209.	1153.	1037.	954.
261	693.	558.	414.	360.	257.	218.	151.	121.	109.
271	94.	90.	72.	76.	63.	53.	44.	26.	32.
281	34.	37.	38.	45.	41.	38.	54.	53.	59.
291	77.	79.	68.	106.	99.	98.	110.	125.	131.
301	160.	139.	119.	132.	108.	123.	93.	72.	44.
311	47.	30.	25.	21.	13.	12.	15.	9.	5.
321	2.	1.	2.	1.	0.	0.	0.	0.	0.
331	0.	1.	0.	0.	2.	0.	1.	1.	0.
341	0.	1.	0.	0.	0.	0.	0.	2.	0.
351	0.	0.	3.	2.	2.	1.	0.	0.	3.
361	3.	2.	0.	1.	0.	3.	0.	0.	1.
371	1.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	1.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	1.
431	0.	1.	0.	0.	0.	0.	0.	1.	0.
441	0.	0.	2.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	1.	1.	0.	1.	0.	0.	0.
491	0.	1.	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	2.19E+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

LABCORE Data Entry Template for Worklist# 18584

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

Book# 75856

Analyst: KNT Instrument: PU01

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
Analytes Requested: PU23901 , PU23901B, PU23901T 97000388 TX-244 GRAB1

4 DUP S97T001292 0 @PU23901 LIQUID
5 SAMPLE S97T001293 0 @PU23901 LIQUID
Analytes Requested: PU23901 , PU23901B, PU23901T 97000388 TX-244 GRAB1

6 DUP S97T001293 0 @PU23901 LIQUID
7 SAMPLE S97T001294 0 @PU23901 LIQUID
Analytes Requested: PU23901 , PU23901B, PU23901T 97000388 TX-244 GRAB1

8 DUP S97T001294 0 @PU23901 LIQUID

Final page for worklist # 18584

Analyst Signature Date
K. J. Thomas 6-17-97

Analyst Signature Date
Joe E. Hogan 6-18-97

Rerun: W18519. Blank was Hot, 3 times detection limit. jfr 10June 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

			STD
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
Refill	PU-236 DECAY CORR'D VALUE (dpm/mL)	2254.692	Pu 239/240 $\mu\text{Ci/L}$ 1.0958E-01
0	PU-238 TRACER VALUE (dpm/mL)	0.000	
Sample Prep	STANDARD BOOK NO	75B56	
N/A	STANDARD VALUE in $\mu\text{Ci/mL}$	1.090E-04	
Sample #			
WL18584			
Instrument Code	Decay Time = Date Counted - Tracer Preparation Date		
WB27808	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * [e to the power of $\{(-\ln 2 * \text{Decay Time}/1040.95)\}$]		
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 $\mu\text{Ci/L}$ = (C239) / (Pu 236 Decay Corr'd Value) (SPKV) / (1000 mL/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 $\mu\text{Ci/L}$ = [(Pu 238 dpm) (DF) (DDF) (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μCi) (D g/L) (SS)]		
Analyst	Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$		
KNT			
Date Complete			
06/18/97	Pu 239/240 $\mu\text{Ci/mL}$	1.10E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$ Pu 239/240 6.68E-06
Analysis Date	Relative Counting Error =	1.5%	
06/17/97			
Analysis Time			
04:35 AM			
Sample Point			
TX-244	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

BLNK

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
Re-run	PU-236 DECAY CORR'D VALUE (dpm/mL)	2254.69	Pu 239/240 $\mu\text{Ci/L}$ =	< 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 * $e^{-(\ln 2 * \text{Decay Time}/1040.95)}$

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 $\mu\text{Ci/L}$ = (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 $\mu\text{Ci/L}$ = [(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 $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$

06/18/97	Pu 239/240 $\mu\text{Ci/mL}$	< 3.21E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$
Analysis Date	Relative Counting Error	= 100.0%	
06/17/97	NOTE: Pu 238 Result is a LESS THAN Value.		Pu 239/240
Analysis Time	Pu 238 $\mu\text{Ci/mL}$	< 3.21E-06	3.21E-06
04:35 AM	Relative Counting Error	= 100.0%	Pu 238
Sample Point	Pu 236 Tracer Recovery	= 107.4%	3.21E-06
TX-244			

Analyst:	KNT	Date:	18-Jun-97
Signature of Chemist:	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

