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Section 1 of 4

Document Information			
Document #	HNF-1652	Revision	0
Title	TANK 241AW101 LOW ACTIVITY WASTE ENVELOPE A ANALYTICAL RESULTS FOR THE FINAL REPORT		
Date	02/08/1999		
Originator	ESCH RA	Originator Co.	WMH
Recipient		Recipient Co.	
References	EDT-626134		
Keywords	CHARACTERIZATION,CORE,AW FARM		
Projects			
Other Information			

Feb 08 1999

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT 626134

2. To: (Receiving Organization) Distribution		3. From: (Originating Organization) Waste Management Laboratory		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: Tank 241-AW-101 Core/Waste Management/PPC/WML		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: 241-AW-101	
11. Receiver Remarks: For release.				11A. Design Baseline Document? ☐ Yes ☒ No	
				12. Major Assm. Dwg. No.: N/A	
				13. Permit/Permit Application No.: N/A	
14. Required Response Date: 02/08/99					

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-1652	N/A	0	Tank 241-AW-101 Low Activity Waste Envelope A 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 WMC-CM-3-5, Sec.12.7)	1. Approval 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved w/comment 6. Receipt acknowledge

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)								
(G) Reason	(H) Disposition	(J) Name	(K) Signature (M) MSIN	(L) Date	(G) Reason	(H) Disposition	(J) Name	(K) Signature (M) MSIN
		Design Authority						
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2	1	Cog. Eng. R. A. Esch	<i>Ruth A. Esch</i>	2/8/99				
2	1	Cog. Mgr. D. B. Hardy	<i>D. B. Hardy</i>	2/8/99				
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18. Signature of EDT Originator <i>L. A. Diaz</i> Date <i>2/8/99</i>		19. Authorized Representative for Receiving Organization N/A		20. Design Authority Date Cognizant Manager <i>D. B. Hardy</i> Date <i>2/8/99</i>		21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
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Tank 241-AW-101 Low Activity Waste Envelope A 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-626134 UC: 2070
Org Code: 31B00 Charge Code: LC087
B&R Code: EW 3120074 Total Pages: 1288

Key Words: Tank-241-AW-101, AW Farm, AW-101, 241-AW-101 Tank
Characterization, Core, Analytical Results, Final Report

Abstract: N/A

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Release/Approval Date

Approved for Public Release

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WASTE MANAGEMENT LABORATORY

**TANK 241-AW-101 LOW ACTIVITY WASTE
ENVELOPE A
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

**222-S Laboratory
Waste Management of Hanford, Inc.
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Richland, Washington**

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This package includes pages 22.1, 153.1, 153.2, 167.1 and 219.1.

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HANFORD ANALYTICAL LABORATORY OPERATIONS

TANK 241-AW-101
LOW ACTIVITY WASTE ENVELOPE A
ANALYTICAL RESULTS FOR THE FINAL REPORT

1.0 INTRODUCTION

This document is the final laboratory report for tank 241-AW-101 grab samples collected on April 21, 1998. The samples were subsampled, composited and analyzed in accordance with the *Tank 241-AW-101 Privatization Grab Sampling and Analysis Plan* (TSAP) (Simpson 1999) and the *Low Activity Waste Feed Data Quality Objective* (LAW DQO) (Wiemers 1997). The analytical results are included in Table 1.

In addition to characterization analyses, solids solubility screening was performed on composite samples in accordance with the *Test Plan for Tank 241-AW-101 Solubility Screening Tests* (Test Plan) (Person 1998) and the *Low-Activity Waste Feed Data Quality Objective* (LAW DQO) (Wiemers 1997). Results from this testing are provided in Table 2.

2.0 SAMPLE RECEIVING AND APPEARANCE

Ten grab samples were taken from tank 241-AW-101 riser 22 on April 21, 1998 and received at the 222-S Laboratory on April 22, 1998. The samples were allowed to settle for several days and were then observed for appearance and determination of the percent settled solids. Table 3 provides the sample receiving and sample appearance information. The percent settled solids measurements were obtained by comparing the height (in millimeters (mm)) of the settled solids to the height of the entire sample in the 125-mL bottles. Except for the first two crust samples, which had 100% solids upon receipt, all samples contained gray crystalline solids that appeared to have precipitated after cooling.

A field blank was collected and received with the samples from this sampling event. The analyses requested on the supernate composite were also performed on the field blank. However, no acid digestion was performed prior to the inductively coupled plasma (ICP), total alpha/total beta activity (AT/TB) or graphite furnace atomic absorption (GFAA) analyses of the field blank.

The sampling depth information that is provided in Table 3 was obtained from the data sheets included in the work package for sampling (work package number ES-98-00013/0). All samples were taken at the depths indicated in the process memo (number 2E98-015, Rev. 1) except for samples 1AW-98-09 (sampling depth was short by 2' 1") and 1AW-98-10 (sampling depth was short by one inch).

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Table 3. Receipt and Appearance Information for Tank 241-AW-101 Grab Samples

Sample Number	Date Sampled	Date Received	Sampling Depth (in.)*	% Settled Solids	Sample Description
1AW-98-1	4/21/98	4/22/98	268	100%	Bottle full. Dark brown solid, no organic layer.
1AW-98-2	4/21/98	4/22/98	268	100%	Bottle full. Dark brown chunky solid, air pockets noted in sample, no organic layer.
1AW-98-3	4/21/98	4/22/98	325	21.1%	Bottle full. Cloudy yellow liquid; gray/brown solids settled on cooling, no organic layer.
1AW-98-4	4/21/98	4/22/98	325	31.6%	Bottle full. Cloudy yellow liquid; gray/brown, lumpy solids settled on cooling, no organic layer.
1AW-98-5	4/21/98	4/22/98	420	16.8%	Bottle full. Cloudy yellow liquid; gray/brown solids settled on cooling; some lighter gray flocculent suspended solids, no organic layer.
1AW-98-6	4/21/98	4/22/98	420	16.5%	Bottle full. Cloudy yellow liquid; gray/brown solids settled on cooling; some lighter gray flocculent suspended solids, no organic layer.
1AW-98-7	4/21/98	4/22/98	515	13.7%	Bottle full. Cloudy yellow liquid; gray/brown, crystalline solids settled on cooling, no organic layer.
1AW-98-8	4/21/98	4/22/98	515	27.4%	Bottle full. Cloudy yellow liquid; significant amount of lighter gray flocculent solids settled on top of finer textured gray/brown solids upon cooling of sample, no organic layer.
1AW-98-9	4/21/98	4/22/98	630	35.8%	Bottle full. Opaque yellow/brown liquid; dark brown solids, no organic layer.
1AW-98-10	4/21/98	4/22/98	654	44.2%	Bottle full. Cloudy yellow liquid; gray/brown solids settled on cooling, no organic layer.
1AW-98-FB1	4/21/98	4/22/98	235	0%	Bottle full. Clear colorless liquid with a few small pieces of dark brown solids on bottom of jar, no organic layer.

* Sample depth is measured from the top of the riser to the mouth of the sample bottle

3.0 SAMPLE HANDLING

Attachment 1 contains the sample breakdown diagrams. These are provided as a cross-reference to relate the tank farm identification numbers to the 222-S Laboratory sample numbers. They also provide information to illustrate how the samples were handled for separation, compositing and subsampling. The analyses performed on each subsample are also identified in these diagrams.

A representative 20-mL aliquot of each parent sample was set aside for archive. Following archive preparation, the remainder of each parent sample was separated by centrifugation for approximately 30 minutes. Composites were prepared by combining all of the liquid into the 'Supernate Composite' and all of the solid collected from centrifugation of the samples into the 'Centrifuged Solid' composite.

As indicated in Attachment 1, nine subsamples for the supernate composite and six subsamples for the centrifuged solid composite were needed so that smaller volumes could be handled to reduce the radiological exposure to personnel and still provide enough material to perform all of the required analyses. However, each requested analysis was performed on only three of the subsamples. The supernate composite analyses were performed on duplicate aliquots taken from each subsample provided. One spike analysis was performed per matrix for applicable methods.

A single aliquot was required for each of the centrifuged solid composite subsamples, with the exception of the polychlorinated biphenyl (PCB) analysis, which required duplicates. However, there was insufficient material from the centrifuged solid composite to analyze duplicate aliquots for PCBs. Therefore, a single analysis result was reported for all requested analytes for the centrifuged solid composite. Results for the characterization analyses of the composites are presented in Table 1.

The Process Chemistry group performed the solids solubility screening. Five liquid/solid composites were built as described in the Test Plan (Person 1998). Varying amounts of diluent were added to three of the five composites, as indicated in the diagrams in Attachment 1. After mixing and settling, the solids and liquids were separated by centrifugation and subsamples were submitted for analysis.

The LAW DQO indicates that the subsamples from the solubility screening study should be analyzed for the same limited set of analytes as the solids composite samples. There is also information suggesting that duplicate analyses should have been performed on the subsamples from the solubility screening study. However, since there was insufficient sample for duplicate analysis, and Table 2 in the TSAP indicates that no duplicates were required for the requested analyses except for PCB analysis, concurrence was received (Attachment 3) to report a single analysis result for these samples. There was insufficient material to perform the PCB analyses. One spike analysis was performed for each matrix. The results of these analyses are presented in

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Table 2. The reported results do not include corrections for the dilutions made during the solubility screening.

The solubility screening indicated that as the dilution of the sample is increased, the amount of dissolved solids increases up to about 83% dissolution at a dilution factor of 2. The primary component of the solids at the final dilution was sodium oxalate with a smaller contribution from phosphate. Water insoluble species include compounds of uranium, chromium, iron and silicon. A more detailed discussion of the solid solubility screening is provided in the *Solubility Screening Tests for Tank 241-AW-101* report, included as Attachment 2.

4.0 ANALYSIS REQUIREMENTS

As stated previously, Table 1 presents the results for the characterization of the supernate and centrifuged solid composites. Some of the multielement methods report analytes that were not specifically requested. Those analyte results are presented as "opportunistic analytes" in Appendix A. The laboratory did not evaluate quality control (QC) failures associated with analytes that were not requested in the TSAP.

Table 4 indicates which analytes are required for each composite and the solubility screening samples. For a given sample matrix, analytes that are not listed in this table are presented in Appendix A.

The analytes are divided into Group 1 and Group 2, as indicated in the LAW DQO. The LAW DQO requires reparation and/or reanalysis only for Group 1 analytes that fail to meet the QC criteria specified in the TSAP. Group 2 analytes that fail to meet the specified QC criteria do not require reanalysis. In addition, reparation and/or reanalysis of Group 1 analytes are only required if the reported results are within the sensitivity bounds, as defined below.

Table 4. Required Analyte List

Sample Matrix	Analyte Group	Method	Required Analyte
Supernate Composite	Group 1	ICP	Al, Ba, Ca, Cd, Cr, Fe, K, La, Na, Ni, Pb, U
		IC	Cl, F, NO ₂ , NO ₃ , PO ₄ , SO ₄
		Cold vapor atomic absorption (CVAA)	Mercury (Hg)
		Potentiometric titration	Hydroxide (OH)
		Persulfate	Total inorganic carbon (TIC)
		Persulfate and furnace oxidation	Total organic carbon (TOC)

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Table 4. Required Analyte List

Sample Matrix	Analyte Group	Method	Required Analyte
Supernate Composite	Group 1	Inductively coupled plasma/mass spectrometry (ICP/MS)	⁹⁹ Tc, ²³⁷ Np, ²³⁹ Pu, ²⁴⁰ Pu, ²⁴¹ Pu/Am, ²⁴² Pu, ²⁴³ Am/Cm, ²⁴⁴ Pu/Cm
		Separation alpha energy analysis (AEA)	²⁴¹ Am, ^{243/244} Cm
		TTA extraction	²³⁷ Np
		Separation/beta counting	⁹⁰ Sr
		Liquid scintillation	⁹⁹ Tc
		Gamma energy analysis (GEA)	¹³⁷ Cs
	Group 2	ICP	Mn, P, S, Si, Sr (total)
		ICP/MS	Cs (total), ¹²⁶ Sn, ²³¹ Pa, U isotopes
		Ion Selective Electrode	Ammonia (NH ₃)
		Gravimetry	Weight % solids
		Gravimetry	Specific gravity (SpG)
		Alpha counting	Total alpha (AT)
		Beta counting	Total beta (TB)
		GEA	⁶⁰ Co, ¹²⁵ Sb, ¹⁵⁴ Eu, ¹⁵⁵ Eu
		Liquid scintillation	³ H, ¹⁴ C, ⁷⁹ Se
		Separation/GEA	¹²⁹ I
	Other requested analytes	ICP	Ag, As, B, Be, Co, Cu, Li, Mg, Mo, Sb, Se, Sn, Ta, Th, Ti, W, V, Y, Zn, Zr
		IC	Br, I
		Colorimetry	Cyanide (CN)
		Graphite furnace atomic absorption (GFAA)	Sb, Tl
		Gas chromatograph/mass spectrometry (GC/MS)	Polychlorinated biphenyls (PCB)
Sludge comp., Solubility screening (solids and liquids)	Group 1	ICP	Al, Cr, Na
		Potentiometric titration	OH
		Persulfate	TIC

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Table 4. Required Analyte List

Sample Matrix	Analyte Group	Method	Required Analyte
Sludge comp., Solubility screening (solids and liquids)	Group 1	Persulfate and furnace oxidation	TOC
		Centrifugation	Volume % solids
		Separation/beta counting	⁹⁰ Sr
		GEA	¹³⁷ Cs
	Group 2	ICP	P, S, Si
		Gravimetry	Weight % solids
		Alpha counting	AT
		GEA	⁶⁰ Co, ¹²⁵ Sb, ¹⁵⁴ Eu, ¹⁵⁵ Eu
	Other	GC/MS	PCB

Table 5 presents the Group 1 analyte results for the supernate composite as compared to the envelope C contract limits for low activity waste. The results for the three subsamples were averaged and converted to molarity (M) units for the non-radionuclides and becquerels/L (Bq/L) for the radionuclides. Each result was then divided by the molarity result for sodium and compared to the contract envelope limit by dividing by the limit and presenting the result in units of a percent. This percentage gives an indication of how close the results are to the contract envelope limit, as specified in the LAW DQO. The LAW DQO defines the sensitivity boundary as $\pm 30\%$ of the envelope limit.

No analytes fell within the sensitivity boundary. Therefore, as stated in the LAW DQO, no reparation or reanalysis was required due to QC failures for any of the analytes. The high results for TRU are explained later.

For the evaluation of the envelope limit for transuranic (TRU) isotopes, not all of the isotopes listed in the LAW DQO were included in the result presented in Table 5 because the isotopic result was either not available or the isotope was not an alpha emitter. The LAW DQO requests ²³⁸Pu, but mass at 238 by ICP/MS was reported as uranium. Likewise, mass at 242 was reported as plutonium, therefore no result is available for ²⁴²Cm. For mass at 243, the ICP/MS reports a combined ²⁴³Am/Cm. Since the combined result of ^{243/244}Cm from the AEA analysis is assumed to be principally ²⁴³Cm, that result was subtracted from the ICP/MS result to obtain the ²⁴³Am answer reported in Table 5. The LAW DQO also indicates that ²⁴¹Pu should be included in the determination for TRU, but this isotope is not an alpha emitter.

Table 5. Tank AW-101 Results for Envelope A Verification

Analyte	Subsamp I (ug/mL)	Subsamp II (ug/mL)	Subsamp III (ug/mL)	Average (ug/mL)	Average (M)	Ratio (Avg/Nu)	Envelope Specification (units analyte/mole Na)	Found Analyte/Env. Spec. [(Avg/Nu)/Env. Spec.] (%)
						A	B	A/B
Al	3.54E+04	3.58E+04	3.54E+04	3.55E+04	1.32E+00	1.10E-01	1.9E-01	57.88%
Ba	5.00E+01	5.00E+01	5.00E+01	5.00E+01	3.64E-04	3.04E-05	1.0E-04	30.40%
Ca	1.00E+02	1.00E+02	1.00E+02	1.00E+02	2.50E-03	2.08E-04	4.0E-02	0.52%
Cd	5.00E+00	5.00E+00	5.00E+00	5.00E+00	4.45E-05	3.71E-06	4.0E-03	0.09%
Cl	6.76E+03	7.72E+03	7.39E+03	7.29E+03	2.06E-01	1.72E-02	3.7E-02	46.40%
Cr	1.28E+02	1.29E+02	1.27E+02	1.28E+02	2.46E-03	2.05E-04	6.9E-03	2.97%
F	8.55E+02	7.27E+02	1.11E+03	8.97E+02	4.72E-02	3.94E-03	9.1E-02	4.33%
Fe	5.00E+01	5.00E+01	5.00E+01	5.00E+01	8.95E-04	7.48E-05	1.0E-02	0.75%
Hg	2.80E-02	2.80E-02	2.80E-02	2.80E-02	1.40E-07	1.17E-08	1.4E-05	0.08%
K	3.46E+04	3.55E+04	3.43E+04	3.48E+04	8.90E-01	7.43E-02	1.8E-01	41.29%
La	5.00E+01	5.00E+01	5.00E+01	5.00E+01	3.60E-04	3.01E-05	8.3E-05	36.21%
Na	2.74E+05	2.80E+05	2.72E+05	2.75E+05	1.20E+01	1	1	100.00%
Ni	2.00E+01	2.00E+01	2.00E+01	2.00E+01	3.41E-04	2.85E-05	3.0E-03	0.95%
NO2	1.04E+05	1.22E+05	1.34E+05	1.20E+05	2.61E+00	2.18E-01	3.8E-01	57.31%
NO3	1.46E+05	1.82E+05	1.88E+05	1.72E+05	2.77E+00	2.32E-01	8.0E-01	28.95%
OH	9.40E+04	9.30E+04	9.46E+04	9.39E+04	5.52E+00	4.61E-01	7.0E-01	65.83%
Pb	1.00E+02	1.00E+02	1.00E+02	1.00E+02	4.83E-04	4.03E-05	6.8E-04	5.93%
PO4	4.97E+02	6.43E+02	1.22E+03	7.87E+02	8.28E-03	6.91E-04	3.8E-02	1.82%
SO4	6.17E+02	5.72E+02	1.79E+03	9.93E+02	1.03E-02	8.63E-04	9.7E-03	8.90%
TiC	1.84E+03	1.67E+03	1.56E+03	1.69E+03	1.41E-01	1.17E-02	3.0E-01	3.92%
TOC (P)	3.64E+03	3.36E+03	2.87E+03	3.29E+03	2.74E-01	2.29E-02	6.0E-02	38.12%
TOC (F)	3.00E+03	2.72E+03	2.81E+03	2.84E+03	2.37E-01	1.98E-02	6.0E-02	32.94%
U	5.00E+02	5.00E+02	5.00E+02	5.00E+02	2.10E-03	1.75E-04	1.2E-03	14.62%
	uCi/mL	uCi/mL	uCi/mL	Bq/L			(Bq analyte/mole Na)	
Total Alpha	1.51E-02	1.36E-02	1.36E-02	1.56E-02	5.77E+05	4.82E+04	4.8E+05	10.04%
Np-237	4.14E-05	2.67E-05	2.74E-05	3.18E-05	1.18E+03	n/a	n/a	n/a
Pu-239	3.75E-02	3.75E-02	3.75E-02	3.75E-02	1.39E+06	n/a	n/a	n/a
Pu-240	5.20E-02	5.20E-02	5.20E-02	5.20E-02	1.92E+06	n/a	n/a	n/a
Am-241	7.96E-04	6.52E-04	6.52E-04	6.70E-04	2.48E+04	n/a	n/a	n/a
Pu-242	2.20E-03	2.20E-03	2.20E-03	2.20E-03	8.13E+04	n/a	n/a	n/a
Am-243/244	5.97E-02	6.07E-02	6.07E-02	6.14E-02	2.27E+06	n/a	n/a	n/a
Am-243	1.01E+00	1.01E+00	1.01E+00	1.01E+00	3.73E+07	n/a	n/a	n/a
TRU				1.16E+00	4.30E+07	3.59E+06	4.8E+05	748.06%
Cs-137	4.54E-02	4.71E-02	4.82E-02	4.69E-02	1.73E+10	1.45E+09	4.3E+09	33.68%
Sr-90	5.08E-01	4.99E-01	4.90E-01	4.99E-01	1.83E+07	1.54E+06	4.4E+07	3.50%
Tc-99	1.68E-01	1.76E-01	1.76E-01	1.73E-01	6.41E+06	5.56E+05	7.1E+06	7.54%

TOC (F) - Total Organic Carbon by furnace oxidation method

TOC (P) - Total Organic Carbon by persulfate method

TRU - Sum of Np-237, Pu-239, Pu-240, Am-241, Cm-243/244, Am-243 results

Am-243 = Am/Cm-243 (by ICP/MS) - Cm-243/244 (by separation AEA)

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The isotopes requested from ICP/MS for the TRU evaluation (^{239}Pu , ^{240}Pu , ^{242}Pu and ^{243}Am) were all reported as less than the detection limit. Because of required dilutions, as discussed later, these detection limits are higher than those requested in the LAW DQO. These high detection limits, when included in the TRU calculation, result in a concentration that is 748.06% of the envelope limit. Due to the high detection limits, this result is biased high.

The total alpha determination, which accounts for all of the requested alpha emitters, indicates a TRU concentration that is 10.04% of the contract limit. Even though the reported results were below the detection limit, a lower detection limit is achievable by this method and, therefore, the total alpha results provide a more accurate representation of the TRU concentration than the sum of the undetectable isotopes from the ICP/MS determination.

Table 5, shows comparisons for total alpha and the sum of the individual isotopes with respect to the contract limit for TRU.

In Tables 1, 2 and Appendix A, the aliquot class (A#) column indicates the type of preparation performed prior to sample analysis. An "A" indicates an acid digest of a solid sample; "F" a fusion of a solid and a "W" a water digest of a solid. A "B" indicates an acid digest of a liquid sample; "G" an acid digest of a liquid for graphite furnace analysis, "D" an acid dilution of a liquid and a blank indicates a direct sample analysis.

5.0 ANALYTICAL RESULTS DISCUSSION BY TEST

Specific Gravity (Sp.G.)

The specific gravity (Sp.G.) determination was performed only on the supernate composite and field blank subsamples. The standard recovery for the Sp.G. determination met the requirements stated in the *222-S Laboratory Quality Assurance Plan* (LABQAP) (Markel 1998); no criterion was specified in the TSAP for the standard recovery. The relative percent difference (RPD) between the sample and duplicate results were all less than 20%.

Weight Percent Solid (Grav. % Solid)

The weight percent solid was determined gravimetrically for all samples. For the supernate and centrifuged solids composite subsamples, the analysis was performed at 105 °C, as requested in the LAW DQO. The analysis was performed on the liquid samples to satisfy the request in the LAW DQO to measure the dissolved solids in the liquid fraction.

For the solid and liquid from the solubility screening study, the analysis was inadvertently performed at 120 °C, which is the routine temperature for this procedure. When compared, the average results for the liquid and solid from the undiluted solubility screening samples (measured at 120 °C) were about 4% - 7% higher than those measured at 105 °C. This indicates

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that the higher temperature did not cause increased loss in moisture. The difference may be from sample variability, since the results were within experimental uncertainty. Since the samples have now been standing for an extended period of time, the moisture composition is compromised and a reanalysis would not provide more accurate information.

The standard recoveries were within the limits 80% - 120% requested in the TSAP. The RPDs for the supernate composite were less than 20%. Duplicate analyses were not performed for the other subsamples.

Volume Percent Solids (Vol. % Solids)

Two separate determinations were made for the vol. % solids. First, the vol. % settled solids in each parent jar were determined. The result was calculated as the height of the solids (in mm) divided by the height of the entire sample in the parent jar (in mm) times 100. The vol. % solids by centrifugation were also determined for all the parent samples. In this case the volumes of the solids and total sample were read directly from the centrifuge cones when the sample was centrifuged to separate the solid and liquid portions, see Attachment 2.

There were no QC requirements stated in the TSAP for the vol. % settled solids determination. Although the TSAP indicates 80% - 120% recovery limits for a standard, the method does not require a standard. Since this determination was only required on the solid samples, and the TSAP did not require duplicate analyses on solids, the RPD requirements stated in the TSAP are not applicable.

Hydroxide (OH)

The hydroxide (OH) analysis was performed on all subsamples. No anomalies or QC failures were noted for this analysis.

Ammonia (NH₃)

The ammonia (NH₃) analysis was performed on the supernate composite subsamples only. No anomalies or QC failures were noted for this analysis.

Cyanide (CN)

The cyanide (CN) analysis was performed on the supernate composite subsamples only. No anomalies or QC failures were noted for this analysis.

Mercury (Hg)

The mercury (Hg) analysis was performed on the supernate composite subsamples only. No anomalies or QC failures were noted for this analysis.

Graphite Furnace Atomic Absorption (GFAA)

The graphite furnace atomic absorption (GFAA) method was used to determine antimony (Sb) and thallium (Tl) for the supernate composite, to achieve a lower detection limit than that attainable by ICP. The Sb analysis is performed using the same acid digestion as used for the ICP. However, for the Tl analysis, a separate acid digestion is required that doesn't include the addition of hydrochloric acid (HCl) because the chloride (Cl) chemically interferes with Tl.

The standard recoveries and RPDs met the requirements stated in LABQAP (Markel 1998). There were no specific QC requirements stated in the TSAP for this method.

For the Sb analysis, one positive result was reported (840 µg/mL) for the sample result for S98T002788, all other sample and duplicate results were less than the method detection limit of 100 µg/mL. A serial dilution was performed on sample S98T002788 with a reported result of 570 µg/mL. The 'erratic' results are believed to be the result of possible matrix interference. The spike standard for Sb, added during the acid digestion, was meant for ICP analysis and was too concentrated to be analyzed by the GFAA method. Therefore, a post-digestion spike was the only spike analysis performed. The recovery from the post-digestion spike was 74.0% (presented with the raw data). This recovery is outside of the LABQAP limits of 85% - 115% recovery. However, since the majority of the reported results were less than the detection limit and Sb is not included in the contract specification envelope limit, no reanalysis was required.

The Tl matrix spike recovery (40.0%) was not within the limits of 75% - 125% stated in LABQAP. A post-digestion spike analysis was performed, which also had a low recovery of 41%. These low recoveries can be attributed to the high concentration of Cl (~ 7000 µg/mL) in the samples. Since this matrix interference can not be eliminated, the sample was reanalyzed by the method of standard additions. This analysis confirmed that there was no detectable Tl present in the samples. Thallium was detected in the field blank, but the results were very close to the detection limit. Since the detectable level of Tl in the field blank was less than 5% of the concentration reported as the detection limit for the samples, the contamination in the blank was considered insignificant. Since Tl is not included in the contract specification envelope limit, no reanalysis was required.

Ion Chromatography (IC)

The ion chromatography (IC) analysis was performed on the supernate composite subsamples only. The standard and spike recoveries met the criteria stated in the TSAP. The RPDs for all analytes except fluoride (F) were less than 20%.

The RPD for F for sample S98T002782 was 47.7%; the reported results were 1.06e+03 µg/mL for the sample and 652 µg/mL for the duplicate. The RPDs for the other two subsamples were less than 10%. These results are from a second analysis of the sample. The sample was

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reanalyzed because the spike standard was inadvertently omitted from the spike sample aliquot on the first analysis run. The F results from the initial analysis were 652 and 702 $\mu\text{g/mL}$, with an RPD of 7.4%. These original results are included in the raw data, but are marked as "Data Not Used". In addition, a triplicate aliquot measured with the second analysis gave a result of 702 $\mu\text{g/mL}$, which confirms the results of the original analysis and the duplicate on the reanalysis. The high RPD on the second analysis might be due to interference from small organic acids. Upon close examination of the chromatograms, two peaks from organic acids can be seen that elute within the integration window for F. The results reported for fluoride might be biased high due to this interference. No reanalysis was required because the F results were not within the sensitivity boundary of the contract specification envelope, as described earlier.

Chloride, nitrate, nitrite and sulfate were detected in the field blank, but the results were less than 5% of the concentration reported for the samples and the contamination was considered insignificant.

Inductively Coupled Plasma (ICP)

The ICP analysis was performed on all subsamples. The standard recoveries for all of the required analytes met the 80% - 120% recovery requirement stated in the TSAP except for silicon (Si) and sodium (Na). All of the required analytes for the supernate composite analysis had RPDs less than 20%. All of the Group 1 analytes were less than 60% of the contract specification envelope limits. Therefore, the LAW DQO did not require any repreparation or reanalysis for QC failures.

The acid digested Si standards were all outside of the 80% - 120% recovery limits. The standards that were prepared with the two liquid sample batches (supernate composite and solubility study liquids) and the centrifuged solid composite sample batch had recoveries for Si that were greater than 120%. The standard that was prepared for the solid samples from the solubility study had a low recovery for Si (33.2%). The high recoveries were attributed with the difficulty in obtaining consistent results for Si from acid digested samples, due to leaching of Si from the glass. The method acceptance limits for the digested standard have been set at a fixed administrative range of 50% - 500% recovery. The standards with high recoveries were within these administrative limits. The cause for the low recovery on the digested standard for the solids from the solubility study was unknown. However, since the sample results were consistent with those obtained from the centrifuged solid composite and Si is not included in the contract specification envelope limit, no reanalysis was requested.

Three of the acid digested standards for Na were outside of the 80% - 120% recovery limits. The recoveries for the failed standards were all greater than 120%. For the standards prepared with the centrifuged solid composite and solids from the solubility study, the recoveries of 123.6% and 126% were within the fixed method limits of 66.1% - 160.53% recovery. The third standard that failed was that prepared with the liquid samples from the solubility study. The recovery of 127% for that standard was outside of the fixed limits of 80% - 120% recovery. The sample

results for the liquid were consistent with those obtained from the supernate composite samples that had an acceptable digested standard recovery. In all cases, the failures were attributed to leaching from the glassware during the acid digestion. For waste tank samples, the leaching effects the standards to a greater extent than the samples because the concentration of Na in the standard is much lower than that in the samples. Therefore, the slightly high recoveries of the Na standards will not affect the accuracy or the usability of the sample results. Since the standards for the solid analysis were within the method control limits and the results for all of the liquid samples were consistent, no reparation or reanalysis was requested due to this failure.

However, during sample preparation for the supernate composite subsamples, the standards for tin (Sn), tantalum (Ta), thorium (Th), tungsten (W) and yttrium (Y) were inadvertently omitted from the laboratory control standard and the matrix spike samples. Therefore, the standard and spike recoveries for these analytes were reported as "n/a" in Table 1. A post-digestion spike analysis was performed for these five analytes. The recoveries (94.8% - 97.3%) were within the limits specified in LABQAP. The calculations for the post-digestion spike recoveries are included in the raw data. A reparation and reanalysis was requested and will be reported in a revision to this document.

Several analytes (Al, K, Na, P, and Si) had spike recovery results outside of the requested limits of 75% - 125% recovery. The failures were attributed to the high concentration of analyte in the sample. In addition, leaching of the glassware during acid digestion may have contributed to the failure for Si. When analyte concentrations are higher than 1000 µg/mL (or 1000 µg/g for solids) it is difficult to add sufficient spike material to perform a meaningful analysis. The post-digestion spike analyses performed for all analytes that failed the matrix spike analysis had acceptable recoveries. Post-digestion spike calculations are presented with the raw data.

In addition to matrix spike and post-digestion spike analyses, serial dilution analyses were performed to assess the accuracy of the measurement for Al, K, Na, P and Si. A serial dilution is the analysis of an additional 5-fold dilution of the sample. The result obtained from this analysis should be within ±10% of the undiluted sample result. The results of this comparison, presented in Table 6, are not corrected for the acid digestion dilution factors. They indicate that the accuracy of these analyses was acceptable.

Table 6: ICP Serial Dilution Results for Tank 241-AW-101

Sample ID	Analyte	Undiluted Sample Result (µg/mL)	Serial Dilution Result (µg/mL)	Percent Difference (%)
S98T002788				
Supernate	Al	3.51E+02	3.69E+02	4.9
Composite	K	3.41E+02	3.61E+02	5.8
	Na	2.74E+03	2.92E+03	6.8

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Table 6: ICP Serial Dilution Results for Tank 241-AW-101

Sample ID	Analyte	Undiluted Sample Result ($\mu\text{g/mL}$)	Serial Dilution Result ($\mu\text{g/mL}$)	Percent Difference (%)
S98T002755				
Centrifuged	Al	8.65E+01	9.17E+01	6.0
Solid Composite	Na	9.39E+02	9.99E+02	6.4
S98T003077				
Solubility Screen	Al	4.02E+02	4.14E+02	2.9
Liquid from	Na	3.87E+03	4.08E+03	5.5
100:25 dilution				
S98T003087				
Solubility Screen	Al	6.30E+01	6.59E+01	4.7
Solid from	P	2.61E+01	2.76E+01	5.8
100:25 dilution	Si	3.46E+00	3.61E+00	4.4
	Na	8.15E+02	8.66E+02	6.2

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

Contamination was detected in all of the acid digest preparation blanks. Aluminum, boron, calcium, silicon, sodium and zinc were detected at concentrations that were less than 5% of the concentrations reported for those analytes in the samples. Therefore, the contamination was considered insignificant and no re-preparation or reanalysis was requested.

Contamination was also detected in the field blank sample. Boron, calcium, silicon, sodium, sulfur and zinc were detected at concentrations that were less than 5% of the concentrations reported for those analytes in the samples. Therefore, the contamination was considered insignificant.

Inductively Coupled Plasma-Mass Spectrometry (ICP/MS)

The ICP/MS analysis was performed on the supernate composite subsamples only. For this analysis, it was difficult to meet the minimum reportable quantities (MRQ) specified in the LAW DQO because of the large dilution required to reduce the concentration of dissolved solids. Sample aliquots were diluted to achieve a sodium concentration of at most 5 $\mu\text{g/mL}$. Concentrations higher than this will affect the analysis because of reduced ionization efficiencies and material buildup on the sample or skimmer cones at the interface to the mass spectrometer.

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Because the detection limits did not meet the MRQ requirements, the sum of the "less than" values used for the determination of the TRU isotopes did not meet the envelope criteria. TRU was at 748.06% of the contract specification envelope limit. A more accurate evaluation of the TRU content can be obtained by using the results from the total alpha activity analysis.

The following analytes have laboratory control standard analyses: technetium-99 (^{99}Tc), cesium-133 (^{133}Cs), neptunium-237 (^{237}Np), plutonium-239 (^{239}Pu), uranium-235 (^{235}U) and uranium-238 (^{238}U). A miscalculation in the standard preparation for ^{241}Am resulted in a concentration that was too low to be detected. Therefore, the standard and spike recovery results for $^{241}\text{Pu}/\text{Am}$ are reported as "n/a". For the other isotopes listed in the TSAP, there was no material available. The standard recoveries met the requested criteria except for ^{237}Np (140.2% recovery), ^{239}Pu (150.5% recovery) and ^{99}Tc (79.69% recovery). The recovery for ^{99}Tc is only slightly outside of the requested limits of 80% - 120% recovery and was considered acceptable. However, the recoveries for the other two isotopes were well outside of the control limits requested in the TSAP; 90% - 110% recovery for ^{237}Np and 80% - 120% recovery for ^{239}Pu .

Currently, the ICP/MS is calibrated indirectly for actinides, using a mass response curve derived from the analysis of a 10 ppb thorium-232 (^{232}Th) and ^{238}U standard. This means that the results are semi-quantitative, as the mass response curve only approximates the actual response for any of the specific isotopes. The validity of this approximation is checked using an initial calibration verification (ICV) standard containing ^{232}Th , ^{237}Np , ^{239}Pu , and ^{241}Am (omitted in this case) at about 10 ppb. Typically, the ^{232}Th recovery is very good (90% - 100%), because, it is in part used to build the calibration curve. For the other three isotopes, recoveries ranging from 50% to 150% are not uncommon.

The actinide method uses an indirect calibration method mainly because of the difficulty in obtaining two separate sets of elemental and isotopic standards that can be used to verify each other. If the customer desires a more accurate result by this method, more development will be required.

^{99}Tc , ^{133}Cs , ^{135}Cs , ^{137}Cs and ^{238}U were the only isotopes detected by ICP/MS. The RPDs for these isotopes met the requirements specified in the TSAP. The total Cs concentration can be obtained by adding the results reported for ^{133}Cs , ^{135}Cs and ^{137}Cs .

The only isotopes for which standard material was available for spike recovery analyses were ^{99}Tc , ^{133}Cs , ^{237}Np , ^{239}Pu and ^{238}U . Two isotopes did not meet the criteria specified in the TSAP for spike recovery. The requested range for ^{237}Np was 75% - 125%, the reported result was 156% recovery. The requested range for ^{239}Pu was 70% - 130%, the reported result was 145.7% recovery. As indicated above, recoveries up to 150% are typical for this method.

Low concentrations of ^{133}Cs , and ^{137}Cs were detected in the method blanks. The concentrations were less than 5% of the concentrations reported for those isotopes in the samples. Therefore, the contamination was considered insignificant and no reparation or reanalysis was requested.

Since this method was relatively new at the time of the analyses, not all of the parameters were set up in the database. As a result, the blank for the ^{237}Np analysis was reported as "n/a" in Table 1.

Total Organic Carbon/Total Inorganic Carbon (TOC/TIC)

The total organic carbon (TOC) was determined using both the furnace and the persulfate oxidation methods. The furnace oxidation method used direct samples for liquid analyses, but solid analyses were performed following a water digestion of the sample. The persulfate oxidation method was performed on direct samples. The total inorganic carbon (TIC) was measured following the acidification of the sample, but prior to the persulfate oxidation for the TOC.

For the TIC and TOC analyses, an Analysis Report worksheet is included for each sample as raw data. Due to programming limitations with the instrument software, the sample size listed at the top of this worksheet was not used in the final calculations and has no bearing on the results reported in Tables 1 and 2.

Standard recoveries met the criteria stated in the TSAP for both TOC and TIC. High RPDs (>20%) were reported for TOC by furnace oxidation for two of the three supernate composite samples; S98T002780, 32.1% and S98T002781, 30.3%. One sample had a high RPD for TIC; sample S98T002781 had an RPD of 46.6%. The cause for the high RPDs is unknown. The samples may not be uniform with respect to carbon concentration. The narrative for the solubility screening study has a brief discussion with respect to the variability in the TOC and TIC results. Triplicate analyses were performed. The results from the sample, duplicate and triplicate analyses are presented in Table 7.

Table 7. TOC/TIC Triplicate Results for the Supernate Composite for Tank 241-AW-101

Sample #	Analyte	Result ($\mu\text{g/mL}$)	Duplicate ($\mu\text{g/mL}$)	Triplicate ($\mu\text{g/mL}$)	Mean ($\mu\text{g/mL}$)
S98T002780	TOC (f)	2.82e+03	3.90e+03	3.67e+03	3.46e+03
S98T002781	TOC (f)	2.44e+03	3.31e+03	3.55e+03	3.10e+03
S98T002781	TIC	1.93e+03	1.20e+03	2.00e+03	1.71e+03

All of the spike recoveries for both TOC and TIC met the criteria stated in the TSAP, except for the centrifuged solid composite sample. The spike recovery for sample S98T002746 was high, 147% recovery. The cause for the failure was unknown. Since TOC concentrations were not within the sensitivity boundary of the contract specification envelope limit, as described earlier, no reanalysis was required.

Tritium (^3H)

The ^3H analysis was performed on the supernate composite subsamples only. No anomalies or QC failures were noted for this analysis.

Total Alpha/Total Beta (AT/TB)

The AT analysis was performed on all subsamples. Total beta (TB) analysis was performed only on the supernate composite samples. All of the quality control criteria were met for the standard recoveries, spike recoveries and RPDs. The AT results, when compared to the envelope A contract specification limit for TRU, are 10.04% of the limit.

The TSAP specified direct sample analysis for TB activity. However, since the AT and TB can both be determined from a single sample mount, both analyses were performed on an acid digested sample portion as indicated in the TSAP for the AT analysis.

Both alpha and beta activities were detected in the field blank sample. However, the contamination was considered insignificant because the activities were much less than 5% of the sample activities.

In addition, alpha activity was detected in the fusion preparation blank prepared with the solid samples from the solubility study. All other preparation blanks had no detectable alpha activity. The activity detected in the one preparation blank was greater than 5% of the activity detected in three of the five samples in that preparation batch. However, since the total alpha activity was not within the sensitivity boundary of the contract specification envelope limit for TRU isotopes, as described earlier, no reanalysis was required.

Gamma Energy Analysis (GEA)

The GEA analysis was performed on all subsamples. Standard recoveries and RPDs met the criteria stated in the TSAP.

Cesium-137 activity was detected in the fusion preparation blanks prepared with both the solid samples from the solubility study and the centrifuged solid composite samples. In addition, ^{137}Cs activity was detected in the field blank sample. Since the detected activities were < 5% of those reported for the samples, the contamination was considered insignificant and no repreparation or reanalysis was requested. No other GEA analytes were detected in the blanks.

For GEA analytes that have a detectable amount of activity, the software does not report instrument detection limits due to potential interferences from other gamma emitting nuclides. In this case, the detection limit (DL) is reported as "n/a". When no detectable activity is observed for an analyte (analytes with a counting uncertainty less than 50%), the DL is reported as the minimum detectable activity (MDA) for that analyte based on the region of interest from

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the GEA spectrum of that sample aliquot. These values are effected by high activity of other gamma emitting nuclides in the sample.

Iodine-129 (^{129}I)

The ^{129}I analysis was performed on the supernate composite subsamples only. No anomalies or QC failures were noted for this analysis.

Carbon-14 (^{14}C)

The ^{14}C analysis was performed on the supernate composite subsamples only. The standard recovery, spike recovery and RPDs met the criteria stated in the TSAP. Carbon-14 activity was detected in the method blank. The level detected was approximately 13% of the average sample activity. Since ^{14}C is not included in the contract specification envelope limit, no reanalysis was required.

Strontium-90 (^{90}Sr)

The ^{90}Sr analysis was performed on all subsamples. The standard recoveries and RPDs met the criteria stated in the TSAP.

Strontium-90 activity was detected in all method and preparation blanks as well as in the field blank sample. However, since the activity detected in each blank was less than 5% of the activities reported for the samples, the contamination was considered insignificant. Since the results for ^{90}Sr were not within the sensitivity boundary for the contract specification envelope limit, as described earlier, no repreparation or reanalysis was required.

Technetium-99 (^{99}Tc)

The ^{99}Tc analysis was performed on the supernate composite subsamples only. No anomalies or QC failures were noted for this analysis.

Neptunium-237 (^{237}Np)

The ^{237}Np analysis was performed on the supernate composite subsamples only. The RPDs met the criterion of less than 20% RPD stated in the TSAP. The standard recovery was 69.7%, which was outside of the limits of 80% - 120% recovery required by the TSAP. This low recovery was within the acceptable range determined by statistical evaluation of historical data (43.78% - 114.25% recovery), so the results were considered acceptable.

Neptunium-237 activity was detected in the method blank. The level of reported activity was less than the detection limit reported for the samples. With the exception of sample S98T002780, no ^{237}Np activity was reported in the samples. For sample S98T002780, the

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activity reported for the method blank was nearly equal to that of the sample portion. The duplicate aliquot was reported as undetected at approximately the same activity level as the method blank. Since most of the sample portions analyzed had no reportable activity for ^{237}Np , the activity reported in the method blank was not considered to be significant, and does not effect the usability of the sample results. The total alpha activity was not within the sensitivity boundary for the contract specification envelope limit, as described earlier, therefore no reanalysis was required.

Americium-241/Curium-243/244 ($^{241}\text{Am}/^{243/244}\text{Cm}$)

The $^{241}\text{Am}/^{243/244}\text{Cm}$ analysis was performed on the supernate composite subsamples only. No anomalies or QC failures were noted for this analysis.

Selenium-79 (^{79}Se)

The ^{79}Se analysis was performed on the supernate composite subsamples only. The RPDs met the criterion of less than 20%, as stated in the TSAP. There are no applicable QC criteria for standard or spike recoveries for this method.

Selenium-79 activity was detected in both the method blank and the field blank at levels approximately six to eight times the reported detection limits. The level of activity in the method blank was less than 5% of the average activity of the sample and was considered insignificant. The level of activity in the field blank was approximately 6% of the average that detected in the samples. However, there are no QC requirements for reanalysis if activity is detected in the field blank. Since ^{79}Se is not included in the contract specification envelope limit, no reanalysis was required.

Polychlorinated Biphenyls (PCB)

The supernate and sludge composites were both analyzed for PCB. However, there was insufficient sample available from the solubility screening to perform the PCB analysis. There were no QC criteria stated in the TSAP for this analysis. The method acceptance limits for the laboratory control standard (LCS) recovery were 70% - 130%. The method limits for matrix spike recovery were 50% - 150%. The standard and spike recoveries for both the solid and liquid analyses met these requirements. No PCBs were detected in the samples therefore, the RPD calculation is not applicable.

Surrogate standard recoveries are of advisory use only for this method. Typically surrogate recoveries between 50% and 150% are considered acceptable. The surrogate standard recoveries for the analysis of the centrifuged solids were all acceptable.

For the supernate composite analysis, there may be a matrix effect on the tetrachloro-m-xylene (TCX), which had low recoveries for all but the LCS. The decachlorobiphenyl (DCB) recoveries

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were acceptable for samples S98T002785, S98T002787 and the duplicate aliquot only for sample S98T002786. Such an effect on surrogates does not necessarily hinder the PCB recovery, as documented by the acceptable recoveries for both the LCS and the matrix spikes. The surrogates are more sensitive to extraction troubles than the aroclor (PCB) mixtures are. The surrogates do not behave the same, since they are either more volatile (TCX), or less volatile (DCB) than the aroclor mixtures. There were no PCBs detected in the sample and this analysis was a screening for characterization purposes only. Therefore, since the less than values were much lower than the regulatory level of concern and PCBs are not included in the contract specification envelope limit, the customer agreed that no reanalysis was required.

6.0 PROCEDURES

Table 8 lists the analytical procedures used for performing the analyses. Abbreviations for analyses are defined in the table notes.

Table 8: Analytical Procedures

Analysis	Preparation Procedure	Analysis Procedure
Inorganic Analyses		
SpG	Direct Analysis	LA-510-112 Rev. E-0
Grav. % Solids	Direct Analysis	LA-564-101 Rev. G-1
Vol. % Settled Solids	Direct Analysis	LA-519-151 Rev. F-0
Vol. % Centrifuged Solids	Direct Analysis	LA-519-132 Rev. E-0
OH	Liquid – Direct Analysis Solid – Water Digest *	LA-211-102 Rev. D-1
NH ₃	Direct Analysis	LA-631-001 Rev. C-1
CN	Direct Analysis	LA-695-102 Rev. G-1
Hg	Direct Analysis	LA-325-104 Rev. E-1 LA-325-106 Rev. A-0
GFAA: Sb, Tl	Sb - Acid Digest † Tl - GFAA Acid Digest ††	LA-505-102 Rev. B-0
IC	Direct Analysis	LA-533-105 Rev. F-0 LA-533-115 Rev. A-0
ICP	Liquid & Solid – Acid Digest †	LA-505-161 Rev. C-3

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Table 8: Analytical Procedures

Analysis	Preparation Procedure	Analysis Procedure
ICP/MS	Liquid – Acid Digest †	LA-506-101 Rev. A-0
TOC – persulfate oxidation	Direct Analysis	LA-342-100 Rev. F-1
TOC – furnace oxidation	Liquid – Direct Analysis Solid - Water Digest *	LA-344-105 Rev. E-0
TIC	Direct Analysis	LA-342-100 Rev. F-1
Radionuclide Analyses		
³ H	Direct Analysis	LA-218-114 Rev. B-4
AT/TB	Liquid – Acid Digest † AT - Solid – Fusion ‡	LA-508-101 Rev. G-0
GEA	Liquid – Direct Analysis Solid – Fusion ‡	LA-548-121 Rev. F-0
¹²⁹ I	Direct Analysis	LA-378-103 Rev. D-3
¹⁴ C	Direct Analysis	LA-348-104 Rev. C-2
⁹⁰ Sr	Liquid – Direct Analysis Solid – Fusion ‡	LA-220-101 Rev. E-3
⁹⁹ Tc	Direct Analysis	LA-438-101 Rev. E-2
²³⁷ Np	Direct Analysis	LA-933-141 Rev. H-2
²⁴¹ Am	Direct Analysis	LA-953-104 Rev. B-0
^{243/244} Cm	Direct Analysis	LA-953-104 Rev. B-0
⁷⁹ Se	Direct Analysis	LA-365-132 Rev. D-4
Organic Analyses		
PCB	Liquid - LA-523-115 Rev. B-0 Solid – LA-523-138 Rev. A-2	LA-523-427 Rev. A-0 LA-523-136 Rev. A-1

*

Water digest procedure LA-504-101 Rev. F-0

†

Acid digest procedures: Liquid – LA-505-158 Rev. E-0; Solid - LA-505-163 Rev. B-0

††

GFAA acid digest procedure LA-505-100 Rev. A-0

‡

Fusion digest procedure LA-549-141 Rev. G-0

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Abbreviations:

SpG	= specific gravity	TOC	= total organic carbon
Grav. % Solids	= weight % solids	TIC	= total inorganic carbon
Vol. % Settled Solids	= volume % settled solids	³ H	= tritium
Vol. % Centrifuged Solids	= volume % solids by centrifugation	AT/TB	= total alpha/total beta
OH	= hydroxide	GEA	= gamma energy analysis
CN	= cyanide	¹²⁹ I	= iodine - 129
NH ₃	= ammonia (by ion selective electrode (ISE))	¹⁴ C	= carbon - 14
Hg	= mercury	⁹⁰ Sr	= strontium - 90
GFAA	= graphite furnace atomic absorption	²³⁷ Np	= neptunium - 237
Sb	= antimony	²⁴¹ Am	= americium - 241
Tl	= thallium	^{243/244} Cm	= curium - 243/244
IC	= ion chromatography	⁷⁹ Se	= selenium - 79
ICP	= inductively coupled plasma	PCB	= polychlorinated biphenyls
ICP/MS	= ICP/mass spectrometry		

7.0 REFERENCES

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- Person, J. C., 1998, *Test Plan for Tank 241-AW-101 Solubility Screening Tests*, HNF-2909, Rev. 0, Numatec Hanford Corporation, Richland, WA 99352.
- Simpson, B. C., 1999, *Tank 241-AW-101 Grab Sampling and Analysis Plan*, HNF-2379, Rev. 0-A, Lockheed Martin Hanford Corporation, Richland, WA 99352.
- Wiemers, K. and M. Miller, 1997, *Low Activity Waste Feed Data Quality Objectives*, WIT-98-010, Preliminary Report, Pacific Northwest National Laboratory, Richland, WA 99352.

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SAMPLE BREAKDOWN

ATTACHMENT 1

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AW-101 LAW Field Blank S98T001292

AW-101 LAW
Parent Sample Numbers

AW-101 LAW Centrifuged Solid Composite S98T002745

AW-101 LAW Parent Sample Numbers

IAW-98-1 S98T001282
IAW-98-2 S98T001283
IAW-98-3 S98T001284
IAW-98-4 S98T001285
IAW-98-5 S98T001286
IAW-98-6 S98T001287
IAW-98-7 S98T001288
IAW-98-8 S98T001289
IAW-98-9 S98T001290
IAW-98-10 S98T001291

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AW-101 LAW Solids Solubility Screening

AW-101 LAW
Parent Sample Numbers
for the Composite

LAW-98-1 S98T001282
LAW-98-2 S98T001283
LAW-98-3 S98T001284
LAW-98-4 S98T001285
LAW-98-5 S98T001286
LAW-98-6 S98T001287
LAW-98-7 S98T001288
LAW-98-8 S98T001289
LAW-98-9 S98T001290
LAW-98-10 S98T001291

100 Parts Composite:
25Parts Diluent
S98T003053

Liquid Solid

S98T003058

TIC/TOC
TOC - furnace ox.
OH
Grav. % Solids
GEA: Co-60
Cs-137, Eu-154,
Eu-155
Sr-90

Acid Digest
S98T003077
Total Alpha
ICP: Al, Cr, P
Na, S, Si

S98T003063

TIC/TOC
Grav. % Solids

S98T003082

GEA: Co-60
Cs-137, Eu-154,
Eu-155
Total Alpha
Sr-90

S98T003087

ICP: Al, Cr, P, Na,
S, Si

S98T003092

TOC: furnace ox.
OH

AW-101 LAW Solids Solubility Screening

AW-101 LAW
Parent Sample Numbers
for the Composite

1AW-98-1 S98T001282
1AW-98-2 S98T001283
1AW-98-3 S98T001284
1AW-98-4 S98T001285
1AW-98-5 S98T001286
1AW-98-6 S98T001287
1AW-98-7 S98T001288
1AW-98-8 S98T001289
1AW-98-9 S98T001290
1AW-98-10 S98T001291

100 Parts Composite:
75Parts Diluent
S98T003054

AW-101 LAW Solids Solubility Screening

AW-101 LAW
Parent Sample Numbers
for the Composite

LAW-98-1 S98T001282
LAW-98-2 S98T001283
LAW-98-3 S98T001284
LAW-98-4 S98T001285
LAW-98-5 S98T001286
LAW-98-6 S98T001287
LAW-98-7 S98T001288
LAW-98-8 S98T001289
LAW-98-9 S98T001290
LAW-98-10 S98T001291

100 Parts Composite:
100 Parts Diluent
S98T003055

Liquid

Solid

S98T003060

TIC/TOC
ICP - furnace ox.
OH
Grav. % Solids
GEA: Co-60
Cs-137, Eu-154,
Eu-155
Sr-90

S98T003079

Total Alpha
ICP: Al, Cr, P
Na, S, Si

S98T003065

TIC/TOC
Grav. % Solids

Fusion
Digest

S98T003084

GEA: Co-60
Cs-137, Eu-154,
Eu-155
Total Alpha
Sr-90

Acid
Digest

S98T003089

ICP: Al, Cr, P, Na,
S, Si

Water
Digest

S98T003094

TOC: furnace ox.
OH

AW-101 LAW Solids Solubility Screening

AW-101 LAW
Parent Sample Numbers
for the Composite

LAW-98-1 S98T001282
LAW-98-2 S98T001283
LAW-98-3 S98T001284
LAW-98-4 S98T001285
LAW-98-5 S98T001286
LAW-98-6 S98T001287
LAW-98-7 S98T001288
LAW-98-8 S98T001289
LAW-98-9 S98T001290
LAW-98-10 S98T001291

100 Parts Composite:
No Diluent - Test 4
S98T003056

Liquid Solid

S98T003061

TIC/TOC
TOC - flame ox.
OH
Grav. % Solids
GEA: Co-60
Cs-137, Eu-154,
Eu-155
Sr-90

S98T003080
Total Alpha
ICF: Al, Cr, P
Na, S, Si

S98T003066

TIC/TOC
Grav. % Solids

S98T003085 S98T003090 S98T003095

GEA: Co-60 ICF: Al, Cr, P, Na, S, Si TOC: flame ox.
Cs-137, Eu-154, Eu-155
Total Alpha
Sr-90

AW-101 LAW Solids Solubility Screening

AW-101 LAW
Parent Sample Numbers
for the Composite

LAW-98-1 S98T001282
LAW-98-2 S98T001283
LAW-98-3 S98T001284
LAW-98-4 S98T001285
LAW-98-5 S98T001286
LAW-98-6 S98T001287
LAW-98-7 S98T001288
LAW-98-8 S98T001289
LAW-98-9 S98T001290
LAW-98-10 S98T001291

100 Parts Composite:
No Diluent - Test 5
S98T003057

AW-101 LAW DQO Grab Samples Archive of Parent Samples

CRUST
1AW-98-1
S98T001282

S98T002494
Archive

CRUST
1AW-98-2
S98T001283

S98T002495
Archive

SUPERNATE
1AW-98-3
S98T001284

S98T002496
Archive

SUPERNATE
1AW-98-4
S98T001285

S98T002497
Archive

SUPERNATE
1AW-98-5
S98T001286

S98T002498
Archive

AW-101 LAW DQO Grab Samples Archive of Parent Samples

SUPERNATE
1AW-98-6
S98T001287

SUPERNATE
1AW-98-7
S98T001288

SUPERNATE
1AW-98-8
S98T001289

SUPERNATE
1AW-98-9
S98T001290

SUPERNATE
1AW-98-10
S98T001291

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S98T002499
Archive

S98T002500
Archive

S98T002501
Archive

S98T002502
Archive

S98T002503
Archive

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SOLUBILITY SCREENING TESTS FOR 241-AW-101

ATTACHMENT 2

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NHC
Numatec
Hanford Corporation

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Internal
Memo

An SGN/Cogema, Inc. Company

From: Process Chemistry
Phone: 373-2377 T6-07
Date: February 1, 1999
Subject: SOLUBILITY SCREENING TESTS FOR TANK 241-AW-101

82100-99-003

To: R. A. Esch T6-12
cc: J. R. Jewett T6-07
Process Aids T6-07
JCP File/LB

References:

1. J. C. Person, "Test Plan for Tank 241-AW-101 Solubility Screening Tests," Report HNF-2909, Rev. 0, 1998, Numatec Hanford Corporation, Richland, WA.
2. C. J. Benar, "Tank 241-AW-101 Privatization Grab Sampling and Analysis Plan, Report HNF-2379, Rev. 0, 1998, Lockheed Martin Hanford Corporation, Richland, Washington.
3. R. A. Esch, "Tank 241-AW-101 Low Activity Waste Envelope C Analytical Results for the Final Report," Report HNF-1652, Rev. 0, 1999, Waste Management Hanford Corporation, Richland, WA.
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7. R. A. Esch, "Tank Waste Remediation System (TWRS) Privatization Contractor Samples Low Activity Waste Envelope "A" Tank 241-AW-101," Report HNF-SD-WM-DP-204, Rev. 1, 1997, Rust Federal Services of Hanford, Inc., Richland, WA.

Introduction

Tank 241-AW-101 (101-AW) has been identified as one of the early tanks to be retrieved for low level waste pretreatment and immobilization. Retrieval of

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the tank waste may require dilution. This report summarizes the test series performed (using the test plan in Reference 1) to study the effects of dilution on the mass of solids and their composition. The tests were done with composites of drainable liquid and centrifuged solids from grab samples that were taken in 1998 (Reference 2).

This report is an attachment to the data package report by Esch (Reference 3). That report contains the original laboratory results (Tables 1 and 2, plus Appendix A), as well as the diagrams showing analyses for the different sample numbers (Attachment 1).

The solubility of sodium oxalate is very dependent on ionic strength, and is rather insoluble at the dilution ratios used for these tests. The solubilities of some of the sodium salts are known to be very temperature-dependent. The solubility screening tests were done only at ambient temperature. Therefore, temperature is likely to be a key factor not explored in these solubility screening tests. Note that the average temperature of the waste in the tank is 38 °C (Reference 4) and the tests described below are conducted at hotcell ambient temperature (24 to 28 °C). Thus, some of the solids seen in the "supernate" layer samples may in fact be in solution at tank temperatures.

Summary of Major Results

Ten grab samples were taken from tank 101-AW, two samples at each of five depths. Each of the ten samples had significant amounts of settled solids after sitting for some weeks, with volumes ranging from 13 to 100 vol%. One liquid composite sample and one solids composite sample were prepared from the ten grab samples. The solids and liquids were recombined for the solubility screening tests in a proportion designed to approximately match the largest fraction of solids observed at the tank depths sampled.

Five solubility screening tests were done to compare analyses of the wet solids and liquids at different dilution levels. Two tests used undiluted test material (Tests 4 and 5). Three tests used different dilutions (25 wt% for Test 1, 75 wt% for Test 2, and 100 wt% for Test 3); the dilutions used inhibited water (a mixture of 0.01 M NaNO_2 and 0.01 M NaOH).

The analyses of the centrifuged solids (c-sol) and liquid were used to estimate the amount and composition of the true (dry) solids after each dilution. In the undiluted material, the dry solids are made up of approximately 59 wt% sodium carbonate (Na_2CO_3), 25 wt% sodium oxalate ($\text{Na}_2\text{C}_2\text{O}_4$), 5 wt% sodium sulfate (Na_2SO_4), 4 wt% sodium phosphate (Na_3PO_4), and 3.5 wt% of water-insoluble species (uranium oxides, $\text{Cr}(\text{OH})_3$, FeOOH , and SiO_2 , in order of abundance). A small fraction of the salts could contain potassium (K) rather than sodium.

As diluent is added, some sodium salts dissolve, so the weight percentages of the insoluble species in the solids increase. After 25 wt% dilution by inhibited water about 60 wt% of the solids dissolve; the remaining solids are composed of approximately 60 wt% $\text{Na}_2\text{C}_2\text{O}_4$, 13 wt% Na_2CO_3 , around 11 wt%

Na_3PO_4 , 8 wt% Na_2SO_4 , and 8 wt% insolubles. After dilution by 100 wt%, about 83 wt% of the solids dissolve; the remaining solids are composed of approximately 78 wt% $\text{Na}_2\text{C}_2\text{O}_4$, 4 wt% Na_3PO_4 , 2 wt% Na_2CO_3 , and 16 wt% insolubles.

Figure 1 shows a schematic summary of the effects of dilution. The plot shows the normalized wt% of the true (dry) solids (normalized to the weight of dry solids in the undiluted material in Tests 4 and 5) versus the dilution wt%. As there are measurements for only four dilutions, the true curves will be smoother than shown. The ordinate has been divided by $(1 - f_{\text{dil}})$ to correct for the change in concentration by dilution, where f_{dil} is the weight fraction of diluent. Thus, the insoluble species contribute an approximately constant wt%, while the contributions of the soluble species decrease at the higher dilutions.

Figure 1 is plotted in the order of solubility, with the most soluble species on top. Figure 1 shows that the biggest change is from the Na_2CO_3 dissolving. The less-soluble $\text{Na}_2\text{C}_2\text{O}_4$ becomes the dominant solid species for

Figure 1. Weight Percentage of Species in the Dry Solids for Different Dilutions, Normalized to 100% for Undiluted Test Material.

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the diluted material. The moderately-soluble solids contain a mixture of Na_2SO_4 and Na_2PO_4 . Details have been ignored in preparing Figure 1; see the discussion of Table 18 (final section) concerning the true identity of the salts and how the masses were adjusted.

The data comparisons also estimate the distribution of the different analytes in the wet solids (c-sol) between solids and liquid. For the undiluted material, the analytes that are primarily (75% or more) in the solids are TOC (total organic carbon), TIC (total inorganic carbon), Cd, Ca, Cr, Fe, Mn, Ni, P (phosphate), Pb, S (sulfate), Si, U, and Zr. The analytes that are largely (75% or more) in the liquid phase are Al, K, Na, hydroxide, and Cs-137. Sodium is divided between the solids and the liquid (75 to 85% in the liquid), as is boron (30 to 45% in the liquid).

Other measurements show that the rate of solids settling is increased by dilution (Figure 6 and Table 4), the liquid density is 1.45 ± 0.02 g/mL, and the density for c-sol is 1.63 ± 0.06 g/mL.

Preparation of Archive Samples

These tests used 10 grab samples (samples 1AW-98-1 through -10) taken as described (Reference 2). The grab samples were weighed and observed. As described in the test plan (Reference 1), subsamples of at least 20 mL were archived from each of the grab samples. The sample weights and the archive weights are given below in Table 2.

Grab Sample Volumes of Settled Solids and Rate of Settling

All of the grab samples contained some settled solids, with the two grab samples from the crust (1AW-98-1 and -2) being essentially all settled solids (100 and 96 vol%) when observed initially (after sitting relatively undisturbed for several weeks). The bottom two grab samples (1AW-98-9 and -10) initially had 38 or 39 vol% settled solids, with the other samples having 13 to 27 vol% settled solids. For all of the grab samples, observations of the solid settling rates were made before separating the solids and the liquids. Table 1 shows the initial vol% (labelled "Ini") of the settled solids and the vol% of settled solids after various settling times. The settling was observed beginning on August 13, 1998 at temperatures from 26.5 to 28 °C. These samples were remixed on August 17, 1998 after settling for 40 hr, and observed for another 48 hr (samples 1AW-98-1, -2, and -3 were observed for 192 hr) at temperatures from 27 to 27.5 °C. The settled solids volume percentages at various settling times are listed in Table 1, with the upper rows showing the first settling and the lower rows showing the repeat settling test.

Figures 2 through 4 illustrate the rate of settling for the 10 grab samples by showing the vol% of settled solids at various settling times after mixing, with samples 1AW-98-1 through -3 shown in Figure 2, samples 1AW-98-4 through -6 shown in Figure 3, and samples 1AW-98-7 through -10 shown in Figure 4. All figures show both the initial settling and the repeat of the

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Table 1. Settled Solids Volume Percentages at Different Settling Times for Ten Grab Samples.

Time, Hr	Temperature °C	Settled Solids, Vol%				
		1AW-98-1	1AW-98-2	1AW-98-3	1AW-98-4	1AW-98-5
Ini	26.5	100	96	20	24	16
16.1	28.0	100	100	40	42	29
20.4	27.5	100	100	27	38	27
23.3	27.0	100	100	24	36	27
39.9	27.0	100	100	23	34	24
Mixed Again						
1.1	27.0	100	100	50	47	70
2.9	27.0	100	100	32	39	28
6.9	27.0	100	100	26	34	27
22.7	27.5	100	100	24	31	24
27.0	27.5	100	100	24	32	24
48.0	27.5	100	100	23	31	23
76.7	27.5	89	100			
192.4	27.5	81	100			

Time, Hr	Temperature °C	Settled Solids, Vol%				
		1AW-98-6	1AW-98-7	1AW-98-8	1AW-98-9	1AW-98-10
Ini	26.5	16	13	24	38	39
16.1	28.0	21	16	31	55	61
20.4	27.5	18	15	28	49	55
23.3	27.0	21	16	27	48	55
39.9	27.0	22	13	27	46	52
Mixed Again						
1.1	27.0	18	8	39	100	100
2.9	27.0	18	9	28	67	79
6.9	27.0	18	9	24	53	65
22.7	27.5	16	9	25	47	52
27.0	27.5	17	8	25	44	51
48.0	27.5	18	9	25	44	51

settling test. The solids settled unevenly for sample 1AW-98-7; the values plotted are visual averages. The figures show that most of the solids settle during the first 8 hrs or so (for the eight samples that settled significantly); although samples 1AW-98-3 and -4 tended to settle more

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Figure 2. Volume of Settled Solids at Different Settling Times for Samples 1AW-98-1 Through -3 for Two Settling Periods.

Figure 3. Volume of Settled Solids at Different Settling Times for Samples 1AW-98-4 Through -6 for Two Settling Periods.

Figure 4. Volume of Settled Solids at Different Settling Times for Samples 1AW-98-7 Through -10 for Two Settling Periods.

slowly during the first settling period. Note the terminology is such that the volume of settled solids is taken to be 100 vol% when all the solids are suspended. Thus, the observation that the "Ini" volume percentages are smaller than the volumes reached after settling for two days implies that the volume of settled solids continues to slowly compact for a period of many days for most samples.

Grab Sample Mass, Volume, and Densities of Liquid and Centrifuged Solids

For the bottom seven grab samples (1AW-98-4 through -10), some liquids were separated from the solids by decanting some of the liquid from above the settled solids. For all samples, the remaining solids and liquids were separated by centrifugation on September 2 and 3, 1998. When the separated solids were combined into the solids composite on September 8, 1998, the liquid jars were observed to have long, thin, white crystalline solids. Therefore, a second separation of the solids and liquids was performed by decanting the upper liquid and centrifuging the remainder on September 14, 1998.

This section reports results for the mass and volume properties of the grab samples at ambient temperature. Table 2 shows the mass and volume properties of the grab samples. The sample properties show the weights,

Table 2. Weights of Grab Samples, Archives, Liquid and Solids Used for Composites, Liquid to Graduated Cylinder, and C-Sol (First Separation and Total); Lower Portion Shows Densities (of Liquid in Graduated Cylinder, All Liquid, Slurry of Solids and Liquid, and C-Sol) and C-Sol Values for Wt%, Vol%, and Solids/Liquid Ratio.

1AW-98-	Weights, g						
	Sample	Archive	Liq Comp	Sol Comp	GC Liq	C-Sol,1st	C-Sol,Total
1	208	37.6	57.2	92.2	nm	99.2	100.5
2	220	39.0	68.7	93.8	nm	99.8	103.1
3	204	39.3	131.8	21.5	nm	21.6	23.8
4	214	38.6	125.4	35.4	100.8	34.9	36.7
5	214	38.1	135.3	27.7	161.3	27.4	29.9
6	190	39.5	121.0	15.7	106.5	15.6	18.8
7	201	39.5	135.0	15.4	111.5	13.5	16.5
8	204	39.2	134.5	16.8	113.1	16.7	20.0
9	210	38.8	111.4	46.5	62.0	47.3	50.8
10	207	41.0	94.2	57.8	31.4	59.4	62.6
1AW-98-	Densities, g/mL				C-Solids		
	GC Liq	All Liq	Slurry	C-Sol,1st	Wt%	Vol%	Sol/Liq
1	nm	1.463	1.548	1.60	63.7	61.6	1.752
2	nm	1.447	1.520	1.57	60.3	58.3	1.519
3	nm	1.435	1.465	1.66	15.2	13.3	0.178
4	1.439	1.431	1.472	1.64	22.1	19.9	0.284
5	1.453	1.444	1.471	1.61	17.8	16.1	0.214
6	1.440	1.435	1.466	1.73	13.3	11.2	0.151
7	1.467	1.465	1.485	1.68	10.7	9.5	0.119
8	1.451	1.440	1.451	1.52	12.9	12.1	0.146
9	1.475	1.464	1.498	1.58	31.3	29.3	0.447
10	1.427	1.431	1.517	1.67	39.9	35.8	0.652
Avg	1.450	1.446	1.489	1.63			
Std Dev	0.017	0.014	0.031	0.06			

densities, and percentages and ratios about the centrifuged solids (c-sol). The upper portion of Table 2 shows the weights, with columns giving the net weight of the grab sample and the weights used for the archive, the liquid composite, the solids composite, and the weight of the liquid added to the graduated 250-mL cylinder (GC) used to measure the density. The weight of

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the centrifuged solids (c-sol) for the first separation and the total weight of the c-sol after adding the second separation are also given. The lower portion of the table shows the densities in g/mL (SpG) of the liquid (as measured by the graduated cylinder), the total of the liquid including the centrifuged liquid (c-liq) as well as that measured by the graduated cylinder, the slurry of liquid plus solids, and the c-sol for the first separation. The three final columns list the centrifuged solids wt%, vol%, and the solids/liquid ratio (the ratio of the weight of the c-sol to the total weight of liquid).

The first column of densities shows 7 samples of liquid decanted from above the settled solids (measured with a 250-mL graduated cylinder), with an average density of 1.450 ± 0.017 g/mL. The density shown for all liquid uses the sum of the volume of liquid of c-liq plus the volume of the liquid decanted from above the settled solids. The average density of 10 samples of all liquid is 1.446 ± 0.014 g/mL. Thus, the liquid density measured here is 1.45 ± 0.02 g/mL, which is in agreement with the specific gravity measurements for the liquid composite samples by the 222-S laboratory (1.468, 1.460, and 1.477, averaging to 1.468 ± 0.008).

The average density of the slurry material (i.e., both liquid and solid material) is dominated by the large amount of the liquid for most samples, being 1.489 ± 0.031 g/mL when all samples were considered; it is 1.534 ± 0.020 g/mL for the two samples that have >50 vol% solids. This value is closer to the average density of the c-sol, which was computed from the volume of solids in the first separation to be 1.63 ± 0.06 g/mL (the small volumes of c-sol at the second solids/liquid separation were calculated from this average solids density and the mass of the c-sol).

Preparation of the Solids and Liquid Composites

The separated solids and liquids were used to prepare composites. The solids were separated from the liquids by centrifugation. The bottom seven samples (IAW-98-4, through -10) had the upper portion of the liquid decanted from the settled solids and the remaining liquids and solids were separated by centrifugation.

All of the material that could be transferred was used to prepare the composites (i.e., all of the separated solids were combined to form the solids composite, with the same for the liquids), except for the material from each grab sample saved as archives. Table 2 shows the mass of liquid from each sample transferred to the liquid composite, as well as the mass of c-sol transferred to the solids composite. All of the solids that could be transferred were used to make the solids composite, which formed a soupy mixture with a uniform texture after mixing. (A thin liquid layer formed on top of the solids after sitting overnight; this was mixed into the solids before use.) The liquids were transferred to a large (6-L capacity) funnel-shaped stainless steel mixer fitted with a valve at the bottom of the funnel. The liquid composite was mixed for about 23 hours before using it.

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Preparation of the Five Solubility Screening Test Mixtures

Five solubility screening tests were performed to observe the effects of diluting with different amounts of inhibited water (0.01 M NaNO₃ and 0.01 M NaOH). The dilution tests were performed with a mixture of solids composite and liquid composite that was prepared with a large ratio of solids to liquid. The intent was to match the highest solids/liquid mass ratio observed for any sampling depth. The sampling depth with the most solids was the depth used for the first two samples (IAW-98-1 and -2). The average ratio for these samples is 1.635 ± 0.165 . A computational error resulted in actually using ratios of 1.528 to 1.532 to create the test mixtures, so the ratios were about 6% smaller than desired.

Table 3 shows the weights of solids and liquid in the original (undiluted) mixture, and the solids/liquid weight ratio. Also shown are the weights of the diluent added, and the weight ratios of diluent to original mixture. The next row has the weights of the centrifuged solids (c-sol) recovered after dilution. This shows that less c-sol was recovered than was used to prepare the original mixture for the two undiluted tests (Tests 4 and 5). The next row shows the solids/liquid weight ratio after dilution. The next four rows in Table 3 show the wt% and vol% of the c-sol, and the normalized wt% and vol% of the c-sol (normalized to 100% for the average of the

Table 3. Weights of Solids and Liquid in Original Mixture, of Diluent Added, and of Solids After Dilution, Together With Various Ratios.

	Test 1	Test 2	Test 3	Test 4	Test 5
Wt Orig Sol, g	70.56	94.28	91.51	37.00	36.95
Wt Orig Liq, g	46.18	61.72	59.79	24.27	24.24
Solids/Liq Orig	1.528	1.528	1.531	1.525	1.524
Wt Diluent, g	29.19	118.24	151.23	0.00	0.00
Wt Dil/Wt Liq+Sol	0.250	0.758	1.000	0.000	0.000
Wt Dil C-Sol, g	12.53	10.68	8.52	29.28	31.01
Sol/Liq Dil	0.244	0.041	0.029	1.048	1.191
Wt% C-Sol	19.6	4.0	2.9	51.2	54.4
Vol% C-Sol	19.0	3.4	2.8	50.7	48.3
Wt% C-Sol/<Test 4+5>	37.2	7.5	5.4	97.0	103.0
Vol% C-Sol/<Test 4+5>	38.5	7.0	5.7	102.4	97.6
Wt% Sol/Original	40.0	11.3	9.3	79.1	83.9
Wt% Sol/(Orig-Resid)	40.9	11.6	9.6	88.4	94.0

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undiluted material in Tests 4 and 5, but not corrected for dilution). The data in the last two rows show the wt% c-sol normalized to the weight of the original solids, and normalized to the weight of the original solids after subtracting the weight of the residue left in the jar after removing the diluted test material.

Figure 5 shows a plot of the normalized wt% of the c-sol (normalized to the undiluted material in Tests 4 and 5) versus the dilution wt%. In this figure (and Table 3) the normalized wt% is not corrected for dilution, which would multiply the value at 100-wt% dilution by two. The large change during the dilution to 25 wt% indicates that a large fraction of the solids are readily water soluble. Further, the small change for dilutions between 75 and 100 wt% indicates that most of the readily water-soluble solids have dissolved before 75-wt% dilution, leaving less-soluble solids and any water-insoluble solids (the small wt% of solids remaining indicates that there is only a few wt% of the water-insoluble species). As discussed later, the

Figure 5. Weight Percentage of Centrifuged Solids Normalized to 100% for Undiluted Test Material (Not Corrected for Dilution).

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more soluble material is mainly the Na_2CO_3 and the less soluble solids contain a mixture of not-as-soluble species (like phosphate salts), low-solubility species (like sodium oxalate), and water-insoluble species, like $\text{Cr}(\text{OH})_3$.

Settling Study of Diluted Solubility Screening Test Material

The diluted solubility screening test material for Tests 1, 2, and 3 was mixed by shaking over a 25-hr period (shaken nine times -- at 0, 1, 2, 3, 4.5, 20.5, 22, 23, and 24.5 hrs). The mixtures mixed fairly easily upon shaking. The settling in the test samples was observed beginning on September 25, 1998 at temperatures from 25 to 26 °C. Because there were no observations for settling times between 3.5 and 68 hr, the test was repeated. The samples were shaken four times at 1-hr intervals, with the settling observed beginning on September 29, 1998 at temperatures from 25 to 26 °C. As shown in Figure 6, the three observations during the first settling period (points plotted individually at 1.5, 3.5, and 68 hr) usually

Figure 6. Volume of Settled Solids Versus Settling Time for Solubility Screening Tests 1 Through 5.

agree well with observations during the second settling period (points plotted connected by lines).

The undiluted solubility screening test material for Tests 4 and 5 was mixed by shaking over a 25-hr period (shaken eight times: at 0, 1.5, 2.5, 18.5, 20, 21, 22.5, and 24 hrs). The settling was observed beginning on September 29, 1998 at temperatures from 24.5 to 26 °C. Figure 6 and Table 4 show the settling to be faster for diluted material (especially for Tests 2 and 3).

Table 4. Settled Solids Volume Percentages Versus Settling Time for Test Samples.

Beginning 9/25/98				
Settle Time, hr	T, °C	Test 1	Test 2	Test 3
1.3	26.0	100	33	23
2.5	26.0	90	25	18
68.0	25.0	51	15	12
Beginning 9/28/98				
Settle Time, hr	T, °C	Test 1	Test 2	Test 3
1.0	25.0	100	37	25
5.0	25.0	89	21	16
21.1	25.5	68	20	17
25.1	25.5	66	21	16
29.1	26.0	66	24	13
47.2		56	20	14
167.3		51	19	14
213.3	24.5	49	15	11
Beginning 9/29/98				
Settle Time, hr	T, °C	Test 4	Test 5	
2.6	26.0	99	99	
20.7		80	80	
140.8		70	73	
186.8	24.5	63	67	

Laboratory Notebook

Data for these tests are recorded in the controlled laboratory notebook WHC-N-442 2, starting on page 97. Entries include observations on the grab samples, including the weights and volumes of the liquids and solids. Other entries report the compositions of the Test Mixtures, as well as the weights and volumes of the liquids and solids.

Interpretation of Results for the Solubility Screening Test Samples

The following sections present an interpretation of the results of the analyses of the samples submitted for analysis by the 222-S Laboratory. The object is to learn about the species present in the solids, and about what dissolves and what does not dissolve upon dilution with inhibited water. Some information can be deduced by comparing the wt% of the different species in the solids composite with the wt% of the same species in the liquid composite, as discussed in the next section.

Composition of the Liquid Composite and the Solids Composite Materials

Table 5 compares the wt% of the different species in the solids composite with the wt% of the same species in the liquid composite (note that $\mu\text{Ci/g}$ is shown for radioactive analytes). Table 5 also shows the molarity ($\mu\text{Ci/mL}$ for radioactive species) and molality of the species in the liquid composite. The data in the first four columns (the present results) were computed from the tables of species concentrations in $\mu\text{g/g}$ or $\mu\text{g/mL}$ given in Reference 3, Table 1 and Appendix A. The values shown are average values for the three samples of each composite.

The final two columns of Table 5 show some earlier data, where both sets of data are taken from Table 1 of Herting (Reference 6). The next-to-last column shows the average of a statistical analysis by Jensen of core sample results for settled solids. The final column is from Esch (Reference 7).

The present analyses for the three samples of liquid composite are in reasonable agreement with each other. The estimated standard deviation was less than 3 percent of the average value for most analytes (%StdDev <3%); The %StdDev was larger for TOC,furn (12%), TOC,pers (5%), TIC (8%), and B (4%). In addition, there was more scatter for the IC results, with large %StdDev values for F (30%), Cl (8%), NO₂ (NO₂⁻, 14%), NO₃ (NO₃⁻, 17%), and SO₄ (SO₄²⁻, 68%) -- no %StdDev value could be computed for the single result reported for PO₄ (PO₄³⁻).

Note that the tables in this letter often show more digits than are significant. Also, the concentration units for the radioactive species (e.g., Cs-137) are quoted in $\mu\text{Ci/g}$ or $\mu\text{Ci/mL}$, rather than wt% or molarity. Two methods were used to measure the total organic carbon (TOC), furnace

Table 5. Average Species Concentrations (or Radioactivity) in Solids and Liquid Composite Compared With Earlier Analyses.

Analyte	Present Results				Jensen ^a	Esch ^b
	Sol, Wt%	Liq, Wt%	Liq, M	Liq, m	SetSol, Wt%	Liq, Wt%
SpG		1.468			1.63	1.52
H2O	44.43	48.20			45.6	43.6
OH	5.31	6.39	5.52	7.80		5.91
TOC,fur	0.544	0.224	0.274	0.387	0.40	0.213
TOC,per	0.640	0.194	0.237	0.335		
TIC	0.688	0.115	0.141	0.199	0.63	0.136
Al	1.663	2.440	1.328	1.877	1.67	1.822
B	0.0128	0.0067	0.0092	0.0129	0.012	0.0051
Cd	0.0010				0.0006	0.0002
Ca	0.0334				0.025	
Cr	0.0532	0.0087	0.0025	0.0035		
Fe	0.0365				0.035	
K	2.60	2.37	0.890	1.258	2.32	2.68
Mn	0.0342				0.024	0.0007
Na	18.4	18.8	12.0	16.9	16.1	15.5
Ni	0.0062				0.0035	0.0008
P	0.1173				0.11	0.0474
S	0.1623	0.0319	0.0146	0.0206	0.11	0.0283
Si	0.0365	0.0105	0.0055	0.0077	0.046	0.0112
Zr	0.0098	0.0011	0.0002	0.0003		
Cs-137 ^c	239.3	319.3	468.8		270.0	276.3
Alpha ^c	0.0951	0.0123	0.018			
Sr-90 ^c	37.8	0.3398	0.499			
Beta ^c		370	543			
F		0.0565	0.0437	0.0617	0.23	0.0375
Cl		0.494	0.204	0.289	0.38	0.368
NO2		8.13	2.59	3.67	6.90	6.71
NO3		11.74	2.78	3.93	14.10	13.49
PO4		0.0438	0.0068	0.0096	0.28	0.1053
SO4		0.0682	0.0104	0.0147		

^aValues from Jensen for settled solids quoted in Reference 6.^bValues from Esch (Reference 7).^cμCi/g in Wt% columns, μCi/mL in M column.

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oxidation and persulfate oxidation. These values should agree, except for normal paraffin hydrocarbons and semi-volatile organic species, which are expected to be detected better by the furnace method. Both results for TOC are shown in the tables.

The analyses of the liquid composite were sufficiently complete that it is possible to sum the wt% of the species with the wt% H_2O and with the mass of the oxygen and hydrogen atoms associated with the observed species to give a mass balance of 102.9%. The mass balance depends on the species assumed to be present in the liquid phase. The species that contribute more than 0.01 wt% to the liquid are either as listed in Table 5, or acetate (for soluble TOC), CO_3^{2-} (for TIC), AlO_2^- , SO_4^{2-} , PO_4^{3-} , and SiO_4^{2-} . If the aluminate is taken to be $Al(OH)_3$ (equivalent to $AlO_2 \cdot 2H_2O$), then the mass balance increases to 106.1%. The two hydrated water molecules in aluminate may be removed during the heating while measuring wt%Solids. In any case, the mass balances are better using AlO_2^- . For the three samples before averaging the mass balances are 99.8, 104.0, and 104.8. An additional check is to compare the charge balance predicted within the liquid. This is done by multiplication of the liquid molarity by the ionic charge of the ion expected for each species. The liquid composite average value has a cation sum 0.999 times as large as the anion sum. The cation/anion ratios for the three samples are 1.058, 1.003, and 0.941. The fairly close agreement with the ideals of 100% for the mass balance and 1.0 for the charge balance ratio indicates that the analyses of the liquid composite were fairly consistent.

A similar comparison was made for the %StdDev for the three samples of the solids composite. These samples show a fair amount of scatter, with values being 8% or less for most analytes; the exceptions were TOC,pers (23%), B (16%), Fe (9%), Pb (10%), total alpha (12%), and Sr-90 (9%). The conclusion is that the composite concentrations are known fairly well; the larger scatter of concentrations in the solids may reflect sample inhomogeneities, which may explain some of the apparent inconsistencies shown below in Table 8.

Another comparison of the analyses for the composites is to compare the average concentrations with the average concentrations found for the liquids and solids for the undiluted test material in Tests 4 and 5 (discussed below). There is a rather large amount of scatter, as the ratio of the average of the liquids from Tests 4 and 5 to the average liquid composite value ranges from 0.6 to 1.7. Comparisons can be made for only 16 of the analytes in Table 5, as many analytes are below their detection limits. For the ICP metals, most ratios lie between 0.83 and 0.88, with the exceptions being B (0.78), Cr (1.10), K (1.03), and Zr (0.71). The radiochemical results also indicate the Test 4 and 5 results to be smaller with ratios of 0.94 (Cs-137), 0.76 (total alpha), and 0.60 (Sr-90). There is reasonable agreement for the ratios for H_2O (0.96), OH (1.04), and TIC (1.09). However, the ratios for TOC indicate the Test 4 and 5 material to be much higher, with ratios of 1.70 (TOC,furn) and 1.44 (TOC,pers).

A similar comparison can be made for the solids composite and the average concentrations found for the solids for the undiluted test material in Tests 4 and 5. This shows a smaller amount of scatter (except for TOC, TIC, total

alpha, and Sr-90), as the ratio of the average of the solids from Tests 4 and 5 to the average solid composite value ranges from 0.91 to 1.1 for the other analytes. For the analytes showing the large differences, the ratio is 1.22 (TOC,furn), 1.34 (TOC,pers), 1.52 (TIC), 1.68 (total alpha), and 1.23 (Sr-90). Comparisons can be made for 23 of the analytes in Table 5, as more analytes are above their detection limits.

The comparisons of composite values with values from Tests 4 and 5 suggest that either there are some inconsistencies in the analyses, or that the composites have significant inhomogeneities (especially for TOC and TIC).

Composition of Solution, Solids, and Interstitial Liquid in Composite Material Before Dilution

A comparison of the wt% values for the solid with the liquid in Table 5 gives an indication of the major solid species. That is, the species that are major components of the solids will have larger wt% for the solid than for the liquid composite, with examples being: TOC, TIC, Cr, S (sulfate), Si, total alpha, and Sr-90. This is also true for analytes that were not detected in the liquid and had significant concentrations in the solids, e.g., Ca, Fe, and P (phosphate).

A more detailed comparison of the analyses of the solids and liquids can be used to separate the contribution of the interstitial liquid (ISL) from the results for the wet solids in order to estimate the contribution from the true solids. A key point in this discussion is that the centrifuged solids consist of true solids plus ISL, with ISL having a greater mass than the true solids. The comparison uses the distribution of species that are only present in the liquid (e.g., water) to estimate the fraction of ISL present in the wet solids.

The comparison assumes that the ISL composition within the wet solids is the same as the composition for the separated liquid (i.e., use the liquid values in Table 5). The mass fraction of ISL in the centrifuged solids is then estimated by assuming that all of the H_2O is in the liquid, with no water in the true solids. The ratio of the wt% H_2O in the wet solids to the wt% H_2O in the liquid then gives an estimate of the ISL mass fraction. In addition, the ISL fraction can be estimated by using the ratio of the wt% in the wet solids to the wt% in the liquid for any other species that can be assumed to be present only in the liquid phase. The estimates of the ISL fraction based on the different species can then be averaged.

The mass fraction of ISL is used to divide the wt% of each analyte in the wet solids between the wt% present as ISL and the wt% present as a dry solid. Table 6 shows the values derived when the ISL mass fraction is estimated from the H_2O . This is the first of a series of tables (Tables 6 through 13). These tables have the same format, with the left-hand column showing the wt% (or $\mu Ci/g$) of the species in the liquid. The next three data columns show the distribution of the species in the wet solids (c-sol), all expressed in wt% (or $\mu Ci/g$) of the wet solids; the first of these

Table 6. Division of Species Between ISL and Solids For Composite,
Calculating ISL from H₂O Concentrations.