				SAMPLE
Type	DATE COUNTED	JUN-17-97	Pu 238 AEA FRAC (C236)	0.668
SAMPLE	SAMPLE VOLUME in mL	SS	Pu 238 AEA FRAC (C238)	0.014
Work List	SAMPLE DILUTION FACTOR	DF	Pu 239 AEA FRAC (C239)	0.280
18584	TRACER VOLUME in mL	SPKV	0.100	2984
Test Code	DIGEST DILUTION FACTOR	DDF	1.0000	AT COUNT TIME (MIN)
@PU23901	TRACER BOOK NO	128B43	BACKGROUND in cpm (Bkg)	0.130
Matrix	DETECTOR NUMBER	18	Pu 238 cpm	60.290
LIQUID	EFFICIENCY FACTOR	EFF	0.269	Pu 238 cpm
Batch Number	TRACER PREPARATION DATE	11/15/96	Pu 239 cpm	25.290
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 μ Ci/L	4.2571E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prep				
N/A				
Sample #	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 μ Ci/L = (C239)/(Pu 236 Decay Corr'd Value)(SPKV)/(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/ μ Ci)]			
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 238 Tracer Recovery / 100)			
SEH	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-238 Tracer Recovery / 100)(2220000 dpm/ μ Ci)(D g/L)(SS)]			
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100			
JFR				
Analyst				
KNT				
Date Complete				
06/18/97	Pu 239/240 μ Ci/mL	4.26E-05	DETECTION LEVELS in μ Ci/mL	
Analyst Date	Relative Counting Error	= 2.1%		
06/17/97			Pu 239/240	
Analyst Time	NOTE: Pu 238 Result is a LESS THAN Value.		4.56E-06	
04:35 AM	Pu 238 μ Ci/mL	< 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:	JFR	Date:	17 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
Refun	PU-236 DECAY CORR'D VALUE (dpm/mL)	2254.692	Pu 239/240 μ Ci/L	3.8705E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		

Sample Prep

N/A

Sample #

S977001292

Instrument Code

WB27809

Prepared By

SEH

Chemist

JFR

Analyst

KNT

Data 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 $\{(-\ln 2 * \text{Decay Time}) / 1040.95\}$]

Pu 236 Tracer Recovery = (Total AT Counts / TC - Bkg) * C236 * 100 / (Pu-236 Decay Corr'd Value * SPKV * EFF)

Pu 239/240 μ Ci/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000 mL/L) * (DF) / (DDF) / $\{[(C236) / (SS) * (D \text{ g/L}) / (2220000 \text{ dpm}/\mu\text{Ci})]\}$ Pu 238 dpm = $\{[(\text{Total AT Counts} / \text{TC}) - \text{Bkg} * 1 / \text{EFF} * \text{C238}] - (\text{Pu-238 Tracer Value} * \text{SPKV} * \text{Pu 236 Tracer Recovery} / 100)\}$ Pu 238 μ Ci/L = $\{[(\text{Pu 238 dpm}) / (DF) / (DDF) / (1000 \text{ mL/L})] / \{[(\text{Pu-236 Tracer Recovery} / 100) / (2220000 \text{ dpm}/\mu\text{Ci}) / (D \text{ g/L}) / (SS)]\}\}$ Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$

06/18/97	Pu 239/240 μ Ci/mL	3.87E-05	DETECTION LEVELS in μ Ci/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.		4.50E-06
04:35 AM	Pu 238 μ Ci/mL	< 4.50E-06	Pu 238
Sample Point	Relative Counting Error	= 6.3%	4.50E-06
TX-244	Pu 236 Tracer Recovery	= 102.6%	

Analyst:	KNT	Date:	18-Jun-97
Signature of Chemist:	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

				SAMPLE
type	DATE COUNTED	JUN-17-97	PU 236 AEA FRAC (C236)	0.686
SAMPLE	SAMPLE VOLUME in mL	SS 1.000	PU 238 AEA FRAC (C238)	0.020
WORK UNIT	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.272
18584	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2699
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	59.210
LIQUID	EFFICIENCY FACTOR	EFF 0.269	PU 238 cpm	1.690
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	23.510
97002646	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Rerun	PU-238 DECAY CORR'D VALUE (dpm/mL)	2254.692	Pu 239/240 $\mu\text{Ci/L}$	4.0270E-02
0	PU-238 TRACER VALUE (dpm/mL)	0.000		
Sample Prop				
N/A				
Sample	Decay Time = Date Counted - Tracer Preparation Date			
S97T001293	Pu-236 Decay Corr'd Value = Pu-236 Preparation Value * $[e \text{ to the power of } \{(-\ln 2 * \text{Decay Time}/1040.95)\}]$			
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 $\mu\text{Ci/L}$ = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000 mL/L) * (DF) * (DDF) / $\{[(C236)(SS)(D \text{ g/L}) / (2220000 \text{ dpm}/\mu\text{Ci})]$			
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 $\mu\text{Ci/L}$ = [(Pu 238 dpm) * (DF) * (DDF) / (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/ μCi) * (D g/L) * (SS)]			
Chemist	Relative Counting Error = Square Root of $\{[1 / (\text{Pu 236 cpm} * \text{min})] + [1 / (\text{Pu 238 or 239/240 cpm} * \text{min})]\} * 1.96 * 100$			
JFR				
Analyst				
KNT				
Date Complete				
06/18/97	Pu 239/240 $\mu\text{Ci/mL}$	4.03E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analysis Date	Relative Counting Error =	2.2%		
06/17/97			Pu 239/240	
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.		4.44E-06	
04:35 AM	Pu 238 $\mu\text{Ci/mL}$	< 4.44E-06	Pu 238	
Sample Point	Relative Counting Error =	7.0%	4.44E-06	
TX-244	Pu 236 Tracer Recovery =	101.8%		

Analyst:	KNT	Date:	18-Jun-97
Signature of Chemist:	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

DUP

Type	DATE COUNTED	JUN-17-97	PU 236 AEA FRAC (C236)	0.682	
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)	0.263	
18584	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2790	
1056 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	
Recovery	PU-236 DECAY CORR'D VALUE (dpm/mL)	2254.692	Pu 239/240 μ Ci/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/1040.96)}]				
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 μ Ci/L = (C239) / (Pu 236 Decay Corr'd Value) * (SPKV) / (1000mL/L) * (DF) * (DDF) / [(C238) * (SS) * (D g/L) * (2220000 dpm/ μ Ci)]				
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value * SPKV * Pu 236 Tracer Recovery / 100)				
SEH	Pu 238 μ Ci/L = [(Pu 238 dpm) * (DF) * (DDF) * (1000mL/L)] / [(Pu-236 Tracer Recovery / 100) * (2220000 dpm/ μ Ci) * (D g/L) * (SS)]				
Chemist	Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100				
JFR					
Analyst					
KNT					
Date Complete					
06/18/97	Pu 239/240 μ Ci/mL	3.92E-05	DETECTION LEVELS in μ Ci/mL		
Analysis Date	Relative Counting Error	= 2.1%			
06/17/97					
Analysis Time	NOTE: Pu 238 Result is a LESS THAN Value.				
04:35 AM	Pu 238 μ Ci/mL	< 4.47E-06			
Sample Points	Relative Counting Error	= 7.1%	Pu 238		
TX-244	Pu 236 Tracer Recovery	= 104.6%	4.47E-06		

Analyst:	KNT	Date:	18-Jun-97
Signature of Chemist:	JFR	Date:	17 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

				SAMPLE
Type	DATE COUNTED	JUN-17-97	PU 236 AEA FRAC (C236)	0.610
SAMPLE	SAMPLE VOLUME in mL	SS 1.000	PU 238 AEA FRAC (C238)	0.037
Work/Lab	SAMPLE DILUTION FACTOR	DF 1.000	PU 239 AEA FRAC (C239)	0.342
18584	TRACER VOLUME in mL	SPKV 0.100	TOTAL AT COUNTS	2891
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	69.740
LIQUID	EFFICIENCY FACTOR	EFF 0.269	PU 238 cpm	4.490
Batch Number	TRACER PREPARATION DATE	11/15/96	PU 239 cpm	39.130
97002646	TRACER PREPARATION VALUE (dpm/mL)	2600.000	AEA COUNT TIME	480
Return	PU-236 DECAY CORR'D VALUE (dpm/mL)	2254.692	Pu 239/240 $\mu\text{Ci/L}$	5.6942E-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 $\mu\text{Ci/L}$ = (C239) / (Pu 236 Decay Corr'd Value) (SPKV) / (1000 mL/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 $\mu\text{Ci/L}$ = [(Pu 238 dpm) (DF) (DDF) / (1000 mL/L)] / [(Pu-236 Tracer Recovery / 100) (2220000 dpm/ μCi) (D g/L) (SS)]

Relative Counting Error = Square Root of [(1 / (Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))] * 1.96 * 100

06/18/97	Pu 239/240 $\mu\text{Ci/mL}$	5.69E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$
Analysis Date	Relative Counting Error	= 1.8%	
06/17/97			Pu 239/240
Analysis Time			5.15E-06
04:35 AM	Pu 238 $\mu\text{Ci/mL}$	6.16E-06	Pu 238
Sample Point	Relative Counting Error	= 4.5% 100%	5.15E-06
TX-244	Pu 236 Tracer Recovery	= 96.9%	

Analyst:	KNT	Date:	18-Jun-97
Signature of Chemist:	JFR	Date:	

SAMPLE.WB1 REV 1.0

943128ML

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

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
Refun	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 #					
N/A					
Sample #	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 μ Ci/L = (C239)/(Pu 236 Decay Corr'd Value)(SPKV)(1000mL/L)(DF)(DDF) / [(C236)(SS)(D g/L)(2220000 dpm/ μ Ci)]				
Prepared By	Pu 238 dpm = [(Total AT Counts / TC) - Bkg * 1/EFF * C238] - (Pu-238 Tracer Value *SPKV *Pu 236 Tracer Recovery / 100)				
SEH	Pu 238 μ Ci/L = [(Pu 238 dpm)(DF)(DDF)(1000mL/L)] / [(Pu-236 Tracer Recovery /100)(2220000 dpm/ μ Ci)(D g/L)(SS)]				
Chemist	Relative Counting Error = Square Root of [(1/(Pu 236 cpm * min)) + (1 / (Pu 238 or 239/240 cpm * min))]* 1.96 * 100				
JFR					
Analyst					
KNT					
Date Complete					
06/18/97	Pu 239/240 μ Ci/mL	4.98E-05	DETECTION LEVELS in μ Ci/mL		
Analysis Date	Relative Counting Error	= 2.1%			
06/17/97	NOTE: Pu 238 Result is a LESS THAN Value.				
Analysis Time	Pu 238 μ Ci/mL	< 4.72E-06			
04:35 AM	Pu 238 μ Ci/mL	< 4.72E-06	Pu 239/240 4.72E-06		
Sample Point	Relative Counting Error	= 7.6%	Pu 238 4.72E-06		
TX-244	Pu 236 Tracer Recovery	= 101.8%			