Liq Wt%	Composite	WetSol Wt%	ISL	Dry Sol	Spec Wt% DrySol	%Spec as Sol
1.468	Liq SpG/ISL Fract		0.922			
48.20	H2O	44.43	44.43	0.00		0.0
6.393	OH	5.310	5.893	-0.583	0.0	-11.0
0.224	TOC,furn	0.544	0.207	0.337	17.9	62.0
0.194	TOC,pers	0.640	0.179	0.462	23.0	72.1
0.115	TIC	0.688	0.106	0.582	39.5	84.6
2.440	Al	1.663	2.250	-0.586	0.0	-35.3
0.0067	B	0.0128	0.0062	0.0066	0.1	51.4
nd	Cd	0.0010	nd	0.0010	0.0	100.0
nd	Ca	0.0334	nd	0.0334	0.5	100.0
0.0087	Cr	0.0532	0.0080	0.0452	1.2	84.9
nd	Fe	0.0365	nd	0.0365	0.9	100.0
2.37	K	2.60	2.18	0.41	5.6	15.9
nd	Mn	0.0342	nd	0.0342	0.5	100.0
18.75	Na	18.40	17.29	1.11	15.1	6.1
nd	Ni	0.0062	nd	0.0062	0.1	100.0
nd	P	0.117	nd	0.117	4.9	100.0
nd	Pb	0.007	nd	0.007	0.1	100.0
0.032	S	0.162	0.029	0.133	5.4	81.9
0.010	Si	0.037	0.010	0.027	0.8	73.5
nd	U	0.145	nd	0.145	2.2	100.0
0.0011	Zr	0.0098	0.0010	0.0087	0.1	89.6
nd	Co-60	nd	nd	0.000		
319.3	Cs-137	239.3	294.3	-55.0		-23.0
nd	Eu-154	nd	nd	0.000		
nd	Eu-155	nd	nd	0.000		
0.012	Alpha	0.095	0.011	0.084		88.1
0.34	Sr-90	37.77	0.31	37.45		99.2
30.32	SumWt%Sol	29.95	27.95	3.17	43.1	
3.92	O,H Wt	7.10	3.62	4.19	56.9	
34.24	Total	37.06	31.57	7.36	100.0	
34.35	Total,furn	36.72	31.66	6.90	93.8	
51.80	Wt%Solids	55.57	47.75	7.81		

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showing the total in the wet solids, the next shows the wt% in the ISL, and the third shows the wt% in the dry solids. The column showing the wt% of the wet solids (or $\mu\text{Ci/g}$) estimated to be present in the ISL was calculated by multiplication of the ISL fraction by the liquid wt%. Subtraction of the ISL contribution gives the estimated contribution from the true solids, (expressed as wt% of dry solids in the wet solids).

The next-to-last column shows the wt% of the true-solids contribution of the analyte, computed as wt% of the observed dry solids. These tables do not include anions such as fluoride, chloride, nitrate, and nitrite; the wt% of the species is therefore overstated to the extent that these anions are present in the solids. Note that the earlier data indicates that about 0.2 wt% of the settled solids was F (Table 5), and the solids may contain an even larger wt% of nitrate. The final column (Table 6) shows the wt% of the analyte in the wet solids that is present as a dry solid (rather than in the ISL). The total weight of the solids entries is estimated by summing the wt% values (ignoring any negative estimates) and adding the weights estimated for the oxygen or hydroxide ions associated with each species in the solid form (e.g., add the mass of three hydroxide ions for each Al atom, as the Al is assumed to present as gibbsite). The assumed compositions of the solid species are listed in Table 14 (shown later). As the TOC values for the two methods showed some differences, the wt% values were based on the TOC values determined by the persulfate method (except that the table entries for TOC, furn wt% use the furnace method result, as do the Total, furn values shown at the bottom of the tables). The differences between the bottom three rows is a measure of the wt% missing for the anions, as the Total values should agree with the $\text{Wt\%Solids}$ (equal to $100 - \text{wt\%H}_2\text{O}$) values.

There is a difference between the estimates of the ISL fraction computed from the concentration ratios for different analytes. For the composite, OH gives a fraction of 0.83, $\text{wt\%H}_2\text{O}$ gives 0.92, and Cs-137 gives 0.75. Using wt% potassium estimates an impossibly large fraction of 1.10. Table 6 shows the results when the ISL fraction from $\text{wt\%H}_2\text{O}$ (0.922) is used. The sensitivity of the results to changes in the ISL fraction can be seen by comparing the results in Table 6 with the results in Table 7, which are calculated from the average of the three estimates from $\text{wt\%H}_2\text{O}$, OH, and Cs-137 (ISL fraction equal to 0.834). Comparing the final columns shows that the wt% of the species in the solids is shifted to a higher value for Table 7. The shift for the species that are primarily in the liquid phase is about 10% (e.g., OH). However the species that are primarily in the solids are shifted by a smaller amount (e.g., the TIC values are almost unchanged). Note that the values in Table 6 predict negative wt% values for OH, Al, and Cs-137. When the average of three species concentrations are used to determine the ISL fraction, Table 7 shows that the predicted wt% solid values for OH, Al, and Cs-137 are now closer to zero. This comparison suggests that the $\text{wt\%H}_2\text{O}$ values are either high for the solids composite or low for the liquid composite, or that around 10% of the water in the wet solids is present as hydrated species.

The values in the last column of Table 7 indicate that most of the analytes are present primarily (>80 wt%) in the solids, including TIC, Cd, Ca, Cr, Fe, Mn, Ni, P, Pb, S, U, Zr, total alpha, and Sr-90. The partially soluble

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Table 7. Division of Species Between ISL and Solids For Composite; ISL Estimated Using H₂O, OH, and Cs-137 Concentrations.

Liq Wt%	Composites	WetSol Wt%	ISL	Dry Sol	Spec Wt% DrySol	%Spec as Sol
1.468	Liq SpG/ISL Fract		0.834			
48.20	H ₂ O	44.43	40.20	4.23		9.5
6.393	OH	5.310	5.332	-0.022	0.0	-0.4
0.224	TOC,furn	0.544	0.187	0.357	14.7	65.6
0.194	TOC,pers	0.640	0.162	0.479	18.8	74.7
0.115	TIC	0.688	0.096	0.592	31.7	86.0
2.440	Al	1.663	2.035	-0.372	0.0	-22.4
0.0067	B	0.0128	0.0056	0.0072	0.1	56.1
nd	Cd	0.0010	nd	0.0010	0.0	100.0
nd	Ca	0.0334	nd	0.0334	0.4	100.0
0.0087	Cr	0.0532	0.0073	0.0460	1.0	86.4
nd	Fe	0.0365	nd	0.0365	0.7	100.0
2.37	K	2.60	1.98	0.62	6.6	23.9
nd	Mn	0.0342	nd	0.0342	0.4	100.0
18.8	Na	18.4	15.6	2.8	29.6	15.0
nd	Ni	0.0062	nd	0.0062	0.1	100.0
nd	P	0.117	nd	0.117	3.9	100.0
nd	Pb	0.007	nd	0.007	0.1	100.0
0.032	S	0.162	0.027	0.136	4.4	83.6
0.010	Si	0.037	0.009	0.028	0.6	76.1
nd	U	0.145	nd	0.145	1.8	100.0
0.0011	Zr	0.0098	0.0009	0.0088	0.1	90.6
nd	Co-60	nd	nd	0.000		
319.296	Cs-137	239.333	266.298	-26.965		-11.3
nd	Eu-154	nd	nd	0.000		
nd	Eu-155	nd	nd	0.000		
0.012	Alpha	0.095	0.010	0.085		89.2
0.340	Sr-90	37.767	0.283	37.483		99.2
30.32	SumWt%Sol	29.95	25.29	5.06	54.1	
3.92	O,H Wt	7.22	3.27	4.28	45.9	
34.24	Total	37.17	28.56	9.34	100.0	
34.35	Total,furn	36.83	28.65	8.89	95.2	
51.80	Wt%Solids	55.57	43.20	12.36		

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species with 15 to about 70 wt% include TOC, B, K, and Na. The next-to-last column indicates that major contributors to the weight of solids include TIC, Na, and TOC; in addition, K, P (phosphate), and S (sulfate) contribute smaller weights. Further comparisons are given below in Tables 14 and 15.

Potassium (K) is a species that is often completely in the liquid in tank waste (Reference 5 shows it is essentially always in the liquid for tank 241-AN-107). However, tank 101-AW waste has a larger K concentration than many tank wastes. Thus the K concentrations in the liquid might exceed the solubility limit; another possibility is that experimental errors give low values for the solids/liquid ratio of K concentrations for some samples. The present data indicate that the K concentrations should not be used to estimate the ISL fraction for the undiluted material.

Comparison of Species Measurements After Dilution With Expected Values

One test of the consistency of the analyses is to compare the reported results from the five Tests with the values expected from the analyses of the composites (and the known composition of the diluent), since the mixing proportions are known. The wt% of any species in the mixture can be calculated in two ways: (1) from measurements on the solids and liquid in the Test material, and (2) from the analytical results for the solids and liquid composites and the diluent that were used to make the Test material.

This comparison would be equivalent to the quality control check of using a known standard, if the analyses of the composites were very precise and if the composite materials were completely uniform. As discussed above there are some 10% differences found in the analyses of many analytes in the solids composite (and differences of 22% or more for the TOC, TIC, total alpha, and Sr-90). Therefore, some (possibly most) of the apparent inconsistencies may simply reflect inhomogeneities in the sample material.

Table 8 shows the results of this consistency test. The columns (one for each Test) show the ratio of the wt% of each species observed (summing the contributions from the liquid and the solids) to the wt% expected from the analyses of the composites and the diluent. The expected wt% (or $\mu\text{Ci/g}$) of the species is calculated by first calculating the undiluted test mixture as the sum of the product of the weight fraction of the solids composite in the test mixture times the species wt% in the solids composite plus the product of the weight fraction of the liquid composite in the test mixture times the species wt% in the liquid composite. Then the expected wt% (or $\mu\text{Ci/g}$) of the species in the diluted material is calculated as the sum of the product of the weight fraction of the diluent times the species wt% in the diluent (zero, except for Na, OH, NO_3 , and H_2O) plus the product of the weight fraction of the test material times the species wt% in the test mixture. The observed wt% is calculated as the sum of the product of the weight fraction of the c-sol in the diluted test mixture times the species wt% in the c-sol plus the product of the weight fraction of the liquid times the species wt% in the liquid.

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Table 8. Ratio of Observed Species Wt% (or $\mu\text{Ci/g}$) To Value Expected from the Composition of Diluted Test Material.

Species	Test 1	Test 2	Test 3	Test 4	Test 5
H ₂ O	0.927	0.951	0.960	0.937	0.949
OH	0.843	0.999	0.908	1.023	1.002
TOC, furn	1.278	1.545	1.451	1.284	1.237
TOC, pers	1.144	1.136	1.244	1.117	1.405
TIC	1.015	1.338	1.461	1.227	1.420
Al	0.888	0.912	0.900	0.909	0.930
B	0.769	0.784	0.706	0.591	1.143
Cd ^a	0.730	1.011	0.777	0.911	0.977
Ca ^a	0.764	0.849	0.705	0.917	1.004
Cr	0.826	0.872	0.883	0.894	0.941
Fe ^a	0.781	0.861	0.862	0.866	0.905
K	1.218	1.268	1.290	1.010	0.917
Mn ^a	0.800	0.871	0.886	0.879	0.928
Na	0.958	0.989	0.981	0.910	0.925
Ni ^a	0.800	0.970	0.835	0.905	0.980
P ^a	1.838	1.078	1.093	0.999	0.825
Pb ^a	2.476	1.240	0.405	0.692	0.572
S	0.814	0.907	0.908	0.897	0.943
Si	0.885	1.056	1.040	0.775	1.019
U ^a	0.800	0.857	0.873	0.882	0.925
Zr	0.799	0.798	0.849	0.862	0.894
Cs-137	0.972	0.962	0.966	0.975	0.979
Alpha	1.359	1.319	1.223	1.442	1.335
Sr-90	1.004	0.954	0.956	1.003	1.151

^aAnalyte with erroneous ratios, unless liquid concentrations are negligible.

Table 8 shows the resulting ratios, where the ideal value is unity. The wt%H₂O values are 4 to 7% low for all five tests, indicating these wt%H₂O values are consistent within 7%. The OH results are seen to be very consistent for Tests 2, 4, and 5, with the other two Tests being 9 to 16%

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low; one reason for the low ratios for Tests 2 and 3 is that the OH concentration in the solids is below the detection limit. This problem is also present for several of the less soluble analytes that were not detected in the liquid (e.g., Ca and Cd). When the value is below the detection limit, the contribution is calculated as if the concentration were zero. This causes the ratios to be calculated erroneously (unless the liquid concentrations are negligible), so the ratios are unreliable for Ca, Cd, Fe, Mn, Ni, P, Pb, U, Co-60, Eu-154, and Eu-155.

Table 8 shows that the analyses of Tests 1 through 5 for the other analytes are fairly consistent, except for TOC, furn in Test 2 and 3, TOC, pers in Test 5, TIC in Tests 3 and 5, B in Test 4, and total alpha in Test 4. The conclusion from Table 8 is that the results for three tests are fairly consistent for the analytes that were above detection limits in both phases; however, the TOC and TIC values had some rather inconsistent values (sample variability may contribute to the apparent inconsistencies). The results of Table 8 are used as a guide to the results that are expected to be reliable in the following tables that partition the test results between the true solids and the interstitial liquid (see Tables 14 through 17 below).

Composition of Liquid, Solids, and ISL After Dilution on Tests 1 Through 5

This section discusses the composition of the supernatant liquid, the true (dry) solids, and the interstitial liquid (ISL). The analyses are used to separate the contribution of the ISL from the results for the wet solids to estimate the contribution from the true solids, as was discussed above for the composite material.

Tables 9 through 13 show the separation of the wet solids into true (dry) solids and ISL, following the same calculation as shown above in Tables 6 and 7. Again the first step is to determine the composition of the supernatant liquid. The values in Reference 3, Table 2 and Appendix A are used for each dilution as the concentrations of the ISL (assuming that the ISL composition within the wet solids is the same as the composition for the separated liquid at that dilution). The table values (in $\mu\text{g/mL}$) are multiplied by 10000 divided by the liquid density (SpG) to convert to wt%. The ratios of the analyte wt% in the wet solids to the analyte wt% in the liquid for four different analytes were used to estimate the mass fraction of ISL in the centrifuged solids. These analytes were the $\text{wt\%H}_2\text{O}$, the wt% of OH and K, and the $\mu\text{Ci/g}$ of Cs-137. Some analytes were not used for all tests (OH was not used when the liquid concentrations approached the detection limits in Tests 2 and 3, and K was not used for undiluted material in the composite and Tests 4 and 5), but at least three estimates were averaged in each case.

A comparison of the ISL fractions estimated for different soluble species gives an indication of the consistency of the analyses in terms of the split between solids and liquids. For the composite, Table 7 shows the three estimates range from -11% to +9.5% for the percentage of the analyte as dry solid (these values should all be zero, if each analyte were entirely in the

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Table 9. Division of Species Between ISL and Solids After Test 1 (Diluted 25 wt%).

Liq Wt%	Test 1	WetSol Wt%	ISL	Dry Sol	Spec Wt% DrySol	%Spec as Sol
1.386	Liq SpG/ISL Fract		0.847			
53.9	H2O	47.2	45.66	1.54		3.3
3.969	OH	3.480	3.362	0.118	1.0	3.4
0.232	TOC,furn	1.230	0.196	1.034	33.2	84.0
0.190	TOC,pers	1.390	0.161	1.229	37.2	88.4
0.352	TIC	0.467	0.298	0.169	7.0	36.1
1.451	Al	1.190	1.229	-0.039	0.0	-3.3
0.0048	B	0.0130	0.0041	0.0089	0.1	68.7
0.0000	Cd	0.0018	nd	0.0018	0.0	100.0
0.0000	Ca	0.0630	nd	0.0630	0.5	100.0
0.0060	Cr	0.0955	0.0051	0.0904	1.5	94.6
0.0000	Fe	0.0705	nd	0.0705	1.1	100.0
2.55	K	2.01	2.16	-0.15	0.0	-7.4
0.0000	Mn	0.0677	nd	0.0677	0.6	100.0
13.9	Na	15.4	11.8	3.6	29.7	23.4
0.0000	Ni	0.0122	nd	0.0122	0.1	100.0
0.010	P	0.493	0.008	0.485	12.3	98.3
0.000	Pb	0.041	nd	0.041	0.3	100.0
0.034	S	0.227	0.029	0.198	4.9	87.1
0.007	Si	0.065	0.006	0.059	1.0	90.7
0.000	U	0.287	nd	0.287	2.7	100.0
0.0005	Zr	0.0185	0.0005	0.0180	0.1	97.5
0.0924	Co-60	nd	0.078	nd		
217.2	Cs-137	184.0	184.0	-0.02		0.0
0.5276	Eu-154	2.253	0.447	1.806		80.2
0.3659	Eu-155	2.061	0.310	1.751		85.0
0.003	Alpha	0.334	0.003	0.331		99.2
0.188	Sr-90	93.600	0.160	93.440		99.8
22.50	SumWt%Sol	25.39	19.06	6.52	53.8	
3.70	O,H Wt	8.59	3.14	5.60	46.2	
26.20	Total	33.99	22.20	12.12	100.0	
26.35	Total,furn	33.43	22.32	11.41	94.1	
46.10	Wt%Solids	52.80	39.05	13.75		

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Table 10. Division of Species Between ISL and Solids After Test 2 (Diluted 75 wt%).

Liq Wt%	Test 2	WetSol Wt%	ISL	Dry Sol	Spec Wt% DrySol	%Spec as Sol
1.230	Liq SpG/ISL Fract		0.735			
66.60	H2O	47.00	48.97	-1.97		-4.2
3.267	OH	3.330	2.402	0.928	3.4	27.9
0.236	TOC,furn	3.550	0.173	3.377	45.8	95.1
0.167	TOC,pers	3.510	0.123	3.387	45.8	96.5
0.349	TIC	0.407	0.256	0.151	2.8	37.0
1.024	Al	0.979	0.753	0.226	2.4	23.1
0.0045	B	0.0077	0.0033	0.0043	0.0	56.6
0.0001	Cd	0.0064	0.0001	0.0063	0.0	98.9
0.0017	Ca	0.2050	0.0012	0.2038	0.8	99.4
0.0047	Cr	0.3330	0.0034	0.3296	2.4	99.0
0.0000	Fe	0.2730	nd	0.2730	1.9	100.0
1.83	K	1.30	1.34	-0.04	0.0	-3.4
0.0000	Mn	0.2590	nd	0.2590	1.0	100.0
10.2	Na	15.4	7.5	7.9	29.1	51.1
0.0004	Ni	0.0431	0.0003	0.0428	0.2	99.4
0.030	P	0.377	0.022	0.355	4.0	94.2
0.002	Pb	0.021	0.002	0.019	0.1	92.7
0.058	S	0.043	0.042	0.000	0.0	0.4
0.009	Si	0.179	0.007	0.172	1.4	96.3
0.000	U	1.080	nd	1.080	4.5	100.0
0.0003	Zr	0.0646	0.0002	0.0644	0.2	99.6
0.0542	Co-60	0.092	0.040	0.052		56.6
149.5	Cs-137	118.000	109.946	8.054		6.8
0.2	Eu-154	0.409	0.165	0.244		59.7
0.1	Eu-155	1.482	0.101	1.381		93.2
0.0	Alpha	1.020	0.005	1.015		99.5
0.2	Sr-90	310.000	0.146	309.854		100.0
16.99	SumWt%Sol	27.82	12.49	15.37	56.8	
3.22	O,H Wt	13.49	2.36	11.70	43.2	
20.20	Total	41.31	14.85	27.07	100.0	
20.44	Total,furn	41.45	15.03	27.04	99.9	
33.40	Wt%Solids	53.00	24.56	28.44		

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Table 11. Division of Species Between ISL and Solids After Test 3 (Diluted 100 wt%).

Liq Wt%	Test 3	WetSol Wt%	ISL	Dry Sol	Spec Wt% DrySol	%Spec as Sol
1.208	Liq SpG/ISL Fract		0.726			
70.70	H2O	46.20	51.33	-5.13		-11.1
2.690	OH	nd	1.953	nd	nd	nd
0.190	TOC,furn	4.140	0.138	4.002	49.7	96.7
0.169	TOC,pers	4.360	0.123	4.237	51.2	97.2
0.338	TIC	0.319	0.245	0.074	1.2	23.1
0.886	Al	0.934	0.643	0.291	2.8	31.2
0.0033	B	0.0150	0.0024	0.0126	0.0	83.8
0.0000	Cd	0.0081	nd	0.0081	0.0	100.0
0.0000	Ca	0.2490	nd	0.2490	0.8	100.0
0.0042	Cr	0.4070	0.0031	0.4039	2.6	99.2
0.0000	Fe	0.3330	nd	0.3330	2.1	100.0
1.63	K	1.16	1.18	-0.02	0.0	-2.0
0.0000	Mn	0.3210	nd	0.3210	1.1	100.0
8.9	Na	15.3	6.5	8.8	29.0	57.6
0.0000	Ni	0.0545	nd	0.0545	0.2	100.0
0.033	P	0.229	0.024	0.205	2.1	89.5
0.000	Pb	0.029	nd	0.029	0.1	100.0
0.051	S	0.037	0.037	0.000	0.0	0.2
0.008	Si	0.215	0.006	0.209	1.5	97.4
0.000	U	1.340	nd	1.340	5.0	100.0
0.0003	Zr	0.0853	0.0002	0.0851	0.3	99.8
0.0477	Co-60	0.129	0.035	0.094		73.2
131.59	Cs-137	107.00	95.54	11.46		10.7
0.1945	Eu-154	0.480	0.141	0.339		70.6
0.0	Alpha	1.120	0.005	1.115		99.6
0.2	Sr-90	378.000	0.138	377.862		100.0
14.75	SumWt%Sol	25.40	10.71	16.66	54.9	
3.00	O,H Wt	15.10	2.18	13.68	45.1	
17.75	Total	40.49	12.89	30.34	100.0	
17.83	Total,furn	39.72	12.94	29.48	97.2	
29.30	Wt%Solids	53.80	21.27	32.53		

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Table 12. Division of Species Between ISL and Solids After Test 4
(Undiluted).

Liq Wt%	Test 4	WetSol Wt%	ISL	Dry Sol	Spec Wt% DrySol	%Spec as Sol
1.510	Liq SpG/ISL Fract		0.821			
46.50	H2O	39.70	38.18	1.52		3.8
6.470	OH	5.300	5.313	-0.013	0.0	-0.2
0.359	TOC,furn	0.705	0.295	0.410	12.0	58.2
0.215	TOC,pers	0.806	0.177	0.629	17.4	78.1
0.100	TIC	1.010	0.082	0.928	34.9	91.9
2.033	Al	1.560	1.669	-0.109	0.0	-7.0
0.0045	B	0.0078	0.0037	0.0041	0.0	52.7
0.0000	Cd	0.0011	nd	0.0011	0.0	100.0
0.0000	Ca	0.0361	nd	0.0361	0.3	100.0
0.0094	Cr	0.0532	0.0077	0.0455	0.7	85.5
0.0000	Fe	0.0373	nd	0.0373	0.5	100.0
2.42	K	2.64	1.98	0.66	4.9	24.8
0.0000	Mn	0.0355	nd	0.0355	0.3	100.0
16.1	Na	17.6	13.2	4.4	33.0	24.9
0.0000	Ni	0.0066	nd	0.0066	0.0	100.0
0.008	P	0.131	0.006	0.125	2.9	95.2
0.006	Pb	nd	0.005	nd	nd	
0.026	S	0.169	0.022	0.147	3.3	87.3
0.009	Si	0.031	0.007	0.024	0.4	76.6
0.000	U	0.151	nd	0.151	1.3	100.0
0.0007	Zr	0.0100	0.0006	0.0093	0.1	93.8
0.1	Co-60	nd	0.077	nd		
296.0	Cs-137	234.000	243.075	-9.075		-3.9
0.7	Eu-154	2.106	0.598	1.508		71.6
0.4	Eu-155	1.473	0.303	1.170		79.4
0.0	Alpha	0.167	0.007	0.160		95.6
0.2	Sr-90	44.800	0.163	44.637		99.6
27.39	SumWt%Sol	29.59	22.49	7.22	54.4	
3.43	O,H Wt	8.83	2.82	6.06	45.6	
30.82	Total	38.42	25.31	13.28	100.0	
31.32	Total, furn	38.07	25.72	12.48	94.0	
53.50	Wt%Solids	60.30	43.93	16.37		

Table 13. Division of Species Between ISL and Solids After Test 5
(Undiluted).

Liq Wt%	Test 5	WetSol Wt%	ISL	Dry Sol	Spec Wt% DrySol	%Spec as Sol
1.468	Liq SpG/ISL Fract		0.828			
45.90	H2O	41.60	38.02	3.58		8.6
6.586	OH	5.050	5.455	-0.405	0.0	-8.0
0.393	TOC,furn	0.620	0.326	0.294	9.0	47.5
0.338	TOC,pers	0.914	0.280	0.634	17.6	69.3
0.147	TIC	1.080	0.122	0.958	36.3	88.7
2.050	Al	1.650	1.698	-0.048	0.0	-2.9
0.0059	B	0.0169	0.0049	0.0120	0.1	71.1
0.0000	Cd	0.0011	nd	0.0011	0.0	100.0
0.0000	Ca	0.0372	nd	0.0372	0.3	100.0
0.0094	Cr	0.0537	0.0078	0.0459	0.7	85.5
0.0000	Fe	0.0367	nd	0.0367	0.5	100.0
2.42	K	2.20	2.00	0.20	1.5	9.0
0.0000	Mn	0.0353	nd	0.0353	0.3	100.0
16.1	Na	18.0	13.4	4.6	35.1	25.7
0.0000	Ni	0.0067	nd	0.0067	0.1	100.0
0.008	P	0.101	0.006	0.095	2.2	93.6
0.005	Pb	nd	0.004	nd	nd	
0.026	S	0.170	0.022	0.148	3.4	87.3
0.009	Si	0.041	0.008	0.033	0.5	81.1
0.000	U	0.149	nd	0.149	1.3	100.0
0.0008	Zr	0.0098	0.0007	0.0091	0.1	93.3
0.1308	Co-60	nd	0.108	nd		
295.57	Cs-137	240.0	244.84	-4.84		-2.0
0.7832	Eu-154	2.419	0.649	1.770		73.2
0.6497	Eu-155	2.129	0.538	1.591		74.7
0.0000	Alpha	0.153	nd	0.153		100.0
0.2043	Sr-90	48.400	0.169	48.231		99.7
27.74	SumWt%Sol	29.55	22.98	7.03	53.4	
3.95	O,H Wt	9.45	3.27	6.15	46.6	
31.69	Total	39.00	26.25	13.17	100.0	
31.88	Total,furn	37.97	26.41	11.93	90.6	
53.50	Wt%Solids	58.40	44.32	14.08		

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liquid phase). For Test 1, Table 9 shows the four different estimates range from -7% to +3%. For Test 2, the three estimates range from -4% to +7%. For Test 3, the three estimates range from -11% to +11%. For Test 4, the three estimates range from -4% to +4%. For Test 5, the three estimates range from -8% to +9%. This indicates the results are reasonably consistent.

The ISL fractions used in Tables 7 and 9 through 13 are reasonably similar, ranging from 0.73 to 0.85 (with the lower values of 0.73 and 0.74 corresponding to the Tests with the most dilution, as the less-diluted material had fractions from 0.82 to 0.85). This suggests the dilution factors are self consistent. The conclusion is that the ISL fractions are reasonably well determined to be 0.85, 0.74, 0.73, 0.82, and 0.83 for Tests 1 through 5, respectively.

The next step is to use the mass fractions of ISL to estimate the amount of each analyte that is present as a solid. Tables 9 through 13 show the values derived. Recall that the format of these tables was explained for Table 6, with the left-hand column showing the wt% (or $\mu\text{Ci/g}$) of the species in the liquid, the next three data columns showing the wt% (or $\mu\text{Ci/g}$) of species in the wet solids (first the total wt%, next the wt% of the wet solids in the ISL, and then the wt% in the wet solids as dry solids). The next-to-last column expresses the contribution of the analyte to the solids, as wt% of the observed dry solids. The final column shows the wt% of the analyte in the wet solids that is present in the dry solids (rather than in the ISL). These last two columns are compared in summary Tables 14 and 15 discussed in the next section.

Note that Tables 9 through 13 do not include the anions of fluoride, chloride, nitrate, and nitrite; the wt% of the species in the solids is therefore overstated when the ignored anions are present in the solids. The total weight of the solids entries is estimated by summing the wt% values (ignoring any negative estimates) and adding the weights estimated for the oxygen or hydroxide ions associated with each species in the solid form (e.g., add the mass of three hydroxide ions for each aluminum atom). The solid species assumed to be present are listed in Table 14 below. The wt% values were based on the TOC values determined by the persulfate method (except the table entries for TOC, furnace use the furnace method result, as do the Total, furnace values shown at the bottom of the tables). An estimate of the effects of the anions that were not analyzed can be made from the differences between the entries for Total and for Wt%Solids at the bottom of the tables.

Comparison of Species Distributions in the True Solids

This section presents two tables that summarize and compare the results given in Table 7 for the undiluted composite with those in Tables 9 through 13 (Tests 1 through 5). Table 14 compares the next-to-last column in these tables. This compares the different estimates of the species wt% in the true solids. The table is arranged with the results for the undiluted material shown first (composite, then Tests 4 and 5), followed by the

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diluted material in the order of the dilution wt% (Test 1 with 25 wt% dilution, Test 2 with 75%, and Test 3 with 100%). A filter has been used to avoid displaying the values with the largest inconsistency ratios. The displayed values for Tests 1 through 5 all have consistency test ratios between 0.5 and 1.5 in Table 8.

If a significant amount of a soluble species dissolves after dilution, the entries in Table 14 for that species will decrease (provided there are still undissolved species containing other analytes). This causes the wt% values for the last three columns to decrease from the values of the first three columns. This trend is shown for carbonate and sulfate. Also there is evidence for the corresponding trend for the wt% of insoluble species to increase with dilution. This is shown for oxalate, $\text{Cr}(\text{OH})_3$, $\text{Fe}(\text{OH})_3$, SiO_2 , and UO_2 . There is no clear trend for Na, which may result from the expected decrease from Na_2CO_3 dissolving being essentially compensated by the expected increase from $\text{Na}_2\text{C}_2\text{O}_4$ not dissolving.

For the undiluted material, the largest contributions to the solids come from sodium salts, where the anions contribute about 34 wt% of carbonate, about 15 wt% of oxalate, about 4 wt% of sulfate, and about 3.5 wt% of phosphate; the anions are combined with about 32 wt% of sodium (and possibly about 5 wt% of potassium). There is also a small amount of water-insoluble species, with 1.5 wt% of uranium oxides, 0.8 wt% of $\text{Cr}(\text{OH})_3$, about 0.6 wt% of $\text{Fe}(\text{OH})_3$ (or FeOOH), and 0.6 wt% of SiO_2 .

In summary, the undiluted material has about 95 wt% of potentially soluble sodium salts (and possibly a few potassium salts), together with about 4 wt% of water-insoluble species.

After the 25-wt% dilution, the carbonate has largely dissolved, dropping to 7 wt% of the remaining solids. After the 75-wt% dilution, the carbonate is further dissolved, dropping to 3 wt%. In addition, the sulfate has dissolved. After the 100-wt% dilution, the largest contributions to the solids still come from sodium salts, with the anions contributing about 50 wt% of oxalate and about 2 wt% of phosphate, but only about 1 wt% of carbonate; the anions are combined with about 29 wt% of sodium. The water-insoluble species remain, with about 5 wt% of uranium oxide, about 3 wt% of $\text{Cr}(\text{OH})_3$, about 2 wt% of $\text{Fe}(\text{OH})_3$ (or FeOOH), about 1.5 wt% of SiO_2 , and about 1 wt% of manganese (probably about 2 wt% as MnO_2).

Table 15 compares the results given in the last column of Table 7 (undiluted composite) with those in Tables 9 through 13 (Tests 1 through 5). This compares the distribution of each species in the wet solids between solids and liquid, showing the estimates of the wt% of the species in the true solids (with 100% minus this number being present in the ISL). The table arrangement is the same as for Table 14 with the undiluted material shown first, followed by the diluted material in order. The displayed values for Tests 1 through 5 also have consistency test ratios between 0.5 and 1.5 in Table 8. Note that the entries of 100% may overstate the percentage somewhat, as these entries result when the liquid concentration is below the detection limit, but not necessarily zero.

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Table 14. Comparison of Species Wt% of Dry Solids for Undiluted Composite and Test Material. Entries Show Species Wt% in the Dry Solids.

Species	Composite	Test 4	Test 5	Test 1	Test 2	Test 3
		Undilt	Undilt	Dilt 25%	Dilt 75%	Dilt 100%
C204,furn	15	12	9	33	i ^a	50
C204,pers	19	17	18	37	46	51
CO3	32	35	36	7	3	1
Al(OH)3	0	0	0	0	2	3
B	0.08	0.03	0.09	0.07	0.02	0.04
Cd	0.01	0.01	0.01	0.01	0.02	0.03
Ca	0.36	0.27	0.28	0.52	0.75	0.82
Cr(OH)3	0.98	0.68	0.69	1.48	2.41	2.64
Fe(OH)3	0.7	0.5	0.5	1.1	1.9	2.1
K	6.6	4.9	1.5	0.00	0.00	0.00
Mn	0.37	0.27	0.27	0.56	0.96	1.06
Na	30	33	35	30	29	29
Ni	0.07	0.05	0.05	0.10	0.16	0.18
P04	3.9	2.9	2.2	i	4.0	2.1
Pb	0.07	nd	nd	i	0.07	i
SO4	4.4	3.3	3.4	4.9	0.00	0.00
SiO2	0.64	0.39	0.54	1.05	1.36	1.48
UO2	1.76	1.29	1.28	2.69	4.53	5.01
Zr	0.09	0.07	0.07	0.15	0.24	0.28

i^a Inconsistent results (Table 8).

In Table 15 the species refer to the analytes, as the chemical forms may be different in the liquid and the solids. For example, presumably the TOC in the solids is in the form of oxalate, while the TOC in the liquids is in the form of complexing agents (e.g., EDTA) or their reaction products (e.g., ED3A, acetate, and formate).

If most of a soluble solid species dissolves, the entries in Table 15 for that species decrease when little is present in the solids. This causes the wt% values for the last three columns to decrease from the values of the first three columns. This trend is shown for TIC and S (the entries of 0%

Table 15. Comparison of Species Distribution for Undiluted Composite and Test Material. Entries Show Wt% of Species in the Wet Solids in the Solid Phase (Rather Than in ISL).

Species	Composite	Test 4	Test 5	Test 1	Test 2	Test 3
		Undilt	Undilt	Dilt 25%	Dilt 75%	Dilt 100%
TOC, furn	66	58	47	84	i ^a	97
TOC, pers	75	78	69	88	96	97
TIC	86	92	89	36	37	23
Al	-22	-7	-3	-3	23	31
B	56	53	71	69	57	84
Cd	100 ^b	100	100	100	99	100
Ca	100	100	100	100	99	100
Cr	86	85	86	95	99	99
Fe	100	100	100	100	100	100
K	24	25	9	-7	-3	-2
Mn	100	100	100	100	100	100
Na	15	25	26	23	51	58
Ni	100	100	100	100	99	100
P	100	95	94	i	94	89
Pb	100			i	93	i
S	84	87	87	87	0 ^c	0
Si	76	77	81	91	96	97
U	100	100	100	100	100	100
Zr	91	94	93	98	100	100

i^a Inconsistent results (Table 8).100^b Concentration in liquid below detection limit, but not necessarily 0%.0^c Concentration in solids below detection limit, but not necessarily 0%.

may understate the percentage, as these entries result when the concentration in the wet solids is below the detection limit, but not necessarily zero). The trend is reversed for TOC, and for Na at dilutions greater than 25 wt%. Both of these effects are due to the relative insolubility of sodium oxalate.

Table 15 classifies the distribution of the different analytes in the wet solids between solids and liquid. For the undiluted material, species that

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are primarily (75% or more) in the solids are TOC, TIC, Cd, Ca, Cr, Fe, Mn, Ni, P (phosphate), Pb, S (sulfate), Si, U, and Zr. The species that are largely (75% or more) in the liquid phase are Al, K, and Na (and hydroxide and Cs-137, which are not shown). Boron is divided between solids and liquid (being 16 to 47% in the liquid). The smaller amount of organic carbon in this tank is not enough to complex the Cd and Ni to put these species in the liquid phase, in contrast with the results for tank 241-AN-107 (Reference 5).

Estimated Amount of Each Species Present in the Solid Material

The mass fraction of interstitial liquid found in Tables 9 through 13 indicates that the dry solids account for only 15 to 27 wt% of the centrifuged solids. This corresponds to about 9 wt% of the starting material in the undiluted test mixtures. This section shows the estimates of composition of these dry solids. Table 16 shows the estimated amount of each species present in the solids in the test mixtures. The table shows the grams of the species in the dry solids per 100 grams of the undiluted solids/liquid mixture. Values are not shown for the analytes with the most inconsistent results, as the displayed values have a consistency test ratio (Table 8) between 0.5 and 1.5. The different oxides/hydroxides shown are representative of the solids that may be expected.

The entries show that the mass of the solids in the undiluted material (Tests 4 and 5) is primarily coming from the sodium carbonate and sodium oxalate, with smaller amounts from sodium sulfate and sodium phosphate (potassium salts may also be minor contributors). After the 100-wt% dilution (Test 3), the mass of the solids primarily comes from sodium oxalate, with insoluble species contributing much smaller amounts from uranium oxides, $\text{Cr}(\text{OH})_3$, $\text{Al}(\text{OH})_3$, sodium phosphate, $\text{Fe}(\text{OH})_3$ (or FeOOH), and SiO_2 .

Note that the exact form of the solid species is not determined, so that the analytes may be in different species in the solids than shown. In particular, phosphate might be present as the sodium-fluoride-phosphate double salt, $\text{Na}_2\text{F}(\text{PO}_4)_2 \cdot 19\text{H}_2\text{O}$. Note that Table 5 shows that fluoride contributes about 0.23 wt% of the settled solids, so it is probably also present as sodium fluoride as well.

Table 17 shows the same results as Table 16, displaying the estimated millimoles of species in the dry solids per 100 grams of the undiluted solid/liquid mixture (calculated from the entries in Table 16). The bottom of the table shows the Na millimoles calculated to be present as salts of the TIC (CO_3), P (PO_4), S (SO_4), and TOC (oxalate). Two values are shown for the amount of Na in salts, depending on whether the TOC value from the persulfate or the furnace oxidation is used. The amount of Na in the solids seems to correspond reasonably well with the amount expected.

The results indicate that a large fraction of the solids dissolve (which matches the large change in the wt% of c-sol shown in Figure 5 and Table 3). The large amount of the solids that dissolve produces a significant change

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Table 16. Grams of Diluted Solid Species Per 100 Grams of Undiluted Material.

Species	Test 1	Test 2	Test 3	Test 4	Test 5
	Dilt 25%	Dilt 75%	Dilt 100%	Undilt	Undilt
C2O4, furn	1.24	i ^a	0.78	1.10	0.84
C2O4, pers	1.39	0.84	0.80	1.59	1.64
CO3	0.26	0.05	0.02	3.19	3.39
Al(OH)3	0.00	0.04	0.04	0.00	0.00
B	0.0028	0.0003	0.0006	0.0028	0.0085
Cd	0.0005	0.0004	0.0004	0.0007	0.0008
Ca	0.0194	0.0139	0.0128	0.0249	0.0263
Cr(OH)3	0.0552	0.0444	0.0413	0.0621	0.0644
Fe(OH)3	0.042	0.036	0.033	0.049	0.050
K	0.0000	0.0000	0.0000	0.4515	0.1397
Mn	0.0209	0.0176	0.0166	0.0245	0.0250
Na	1.11	0.54	0.45	3.02	3.28
Ni	0.0038	0.0029	0.0028	0.0045	0.0048
P04	i	0.074	0.032	0.263	0.205
Pb	i	0.0013	i	0.0000	0.0000
SO4	0.183	0.000	0.000	0.304	0.315
SiO2	0.0391	0.0251	0.0231	0.0353	0.0506
UO2	0.1004	0.0834	0.0784	0.1180	0.1197
Zr	0.0056	0.0044	0.0044	0.0064	0.0064

i^a Inconsistent results (Table 8).

in the solids composition, going from primarily sodium carbonate with some sodium oxalate to primarily sodium oxalate. Sodium sulfate is seen to dissolve for dilutions of 75 wt% or more, while the phosphate salts are still dissolving at the dilutions studied. The results for Cr, Fe, Si, and U are consistent with the expectation that these species are not soluble in inhibited water. The Al results suggest that a fraction of the Al precipitates at water dilutions of 75 and 100 wt%, but this may not be significant, as the Al results show large fluctuations in Table 15.

Table 18 shows the data that were used to prepare Figure 1. The weights of the dry solids species are estimated from the results in Table 17. The

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Table 17. Millimoles of Diluted Solid Species Per 100 Grams of Undiluted Material.

Species	Test 1	Test 2	Test 3	Test 4	Test 5
	Dilt 25%	Dilt 75%	Dilt 100%	Undilt	Undilt
TOC,furn	28.2	i ^a	17.7	25.1	19.2
TOC,pers	31.5	19.2	18.2	36.1	37.4
TIC	4.3	0.9	0.3	53.2	56.5
Al	0.00	0.57	0.56	0.00	0.00
B	0.25	0.03	0.06	0.26	0.79
Cd	0.00	0.00	0.00	0.01	0.01
Ca	0.48	0.35	0.32	0.62	0.66
Cr	0.54	0.43	0.40	0.60	0.63
Fe	0.39	0.33	0.31	0.46	0.47
K	0.00	0.00	0.00	11.5	3.6
Mn	0.38	0.32	0.30	0.45	0.46
Na	48.3	23.3	19.8	131	143
Ni	0.06	0.05	0.05	0.08	0.08
P	i	0.78	0.34	2.8	2.2
Pb	i	0.0	i	0.0	0.0
S	1.9	0.0	0.0	3.2	3.3
Si	0.65	0.42	0.38	0.59	0.84
U	0.37	0.31	0.29	0.44	0.44
Zr	0.06	0.05	0.05	0.07	0.07
NaSalt,pers	58.5	23.2	19.9	146	160
NaSalt,furn	55.1	23.2	19.4	135	142

i^a Inconsistent results (Table 8).

entries for oxalate use the values for TOC,pers and the entry for phosphate for Test 1 was estimated as the average from Tests 4 and 5. The amount of sodium is assumed to match the quantity needed to form the species shown, which Table 17 shows to be approximately correct. The "Insolubles" entries are computed by summing all the species not listed (except for Na and K). The "Sum, NaSalt" entries show the sums of the four sodium salts listed.

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Table 18. Diluted Solid Species Wt% of the Solids in Undiluted Material.

Species	Test 4	Test 5	Test 1	Test 2	Test 3
Wt% Diluent	0.0	0.0	25.0	75.8	100.0
Na ₂ CO ₃	58	61	13	5	2
Na ₂ SO ₄	4.6	4.7	7.6	0.0	0.0
Na ₃ PO ₄	4.7	3.6	11 ^a	7.2	3.6
Na ₂ C ₂ O ₄	25	26	60	72	78
Insolubles	3.4	3.6	8.2	15.4	16.4
Sum, NaSalt	92	95	92	85	84
DrySol/(<Test 4+5>	99.0	101.0	40.4	19.9	16.9

^a Estimated from average of results for Tests 4 and 5.

The bottom row of Table 18 shows the ratio of the weight of dry solids to the average for undiluted material in Tests 4 and 5. These values are computed from the entries in Table 3 for Wt% C-Sol/(<Test 4+5>), after correcting for dilution by dividing by $(1 - f_{dil})$ and multiplication by $(1 - f_{ISL})$, where f_{ISL} is the mass fraction of ISL. The normalized dry solids wt% shown in Figure 1 is then calculated as the product of the wt% for each salt multiplied by the entry in the bottom row, divided by 100.

Thus the values for the normalized wt% solids in Figure 1 were calculated by assuming that there was an exact match between the sodium measured and the sodium needed for the salts shown, that the total wt% was given by the species shown (including the insolubles) plus the weight of any K estimated to be in the solids; the total dry solids wt% was normalized to 100% times the weight fraction of dry solids estimated to be present at that dilution from the measured weights of the c-sol and the weight fraction of ISL present in the c-sol.

In summary, a large fraction of the solids dissolve. The solids are primarily composed of the sodium salts of TIC (sodium carbonate) and TOC (sodium oxalate), with smaller contributions from S (sodium sulfate) and P (sodium phosphate, or the sodium-fluoride-phosphate double salt). In this waste, the hydroxide and Cs-137 appear to be in the liquid phase in all of the undiluted and diluted mixtures, as is K for all the diluted mixtures; Al is also primarily in the liquid phase.

J. C. Person, Scientist II
Process Chemistry

peer reviewer

HNH-1652 REV. 0

CORRESPONDENCE

ATTACHMENT 3

HNF-1652 REV. 0

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Esch, Ruth A

From: Jo, Jaiduk
Sent: Monday, January 18, 1999 9:14 AM
To: Esch, Ruth A; Templeton, Andrew M; Tung, Tzu L (Cliff)
Cc: Jo, Jaiduk
Subject: AN-107 and AW-101

Ruth,

Since there was not enough samples to run duplicate analyses for solubility screening, it is acceptable to the customers to receive single run results for tanks AN-107 and AW-101.

Jaiduk

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SAMPLE DATA SUMMARY

TABLE 1

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Table 1. Data Summary Report
AH-101 LAMRISER: 22
SEGMENT #: Composite

SEGMENT PORTION: Centrifuged Solids

Sample #	R# Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	BPD % Spk Rec %	Det Limit	Count Err%
S981002766	Solids % - Gravimetric	%	104.9		56.60	n/a	n/a	n/a	1.00e-02	n/a
S981002766	TIC by Persulfate/Coulometry	ug/g	99.17	1.100	6.84e+03	n/a	n/a	n/a	5.000	n/a
S981002766	TIC by Persulfate/Coulometry	ug/g	87.33	11.40	4.87e+03	n/a	n/a	n/a	147.0	n/a
S981002767	Solids % - Gravimetric	%	104.9	n/a	56.60	n/a	n/a	n/a	1.00e-02	n/a
S981002767	TIC by Persulfate/Coulometry	ug/g	92.19	6.200	7.74e+03	n/a	n/a	n/a	5.000	n/a
S981002767	TIC by Persulfate/Coulometry	ug/g	99.00	27.60	7.74e+03	n/a	n/a	n/a	40.00	n/a
S981002768	Solids % - Gravimetric	%	104.9	n/a	53.50	n/a	n/a	n/a	1.00e-02	n/a
S981002768	TIC by Persulfate/Coulometry	ug/g	92.19	6.200	6.61e+03	n/a	n/a	n/a	5.000	n/a
S981002768	TIC by Persulfate/Coulometry	ug/g	99.00	27.60	6.58e+03	n/a	n/a	n/a	40.00	n/a
S981002769	Strontium-89/90 High Level	uCi/g	103.8	4.60e-02	35.00	n/a	n/a	n/a	1.20e-02	8.61E-01
S981002769	Cobalt-60 by GEA	uCi/g	103.7	<1.91e-02	<2.17e-02	n/a	n/a	n/a	2.20e-02	n/a
S981002769	Antimony-125 by GEA	uCi/g	<1.91e-02	<4.86e-02	<5.58e-01	n/a	n/a	n/a	5.58e-01	n/a
S981002769	Cesium-137 by GEA	uCi/g	103.2	2.48e-01	2.44e+02	n/a	n/a	n/a	n/a	0.290
S981002769	Europium-154 by GEA	uCi/g	<1.91e-02	<4.93e-02	<8.14e-02	n/a	n/a	n/a	8.10e-02	n/a
S981002769	Alpha of Digested Solid	uCi/g	<1.91e-02	<3.35e-01	<3.35e-01	n/a	n/a	n/a	3.35e-01	n/a
S981002769	Strontium-89/90 High Level	uCi/g	97.78	<1.54e-02	8.79e-02	n/a	n/a	n/a	80.99	2.00e-02
S981002769	Cobalt-60 by GEA	uCi/g	103.8	4.60e-02	36.80	n/a	n/a	n/a	1.10e-02	8.16E-01
S981002769	Antimony-125 by GEA	uCi/g	103.7	<1.91e-02	<2.22e-02	n/a	n/a	n/a	2.30e-02	n/a
S981002769	Cesium-137 by GEA	uCi/g	<1.91e-02	<4.86e-02	<5.60e-01	n/a	n/a	n/a	5.60e-01	n/a
S981002769	Europium-154 by GEA	uCi/g	103.2	2.48e-01	2.40e+02	n/a	n/a	n/a	n/a	0.290
S981002769	Alpha of Digested Solid	uCi/g	<1.91e-02	<4.93e-02	<7.48e-02	n/a	n/a	n/a	7.50e-02	n/a
S981002769	Strontium-89/90 High Level	uCi/g	97.78	<1.54e-02	<3.33e-01	n/a	n/a	n/a	3.33e-01	n/a
S981002769	Cobalt-60 by GEA	uCi/g	103.8	4.60e-02	41.50	n/a	n/a	n/a	2.00e-02	2.54E-01
S981002769	Antimony-125 by GEA	uCi/g	103.7	<1.91e-02	<1.40e-02	n/a	n/a	n/a	1.20e-02	7.90E-01
S981002769	Cesium-137 by GEA	uCi/g	103.2	2.48e-01	<3.86e-01	n/a	n/a	n/a	3.86e-01	n/a
S981002769	Europium-154 by GEA	uCi/g	<1.91e-02	<4.93e-02	<2.32e+02	n/a	n/a	n/a	n/a	0.210
S981002769	Alpha of Digested Solid	uCi/g	97.78	<1.54e-02	<4.54e-02	n/a	n/a	n/a	4.50e-02	n/a
S981002769	Strontium-89/90 High Level	uCi/g	97.60	<1.47e-02	<2.31e-01	n/a	n/a	n/a	2.31e-01	n/a
S981002769	Cobalt-60 by GEA	uCi/g	97.60	<1.47e-02	8.94e-02	n/a	n/a	n/a	58.80	29.10
S981002769	Antimony-125 by GEA	uCi/g	123.6	<1.00e-02	5.11e+02	n/a	n/a	n/a	92.60	5.820
S981002769	Europium-154 by GEA	uCi/g	95.40	<1.00e-02	1.82e+03	n/a	n/a	n/a	5.76e-02	58.20
S981002769	Alpha of Digested Solid	uCi/g	95.80	<2.00e-01	1.08e+03	n/a	n/a	n/a	113.6	117.0
S981002769	Strontium-89/90 High Level	uCi/g	90.60	<1.00e-01	1.56e+03	n/a	n/a	n/a	85.40	58.20
S981002769	Cobalt-60 by GEA	uCi/g	120.2	1.370	3.68e+02	n/a	n/a	n/a	101.4	29.10
S981002769	Antimony-125 by GEA	uCi/g	97.60	<1.47e-02	1.70e+04	n/a	n/a	n/a	n/a	30.90
S981002769	Europium-154 by GEA	uCi/g	95.40	<1.00e-02	5.11e+02	n/a	n/a	n/a	6.150	n/a
S981002769	Alpha of Digested Solid	uCi/g	95.80	<2.00e-01	1.87e+03	n/a	n/a	n/a	61.50	61.50
S981002769	Strontium-89/90 High Level	uCi/g	95.80	<2.00e-01	1.19e+03	n/a	n/a	n/a	123.0	n/a
S981002769	Cobalt-60 by GEA	uCi/g	90.60	<1.00e-01	1.57e+03	n/a	n/a	n/a	61.50	n/a
S981002769	Antimony-125 by GEA	uCi/g	120.2	1.370	3.78e+02	n/a	n/a	n/a	30.90	n/a
S981002769	Europium-154 by GEA	uCi/g	97.60	<1.47e-02	1.61e+04	n/a	n/a	n/a	28.70	n/a
S981002769	Alpha of Digested Solid	uCi/g	95.40	<1.00e-02	5.68e+02	n/a	n/a	n/a	5.760	n/a

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T002757	A	Sodium - ICP-Acid Digest	ug/g	123.6	7.59e-01	1.83e+05	n/a	n/a	n/a	n/a	57.60	n/a
S98T002757	A	Phosphorus - ICP-Acid Digest	ug/g	95.80	<2.00e-01	1.25e+03	n/a	n/a	n/a	n/a	115.0	n/a
S98T002757	A	Sulfur - ICP-Acid Digest	ug/g	90.60	<1.00e-01	1.74e+03	n/a	n/a	n/a	n/a	57.60	n/a
S98T002757	A	Strontium - ICP-Acid Digest	ug/g	120.2	<1.00e-01	3.49e+02	n/a	n/a	n/a	n/a	28.70	n/a
S98T002758	W	Ch. by Petc. Titration	ug/g	99.42	<25.00e-01	5.71e+04	n/a	n/a	n/a	n/a	2.50e+04	n/a
S98T002758	W	Ch. by Petc. Titration by Coul.	ug/g	100.3	1.700	5.09e+03	4.94e+03	5.00e+03	2.20	92.33	1.10e+03	n/a
S98T002759	W	Ch. by Petc. Titration	ug/g	99.42	<25.00e-01	5.00e+04	n/a	n/a	n/a	n/a	2.47e+04	n/a
S98T002759	W	Ch. by Petc. Titration by Coul.	ug/g	100.3	1.700	5.87e+03	n/a	n/a	n/a	n/a	1.09e+03	n/a
S98T002760	W	Ch. by Petc. Titration	ug/g	99.42	<25.00e-01	5.22e+04	n/a	n/a	n/a	n/a	2.45e+04	n/a
S98T002760	W	Tot. Organic Carbon by Coul.	ug/g	100.3	1.700	5.40e+03	n/a	n/a	n/a	n/a	1.08e+03	n/a

Supernate: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T002779	W	Solids % - Gravimetric	%	105.7	n/a	51.60	52.70	52.15	2.11	n/a	1.00e-02	n/a
S98T002779	W	Tot. Organic Carbon by Coul.	ug/mL	98.33	3.00e-01	3.58e+03	3.70e+03	3.64e+03	3.30	95.80	55.00	n/a
S98T002779	W	TIC by Acid/Coulometry	ug/mL	100.0	<2.00e-01	1.93e+03	1.76e+03	1.84e+03	9.21	94.80	5.000	n/a
S98T002779	W	TOC by Persulfate/Coulometry	ug/mL	93.33	8.000	3.03e+03	2.98e+03	3.00e+03	1.65	94.00	4.00e-03	n/a
S98T002779	W	Technetium-99 Liq. Scint.	uCi/mL	101.4	<8.13e-04	1.72e-01	1.65e-01	1.68e-01	4.15	n/a	1.00e-03	1.17e+00
S98T002779	W	Strontium-89/90 High Level	uCi/mL	101.9	2.53e-04	5.13e-01	5.02e-01	5.08e-01	2.17	n/a	3.62e-04	1.30e+00
S98T002779	W	Selenium-79 by Liquid Scint.	uCi/mL	101.9	2.53e-05	6.99e-04	2.09e-04	7.02e-04	1.99	n/a	4.28e-05	1.04e+00
S98T002779	W	Selenium-79 by Liquid Scint.	uCi/mL	69.70	2.74e-05	4.14e-05	4.04e-5	n/a	n/a	n/a	4.71e-05	1.54e+02
S98T002779	W	Iodine-129 Waste Tank Samples	uCi/mL	91.52	<7.39e-05	3.28e-04	3.32e-04	3.30e-04	1.21	n/a	2.02e-05	3.87e+00
S98T002779	W	Tritium by Lachat	uCi/mL	99.45	<4.09e-04	3.88e-03	3.75e-03	3.79e-03	3.17	95.76	4.08e-04	3.83e+00
S98T002779	W	Cobalt-60 by GEA	uCi/mL	105.9	<5.38e-03	<6.36e-03	<6.44e-3	n/a	n/a	n/a	6.00e-03	n/a
S98T002779	W	Antimony-125 by GEA	uCi/mL	101.7	<1.47e-02	<3.18e-01	<3.12e-1	n/a	n/a	n/a	3.13e-01	n/a
S98T002779	W	Cesium-137 by GEA	uCi/mL	101.7	<6.44e-03	4.59e+02	4.49.0	454.0	2.20	n/a	n/a	0.0900
S98T002779	W	Europium-154 by GEA	uCi/mL	n/a	<1.72e-02	<1.92e-02	<1.90e-2	n/a	n/a	n/a	1.90e-02	n/a
S98T002779	W	Europium-155 by GEA	uCi/mL	n/a	<8.72e-03	<7.79e-2	<7.79e-2	n/a	n/a	n/a	7.90e-02	n/a
S98T002779	W	C-14 Small Volume	uCi/mL	87.90	3.91e-05	3.04e-04	3.10e-04	3.07e-04	1.95	82.17	2.01e-05	2.87e+00
S98T002779	W	Am-241 by Extraction	uCi/mL	92.95	<3.15e-05	8.36e-04	7.56e-04	7.96e-04	10.1	n/a	8.29e-05	2.47e+00
S98T002780	W	Am-243/244 by Extraction	uCi/mL	n/a	<3.15e-05	<8.29e-05	<7.23E-5	n/a	n/a	n/a	8.29e-05	7.18e+00
S98T002780	W	Solids % - Gravimetric	%	105.7	n/a	51.60	51.50	51.55	0.19	n/a	1.00e-02	n/a
S98T002780	W	Tot. Organic Carbon by Coul.	ug/mL	98.33	3.00e-01	2.82e+03	3.90e+03	3.36e+03	32.1	n/a	55.00	n/a
S98T002780	W	TIC by Acid/Coulometry	ug/mL	100.0	<2.00e-01	1.69e+03	1.65e+03	1.67e+03	2.40	n/a	5.000	n/a
S98T002780	W	TOC by Persulfate/Coulometry	ug/mL	93.33	8.000	2.98e+03	2.47e+03	2.72e+03	18.7	n/a	4.00e-04	n/a
S98T002780	W	Technetium-99 Liq. Scint.	uCi/mL	112.1	<4.24e-04	1.72e-01	1.79e-01	1.76e-01	3.41	n/a	4.24e-04	8.30e-01
S98T002780	W	Strontium-89/90 High Level	uCi/mL	101.9	2.53e-04	4.98e-01	5.00e-01	4.99e-01	0.40	n/a	3.91e-04	1.37e+00
S98T002780	W	Selenium-79 by Liquid Scint.	uCi/mL	101.9	2.53e-05	7.11e-04	7.35e-04	7.23e-04	3.32	n/a	4.63e-06	1.07e+00
S98T002780	W	Selenium-79 by Liquid Scint.	uCi/mL	69.70	2.53e-05	2.67e-05	<2.78E-5	n/a	n/a	n/a	4.71e-05	1.06e+02
S98T002780	W	Iodine-129 Waste Tank Samples	uCi/mL	91.52	<7.39e-05	3.37e-04	3.10e-04	3.24e-04	8.35	n/a	1.88e-05	3.62e+00
S98T002780	W	Tritium by Lachat	uCi/mL	99.45	<4.09e-04	3.92e-03	4.06e-03	3.99e-03	3.51	n/a	3.12e-04	3.53e+00
S98T002780	W	Cobalt-60 by GEA	uCi/mL	105.9	<5.38e-03	<1.70e-02	<1.70e-2	n/a	n/a	n/a	6.27e-01	n/a
S98T002780	W	Antimony-125 by GEA	uCi/mL	n/a	<1.47e-02	<6.27e-01	<6.24e-1	n/a	n/a	n/a	n/a	0.160
S98T002780	W	Cesium-137 by GEA	uCi/mL	101.7	<6.44e-03	4.72e+02	4.69.0	471.0	0.85	n/a	6.10e-02	n/a
S98T002780	W	Europium-154 by GEA	uCi/mL	n/a	<1.72e-02	<6.07e-02	<5.63e-2	n/a	n/a	n/a	1.89e-02	n/a
S98T002780	W	Europium-155 by GEA	uCi/mL	n/a	<8.72e-03	<1.89e-01	<1.89e-1	n/a	n/a	n/a	2.01e-05	2.88e+00
S98T002780	W	C-14 Small Volume	uCi/mL	87.90	3.91e-05	3.02e-04	3.15e-04	3.09e-04	4.21	n/a	7.38e-05	2.71e+00
S98T002780	W	Am-241 by Extraction	uCi/mL	92.95	<3.15e-05	5.62e-04	5.62e-04	5.62e-04	0.00	n/a	7.38e-05	8.47e+00
S98T002780	W	Am-243/244 by Extraction	uCi/mL	n/a	<3.15e-05	<7.38e-05	<7.12E-5	n/a	n/a	n/a	1.00e-02	n/a
S98T002781	W	Solids % - Gravimetric	%	105.7	n/a	51.20	52.20	51.70	1.93	n/a	1.00e-02	n/a

Sample#	RA#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec. %	Det Limit	Count Err%
S98T002781	A	Total Organic Carbon by Coul.	ug/mL	98.33	3.00e-01	2.44e+03	3.31e+03	2.88e+03	30.3	n/a	n/a	n/a
S98T002781	A	11C by Acid/Coulometry	ug/mL	98.67	3.800	1.93e+03	1.20e+03	1.56e+03	46.6	n/a	55.00	n/a
S98T002781	A	10C by Perculfate/Coulometry	ug/mL	99.33	12.20	2.80e+03	2.83e+03	2.82e+03	1.07	n/a	5.000	n/a
S98T002781	A	Technium-99 Liq. Scint.	uCi/mL	112.1	4.24e-04	1.84e-01	1.69e-01	1.76e-01	8.50	n/a	40.00	n/a
S98T002781	A	Strontium-90 Liq. Level	uCi/mL	101.9	2.53e-04	4.91e-01	4.90e-01	4.90e-01	0.20	n/a	4.37e-04	8.20E-01
S98T002781	A	Selenium-79 by Liquid Scint.	uCi/mL	n/a	3.55e-05	7.07e-04	7.24e-04	7.15e-04	2.38	n/a	3.68e-04	1.34e-01
S98T002781	A	Wp237 by IIA Extraction	uCi/mL	69.70	2.74e-05	4.29e-05	2.74e-05	2.74e-05	n/a	n/a	4.50e-06	1.05E-00
S98T002781	A	Iodine-129 Waste Tank Samples	uCi/mL	91.52	37.39e-05	3.14e-04	3.01e-04	3.07e-04	4.23	n/a	4.71e-05	1.43E-02
S98T002781	A	Tridium by Lechat	uCi/mL	99.45	5.39e-03	4.26e-03	3.94e-03	4.10e-03	7.80	n/a	1.12e-05	2.72E-00
S98T002781	A	Cobalt-60 by GEA	uCi/mL	105.9	5.47e-02	42.00e-02	41.85e-2	n/a	n/a	n/a	4.09e-04	3.72E-00
S98T002781	A	Antimony-125 by GEA	uCi/mL	101.7	4.17e-02	46.29e-01	46.36e-2	n/a	n/a	n/a	6.29e-01	n/a
S98T002781	A	Cesium-137 by GEA	uCi/mL	101.7	46.44e-03	4.74e+02	489.0	481.5	3.12	n/a	n/a	0.160
S98T002781	A	Europium-154 by GEA	uCi/mL	101.7	4.17e-02	45.97e-02	45.21e-2	n/a	n/a	n/a	6.00e-02	n/a
S98T002781	A	Curium-155 by GEA	uCi/mL	102.4	8.72e-03	41.90e-01	41.92e-1	n/a	n/a	n/a	1.90e-01	n/a
S98T002781	A	C-14 Small Volume	uCi/mL	87.90	3.91e-05	2.99e-04	2.77e-04	2.88e-04	7.64	n/a	2.01e-05	2.89E-00
S98T002781	A	Am-241 by Extraction	uCi/mL	92.95	3.15e-05	5.92e-04	7.12e-04	6.52e-04	18.4	n/a	6.80e-05	2.61E-00
S98T002781	A	Cyanide Water Distillation	ug/mL	100.2	1.10e-02	6.85e-01	6.17e-05	n/a	n/a	n/a	6.80e-05	8.60E-00
S98T002782	A	Mercury by CMAA (PE) with FIAS	ug/mL	100.2	<1.00e-02	8.450	9.050	8.750	6.86	85.40	5.50e-01	n/a
S98T002782	A	Ammonia by ISE-Std Additions	ug/mL	91.80	<2.8e-2	42.8e-2	42.8e-2	n/a	n/a	89.30	2.80e-02	n/a
S98T002782	A	Oil by Pot. Titration	ug/mL	98.72	<10.00	10.00	1.00E+1	9.40e+04	0.75	n/a	110.7	10.00
S98T002782	A	Specific Gravity	Sp. G.	101.2	<25300.0	9.43e+04	9.36e+04	9.40e+04	n/a	n/a	2.53e+04	n/a
S98T002782	A	Uranium-233 by ICP/MS Acid Add	ug/mL	98.92	n/a	1.459	1.477	1.468	1.23	n/a	1.00e-03	n/a
S98T002782	A	Uranium-234 by ICP/MS Acid Add	ug/mL	n/a	4.73e-05	< 1.917	<1.9260	n/a	n/a	n/a	1.917	n/a
S98T002782	A	Uranium-235 by ICP/MS Acid Add	ug/mL	n/a	5.49e-05	< 2.924	<2.9260	n/a	n/a	n/a	2.224	n/a
S98T002782	A	Uranium-236 by ICP/MS Acid Add	ug/mL	102.4	3.79e-05	< 1.534	<1.5360	n/a	n/a	n/a	1.534	n/a
S98T002782	A	Uranium-238 by ICP/MS Acid Add	ug/mL	n/a	3.49e-05	< 1.413	<1.4160	n/a	n/a	n/a	1.413	n/a
S98T002782	A	Uranium-238 by ICP/MS Acid Add	ug/mL	102.0	5.16e-05	2.284	2.200	2.242	3.57	88.64	2.088	n/a
S98T002782	D	Tc 99 by ICP/MS Acid Addition	ug/mL	79.69	<2.00e-06	8.444	8.130	8.287	3.74	86.00	8.10e-02	n/a
S98T002782	D	Sn 126 by ICP/MS Acid Addition	ug/mL	n/a	<1.50e-04	< 6.075	<6.0860	n/a	n/a	n/a	6.075	n/a
S98T002782	D	Cs 133 by ICP/MS Acid Addition	ug/mL	98.50	2.40e-06	12.21	12.10	12.16	0.82	97.11	8.10e-02	n/a
S98T002782	D	Cs 135 by ICP/MS Acid Addition	ug/mL	n/a	<2.00e-06	3.260	3.220	3.240	1.23	n/a	8.10e-02	n/a
S98T002782	D	Cs 137 by ICP/MS Acid Addition	ug/mL	n/a	<2.00e-06	4.880	4.810	4.845	1.44	n/a	8.10e-02	n/a
S98T002782	A	Protactinium-231 by ICP/MS	ug/mL	140.2	<1.32e-05	5.34e-01	5.34e-01	n/a	n/a	156.0	5.34e-01	n/a
S98T002782	A	Neptunium-237 by ICP/MS	ug/mL	130.5	<1.49e-05	6.05e-01	6.05e-01	n/a	n/a	145.7	6.05e-01	n/a
S98T002782	A	Plutonium-239 by ICP/MS	ug/mL	n/a	5.64e-06	<2.29e-01	<2.28e-1	n/a	n/a	n/a	5.34e-01	n/a
S98T002782	A	Plutonium-240 by ICP/MS	ug/mL	n/a	<1.37e-05	5.56e-01	5.56e-01	n/a	n/a	n/a	5.56e-01	n/a
S98T002782	A	Pu/Am-241 by ICP/MS	ug/mL	0.30	<8.75e-06	3.54e-01	3.54e-01	n/a	n/a	2.97e-01	3.54e-01	n/a
S98T002782	A	Am-243/Cm-243 by ICP/MS	ug/mL	n/a	<1.32e-05	5.36e-01	5.36e-01	n/a	n/a	n/a	5.36e-01	n/a
S98T002782	A	Pu-244/Cm-244 by ICP/MS	ug/mL	92.05	<2.92e-06	3.21e-01	3.21e-01	n/a	n/a	n/a	3.21e-01	n/a
S98T002782	A	Iodide-IC-Dioxin 500 System 1	ug/mL	103.9	<2.00e-01	<1.03e+03	<1.03e+03	854.5	47.7	90.94	1.03e+03	n/a
S98T002782	A	Fluoride-IC-Dioxin 4000/4500	ug/mL	103.9	<1.20e-02	1.06e+03	652.0	676e+03	3.70	96.75	49.69	n/a
S98T002782	A	Chloride-IC-Dioxin 4000/4500	ug/mL	105.7	<1.70e-02	6.89e+03	6.64e+03	6.76e+03	4.78	97.62	70.40	n/a
S98T002782	A	Nitrite-IC - Dioxin Chromatograph	ug/mL	95.41	<1.08e-01	1.07e+05	<5.18e+02	1.02e+05	1.02e+05	96.75	447.2	n/a
S98T002782	A	Bromide by Ion Chromatograph	ug/mL	104.6	<1.29e-01	1.47e+05	1.47e+05	1.46e+05	2.06	120.1	517.6	n/a
S98T002782	A	Nitrate by IC-Dioxin 4000/4500	ug/mL	108.5	<1.29e-01	1.47e+05	<4.97e+02	1.47e+05	2.06	107.5	575.6	n/a
S98T002782	A	Phosphate-IC-Dioxin 4000/4500	ug/mL	101.4	<1.20e-01	1.47e+05	<4.97e+02	1.47e+05	2.06	107.5	575.6	n/a
S98T002782	A	Sulfate by IC-Dioxin 4000/4500	ug/mL	100.2	<1.38e-01	6.41e+02	592.0	616.6	7.95	104.4	571.5	n/a
S98T002782	A	Cyanide Water Distillation	ug/mL	105.2	<1.10e-02	9.170	9.410	9.290	2.58	n/a	5.50e-01	n/a
S98T002783	A	Mercury by CMAA (PE) with FIAS	ug/mL	91.80	<2.8e-2	42.8e-2	<2.8e-2	n/a	n/a	n/a	2.80e-02	n/a
S98T002783	A	Ammonia by ISE-Std Additions	ug/mL	98.72	<10.00	< 10.00	<1.00E+1	n/a	n/a	n/a	10.00	n/a

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Sample#	R.#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec.	Det Limit	Count Err%
S98T002783		Oh- by Pot. Titration	ug/mL	101.2	<2500.0	9.43e+04	9.17e+04	9.30e+04	2.80	n/a	n/a	n/a
S98T002783		Specific Gravity	Sp. G.	98.92	<4.73e-05	n/a	1.452	1.460	1.03	n/a	2.53e+04	n/a
S98T002783	A	Uranium-233 by ICP/MS Acid Add	ug/mL	n/a	<4.73e-05	< 1.917	<1.9260	n/a	n/a	n/a	1.00e-03	n/a
S98T002783	A	Uranium-234 by ICP/MS Acid Add	ug/mL	n/a	<4.73e-05	< 1.917	<1.9260	n/a	n/a	n/a	1.917	n/a
S98T002783	A	Uranium-235 by ICP/MS Acid Add	ug/mL	n/a	<4.73e-05	< 1.917	<1.9260	n/a	n/a	n/a	2.224	n/a
S98T002783	A	Uranium-236 by ICP/MS Acid Add	ug/mL	102.4	<3.79e-05	< 1.534	<1.5360	n/a	n/a	n/a	1.534	n/a
S98T002783	A	Uranium-238 by ICP/MS Acid Add	ug/mL	n/a	<3.79e-05	< 1.413	<1.4160	n/a	n/a	n/a	1.413	n/a
S98T002783	A	Uranium-238 by ICP/MS Acid Add	ug/mL	102.0	<5.16e-05	< 2.357	<2.340	2.299	5.22	n/a	2.088	n/a
S98T002783	D	Tc 99 by ICP/MS Acid Addition	ug/mL	79.69	<2.00e-06	< 6.946	<6.070	8.008	1.50	n/a	8.10e-02	n/a
S98T002783	D	Sn 126 by ICP/MS Acid Addition	ug/mL	n/a	<1.50e-04	< 6.946	<6.070	n/a	n/a	n/a	6.075	n/a
S98T002783	D	Cs 133 by ICP/MS Acid Addition	ug/mL	98.50	<2.00e-06	11.81	11.90	11.86	0.84	n/a	8.10e-02	n/a
S98T002783	D	Cs 135 by ICP/MS Acid Addition	ug/mL	n/a	<2.00e-06	3.090	3.090	3.090	0.00	n/a	8.10e-02	n/a
S98T002783	D	Cs 137 by ICP/MS Acid Addition	ug/mL	n/a	<2.00e-06	4.564	4.557	4.557	0.22	n/a	8.10e-02	n/a
S98T002783	A	Protactinium-231 by ICP/MS	ug/mL	n/a	<1.32e-05	<5.34e-01	<5.34e-01	n/a	n/a	n/a	7.62e-01	n/a
S98T002783	A	Neptunium-237 by ICP/MS	ug/mL	140.2	<1.49e-05	<6.05e-01	<6.05e-01	n/a	n/a	n/a	6.05e-01	n/a
S98T002783	A	Plutonium-239 by ICP/MS	ug/mL	150.5	<1.49e-05	<2.29e-01	<2.29e-01	n/a	n/a	n/a	2.29e-01	n/a
S98T002783	A	Plutonium-240 by ICP/MS	ug/mL	n/a	<1.37e-05	<5.56e-01	<5.56e-01	n/a	n/a	n/a	5.56e-01	n/a
S98T002783	A	Plutonium-242 by ICP/MS	ug/mL	0.30	<8.75e-06	<3.54e-01	<3.54e-01	n/a	n/a	n/a	3.54e-01	n/a
S98T002783	A	Pu/Am-241 by ICP/MS	ug/mL	n/a	<1.32e-05	<3.54e-01	<3.54e-01	n/a	n/a	n/a	3.54e-01	n/a
S98T002783	A	Am 243/Am 243 by ICP/MS	ug/mL	92.05	<2.00e-01	<3.21e-01	<3.21e-01	n/a	n/a	n/a	3.21e-01	n/a
S98T002783	A	Iodine-131 by ICP/MS	ug/mL	102.2	<9.00e-01	<1.03e+03	<1.03e+03	762.0	9.77	n/a	1.03e+03	n/a
S98T002783	A	Pu 244/Cm 244 by ICP/MS	ug/mL	106.4	<1.20e-02	6.91e+02	6.91e+02	726.5	9.77	n/a	49.69	n/a
S98T002783	A	Fluoride-18 by ICP/MS	ug/mL	104.7	<1.70e-02	7.71e+03	7.73e+03	7.72e+03	0.26	n/a	70.40	n/a
S98T002783	A	Chloride-18 by ICP/MS	ug/mL	95.21	<1.08e-01	1.21e+05	1.22e+05	1.22e+05	0.82	n/a	447.2	n/a
S98T002783	A	Nitrite-18 by ICP/MS	ug/mL	107.0	<1.35e-01	1.82e+02	1.83e+02	1.82e+02	0.55	n/a	517.6	n/a
S98T002783	A	Bromide by Ion Chromatograph	ug/mL	107.6	<1.35e-01	1.82e+02	1.83e+02	1.82e+02	0.55	n/a	517.6	n/a
S98T002783	A	Phosphate-18 by ICP/MS	ug/mL	102.2	<1.20e-01	7.04e+02	7.04e+02	683.0	19.1	n/a	496.9	n/a
S98T002783	A	Sulfate by ICP/MS	ug/mL	102.6	<1.38e-01	<5.72e+02	<5.72e+02	623.0	n/a	n/a	571.5	n/a
S98T002784	A	Cyanide Water Distillation	ug/mL	100.6	<1.10e-02	8.750	9.470	9.110	7.90	n/a	5.50e-01	n/a
S98T002784	A	Mercury by CVAAS (PE) with FIAS	ug/mL	91.80	<7.00e-05	<2.8e-2	<2.8e-2	n/a	n/a	n/a	2.80e-02	n/a
S98T002784	A	Ammonia by ISE Std Additions	ug/mL	98.72	<10.00	< 10.00	<1.00E-1	n/a	n/a	n/a	10.00	n/a
S98T002784	A	Oh- by Pot. Titration	ug/mL	101.2	<2500.0	9.63e+04	9.30e+04	9.46e+04	3.49	n/a	2.53e+04	n/a
S98T002784	A	Specific Gravity	Sp. G.	98.92	<4.73e-05	n/a	1.484	1.477	0.95	n/a	1.00e-03	n/a
S98T002784	A	Uranium-233 by ICP/MS Acid Add	ug/mL	n/a	<4.73e-05	< 1.917	<1.9260	n/a	n/a	n/a	1.917	n/a
S98T002784	A	Uranium-234 by ICP/MS Acid Add	ug/mL	n/a	<4.73e-05	< 1.917	<1.9260	n/a	n/a	n/a	2.224	n/a
S98T002784	A	Uranium-235 by ICP/MS Acid Add	ug/mL	102.4	<3.79e-05	< 1.534	<1.5360	n/a	n/a	n/a	1.534	n/a
S98T002784	A	Uranium-236 by ICP/MS Acid Add	ug/mL	n/a	<3.79e-05	< 1.413	<1.4160	n/a	n/a	n/a	1.413	n/a
S98T002784	A	Uranium-238 by ICP/MS Acid Add	ug/mL	102.0	<5.16e-05	< 2.088	<2.340	n/a	n/a	n/a	2.088	n/a
S98T002784	D	Tc 99 by ICP/MS Acid Addition	ug/mL	79.69	<2.00e-06	< 8.870	<8.560	8.715	3.56	n/a	8.10e-02	n/a
S98T002784	D	Sn 126 by ICP/MS Acid Addition	ug/mL	n/a	<1.50e-04	< 6.075	<6.080	n/a	n/a	n/a	6.075	n/a
S98T002784	D	Cs 133 by ICP/MS Acid Addition	ug/mL	98.50	<2.00e-06	12.82	12.30	12.56	3.98	n/a	8.10e-02	n/a
S98T002784	D	Cs 135 by ICP/MS Acid Addition	ug/mL	n/a	<2.00e-06	3.326	3.358	3.358	1.79	n/a	8.10e-02	n/a
S98T002784	D	Cs 137 by ICP/MS Acid Addition	ug/mL	n/a	<2.00e-06	5.127	4.890	5.008	4.79	n/a	8.10e-02	n/a
S98T002784	A	Protactinium-231 by ICP/MS	ug/mL	n/a	<1.32e-05	<5.34e-01	<5.34e-01	n/a	n/a	n/a	5.34e-01	n/a
S98T002784	A	Neptunium-237 by ICP/MS	ug/mL	140.2	<1.49e-05	<6.05e-01	<6.05e-01	n/a	n/a	n/a	6.05e-01	n/a
S98T002784	A	Plutonium-239 by ICP/MS	ug/mL	150.5	<1.49e-05	<2.29e-01	<2.29e-01	n/a	n/a	n/a	2.29e-01	n/a
S98T002784	A	Plutonium-240 by ICP/MS	ug/mL	n/a	<1.37e-05	<5.56e-01	<5.56e-01	n/a	n/a	n/a	5.56e-01	n/a
S98T002784	A	Plutonium-242 by ICP/MS	ug/mL	0.30	<8.75e-06	<3.54e-01	<3.54e-01	n/a	n/a	n/a	3.54e-01	n/a
S98T002784	A	Pu/Am-241 by ICP/MS	ug/mL	n/a	<1.32e-05	<3.54e-01	<3.54e-01	n/a	n/a	n/a	3.54e-01	n/a
S98T002784	A	Am 243/Am 243 by ICP/MS	ug/mL	n/a	<2.00e-01	<3.21e-01	<3.21e-01	n/a	n/a	n/a	3.21e-01	n/a
S98T002784	A	Pu 244/Cm 244 by ICP/MS	ug/mL	n/a	<7.92e-06	<3.21e-01	<3.21e-01	n/a	n/a	n/a	3.21e-01	n/a

Sample #	R. #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec. %	Det Limit	Count Err%
S981002784		Iodide - IC-Dionex 500 System 1	ug/mL	92.05	< 2.00e-01	< 1.03e+03	< 1.05e3	n/a	n/a	n/a	1.03e+03	n/a
S981002784		Fluoride - IC-Dionex 4000/4500	ug/mL	103.8	< 1.14e+02	1.14e+03	1.08e+03	1.11e+03	5.41	n/a	1.08e+03	n/a
S981002784		Chloride - IC-Dionex 4000/4500	ug/mL	103.8	< 1.20e-02	7.31e+03	7.47e+03	7.39e+03	2.17	n/a	173.4	n/a
S981002784		Nitrite - IC - Dionex 4000/4500	ug/mL	103.3	< 1.05e-01	1.32e+05	1.35e+05	1.34e+05	2.25	n/a	1.10e+03	n/a
S981002784		Bromide by Ion Chromatograph	ug/mL	107.3	< 1.28e+03	< 1.28e+03	< 1.28e3	n/a	n/a	n/a	1.28e+03	n/a
S981002784		Nitrate by IC-Dionex 4000/4500	ug/mL	106.3	< 1.84e+05	1.84e+05	1.92e+05	1.88e+05	4.26	n/a	1.42e+03	n/a
S981002784		Phosphate - IC-Dionex 4000/4500	ug/mL	106.5	< 1.39e-01	< 1.22e+03	< 1.22e3	n/a	n/a	n/a	1.22e+03	n/a
S981002784		Sulfate by IC-Dionex 4000/4500	ug/mL	104.7	< 1.36e-01	1.89e+03	1.68e+03	1.79e+03	11.8	n/a	1.41e+03	n/a
S981002784		Antimony by GFAA	ug/L	99.20	< 1.00e-01	8.40e+02	< 100	n/a	n/a	n/a	100.0	n/a
S981002788		Silver - ICP-Acid Digest-Liquid	ug/mL	95.70	< 1.00e-02	< 10.00	< 1.00e1	102.0	n/a	n/a	10.00	n/a
S981002788		Aluminum - ICP-Acid Digest-Liquid	ug/mL	95.00	8.00e-02	3.51e+04	3.57e+04	3.54e+04	1.69	n/a	50.00	n/a
S981002788		Arsenic - ICP-Acid Digest-Liquid	ug/mL	96.60	< 1.00e-01	1.01e+02	115.0	108.0	13.0	n/a	103.6	n/a
S981002788		Boron - ICP-Acid Digest-Liquid	ug/mL	104.4	4.78e-01	97.70	97.70	95.05	5.58	n/a	50.00	n/a
S981002788		Barium - ICP-Acid Digest-Liquid	ug/mL	95.20	< 5.00e-02	< 92.40	< 5.00e1	n/a	n/a	n/a	50.00	n/a
S981002788		Beryllium - ICP-Acid Digest-Liquid	ug/mL	105.0	< 5.00e-03	< 5.000	< 5.00e0	n/a	n/a	n/a	50.00	n/a
S981002788		Calcium - ICP-Acid Digest-Liquid	ug/mL	98.00	1.34e-01	< 1.00e+02	< 1.00e2	n/a	n/a	n/a	103.6	n/a
S981002788		Cadmium - ICP-Acid Digest-Liquid	ug/mL	95.80	< 5.00e-03	< 5.000	< 5.00e0	n/a	n/a	n/a	50.00	n/a
S981002788		Cobalt - ICP-Acid Digest-Liquid	ug/mL	94.40	< 2.00e-02	< 20.00	< 2.00e1	n/a	n/a	n/a	100.8	n/a
S981002788		Chromium - ICP-Acid Digest-Liquid	ug/mL	91.00	< 1.00e-02	1.24e+02	131.0	127.5	5.49	n/a	103.6	n/a
S981002788		Iron - ICP-Acid Digest-Liquid	ug/mL	96.00	< 5.00e-02	< 10.00	< 5.00e1	n/a	n/a	n/a	92.80	n/a
S981002788		Potassium - ICP-Acid Digest-Liquid	ug/mL	95.00	< 5.00e-01	3.41e+04	3.52e+04	3.46e+04	3.17	n/a	500.0	n/a
S981002788		Lanthanum - ICP-Acid Digest-Liquid	ug/mL	96.80	< 1.00e-02	< 50.00	< 5.00e1	n/a	n/a	n/a	98.80	n/a
S981002788		Lithium - ICP-Acid Digest-Liquid	ug/mL	95.60	< 1.00e-02	< 10.00	< 1.00e1	n/a	n/a	n/a	94.20	n/a
S981002788		Magnesium - ICP-Acid Digest-Liquid	ug/mL	93.80	< 1.00e-02	< 1.00e+02	< 1.00e2	n/a	n/a	n/a	96.60	n/a
S981002788		Manganese - ICP-Acid Digest-Liquid	ug/mL	97.80	< 5.00e-02	75.70	75.70	75.65	0.13	n/a	97.60	n/a
S981002788		Molybdenum - ICP-Acid Digest-Liquid	ug/mL	113.6	6.36e-01	2.74e+05	2.75e+05	2.74e+05	0.36	n/a	50.00	n/a
S981002788		Nickel - ICP-Acid Digest-Liquid	ug/mL	96.60	< 2.00e-02	< 20.00	< 2.00e1	n/a	n/a	n/a	104.0	n/a
S981002788		Phosphorus - ICP-Acid Digest-Liquid	ug/mL	96.00	< 2.00e-02	< 2.00e+02	< 2.00e2	n/a	n/a	n/a	107.6	n/a
S981002788		Lead - ICP-Acid Digest-Liquid	ug/mL	92.60	< 1.00e-01	< 1.00e+02	< 1.00e2	n/a	n/a	n/a	119.0	n/a
S981002788		Sulfur - ICP-Acid Digest-Liquid	ug/mL	96.40	< 1.00e-01	4.72e+02	479.0	475.5	1.47	n/a	106.2	n/a
S981002788		Antimony - ICP-Acid Digest-Liquid	ug/mL	93.20	< 6.00e-02	< 60.00	< 6.00e1	n/a	n/a	n/a	101.2	n/a
S981002788		Selenium - ICP-Acid Digest-Liquid	ug/mL	92.20	< 1.00e-01	< 1.00e+02	< 1.00e2	n/a	n/a	n/a	104.6	n/a
S981002788		Silicon - ICP-Acid Digest-Liquid	ug/mL	142.0	1.78e-01	1.50e+02	154.0	152.0	2.63	n/a	101.2	n/a
S981002788		Tin - ICP-Acid Digest-Liquid	ug/mL	96.80	< 5.00e-02	1.60e+02	161.0	160.5	0.62	n/a	50.00	n/a
S981002788		Strontium - ICP-Acid Digest-Liquid	ug/mL	96.80	< 1.00e-02	< 10.00	< 1.00e1	n/a	n/a	n/a	98.60	n/a
S981002788		Tantalum - ICP-Acid Digest-Liquid	ug/mL	n/a	< 5.00e-02	< 50.00	< 5.00e1	n/a	n/a	n/a	50.00	n/a
S981002788		Thorium - ICP-Acid Digest-Liquid	ug/mL	n/a	< 5.00e-02	< 50.00	< 5.00e1	n/a	n/a	n/a	50.00	n/a
S981002788		Titanium - ICP-Acid Digest-Liquid	ug/mL	97.40	< 1.00e-02	< 10.00	< 1.00e1	n/a	n/a	n/a	98.60	n/a
S981002788		Uranium - ICP-Acid Digest-Liquid	ug/mL	92.30	< 5.00e-01	< 5.00e+02	< 5.00e2	n/a	n/a	n/a	95.20	n/a
S981002788		Vanadium - ICP-Acid Digest-Liquid	ug/mL	96.20	< 5.00e-02	< 50.00	< 5.00e1	n/a	n/a	n/a	100.8	n/a
S981002788		Tungsten - ICP-Acid Digest-Liquid	ug/mL	n/a	< 5.00e-02	4.01e+02	404.0	402.5	0.75	n/a	50.00	n/a
S981002788		Yttrium - ICP-Acid Digest-Liquid	ug/mL	n/a	< 5.00e-02	< 50.00	< 5.00e1	n/a	n/a	n/a	50.00	n/a
S981002788		Zinc - ICP-Acid Digest-Liquid	ug/mL	92.40	1.00e-02	26.10	26.10	26.10	0.00	n/a	50.00	n/a
S981002788		Aluminum - ICP-Acid Digest-Liquid	ug/mL	97.00	< 1.00e-02	16.90	16.90	16.45	5.47	n/a	103.0	n/a
S981002788		Zirconium - ICP-Acid Digest-Liquid	ug/mL	97.78	< 1.51e-02	< 1.80E-2	< 1.80E-2	n/a	n/a	n/a	94.07	n/a
S981002788		Beta in Liquid Samples	uCi/mL	110.0	< 1.22e-01	5.46e+02	557.0	551.5	1.99	n/a	2.40e-02	5.00e+02
S981002788		Antimony by GFAA	ug/L	99.20	< 1.00e-01	< 100	< 100e1	n/a	n/a	n/a	100.0	n/a
S981002788		Silver - ICP-Acid Digest-Liquid	ug/mL	95.70	< 1.00e-02	< 10.00	< 1.00e1	n/a	n/a	n/a	100.0	n/a
S981002789		Aluminum - ICP-Acid Digest-Liquid	ug/mL	95.00	8.00e-02	3.59e+04	3.58e+04	3.58e+04	0.28	n/a	50.00	n/a