Analyst:	KNT	Date:	18-Jun-97
Signature of Chemist:	JFR	Date:	19 June 97

SAMPLE.WB1 REV 1.0

943128ML

222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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 Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Pu236	0.456	5.755	5.737	0.018	0.02	64.84	1.1	300.0	0.135E-03
2		????		5.465			1.32	10.2		
3	Th228	0.011	5.400	5.394	0.006	0.02	1.56	8.1	9.9	0.447E-05
4		????		5.313			0.63	15.0		
5	Pu239	0.492	5.147	5.126	0.021	0.02	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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 17497.3

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4.....5.
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Raw Data Dump for AEA Spectrum: 5a5300.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.	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 Laboratory
 G E N E R A L A L P H A E N E R G Y A N A L Y S I S
 Rev. 2.10

DATA REDUCTION REPORT

SAMPLE
 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count Rate	%err @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.				
1	Cm243	0.950	5.779	5.765	0.0140.04	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	-.0150.07	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: _____

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1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 12020.0

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[illegible]

Raw Data Dump for AEA Spectrum:	6a6115.CNF	HNF-SD-WM-DP-251, REV. 0
1	0.	0.
11	0.	0.
21	1.	0.
31	0.	0.
41	0.	0.
51	2.	1.
61	0.	0.
71	0.	0.
81	0.	1.
91	0.	0.
101	2.	0.
111	0.	0.
121	0.	0.
131	0.	0.
141	0.	1.
151	0.	0.
161	1.	0.
171	0.	1.
181	0.	0.
191	0.	1.
201	0.	0.
211	3.	0.
221	2.	2.
231	5.	3.
241	2.	4.
251	10.	7.
261	9.	9.
271	21.	12.
281	27.	40.
291	59.	33.
301	22.	12.
311	25.	17.
321	19.	31.
331	82.	86.
341	183.	199.
351	671.	789.
361	1773.	1709.
371	317.	208.
381	0.	0.
391	0.	0.
401	0.	0.
411	0.	0.
421	1.	1.
431	1.	1.
441	0.	1.
451	1.	0.
461	0.	0.
471	2.	3.
481	10.	11.
491	1.	0.
511	0.	0.

HNF-SD-WM-DP-251, REV. 0
 222-S Analytical Laboratory
 GENERAL ALPHA ENERGY ANALYSIS
 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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		Count Rate	%err @95	d/m	Activity uCi/ea
			Exp.	Obs. Diff.	c/m			
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	-0.006			317.8 0.143E-03
2	Am241	0.014	5.479	5.496	-0.0170.05	1.25	10.4	6.9 0.310E-05
	Pu238		5.487	5.496	-0.009			9.0 0.404E-05
3	Th228	0.022	5.400	5.418	-0.0180.04	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	-0.002			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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11236.8

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Raw Data Dump for AEA Spectrum:	7a7848.CNF	HNF-SD-WM-DP-251, REV.0	
1	0.	0.	0.
11	0.	0.	0.
21	3.	0.	1.
31	0.	2.	1.
41	0.	0.	1.
51	0.	0.	0.
61	1.	1.	0.
71	0.	0.	3.
81	0.	0.	0.
91	1.	1.	0.
101	0.	2.	1.
111	2.	0.	1.
121	0.	0.	2.
131	4.	2.	3.
141	1.	1.	8.
151	3.	2.	1.
161	5.	4.	6.
171	3.	3.	3.
181	8.	11.	7.
191	13.	21.	15.
201	31.	29.	38.
211	75.	74.	75.
221	277.	325.	342.
231	788.	772.	723.
241	81.	55.	36.
251	7.	5.	3.
261	7.	6.	9.
271	14.	18.	15.
281	16.	24.	31.
291	61.	35.	52.
301	25.	29.	36.
311	28.	24.	25.
321	24.	27.	38.
331	59.	63.	74.
341	146.	163.	185.
351	662.	785.	872.
361	1613.	1720.	1695.
371	314.	229.	124.
381	1.	0.	0.
391	0.	0.	0.
401	0.	0.	0.
411	0.	0.	0.
421	0.	1.	0.
431	0.	0.	0.
441	0.	0.	0.
451	1.	0.	0.
461	0.	0.	0.
471	8.	2.	5.
481	4.	2.	3.
491	0.	0.	0.
511	0.	0.	0.

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

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GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Exp.	Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Pu236	0.677	5.755	5.760	-0.0050	0.02	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	-0.0090	0.04	2.08	7.0	13.6	0.615E-05
	Am241		5.479	5.496	-0.017				10.5	0.471E-05
3	Th228	0.011	5.400	5.418	-0.0180	0.02	1.10	12.0	7.3	0.329E-05
4	sk	????		5.328			0.37	22.4		
5		????		5.270			0.60	24.1		
6	Pu239	0.258	5.147	5.146	0.0010	0.02	25.78	1.8	122.0	0.550E-04
	Pu240		5.144	5.146	-0.002				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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 14291.1