Sample #	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Error
S981002782	8	Arsenic -ICP-Acid Digest-Liq	ug/mL	96.40	< 1.00e-01	< 1.00e+02	< 1.00e-2	n/a	n/a	n/a	100.0	n/a
S981002783	8	Boron -ICP-Acid Digest-Liquid	ug/mL	104.4	4.78e-01	97.10	107.6	102.0	9.70	n/a	50.00	n/a
S981002784	8	Boron -ICP-Acid Digest-Liquid	ug/mL	95.20	< 1.00e-01	< 1.00e+02	< 1.00e-2	n/a	n/a	n/a	50.00	n/a
S981002785	8	Beryllium -ICP-Acid Digest-Liquid	ug/mL	105.0	< 5.00e-03	< 5.000	< 5.000	< 5.000	n/a	n/a	5.000	n/a
S981002786	8	Calcium -ICP-Acid Digest-Liq	ug/mL	98.00	1.34e-01	< 1.00e+02	< 1.00e-2	n/a	n/a	n/a	100.0	n/a
S981002787	8	Calcium -ICP-Acid Digest-Liq	ug/mL	98.80	< 5.00e-03	< 5.000	< 5.000	< 5.000	n/a	n/a	5.000	n/a
S981002788	8	Cobalt -ICP-Acid Digest-Liq	ug/mL	94.40	< 2.00e-02	< 2.000	< 2.000	< 2.000	n/a	n/a	20.00	n/a
S981002789	8	Cadmium -ICP-Acid Digest-Liq	ug/mL	95.40	< 1.00e-02	1.29e+02	129.0	129.0	0.00	n/a	10.00	n/a
S981002790	8	Copper -ICP-Acid Digest-Liquid	ug/mL	91.00	< 1.00e-02	< 1.000	< 1.00e-1	n/a	n/a	n/a	10.00	n/a
S981002791	8	Iron -ICP-Acid Digest-Liquid	ug/mL	96.00	< 5.00e-02	< 5.000	< 5.00e-1	n/a	n/a	n/a	50.0	n/a
S981002792	8	Potassium -ICP-Acid Digest-Liq	ug/mL	96.00	< 5.00e-01	3.51e+04	3.55e+04	3.55e+04	2.25	n/a	500.0	n/a
S981002793	8	Lithium -ICP-Acid Digest-Liq	ug/mL	96.80	< 1.00e-02	< 1.000	< 5.00e-1	n/a	n/a	n/a	50.00	n/a
S981002794	8	Lithium -ICP-Acid Digest-Liq	ug/mL	93.80	< 1.00e-01	< 1.000	< 1.00e-1	n/a	n/a	n/a	10.00	n/a
S981002795	8	Magnesium -ICP-Acid Digest-Liq	ug/mL	93.80	< 1.00e-01	< 1.00e+02	< 1.00e-2	n/a	n/a	n/a	100.0	n/a
S981002796	8	Magnesium -ICP-Acid Digest-Liq	ug/mL	93.80	< 1.00e-02	< 1.000	< 1.00e-1	n/a	n/a	n/a	10.00	n/a
S981002797	8	Sodium -ICP-Acid Digest-Liquid	ug/mL	97.80	< 5.00e-02	74.90	76.20	75.55	1.72	n/a	50.00	n/a
S981002798	8	Nickel -ICP-Acid Digest-Liquid	ug/mL	113.6	6.36e-01	2.82e+05	2.77e+05	2.80e+05	1.79	n/a	100.0	n/a
S981002799	8	Phosphorus -ICP-Acid Adjust-Liq	ug/mL	96.60	< 2.00e-02	< 2.000	< 2.00e-1	n/a	n/a	n/a	200.0	n/a
S981002799	8	Lead -ICP-Acid Digest-Liquid	ug/mL	92.60	< 1.00e-01	< 1.00e+02	< 1.00e-2	n/a	n/a	n/a	100.0	n/a
S981002799	8	Sulfur -ICP-Acid Digest-Liquid	ug/mL	93.40	< 1.00e-01	4.66e+02	465.0	465.5	0.21	n/a	60.00	n/a
S981002799	8	Selenium -ICP-Acid Digest-Liq	ug/mL	96.20	< 5.00e-02	< 60.00	< 60.00	< 60.00	n/a	n/a	100.0	n/a
S981002799	8	Selenium -ICP-Acid Digest-Liq	ug/mL	92.20	< 1.00e-01	< 1.00e+02	< 1.00e-2	n/a	n/a	n/a	50.00	n/a
S981002799	8	Silicon -ICP-Acid Digest-Liq	ug/mL	142.0	1.78e-01	1.42e+02	169.0	155.5	17.4	n/a	50.00	n/a
S981002799	8	Strontium -ICP-Acid Digest-Liq	ug/mL	n/a	< 5.00e-02	1.58e+02	165.0	161.5	4.33	n/a	50.00	n/a
S981002799	8	Strontium -ICP-Acid Digest-Liq	ug/mL	96.80	< 1.00e-02	< 1.000	< 1.00e-1	n/a	n/a	n/a	10.00	n/a
S981002799	8	Tantalum -ICP-Acid Digest-Liq	ug/mL	n/a	< 5.00e-02	< 50.00	< 5.00e-1	n/a	n/a	n/a	50.00	n/a
S981002799	8	Thorium -ICP-Acid Digest-Liq	ug/mL	97.40	< 1.00e-02	< 1.000	< 1.00e-1	n/a	n/a	n/a	10.00	n/a
S981002799	8	Titanium -ICP-Acid Digest-Liq	ug/mL	92.30	< 5.00e-01	< 5.00e+02	< 5.00e-2	n/a	n/a	n/a	500.0	n/a
S981002799	8	Vanadium -ICP-Acid Digest-Liq	ug/mL	96.20	< 5.00e-02	342.0	< 342.0	322.0	12.4	n/a	50.00	n/a
S981002799	8	Tungsten -ICP-Acid Digestion	ug/mL	n/a	< 5.00e-02	< 50.00	< 5.00e-1	n/a	n/a	n/a	50.00	n/a
S981002799	8	Zinc -ICP-Acid Digest-Liquid	ug/mL	92.40	1.00e-02	25.10	26.00	25.55	3.52	n/a	10.00	n/a
S981002799	8	Zinc -ICP-Acid Digest-Liquid	ug/mL	97.00	< 1.00e-02	14.80	16.80	15.80	12.7	n/a	10.00	n/a
S981002799	8	Zirconium -ICP-Acid Digest-Liq	ug/mL	97.78	< 1.51e-02	1.81e+02	< 2.26e-2	n/a	n/a	n/a	2.40e-02	1.01E-01
S981002799	8	Alpha in Liquid Samples	uc/L	110.0	< 1.22e-01	5.37e+02	552.0	544.5	2.75	n/a	1.43e-01	3.22E-01
S981002799	8	Antimony by GFAA	ug/L	99.20	< 1.00e-01	< 100.0	< 100.0	n/a	n/a	n/a	100.0	n/a
S981002790	8	Silver -ICP-Acid Digest-Liquid	ug/mL	95.70	< 1.00e-02	< 1.000	< 1.00e-1	n/a	n/a	n/a	10.00	n/a
S981002790	8	Aluminum -ICP-Acid Digest-Liq	ug/mL	95.00	8.00e-02	3.44e+04	3.63e+04	3.54e+04	5.37	n/a	50.00	n/a
S981002790	8	Arsenic -ICP-Acid Digest-Liq	ug/mL	96.60	< 1.00e-01	< 1.00e+02	110.0	n/a	n/a	n/a	100.0	n/a
S981002790	8	Boron -ICP-Acid Digest-Liquid	ug/mL	104.4	4.78e-01	1.03e+02	96.80	99.90	6.21	n/a	50.00	n/a
S981002790	8	Barium -ICP-Acid Digest-Liquid	ug/mL	95.20	< 5.00e-02	< 5.000	< 5.00e-1	n/a	n/a	n/a	5.000	n/a
S981002790	8	Beryllium -ICP-Acid Digest-Liq	ug/mL	105.0	< 5.00e-03	< 5.000	< 5.00e-2	n/a	n/a	n/a	5.000	n/a
S981002790	8	Calcium -ICP-Acid Digest-Liq	ug/mL	98.00	1.34e-01	< 1.00e+02	< 1.00e-2	n/a	n/a	n/a	100.0	n/a
S981002790	8	Cadmium -ICP-Acid Digest-Liq	ug/mL	95.80	< 5.00e-03	< 5.000	< 5.00e-2	n/a	n/a	n/a	5.000	n/a
S981002790	8	Cobalt -ICP-Acid Digest-Liq	ug/mL	94.40	< 2.00e-02	< 2.000	< 2.00e-1	n/a	n/a	n/a	20.00	n/a
S981002790	8	Chromium -ICP-Acid Digest-Liq	ug/mL	95.40	< 1.00e-02	1.22e+02	< 131.0	126.5	7.11	n/a	10.00	n/a
S981002790	8	Copper -ICP-Acid Digest-Liquid	ug/mL	91.00	< 1.00e-02	< 1.000	< 1.00e-1	n/a	n/a	n/a	10.00	n/a
S981002790	8	Iron -ICP-Acid Digest-Liquid	ug/mL	96.00	< 5.00e-02	< 50.00	< 5.00e-1	n/a	n/a	n/a	50.00	n/a
S981002790	8	Potassium -ICP-Acid Digest-Liq	ug/mL	95.00	< 5.00e-01	3.53e+04	3.43e+04	3.43e+04	5.83	n/a	500.0	n/a

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Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S981002700	8	Lanthanum - ICP-Acid Digest-Liq	ug/mL	96.80	< 5.00e-02	< 50.00	< 5.00e-01	n/a	n/a	n/a	50.00	n/a
S981002700	8	Lithium - ICP-Acid Digest-Liq	ug/mL	95.80	< 1.00e-02	< 10.00	< 1.00e-01	n/a	n/a	n/a	10.00	n/a
S981002700	8	Magnesium - ICP-Acid Digest-Liq	ug/mL	92.80	< 1.00e-01	< 1.00e+02	< 1.00e-02	n/a	n/a	n/a	100.0	n/a
S981002700	8	Manganese - ICP-Acid Digest-Liq	ug/mL	92.80	< 1.00e-02	< 10.00	< 1.00e-01	n/a	n/a	n/a	10.00	n/a
S981002700	8	Molybdenum - ICP-Acid Digest-Liq	ug/mL	97.80	< 5.00e-02	72.90	2.77e+05	75.20	6.12	n/a	50.00	n/a
S981002700	8	Sodium - ICP-Acid Digest-Liq	ug/mL	113.6	6.36e-01	2.66e+05	2.77e+05	2.72e+05	4.41	n/a	100.0	n/a
S981002700	8	Nickel - ICP-Acid Digest-Liq	ug/mL	96.60	< 2.00e-02	< 20.00	< 2.00e-01	n/a	n/a	n/a	20.00	n/a
S981002700	8	Phosphorus - ICP-Acid Digest-Liq	ug/mL	96.60	< 2.00e-01	< 2.00e+02	< 2.00e-02	n/a	n/a	n/a	200.0	n/a
S981002700	8	Ce3+ - ICP-Acid Digest-Liq	ug/mL	92.60	< 1.00e-01	< 1.00e+02	< 1.00e-02	n/a	n/a	n/a	100.0	n/a
S981002700	8	Sulfur - ICP-Acid Digest-Liq	ug/mL	95.40	< 1.00e-01	4.47e+02	4.80.0	4.63.5	7.12	n/a	100.0	n/a
S981002700	8	Antimony - ICP-Acid Digest-Liq	ug/mL	96.20	< 5.00e-02	< 60.00	< 5.00e-01	n/a	n/a	n/a	60.00	n/a
S981002700	8	Selenium - ICP-Acid Digest-Liq	ug/mL	92.20	< 1.00e-01	< 1.00e+02	< 1.00e-02	n/a	n/a	n/a	100.0	n/a
S981002700	8	Strontium - ICP-Acid Digest-Liq	ug/mL	142.0	1.78e-01	1.58e+02	1.55.0	154.0	1.30	n/a	50.00	n/a
S981002700	8	Tin - ICP-Acid Digest-Liq	ug/mL	n/a	< 5.00e-02	1.60e+02	1.65.0	162.5	3.08	n/a	50.00	n/a
S981002700	8	Tantalum - ICP-Acid Digest-Liq	ug/mL	96.80	< 1.00e-02	< 10.00	< 1.00e-01	n/a	n/a	n/a	10.00	n/a
S981002700	8	Tantalum - ICP-Acid Digestion	ug/mL	n/a	< 5.00e-02	< 50.00	< 5.00e-01	n/a	n/a	n/a	50.00	n/a
S981002700	8	Titanium - ICP-Acid Digestion	ug/mL	n/a	< 5.00e-02	< 50.00	< 5.00e-01	n/a	n/a	n/a	50.00	n/a
S981002700	8	Titanium - ICP-Acid Digest-Liq	ug/mL	97.40	< 1.00e-02	< 10.00	< 1.00e-01	n/a	n/a	n/a	10.00	n/a
S981002700	8	Vanadium - ICP-Acid Digest-Liq	ug/mL	92.30	< 5.00e-01	< 5.00e+02	< 5.00e-02	n/a	n/a	n/a	500.0	n/a
S981002700	8	Vanadium - ICP-Acid Digestion	ug/mL	96.20	< 5.00e-02	< 50.00	< 5.00e-01	n/a	n/a	n/a	50.00	n/a
S981002700	8	Yttrium - ICP-Acid Digestion	ug/mL	n/a	< 5.00e-02	3.48e+02	410.0	379.0	16.4	n/a	50.00	n/a
S981002700	8	Zinc - ICP-Acid Digest-Liq	ug/mL	n/a	< 5.00e-02	< 50.00	< 5.00e-01	n/a	n/a	n/a	50.00	n/a
S981002700	8	Zirconium - ICP-Acid Digest-Liq	ug/mL	92.40	1.00e-02	25.00	27.10	26.05	8.06	n/a	10.00	n/a
S981002700	8	Zirconium - ICP-Acid Digest-Liq	ug/mL	97.00	< 1.00e-02	16.00	16.70	16.35	4.28	n/a	10.00	n/a
S981002700	8	Alpha in Liquid Samples	ug/mL	97.78	< 1.51e-02	< 1.36e+02	< 1.36e+02	n/a	n/a	n/a	2.40e-02	5.00E+02
S981002700	8	Beta in Liquid Samples	ug/mL	110.0	< 1.22e-01	5.21e+02	547.0	534.0	4.87	n/a	1.43e-01	3.27E+01
S981002701	6	Thallium by GFAA	ug/L	97.00	< 1.000	< 50	< 50	n/a	n/a	n/a	40.00	n/a
S981002702	6	Thallium by GFAA	ug/L	97.00	< 1.000	< 50	< 50	n/a	n/a	n/a	50.00	n/a
S981002703	6	Thallium by GFAA	ug/L	97.00	< 1.000	< 50	< 50	n/a	n/a	n/a	50.00	n/a

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Table 1. Data Summary Report
AH-101 LAW

RISER: 22

SEGMENT #: Field Blank

SEGMENT PORTION: Field Blank

Sample #	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Error
S981002794		Tot. Organic Carbon by Coul.	ug/mL	98.33	3.00e-01	2.37e+02	215.0	226.0	9.73	n/a	55.00	n/a
S981002794		11C by Acid/coulometry	ug/mL	99.67	3.800	< 23.00	29.00	26.00	23.1	n/a	5.000	n/a
S981002794		10C by Presulfate/Coulometry	ug/mL	93.33	12.20	< 44.00e-1	44.00e-1	n/a	n/a	n/a	4.00	n/a
S981002794	A	Uranium-233 by ICP/MS Acid Add	ug/mL	n/a	4.73e-05	4.73e-04	n/a	n/a	n/a	n/a	4.73e-04	n/a
S981002794	A	Uranium-234 by ICP/MS Acid Add	ug/mL	n/a	5.49e-05	5.49e-04	n/a	n/a	n/a	n/a	1.00e-03	n/a
S981002794	A	Uranium-235 by ICP/MS Acid Add	ug/mL	102.4	3.79e-05	3.79e-04	3.79e-4	n/a	n/a	n/a	3.79e-04	n/a
S981002794	A	Uranium-236 by ICP/MS Acid Add	ug/mL	n/a	3.49e-05	3.49e-04	n/a	n/a	n/a	n/a	3.49e-04	n/a
S981002794	A	Uranium-238 by ICP/MS Acid Add	ug/mL	102.0	5.16e-05	2.12e-03	2.18e-03	2.15e-03	2.79	n/a	1.00e-03	n/a
S981002794	D	Tc 99 by ICP/MS Acid Addition	ug/mL	79.69	< 2.00e-6	1.01e-03	9.68e-04	9.89e-04	4.25	n/a	2.00e-05	n/a
S981002794	D	Sn 126 by ICP/MS Acid Addition	ug/mL	n/a	< 1.50e-04	< 1.50e-3	< 1.50e-3	n/a	n/a	n/a	2.00e-03	n/a
S981002794	D	Cs 135 by ICP/MS Acid Addition	ug/mL	98.50	2.40e-06	8.18e-04	8.04e-04	8.11e-04	1.73	n/a	2.00e-05	n/a
S981002794	D	Cs 137 by ICP/MS Acid Addition	ug/mL	n/a	< 2.00e-6	1.07e-04	9.20e-05	9.75e-05	11.3	n/a	2.00e-05	n/a
S981002794	D	Cs 137 by ICP/MS Acid Addition	ug/mL	n/a	< 2.00e-6	1.07e-04	9.20e-05	9.85e-05	17.3	n/a	2.00e-05	n/a
S981002794	A	Protactinium-231 by ICP/MS	ug/mL	n/a	< 1.32e-05	< 1.32e-4	< 1.32e-4	n/a	n/a	n/a	1.32e-04	n/a
S981002794	A	Neptunium-237 by ICP/MS	ug/mL	140.2	n/a	< 1.88e-04	< 1.88e-4	n/a	n/a	n/a	1.88e-04	n/a
S981002794	A	Plutonium-239 by ICP/MS	ug/mL	150.5	< 1.49e-05	< 1.49e-04	< 1.49e-4	n/a	n/a	n/a	1.49e-04	n/a
S981002794	A	Plutonium-240 by ICP/MS	ug/mL	n/a	< 5.64e-06	< 5.64e-5	< 5.64e-5	n/a	n/a	n/a	5.64e-05	n/a
S981002794	A	Pu/Am-241 by ICP/MS	ug/mL	n/a	< 1.37e-05	< 1.37e-04	< 1.37e-4	n/a	n/a	n/a	1.37e-04	n/a
S981002794	A	Pu-244/Cm-244 by ICP/MS	ug/mL	0.30	< 8.75e-06	< 8.75e-05	< 8.75e-5	n/a	n/a	n/a	8.75e-05	n/a
S981002794	A	Am-243/Cm-243 by ICP/MS	ug/mL	n/a	< 1.32e-05	< 1.32e-04	< 1.32e-4	n/a	n/a	n/a	1.32e-04	n/a
S981002794	A	Pu-244/Cm-244 by ICP/MS	ug/mL	n/a	< 7.92e-06	< 7.92e-05	< 7.92e-5	n/a	n/a	n/a	7.92e-05	n/a
S981002794	A	Cobalt-60 by ICP/MS	ug/mL	105.9	< 5.38e-03	< 5.38e-05	< 5.38e-5	n/a	n/a	n/a	2.89e-05	n/a
S981002794	A	Antimony-125 by ICP/MS	ug/mL	101.7	< 1.47e-02	< 1.47e-03	< 1.47e-3	n/a	n/a	n/a	7.91e-05	n/a
S981002794	A	Antimony-125 by ICP/MS	ug/mL	101.7	< 6.44e-03	< 6.44e-05	< 6.44e-5	n/a	n/a	n/a	7.89e-05	n/a
S981002794	A	Europium-154 by ICP/MS	ug/mL	n/a	< 1.72e-02	< 1.72e-03	< 1.72e-3	1.21e-03	7.41	n/a	n/a	4.49
S981002794	A	Europium-154 by ICP/MS	ug/mL	n/a	< 8.75e-03	< 8.75e-05	< 8.75e-5	n/a	n/a	n/a	8.75e-05	n/a
S981002794	A	C-14 Small Volume	ug/mL	87.90	< 3.91e-05	< 3.91e-06	< 3.91e-6	7.92e-06	20.1	n/a	4.31e-05	n/a
S981002794	A	Alpha in Liquid Samples	ug/mL	96.11	< 2.02e-06	< 2.02e-06	< 2.02e-6	7.13e-06	20.1	n/a	2.00e-06	4.82e+00
S981002794	A	Beta in Liquid Samples	ug/mL	109.0	< 9.02e-06	< 9.02e-06	< 9.02e-6	3.01e-02	0.00	n/a	3.01e-02	3.71e+01
S981002795		Antimony by GFAA	ug/L	99.20	< 1.000	< 100	< 100	n/a	n/a	n/a	100.0	4.28E-01
S981002795		Thallium by GFAA	%	105.7	< 1.000	< 1.000	1.500	1.250	40.0	n/a	1.000	n/a
S981002795		Solids % - Gravimetric	%	105.7	< 1.000	< 1.000	1.500	1.250	40.0	n/a	1.000	n/a
S981002795		Technetium-99 Liq. Scint.	ug/mL	89.36	< 8.60e-05	< 8.60e-05	< 8.60e-5	n/a	n/a	n/a	8.32e-05	n/a
S981002795		Strontium-89/90 High Level	ug/mL	101.9	2.53e-04	2.97e-04	2.92e-04	2.95e-04	1.70	n/a	1.90e-06	9.64E+00
S981002795		Selenium-79 by Liquid Scint.	ug/mL	n/a	3.55e-05	3.79e-05	4.39e-05	4.09e-05	14.7	n/a	5.69e-06	3.93E+00
S981002795		Pu237 by TTA Extraction	ug/mL	69.70	2.74e-05	< 3.08e-05	< 3.08e-5	n/a	n/a	n/a	4.71e-05	3.43E+02
S981002795		Iodine-129 Waste Tank Samples	ug/mL	91.52	< 3.99e-05	< 3.99e-05	< 3.99e-5	n/a	n/a	n/a	5.77e-05	0.00E+00
S981002795		Tridium By Lachat	ug/mL	99.45	< 4.74e-05	< 4.74e-05	< 4.74e-5	n/a	n/a	n/a	3.13e-04	6.11E+00
S981002795		Am-241 by Extraction	ug/mL	92.95	< 3.15e-05	< 3.15e-04	< 3.15e-4	n/a	n/a	n/a	2.66e-06	1.00E+02
S981002795		Cm-243/244 by Extraction	ug/mL	100.2	< 1.00e-02	< 2.66e-06	< 3.12E-6	n/a	n/a	n/a	2.66e-06	1.00E+02
S981002796		Cyanide Water Distillation	ug/mL	91.80	< 1.00e-02	< 5.50E-01	< 5.50E-1	n/a	n/a	n/a	5.50E-01	n/a
S981002796		Mercury by CVA4 (PE) with FIAS	ug/mL	97.80	< 7.00e-05	< 2.8e-2	< 2.8e-2	n/a	n/a	n/a	2.80e-02	n/a
S981002796		Ammonia by ISE Std Additions	ug/mL	98.72	< 10.00	< 10.00	< 10.00	n/a	n/a	n/a	10.00	n/a
S981002796		OH- by Pot. Titration	ug/mL	101.2	< 25300.0	< 1.25e+02	< 1.25	n/a	n/a	n/a	125.0	n/a

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Sample#	R.#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	ppm %	Spk Rec. %	Det Limit	Count Err%
S98T002766	D	Specific Gravity	Sp.G.	98.92	n/a	9.91e-01	9.85e-01	9.88e-01	n/a	n/a	1.00e-03	n/a
S98T002766	D	Silver-ICP-Acid Dil.	ug/mL	101.0	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T002766	D	Aluminum-ICP-Acid Dil.	ug/mL	98.40	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T002766	D	Arsenic-ICP-Acid Dil.	ug/mL	103.2	<1.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	n/a	2.00e-01	n/a
S98T002766	D	Boron-ICP-Acid Dil.	ug/mL	98.60	<5.00e-02	1.920	1.940	1.930	1.02	n/a	1.00e-01	n/a
S98T002766	D	Barium-ICP-Acid Dil.	ug/mL	99.20	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T002766	D	Beryllium-ICP-Acid Dil.	ug/mL	101.4	<5.00e-03	<1.00e-02	<1.00e-02	n/a	n/a	n/a	1.00e-02	n/a
S98T002766	D	Calcium-ICP-Acid Dil.	ug/mL	101.6	<1.00e-01	7.48e-01	7.24e-01	7.36e-01	3.26	n/a	2.00e-01	n/a
S98T002766	D	Cadmium-ICP-Acid Dil.	ug/mL	102.0	<5.00e-03	<1.00e-02	<1.00e-02	n/a	n/a	n/a	1.00e-02	n/a
S98T002766	D	Cobalt-ICP-Acid Dil.	ug/mL	100.4	<1.00e-02	<4.00e-02	<4.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T002766	D	Chromium-ICP-Acid Dil.	ug/mL	100.0	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T002766	D	Copper-ICP-Acid Dil.	ug/mL	95.20	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T002766	D	Iron-ICP-Acid Dil.	ug/mL	102.8	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T002766	D	Potassium-ICP-Acid Dil.	ug/mL	102.6	<5.00e-01	<1.000	<1.0060	n/a	n/a	n/a	1.000	n/a
S98T002766	D	Lanthanum-ICP-Acid Dil.	ug/mL	99.80	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T002766	D	Lithium-ICP-Acid Dil.	ug/mL	100.0	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T002766	D	Magnesium-ICP-Acid Dil.	ug/mL	101.8	<1.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	n/a	2.00e-01	n/a
S98T002766	D	Manganese-ICP-Acid Dil.	ug/mL	99.20	<5.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T002766	D	Molybdenum-ICP-Acid Dil.	ug/mL	100.6	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T002766	D	Sodium-ICP-Acid Dil.	ug/mL	103.0	<1.00e-01	5.410	5.600	5.505	3.45	n/a	2.00e-01	n/a
S98T002766	D	Nickel-ICP-Acid Dil.	ug/mL	100.0	<2.00e-02	<4.00e-02	<4.00e-02	n/a	n/a	n/a	4.00e-02	n/a
S98T002766	D	Phosphorus-ICP-Acid Dil.	ug/mL	98.40	<2.00e-01	<4.00e-01	<4.00e-01	n/a	n/a	n/a	4.00e-01	n/a
S98T002766	D	Lead-ICP-Acid Dil.	ug/mL	100.0	<1.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	n/a	2.00e-01	n/a
S98T002766	D	Sulfur-ICP-Acid Dil.	ug/mL	98.20	<1.00e-01	4.04e-01	3.88e-01	3.96e-01	4.04	n/a	1.20e-01	n/a
S98T002766	D	Selenium-ICP-Acid Dil.	ug/mL	100.4	<6.00e-02	<1.20e-01	<1.20e-01	n/a	n/a	n/a	2.00e-01	n/a
S98T002766	D	Antimony-ICP-Acid Dil.	ug/mL	95.40	<1.00e-01	<2.00e-01	<2.00e-01	n/a	n/a	n/a	2.00e-01	n/a
S98T002766	D	Silicon-ICP-Acid Dil.	ug/mL	97.80	1.04e-01	4.860	4.860	4.860	0.00	n/a	1.00e-01	n/a
S98T002766	D	Tin-ICP-Acid Dil.	ug/mL	103.6	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T002766	D	Strontium-ICP-Acid Dil.	ug/mL	100.2	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T002766	D	Tantalum-ICP-Acid Dil.	ug/mL	105.8	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T002766	D	Thorium-ICP-Acid Dil.	ug/mL	97.20	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T002766	D	Titanium-ICP-Acid Dil.	ug/mL	99.40	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T002766	D	Uranium-ICP-Acid Dil.	ug/mL	96.50	<5.00e-01	<1.000	<1.0060	n/a	n/a	n/a	1.000	n/a
S98T002766	D	Vanadium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T002766	D	Tungsten-ICP-Acid Dil.	ug/mL	100.8	<5.00e-02	<1.00e-01	<1.00e-01	n/a	n/a	n/a	1.00e-01	n/a
S98T002766	D	Yttrium-ICP-Acid Dil.	ug/mL	100.0	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T002766	D	Zinc-ICP-Acid Dil.	ug/mL	99.80	<1.00e-02	7.75e-02	7.58e-02	7.66e-02	2.22	n/a	2.00e-02	n/a
S98T002766	D	Zirconium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	<2.00e-02	<2.00e-02	n/a	n/a	n/a	2.00e-02	n/a
S98T002766	D	Iodide-IC-Dioxen 500 System 1	ug/mL	92.05	<2.00e-01	<1.03e+03	<1.0363	n/a	n/a	n/a	1.03e+03	n/a
S98T002766	D	Fluoride-IC-Dioxen 4000/4500	ug/mL	103.8	<1.20e-02	<3.60e-02	<3.60e-02	n/a	n/a	n/a	3.60e-02	n/a
S98T002766	D	Chloride-IC-Dioxen 4000/4500	ug/mL	108.1	<1.70e-02	<3.80e-01	<3.66e-01	3.75e-01	3.75	n/a	5.10e-02	n/a
S98T002766	D	Nitrite-IC - Dioxen 4000/4500	ug/mL	103.3	<1.09e-01	<3.7e-01	<3.74e-01	n/a	n/a	n/a	3.74e-01	n/a
S98T002766	D	Bromide by Ion Chromatograph	ug/mL	107.3	<1.25e-01	<3.75e-01	<3.75e-01	n/a	n/a	n/a	3.75e-01	n/a
S98T002766	D	Nitrate by IC-Dioxen 4000/4500	ug/mL	106.3	<1.25e-01	7.47e-01	7.58e-01	7.58e-01	2.77	n/a	4.17e-01	n/a
S98T002766	D	Phosphate-IC-Dioxen 4000/4500	ug/mL	106.6	<1.20e-01	<3.60e-01	<3.60e-01	n/a	n/a	n/a	3.60e-01	n/a
S98T002766	D	Sulfate by IC-Dioxen 4000/4500	ug/mL	104.7	<1.38e-01	1.209	1.150	1.179	5.08	n/a	4.14e-01	n/a

Table 1. Data Summary Report
AW-101 LAWRISER: 22
SEGMENT #: Composite

SEGMENT PORTION: Centrifuged Solids

Sample#	AF#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T002749		Aroclor-1016	ug/Kg	n/a	<860.0	<-3.34e+02	n/a	n/a	n/a	n/a	n/a	534
S98T002749		Aroclor-1221	ug/Kg	n/a	<860.0	<-3.34e+02	n/a	n/a	n/a	n/a	n/a	534
S98T002749		Aroclor-1232	ug/Kg	n/a	<860.0	<-3.34e+02	n/a	n/a	n/a	n/a	n/a	534
S98T002749		Aroclor-1242	ug/Kg	n/a	<860.0	<-3.34e+02	n/a	n/a	n/a	n/a	n/a	534
S98T002749		Aroclor-1248	ug/Kg	n/a	<860.0	<-3.34e+02	n/a	n/a	n/a	n/a	n/a	534
S98T002749		Aroclor-1254	ug/Kg	81.12	<860.0	<-3.34e+02	n/a	n/a	n/a	n/a	n/a	534
S98T002749		Aroclor-1260	ug/Kg	n/a	<860.0	<-3.34e+02	n/a	n/a	n/a	n/a	n/a	534
S98T002749		Tetrachloro-m-xylene	% Recovery	63.75	51.75	66.45	n/a	n/a	n/a	n/a	n/a	1
S98T002749		Decachlorobiphenyl	% Recovery	73.50	106.32	106.32	n/a	n/a	n/a	n/a	n/a	1
S98T002750		Aroclor-1016	ug/Kg	n/a	<860.0	<-1.14e+03	n/a	n/a	n/a	n/a	1.14E+03	n/a
S98T002750		Aroclor-1221	ug/Kg	n/a	<860.0	<-1.14e+03	n/a	n/a	n/a	n/a	1.14E+03	n/a
S98T002750		Aroclor-1232	ug/Kg	n/a	<860.0	<-1.14e+03	n/a	n/a	n/a	n/a	1.14E+03	n/a
S98T002750		Aroclor-1242	ug/Kg	n/a	<860.0	<-1.14e+03	n/a	n/a	n/a	n/a	1.14E+03	n/a
S98T002750		Aroclor-1248	ug/Kg	n/a	<860.0	<-1.14e+03	n/a	n/a	n/a	n/a	1.14E+03	n/a
S98T002750		Aroclor-1254	ug/Kg	81.12	<860.0	<-1.14e+03	n/a	n/a	n/a	79.74	1.14E+03	n/a
S98T002750		Aroclor-1260	ug/Kg	n/a	<860.0	<-1.14e+03	n/a	n/a	n/a	n/a	1.14E+03	n/a
S98T002750		Tetrachloro-m-xylene	% Recovery	63.75	51.75	59.05	n/a	n/a	n/a	n/a	60.49	1
S98T002750		Decachlorobiphenyl	% Recovery	73.50	80.76	104.42	n/a	n/a	n/a	n/a	81.63	1
S98T002751		Aroclor-1016	ug/Kg	n/a	<860.0	<-5.10e+02	n/a	n/a	n/a	n/a	n/a	510
S98T002751		Aroclor-1221	ug/Kg	n/a	<860.0	<-5.10e+02	n/a	n/a	n/a	n/a	n/a	510
S98T002751		Aroclor-1232	ug/Kg	n/a	<860.0	<-5.10e+02	n/a	n/a	n/a	n/a	n/a	510
S98T002751		Aroclor-1242	ug/Kg	n/a	<860.0	<-5.10e+02	n/a	n/a	n/a	n/a	n/a	510
S98T002751		Aroclor-1248	ug/Kg	n/a	<860.0	<-5.10e+02	n/a	n/a	n/a	n/a	n/a	510
S98T002751		Aroclor-1254	ug/Kg	81.12	<860.0	<-5.10e+02	n/a	n/a	n/a	n/a	n/a	510
S98T002751		Aroclor-1260	ug/Kg	n/a	<860.0	<-5.10e+02	n/a	n/a	n/a	n/a	n/a	510
S98T002751		Tetrachloro-m-xylene	% Recovery	63.75	51.75	65.62	n/a	n/a	n/a	n/a	n/a	1
S98T002751		Decachlorobiphenyl	% Recovery	73.50	80.76	96.29	n/a	n/a	n/a	n/a	n/a	1

Supernate

Sample#	AF#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T002785		Aroclor-1016	ug/L	n/a	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	n/a	4
S98T002785		Aroclor-1221	ug/L	n/a	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	n/a	4
S98T002785		Aroclor-1232	ug/L	n/a	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	n/a	4
S98T002785		Aroclor-1242	ug/L	n/a	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	n/a	4
S98T002785		Aroclor-1248	ug/L	n/a	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	n/a	4
S98T002785		Aroclor-1254	ug/L	90	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	72.04	4
S98T002785		Aroclor-1260	ug/L	n/a	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	n/a	4
S98T002785		Tetrachloro-m-xylene	% Recovery	54.12	33.50	28.00	26.50	n/a	n/a	n/a	21.14	1
S98T002785		Decachlorobiphenyl	% Recovery	3.98	13.62	63.00	64.88	n/a	n/a	n/a	71.33	1
S98T002786		Aroclor-1016	ug/L	n/a	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	n/a	4
S98T002786		Aroclor-1221	ug/L	n/a	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	n/a	4
S98T002786		Aroclor-1232	ug/L	n/a	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	n/a	4
S98T002786		Aroclor-1242	ug/L	n/a	<4,000	< 4,000	<4,00e0	n/a	n/a	n/a	n/a	4

Sample#	Analite	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T002786	Arador-1248	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002786	Arador-1254	ug/L	90	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002786	Arador-1260	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002786	Tetrachloro-m-xylene	Surr	54.12	33.50	0.13	4.23	n/a	n/a	n/a	1	n/a
S98T002787	Decachlorobiphenyl	Surr	3.98	13.62	25.00	50.38	n/a	n/a	n/a	1	n/a
S98T002787	Arador-1016	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002787	Arador-1221	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002787	Arador-1232	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002787	Arador-1242	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002787	Arador-1248	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002787	Arador-1254	ug/L	90	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002787	Arador-1260	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002787	Tetrachloro-m-xylene	Surr	54.12	33.50	0.41	0.00	n/a	n/a	n/a	1	n/a
S98T002787	Decachlorobiphenyl	Surr	3.98	13.62	50.75	65.63	n/a	n/a	n/a	1	n/a

RISER: 22
SEGMENT #: Field Blank

SEGMENT PORTION: Field Blank

Sample#	Analite	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T002797	Arador-1016	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002797	Arador-1221	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002797	Arador-1232	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002797	Arador-1242	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002797	Arador-1248	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002797	Arador-1254	ug/L	90	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002797	Arador-1260	ug/L	n/a	<4,000	< 4,000	<4,000	n/a	n/a	n/a	4	n/a
S98T002797	Tetrachloro-m-xylene	Surr	54.12	33.50	0.00	0.00	n/a	n/a	n/a	1	n/a
S98T002797	Decachlorobiphenyl	Surr	3.98	13.62	31.75	16.53	n/a	n/a	n/a	1	n/a

Table 1. Data Summary Report
AM-101 LAH

RISER: 22
SEGMENT #: 1AH-98-1

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample #	Ri #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err %
S98T001282		Volume % Solids	%	n/a	n/a	61.60	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S98T001282		Volume % Settled Solids	%	n/a	n/a	1.00e+02	n/a	n/a	n/a	n/a	1.00e-01	n/a	n/a

Table 1. Data Summary Report
AM-101 LAW

RISER: 22
SEGMENT #: 1M-98-2

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample #	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S981001283		Volume % Solids	%	N/A	N/A	58.30	N/A	N/A	N/A	N/A	N/A	N/A
S981001283		Volume % Settled Solids	%	N/A	N/A	1.00e+02	N/A	N/A	N/A	N/A	1.00e-01	N/A

Table 1. Data Summary Report
AH-101 LAH

RISER: 22
SEGMENT #: 1AU-98-3

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S981001284		Volume % Solids	%	n/a	n/a	33.30	n/a	n/a	n/a	n/a	n/a	n/a
S981001284		Volume % Settled Solids	%	n/a	n/a	21.10	n/a	n/a	n/a	n/a	1.00e-01	n/a

Table 1. Data Summary Report
AM-101 LAH

RISER: 22
SEGMENT #: 1AH-98-4

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T001285		Volume % Solids	%	n/a	n/a	19.90	n/a	n/a	n/a	n/a	n/a	n/a
S98T001285		Volume % Settled Solids	%	n/a	n/a	31.60	n/a	n/a	n/a	n/a	1.00e-01	n/a

Table 1. Data Summary Report
AP-101 LAH

RISER: 22
SEGMENT #: 1A-98-5

SEGMENT PORTION: Supernate

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPN % Spk Rec %	Det Limit Count Err%
S98T001286		Volume % Solids	%	n/a	n/a	16.10	n/a	n/a	n/a	n/a
S98T001286		Volume % Settled Solids	%	n/a	n/a	16.80	n/a	n/a	n/a	1.00e-01

Table 1. Data Summary Report
AM-101 LAM

RISER: 22
SEGMENT #: 1AM-98-6

SEGMENT PORTION: Supernate

Sample #	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	% Spk Rec %	Det Limit	Count Err %
3981001287		Volume % Solids	%	N/A	N/A	11.20	N/A	N/A	N/A	N/A	N/A	N/A
3981001287		Volume % Settled Solids	%	N/A	N/A	16.50	N/A	N/A	N/A	N/A	1.00e-01	N/A

Table 1. Data Summary Report
AM-101 LAH

RISER: 22
SEGMENT #: 1A-98-7

SEGMENT PORTION: Supernate

Sample#	R. A#	Analvte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk. Rec. %	Det. Limit	Count	Err%
S98T001288		Volume % Solids	%	n/a	n/a	9.500	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S98T001288		Volume % Settled Solids	%	n/a	n/a	13.70	n/a	n/a	n/a	n/a	1.00e-01	n/a	n/a

Table 1. Data Summary Report
AM-101 LAH

RISER: 22
SEGMENT #: 1AM-98-8

SEGMENT PORTION: Supernate

Sample#	Rt #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec. %	Det Limit	Count Err%
S98T001289		Volume % Solids	%	n/a	n/a	12.10	n/a	n/a	n/a	n/a	n/a	n/a
S98T001289		Volume % Settled Solids	%	n/a	n/a	27.40	n/a	n/a	n/a	n/a	1.00e-01	n/a

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Table 1. Data Summary Report
AH-101 LAM

RISER: 22
SEGMENT #: 1AN-98-9

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample #	R/A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S98T001290		Volume % Solids	%	n/a	n/a	29.30	n/a	n/a	n/a	n/a	n/a	n/a	n/a
S98T001290		Volume % Settled Solids	%	n/a	n/a	35.80	n/a	n/a	n/a	n/a	1.00e-01	n/a	n/a

Table 1. Data Summary Report
AW-101 LAW

RISER: 22
SEGMENT #: 14W-98-10

SEGMENT PORTION: Sludge (from Liquid Grab Sample)

Sample #	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T001291		Volume % Solids	%	n/a	n/a	35.80	n/a	n/a	n/a	n/a	n/a	n/a
S98T001291		Volume % Settled Solids	%	n/a	n/a	44.20	n/a	n/a	n/a	n/a	1.00e-01	n/a

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SOLUBILITY SCREENING RESULTS

TABLE 2

HNF-1652 REV. 0

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Table 2. Solubility Screening Results
AM-101 LAW

RISER: 22
SEGMENT #: 100 PARTS COMP 25 PARTS DIL
SEGMENT PORTION: Centrifuged Solids

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003063		Solids % - Gravimetric	%	105.4	n/a	52.80	n/a	n/a	n/a	n/a	1.00e-02	n/a
S98T003063		TIC by Acid/Coulometry	ug/g	99.17	2.100	4.67e+03	n/a	n/a	n/a	104.0	5.000	n/a
S98T003063		TOC by Persulfate/Coulometry	ug/g	92.00	9.200	1.39e+04	n/a	n/a	n/a	111.0	40.00	n/a
S98T003062	F	Strontium-89/90 High Level	uCi/g	105.8	1.75e-01	93.60	n/a	n/a	n/a	n/a	4.20e-02	9.48E-01
S98T003062	F	Cobalt-60 by GE	uCi/g	105.8	<3.50e-02	46.32e-02	n/a	n/a	n/a	n/a	4.30e-02	n/a
S98T003062	F	Antimony-125 by GE	uCi/g	105.8	<8.50e-02	66.62e-02	n/a	n/a	n/a	n/a	6.62e-01	n/a
S98T003062	F	Cesium-137 by GE	uCi/g	102.0	1.86e-01	1.84e+02	n/a	n/a	n/a	n/a	n/a	0.450
S98T003062	F	Europium-154 by GE	uCi/g	n/a	<9.92e-02	<1.34e-01	n/a	n/a	n/a	n/a	1.34e-01	n/a
S98T003062	F	Europium-155 by GE	uCi/g	n/a	<2.60e-02	4.07e-01	n/a	n/a	n/a	n/a	4.07e-01	n/a
S98T003062	F	Alpha of Digested Solid	uCi/g	98.89	2.60e-02	3.34e-01	n/a	n/a	n/a	94.07	3.50e-02	1.92E+01
S98T003067	A	Aluminum -ICP-Acid Digest	ug/g	96.60	9.90e-02	1.19e+04	n/a	n/a	n/a	132.6	28.30	n/a
S98T003067	A	Chromium -ICP-Acid Digest	ug/g	95.40	<1.00e-02	9.59e+03	n/a	n/a	n/a	102.8	5.670	n/a
S98T003067	A	Sodium -ICP-Acid Digest	ug/g	126.0	9.45e-01	1.54e+05	n/a	n/a	n/a	<6.080e2	56.70	n/a
S98T003067	A	Phosphorus -ICP-Acid Digest	ug/g	94.40	<2.00e-01	4.92e+03	n/a	n/a	n/a	<1.990e2	113.0	n/a
S98T003067	A	Sulfur -ICP-Acid Digest	ug/g	90.60	<1.00e-01	2.27e+03	n/a	n/a	n/a	102.4	56.70	n/a
S98T003067	A	Silicon -ICP-Acid Digest	ug/g	33.20	7.30e-01	6.54e+02	n/a	n/a	n/a	32.00	28.30	n/a
S98T003092	W	OH- by Pot. Titration	ug/g	99.42	<25000.0	3.48e+04	n/a	n/a	n/a	n/a	2.50e+04	n/a
S98T003092	W	Tot. Organic Carbon by Coul.	ug/g	97.00	5.00e-01	1.23e+04	n/a	n/a	n/a	92.90	1.10e+03	n/a

Supernate: Supernate

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003068		OH- by Pot. Titration	ug/mL	100.0	<5000.0	5.50e+04	n/a	n/a	n/a	n/a	5.00e-03	n/a
S98T003068		Solids % - Gravimetric	%	107.6	n/a	46.10	n/a	n/a	n/a	n/a	1.00e-02	n/a
S98T003068		Tot. Organic Carbon by Coul.	ug/mL	97.33	1.500	3.21e+03	n/a	n/a	n/a	90.60	95.00	n/a
S98T003068		TIC by Acid/Coulometry	ug/mL	97.84	1.500	4.88e+03	n/a	n/a	n/a	98.40	5.000	n/a
S98T003068		TOC by Persulfate/Coulometry	ug/mL	99.67	7.500	2.63e+03	n/a	n/a	n/a	111.0	40.00	n/a
S98T003068		Strontium-89/90 High Level	uCi/mL	104.8	1.14e-04	2.61e-01	n/a	n/a	n/a	n/a	1.78e-04	1.29E+00
S98T003068		Cobalt-60 by GE	uCi/mL	105.0	<3.50e-03	<5.17e-03	n/a	n/a	n/a	n/a	5.00e-03	n/a
S98T003068		Antimony-125 by GE	uCi/mL	n/a	<8.94e-03	<2.77e-01	n/a	n/a	n/a	n/a	2.77e-01	n/a
S98T003068		Cesium-137 by GE	uCi/mL	103.2	<8.05e-03	3.01e+02	n/a	n/a	n/a	n/a	1.20e-02	n/a
S98T003068		Europium-154 by GE	uCi/mL	n/a	<9.96e-03	<1.21e-02	n/a	n/a	n/a	n/a	1.63e-01	n/a
S98T003077	B	Aluminum -ICP-Acid Digest-Liq	ug/mL	101.2	9.10e-02	2.01e+04	n/a	n/a	n/a	250.0	25.00	n/a
S98T003077	B	Chromium -ICP-Acid Digest-Liq	ug/mL	98.40	<1.00e-02	83.70	n/a	n/a	n/a	100.8	5.000	n/a
S98T003077	B	Sodium -ICP-Acid Digest-Liq	ug/mL	127.0	6.79e-01	1.92e+05	n/a	n/a	n/a	1.44e+03	50.00	n/a
S98T003077	B	Phosphorus-ICP-Acid Adj-Liq	ug/mL	103.0	<2.00e-01	1.36e+02	n/a	n/a	n/a	102.8	100.0	n/a
S98T003077	B	Sulfur -ICP-Acid Digest-Liq	ug/mL	101.0	<1.00e-01	4.78e+02	n/a	n/a	n/a	104.0	50.00	n/a
S98T003077	B	Silicon -ICP-Acid Digest-Liq	ug/mL	172.8	5.66e-01	99.40	n/a	n/a	n/a	96.60	25.00	n/a
S98T003077	B	Alpha in Liquid Samples	uCi/mL	93.33	<6.63e-03	4.33e-03	n/a	n/a	n/a	87.65	1.10e-02	1.43E+02

Tank Composite: Tank Composite

Sample#	R/A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk. Rec. %	Det Limit	Count	Err%
5981003053		Volume % Solids	%	n/a	n/a	19.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Table 2. Solubility Screening Results
AN-101 LAM

RISER: 22
SEGMENT #: 100 PARTS COMP 75 PARTS DIL
SEGMENT PORTION: Centrifuged Solids

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003064		% - Gravimetric	%	105.4	n/a	53.00	n/a	n/a	n/a	n/a	1.00e-02	n/a
S98T003064		TIC by Acid/Coulometry	ug/g	99.17	2.100	4.07e+03	n/a	n/a	n/a	n/a	5.000	n/a
S98T003064		TIC by Persulfate/Coulometry	ug/g	99.00	9.200	3.51e+04	n/a	n/a	n/a	n/a	40.00	n/a
S98T003063	F	Strontium-89/90 High Level	uc/g	105.8	1.75e-01	3.10e+02	n/a	n/a	n/a	n/a	9.90e-02	8.16e-01
S98T003063	F	Cobalt-60 by GEA	uc/g	105.8	<3.50e-02	9.19e-02	n/a	n/a	n/a	n/a	n/a	30.1
S98T003063	F	Antimony-125 by GEA	uc/g	102.0	<8.94e-01	5.41e-01	n/a	n/a	n/a	n/a	5.41e-01	n/a
S98T003063	F	Cesium-137 by GEA	uc/g	102.0	1.86e-01	1.18e+02	n/a	n/a	n/a	n/a	n/a	0.570
S98T003063	F	Europium-154 by GEA	uc/g	n/a	<9.92e-02	4.09e-01	n/a	n/a	n/a	n/a	n/a	20.4
S98T003063	F	Europium-155 by GEA	uc/g	n/a	<8.54e-02	<0.00e+00	n/a	n/a	n/a	n/a	n/a	n/a
S98T003063	F	Alpha of Digested Solid	ug/g	98.89	2.60e-02	1.020	n/a	n/a	n/a	n/a	7.00e-02	1.51E+01
S98T003068	A	Aluminum - ICP-Acid Digest	ug/g	96.60	9.90e-02	9.79e+03	n/a	n/a	n/a	n/a	5.970	n/a
S98T003068	A	Chromium - ICP-Acid Digest	ug/g	95.40	<1.00e-02	3.33e+03	n/a	n/a	n/a	n/a	n/a	n/a
S98T003068	A	Sodium - ICP-Acid Digest	ug/g	126.0	9.45e-01	1.54e+05	n/a	n/a	n/a	n/a	59.70	n/a
S98T003068	A	Phosphorus - ICP-Acid Digest	ug/g	94.40	<2.00e-01	3.77e+03	n/a	n/a	n/a	n/a	119.0	n/a
S98T003068	A	Sulfur - ICP-Acid Digest	ug/g	90.60	<1.00e-01	4.26e+02	n/a	n/a	n/a	n/a	59.70	n/a
S98T003068	A	Silicon - ICP-Acid Digest	ug/g	33.20	7.30e-01	1.79e+03	n/a	n/a	n/a	n/a	29.80	n/a
S98T003093	U	Oh- by Pot. Titration	ug/g	99.42	<25000.0	3.33e+04	n/a	n/a	n/a	n/a	2.54e+04	n/a
S98T003093	U	Tot. Organic Carbon by Coul	ug/g	97.00	5.00e-01	3.58e+04	n/a	n/a	n/a	n/a	1.12e+03	n/a

Supernate: Supernate

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003059		OH- by Pot. Titration	ug/mL	100.0	<5000.0	4.02e+04	n/a	n/a	n/a	n/a	5.00e-03	n/a
S98T003059		Solids % - Gravimetric	%	107.6	n/a	33.40	n/a	n/a	n/a	n/a	1.00e-02	n/a
S98T003059		Tot. Organic Carbon by Coul.	ug/mL	97.33	1.500	2.90e+03	n/a	n/a	n/a	n/a	55.00	n/a
S98T003059		TIC by Acid/Coulometry	ug/mL	100.2	3.700	4.29e+03	n/a	n/a	n/a	n/a	5.000	n/a
S98T003059		TIC by Persulfate/Coulometry	ug/mL	99.67	7.500	2.06e+03	n/a	n/a	n/a	n/a	40.00	n/a
S98T003059		Strontium-89/90 High Level	uc/mL	104.8	1.14e-04	2.44e-01	n/a	n/a	n/a	n/a	1.80e-04	1.35E+00
S98T003059		Cobalt-60 by GEA	uc/mL	105.0	<3.56e-03	<2.51e-03	n/a	n/a	n/a	n/a	1.53e-01	n/a
S98T003059		Antimony-125 by GEA	uc/mL	n/a	<8.94e-03	<1.53e-02	n/a	n/a	n/a	n/a	n/a	0.110
S98T003059		Cesium-137 by GEA	uc/mL	103.2	<9.09e-03	1.84e+02	n/a	n/a	n/a	n/a	7.00e-03	n/a
S98T003059		Europium-154 by GEA	uc/mL	n/a	<8.72e-03	<8.99e-02	n/a	n/a	n/a	n/a	9.00e-02	n/a
S98T003078	B	Aluminum - ICP-Acid Digest-Liq	ug/mL	101.2	9.10e-02	1.26e+04	n/a	n/a	n/a	n/a	10.00	n/a
S98T003078	B	Chromium - ICP-Acid Digest-Liq	ug/mL	98.40	<1.00e-02	57.40	n/a	n/a	n/a	n/a	2.000	n/a
S98T003078	B	Sodium - ICP-Acid Digest-Liquid	ug/mL	127.0	6.75e-01	1.26e+05	n/a	n/a	n/a	n/a	20.00	n/a
S98T003078	B	Phosphorus-ICP-Acid Adjust-Liq	ug/mL	103.0	<2.00e-01	3.66e+02	n/a	n/a	n/a	n/a	40.00	n/a
S98T003078	B	Sulfur - ICP-Acid Digest-Liquid	ug/mL	101.0	<1.00e-01	7.10e+02	n/a	n/a	n/a	n/a	20.00	n/a
S98T003078	B	Silicon - ICP-Acid Digest-Liquid	ug/mL	172.8	5.66e-01	1.11e+02	n/a	n/a	n/a	n/a	10.00	n/a
S98T003078	B	Alpha in Liquid samples	uc/mL	93.33	<6.63e-03	8.21e-03	n/a	n/a	n/a	n/a	1.10e-02	1.06E+02

Tank Composite: Tank Composite

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec. %	Det Limit	Count	Err%
S98T003054		Volume % Solids	%	n/a	n/a	3.400	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Table 2. Solubility Screening Results
AH-101 LHW

RISER: 22
SEGMENT #: 100 PARTS COMP 100 PARTS DIL
SEGMENT PORTION: Centrifuged Solids

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD	% Spk Rec	Det Limit	Count Err%
S98T003065		Solids % - Gravimetric	%	105.4	n/a	53.80	n/a	n/a	n/a	n/a	1.00e-02	n/a
S98T003065		TIC by Acid/Coulometry	ug/g	97.84	1.500	3.19e+03	n/a	n/a	n/a	n/a	5.000	n/a
S98T003065		TIC by Persulfate/Coulometry	ug/g	99.00	2.700	4.34e+02	n/a	n/a	n/a	n/a	40.00	n/a
S98T003084	F	Strontium-89/90 High Level	uc1/g	105.8	1.75e-01	3.78e+02	n/a	n/a	n/a	n/a	1.04e-01	7.58e-01
S98T003084	F	Cobalt-60 by GE	uc1/g	105.8	<3.50e-02	1.29e-01	n/a	n/a	n/a	n/a	1.04e-01	42.6
S98T003084	F	Antimony-125 by GE	uc1/g	102.0	<8.94e-03	<9.24e-01	n/a	n/a	n/a	n/a	9.24e-01	n/a
S98T003084	F	Cesium-137 by GE	uc1/g	102.0	1.86e-01	1.07e+02	n/a	n/a	n/a	n/a	n/a	1.02
S98T003084	F	Europium-154 by GE	uc1/g	n/a	<9.92e-02	4.80e-01	n/a	n/a	n/a	n/a	n/a	44.2
S98T003084	F	Europium-155 by GE	uc1/g	n/a	<8.54e-02	<6.82e-01	n/a	n/a	n/a	n/a	6.82e-01	n/a
S98T003089	F	Alpha of Digested Solid	ug/g	98.89	2.60e-02	1.120	n/a	n/a	n/a	n/a	7.40e-02	1.43e+01
S98T003089	A	Aluminum - ICP-Acid Digest	ug/g	96.60	9.90e-02	9.34e+03	n/a	n/a	n/a	n/a	30.90	n/a
S98T003089	A	Chromium - ICP-Acid Digest	ug/g	95.40	<1.00e-02	4.07e+03	n/a	n/a	n/a	n/a	6.180	n/a
S98T003089	A	Sodium - ICP-Acid Digest	ug/g	126.0	9.45e-01	1.53e+05	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Phosphorus - ICP-Acid Digest	ug/g	94.60	<2.00e-01	2.29e+03	n/a	n/a	n/a	n/a	124.0	n/a
S98T003089	A	Sulfur - ICP-Acid Digest	ug/g	90.60	<1.00e-01	3.69e+03	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Silicon - ICP-Acid Digest	ug/g	33.20	7.30e-01	2.19e+03	n/a	n/a	n/a	n/a	30.90	n/a
S98T003094	W	Oh: by Pot. Titration	ug/g	99.42	<25000.0	<2.49e+04	n/a	n/a	n/a	n/a	2.49e+04	n/a
S98T003094	W	Tot. Organic Carbon by Coul	ug/g	97.00	5.00e-01	4.14e+04	n/a	n/a	n/a	n/a	1.09e+03	n/a

Supernatant: Supernatant

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD	% Spk Rec	Det Limit	Count Err%
S98T003060		Oh: by Pot. Titration	ug/mL	100.0	<5000.0	3.22e+04	n/a	n/a	n/a	n/a	5.00e-03	n/a
S98T003060		Solids % - Gravimetric	%	107.6	n/a	29.30	n/a	n/a	n/a	n/a	1.00e-02	n/a
S98T003060		Tot. Organic Carbon by Coul.	ug/mL	97.33	1.500	2.30e+03	n/a	n/a	n/a	n/a	55.00	n/a
S98T003060		TIC by Acid/Coulometry	ug/mL	100.2	3.700	4.08e+03	n/a	n/a	n/a	n/a	5.000	n/a
S98T003060		TIC by Persulfate/Coulometry	ug/mL	99.67	7.500	2.04e+03	n/a	n/a	n/a	n/a	40.00	n/a
S98T003060		Strontium-89/90 High Level	uc1/mL	104.8	1.14e-04	2.29e-01	n/a	n/a	n/a	n/a	1.76e-04	1.37e+00
S98T003060		Cobalt-60 by GE	uc1/mL	105.0	<3.56e-03	<2.12e-01	n/a	n/a	n/a	n/a	2.00e-03	n/a
S98T003060		Antimony-125 by GE	uc1/mL	n/a	<8.94e-03	<1.42e-01	n/a	n/a	n/a	n/a	1.42e-01	n/a
S98T003060		Cesium-137 by GE	uc1/mL	103.2	<8.05e-03	1.59e+02	n/a	n/a	n/a	n/a	n/a	0.110
S98T003060		Europium-154 by GE	uc1/mL	n/a	<9.96e-03	<6.21e-01	n/a	n/a	n/a	n/a	6.00e-03	n/a
S98T003060		Europium-155 by GE	uc1/mL	n/a	<8.72e-03	<8.34e-02	n/a	n/a	n/a	n/a	8.30e-02	n/a
S98T003079	B	Aluminum - ICP-Acid Digest-Liq	ug/mL	101.2	9.10e-02	1.07e+04	n/a	n/a	n/a	n/a	12.50	n/a
S98T003079	B	Chromium - ICP-Acid Digest-Liq	ug/mL	98.40	<1.00e-02	51.00	n/a	n/a	n/a	n/a	2.500	n/a
S98T003079	B	Sodium - ICP-Acid Digest-Liq	ug/mL	127.0	6.75e-01	1.08e+05	n/a	n/a	n/a	n/a	25.00	n/a
S98T003079	B	Phosphorus-ICP-Acid Adjust-Liq	ug/mL	103.0	<2.00e-01	4.01e+02	n/a	n/a	n/a	n/a	50.00	n/a
S98T003079	B	Sulfur - ICP-Acid Digest-Liq	ug/mL	101.0	<1.00e-01	6.13e+02	n/a	n/a	n/a	n/a	25.00	n/a
S98T003079	B	Silicon - ICP-Acid Digest-Liq	ug/mL	172.8	5.66e-01	95.20	n/a	n/a	n/a	n/a	12.50	n/a
S98T003079	B	Alpha in Liquid Samples	uc1/mL	93.33	<6.63e-03	7.66e-03	n/a	n/a	n/a	n/a	1.10e-02	1.06e+02

Tank Composite: Tank Composite

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec. %	Det Limit	Count	Err%
S98T003055		Volume % Solids	%	n/a	n/a	2.800	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 2. Solubility Screening Results
AH-101 LNW

RI SER: 22
SEGMENT #: 100 PARTS COMP NO DIL TEST#4

SEGMENT PORTION: Centrifuged Solids

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003066		Solids % - Gravimetric	%	105.4		60.30	n/a	n/a	n/a	n/a	1.00e-02	n/a
S98T003066		TIC by Acid/Coulometry	ug/g	99.17	2.100	1.01e+04	n/a	n/a	n/a	n/a	5.000	n/a
S98T003066		TOC by Persulfate/Coulometry	ug/g	92.00	9.200	8.06e+03	n/a	n/a	n/a	n/a	5.000	n/a
S98T003066		Strontium-89/90 High Level	uCi/g	105.8	1.75e-01	44.80	n/a	n/a	n/a	n/a	3.80e-02	1.35E+00
S98T003065		Cobalt-60 by GEA	uCi/g	105.8	<3.50e-02	<3.27e-02	n/a	n/a	n/a	n/a	3.30e-02	n/a
S98T003065		Antimony-125 by GEA	uCi/g	102.0	<8.94e-01	<7.07e-01	n/a	n/a	n/a	n/a	7.07e-01	n/a
S98T003065		Cesium-137 by GEA	uCi/g	102.0	1.86e-01	2.34e+02	n/a	n/a	n/a	n/a	n/a	0.380
S98T003065		Europium-154 by GEA	uCi/g	n/a	<9.92e-02	<1.07e-01	n/a	n/a	n/a	n/a	1.07e-01	n/a
S98T003065		Europium-155 by GEA	uCi/g	n/a	<8.54e-02	<4.28e-01	n/a	n/a	n/a	n/a	4.28e-01	n/a
S98T003065		Alpha of Digested Solid	ug/g	98.89	2.60e-02	1.67e-01	n/a	n/a	n/a	n/a	3.20e-02	2.66E+01
S98T003090		Chromium -ICP-Acid Digest	ug/g	96.60	9.90e-02	1.56e+04	n/a	n/a	n/a	n/a	31.20	n/a
S98T003090		Sodium -ICP-Acid Digest	ug/g	95.40	9.45e-01	5.32e+02	n/a	n/a	n/a	n/a	62.40	n/a
S98T003090		Phosphorus -ICP-Acid Digest	ug/g	126.0	9.45e-01	1.76e+05	n/a	n/a	n/a	n/a	62.40	n/a
S98T003090		Sulfur -ICP-Acid Digest	ug/g	94.40	<2.00e-01	1.31e+03	n/a	n/a	n/a	n/a	124.0	n/a
S98T003090		Silicon -ICP-Acid Digest	ug/g	90.60	<1.00e-01	1.69e+03	n/a	n/a	n/a	n/a	62.40	n/a
S98T003095		Oh- by Pot. Titration	ug/g	33.20	7.30e-01	3.12e+02	n/a	n/a	n/a	n/a	31.20	n/a
S98T003095		Oh- by Pot. Titration	ug/g	99.42	<25000.0	5.30e+04	n/a	n/a	n/a	n/a	2.43e+04	n/a
S98T003095		Tot. Organic Carbon by Coul.	ug/g	97.00	5.00e-01	7.05e+03	n/a	n/a	n/a	n/a	1.07e+03	n/a

Supernate: Supernate

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003061		Oh- by Pot. Titration	ug/mL	100.0	<5000.0	9.77e+04	n/a	n/a	n/a	n/a	5.00e+03	n/a
S98T003061		Solids % - Gravimetric	%	107.6	n/a	53.50	n/a	n/a	n/a	n/a	1.00e-02	n/a
S98T003061		Tot. Organic Carbon by Coul.	ug/mL	97.33	1.500	5.42e+03	n/a	n/a	n/a	n/a	55.000	n/a
S98T003061		TIC by Acid/Coulometry	ug/mL	100.2	3.700	1.51e+03	n/a	n/a	n/a	n/a	5.000	n/a
S98T003061		TOC by Persulfate/Coulometry	ug/mL	99.67	7.500	3.25e+03	n/a	n/a	n/a	n/a	40.00	n/a
S98T003061		Strontium-89/90 High Level	uCi/mL	104.8	1.14e-04	3.00e-01	n/a	n/a	n/a	n/a	1.76e-04	1.20E+00
S98T003061		Cobalt-60 by GEA	uCi/mL	105.0	<3.56e-03	<4.70e-03	n/a	n/a	n/a	n/a	5.00e-03	n/a
S98T003061		Antimony-125 by GEA	uCi/mL	103.2	<8.05e-03	<3.39e-01	n/a	n/a	n/a	n/a	3.39e-01	n/a
S98T003061		Cesium-137 by GEA	uCi/mL	n/a	<9.96e-03	<1.17e-02	n/a	n/a	n/a	n/a	n/a	0.100
S98T003061		Europium-154 by GEA	uCi/mL	n/a	<8.72e-03	<1.98e-01	n/a	n/a	n/a	n/a	1.20e-02	n/a
S98T003061		Europium-155 by GEA	uCi/mL	101.2	9.10e-02	3.07e+04	n/a	n/a	n/a	n/a	1.98e-01	n/a
S98T003080		Aluminum -ICP-Acid Digest-Liq	ug/mL	107.40	<1.00e-02	1.42e+02	n/a	n/a	n/a	n/a	25.000	n/a
S98T003080		Chromium -ICP-Acid Digest-Liq	ug/mL	98.00	<1.00e-02	2.43e+05	n/a	n/a	n/a	n/a	5.000	n/a
S98T003080		Sodium -ICP-Acid Digest-Liq	ug/mL	127.0	6.75e-01	1.16e+02	n/a	n/a	n/a	n/a	100.0	n/a
S98T003080		Phosphorus-ICP-Acid Ad Just-Liq	ug/mL	103.0	<2.00e-01	3.96e+02	n/a	n/a	n/a	n/a	50.000	n/a
S98T003080		Sulfur -ICP-Acid Digest-Liq	ug/mL	101.0	<1.00e-01	1.36e+02	n/a	n/a	n/a	n/a	25.000	n/a
S98T003080		Silicon -ICP-Acid Digest-Liq	ug/mL	172.8	5.66e-01	1.34e+02	n/a	n/a	n/a	n/a	2.60e-02	1.43E+02
S98T003080		Alpha in Liquid Samples	uCi/mL	93.33	<6.63e-03	1.36e-02	n/a	n/a	n/a	n/a	2.60e-02	1.43E+02

Tank Composite: Tank Composite

Sample#	R. A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
598T03056		Volume % Solids	%	n/a	n/a	50.70	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Table 2. Solubility Screening Results
AW-101 LAW
 RISER: 22
 SEGMENT #: 100 PARTS COMP NO DIL TESTS

SEGMENT PORTION: Centrifuged Solids

Sample #	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD	% Spk Rec	Det Limit	Count Err%
S98T003067		Solids % - Gravimetric	%	105.4	n/a	58.40	n/a	n/a	n/a	n/a	1.00e-02	n/a
S98T003067		Solids % - Gravimetric	%	105.4	1.500	1.08e+03	n/a	n/a	n/a	n/a	5.000	n/a
S98T003067		TIC by Acid/Coulometry	ug/g	99.00	2.700	9.14e+03	n/a	n/a	n/a	n/a	40.00	n/a
S98T003068	F	TIC by Persulfate/Coulometry	ug/g	105.8	1.75e-01	1.83e+02	n/a	n/a	n/a	n/a	3.90e-02	1.30e+00
S98T003068	F	TIC by Persulfate/Coulometry	ug/g	105.8	<3.50e-02	<3.84e-02	n/a	n/a	n/a	n/a	3.80e-02	n/a
S98T003068	F	Cobalt-60 by GEA	uc/g	n/a	<8.94e-03	<2.27e-01	n/a	n/a	n/a	n/a	7.27e-01	n/a
S98T003068	F	Antimony-125 by GEA	uc/g	102.0	1.86e-01	<2.20e+02	n/a	n/a	n/a	n/a	0.360	n/a
S98T003068	F	Europium-154 by GEA	uc/g	n/a	<9.92e-02	<1.20e+01	n/a	n/a	n/a	n/a	1.20e-01	n/a
S98T003068	F	Europium-154 by GEA	uc/g	n/a	<8.54e-02	<4.40e-01	n/a	n/a	n/a	n/a	4.40e-01	n/a
S98T003091	A	Aluminum - ICP-Acid Digest	ug/g	98.80	2.60e-02	1.53e+01	n/a	n/a	n/a	n/a	3.30e-02	2.69e+01
S98T003091	A	Chromium - ICP-Acid Digest	ug/g	96.80	9.90e-02	1.65e+04	n/a	n/a	n/a	n/a	28.30	n/a
S98T003091	A	Sodium - ICP-Acid Digest	ug/g	95.60	<1.00e-02	5.37e+02	n/a	n/a	n/a	n/a	5.670	n/a
S98T003091	A	Phosphorus - ICP-Acid Digest	ug/g	126.0	9.45e-01	1.80e+05	n/a	n/a	n/a	n/a	113.0	n/a
S98T003091	A	Sulfur - ICP-Acid Digest	ug/g	94.40	<2.00e-01	1.01e+03	n/a	n/a	n/a	n/a	56.70	n/a
S98T003091	A	Sulfur - ICP-Acid Digest	ug/g	90.60	<1.00e-01	4.12e+02	n/a	n/a	n/a	n/a	28.30	n/a
S98T003091	A	Silicon - ICP-Acid Digest	ug/g	33.20	7.30e-01	5.05e+04	n/a	n/a	n/a	n/a	2.48e+04	n/a
S98T003096	H	OH- by Pot. Titration	ug/g	99.42	<25000.0	5.05e+04	n/a	n/a	n/a	n/a	1.02e+03	n/a
S98T003096	H	Tot. Organic Carbon by Coul.	ug/g	97.00	5.00e-01	6.20e+03	n/a	n/a	n/a	n/a	1.80e+02	n/a

Supernate: Supernate

Sample #	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD	% Spk Rec	Det Limit	Count Err%
S98T003062		OH- by Pot. Titration	ug/mL	100.0	<5000.0	9.67e+04	n/a	n/a	n/a	n/a	5.00e+03	n/a
S98T003062		Solids % - Gravimetric	%	107.6	n/a	54.10	n/a	n/a	n/a	n/a	1.00e-02	n/a
S98T003062		Tot. Organic Carbon by Coul.	ug/mL	97.33	1.500	5.77e+03	n/a	n/a	n/a	n/a	55.00	n/a
S98T003062		TIC by Acid/Coulometry	ug/mL	100.2	3.700	2.16e+03	n/a	n/a	n/a	n/a	5.000	n/a
S98T003062		TIC by Persulfate/Coulometry	ug/mL	99.67	7.500	4.97e+03	n/a	n/a	n/a	n/a	40.00	n/a
S98T003062		Strontium-89/90 High Level	uc/g	104.8	1.14e-04	3.00e-01	n/a	n/a	n/a	n/a	1.74e-04	1.19e+00
S98T003062		Cobalt-60 by GEA	uc/g	105.0	<3.56e-03	<8.60e-03	n/a	n/a	n/a	n/a	9.00e-03	n/a
S98T003062		Antimony-125 by GEA	uc/g	n/a	<8.94e-03	<4.63e-01	n/a	n/a	n/a	n/a	4.63e-01	n/a
S98T003062		Cesium-137 by GEA	uc/g	103.2	<8.05e-03	<2.26e-02	n/a	n/a	n/a	n/a	2.30e-02	n/a
S98T003062		Europium-154 by GEA	uc/g	n/a	<9.99e-03	<3.11e-01	n/a	n/a	n/a	n/a	3.11e-01	n/a
S98T003062		Europium-154 by GEA	uc/g	n/a	<8.72e-03	<3.10e-01	n/a	n/a	n/a	n/a	25.00	n/a
S98T003081	B	Aluminum - ICP-Acid Digest-Liq	ug/mL	101.2	9.10e-02	1.01e+04	n/a	n/a	n/a	n/a	5.000	n/a
S98T003081	B	Chromium - ICP-Acid Digest-Liq	ug/mL	98.40	<1.00e-02	1.38e+02	n/a	n/a	n/a	n/a	50.00	n/a
S98T003081	B	Sodium - ICP-Acid Digest-Liq	ug/mL	127.0	6.75e-01	2.37e+05	n/a	n/a	n/a	n/a	100.0	n/a
S98T003081	B	Phosphorus-ICP-Acid Adjust-Liq	ug/mL	103.0	<2.00e-01	1.15e+02	n/a	n/a	n/a	n/a	50.00	n/a
S98T003081	B	Sulfur - ICP-Acid Digest-Liq	ug/mL	101.0	<1.00e-01	3.82e+02	n/a	n/a	n/a	n/a	25.00	n/a
S98T003081	B	Silicon - ICP-Acid Digest-Liq	ug/mL	172.8	1.56e+01	1.38e+02	n/a	n/a	n/a	n/a	2.60e-02	n/a
S98T003081	B	Alpha in Liquid Samples	ug/mL	93.33	<6.63e-03	<2.02e-02	n/a	n/a	n/a	n/a	2.60e-02	1.80e+02

Tank Composite: Tank Composite

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98003057		Volume % Solids	%	n/a	n/a	48.30	n/a	n/a	n/a	n/a	n/a	n/a

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CHAIN OF CUSTODY

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CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 1AW-98-FBI		(2) Supervisor/Sampler JAMES SICKELS		(9) Seal Intact Upon Release? ☒ Yes ☐ No
(3) Tank AW-101	(4) Riser 022	(5) Cask/Pig Serial No. TF-11		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No
(6) Shipment Description:				(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No
(7) Sampling Data - Lithium Bromide Amount Concentration - X-Ray - Partial Sample - Retrieved Partial Sample Stroke Length				(12) Laboratory Comments:
A. Work Package Number ES-98-00013 B. Cask/Pig Seal Number 2010 C. Date Sample Collected 4-21-98 1040 744 4-21-98 D. Time Sample Collected				
(8) Field Comments:				

(13) Relinquished By (Sign and PRINT) Robert Praznik	(14) Received By (Sign and PRINT) James Sickels	(15) Date/Time 4-22-98	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) Robert Praznik	(18) Received By (Sign and PRINT) James Sickels	(19) Date/Time 4-22-98	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT) Robert Praznik	(22) Received By (Sign and PRINT) Jim Knight	(23) Date/Time 4-22-98	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

HNF-1652 REV. C

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 1AW-98-1	(2) Supervisor/Sampler James Sickels	(9) Seal Intact Upon Release? ☒ Yes ☐ No
(3) Tank AW-101	(4) Riser 022	(10) Seal Intact Upon Receipt? ☒ Yes ☐ No
(5) Cask/Fig Serial No. TF-1		(11) Seal Number AND Cask/Fig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No
(6) Shipment Description:		(12) Laboratory Comments:
<p>(7) Sampling Data</p> <p>Y N</p> <p>Lithium Bromide ☐ ☐</p> <p>Amount <u>14</u></p> <p>Concentration <u>14</u></p> <p>- X-Ray ☐ ☐</p> <p>- Partial Sample ☐ ☐</p> <p>- Retrieved Partial Sample Stroke Length _____</p>		
(8) Field Comments:		

(13) Relinquished By (Sign and PRINT) Robert J. Praszniak	(14) Received By (Sign and PRINT) V. Matthews	(15) Date/Time 4-22-98	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) V. Matthews	(18) Received By (Sign and PRINT) Jim Knight Jr	(19) Date/Time 4-22-98	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

HNF-1652 REV. C

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 1AW-98-2		(2) Supervisor/Sampler JAMES SICKELS James Sickels		(9) Seal Intact Upon Release? ☒ Yes ☐ No
(3) Tank AW-101	(4) Riser 022	(5) Cask/Pig Serial No. B-25		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No
(6) Shipment Description: <div> A. Work Package Number ES-98-00013 </div> <div> B. Cask/Pig Seal Number 2012 </div> <div> C. Date Sample Collected 4-21-98 </div> <div> D. Time Sample Collected 1050 </div>				(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No
(7) Sampling Data <div> Y ☐ N ☐ </div> <div> Lithium Bromide ☐ </div> <div> Amount 4 </div> <div> Concentration A </div> <div> X-Ray ☐ </div> <div> Partial Sample ☐ </div> <div> Retrieved Partial Sample Stroke Length ☐ </div>				(12) Laboratory Comments:
(8) Field Comments:				
(13) Relinquished By (Sign and PRINT) Robert J. Proznick		(14) Received By (Sign and PRINT) James Sickels		(15) Date/Time 4-22-98 1058
(17) Relinquished By (Sign and PRINT) James Sickels		(18) Received By (Sign and PRINT) Jim Knight		(19) Date/Time 4-22-98 1159
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)		(23) Date/Time
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)		(27) Date/Time
(28) Relinquished By (Sign and PRINT)		(29) Received By (Sign and PRINT)		(30) Date/Time

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CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number <u>1 AW-98-3</u>		(2) Supervisor/Sampler <u>JAMES SICKLES</u>		(9) Seal Intact Upon Release? ☒ Yes ☐ No	
(3) Tank <u>AW-101</u>	(4) Riser <u>022</u>	(5) Cask/Pig Serial No. <u>13-24</u>		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No	
(6) Shipment Description:				(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6) ☒ Yes ☐ No	
A. Work Package Number <u>ES-98-00013</u> B. Cask/Pig Seal Number <u>2013</u> C. Date Sample Collected <u>4-21-98</u> D. Time Sample Collected <u>1056</u>				(12) Laboratory Comments:	
(7) Sampling Data - Lithium Bromide ☐ Y ☐ N Amount <u>4</u> Concentration <u>A</u> - X-Ray ☐ - Partial Sample ☐ - Retrieved Partial Sample Stroke Length _____					
(8) Field Comments:					
(13) Relinquished By (Sign and PRINT) <u>Robert J. Pazich</u>		(14) Received By (Sign and PRINT) <u>V. Matthews</u>		(15) Date/Time <u>4-22-98</u>	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) <u>V. Matthews</u>		(18) Received By (Sign and PRINT) <u>V. Matthews</u>		(19) Date/Time <u>4-22-98</u>	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)		(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)		(27) Date/Time	(28) Receiver Comments

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CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 1AW-98-4	(2) Supervisor/Sampler James Sickels	(9) Seal Intact Upon Release? ☒ Yes ☐ No
(3) Tank AW-101	(4) Riser 022	(10) Seal Intact Upon Receipt? ☒ Yes ☐ No
(6) Shipment Description: <div> <div>(5) Cask/Pig Serial No. TF-8</div> <div>(7) Sampling Data <div> <div>Y ☐ N ☐</div> <div>Lithium Bromide Amount 40</div> <div>Concentration A</div> <div>X-Ray ☐</div> <div>Partial Sample ☐</div> <div>Retrieved Partial Sample Stroke Length 1120</div> </div> </div> </div> <td>(11) Seal Number AND Cask/Pig SERIAL Number consistent with the record? (Block 5 & 6b) ☒ Yes ☐ No</td>		(11) Seal Number AND Cask/Pig SERIAL Number consistent with the record? (Block 5 & 6b) ☒ Yes ☐ No
(12) Laboratory Comments:		
(8) Field Comments:		

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(13) Relinquished By (Sign and PRINT) Robert J. Rozent	(14) Received By (Sign and PRINT) V. Matthews	(15) Date/Time 12-30-98	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) V. Matthews	(18) Received By (Sign and PRINT) V. Matthews	(19) Date/Time 1318	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

04-22-98
EXTENDED IN
DATE

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 1AW-98-5	(2) Supervisor/Sampler JAMES PICKELS	(3) Tank AW-101	(4) Riser 032	(5) Sampling Serial No. TF-9	(6) Shipment Description: ES-98-00013	(7) Sampling Data Amount Concentration X-Ray Partial Sample Retrieved Partial Sample Stroke Length	(8) Field Comments:
--------------------------------------	--	---------------------------	-------------------------	--	---	---	---------------------

(9) Seal Intact Upon Release? ☒ Yes ☐ No	(10) Seal Intact Upon Receipt? ☒ Yes ☐ No	(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No	(12) Laboratory Comments:
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HNF-1652 REV. 0

118

(13) Relinquished By (Sign and PRINT) Robert J Mazurik	(14) Received By (Sign and PRINT) James Pickels	(15) Date/Time 4-22-98 4:25	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) James Pickels	(18) Received By (Sign and PRINT) James Pickels	(19) Date/Time 4-22-98 4:25	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time 4:25	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

CHAIN-OF-CUSTODY RECORD FOR CPO

HNF-1652 REV. 0

(1) Sample Number 1AW-98-6		(2) Supervisor/Sampler James Sickets		(9) Seal Intact Upon Release? ☒ Yes ☐ No	
(3) Tank AW-101		(4) Riser 022		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No	
(5) Shipment Description: B-18				(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No	
A. Work Package Number ES-98-00013		(7) Sampling Data Y N Lithium Bromide ☐ ☐ Amount ☐ ☐ Concentration ☐ ☐ X-Ray ☐ ☐ Partial Sample ☐ ☐ Retrieved Partial Sample Stroke Length _____		(12) Laboratory Comments:	
B. Cask/Pig Seal Number 11909					
C. Date Sample Collected 4-21-98					
D. Time Sample Collected 1107					
(8) Field Comments:					
(13) Relinquished By (Sign and PRINT) [Signature] J. Puznic		(14) Received By (Sign and PRINT) [Signature] V. Matthews		(15) Date/Time 1025 4-22-98	
(17) Relinquished By (Sign and PRINT) [Signature] V. Matthews		(18) Received By (Sign and PRINT) [Signature] J. Puznic		(19) Date/Time 1115 4-22-98	
(21) Relinquished By (Sign and PRINT)		(20) Received By (Sign and PRINT)		(22) Date/Time	
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)		(27) Date/Time	
				(24) Receiver Comments	
				(28) Receiver Comments	

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 1AW-98-7		(2) Supervisor/Sampler James Sichel		(9) Seal Intact Upon Release? ☒ Yes ☐ No
(3) Tank AW-101	(4) Riser 022	(5) Cas/Pig Serial No. 15-10		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No
(6) Shipment Description:				(11) Seal Number AND Cas/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No
(7) Sampling Data Lithium Bromide ☐ Y ☐ N Ambient ☐ Concentration A ☐ - X-Ray ☐ - Partial Sample ☐ - Retrieved Partial Sample Stroke Length ☐				(12) Laboratory Comments:
(8) Field Comments:				

(13) Relinquished By (Sign and PRINT) Allen Roberts	(14) Received By (Sign and PRINT) V. Matthews	(15) Date/Time 10-25	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) V. Matthews	(18) Received By (Sign and PRINT) James Sichel	(19) Date/Time 11-5	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

HNF-1652 REV. 0

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 1AW-98-8		(2) Supervisor/Sampler James Sickels		(9) Seal Intact Upon Release? ☒ Yes ☐ No
(3) Tank AW-101	(4) Riser 022	(5) Cask/Pig Serial No. B-13		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No
(6) Shipment Description:				(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No
(7) Sampling Data Y N Lithium Bromide ☐ ☐ Amount _____ Concentration A _____ - X-Ray ☐ ☐ - Partial Sample ☐ ☐ - Retrieved Partial Sample Stroke Length _____				(12) Laboratory Comments:
(8) Field Comments:				

(13) Relinquished By (Sign and PRINT) Robert J. Pacenski	(14) Received By (Sign and PRINT) James B. [Signature]	(15) Date/Time 4-22-98 0845	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) James B. [Signature]	(18) Received By (Sign and PRINT) James B. [Signature]	(19) Date/Time 4-22-98 1005	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT) James B. [Signature]	(22) Received By (Sign and PRINT) James B. [Signature]	(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 1AW-98-9	(2) Supervisor/Sampler JAMES SICKELS James Sickels	(9) Seal Intact Upon Release? ☒ Yes ☐ No																		
(3) Tank AW-101 022	(5) Cask/Pig Serial No. TF-4	(10) Seal Intact Upon Receipt? ☒ Yes ☐ No																		
(6) Shipment Description: ES-98-00013		(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record* (Block 5 & 6b) ☒ Yes ☐ No																		
(12) Laboratory Comments:																				
<p>(7) Sampling Data</p> <table border="0"> <tr> <td>Amount</td> <td>Y</td> <td>N</td> </tr> <tr> <td>• Lithium Bromide</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>Concentration</td> <td colspan="2">14</td> </tr> <tr> <td>• X-Ray</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>• Partial Sample</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>• Retrieved Partial Sample Stroke Length</td> <td colspan="2">14</td> </tr> </table>			Amount	Y	N	• Lithium Bromide	☐	☐	Concentration	14		• X-Ray	☐	☐	• Partial Sample	☐	☐	• Retrieved Partial Sample Stroke Length	14	
Amount	Y	N																		
• Lithium Bromide	☐	☐																		
Concentration	14																			
• X-Ray	☐	☐																		
• Partial Sample	☐	☐																		
• Retrieved Partial Sample Stroke Length	14																			
(8) Field Comments: Sample Taken at a depth of 52' 6" From Top of Range Sheet of Actual depth by 2' 1". 4-21-98																				

HNF-1652 REV. 0

(13) Relinquished By (Sign and PRINT) Robert J. Praznik	(14) Received By (Sign and PRINT) James Sickels	(15) Date/Time 4-22-98 0845	(16) Receiver Comments
(17) Relinquished By (Sign and PRINT) James Sickels	(18) Received By (Sign and PRINT) James Sickels	(19) Date/Time 4-22-98 1005	(20) Receiver Comments
(21) Relinquished By (Sign and PRINT)	(22) Received By (Sign and PRINT)	(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments

CHAIN-OF-CUSTODY RECORD FOR CPO

(1) Sample Number 1AW-98-10		(2) Supervisor/Sampler James Pickels		(9) Seal Intact Upon Release? ☒ Yes ☐ No																												
(3) Tank AW-101		(4) Riser 022		(10) Seal Intact Upon Receipt? ☒ Yes ☐ No																												
(5) Shipments Description: B-14				(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) ☒ Yes ☐ No																												
(6) Sampling Data				(12) Laboratory Comments:																												
<table border="0"> <tr> <td colspan="2">Y</td> <td colspan="2">N</td> </tr> <tr> <td colspan="2">☐</td> <td colspan="2">☐</td> </tr> <tr> <td colspan="4"> <table border="0"> <tr> <td>Lithium Bromide</td> <td>Amount</td> <td>Concentration</td> <td>X-Ray</td> <td>Partial Sample</td> </tr> <tr> <td>☒</td> <td>14.</td> <td>4</td> <td>☐</td> <td>☐</td> </tr> <tr> <td colspan="5">Retrieved Partial Sample Stroke Length</td> </tr> </table> </td> </tr> </table>				Y		N		☐		☐		<table border="0"> <tr> <td>Lithium Bromide</td> <td>Amount</td> <td>Concentration</td> <td>X-Ray</td> <td>Partial Sample</td> </tr> <tr> <td>☒</td> <td>14.</td> <td>4</td> <td>☐</td> <td>☐</td> </tr> <tr> <td colspan="5">Retrieved Partial Sample Stroke Length</td> </tr> </table>				Lithium Bromide	Amount	Concentration	X-Ray	Partial Sample	☒	14.	4	☐	☐	Retrieved Partial Sample Stroke Length						
Y		N																														
☐		☐																														
<table border="0"> <tr> <td>Lithium Bromide</td> <td>Amount</td> <td>Concentration</td> <td>X-Ray</td> <td>Partial Sample</td> </tr> <tr> <td>☒</td> <td>14.</td> <td>4</td> <td>☐</td> <td>☐</td> </tr> <tr> <td colspan="5">Retrieved Partial Sample Stroke Length</td> </tr> </table>				Lithium Bromide	Amount	Concentration	X-Ray	Partial Sample	☒	14.	4	☐	☐	Retrieved Partial Sample Stroke Length																		
Lithium Bromide	Amount	Concentration	X-Ray	Partial Sample																												
☒	14.	4	☐	☐																												
Retrieved Partial Sample Stroke Length																																
(8) Field Comments:																																
<div style="display: flex; justify-content: space-between;"> <div> <p>(13) Relinquished By (Sign and PRINT) James Pickels</p> <p>(17) Relinquished By (Sign and PRINT) James Pickels</p> <p>(21) Relinquished By (Sign and PRINT) James Pickels</p> <p>(25) Relinquished By (Sign and PRINT)</p> </div> <div> <p>(14) Received By (Sign and PRINT) James Pickels</p> <p>(18) Received By (Sign and PRINT) James Pickels</p> <p>(22) Received By (Sign and PRINT) James Pickels</p> <p>(26) Received By (Sign and PRINT)</p> </div> <div> <p>(15) Date/Time 4-22-98</p> <p>(19) Date/Time 4-22-98</p> <p>(23) Date/Time 1158</p> <p>(27) Date/Time</p> </div> <div> <p>(16) Receiver Comments</p> <p>(20) Receiver Comments</p> <p>(24) Receiver Comments</p> <p>(28) Receiver Comments</p> </div> </div>																																

HNF-1652 REV. 0

123

HNF-1652 REV. 0

PHOTOGRAPHS

HNF-1652 REV. 0

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Aw-101 G-RAB Field Blank + Segment 1 6-1798 pc

AW-101 Grab

Sagments 2 or 3

6-17-98

PC.

Av-101 Grab Segments 445

6-17-98

PC
PHE
JED 6-17-98

Avu-101 Grab Sept 6+7

HNF-1652 REV. 0

121

AW-101 GRAS Seq. 829

AW-101 Grab Seq 10

HNH-1652 REV. 0

SAMPLE HANDLING

HNF-1652 REV. 0

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LABCORE Data Entry Template for Worklist# 24099

Analyst: RDH Instrument: NONE Book # N/A

Method: LA-519-151 Rev/Mod E-0

Worklist Comment: AW101, @BRKDOWN1 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000261	AW-101 LAW	1 SAMPLE	S98T001284	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
98000261	AW-101 LAW	1 SAMPLE	S98T001284	0	@BRKDOWN1 SEALNUM	LIQUID	N/A	2013		
98000261	AW-101 LAW	1 SAMPLE	S98T001284	0	@BRKDOWN1 ETCHNUM	LIQUID	N/A	1AW-98-03		
98000261	AW-101 LAW	1 SAMPLE	S98T001284	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	CLOUDY		
98000261	AW-101 LAW	1 SAMPLE	S98T001284	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
98000261	AW-101 LAW	1 SAMPLE	S98T001284	0	@BRKDOWN1 STLSLD01	LIQUID	N/A	21.1		%
98000261	AW-101 LAW	1 SAMPLE	S98T001284	0	@BRKDOWN1 COLOR-01	LIQUID	N/A	YELLOW LIQUID BROWN SOLID		
98000261	AW-101 LAW	1 SAMPLE	S98T001284	0	@BRKDOWN1 ORGVOL02	LIQUID	N/A	NONE		mL
98000261	AW-101 LAW	2 SAMPLE	S98T001285	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
98000261	AW-101 LAW	2 SAMPLE	S98T001285	0	@BRKDOWN1 SEALNUM	LIQUID	N/A	2158		
98000261	AW-101 LAW	2 SAMPLE	S98T001285	0	@BRKDOWN1 ETCHNUM	LIQUID	N/A	1AW-98-04		
98000261	AW-101 LAW	2 SAMPLE	S98T001285	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	CLOUDY		
98000261	AW-101 LAW	2 SAMPLE	S98T001285	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
98000261	AW-101 LAW	2 SAMPLE	S98T001285	0	@BRKDOWN1 STLSLD01	LIQUID	N/A	31.6		%
98000261	AW-101 LAW	2 SAMPLE	S98T001285	0	@BRKDOWN1 COLOR-01	LIQUID	N/A	YELLOW LIQUID BROWN SOLID		
98000261	AW-101 LAW	2 SAMPLE	S98T001285	0	@BRKDOWN1 ORGVOL02	LIQUID	N/A	NONE		mL
98000261	AW-101 LAW	3 SAMPLE	S98T001286	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
98000261	AW-101 LAW	3 SAMPLE	S98T001286	0	@BRKDOWN1 SEALNUM	LIQUID	N/A	11902		

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# 24099

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000261	AW-101 LAW	3 SAMPLE	S98T001286	0	@BRKDWN1 ETCHNUM	LIQUID	N/A	1AW-98-05		
98000261	AW-101 LAW	3 SAMPLE	S98T001286	0	@BRKDWN1 APPEAR02	LIQUID	N/A	CLOUDY		
98000261	AW-101 LAW	3 SAMPLE	S98T001286	0	@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
98000261	AW-101 LAW	3 SAMPLE	S98T001286	0	@BRKDWN1 STLSLD01	LIQUID	N/A	16.8		%
98000261	AW-101 LAW	3 SAMPLE	S98T001286	0	@BRKDWN1 COLOR-01	LIQUID	N/A	YELLOW LIQUID BROWN SOLID		
98000261	AW-101 LAW	3 SAMPLE	S98T001286	0	@BRKDWN1 ORGVOL02	LIQUID	N/A	NONE		mL
98000261	AW-101 LAW	4 SAMPLE	S98T001287	0	@BRKDWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
98000261	AW-101 LAW	4 SAMPLE	S98T001287	0	@BRKDWN1 SEALNUM	LIQUID	N/A	11909		
98000261	AW-101 LAW	4 SAMPLE	S98T001287	0	@BRKDWN1 ETCHNUM	LIQUID	N/A	1AW-98-06		
98000261	AW-101 LAW	4 SAMPLE	S98T001287	0	@BRKDWN1 APPEAR02	LIQUID	N/A	CLOUDY		
98000261	AW-101 LAW	4 SAMPLE	S98T001287	0	@BRKDWN1 SAMPAMT2	LIQUID	N/A	125		mL
98000261	AW-101 LAW	4 SAMPLE	S98T001287	0	@BRKDWN1 STLSLD01	LIQUID	N/A	16.5		%
98000261	AW-101 LAW	4 SAMPLE	S98T001287	0	@BRKDWN1 COLOR-01	LIQUID	N/A	YELLOW LIQUID BROWN SOLID		
98000261	AW-101 LAW	4 SAMPLE	S98T001287	0	@BRKDWN1 ORGVOL02	LIQUID	N/A	NONE		mL

Final page for worklist # 24099

RD He 6/17/98
Analyst Signature Date

JK Wollam 11/12/98 ^{SKW 1/12/99}
Analyst Signature Date

Data Entry Comments:

validated by Ratna 1/12/99

LABCORE Data Entry Template for Worklist# 24100

Analyst: EDH Instrument: NONE Book # N/A

Method: LA-519-151 Rev/Mod F-0

Worklist Comment: AW101, @BRKDOWN1 skm
HW 4/20/99

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000261	AW-101 LAW	1 SAMPLE	S98T001292	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
98000261	AW-101 LAW	1 SAMPLE	S98T001292	0	@BRKDOWN1 SEALNUM	LIQUID	N/A	2010		
98000261	AW-101 LAW	1 SAMPLE	S98T001292	0	@BRKDOWN1 ETCHNUM	LIQUID	N/A	1AW-98-FB1		
98000261	AW-101 LAW	1 SAMPLE	S98T001292	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	CLEAR		
98000261	AW-101 LAW	1 SAMPLE	S98T001292	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
98000261	AW-101 LAW	1 SAMPLE	S98T001292	0	@BRKDOWN1 STLSD01	LIQUID	N/A	0		%
98000261	AW-101 LAW	1 SAMPLE	S98T001292	0	@BRKDOWN1 COLOR-01	LIQUID	N/A	COLORLESS		
98000261	AW-101 LAW	1 SAMPLE	S98T001292	0	@BRKDOWN1 ORGVOL02	LIQUID	N/A	NONE		mL
98000261	AW-101 LAW	2 SAMPLE	S98T001288	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
98000261	AW-101 LAW	2 SAMPLE	S98T001288	0	@BRKDOWN1 SEALNUM	LIQUID	N/A	11910		
98000261	AW-101 LAW	2 SAMPLE	S98T001288	0	@BRKDOWN1 ETCHNUM	LIQUID	N/A	1AW-98-07		
98000261	AW-101 LAW	2 SAMPLE	S98T001288	0	@BRKDOWN1 APPEAR02	LIQUID	N/A	CLOUDY		
98000261	AW-101 LAW	2 SAMPLE	S98T001288	0	@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
98000261	AW-101 LAW	2 SAMPLE	S98T001288	0	@BRKDOWN1 STLSD01	LIQUID	N/A	13.7		%
98000261	AW-101 LAW	2 SAMPLE	S98T001288	0	@BRKDOWN1 COLOR-01	LIQUID	N/A	YELLOW LIQUID BROWN SOLID		
98000261	AW-101 LAW	2 SAMPLE	S98T001288	0	@BRKDOWN1 ORGVOL02	LIQUID	N/A	NONE		mL
98000261	AW-101 LAW	3 SAMPLE	S98T001289	0	@BRKDOWN1 DOSERATE	LIQUID	N/A	N/A		mrad/hour
98000261	AW-101 LAW	3 SAMPLE	S98T001289	0	@BRKDOWN1 SEALNUM	LIQUID	N/A	11911		

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 24100

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000261	AW-101 LAW	3 SAMPLE	S98T001289	0		@BRKDOWN1 ETCHNUM	LIQUID	N/A	1AW-98-08		
98000261	AW-101 LAW	3 SAMPLE	S98T001289	0		@BRKDOWN1 APPEAR02	LIQUID	N/A	CLOUDY		
98000261	AW-101 LAW	3 SAMPLE	S98T001289	0		@BRKDOWN1 SAMPAMT2	LIQUID	N/A	125		mL
98000261	AW-101 LAW	3 SAMPLE	S98T001289	0		@BRKDOWN1 STLSLD01	LIQUID	N/A	27.4		%
98000261	AW-101 LAW	3 SAMPLE	S98T001289	0		@BRKDOWN1 COLOR-01	LIQUID	N/A	YELLOW LIQUID BROWN SOLID		
98000261	AW-101 LAW	3 SAMPLE	S98T001289	0		@BRKDOWN1 ORGVOL02	LIQUID	N/A	NONE		mL

Final page for worklist # 24100

RS. Hle 6/17/98
Analyst Signature Date

Sandy Wolan 11/2/99
Analyst Signature Date

Data Entry Comments:

validated by Ruth Hle 11/2/99

LABCORE Data Entry Template for Worklist# 24101

Analyst: RDH Instrument: NONE Book # _____

Method: LA-519-151 Rev/Mod E-0

Worklist Comment: AW101, @BRKDWN1 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000261	AW-101 LAW	1 SAMPLE	S98T001282	0	@BRKDWN1 DOSERATE	SOLID	N/A	N/A		mrad/hour
98000261	AW-101 LAW	1 SAMPLE	S98T001282	0	@BRKDWN1 SEALNUM	SOLID	N/A	2011		
98000261	AW-101 LAW	1 SAMPLE	S98T001282	0	@BRKDWN1 ETCHNUM	SOLID	N/A	1AW-98-01		
98000261	AW-101 LAW	1 SAMPLE	S98T001282	0	@BRKDWN1 APPEAR02	SOLID	N/A	OPAQUE		
98000261	AW-101 LAW	1 SAMPLE	S98T001282	0	@BRKDWN1 SAMPAMT2	SOLID	N/A	125		mL
98000261	AW-101 LAW	1 SAMPLE	S98T001282	0	@BRKDWN1 STLSLD01	SOLID	N/A	100		%
98000261	AW-101 LAW	1 SAMPLE	S98T001282	0	@BRKDWN1 COLOR-01	SOLID	N/A	BROWN		
98000261	AW-101 LAW	1 SAMPLE	S98T001282	0	@BRKDWN1 ORGVOL02	SOLID	N/A	NONE		mL
98000261	AW-101 LAW	2 SAMPLE	S98T001283	0	@BRKDWN1 DOSERATE	SOLID	N/A	N/A		mrad/hour
98000261	AW-101 LAW	2 SAMPLE	S98T001283	0	@BRKDWN1 SEALNUM	SOLID	N/A	2012		
98000261	AW-101 LAW	2 SAMPLE	S98T001283	0	@BRKDWN1 ETCHNUM	SOLID	N/A	1AW-98-02		
98000261	AW-101 LAW	2 SAMPLE	S98T001283	0	@BRKDWN1 APPEAR02	SOLID	N/A	OPAQUE		
98000261	AW-101 LAW	2 SAMPLE	S98T001283	0	@BRKDWN1 SAMPAMT2	SOLID	N/A	125		mL
98000261	AW-101 LAW	2 SAMPLE	S98T001283	0	@BRKDWN1 STLSLD01	SOLID	N/A	100		%
98000261	AW-101 LAW	2 SAMPLE	S98T001283	0	@BRKDWN1 COLOR-01	SOLID	N/A	BROWN		
98000261	AW-101 LAW	2 SAMPLE	S98T001283	0	@BRKDWN1 ORGVOL02	SOLID	N/A	NONE		mL
98000261	AW-101 LAW	3 SAMPLE	S98T001290	0	@BRKDWN1 DOSERATE	SOLID	N/A	N/A		mrad/hour
98000261	AW-101 LAW	3 SAMPLE	S98T001290	0	@BRKDWN1 SEALNUM	SOLID	N/A	11913		

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 24101

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000261	AW-101 LAW	3 SAMPLE	S98T001290	0	@BRKDWN1 ETCHNUM	SOLID	N/A	1AW-98-09		
98000261	AW-101 LAW	3 SAMPLE	S98T001290	0	@BRKDWN1 APPEAR02	SOLID	N/A	OPAQUE		
98000261	AW-101 LAW	3 SAMPLE	S98T001290	0	@BRKDWN1 SAMPAMT2	SOLID	N/A	125		mL
98000261	AW-101 LAW	3 SAMPLE	S98T001290	0	@BRKDWN1 STLSTD01	SOLID	N/A	35.8		%
98000261	AW-101 LAW	3 SAMPLE	S98T001290	0	@BRKDWN1 COLOR-01	SOLID	N/A	YELLOW LIQUID BROWN SOLID		
98000261	AW-101 LAW	3 SAMPLE	S98T001290	0	@BRKDWN1 ORGVOL02	SOLID	N/A	NONE		mL
98000261	AW-101 LAW	4 SAMPLE	S98T001291	0	@BRKDWN1 DOSERATE	SOLID	N/A	N/A		mmrad/hour
98000261	AW-101 LAW	4 SAMPLE	S98T001291	0	@BRKDWN1 SEALNUM	SOLID	N/A	11914		
98000261	AW-101 LAW	4 SAMPLE	S98T001291	0	@BRKDWN1 ETCHNUM	SOLID	N/A	1AW-98-10		
98000261	AW-101 LAW	4 SAMPLE	S98T001291	0	@BRKDWN1 APPEAR02	SOLID	N/A	CLOUDY		
98000261	AW-101 LAW	4 SAMPLE	S98T001291	0	@BRKDWN1 SAMPAMT2	SOLID	N/A	125		mL
98000261	AW-101 LAW	4 SAMPLE	S98T001291	0	@BRKDWN1 STLSTD01	SOLID	N/A	44.2		%
98000261	AW-101 LAW	4 SAMPLE	S98T001291	0	@BRKDWN1 COLOR-01	SOLID	N/A	YELLOW LIQUID BROWN SOLID		
98000261	AW-101 LAW	4 SAMPLE	S98T001291	0	@BRKDWN1 ORGVOL02	SOLID	N/A	NONE		mL

Final page for worklist # 24101

RS 4/02 6/17/98
Analyst Signature Date

Andy Wollam 1/12/99
Analyst Signature Date

Data Entry Comments:

Validated by Rott RLL 1/12/99

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

HNF-1652 REV. 0

SAMPLE PREPARATIONS

HNF-1652 REV. 0

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HNF-1652 REV. 0

Page: 1

worklistrpt Version 2.1 05/15/95

10/05/98 12:39

LABCORE Data Entry Template for Worklist# 26468

Analyst: 924 Instrument: FUS01 Bool: # 101AMethod: LA-549-141 Rev/Mod G-0

Worklist Comment: AW101 LAW, FUSION01 skim

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	<u>1</u>	<u>.250</u>	<u>N/A</u>	<u>g/L</u>
98000261	AW-101 LAW	2 SAMPLE	S98T002752	0 F	FUSION01	SOLID	<u>N/A</u>	<u>1.9912</u>		<u>g/L</u>
98000261	AW-101 LAW	3 SAMPLE	S98T002752	0	DOSE-02	SOLID	<u>N/A</u>	<u>17.4</u>		<u>mrads/hour</u>
98000261	AW-101 LAW	4 SAMPLE	S98T002753	0 F	FUSION01	SOLID	<u>N/A</u>	<u>1.9572</u>		<u>g/L</u>
98000261	AW-101 LAW	5 SAMPLE	S98T002753	0	DOSE-02	SOLID	<u>N/A</u>	<u>21</u>		<u>mrads/hour</u>
98000261	AW-101 LAW	6 SAMPLE	S98T002754	0 F	FUSION01	SOLID	<u>N/A</u>	<u>1.9588</u>		<u>g/L</u>
98000261	AW-101 LAW	7 SAMPLE	S98T002754	0	DOSE-02	SOLID	<u>N/A</u>	<u>23.6</u>		<u>mrads/hour</u>

Final page for worklist # 26468

Analyst Signature [Signature] Date 10-7-98Analyst Signature [Signature] Date 10/8/98

Parent Daughter
 S98T002746 → S98T002752
 S98T002747 → S98T002753
 S98T002748 → S98T002754

Verified by: [Signature] 11/1/98

Data Entry Comments:

forward to 373-1180 on 10-7-98 [Signature]

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-1652 REV. 0

worklist Version 2.1 05/15/95

10/18/98 10:53

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LABCORE Data Entry Template for Worklist# 26624

Analyst: RRO Instrument: FUS01 Book # NAMethod: LA-549-141 Rev/Mod G-0

Worklist Comment: AW101 LAW, FUSION01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	<u>1</u>	<u>0.250</u>	N/A	g/L
98000554	AW-101 LAW	2 SAMPLE	S98T003082	0 F	FUSION01	SOLID	N/A	<u>2.1744</u>		g/L
		<u>54369</u> →	<u>250L</u>							
98000554	AW-101 LAW	3 SAMPLE	S98T003082	0	DOSE-02	SOLID	N/A	<u>39</u>		mrad/hour
98000554	AW-101 LAW	4 SAMPLE	S98T003083	0 F	FUSION01	SOLID	N/A	<u>2.1428</u>		g/L
		<u>53579</u> →	<u>250L</u>							
98000554	AW-101 LAW	5 SAMPLE	S98T003083	0	DOSE-02	SOLID	N/A	<u>143</u>		mrad/hour
98000554	AW-101 LAW	6 SAMPLE	S98T003084	0 F	FUSION01	SOLID	N/A	<u>2.0448</u>		g/L
		<u>50379</u> →	<u>250L</u>							
98000554	AW-101 LAW	7 SAMPLE	S98T003084	0	DOSE-02	SOLID	N/A	<u>143</u>		mrad/hour
98000554	AW-101 LAW	8 SAMPLE	S98T003085	0 F	FUSION01	SOLID	N/A	<u>2.3696</u>		g/L
		<u>59249</u> →	<u>250L</u>							
98000554	AW-101 LAW	9 SAMPLE	S98T003085	0	DOSE-02	SOLID	N/A	<u>29</u>		mrad/hour
98000554	AW-101 LAW	10 SAMPLE	S98T003086	0 F	FUSION01	SOLID	N/A	<u>2.3012</u>		g/L
		<u>57539</u> →	<u>250L</u>							
98000554	AW-101 LAW	11 SAMPLE	S98T003086	0	DOSE-02	SOLID	N/A	<u>32</u>		mrad/hour

Final page for worklist # 26624

Robin R O'Dell 10-18-98
Analyst Signature Date

Spina 2 Chua 10/19/98
Analyst Signature Date

Verified by:

RLH 10/19/98

Parent
S98T003063 → S98T003082
3064 → S98T003083
3065 → S98T003084
3066 → S98T003085
3067 → S98T003086

Data Entry Comments:

Faxed 10/18/98

HP + Chuck Felder

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.

worklist Version 2.1 05/15/95
10/05/98 12:40

HNF-1652 REV. 0

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LABCORE Data Entry Template for Worklist# 26469

Analyst: Jan 2 Instrument: H2001 _____ Block # N/AMethod: LA-504-101 Rev/Mod F-0

Worklist Comment: AW101 LAW, H2ODIG01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			H2ODIG01	SOLID	<u>1</u>	<u>.100</u>	<u>N/A</u>	<u>g/L</u>
98000261	AW-101 LAW	2 SAMPLE <u>.5008g</u> → <u>.1000</u>	S98T002758	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>5.008</u>		<u>g/L</u>
98000261	AW-101 LAW	3 SAMPLE	S98T002758	0	DOSE-02	SOLID	<u>N/A</u>	<u>16</u>		<u>mrads/hour</u>
98000261	AW-101 LAW	4 SAMPLE <u>.5056g</u> → <u>.1000</u>	S98T002759	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>5.056</u>		<u>g/L</u>
98000261	AW-101 LAW	5 SAMPLE	S98T002759	0	DOSE-02	SOLID	<u>N/A</u>	<u>13</u>		<u>mrads/hour</u>
98000261	AW-101 LAW	6 SAMPLE <u>.5093g</u> → <u>.1000</u>	S98T002760	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>5.093</u>		<u>g/L</u>
98000261	AW-101 LAW	7 SAMPLE	S98T002760	0	DOSE-02	SOLID	<u>N/A</u>	<u>10</u>		<u>mrads/hour</u>

Final page for worklist # 26469

Analyst Signature [Signature] Date 10/7/98

Analyst Signature _____ Date _____

Data Entry Comments:

HIT - Kathy Alessio

Validated by:

DATA ENTRY 10-8-98Saul M. PangJR Howell10/9/98Units 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-1652 REV. 0

Page: 1

worklistrpt Version 2.1 05/15/95
10/16/98 11:04

LABCORE Data Entry Template for Worklist# 26625

Analyst: Law 2 Instrument: H2001 Boon # N/AMethod: LA-504-101 Rev/Mod F-0

Worklist Comment: AW101 LAW, H2ODIG01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			H2ODIG01	SOLID	<u>1</u>	<u>.100</u>	<u>N/A</u>	g/L
98000554	AW-101 LAW	2 SAMPLE	S98T003092	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>5</u>		g/L
		<u>.5000 g</u> → <u>.1001</u>	S98T003092	0	DOSE-02	SOLID	<u>N/A</u>	<u>15</u>		mrad/hour
98000554	AW-101 LAW	3 SAMPLE								
98000554	AW-101 LAW	4 SAMPLE	S98T003093	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>4.926</u>		g/L
		<u>.4926 g</u> → <u>.1001</u>	S98T003093	0	DOSE-02	SOLID	<u>N/A</u>	<u>12</u>		mrad/hour
98000554	AW-101 LAW	5 SAMPLE								
98000554	AW-101 LAW	6 SAMPLE	S98T003094	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>5.029</u>		g/L
		<u>.5029 g</u> → <u>.1001</u>	S98T003094	0	DOSE-02	SOLID	<u>N/A</u>	<u>6</u>		mrad/hour
98000554	AW-101 LAW	7 SAMPLE								
98000554	AW-101 LAW	8 SAMPLE	S98T003095	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>5.150</u>		g/L
		<u>.5150 g</u> → <u>.1001</u>	S98T003095	0	DOSE-02	SOLID	<u>N/A</u>	<u>18</u>		mrad/hour
98000554	AW-101 LAW	9 SAMPLE								
98000554	AW-101 LAW	10 SAMPLE	S98T003096	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>5.146</u>		g/L
		<u>.5146 g</u> → <u>.1001</u>	S98T003096	0	DOSE-02	SOLID	<u>N/A</u>	<u>18</u>		mrad/hour
98000554	AW-101 LAW	11 SAMPLE								

Final page for worklist # 26625

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

HPT. Check Pellet

Validated by:

DATA ENTRY 10-21-98

S. H. Pang
10/21/98

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

worklist# Version 2.1 05/15/95
10/05/98 12:33

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LABCORE Data Entry Template for Worklist# 26465

Analyst: Jan 2 Instrument: ACD01 Books # WHC-1A 2.5 mls each into
WHC-2 50 mls total Volume
 Method: LA-505-163 Rev/Mod B-0 * DF = 20x
 Worklist Comment: AW101 LAW, ACIDIG01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			ACIDIG01	SOLID	<u>1</u>	<u>.050</u>	<u>N/A</u>	<u>g/L</u>
		2 STD-PREP			ACIDIG01	SOLID	<u>20</u>	<u>20</u>	<u>N/A</u>	<u>g/L</u>
98000261	AW-101 LAW	3 SAMPLE	S98T002755	0 A	ACIDIG01	SOLID	<u>N/A</u>	<u>5.148</u>		<u>g/L</u>
		<u>.25747</u>	<u>→ .050</u>							
98000261	AW-101 LAW	4 SAMPLE	S98T002755	0	DOSE-02	SOLID	<u>N/A</u>	<u>19</u>		<u>mrads/hour</u>
98000261	AW-101 LAW	5 SPK	S98T002755	0 A	ACIDIG01	SOLID	<u>5.056</u>	<u>N/A</u>	<u>N/A</u>	<u>g/L</u> * <u>SEE NOTE</u>
		<u>.25289</u>	<u>→ .050</u>							
98000261	AW-101 LAW	6 SPK	S98T002755	0	DOSE-02	SOLID	<u>23</u>	<u>N/A</u>	<u>N/A</u>	<u>mrads/hour</u>
98000261	AW-101 LAW	7 SAMPLE	S98T002756	0 A	ACIDIG01	SOLID	<u>N/A</u>	<u>4.968</u>		<u>g/L</u>
		<u>.24393</u>	<u>→ .050</u>							
98000261	AW-101 LAW	8 SAMPLE	S98T002756	0	DOSE-02	SOLID	<u>N/A</u>	<u>10</u>		<u>mrads/hour</u>
98000261	AW-101 LAW	9 SAMPLE	S98T002757	0 A	ACIDIG01	SOLID	<u>N/A</u>	<u>5.218</u>		<u>g/L</u>
		<u>.26093</u>	<u>→ .050</u>							
98000261	AW-101 LAW	10 SAMPLE	S98T002757	0	DOSE-02	SOLID	<u>N/A</u>	<u>19</u>		<u>mrads/hour</u>

Final page for worklist # 26465

Jan 2 10/7/98
 Analyst Signature Date

Analyst Signature Date

Parent Daughters
 S98T002746 → S98T002755
 S98T002747 → S98T002756
 S98T002748 → S98T002757

Data Entry Comments: HTS - Kathy Alleccio

DATA ENTRY 10-8-98

JL Wavell

Validated by:

Sam M. Pang
10/9/98

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

HNF-1652 REV. 0

worklistrpt Version 2.1 05/15/95

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10/05/98 12:37

LABCORE Data Entry Template for Worklist# 26466

Analyst: P. H. 2 Instrument: ACD01

W4C-1A 2.5 ml each into
 W4C-2 50 ml total volume
 * DF = 20x

Method: LA-505-158 Rev/Mod E-0

Worklist Comment: AW101 LAW, ACIDIG02 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			ACIDIG02	LIQUID	<u>1</u>	<u>.050</u>	<u>N/A</u>	DF
		2 STD-PREP			ACIDIG02	LIQUID	<u>20</u>	<u>20</u>	<u>N/A</u>	DF
98000261	AW-101 LAW	3 SAMPLE	S98T002788	0 B	ACIDIG02	LIQUID	<u>N/A</u>	<u>100</u>		DF
		<u>.500 ml → 50 ml</u>								
98000261	AW-101 LAW	4 SAMPLE	S98T002788	0	DOSE-02	LIQUID	<u>N/A</u>	<u>44</u>		mrad/hour
98000261	AW-101 LAW	5 DUP	S98T002788	0 B	ACIDIG02	LIQUID	<u>100</u>	<u>100</u>	<u>N/A</u>	DF
		<u>.500 ml → 50 ml</u>								
98000261	AW-101 LAW	6 DUP	S98T002788	0	DOSE-02	LIQUID	<u>44</u>	<u>22</u>	<u>N/A</u>	mrad/hour
98000261	AW-101 LAW	7 SPK	S98T002788	0 B	ACIDIG02	LIQUID	<u>100</u>	<u>N/A</u>	<u>N/A</u>	DF * see note
		<u>* see note . 500 ml → 50 ml</u>								
98000261	AW-101 LAW	8 SPK	S98T002788	0	DOSE-02	LIQUID	<u>30</u>	<u>N/A</u>	<u>N/A</u>	mrad/hour
98000261	AW-101 LAW	9 SAMPLE	S98T002789	0 B	ACIDIG02	LIQUID	<u>N/A</u>	<u>100</u>		DF
		<u>.500 ml → 50 ml</u>								
98000261	AW-101 LAW	10 SAMPLE	S98T002789	0	DOSE-02	LIQUID	<u>N/A</u>	<u>36</u>		mrad/hour
98000261	AW-101 LAW	11 DUP	S98T002789	0 B	ACIDIG02	LIQUID	<u>100</u>	<u>100</u>	<u>N/A</u>	DF
		<u>.500 ml → 50 ml</u>								
98000261	AW-101 LAW	12 DUP	S98T002789	0	DOSE-02	LIQUID	<u>36</u>	<u>34</u>	<u>N/A</u>	mrad/hour
98000261	AW-101 LAW	13 SAMPLE	S98T002790	0 B	ACIDIG02	LIQUID	<u>N/A</u>	<u>100</u>		DF
		<u>.500 ml → 50 ml</u>								
98000261	AW-101 LAW	14 SAMPLE	S98T002790	0	DOSE-02	LIQUID	<u>N/A</u>	<u>30</u>		mrad/hour
98000261	AW-101 LAW	15 DUP	S98T002790	0 B	ACIDIG02	LIQUID	<u>100</u>	<u>100</u>	<u>N/A</u>	DF
		<u>.500 ml → 50 ml</u>								
98000261	AW-101 LAW	16 DUP	S98T002790	0	DOSE-02	LIQUID	<u>30</u>	<u>36</u>	<u>N/A</u>	mrad/hour

Parent Daughten
 S98T002779 → S98T002788
 S98T002780 → S98T002789
 S98T002781 → S98T002790

Data Entry Comments:

DATA ENTRY 10-9-98
 John Wansell

Validated by:
 Sam H. Pang
 10/9/98

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

worklistrpt Version 2.1 05/15/95
10/05/98 12:37

HNF-1652 NW0

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LABCORE Data Entry Template for Worklist# 26466

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

Final page for worklist # 26466

10/8/98

Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

HPT- Kirby Alessio

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-1652 REV. 0

worklist# Version 2.1 05/15/95

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10/16/98 14:39

LABCORE Data Entry Template for Worklist# 26637

Analyst: Pr 2 Instrument: ACD01 Books # NHC-2 *2.5ml/s each into 50 ml/s total Volume*
 Method: LA-505-163 Rev/Mod B-0 * *D.F. = 20x*

Worklist Comment: AW101 LAW, ACIDIG01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			ACIDIG01	SOLID	<u>1</u>	<u>.050</u>	N/A	g/L
		2 STD-PREP			ACIDIG01	SOLID	<u>20</u>	<u>20</u>	N/A	g/L
98000554	AW-101 LAW	3 SAMPLE	S98T003087	0 A	ACIDIG01	SOLID	<u>N/A</u>	<u>5.29</u>		g/L
		<i>.2645 g → .050 g</i>								
98000554	AW-101 LAW	4 SAMPLE	S98T003087	0	DOSE-02	SOLID	<u>N/A</u>	<u>54</u>		mrad/hour
98000554	AW-101 LAW	5 SPK	S98T003087	0 A	ACIDIG01	SOLID	<u>4.968</u>	<u>N/A</u>	N/A	g/L
		<i>* SEE NOTE .2484 g → .050 g</i>								
98000554	AW-101 LAW	6 SPK	S98T003087	0	DOSE-02	SOLID	<u>54</u>	<u>N/A</u>	N/A	mrad/hour
98000554	AW-101 LAW	7 SAMPLE	S98T003088	0 A	ACIDIG01	SOLID	<u>N/A</u>	<u>5.028</u>		g/L
		<i>.2514 g → .050 g</i>								
98000554	AW-101 LAW	8 SAMPLE	S98T003088	0	DOSE-02	SOLID	<u>N/A</u>	<u>140</u>		mrad/hour
98000554	AW-101 LAW	9 SAMPLE	S98T003089	0 A	ACIDIG01	SOLID	<u>N/A</u>	<u>4.846</u>		g/L
		<i>.2423 g → .050 g</i>								
98000554	AW-101 LAW	10 SAMPLE	S98T003089	0	DOSE-02	SOLID	<u>N/A</u>	<u>170</u>		mrad/hour
98000554	AW-101 LAW	11 SAMPLE	S98T003090	0 A	ACIDIG01	SOLID	<u>N/A</u>	<u>4.814</u>		g/L
		<i>.2407 g → .050 g</i>								
98000554	AW-101 LAW	12 SAMPLE	S98T003090	0	DOSE-02	SOLID	<u>N/A</u>	<u>30</u>		mrad/hour
98000554	AW-101 LAW	13 SAMPLE	S98T003091	0 A	ACIDIG01	SOLID	<u>N/A</u>	<u>5.3</u>		g/L
		<i>.2650 g → .050 g</i>								
98000554	AW-101 LAW	14 SAMPLE	S98T003091	0	DOSE-02	SOLID	<u>N/A</u>	<u>27</u>		mrad/hour

Final page for worklist # 26637

Pr 2
 Analyst Signature Date 10/21/98

Analyst Signature Date

Data Entry Comments:

HPT. Check Refs
 DATA ENTRY 10-21-98
John Howell

Validated by:

Paul W. Pang
 10/21/98

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

HNF-1652 REV. 0

worklistrpt Version 2.1 05/15/95
10/21/98 13:58

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LABCORE Data Entry Template for Worklist# 26688

Analyst: Luc Instrument: ACD01 _____ Book # WPC-1A
WPC-2 2.5 ml into each
50 ml final volume
* DF = 20x

Method: LA-505-158 Rev/Mod E-0

Worklist Comment: AW101 LAW, ACIDIG02 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			ACDIG02	LIQUID	<u>1</u>	<u>.050</u>	<u>N/A</u>	DF
		2 STD-PREP			ACDIG02	LIQUID	<u>20</u>	<u>20</u>	<u>N/A</u>	DF
98000554	AW-101 LAW	3 SAMPLE	S98T003077	0 B	ACDIG02	LIQUID	<u>N/A</u>	<u>50</u>		DF
		<u>1 ml → 50 ml</u>								
98000554	AW-101 LAW	4 SAMPLE	S98T003077	0	DOSE-02	LIQUID	<u>N/A</u>	<u>75</u>		mrad/10ur
98000554	AW-101 LAW	5 SPK	S98T003077	0 B	ACDIG02	LIQUID	<u>N/A</u>	<u>50</u>	<u>N/A</u>	DF
		<u>1 ml → 50 ml</u>								
98000554	AW-101 LAW	6 SPK	S98T003077	0	DOSE-02	LIQUID	<u>N/A</u>	<u>75</u>	<u>N/A</u>	mrad/10ur
98000554	AW-101 LAW	7 SAMPLE	S98T003078	0 B	ACDIG02	LIQUID	<u>N/A</u>	<u>50</u>		DF
		<u>1 ml → 50 ml</u>								
98000554	AW-101 LAW	8 SAMPLE	S98T003078	0	DOSE-02	LIQUID	<u>N/A</u>	<u>60</u>		mrad/hour
98000554	AW-101 LAW	9 SAMPLE	S98T003079	0 B	ACDIG02	LIQUID	<u>N/A</u>	<u>50</u>		DF
		<u>1 ml → 50 ml</u>								
98000554	AW-101 LAW	10 SAMPLE	S98T003079	0	DOSE-02	LIQUID	<u>N/A</u>	<u>45</u>		mrad/hour
98000554	AW-101 LAW	11 SAMPLE	S98T003080	0 B	ACDIG02	LIQUID	<u>N/A</u>	<u>50</u>		DF
		<u>1 ml → 50 ml</u>								
98000554	AW-101 LAW	12 SAMPLE	S98T003080	0	DOSE-02	LIQUID	<u>N/A</u>	<u>112</u>		mrad/hour
98000554	AW-101 LAW	13 SAMPLE	S98T003081	0 B	ACDIG02	LIQUID	<u>N/A</u>	<u>50</u>		DF
		<u>1 ml → 50 ml</u>								
98000554	AW-101 LAW	14 SAMPLE	S98T003081	0	DOSE-02	LIQUID	<u>N/A</u>	<u>112</u>		mrad/hour

Final page for worklist # 26688

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

HET - Bill Bishop

Validated by:

DATA ENTRY 10-27-98

Sally M. Pung

John Howell

10/29/98

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

HNF-1652 REV. 0

Page: 1

worklistrpt Version 2.1 05/15/95

10/05/98 12:38

LABCORE Data Entry Template for Worklist# 26467

Analyst: Amz Instrument: ACD01 _____ Bool: # 58W10-6 2-5mlsMethod: LA-505-100 Rev/Mod A-0

Worklist Comment: AW101 LAW, GFADIG01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			GFADIG01	LIQUID	<u>1</u>	<u>.025</u>	<u>N/A</u>	DF
		2 STD-PREP			GFADIG01	LIQUID	<u>20</u>	<u>20</u>	<u>N/A</u>	DF
98000261	AW-101 LAW	3 SAMPLE	S98T002791 0 G		GFADIG01	LIQUID	<u>N/A</u>	<u>50</u>		DF
		<u>500 ml</u> → <u>25 ml</u>								
98000261	AW-101 LAW	4 SAMPLE	S98T002791 0		DOSE-02	LIQUID	<u>N/A</u>	<u>75</u>		mrad/hour
98000261	AW-101 LAW	5 DUP	S98T002791 0 G		GFADIG01	LIQUID	<u>50</u>	<u>50</u>	<u>N/A</u>	DF
		<u>500 ml</u> → <u>25 ml</u>								
98000261	AW-101 LAW	6 DUP	S98T002791 0		DOSE-02	LIQUID	<u>75</u>	<u>70</u>	<u>N/A</u>	mrad/hour
98000261	AW-101 LAW	7 SPK	S98T002791 0 G		GFADIG01	LIQUID	<u>50</u>	<u>N/A</u>	<u>N/A</u>	DF
		<u>500 ml</u> → <u>25 ml</u>								
98000261	AW-101 LAW	8 SPK	S98T002791 0		DOSE-02	LIQUID	<u>60</u>	<u>N/A</u>	<u>N/A</u>	mrad/hour
98000261	AW-101 LAW	9 SAMPLE	S98T002792 0 G		GFADIG01	LIQUID	<u>N/A</u>	<u>50</u>		DF
		<u>500 ml</u> → <u>25 ml</u>								
98000261	AW-101 LAW	10 SAMPLE	S98T002792 0		DOSE-02	LIQUID	<u>N/A</u>	<u>75</u>		mrad/hour
98000261	AW-101 LAW	11 DUP	S98T002792 0 G		GFADIG01	LIQUID	<u>50</u>	<u>50</u>	<u>N/A</u>	DF
		<u>500 ml</u> → <u>25 ml</u>								
98000261	AW-101 LAW	12 DUP	S98T002792 0		DOSE-02	LIQUID	<u>75</u>	<u>60</u>	<u>N/A</u>	mrad/hour
98000261	AW-101 LAW	13 SAMPLE	S98T002793 0 G		GFADIG01	LIQUID	<u>N/A</u>	<u>50</u>		DF
		<u>500 ml</u> → <u>25 ml</u>								
98000261	AW-101 LAW	14 SAMPLE	S98T002793 0		DOSE-02	LIQUID	<u>N/A</u>	<u>70</u>		mrad/hour
98000261	AW-101 LAW	15 DUP	S98T002793 0 G		GFADIG01	LIQUID	<u>50</u>	<u>50</u>	<u>N/A</u>	DF
		<u>500 ml</u> → <u>25 ml</u>								
98000261	AW-101 LAW	16 DUP	S98T002793 0		DOSE-02	LIQUID	<u>70</u>	<u>85</u>	<u>N/A</u>	mrad/hour

Parent Daughters
 598T002782 → 598T002791
 598T002783 → 598T002792
 598T002784 → 598T002793

Data Entry Comments:

* ADDED .050ml H₂O₂ to EACH

DATA ENTRY 10-13-98

Validated by:

J.R. Howell

Sally P. King 10/13/98

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

worklist rpt Version 2.1 05/15/95
10/05/98 12:38

HNF-1652 REV. 0

Page: 2

LABCORE Data Entry Template for Worklist# 26467

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

Final page for worklist # 26467

10/9/98

Analyst Signature Date

Analyst Signature Date

* ADDED .050 ml H₂O₂ to EACH.

Data Entry Comments: HDT- LISA Valdez

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-1652 REV. 0

Page: 1

Worklist Version 2.1 05/15/95
00/08/98 07:11

LABCORE Data Entry Template for Worklist# 26461

Analyst: CJO Instrument: NONE Book # _____Method: LA-523-115 Rev/Mod B-0

Worklist Comment: AW101 LAW, PCBPREP1 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLANK			PCBPREP1	LIQ		DONE	N/A	
		2 LCS			PCBPREP1	LIQ		DONE	N/A	
98000261	AW-101 LAW	3 SAMPLE	S98T002785	0	PCBPREP1	LIQ	N/A	DONE		
98000261	AW-101 LAW	4 DUP	S98T002785	0	PCBPREP1	LIQ		DONE	N/A	
98000261	AW-101 LAW	5 MS	S98T002785	0	PCBPREP1	LIQ		DONE	N/A	
98000261	AW-101 LAW	6 SAMPLE	S98T002786	0	PCBPREP1	LIQ	N/A	DONE		
98000261	AW-101 LAW	7 DUP	S98T002786	0	PCBPREP1	LIQ		DONE	N/A	
98000261	AW-101 LAW	8 SAMPLE	S98T002787	0	PCBPREP1	LIQ	N/A	DONE		
98000261	AW-101 LAW	9 DUP	S98T002787	0	PCBPREP1	LIQ		DONE	N/A	
98000261	AW-101 LAW	10 SAMPLE	S98T002797	0	PCBPREP1	LIQ	N/A	DONE		
98000261	AW-101 LAW	11 DUP	S98T002797	0	PCBPREP1	LIQ		DONE	N/A	

Final page for worklist # 26461

C.J. O'Brien 11/5/98
Analyst Signature Date

Barbara S. Jett 11-5-98
Analyst Signature Date

Data Entry Comments:

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

worklist rpt Version 2.1 05/15/95
10/08/98 07:14

HNF-1652 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 26462

Analyst: CJO Instrument: NONE Book # Method: LA-523-138 Rev/ModWorklist Comment: AW101 LAW, PCBPREP1 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLANK			PCBPREP1	SOL		<u>DONE</u>	<u>N/A</u>	
		2 LCS			PCBPREP1	SOL		<u>DONE</u>	<u>N/A</u>	
98000261	AW-101 LAW	3 SAMPLE	S98T002749	0	PCBPREP1	SOL	<u>N/A</u>	<u>DONE</u>		
98000261	AW-101 LAW	4 MS	S98T002749	0	PCBPREP1	SOL		<u>DONE</u>	<u>N/A</u>	
98000261	AW-101 LAW	5 SAMPLE	S98T002750	0	PCBPREP1	SOL	<u>N/A</u>	<u>DONE</u>		
98000261	AW-101 LAW	6 SAMPLE	S98T002751	0	PCBPREP1	SOL	<u>N/A</u>	<u>DONE</u>		

Final page for worklist # 26462

Analyst Signature CJO Date 10/12/98

START 10-8-98 11:30

Analyst Signature JH Se Date 10/12/98

DA Ron 10/12/98

Data Entry Comments:

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

HNF-1652 REV. 0

INORGANIC ANALYSIS

HNF-1652 REV. 0

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LABCORE Completed Worklist Report for Worklist# 26406

Analyst: rwk

Instrument: BA001

Book#: 134N16C

Method: LA-510-112 Rev/Mod ~~D-I~~ E-~~0~~
1002 1/25/98

Worklist Comment: AW101 LAW, SPG-01 skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	SPG-01	LIQUID	1.3779	1.363	98.919 % Recovery	
2 SAMPLE	S98T002782 0	SPG-01	LIQUID	N/A	1.459	1.00e-003 Sp.G.	
3 DUP	S98T002782 0	SPG-01	LIQUID	1.459	1.477	1.226 RPD	
4 SAMPLE	S98T002783 0	SPG-01	LIQUID	N/A	1.467	1.00e-003 Sp.G.	
5 DUP	S98T002783 0	SPG-01	LIQUID	1.467	1.452	1.028 RPD	
6 SAMPLE	S98T002784 0	SPG-01	LIQUID	N/A	1.484	1.00e-003 Sp.G.	
7 DUP	S98T002784 0	SPG-01	LIQUID	1.484	1.470	0.948 RPD	
8 SAMPLE	S98T002796 0	SPG-01	LIQUID	N/A	.991	1.00e-003 Sp.G.	
9 DUP	S98T002796 0	SPG-01	LIQUID	.991	.985	0.607 RPD	

Final page for worklist# 26406

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

HNF-1652 REV. 0

worklistprt Version 2.1 05/15/95
09/29/98 13:52

Page: 1

LABCORE Data Entry Template for Worklist# 26406

Analyst: WK Instrument: BA001 Book # 134776-C
Method: LA-510-112 Rev/Mod D-1
Worklist Comment: AW101 LAW, SPG-01 skm

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	D.	UNIT
		1	STD				SPG-01	LIQUID			N/A	Sp.G.
98000261	AW-101 LAW	2	SAMPLE	S98T002782	0		SPG-01	LIQUID	N/A			Sp.G.
98000261	AW-101 LAW	3	DUP	S98T002782	0		SPG-01	LIQUID			N/A	Sp.G.
98000261	AW-101 LAW	4	SAMPLE	S98T002783	0		SPG-01	LIQUID	N/A			Sp.G.
98000261	AW-101 LAW	5	DUP	S98T002783	0		SPG-01	LIQUID			N/A	Sp.G.
98000261	AW-101 LAW	6	SAMPLE	S98T002784	0		SPG-01	LIQUID	N/A			Sp.G.
98000261	AW-101 LAW	7	DUP	S98T002784	0		SPG-01	LIQUID			N/A	Sp.G.
98000261	AW-101 LAW	8	SAMPLE	S98T002796	0		SPG-01	LIQUID	N/A			Sp.G.
98000261	AW-101 LAW	9	DUP	S98T002796	0		SPG-01	LIQUID			N/A	Sp.G.

Final page for worklist # 26406

Mark King 10/13/98
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		STD	REPLICATE
STD	Gross Weight (W2)	2.0125	2.0393
Work List	Tare Weight (W1)	1.8766	1.9027
26406	Weight of Solution (W2-W1)	0.1359	0.1366
Test Code	Volume of Solution μ L	100.0000	100.0000
SPG-01	Specific Gravity	1.3590	1.3660
Matrix	Specific Gravity (Average)	1.3625	
LIQUID			
Sample #			
STD			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RWK	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
10/03/98	v RESULT v		
Time	Specific Gravity Average =	1.363	
02:00 PM			

Data Entry by:

Date:

10/15/98

Approved by:

Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAM	REPLICATE
SAM	Gross Weight (W2)	1.9699	
Work List	Tare Weight (W1)	1.8240	
26406	Weight of Solution (W2-W1)	0.1459	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4590	NA
Matrix			
LIQUID			
Sample #			
S98T002782			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RWK	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date	v RESULT v		
10/03/98			
Time	Specific Gravity =	1.459	
02:00 PM			

Data Entry by:

Date: 10/15/98

Approved by:

Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUP	REPLICATE
DUP	Gross Weight (W2)	1.9940	
Work List	Tare Weight (W1)	1.8463	
26406	Weight of Solution (W2-W1)	0.1477	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4770	NA
Matrix			
LIQUID			
Sample #			
S98T002782			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RWK	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
10/03/98	v RESULT v		
Time	Specific Gravity =	1.477	
02:00 PM			

Data Entry by:

Date: 10/15/98

Approved by:

Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAM	REPLICATE
SAM	Gross Weight (W2)	1.9891	
Work List	Tare Weight (W1)	1.8424	
26406	Weight of Solution (W2-W1)	0.1467	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4670	NA
Matrix			
LIQUID			
Sample #			
S98T002783			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RWK	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
10/03/98	∇ RESULT ∇		
Time	Specific Gravity =	1.467	
02:00 PM			

Data Entry by:

Date: 10/15/98

Approved by:

Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUP	REPLICATE
DUP	Gross Weight (W2)	1.9897	
Work List	Tare Weight (W1)	1.8445	
26406	Weight of Solution (W2-W1)	0.1452	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4520	NA
Matrix			
LIQUID			
Sample #			
S98T002783			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RWK	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
10/03/98	$\checkmark$ RESULT $\checkmark$		
Time	Specific Gravity =	1.452	
02:00 PM			

Data Entry by:	Date:	10/15/98
Approved by:	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAM	REPLICATE
SAM	Gross Weight (W2)	1.9517	
Work List	Tare Weight (W1)	1.8033	
26406	Weight of Solution (W2-W1)	0.1484	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4840	NA
Matrix			
LIQUID			
Sample #			
S98T002784			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RWK	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
10/03/98	$\checkmark$ RESULT $\checkmark$		
Time	Specific Gravity =	1.484	
02:00 PM			

Data Entry by:	Date:	10/15/98
Approved by:	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUP	REPLICATE
DUP	Gross Weight (W2)	1.9041	
Work List	Tare Weight (W1)	1.7571	
26406	Weight of Solution (W2-W1)	0.147	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	1.4700	NA
Matrix			
LIQUID			
Sample #			
S98T002784			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RWK	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date	v RESULT v		
10/03/98	Specific Gravity =	1.470	
Time			
02:00 PM			

Data Entry by:	Date:	10/15/98
Approved by:	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAM	REPLICATE
SAM	Gross Weight (W2)	1.9334	
Work List	Tare Weight (W1)	1.8343	
26406	Weight of Solution (W2-W1)	0.0991	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	0.9910	NA
Matrix			
LIQUID			
Sample #			
S98T002796			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RWK	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date	v RESULT v		
10/03/98			
Time	Specific Gravity =	0.991	
02:00 PM			

Data Entry by:	Date: 10/15/98
Approved by:	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUP	REPLICATE
DUP	Gross Weight (W2)	1.9444	
Work List	Tare Weight (W1)	1.8459	
26406	Weight of Solution (W2-W1)	0.0985	0
Test Code	Volume of Solution μ L	100.0000	
SPG-01	Specific Gravity	0.9850	NA
Matrix			
LIQUID			
Sample #			
S98T002796			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RWK	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
10/03/98	$\checkmark$ RESULT $\checkmark$		
Time	Specific Gravity =	0.985	
02:00 PM			

Data Entry by:

Date: 10/15/98

Approved by:

Date:

LABCORE Data Entry Template for Worklist# 26626

Analyst: RAE Instrument: BA001 Book # N/A

Method: LA-519-132 Rev/Mod E-6

Worklist Comment: AW101 LAW, V%SLD-01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
98000554	AW-101 LAW	1 SAMPLE	S98T003053	0	V%SLD-01	SOLID	N/A	<u>19.0</u>		%
98000554	AW-101 LAW	2 SAMPLE	S98T003054	0	V%SLD-01	SOLID	N/A	<u>3.4</u>		%
98000554	AW-101 LAW	3 SAMPLE	S98T003055	0	V%SLD-01	SOLID	N/A	<u>2.8</u>		%
98000554	AW-101 LAW	4 SAMPLE	S98T003056	0	V%SLD-01	SOLID	N/A	<u>50.7</u>		%
98000554	AW-101 LAW	5 SAMPLE	S98T003057	0	V%SLD-01	SOLID	N/A	<u>48.3</u>		%

Final page for worklist # 26626

Ruth R. Clark 1/26/99
Analyst Signature Date

Sandra K. Wollam 1/26/99
Analyst Signature Date

Analysis performed by
Jerry Kunkel per test plan
HNF-2909 Rev. 8 under
the direction of J.C. Person.

Data Entry Comments:

Validated by Ruth R. Clark 1/27/99

LABCORE Completed Worklist Report for Worklist# 26403

Analyst: rwk

Instrument: BA001

Book#: 117N8A

Method: LA-564-101 Rev/Mod _____

Worklist Comment: AW101 LAW, SOLID-01 Perform at 105 C. skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		SOLID-01	LIQUID	4.06e1	42.9	105.665 % Recovery	
2 SAMPLE	S98T002779	0	SOLID-01	LIQUID	N/A	51.6	1.00e-002 %	
3 DUP	S98T002779	0	SOLID-01	LIQUID	51.6	52.7	2.109 RPD	
4 SAMPLE	S98T002780	0	SOLID-01	LIQUID	N/A	51.6	1.00e-002 %	
5 DUP	S98T002780	0	SOLID-01	LIQUID	51.6	51.5	0.194 RPD	
6 SAMPLE	S98T002781	0	SOLID-01	LIQUID	N/A	51.2	1.00e-002 %	
7 DUP	S98T002781	0	SOLID-01	LIQUID	51.2	52.2	1.934 RPD	
8 SAMPLE	S98T002795	0	SOLID-01	LIQUID	N/A <	0.01	1.00e-002 %	
9 DUP	S98T002795	0	SOLID-01	LIQUID	0	.8	200.000 RPD	

Final page for worklist# 26403

Analyst Signature

Date

Analyst Signature

Date

See Attached page for signatures

Reviewer Signature

Date

Del
2/3/99

worklistrpt Version 2.1 05/15/95
09/29/98 13:44

HNF-1652 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 26403

Analyst: 92 KK Instrument: BA001 _____ Bottle # 117228-A

Method: LA-564-101 Rev/Mod _____

Worklist Comment: AW101 LAW, SOLID-01 Perform at 105 C. skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				SOLID-01	LIQUID	<u>42.9</u>	N/A	%
98000261	AW-101 LAW	2 SAMPLE	S98T002779	0		SOLID-01	LIQUID	N/A <u>51.6</u>		%
98000261	AW-101 LAW	3 DUP	S98T002779	0		SOLID-01	LIQUID	<u>51.6</u> <u>52.7</u>	N/A	%
98000261	AW-101 LAW	4 SAMPLE	S98T002780	0		SOLID-01	LIQUID	N/A <u>51.6</u>		%
98000261	AW-101 LAW	5 DUP	S98T002780	0		SOLID-01	LIQUID	<u>51.6</u> <u>51.5</u>	N/A	%
98000261	AW-101 LAW	6 SAMPLE	S98T002781	0		SOLID-01	LIQUID	N/A <u>51.2</u>		%
98000261	AW-101 LAW	7 DUP	S98T002781	0		SOLID-01	LIQUID	<u>51.2</u> <u>52.2</u>	N/A	%
98000261	AW-101 LAW	8 SAMPLE	S98T002795	0		SOLID-01	LIQUID	N/A <u>0</u>		%
98000261	AW-101 LAW	9 DUP	S98T002795	0		SOLID-01	LIQUID	<u>0</u> <u>.8</u>	N/A	%

Final page for worklist # 26403

Analyst Signature M. P. King Date 10/18/98Analyst Signature [Signature] Date 10-23-98Validated 10/27/98 [Signature]

Data Entry Comments:

Fixed 10/18/98

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		STD	REPLICATE
Type	Tare Weight (W1)	17.5740	
STD	Gross Weight (W2)	18.9702	
Work List	First Residue Weight (W3)	18.1728	
26403	Second Residue Weight (W4)	18.1723	
Test Code	Percent Difference	0.0028	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	42.85	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
117N8A			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/07/98	Percent Weight Solids	= [(W4-W1)/(W2-W1))*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:00 AM			

RESULT

% SOLIDS = 42.9

Data Entry by:

Date:

10/23/98

Approved by:

Date:

Form 564101S2 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		STD	REPLICATE
Type	Tare Weight (W1)	15.0799	
CFB SAM 14010119	Gross Weight (W2)	16.5520	
Work List	First Residue Weight (W3)	15.8406	
26403	Second Residue Weight (W4)	15.8401	
Test Code	Percent Difference	0.0032	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	51.64	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002779			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= $[(W3-W4)/W4]*100.00$	
Date	QC Check "Pass" if % Difference	= $< +/- 0.1500\%$	
10/07/98	Percent Weight Solids	= $[(W4-W1)/(W2-W1)]*100 = \% \text{ SOLIDS}$	
Time	Percent Solids (Average)	= $[(\% \text{ SOLIDS for A})+(\% \text{ SOLIDS for B})]/2$	
01:00 AM			

RESULT

% SOLIDS = 51.6

Data Entry by:

Date: 10/23/98

Approved by:

Date:

Form 564101S2 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		DUP	REPLICATE
Type	Tare Weight (W1)	14.8937	
DUP	Gross Weight (W2)	16.3842	
Work List	First Residue Weight (W3)	15.6804	
26403	Second Residue Weight (W4)	15.6788	
Test Code	Percent Difference	0.0102	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	52.67	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002779			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/07/98	Percent Weight Solids	= [(W4-W1)/(W2-W1))*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:00 AM			

RESULT

% SOLIDS = 52.7

Data Entry by:	Date:	10/23/98
Approved by:	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		SAM	REPLICATE
Type	Tare Weight (W1)	15.1540	
SAM	Gross Weight (W2)	16.6329	
Work List	First Residue Weight (W3)	15.9181	
26403	Second Residue Weight (W4)	15.9168	
Test Code	Percent Difference	0.0082	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	51.58	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002780			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/07/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:00 AM			

RESULT

% SOLIDS = 51.6

Data Entry by:	Date:	10/23/98
Approved by:	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		DUP	REPLICATE
Type	Tare Weight (W1)	14.9136	
DUP	Gross Weight (W2)	16.3909	
Work List	First Residue Weight (W3)	15.6755	
26403	Second Residue Weight (W4)	15.6739	
Test Code	Percent Difference	0.0102	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	51.47	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002780			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= $[(W3-W4)/W4]*100.00$	
Date	QC Check "Pass" if % Difference	= $< +/- 0.1500\%$	
10/07/98	Percent Weight Solids	= $[(W4-W1)/(W2-W1)]*100 = \% \text{ SOLIDS}$	
Time	Percent Solids (Average)	= $[(\% \text{ SOLIDS for A})+(\% \text{ SOLIDS for B})]/2$	
01:00 AM			

RESULT

% SOLIDS = 51.5

Data Entry by:	Date:	10/23/98
Approved by:	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		SAM	REPLICATE
Type	Tare Weight (W1)	15.3444	
SAM	Gross Weight (W2)	16.8292	
Work List	First Residue Weight (W3)	16.1049	
26403	Second Residue Weight (W4)	16.1042	
Test Code	Percent Difference	0.0043	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	51.17	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002781			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/07/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:00 AM			

RESULT**% SOLIDS = 51.2**

Data Entry by:	Date:	10/23/98
Approved by:	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		DUP	REPLICATE
Type	Tare Weight (W1)	14.8668	
DUP	Gross Weight (W2)	16.3612	
Work List	First Residue Weight (W3)	15.6482	
26403	Second Residue Weight (W4)	15.6470	
Test Code	Percent Difference	0.0077	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	52.21	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002781			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/07/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:00 AM			

RESULT**% SOLIDS = 52.2**

Data Entry by:

Date: 10/23/98

Approved by:

Date:

Form 564101S2 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		SAM	REPLICATE
Type	Tare Weight (W1)	14.8854	
SAM	Gross Weight (W2)	15.9003	
Work List	First Residue Weight (W3)	14.8854	
26403	Second Residue Weight (W4)	14.8856	
Test Code	Percent Difference	0.0013	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	0.02	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002795			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/07/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:00 AM			

RESULT

% SOLIDS = 0.0

Data Entry by:	Date:	10/23/98
Approved by:	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		DUP	REPLICATE
Type	Tare Weight (W1)	15.3315	
DUP	Gross Weight (W2)	16.3437	
Work List	First Residue Weight (W3)	15.3396	
26403	Second Residue Weight (W4)	15.3398	
Test Code	Percent Difference	0.0013	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	0.82	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002795			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/07/98	Percent Weight Solids	= [(W4-W1)/(W2-W1))*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:00 AM			

RESULT

% SOLIDS = 0.8

Data Entry by:	Date:	10/23/98
Approved by:	Date:	

worklist rpt Version 2.1 05/15/95
09/29/98 13:51

HNF-1652 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 26404

Analyst: RM Instrument: BA001 Book # 11708-4Method: LA-564-101 Rev/Mod G-1Worklist Comment: AW101 LAW, SOLID-01 Perform at 105 C. skm
AWC: 10/25/98

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SOLID-01	SOLID	<u>40.6</u>	<u>42.6</u>	<u>N/A</u>	%
98000261	AW-101 LAW	2 SAMPLE	S98T002746	0	SOLID-01	SOLID	<u>N/A</u>	<u>56.6</u>		%
98000261	AW-101 LAW	3 SAMPLE	S98T002747	0	SOLID-01	SOLID	<u>N/A</u>	<u>56.6</u>		%
98000261	AW-101 LAW	4 SAMPLE	S98T002748	0	SOLID-01	SOLID	<u>N/A</u>	<u>53.5</u>		%

Final page for worklist # 26404

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

Fayed 10/18/98Units 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

% SOLIDS : LA-564-101 (G-0)

		STD	REPLICATE
Type	Tare Weight (W1)	17.8405	
STD	Gross Weight (W2)	19.2524	
Work List	First Residue Weight (W3)	18.4426	
26404	Second Residue Weight (W4)	18.4418	
Test Code	Percent Difference	0.0043	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	42.59	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
117N8A			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/08/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:20 AM			

RESULT

% SOLIDS =	42.6
------------	------

Data Entry by:

Date:

10/19/98

Approved by:

Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		SAM	REPLICATE
Type	Tare Weight (W1)	17.6413	
SAM	Gross Weight (W2)	18.6339	
Work List	First Residue Weight (W3)	18.2033	
26404	Second Residue Weight (W4)	18.2031	
Test Code	Percent Difference	0.0011	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	56.60	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002746			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/08/98	Percent Weight Solids	= [(W4-W1)/(W2-W1))*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:20 AM			

RESULT

% SOLIDS = 56.6

Data Entry by:

Date:

10/19/98

Approved by:

Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		SAM	REPLICATE
Type	Tare Weight (W1)	17.7268	
SAM	Gross Weight (W2)	19.6134	
Work List	First Residue Weight (W3)	18.7963	
26404	Second Residue Weight (W4)	18.7944	
Test Code	Percent Difference	0.0101	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	56.59	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002747			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/08/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:20 AM			

RESULT

% SOLIDS = 56.6

Data Entry by:	Date:	10/19/98
Approved by:	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		SAM	REPLICATE
Type	Tare Weight (W1)	17.7753	
SAM	Gross Weight (W2)	19.0739	
Work List	First Residue Weight (W3)	18.4703	
26404	Second Residue Weight (W4)	18.4706	
Test Code	Percent Difference	0.0016	N/A
SOLID-01	QC Check	Pass	N/A
Matrix	Percent Weight Solids	53.54	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T002748			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
RWK	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/08/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
01:20 AM			

RESULT

% SOLIDS =	53.5
------------	------

Data Entry by:

Date: 10/19/98

Approved by:

Date:

LABCORE Completed Worklist Report for Worklist# 26621

Analyst: slh

Instrument: BA001

Book#: 117N8A

Method: LA-564-101 Rev/Mod ^{rev. 1/24/98} ~~G-1~~ G-1

Worklist Comment: AW101 LAW, SOLID-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		SOLID-01	LIQUID	4.06e1	43.7	107.635 % Recovery	
2 SAMPLE	S98T003058	0	SOLID-01	LIQUID	N/A	46.1	1.00e-002 %	
3 SAMPLE	S98T003059	0	SOLID-01	LIQUID	N/A	33.4	1.00e-002 %	
4 SAMPLE	S98T003060	0	SOLID-01	LIQUID	N/A	29.3	1.00e-002 %	
5 SAMPLE	S98T003061	0	SOLID-01	LIQUID	N/A	53.5	1.00e-002 %	
6 SAMPLE	S98T003062	0	SOLID-01	LIQUID	N/A	54.1	1.00e-002 %	

Final page for worklist# 26621

Analyst Signature

Date

Ch. Spencer
Analyst Signature

11/4/98
Date

D. Machelo
Reviewer Signature

11/10/98
Date

LABCORE Data Entry Template for Worklist# 26621

Analyst: SLH Instrument: BA001 Book # 117 N8A

Method: LA-564-101 Rev/Mod _____

*Ensure dose rate is ≤ 50 m Rem/hr
@ 30 cm prior to performing this
analysis.*

Worklist Comment: AW101 LAW, SOLID-01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SOLID-01	LIQUID		<u>43.7</u>	<u>N/A</u>	%
98000554	AW-101 LAW	2 SAMPLE	S98T003058	0	SOLID-01	LIQUID	<u>N/A</u>			%
98000554	AW-101 LAW	3 SAMPLE	S98T003059	0	SOLID-01	LIQUID	<u>N/A</u>			%
98000554	AW-101 LAW	4 SAMPLE	S98T003060	0	SOLID-01	LIQUID	<u>N/A</u>			%
98000554	AW-101 LAW	5 SAMPLE	S98T003061	0	SOLID-01	LIQUID	<u>N/A</u>			%
98000554	AW-101 LAW	6 SAMPLE	S98T003062	0	SOLID-01	LIQUID	<u>N/A</u>			%

Final page for worklist # 26621

Sandra L. Hod Boatright
Analyst Signature Date
10-18-98

C. L. O'Brien 11-3-98
Analyst Signature Date

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

% SOLIDS : LA-564-101 (G-0)		STD	REPLICATE
Type	Tare Weight (W1)	15.1024	15.0418
STD	Gross Weight (W2)	16.4631	16.3880
Work List	First Residue Weight (W3)	15.6869	15.6426
26621	Second Residue Weight (W4)	15.6860	15.6413
Test Code	Percent Difference	0.0057	0.0083
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	42.89	44.53
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
STD			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
10:00 PM			

RESULT

% SOLIDS (Average) = 43.7

Data Entry by:

Date: 11/04/98

Approved by:

Date:

Form 564101S2 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

% SOLIDS : LA-564-101 (G-0)		SAMPLE	REPLICATE
Type	Tare Weight (W1)	15.1976	15.1593
SAMPLE	Gross Weight (W2)	15.9058	15.8662
Work List	First Residue Weight (W3)	15.5226	15.4868
26621	Second Residue Weight (W4)	15.5225	15.4862
Test Code	Percent Difference	0.0006	0.0039
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	45.88	46.24
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T003058			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
10:00 PM			

RESULT**% SOLIDS (Average) = 46.1**

Data Entry by:	<i>NA</i>	Date:	11/04/98
Approved by:		Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		SAMPLE	REPLICATE
Type	Tare Weight (W1)	15.1336	15.2964
SAMPLE	Gross Weight (W2)	15.7748	15.9144
Work List	First Residue Weight (W3)	15.3488	15.5022
26621	Second Residue Weight (W4)	15.3485	15.5019
Test Code	Percent Difference	0.0020	0.0019
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	33.52	33.25
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T003059			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
10:00 PM			

RESULT**% SOLIDS (Average) = 33.4**

Data Entry by:	Date:	11/04/98
Approved by:	Date:	

% SOLIDS : LA-564-101 (G-0)

% SOLIDS : LA-564-101 (G-O)		SAMPLE	REPLICATE
Type	Tare Weight (W1)	15.1451	15.2596
SAMPLE	Gross Weight (W2)	15.7796	15.8893
Work List	First Residue Weight (W3)	15.3314	15.4435
26621	Second Residue Weight (W4)	15.3313	15.4436
Test Code	Percent Difference	0.0007	0.0006
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	29.35	29.22
SOLID	(If it is necessary to do a 3rd heating then substitute		
Sample #	the last weight measured for W4 and the second to last weight		
S98T003060	measured for W3 in the calculations above.)		
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
10:00 PM			

RESULT**% SOLIDS (Average) = 29.3**

Data Entry by:

Date: 11/04/98

Approved by:

Date:

Form 564101S2 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

% SOLIDS : LA-564-101 (G-O)		SAMPLE	REPLICATE
Type	Tare Weight (W1)	15.2217	15.1758
SAMPLE	Gross Weight (W2)	15.9801	15.9133
Work List	First Residue Weight (W3)	15.6259	15.5733
26621	Second Residue Weight (W4)	15.6250	15.5723
Test Code	Percent Difference	0.0058	0.0064
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	53.18	53.76
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T003061			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
10:00 PM			

RESULT**% SOLIDS (Average) = 53.5**

Data Entry by:

Date: 11/04/98

Approved by:

Date:

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Page 1 of 1

% SOLIDS : LA-564-101 (G-0)

		SAMPLE	REPLICATE
Type	Tare Weight (W1)	15.0122	14.9495
SAMPLE	Gross Weight (W2)	15.7435	15.6861
Work List	First Residue Weight (W3)	15.4098	15.3469
26621	Second Residue Weight (W4)	15.4090	15.3463
Test Code	Percent Difference	0.0052	0.0039
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	54.26	53.87
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T003062			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
10:00 PM			

RESULT**% SOLIDS (Average) = 54.1**

Data Entry by:

Date: 11/04/98

Approved by:

Date:

LABCORE Data Entry Template for Worklist# 26622

Analyst: SLH Instrument: BA001 Book # 117N8A

Method: LA-564-101 Rev/Mod _____

*Ensure dose rate is ≤ 50 mRem/hr
@ 30 cm prior to performing this
analysis*

Worklist Comment: AW101 LAW, SOLID-01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SOLID-01	SOLID		<u>42.8</u>	<u>N/A</u>	%
98000554	AW-101 LAW	2 SAMPLE	S98T003063	0	SOLID-01	SOLID	<u>N/A</u>	<u>52.8</u>		%
98000554	AW-101 LAW	3 SAMPLE	S98T003064	0	SOLID-01	SOLID	<u>N/A</u>	<u>53.0</u>		%
98000554	AW-101 LAW	4 SAMPLE	S98T003065	0	SOLID-01	SOLID	<u>N/A</u>	<u>53.8</u>		%
98000554	AW-101 LAW	5 SAMPLE	S98T003066	0	SOLID-01	SOLID	<u>N/A</u>	<u>60.3</u>		%
98000554	AW-101 LAW	6 SAMPLE	S98T003067	0	SOLID-01	SOLID	<u>N/A</u>	<u>58.4</u>		%

Final page for worklist # 26622

Sandra J Hood Boatright
Analyst Signature Date

Validated 10-18-98
Boatright

Sandra J Hood Boatright
Analyst Signature Date 10-24-98

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		STD	REPLICATE
Type	Tare Weight (W1)	15.1669	14.7715
STD	Gross Weight (W2)	16.5302	16.1046
Work List	First Residue Weight (W3)	15.7515	15.3447
26622	Second Residue Weight (W4)	15.7504	15.3429
Test Code	Percent Difference	0.0070	0.0117
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	42.80	42.86
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
117N8A			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
04:00 AM			

RESULT

% SOLIDS (Average) = 42.8

Data Entry by:

Date: 10/23/98

Approved by:

Date:

Form 564101S2 Rev. 1.1

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

% SOLIDS : LA-564-101 (G-0)		SAM	REPLICATE
Type	Tare Weight (W1)	14.8488	15.1489
SAM	Gross Weight (W2)	15.3971	15.6496
Work List	First Residue Weight (W3)	15.1390	15.4126
26622	Second Residue Weight (W4)	15.1386	15.4125
Test Code	Percent Difference	0.0026	0.0006
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	52.85	52.65
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T003063			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
04:00 AM			

RESULT

% SOLIDS (Average) = 52.8

Data Entry by:	NA	Date:	10/23/98
Approved by:		Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		SAM	REPLICATE
Type	Tare Weight (W1)	14.9094	14.9123
SAM	Gross Weight (W2)	15.4454	15.4458
Work List	First Residue Weight (W3)	15.1924	15.1965
26622	Second Residue Weight (W4)	15.1921	15.1963
Test Code	Percent Difference	0.0020	0.0013
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	52.74	53.23
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T003064			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
04:00 AM			

RESULT

% SOLIDS (Average) = 53.0

Data Entry by:

Date: 10/23/98

Approved by:

Date:

% SOLIDS : LA-564-101 (G-0)

		SAM	REPLICATE
Type	Tare Weight (W1)	14.8923	15.2535
SAM	Gross Weight (W2)	15.4556	15.7507
Work List	First Residue Weight (W3)	15.1953	15.5212
26622	Second Residue Weight (W4)	15.1954	15.5213
Test Code	Percent Difference	0.0007	0.0006
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	53.81	53.86
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T003065			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
04:00 AM			

RESULT

% SOLIDS (Average) = 53.8

Data Entry by:

Date:

10/23/98

Approved by:

Date:

Form 564101S2 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		SAM	REPLICATE
Type	Tare Weight (W1)	14.8404	14.9866
SAM	Gross Weight (W2)	15.3817	15.5983
Work List	First Residue Weight (W3)	15.1677	15.3556
26622	Second Residue Weight (W4)	15.1671	15.3553
Test Code	Percent Difference	0.0040	0.0020
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	60.35	60.27
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T003066			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
04:00 AM			

RESULT

% SOLIDS (Average) = 60.3

Data Entry by:

Date: 10/23/98

Approved by:

Date:

Form 564101S2 Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

% SOLIDS : LA-564-101 (G-0)

		SAM	REPLICATE
Type	Tare Weight (W1)	15.1252	15.3519
SAM	Gross Weight (W2)	15.7604	15.9525
Work List	First Residue Weight (W3)	15.4953	15.7041
26622	Second Residue Weight (W4)	15.4949	15.7036
Test Code	Percent Difference	0.0026	0.0032
SOLID-01	QC Check	Pass	Pass
Matrix	Percent Weight Solids	58.20	58.56
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S98T003067			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W4 - W1	= Residue Weight - Tare Weight	
SLH	Percent Difference	= [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/18/98	Percent Weight Solids	= [(W4-W1)/(W2-W1)]*100 = % SOLIDS	
Time	Percent Solids (Average)	= [(% SOLIDS for A)+(% SOLIDS for B)]/2	
04:00 AM			

RESULT

% SOLIDS (Average) = 58.4

Data Entry by:

Date: 10/23/98

Approved by:

Date:

Form 564101S2 Rev. 1.1

Page 1 of 1

LABCORE Completed Worklist Report for Worklist# 26412

Analyst: rwk

Instrument: PH01

Book#: 111N8

Method: LA-211-102 Rev/Mod ~~D-1~~ D-1 *new 1/22/98*

Worklist Comment: AW101 LAW, OH-01 STD: 0.050mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	OH-01	LIQUID	1	<25300		ug/mL
2 STD	0	OH-01	LIQUID	1.72e4	1.74e4	101.163 % Recovery	
3 SAMPLE	S98T002782 0	OH-01	LIQUID	N/A	9.43e4	25300.000	ug/mL
4 DUP	S98T002782 0	OH-01	LIQUID	9.43e4	9.36e4	0.745 RPD	
5 SAMPLE	S98T002783 0	OH-01	LIQUID	N/A	9.43e4	25300.000	ug/mL
6 DUP	S98T002783 0	OH-01	LIQUID	9.43e4	9.17e4	2.796 RPD	
7 SAMPLE	S98T002784 0	OH-01	LIQUID	N/A	9.63e4	25300.000	ug/mL
8 DUP	S98T002784 0	OH-01	LIQUID	9.63e4	9.30e4	3.487 RPD	
9 SAMPLE	S98T002796 0	OH-01	LIQUID	N/A	125	125.000	ug/mL
10 DUP	S98T002796 0	OH-01	LIQUID	<125	<125		RPD

Final page for worklist# 26412

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

LABCORE Data Entry Template for Worklist# 26412

Analyst: RK Instrument: PH01 Book # 11128

Method: LA-211-102 Rev/Mod _____

Worklist Comment: AW101 LAW, OH-01 STD: 0.050mL skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID	_____	_____	N/A	ug/mL
		2 STD			OH-01	LIQUID	_____	_____	N/A	ug/mL
98000261	AW-101 LAW	3 SAMPLE	S98T002782	0	OH-01	LIQUID	N/A	_____	_____	ug/mL
98000261	AW-101 LAW	4 DUP	S98T002782	0	OH-01	LIQUID	_____	_____	N/A	ug/mL
98000261	AW-101 LAW	5 SAMPLE	S98T002783	0	OH-01	LIQUID	N/A	_____	_____	ug/mL
98000261	AW-101 LAW	6 DUP	S98T002783	0	OH-01	LIQUID	_____	_____	N/A	ug/mL
98000261	AW-101 LAW	7 SAMPLE	S98T002784	0	OH-01	LIQUID	N/A	_____	_____	ug/mL
98000261	AW-101 LAW	8 DUP	S98T002784	0	OH-01	LIQUID	_____	_____	N/A	ug/mL
98000261	AW-101 LAW	9 SAMPLE	S98T002796	0	OH-01	LIQUID	N/A	_____	_____	ug/mL
98000261	AW-101 LAW	10 DUP	S98T002796	0	OH-01	LIQUID	_____	_____	N/A	ug/mL

Final page for worklist # 26412

Mohd Kim 10/9/98
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		STD
Type	Sample Size (mL) SS	0.050
STD	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.265
26412	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.03E+00
OH-01	OH in Sample in µg/mL (PPM)	1.74E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
STD		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RWK		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		STD
11:45 PM	Concentration of OH in Sample (Molarity)	1.03E+00
	OH in Sample in µg/mL (PPM)	1.74E+04

Data Entry by:	Date: 10/15/98
Approved by: NA	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		BLK
Type	Sample Size (mL) SS	0.500
BLK	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.009
26412	Dilution Factor DF	101
Test Code	Concentration of OH in Sample (Molarity)	3.52E-01
OH-01	OH in Sample in µg/mL (PPM)	5.98E+03
Matrix		
Liquid		
Sample #	Detection Limit = 125µg / SS * DF	
BLK		
Instrument Code	Detection Limit (µg/mL)	2.53E+04
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RWK		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		BLK
11:45 AM	Concentration of OH in Sample (Molarity)	3.52E-01
	OH in Sample in µg/mL (PPM)	<25250

The Result is < Detection Limit

Data Entry by:	Date: 10/19/98
Approved by: NA	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		SAM
Type	Sample Size (mL) SS	0.500
SAM	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.142
26412	Dilution Factor DF	101
Test Code	Concentration of OH in Sample (Molarity)	5.55E+00
OH-01	OH in Sample in µg/mL (PPM)	9.43E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T002782		
Instrument Code	Detection Limit (µg/mL)	2.53E+04
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RWK		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		SAM
11:45 PM	Concentration of OH in Sample (Molarity)	5.55E+00
	OH in Sample in µg/mL (PPM)	9.43E+04

Data Entry by:	Date: 10/15/98
Approved by: <u>NA</u>	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		DUP
Type	Sample Size (mL) SS	0.500
DUP	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.141
26412	Dilution Factor DF	101
Test Code	Concentration of OH in Sample (Molarity)	5.51E+00
OH-01	OH in Sample in µg/mL (PPM)	9.36E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T002782		
Instrument Code	Detection Limit (µg/mL)	2.53E+04
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RWK		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		DUP
11:45 PM	Concentration of OH in Sample (Molarity)	5.51E+00
	OH in Sample in µg/mL (PPM)	9.36E+04

Data Entry by:	Date:	10/15/98
Approved by: JA	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		SAM
Type	Sample Size (mL) SS	0.500
SAM	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.142
26412	Dilution Factor DF	101
Test Code	Concentration of OH in Sample (Molarity)	5.55E+00
OH-01	OH in Sample in µg/mL (PPM)	9.43E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T002783		
Instrument Code	Detection Limit (µg/mL)	2.53E+04
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RWK		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		SAM
11:45 PM	Concentration of OH in Sample (Molarity)	5.55E+00
	OH in Sample in µg/mL (PPM)	9.43E+04

Data Entry by:	Date:	10/15/98
Approved by: <i>DA</i>	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		DUP
Type	Sample Size (mL) SS	0.500
DUP	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.138
26412	Dilution Factor DF	101
Test Code	Concentration of OH in Sample (Molarity)	5.39E+00
OH-01	OH in Sample in µg/mL (PPM)	9.17E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T002783		
Instrument Code	Detection Limit (µg/mL)	2.53E+04
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RWK		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		DUP
11:45 PM	Concentration of OH in Sample (Molarity)	5.39E+00
	OH in Sample in µg/mL (PPM)	9.17E+04

Data Entry by:	Date:	10/15/98
Approved by: DA	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		SAM
Type	Sample Size (mL) SS	0.500
SAM	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.145
26412	Dilution Factor DF	101
Test Code	Concentration of OH in Sample (Molarity)	5.66E+00
OH-01	OH in Sample in µg/mL (PPM)	9.63E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T002784		
Instrument Code	Detection Limit (µg/mL)	2.53E+04
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RWK		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		SAM
11:45 PM	Concentration of OH in Sample (Molarity)	5.66E+00
	OH in Sample in µg/mL (PPM)	9.63E+04

Data Entry by:	Date:	10/15/98
Approved by: NA	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		DUP
Type	Sample Size (mL) SS	0.500
DUP	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.140
26412	Dilution Factor DF	101
Test Code	Concentration of OH in Sample (Molarity)	5.47E+00
OH-01	OH in Sample in µg/mL (PPM)	9.30E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T002784		
Instrument Code	Detection Limit (µg/mL)	2.53E+04
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RWK		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		DUP
11:45 PM	Concentration of OH in Sample (Molarity)	5.47E+00
	OH in Sample in µg/mL (PPM)	9.30E+04

Data Entry by:	Date:	10/15/98
Approved by: <i>NA</i>	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		SAM
Type	Sample Size (mL) SS	1.000
SAM	Concentration of HNO ₃ (Molarity)	0.1934
Work List	HNO ₃ Titrant at OH end-point in mL	0.009
26412	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.74E-03
OH-01	OH in Sample in µg/mL (PPM)	2.96E+01
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T002784		
Instrument Code	Detection Limit (µg/mL)	1.25E+02
PH01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
RWK		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		SAM
11:45 PM	Concentration of OH in Sample (Molarity)	1.74E-03
	OH in Sample in µg/mL (PPM)	<125

The Result is < Detection Limit

Data Entry by:	Date:	10/15/98
Approved by: NA	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		DUP
Type	Sample Size (mL) SS	1.000
DUP	Concentration of HNO ₃ (Molarity)	0.1934
Work List	HNO ₃ Titrant at OH end-point in mL	0.009
26412	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.74E-03
OH-01	OH in Sample in µg/mL (PPM)	2.96E+01
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T002784		
Instrument Code	Detection Limit (µg/mL)	1.25E+02
PH01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
RWK		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		DUP
11:45 PM	Concentration of OH in Sample (Molarity)	1.74E-03
	OH in Sample in µg/mL (PPM)	<125

The Result is < Detection Limit

Data Entry by:	Date:	10/15/98
Approved by: NA	Date:	

BLK

2782 Dip

calibration data
date 98-10-08
pH(S) 1 7.00
pH(S) 2 10.00
t.cal. 22.0 °C
slope(rel) .999
U(as) 27.6 mV
electr. input 1
=====

date 98-10-08 time 23:21
GET pH 12 # 79
Id.#1 2872-2
Id.#2 .1934
pH(init) 5.90
V/ml
EP1 .009 pH 4.79
manual stop
=====

Id.#1 2782-2
C00= .5ml

date 98-10-09 time 00:27
GET pH 12 # 86
Id.#1 2782-2
Id.#2 .1934
pH(init) 11.34
V/ml pH
EP1 .141 9.65
EP2 .191 6.57
stop volt.reached
=====

date 98-10-08 time 23:21
GET pH 12 # 79
.10ml/div ΔpH=1/div
start V .000 ml

67d

Id.#1 0000
C00= .050ml

date 98-10-08 time 23:27
GET pH 12 # 80
Id.#1 0000
Id.#2 .1934
pH(init) 11.71
V/ml pH
EP1 .265 9.94
EP2 .342 7.24
stop volt.reached
=====

2782

Id.#1 2782
C00= .5ml
Id.#1 2782
C00= .5ml

date 98-10-09 time 00:22
GET pH 12 # 85
Id.#1 2782
Id.#2 .1934
pH(init) 12.13
V/ml pH
EP1 .142 10.31
EP2 .188 7.15
stop volt.reached
=====

date 98-10-08 time 23:28
GET pH 12 # 80
.10ml/div ΔpH=1/div
start V .000 ml

date 98-10-09 time 00:22
GET pH 12 # 85
.10ml/div ΔpH=1/div
start V .000 ml

2783

Id.#1 2783
C00= .5ml

date 98-10-09 time 00:41
GET pH 12 # 88
Id.#1 2783
Id.#2 .1934
pH(init) 11.41

	V/ml	pH
EP1	.142	9.66
EP2	.189	7.36

manual stop
=====

date 98-10-09 time 00:41
GET pH 12 # 88
.10ml/div Δ pH=1/div
start V .000 ml

2783 DUP

Id.#1 2783-2
C00= .5ml

date 98-10-09 time 00:45
GET pH 12 # 89
Id.#1 2783-2
Id.#2 .1934
pH(init) 11.40

	V/ml	pH
EP1	.138	9.76

manual stop
=====

date 98-10-09 time 00:45
GET pH 12 # 89
.10ml/div Δ pH=1/div
start V .000 ml

2784

Id.#1 2784
C00= .5ml

date 98-10-09 time 01:02
GET pH 12 # 91
Id.#1 2784
Id.#2 .1934
pH(init) 11.46

	V/ml	pH
EP1	.145	9.74
EP2	.197	6.57

stop volt.reached
=====

date 98-10-09 time 01:02
GET pH 12 # 91
.10ml/div Δ pH=1/div
start V .000 ml

Id.#1 2784-2
C00= .5ml

date 98-10-09 time 01:07
GET pH 12 # 92
Id.#1 2784-2
Id.#2 .1934
pH(init) 11.43

	V/ml	pH
EP1	.140	9.72
EP2	.189	7.37

manual stop
=====

date 98-10-09 time 01:07
GET pH 12 # 92
.10ml/div Δ pH=1/div
start V .000 ml

2746

Id.#1 2796
C00= 1ml

date 98-10-09 time 01:14
GET pH 12 # 94
Id.#1 2796
Id.#2 .1934
pH(init) 5.65

	V/ml	pH
EP1	.009	4.69

manual stop
=====

date 98-10-09 time 01:14
GET pH 12 # 94
.10ml/div Δ pH=1/div
start V .000 ml

2746
DUP

Id.#1 2796-2
C00= 1ml

date 98-10-09 time 01:17
GET pH 12 # 95
Id.#1 2796-2
Id.#2 .1934
pH(init) 5.88

	V/ml	pH
EP1	.009	4.69

manual stop
=====

date 98-10-09 time 01:17
GET pH 12 # 95
.10ml/div Δ pH=1/div
start V .000 ml

LABCORE Completed Worklist Report for Worklist# 26521

Analyst: krm

Instrument: PH01

Book#: 111N8

Method: LA-211-102

Rev/Mod ~~D-D~~ D-1
rev 1/25/99

Worklist Comment: AW101 LAW, OH-01, STD: 0.050mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK-PREP	0	OH-01	SOLID	1	<2.50e4		ug/g
2 STD	0	OH-01	SOLID	1.72e4	1.71e4	99.419 % Recovery	
3 SAMPLE	S98T002758 0 W	OH-01	SOLID	N/A	5.71e4	25000.000	ug/g
4 SAMPLE	S98T002759 0 W	OH-01	SOLID	N/A	5.00e4	24700.000	ug/g
5 SAMPLE	S98T002760 0 W	OH-01	SOLID	N/A	5.22e4	24500.000	ug/g

Final page for worklist# 26521

Analyst Signature

Date

10/19/98
 Analyst Signature Date

 Reviewer Signature
10/19/98
Date

LABCORE Data Entry Template for Worklist# 26521

Analyst:

KRM

Instrument: PH01

Book # 111NB

Method: LA-211-102 Rev/Mod _____

Worklist Comment: AW101 LAW, OH-01, STD: 0.050mL skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			OH-01	SOLID		<u>1.97</u> ^{E1}	N/A	ug/g
		2 STD			OH-01	SOLID		<u>1.74</u> ^{E1} <u>1.71</u> ^{E1}	N/A	ug/g
98000261	AW-101 LAW	3 SAMPLE	S98T002758	0 W	OH-01	SOLID	N/A	<u>2.86</u> ^{E2}		ug/g
98000261	AW-101 LAW	4 SAMPLE	S98T002759	0 W	OH-01	SOLID	N/A	<u>2.53</u> ^{E2}		ug/g
98000261	AW-101 LAW	5 SAMPLE	S98T002760	0 W	OH-01	SOLID	N/A	<u>2.66</u> ^{E2}		ug/g