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Raw	Data	Dump	for	AEA	Spectrum:	9a9984.CNF	HNF-SD-WM-DP-251, REV. 0		
1	0.	0.	1.	1.	1.	0.	0.	0.	0.
11	1.	0.	0.	1.	0.	1.	1.	1.	1.
21	1.	1.	2.	2.	0.	3.	0.	2.	0.
31	1.	1.	2.	2.	1.	3.	1.	1.	0.
41	2.	3.	5.	2.	4.	8.	3.	4.	9.
51	7.	5.	10.	5.	4.	2.	3.	5.	2.
61	1.	1.	3.	1.	2.	1.	2.	2.	0.
71	0.	1.	1.	0.	1.	0.	1.	1.	2.
81	0.	0.	1.	1.	1.	1.	2.	1.	1.
91	0.	1.	1.	2.	0.	0.	0.	1.	0.
101	3.	0.	1.	1.	1.	1.	1.	3.	0.
111	2.	1.	1.	3.	1.	1.	0.	1.	0.
121	3.	0.	3.	3.	3.	1.	4.	2.	1.
131	1.	2.	2.	6.	4.	3.	3.	2.	1.
141	2.	5.	6.	3.	4.	1.	3.	3.	1.
151	0.	2.	5.	2.	0.	1.	7.	4.	4.
161	0.	7.	5.	5.	3.	8.	7.	5.	8.
171	10.	6.	10.	4.	10.	14.	12.	9.	4.
181	8.	9.	16.	17.	16.	8.	17.	21.	15.
191	13.	19.	30.	28.	21.	24.	30.	38.	33.
201	39.	45.	53.	57.	63.	63.	64.	56.	71.
211	100.	114.	121.	143.	179.	196.	252.	295.	307.
221	382.	449.	500.	601.	724.	896.	1043.	1069.	1115.
231	821.	583.	365.	188.	96.	50.	25.	6.	7.
241	7.	4.	7.	5.	3.	3.	7.	5.	6.
251	5.	9.	5.	14.	13.	13.	12.	12.	5.
261	12.	10.	11.	15.	20.	16.	34.	25.	18.
271	23.	18.	13.	13.	16.	22.	17.	23.	26.
281	18.	49.	45.	65.	70.	82.	68.	63.	75.
291	33.	26.	19.	27.	20.	36.	31.	33.	33.
301	36.	54.	58.	48.	47.	34.	35.	20.	26.
311	18.	24.	19.	21.	33.	28.	35.	27.	44.
321	46.	51.	54.	60.	63.	58.	91.	85.	84.
331	99.	106.	113.	128.	145.	169.	159.	164.	187.
341	246.	296.	303.	433.	454.	599.	705.	797.	961.
351	1172.	1263.	1326.	1388.	1598.	1829.	2060.	2383.	2511.
361	2287.	1801.	1075.	596.	321.	124.	39.	14.	4.
371	0.	1.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	1.	0.	1.	0.
411	2.	1.	0.	0.	1.	0.	2.	0.	0.
421	0.	0.	0.	2.	2.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	1.	0.	0.	0.
441	1.	0.	0.	0.	0.	1.	0.	1.	0.
451	0.	0.	0.	2.	2.	0.	1.	3.	4.
461	7.	7.	5.	6.	7.	6.	7.	5.	3.
471	2.	5.	4.	1.	1.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

HNF-SD-WM-DP-251, REV.0
222-S Analytical Laboratory
GENERAL ALPHA ENERGY ANALYSIS
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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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		Count Rate	%err @95	d/m	Activity uCi/ea
		Exp.	Obs.	Diff.	c/m			
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: _____

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 11503.5

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Raw Data	Dump	for AEA	Spectrum:	10a1089.CNF	HNF-SD-WM-DP-251, REV. 0
1	0.	0.	0.	0.	0.
11	0.	1.	0.	1.	0.
21	0.	1.	0.	0.	1.
31	0.	0.	0.	0.	0.
41	0.	0.	1.	0.	1.
51	1.	1.	1.	0.	1.
61	3.	5.	2.	3.	7.
71	7.	3.	2.	4.	2.
81	1.	0.	0.	0.	0.
91	0.	0.	0.	0.	1.
101	1.	0.	0.	0.	0.
111	1.	1.	1.	0.	0.
121	1.	1.	1.	0.	1.
131	2.	1.	0.	2.	1.
141	1.	0.	2.	3.	2.
151	1.	2.	1.	1.	3.
161	3.	2.	2.	2.	0.
171	4.	0.	4.	8.	1.
181	3.	8.	7.	6.	4.
191	6.	5.	7.	8.	10.
201	13.	22.	14.	28.	24.
211	71.	67.	80.	103.	108.
221	316.	320.	401.	482.	585.
231	1012.	816.	541.	263.	119.
241	3.	2.	1.	3.	2.
251	5.	6.	8.	8.	9.
261	6.	5.	10.	7.	14.
271	23.	18.	10.	12.	8.
281	15.	33.	34.	43.	56.
291	36.	13.	14.	17.	22.
301	34.	27.	39.	34.	41.
311	9.	11.	8.	13.	13.
321	17.	12.	22.	21.	26.
331	33.	37.	46.	39.	52.
341	119.	155.	169.	178.	234.
351	831.	926.	1050.	1159.	1106.
361	2487.	2511.	2452.	1960.	1184.
371	1.	2.	0.	0.	0.
381	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.
401	0.	0.	1.	0.	0.
411	1.	0.	0.	0.	0.
421	1.	2.	1.	1.	0.
431	0.	0.	0.	1.	0.
441	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.
461	1.	2.	1.	0.	1.
471	6.	6.	9.	8.	3.
481	3.	2.	0.	0.	1.
491	0.	0.	0.	0.	0.
511	0.	0.	0.	0.	0.