Final page for worklist # 26521

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

$$125 \mu\text{g}/\text{ml} \times \frac{1000 \text{ ml}}{\text{L}} \times \frac{1 \text{ L}}{5.008 \text{ g}} = 2.50 \text{ E}4 \mu\text{g}/\text{g}$$

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

		PRE BLK
Type	Sample Size (mL) SS	1.000
PRE BLK	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.006
26521	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.16E-03
OH-01	OH in Sample in $\mu\text{g}/\text{mL}$ (PPM)	1.97E+01

Matrix			2.27 mL 10/19/98
SOLID			
Sample #	Detection Limit = $125 \mu\text{g} / \text{SS} * \text{DF}$		
BLK			
Instrument Code	Detection Limit ($\mu\text{g}/\text{mL}$)	1.25E+02	m/L 10/17/98
PH01	8 mL 10/19/98	2.50E4	
Analyst	OH Molarity = $((\text{mL HNO3}) * (\text{M HNO3})) / (\text{Sample Size in mL} * \text{Dilution Factor})$		
KRM			
Date	OH in $\mu\text{g}/\text{mL} = (\text{OH MOLARITY}) * (17.0 \text{ g/mole}) * ((1000000 \mu\text{g/g}) / (1000 \text{ mL/L}))$		
10/09/98			
Time			
11:13 PM			
		PRE BLK	
		Concentration of OH in Sample (Molarity)	1.16E-03
		OH in Sample in $\mu\text{g}/\text{mL}$ (PPM)	<125 m/L 10/19/98
		The Result is < Detection Limit	
		2.50E4 10/19/98	

Data Entry by:	Date:	10/14/98
Approved by: NA	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		STD
Type	Sample Size (mL) SS	0.050
STD	Concentration of HNO ₃ (Molarity)	0.1934
Work List	HNO ₃ Titrant at OH end-point in mL	0.260
26521	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.01E+00
OH-01	OH in Sample in µg/mL (PPM)	1.71E+04
Matrix		
SOLID		
Sample #	Detection Limit = 125µg / SS * DF	
111N8		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity = ((mL HNO ₃)*(M HNO ₃))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/09/98		
Time		STD
11:13 PM	Concentration of OH in Sample (Molarity)	1.01E+00
	OH in Sample in µg/mL (PPM)	1.71E+04

Data Entry by:	Date: 10/14/98
Approved by: NA	Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

$$2.86 \text{ E}2 \text{ mg/ml} \times \frac{1000 \text{ ml}}{\text{L}} \times \frac{1 \text{ L}}{5.008 \text{ g}} = 5.71 \text{ E}4 \text{ mg/g}$$

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

		SAM
Type	Sample Size (mL) SS	1.000
SAM	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.087
26521	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.68E-02
OH-01	OH in Sample in $\mu\text{g/mL}$ (PPM)	-2.86E+02
Matrix	8 mL 10/19/98 5.71E4 mL 10/19/98	
SOLID		
Sample #	Detection Limit = 125 μg / SS * DF	
S98T002758		
Instrument Code	Detection Limit ($\mu\text{g/mL}$)	4.25E+02
PH01	8 mL 10/19/98 2.50 E4 10/19/98	
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in $\mu\text{g/mL}$ = (OH MOLARITY)*(17.0g/mole)*((1000000 $\mu\text{g/g}$)/(1000mL/L))	
10/09/98		
Time		
11:13 PM		
		SAM
		Concentration of OH in Sample (Molarity)
		1.68E-02
		OH in Sample in $\mu\text{g/mL}$ (PPM)
		-2.86E+02

Data Entry by:	Date:	10/14/98
Approved by: NA	Date:	

10/14/98
PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

$$253 \frac{\text{mg}}{\text{mL}} \times \frac{1000 \text{ mL}}{\text{L}} \times \frac{1}{5.056} = 5.00 \text{ E4 } \frac{\text{mg}}{\text{g}}$$

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

Type	Sample Size (mL) SS	SAM
SAM	Concentration of HNO3 (Molarity)	1.000
Work List	HNO3 Titrant at OH end-point in mL	0.1934
26521	Dilution Factor DF	0.077
Test Code	Concentration of OH in Sample (Molarity)	1
OH-01	OH in Sample in $\mu\text{g/mL}$ (PPM)	1.49E-02

Matrix 5.00 E4 $\text{mL}/10/14/98$

SOLID

Sample # Detection Limit = $125 \mu\text{g} / \text{SS} * \text{DF}$

S98T002759

Instrument Code Detection Limit ($\mu\text{g/mL}$) $1.25 \text{ E}+02$ $\text{mL}/10/14/98$

PH01 $2 \text{ mL}/10/14/98$ $2.47 \text{ E4 } \mu\text{g/g}$

Analyst OH Molarity = $((\text{mL HNO3}) * (\text{M HNO3})) / (\text{Sample Size in mL} * \text{Dilution Factor})$

KRM OH in $\mu\text{g/mL}$ = $(\text{OH MOLARITY}) * (17.0 \text{ g/mole}) * ((1000000 \mu\text{g/g}) / (1000 \text{ mL/L}))$

Date 10/09/98

Time

11:13 PM

Concentration of OH in Sample (Molarity) SAM

OH in Sample in $\mu\text{g/mL}$ (PPM) $1.49 \text{ E}-02$

$2 \text{ mL}/10/14/98$ 5.00 E4 $\text{mL}/10/14/98$

Data Entry by: Date: 10/14/98

Approved by: NA Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

$$266 \text{ mg/ml} \times \frac{1000 \text{ ml}}{2} \times \frac{1 \text{ L}}{5.093 \text{ g}} = 5.22 \text{ E} 4 \text{ mg/g}$$

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

OH (AUTO) : LA-211-102 (D-0)		SAM
Type	Sample Size (mL) SS	1.000
SAM	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.081
26521	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.57E-02
OH-01	OH in Sample in $\mu\text{g/mL}$ (PPM)	-2.66E+02
Matrix	<i>g/mL 10/19/98</i>	<i>5.22E4 mg/g</i>
SOLID		
Sample #	Detection Limit = $125 \mu\text{g} / \text{SS} * \text{DF}$	
S98T002760		
Instrument Code	Detection Limit ($\mu\text{g/mL}$)	-1.25E+02
PH01	<i>g/mL 10/19/98</i>	<i>2.45E4</i>
Analyst	OH Molarity = $((\text{mL HNO}_3) * (\text{M HNO}_3)) / (\text{Sample Size in mL} * \text{Dilution Factor})$	
KRM		
Date	OH in $\mu\text{g/mL}$ = $(\text{OH MOLARITY}) * (17.0 \text{ g/mole}) * ((1000000 \mu\text{g/g}) / (1000 \text{ mL/L}))$	
10/09/98		
Time		SAM
11:13 PM	Concentration of OH in Sample (Molarity)	1.57E-02
	OH in Sample in $\mu\text{g/mL}$ (PPM)	-2.66E+02
	<i>g/mL 10/19/98</i>	<i>5.22E4 mg/g</i>

Data Entry by:	Date:	10/14/98
Approved by: NA	Date:	

PREP BCK
1mc

5987002758

1.0mc

date 98-10-09 time 23:13
GET pH 12 # 102
Id.#1 2796-2
Id.#2 .1934
pH(init) 6.67
V/ml pH
EP1 .006 5.83
stop volt.reached
=====

date 98-10-09 time 23:14
GET pH 12 # 102
.10ml/div Δ pH=1/div
start V .000 ml

STD 11108
.05mc

date 98-10-09 time 22:49
GET pH 12 # 97
Id.#1 2796-2
Id.#2 .1934
pH(init) 11.75
V/ml pH
EP1 .260 9.94
EP2 .334 7.03
stop volt.reached
=====

date 98-10-09 time 22:56
GET pH 12 # 97
.10ml/div Δ pH=1/div
start V .000 ml

date 98-10-09 time 23:04
GET pH 12 # 99
Id.#1 2796-2
Id.#2 .1934
pH(init) 11.21
V/ml pH
EP1 .087 9.52
EP2 .118 7.63
stop volt.reached
=====

date 98-10-09 time 23:04
GET pH 12 # 99
.10ml/div Δ pH=1/div
start V .000 ml

5987002759

1mc

date 98-10-09 time 23:07
GET pH 12 # 100
Id.#1 2796-2
Id.#2 .1934
pH(init) 11.26
V/ml pH
EP1 .077 10.03
EP2 .102 8.86
EP3 .126 7.57
stop volt.reached
=====

date 98-10-09 time 23:08
GET pH 12 # 100
.10ml/div Δ pH=1/div
start V .000 ml

5987002760

date 98-10-09 time 23:11
GET pH 12 # 101
Id.#1 2796-2
Id.#2 .1934
pH(init) 11.24
V/ml pH
EP1 .081 9.48
EP2 .120 7.39
stop volt.reached
=====

date 98-10-09 time 23:12
GET pH 12 # 101
.10ml/div Δ pH=1/div
start V .000 ml

LABCORE Completed Worklist Report for Worklist# 26623

Analyst: rdm

Instrument: PH01

Book#: 111N8

Method: LA-211-102 Rev/Mod _____

Worklist Comment: AW101 LAW, OH-01, STD: 0.050mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	OH-01	LIQUID	1	<5000		ug/mL
2 STD	0	OH-01	LIQUID	1.72e4	1.72e4	100.000 % Recovery	
3 SAMPLE	S98T003058 0	OH-01	LIQUID	N/A	5.50e4	5000.000	ug/mL
4 SAMPLE	S98T003059 0	OH-01	LIQUID	N/A	4.02e4	5000.000	ug/mL
5 SAMPLE	S98T003060 0	OH-01	LIQUID	N/A	3.25e4	5000.000	ug/mL
6 SAMPLE	S98T003061 0	OH-01	LIQUID	N/A	9.77e4	5000.000	ug/mL
7 SAMPLE	S98T003062 0	OH-01	LIQUID	N/A	9.67e4	5000.000	ug/mL

Final page for worklist# 26623

See attached pages for analyst signatures *rdm* 1/29/98

Analyst Signature Date Analyst Signature Date

[Signature] 1/29/98

Reviewer Signature Date

LABCORE Completed Worklist Report for Worklist# 26623

Analyst: rdm

Instrument: PH01

Book#: 111N8

Method: LA-211-102 Rev/Mod _____

Worklist Comment: AW101 LAW, OH-01, STD: 0.050mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	OH-01	LIQUID	1	<42		ug/mL
2 STD	0	OH-01	LIQUID	1.72e4	1.72e4	100.000 % Recovery	
3 SAMPLE	S98T003058 0	OH-01	LIQUID	N/A	5.50e4	5000.000	ug/mL
4 SAMPLE	S98T003059 0	OH-01	LIQUID	N/A	4.02e4	5000.000	ug/mL
5 SAMPLE	S98T003060 0	OH-01	LIQUID	N/A	3.25e4	5000.000	ug/mL
6 SAMPLE	S98T003061 0	OH-01	LIQUID	N/A	9.77e4	5000.000	ug/mL
7 SAMPLE	S98T003062 0	OH-01	LIQUID	N/A	9.67e4	5000.000	ug/mL

Final page for worklist# 26623

Analyst Signature _____ Date _____

10/22/98
Analyst Signature _____ Date _____

10/27/98
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 26623

Analyst: ROM

Instrument: PH01

Book # 111N8

Method: LA-211-102 Rev/Mod

Ensure dose rate
≤ 50 m Rem/hr. (D) 30 cm

Worklist Comment: AW101 LAW, OH-01, STD: 0.050mL skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			OH-01	LIQUID			N/A	ug/mL
		2 STD			OH-01	LIQUID			N/A	ug/mL
98000554	AW-101 LAW	3 SAMPLE	S98T003058	0	OH-01	LIQUID	N/A			ug/mL
98000554	AW-101 LAW	4 SAMPLE	S98T003059	0	OH-01	LIQUID	N/A			ug/mL
98000554	AW-101 LAW	5 SAMPLE	S98T003060	0	OH-01	LIQUID	N/A			ug/mL
98000554	AW-101 LAW	6 SAMPLE	S98T003061	0	OH-01	LIQUID	N/A			ug/mL
98000554	AW-101 LAW	7 SAMPLE	S98T003062	0	OH-01	LIQUID	N/A			ug/mL

Final page for worklist # 26623

Analyst Signature ROM

Date 10/14/98

Analyst Signature

Date

Data Entry Comments:

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

date 98-10-19 time 06:49
GET pH 12 # 127

Id.#1 2796-2
Id.#2 .1934
pH(init) 5.51

V/ml pH
EP1 .007 4.57
stop volt.reached
=====

date 98-10-19 time 06:49
GET pH 12 # 127
.10ml/div dH=1/div
start V .000 ml

date 98-10-19 time 06:57
GET pH 12 # 128

Id.#1 2796-2
Id.#2 .1934
pH(init) 11.92

V/ml pH
EP1 .262 10.09
EP2 .335 7.60
stop volt.reached
=====

date 98-10-19 time 06:57
GET pH 12 # 128
.10ml/div dH=1/div
start V .000 ml

date 98-10-19 time 10:28
GET pH 12 # 130

Id.#1 2796-2
Id.#2 .1934
pH(init) 12.02 3058

V/ml pH
EP1 .418 10.14
EP2 .535 8.39
stop volt.reached
=====

date 98-10-19 time 10:29
GET pH 12 # 130
.10ml/div dH=1/div
start V .000 ml

date 98-10-19 time 10:47
GET pH 12 # 131
.10ml/div dH=1/div
start V .000 ml

date 98-10-19 time 10:53
GET pH 12 # 132
Id.#1 2796-2
Id.#2 .1934 3060
pH(init) 11.80

V/ml pH
EP1 .247 10.03
EP2 .335 7.69
EP3 .358 6.57
stop volt.reached
=====

date 98-10-19 time 10:56
GET pH 12 # 132
.10ml/div dH=1/div
start V .000 ml

date 98-10-19 time 10:35
GET pH 12 # 131

Id.#1 2796-2
Id.#2 .1934
pH(init) 11.85 3059

V/ml pH
EP1 .306 10.07
EP2 .407 7.97
stop volt.reached
=====

date 98-10-19 time 11:08
 GET pH 12 # 133
 Id.#1 2796-2
 Id.#2 .1934
 pH(init) 12.28

3061

V/ml pH
 EP1 .743 10.38
 stop volt.reached
 =====

date 98-10-19 time 11:18
 GET pH 12 # 134
 Id.#1 2796-2
 Id.#2 .1934
 pH(init) 12.23

3062

V/ml pH
 EP1 .735 10.35
 EP2 .989 6.37
 stop volt.reached
 =====

date 98-10-19 time 11:08
 GET pH 12 # 133
 .10ml/div Δ pH=1/div
 start V .000 ml

date 98-10-19 time 11:18
 GET pH 12 # 134
 .10ml/div Δ pH=1/div
 start V .000 ml

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

Type	Sample Size (mL) SS	BLK
BLK	Concentration of Titrant (Molarity)	0.025
Work List	Concentration of Titrant (Molarity)	0.1934
26623	Titrant volume at end-point in mL	0.007
Test Code	*** Enter Dilution Factor (DF) or 1 ***	1
OH-01	Concentration of Sample (MOLARITY)	5.42E-02
Matrix	Concentration of Sample in PPM	9.21E+02
LIQUID		
Sample #		
BLK	Detection Limit =(125µg/SS)*DF	
Instrument Code		
PH01	Detection Limit (PPM)	5.00E+03
Analyst		
RDM 08/10/99	OH Molarity =((mL HNO3)*(M HNO3))/Sample Size in mL)*Dilution Factor	
Date 10/19/98 08/10/99	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*(1000000µg/g)/(1000mL/L)	
Time 12:01 AM 08/10/99		
		BLK
	Concentration of Sample (MOLARITY)	5.42E-02
	Concentration of Sample in PPM	<5000
	The Result is < Detection Limit	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		STD
Type	Sample Size (mL) SS	0.050
STD	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.262
26623	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.01E+00
OH-01	OH in Sample in µg/mL (PPM)	1.72E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
STD		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/19/98		
Time		STD
12:01 AM	Concentration of OH in Sample (Molarity)	1.01E+00
	OH in Sample in µg/mL (PPM)	1.72E+04

Data Entry by:	Date:	10/22/98
Approved by: <i>NA</i>	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

		SAM
Type	Sample Size (mL) SS	0.025
SAM	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.418
26623	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	3.23E+00
OH-01	OH in Sample in µg/mL (PPM)	5.50E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T003058		
Instrument Code	Detection Limit (µg/mL)	5.00E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/((1000mL/L))	
10/19/98		
Time		SAM
12:01 AM	Concentration of OH in Sample (Molarity)	3.23E+00
	OH in Sample in µg/mL (PPM)	5.50E+04

Data Entry by:	Date:	10/22/98
Approved by: <i>NA</i>	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		SAM
Type	Sample Size (mL) SS	0.025
SAM	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.306
26623	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	2.37E+00
OH-01	OH in Sample in µg/mL (PPM)	4.02E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T003059		
Instrument Code	Detection Limit (µg/mL)	5.00E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/19/98		
Time		SAM
12:01 AM	Concentration of OH in Sample (Molarity)	2.37E+00
	OH in Sample in µg/mL (PPM)	4.02E+04

Data Entry by:	Date:	10/22/98
Approved by:	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		SAM
Type	Sample Size (mL) SS	0.025
SAM	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.247
26623	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.91E+00
OH-01	OH in Sample in µg/mL (PPM)	3.25E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T003060		
Instrument Code	Detection Limit (µg/mL)	5.00E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/19/98		
Time		SAM
12:01 AM	Concentration of OH in Sample (Molarity)	1.91E+00
	OH in Sample in µg/mL (PPM)	3.25E+04

Data Entry by:	Date:	10/22/98
Approved by: <i>NH</i>	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		SAM
Type	Sample Size (mL) SS	0.025
SAM	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.743
26623	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	5.75E+00
OH-01	OH in Sample in µg/mL (PPM)	9.77E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T003061		
Instrument Code	Detection Limit (µg/mL)	5.00E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/19/98		
Time		SAM
12:01 AM	Concentration of OH in Sample (Molarity)	5.75E+00
	OH in Sample in µg/mL (PPM)	9.77E+04

Data Entry by:	Date:	10/22/98
Approved by: <i>IVH</i>	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		SAM
Type	Sample Size (mL) SS	0.025
SAM	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.735
26623	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	5.69E+00
OH-01	OH in Sample in µg/mL (PPM)	9.67E+04
Matrix		
LIQUID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T003062		
Instrument Code	Detection Limit (µg/mL)	5.00E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
RDM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/19/98		
Time		SAM
12:01 AM	Concentration of OH in Sample (Molarity)	5.69E+00
	OH in Sample in µg/mL (PPM)	9.67E+04

Data Entry by:	Date:	10/22/98
Approved by:	Date:	

LABCORE Completed Worklist Report for Worklist# 26704

Analyst: krm

Instrument: PH01

Book#: 111N8

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

Worklist Comment: AW101 LAW, OH-01 STD: 0.050mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK-PREP	0	OH-01	SOLID	1	<2.50e4		ug/g
2 STD	0	OH-01	SOLID	1.72e4	1.71e+4	99.419 % Recovery	
3 SAMPLE	S98T003092 0 W	OH-01	SOLID	N/A	3.48e4	25000.000	ug/g
4 SAMPLE	S98T003093 0 W	OH-01	SOLID	N/A	3.33e+4	25400.000	ug/g
5 SAMPLE	S98T003094 0 W	OH-01	SOLID	N/A	2.49e4	24900.000	ug/g
6 SAMPLE	S98T003095 0 W	OH-01	SOLID	N/A	5.30e+4	24300.000	ug/g
7 SAMPLE	S98T003096 0 W	OH-01	SOLID	N/A	5.05e+4	24800.000	ug/g

Final page for worklist# 26704

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

11/17/98
Date

LABCORE Data Entry Template for Worklist# 26704

Analyst:

KRM

Instrument: PH01

Book #

11108

Method: LA-211-102 Rev/Mod

Worklist Comment: AW101 LAW, OH-01 STD: 0.050mL skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT	FOUND
		1 BLNK-PREP			OH-01	SOLID		<u>1.25E+4</u>	<u>11-17-98</u> N/A	ug/g	<u>2.8E+4</u>
		2 STD			OH-01	SOLID		<u>1.71E+4</u>	N/A	ug/g	
98000554	AW-101 LAW	3 SAMPLE	S98T003092	0 W	OH-01	SOLID	N/A	<u>1.74E+4</u>	<u>11-17-98</u>	ug/g	<u>3.48E+4</u>
98000554	AW-101 LAW	4 SAMPLE	S98T003093	0 W	OH-01	SOLID	N/A	<u>1.64E+4</u>	<u>11-17-98</u>	ug/g	<u>3.33E+4</u>
98000554	AW-101 LAW	5 SAMPLE	S98T003094	0 W	OH-01	SOLID	N/A	<u>6.125</u>	<u>11-17-98</u>	ug/g	<u>2.49E+4</u>
98000554	AW-101 LAW	6 SAMPLE	S98T003095	0 W	OH-01	SOLID	N/A	<u>2.73E+4</u>	<u>11-17-98</u>	ug/g	<u>5.30E+4</u>
98000554	AW-101 LAW	7 SAMPLE	S98T003096	0 W	OH-01	SOLID	N/A	<u>2.60E+4</u>	<u>11-17-98</u>	ug/g	<u>5.05E+4</u>

Final page for worklist # 26704

Analyst Signature

Date

10-22-98

Analyst Signature

Date

11/4/98

Data Entry Comments:

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

STD

PREP
BLK

3092

date 98-10-22 time 22:21
 GET pH 12 # 146
 Id.#1 2796-2
 Id.#2 .1934
 pH(init) 11.79
 V/ml pH
 EP1 .268 10.16
 EP2 .345 6.71
 stop volt.reached
 =====

date 98-10-22 time 22:31
 GET pH 12 # 146
 .10ml/div dPH=1/div
 start V .000 ml

date 98-10-22 time 23:01
 GET pH 12 # 151
 Id.#1 2796-2
 Id.#2 .1934
 pH(init) 5.23
 V/ml pH
 EP1 .006 4.35
 stop volt.reached
 =====

date 98-10-22 time 23:01
 GET pH 12 # 151
 .10ml/div dPH=1/div
 start V .000 ml

date 98-10-22 time 22:45
 GET pH 12 # 149
 Id.#1 2796-2
 Id.#2 .1934
 pH(init) 11.03
 V/ml pH
 EP1 .053 10.07
 EP2 .101 7.09
 stop volt.reached
 =====

date 98-10-22 time 22:55
 GET pH 12 # 149
 .10ml/div dPH=1/div
 start V .000 ml

3093

date 98-10-22 time 23:05
 GET pH 12 # 152
 Id.#1 2796-2
 Id.#2 .1934
 pH(init) 10.81
 V/ml pH
 EP1 .050 8.33
 EP2 .072 5.67
 stop volt.reached
 =====

date 98-10-22 time 23:05
 GET pH 12 # 152
 .10ml/div dPH=1/div
 start V .000 ml

3094

date 98-10-22 time 23:23
 GET pH 12 # 153
 Id.#1 2796-2
 Id.#2 .1934
 pH(init) 10.76
 V/ml pH
 EP1 .029 8.23
 stop Volt.reached
 =====

date 98-10-22 time 23:25
 GET pH 12 # 153
 .10ml/div dPH=1/div
 start V .000 ml

3095

date 98-10-22 time 23:29
 GET pH 12 # 154
 Id.#1 2796-2
 Id.#2 .1934
 pH(init) 11.24
 V/ml pH
 EP1 .003 9.90
 EP2 .192 6.31
 stop volt.reached
 =====

date 98-10-22 time 23:42
 GET pH 12 # 154
 .10ml/div dPH=1/div
 start V .000 ml

date 98-10-22 time 23:47
 GET pH 12 # 155
 Id.#1 2796-2
 Id.#2 .1934
 pH(init) 11.17
 V/ml pH
 EP1 .079 9.27
 EP2 .111 7.84
 EP3 .145 6.29
 stop volt.reached
 =====

3096

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

$$\frac{<125 \times 1000}{5.0} = <2.5 \text{ E}+4 \mu\text{g/g}$$

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

		BLK
Type	Sample Size (mL) SS	1.000
BLK	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.006
26704	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.16E-03
OH-01	OH in Sample in $\mu\text{g/mL}$ (PPM)	1.97E+01
Matrix		
SOLID		
Sample #	Detection Limit = $125\mu\text{g} / \text{SS} * \text{DF}$	
BLNK-PREP		
Instrument Code	Detection Limit ($\mu\text{g/mL}$)	1.25E+02
PH01		
Analyst	OH Molarity = $((\text{mL HNO}_3) * (\text{M HNO}_3)) / \text{Sample Size in mL} * \text{Dilution Factor}$	
KRM		
Date	OH in $\mu\text{g/mL}$ = $(\text{OH MOLARITY}) * (17.0\text{g/mole}) * ((1000000\mu\text{g/g}) / (1000\text{mL/L}))$	
10/22/98		
Time		BLK
10:00 PM	Concentration of OH in Sample (Molarity)	1.16E-03
	OH in Sample in $\mu\text{g/mL}$ (PPM)	<125

The Result is < Detection Limit

Data Entry by:	Date:	11/04/98
Approved by: <i>NA</i>	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

OH (AUTO) : LA-211-102 (D-0)		STD
Type	Sample Size (mL) SS	0.050
STD	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.260
26704	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.01E+00
OH-01	OH in Sample in µg/mL (PPM)	1.71E+04
Matrix		
SOLID		
Sample #	Detection Limit = 125µg / SS * DF	
STD		
Instrument Code	Detection Limit (µg/mL)	2.50E+03
PH01		
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/22/98		
Time		STD
10:00 PM	Concentration of OH in Sample (Molarity)	1.01E+00
	OH in Sample in µg/mL (PPM)	1.71E+04

Data Entry by:	Date:	11/04/98
Approved by: <i>N/A</i>	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

$$\frac{1.74E+2 \times 1000}{5.0} = 3.48E+4 \mu\text{g/g}$$

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

		SAMPLE
Type	Sample Size (mL) SS	1.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.053
26704	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.03E-02
OH-01	OH in Sample in $\mu\text{g/mL}$ (PPM)	1.74E+02
Matrix		
SOLID		
Sample #	Detection Limit = $125\mu\text{g} / \text{SS} * \text{DF}$	
S98T003092		
Instrument Code	Detection Limit ($\mu\text{g/mL}$)	1.25E+02
PH01		
Analyst	OH Molarity = $((\text{mL HNO3}) * (\text{M HNO3})) / (\text{Sample Size in mL} * \text{Dilution Factor})$	
KRM		
Date	OH in $\mu\text{g/mL}$ = $(\text{OH MOLARITY}) * (17.0\text{g/mole}) * ((1000000\mu\text{g/g}) / (1000\text{mL/L}))$	
10/22/98		
Time		SAMPLE
10:00 PM	Concentration of OH in Sample (Molarity)	1.03E-02
	OH in Sample in $\mu\text{g/mL}$ (PPM)	1.74E+02

Data Entry by:	Date:	11/04/98
Approved by: <i>NA</i>	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

$$\frac{1.64E+2 \times 1000}{4.926} = 3.33E+4$$

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

		SAMPLE
Type	Sample Size (mL) SS	1.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.050
26704	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	9.67E-03
OH-01	OH in Sample in µg/mL (PPM)	1.64E+02

Matrix

SOLID

Sample #

S98T003093

Detection Limit = 125µg / SS * DF

2.54E+4

Instrument Code

Detection Limit (µg/mL)

1.26E+02

PH01

Analyst

OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor

KRM

Date

OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))

10/22/98

Time

SAMPLE

10:00 PM

Concentration of OH in Sample (Molarity)

9.67E-03

OH in Sample in µg/mL (PPM)

1.64E+02

Data Entry by:

Date: 11/04/98

Approved by:

Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

$$\frac{125 \times 1000}{5.029} = 2.49 \text{ E}+4$$

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

		SAMPLE
Type	Sample Size (mL) SS	1.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.029
26704	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	5.61E-03
OH-01	OH in Sample in µg/mL (PPM)	9.53E+01

Matrix

SOLID

Sample

S98T003094

Detection Limit = 125 µg / SS * DF

Instrument Code

PH01

m/L 11/2/98

Detection Limit (µg/mL)

2.49 E4 m/L

4.25E+02

11/17/98

Analyst

KRM

OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor

Date

10/22/98

OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))

Time

10:00 PM

Concentration of OH in Sample (Molarity)

OH in Sample in µg/mL (PPM)

SAMPLE

5.61E-03

<125

The Result is < Detection Limit

Data Entry by:

Date: 11/04/98

Approved by:

Date:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

$$\frac{2.73E+2 \times 1000}{5.15} = 5.30 E+4$$

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

		SAMPLE
Type	Sample Size (mL) SS	1.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.083
26704	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.61E-02
OH-01	OH in Sample in µg/mL (PPM)	2.73E+02

Matrix		
SOLID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T003095		
Instrument Code	Detection Limit (µg/mL) <i>mL 11/17/98</i>	2.43E4
PH01		1.25E+02 <i>mL 11/17/98</i>
Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/22/98		
Time		SAMPLE
10:00 PM	Concentration of OH in Sample (Molarity)	1.61E-02
	OH in Sample in µg/mL (PPM)	2.73E+02

Data Entry by:	Date:	11/04/98
Approved by: <i>N/A</i>	Date:	

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

$$\frac{2.60 \text{ E}+2 \times 1000}{5.146} = 5.05 \text{ E}+4$$

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

		SAMPLE
Type	Sample Size (mL) SS	1.000
SAMPLE	Concentration of HNO3 (Molarity)	0.1934
Work List	HNO3 Titrant at OH end-point in mL	0.079
26704	Dilution Factor DF	1
Test Code	Concentration of OH in Sample (Molarity)	1.53E-02
OH-01	OH in Sample in µg/mL (PPM)	2.60E+02

Matrix		
SOLID		
Sample #	Detection Limit = 125µg / SS * DF	
S98T003096	w/L 11/17/98	
Instrument Code	Detection Limit (µg/mL) g	2.48 E4 m/L 11/17/98
PH01		1.25E+02

Analyst	OH Molarity = ((mL HNO3)*(M HNO3))/Sample Size in mL*Dilution Factor	
KRM		
Date	OH in µg/mL = (OH MOLARITY)*(17.0g/mole)*((1000000µg/g)/(1000mL/L))	
10/22/98		
Time		SAMPLE
10:00 PM	Concentration of OH in Sample (Molarity)	1.53E-02
	OH in Sample in µg/mL (PPM)	2.60E+02

Data Entry by:	Date:	11/04/98
Approved by: <i>IVH</i>	Date:	

LABCORE Completed Worklist Report for Worklist# 26411

Analyst: mf

Instrument: NH301

Book#: _____

Method: LA-631-001 Rev/Mod C-1

rev 1/25/99

Worklist Comment: AW101 LAW, NH3-01 STD: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	NH3-01	LIQUID	1	<1.00E+1		ug/mL
2 STD	0	NH3-01	LIQUID	3.92E+02	3.87E+2	98.724 % Recovery	
3 SAMPLE	S98T002782 0	NH3-01	LIQUID	N/A	< 1.00E+01	10.000	ug/mL
4 DUP	S98T002782 0	NH3-01	LIQUID	<1.00E+1	<1.00E+1		RPD
5 SPK	S98T002782 0	NH3-01	LIQUID	1.96E+02	2.17E+02	110.714 % Recovery	
6 SAMPLE	S98T002783 0	NH3-01	LIQUID	N/A	< 1.00E+01	10.000	ug/mL
7 DUP	S98T002783 0	NH3-01	LIQUID	<1.00E+1	<1.00E+1		RPD
8 SAMPLE	S98T002784 0	NH3-01	LIQUID	N/A	< 1.00E+01	10.000	ug/mL
9 DUP	S98T002784 0	NH3-01	LIQUID	<1.00E+1	<1.00E+1		RPD
10 SAMPLE	S98T002796 0	NH3-01	LIQUID	N/A	< 1.00E+01	10.000	ug/mL
11 DUP	S98T002796 0	NH3-01	LIQUID	<1.00E+1	<1.00E+1		RPD
12 STD	0	NH3-01	LIQUID	3.92E+02	4.39E+2	111.990 % Recovery	

Final page for worklist# 26411

Analyst Signature

Date

[Signature]
Analyst Signature

10/13/98
Date

[Signature]
Reviewer Signature

10/13/98
Date

LABCORE Data Entry Template for Worklist# 26411

Analyst: 62269/MF Instrument: NH301 Book # 50N19-C

Method: LA-631-001 Rev/Mod _____

Worklist Comment: AW101 LAW, NH3-01 STD: 1.0mL skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			NH3-01	LIQUID	_____	_____	N/A	ug/mL
		2 STD			NH3-01	LIQUID	_____	_____	N/A	ug/mL
98000261	AW-101 LAW	3 SAMPLE	S98T002782	0	NH3-01	LIQUID	N/A	_____	_____	ug/mL
98000261	AW-101 LAW	4 DUP	S98T002782	0	NH3-01	LIQUID	_____	_____	N/A	ug/mL
98000261	AW-101 LAW	5 SPK	S98T002782	0	NH3-01	LIQUID	_____	_____	N/A	ug/mL
98000261	AW-101 LAW	6 SAMPLE	S98T002783	0	NH3-01	LIQUID	N/A	_____	_____	ug/mL
98000261	AW-101 LAW	7 DUP	S98T002783	0	NH3-01	LIQUID	_____	_____	N/A	ug/mL
98000261	AW-101 LAW	8 SAMPLE	S98T002784	0	NH3-01	LIQUID	N/A	_____	_____	ug/mL
98000261	AW-101 LAW	9 DUP	S98T002784	0	NH3-01	LIQUID	_____	_____	N/A	ug/mL
98000261	AW-101 LAW	10 SAMPLE	S98T002796	0	NH3-01	LIQUID	N/A	_____	_____	ug/mL
98000261	AW-101 LAW	11 DUP	S98T002796	0	NH3-01	LIQUID	_____	_____	N/A	ug/mL
		12 STD			NH3-01	LIQUID	_____	_____	N/A	ug/mL

Final page for worklist # 26411

Manya Irony 9-7-98
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

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

LIQUIDS/SOLIDS

		BLNK
Type	Instrument Data (µg/mL)	ID 0.000
BLNK	Blank Result from the Instrument (µg/mL)	BR 0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID	Dilution Factor	DF 1.000
Batch Number		
98004988		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+01
Sample #		
BLK	Detection Limit (µg/mL)	1.00E+01
Instrument Code		
NH301	Detection Limit = 0.200µg * (FVOL/VSAM)	
Prepared By		
JDS	NH3 Concentration (µg/mL) = (BR) * (FVOL / VSAM) * DDF	
Chemist		
MJL		
Analyst		
MF		
Date Complete		
10/13/98		
Analysis Date		
09/07/98		
Analysis Time		
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+01
AW101		

Analyst:	MF Date: 10/13/98
Signature of Chemist: NA	MJL Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: STD2

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

LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	ID 15.600
STD	Blank Result from the Instrument (µg/mL)	BR 0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.000
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 50N19C
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL 3.92E+02
Matrix		
Batch Number		
98004988		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 3.87E+02
Sample #		
STD	Detection Limit (µg/mL)	5.00E+00
Instrument Code		
NH301	Detection Limit = 0.200µg * (FVOL/VSAM)	
Prepared By		
JDS	NH3 Concentration (µg/mL) = (ID-BR)*(FVOL /VSAM)	
Chemist		
MJL	QC ACTUAL = STD VAL	
Analyst	QC FOUND = (ID-BR) * (FVOL/VSAM)	
MF		
Date Complete		
10/13/98		
Analysis Date	QC ACTUAL (µg)	3.92E+02
09/07/98	QC FOUND (µg)	3.87E+02
Analysis Time		
03:00 PM		
Sample Point		
AW101		

Analyst:	MF	Date: 10/13/98
Signature of Chemist: NA	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: SAM3

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

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID 0.185
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID	Dilution Factor	DF 1.000
Batch Number		
98004988		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+01
Sample #		
S98T002782	Detection Limit (µg/mL)	1.00E+01
Instrument Code		
NH301	Detection Limit = $0.200\mu\text{g} * (\text{FVOL}/\text{VSAM}) * \text{DF}$	
Prepared By		
JDS	NH3 Concentration (µg/mL) = $(\text{ID}-\text{BR}) * (\text{FVOL} / \text{VSAM}) * \text{DF}$	
Chemist		
MJL		
Analyst		
MF		
Date Complete		
10/13/98		
Analysis Date		
09/07/98		
Analysis Time		
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+01
AW101		

Analyst:	MF	Date: 10/13/98
Signature of Chemist: NA	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: DUP4

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

LIQUIDS/SOLIDS

		DUP
Type	Instrument Data (µg/mL)	ID 0.112
DUP	Blank Result from the Instrument (µg/mL)	BR 0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID	Dilution Factor	DF 1.000
Batch Number		
98004988		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+01
Sample #		
S98T002782	Detection Limit (µg/mL)	1.00E+01
Instrument Code		
NH301	Detection Limit = $0.200\mu\text{g} * (\text{FVOL}/\text{VSAM}) * \text{DF}$	
Prepared By		
JDS	NH3 Concentration (µg/mL) = $(\text{ID}-\text{BR}) * (\text{FVOL} / \text{VSAM}) * \text{DF}$	
Chemist		
MJL		
Analyst		
MF		
Date Complete		
10/13/98		
Analysis Date		
09/07/98		
Analysis Time		
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+01
AW101		

Analyst:	MF	Date: 10/13/98
Signature of Chemist: NA	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: SPIKES

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

LIQUIDS/SOLIDS

		SPK
Type	Instrument Data (µg/mL)	ID 8.850
SPK	Blank Result from the Instrument (µg/mL)	BR 0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	Spike Book Number	SPK 50N19C
NH3-01	Spike Value (µg/mL)	SPK VAL 3.92E+02
Matrix	Vol of Spike Standard Used (mL)	VOL SPK 0.500
LIQUID		
Batch Number		
98004988		
Rerun	Sample Instrument Data (µg/mL)	SAM ID 0.185
0	Sample Volume of Sample (mL)	SAM VSAM 0.500
Sample Prep	Sample Final Volume (mL)	SAM FVOL 25.0
N/A		
Sample #		
S98T002782		
Instrument Code		
NH301		
Prepared By		
JDS		
Chemist		
MJL	QC ACTUAL = SPK VAL * VOL SPK	
Analyst	QC FOUND = (((ID-BR) * FVOL) - (SAM ID - BR) * SAM FVOL * (VSAM / SAM VSAM))	
MF		
Date Complete		
10/13/98		
Analysis Date	QC ACTUAL (µg)	1.96E+02
09/07/98	QC FOUND (µg)	2.17E+02
Analysis Time		
03:00 PM		
Sample Point		
AW101		

Analyst:	MF	Date: 10/13/98
Signature of Chemist: N/A	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: SAM6

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

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID 0.092
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID	Dilution Factor	DF 1.000
Batch Number		
98004988		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+01
Sample #		
S98T002783	Detection Limit (µg/mL)	1.00E+01
Instrument Code		
NH301	Detection Limit = $0.200\mu\text{g} * (\text{FVOL}/\text{VSAM}) * \text{DF}$	
Prepared By		
JDS	NH3 Concentration (µg/mL) = $(\text{ID}-\text{BR}) * (\text{FVOL} / \text{VSAM}) * \text{DF}$	
Chemist		
MJL		
Analyst		
MF		
Date Complete		
10/13/98		
Analysis Date		
09/07/98		
Analysis Time		
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+01
AW101		

Analyst:	MF	Date:	10/13/98
Signature of Chemist:	NA	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: DUP7

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

LIQUIDS/SOLIDS

DUP

Type	Instrument Data (µg/mL)	ID	0.095
DUP	Blank Result from the Instrument (µg/mL)	BR	0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID	Dilution Factor	DF	1.000
Batch Number			
98004988			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	< 1.00E+01
Sample #			
S98T002783	Detection Limit (µg/mL)	1.00E+01	
Instrument Code			
NH301	Detection Limit = 0.200µg * (FVOL/VSAM) * DF		
Prepared By			
JDS	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)*DF		
Chemist			
MJL			
Analyst			
MF			
Date Complete			
10/13/98			
Analysis Date			
09/07/98			
Analysis Time			
03:00 PM			
Sample Point	NH3 Concentration (µg/mL)		< 1.00E+01
AW101			

Analyst:	MF	Date:	10/13/98
Signature of Chemist: NA	MJL	Date:	

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: SAM8

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

LIQUIDS/SOLIDS

LIQUIDS/SOLIDS		SAMPLE
Type	Instrument Data (µg/mL)	ID 0.072
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID	Dilution Factor	DF 1.000
Batch Number		
98004988		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+01
Sample #		
S98T002784	Detection Limit (µg/mL)	1.00E+01
Instrument Code		
NH301	Detection Limit = 0.200µg * (FVOL/VSAM) * DF	
Prepared By		
JDS	NH3 Concentration (µg/mL) = (ID-BR) * (FVOL / VSAM)*DF	
Chemist		
MJL		
Analyst		
MF		
Date Complete		
10/13/98		
Analysis Date		
09/07/98		
Analysis Time		
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+01
AW101		

Analyst:	MF	Date: 10/13/98
Signature of Chemist: NA	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: DUP9

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

LIQUIDS/SOLIDS

		DUP
Type	Instrument Data (µg/mL)	ID 0.082
DUP	Blank Result from the Instrument (µg/mL)	BR 0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID	Dilution Factor	DF 1.000
Batch Number		
98004988		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+01
Sample #		
S98T002784	Detection Limit (µg/mL)	1.00E+01
Instrument Code		
NH301	Detection Limit = $0.200\mu\text{g} * (\text{FVOL}/\text{VSAM}) * \text{DF}$	
Prepared By		
JDS	NH3 Concentration (µg/mL) = $(\text{ID}-\text{BR}) * (\text{FVOL} / \text{VSAM}) * \text{DF}$	
Chemist		
MJL		
Analyst		
MF		
Date Complete		
10/13/98		
Analysis Date		
09/07/98		
Analysis Time		
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+01
AW101		

Analyst:	MF	Date: 10/13/98
Signature of Chemist: NA	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: SAM10

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

LIQUIDS/SOLIDS

		SAMPLE
Type	Instrument Data (µg/mL)	ID 0.069
SAMPLE	Blank Result from the Instrument (µg/mL)	BR 0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 0.500
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code		
NH3-01		
Matrix		
LIQUID	Dilution Factor	DF 1.000
Batch Number		
98004988		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC < 1.00E+01
Sample #		
S98T002796	Detection Limit (µg/mL)	1.00E+01
Instrument Code		
NH301	Detection Limit = $0.200\mu\text{g} * (\text{FVOL}/\text{VSAM}) * \text{DF}$	
Prepared By		
JDS	NH3 Concentration (µg/mL) = $(\text{ID}-\text{BR}) * (\text{FVOL} / \text{VSAM}) * \text{DF}$	
Chemist		
MJL		
Analyst		
MF		
Date Complete		
10/13/98		
Analysis Date		
09/07/98		
Analysis Time		
03:00 PM		
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+01
AW101		

Analyst:	MF	Date: 10/13/98
Signature of Chemist: NA	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

252.1

WORKBOOK PAGE: DUP11

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

LIQUIDS/SOLIDS

DUP

Type	Instrument Data (µg/mL)	ID	0.091
DUP	Blank Result from the Instrument (µg/mL)	BR	0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM	0.500
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL	25.0
Test Code			
NH3-01			
Matrix			
LIQUID	Dilution Factor	DF	1.000
Batch Number			
98004988			
Rerun			
0			
Sample Prep			
N/A	NH3 Concentration (µg/mL)	NH3 CONC	< 1.00E+01
Sample #			
S98T002796	Detection Limit (µg/mL)	1.00E+01	
Instrument Code			
NH301	Detection Limit = $0.200\mu\text{g} * (\text{FVOL}/\text{VSAM}) * \text{DF}$		
Prepared By			
JDS	NH3 Concentration (µg/mL) = $(\text{ID}-\text{BR}) * (\text{FVOL} / \text{VSAM}) * \text{DF}$		
Chemist			
MJL			
Analyst			
MF			
Date Complete			
10/13/98			
Analysis Date			
09/07/98			
Analysis Time			
03:00 PM			
Sample Point	NH3 Concentration (µg/mL)	< 1.00E+01	
AW101			

Analyst:	MF	Date:	10/13/98
Signature of Chemist: NA	MJL	Date:	

SAMPLE.WB1 REV 1.0

631001ML

WORKBOOK PAGE: ST_END12

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

LIQUIDS/SOLIDS

		STD
Type	Instrument Data (µg/mL)	ID 17.700
STD	Blank Result from the Instrument (µg/mL)	BR 0.133
Work List	Vol of Sample for Dilution (mL) or Vol of Sample Direct (mL)	VSAM 1.000
26411	Final Vol of Dilution (mL) or Vol of Sample Direct (mL)	FVOL 25.0
Test Code	LCS Standard Book Number	LCS 50N19C
NH3-01	LCS Standard Concentration (µg/mL)	STD VAL 3.92E+02
Matrix		
Batch Number		
98004988		
Rerun		
0		
Sample Prep		
N/A	NH3 Concentration (µg/mL)	NH3 CONC 4.39E+02
Sample #		
	Detection Limit (µg/mL)	5.00E+00
Instrument Code		
NH301	Detection Limit = 0.200µg * (FVOL/VSAM)	
Prepared By		
JDS	NH3 Concentration (µg/mL) = (ID-BR)*(FVOL /VSAM)	
Chemist		
MJL	QC ACTUAL = STD VAL	
Analyst	QC FOUND = (ID-BR) * (FVOL/VSAM)	
MF		
Date Complete		
10/13/98		
Analysis Date	QC ACTUAL (µg)	3.92E+02
09/07/98	QC FOUND (µg)	4.39E+02
Analysis Time		
03:00 PM		
Sample Point		
AW101		

Analyst:	MF	Date: 10/13/98
Signature of Chemist: NA	MJL	Date:

SAMPLE.WB1 REV 1.0

631001ML

DOUBLE KNOWN ADDITION SELECTED
AT 08:45, 10-07-98

HNF-1652 REV. 0

SAMPLE VOL= 25.000 AT 08:45, 10-07-98
ENTERED

MF= 30.5 mV AT 08:46, 10-07-98

MF= 30.3 mV AT 08:47, 10-07-98

MF= 30.1 mV AT 08:47, 10-07-98

MF= 30.0 mV AT 08:48, 10-07-98

MF= 29.9 mV AT 08:48, 10-07-98
ENTERED

TD CONC= 1000 AT 08:48, 10-07-98
ENTERED

TD VOL= .25000 AT 08:48, 10-07-98
ENTERED

MF= 17.6 mV AT 08:49, 10-07-98

MF= 17.5 mV AT 08:50, 10-07-98
ENTERED

TD VOL= 2.5000 AT 08:50, 10-07-98
ENTERED

MF=-20.4 mV AT 08:51, 10-07-98

MF=-20.6 mV AT 08:51, 10-07-98

MF=-20.7 mV AT 08:52, 10-07-98

MF=-20.7 mV AT 08:52, 10-07-98
ENTERED

NH3 SLOPE=-58.8 mV/DEC
AT 08:52, 10-07-98

NH3 CONC= 15.6

1 ml 50 N19-C STD

DOUBLE KNOWN ADDITION SELECTED

AT 08:55, 10-07-98

SAMPLE VOL= 25.000 AT 08:55, 10-07-98

ENTERED

MF= 150.7 mV AT 09:06, 10-07-98

MF= 153.4 mV AT 09:08, 10-07-98

MF= 153.6 mV AT 09:09, 10-07-98

ENTERED

STD CONC= 1000 AT 09:09, 10-07-98

ENTERED

STD VOL= .25000 AT 09:09, 10-07-98

ENTERED

MF= 42.7 mV AT 09:12, 10-07-98

MF= 42.6 mV AT 09:13, 10-07-98

ENTERED

STD VOL= 1.3000 AT 09:13, 10-07-98

ENTERED

MF=-15.8 mV AT 09:16, 10-07-98

MF=-16.0 mV AT 09:16, 10-07-98

MF=-16.2 mV AT 09:16, 10-07-98

ENTERED

NH3 SLOPE=-59.1 mV/DEC

AT 09:16, 10-07-98

NH3 CONC= .133

Blk

DOUBLE KNOWN ADDITION SELECTED
AT 10:23, 10-07-98

HNF-1652 REV. 0

SAMPLE VOL= 25.000 AT 10:24, 10-07-98
ENTERED

MF= 136.0 mV AT 10:27, 10-07-98

MF= 136.6 mV AT 10:28, 10-07-98

MF= 137.2 mV AT 10:28, 10-07-98

MF= 137.5 mV AT 10:29, 10-07-98

MF= 137.5 mV AT 10:29, 10-07-98
ENTERED

TD CONC= 1000 AT 10:29, 10-07-98
ENTERED

TD VOL= .25000 AT 10:29, 10-07-98
ENTERED

MF= 36.6 mV AT 10:30, 10-07-98

MF= 36.4 mV AT 10:31, 10-07-98

MF= 36.4 mV AT 10:31, 10-07-98
ENTERED

TD VOL= 2.5000 AT 10:32, 10-07-98
ENTERED

MF=-21.2 mV AT 10:32, 10-07-98

MF=-21.4 mV AT 10:33, 10-07-98

MF=-21.4 mV AT 10:33, 10-07-98
ENTERED

NH3 SLOPE=-58.2 mV/DEC
AT 10:33, 10-07-98

NH3 CONC= .185

598T002782 .500 ml Sam

DOUBLE KNOWN ADDITION SELECTED

AT 10:35, 10-07-98

SAMPLE VOL= 25.000 AT 10:35, 10-07-98

ENTERED

MF= 150.6 mV AT 10:43, 10-07-98

MF= 153.5 mV AT 10:45, 10-07-98

MF= 154.3 mV AT 10:45, 10-07-98

MF= 154.4 mV AT 10:45, 10-07-98

ENTERED

TD CONC= 1000 AT 10:46, 10-07-98

ENTERED

TD VOL= .25000 AT 10:46, 10-07-98

ENTERED

MF= 39.0 mV AT 10:48, 10-07-98

MF= 38.9 mV AT 10:48, 10-07-98

ENTERED

TD VOL= 2.5000 AT 10:49, 10-07-98

ENTERED

MF=-19.7 mV AT 10:50, 10-07-98

MF=-19.9 mV AT 10:51, 10-07-98

MF=-20.0 mV AT 10:51, 10-07-98

ENTERED

NH3 SLOPE=-59.1 mV/DEC

AT 10:51, 10-07-98

NH3 CONC= .112

2782 Dup .500 ml

DOUBLE KNOWN ADDITION SELECTED

HNF-1652 REV. 0

AT 10:54, 10-07-98

SAMPLE VOL= 25.000 AT 10:54, 10-07-98

ENTERED

MF= 43.7 mV AT 10:54, 10-07-98

MF= 43.7 mV AT 10:55, 10-07-98

MF= 44.2 mV AT 10:56, 10-07-98

MF= 44.3 mV AT 10:56, 10-07-98

ENTERED

ED CONCEN= 1000 AT 10:57, 10-07-98

ENTERED

ED VOL= .25000 AT 10:57, 10-07-98

ENTERED

MF= 25.2 mV AT 10:58, 10-07-98

MF= 24.9 mV AT 10:58, 10-07-98

MF= 24.8 mV AT 10:59, 10-07-98

MF= 24.7 mV AT 10:59, 10-07-98

ENTERED

ED VOL= 2.5000 AT 10:59, 10-07-98

ENTERED

MF=-20.7 mV AT 11:01, 10-07-98

MF=-21.0 mV AT 11:02, 10-07-98

MF=-21.2 mV AT 11:02, 10-07-98

MF=-21.2 mV AT 11:03, 10-07-98

ENTERED

HNH3 SLOPE=-60.5 mV/DEC

AT 11:03, 10-07-98

HNH3 CONCEN= 8.85

2782 .500ml spk / .500ml 50N19-C

DOUBLE KNOWN ADDITION SELECTED
AT 12:56. 10-07-98

HNF-1652 REV. 0

SAMPLE VOL= 25.000 AT 12:56. 10-07-98
ENTERED

MF= 153.3 mV AT 13:00. 10-07-98

MF= 155.2 mV AT 13:01. 10-07-98

MF= 156.0 mV AT 13:02. 10-07-98

MF= 156.5 mV AT 13:02. 10-07-98

MF= 157.0 mV AT 13:03. 10-07-98

MF= 157.6 mV AT 13:03. 10-07-98

MF= 158.2 mV AT 13:04. 10-07-98

MF= 158.2 mV AT 13:04. 10-07-98
ENTERED

TD CONC= 1000 AT 13:05. 10-07-98
ENTERED

TD VOL= .25000 AT 13:05. 10-07-98
ENTERED

MF= 39.7 mV AT 13:07. 10-07-98

MF= 39.2 mV AT 13:07. 10-07-98

MF= 38.9 mV AT 13:08. 10-07-98

MF= 38.9 mV AT 13:08. 10-07-98
ENTERED

TD VOL= 2.5000 AT 13:08. 10-07-98
ENTERED

MF=-19.1 mV AT 13:10. 10-07-98

MF=-19.4 mV AT 13:11. 10-07-98

MF=-19.6 mV AT 13:11. 10-07-98

MF=-19.5 mV AT 13:11. 10-07-98
ENTERED

NH3 SLOPE=-58.6 mV/DEC
AT 13:11. 10-07-98

NH3 CONC= .0919

598T002783 Sam. 500 ml

DOUBLE KNOWN ADDITION SELECTED
AT 13:13, 10-07-98

HNF-1652 REV. 0

SAMPLE VOL= 25.000 AT 13:14, 10-07-98
ENTERED

HF= 150.8 mV AT 13:20, 10-07-98

HF= 152.5 mV AT 13:21, 10-07-98

HF= 153.7 mV AT 13:22, 10-07-98

HF= 154.4 mV AT 13:23, 10-07-98

HF= 155.0 mV AT 13:23, 10-07-98

HF= 155.5 mV AT 13:24, 10-07-98

HF= 156.0 mV AT 13:24, 10-07-98

HF= 156.6 mV AT 13:25, 10-07-98

HF= 157.0 mV AT 13:26, 10-07-98

HF= 157.3 mV AT 13:26, 10-07-98

HF= 157.3 mV AT 13:26, 10-07-98
ENTERED

STD CONC= 1000 AT 13:26, 10-07-98
ENTERED

STD VOL= .25000 AT 13:26, 10-07-98
ENTERED

HF= 40.1 mV AT 13:29, 10-07-98

HF= 39.8 mV AT 13:29, 10-07-98

HF= 39.7 mV AT 13:30, 10-07-98

HF= 39.7 mV AT 13:30, 10-07-98
ENTERED

STD VOL= 2.5000 AT 13:30, 10-07-98
ENTERED

HF=-18.0 mV AT 13:32, 10-07-98

HF=-18.2 mV AT 13:32, 10-07-98

HF=-18.3 mV AT 13:34, 10-07-98
ENTERED

NH3 SLOPE=-58.2 mV/DEC
AT 13:34, 10-07-98

NH3 CONC= .0953

2783 dup . 500 ml

DOUBLE KNOWN ADDITION SELECTED
AT 13:36, 10-07-98

HNF-1652 REV. 0

SAMPLE VOL= 25.000 AT 13:36, 10-07-98
ENTERED

HIF= 160.8 mV AT 13:43, 10-07-98

HIF= 163.0 mV AT 13:45, 10-07-98

HIF= 163.4 mV AT 13:45, 10-07-98

HIF= 163.8 mV AT 13:45, 10-07-98

HIF= 164.0 mV AT 13:46, 10-07-98

HIF= 164.5 mV AT 13:46, 10-07-98

HIF= 164.7 mV AT 13:46, 10-07-98

ENTERED

STD CONCEN= 1000 AT 13:47, 10-07-98

ENTERED

STD VOL= .25000 AT 13:47, 10-07-98

ENTERED

HIF= 39.9 mV AT 13:48, 10-07-98

HIF= 39.7 mV AT 13:48, 10-07-98

ENTERED

STD VOL= 2.5000 AT 13:49, 10-07-98

ENTERED

HIF=-18.5 mV AT 13:50, 10-07-98

HIF=-18.6 mV AT 13:50, 10-07-98

HIF=-18.6 mV AT 13:51, 10-07-98

ENTERED

NH3 SLOPE=-58.4 mV/DEC

AT 13:51, 10-07-98

NH3 CONCEN= .0724

598T002784 .500ml

DOUBLE KNOWN ADDITION SELECTED
AT 13:53, 10-07-98

HNF-1652 REV. 0

SAMPLE VOL= 25.000 AT 13:53, 10-07-98
ENTERED

MF= 157.2 mV AT 13:57, 10-07-98

MF= 162.6 mV AT 14:01, 10-07-98

MF= 163.3 mV AT 14:01, 10-07-98

MF= 163.6 mV AT 14:02, 10-07-98

MF= 164.0 mV AT 14:02, 10-07-98

MF= 164.1 mV AT 14:02, 10-07-98

ENTERED

ED CONC= 1000 AT 14:03, 10-07-98
ENTERED

ED VOL= .25000 AT 14:03, 10-07-98
ENTERED

MF= 42.0 mV AT 14:04, 10-07-98

MF= 41.6 mV AT 14:05, 10-07-98

ENTERED

ED VOL= 2.5000 AT 14:06, 10-07-98
ENTERED

MF=-16.7 mV AT 14:07, 10-07-98

MF=-16.9 mV AT 14:08, 10-07-98

MF=-17.0 mV AT 14:08, 10-07-98

ENTERED

NH3 SLOPE=-58.8 mV/DEC
AT 14:08, 10-07-98

NH3 CONC= .0822

2784 dup . 500 ml

DOUBLE KNOWN ADDITION SELECTED
AT 14:34. 10-07-98

HNF-1652 REV. 0

SAMPLE VOL= 25.000 AT 14:34. 10-07-98
ENTERED

MF= 165.4 mV AT 14:39. 10-07-98

MF= 165.9 mV AT 14:39. 10-07-98

MF= 166.2 mV AT 14:39. 10-07-98

MF= 166.4 mV AT 14:39. 10-07-98
ENTERED

STD CONC= 1000 AT 14:40. 10-07-98
ENTERED

STD VOL= .25000 AT 14:40. 10-07-98
ENTERED

MF= 40.5 mV AT 14:42. 10-07-98

MF= 40.3 mV AT 14:42. 10-07-98

MF= 40.1 mV AT 14:43. 10-07-98

MF= 40.0 mV AT 14:43. 10-07-98

MF= 40.0 mV AT 14:43. 10-07-98
ENTERED

STD VOL= 2.5000 AT 14:44. 10-07-98
ENTERED

MF=-17.9 mV AT 14:46. 10-07-98

MF=-18.1 mV AT 14:46. 10-07-98

MF=-18.3 mV AT 14:47. 10-07-98
ENTERED

NH3 SLOPE=-58.4 mV/DEC
AT 14:47. 10-07-98

NH3 CONC= .0685

598T002796 .500 mL

DOUBLE KNOWN ADDITION SELECTED
AT 14:48, 10-07-98

HNF-1652 REV. 0

SAMPLE VOL= 25.000 AT 14:49, 10-07-98
ENTERED

MF= 156.6 mV AT 14:57, 10-07-98

MF= 157.4 mV AT 14:58, 10-07-98

MF= 158.6 mV AT 14:59, 10-07-98

MF= 159.0 mV AT 14:59, 10-07-98

MF= 160.3 mV AT 15:00, 10-07-98

MF= 160.6 mV AT 15:01, 10-07-98

MF= 160.9 mV AT 15:01, 10-07-98

MF= 161.2 mV AT 15:01, 10-07-98

MF= 161.4 mV AT 15:01, 10-07-98

MF= 161.6 mV AT 15:02, 10-07-98

ENTERED

FD CONC= 1000 AT 15:02, 10-07-98

ENTERED

FD VOL= .25000 AT 15:02, 10-07-98

ENTERED

MF= 41.0 mV AT 15:05, 10-07-98

MF= 40.9 mV AT 15:05, 10-07-98

MF= 40.7 mV AT 15:05, 10-07-98

ENTERED

TD VOL= 2.5000 AT 15:06, 10-07-98

ENTERED

MF=-18.0 mV AT 15:08, 10-07-98

MF=-18.3 mV AT 15:08, 10-07-98

MF=-18.4 mV AT 15:08, 10-07-98

ENTERED

MF NH3 SLOPE=-59.3 mV/DEC

AT 15:08, 10-07-98

MF NH3 CONC= .0913

2996 dup . 500 ml

DOUBLE KNOWN ADDITION SELECTED
AT 15:10, 10-07-98

HNF-1652 REV. 0

SAMPLE VOL= 25.000 AT 15:10, 10-07-98
ENTERED

MF= 28.1 mV AT 15:12, 10-07-98

MF= 27.9 mV AT 15:12, 10-07-98

MF= 28.0 mV AT 15:13, 10-07-98

MF= 28.1 mV AT 15:13, 10-07-98

MF= 28.1 mV AT 15:13, 10-07-98
ENTERED

FD CONCEN= 1000 AT 15:14, 10-07-98
ENTERED

FD VOL= .25000 AT 15:14, 10-07-98
ENTERED

MF= 17.5 mV AT 15:15, 10-07-98

MF= 16.8 mV AT 15:15, 10-07-98

MF= 16.7 mV AT 15:16, 10-07-98

MF= 16.5 mV AT 15:16, 10-07-98

MF= 16.5 mV AT 15:17, 10-07-98
ENTERED

FD VOL= 2.5000 AT 15:17, 10-07-98
ENTERED

MF=-21.2 mV AT 15:19, 10-07-98

MF=-21.4 mV AT 15:20, 10-07-98

MF=-21.5 mV AT 15:20, 10-07-98
ENTERED

NH3 SLOPE=-61.0 mV/DEC
AT 15:20, 10-07-98

NH3 CONCEN= 17.7 1ml 50 N 19-C STD

LABCORE Completed Worklist Report for Worklist# 27180

Analyst: jis Instrument: SP02 Book#: _____

Method: LA-695-102 Rev/Mod _____

Worklist Comment: AW101 LAW, CN-03 STD: 0.250mL to 25.0mL Use 0.500mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCV	0	CN-03	LIQUID	9.22E+02	9.24E+2	100.217	% Recovery
2 CCB	0	CN-03	LIQUID	1	<1.10E-2		Ratio
3 SAMPLE	S98T002782 0	CN-03	LIQUID	N/A	8.45E+00	0.550	ug/mL
4 DUP	S98T002782 0	CN-03	LIQUID	8.45E+0	9.05E+0	6.857	RPD
5 SPK	S98T002782 0	CN-03	LIQUID	1.00E+02	8.54E+01	85.400	% Recovery
6 SAMPLE	S98T002783 0	CN-03	LIQUID	N/A	9.17E+00	0.550	ug/mL
7 DUP	S98T002783 0	CN-03	LIQUID	9.17E+0	9.41E+0	2.593	RPD
8 SAMPLE	S98T002784 0	CN-03	LIQUID	N/A	8.75E+00	0.550	ug/mL
9 DUP	S98T002784 0	CN-03	LIQUID	8.75E+0	9.47E+0	7.903	RPD
10 SAMPLE	S98T002796 0	CN-03	LIQUID	N/A	5.50E-01	0.550	ug/mL
11 DUP	S98T002796 0	CN-03	LIQUID	<5.50E-1	<5.50E-1		RPD

Final page for worklist# 27180

11/19/98

Analyst Signature Date

Analyst Signature Date

11/23/98

Reviewer Signature Date

11/13/98 09:34
A-0004-1

HNF-1652 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 27180

Analyst: JIS Instrument: SP02 Book# 119 UK-AMethod: LA-695-102 Rev/Mod G-1Worklist Comment: AW101 LAW, CN-03 STD: 0.250mL to 25.0mL Use 0.500mL skm Rxru SKM

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCV			CN-03	LIQUID		
2 CCB			CN-03	LIQUID		
3 SAMPLE	S98T002782 0		CN-03	LIQUID	98000261	AW-101 LAW
	Analytes Requested: CN-03					
4 DUP	S98T002782 0		CN-03	LIQUID		
5 SPK	S98T002782 0		CN-03	LIQUID		
6 SAMPLE	S98T002783 0		CN-03	LIQUID	98000261	AW-101 LAW
	Analytes Requested: CN-03					
7 DUP	S98T002783 0		CN-03	LIQUID		
8 SAMPLE	S98T002784 0		CN-03	LIQUID	98000261	AW-101 LAW
	Analytes Requested: CN-03					
9 DUP	S98T002784 0		CN-03	LIQUID		
10 SAMPLE	S98T002796 0		CN-03	LIQUID	98000261	AW-101 LAW
	Analytes Requested: CN-03					
11 DUP	S98T002796 0		CN-03	LIQUID		

Final page for worklist # 27180

Analyst Signature Date 11-17-98

Analyst Signature Date

Data Entry Comments:

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

WORKBOOK PAGE: STD1

CN- DETERMINATION : LA-695-102(G-1)

		STANDARD
Type	WAS THIS RUN BY EDTA DISSOLUTION? (Y / N)	N
CCV	DISSOLUTION INFORMATION:	
Work List	STANDARD ALIQUOT (mL)	N/A
27180	FINAL VOLUME (mL)	N/A
Test Code	DILUTION INFORMATION:	
CN-03	SAMPLE SIZE USED FOR DILUTION (mL) (SSD)	0.250
Matrix	FINAL DILUTION VOLUME (mL) (FDV)	25.000
LIQUID	ANALYSIS INFORMATION:	
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL) (SS)	0.5000
	ABSORBANCE OF BLANK (CCB)	0.002
Retun	ABSORBANCE OF STANDARD (CCV)	0.766
0	STANDARD BOOK NUMBER	119N8A
Sample Prep	STANDARD VALUE OF CN- ($\mu\text{g} / \text{mL}$)	922
N/A	Y-INTERCEPT VALUE	-0.003330
Sample #	SLOPE VALUE	0.166070
STD	AMOUNT OF CN- IN STANDARD (μg)	4.621
Instrument Code	CONCENTRATION OF CN- IN STANDARD ($\mu\text{g} / \text{mL}$)	924.104
SP02	Post-Distillation Dilution Factor PDDF	1.00
Prepared By	JDS	
JDS	AMOUNT OF CN- (μg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF	
Chemist	CONCENTRATION OF CN- ($\mu\text{g} / \text{mL}$) = (AMOUNT OF CN- in μg) / (SS in mL) * (FDV/SSD)	
PPB	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)	
Analyst	METHOD DETECTION LIMIT ($\mu\text{g} / \text{mL}$) = (0.055 μg CYANIDE) / (SS in mL) * DF * DF2	
JIS	QC ACTUAL ($\mu\text{g}/\text{mL}$) = STANDARD VALUE OF CN- in $\mu\text{g}/\text{mL}$	
Date Complete	QC FOUND ($\mu\text{g}/\text{mL}$) = CONCENTRATION OF CN- in $\mu\text{g}/\text{mL}$	
11/19/98	% RECOVERY = QC FOUND / QC ACTUAL * 100	
Analysis Date	11/17/98	
Analysis Time	Method Detection Limit in $\mu\text{g}/\text{mL}$	1.10E+01
03:15 PM	QC Actual in $\mu\text{g}/\text{mL}$	9.22E+02
Sample Point	QC Found in $\mu\text{g}/\text{mL}$	9.24E+02
AW 101 LAW	Percent Standard Recovery	100.2

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	<i>N/A</i>	PPB	Date:

STANDARD.WB1 REV.1.

69510NML

WORKBOOK PAGE: BLANK2

CN- DETERMINATION : LA-695-102(G-1)

Type	WAS THIS RUN BY EDTA DISSOLUTION?	(Y / N)	BLANK
CCB	DISSOLUTION INFORMATION:		N
Work List	SAMPLE ALIQUOT (mL)	(SA)	N/A
27180	FINAL VOLUME (mL)	(FV)	N/A
Test Code	SAMPLE DILUTION INFORMATION:		
CN-03	SAMPLE SIZE USED FOR DILUTION (mL)	(SSD)	N/A
Matrix	FINAL DILUTION VOLUME (mL)	(FDV)	N/A
LIQUID	ANALYSIS INFORMATION:		
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL)	(SS)	5.0000
	ABSORBANCE OF BLANK (REAGENT, PREP)	(CCB)	0.002
Rerun	Y-INTERCEPT VALUE		-0.003330
0	SLOPE VALUE		0.166070
Sample Prep	AMOUNT OF CN- IN BLANK (µg)		0.032
N/A	CONCENTRATION OF CN- IN BLANK (µg / mL)		0.006

Sample #			
BLK			
Instrument Code	Post-Distillation Dilution Factor	PDDF	1.00
SP02	NOTE: The instrument is zeroed prior to each batch, therefore the Instrument Blank = 0.000		
Prepared By			
JDS	AMOUNT OF CN- (µg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF		
Chemist	CONCENTRATION OF CN- (µg / mL) = (AMOUNT OF CN- in µg) / (SS in mL) * (FDV/SSD) * (FV/SA)		
PPB	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)		
Analyst	METHOD DETECTION LIMIT (µg / mL) = (0.055 µg CYANIDE) / (SS in mL) * DF * DF2		
JIS	QC FOUND (µg/mL) = CONCENTRATION OF CN- in µg/mL		
Date Complete			
11/19/98			
Analysis Date	NOTE: Reported Result is Below Detection Level.		
11/17/98			
Analysis Time	Method Detection Limit in µg/mL		1.10E-02
03:15 PM			
Sample Point	QC Found in µg/mL		< 1.10E-02
AW 101 LAW			

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	N/A	PPB	Date:

BLANK.WB1 REV.1.2

69510NML

WORKBOOK PAGE: SAM3

CN- DETERMINATION : LA-695-102(G-1)

Type	WAS THIS RUN BY EDTA DISSOLUTION? (Y / N)	SAMPLE	N
SAMPLE	DISSOLUTION INFORMATION:		
Work List	SAMPLE ALIQUOT (mL)		N/A
27180	FINAL VOLUME (mL)		N/A
Test Code	SAMPLE DILUTION INFORMATION:		
CN-03	SAMPLE SIZE USED FOR DILUTION (mL)		N/A
Matrix	FINAL DILUTION VOLUME (mL)		N/A
LIQUID	ANALYSIS INFORMATION:		
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL) (SS)		0.1000
98005797	ABSORBANCE OF BLANK (CCB)		0.002
Rerun	ABSORBANCE OF SAMPLE (CCV)		0.139
0	Y-INTERCEPT VALUE		-0.003330
Sample Prep	SLOPE VALUE		0.166070
N/A	AMOUNT OF CN- IN SAMPLE (µg)		0.845
Sample #	CONCENTRATION OF CN- IN SAMPLE (µg / mL)		8.450
S98T002782			
Instrument Code			
SP02	Post-Distillation Dilution Factor	PDDF	1.00
Prepared By	AMOUNT OF CN- (µg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF		
JDS	CONCENTRATION OF CN- (µg / mL) = (AMOUNT OF CN- in µg) / (SS in mL) * (DF) * (DF2)		
Chemist	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)		
PPB	DF2 = (FINAL VOLUME in mL) / (SAMPLE ALIQUOT in mL)		
Analyst	METHOD DETECTION LIMIT (µg / mL) = (0.055 µg CYANIDE) / (SS in mL) * DF * DF2		
JIS	QC FOUND (µg/mL) = CONCENTRATION OF CN- in µg/mL		
Date Complete			
11/19/98			
Analysis Date			
11/17/98			
Analysis Time	Method Detection Limit in µg/mL		5.50E-01
03:15 PM			
Sample Point	CONCENTRATION OF CN- IN SAMPLE (µg / mL)		8.45E+00
AW 101 LAW			

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	PPB	Date:	

SAMPLE.WB1 REV 1.1

69510NML

WORKBOOK PAGE: DUP4

CN- DETERMINATION : LA-695-102(G-1)

CN- DETERMINATION : LA-695-102(G-1)		DUPLICATE
Type	WAS THIS RUN BY EDTA DISSOLUTION? (Y / N)	N
DUP	DISSOLUTION INFORMATION:	
Work List	SAMPLE ALIQUOT (mL)	N/A
27180	FINAL VOLUME (mL)	N/A
Test Code	SAMPLE DILUTION INFORMATION:	
CN-03	SAMPLE SIZE USED FOR DILUTION (mL)	N/A
Matrix	FINAL DILUTION VOLUME (mL)	N/A
LIQUID	ANALYSIS INFORMATION:	
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL) (SS)	0.1000
98005797	ABSORBANCE OF BLANK (CCB)	0.002
Rerun	ABSORBANCE OF SAMPLE (CCV)	0.149
0	Y-INTERCEPT VALUE	-0.003330
Sample Prep	SLOPE VALUE	0.166070
N/A	AMOUNT OF CN- IN SAMPLE (µg)	0.905
Sample #	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	9.052
S98T002782	SAMPLE RESULT	8.45E+00
Instrument Code		
SP02	Post-Distillation Dilution Factor PDDF	1.00
Prepared By	AMOUNT OF CN- (µg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF	
JDS	CONCENTRATION OF CN- (µg / mL) = (AMOUNT OF CN- in µg) / (SS in mL) * (DF) * (DF2)	
Chemist	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)	
PFB	DF2 = (FINAL VOLUME in mL) / (SAMPLE ALIQUOT in mL)	
Analyst	METHOD DETECTION LIMIT (µg / mL) = (0.055 µg CYANIDE) / (SS in mL) * DF * DF2	
JIS	QC FOUND (µg/mL) = CONCENTRATION OF CN- in µg/mL	
Date Complete		
11/19/98		
Analysis Date		
11/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E-01
03:15 PM		
Sample Point	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	9.05E+00
AW 101 LAW		

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	PPB	Date:	
SAMPLE.WB1 REV 1.1			
69510NML			

WORKBOOK PAGE: SPIKE5

CN- DETERMINATION : LA-695-102(G-1)

Type	WAS THIS RUN BY EDTA DISSOLUTION? (Y / N)	SPIKE
SPK	DISSOLUTION INFORMATION:	N
Work List	SAMPLE ALIQUOT (mL)	N/A
27180	FINAL VOLUME (mL)	N/A
Test Code	SAMPLE DILUTION INFORMATION:	
CN-03	SAMPLE SIZE USED FOR DILUTION (mL)	N/A
Matrix	FINAL DILUTION VOLUME (mL)	N/A
LIQUID	ANALYSIS INFORMATION:	
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL) (SS)	0.1000
98005797	ABSORBANCE OF BLANK (CCB)	0.002
Rerun	ABSORBANCE OF SPIKE	0.466
0	AMOUNT OF SPIKE STANDARD ADDED (mL)	0.250
Sample Prep	SPIKE BOOK NUMBER	119N8A
N/A	SPIKE VALUE OF CN- (µg / mL)	922
Sample #	Y-INTERCEPT VALUE	-0.003330
S98T002782	SLOPE VALUE	0.166070
Instrument Code	AMOUNT OF CN- IN SPIKE (µg)	2.814
SP02	AMOUNT OF CN- FROM SAMPLE (µg)	0.845
Prepared By	Post-Distillation Dilution Factor PDDF	1.00
JDS		
Chemist	AMOUNT OF CN- (µg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF	
PPE	METHOD DETECTION LIMIT (µg / mL) = (0.055 µg CYANIDE) / (SS in mL) * DF * DF2	
Analyst	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)	
JIS	% REC = 100 * (AMT OF CN- IN SPK - AMT OF CN- FROM SAM) / (SPK VAL / 100 * AMT OF SPK STD ADDED)	
Date Complete	QC ACTUAL = SPIKE VALUE OF CN- in µg/mL	
11/19/98	QC FOUND = % RECOVERY * QC ACTUAL * 100	
Analysis Date		
11/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E-01
03:15 PM	QC Actual in µg/mL	9.22E+02
Sample Point	QC Found in µg/mL	7.88E+02
AW 101 LAW	Percent Standard Recovery	85.4

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	N/A	PPB	Date:

SPIKE.WB1 REV.1.2

69510NML

WORKBOOK PAGE: SAM6

CN- DETERMINATION : LA-695-102(G-1)

Type	WAS THIS RUN BY EDTA DISSOLUTION? (Y / N)	SAMPLE
SAMPLE	DISSOLUTION INFORMATION:	N
Work List	SAMPLE ALIQUOT (mL)	N/A
27180	FINAL VOLUME (mL)	N/A
Test Code	SAMPLE DILUTION INFORMATION:	
CN-03	SAMPLE SIZE USED FOR DILUTION (mL)	N/A
Matrix	FINAL DILUTION VOLUME (mL)	N/A
LIQUID	ANALYSIS INFORMATION:	
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL) (SS)	0.1000
98005797	ABSORBANCE OF BLANK (CCB)	0.002
Rerin	ABSORBANCE OF SAMPLE (CCV)	0.151
0	Y-INTERCEPT VALUE	-0.003330
Sample Prep	SLOPE VALUE	0.166070
N/A	AMOUNT OF CN- IN SAMPLE (µg)	0.917
Sample #	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	9.173
S98T002783		
Instrument Code		
SP02	Post-Distillation Dilution Factor PDDF	1.00
Prepared By	AMOUNT OF CN- (µg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF	
JDS	CONCENTRATION OF CN- (µg / mL) = (AMOUNT OF CN- in µg) / (SS in mL) * (DF) * (DF2)	
Chemist	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)	
PPB	DF2 = (FINAL VOLUME in mL) / (SAMPLE ALIQUOT in mL)	
Analyst	METHOD DETECTION LIMIT (µg / mL) = (0.055 µg CYANIDE) / (SS in mL) * DF * DF2	
JIS	QC FOUND (µg/mL) = CONCENTRATION OF CN- in µg/mL	
Date Complete		
11/19/98		
Analysis Date		
11/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E-01
03:15 PM		
Sample Point	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	9.17E+00
AW 101 LAW		

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	PPB	Date:	

SAMPLE.WB1 REV 1.1

69510NML

WORKBOOK PAGE: DUP7

CN- DETERMINATION : LA-695-102(G-1)

		DUPLICATE
Type	WAS THIS RUN BY EDTA DISSOLUTION? (Y / N)	N
DUP	DISSOLUTION INFORMATION:	
Work List	SAMPLE ALIQUOT (mL)	N/A
27180	FINAL VOLUME (mL)	N/A
Test Code	SAMPLE DILUTION INFORMATION:	
CN-03	SAMPLE SIZE USED FOR DILUTION (mL)	N/A
Matrix	FINAL DILUTION VOLUME (mL)	N/A
LIQUID	ANALYSIS INFORMATION:	
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL) (SS)	0.1000
98005797	ABSORBANCE OF BLANK (CCB)	0.002
Rerun	ABSORBANCE OF SAMPLE (CCV)	0.155
0	Y-INTERCEPT VALUE	-0.003330
Sample Prep	SLOPE VALUE	0.166070
N/A	AMOUNT OF CN- IN SAMPLE (µg)	0.941
Sample #	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	9.414
S98T002783	SAMPLE RESULT	9.17E+00
Instrument Code		
SP02	Post-Distillation Dilution Factor PDDF	1.00
Prepared By	AMOUNT OF CN- (µg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF	
JDS	CONCENTRATION OF CN- (µg / mL) = (AMOUNT OF CN- in µg) / (SS in mL) * (DF) * (DF2)	
Chemist	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)	
PPB	DF2 = (FINAL VOLUME in mL) / (SAMPLE ALIQUOT in mL)	
Analyst	METHOD DETECTION LIMIT (µg / mL) = (0.055 µg CYANIDE) / (SS in mL) * DF * DF2	
JIS	QC FOUND (µg/mL) = CONCENTRATION OF CN- in µg/mL	
Date Complete		
11/19/98		
Analysis Date		
11/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E-01
03:15 PM		
Sample Point	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	9.41E+00
AW 101 LAW		

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	PPB	Date:	

SAMPLE.WB1 REV 1.1

69510NML

WORKBOOK PAGE: SAM8

CN- DETERMINATION : LA-695-102(G-1)

Type	WAS THIS RUN BY EDTA DISSOLUTION? (Y / N)	SAMPLE
SAMPLE	DISSOLUTION INFORMATION:	N
Work List	SAMPLE ALIQUOT (mL)	N/A
27180	FINAL VOLUME (mL)	N/A
Test Code	SAMPLE DILUTION INFORMATION:	
CN-03	SAMPLE SIZE USED FOR DILUTION (mL)	N/A
Matrix	FINAL DILUTION VOLUME (mL)	N/A
LIQUID	ANALYSIS INFORMATION:	
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL) (SS)	0.1000
98005797	ABSORBANCE OF BLANK (CCB)	0.002
Rerun	ABSORBANCE OF SAMPLE (CCV)	0.144
0	Y-INTERCEPT VALUE	-0.003330
Sample Prep	SLOPE VALUE	0.166070
N/A	AMOUNT OF CN- IN SAMPLE (µg)	0.875
Sample #	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	8.751
S98T002784		
Instrument Code		
SP02	Post-Distillation Dilution Factor PDDF	1.00
Prepared By	AMOUNT OF CN- (µg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF	
JDS	CONCENTRATION OF CN- (µg / mL) = (AMOUNT OF CN- in µg) / (SS in mL) * (DF) * (DF2)	
Chemist	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)	
PPB	DF2 = (FINAL VOLUME in mL) / (SAMPLE ALIQUOT in mL)	
Analyst	METHOD DETECTION LIMIT (µg / mL) = (0.055 µg CYANIDE) / (SS in mL) * DF * DF2	
JIS	QC FOUND (µg/mL) = CONCENTRATION OF CN- in µg/mL	
Date Complete		
11/19/98		
Analysis Date		
11/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E-01
03:15 PM		
Sample Point	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	8.75E+00
AW 101 LAW		

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	PPB	Date:	

SAMPLE.WB1 REV 1.1

69510NML

WORKBOOK PAGE: DUP9

CN- DETERMINATION : LA-695-102(G-1)

		DUPLICATE
Type	WAS THIS RUN BY EDTA DISSOLUTION? (Y / N)	N
DUP	DISSOLUTION INFORMATION:	
Work List	SAMPLE ALIQUOT (mL)	N/A
27180	FINAL VOLUME (mL)	N/A
Test Code	SAMPLE DILUTION INFORMATION:	
CN-03	SAMPLE SIZE USED FOR DILUTION (mL)	N/A
Matrix	FINAL DILUTION VOLUME (mL)	N/A
LIQUID	ANALYSIS INFORMATION:	
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL) (SS)	0.1000
98005797	ABSORBANCE OF BLANK (CCB)	0.002
Rerun	ABSORBANCE OF SAMPLE (CCV)	0.156
0	Y-INTERCEPT VALUE	-0.003330
Sample Prep	SLOPE VALUE	0.166070
N/A	AMOUNT OF CN- IN SAMPLE (µg)	0.947
Sample #	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	9.474
S98T002784	SAMPLE RESULT	8.75E+00
Instrument Code		
SP02	Post-Distillation Dilution Factor PDDF	1.00
Prepared By	AMOUNT OF CN- (µg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF	
JDS	CONCENTRATION OF CN- (µg / mL) = (AMOUNT OF CN- in µg) / (SS in mL) * (DF) * (DF2)	
Chemist	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)	
PPB	DF2 = (FINAL VOLUME in mL) / (SAMPLE ALIQUOT in mL)	
Analyst	METHOD DETECTION LIMIT (µg / mL) = (0.055 µg CYANIDE) / (SS in mL) * DF * DF2	
JIS	QC FOUND (µg/mL) = CONCENTRATION OF CN- in µg/mL	
Date Complete		
11/19/98		
Analysis Date		
11/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E-01
03:15 PM		
Sample Point	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	9.47E+00
AW 101 LAW		

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	PPB	Date:	

SAMPLE.WB1 REV 1.1

69510NML

277

CN- DETERMINATION : LA-695-102(G-1)

Type	WAS THIS RUN BY EDTA DISSOLUTION? (Y / N)	SAMPLE
SAMPLE	DISSOLUTION INFORMATION:	N
Work List	SAMPLE ALIQUOT (mL)	N/A
27180	FINAL VOLUME (mL)	N/A
Test Code	SAMPLE DILUTION INFORMATION:	
CN-03	SAMPLE SIZE USED FOR DILUTION (mL)	N/A
Matrix	FINAL DILUTION VOLUME (mL)	N/A
LIQUID	ANALYSIS INFORMATION:	
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL) (SS)	0.1000
98005797	ABSORBANCE OF BLANK (CCB)	0.002
Re-run	ABSORBANCE OF SAMPLE (CCV)	0.002
0	Y-INTERCEPT VALUE	-0.003330
Sample Prep	SLOPE VALUE	0.166070
N/A	AMOUNT OF CN- IN SAMPLE (µg)	0.020
Sample #	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	0.201
S98T002796		
Instrument Code		
SP02	Post-Distillation Dilution Factor PDDF	1.00
Prepared By	AMOUNT OF CN- (µg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF	
JDS	CONCENTRATION OF CN- (µg / mL) = (AMOUNT OF CN- in µg) / (SS in mL) * (DF)	
Chemist	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)	
PPB	DF2 = (FINAL VOLUME in mL) / (SAMPLE ALIQUOT in mL)	
Analyst	METHOD DETECTION LIMIT (µg / mL) = (0.055 µg CYANIDE) / (SS in mL) * DF * DF2	
JIS	QC FOUND (µg/mL) = CONCENTRATION OF CN- in µg/mL	
Date Complete		
11/19/98		
Analysis Date		
11/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E-01
03:15 PM		
Sample Point	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	< 5.50E-01
AW 101 LAW		

NOTE: Reported Result is Below Detection Level.

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	PPB	Date:	

SAMPLE.WB1 REV 1.1

69510NML

WORKBOOK PAGE: DUP11

CN- DETERMINATION : LA-695-102(G-1)

		DUPLICATE
Type	WAS THIS RUN BY EDTA DISSOLUTION? (Y / N)	N
DUP	DISSOLUTION INFORMATION:	
Work List	SAMPLE ALIQUOT (mL)	N/A
27180	FINAL VOLUME (mL)	N/A
Test Code	SAMPLE DILUTION INFORMATION:	
CN-03	SAMPLE SIZE USED FOR DILUTION (mL)	N/A
Matrix	FINAL DILUTION VOLUME (mL)	N/A
LIQUID	ANALYSIS INFORMATION:	
Batch Number	SAMPLE SIZE USED FOR ANALYSIS (mL) (SS)	0.1000
98005797	ABSORBANCE OF BLANK (CCB)	0.002
Rerun	ABSORBANCE OF SAMPLE (CCV)	0.002
0	Y-INTERCEPT VALUE	-0.003330
Sample Prep	SLOPE VALUE	0.166070
N/A	AMOUNT OF CN- IN SAMPLE (µg)	0.020
Sample #	CONCENTRATION OF CN- IN SAMPLE (µg / mL)	0.201
S98T002796	SAMPLE RESULT <	5.50E-01
Instrument Code		
SP02	Post-Distillation Dilution Factor PDDF	1.00
Prepared By	AMOUNT OF CN- (µg) = [(ABSORB. OF SAMPLE - ABSORB. OF BLANK - (Y-INTERCEPT)) / SLOPE VALUE] * PDDF	
JDS	CONCENTRATION OF CN- (µg / mL) = (AMOUNT OF CN- in µg) / (SS in mL) * (DF) * (DF2)	
Chemist	DF = (FINAL DILUTION VOLUME in mL) / (SAMPLE SIZE USED FOR DILUTION in mL)	
PPB	DF2 = (FINAL VOLUME in mL) / (SAMPLE ALIQUOT in mL)	
Analyst	METHOD DETECTION LIMIT (µg / mL) = (0.055 µg CYANIDE) / (SS in mL) * DF * DF2	
JIS	QC FOUND (µg/mL) = CONCENTRATION OF CN- in µg/mL	
Date Complete		
11/19/98		
Analysis Date		
11/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E-01
03:15 PM		
Sample Point	CONCENTRATION OF CN- IN SAMPLE (µg / mL) <	5.50E-01
AW 101 LAW		

NOTE: Reported Result is Below Detection Level.