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 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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 Exp.	Centroid Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Cm244	0.682	5.795	5.776	0.0190.02		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	-.0180.04		1.65	7.5	11.2	0.503E-05
	Am241		5.479	5.505	-.026				8.6	0.385E-05
3	Th228	0.011^h	5.400	5.427	-.0270.01		1.04	11.4	7.1	0.320E-05
4	????		5.343				0.66	14.5		
5	Pu239	0.263	5.147	5.156	-.0090.02		25.12	1.8	122.5	0.552E-04
	Pu240		5.144	5.156	-.012				122.5	0.552E-04

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

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 14430.9

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Raw Data Dump for AEA Spectrum: 11a1103.CNF HNF-SD-WM-DP-251, REV. 0

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.								

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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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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	Exp.	Obs.	Diff.	FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
1	Cm243	0.610	5.779	5.766	0.0130.11	69.74	1.1	454.9	0.205E-03	
	Pu236		5.755	5.766	-0.011			338.9	0.153E-03	
2	Th228	0.037	5.400	5.442	-0.0420.33	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	0.0070.10	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) = $4.075 + (0.0048) \times \text{Channel}$
 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

9560.0

321

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.								

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 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		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	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			Count Rate c/m	%err @95	d/m	Activity uCi/ea
		Exp.	Obs.	Diff.	FWHM				
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	-0.0010.01	0.85	13.1	4.7	0.213E-05
4	SW	????		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: _____

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 10383.8

Raw Data	Dump	for AEA	Spectrum:	13a1330.CNF	HNF-SD-WM-DP-251, REV. 0
1	0.	0.	0.	0.	0.
11	2.	0.	2.	0.	1.
21	2.	0.	2.	0.	1.
31	0.	0.	1.	2.	0.
41	2.	1.	1.	1.	0.
51	0.	2.	1.	2.	3.
61	2.	5.	4.	3.	9.
71	2.	2.	4.	1.	0.
81	2.	1.	0.	1.	0.
91	1.	1.	1.	0.	0.
101	2.	0.	1.	0.	0.
111	1.	1.	0.	4.	1.
121	1.	0.	3.	2.	1.
131	0.	1.	3.	2.	2.
141	4.	2.	2.	1.	3.
151	2.	3.	3.	2.	4.
161	3.	3.	1.	3.	4.
171	3.	4.	5.	1.	6.
181	6.	8.	9.	7.	4.
191	17.	10.	10.	10.	17.
201	17.	22.	26.	28.	29.
211	66.	98.	118.	103.	134.
221	399.	457.	555.	644.	799.
231	800.	369.	185.	67.	21.
241	2.	1.	1.	3.	2.
251	6.	4.	5.	7.	9.
261	4.	6.	19.	7.	7.
271	7.	12.	13.	11.	3.
281	32.	29.	44.	49.	57.
291	19.	18.	24.	22.	23.
301	35.	52.	41.	32.	28.
311	5.	10.	7.	5.	11.
321	10.	16.	22.	23.	17.
331	35.	39.	35.	41.	58.
341	139.	165.	169.	207.	261.
351	1020.	1038.	885.	911.	948.
361	2521.	2173.	1436.	527.	138.
371	0.	0.	1.	0.	0.
381	0.	1.	0.	2.	0.
391	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.
411	0.	0.	0.	1.	0.
421	0.	0.	0.	0.	0.
431	1.	1.	0.	0.	0.
441	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	1.
461	2.	0.	2.	1.	0.
471	5.	10.	6.	3.	7.
481	0.	0.	2.	1.	0.
491	0.	0.	0.	1.	0.
511	1.	0.			

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

ATTACHMENT A
OPPORTUNISTIC ANALYTE RESULTS

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

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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	<5.050e0	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	<5.050e0	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	46.10	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	Cobalt-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	Chromium-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	Copper-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	Potassium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-02	< 5.050	<5.050e0	n/a	n/a	n/a	5.050	n/a
S97T001286	D	Lanthanum-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	Lithium-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	Magnesium-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	Manganese-ICP-Acid Dil.	ug/mL	101.0	<5.00e-02	< 5.050	<5.050e0	n/a	n/a	n/a	5.050	n/a
S97T001286	D	Molybdenum-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	Neodymium-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	Nickel-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	Phosphorus-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	Lead-ICP-Acid Dil.	ug/mL	99.20	<1.00e-01	1.01e+03	998.0	1.00e+03	1.20	n/a	10.10	n/a
S97T001286	D	Sulfur-ICP-Acid Dil.	ug/mL	96.20	<6.00e-02	< 6.060	<6.060e0	n/a	n/a	n/a	6.060	n/a
S97T001286	D	Antimony-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	Selenium-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	Silicon-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	Samarium-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	Strontium-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	Titanium-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	Thallium-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	Uranium-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	< 5.050	<5.050e0	n/a	n/a	n/a	5.050	n/a
S97T001286	D	Vanadium-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	Zinc-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	D	Zirconium-ICP-Acid Dil.	ug/mL	99.15	<1.25e-01	<2.65e+02	<2.65e2	n/a	n/a	n/a	265.1	n/a
S97T001286	D	Bromide by Ion Chromatograph	ug/mL	100.2	<1.05e-01	<2.23e+02	<2.23e2	n/a	n/a	n/a	222.7	n/a
S97T001286	D	Oxalate-IC-Dionex 4000/450	ug/mL	102.9	<1.01e-05	<1.31e-05	<1.36e-5	n/a	n/a	n/a	1.31e-05	n/a
S97T001292		Cobalt-60 by GEA	uCi/mL									