Analyst:	JIS	Date:	11/19/98
Signature of Chemist:	PPB	Date:	

SAMPLE.WB1 REV 1.1

69510NML

HNF-1652 REV. 0

Page: 1

worklist Version 2.1 05/15/95
11/05/98 13:44

LABCORE Data Entry Template for Worklist# 26507

Analyst: KST Instrument: CAA01 Book # 93W11FMethod: LA-325-106 Rev/Mod A-O

Worklist Comment: AW-101 LAW, HG-02

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 ICV	93W11F		HG-02	LIQUID	0.1	$9.18e^{-2}$	N/A	ug/mL
		2 ICB			HG-02	LIQUID	1	$<7.0e^{-5}$	N/A	ug/mL
		3 LLS	<u>Delete</u>		HG-02	LIQUID			N/A	ug/mL
98000261	AW-101 LAW	4 SAMPLE	S98T002782 .05mL - 20mL	0	HG-02	LIQUID	N/A	$<2.8e^{-2}$	$2.8e^{-2}$	ug/mL
98000261	AW-101 LAW	5 DUP	S98T002782 .05mL - 20mL	0	HG-02	LIQUID	$<2.8e^{-2}$	$<2.8e^{-2}$	N/A	ug/mL
98000261	AW-101 LAW	6 SPK	S98T002782 .05mL - 20mL	0	HG-02	LIQUID	100	89.3	N/A	ug/mL
98000261	AW-101 LAW	7 SAMPLE	S98T002783 .05mL - 20mL	0	HG-02	LIQUID	N/A	$<2.8e^{-2}$	$2.8e^{-2}$	ug/mL
98000261	AW-101 LAW	8 DUP	S98T002783 .05mL - 20mL	0	HG-02	LIQUID	$<2.8e^{-2}$	$<2.8e^{-2}$	N/A	ug/mL
98000261	AW-101 LAW	9 SAMPLE	S98T002784 .05mL - 20mL	0	HG-02	LIQUID	N/A	$<2.8e^{-2}$	$2.8e^{-2}$	ug/mL
98000261	AW-101 LAW	10 DUP	S98T002784 .05mL - 20mL	0	HG-02	LIQUID	$<2.8e^{-2}$	$<2.8e^{-2}$	N/A	ug/mL
98000261	AW-101 LAW	11 SAMPLE	S98T002796 .05mL - 20mL	0	HG-02	LIQUID	N/A	$<2.8e^{-2}$	$2.8e^{-2}$	ug/mL
98000261	AW-101 LAW	12 DUP	S98T002796 .05mL - 20mL	0	HG-02	LIQUID	$<2.8e^{-2}$	$<2.8e^{-2}$	N/A	ug/mL
		13 CCV	93W11F		HG-02	LIQUID	0.1	$8.88e^{-2}$	N/A	ug/mL
		14 CCB			HG-02	LIQUID	1	$<7.0e^{-5}$	N/A	ug/mL

Final page for worklist # 26507

Analyst Signature

Date

Analyst Signature

Date

Validated by H/Arastis 11.9.98

Data Entry Comments:

$$IDL = \frac{0.070 \mu\text{g}}{\text{L}} \times \frac{0.020 \text{ L}}{0.050 \text{ mL}} = 2.8e^{-2} \mu\text{g/mL} = \text{DL}$$

DATA ENTRY 11-6-98

John Wawell

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.

Method Name: Hg
Method Description: Hg by FIAS

Element: Hg

HNF-1652 REV. 0

Date: 11/05/1998
Technique: FI-MHS
Wavelength: 253.7 nm
Lamp Current: 0
Sample Info File: 26507.SIF

Calibration Equation: Zero Intercept: Linear
Slit Width: 0.70 nm
Energy: 84
Results Data Set: 26507

Element: Hg Seq. No.: 1 AS Loc.: 9 Date: 11/05/1998
Sample ID: Calib Blank

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1			0.001	0.000	0.001			14:08:32	No

Auto-zero performed.

Element: Hg Seq. No.: 2 AS Loc.: 10 Date: 11/05/1998
Sample ID: 0.25ppb Hg 92N11F

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1			0.002	0.017	0.003			14:09:33	No

Standard number 1 applied. [0.25]
Correlation Coefficient: 1.0000 Slope: 0.0098

Element: Hg Seq. No.: 3 AS Loc.: 11 Date: 11/05/1998
Sample ID: 0.50ppb Hg 92N11F

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1			0.005	0.036	0.005			14:10:33	No

Standard number 2 applied. [0.50]
Correlation Coefficient: 0.9997 Slope: 0.0097

Element: Hg Seq. No.: 4 AS Loc.: 12 Date: 11/05/1998
Sample ID: 1.00ppb Hg 92N11F

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1			0.009	0.070	0.010			14:11:34	No

Standard number 3 applied. [1.00]
Correlation Coefficient: 0.9995 Slope: 0.0095

Element: Hg Seq. No.: 5 AS Loc.: 13 Date: 11/05/1998
Sample ID: 2.50ppb Hg 92N11F

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1			0.027	0.196	0.028			14:12:34	No

Standard number 4 applied. [2.50]
Correlation Coefficient: 0.9969 Slope: 0.0106

Element: Hg Seq. No.: 6 AS Loc.: 14 Date: 11/05/1998
 Sample ID: 5.0ppb Hg 92N11F

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1			0.051	0.376	0.052			14:13:35	No

Standard number 5 applied. [5.00]
 Correlation Coefficient: 0.9992 Slope: 0.0104

Element: Hg Seq. No.: 7 AS Loc.: 15 Date: 11/05/1998
 Sample ID: 7.5ppb Hg 92N11F

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1			0.076	0.558	0.077			14:14:37	No

Standard number 6 applied. [7.5]
 Correlation Coefficient: 0.9996 Slope: 0.0102

Element: Hg Seq. No.: 8 AS Loc.: 16 Date: 11/05/1998
 Sample ID: 10.0ppb Hg 92N11F

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1			0.103	0.760	0.104			14:15:38	No

Standard number 7 applied. [10.0]
 Correlation Coefficient: 0.9998 Slope: 0.0103

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.000	---	0.000	---	---
0.25ppb Hg 92N11F	0.002	0.25	0.239	---	---
0.50ppb Hg 92N11F	0.005	0.50	0.470	---	---
1.00ppb Hg 92N11F	0.009	1.00	0.913	---	---
2.50ppb Hg 92N11F	0.027	2.50	2.640	---	---
5.0ppb Hg 92N11F	0.051	5.00	5.005	---	---
7.5ppb Hg 92N11F	0.076	7.5	7.412	---	---
10.0ppb Hg 92N11F	0.103	10.0	10.04	---	---
Correlation Coefficient: 0.99979		Slope: 0.01028			

*This data
was used
1/20/99*

Element: Hg Seq. No.: 9 AS Loc.: 17 Date: 11/05/1998
Sample ID: ICV 93N11F

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	2.437	2.437	0.025	0.185	0.026			14:17:06	No

Element: Hg Seq. No.: 10 AS Loc.: 18 Date: 11/05/1998
Sample ID: ICB

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.072	0.072	0.001	0.007	0.001			14:18:07	No

Element: Hg Seq. No.: 11 AS Loc.: 19 Date: 11/05/1998
Sample ID: S98T002782

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.042	0.042	0.000	0.005	0.001			14:19:08	No

Element: Hg Seq. No.: 12 AS Loc.: 20 Date: 11/05/1998
Sample ID: S98T002782 DUP

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.022	0.022	0.000	0.002	0.001			14:20:09	No

Element: Hg Seq. No.: 13 AS Loc.: 21 Date: 11/05/1998
Sample ID: S98T002782 SPIKE

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	2.271	2.271	0.023	0.172	0.024			14:21:10	No

**DATA
NOT USED**

=====

Element: Hg Seq. No.: 14 AS Loc.: 22 Date: 11/05/1998

Sample ID: S98T002783 SAM

=====

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.062	0.062	0.001	0.005	0.001			14:22:11	No

=====

Element: Hg Seq. No.: 15 AS Loc.: 23 Date: 11/05/1998

Sample ID: S98T002783 DUP

=====

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.002	0.002	0.000	0.001	0.001			14:23:12	No

=====

Element: Hg Seq. No.: 16 AS Loc.: 24 Date: 11/05/1998

Sample ID: S98T002784 SAM

=====

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.022	0.022	0.000	0.002	0.001			14:24:13	No

=====

Element: Hg Seq. No.: 17 AS Loc.: 25 Date: 11/05/1998

Sample ID: S98T002784 DUP

=====

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.008	0.008	0.000	0.001	0.001			14:25:14	No

=====

Element: Hg Seq. No.: 18 AS Loc.: 26 Date: 11/05/1998

Sample ID: S98T002796 SAM

=====

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	-0.007	-0.007	0.000	0.000	0.000			14:26:15	No

=====

Element: Hg Seq. No.: 19 AS Loc.: 27 Date: 11/05/1998

Sample ID: S98T002796 DUP

=====

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.004	0.004	0.000	0.001	0.001			14:27:16	No

=====

Element: Hg Seq. No.: 20 AS Loc.: 28 Date: 11/05/1998

Sample ID: CCV 93N11F

=====

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	2.265	2.265	0.023	0.173	0.024			14:28:17	No

=====

DATA
NOT USED

Element: Hg Seq. No.: 21 AS Loc.: 29 Date: 11/05/1998
Sample ID: CCB

Repl	SampleConc	StdConc	BlkCorr	Peak	Peak	Bkgnd	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Height	Area	Height		Stored
1	0.038	0.038	0.000	0.004	0.001			14:29:18	No

Reran due to carryover from
stds + spks. See p. 7-11.

2/ Anastas 11.5.98

=====
Element: Hg Seq. No.: 22 AS Loc.: 9 Date: 11/05/1998
Sample ID: Sample009
=====

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Bkgnd	Bkgnd	Time	Peak
#	ug/L	ug/L	Signal	Area	Height	Area	Height		Stored
1	0.002	0.002	0.000	0.002	0.001			14:31:58	No

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=====

Element: Hg Seq. No.: 23 AS Loc.: 18 Date: 11/05/1998

Sample ID: ICB

=====

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Bkgnd	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Height	Area	Height		Stored
1	0.019	0.019	0.000	0.002	0.001			14:33:57	No

287

=====
 Element: Hg Seq. No.: 24 AS Loc.: 17 Date: 11/05/1998
 Sample ID: ICV 93N11F

Repl #	Sample Conc µg/L	Stnd Conc µg/L	Blk Corr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	2.296	2.296	0.024	0.178	0.024			14:35:55	No

=====
 Element: Hg Seq. No.: 25 AS Loc.: 18 Date: 11/05/1998
 Sample ID: ICB

Repl #	Sample Conc µg/L	Stnd Conc µg/L	Blk Corr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.042	0.042	0.000	0.005	0.001			14:36:56	No

=====
 Element: Hg Seq. No.: 26 AS Loc.: 19 Date: 11/05/1998
 Sample ID: S98T002782

Repl #	Sample Conc µg/L	Stnd Conc µg/L	Blk Corr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.019	0.019	0.000	0.002	0.001			14:37:57	No

=====
 Element: Hg Seq. No.: 27 AS Loc.: 20 Date: 11/05/1998
 Sample ID: S98T002782 DUP

Repl #	Sample Conc µg/L	Stnd Conc µg/L	Blk Corr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.022	0.022	0.000	0.002	0.001			14:38:58	No

=====
 Element: Hg Seq. No.: 28 AS Loc.: 21 Date: 11/05/1998
 Sample ID: S98T002782 SPIKE

Repl #	Sample Conc µg/L	Stnd Conc µg/L	Blk Corr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	2.233	2.233	0.023	0.174	0.023			14:39:59	No

=====

Element: Hg Seq. No.: 29 AS Loc.: 9 Date: 11/05/1998

Sample ID: Sample009

=====

Repl	SampleConc	StdndConc	BlkCorr	Peak	Peak	Bkgnd	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Height	Area	Height		Stored
1	0.033	0.033	0.000	0.002	0.001			14:41:27	No

=====

Element: Hg Seq. No.: 30 AS Loc.: 22 Date: 11/05/1998

Sample ID: S98T002783 SAM

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.019	0.019	0.000	0.003	0.001			14:43:10	No

=====

Element: Hg Seq. No.: 31 AS Loc.: 23 Date: 11/05/1998

Sample ID: S98T002783 DUP

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.000	0.000	0.000	0.002	0.001			14:44:11	No

=====

Element: Hg Seq. No.: 32 AS Loc.: 24 Date: 11/05/1998

Sample ID: S98T002784 SAM

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.006	0.006	0.000	0.002	0.001			14:45:11	No

=====

Element: Hg Seq. No.: 33 AS Loc.: 25 Date: 11/05/1998

Sample ID: S98T002784 DUP

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.002	0.002	0.000	0.000	0.001			14:46:12	No

=====

Element: Hg Seq. No.: 34 AS Loc.: 26 Date: 11/05/1998

Sample ID: S98T002796 SAM

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	-0.002	-0.002	0.000	0.000	0.000			14:47:13	No

=====

Element: Hg Seq. No.: 35 AS Loc.: 27 Date: 11/05/1998

Sample ID: S98T002796 DUP

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	0.002	0.002	0.000	0.000	0.001			14:48:14	No

=====

Element: Hg Seq. No.: 36 AS Loc.: 28 Date: 11/05/1998

Sample ID: CCV 93N11F

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Peak Height	Bkgnd Area	Bkgnd Height	Time	Peak Stored
1	2.221	2.221	0.023	0.175	0.023			14:49:15	No

=====

Element: Hg Seq. No.: 37 AS Loc.: 29 Date: 11/05/1998

Sample ID: CCB

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Bkgnd	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Height	Area	Height		Stored
1	0.044	0.044	0.000	0.004	0.001			14:50:16	No

LABCORE Data Entry Template for Worklist# 26553

Analyst: Kjt/hla Instrument: GFAA1 Book # 57WIDE

Method: LA-505-102 Rev/Mod B-Ø

Worklist Comment: AW101 LAW, GF-SB-01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 ICV			GF-SB-01	LIQUID	<u>50</u>	<u>49.6</u>	<u>N/A</u>	ug/L
		2 ICB			GF-SB-01	LIQUID	<u>1</u>	<u><1</u>	<u>N/A</u>	ug/L
		3 BLNK-PREP			GF-SB-01	LIQUID	<u>1</u>	<u><1</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	4 SERDIL	S98T002788	0 B	GF-SB-01	LIQUID	<u>8.4e²</u>	<u>5.7e²</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	5 SAMPLE	S98T002788	0 B	GF-SB-01	LIQUID	<u>N/A</u>	<u>8.4e²</u>	<u>100</u>	ug/L
98000261	AW-101 LAW	6 DUP	S98T002788	0 B	GF-SB-01	LIQUID	<u>8.4e²</u>	<u><100</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	7 SPK-POST	S98T002788	0 B	GF-SB-01	LIQUID	<u>100</u>	<u>74</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	8 SAMPLE	S98T002789	0 B	GF-SB-01	LIQUID	<u>N/A</u>	<u>400</u>	<u>100</u>	ug/L
98000261	AW-101 LAW	9 DUP	S98T002789	0 B	GF-SB-01	LIQUID	<u><100</u>	<u>400</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	10 SAMPLE	S98T002790	0 B	GF-SB-01	LIQUID	<u>N/A</u>	<u><100</u>	<u>400</u>	ug/L
98000261	AW-101 LAW	11 DUP	S98T002790	0 B	GF-SB-01	LIQUID	<u><100</u>	<u><100</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	12 SAMPLE	S98T002795	0	GF-SB-01	LIQUID	<u>N/A</u>	<u><1</u>	<u>1</u>	ug/L
98000261	AW-101 LAW	13 DUP	S98T002795	0	GF-SB-01	LIQUID	<u><1</u>	<u><1</u>	<u>N/A</u>	ug/L
		14 CCV			GF-SB-01	LIQUID	<u>50</u>	<u>48.0</u>	<u>N/A</u>	ug/L
		15 CCB			GF-SB-01	LIQUID	<u>1</u>	<u><1</u>	<u>N/A</u>	ug/L

Final page for worklist # 26553

See Attached

Data Entry Comments:

ERA SAMPLE Lot 423 = 93.9ug/L True Value = 91.2ug/L (108%)
S98T002788 gave erratic results - possibly due to
matrix interference - Will be rerun if requested
10.20.98

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

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10/19/98 08:18

LABCORE Data Entry Template for Worklist# 26553

Analyst: KST Instrument: GFAA1 Book # 57W10EMethod: LA-505-102 Rev/Mod B-0

Worklist Comment: AW101 LAW, GF-SB-01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 ICV			GF-SB-01	LIQUID	<u>50</u>	<u>49.6</u>	<u>N/A</u>	ug/L
		2 ICB			GF-SB-01	LIQUID	<u>1</u>	<u><1</u>	<u>N/A</u>	ug/L
		3 BLNK-PREP			GF-SB-01	LIQUID	<u>1</u>	<u><1</u>	<u>N/A</u>	ug/L
		4 STD-PREP			GF-SB-01	LIQUID			<u>N/A</u>	ug/L
98000261	AW-101 LAW	5 SERDIL	S98T002788	0 B	GF-SB-01	LIQUID	<u>8.4</u>	<u>5.71</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	6 SAMPLE	S98T002788	0 B	GF-SB-01	LIQUID	<u>N/A</u>	<u>8.4</u>		ug/L
98000261	AW-101 LAW	7 DUP	S98T002788	0 B	GF-SB-01	LIQUID			<u>N/A</u>	ug/L
98000261	AW-101 LAW	8 SPK	S98T002788	0 B	GF-SB-01	LIQUID			<u>N/A</u>	ug/L
98000261	AW-101 LAW	9 SPK-POST	S98T002788	0 B	GF-SB-01	LIQUID			<u>N/A</u>	ug/L
98000261	AW-101 LAW	10 SAMPLE	S98T002789	0 B	GF-SB-01	LIQUID	<u>N/A</u>			ug/L
98000261	AW-101 LAW	11 DUP	S98T002789	0 B	GF-SB-01	LIQUID			<u>N/A</u>	ug/L
98000261	AW-101 LAW	12 SAMPLE	S98T002790	0 B	GF-SB-01	LIQUID	<u>N/A</u>			ug/L
98000261	AW-101 LAW	13 DUP	S98T002790	0 B	GF-SB-01	LIQUID			<u>N/A</u>	ug/L
98000261	AW-101 LAW	14 SAMPLE	S98T002795	0	GF-SB-01	LIQUID	<u>N/A</u>			ug/L
98000261	AW-101 LAW	15 DUP	S98T002795	0	GF-SB-01	LIQUID			<u>N/A</u>	ug/L
		16 CCV			GF-SB-01	LIQUID			<u>N/A</u>	ug/L
		17 CCB			GF-SB-01	LIQUID			<u>N/A</u>	ug/L

Data Entry Comments:

An FRA check sample was analyzed with this batch - Lot 423. We found 93.9 ug/L / 91.2 ug/L $\times 100 = 103\%$ Recovery.

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

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10/19/98 08:18

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LABCORE Data Entry Template for Worklist# 26553

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

Final page for worklist # 26553

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

This document was too large to scan as a single document; therefore, it has been divided into smaller sections.

Section 2 of 4

Document Information			
Document #	HNF-1652	Revision	0
Title	TANK 241AW101 LOW ACTIVITY WASTE ENVELOPE A ANALYTICAL RESULTS FOR THE FINAL REPORT		
Date	02/08/1999		
Originator	ESCH RA	Originator Co.	WMH
Recipient		Recipient Co.	
References	EDT-626134		
Keywords	CHARACTERIZATION,CORE,AW FARM		
Projects			
Other Information			

Method Name: SB MED

Element: Sb

Method Description: 6.25 - 100PPB; 125PPB CAL STD

HNF-1652 REV. 0

Date: 10/19/1998

Technique: Furnace

Wavelength: 217.6 nm

Lamp Current: 0

Sample Info File: Untitled

Calibration Equation: Zero Intercept: Linear

Slit Width: 0.70 nm

Energy: 67

Results Data Set: 26553

Element: Sb Seq. No.: 1 AS Loc.: 79 Date: 10/19/1998

Sample ID: Blank

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			0.005	0.005	0.175	12:19:51	No

Auto-zero performed.

Element: Sb Seq. No.: 2 AS Loc.: 78 Date: 10/19/1998

Sample ID: 82N11F 4X 6.25

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			0.011	0.015	0.174	12:22:38	No

Standard number 1 applied. [6.250]

Correlation Coefficient: 1.0000

Slope: 0.0017

Element: Sb Seq. No.: 3 AS Loc.: 78 Date: 10/19/1998

Sample ID: 82N11F 4X 12.5

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			0.021	0.026	0.173	12:25:28	No

Standard number 2 applied. [12.500]

Correlation Coefficient: 0.9989

Slope: 0.0017

Element: Sb Seq. No.: 4 AS Loc.: 78 Date: 10/19/1998

Sample ID: 82N11F 4X 25

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			0.046	0.051	0.164	12:28:17	No

Standard number 3 applied. [25.000]

Correlation Coefficient: 0.9970

Slope: 0.0018

Element: Sb Seq. No.: 5 AS Loc.: 78 Date: 10/19/1998

Sample ID: 82N11F 4X 50

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			0.088	0.093	0.169	12:31:07	No

Standard number 4 applied. [50]

Correlation Coefficient: 0.9994

Slope: 0.0018

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295

Element: Sb Seq. No.: 6

AS Loc.: 78

Date: 10/19/1998

HNF-1652 REV. 0

Sample ID: 82N11F 4X 75

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			0.129	0.133	0.166	12:33:57	No

Standard number 5 applied. [75]
Correlation Coefficient: 0.9994 Slope: 0.0017

Element: Sb Seq. No.: 7

AS Loc.: 78

Date: 10/19/1998

Sample ID: 82N11F 4X 100

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			0.159	0.163	0.149	12:36:50	No

Standard number 6 applied. [100]
Correlation Coefficient: 0.9969 Slope: 0.0017

Calibration data for Sb

Standard ID	Mean Signal (Pk Area)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Blank	0.000	----	0.000	----	----
82N11F 4X 6.25	0.011	6.250	6.538	----	----
82N11F 4X 12.5	0.021	12.500	12.61	----	----
82N11F 4X 25	0.046	25.000	27.69	----	----
82N11F 4X 50	0.088	50	53.08	----	----
82N11F 4X 75	0.129	75	77.40	----	----
82N11F 4X 100	0.159	100	95.53	----	----
Correlation Coefficient: 0.99691		Slope: 0.00166			

Sb, Measured Characteristic Mass: 55.5 pg/0.0044 A-s

Method Name: SB MED Element: Sb
 Method Description: 6.25 - 100PPB; 125PPB CAL STD

HNF-1652 REV. 0

Date: 10/19/1998

Technique: Furnace

Wavelength: 217.6 nm

Lamp Current: 0

Sample Info File: Untitled

Calibration Equation: Zero Intercept: Nonlinear

Slit Width: 0.70 nm

Energy: 67

Results Data Set: 26553

Element: Sb Seq. No.: 8 AS Loc.: 78 Date: 10/19/1998
 Sample ID: 82N11F 4X 100

Repl #	Sample Conc μg/L	Std Conc μg/L	Blk Corr Signal	Peak Area	Bknd Area	Time	Peak Stored
1			0.159	0.163	0.148	12:41:16	No

S-shaped calibration curve detected. Two-coefficient equation used.

Standard number 6 applied. [100]

Correlation Coefficient: 0.9983

Slope: 0.0018

Calibration data for Sb

Standard ID	Mean Signal (Pk Area)	Entered Concentration (μg/L)	Calculated Concentration (μg/L)	Standard Deviation	%RSD
Blank	0.000	----	0.000	----	----
82N11F 4X 6.25	0.011	6.250	6.124	----	----
82N11F 4X 12.5	0.021	12.500	11.87	----	----
82N11F 4X 25	0.046	25.000	26.35	----	----
82N11F 4X 50	0.088	50	51.49	----	----
82N11F 4X 75	0.129	75	76.50	----	----
82N11F 4X 100	0.159	100	96.86	----	----

Correlation Coefficient: 0.99828 Slope: 0.00178

Sb, Measured Characteristic Mass: 55.4 pg/0.0044 A-s

The calibration curve has been edited.

HNF-1652 REV. 0

=====

Element: Sb Seq. No.: 9 AS Loc.: 1 Date: 10/19/1998

Sample ID: Blank

=====

Repl	SampleConc	StndConc	BlkCorr	Peak	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Area		Stored
1	0.026	0.026	0.000	0.005	0.153	13:00:08	No
2	-0.396	-0.396	-0.001	0.004	0.155	13:02:48	No
Mean:	-0.185	-0.185	0.000				
SD :	0.299	0.299	0.001				
%RSD:	161.1	161.1	161.06				

=====

=====

Element: Sb Seq. No.: 10 AS Loc.: 2 Date: 10/19/1998

Sample ID: ICV 57W10E 50X

=====

Repl	SampleConc	StndConc	BlkCorr	Peak	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Area		Stored
1	4.317	4.317	0.008	0.012	0.147	13:05:30	No
2	4.329	4.329	0.008	0.012	0.158	13:08:11	No
Mean:	4.323	4.323	0.008				
SD :	0.008	0.008	0.000				
%RSD:	0.19	0.19	0.19				

=====

=====

Element: Sb Seq. No.: 11 AS Loc.: 3 Date: 10/19/1998

Sample ID: ICB

=====

Repl	SampleConc	StndConc	BlkCorr	Peak	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Area		Stored
1	-0.962	-0.962	-0.002	0.003	0.150	13:10:53	No

=====

Element: Sb Seq. No.: 12 AS Loc.: 1 Date: 10/19/1998
 Sample ID: Blank

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	1.205	1.205	0.002	0.007	0.166	13:16:31	No
2	0.028	0.028	0.000	0.005	0.152	13:19:11	No
Mean:	0.616	0.616	0.001				
SD :	0.832	0.832	0.001				
%RSD:	135.1	135.1	135.08				

Element: Sb Seq. No.: 13 AS Loc.: 2 Date: 10/19/1998
 Sample ID: ICV 57W10E 50X

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	49.70	49.70	0.085	0.090	0.160	13:21:53	No
2	49.49	49.49	0.085	0.089	0.161	13:24:34	No
Mean:	49.59	49.59	0.085				
SD :	0.148	0.148	0.000				
%RSD:	0.30	0.30	0.29				

Element: Sb Seq. No.: 14 AS Loc.: 3 Date: 10/19/1998
 Sample ID: ICB

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	0.176	0.176	0.000	0.005	0.163	13:27:17	No
2	0.479	0.479	0.001	0.005	0.160	13:29:58	No
Mean:	0.328	0.328	0.001				
SD :	0.214	0.214	0.000				
%RSD:	65.34	65.34	65.32				

Element: Sb Seq. No.: 15 AS Loc.: 4 Date: 10/19/1998
 Sample ID: ERA LOT 423 2X

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	93.38	46.69	0.080	0.085	0.222	13:32:41	No
2	94.34	47.17	0.081	0.086	0.232	13:35:23	No
Mean:	93.86	46.93	0.081				
SD :	0.673	0.336	0.001				
%RSD:	0.72	0.72	0.69				

Element: Sb Seq. No.: 16 AS Loc.: 5 Date: 10/19/1998
 Sample ID: PREP-BLANK

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	-0.257	-0.257	0.000	0.004	0.183	13:38:07	No
2	-1.268	-1.268	-0.002	0.002	0.193	13:40:49	No
Mean:	-0.763	-0.763	-0.001				
SD :	0.715	0.715	0.001				
%RSD:	93.70	93.70	93.74				

Element: Sb Seq. No.: 17

AS Loc.: 79

Date: 10/19/1998

HNF-1652 REV. 0

Sample ID: Blank

Repl	SampleConc	StdndConc	BlndCorr	Peak	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Area		Stored
1			0.000	0.004	0.194	13:43:31	No

Auto-zero performed.

Element: Sb Seq. No.: 18

AS Loc.: 78

Date: 10/19/1998

Sample ID: 82N11F 4X 50

Repl	SampleConc	StdndConc	BlndCorr	Peak	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Area		Stored
1			0.094	0.099	0.204	13:46:20	No
2			0.094	0.098	0.205	13:49:08	No

Mean:

SD :

%RSD:

Reslope standard applied. [50.000]

Correlation Coefficient: 0.9983

Slope: 0.0020

Calibration data for Sb

Standard ID	Mean Signal (Pk Area)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Blank	0.000	---	0.000	---	---
82N11F 4X 6.25	0.011	6.250	5.569	---	---
82N11F 4X 12.5	0.021	12.500	10.79	---	---
82N11F 4X 25	0.046	25.000	23.96	---	---
82N11F 4X 50	0.088	50	46.82	---	---
82N11F 4X 75	0.129	75	69.56	---	---
82N11F 4X 100	0.159	100	87.17	---	---
82N11F 4X 50	0.094	50.000	50.00	0.000	0.454

Correlation Coefficient: 0.99828

Slope: 0.00196

300

Element: Sb Seq. No.: 19
Sample ID: PREP-STD 2X

AS Loc.: 6 Date: 10/19/1998

HNF-1652 REV. 0

Repl	SampleConc	StdConc	BlkCorr	Peak	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Area		Stored
1	85600	42800	2.204	2.208	0.526	13:51:55	No

Sample absorbance is greater than that of the highest standard.

Sample beyond calibration range. It will be diluted and reanalyzed.

Element: Sb Seq. No.: 20
Sample ID: PREP-STD 2X

AS Loc.: 6 Date: 10/19/1998

Repl	SampleConc	StdConc	BlkCorr	Peak	Bkgnd	Time	Peak
#	µg/L	µg/L	Signal	Area	Area		Stored
1	8927	2232	1.492	1.496	0.409	13:54:46	No

Sample absorbance is greater than that of the highest standard.

Element: Sb Seq. No.: 21
Sample ID: Sample001

AS Loc.: 1 Date: 10/19/1998

HNF-1652 REV. 0

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	1.465	1.465	0.003	0.007	0.276	13:58:46	No
2	0.603	0.603	0.001	0.005	0.268	14:01:27	No
Mean:	1.034	1.034	0.002				
SD :	0.609	0.609	0.001				
%RSD:	58.92	58.92	58.87				

RSD is over the limit.

Element: Sb Seq. No.: 22
Sample ID: Sample001

AS Loc.: 1 Date: 10/19/1998

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	0.423	0.423	0.001	0.005	0.263	14:04:07	No

Element: Sb Seq. No.: 23
Sample ID: S98T002788 SD 5X

AS Loc.: 7 Date: 10/19/1998

HNF-1652 REV. 0

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	4.676	0.935	0.002	0.006	0.223	14:07:55	No
2	-2.391	-0.478	-0.001	0.003	0.209	14:10:39	No
Mean:	1.142	0.228	0.000				
SD :	4.997	0.999	0.002				
%RSD:	437.5	437.5	438.24				

Element: Sb Seq. No.: 24
Sample ID: S98T002788

AS Loc.: 8 Date: 10/19/1998

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	-1.700	-1.700	-0.003	0.001	0.075	14:13:24	No
2	10.42	10.42	0.020	0.025	1.078	14:16:09	No
Mean:	4.360	4.360	0.008				
SD :	8.570	8.570	0.017				
%RSD:	196.6	196.6	197.25				

RSD is over the limit.

Result was reported as the
average of the 3 results obtained
from 2 analysis seq no. 24 and 25

Element: Sb Seq. No.: 25
Sample ID: S98T002788

AS Loc.: 8 Date: 10/19/1998

$\frac{10.4 + 8.1 + 6.7}{3} = 8.4$

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	8.074	8.074	0.016	0.020	0.885	14:18:53	No
2	6.744	6.744	0.013	0.017	0.950	14:22:14	No
Mean:	7.409	7.409	0.014				
SD :	0.941	0.941	0.002				
%RSD:	12.69	12.69	12.61				

A furnace clean-out has been performed.

$8.4 \times 100 \text{ dF}$
 $= 840 \mu\text{g/L}$
 $(20E, 12/29/99)$

Element: Sb Seq. No.: 26
Sample ID: Blank

AS Loc.: 79 Date: 10/19/1998

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			0.002	0.006	0.261	14:24:57	No

Auto-zero performed.

Element: Sb Seq. No.: 27
Sample ID: 82N11F 4X 50

AS Loc.: 78 Date: 10/19/1998

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			0.095	0.101	0.265	14:27:43	No
2			0.096	0.103	0.260	14:30:33	No
Mean:			0.096				
SD :			0.001				
%RSD:			1.19				

Reslope standard applied. [50.000]
Correlation Coefficient: 0.9983

Slope: 0.0020

HNF-1652 REV. 0

Calibration data for Sb

Standard ID	Mean Signal (Pk Area)	Entered Concentration ($\mu\text{g/L}$)	Calculated Concentration ($\mu\text{g/L}$)	Standard Deviation	%RSD
Blank	0.000	-----	0.000	-----	-----
82N11F 4X 6.25	0.011	6.250	5.471	-----	-----
82N11F 4X 12.5	0.021	12.500	10.60	-----	-----
82N11F 4X 25	0.046	25.000	23.54	-----	-----
82N11F 4X 50	0.088	50	46.00	-----	-----
82N11F 4X 75	0.129	75	68.34	-----	-----
82N11F 4X 100	0.159	100	85.64	-----	-----
82N11F 4X 50	0.096	50.000	50.00	0.001	1.191
Correlation Coefficient: 0.99828		Slope: 0.00200			

Element: Sb Seq. No.: 28 AS Loc.: 9 Date: 10/19/1998

Sample ID: 887002788 DUP

Repl	Sample Conc	Std Conc	Blank Corr	Peak Area	Bkgnd Area	Time	Peak Stored
#	$\mu\text{g/L}$	$\mu\text{g/L}$	Signal				
1	1.478	-1.478	-0.003	0.003	0.117	14:33:21	No
2	2.398	-2.398	-0.005	0.001	0.092	14:36:06	No
Mean:	1.938	-1.938	-0.004				
SD:	0.651	0.651	0.001				
CRSD:	33.57	33.57	33.62				

Element: Sb Seq. No.: 29
Sample ID: S98T002788 PS50

AS Loc.: 11

Date: 10/19/1998

HNF-1652 REV. 0

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	42.30	42.30	0.081	0.088	0.097	14:38:53	No
2	41.74	41.74	0.080	0.087	0.096	14:42:30	No
Mean:	42.02	42.02	0.081				
SD :	0.391	0.391	0.001				
%RSD:	0.93	0.93	0.90				

Element: Sb Seq. No.: 30
Sample ID: S98T002789

AS Loc.: 12

Date: 10/19/1998

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	-3.044	-3.044	-0.006	0.000	0.075	14:45:18	No
2	-1.827	-1.827	-0.004	0.003	0.079	14:48:05	No
Mean:	-2.436	-2.436	-0.005				
SD :	0.861	0.861	0.002				
%RSD:	35.33	35.33	35.41				

Element: Sb Seq. No.: 31
Sample ID: S98T002789 DUP

AS Loc.: 13

Date: 10/19/1998

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	-2.789	-2.789	-0.006	0.001	0.112	14:50:52	No
2	-2.564	-2.564	-0.005	0.001	0.104	14:53:39	No
Mean:	-2.677	-2.677	-0.005				
SD :	0.159	0.159	0.000				
%RSD:	5.94	5.94	5.95				

Element: Sb Seq. No.: 32
Sample ID: S98T002790

AS Loc.: 14

Date: 10/19/1998

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	-3.035	-3.035	-0.006	0.000	0.094	14:56:25	No
2	-2.319	-2.319	-0.005	0.002	0.100	14:59:11	No
Mean:	-2.677	-2.677	-0.005				
SD :	0.506	0.506	0.001				
%RSD:	18.91	18.91	18.96				

Element: Sb Seq. No.: 33
Sample ID: Blank

AS Loc.: 79

Date: 10/19/1998

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			-0.003	0.003	0.177	15:01:54	No

Auto-zero performed.

Element: Sb Seq. No.: 34

AS Loc.: 78

Date: 10/19/1998

HNF-1652 REV. 0

Sample ID: 82N11F 4X 50

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1			0.096	0.098	0.197	15:04:41	No
2			0.097	0.100	0.213	15:21:52	No
Mean:			0.096				
SD :			0.001				
%RSD:			1.01				

Reslope standard applied. [50.000]

Correlation Coefficient: 0.9983

Slope: 0.0020

Calibration data for Sb

Standard ID	Mean Signal (Pk Area)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Blank	0.000	----	0.000	----	----
82N11F 4X 6.25	0.011	6.250	5.421	----	----
82N11F 4X 12.5	0.021	12.500	10.50	----	----
82N11F 4X 25	0.046	25.000	23.33	----	----
82N11F 4X 50	0.088	50	45.58	----	----
82N11F 4X 75	0.129	75	67.72	----	----
82N11F 4X 100	0.159	100	84.86	----	----
82N11F 4X 50	0.096	50.000	50.00	0.001	1.009
Correlation Coefficient: 0.99828		Slope: 0.00201			

Element: Sb Seq. No.: 35
Sample ID: S98T002790 DUP

AS Loc.: 15

Date: 10/19/1998

HNF-1652 REV. 0

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	-0.809	-0.809	-0.002	0.001	0.083	15:24:38	No
2	-1.190	-1.190	-0.002	0.000	0.080	15:27:28	No
Mean:	-1.000	-1.000	-0.002				
SD :	0.269	0.269	0.001				
%RSD:	26.91	26.91	26.93				

 Element: Sb Seq. No.: 36 AS Loc.: 16 Date: 10/19/1998
 Sample ID: S98T002795

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	0.197	0.197	0.000	0.003	0.175	15:30:14	No
2	0.230	0.230	0.000	0.003	0.186	15:32:58	No
Mean:	0.214	0.214	0.000				
SD :	0.023	0.023	0.000				
%RSD:	10.90	10.90	10.90				

 Element: Sb Seq. No.: 37 AS Loc.: 17 Date: 10/19/1998
 Sample ID: S98T002795 DUP

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	-0.406	-0.406	-0.001	0.002	0.188	15:35:44	No
2	0.458	0.458	0.001	0.004	0.198	15:39:02	No
Mean:	0.026	0.026	0.000				
SD :	0.611	0.611	0.001				
%RSD:	2332	2332	2347.15				

 Element: Sb Seq. No.: 38 AS Loc.: 18 Date: 10/19/1998
 Sample ID: CCV 57W10E 50X

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	48.32	48.32	0.093	0.096	0.199	15:41:46	No
2	47.67	47.67	0.092	0.095	0.206	15:44:30	No
Mean:	48.00	48.00	0.093				
SD :	0.463	0.463	0.001				
%RSD:	0.96	0.96	0.92				

 Element: Sb Seq. No.: 39 AS Loc.: 19 Date: 10/19/1998
 Sample ID: CCB

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Area	Bkgnd Area	Time	Peak Stored
1	0.186	0.186	0.000	0.003	0.211	15:47:13	No
2	-0.234	-0.234	0.000	0.002	0.209	15:49:56	No
Mean:	-0.024	-0.024	0.000				
SD :	0.297	0.297	0.001				
%RSD:	1226	1226	1224.28				

LABCORE Data Entry Template for Worklist# 26620

Analyst: vlm Instrument: GFAA1 Book # 57W10F

Method: LA-505-102 Rev/Mod B-0

Worklist Comment: AW101 LAW, GF-TL-01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	ICV		GF-TL-01	LIQUID	<u>100</u>	<u>99.4</u>	<u>N/A</u>	ug/L
		2	ICB		GF-TL-01	LIQUID	<u>1</u>	<u><1</u>	<u>N/A</u>	ug/L
		3	BLNK-PREP		GF-TL-01	LIQUID	<u>1</u>	<u><1</u>	<u>N/A</u>	ug/L
		4	STD-PREP		GF-TL-01	LIQUID	<u>50</u>	<u>48.5</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	5	SERDIL S98T002791 0 G		GF-TL-01	LIQUID	<u><50</u>	<u><50</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	6	SAMPLE S98T002791 0 G		GF-TL-01	LIQUID	<u>N/A</u>	<u><50</u>	<u>50</u>	ug/L
98000261	AW-101 LAW	7	DUP S98T002791 0 G		GF-TL-01	LIQUID	<u><50</u>	<u><50</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	8	SPK S98T002791 0 G		GF-TL-01	LIQUID	<u>100</u>	<u>40%</u> <u>44%</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	9	SPK-POST S98T002791 0 G		GF-TL-01	LIQUID	<u>100</u>	<u>41%</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	10	SAMPLE S98T002792 0 G		GF-TL-01	LIQUID	<u>N/A</u>	<u><50</u>	<u>50</u>	ug/L
98000261	AW-101 LAW	11	DUP S98T002792 0 G		GF-TL-01	LIQUID	<u><50</u>	<u><50</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	12	SAMPLE S98T002793 0 G		GF-TL-01	LIQUID	<u>N/A</u>	<u><50</u>	<u>50</u>	ug/L
98000261	AW-101 LAW	13	DUP S98T002793 0 G		GF-TL-01	LIQUID	<u><50</u>	<u><50</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	14	SAMPLE S98T002795 0		GF-TL-01	LIQUID	<u>N/A</u>	<u>1.0</u> <u>1.5</u>	<u>1</u>	ug/L
98000261	AW-101 LAW	15	DUP S98T002795 0		GF-TL-01	LIQUID	<u>1</u>	<u>1.5</u> <u>1.5</u>	<u>N/A</u>	ug/L
		16	CCV		GF-TL-01	LIQUID	<u>100</u>	<u>94.5</u>	<u>N/A</u>	ug/L
		17	CCB		GF-TL-01	LIQUID	<u>1</u>	<u><1</u>	<u>N/A</u>	ug/L

Data Entry Comments:

ERA Lot 423 yielded 110.4 ug/L; true = 104 ± 10.6% Recovery

Due to sample QC failures, method of standard additions was performed. MSA confirms no detectable TL in S98T002791, 2 + 3; however, TL near DL was detected in S98T002795 - results reported 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.
were determined by MSA. Alanoth 11-9-98

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

See Attached

Analyst Signature _____ **Date** _____

Validated by Hhast 11-9-98

Data Entry Comments:

HNF-1652 REV.0

Page: 1

worklistrpt Version 2.1 05/15/95

10/16/98 10:39

LABCORE Data Entry Template for Worklist# 26620

Analyst: VLM Instrument: GFAA1 ✓ Book # 57W10-FMethod: LA-505-102 Rev/Mod B-0

Worklist Comment: AW101 LAW, GF-TL-01 skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 ICV			GF-TL-01	LIQUID	<u>100</u>	<u>99.4</u>	<u>N/A</u>	ug/L
		2 ICB			GF-TL-01	LIQUID	<u>1</u>	<u><1</u>	<u>N/A</u>	ug/L
		3 BLNK-PREP			GF-TL-01	LIQUID	<u>1</u>	<u><1</u>	<u>N/A</u>	ug/L
98000261	AW-101 LAW	4 SERDIL	S98T002791	0	G	GF-TL-01	LIQUID		<u>N/A</u>	ug/L
98000261	AW-101 LAW	5 SAMPLE	S98T002791	0	G	GF-TL-01	LIQUID	<u>N/A</u>		ug/L
98000261	AW-101 LAW	6 DUP	S98T002791	0	G	GF-TL-01	LIQUID		<u>N/A</u>	ug/L
98000261	AW-101 LAW	7 SPK	S98T002791	0	G	GF-TL-01	LIQUID		<u>N/A</u>	ug/L
98000261	AW-101 LAW	8 SPK-POST	S98T002791	0	G	GF-TL-01	LIQUID		<u>N/A</u>	ug/L
98000261	AW-101 LAW	9 SAMPLE	S98T002792	0	G	GF-TL-01	LIQUID	<u>N/A</u>		ug/L
98000261	AW-101 LAW	10 DUP	S98T002792	0	G	GF-TL-01	LIQUID		<u>N/A</u>	ug/L
98000261	AW-101 LAW	11 SAMPLE	S98T002793	0	G	GF-TL-01	LIQUID	<u>N/A</u>		ug/L
98000261	AW-101 LAW	12 DUP	S98T002793	0	G	GF-TL-01	LIQUID		<u>N/A</u>	ug/L
98000261	AW-101 LAW	13 SAMPLE	S98T002795	0		GF-TL-01	LIQUID	<u>N/A</u>		ug/L
98000261	AW-101 LAW	14 DUP	S98T002795	0		GF-TL-01	LIQUID		<u>N/A</u>	ug/L
		15 CCV			GF-TL-01	LIQUID			<u>N/A</u>	ug/L
		16 CCB			GF-TL-01	LIQUID			<u>N/A</u>	ug/L

Data Entry Comments:

ERA Lot 423 yielded 110.4 ug/L; true = 104 : 106%

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-1652 REV. 0

worklist rpt Version 2.1 05/15/95

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10/16/98 10:39

LABCORE Data Entry Template for Worklist# 26620

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

Final page for worklist # 26620

Valerie L. Massie 10-29-98
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

Method Name: TL HI
 Method Description: 10 - 100PPB; ICAL STD

Element: TL

HNF-1652 REV. 0

Date: 10/29/1998
 Technique: Furnace
 Wavelength: 276.8 nm
 Lamp Current: 0
 Sample Info File: Untitled

Calibration Equation: Zero Intercept: Nonlinear
 Slit Width: 0.70 nm
 Energy: 69
 Results Data Set: 26620

Element: TL Seq. No.: 1 AS Loc.: 79 Date: 10/29/1998
 Sample ID: Blank

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1			0.000	0.000	0.015	13:06:01

Auto-zero performed.

Element: TL Seq. No.: 2 AS Loc.: 78 Date: 10/29/1998
 Sample ID: 56W10G 10

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1			0.017	0.017	0.024	13:08:55

Standard number 1 applied. [10.000]

Correlation Coefficient: 1.0000

Slope: 0.0017

Element: TL Seq. No.: 3 AS Loc.: 78 Date: 10/29/1998
 Sample ID: 56W10G 20

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1			0.032	0.032	0.031	13:11:44

Standard number 2 applied. [20.000]

Correlation Coefficient: 1.0000

Slope: 0.0017

Element: TL Seq. No.: 4 AS Loc.: 78 Date: 10/29/1998
 Sample ID: 56W10G 30

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1			0.049	0.049	0.037	13:14:34

S-shaped calibration curve detected. Two-coefficient equation used.

Standard number 3 applied. [30.000]

Correlation Coefficient: 0.9993

Slope: 0.0016

Element: TL Seq. No.: 5 AS Loc.: 78 Date: 10/29/1998
 Sample ID: 56W10G 40

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1			0.066	0.066	0.045	13:17:24

S-shaped calibration curve detected. Two-coefficient equation used.

Standard number 4 applied. [40.000]

Correlation Coefficient: 0.9997

Slope: 0.0016

=====
Element: T1 Seq. No.: 6 AS Loc.: 78 Date: 10/29/1998
Sample ID: 56W10G 50
=====

Repl	SampleConc	StndConc	BlncCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1			0.084	0.084	0.052	13:20:14

S-shaped calibration curve detected. Two-coefficient equation used.
Standard number 5 applied. [50.000]
Correlation Coefficient: 0.9998 Slope: 0.0016

=====
Element: T1 Seq. No.: 7 AS Loc.: 78 Date: 10/29/1998
Sample ID: 56W10G 70
=====

Repl	SampleConc	StndConc	BlncCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1			0.113	0.113	0.064	13:23:04

S-shaped calibration curve detected. Two-coefficient equation used.
Standard number 6 applied. [70.000]
Correlation Coefficient: 0.9993 Slope: 0.0016

=====
Element: T1 Seq. No.: 8 AS Loc.: 78 Date: 10/29/1998
Sample ID: 56W10G 100
=====

Repl	SampleConc	StndConc	BlncCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1			0.160	0.160	0.087	13:25:53

S-shaped calibration curve detected. Two-coefficient equation used.
Standard number 7 applied. [100.000]
Correlation Coefficient: 0.9997 Slope: 0.0017

=====
Element: T1 Seq. No.: 9 AS Loc.: 78 Date: 10/29/1998
Sample ID: 56W10G 150
=====

Repl	SampleConc	StndConc	BlncCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1			0.212	0.212	0.111	13:28:43

S-shaped calibration curve detected. Two-coefficient equation used.
Standard number 8 applied. [150.00]
Correlation Coefficient: 0.9974 Slope: 0.0017

=====
Element: T1 Seq. No.: 10 AS Loc.: 78 Date: 10/29/1998
Sample ID: 56W10G 200
=====

Repl	SampleConc	StndConc	BlncCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1			0.297	0.298	0.154	13:31:29

S-shaped calibration curve detected. Two-coefficient equation used.
Standard number 9 applied. [200.00]
Correlation Coefficient: 0.9977 Slope: 0.0017

HNF-1652 REV. 0

Calibration data for Tl

Standard ID	Mean Signal (Pk Area)	Entered Concentration ($\mu\text{g/L}$)	Calculated Concentration ($\mu\text{g/L}$)	Standard Deviation	%RSD
Blank	0.000	-----	0.000	-----	-----
56W10G 10	0.017	10.000	9.910	-----	-----
56W10G 20	0.032	20.000	19.27	-----	-----
56W10G 30	0.049	30.000	29.96	-----	-----
56W10G 40	0.066	40.000	40.50	-----	-----
56W10G 50	0.084	50.000	51.89	-----	-----
56W10G 70	0.113	70.000	70.65	-----	-----
56W10G 100	0.160	100.000	102.6	-----	-----
56W10G 150	0.212	150.00	139.3	-----	-----
56W10G 200	0.297	200.00	204.9	-----	-----
Correlation Coefficient: 0.99774		Slope: 0.00168			

Tl, Measured Characteristic Mass: 59.2 pg/0.0044 A-s

The calibration curve has been edited.

The calibration curve has been edited.

=====

Element: Tl Seq. No.: 11 AS Loc.: 78 Date: 10/29/1991

Sample ID: 56W10G 150

Repl	Sample Conc	Std Conc	Blk Corr	Peak	Bkgnd	Time
#	$\mu\text{g/L}$	$\mu\text{g/L}$	Signal	Area	Area	
1			0.217	0.217	0.111	13:35:20

S-shaped calibration curve detected. Two-coefficient equation used.

Standard number 8 applied. [150.00]

Correlation Coefficient: 0.9988

Slope: 0.0017

The calibration curve has been edited.

Element: T1 Seq. No.: 12 AS Loc.: 1 Date: 10/29/1998
 Sample ID: BLANK

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1	-0.075	-0.075	0.000	0.000	0.014	13:52:20
2	-0.322	-0.322	-0.001	0.000	0.014	13:55:02
Mean:	-0.198	-0.198	0.000			
SD :	0.175	0.175	0.000			
%RSD:	88.22	88.22	88.23			

Element: T1 Seq. No.: 13 AS Loc.: 2 Date: 10/29/1998
 Sample ID: ICV 57W10F 100

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1	99.33	99.33	0.156	0.156	0.078	13:57:41
2	99.54	99.54	0.156	0.156	0.080	14:00:21
Mean:	99.44	99.44	0.156			
SD :	0.144	0.144	0.000			
%RSD:	0.14	0.14	0.13			

Element: T1 Seq. No.: 14 AS Loc.: 3 Date: 10/29/1998
 Sample ID: ICB

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1	0.039	0.039	0.000	0.000	0.007	14:03:07
2	0.368	0.368	0.001	0.001	0.006	14:05:08
Mean:	0.204	0.204	0.000			
SD :	0.233	0.233	0.000			
%RSD:	114.2	114.2	114.19			

Element: T1 Seq. No.: 15 AS Loc.: 4 Date: 10/29/1998
 Sample ID: ERA LOT423 104

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1	112.2	112.2	0.174	0.175	0.089	14:08:31
2	108.7	108.7	0.169	0.170	0.086	14:11:13
Mean:	110.4	110.4	0.172			
SD :	2.452	2.452	0.004			
%RSD:	2.22	2.22	2.06			

Element: T1 Seq. No.: 16 AS Loc.: 5 Date: 10/29/1998
 Sample ID: PREP-BLANK

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1	0.341	0.341	0.001	0.001	0.010	14:13:57
2	-0.110	-0.110	0.000	0.000	0.012	14:16:39
Mean:	0.115	0.115	0.000			
SD :	0.319	0.319	0.001			
%RSD:	276.9	276.9	276.99			

=====
 Element: Tl Seq. No.: 17 AS Loc.: 79 Date: 10/29/1998
 Sample ID: Blank
 =====

Repl	SampleConc	StndConc	BlkCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1			0.000	0.001	0.008	14:19:21

Auto-zero performed.

=====
 Element: Tl Seq. No.: 18 AS Loc.: 78 Date: 10/29/1998
 Sample ID: 56W10G 40
 =====

Repl	SampleConc	StndConc	BlkCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1			0.073	0.073	0.045	14:22:01
2			0.076	0.077	0.046	14:24:51
Mean:			0.074			
SD :			0.002			
%RSD:			3.05			

Reslope standard applied. [40.000]

Correlation Coefficient: 0.9988

Slope: 0.0019

Calibration data for T1

Standard ID	Mean Signal (Pk Area)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Blank	0.000	---	0.000	---	---
56W10G 10	0.017	10.000	8.694	---	---
56W10G 20	0.032	20.000	16.90	---	---
56W10G 30	0.049	30.000	26.25	---	---
56W10G 40	0.066	40.000	35.48	---	---
56W10G 50	0.084	50.000	45.42	---	---
56W10G 70	0.113	70.000	61.78	---	---
56W10G 100	0.160	100.000	89.52	---	---
56W10G 150	0.217	150.00	124.7	---	---
56W10G 200	0.297	200.00	177.9	---	---
56W10G 40	0.074	40.000	40.00	0.002	3.053
Correlation Coefficient: 0.99883		Slope:	0.00192		

=====

Element: T1 Seq. No.: 19 AS Loc.: 6 Date: 10/29/1998

Sample ID: PREP-STD

=====

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1	48.53	48.53	0.089	0.090	0.045	14:27:45
2	48.53	48.53	0.089	0.090	0.046	14:30:29
Mean:	48.53	48.53	0.089			
SD :	0.003	0.003	0.000			
%RSD:	0.01	0.01	0.01			

=====

=====

Element: T1 Seq. No.: 20 AS Loc.: 7 Date: 10/29/1998

Sample ID: S98T002791 SD

=====

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1	-6.556	-1.311	-0.003	-0.002	0.108	14:33:44
2	-4.391	-0.878	-0.002	-0.001	0.113	14:35:48
Mean:	-5.473	-1.095	-0.002			
SD :	1.531	0.306	0.001			
%RSD:	27.97	27.97	28.00			

=====

=====

Element: T1 Seq. No.: 21 AS Loc.: 8 Date: 10/29/1998

Sample ID: S98T002791

=====

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1	-2.977	-2.977	-0.006	-0.005	0.447	14:38:44
2	-3.602	-3.602	-0.007	-0.006	0.437	14:41:29
Mean:	-3.289	-3.289	-0.006			
SD :	0.442	0.442	0.001			
%RSD:	13.43	13.43	13.46			

=====

Element: T1 Seq. No.: 22 AS Loc.: 9 Date: 10/29/1998
Sample ID: S98T002791 DUP

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Bkgnd Area	Time
1	-2.754	-2.754	-0.005	-0.005	0.417	14:44:14
2	-2.944	-2.944	-0.006	-0.005	0.416	14:47:00
Mean:	-2.849	-2.849	-0.005			
SD :	0.134	0.134	0.000			
%RSD:	4.71	4.71	4.72			

Element: T1 Seq. No.: 23 AS Loc.: 10 Date: 10/29/1998
Sample ID: S98T002791 SPK50

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Bkgnd Area	Time
1	20.25	20.25	0.038	0.039	0.455	14:49:06
2	19.94	19.94	0.038	0.038	0.458	14:52:12
Mean:	20.09	20.09	0.038			
SD :	0.218	0.218	0.000			
%RSD:	1.08	1.08	1.07			

Element: T1 Seq. No.: 24 AS Loc.: 79 Date: 10/29/1998
Sample ID: Blank

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Bkgnd Area	Time
1			-0.001	-0.001	0.006	14:55:16

Auto-zero performed.

Element: T1 Seq. No.: 25 AS Loc.: 78 Date: 10/29/1998
Sample ID: 56W10G 40

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Area	Bkgnd Area	Time
1			0.075	0.074	0.041	14:58:32
2			0.070	0.069	0.039	15:00:52
Mean:			0.072			
SD :			0.004			
%RSD:			4.89			

Reslope standard applied. [40.000]
Correlation Coefficient: 0.9988

Slope: 0.0019

Calibration data for Tl

Standard ID	Mean Signal (Pk Area)	Entered Concentration ($\mu\text{g/L}$)	Calculated Concentration ($\mu\text{g/L}$)	Standard Deviation	%RSD
Blank	0.000	---	0.000	---	---
56W10G 10	0.017	10.000	8.934	---	---
56W10G 20	0.032	20.000	17.37	---	---
56W10G 30	0.049	30.000	26.98	---	---
56W10G 40	0.066	40.000	36.45	---	---
56W10G 50	0.084	50.000	46.67	---	---
56W10G 70	0.113	70.000	63.49	---	---
56W10G 100	0.160	100.000	91.99	---	---
56W10G 150	0.217	150.00	128.1	---	---
56W10G 200	0.297	200.00	182.8	---	---
56W10G 40	0.072	40.000	40.00	0.004	4.895
Correlation Coefficient: 0.99883		Slope: 0.00187			

Element: Tl Seq. No.: 26
Sample ID: S98T002791 P350

AS Loc.: 11

Date: 10/29/1994

Repl #	SampleConc $\mu\text{g/L}$	StdndConc $\mu\text{g/L}$	BlkCorr Signal	Peak Area	Bkgnd Area	Time
1	17.75	17.75	0.033	0.032	0.414	15:03:39
2	19.68	19.68	0.036	0.036	0.423	15:06:25
Mean:	18.72	18.72	0.034			
SD :	1.359	1.359	0.002			
%RSD:	7.26	7.26	7.16			

=====
 Element: T1 Seq. No.: 27 AS Loc.: 12 Date: 10/29/1998
 Sample ID: S98T002792
 =====

Repl	SampleConc	StndConc	BlnkCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1	-2.281	-2.281	-0.004	-0.005	0.423	15:09:13
2	-3.172	-3.172	-0.006	-0.006	0.442	15:12:01
Mean:	-2.726	-2.726	-0.005			
SD :	0.630	0.630	0.001			
%RSD:	23.11	23.11	23.16			

=====
 Element: T1 Seq. No.: 28 AS Loc.: 13 Date: 10/29/1998
 Sample ID: S98T002792 DUP
 =====

Repl	SampleConc	StndConc	BlnkCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1	-2.435	-2.435	-0.005	-0.005	0.444	15:14:48
2	-1.421	-1.421	-0.003	-0.003	0.457	15:17:35
Mean:	-1.928	-1.928	-0.004			
SD :	0.717	0.717	0.001			
%RSD:	37.17	37.17	37.22			

=====
 Element: T1 Seq. No.: 29 AS Loc.: 14 Date: 10/29/1998
 Sample ID: S98T002793
 =====

Repl	SampleConc	StndConc	BlnkCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1	-2.632	-2.632	-0.005	-0.005	0.432	15:20:21
2	-2.842	-2.842	-0.005	-0.006	0.445	15:23:07
Mean:	-2.737	-2.737	-0.005			
SD :	0.148	0.148	0.000			
%RSD:	5.41	5.41	5.42			

=====
 Element: T1 Seq. No.: 30 AS Loc.: 15 Date: 10/29/1998
 Sample ID: S98T002793 DUP
 =====

Repl	SampleConc	StndConc	BlnkCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1	-3.371	-3.371	-0.006	-0.007	0.459	15:25:14
2	-2.953	-2.953	-0.006	-0.006	0.459	15:28:18
Mean:	-3.162	-3.162	-0.006			
SD :	0.295	0.295	0.001			
%RSD:	9.34	9.34	9.36			

=====
 Element: T1 Seq. No.: 31 AS Loc.: 79 Date: 10/29/1998
 Sample ID: Blank
 =====

Repl	SampleConc	StndConc	BlnkCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1			0.001	0.001	0.002	15:31:23

Auto-zero performed.

Element: Tl Seq. No.: 32 AS Loc.: 78 Date: 10/29/1998
 Sample ID: 56W10G 40

Repl #	Sample Conc µg/L	Std Conc µg/L	Blank Corr Signal	Peak Area	Bkgnd Area	Time
1			0.069	0.069	0.039	15:34:03
2			0.069	0.070	0.038	15:36:53
Mean:			0.069			
SD :			0.000			
%RSD:			0.50			

Reslope standard applied. [40.000]
 Correlation Coefficient: 0.9988 Slope: 0.0018

Calibration data for Tl

Standard ID	Mean Signal (Pk Area)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Blank	0.000	---	0.000	---	---
56W10G 10	0.017	10.000	9.368	---	---
56W10G 20	0.032	20.000	18.21	---	---
56W10G 30	0.049	30.000	28.29	---	---
56W10G 40	0.066	40.000	38.22	---	---
56W10G 50	0.084	50.000	48.94	---	---
56W10G 70	0.113	70.000	66.57	---	---
56W10G 100	0.160	100.000	96.46	---	---
56W10G 150	0.217	150.00	134.4	---	---
56W10G 200	0.297	200.00	191.7	---	---
56W10G 40	0.069	40.000	40.00	0.000	0.498

Correlation Coefficient: 0.99883 Slope: 0.00178

Element: T1 Seq. No.: 33 AS Loc.: 16 Date: 10/29/1998
 Sample ID: S98T002795

Repl	SampleConc	StndConc	BlncCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1	-0.487	-0.487	-0.001	0.000	0.001	15:39:45
2	4.101	4.101	0.007	0.008	0.008	15:42:25
Mean:	1.807	1.807	0.003			
SD :	3.244	3.244	0.006			
%RSD:	179.5	179.5	179.68			

RSD is over the limit.

Element: T1 Seq. No.: 34 AS Loc.: 16 Date: 10/29/1998
 Sample ID: S98T002795

Repl	SampleConc	StndConc	BlncCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1	-0.540	-0.540	-0.001	0.000	0.002	15:45:11
2	-0.418	-0.418	-0.001	0.000	0.004	15:47:59
Mean:	-0.479	-0.479	-0.001			
SD :	0.086	0.086	0.000			
%RSD:	18.00	18.00	18.00			

X of 4 Repts = 0.664

Element: T1 Seq. No.: 35 AS Loc.: 17 Date: 10/29/1998
 Sample ID: S98T002795 DUP

Repl	SampleConc	StndConc	BlncCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1	0.051	0.051	0.000	0.001	0.002	15:50:44
2	0.006	0.006	0.000	0.001	0.000	15:53:28
Mean:	0.028	0.028	0.000			
SD :	0.032	0.032	0.000			
%RSD:	113.0	113.0	112.96			

Element: T1 Seq. No.: 36 AS Loc.: 18 Date: 10/29/1998
 Sample ID: CCV 57W10F 100

Repl	SampleConc	StndConc	BlncCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1	94.08	94.08	0.156	0.157	0.080	15:56:12
2	94.92	94.92	0.157	0.158	0.080	15:58:56
Mean:	94.50	94.50	0.157			
SD :	0.597	0.597	0.001			
%RSD:	0.63	0.63	0.59			

Element: T1 Seq. No.: 37 AS Loc.: 19 Date: 10/29/1998
 Sample ID: CCB

Repl	SampleConc	StndConc	BlncCorr	Peak	Bkgnd	Time
#	µg/L	µg/L	Signal	Area	Area	
1	0.466	0.466	0.001	0.001	0.001	16:01:40
2	0.186	0.186	0.000	0.001	0.002	16:04:23
Mean:	0.326	0.326	0.001			
SD :	0.198	0.198	0.000			
%RSD:	60.65	60.65	60.64			

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Seq. No.	1	AS Loc:	79	Date:	11/2/98			
Sample ID:	Blank							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			-0.0009	-0.0009	0.0033	0.0025	0.0045	13:07:11
			-0.0004	-0.0004	-0.0001	0.0032	0.0031	13:09:55
Auto-zero performed.								
Mean:			-0.0007					
SD:			0.00037					
%RSD:			56.66					
Seq. No.	2	AS Loc:	1	Date:	11/2/98			
Sample ID:	ERA Lot 423							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.1001	0.0995	0.0514	0.1356	0.0661	13:12:40
Mean:								
SD:								
%RSD:								
Seq. No.	4	AS Loc:	79	Date:	11/2/98			
Sample ID:	Blank							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0092	0.0092	-0.0007	0.0140	0.0047	13:40:58
			0.0003	0.0003	0.0011	0.0037	0.0045	13:43:42
Mean:								
SD:								
%RSD:								
Seq. No.	5	AS Loc:	79	Date:	11/2/98			
Sample ID:	Blank							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0003	0.0003	0.0020	0.0035	0.0045	13:46:46
			-0.0007	-0.0007	0.0030	0.0031	0.0044	13:49:31
Auto-zero performed.								
Mean:								
SD:								
%RSD:								
Seq. No.	6	AS Loc:	1	Date:	11/2/98			
Sample ID:	ERA Lot 423							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI	µg/L	µg/L	0.1016	0.1014	0.0501	0.1528	0.0747	13:52:15
	µg/L	µg/L	0.1019	0.1017	0.0497	0.1554	0.0712	13:55:04
Mean: 119.9µg/L								
SD: 119.9µg/L								
%RSD: 0.22								
Seq. No.	7	AS Loc:	78	Date:	11/2/98			
Sample ID:	20							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.1182	0.1180	0.0588	0.1714	0.0825	13:58:05
			0.1184	0.1182	0.0569	0.1724	0.0799	14:01:06
Addition number 1 applied. [20]								
Correlation Coefficient: 1.0000								
Mean: 0.1183								

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SD: 0.00011
 %RSD: 0.09

Seq. No.	8	AS Loc:	78	Date:	11/2/98				
Sample ID:	50								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
TI			0.1458	0.1456	0.0713	0.2095	0.1007	14:04:08	
			0.1430	0.1428	0.0719	0.2083	0.0999	14:07:09	
Addition number 2 applied. [50]									
Correlation Coefficient: 0.9997 Slope: 0.0008									
[TI] Sample Concentration 119.9 µg/L									
Mean:			0.1444						
SD:			0.00198						
%RSD:			1.37						

Seq. No.	9	AS Loc:	2	Date:	11/2/98				
Sample ID:	S98T002791								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
TI			-0.0082	-0.0084	0.3073	0.0030	0.1631	14:10:00	
			-0.0054	-0.0056	0.3108	0.0030	0.1718	14:12:49	
Mean:			-0.0088						
SD:			0.00202						
%RSD:			29.67						

Seq. No.	10	AS Loc:	78	Date:	11/2/98				
Sample ID:	20								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
TI			0.0093	0.0091	0.2947	0.0145	0.1706	14:15:51	
			0.0077	0.0075	0.3020	0.0131	0.1692	14:18:52	
Addition number 1 applied. [20]									
Correlation Coefficient: 1.0000		Slope: 0.0004							
Mean:			0.0085						
SD:			0.00112						
%RSD:			13.21						

Seq. No.	11	AS Loc:	79	Date:	11/2/98				
Sample ID:	Blank								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Tl			-0.0009	-0.0011	0.0014	0.0023	0.0054	14:22:36	
Auto-zero performed.									
Mean:			-0.0009						
SD:									
%RSD:									

Seq. No.	12	AS Loc:	1	Date:	11/2/98				
Sample ID:	ERA Lot 423								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
TI	µg/L	µg/L	0.1037	0.1026	0.0450	0.1752	0.0820	14:25:20	
Mean:	124.8µg/L	124.8µg/L	0.1037						
SD:	µg/L	µg/L							
%RSD:									

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Seq. No.	13	AS Loc:	78	Date:	11/2/98			
Sample ID: 20								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.1207	0.1196	0.0498	0.2087	0.1004	14:28:22
Addition number 1 applied. [20]								
Correlation Coefficient: 1.0000								
Slope: 0.0009								
Mean: 0.1207								
SD:								
%RSD:								
Seq. No.	14	AS Loc:	78	Date:	11/2/98			
Sample ID: 50								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.1451	0.1440	0.0610	0.2385	0.1163	14:31:23
Addition number 2 applied. [50]								
Correlation Coefficient: 0.9997								
Slope: 0.0008								
[TI] Sample Concentration 124.8 µg/L								
Mean: 0.1451								
SD:								
%RSD:								
Seq. No.	15	AS Loc:	2	Date:	11/2/98			
Sample ID: S98T002791								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI	µg/L	µg/L	-0.0058	-0.0069	0.2843	0.0033	0.1546	14:34:14
Mean: -11.82 µg/L								
SD: µg/L								
%RSD:								
Seq. No.	16	AS Loc:	78	Date:	11/2/98			
Sample ID: 20								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0100	0.0089	0.2687	0.0212	0.1496	14:37:15
Addition number 1 applied. [20]								
Correlation Coefficient: 1.0000								
Slope: 0.0005								
Mean: 0.0100								
SD:								
%RSD:								
Seq. No.	17	AS Loc:	78	Date:	11/2/98			
Sample ID: 50								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0247	0.0236	0.2850	0.0314	0.1638	14:40:17
Addition number 2 applied. [50]								
Correlation Coefficient: 0.9999								
Slope: 0.0005								
[TI] Sample Concentration -11.82 µg/L								
Mean: 0.0247								
SD:								
%RSD:								
Seq. No.	18	AS Loc:	3	Date:	11/2/98			
Sample ID: S98T002791 dup								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI	µg/L	µg/L	-0.0057	-0.0068	0.2636	0.0032	0.1432	14:43:09

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Mean: -11.10 µg/L -11.10 µg/L -0.0057
 SD: µg/L µg/L
 %RSD:

Seq. No.	19	AS Loc:	78	Date:	11/1/98			
Sample ID:	20							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0103	0.0092	0.2577	0.0151	0.1445	14:46:10
Addition number 1 applied. [20]								
Correlation Coefficient: 1.0000 Slope: 0.0005								
Mean: 0.0103								
SD:								
%RSD:								

Seq. No.	20	AS Loc:	78	Date:	11/1/98			
Sample ID:	50							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0255	0.0245	0.2837	0.0386	0.1532	14:49:11
Addition number 2 applied. [50]								
Correlation Coefficient: 1.0000 Slope: 0.0005								
[TI] Sample Concentration -11.10 µg/L								
Mean: 0.0255								
SD:								
%RSD:								

Seq. No.	21	AS Loc:	4	Date:	11/1/98			
Sample ID:	S98T002792							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI	µg/L	µg/L	-0.0022	-0.0033	0.2859	0.0042	0.1458	14:52:02
Mean: -4.053 µg/L -4.053 µg/L -0.0022								
SD: µg/L µg/L								
%RSD:								

Seq. No.	22	AS Loc:	78	Date:	11/1/98			
Sample ID:	20							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0125	0.0114	0.2649	0.0189	0.1490	14:55:03
Addition number 1 applied. [20]								
Correlation Coefficient: 1.0000 Slope: 0.0006								
Mean: 0.0125								
SD:								
%RSD:								

Seq. No.	23	AS Loc:	78	Date:	11/1/98			
Sample ID:	50							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0267	0.0256	0.2972	0.0328	0.1569	14:58:04
The calibration curve may not be linear.								
Addition number 2 applied. [50]								
Correlation Coefficient: 0.9895 Slope: 0.0005								
[TI] Sample Concentration -4.053 µg/L								
Mean: 0.0267								
SD:								
%RSD:								

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Seq. No.	24	AS Loc:	5	Date:	11/1/98				
Sample ID:	S98T002792 dup								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
TI	µg/L	µg/L	-0.0053	-0.0064	0.2888	0.0032	0.1389	15:00:56	
Mean:	-10.35µg/L	-10.35µg/L	-0.0053						
SD:	µg/L	µg/L							
%RSD:									

Seq. No.	25	AS Loc:	78	Date:	11/1/98				
Sample ID:	20								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
TI			0.0084	0.0073	0.2755	0.0145	0.1462	15:03:57	
Addition number 1 applied. [20]									
Correlation Coefficient: 1.0000		Slope: 0.0004							
Mean:			0.0084						
SD:									
%RSD:									

Seq. No.	26	AS Loc:	78	Date:	11/1/98				
Sample ID:	50								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Ti			0.0262	0.0252	0.3056	0.0342	0.1604	15:06:57	
The calibration curve may not be linear.									
Addition number 2 applied. [50]									
Correlation Coefficient: 0.9839			Slope: 0.0005						
[Ti] Sample Concentration		-10.35 µg/L							
Mean:			0.0262						
SD:									
%RSD:									

Seq. No.	27	AS Loc:	6	Date:	11/1/98				
Sample ID:	S98T002793								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
TI	µg/L	µg/L	-0.0059	-0.0070	0.2877	0.0033	0.1442	15:09:49	
Mean:	-11.09µg/L	-11.09µg/L	-0.0059						
SD:	µg/L	µg/L							
%RSD:									

Seq. No.	28	AS Loc:	78	Date:	11/1/98				
Sample ID:	20								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
TI			0.0113	0.0102	0.2849	0.0181	0.1432	15:12:49	
Addition number 1 applied. [20]									
Correlation Coefficient: 1.0000			Slope: 0.0006						
Mean:			0.0113						
SD:									
%RSD:									

Seq. No.	29	AS Loc:	78	Date:	11/1/98				
Sample ID:	50								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
TI			0.0264	0.0253	0.3073	0.0341	0.1643	15:15:49	
Addition number 2 applied. [50]									
Correlation Coefficient: 0.9981		Slope: 0.0005							

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[T1] Sample Concentration -11.09 µg/L								
Mean:			0.0264					
SD:								
%RSD:								
Seq. No.	30	AS Loc:	7	Date:	11/1/98			
Sample ID:	S98T002793 dup							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI	µg/L	µg/L	-0.0054	-0.0064	0.2953	0.0026	0.1454	15:18:41
Mean:		-10.42µg/L	-10.42µg/L	-0.0054				
SD:		µg/L	µg/L					
%RSD:								
Seq. No.	31	AS Loc:	78	Date:	11/1/98			
Sample ID:	20							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0094	0.0083	0.2889	0.0172	0.1422	15:21:40
Addition number 1 applied. [20]								
Correlation Coefficient: 1.0000			Slope: 0.0005					
Mean:		0.0094						
SD:								
%RSD:								
Seq. No.	32	AS Loc:	78	Date:	11/1/98			
Sample ID:	50							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0260	0.0249	0.3007	0.0337	0.1598	15:24:39
The calibration curve may not be linear.								
Addition number 2 applied. [50]								
Correlation Coefficient: 0.9961			Slope: 0.0005					
[T1] Sample Concentration		-10.42 µg/L						
Mean:		0.0260						
SD:								
%RSD:								
Seq. No.	33	AS Loc:	8	Date:	11/1/98			
Sample ID:	S98T002795							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI	µg/L	µg/L	0.0010	-0.0001	0.0105	0.0028	0.0107	15:27:31
Mean:		1.010µg/L	1.010µg/L	0.0010				
SD:		µg/L	µg/L					
%RSD:								
Seq. No.	34	AS Loc:	78	Date:	11/1/98			
Sample ID:	20							
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time
TI			0.0246	0.0235	0.0214	0.0488	0.0255	15:30:30
Addition number 1 applied. [20]								
Correlation Coefficient: 1.0000			Slope: 0.0012					
Mean:		0.0246						
SD:								
%RSD:								

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Seq. No.	35	AS Loc:	78	Date:	11/13/98				
Sample ID:	50								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Ti			0.0475	0.0484	0.0311	0.1020	0.0508	15:33:29	
The calibration curve may not be linear. Addition number 2 applied. [50] Correlation Coefficient: 0.9742 Slope: 0.0010									
[Ti] Sample Concentration	1.010 µg/L								
Mean:			0.0475						
SD:									
%RSD:									
Seq. No.	36	AS Loc:	9	Date:	11/13/98				
Sample ID:	S98T002795 dup								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Ti	µg/L	µg/L	0.0014	0.0003	0.0092	0.0034	0.0089	15:36:21	
Mean:	1.486µg/L	1.486µg/L	0.0014						
SD:	µg/L	µg/L							
%RSD:									
Seq. No.	37	AS Loc:	78	Date:	11/13/98				
Sample ID:	20								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Ti			0.0236	0.0225	0.0216	0.0481	0.0261	15:39:19	
Addition number 1 applied. [20] Correlation Coefficient: 1.0000 Slope: 0.0011									
Mean:			0.0236						
SD:									
%RSD:									
Seq. No.	38	AS Loc:	78	Date:	11/13/98				
Sample ID:	50								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Ti			0.0481	0.0470	0.0334	0.0990	0.0497	15:42:17	
The calibration curve may not be linear. Addition number 2 applied. [50] Correlation Coefficient: 0.9870 Slope: 0.0010									
[Ti] Sample Concentration	1.486 µg/L								
Mean:			0.0481						
SD:									
%RSD:									
Seq. No.	39	AS Loc:	10	Date:	11/13/98				
Sample ID:	ERA Lot423								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Ti	µg/L	µg/L	0.1035	0.1024	0.0594	0.2061	0.1009	15:45:09	
Mean:	134.4µg/L	134.4µg/L	0.1035						
SD:	µg/L	µg/L							
%RSD:									
Seq. No.	40	AS Loc:	78	Date:	11/13/98				
Sample ID:	20								
Elem	SampleConc	StdConc	Blank Corr Signal	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Ti			0.1190	0.1179	0.0659	0.2355	0.1179	15:48:07	

LABCORE Completed Worklist Report for Worklist# 26407

Analyst: adp

Instrument: IC40S2

Book#: 21N21C

Method: LA-533-105

Rev/Mod F-0

Worklist Comment: AW101 LAW, @IC-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	0	01C-QC F	QC	1	<1.20e-2		ug/mL
1 CCB	0	0	01C-QC CL	QC	1	<1.70e-2		ug/mL
1 CCB	0	0	01C-QC NO2	QC	1	<1.08e-1		ug/mL
1 CCB	0	0	01C-QC BR	QC	1	<1.25e-1		ug/mL
1 CCB	0	0	01C-QC NO3	QC	1	<1.35e-1		ug/mL
1 CCB	0	0	01C-QC P04	QC	1	<1.20e-1		ug/mL
1 CCB	0	0	01C-QC SO4	QC	1	<1.38e-1		ug/mL
1 CCB	0	0	01C-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2 ICV	0	0	01C-QC F	QC	5.90e1	6.53e+01	110.678 % Recovery	
2 ICV	0	0	01C-QC CL	QC	8.00e1	8.65e+01	108.125 % Recovery	
2 ICV	0	0	01C-QC NO2	QC	5.38e2	5.37e+02	99.814 % Recovery	
2 ICV	0	0	01C-QC BR	QC	5.86e2	6.19e+02	105.631 % Recovery	
2 ICV	0	0	01C-QC NO3	QC	5.32e2	6.29e+02	106.250 % Recovery	
2 ICV	0	0	01C-QC P04	QC	5.47e2	5.51e+02	100.731 % Recovery	
2 ICV	0	0	01C-QC SO4	QC	6.38e2	6.69e+02	104.859 % Recovery	
2 ICV	0	0	01C-QC OXALATE2	QC	5.53e2	5.78e+02	104.521 % Recovery	
4 DUP	S98T002782	0	01C-01 F-02	LIQUID	6.52e+02	7.02e+02	7.386 RPD	
4 DUP	S98T002782	0	01C-01 CL-02	LIQUID	7.14e+03	7.31e+03	2.353 RPD	
4 DUP	S98T002782	0	01C-01 NO2-02	LIQUID	1.13e+05	1.18e+05	4.329 RPD	
4 DUP	S98T002782	0	01C-01 BR-02	LIQUID	<5.18e2	<5.18e2	RPD	
4 DUP	S98T002782	0	01C-01 NO3-02	LIQUID	1.69e+05	1.68e+05	0.593 RPD	
4 DUP	S98T002782	0	01C-01 P04-02	LIQUID	<4.97e2	<4.97e2	RPD	
4 DUP	S98T002782	0	01C-01 SO4-02	LIQUID	6.88e+02	6.35e+02	8.012 RPD	
4 DUP	S98T002782	0	01C-01 OXALATE2	LIQUID	<4.35e2	<4.35e2	RPD	
5 SPK	S98T002782	0	01C-01 F-02	LIQUID	5.90e1	4.75e+00	8.051 % Recovery	
5 SPK	S98T002782	0	01C-01 CL-02	LIQUID	8.00e1	6.68e+00	8.350 % Recovery	
5 SPK	S98T002782	0	01C-01 NO2-02	LIQUID	5.38e2	1.75e+02	32.528 % Recovery	
5 SPK	S98T002782	0	01C-01 BR-02	LIQUID	5.86e2	0.00e+00	0.000 % Recovery	
5 SPK	S98T002782	0	01C-01 NO3-02	LIQUID	5.32e2	8.27e+01	13.970 % Recovery	
5 SPK	S98T002782	0	01C-01 P04-02	LIQUID	5.47e2	1.31e+01	2.395 % Recovery	
5 SPK	S98T002782	0	01C-01 SO4-02	LIQUID	6.38e2	-3.47e0	-0.544 % Recovery	
5 SPK	S98T002782	0	01C-01 OXALATE2	LIQUID	5.53e2	0.00e+00	0.000 % Recovery	
6 SAMPLE	S98T002783	0	01C-01 F-02	LIQUID	N/A	6.911e+02	49.690 ug/mL	
6 SAMPLE	S98T002783	0	01C-01 CL-02	LIQUID	N/A	7.712e+03	70.400 ug/mL	
6 SAMPLE	S98T002783	0	01C-01 NO2-02	LIQUID	N/A	1.210e+05	447.200 ug/mL	
6 SAMPLE	S98T002783	0	01C-01 BR-02	LIQUID	N/A	< 5.176e+02	517.600 ug/mL	
6 SAMPLE	S98T002783	0	01C-01 NO3-02	LIQUID	N/A	1.819e+05	875.600 ug/mL	
6 SAMPLE	S98T002783	0	01C-01 P04-02	LIQUID	N/A	7.041e+02	496.900 ug/mL	
6 SAMPLE	S98T002783	0	01C-01 SO4-02	LIQUID	N/A	< 5.715e+02	571.500 ug/mL	
6 SAMPLE	S98T002783	0	01C-01 OXALATE2	LIQUID	N/A	< 4.348e+02	434.800 ug/mL	
7 DUP	S98T002783	0	01C-01 F-02	LIQUID	6.91e+02	7.62e+02	9.773 RPD	

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

LABCORE Completed Worklist Report for Worklist# 26407

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
7 DUP	S98T002783	0	•IC-01 CL-02	LIQUID	7.71e+03	7.73e+03	0.259	RPD
7 DUP	S98T002783	0	•IC-01 NO2-02	LIQUID	1.21e+05	1.22e+05	0.823	RPD
7 DUP	S98T002783	0	•IC-01 BR-02	LIQUID	<5.18e2	<5.18e2		RPD
7 DUP	S98T002783	0	•IC-01 NO3-02	LIQUID	1.82e+05	1.83e+05	0.548	RPD
7 DUP	S98T002783	0	•IC-01 PO4-02	LIQUID	7.04e+02	5.81e+02	19.144	RPD
7 DUP	S98T002783	0	•IC-01 SO4-02	LIQUID	<5.72e2	6.23e+02		RPD
7 DUP	S98T002783	0	•IC-01 OXALATE2	LIQUID	<4.35e2	<4.35e2		RPD
8 CCV	0	0	•IC-QC F	QC	6.40e1	6.81e+01	106.406 %	Recovery
8 CCV	0	0	•IC-QC CL	QC	9.00e1	9.42e+01	104.667 %	Recovery
8 CCV	0	0	•IC-QC NO2	QC	5.43e2	5.17e+02	95.212 %	Recovery
8 CCV	0	0	•IC-QC BR	QC	6.30e2	6.74e+02	106.984 %	Recovery
8 CCV	0	0	•IC-QC NO3	QC	6.98e2	7.51e+02	107.593 %	Recovery
8 CCV	0	0	•IC-QC PO4	QC	6.32e2	6.46e+02	102.215 %	Recovery
8 CCV	0	0	•IC-QC SO4	QC	6.99e2	7.17e+02	102.575 %	Recovery
8 CCV	0	0	•IC-QC OXALATE2	QC	5.33e2	5.69e+02	106.004 %	Recovery

Final page for worklist# 26407

Analyst Signature

Date

Analyst Signature

Date

Janis M. Foy
Reviewer Signature Date 10/5/98

LABCORE Data Entry Template for Worklist# 26407

Analyst: ASD Instrument: IC 4052 Book# 21N21-CMethod: LA-533-105 Rev/Mod FO

Worklist Comment: AW101 LA/W, @IC-01 skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 ICV			@IC-QC	QC		
3 SAMPLE	S98T002782 0		@IC-01	LIQUID	98000261	AW-101 LAW
Analytes Requested:			BR-02	CL-02	F-02	NO2-02 , NO3-02
			OXALATE2	PO4-02	SO4-02	
4 DUP	S98T002782 0		@IC-01	LIQUID		
5 SPK	S98T002782 0		@IC-01	LIQUID		
6 SAMPLE	S98T002783 0		@IC-01	LIQUID	98000261	AW-101 LAW
Analytes Requested:			BR-02	CL-02	F-02	NO2-02 , NO3-02
			OXALATE2	PO4-02	SO4-02	
7 DUP	S98T002783 0		@IC-01	LIQUID		
8 CCV			@IC-QC	QC		

Final page for worklist # 26407

Anthony Puente ^{all} 9-29-98
 Analyst Signature Date

Jesus Lu Mij 10/01/98
 Analyst Signature Date

S98T002782 was rejected because no spike
 was added to the spike. Rest validated. JLM
 10/5/98

Data Entry Comments:

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

Sample Name: 21N21-C Date: 09/29/1998 19:57:32
 Data File : C:\DX\DATA\98092911.D03
 Method : C:\DX\METHOD\4000SYS2.MET
 ACT Address: System Inject#: 3 Detector: CDM-1
 Analyst : *Anthony J. Smith* Column: AG4A/AS4A anion column

9-29-98
 Calibration Volume Dilution Points Rate Start Stop Area Reject
 External 1 101 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.79		0.000	79	290	2	
2	0.95	fluoride	65.294	1897	5656	2	-0.35
3	1.47	chloride	86.515	1421	4847	1	-2.21
4	1.79	nitrite	536.884	5263	20952	1	-2.37
5	2.73	bromide	618.958	3095	15996	1	-2.73
6	3.12	nitrate	628.900	3527	21641	1	-2.80
7	4.51	phosphate	550.730	858	9413	1	-2.87
8	5.97	sulfate	669.223	2103	28442	1	-2.61
9	7.84	oxalate	578.023	996	19420	1	-2.65

Totals 3734.528 19237 126657

File: 98092911.D03 Sample: 21N21-C

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 333 TO 340.

33.100-16

=====

Sample Name: BLANK	Date: 09/29/1998 19:18:26
Data File : C:\DX\DATA\98092911.D01	
Method : C:\DX\METHOD\4000SYS2.MET	
ACI Address: 1 System: 2 Inject#: 1	Detector: CDM-1
Analyst :	Column: AG4A/AS4A anion column

=====

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 1 3000 5Hz 0.00 10.00 30

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

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

File: 98092911.D01 Sample: BLANK

SSI

Data Reprocessed On 10/01/1998 08:55:42

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Sample Name: S98T002782 SAM	Date: 09/29/1998 21:13:36
Data File : F:\DATA\98092911.D07	
Method : C:\DX\METHOD\4000SYS2.MET	
ACI Address: 1 System: 2 Inject#: 7	Detector: CDM-1
Analyst :	Column: AG4A/AS4A anion column

=====

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
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External	1	4141	3000	5Hz	0.00	10.00		30
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***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.79		0.000	414	1795	1	
2	0.95	fluoride	0.000	356	1338	2	-0.35
3	1.07		0.000	383	924	2	
4	1.46	chloride	0.000	2473	9933	1	-3.10
5	1.79	nitrite	0.000	28121	115888	1	-2.37
6	3.03	nitrate	0.000	22620	161205	1	0.11
7	5.97	sulfate	0.000	31	586	1	-2.61

Totals	2901709066	0.0054398	291669
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File: 98092911.D07 Sample: S98T002782 SAM

SS.

100-10-250-10

HNF-1652 REV. 0

Data Reprocessed On 10/01/1998 08:58:25

Sample Name: S98T002782 DUP Date: 09/29/1998 21:28:23
 Data File : F:\DATA\98092911.D08
 Method : C:\DX\METHOD\4000SYS2.MET
 ACI Address: 1 System: 2 Inject#: 8 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 4141 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.79		0.000	406	1749	1	
2	0.95	fluoride	7027418	385	1445	2	-0.35
3	1.06		0.000	376	956	2	
4	1.46	chloride	7311087684	2504	10179	1	-3.10
5	1.79	nitrite	1179441439	28461	121836	1	-2.37
6	3.03	nitrate	167701591	22775	159748	1	-0.11
7	5.97	sulfate	635496	32	532	1	-2.61
Totals			294295920	54940	296445		

File: 98092911.D08 Sample: S98T002782 DUP

SS .100-10-.250-10

Data Reprocessed On 10/01/1998 09:00:06

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=====
Sample Name: S98T002782 SPK                      Date: 09/29/1998 21:44:39
Data File  : F:\DATA\98092911.D09
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 9                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
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Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          4141    3000 5Hz    0.00 10.00          30
=====

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.79		0.000	421	1825	1	
2	0.95	fluoride	843.066	433	1742	2	-0.35
3	1.07		0.000	415	1052	2	
4	1.46	chloride	7410.317	2590	10321	1	-3.10
5	1.79	nitrite	119727.496	29029	123864	1	-2.37
6	3.03	nitrate	172345.046	23331	164946	1	-0.11
7	4.53	phosphate	530.125	16	160	1	-2.30
8	6.03	sulfate	548.564	30	443	1	-1.74
Totals			301404.615	56264	304353		

File: 98092911.D09 Sample: S98T002782 SPK

Data Reprocessed On 10/01/1998 09:02:07

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=====
Sample Name: S98T002783 SAM                      Date: 09/29/1998 22:11:26
Data File  : F:\DATA\98092911.D11
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 11              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

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=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          4141    3000  5Hz   0.00 10.00          30
=====

```

***** Peak Report; All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration $\mu\text{g/ml}$	Height	Area	Bl. Code	%Delta
1	0.79		0.000	441	1921	1	
2	0.95	fluoride	691.123	387	1421	2	-0.35
3	1.07		0.000	415	1012	2	
4	1.46	chloride	7712.213	2718	10757	1	-3.10
5	1.79	nitrite	120995.650	30329	125309	1	-2.37
6	3.02	nitrate	181870.207	24450	175791	1	0.00
7	4.51	phosphate	704.140	20	233	1	-2.87
8	6.03	sulfate	399.266	28	290	1	-1.74
Totals			312372.599	58787	316734		

File: 98092911.D11 Sample: S98T002783 SAM

SS
100-10-250-10

Data Reprocessed On 10/01/1998 09:04:23

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=====
Sample Name: S98T002783 DUP                      Date: 09/29/1998 22:36:03
Data File  : F:\DATA\98092911.D12
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 12              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 4141 3000 5Hzres 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.79		0.000	426	1851	1	
2	0.95	fluoride	762.486	405	1572	2	-0.35
3	1.07		0.000	430	1069	2	
4	1.46	chloride	7734.130	2666	10789	1	-3.10
5	1.79	nitrite	121988.216	30241	126443	1	-2.37
6	3.03	nitrate	183101.681	24516	177212	1	-0.11
7	4.53	phosphate	580.813	16	181	1	-2.30
8	5.97	sulfate	623.301	35	519	1	-2.61
Totals			314790.625	58735	319637		

File: 98092911.D12 Sample: S98T002783 DUP

SS

100-10-250-10

Sample Name: 20N21-C Date: 09/29/1998 20:29:15
 Data File : C:\DX\DATA\98092911.D05
 Method : C:\DX\METHOD\4000SYS2.MET
 ACI Address: 1 System: 2 Inject#: 5 Detector: CDM-1
 Analyst : Column: AG4A/AS4A anion column

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.79		0.000	77	302	2	
2	0.95	fluoride	68.125	2003	5907	2	-0.35
3	1.47	chloride	94.212	1611	5287	1	-2.21
4	1.78	nitrite	517.018	5186	20154	1	-2.73
5	2.73	bromide	673.908	3288	17461	1	-2.97
6	3.11	nitrate	750.739	4184	25973	1	-3.01
7	4.51	phosphate	646.142	1020	11080	1	-2.87
8	5.97	sulfate	717.054	2312	30520	1	-2.61
9	7.84	oxalate	565.195	997	18986	1	-2.65
Totals			4032.393	20679	135670		

File: 98092911.D05 Sample: 20N21-C

SS. 100-10

LABCORE Completed Worklist Report for Worklist# 26408

Analyst: adp

Instrument: IC40S1

Book#: 20N21C

Method: LA-533-105

Rev/Mod F-0

Worklist Comment: AW101 LAW, @IC-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	0	01C-QC	F	QC	1	<1.20e-2	ug/mL
1 CCB	0	0	01C-QC	CL	QC	1	<1.70e-2	ug/mL
1 CCB	0	0	01C-QC	NO2	QC	1	<1.08e-1	ug/mL
1 CCB	0	0	01C-QC	BR	QC	1	<1.25e-1	ug/mL
1 CCB	0	0	01C-QC	NO3	QC	1	<1.39e-1	ug/mL
1 CCB	0	0	01C-QC	PO4	QC	1	<1.20e-1	ug/mL
1 CCB	0	0	01C-QC	SO4	QC	1	<1.38e-1	ug/mL
1 CCB	0	0	01C-QC	OXALATE2	QC	1	<1.05e-1	ug/mL
2 ICV	0	0	01C-QC	F	QC	5.90e1	6.74e+01	114.237 % Recovery
2 ICV	0	0	01C-QC	CL	QC	8.00e1	8.35e+01	104.375 % Recovery
2 ICV	0	0	01C-QC	NO2	QC	5.38e2	5.32e+02	98.885 % Recovery
2 ICV	0	0	01C-QC	BR	QC	5.86e2	6.00e+02	102.389 % Recovery
2 ICV	0	0	01C-QC	NO3	QC	5.92e2	6.05e+02	102.196 % Recovery
2 ICV	0	0	01C-QC	PO4	QC	5.47e2	5.59e+02	102.194 % Recovery
2 ICV	0	0	01C-QC	SO4	QC	6.38e2	6.53e+02	102.351 % Recovery
2 ICV	0	0	01C-QC	OXALATE2	QC	5.53e2	5.68e+02	102.712 % Recovery
3 SAMPLE	S98T002784	0	01C-01	F-02	LIQUID	N/A	1.138e+03	122.400 ug/mL
3 SAMPLE	S98T002784	0	01C-01	CL-02	LIQUID	N/A	7.311e+03	173.400 ug/mL
3 SAMPLE	S98T002784	0	01C-01	NO2-02	LIQUID	N/A	1.323e+05	1102.000 ug/mL
3 SAMPLE	S98T002784	0	01C-01	BR-02	LIQUID	N/A	1.275e+03	1275.000 ug/mL
3 SAMPLE	S98T002784	0	01C-01	NO3-02	LIQUID	N/A	1.839e+05	1418.000 ug/mL
3 SAMPLE	S98T002784	0	01C-01	PO4-02	LIQUID	N/A	1.224e+03	1224.000 ug/mL
3 SAMPLE	S98T002784	0	01C-01	SO4-02	LIQUID	N/A	1.894e+03	1408.000 ug/mL
3 SAMPLE	S98T002784	0	01C-01	OXALATE2	LIQUID	N/A	1.071e+03	1071.000 ug/mL
4 DUP	S98T002784	0	01C-01	F-02	LIQUID	1.144e+03	1.088e+03	5.405 RPD
4 DUP	S98T002784	0	01C-01	CL-02	LIQUID	7.313e+03	7.478e+03	2.165 RPD
4 DUP	S98T002784	0	01C-01	NO2-02	LIQUID	1.324e+05	1.354e+05	2.247 RPD
4 DUP	S98T002784	0	01C-01	BR-02	LIQUID	<1.28e3	<1.28e3	RPD
4 DUP	S98T002784	0	01C-01	NO3-02	LIQUID	1.844e+05	1.924e+05	4.255 RPD
4 DUP	S98T002784	0	01C-01	PO4-02	LIQUID	<1.22e3	<1.22e3	RPD
4 DUP	S98T002784	0	01C-01	SO4-02	LIQUID	1.894e+03	1.684e+03	11.765 RPD
4 DUP	S98T002784	0	01C-01	OXALATE2	LIQUID	<1.07e3	<1.07e3	RPD
5 SAMPLE	S98T002796	0	01C-01	F-02	LIQUID	N/A	3.600e-02	3.60e-002 ug/mL
5 SAMPLE	S98T002796	0	01C-01	CL-02	LIQUID	N/A	3.800e-01	5.10e-002 ug/mL
5 SAMPLE	S98T002796	0	01C-01	NO2-02	LIQUID	N/A	3.370e-01	0.324 ug/mL
5 SAMPLE	S98T002796	0	01C-01	BR-02	LIQUID	N/A	3.750e-01	0.375 ug/mL
5 SAMPLE	S98T002796	0	01C-01	NO3-02	LIQUID	N/A	7.470e-01	0.417 ug/mL
5 SAMPLE	S98T002796	0	01C-01	PO4-02	LIQUID	N/A	3.600e-01	0.360 ug/mL
5 SAMPLE	S98T002796	0	01C-01	SO4-02	LIQUID	N/A	1.209e+00	0.414 ug/mL
5 SAMPLE	S98T002796	0	01C-01	OXALATE2	LIQUID	N/A	3.150e-01	0.315 ug/mL
6 DUP	S98T002796	0	01C-01	F-02	LIQUID	<3.60e-2	<3.60e-2	RPD

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

LABCORE Completed Worklist Report for Worklist# 26408

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 DUP	S98T002796	0	⊖IC-01	CL-02	LIQUID	3.80e-01	3.66e-01	3.753 RPD
6 DUP	S98T002796	0	⊖IC-01	NO2-02	LIQUID	3.37e-01	<3.24e-1	RPD
6 DUP	S98T002796	0	⊖IC-01	BR-02	LIQUID	<3.75e-1	<3.75e-1	RPD
6 DUP	S98T002796	0	⊖IC-01	NO3-02	LIQUID	7.47e-01	7.68e-01	2.772 RPD
6 DUP	S98T002796	0	⊖IC-01	PO4-02	LIQUID	<3.60e-1	<3.60e-1	RPD
6 DUP	S98T002796	0	⊖IC-01	SO4-02	LIQUID	1.21e+00	1.15e+00	5.085 RPD
6 DUP	S98T002796	0	⊖IC-01	OXALATE2	LIQUID	<3.15e-1	<3.15e-1	RPD
7 CCV	0	0	⊖IC-QC	F	QC	6.40e1	6.64e+01	103.750 % Recovery
7 CCV	0	0	⊖IC-QC	CL	QC	9.00e1	9.73e+01	108.111 % Recovery
7 CCV	0	0	⊖IC-QC	NO2	QC	5.43e2	5.61e+02	103.315 % Recovery
7 CCV	0	0	⊖IC-QC	BR	QC	6.30e2	6.76e+02	107.302 % Recovery
7 CCV	0	0	⊖IC-QC	NO3	QC	6.98e2	7.42e+02	106.304 % Recovery
7 CCV	0	0	⊖IC-QC	PO4	QC	6.32e2	6.74e+02	106.646 % Recovery
7 CCV	0	0	⊖IC-QC	SO4	QC	6.99e2	7.32e+02	104.721 % Recovery
7 CCV	0	0	⊖IC-QC	OXALATE2	QC	5.33e2	5.66e+02	106.191 % Recovery

Final page for worklist# 26408

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

James M. Faye 10/5/98
Reviewer Signature Date

09/29/98 13:55

A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 26408

Analyst: ADP Instrument: IC 4051 Book# 21N21-CMethod: LA-533-105 Rev/Mod FO

Worklist Comment: AW101 LAW, @IC-01 skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 ICV			@IC-QC	QC		
3 SAMPLE	S98T002784 0		@IC-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested:		BR-02 , CL-02 , OXALATE2, PO4-02		F-02 , NO2-02 , NO3-02 , SO4-02	
4 DUP	S98T002784 0		@IC-01	LIQUID		
5 SAMPLE	S98T002796 0		@IC-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested:		BR-02 , CL-02 , OXALATE2, PO4-02		F-02 , NO2-02 , NO3-02 , SO4-02	
6 DUP	S98T002796 0		@IC-01	LIQUID		
7 CCV			@IC-QC	QC		

Final page for worklist # 26408

 Analyst Signature

9-29-98
 Date

 Analyst Signature

10/01/98
 Date

Validated 10/5/98 gmj

Data Entry Comments:

Add'l Spk TOWL S98T002784 > spk not used. (data)
zxc

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

Sample Name: 21N21-C Date: 09/29/1998 19:37:14
 Data File : C:\DX\DATA\98092921.D02
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 2 Detector: CDM-1
 Analyst : *Anthony P. Puri* Column: AG4A/AS4A anion column

7-29-98

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

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	83	351	2	
2	1.01	fluoride	67.394	2402	11367	2	1.33
3	1.49	chloride	104.328	2081	9497	1	0.22
4	1.77	nitrite	531.887	7920	41360	1	0.19
5	2.63	bromide	600.288	5379	31758	1	-0.25
6	2.97	nitrate	604.852	6208	44073	1	-0.89
7	4.23	phosphate	559.133	1439	17985	1	-0.39
8	5.44	sulfate	652.899	4099	57945	1	-0.91
9	7.09	oxalate	567.663	2241	38717	1	-1.48
Totals			3667.569	31852	253052		

File: 98092921.D02 Sample: 21N21-C

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 344 TO 351.

SS .100-10

Sample Name: BLANK Date: 09/29/1998 19:20:12
Data File : C:\DX\DATA\98092921.D01
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 1 Detector: CDM-1
Analyst : Column: AG4A/AS4A anion column

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

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

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

SSI

HNF-1652 REV. 0

Sample Name: S98T002784 SAM Date: 09/29/1998 20:25:50
 Data File : C:\DX\DATA\98092921.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	10201	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.86		0.000	239	1224	2	
2	1.02	fluoride	1138.138	337	1710	2	2.00
3	1.10		0.000	360	2887	2	
4	1.47	chloride	7311.332	1640	8233	1	-1.57
5	1.75	nitrite	132280.027	19036	104234	1	-0.94
6	2.90	nitrate	183855.165	18460	138251	1	-3.33
7	5.44	sulfate	1893.916	48	870	1	-0.91
Totals			326478.578	40120	257409		

File: 98092921.D04 Sample: S98T002784 SAM

SS.100-10-.100-10

HNF-1652 REV. 0

Sample Name: S98T002784 DUP Date: 09/29/1998 20:49:14
 Data File : C:\DX\DATA\98092921.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	10201	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.86		0.000	235	1167	2	
2	1.01	fluoride	1077.184	336	1607	2	1.33
3	1.09		0.000	370	2966	2	
4	1.47	chloride	7469.651	1705	8412	1	-1.57
5	1.75	nitrite	135196.978	19541	106602	1	-0.94
6	2.90	nitrate	191546.778	18691	144361	1	-3.33
7	5.44	sulfate	1682.213	51	684	1	-0.91
Totals			336972.804	40930	265798		

File: 98092921.D05 Sample: S98T002784 DUP

SS 100-10 - 100-10

Not used
Date 10/21/98

Sample Name: S98T002784 SPK Date: 09/29/1998 21:03:22
 Data File : C:\DX\DATA\98092921.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	10201	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.86		0.000	276	1250	2	
2	1.00	fluoride	9053.671	2552	15233	2	0.00
3	1.47	chloride	15467.488	3465	17553	1	-1.57
4	1.76	nitrite	186778.843	27042	148882	1	-0.56
5	2.60	bromide	60254.882	5514	31556	1	-1.52
6	2.89	nitrate	246616.347	24113	188909	1	-3.78
7	4.19	phosphate	57618.032	1463	18360	1	-1.33
8	5.39	sulfate	67093.414	4202	58985	1	-1.88
9	7.04	oxalate	58341.518	2358	39409	1	-2.22
Totals			701224.195	70985	520137		

File: 98092921.D06 Sample: S98T002784 SPK

SS .100-10 - .100-10 SPK # 21N21-C

HNF-1652 REV. 0

Sample Name: S98T002796 SAM

Date: 09/29/1998 22:14:37

Data File : C:\DX\DATA\98092921.D11

Method : C:\DX\METHOD\KIT.MET

ACI Address: 1 System: 1 Inject#: 11

Detector: CDM-1

Analyst : Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	3	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	1.49	chloride	0.380	354	1496	1	-0.22
2	1.77	nitrite	0.337	47	201	1	-0.19
3	2.99	nitrate	0.747	184	1171	1	-0.22
4	5.49	sulfate	1.209	216	2819	1	0.06
5	9.39		0.000	12	538	1	
Totals			2.674	813	6225		

File: 98092921.D11 Sample: S98T002796 SAM

SS 5-10

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=====
Sample Name: S98T002796 DUP                      Date: 09/29/1998 22:34:41
Data File  : C:\DX\DATA\98092921.D12
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 12              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====
  
```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
=====
External          1          3    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	1.48	chloride	0.366	346	1441	1	-0.67
2	1.76	nitrite	0.320	39	157	1	-0.56
3	2.99	nitrate	0.768	188	1223	1	-0.44
4	5.44	sulfate	1.146	186	2632	1	-0.91
Totals			2.601	759	5452		

File: 98092921.D12 Sample: S98T002796 DUP

3S 5-10

Sample Name: 20N21-C Date: 09/29/1998 20:06:33
 Data File : C:\DX\DATA\98092921.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 1 101 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.86		0.000	74	276	2	
2	1.00	fluoride	66.415	2493	11198	2	0.00
3	1.48	chloride	97.266	2419	11080	1	-0.67
4	1.75	nitrite	561.199	8208	43699	1	-0.94
5	2.60	bromide	675.977	5990	35895	1	-1.52
6	2.93	nitrate	741.694	7801	54380	1	-2.22
7	4.19	phosphate	673.915	1733	21794	1	-1.33
8	5.39	sulfate	732.164	4322	65195	1	-1.88
9	7.04	oxalate	566.414	2281	38631	1	-2.22
Totals			4115.043	35320	282147		

File: 98092921.D03 Sample: 20N21-C

SS .100-10

LABCORE Completed Worklist Report for Worklist# 26435

Analyst: kjt

Instrument: IC40S2

Book#: 21N21D

Method: LA-533-105

Rev/Mod F-0

Worklist Comment: AN107 LAW, @IC-01 skm

AW-101

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	OCB	0	01C-QC F	QC	1	<1.20e-2		ug/mL
1	OCB	0	01C-QC CL	QC	1	<1.70e-2		ug/mL
1	OCB	0	01C-QC NO2	QC	1	<1.08e-1		ug/mL
1	OCB	0	01C-QC BR	QC	1	<1.25e-1		ug/mL
1	OCB	0	01C-QC NO3	QC	1	<1.39e-1		ug/mL
1	OCB	0	01C-QC PO4	QC	1	<1.20e-1		ug/mL
1	OCB	0	01C-QC SO4	QC	1	<1.38e-1		ug/mL
1	OCB	0	01C-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2	ICV	0	01C-QC F	QC	5.90e1	6.71e+01	113.729 % Recovery	
2	ICV	0	01C-QC CL	QC	8.00e1	8.77e+01	109.625 % Recovery	
2	ICV	0	01C-QC NO2	QC	5.46e2	5.32e+02	97.436 % Recovery	
2	ICV	0	01C-QC BR	QC	5.86e2	6.19e+02	105.631 % Recovery	
2	ICV	0	01C-QC NO3	QC	5.92e2	6.24e+02	105.405 % Recovery	
2	ICV	0	01C-QC PO4	QC	5.47e2	5.52e+02	100.914 % Recovery	
2	ICV	0	01C-QC SO4	QC	6.38e2	6.90e+02	108.150 % Recovery	
2	ICV	0	01C-QC OXALATE2	QC	5.39e2	5.55e+02	102.968 % Recovery	
3	SAMPLE	S98T002866	0 01C-01 F-02	LIQUID	N/A	4.578e+03		61.910 ug/mL
3	SAMPLE	S98T002866	0 01C-01 CL-02	LIQUID	N/A	2.143e+03		87.570 ug/mL
3	SAMPLE	S98T002866	0 01C-01 NO2-02	LIQUID	N/A	7.330e+04		556.300 ug/mL
3	SAMPLE	S98T002866	0 01C-01 BR-02	LIQUID	N/A	< 6.439e+02		643.900 ug/mL
3	SAMPLE	S98T002866	0 01C-01 NO3-02	LIQUID	N/A	2.548e+05		716.000 ug/mL
3	SAMPLE	S98T002866	0 01C-01 PO4-02	LIQUID	N/A	3.910e+03		618.100 ug/mL
3	SAMPLE	S98T002866	0 01C-01 SO4-02	LIQUID	N/A	3.794e+03		710.800 ug/mL
3	SAMPLE	S98T002866	0 01C-01 OXALATE2	LIQUID	N/A	1.280e+03		540.900 ug/mL
4	DUP	S98T002866	0 01C-01 F-02	LIQUID	4.58e+03	4.59e+03	0.218 RPD	
4	DUP	S98T002866	0 01C-01 CL-02	LIQUID	2.14e+03	2.26e+03	5.455 RPD	
4	DUP	S98T002866	0 01C-01 NO2-02	LIQUID	7.33e+04	7.52e+04	2.559 RPD	
4	DUP	S98T002866	0 01C-01 BR-02	LIQUID	<6.44e2	<6.44e2	RPD	
4	DUP	S98T002866	0 01C-01 NO3-02	LIQUID	2.55e+05	2.60e+05	1.943 RPD	
4	DUP	S98T002866	0 01C-01 PO4-02	LIQUID	3.91e+03	4.35e+03	10.654 RPD	
4	DUP	S98T002866	0 01C-01 SO4-02	LIQUID	3.79e+03	3.95e+03	1.621 RPD	
4	DUP	S98T002866	0 01C-01 OXALATE2	LIQUID	1.28e+03	1.17e+03	8.980 RPD	
5	SPK	S98T002866	0 01C-01 F-02	LIQUID	5.90e1	-9.77e1	-148.644 % Recovery	
5	SPK	S98T002866	0 01C-01 CL-02	LIQUID	8.00e1	9.18e+01	114.750 % Recovery	
5	SPK	S98T002866	0 01C-01 NO2-02	LIQUID	5.46e2	6.79e+02	124.359 % Recovery	
5	SPK	S98T002866	0 01C-01 BR-02	LIQUID	5.86e2	6.18e+02	105.461 % Recovery	
5	SPK	S98T002866	0 01C-01 NO3-02	LIQUID	5.92e2	6.26e+02	105.743 % Recovery	
5	SPK	S98T002866	0 01C-01 PO4-02	LIQUID	5.47e2	5.46e+02	99.817 % Recovery	
5	SPK	S98T002866	0 01C-01 SO4-02	LIQUID	6.38e2	6.85e+02	107.367 % Recovery	
5	SPK	S98T002866	0 01C-01 OXALATE2	LIQUID	5.39e2	5.49e+02	101.855 % Recovery	
6	SAMPLE	S98T002866	0 01C-01 F-02	LIQUID	N/A	3.855e+03		61.910 ug/mL

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

LABCORE Completed Worklist Report for Worklist# 26435

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SAMPLE	S98T002869	0	QIC-01	CL-02	LIQUID	N/A	1.915e+03	87.570 ug/mL
6 SAMPLE	S98T002869	0	QIC-01	NO2-02	LIQUID	N/A	6.456e+04	556.300 ug/mL
6 SAMPLE	S98T002869	0	QIC-01	BR-02	LIQUID	N/A	6.439e+02	643.900 ug/mL
6 SAMPLE	S98T002869	0	QIC-01	NO3-02	LIQUID	N/A	2.241e+05	716.000 ug/mL
6 SAMPLE	S98T002869	0	QIC-01	PO4-02	LIQUID	N/A	3.557e+03	618.100 ug/mL
6 SAMPLE	S98T002869	0	QIC-01	SO4-02	LIQUID	N/A	9.016e+03	710.800 ug/mL
6 SAMPLE	S98T002869	0	QIC-01	OXALATE2	LIQUID	N/A	5.409e+02	540.900 ug/mL
7 DUP	S98T002869	0	QIC-01	F-02	LIQUID	3.86e+03	3.90e+03	1.031 RPD
7 DUP	S98T002869	0	QIC-01	CL-02	LIQUID	1.92e+03	1.94e+03	1.036 RPD
7 DUP	S98T002869	0	QIC-01	NO2-02	LIQUID	6.46e+04	6.39e+04	1.089 RPD
7 DUP	S98T002869	0	QIC-01	BR-02	LIQUID	<6.44e2	<6.44e2	RPD
7 DUP	S98T002869	0	QIC-01	NO3-02	LIQUID	2.24e+05	2.24e+05	0.000 RPD
7 DUP	S98T002869	0	QIC-01	PO4-02	LIQUID	3.56e+03	3.11e+03	13.493 RPD
7 DUP	S98T002869	0	QIC-01	SO4-02	LIQUID	9.02e+03	8.66e+03	4.072 RPD
7 DUP	S98T002869	0	QIC-01	OXALATE2	LIQUID	<5.41e2	8.99e+02	RPD
8 SAMPLE	S98T002782	0	QIC-01	F-02	LIQUID	N/A	1.057e+03	49.690 ug/mL
8 SAMPLE	S98T002782	0	QIC-01	CL-02	LIQUID	N/A	6.889e+03	70.400 ug/mL
8 SAMPLE	S98T002782	0	QIC-01	NO2-02	LIQUID	N/A	1.067e+05	447.200 ug/mL
8 SAMPLE	S98T002782	0	QIC-01	BR-02	LIQUID	N/A	5.176e+02	517.600 ug/mL
8 SAMPLE	S98T002782	0	QIC-01	NO3-02	LIQUID	N/A	1.445e+05	575.600 ug/mL
8 SAMPLE	S98T002782	0	QIC-01	PO4-02	LIQUID	N/A	4.969e+02	496.900 ug/mL
8 SAMPLE	S98T002782	0	QIC-01	SO4-02	LIQUID	N/A	6.413e+02	571.500 ug/mL
8 SAMPLE	S98T002782	0	QIC-01	OXALATE2	LIQUID	N/A	4.348e+02	434.800 ug/mL
9 DUP	S98T002782	0	QIC-01	F-02	LIQUID	1.06e+03	6.52e+02	47.664 RPD
9 DUP	S98T002782	0	QIC-01	CL-02	LIQUID	6.89e+03	6.64e+03	3.695 RPD
9 DUP	S98T002782	0	QIC-01	NO2-02	LIQUID	1.07e+05	1.02e+05	4.785 RPD
9 DUP	S98T002782	0	QIC-01	BR-02	LIQUID	<5.18e2	<5.18e2	RPD
9 DUP	S98T002782	0	QIC-01	NO3-02	LIQUID	1.44e+05	1.47e+05	2.062 RPD
9 DUP	S98T002782	0	QIC-01	PO4-02	LIQUID	<4.97e2	<4.97e2	RPD
9 DUP	S98T002782	0	QIC-01	SO4-02	LIQUID	6.41e+02	5.92e+02	7.948 RPD
9 DUP	S98T002782	0	QIC-01	OXALATE2	LIQUID	<4.35e2	<4.35e2	RPD
10 SPK	S98T002782	0	QIC-01	F-02	LIQUID	5.90e1	5.56e+01	94.237 % Recovery
10 SPK	S98T002782	0	QIC-01	CL-02	LIQUID	8.00e1	7.74e+01	96.750 % Recovery
10 SPK	S98T002782	0	QIC-01	NO2-02	LIQUID	5.46e2	5.33e+02	97.619 % Recovery
10 SPK	S98T002782	0	QIC-01	BR-02	LIQUID	5.86e2	6.30e+02	107.503 % Recovery
10 SPK	S98T002782	0	QIC-01	NO3-02	LIQUID	5.92e2	7.11e+02	120.101 % Recovery
10 SPK	S98T002782	0	QIC-01	PO4-02	LIQUID	5.47e2	5.23e+02	95.612 % Recovery
10 SPK	S98T002782	0	QIC-01	SO4-02	LIQUID	6.38e2	6.66e+02	104.389 % Recovery
10 SPK	S98T002782	0	QIC-01	OXALATE2	LIQUID	5.39e2	5.46e+02	101.299 % Recovery
11 CCV	0	0	QIC-QC	F	QC	6.40e1	6.65e+01	103.906 % Recovery
11 CCV	0	0	QIC-QC	CL	QC	9.00e1	9.51e+01	105.667 % Recovery
11 CCV	0	0	QIC-QC	NO2	QC	5.45e2	5.20e+02	95.413 % Recovery
11 CCV	0	0	QIC-QC	BR	QC	6.30e2	6.59e+02	104.603 % Recovery
11 CCV	0	0	QIC-QC	NO3	QC	6.98e2	7.57e+02	108.453 % Recovery
11 CCV	0	0	QIC-QC	PO4	QC	6.32e2	6.41e+02	101.424 % Recovery
11 CCV	0	0	QIC-QC	SO4	QC	6.99e2	7.35e+02	105.150 % Recovery
11 CCV	0	0	QIC-QC	OXALATE2	QC	5.28e2	5.25e+02	99.432 % Recovery

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

LABCORE Completed Worklist Report for Worklist# 26435

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

Final page for worklist# 26435

Analyst Signature

Date

Analyst Signature

Date

John Faye 11/5/98
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 26435

Analyst: KJT Instrument: IC 4052 Book# 21N210
Method: LA-533-105 Rev/Mod F-0 ^{20N210}
* Combined WL 26435 & 26479
Worklist Comment: AN107 LAW, @IC-01 skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 ICV			@IC-QC	QC		
3 SAMPLE	S98T002866 0		@IC-01	LIQUID	98000250	AN-107 LAW
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
4 DUP	S98T002866 0		@IC-01	LIQUID		
5 SPK	S98T002866 0		@IC-01	LIQUID		
6 SAMPLE	S98T002869 0		@IC-01	LIQUID	98000250	AN-107 LAW
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
7 DUP	S98T002869 0		@IC-01	LIQUID		
8 SAMPLE	S98T002782 0		@IC-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
9 DUP	S98T002782 0		@IC-01	LIQUID		
10 SPK	S98T002782 0		@IC-01	LIQUID		
11 CCV			@IC-QC	QC		

Final page for worklist # 26435

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Data Entry Comments:

uploaded 11-4-98
JL Howell

Validated 11/5/98 JPM

26435 OCT.CSV

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

HNF-1653 REV. 0
Am 12/199

HNF-1652 REV. 0

Page: 1

1/08/98 08:41
-0004-1

LABCORE Data Entry Template for Worklist# 26435

Analyst: KST Instrument: IC 4000Sye2 Book# 210210Method: LA-533-105 Rev/Mod F-O

Worklist Comment: AN107 LAW, @IC-01 skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 ICV			@IC-QC	QC		
3 SAMPLE	S98T002866 0		@IC-01	LIQUID	98000250	AN-107 LAW
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
4 DUP	S98T002866 0		@IC-01	LIQUID		
5 SPK	S98T002866 0		@IC-01	LIQUID		
6 SAMPLE	S98T002869 0		@IC-01	LIQUID	98000250	AN-107 LAW
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
7 DUP	S98T002869 0		@IC-01	LIQUID		
8 CCV			@IC-QC	QC		

Final page for worklist # 26435

KS Thornike 10-12-98
 Analyst Signature Date

 Analyst Signature Date

Data Entry Comments:

uploaded 10-13-98validated 10/14/98 JMFJohn HowellRevalidated 11/5/98 JMF26435 OCT.CSV

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

LABCORE Data Entry Template for Worklist# 26479

Analyst: KST Instrument: IC 4000sys2 Book# 21W210

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

Worklist Comment: AW101 LAW, @IC-01 DF= 4141 Rerun-Spike was not spiked. skm

S Type	Sample#	R	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 ICV			@IC-QC	QC		
3 SAMPLE	S98T002782 0		@IC-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested:		BR-02	CL-02	F-02	NO2-02 NO3-02
			OXALATE2	PO4-02	SO4-02	
4 DUP	S98T002782 0		@IC-01	LIQUID		
5 SPK	S98T002782 0		@IC-01	LIQUID		
6 CCV			@IC-QC	QC		

Final page for worklist # 26479

K.S. Hemdile 10-12-98
Analyst Signature Date

Analyst Signature Date

Ran with Worklist 26435 - Use that QC

Faxed
10-12-98

Refaxed 11/4/98

Data Entry Comments:

HNF-1653 REV.0
Rev 12/198

Date: 10/12/1998 09:18:43

Sample Name: CCB
Data File : C:\DX\DATA\98100831.D01
Method : C:\DX\METHOD\4000SYS2.MET
Detector: CDM-1
Address: 1 System: 2 Inject#: 1
Analyst : KS Thorndike Column: AG4A/AS4A anion column

Libration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
Internal	1	1	3000	5Hz	0.00	10.00		30

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

k.	Ret	Component	Concentration	Height	Area	Bl.	%Delta
um	Time	Name	ug/ml			Code	
1	0.63		0.000	45	54	2	
2	0.69		0.000	23	57	2	
3	1.33		0.000	61	327	1	
4	2.55		0.000	23	64	1	
5	7.73	oxalate	0.100	30	414	1	-3.97
Totals			0.100	181	916		

File: 98100831.D01 Sample: CCB

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 358 TO 364.

HNF-1653 REV. 0
Hm 12/1/99

Date: 10/12/1998 09:32:27

Sample Name: 21N21D
 Data File : C:\DX\DATA\98100841.D02
 Method : C:\DX\METHOD\4000SYS2.MET
 CI Address: 1 System: 2 Inject#: 2
 Analyst : K S Thorndike Column: AG4A/AS4A anion column
 Detector: CDM-1

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

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

k. um	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.78		0.000	96	389	2	
2	0.95	fluoride	67.051	2157	5812	2	-0.35
3	1.30		0.000	57	310	2	
4	1.49	chloride	87.722	1698	4916	2	-0.88
5	1.81	nitrite	532.143	5767	20761	1	-1.28
6	2.75	bromide	619.345	3165	16007	1	-2.02
7	3.15	nitrate	623.817	3500	21460	1	-1.97
8	4.67	phosphate	551.544	820	9428	1	0.57
9	6.45	sulfate	690.359	2145	29360	1	5.22
10	8.48	oxalate	554.635	963	18629	1	5.30
Totals			3726.616	20366	127072		

File: 98100841.D02 Sample: 21N21D

HNF-1653 REV. 0
JAN 14 1999

HNF-1652 REV. 0

Date: 10/12/1998 09:56:44

Sample Name: 20N21D
 Data File : C:\DX\DATA\98100841.D03
 Method : C:\DX\METHOD\4000SYS2.MET
 Address: 1 System: 2 Inject#: 3
 Analyst : Ks Thorndike Column: AG4A/AS4A anion column
 Detector: CDM-1

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

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

Peak Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.79		0.000	84	341	2	
2	0.95	fluoride	66.498	2126	5763	2	-0.35
3	1.30		0.000	53	212	1	
4	1.49	chloride	95.110	1860	5339	1	-0.88
5	1.81	nitrite	519.764	5617	20265	1	-1.28
6	2.75	bromide	658.888	3382	17060	1	-2.02
7	3.14	nitrate	756.561	4186	26181	1	-2.18
8	4.67	phosphate	641.254	946	10995	1	0.57
9	6.45	sulfate	735.486	2299	31322	1	5.22
10	8.48	oxalate	525.241	926	17637	1	5.30
Totals			3998.803	21479	135113		

File: 98100841.D03 Sample: 20N21D

Data Reprocessed On 10/12/1998 15:02:23

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=====
Sample Name: S98T002782      Date: 10/12/1998 14:25:50
Data File  : C:\DX\DATA\98100841.D10
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 10
Analyst    : Ks Florence      Column: AG4A/AS4A anion column
=====

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```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
=====
External      1      4141      3000      5Hz      0.00      10.00      30
=====

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.79		0.000	403	1992	2	
2	0.95	fluoride	1056.817	511	2195	2	0.35
3	1.07		0.000	531	1702	2	
4	1.15		0.000	203	979	2	
5	1.47	chloride	6889.195	2500	9571	1	-2.21
6	1.80	nitrite	106671.005	26676	109165	1	-1.64
7	3.03	nitrate	144540.433	20545	134619	1	0.11
8	6.45	sulfate	641.252	33	538	1	5.22
Totals			259798.701	51402	260760		

File: 98100841.D10 Sample: S98T002782

Data Rprocessed On 10/12/1998 15:03:24

Sample Name: S98T002782 DUP

Date: 10/12/1998 14:38:32

Data File : C:\DX\DATA\98100841.D11

Method : C:\DX\METHOD\4000SYS2.MET

ACI Address: 1 System: 2 Inject#: 11

Detector: CDM-1

Analyst : K5 *Thompson* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.27		0.000	19	68	1	
2	0.79		0.000	389	1839	1	
3	0.95	fluoride	652.113	365	1339	2	0.35
4	1.07		0.000	365	889	2	
5	1.47	chloride	6639.310	2452	9213	1	-2.21
6	1.80	nitrite	101546.434	26647	103486	1	-1.64
7	3.03	nitrate	147090.483	20563	137324	1	0.11
8	6.45	sulfate	591.690	34	487	1	5.22
Totals			256520.029	50833	254645		

File: 98100841.D11 Sample: S98T002782 DUP

Data Reprocessed On 10/12/1998 15:04:46

Sample Name: S98T002782 TRI Date: 10/12/1998 14:53:20
 Data File : C:\DX\DATA\98100841.D12
 Method : C:\DX\METHOD\4000SYS2.MET
 ACI Address: 1 System: 2 Inject#: 2 Detector: CDM-1
 Analyst : *Ks Thomick* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	4141	3000	5Hz	0.00	10.00		30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.79		0.000	408	1988	1	
2	0.95	fluoride	701.695	388	1444	2	0.35
3	1.07		0.000	379	979	2	
4	1.47	chloride	6944.089	2601	9650	1	-2.21
5	1.80	nitrite	110196.839	28398	113101	1	-1.64
6	3.03	nitrate	155774.711	21962	146647	1	-0.11
7	6.40	sulfate	710.323	36	609	1	4.35

Totals	274327.657	54173	274418
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File: 98100841.D12 Sample: S98T002782 TRI

Data Reprocessed On 10/12/1998 15:08:09

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=====
Sample Name: S98T002782 SPIKE                      Date: 10/12/1998 15:06:27
Data File  : C:\DX\DATA\98100841.D13
Method     : C:\DX\METHOD\4000SYS2.MET
ACI Address: 1 System: 2 Inject#: 13
Analyst    : KS Thorn Column: AG4A/AS4A anion column
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          4141    3000  5Hz   0.00 10.00          30
-----

```