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

RISER: 8

SEGMENT #: 244-TX-97-2

SEGMENT PORTION: Supernate

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Sample#	R #	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	Asenic-ICP-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	<5.03e0	<5.03e0	n/a	n/a	n/a	5.050	n/a
S97T001290	D	Berium-ICP-Acid DIL.	ug/mL	98.20	<5.00e-02	<5.03e0	<5.03e0	n/a	n/a	n/a	5.050	n/a
S97T001290	D	Beryllium-ICP-Acid DIL.	ug/mL	101.6	<5.00e-01	<5.05e-1	<5.05e-1	n/a	n/a	n/a	5.05e-01	n/a
S97T001290	D	Bismuth-ICP-Acid DIL.	ug/mL	101.6	<1.00e-01	44.70	45.80	45.25	2.45	n/a	10.10	n/a
S97T001290	D	Calcium-ICP-Acid DIL.	ug/mL	98.40	<1.00e-01	<1.01e1	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290	D	Cadmium-ICP-Acid DIL.	ug/mL	99.00	<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	101.6	<1.00e-01	<1.01e1	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290	D	Cobalt-ICP-Acid DIL.	ug/mL	101.6	<2.00e-02	<2.02e0	<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	<1.01e0	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290	D	Copper-ICP-Acid DIL.	ug/mL	96.40	<5.00e-02	<1.01e0	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290	D	Potassium-ICP-Acid DIL.	ug/mL	99.80	<1.00e+02	102.0	100.0	7.35	100.0	n/a	50.50	n/a
S97T001290	D	Lanthanum-ICP-Acid DIL.	ug/mL	99.80	<5.00e-02	<5.05e0	<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	<1.01e0	<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	<1.01e0	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290	D	Magnesium-ICP-Acid DIL.	ug/mL	97.60	<1.00e-02	<1.01e0	<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	<5.05e0	<5.05e0	n/a	n/a	n/a	5.050	n/a
S97T001290	D	Niobium-ICP-Acid DIL.	ug/mL	99.00	<1.00e-01	<1.01e1	<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	<2.02e0	<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	<1.01e1	<1.01e1	1.01e+03	1.01e+03	n/a	10.10	n/a
S97T001290	D	Sulfur-ICP-Acid DIL.	ug/mL	97.20	<1.00e-01	<1.01e1	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290	D	Antimony-ICP-Acid DIL.	ug/mL	93.60	<1.00e-01	<1.01e1	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290	D	Selenium-ICP-Acid DIL.	ug/mL	93.60	<1.00e-01	<1.01e1	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290	D	Silicon-ICP-Acid DIL.	ug/mL	97.00	<2.00e-02	11.00	10.95	0.91	n/a	n/a	5.050	n/a
S97T001290	D	Samarium-ICP-Acid DIL.	ug/mL	97.80	<1.00e-01	<1.01e1	<1.01e1	n/a	n/a	n/a	10.10	n/a
S97T001290	D	Strontium-ICP-Acid DIL.	ug/mL	98.60	<1.00e-02	<1.01e0	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290	D	Tantalum-ICP-Acid DIL.	ug/mL	97.40	<2.00e-01	<2.02e1	<2.02e1	n/a	n/a	n/a	20.20	n/a
S97T001290	D	Vanadium-ICP-Acid DIL.	ug/mL	96.30	<5.00e-01	<5.05e0	<5.05e0	n/a	n/a	n/a	50.50	n/a
S97T001290	D	Vanadium-ICP-Acid DIL.	ug/mL	100.8	<5.00e-02	<5.05e0	<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	<1.01e0	<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	<1.01e0	<1.01e0	n/a	n/a	n/a	1.010	n/a
S97T001290	D	Bromide by Ion Chromatograph	ug/mL	99.15	<1.25e-01	<2.25e+02	<2.25e2	n/a	n/a	n/a	222.7	n/a
S97T001290	D	Koalate-ICP-Ionex 4000/450	ug/mL	100.2	<1.05e-01	<2.25e+02	<2.25e2	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	<1.37e-5	n/a	n/a	n/a	1.37e-05	n/a

Appendix A: Opportunistic Analyte Results
TX-244 GR81

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	n/a	92.80	1.010	n/a	n/a
S97T001291	D		Arsenic-ICP-Acid Dil.	ug/mL	104.6	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	106.0	10.10	n/a	n/a
S97T001291	D		Boron-ICP-Acid Dil.	ug/mL	101.2	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	103.0	5.050	n/a	n/a
S97T001291	D		Barium-ICP-Acid Dil.	ug/mL	104.0	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	99.50	5.050	n/a	n/a
S97T001291	D		Beryllium-ICP-Acid Dil.	ug/mL	102.4	<5.00e-03	<5.05e-01	<5.05e-1	n/a	n/a	n/a	103.0	5.05e-01	n/a	n/a
S97T001291	D		Bismuth-ICP-Acid Dil.	ug/mL	102.8	<1.00e-01	35.30	29.70	32.50	17.2	n/a	99.70	10.10	n/a	n/a
S97T001291	D		Calcium-ICP-Acid Dil.	ug/mL	102.6	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	104.0	10.10	n/a	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	n/a	102.0	5.05e-01	n/a	n/a
S97T001291	D		Cerium-ICP-Acid Dil.	ug/mL	101.4	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	99.90	10.10	n/a	n/a
S97T001291	D		Cobalt-ICP-Acid Dil.	ug/mL	101.4	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	n/a	101.0	2.020	n/a	n/a
S97T001291	D		Chromium-ICP-Acid Dil.	ug/mL	103.0	<1.00e-02	78.80	78.90	78.85	0.13	n/a	102.0	1.010	n/a	n/a
S97T001291	D		Copper-ICP-Acid Dil.	ug/mL	97.80	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	96.70	1.010	n/a	n/a
S97T001291	D		Potassium-ICP-Acid Dil.	ug/mL	98.20	<5.00e-01	1.24e+02	123.0	123.5	0.81	n/a	89.90	50.50	n/a	n/a
S97T001291	D		Lanthanum-ICP-Acid Dil.	ug/mL	103.0	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	102.0	5.050	n/a	n/a
S97T001291	D		Lithium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	103.0	1.010	n/a	n/a
S97T001291	D		Magnesium-ICP-Acid Dil.	ug/mL	104.0	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	102.0	10.10	n/a	n/a
S97T001291	D		Manganese-ICP-Acid Dil.	ug/mL	100.6	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	98.00	1.010	n/a	n/a
S97T001291	D		Molybdenum-ICP-Acid Dil.	ug/mL	101.6	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	102.0	5.050	n/a	n/a
S97T001291	D		Neodymium-ICP-Acid Dil.	ug/mL	103.6	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	102.0	10.10	n/a	n/a
S97T001291	D		Nickel-ICP-Acid Dil.	ug/mL	102.4	<2.00e-02	< 2.020	<2.02e0	n/a	n/a	n/a	102.0	2.020	n/a	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	n/a	101.0	20.20	n/a	n/a
S97T001291	D		Lead-ICP-Acid Dil.	ug/mL	103.0	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	102.0	10.10	n/a	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	n/a	96.80	10.10	n/a	n/a
S97T001291	D		Antimony-ICP-Acid Dil.	ug/mL	96.40	<6.00e-02	< 6.060	<6.06e0	n/a	n/a	n/a	97.20	6.060	n/a	n/a
S97T001291	D		Selenium-ICP-Acid Dil.	ug/mL	98.00	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	98.00	10.10	n/a	n/a
S97T001291	D		Silicon-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	9.480	9.990	9.735	5.24	n/a	99.90	5.050	n/a	n/a
S97T001291	D		Samarium-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 10.10	<1.01e1	n/a	n/a	n/a	97.70	10.10	n/a	n/a
S97T001291	D		Strontium-ICP-Acid Dil.	ug/mL	100.2	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	98.80	1.010	n/a	n/a
S97T001291	D		Titanium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	97.90	1.010	n/a	n/a
S97T001291	D		Thallium-ICP-Acid Dil.	ug/mL	97.80	<2.00e-01	< 20.20	<2.02e1	n/a	n/a	n/a	94.60	20.20	n/a	n/a
S97T001291	D		Uranium-ICP-Acid Dil.	ug/mL	96.70	<5.00e-01	< 50.50	<5.05e1	n/a	n/a	n/a	99.00	50.50	n/a	n/a
S97T001291	D		Vanadium-ICP-Acid Dil.	ug/mL	99.60	<5.00e-02	< 5.050	<5.05e0	n/a	n/a	n/a	99.10	5.050	n/a	n/a
S97T001291	D		Zinc-ICP-Acid Dil.	ug/mL	97.40	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	98.70	1.010	n/a	n/a
S97T001291	D		Zirconium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	< 1.010	<1.01e0	n/a	n/a	n/a	98.00	1.010	n/a	n/a
S97T001291			Bromide by Ion Chromatograph	ug/mL	99.15	<1.25e-01	<2.65e+02	<2.65e2	n/a	n/a	n/a	91.00	265.1	n/a	n/a
S97T001291			Oxalate-IC-Dionex 4000/450	ug/mL	100.2	<1.05e-01	<2.23e+02	<2.23e2	n/a	n/a	n/a	103.5	222.7	n/a	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	n/a	1.34e-05	n/a	n/a

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

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				Date: 08/11/97	
Project Title/Work Order HNF-SD-WM-DP-251, Rev. 0 "Double-Contained Receiver Tank 244-TX, Grab Samples, 244TX-97-1 through 244TX-97-3 Analytical Results for the Final Report			EDT NO.: EDT-620416		
			ECN NO.: N/A		
Name		MSIN	Text With all Attach	EDT/ECN ONLY	

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