```

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

```

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.79		0.000	434	1912	1	
2	0.95	fluoride	3300.633	2304	7004	2	-0.35
3	1.07		0.000	376	1001	2	
4	1.47	chloride	10008.738	3795	14115	1	-2.21
5	1.81	nitrite	128175.081	32419	133558	1	-1.28
6	2.71	bromide	25406.559	3124	16015	1	-3.68
7	3.02	nitrate	173208.757	24130	165919	1	0.00
8	4.67	phosphate	21071.245	805	8773	1	0.57
9	6.40	sulfate	27487.483	1945	28495	1	4.35
10	8.43	oxalate	22018.490	937	18035	1	4.64
Totals			410676.987	70270	394827		

File: 98100841.D13 Sample: S98T002782 SPIKE

LABCORE Completed Worklist Report for Worklist# 26835

Analyst: vlm

Instrument: IC50S1

Book#: 27N21A

Method: LA-533-115 Rev/Mod A-0

Worklist Comment: AW101 LAW , @IC5-01 used to be26409 and 26410. jmf

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	@IC5-QC IDA-05 QC		1	<1.40e-1		ug/mL
1 CCB	0	@IC5-QC S04-05 QC		1	<1.38e-1		ug/mL
1 CCB	0	@IC5-QC OXALATES QC		1	<1.07e-1		ug/mL
1 CCB	0	@IC5-QC NTA-05 QC		1	<1.26e-1		ug/mL
1 CCB	0	@IC5-QC P04-05 QC		1	<1.26e-1		ug/mL
1 CCB	0	@IC5-QC I-05 QC		1	<2.00e-1		ug/mL
1 CCB	0	@IC5-QC CITRATES QC		1	<1.39e-1		ug/mL
2 ICV	0	@IC5-QC S04-05 QC		6.42e2	6.41e+02	99.844 % Recovery	
2 ICV	0	@IC5-QC OXALATES QC		5.56e2	5.32e+02	95.683 % Recovery	
2 ICV	0	@IC5-QC NTA-05 QC		6.03e2	6.58e+02	109.121 % Recovery	
2 ICV	0	@IC5-QC P04-05 QC		5.60e2	5.23e+02	93.393 % Recovery	
2 ICV	0	@IC5-QC I-05 QC		5.74e2	5.12e+02	89.199 % Recovery	
2 ICV	0	@IC5-QC CITRATES QC		6.85e2	7.05e2	102.920 % Recovery	
3 CCV	0	@IC5-QC S04-05 QC		6.80e2	6.85e+02	100.735 % Recovery	
3 CCV	0	@IC5-QC OXALATES QC		5.47e2	5.31e+02	97.075 % Recovery	
3 CCV	0	@IC5-QC NTA-05 QC		5.63e2	6.21e+02	110.302 % Recovery	
3 CCV	0	@IC5-QC P04-05 QC		6.50e2	6.28e+02	96.615 % Recovery	
3 CCV	0	@IC5-QC I-05 QC		5.16e2	4.75e+02	92.054 % Recovery	
3 CCV	0	@IC5-QC CITRATES QC		6.51e2	6.70e2	102.919 % Recovery	
4 SAMPLE	S98T002782	0 @IC5-01 I-05 LIQUID		N/A	< 1.030e+03	1030.000	ug/mL
5 DUP	S98T002782	0 @IC5-01 I-05 LIQUID		<1.03e3	<1.03e3		RPD
6 SPK	S98T002782	0 @IC5-01 I-05 LIQUID		5.74e2	5.22e+02	90.941 % Recovery	
7 SAMPLE	S98T002783	0 @IC5-01 I-05 LIQUID		N/A	< 1.030e+03	1030.000	ug/mL
8 DUP	S98T002783	0 @IC5-01 I-05 LIQUID		<1.03e3	<1.03e3		RPD
9 SAMPLE	S98T002784	0 @IC5-01 I-05 LIQUID		N/A	< 1.030e+03	1030.000	ug/mL
10 DUP	S98T002784	0 @IC5-01 I-05 LIQUID		<1.03e3	<1.03e3		RPD
11 SAMPLE	S98T002796	0 @IC5-01 I-05 LIQUID		N/A	< 1.030e+03	1030.000	ug/mL
12 DUP	S98T002796	0 @IC5-01 I-05 LIQUID		<1.03e3	<1.03e3		RPD

Final page for worklist# 26835

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

LABCORE Data Entry Template for Worklist# 26835

Analyst: VLM Instrument: IC50S1 _____ Book# 26835 - FCB

Method: LA-533-115 Rev/Mod A-0

26835 - FCB

Worklist Comment: AW101 LAW , @IC5-01 used to be26409 and 26410. jmf

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC5-QC	QC		
2 ICV			@IC5-QC	QC		
3 CCV			@IC5-QC	QC		
4 SAMPLE	S98T002782 0		@IC5-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: I-05					
5 DUP	S98T002782 0		@IC5-01	LIQUID		
6 SPK	S98T002782 0		@IC5-01	LIQUID		
7 SAMPLE	S98T002783 0		@IC5-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: I-05					
8 DUP	S98T002783 0		@IC5-01	LIQUID		
9 SAMPLE	S98T002784 0		@IC5-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: I-05					
10 DUP	S98T002784 0		@IC5-01	LIQUID		
11 SAMPLE	S98T002796 0		@IC5-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: I-05					
12 DUP	S98T002796 0		@IC5-01	LIQUID		

Final page for worklist # 26835

See original 26409
Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Data Entry Comments:

uploaded 10/28/98 JMF

validated 10/28/98 JMF

LABCORE Data Entry Template for Worklist# 26409

Analyst: VLM Instrument: IC0 IC501 Book# 27N21A - ICV
26N21A - CCV

Method: LA-533-115 Rev/Mod A-0

Worklist Comment: AW101 LAW, @IC5-01 skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB ICV			@IC5-QC	QC		
2 CCV			@IC5-QC	QC		
3 SAMPLE	S98T002782 0		@IC5-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: I-05					
4 DUP	S98T002782 0		@IC5-01	LIQUID		
5 SPK	S98T002782 0		@IC5-01	LIQUID		
6 SAMPLE	S98T002783 0		@IC5-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: I-05					
7 DUP	S98T002783 0		@IC5-01	LIQUID		

Final page for worklist # 26409

Valerie L Massie 10-21-98
Analyst Signature Date

Analyst Signature Date

Combined with 26410 as 26835

Data Entry Comments:

Needs to be combined with 26410

LABCORE Data Entry Template for Worklist# 26410

Analyst: _____ Instrument: IC0 _____ Book# _____

Method: LA-533-115 Rev/Mod _____

Worklist Comment: AW101 LAW, @IC5-01 skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC5-QC	QC		
2	CCV				@IC5-QC	QC		
3	SAMPLE	S98T002784 0			@IC5-01	LIQUID	98000261	AW-101 LAW
		Analytes Requested: I-05						
4	DUP	S98T002784 0			@IC5-01	LIQUID		
5	SAMPLE	S98T002796 0			@IC5-01	LIQUID	98000261	AW-101 LAW
		Analytes Requested: I-05						
6	DUP	S98T002796 0			@IC5-01	LIQUID		

Final page for worklist # 26410

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Became 26835

Data Entry Comments:

222S Sample Analysis Report

Sample Name : WATER BLANK

Data File Name : ...\\OC\\ 2100_001.DXD

Schedule File Name : ...\\aw101i05.as3

Method File Name : ...\\us1lan3.met

Injection Volume : 50.00

System Operator : VL MANSIE

Dilution Factor : 1.00

Date Time Collected : 10/21/98 10:56:29 AM

Vial ID : A01

Valerie L Mansie 10-21-98

Peak Information : All Peaks

Peak #	Retention Time	Component	Name	Concentration (UG/ML)	Peak Area	Peak Height
1	2.29			0.00	193	52
2	2.58			0.00	1287	491
3	3.36			0.00	409	170
4	3.64			0.00	264	187
5	5.05			0.00	9908	621
6	6.32			0.00	13555	2440
7	6.92	SULFATE		0.07	6078	1417
8	9.49	PHOSPHATE		0.02	426	152
9	12.93			0.00	47	49
10	14.58			0.00	40336	158
11	14.78			0.00	290	58
12	14.85			0.00	61	34

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 369 TO 391.

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222S Sample Analysis Report

370

222S Sample Analysis Report

Sample Name : WATER BLANK

Data File Name : ...\\OCN 2100_002.DXD
Method File Name : ...\\as11an3.met
System Operator : VL MAHSIE
Date Time Collected : 10/21/98 11:19:52 AM

Schedule File Name : ...\\aw101105.as3
Injection Volume : 50.00
Dilution Factor : 1.00
Vial ID : A01

Peak Information : All Peaks

Peak #	Retention Time	Component Name	Concentration (UG/ML)	Peak Area	Peak Height
1	2.16		0.00	142	55
2	2.57		0.00	838	345
3	3.64		0.00	3432	135
4	4.30		0.00	992	159
5	6.31		0.00	46194	624
6	6.89	SULFATE	0.01	431	865
7	14.03		0.00	40	93
8	14.53		0.00	4497	89
9	14.70		0.00	321	55
10	14.83		0.00	6703	165

WATER BLANK

371

222S Sample Analysis Report

Sample Name : 27N21-A 101 ICV

Data File Name : J:\DATA\OCT 2100_003.DXD

Method File Name : ...\\as11an3.met

System Operator : VL MASSIE

Date Time Collected : 10/21/98 11:43:11 AM

Schedule File Name : ...\\aw101i05.as3

Injection Volume : 50.00

Dilution Factor : 101.00

Vial ID : A02

Peak Information : All Peaks

Peak #	Peak Retention Time	Component Name	Concentration (UG/ML)	Peak Area	Peak Height
1	2.28		0.00	543	176
2	2.57		0.00	890	335
3	3.64		0.00	2760	211
4	6.30		0.00	88698	954
5	6.85	SULFATE	640.63	568466	139271
6	7.19	OXALATE	531.91	419410	89318
7	7.77	NTA	658.48	212295	30253
8	9.45	PHOSPHATE	522.50	152724	28162
9	9.86	IODIDE	512.27	125807	15370
10	10.68	CITRATE	705.46	169617	27256
11	14.51		0.00	69	47
12	14.82		0.00	4237	260

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222S Sample Analysis Report

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222S Sample Analysis Report

Sample Name : 26N21-A 101 CCV

Data File Name : J:\DATA\OCT 2100_004.DXD

Method File Name : ...\\asllan3.met

System Operator : VL MASSIE

Date Time Collected : 10/21/98 12:06:29 PM

Schedule File Name : ...\\aw101i05.as3

Injection Volume : 50.00

Dilution Factor : 101.00

Vial ID : A03

Peak Information : All Peaks

Peak #	Peak Retention Time	Component Name	Concentration (UG/ML)	Peak Area	Peak Height
1	2.29		0.00	17	33
2	2.58		0.00	865	313
3	3.64		0.00	1358	343
4	5.29		0.00	18932	2572
5	6.30		0.00	752	1108
6	6.85	SULFATE	684.98	609612	143544
7	7.20	OXALATE	531.30	418933	90452
8	7.79	NTA	621.27	199472	28786
9	9.45	PHOSPHATE	628.03	185894	33513
10	9.85	IODIDE	475.46	115961	14255
11	10.70	CITRATE	669.94	160858	26365
12	14.80		0.00	2011912	12869
13	18.64		0.00	140	43
14	18.79		0.00	27	14

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222S Sample Analysis Report

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222S Sample Analysis Report

Sample Name : S98T001782

Data File Name : ...\\OCW 2100.005.DXD
 Method File Name : ...\\usllan3.met
 System Operator : VL MANSIE
 Date Time Collected : 10/21/98 12:29:48 PM

Schedule File Name : ...\\aw101105.as3
 Injection Volume : 50.00
 Dilution Factor : 5151.00
 Vial ID : A04

Peak Information : All Peaks

Peak #	Retention Time	Component	Name	Concentration (UG/ML)	Peak Area	Peak Height
1	2.15			0.00	14475	3644
2	2.29			0.00	20000	4926
3	2.59			0.00	30173	8989
4	2.81			0.00	4046	1363
5	3.64			0.00	136340	44203
6	4.01			0.00	1625807	331882
7	5.17			0.00	2347512	369092
8	6.08			0.00	1711	259
9	6.30			0.00	24332	2854
10	6.90	SULFATE		445.85	7459	1950
11	7.26	OXALATE		101.85	1599	377
12	9.54	PHOSPHATE		69.85	379	127
13	10.78	CITRATE		140.44	645	179
14	14.66			0.00	25	31
15	14.82			0.00	187	43

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222S Sample Analysis Report

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222S Sample Analysis Report

Sample Name : S98T002782 DUP

Data File Name : ...\\OCM 2100_006.DXD
 Method File Name : ...\\us1lan3.met
 System Operator : VL MAHSIE
 Date Time Collected : 10/21/98 12:53:09 PM

Schedule File Name : ...\\aw101i05.as3
 Injection Volume : 50.00
 Dilution Factor : 5151.00
 Vial ID : A05

Peak Information : All Peaks

Peak #	Retention Time	Component	Name	Concentration (UG/ML)	Peak Area	Peak Height
1	2.15			0.00	14265	3556
2	2.29			0.00	20300	4960
3	2.59			0.00	31554	9296
4	2.81			0.00	4406	1416
5	3.64			0.00	143103	45831
6	4.01			0.00	1695010	344326
7	5.18			0.00	2457601	388497
8	6.09			0.00	1331	294
9	6.31			0.00	41561	4551
10	6.92	SULFATE		446.14	7464	1934
11	7.27	OXALATE		82.40	1293	356
12	10.80	CITRATE		128.97	592	164
13	14.70			0.00	35	28
14	14.81			0.00	146	33

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222S Sample Analysis Report

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222S Sample Analysis Report

Sample Name : S98T000782 SPK

Data File Name : ...\\OCW 2100_007.DXD
 Method File Name : ...\\asilan3.met
 System Operator : VL MAHSIE
 Date Time Collected : 10/21/98 1:16:30 PM

Schedule File Name : ...\\aw101i05.as3
 Injection Volume : 50.00
 Dilution Factor : S151.00
 Vial ID : A06

Peak Information : All Peaks

Peak #	Retention Time	Component	Name	Concentration (UG/ML)	Peak Area	Peak Height
1	0.93			0.00	1123	192
2	2.16			0.00	16000	3306
3	2.29			0.00	18492	4262
4	2.59			0.00	30401	8101
5	2.81			0.00	4262	1343
6	3.64			0.00	138561	43340
7	4.01			0.00	1640431	336213
8	5.18			0.00	2369650	378363
9	6.11			0.00	749	290
10	6.32			0.00	22576	2740
11	6.89	SULFATE		32250.57	560823	137634
12	7.23	OXALATE		26553.69	410668	86076
13	7.83	NTA		31904.49	200950	28566
14	9.51	PHOSPHATE		28228.56	162376	30139
15	9.82	IODIDE		26361.08	127053	15663
16	10.77	CITRATE		36544.70	172361	27511
17	14.29			0.00	53	21
18	14.86			0.00	16814	638

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222S Sample Analysis Report

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222S Sample Analysis Report

Sample Name : S98T000783

Data File Name : ...\\OCW 2100_008.DXD
 Method File Name : ...\\hsilan3.met
 System Operator : VL MAHSIE
 Date Time Collected : 10/21/98 1:39:50 PM

Schedule File Name : ...\\aw101i05.as3
 Injection Volume : 50.00
 Dilution Factor : 5151.00
 Vial ID : A07

Peak Information : All Peaks

Peak #	Peak Retention Time	Component Name	Concentration (UG/ML)	Peak Area	Peak Height
1	0.92		0.00	399	111
2	2.15		0.00	19270	4418
3	2.29		0.00	21114	5289
4	2.58		0.00	33946	9885
5	2.81		0.00	4745	1510
6	3.64		0.00	164540	51584
7	4.01		0.00	1786886	359617
8	5.18		0.00	2591329	402178
9	6.13		0.00	533	370
10	6.34		0.00	21580	2587
11	6.94	SULFATE	295.29	4939	1484
12	7.30	OXALATE	67.03	1052	345
13	10.86	CITRATE	175.18	805	215
14	14.77		0.00	66	36
15	19.44		0.00	112	11

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222S Sample Analysis Report

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222S Sample Analysis Report

Sample Name : S98T000783 DUP

Data File Name : ...\\OCN 2100_009.DXD
 Method File Name : ...\\msllan3.met
 System Operator : VL MAHSIE
 Date Time Collected : 10/21/98 2:03:08 PM

Schedule File Name : ...\\aw101i05.as3
 Injection Volume : 50.00
 Dilution Factor : 5151.00
 Vial ID : A08

Peak Information : All Peaks

Peak #	Peak Retention Time	Component	Name	Concentration (UG/ML)	Peak Area	Peak Height
1	0.93			0.00	792	150
2	2.16			0.00	18812	4202
3	2.30			0.00	20849	5057
4	2.60			0.00	33367	9599
5	2.82			0.00	4545	1511
6	3.65			0.00	149429	48494
7	4.02			0.00	1782430	358341
8	5.18			0.00	2574695	395195
9	6.15			0.00	1228	394
10	6.37			0.00	22370	2635
11	6.97	SULFATE		414.58	6935	1958
12	7.32	OXALATE		51.08	802	327
13	10.89	CITRATE		117.37	539	170
14	14.66			0.00	51	29
15	14.78			0.00	1143	100

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222S Sample Analysis Report

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222S Sample Analysis Report

Sample Name : S98T00:784

Data File Name : ...\\OC2 2100_010.DXD
 Method File Name : ...\\usllan3.met
 System Operator : VL MANSIE
 Date Time Collected : 10/21/98 2:26:25 PM

Schedule File Name : ...\\aw101i05.as3
 Injection Volume : 50.00
 Dilution Factor : 5151.00
 Vial ID : A09

Peak Information : All Peaks

Peak #	Retention Time	Component	Name	Concentration (UG/ML)	Peak Area	Peak Height
1	0.93			0.00	729	117
2	2.17			0.00	18635	4373
3	2.30			0.00	22409	5331
4	2.59			0.00	33301	9083
5	2.82			0.00	4526	1502
6	3.65			0.00	150306	48138
7	4.02			0.00	1756002	353888
8	5.19			0.00	2364962	375562
9	6.15			0.00	267	343
10	6.36			0.00	22749	2666
11	6.97	SULFATE		447.83	7492	2020
12	7.32	OXALATE		60.44	949	348
13	10.90	CITRATE		154.22	708	202
14	14.74			0.00	42	16
15	14.87			0.00	31	0

222S Sample Analysis Report

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222S Sample Analysis Report

Sample Name : S98T00:784 DUP

Data File Name : ...\\OCN 2100_011.DXD
 Method File Name : ...\\ms1lan3.met
 System Operator : VL MARSIE
 Date Time Collected : 10/21/98 2:49:43 PM

Schedule File Name : ...\\aw101i05.as3
 Injection Volume : 50.00
 Dilution Factor : 5151.00
 Vial ID : A10

Peak Information : All Peaks

Peak #	Peak Retention Time	Component	Name	Concentration (UG/ML)	Peak Area	Peak Height
1	0.93			0.00	694	139
2	2.17			0.00	19457	4491
3	2.30			0.00	20908	4990
4	2.60			0.00	32872	9620
5	2.82			0.00	4515	1428
6	3.65			0.00	149493	46915
7	4.02			0.00	1761306	352199
8	5.19			0.00	2369918	377046
9	6.17			0.00	527	350
10	6.38			0.00	22142	2672
11	6.99	SULFATE		297.31	4973	1673
12	7.34	OXALATE		90.58	1422	371
13	9.64	PHOSPHATE		13.23	72	43
14	10.92	CITRATE		110.62	508	163
15	14.59			0.00	2	6
16	14.72			0.00	355	43
17	14.90			0.00	237	71

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222S Sample Analysis Report

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222S Sample Analysis Report

Sample Name : S98T002796

Data File Name : ...\\OC\\2100_012.DXD
Method File Name : ...\\asilan3.met
System Operator : VL MASSIE
Date Time Collected : 10/21/98 3:12:59 PM

Schedule File Name : ...\\aw101i05.as3
Injection Volume : 50.00
Dilution Factor : 5151.00
Vial ID : A11

Peak Information : All Peaks

Peak #	Retention Time	Component Name	Concentration (UG/ML)	Peak Area	Peak Height
1	2.60		0.00	550	257
2	3.66		0.00	1289	171
3	6.40		0.00	102053	1223
4	7.00	SULFATE	108.44	1813	590
5	14.64		0.00	29	25
6	14.84		0.00	532	84

S98T002796

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222S Sample Analysis Report

Sample Name : S98T002796 DUP

Data File Name : ...\\OCT 2100_013.DXD
Method File Name : ...\\s11an3.met
System Operator : VL MAESIE
Date Time Collected : 11/21/98 3:36:14 PM

Schedule File Name : ...\\aw101105.as3
Injection Volume : 50.00
Dilution Factor : 5151.00
Vial ID : A12

Peak Information : All Peaks

Peak #	Retention Time	Component Name	Concentration (UG/ML)	Peak Area	Peak Height
1	2.32		0.00	204	16
2	2.60		0.00	1476	499
3	3.66		0.00	101	483
4	6.37		0.00	89698	1636
5	6.97	SULFATE	182.90	3059	1012
6	14.63		0.00	34	25
7	14.78		0.00	1684	143

S98T002796 DUP

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09/28/98 15:17
4-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 26379

Analyst: JK Scto **Instrument:** ICP01 2 M 10.6.98 **Book#** 15 B98Q
Method: LA-505-151/161 Rev/Mod C-3 107 # 72/609-Turnip/len 72/609-Turnip/len
3/0.6.98 100E 1/25/99 809613-7h/ven 72/609-Tin
Worklist Comment: ICP AW-101 (DIRECT) 810409-4H/ven

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	S98T002796 0 D		@ICP-D05 LIQUID		98000261	AW-101 LAW
	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 , SN-D-01 , SR-D-01 , TA-D-01 , TH-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , W-D-01 , Y-D-01 , ZN-D-01 , ZR-D-01					
7 DUP	S98T002796 0 D		@ICP-D05 LIQUID			
8 ICSA			@ICP-QC	QC		
9 ICSAB			@ICP-QC	QC		
10 CCV			@ICP-QC	QC		
11 CCB			@ICP-QC	QC		

Final page for worklist # 26379

JK Scto 10-07-98
Analyst Signature **Date**
5987002796 3-3 df 2
5987002796 3-3 2
Data Entry Comments:

Analyst Signature **Date**

Validated by:
Sa M. Paring
10/7/98

HNF-1652 REV. 0

Analysis Report

Summary

Wed 10-07-98 10:12:06 AM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV - SS75	981007A	ICP20	10/07/98	09:11	DKS	Q	CONC
2	ICV - W	981007A	ICP20	10/07/98	09:14	DKS	Q	CONC
3	ICV - $3n, Tn, Th = 7$	981007A	ICP20	10/07/98	09:17	DKS	Q	CONC
4	ICB	981007A	ICP20	10/07/98	09:19	DKS	Q	CONC
5	LLS	981007A	ICP20	10/07/98	09:22	DKS	Q	CONC
6	LLS	981007A	ICP20	10/07/98	09:31	DKS	Q	CONC
7	ICSA	981007A	ICP20	10/07/98	09:34	DKS	Q	CONC
8	ICSAB	981007A	ICP20	10/07/98	09:36	DKS	Q	CONC
9	S98T002796	981007A	ICP20	10/07/98	09:38	DKS	S	CONC
0	S98T002796_D	981007A	ICP20	10/07/98	09:40	DKS	S	CONC
1	ICSA	981007A	ICP20	10/07/98	09:42	DKS	Q	CONC
2	ICSAB	981007A	ICP20	10/07/98	09:44	DKS	Q	CONC
3	CCV	981007A	ICP20	10/07/98	09:48	DKS	Q	CONC
4	CCV	981007A	ICP20	10/07/98	09:51	DKS	Q	CONC
5	CCV	981007A	ICP20	10/07/98	10:01	DKS	Q	CONC
6	CCB	981007A	ICP20	10/07/98	10:03	DKS	Q	CONC
7	CCB	981007A	ICP20	10/07/98	10:10	DKS	Q	CONC

JK
 10-07-98
 Work/ist # 26379

GW-101
 598T002796

10-7-98

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 392 TO 397.

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Analysis Report

Averages

Wed 10-07-98 10:12:06 AM

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Sample Name	Ag	Al	As	B	Ba	Be
1 ICV	5.0470	4.9189	5.1591	4.9260	4.9555	5.0665
2 ICV	.00205	.09103	-.00117	.29721	.00051	-.00398
3 ICV	-.00106	8.4833	.01317	28.889	.04671	-.00013
4 ICB	-.00013	.00094	-.00959	.00750	.00002	.00000
5 LLS	.02236	.10857	.19769	.10697	.09896	.01080
6 LLS	-.00060	.01795	-.00024	.01140	.00017	-.00011
7 ICSA	-.00230	242.42	.19745	-.00414	.00034	.00022
8 ICASAB	.95335	241.40	.24042	-.00838	.45702	.47762
9 S98T002796	.00136	.08127	.00002	1.9222	.00070	-.00045
10 S98T002796_D	.00027	.06185	.02902	1.9447	.00040	-.00026
11 ICSA	-.00166	242.55	.12238	-.00701	.00037	.00022
12 ICASAB	.94735	241.49	.19574	-.00783	.45867	.48004
13 CCV	5.0124	4.8919	5.1825	4.9172	4.9894	5.1069
14 CCV	.00001	.08213	.00120	.29250	.00040	-.00380
15 CCV	.00080	.04937	-.02436	.02528	.00030	.00004
16 CCB	-.00039	-.00312	-.00324	.03979	.00003	.00000
17 CCB	.00026	.00604	-.00813	.00839	.00002	.00018

Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1 ICV	4.9159	5.0798	5.1004	5.0311	5.0166	4.9952
2 ICV	.01799	.16929	.00093	.00588	.00271	-.00046
3 ICV	.00994	.14486	-.00058	-.00362	.00394	.00071
4 ICB	.02092	-.00213	-.00131	-.00365	-.00115	-.00195
5 LLS	.23493	.23105	.00991	.20323	.04241	.02007
6 LLS	-.01552	.02529	-.00035	-.00017	.00050	-.00150
7 ICSA	.03665	256.56	.00565	-.00807	-.00044	-.00367
8 ICASAB	.02637	258.09	.94889	.00113	.46516	.47072
9 S98T002796	-.00463	.74802	.00234	.01770	-.00274	-.00599
10 S98T002796_D	.02356	.72413	-.00115	-.00404	-.00559	-.00701
11 ICSA	.00214	254.85	.00578	.00611	.00196	-.00328
12 ICASAB	.02868	255.61	.94626	-.00621	.46238	.46515
13 CCV	4.9333	5.0465	5.0974	5.0716	5.0055	4.9802
14 CCV	-.00115	.16159	-.00004	-.00522	.00189	-.00075
15 CCV	.03603	.06077	-.00014	.00064	.00539	-.00007
16 CCB	.02184	-.00042	-.00036	-.00145	-.00088	-.00210
17 CCB	.02158	-.00153	.00046	.00061	.00052	-.00094

Sample Name	Cu	Eu	Fe	K	La	Li
1 ICV	4.7554	.0058	5.1374	5.1324	4.9915	5.0019
2 ICV	.00147	.0070	.00085	.28026	.00183	.00029
3 ICV	.00272	-.0000	.21124	.18561	.00010	.00417
4 ICB	-.00049	-.0003	-.00024	.00979	-.00067	-.00038
5 LLS	.01903	.0004	.10898	Q.68164	.10191	.02105
6 LLS	-.00003	.0006	.00044	.03679	-.00037	.00029
7 ICSA	.00284	-.0126	92.818	.15528	-.00442	.00252
8 ICASAB	.45906	-.0131	92.717	.25217	-.00415	.95672
9 S98T002796	-.00183	.0032	.00377	.31720	.00198	.00271
10 S98T002796_D	-.00126	.0015	.00196	.18946	-.00126	.00213
11 ICSA	.00256	-.0071	92.626	.16813	-.00385	.00175

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Analysis Report Averages Wed 10-07-98 10:12:06 AM page 3

#	Sample Name	Cu	Eu	Fe	K	La	Li
12	ICSAB	.46370	-.0073	92.538	.19409	-.00477	.97158
13	CCV	4.8009	.0055	5.1068	4.8748	5.0351	5.0179
14	CCV	.00101	.0064	-.00009	.03459	.00135	.00029
15	CCV	.00033	.0003	.00123	.16212	.00029	.00000
16	CCB	.00005	-.0001	.00057	-.00003	-.00050	-.00019
17	CCB	.00037	-.0005	.00057	.02946	.00029	-.00087

10-7-98

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.0900	4.9628	5.0271	5.1455	4.8746	5.0004
2	ICV	.02493	.00095	.00232	.23385	.00313	-.00552
3	ICV	.04687	.00268	.00131	22.271	-.00223	-.00322
4	ICB	-.00173	-.00002	.00000	-.00730	-.00261	-.00576
5	LLS	.21189	.02046	.10389	.19997	.20266	.03560
6	LLS	.00202	.00015	.00116	.01037	.00006	-.00810
7	ICSA	247.13	-.00446	-.01528	188.41	-.00282	-.01108
8	ICSAB	245.34	.44484	-.01684	186.65	-.00148	.93422
9	S98T002796	.12986	.00924	-.00027	5.4082	-.00967	.00373
10	S98T002796_D	.11525	.00864	-.00495	5.5968	-.01183	.00018
11	ICSA	246.21	-.00464	-.01546	189.44	-.00118	-.01692
12	ICSAB	244.95	.44242	-.01584	188.42	-.00097	.91015
13	CCV	5.0288	4.9393	5.0066	5.0895	4.9185	5.0057
14	CCV	.01261	.00097	.00248	.22649	.00306	-.00315
15	CCV	.01058	-.00020	-.00099	.00271	.00001	-.00612
16	CCB	.00045	-.00004	.00000	.00027	.00196	.00340
17	CCB	.00632	-.00008	.00181	-.00385	.00034	-.00535

10-7-98

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	4.9231	4.9969	4.9132	5.0158	4.7685	4.8922
2	ICV	.02481	-.00438	.01673	-.00462	.01276	2.7277
3	ICV	.10472	-.00737	-.00296	-.00189	.08912	258.41
4	ICB	.00577	-.01096	.02609	-.00566	.01368	Q.10382
5	LLS	.40644	.20470	.21550	.09596	.20647	Q.17375
6	LLS	.01109	-.00531	-.00123	-.00255	.01711	.77017
7	ICSA	-.08287	.01396	-.02748	.00449	-.04769	.00728
8	ICSAB	-.07467	.99723	-.01486	-.00989	-.03351	.00613
9	S98T002796	.02572	-.05878	.40357	-.00625	.01883	4.8570
10	S98T002796_D	.02028	-.04571	.38754	-.01384	-.00739	4.8575
11	ICSA	-.08233	.00995	-.02325	.00204	-.02608	.00222
12	ICSAB	-.07007	1.0003	-.03452	-.00542	-.01759	.00201
13	CCV	4.9616	4.9822	4.8704	5.0214	4.7855	4.8616
14	CCV	.01527	-.01254	.00124	-.00592	.01406	2.7355
15	CCV	.01500	-.00873	.00814	-.00692	.01017	5.7523
16	CCB	.01946	-.01169	.02171	-.00616	.01264	Q1.9989
17	CCB	.00698	-.00567	.00927	-.00808	.00644	.04539

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Analysis Report

Averages

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#	Sample Name	Sm	Sn	Sr	Ta	Th	Ti
1	ICV	4.8848	.0373	5.0070	.0617	.00938	4.9679
2	ICV	.00647	5.178	.00025	5.345	4.8613	.00198
3	ICV	-.00609	Q-.1190	.00422	Q.0256	Q-.00071	.12574
4	ICB	-.00273	-.0001	-.00008	-.0010	-.00138	.00000
5	LLS	.19865	.0043	.02016	.0073	.00075	.02062
6	LLS	.00523	.0975	.00012	.0916	.09859	.00083
7	ICSA	-.01535	.0200	.00179	-.0185	-.02565	.00126
8	ICSAB	-.01604	.0281	.00174	-.0175	-.02199	.00197
9	S98T002796	.01992	-.0186	.00143	.0120	.00397	-.00181
10	S98T002796_D	.00199	-.0217	.00118	.0069	.00447	-.00226
11	ICSA	-.02269	.0177	.00185	-.0209	-.02160	.00150
12	ICSAB	-.01801	.0316	.00183	-.0092	-.01919	.00175
13	CCV	4.9357	.0406	5.0508	.0530	.01277	5.0072
14	CCV	.00100	5.127	.00016	5.278	4.8366	.00166
15	CCV	.00033	Q-.0163	.00012	Q.0121	Q.00496	.00093
16	CCB	.00074	-.0063	-.00004	.0038	-.00274	.00000
17	CCB	-.00487	.0008	-.00008	.0061	.00265	.00024

#	Sample Name	Tl	U	V	W	Y	Zn
1	ICV	4.7827	9.6472	4.9878	.0572	.00510	4.9876
2	ICV	.01479	.02074	.00241	Q.8709	5.0005	.00055
3	ICV	.00564	-.02221	.00079	5.042	Q.00032	.00608
4	ICB	-.01499	-.01164	-.00033	.0037	-.00037	.00015
5	LLS	.39641	.47543	.10051	.0117	-.00007	.02104
6	LLS	-.00316	.01158	.00099	.1077	.09623	.00032
7	ICSA	-.00143	-.03194	.00202	.1220	.00596	-.00368
8	ICSAB	-.01933	-.04983	.46542	.1405	.00603	.95085
9	S98T002796	.00477	.06748	.00453	.0273	.00035	.07750
10	S98T002796_D	-.00953	.00248	.00033	.0251	-.00051	.07583
11	ICSA	-.01479	-.04319	.00072	-.1287	.00551	-.00318
12	ICSAB	-.00844	-.05237	.46409	.0361	.00571	.94461
13	CCV	4.8732	9.7384	4.9925	.0589	.00487	4.9340
14	CCV	.00328	-.00096	.00125	Q.8587	5.0011	-.00023
15	CCV	-.01485	-.00238	.00071	5.142	Q-.00019	.00037
16	CCB	.00045	-.00468	-.00034	.0370	-.00025	-.00047
17	CCB	-.00194	-.02299	-.00104	.0036	-.00043	.00020

#	Sample Name	Zr
1	ICV	4.9535
2	ICV	.02362
3	ICV	.15705
4	ICB	-.00020
5	LLS	.02008
6	LLS	.00108
7	ICSA	-.00092
8	ICSAB	-.00070
9	S98T002796	.00287
10	S98T002796_D	-.00037
11	ICSA	-.00152

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#	Sample Name	Zr
12	ICSAB	-.00151
13	CCV	4.9700
14	CCV	.02499
15	CCV	.00089
16	CCB	-.00054 <i>DK 10-7-98</i>
17	CCB	-.00118

DK L.D.
10-07-98

10/08/98 10:16
A-0004-1

File #: 981016.TXT

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LABCORE Data Entry Template for Worklist# 26501

Analyst: JX 5610 Instrument: ICPOT-1 10-11-98 Book# 758480Method: LA-505-151/161 Rev/Mod C-3
10-11-98 1/15/99 etc

Worklist Comment: ICP AW-101 (SOLID ACID DIGEST)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 ICV			@ICP-QC	QC		
2 ICB			@ICP-QC	QC		
3 LLS			@ICP-QC	QC		
4 ICSA			@ICP-QC	QC		
5 ICSAB			@ICP-QC	QC		
6 PREPSTDITJA			@ICP-A01	SOLID		
7 PREPBKLTJA			@ICP-A01	SOLID		
8 SERDIL	S98T002755 0 A		@ICP-A01	SOLID		
9 SAMPLE	S98T002755 0 A		@ICP-A01	SOLID	98000261	AW-101 LAW
Analytes Requested: AG-A-01, AL-A-01, AS-A-01, B-A-01, BA-A-01, BE-A-01, BI-A-01, CA-A-01, CD-A-01, CE-A-01, CO-A-01, CR-A-01, CU-A-01, FE-A-01, K-A-01, LA-A-01, LI-A-01, MG-A-01, MN-A-01, MO-A-01, NA-A-01, ND-A-01, NI-A-01, P-A-01, PB-A-01, S-A-01, SB-A-01, SE-A-01, SI-A-01, SM-A-01, SR-A-01, TI-A-01, TL-A-01, U-A-01, V-A-01, ZN-A-01, ZR-A-01						
0 SPK-PREDIG	S98T002755 0 A		@ICP-A01	SOLID		
1 SAMPLE	S98T002756 0 A		@ICP-A01	SOLID	98000261	AW-101 LAW
Analytes Requested: AG-A-01, AL-A-01, AS-A-01, B-A-01, BA-A-01, BE-A-01, BI-A-01, CA-A-01, CD-A-01, CE-A-01, CO-A-01, CR-A-01, CU-A-01, FE-A-01, K-A-01, LA-A-01, LI-A-01, MG-A-01, MN-A-01, MO-A-01, NA-A-01, ND-A-01, NI-A-01, P-A-01, PB-A-01, S-A-01, SB-A-01, SE-A-01, SI-A-01, SM-A-01, SR-A-01, TI-A-01, TL-A-01, U-A-01, V-A-01, ZN-A-01, ZR-A-01						
2 SAMPLE	S98T002757 0 A		@ICP-A01	SOLID	98000261	AW-101 LAW

Data Entry Comments:

Validated by:
Saul M. Wang
10/12/98

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

10/08/98 10:16
A-0004-1

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LABCORE Data Entry Template for Worklist# 26501

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

Final page for worklist # 26501

Analyst Signature	Date
<i>JK Jdt</i>	10-12-98
Prep 516 JTC	Direct 1-11 1
Prep 616 JTC	Direct 1-11 1
5987001755-X	3-6-1-8 15
5987001755	3-6 3
5987001755-S	3-6 3
5987001755-X	3-6-1-9 30
5987001755-QX	3-6-1-9 30
5987001756	3-6 1-11 3
5987001757	3-6 3

Analyst Signature Date

Data Entry Comments:

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

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Analysis Report

Summary

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#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	981012A	ICP2	10/12/98	09:47	DKS	Q	CONC
2	ICB	981012A	ICP2	10/12/98	09:51	DKS	Q	CONC
3	LLS	981012A	ICP2	10/12/98	09:54	DKS	Q	CONC
4	ICSA	981012A	ICP2	10/12/98	09:57	DKS	Q	CONC
5	ICSAB	981012A	ICP2	10/12/98	10:00	DKS	Q	CONC
6	PREPSTDTJA	981012A	ICP2	10/12/98	10:03	DKS	Q	CONC
7	PREPBLKTJA	981012A	ICP2	10/12/98	10:06	DKS	Q	CONC
8	S98T002755_L	981012A	ICP2	10/12/98	10:10	DKS	S	CONC
9	S98T002755	981012A	ICP2	10/12/98	10:13	DKS	S	CONC
10	S98T002755_S	981012A	ICP2	10/12/98	10:17	DKS	S	CONC
11	S98T002755_X	981012A	ICP2	10/12/98	10:21	DKS	S	CONC
12	S98T002755_AX	981012A	ICP2	10/12/98	10:26	DKS	S	CONC
13	CCV	981012A	ICP2	10/12/98	10:37	DKS	Q	CONC
14	CCB	981012A	ICP2	10/12/98	10:41	DKS	Q	CONC
15	S98T002756	981012A	ICP2	10/12/98	10:44	DKS	S	CONC
16	S98T002757	981012A	ICP2	10/12/98	10:48	DKS	S	CONC
17	ICSA	981012A	ICP2	10/12/98	10:51	DKS	Q	CONC
18	ICSAB	981012A	ICP2	10/12/98	12:11	DKS	Q	CONC
19	CCV_1	981012A	ICP2	10/12/98	12:14	DKS	Q	CONC
20	CCB_1	981012A	ICP2	10/12/98	12:17	DKS	Q	CONC

AK

10-12-98

Work list # 26501

GW-101

5987002755

5987002756

5987002757

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 400 TO 405.

$$C_r = 2.647 \frac{\mu\text{g}}{\text{ml}} \times \frac{1}{5.148 \frac{\text{g}}{\text{L}} \times \frac{1\text{L}}{1000\text{ml}}} = 5.14 \pm 2 \frac{\mu\text{g}}{\text{g}}$$

Predig SPK:

$$C_r = \frac{7.2759 - 2.647}{5} \times 100 = 92.6\%$$

Post Spike:

$$R_L = \frac{\left(\frac{390.50}{30}\right) - \left(\frac{93.337}{30}\right)}{10} \times 100 = 99.05\%$$

$$M_a = \frac{\left(\frac{1324.5}{30}\right) - \left(\frac{1032.7}{30}\right)}{10} \times 100 = 97.26\%$$

$$K = \frac{\left(\frac{453.29}{30}\right) - \left(\frac{153.28}{30}\right)}{10} \times 100 = 100.0\%$$

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analysis Report

Averages

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.9606	4.9688	5.1079	4.9390	5.0211	5.0873
2	ICB	.00199	.00398	.01443	.00478	.00009	.00000
3	LLS	.02372	.11082	.20653	.10579	.10108	.01074
4	ICSA	.00411	243.35	.05676	-.00613	.00039	.00019
5	ICSAB	.95343	245.17	.02478	-.00421	.46746	.48223
6	PREPSTD TJJA	.33808	4.8781	4.8045	5.2833	4.9428	5.0070
7	PREPBLKTJA	.00161	Q.11551	.00062	Q.48470	.00083	-.00004
8	S98T002755_L	.21433	91.733	-.03275	.80597	.04133	.00808
9	S98T002755_	.17623	86.547	-.06847	.71539	.03647	.00782
10	S98T002755_S	1.1329	89.485	4.8891	5.4783	4.8629	5.0442
11	S98T002755_X	.23683	93.337	.28947	.90642	.04656	.00664
12	S98T002755_AX	270.76	390.50	308.88	309.14	311.96	306.34
13	CCV	5.0568	5.0529	5.2494	5.0135	5.1248	5.1685
14	CCB	.00425	-.00166	-.00463	.00526	.00010	-.00004
15	S98T002756	.16709	82.695	-.09818	.68223	.03355	.00770
16	S98T002757	.19489	83.751	-.10582	.54629	.04098	.00804
17	ICSA	.00591	249.32	.05151	-.00224	.00045	.00019
18	ICSAB	.95618	244.02	.04522	-.01062	.46615	.48662
19	CCV_1	5.0742	4.9758	5.2438	4.9612	5.0147	5.1544
20	CCB_1	.00203	.00063	.00756	.00001	.00015	-.00014

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	4.9968	4.9357	5.0342	5.1222	4.9414	4.8982
2	ICB	.00331	.00063	.00090	.00770	.00129	.00083
3	LLS	.18062	.22936	.01046	.21102	.04272	.02058
4	ICSA	-.02214	253.60	.00566	.00735	-.00014	-.00079
5	ICSAB	-.01304	252.74	.94597	.00259	.45868	.46540
6	PREPSTD TJJA	4.6771	4.8948	4.7128	5.0531	4.6984	4.7651
7	PREPBLKTJA	-.00571	Q.13556	-.00035	.00795	-.00081	.00250
8	S98T002755_L	-.26239	1.8133	.07486	.13108	.00122	2.8169
9	S98T002755_	.01580	1.6806	.04874	.02499	.00422	2.6470
10	S98T002755_S	4.9001	6.2987	4.9003	5.0343	4.7742	7.2759
11	S98T002755_X	-.02898	1.9561	.08582	.33809	.04018	2.8687
12	S98T002755_AX	309.98	303.50	303.12	312.54	304.89	306.02
13	CCV	5.0264	5.0152	5.1212	5.1983	5.0339	4.9925
14	CCB	-.00960	-.00268	.00036	.00166	-.00103	-.00073
15	S98T002756	-.02478	1.5284	.04675	.03478	.00958	2.5082
16	S98T002757	.09521	1.7770	.05490	.03172	.00671	2.9618
17	ICSA	-.03441	257.14	.00702	.00824	-.00002	-.00074
18	ICSAB	-.02139	255.17	.95965	.00977	.46852	.47376
19	CCV_1	5.1080	5.1063	5.1809	5.1205	5.0848	5.0412
20	CCB_1	-.02226	.00399	.00111	.00546	-.00101	.00146

#	Sample Name	Cu	Bu	Fe	K	La	Li
1	ICV	4.8279	.00562	4.8801	5.2850	5.0757	5.1854
2	ICB	.00036	-.00031	.00018	.16725	.00104	-.00050
3	LLS	.01749	-.00023	.10304	Q.66826	.10494	.02093
4	ICSA	.00226	.00396	92.993	.42593	-.00323	.00252
5	ICSAB	.47318	.00948	92.784	.23606	-.00420	1.0081

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Analysis Report

Averages

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#	Sample Name	Cu	Eu	Fe	K	La	Li
6	PREPSTD TJ A	4.6444	.00544	4.6451	5.0039	5.0245	5.0787
7	PREPBLKT J A	.00282	-.00157	.02241	.22830	.00090	-.00191
8	S98T002755_L	.00984	.00191	1.8922	141.84	.04253	-.00041
9	S98T002755_	.00983	-.00055	1.7734	132.74	.03334	-.00038
10	S98T002755_S	4.6650	.00554	6.2782	133.56	5.0089	4.9341
11	S98T002755_X	.01022	.00258	1.9126	153.28	.07531	-.00042
12	S98T002755_AX	293.49	.35921	292.81	453.29	311.29	311.37
13	CCV	4.8819	.00616	4.9509	5.2763	5.1566	5.2157
14	CCB	-.00072	-.00006	-.00022	-.02890	-.00015	-.00040
15	S98T002756	.01277	-.00105	1.6651	121.57	.03117	-.00126
16	S98T002757	.00731	-.00254	2.0265	141.44	.03885	-.00195
17	ICSA	.00277	.00561	94.523	.26913	-.00302	.00191
18	ICSAB	.46844	.00373	93.613	.19946	-.00375	.97255
19	CCV_1	4.7830	.00697	4.9483	5.1607	5.0789	4.9254
20	CCB_1	-.00036	.00136	-.00072	.20704	.00106	.00090

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.1293	4.8924	4.9615	5.2911	4.9793	4.9300
2	ICB	.00793	-.00009	.00117	.00736	-.00058	-.00084
3	LLS	.21169	.02027	.10203	.21013	.20436	.03714
4	ICSA	248.91	-.00472	-.01860	190.79	.00034	-.01070
5	ICSAB	249.33	.44411	-.01372	194.34	-.00057	.91146
6	PREPSTD TJ A	4.7411	4.6949	4.7775	6.1850	4.9444	4.7986
7	PREPBLKT J A	.02100	.00002	.00232	Q.75852	.00005	-.00229
8	S98T002755_L	.56392	1.7854	.22252	999.43	.01007	.28148
9	S98T002755_	.41739	1.6823	.18213	939.10	.02448	.30303
10	S98T002755_S	5.1762	6.2610	5.1665	910.31	4.8958	5.1819
11	S98T002755_X	.87894	1.8099	.26823	1032.7	.02436	.22845
12	S98T002755_AX	315.66	303.99	305.83	1324.5	303.55	302.91
13	CCV	5.1592	4.9824	5.0616	5.2737	5.0507	5.0296
14	CCB	.00067	-.00009	.00203	.00070	-.00154	-.00316
15	S98T002756	.39012	1.6053	.18286	908.07	.02782	.29245
16	S98T002757	.47500	1.9308	.17871	952.81	.02556	.34444
17	ICSA	253.41	-.00480	-.01708	195.70	.00209	-.00528
18	ICSAB	248.64	.44730	-.01612	188.95	-.00080	.92821
19	CCV_1	5.0818	5.0113	5.1061	5.0471	4.9432	5.0708
20	CCB_1	.00654	.00045	.00052	-.01582	.00222	-.00500

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.0212	4.8898	4.8328	4.9677	4.7315	4.8858
2	ICB	.01446	.00955	.01209	.00162	-.00111	.00045
3	LLS	.41127	.21558	.20590	.09340	.19341	Q.14167
4	ICSA	.07170	.03559	-.02257	-.00382	.07329	.00061
5	ICSAB	.06882	.98273	-.02930	-.00881	.04939	-.00055
6	PREPSTD TJ A	4.7854	4.4812	4.5251	4.6082	4.5440	6.0070
7	PREPBLKT J A	.05150	.00841	Q.06827	.00153	.01114	Q1.3735
8	S98T002755_L	6.0832	.33576	8.6580	.02391	.02002	2.0359
9	S98T002755_	5.5377	.35631	8.0535	-.00366	.12901	1.8944
10	S98T002755_S	11.222	4.9309	12.324	4.9805	4.8152	6.9602
11	S98T002755_X	6.4329	.44575	8.7744	-.05052	.46769	2.1471

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#	Sample Name	P	Pb	S	Sb	Se	Si
12	S98T002755_AX	325.45	304.88	310.20	308.83	298.42	306.98
13	CCV	5.2640	4.9823	4.9874	5.0690	4.8108	4.9545
14	CCB	.02207	-.00693	.00978	.00600	.01108	.00016
15	S98T002756	5.8024	.34637	7.6248	-.02425	.09149	1.8424
16	S98T002757	6.5242	.30776	9.0604	.01690	.09101	1.8195
17	ICSA	.08293	.01690	-.02972	-.00490	.05021	-.00185
18	ICSAB	.11134	1.0069	-.02646	-.00711	.08075	-.00240
19	CCV_1	5.4252	5.0254	5.0048	5.0958	4.8602	4.9703
20	CCB_1	.03774	.00243	.00903	-.00024	.03008	.00360

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.9880	5.0790	.20326	4.9841	4.8031	9.9077
2	ICB	-.00258	.00000	.00918	.00073	-.00628	-.01029
3	LLS	.20303	.02055	.00956	.02007	.41674	.47766
4	ICSA	-.01302	.00208	.00108	.00115	-.00790	-.01908
5	ICSAB	-.01836	.00225	-.00733	.00087	-.01175	-.00251
6	PREPSTDITJA	4.9595	5.0098	.18617	4.8465	4.5840	9.7133
7	PREPBLKTJA	-.02063	.00000	.01189	.00074	-.01142	-.07265
8	S98T002755_L	-.01811	.03096	.27164	.01100	.19621	7.7060
9	S98T002755	-.02620	.02757	.15734	.01153	.07189	7.1684
10	S98T002755_S	4.8640	4.9665	.34534	4.9826	4.6799	16.187
11	S98T002755_X	.02285	.03226	.40162	.01146	.08453	7.8883
12	S98T002755_AX	303.91	307.31	12.352	307.98	302.91	604.36
13	CCV	5.0652	5.1499	.19689	5.0610	4.9494	10.045
14	CCB	-.00145	.00000	.00259	-.00022	-.01251	-.00149
15	S98T002756	-.03340	.02154	.14556	.01031	.04440	6.7059
16	S98T002757	-.04205	.02629	.17963	.01173	-.03472	8.2575
17	ICSA	-.01702	.00227	.00441	.00163	-.02185	-.02556
18	ICSAB	-.01361	.00212	.00555	.00072	-.00774	-.04350
19	CCV_1	4.9693	5.0753	.20567	5.0385	4.9158	9.8146
20	CCB_1	.01433	.00030	.00363	.00024	-.00777	.05032

#	Sample Name	V	Y	Zn	Zr
1	ICV	4.9531	.00691	4.6247	4.9596
2	ICB	-.00073	-.00015	.00010	-.00133
3	LLS	.10007	.00003	.01939	.01922
4	ICSA	.00162	.00753	-.00367	-.00258
5	ICSAB	.46575	.00744	.91599	-.00206
6	PREPSTDITJA	4.8733	.00621	4.2529	4.8218
7	PREPBLKTJA	-.00428	-.00130	.00516	-.00080
8	S98T002755_L	.00651	.00377	.04951	.50898
9	S98T002755	-.00253	.00142	.04840	.48719
10	S98T002755_S	4.8807	.00887	4.5608	5.4324
11	S98T002755_X	.00576	.00605	.05404	.50899
12	S98T002755_AX	303.94	.46486	284.30	306.78
13	CCV	5.0398	.00732	4.7162	5.0404
14	CCB	-.00073	-.00015	.00030	-.00051
15	S98T002756	-.00273	.00091	.04299	.45472
16	S98T002757	-.00625	.00119	.04383	.54914
17	ICSA	.00134	.00753	-.00399	-.00264

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Analysis Report

Averages

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#	Sample Name	V	Y	Zn	Zr
18	ICSAB	.46998	.00777	.92646	-.00240
19	CCV_1	5.0485	.00781	4.7863	5.0190
20	CCB_1	.00336	.00091	-.00021	.00198

*DK**10-12-98*

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LABCORE Data Entry Template for Worklist# 26584

Analyst: JK Sejo Instrument: ICP01 2 10-18-98Book# 758489Lot No. 711409 TanakaMethod: LA-505-151/161 Rev/Mod C-3808413 No. 100810409 9th Ave711409 Tanaka711409 Tin

Worklist Comment: ICP AW-101 (LIQUID ACID DIGEST)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 ICV <u>ICV 1</u> <u>10-18-98</u>			@ICP-QC	QC		
2 ICB			@ICP-QC	QC		
3 LLS <u>LLS 1</u> <u>10-18-98</u>			@ICP-QC	QC		
4 ICSA			@ICP-QC	QC		
5 ICSAB			@ICP-QC	QC		
6 PREPSTDITJA			@ICP-B05	LIQUID		
7 PREPBLKTJA			@ICP-B05	LIQUID		
8 SERDIL	S98T002788	0 B	@ICP-B05	LIQUID		
9 SAMPLE	S98T002788	0 B	@ICP-B05	LIQUID	98000261	AW-101 LAW
Analytes Requested: AG-B-01 , AL-B-01 , AS-B-01 , B-B-01 , BA-B-01 , BE-B-01 , BI-B-01 , CA-B-01 , CD-B-01 , CE-B-01 , CO-B-01 , CR-B-01 , CU-B-01 , FE-B-01 , K-B-01 , LA-B-01 , LL-B-01 , MG-B-01 , MN-B-01 , MO-B-01 , NA-B-01 , ND-B-01 , NI-B-01 , P-B-01 , PB-B-01 , S-B-01 , SB-B-01 , SE-B-01 , SI-B-01 , SM-B-01 , SN-B-01 , SR-B-01 , TA-B-01 , TH-B-01 , TI-B-01 , TL-B-01 , U-B-01 , V-B-01 , W-B-01 , Y-B-01 , ZN-B-01 , ZR-B-01						
0 DUP	S98T002788	0 B	@ICP-B05	LIQUID		
1 SPK-PREDIG <u>Sample X</u> <u>Spk ex (10 ppm)</u> <u>10-18-98</u>	S98T002788	0 B	@ICP-B05	LIQUID		
2 CCV			@ICP-QC	QC		
3 CCB			@ICP-QC	QC		
4 SAMPLE	S98T002789	0 B	@ICP-B05	LIQUID	98000261	AW-101 LAW
Analytes Requested: AG-B-01 , AL-B-01 , AS-B-01 , B-B-01 , BA-B-01 , BE-B-01 , BI-B-01 , CA-B-01 , CD-B-01 , CE-B-01 , CO-B-01 ,						

Data Entry Comments:

Validated by:

Saul M. Pang
10/26/98

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

10/15/98 07:06
A-0004-1

HNF-1652 REV. C

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LABCORE Data Entry Template for Worklist# 26584

S Type	Sample#	R A	Test	Matrix	Group#	Project
			CR-B-01	CU-B-01	FE-B-01	K-B-01 , LA-B-01 , LI-B-01 ,
			MG-B-01	MN-B-01	MO-B-01	NA-B-01 , ND-B-01 , NI-B-01 ,
			P-B-01	PB-B-01	S-B-01	SE-B-01 , SE-B-01 , SI-B-01 ,
			SM-B-01	SN-B-01	SR-B-01	TA-B-01 , TH-B-01 , TI-B-01 ,
			TL-B-01	U-B-01	V-B-01	W-B-01 , Y-B-01 , ZN-B-01 ,
			ZR-B-01			
15 DUP	S98T002789	0 B	①ICP-B05 LIQUID			
16 SAMPLE	S98T002790	0 B	①ICP-B05 LIQUID			
			98000261 AW-101 LAW			
	Analytes Requested: AG-B-01 , AL-B-01 , AS-B-01 , B-B-01 , BA-B-01 ,					
	BE-B-01 , BI-B-01 , CA-B-01 , CD-B-01 , CE-B-01 , CO-B-01 ,					
	CR-B-01 , CU-B-01 , FE-B-01 , K-B-01 , LA-B-01 , LI-B-01 ,					
	MG-B-01 , MN-B-01 , MO-B-01 , NA-B-01 , ND-B-01 , NI-B-01 ,					
	P-B-01 , PB-B-01 , S-B-01 , SE-B-01 , SE-B-01 , SI-B-01 ,					
	SM-B-01 , SN-B-01 , SR-B-01 , TA-B-01 , TH-B-01 , TI-B-01 ,					
	TL-B-01 , U-B-01 , V-B-01 , W-B-01 , Y-B-01 , ZN-B-01 ,					
	ZR-B-01					
17 DUP	S98T002790	0 B	①ICP-B05 LIQUID			
18 ICSA			①ICP-QC QC			
19 ICSAB			①ICP-QC QC			
20 CCV			①ICP-QC QC			
CCV1	JK 10-18-98					
21 CCB			①ICP-QC QC			

Final page for worklist # 26584

JK 10-18-98

Analyst Signature	Date
Propst/ITA	10-18-98
Propst/ITA	10-18-98
S987002788-L	10-18-98
S987002788	10-18-98
S987002788-D	10-18-98
S987002788-S	10-18-98
S987002788-X	10-18-98
S987002788-QX	10-18-98

Analyst Signature	Date
S987002789	10-18-98
S987002789-D	10-18-98
S987002790	10-18-98
S987002790-D	10-18-98

Data Entry Comments:

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

$$C_2 = 1.2432 \frac{\mu\text{g}}{\text{ml}} \times 100 = 1.24 \times 10^2 \frac{\mu\text{g}}{\text{ml}}$$

Pre-dig Spk:

$$C_2 = \frac{6.4272 - 1.2432}{5} \times 100 = 103.7\%$$

Post Spk:

$$\text{Al} = \frac{\left(\frac{1315.6}{100}\right) - \left(\frac{365.47}{100}\right)}{10} \times 100 = 95.0\%$$

$$\text{K} = \frac{\left(\frac{1339.6}{100}\right) - \left(\frac{356.17}{100}\right)}{10} \times 100 = 98.34\%$$

$$\text{Na} = \frac{\left(\frac{3770.5}{100}\right) - \left(\frac{2850.5}{100}\right)}{10} \times 100 = 92.0\%$$

$$\text{Sn} = \frac{\left(\frac{50.03}{10}\right) - \left(\frac{1.453}{10}\right)}{5} \times 100 = 97.15\%$$

$$\text{Ta} = \frac{\left(\frac{48.66}{10}\right) - 0}{5} \times 100 = 97.3\%$$

$$\text{Th} = \frac{\left(\frac{48.479}{10}\right) - 0}{5} \times 100 = 96.96\%$$

$$\text{W} = \frac{\left(\frac{49.85}{10}\right) - \left(\frac{2.439}{10}\right)}{5} \times 100 = 94.8\%$$

$$\text{Y} = \frac{\left(\frac{48.301}{10}\right) - (0)}{5} \times 100 = 96.6\%$$

$$\text{Zr} = \frac{\left(\frac{982.78}{100}\right) - \left(\frac{0.16023}{100}\right)}{10} \times 100 = 98.96\%$$

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Analysis Report

Summary

Sun 10-18-98 10:52:36 AM

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#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	981018A	ICP20	10/18/98	09:08	DKS	Q	CONC
2	ICV2	981018A	ICP20	10/18/98	09:11	DKS	Q	CONC
3	ICB	981018A	ICP20	10/18/98	09:18	DKS	Q	CONC
4	LLS	981018A	ICP20	10/18/98	09:20	DKS	Q	CONC
5	LLS2	981018A	ICP20	10/18/98	09:22	DKS	Q	CONC
6	LLS2	981018A	ICP20	10/18/98	09:28	DKS	Q	CONC
7	ICSA	981018A	ICP20	10/18/98	09:32	DKS	Q	CONC
8	ICSAB	981018A	ICP20	10/18/98	09:34	DKS	Q	CONC
9	PREPSTDITJA	981018A	ICP20	10/18/98	09:37	DKS	Q	CONC
10	PREPBLKTJA	981018A	ICP20	10/18/98	09:39	DKS	Q	CONC
11	S98T002788_L	981018A	ICP20	10/18/98	09:42	DKS	S	CONC
12	S98T002788	981018A	ICP20	10/18/98	09:45	DKS	S	CONC
13	S98T002788_D	981018A	ICP20	10/18/98	09:47	DKS	S	CONC
14	S98T002788_S	981018A	ICP20	10/18/98	09:50	DKS	S	CONC
15	S98T002788_X	981018A	ICP20	10/18/98	09:54	DKS	S	CONC
16	S98T002788_AX	981018A	ICP20	10/18/98	09:57	DKS	S	CONC
17	CCV	981018A	ICP20	10/18/98	10:07	DKS	Q	CONC
18	CCV2	981018A	ICP20	10/18/98	10:10	DKS	Q	CONC
19	CCB	981018A	ICP20	10/18/98	10:16	DKS	Q	CONC
20	S98T002789	981018A	ICP20	10/18/98	10:19	DKS	S	CONC
21	S98T002789_D	981018A	ICP20	10/18/98	10:22	DKS	S	CONC
22	S98T002790	981018A	ICP20	10/18/98	10:24	DKS	S	CONC
23	S98T002790_D	981018A	ICP20	10/18/98	10:26	DKS	S	CONC
24	ICSA	981018A	ICP20	10/18/98	10:30	DKS	Q	CONC
25	ICSAB	981018A	ICP20	10/18/98	10:33	DKS	Q	CONC
26	CCV	981018A	ICP20	10/18/98	10:37	DKS	Q	CONC
27	CCV2	981018A	ICP20	10/18/98	10:40	DKS	Q	CONC
28	CCB	981018A	ICP20	10/18/98	10:46	DKS	Q	CONC

JK QD

10-18-98

work list # 26584

QW-101

588700 2788

588700 2789

588700 2790

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 409 TO 419.

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Analysis Report

Averages

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.9725	4.9405	5.1283	4.9361	5.0005	5.0939
2	ICV2	.00068	.22736	-.04108	.35079	.00026	-.00406
3	ICB	-.00026	.00262	-.01523	.00683	.00001	.00004
4	LLS	.02384	.11482	.18680	.10496	.09929	.01060
5	LLS2	.00046	.01258	.01503	.01510	.00001	.00001
6	LLS2	.00016	.02579	-.01233	.02370	.00005	.00002
7	ICSA	-.00287	240.80	.50570	-.00665	.00027	.00038
8	ICSAB	.94400	239.96	.51885	-.00324	.45208	.47291
9	PREPSTDITJA	.95668	4.7533	4.8270	5.2185	4.7640	5.2450
10	PREPBLKTJA	.00011	Q.07976	-.00109	Q.47753	.00044	-.00008
11	S98T002788_L	-.06310	368.60	.43679	.96547	.00152	.03695
12	S98T002788	-.00119	351.30	1.0080	.92362	.00169	.03039
13	S98T002788_D	-.00240	356.52	1.1539	.97742	.00139	.03341
14	S98T002788_S	1.0183	380.68	6.1874	5.5957	4.7721	5.0950
15	S98T002788_X	-.07366	365.47	1.1831	.93909	.00841	.03422
16	S98T002788_AX	903.59	1315.6	1010.3	988.36	984.82	981.19
17	CCV	5.0274	4.8955	5.1769	4.8791	4.9615	5.0645
18	CCV2	.00257	.54785	-.04658	1.3324	.00046	-.00435
19	CCB	.00037	.00337	.00088	.00133	.00006	.00004
20	S98T002789	-.01780	359.30	.81688	.97086	.00018	.03435
21	S98T002789_D	.00146	358.18	.75267	1.0743	.00238	.03384
22	S98T002790	-.01122	343.59	.74518	1.0286	.00103	.03169
23	S98T002790_D	.00141	362.59	1.0953	.96763	.00174	.03340
24	ICSA	-.00138	242.30	.53393	-.01346	.00034	.00020
25	ICSAB	.94735	242.31	.48211	-.00656	.46127	.47920
26	CCV	5.0623	4.8940	5.2195	4.8963	4.9703	5.1001
27	CCV2	.00082	.69145	-.02730	1.8220	.00064	-.00436
28	CCB	.00026	.00260	.00116	.00356	.00004	-.00008

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	4.9293	4.9767	5.0690	5.1014	4.9586	4.9353
2	ICV2	-.02639	.10321	.00038	-.00667	.00651	.00069
3	ICB	-.00417	-.00214	.00000	-.00353	.00035	.00044
4	LLS	.21432	.23754	.01108	.21878	.04326	.02222
5	LLS2	.00909	.04548	.00043	.00595	.00073	.00007
6	LLS2	.00798	.08198	.00078	-.00023	.00023	.00027
7	ICSA	-.02364	255.52	.00579	-.00479	.00093	-.00469
8	ICSAB	.00146	256.25	.94472	.00667	.46319	.46822
9	PREPSTDITJA	4.6477	4.9005	4.7874	4.8583	4.7177	4.7667
10	PREPBLKTJA	-.01075	Q.13376	.00000	.00028	-.00074	.00211
11	S98T002788_L	.28144	.28930	.05085	-.46829	.01319	1.3137
12	S98T002788	-.06626	.37351	.04026	-.05667	-.02995	1.2432
13	S98T002788_D	-.15714	.22038	.04360	-.02687	.01598	1.3090
14	S98T002788_S	5.1229	5.4227	5.1811	4.8996	5.0351	6.4272
15	S98T002788_X	-.62434	.37856	.11923	.18221	-.03182	1.3700
16	S98T002788_AX	1002.7	1018.1	1002.0	989.66	1005.7	1007.1
17	CCV	4.9324	5.0867	5.1143	5.0456	5.0186	4.9980
18	CCV2	-.05191	.11042	.00108	-.00137	.00537	.00033
19	CCB	-.00038	-.00153	.00027	-.00616	.00036	-.00009
20	S98T002789	-.06785	.17544	.02874	-.17932	-.00613	1.2919
21	S98T002789_D	-.22438	.25453	.05548	.04310	.00744	1.2945

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#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
22	S98T002790	-.02716	.18215	.04804	-.09635	-.00931	1.2157
23	S98T002790_D	-.07918	.22671	.04920	-.01406	.00421	1.3125
24	ICSA	.00101	258.97	.00709	.00532	.00273	-.00312
25	ICSAB	-.02295	256.30	.95139	-.00122	.46700	.46839
26	CCV	5.0571	5.1504	5.1754	5.0537	5.0757	5.0468
27	CCV2	-.03870	.11075	.00087	-.00163	.00540	.00117
28	CCB	-.00353	.00161	.00074	-.00029	.00063	.00064

#	Sample Name	Cu	Bu	Fe	K	La	Li
1	ICV	4.8340	.0055	5.1138	5.1446	5.0590	5.1006
2	ICV2	.00044	.0083	.00035	-.10597	-.00847	.00029
3	ICB	.00000	-.0006	-.00015	-.03210	-.00072	-.00029
4	LLS	.01971	-.0004	.11078	Q.64756	.10504	.02146
5	LLS2	.00055	-.0006	-.00045	-.00176	-.00000	-.00039
6	LLS2	.00129	-.0003	-.00037	-.01977	-.00036	-.00029
7	ICSA	.00223	.0026	92.583	.12854	-.00464	.00318
8	ICSAB	.45397	.0026	92.411	.25804	-.00277	.95138
9	PREPSTDITJA	4.5541	.0057	4.7963	4.7512	4.8426	4.7784
10	PREPBLKTJA	.00247	-.0011	.01709	.02987	.00003	-.00049
11	S98T002788_L	.04276	-.0021	.03102	361.01	-.07991	.01990
12	S98T002788	.02319	.0044	.10107	341.33	-.00178	.01293
13	S98T002788_D	.05456	.0086	.10499	351.90	-.00076	.01293
14	S98T002788_S	4.6362	.0187	5.1303	373.36	4.9386	4.7072
15	S98T002788_X	.06785	.1107	.03092	356.17	-.03049	.09929
16	S98T002788_AX	927.94	1.313	993.05	1339.6	984.00	941.87
17	CCV	4.7458	.0069	5.1195	5.1784	4.9996	4.9236
18	CCV2	.00081	.0091	.00819	-.08588	-.00906	.00079
19	CCB	.00036	-.0003	-.00015	.01228	-.00049	-.00009
20	S98T002789	.04525	-.0070	.09563	358.79	-.02083	.00002
21	S98T002789_D	.04956	.0050	.16383	350.82	.00464	.00696
22	S98T002790	.03880	.0038	.09008	333.45	-.01107	.01194
23	S98T002790_D	.04791	.0081	.10024	352.65	.00200	.01392
24	ICSA	.00296	-.0012	93.555	.20935	-.00355	.00248
25	ICSAB	.46078	.0079	93.074	.14564	-.00347	.97059
26	CCV	4.7510	.0072	5.1426	5.1068	5.0160	4.8493
27	CCV2	.00004	.0095	.01132	.07956	-.00921	.00139
28	CCB	-.00023	.0006	-.00024	.07398	.00005	.00049

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.1027	4.9026	4.9986	5.2404	4.9693	4.9568
2	ICV2	-.02777	.00060	-.00314	.18679	-.00033	-.00236
3	ICB	-.00309	-.00021	-.00048	.00317	-.00053	-.00035
4	LLS	.22075	.02003	.10311	.20522	.20408	.03411
5	LLS2	.00634	-.00029	-.00206	.00840	-.00279	-.00535
6	LLS2	-.00028	-.00013	-.00016	.01657	.00005	.00036
7	ICSA	247.10	-.00513	-.01432	188.76	-.00293	-.01001
8	ICSAB	245.69	.44087	-.01659	187.21	-.00129	.91881
9	PREPSTDITJA	4.6945	4.6854	4.8878	5.6802	4.7478	4.8299
10	PREPBLKTJA	.01340	.00025	-.00034	Q.63646	-.00109	.00297
11	S98T002788_L	-.30217	.02926	.71004	2922.7	-.08972	.06416

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#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
12	S98T002788	.04186	.02793	.75588	2737.4	-.10026	.07372
13	S98T002788_D	.05164	.02804	.75727	2751.1	.00240	.07184
14	S98T002788_S	4.8342	4.8804	5.8950	2885.2	4.8257	5.1991
15	S98T002788_X	-.15134	.05833	.68070	2850.5	-.11520	.20746
16	S98T002788_AX	1011.9	993.93	1005.1	3770.5	956.14	1001.7
17	CCV	5.0443	4.9480	5.0401	5.0747	4.8947	5.0137
18	CCV2	-.02091	.00092	-.00409	.91645	.00096	-.00378
19	CCB	-.00354	-.00005	-.00047	.00069	-.00162	-.00559
20	S98T002789	-.12551	.02332	.74918	2824.6	-.02044	.06246
21	S98T002789_D	.14171	.02682	.76199	2765.3	.00222	.10952
22	S98T002790	-.03368	.02483	.72888	2658.9	-.03222	.05714
23	S98T002790_D	.03672	.02697	.77465	2782.0	.00488	.09271
24	ICSA	248.04	-.00523	-.01338	187.51	-.00133	-.00756
25	ICSAB	247.29	.44223	-.01754	189.40	-.00474	.92659
26	CCV	5.0124	4.9874	5.0873	4.9921	4.8923	5.0920
27	CCV2	-.01418	.00117	-.00550	1.2529	.00185	-.00319
28	CCB	.00056	.00019	-.00030	.00172	-.00005	-.00362

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	4.9378	4.9182	4.8200	4.9863	4.8161	4.8777
2	ICV2	.00595	-.00263	-.00290	-.00280	.02043	8.3825
3	ICS	.00672	.00063	.01257	.00202	.01243	.01379
4	LLS	.40466	.21718	.20985	.10197	.19960	Q.15591
5	LLS2	.01023	-.00311	-.00756	-.00343	-.00791	-.89153
6	LLS2	-.00264	-.00394	-.00127	.00140	.01689	.93816
7	ICSA	-.08421	.03141	-.02596	-.00487	-.04916	.00354
8	ICSAB	-.08853	1.0040	-.02097	.01081	-.02470	.00192
9	PREPSTD TJJA	4.7965	4.6254	4.6734	4.8061	4.6126	7.1023
10	PREPBLKTJA	.02592	.00758	Q.06462	.00112	.02071	Q.17829
11	S98T002788_L	1.0689	1.1281	5.1291	-.01750	.94717	1.5836
12	S98T002788	1.0598	.66813	4.7223	-.08642	.32880	1.4980
13	S98T002788_D	1.1432	.88428	4.7898	-.06073	.35795	1.5437
14	S98T002788_S	5.3793	5.9480	10.032	5.0649	5.2336	6.5580
15	S98T002788_X	2.2853	1.1665	5.5025	-.42627	3.8069	2.1017
16	S98T002788_AX	996.70	1018.0	991.01	1013.3	968.83	996.88
17	CCV	4.9768	4.9841	4.8775	5.0271	4.8225	4.9173
18	CCV2	.02872	.00643	-.00538	-.00768	.02877	17.481
19	CCB	.01152	.00968	.00957	.00046	.00228	.00404
20	S98T002789	.73044	.74893	4.6638	-.06396	.23750	1.4239
21	S98T002789_D	.81677	.75511	4.6492	.03977	.38536	1.6908
22	S98T002790	.75722	.65771	4.4705	-.08854	.34282	1.5291
23	S98T002790_D	.99021	.88104	4.8015	-.04529	.33557	1.5530
24	ICSA	-.08067	.03501	-.01971	.00438	-.01617	.00476
25	ICSAB	-.07953	1.0019	-.02748	-.00329	-.03671	-.00157
26	CCV	4.9948	5.0631	4.9145	5.0852	4.8502	4.9447
27	CCV2	.02370	-.00207	-.00592	-.01357	.03446	21.798
28	CCB	.01190	-.00268	.00846	-.00129	.03364	.00577

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#	Sample Name	Sm	Sn	Sr	Ta	Th	Ti
1	ICV	4.9482	.0332	5.0631	.0571	-.00313	4.9975
2	ICV2	.00097	5.041	.00024	5.074	5.0310	.00174
3	ICB	-.00942	.0023	-.00008	.0026	.00406	.00023
4	LLS	.19457	.0012	.02023	.0066	.00622	.02118
5	LLS2	.00869	.1095	.00008	.1003	.10296	-.00004
6	LLS2	-.00669	.0956	-.00008	.0948	.10187	.00016
7	ICSA	-.01415	.0116	.00178	-.0106	-.02487	.00163
8	ICSA8	-.01290	.0195	.00171	.0014	-.02061	.00187
9	PREPSTDTJA	4.7128	.0631	4.8374	.0555	-.00287	4.8669
10	PREPBLKTJA	-.01367	.0461	.00004	-.0014	.00565	.00069
11	S98T002788_L	-.08473	1.721	-.00212	.4932	-.08172	-.01149
12	S98T002788	.02791	1.605	.00041	.0289	.03742	-.01759
13	S98T002788_D	.05141	1.607	.00083	.1238	.00464	.00004
14	S98T002788_S	4.8737	1.751	4.9278	.1596	-.04256	4.9282
15	S98T002788_X	1.2223	2.431	.01236	.9594	-.28000	.04317
16	S98T002788_AX	947.28	7.183	973.30	12.94	.20140	990.50
17	CCV	4.8753	.0403	5.0013	.0711	-.00478	4.9663
18	CCV2	.00405	5.049	.00054	5.096	5.0557	.00406
19	CCB	-.00308	.0081	-.00008	.0035	.00116	.00000
20	S98T002789	-.10093	1.577	-.00081	.0257	-.04850	-.00234
21	S98T002789_D	.04753	1.650	.00041	.0905	.01988	.00014
22	S98T002790	.02809	1.598	.00042	.1139	-.03476	-.00673
23	S98T002790_D	.06171	1.654	.00082	.2171	-.00433	.00221
24	ICSA	-.01213	.0204	.00166	-.0102	-.01976	.00144
25	ICSA8	-.01877	.0145	.00176	-.0080	-.02018	.00099
26	CCV	4.8843	.0447	5.0143	.0653	-.00245	4.9988
27	CCV2	.00894	5.047	.00075	5.104	5.0639	.00498
28	CCB	.00524	.0064	.00004	.0107	.00133	.00000

#	Sample Name	Tl	U	V	W	Y	Zn
1	ICV	4.8414	9.8125	4.9731	.0473	.00419	4.8976
2	ICV2	.00691	.01276	.00176	5.032	5.0211	-.00260
3	ICB	-.00561	-.02766	-.00185	-.0219	-.00080	.00003
4	LLS	.41854	.46801	.09996	-.0074	-.00057	.02095
5	LLS2	.00889	.05426	.00174	.00694	.09823	.00206
6	LLS2	.00271	-.02172	-.00159	.1087	.09835	.00277
7	ICSA	-.00969	.04694	.00177	1.035	.00582	-.00145
8	ICSA8	-.00610	.04949	.46242	1.099	.00595	.95227
9	PREPSTDTJA	4.5968	9.2277	4.8126	.0607	.00406	4.6199
10	PREPBLKTJA	.01437	-.04829	-.00183	-.0098	-.00111	.01024
11	S98T002788_L	.14241	-.10288	-.00051	4.246	-.02196	.34165
12	S98T002788	.01905	-.02044	.00579	4.012	-.00187	.26127
13	S98T002788_D	-.08185	.09949	.00910	4.037	-.00067	.26115
14	S98T002788_S	5.0192	9.5227	5.0404	4.422	.00664	5.4155
15	S98T002788_X	-.13684	3.9269	.23417	5.002	.00461	.30180
16	S98T002788_AX	983.55	1859.0	992.42	19.40	1.0964	1002.3
17	CCV	4.8156	9.6559	4.9913	.0603	.00507	4.9824
18	CCV2	-.01270	.02379	.00288	5.082	5.0524	-.00262
19	CCB	-.01334	-.00961	-.00067	-.0006	-.00062	.00030
20	S98T002789	.03096	-.41141	-.02258	3.018	-.00862	.25124
21	S98T002789_D	.15609	.00532	.00920	3.417	-.00314	.26008

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#	Sample Name	Tl	U	V	W	Y	Zn
22	S98T002790	-.03888	-.04968	.00607	3.476	-.00438	.24985
23	S98T002790_D	-.10985	.15337	.00900	4.099	-.00195	.27086
24	ICSA	-.00192	.04310	.00213	.9787	.00608	-.00146
25	ICSAB	-.03846	.02916	.46568	.8476	.00545	.95073
26	CCV	4.9203	9.6559	5.0295	.0665	.00507	5.0312
27	CCV2	.00691	.04203	.00335	5.161	5.0438	-.00224
28	CCB	.00129	.01956	.00116	-.0012	-.00007	.00051

#	Sample Name	Zr
1	ICV	4.9788
2	ICV2	.02171
3	ICB	-.00125
4	LLS	.01965
5	LLS2	.00045 10-18-98
6	LLS2	.00025
7	ICSA	-.00053
8	ICSAB	-.00036
9	PREPSTD TJJA	4.8542
10	PREPBLKTJA	-.00138
11	S98T002788_L	.16370
12	S98T002788	.16023
13	S98T002788_D	.16900
14	S98T002788_S	3.8063
15	S98T002788_X	.36648
16	S98T002788_AX	989.78
17	CCV	4.9592
18	CCV2	.02915
19	CCB	-.00071
20	S98T002789	.14843
21	S98T002789_D	.16778
22	S98T002790	.15972
23	S98T002790_D	.16653
24	ICSA	-.00106
25	ICSAB	-.00135
26	CCV	4.9936
27	CCV2	.02910
28	CCB	.00114

JK
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QU-101

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File # 9810 23E.TXT

Work/15/ # 26584

ICV3

ICB

5487002788 , 1-9 , DF 10

5487002788-D , 1-9 , 10

5487002788-a , 1-9 , 10

5487002787 , 1-9 , DF 10

5487002788-D , 1-9 , 10

5487002790 , 1-9 , DF 10

5487002790-D , 1-9 , 10

CCV2

CCB

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#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV2	981023E	ICP20	10/23/98	19:36	DKS	Q	CONC
2	ICB	981023E	ICP20	10/23/98	19:42	DKS	Q	CONC
3	S98T002788	981023E	ICP20	10/23/98	19:44	DKS	S	CONC
4	S98T002788_D	981023E	ICP20	10/23/98	19:46	DKS	S	CONC
5	S98T002788_A	981023E	ICP20	10/23/98	19:48	DKS	S	CONC
6	S98T002789	981023E	ICP20	10/23/98	19:57	DKS	S	CONC
7	S98T002789_D	981023E	ICP20	10/23/98	19:59	DKS	S	CONC
8	S98T002790	981023E	ICP20	10/23/98	20:02	DKS	S	CONC
9	S98T002790_D	981023E	ICP20	10/23/98	20:05	DKS	S	CONC
10	CCV2	981023E	ICP20	10/23/98	20:08	DKS	Q	CONC
11	CCB	981023E	ICP20	10/23/98	20:12	DKS	Q	CONC

JK L&D

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Worklist # 26584

QW-101

S98T002788

S98T002789

S98T002790

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV2	.00162	.02505	-.00149	.02326	.00023	-.00425
2	ICB	.00139	.01170	.01953	.00583	.00003	.00004
3	S98T002788	.00765	340.33	.66845	.98520	.00135	.03038
4	S98T002788_D	.01270	344.34	.88191	.93521	.00204	.02993
5	S98T002788_A	.01255	345.49	.54892	.67792	.00334	-.00986
6	S98T002789	.01897	344.63	.99799	.91682	.00233	.03036
7	S98T002789_D	.02665	341.13	.85111	.99834	.00237	.02949
8	S98T002790	.01010	332.23	.62097	.95520	.00161	.03083
9	S98T002790_D	.01144	350.25	.89963	.98485	.00138	.03037
10	CCV2	.00061	.02774	.00677	.01973	.00025	-.00413
11	CCB	.00154	.00176	.01064	.00312	.00012	-.00009

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV2	.01819	.10235	.00076	.00813	.00473	.00018
2	ICB	.00485	-.00191	-.00013	.01538	-.00060	.00089
3	S98T002788	.06700	.18332	.04821	.05925	-.00471	1.2253
4	S98T002788_D	.27035	.19429	.05231	.10427	.00123	1.2416
5	S98T002788_A	.05574	.90327	.05804	.09585	.03325	1.2414
6	S98T002789	-.13185	.25906	.05252	.15832	-.00485	1.2507
7	S98T002789_D	.05088	.25929	.04907	.15883	.00375	1.2440
8	S98T002790	.25525	.18228	.03836	.07722	-.01225	1.2028
9	S98T002790_D	-.13436	.18801	.05504	.08458	.00012	1.2656
10	CCV2	.02349	.09924	.00209	.01114	.00272	-.00033
11	CCB	-.00821	-.00162	.00100	.01267	.00040	.00161

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV2	.00176	.0044	.00582	.15391	.00547	.00039
2	ICB	.00094	-.00003	.00000	.15632	.00170	.00000
3	S98T002788	.04025	.0029	.09798	330.94	.00690	.00895
4	S98T002788_D	.04555	.0047	.10036	333.90	.01423	.01392
5	S98T002788_A	.04214	.0478	.06284	335.55	.04179	.01194
6	S98T002789	.04398	.0035	.11607	331.83	.02090	.01094
7	S98T002789_D	.04350	.0042	.11603	326.56	.02445	.00995
8	S98T002790	.04591	-.0012	.09963	321.24	.00964	.00399
9	S98T002790_D	.04406	.0048	.11054	337.46	.01300	.01194
10	CCV2	.00185	.0052	.00647	.10022	.00333	.00109
11	CCB	.00066	.0012	.00141	.22225	.00177	.00139

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV2	.03036	.00042	-.00679	.02601	.00327	-.00125
2	ICB	.01057	-.00006	-.00126	.01274	.00152	.00794
3	S98T002788	.10067	.02533	.69581	2598.0	-.00867	.10407
4	S98T002788_D	.12486	.02689	.71159	2615.4	.01113	.14769
5	S98T002788_A	.32009	.02924	.66732	2634.6	.02632	.06687
6	S98T002789	.13471	.02419	.69582	2611.9	-.00369	.13058
7	S98T002789_D	.17952	.02491	.70212	2578.9	.00728	.10172
8	S98T002790	.05046	.02143	.67521	2534.0	-.01766	.07426

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#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
9	S98T002790_D	.12597	.02469	.70847	2655.0	-.00815	.10976
10	CCV2	.02619	.00064	-.00566	.02476	.00375	-.00105
11	CCB	.01483	.00044	-.00139	.00811	.00265	.00071

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV2	.00988	-.00010	.00995	-.00116	-.00206	.41604
2	ICB	-.00270	.01065	-.00270	.00597	-.00973	.02514
3	S98T002788	.92698	.87221	4.5267	-.04157	.13827	1.6143
4	S98T002788_D	.89966	.86877	4.6358	.04603	.11586	1.6044
5	S98T002788_A	1.0372	.85151	4.6422	.00983	.01619	17.968
6	S98T002789	.77164	.89712	4.6253	.05351	.08218	1.5288
7	S98T002789_D	.79411	.83657	4.8160	.00985	.09843	1.6963
8	S98T002790	.70392	.77605	4.3414	.00978	.10310	1.5203
9	S98T002790_D	.88822	.91632	4.6403	-.02914	.11907	1.5158
10	CCV2	.00958	.01023	.00663	-.00149	.00712	.29054
11	CCB	.00053	.00612	.01249	.00109	.00177	.01040

#	Sample Name	Sm	Sn	Sr	Ta	Th	Ti
1	ICV2	.00510	5.041	.00020	4.851	4.9587	.00170
2	ICB	-.00189	-.0090	.00000	.0016	.00600	.00046
3	S98T002788	.02303	1.453	.00127	.0478	-.00351	.00005
4	S98T002788_D	.04332	1.500	.00211	.0168	.00402	.00227
5	S98T002788_A	.02522	50.03	.00251	48.66	48.479	.01730
6	S98T002789	.01482	1.517	.00126	.0011	.03583	.00461
7	S98T002789_D	.04308	1.495	.00126	.0643	.02169	.00461
8	S98T002790	-.02951	1.435	.00086	-.0486	.01769	.00459
9	S98T002790_D	.04017	1.537	.00126	.0506	-.00541	.00447
10	CCV2	.01345	5.062	.00033	4.813	4.9377	.00140
11	CCB	.01878	.0026	.00029	.0072	-.00185	.00110

#	Sample Name	Tl	U	V	W	Y	Zn
1	ICV2	.01747	.00233	.00144	4.804	4.9311	-.00100
2	ICB	.01407	-.00929	-.00103	.0293	-.00006	.00006
3	S98T002788	.26237	-.06959	-.00429	2.439	.00133	.24279
4	S98T002788_D	.02795	.05053	.00406	2.563	.00324	.23840
5	S98T002788_A	.27839	-.00895	.01619	49.85	48.301	.20998
6	S98T002789	.30160	-.02720	-.00103	2.737	.00131	.24039
7	S98T002789_D	.16431	-.03803	.00418	2.635	.00197	.23953
8	S98T002790	.18131	-.25015	-.01261	1.820	-.00185	.22799
9	S98T002790_D	.19861	.01121	-.00101	2.616	.00130	.24265
10	CCV2	.01027	.03710	.00298	4.888	4.9250	-.00116
11	CCB	.00707	.05321	.00318	.0084	.00076	-.00063

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#	Sample Name	Zr
1	ICV2	-.00638
2	ICB	-.00080
3	S98T002788	.15404
4	S98T002788_D	.15336
5	S98T002788_A	.07885
6	S98T002789	.15084
7	S98T002789_D	.15194
8	S98T002790	.13356
9	S98T002790_D	.15100
10	CCV2	-.00658
11	CCB	.00232

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LABCORE Data Entry Template for Worklist# 26863

Analyst: JK Se/0 Instrument: ICP01 3 10-29-98 Book# 75B48BMethod: LA-505-151/161 Rev/Mod C-3Worklist Comment: ICP AW-101 (LIQUID ACID DIGEST)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	LLS		@ICP-QC	QC		
4	ICSA		@ICP-QC	QC		
5	ICSAB		@ICP-QC	QC		
6	PREPSTDITJA		@ICP-B01	LIQUID		
7	PREPBLKTJA		@ICP-B01	LIQUID		
8	SERDIL	S98T003077 0 B	@ICP-B01	LIQUID		
9	SAMPLE	S98T003077 0 B	@ICP-B01	LIQUID	98000554	AW-101 LAW
Analytes Requested: AG-B-01 , AL-B-01 , AS-B-01 , B-B-01 , BA-B-01 , BE-B-01 , BI-B-01 , CA-B-01 , CD-B-01 , CE-B-01 , CO-B-01 , CR-B-01 , CU-B-01 , FE-B-01 , K-B-01 , LA-B-01 , LI-B-01 , MG-B-01 , MN-B-01 , MO-B-01 , NA-B-01 , ND-B-01 , NI-B-01 , P-B-01 , PB-B-01 , S-B-01 , SB-B-01 , SE-B-01 , SI-B-01 , SM-B-01 , SR-B-01 , TI-B-01 , TL-B-01 , U-B-01 , V-B-01 , ZN-B-01 , ZR-B-01						
10	DUP	S98T003077 0 B	@ICP-B01	LIQUID		8 10/29/98
11	SPK-PREDIG	S98T003077 0 B	@ICP-B01	LIQUID		
12	CCV	^{sample X} Splic 2X (10 ppm) 10-19-98	@ICP-QC	QC		
13	CCB		@ICP-QC	QC		
14	SAMPLE	S98T003078 0 B	@ICP-B01	LIQUID	98000554	AW-101 LAW
Analytes Requested: AG-B-01 , AL-B-01 , AS-B-01 , B-B-01 , BA-B-01 , BE-B-01 , BI-B-01 , CA-B-01 , CD-B-01 , CE-B-01 , CO-B-01 , CR-B-01 , CU-B-01 , FE-B-01 , K-B-01 , LA-B-01 , LI-B-01 ,						
Data Entry Comments: <u>uploaded 10-30-98</u> <u>Validated by:</u> <u>John Wouell</u> <u>Sal M. Pang</u> <u>11/2/98</u>						

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

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LABCORE Data Entry Template for Worklist# 26863

S Type	Sample#	R A	Test	Matrix	Group#	Project		
			MG-B-01	MN-B-01	MO-B-01	NA-B-01	ND-B-01	NI-B-01
			P-B-01	PB-B-01	S-B-01	SB-B-01	SE-B-01	SI-B-01
			SM-B-01	SR-B-01	TI-B-01	TL-B-01	U-B-01	V-B-01
			ZN-B-01	ZR-B-01				
15 SAMPLE	S98T003079	0 B	@ICP-B01	LIQUID	98000554	AW-101 LAW		
	Analytes Requested:		AG-B-01	AL-B-01	AS-B-01	B-B-01	BA-B-01	
			BE-B-01	BI-B-01	CA-B-01	CD-B-01	CE-B-01	CO-B-01
			CR-B-01	CU-B-01	FE-B-01	K-B-01	LA-B-01	LI-B-01
			MG-B-01	MN-B-01	MO-B-01	NA-B-01	ND-B-01	NI-B-01
			P-B-01	PB-B-01	S-B-01	SB-B-01	SE-B-01	SI-B-01
			SM-B-01	SR-B-01	TI-B-01	TL-B-01	U-B-01	V-B-01
			ZN-B-01	ZR-B-01				
16 SAMPLE	S98T003080	0 B	@ICP-B01	LIQUID	98000554	AW-101 LAW		
	Analytes Requested:		AG-B-01	AL-B-01	AS-B-01	B-B-01	BA-B-01	
			BE-B-01	BI-B-01	CA-B-01	CD-B-01	CE-B-01	CO-B-01
			CR-B-01	CU-B-01	FE-B-01	K-B-01	LA-B-01	LI-B-01
			MG-B-01	MN-B-01	MO-B-01	NA-B-01	ND-B-01	NI-B-01
			P-B-01	PB-B-01	S-B-01	SB-B-01	SE-B-01	SI-B-01
			SM-B-01	SR-B-01	TI-B-01	TL-B-01	U-B-01	V-B-01
			ZN-B-01	ZR-B-01				
17 SAMPLE	S98T003081	0 B	@ICP-B01	LIQUID	98000554	AW-101 LAW		
	Analytes Requested:		AG-B-01	AL-B-01	AS-B-01	B-B-01	BA-B-01	
			BE-B-01	BI-B-01	CA-B-01	CD-B-01	CE-B-01	CO-B-01
			CR-B-01	CU-B-01	FE-B-01	K-B-01	LA-B-01	LI-B-01
			MG-B-01	MN-B-01	MO-B-01	NA-B-01	ND-B-01	NI-B-01
			P-B-01	PB-B-01	S-B-01	SB-B-01	SE-B-01	SI-B-01
			SM-B-01	SR-B-01	TI-B-01	TL-B-01	U-B-01	V-B-01
			ZN-B-01	ZR-B-01				
18 ICSA			@ICP-QC	QC				
19 ICSAB			@ICP-QC	QC				
20 CCV			@ICP-QC	QC				
21 CCB			@ICP-QC	QC				

Data Entry Comments:

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

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LABCORE Data Entry Template for Worklist# 26863

S Type	Sample#	R A Test	Matrix	Group#	Project
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Final page for worklist # 26863

JK Jato 10-27-98

Analyst Signature	Date
<i>Incept/KTA</i>	<i>Direct</i> , <i>DF</i> 1
<i>Prep/KTA</i>	<i>Direct</i> , 1
<i>5987003077-L</i>	<i>1-9-2-8</i> , <i>DF</i> 50
<i>5987003077</i>	<i>1-9</i> , 10
<i>5987003077-S</i>	<i>1-9</i> , 10
<i>5987003077-X</i>	<i>1-9-1-9</i> , 100
<i>5987003077-QX</i>	<i>1-9-1-9</i> , 100
<i>5987003078</i>	<i>2-6</i> , <i>DF</i> 4
<i>5987003079</i>	<i>2-8</i> , <i>DF</i> 5
<i>5987003080</i>	<i>1-9</i> , <i>DF</i> 10
<i>5987003081</i>	<i>1-9</i> , <i>DF</i> 10

Analyst Signature	Date
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Data Entry Comments:

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

$$C_r = 1.6737 \frac{\mu\text{g}}{\text{ml}} \times 50 = 8.37e + 1 \frac{\mu\text{g}}{\text{ml}}$$

Pre-dig Spt:

$$C_r = \frac{6.7109 - 1.6737}{5} \times 100 = 100.7\%$$

Post Spt:

$$Al = \frac{\left(\frac{1382.7}{100}\right) - \left(\frac{411.73}{100}\right)}{10} \times 100 = 97.1\%$$

$$Na = \frac{\left(\frac{5029.4}{100}\right) - \left(\frac{4092.3}{100}\right)}{10} \times 100 = 93.7\%$$

$$K = \frac{\left(\frac{1781.3}{100}\right) - \left(\frac{743.80}{100}\right)}{10} \times 100 = 103.75\%$$

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Analysis Report

Summary

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#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	981029A	ICP2	10/29/98	10:55	DKS	Q	CONC
2	ICB	981029A	ICP2	10/29/98	10:59	DKS	Q	CONC
3	LLS	981029A	ICP2	10/29/98	11:02	DKS	Q	CONC
4	ICSA	981029A	ICP2	10/29/98	11:05	DKS	Q	CONC
5	ICSAB	981029A	ICP2	10/29/98	11:08	DKS	Q	CONC
6	PREPSTDITJA	981029A	ICP2	10/29/98	11:11	DKS	Q	CONC
7	PREPBLKTJA	981029A	ICP2	10/29/98	11:15	DKS	Q	CONC
8	S98T003077_L	981029A	ICP2	10/29/98	11:19	DKS	S	CONC
9	S98T003077_	981029A	ICP2	10/29/98	11:22	DKS	S	CONC
10	S98T003077_S	981029A	ICP2	10/29/98	11:25	DKS	S	CONC
11	S98T003077_x	981029A	ICP2	10/29/98	11:29	DKS	S	CONC
12	S98T003077_AX	981029A	ICP2	10/29/98	11:31	DKS	S	CONC
13	CCV	981029A	ICP2	10/29/98	12:59	DKS	Q	CONC
14	CCB	981029A	ICP2	10/29/98	13:02	DKS	Q	CONC
15	S98T003078	981029A	ICP2	10/29/98	13:05	DKS	S	CONC
16	S98T003079	981029A	ICP2	10/29/98	13:09	DKS	S	CONC
17	S98T003080	981029A	ICP2	10/29/98	13:12	DKS	S	CONC
18	S98T003081	981029A	ICP2	10/29/98	13:15	DKS	S	CONC
19	ICSA	981029A	ICP2	10/29/98	13:20	DKS	Q	CONC
20	ICSAB	981029A	ICP2	10/29/98	13:23	DKS	Q	CONC
21	CCV	981029A	ICP2	10/29/98	13:26	DKS	Q	CONC
22	CCB	981029A	ICP2	10/29/98	13:29	DKS	Q	CONC

M. L. D.

10-29-98

Workfile # 26863

GW-101

5987003077

5987003078

5987003079

5987003080

5987003081

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 424 TO 428.

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Analysis Report

Averages

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	5.0185	5.0165	5.2085	5.0679	5.0890	5.1307
2	ICB	-.00013	-.00226	.01232	.00234	.00000	.00004
3	LLS	.02211	.10604	.20434	.10012	.09937	.01037
4	ICSA	.00170	243.26	.03283	-.00649	.00027	.00009
5	ICSAB	.95281	244.28	.03152	-.00259	.46248	.47598
6	PREPSTD TJ A	1.0110	5.0565	5.0583	5.8075	4.9844	5.4446
7	PREPBLKTJ A	.00052	Q.09130	.00812	Q.46983	.00057	-.00017
8	S98T003077_L	.27639	413.53	.02499	1.2684	-.00213	.03155
9	S98T003077	.28089	401.73	-.33758	1.3297	.00135	.03469
10	S98T003077_S	1.3186	414.18	4.8515	6.2147	4.9112	5.1830
11	S98T003077_X	.26447	411.73	-.61574	1.7381	.00274	.01365
12	S98T003077_AX	924.30	1382.7	1007.0	1018.8	1009.0	992.80
13	CCV	4.9793	4.9256	5.1383	5.0186	4.9458	5.0276
14	CCB	-.00012	-.00420	.00320	.00328	.00003	-.00004
15	S98T003078	.17850	252.44	-.25459	1.1126	.00090	.02181
16	S98T003079	.14866	213.68	-.19260	.80813	.00080	.01870
17	S98T003080	.35382	613.05	-.63013	1.3485	.00736	.05497
18	S98T003081	.33787	602.21	-.66199	1.7338	.05232	.05406
19	ICSA	.00242	241.22	.03976	-.00867	.00031	.00004
20	ICSAB	.94813	243.21	.02285	-.00564	.45928	.47395
21	CCV	5.0064	4.9602	5.1861	5.0280	5.0161	5.0898
22	CCB	.00025	.00128	.01424	.00046	.00003	.00004

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.0525	4.9666	5.1080	5.1655	4.9968	4.9546
2	ICB	.01695	-.00210	-.00091	-.00722	.00000	.00076
3	LLS	.23630	.21559	.01108	.21126	.04261	.02283
4	ICSA	-.02168	254.14	.00419	.00366	-.00123	-.00244
5	ICSAB	.00783	255.80	.94226	.00211	.46319	.46841
6	PREPSTD TJ A	4.9382	5.2659	5.0031	5.0563	4.8958	4.9170
7	PREPBLKTJ A	.01750	Q.13996	-.00010	-.00435	.00009	.00285
8	S98T003077_L	.75744	.36169	-.00517	-.13236	-.00666	1.7568
9	S98T003077	.28897	.49456	.04108	.04591	.00597	1.6737
10	S98T003077_S	5.2251	5.4994	5.1663	5.0199	5.0039	6.7109
11	S98T003077_X	1.9500	.48098	.02305	-.39498	.04770	1.8259
12	S98T003077_AX	1010.4	1006.0	994.42	1009.2	999.40	996.19
13	CCV	4.9586	4.9701	5.0370	5.0323	4.9356	4.9162
14	CCB	.00111	.00012	-.00005	-.00227	.00193	.00190
15	S98T003078	-.04404	.41393	.02275	-.01983	-.00299	1.1478
16	S98T003079	.15488	.46019	.01794	-.03290	.00477	1.0195
17	S98T003080	.05604	.29649	.04559	-.01966	.00713	2.8431
18	S98T003081	.05295	.31700	.04654	.00360	.00605	2.7507
19	ICSA	-.00889	253.40	.00510	.00069	.00204	.00028
20	ICSAB	.00956	254.13	.93726	.00562	.45956	.46409
21	CCV	4.9876	4.9897	5.0728	5.1072	4.9728	4.9434
22	CCB	.00967	.00066	-.00034	-.00393	.00036	.00120

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Analysis Report

Averages

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#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	4.8648	.00683	4.9458	5.0089	5.1200	5.2081
2	ICB	-.00034	-.00027	-.00029	.00796	-.00062	.00020
3	LLS	.01746	.00047	.09938	.55814	.10300	.02180
4	ICSA	.00273	.01983	92.674	.08480	-.00453	.00260
5	ICSAB	.46627	.02022	92.902	.09267	-.00454	.99616
6	PREPSTDITJA	4.7722	.00763	4.7902	5.0895	5.0311	5.0615
7	PREPBLKTJA	.00234	-.00131	.02034	-.11347	-.00055	-.00072
8	S98T003077_L	.27940	-.01788	.08847	738.81	-.01239	-.01553
9	S98T003077	.08336	.00285	.11206	705.37	.00400	.00520
10	S98T003077_S	4.8253	.01168	4.9321	726.34	5.0624	5.0578
11	S98T003077_X	.13475	.00039	.07886	743.80	-.01168	.01047
12	S98T003077_AX	947.37	1.4598	951.27	1781.3	1003.0	1006.6
13	CCV	4.7300	.00751	4.8589	5.2216	4.9891	5.0552
14	CCB	.00008	.00027	-.00094	.05488	-.00072	.00031
15	S98T003078	.05196	-.00014	.07631	449.35	-.00353	.00250
16	S98T003079	.04490	.00065	.05795	393.53	-.00652	.00260
17	S98T003080	.14092	.00069	.11194	730.10	-.00270	.00624
18	S98T003081	.12650	.00825	.12192	709.41	-.00043	.01143
19	ICSA	.00300	.01865	91.819	.12444	-.00391	.00301
20	ICSAB	.46276	.02249	92.230	.21266	-.00339	.99470
21	CCV	4.8020	.00778	4.8716	5.1252	5.0544	5.1226
22	CCB	.00077	.00020	-.00025	-.02195	-.00021	.00020

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.1738	4.9641	5.0755	5.3466	5.0209	4.9730
2	ICB	-.00123	-.00002	.00285	.02274	.00209	.00720
3	LLS	.21875	.02036	.10712	.20934	.20499	.04720
4	ICSA	250.17	-.00522	-.01290	195.36	.00113	.00108
5	ICSAB	250.65	.44202	-.01154	194.19	.00173	.91643
6	PREPSTDITJA	5.0383	4.8715	5.1514	6.3486	4.9186	5.0267
7	PREPBLKTJA	.01697	.00020	.00124	Q.67515	-.00012	.00390
8	S98T003077_L	.20219	.02781	.97866	4079.8	.03872	.31486
9	S98T003077	.10337	.03600	.88698	3865.3	.00709	.13051
10	S98T003077_S	5.0630	4.8838	6.0046	3937.5	4.9848	5.1388
11	S98T003077_X	.57660	.02940	.93842	4092.3	.16424	.10146
12	S98T003077_AX	1032.0	990.41	1005.5	5029.4	977.96	993.23
13	CCV	5.0527	4.8907	5.0018	5.2002	4.8875	4.9230
14	CCB	.00220	.00008	.00191	.01228	.00158	.00170
15	S98T003078	.00355	.00175	.52998	2521.8	-.00182	.08979
16	S98T003079	.02041	.00192	.44668	2165.3	.00480	.06583
17	S98T003080	.07751	.05686	1.2166	4859.4	.04241	.14552
18	S98T003081	.11467	.06032	1.1753	4739.4	.02651	.13737
19	ICSA	247.66	-.00499	-.01434	192.87	.00420	.00110
20	ICSAB	249.21	.43853	-.01265	192.64	.00331	.91832
21	CCV	5.0883	4.9250	5.0361	5.2272	4.9410	4.9604
22	CCB	.00029	-.00002	.00142	.02598	.00232	-.00173

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Analysis Report

Averages

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#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.0778	4.9946	4.8819	5.0675	4.8876	4.9000
2	ICB	-.00359	-.00275	.00696	-.01013	.00109	.00343
3	LLS	.40047	.21672	.20851	.09755	.20555	Q.15657
4	ICSA	.02961	.02453	-.03907	-.00826	.05618	-.00645
5	ICSAB	.03477	1.0126	-.02719	.00357	.05544	-.00479
6	PREPSTD TJJA	5.1535	4.8630	5.0468	5.1352	4.7941	8.6386
7	PREPBLKTJA	.00434	.00355	.04724	-.00162	.00818	Q.56648
8	S98T003077_L	2.5126	.86809	9.3210	-.75915	-.14834	2.0349
9	S98T003077	2.7194	.97071	9.5511	-.10764	.39194	1.9883
10	S98T003077_S	7.8584	5.9950	14.756	5.1607	5.3997	6.8191
11	S98T003077_X	2.6538	1.5132	9.6157	-.85115	1.6594	2.0192
12	S98T003077_AX	1014.0	1014.3	987.45	1014.8	972.66	989.79
13	CCV	4.9257	4.9842	4.8259	5.0013	4.7333	4.8485
14	CCB	.00635	.00117	.00695	-.01092	.01329	.00338
15	S98T003078	7.3207	.51317	14.209	-.02786	.30363	2.2250
16	S98T003079	8.0174	.43864	12.259	-.06318	.22292	1.8647
17	S98T003080	2.3111	1.7181	7.9233	-.08980	.56636	2.6757
18	S98T003081	2.3047	1.4762	7.6486	-.15376	.73594	2.7695
19	ICSA	.03233	.02828	-.03080	-.00278	.07673	-.00451
20	ICSAB	.03671	1.0048	-.03445	.00906	.06938	-.00694
21	CCV	5.0230	5.0019	4.8923	5.0495	4.8049	4.8787
22	CCB	.00535	-.00022	.00072	-.00860	.00631	.00000

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	5.0314	5.1235	.21610	5.1504	4.8975	9.9726
2	ICB	-.00458	-.00004	.00013	-.00045	.01225	-.00878
3	LLS	.19864	.02014	.01056	.02079	.42867	.49264
4	ICSA	-.01649	.00189	.00020	.00089	.04087	-.01326
5	ICSAB	-.01965	.00192	.00235	.00204	-.01943	-.02295
6	PREPSTD TJJA	4.9257	5.0291	.21474	5.2118	4.8977	9.6653
7	PREPBLKTJA	-.01850	.00000	.00011	.00000	.01151	-.06035
8	S98T003077_L	-.30287	-.00206	-.21639	-.01205	.50708	-1.1642
9	S98T003077	.00160	.00085	.01304	-.00214	.12170	-.15931
10	S98T003077_S	4.9336	5.0473	.19224	5.0680	4.6754	9.4783
11	S98T003077_X	-.42634	.00010	-.05986	.02263	2.7241	-1.4186
12	S98T003077_AX	976.00	993.74	44.019	1015.4	987.84	1929.1
13	CCV	4.8926	5.0015	.21869	5.0397	4.8111	9.6618
14	CCB	.00035	.00004	-.00571	-.00002	.01674	.00635
15	S98T003078	-.02948	.00034	-.02117	-.00277	.04191	-.15348
16	S98T003079	-.02398	.00042	-.00827	.00000	.04702	-.11967
17	S98T003080	-.03514	.00000	.01693	.00692	-.03819	-.16899
18	S98T003081	.04689	.00171	-.00131	-.00222	.07666	.02398
19	ICSA	-.01199	.00191	.00370	.00158	.00720	.00186
20	ICSAB	-.01700	.00189	.00609	.00183	.00012	-.02565
21	CCV	4.9719	5.0616	.22658	5.1008	4.8719	9.8124
22	CCB	-.00139	-.00004	-.00218	.00022	.02340	-.00559

HNF-1652 REV. 0

Analysis Report

Averages

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#	Sample Name	V	Y	Zn	Zr
1	ICV	5.0280	.00712	4.7432	4.8986
2	ICB	-.00068	.00000	-.00007	-.00092
3	LLS	.10103	.00041	.01898	.01870
4	ICSA	.00089	.00768	-.00482	-.00363
5	ICSAB	.46542	.00753	.92727	-.00362
6	PREPSTD TJJA	4.9893	.00717	4.6953	4.9724
7	PREPBLKTJA	-.00199	-.00107	.00631	-.00087
8	S98T003077_L	-.05975	-.01517	.18515	.10945
9	S98T003077	.00250	.00006	.20390	.15039
10	S98T003077_S	5.0558	.00851	5.1232	4.6501
11	S98T003077_X	-.03350	.00060	.21117	.09799
12	S98T003077_AX	994.93	1.5783	951.26	968.06
13	CCV	4.9535	.00780	4.7376	4.8010
14	CCB	.00052	.00031	.00015	.00041
15	S98T003078	-.00459	-.00150	.12149	.08178
16	S98T003079	.00136	-.00073	.10876	.06382
17	S98T003080	-.00141	-.00071	.30560	.22692
18	S98T003081	.00879	.00390	.30494	.23115
19	ICSA	.00276	.00791	-.00398	-.00261
20	ICSAB	.46218	.00761	.92195	-.00384
21	CCV	4.9920	.00750	4.7463	4.8518
22	CCB	-.00016	.00000	.00025	-.00014

K D

10-178

10/22/98 07:16
A-0004-1

File #: 981022G.TYT

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LABCORE Data Entry Template for Worklist# 26689

Analyst: JK Sejo Instrument: ICP042 10-22-98Book# 788888Method: LA-505-151/161 Rev/Mod C-3figure dose rate at 30cm is ≤ 50 mrem/hr
prior to performing this analysis.

Worklist Comment: ICP AW-101 (SOLID ACID DIGEST)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 ICV			@ICP-QC	QC		
2 ICB			@ICP-QC	QC		
3 LLS			@ICP-QC	QC		
4 ICSA			@ICP-QC	QC		
5 ICSAB			@ICP-QC	QC		
6 PREPSTDITJA			@ICP-A01	SOLID		
7 PREPELKTJA			@ICP-A01	SOLID		
8 SERDIL	S98T003087 0 A		@ICP-A01	SOLID		
9 SAMPLE	S98T003087 0 A		@ICP-A01	SOLID	98000554	AW-101 LAW
Analytes Requested: AG-A-01 , AL-A-01 , AS-A-01 , B-A-01 , BA-A-01 , BE-A-01 , BI-A-01 , CA-A-01 , CD-A-01 , CE-A-01 , CO-A-01 , CR-A-01 , CU-A-01 , FE-A-01 , K-A-01 , LA-A-01 , LI-A-01 , MG-A-01 , MN-A-01 , MO-A-01 , NA-A-01 , ND-A-01 , NI-A-01 , P-A-01 , PB-A-01 , S-A-01 , SB-A-01 , SE-A-01 , SI-A-01 , SM-A-01 , SR-A-01 , TI-A-01 , TL-A-01 , U-A-01 , V-A-01 , ZN-A-01 , ZR-A-01						
0 SPK-PREDIG	S98T003087 0 A		@ICP-A01	SOLID		
1 CCV	10 ppb (10 ppb) <u>10-22-98</u>		@ICP-QC	QC		
2 CCB			@ICP-QC	QC		
3 SAMPLE	S98T003088 0 A		@ICP-A01	SOLID	98000554	AW-101 LAW
Analytes Requested: AG-A-01 , AL-A-01 , AS-A-01 , B-A-01 , BA-A-01 , BE-A-01 , BI-A-01 , CA-A-01 , CD-A-01 , CE-A-01 , CO-A-01 , CR-A-01 , CU-A-01 , FE-A-01 , K-A-01 , LA-A-01 , LI-A-01 , MG-A-01 , MN-A-01 , MO-A-01 , NA-A-01 , ND-A-01 , NI-A-01 , P-A-01 , PB-A-01 , S-A-01 , SB-A-01 , SE-A-01 , SI-A-01 ,						

Data Entry Comments:

uploaded 10-22-98
John WarrallValidated by:
Paul M. Yang
10/23/98

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

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LABCORE Data Entry Template for Worklist# 26689

S Type	Sample#	R A	Test	Matrix	Group#	Project
			SM-A-01	SR-A-01	TI-A-01	TL-A-01
			ZN-A-01	ZR-A-01		
14 SAMPLE	S98T003089 0 A	@ICP-A01	SOLID		98000554	AW-101 LAW
	Analytes Requested:					
			AG-A-01	AL-A-01	AS-A-01	B-A-01
			BE-A-01	BI-A-01	CA-A-01	CD-A-01
			CR-A-01	CU-A-01	FE-A-01	K-A-01
			MG-A-01	MN-A-01	MO-A-01	NA-A-01
			P-A-01	PB-A-01	S-A-01	SB-A-01
			SM-A-01	SR-A-01	TI-A-01	TL-A-01
			ZN-A-01	ZR-A-01		
15 SAMPLE	S98T003090 0 A	@ICP-A01	SOLID		98000554	AW-101 LAW
	Analytes Requested:					
			AG-A-01	AL-A-01	AS-A-01	B-A-01
			BE-A-01	BI-A-01	CA-A-01	CD-A-01
			CR-A-01	CU-A-01	FE-A-01	K-A-01
			MG-A-01	MN-A-01	MO-A-01	NA-A-01
			P-A-01	PB-A-01	S-A-01	SB-A-01
			SM-A-01	SR-A-01	TI-A-01	TL-A-01
			ZN-A-01	ZR-A-01		
16 SAMPLE	S98T003091 0 A	@ICP-A01	SOLID		98000554	AW-101 LAW
	Analytes Requested:					
			AG-A-01	AL-A-01	AS-A-01	B-A-01
			BE-A-01	BI-A-01	CA-A-01	CD-A-01
			CR-A-01	CU-A-01	FE-A-01	K-A-01
			MG-A-01	MN-A-01	MO-A-01	NA-A-01
			P-A-01	PB-A-01	S-A-01	SB-A-01
			SM-A-01	SR-A-01	TI-A-01	TL-A-01
			ZN-A-01	ZR-A-01		
17 ICSA		@ICP-QC	QC			
18 ICSAB		@ICP-QC	QC			
19 CCV		@ICP-QC	QC			
20 CCB		@ICP-QC	QC			

Final page for worklist # 26689

10-22-98

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

S 98700 3087

$$C_r = 5.0523 \frac{\mu\text{g}}{\text{ml}} \times \frac{1}{5.29 \frac{\text{g}}{\text{L}} \times \frac{1\text{L}}{1000\text{ml}}} = 9.55 \pm 2 \frac{\mu\text{g}}{\text{g}}$$

Pre-spike:

$$C_r = \frac{10.185 - 5.0523}{5} \times 100 = 103.3 \%$$

Post spike:

$$\text{Al} = \frac{\left(\frac{358.77}{30}\right) - \left(\frac{67.220}{30}\right)}{10} \times 100 = 97.2 \%$$

$$\text{Na} = \frac{\left(\frac{1163.9}{30}\right) - \left(\frac{879.49}{30}\right)}{10} \times 100 = 94.8 \%$$

$$\text{P} = \frac{\left(\frac{329.81}{30}\right) - \left(\frac{28.013}{30}\right)}{10} \times 100 = 100.6 \%$$

$$\text{Si} = \frac{\left(\frac{303.61}{30}\right) - \left(\frac{3.8100}{30}\right)}{10} \times 100 = 99.9 \%$$

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LABCORE Data Entry Template for Worklist# 26689

S Type	Sample#	R A Test	Matrix	Group#	Project
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Prep54/TJA	1	Direct		DF	1
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Prep61k/TJA		Direct			1
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5487003087_1		3.6-2.8		DF	15
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5487003087		3.6			3
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5487003087_5		3.6			3
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5487003087_X		3.6-1.9			30
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5487003087_QX		3.6-1.9			30
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5487003088		3.6		DF	3
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5487003089		3.6		DF	3
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5487003090		3.6		DF	3
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5487003091		3.6		DF	3
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Data Entry Comments:

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

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Analysis Report

Summary

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#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	981022A	ICP2	10/22/98	12:34	DKS	Q	CONC
2	ICB	981022A	ICP2	10/22/98	12:37	DKS	Q	CONC
3	LLS	981022A	ICP2	10/22/98	12:48	DKS	Q	CONC
4	ICSA	981022A	ICP2	10/22/98	12:51	DKS	Q	CONC
5	ICSAB	981022A	ICP2	10/22/98	12:54	DKS	Q	CONC
6	PREPSTDTJA	981022A	ICP2	10/22/98	12:59	DKS	Q	CONC
7	PREPBLKTJA	981022A	ICP2	10/22/98	13:03	DKS	Q	CONC
8	S98T003087_L	981022A	ICP2	10/22/98	13:17	DKS	S	CONC
9	S98T003087	981022A	ICP2	10/22/98	13:20	DKS	S	CONC
10	S98T003087_S	981022A	ICP2	10/22/98	13:23	DKS	S	CONC
11	S98T003087_X	981022A	ICP2	10/22/98	13:28	DKS	S	CONC
12	S98T003087_AX	981022A	ICP2	10/22/98	13:31	DKS	S	CONC
13	CCV	981022A	ICP2	10/22/98	13:52	DKS	Q	CONC
14	CCB	981022A	ICP2	10/22/98	13:55	DKS	Q	CONC
15	S98T003088	981022A	ICP2	10/22/98	13:58	DKS	S	CONC
16	S98T003089	981022A	ICP2	10/22/98	14:01	DKS	S	CONC
17	S98T003090	981022A	ICP2	10/22/98	14:04	DKS	S	CONC
18	S98T003091	981022A	ICP2	10/22/98	14:07	DKS	S	CONC
19	ICSA	981022A	ICP2	10/22/98	14:12	DKS	Q	CONC
20	ICSAB	981022A	ICP2	10/22/98	14:15	DKS	Q	CONC
21	CCV	981022A	ICP2	10/22/98	14:18	DKS	Q	CONC
22	CCB	981022A	ICP2	10/22/98	14:22	DKS	Q	CONC

JK
10-22-98
Worklist # 26489

Q6-101
5987003087
5987003088
5987003087
5987003090
5987003091

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 433 TO 437

HNF-1652 REV. 0

Analysis Report

Averages

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#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	5.0097	4.9354	5.0893	5.0152	4.9635	5.0300
2	ICB	-.00065	-.00019	-.00065	.00046	-.00004	-.00013
3	LLS	.01983	.10152	.19762	.10029	.09772	.01009
4	ICSA	.00276	240.70	.04468	-.00371	.00037	.00000
5	ICSAB	.94877	241.39	.05468	-.00699	.45880	.47217
6	PREPSTDITJA	.94526	4.8300	4.7586	5.1482	4.9254	5.2399
7	PREPBLKTJA	-.00164	Q.09859	.00733	Q.44313	.00071	-.00026
8	S98T003087_L	.28371	65.949	.15360	.69286	.07654	.00455
9	S98T003087	.27572	63.012	-.02165	.68991	.07401	.00593
10	S98T003087_S	1.2921	69.644	4.9889	5.4369	4.9678	5.1004
11	S98T003087_X	.26756	67.220	.16559	.76331	.07625	.00455
12	S98T003087_AX	277.06	358.77	299.62	306.47	301.39	295.87
13	CCV	5.0224	4.9654	5.1192	5.0208	5.0141	5.0565
14	CCB	.00126	.00626	-.00174	.00093	.00000	.00004
15	S98T003088	.81722	49.214	.04697	.38455	.26452	.00530
16	S98T003089	.95362	45.242	-.06435	.72747	.31635	.00540
17	S98T003090	.16699	75.213	-.04869	.37296	.03596	.00636
18	S98T003091	.18286	87.500	-.08552	.89311	.03960	.00739
19	ICSA	.00329	244.20	.04050	-.00639	.00023	.00004
20	ICSAB	.95081	243.40	.06836	-.00597	.46421	.47595
21	CCV	5.0202	4.9617	5.1351	5.0339	5.0454	5.0793
22	CCB	-.00153	.00192	-.00174	.00515	-.00002	.00000

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.0254	5.0016	5.0692	5.0303	4.9720	4.9451
2	ICB	-.00170	-.00209	.00044	-.00757	-.00159	.00014
3	LLS	.20223	.21447	.01029	.19978	.03840	.02036
4	ICSA	-.00636	255.30	.00580	.00073	.00119	-.00223
5	ICSAB	-.00775	254.29	.93555	-.00194	.45754	.46077
6	PREPSTDITJA	4.6545	4.9302	4.7452	4.9890	4.7147	4.7684
7	PREPBLKTJA	-.00366	Q.11792	.00000	-.00501	-.00088	.00285
8	S98T003087_L	.12074	3.4289	.09480	-.03896	-.00308	5.2953
9	S98T003087	.10484	3.3319	.09402	.01318	.01189	5.0523
10	S98T003087_S	5.0030	8.4173	5.0960	5.0377	4.9417	10.189
11	S98T003087_X	-.42009	3.6845	.09513	-.10764	-.03390	5.3892
12	S98T003087_AX	304.00	306.32	296.67	300.72	300.61	303.62
13	CCV	4.9422	5.0170	5.0758	5.0656	4.9812	4.9526
14	CCB	-.01393	-.00244	.00084	.00127	-.00207	-.00054
15	S98T003088	.43598	10.309	.32237	.08811	.04273	16.734
16	S98T003089	5.2244	12.059	.39296	.08360	.05174	19.703
17	S98T003090	.04193	1.7355	.05105	-.00293	.01066	2.5630
18	S98T003091	.09391	1.9702	.05645	.01121	.00414	2.8469
19	ICSA	-.00945	255.44	.00608	.00303	-.00112	-.00244
20	ICSAB	-.01453	254.40	.93938	.00034	.46156	.46469
21	CCV	5.0314	5.0346	5.0785	5.0936	4.9941	4.9588
22	CCB	.01009	-.00063	-.00038	-.00488	.00086	.00115

Analysis Report

Averages

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#	Sample Name	Cu	Bu	Fe	K	La	Li
1	ICV	4.7317	.00704	4.9007	5.0258	4.9948	5.0114
2	ICB	-.00024	-.00038	.00017	-.04314	-.00089	-.00051
3	LLS	.01644	.00064	.09633	.46039	.10043	.02053
4	ICSA	.00217	.01355	92.274	.14605	-.00427	.00227
5	ICSAB	.45956	.01945	92.070	.08143	-.00483	.98031
6	PREPSTDTJA	4.6169	.00596	4.6638	4.8905	4.9811	4.9782
7	PREPBLKTJA	.00298	-.00138	.02338	-.06175	-.00130	-.00175
8	S98T003087_L	-.02036	-.00643	3.8792	110.18	.06119	-.00858
9	S98T003087	-.01715	-.00033	3.7294	106.45	.06229	.00104
10	S98T003087_S	4.6645	.00859	8.6552	113.04	5.0789	4.9627
11	S98T003087_X	-.03293	.01175	3.9669	110.91	.05718	-.00706
12	S98T003087_AX	282.51	.43951	289.24	420.66	299.03	300.49
13	CCV	4.7648	.00684	4.9001	5.0360	5.0226	5.0518
14	CCB	-.00021	-.00058	.00037	-.03508	.00001	-.00030
15	S98T003088	-.10687	.00472	13.706	65.323	.23280	.00573
16	S98T003089	-.13421	.00614	16.145	56.118	.27941	.00671
17	S98T003090	.00092	.00243	1.7938	126.91	.03136	.00239
18	S98T003091	.00188	-.00066	1.9459	116.79	.03458	-.00042
19	ICSA	.00266	.01769	92.675	-.03241	-.00401	.00165
20	ICSAB	.46482	.02205	92.355	.03810	-.00484	.99415
21	CCV	4.7868	.00750	4.8965	5.0986	5.0525	5.1237
22	CCB	.00009	.00071	.00030	.14437	-.00046	.00000

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.0982	4.9276	5.0285	5.1841	4.8908	4.9676
2	ICB	-.00386	-.00011	-.00096	.02187	-.00192	-.00414
3	LLS	.20801	.02015	.10043	.19364	.19554	.03189
4	ICSA	248.28	-.00486	-.01903	189.82	-.00196	-.01299
5	ICSAB	248.31	.44015	-.01813	191.87	-.00237	.91076
6	PREPSTDTJA	4.7638	4.7112	4.8581	6.3009	4.8962	4.8009
7	PREPBLKTJA	.00752	.00014	-.00211	Q.94473	-.00102	-.00540
8	S98T003087_L	.89788	3.7323	.11202	865.62	.05830	.54504
9	S98T003087	.83045	3.5805	.12479	815.07	.04956	.64633
10	S98T003087_S	5.7885	8.6251	5.1451	784.67	4.9567	5.6757
11	S98T003087_X	1.0613	3.8155	.14367	879.49	-.03446	.52238
12	S98T003087_AX	310.44	301.21	301.05	1163.9	291.97	298.12
13	CCV	5.1005	4.9423	5.0283	5.1711	4.9161	4.9821
14	CCB	-.00226	-.00005	-.00064	.02473	-.00197	-.00149
15	S98T003088	2.8750	13.027	.07097	775.49	.19459	2.1665
16	S98T003089	3.4563	15.571	.05080	742.13	.23276	2.6402
17	S98T003090	.39797	1.7082	.16570	846.85	.02390	.31701
18	S98T003091	.43547	1.8721	.19292	952.89	.02424	.35561
19	ICSA	251.16	-.00521	-.01521	193.71	-.00054	-.02050
20	ICSAB	249.91	.44021	-.01622	193.39	-.00098	.91202
21	CCV	5.0878	4.9416	5.0471	5.2167	4.9542	4.9836
22	CCB	-.00466	.00017	-.00031	.01506	.00121	-.00229

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Analysis Report

Averages

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#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	4.9914	5.0102	4.8383	5.0200	4.7275	4.9289
2	ICB	.00278	-.00987	.01436	.00254	-.00446	-.00124
3	LLS	.39400	.20606	.20531	.09615	.19463	Q.15171
4	ICSA	.03630	.01786	-.04135	-.00366	.04479	-.00575
5	ICSAB	.03041	.99617	-.03334	.00434	.02894	-.00607
6	PREPSTD TJ A	4.7188	4.5237	4.5283	4.7027	4.5531	1.6621
7	PREPBLKTJA	.02238	.00168	.04830	.00923	-.00124	Q.72968
8	S98T003087_L	27.606	.38025	12.531	.16426	-.05175	3.6099
9	S98T003087	26.097	.28790	11.987	.02240	.06023	3.4579
10	S98T003087_S	16.154	5.1919	17.108	4.9992	4.8715	5.0622
11	S98T003087_X	28.013	.15268	12.800	.24921	-.19383	3.8100
12	S98T003087_AX	329.81	303.62	307.66	303.09	288.84	303.61
13	CCV	5.0371	5.0053	4.8765	5.0271	4.7577	4.9283
14	CCB	.00697	-.00926	.00401	.00334	-.01740	-.00095
15	S98T003088	18.945	1.0504	2.1416	.02617	.02740	8.9988
16	S98T003089	11.106	1.3817	1.7870	.03649	.03620	10.423
17	S98T003090	6.3061	.22005	8.1496	.00673	.06748	1.5040
18	S98T003091	5.3608	.24969	9.0171	.03843	.08909	2.1844
19	ICSA	.03273	.01728	-.03372	.02253	.04146	-.00620
20	ICSAB	.02871	.98386	-.02863	.01343	.04435	-.00562
21	CCV	4.9710	4.9853	4.8596	5.0370	4.7626	4.9318
22	CCB	-.00180	.00207	.00677	.00076	.00692	.00257

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.8957	5.0139	.22260	5.0495	4.8422	9.6746
2	ICB	-.00595	-.00008	-.00346	-.00001	-.00902	-.01531
3	LLS	.19937	.01992	.00588	.02007	.39946	.48530
4	ICSA	-.01873	.00177	.00926	.00140	-.01124	-.06030
5	ICSAB	-.02211	.00180	-.00154	.00090	-.05862	-.06324
6	PREPSTD TJ A	4.9046	4.9797	.21319	4.9758	4.5539	9.6498
7	PREPBLKTJA	-.02052	-.00004	-.00257	.00000	-.00730	-.06972
8	S98T003087_L	-.10884	.04900	.37362	.02403	-.34967	15.458
9	S98T003087	-.03293	.04877	.32655	.02547	-.04751	15.176
10	S98T003087_S	4.8942	5.0553	.55837	5.0641	4.7122	25.337
11	S98T003087_X	.04070	.04765	.43384	.00715	-.31786	16.004
12	S98T003087_AX	291.17	296.86	14.051	303.95	294.51	592.93
13	CCV	4.9268	5.0344	.22032	5.0758	4.8455	9.7390
14	CCB	-.00387	-.00012	.00249	-.00021	.00178	-.01908
15	S98T003088	-.01979	.17361	1.2084	.08510	-.02605	54.473
16	S98T003089	-.00652	.20782	1.4117	.09954	-.04001	65.106
17	S98T003090	.00069	.02402	.16747	.01260	-.01165	7.2563
18	S98T003091	-.02765	.02589	.17207	.01360	-.00764	7.9185
19	ICSA	-.02306	.00185	.00978	.00117	-.01003	-.06926
20	ICSAB	-.02395	.00180	.00528	.00115	.00993	-.06761
21	CCV	4.9608	5.0679	.22387	5.0890	4.8652	9.8020
22	CCB	.00535	.00004	-.00302	.00044	-.02304	.01546

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Analysis Report

Averages

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#	Sample Name	V	Y	Zn	Zr
1	ICV	4.9717	.00733	4.7773	4.8240
2	ICB	-.00171	-.00022	-.00007	-.00034
3	LLS	.10015	.00057	.01973	.01945
4	ICSA	.00008	.00747	-.00347	-.00422
5	ICSAB	.46071	.00723	.92201	-.00350
6	PREPSTD TJJA	4.8819	.00600	4.3445	4.7415
7	PREPBLKTJA	-.00477	-.00114	.00877	-.00097
8	S98T003087_L	-.02731	.00048	.10858	.99247
9	S98T003087	.00276	.00530	.07308	.97843
10	S98T003087_S	5.0178	.01368	4.8244	5.8466
11	S98T003087_X	-.02062	.01200	.10832	1.0154
12	S98T003087_AX	299.02	.47451	286.39	291.35
13	CCV	4.9926	.00706	4.7752	4.8418
14	CCB	-.00207	-.00038	.00031	-.00078
15	S98T003088	.00881	.02457	.14337	3.2487
16	S98T003089	.01058	.03040	.17230	4.1323
17	S98T003090	.00053	.00326	.05939	.47931
18	S98T003091	-.00390	.00251	.07453	.51659
19	ICSA	.00002	.00731	-.00370	-.00459
20	ICSAB	.46265	.00723	.92486	-.00496
21	CCV	5.0016	.00711	4.7720	4.8587
22	CCB	-.00037	.00015	-.00034	.00082

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10-22-98

LABCORE Completed Worklist Report for Worklist# 26328

Analyst: bjg

Instrument: ICPMS1

Book#: 5B59

Method: LA-506-101 Rev/Mod A-0

Worklist Comment: ICP/MS AW-101 (DIRECT)

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 ICV	0	0	MSACT TH232	QC	1.0e-2	9.85e-03	98.500 % Recovery	
1 ICV	0	0	MSACT NP237	QC	9.84e-3	1.38e-02	140.244 % Recovery	
1 ICV	0	0	MSACT PU239	QC	1.05e-2	1.58e-02	150.476 % Recovery	
1 ICV	0	0	MSACT 241	QC	8.91e-3	2.66e-05	0.299 % Recovery	
2 ICB	0	0	MSACT1 PA231-A1	LIQUID	1	<1.32e-5		ug/mL
2 ICB	0	0	MSACT1 PU239-A1	LIQUID	1	<1.49e-5		ug/mL
2 ICB	0	0	MSACT1 PU240-A1	LIQUID	1	<5.64e-6		ug/mL
2 ICB	0	0	MSACT1 PU242-A1	LIQUID	1	<1.37e-5		ug/mL
2 ICB	0	0	MSACT1 241-A1	LIQUID	1	<8.75e-6		ug/mL
2 ICB	0	0	MSACT1 243-A1	LIQUID	1	<1.32e-5		ug/mL
2 ICB	0	0	MSACT1 244-A1	LIQUID	1	<7.92e-6		ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 PA231-A1	LIQUID	N/A	< 5.336e-01	0.534	ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 TH229-A1	LIQUID	N/A	< 1.459e+00	1.459	ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 TH230-A1	LIQUID	N/A	< 1.416e+00	1.416	ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 TH232-A1	LIQUID	N/A	< 8.263e-01	0.826	ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 NP237-A1	LIQUID	N/A	< 7.617e-01	0.762	ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 PU239-A1	LIQUID	N/A	< 6.052e-01	0.605	ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 PU240-A1	LIQUID	N/A	< 2.285e-01	0.229	ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 PU242-A1	LIQUID	N/A	< 5.564e-01	0.556	ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 241-A1	LIQUID	N/A	< 3.545e-01	0.354	ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 243-A1	LIQUID	N/A	< 5.361e-01	0.536	ug/mL
3 SAMPLE	S98T002782	0 A	MSACT1 244-A1	LIQUID	N/A	< 3.206e-01	0.321	ug/mL
4 DUP	S98T002782	0 A	MSACT1 PA231-A1	LIQUID	<5.34e-1	<5.34e-1		RPD
4 DUP	S98T002782	0 A	MSACT1 TH229-A1	LIQUID	<1.46e0	<1.46e0		RPD
4 DUP	S98T002782	0 A	MSACT1 TH230-A1	LIQUID	<1.42e0	<1.42e0		RPD
4 DUP	S98T002782	0 A	MSACT1 TH232-A1	LIQUID	<8.26e-1	<8.26e-1		RPD
4 DUP	S98T002782	0 A	MSACT1 NP237-A1	LIQUID	<7.62e-1	<7.62e-1		RPD
4 DUP	S98T002782	0 A	MSACT1 PU239-A1	LIQUID	<6.05e-1	<6.05e-1		RPD
4 DUP	S98T002782	0 A	MSACT1 PU240-A1	LIQUID	<2.29e-1	<2.28e-1		RPD
4 DUP	S98T002782	0 A	MSACT1 PU242-A1	LIQUID	<5.56e-1	<5.56e-1		RPD
4 DUP	S98T002782	0 A	MSACT1 241-A1	LIQUID	<3.54e-1	<3.54e-1		RPD
4 DUP	S98T002782	0 A	MSACT1 243-A1	LIQUID	<5.36e-1	<5.36e-1		RPD
4 DUP	S98T002782	0 A	MSACT1 244-A1	LIQUID	<3.21e-1	<3.21e-1		RPD
5 SPK-POST	S98T002782	0 A	MSACT1 TH232-A1	LIQUID	0.0210	1.78e-02	84.762 % Recovery	
5 SPK-POST	S98T002782	0 A	MSACT1 NP237-A1	LIQUID	0.0168	2.62e-02	155.952 % Recovery	
5 SPK-POST	S98T002782	0 A	MSACT1 PU239-A1	LIQUID	0.0210	3.06e-02	145.714 % Recovery	
5 SPK-POST	S98T002782	0 A	MSACT1 241-A1	LIQUID	0.01780	5.29e-05	0.297 % Recovery	
6 SAMPLE	S98T002783	0 A	MSACT1 PA231-A1	LIQUID	N/A	< 5.336e-01	0.534	ug/mL
6 SAMPLE	S98T002783	0 A	MSACT1 TH229-A1	LIQUID	N/A	< 1.459e+00	1.459	ug/mL
6 SAMPLE	S98T002783	0 A	MSACT1 TH230-A1	LIQUID	N/A	< 1.416e+00	1.416	ug/mL
6 SAMPLE	S98T002783	0 A	MSACT1 TH232-A1	LIQUID	N/A	< 8.263e-01	0.826	ug/mL

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

LABCORE Completed Worklist Report for Worklist# 26328

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SAMPLE	S98T002783	0 A	OMSACTA1 NP237-A1	LIQUID	<u>N/A</u> <	7.617e-01	0.762	ug/mL
6 SAMPLE	S98T002783	0 A	OMSACTA1 PU239-A1	LIQUID	<u>N/A</u> <	6.052e-01	0.605	ug/mL
6 SAMPLE	S98T002783	0 A	OMSACTA1 PU240-A1	LIQUID	<u>N/A</u> <	2.285e-01	0.229	ug/mL
6 SAMPLE	S98T002783	0 A	OMSACTA1 PU242-A1	LIQUID	<u>N/A</u> <	5.564e-01	0.556	ug/mL
6 SAMPLE	S98T002783	0 A	OMSACTA1 241-A1	LIQUID	<u>N/A</u> <	3.545e-01	0.354	ug/mL
6 SAMPLE	S98T002783	0 A	OMSACTA1 243-A1	LIQUID	<u>N/A</u> <	5.361e-01	0.536	ug/mL
6 SAMPLE	S98T002783	0 A	OMSACTA1 244-A1	LIQUID	<u>N/A</u> <	3.206e-01	0.321	ug/mL
7 DUP	S98T002783	0 A	OMSACTA1 PA231-A1	LIQUID	<5.34e-1	<5.34e-1		RPD
7 DUP	S98T002783	0 A	OMSACTA1 TH229-A1	LIQUID	<1.46e0	<1.46e0		RPD
7 DUP	S98T002783	0 A	OMSACTA1 TH230-A1	LIQUID	<1.42e0	<1.42e0		RPD
7 DUP	S98T002783	0 A	OMSACTA1 TH232-A1	LIQUID	<8.26e-1	<8.26e-1		RPD
7 DUP	S98T002783	0 A	OMSACTA1 NP237-A1	LIQUID	<7.62e-1	<7.62e-1		RPD
7 DUP	S98T002783	0 A	OMSACTA1 PU239-A1	LIQUID	<6.05e-1	<6.05e-1		RPD
7 DUP	S98T002783	0 A	OMSACTA1 PU240-A1	LIQUID	<2.29e-1	<2.29e-1		RPD
7 DUP	S98T002783	0 A	OMSACTA1 PU242-A1	LIQUID	<5.56e-1	<5.56e-1		RPD
7 DUP	S98T002783	0 A	OMSACTA1 241-A1	LIQUID	<3.54e-1	<3.54e-1		RPD
7 DUP	S98T002783	0 A	OMSACTA1 243-A1	LIQUID	<5.36e-1	<5.36e-1		RPD
7 DUP	S98T002783	0 A	OMSACTA1 244-A1	LIQUID	<3.21e-1	<3.21e-1		RPD
8 SAMPLE	S98T002784	0 A	OMSACTA1 PA231-A1	LIQUID	<u>N/A</u> <	5.336e-01	0.534	ug/mL
8 SAMPLE	S98T002784	0 A	OMSACTA1 TH229-A1	LIQUID	<u>N/A</u> <	1.459e+00	1.459	ug/mL
8 SAMPLE	S98T002784	0 A	OMSACTA1 TH230-A1	LIQUID	<u>N/A</u> <	1.416e+00	1.416	ug/mL
8 SAMPLE	S98T002784	0 A	OMSACTA1 TH232-A1	LIQUID	<u>N/A</u> <	8.263e-01	0.826	ug/mL
8 SAMPLE	S98T002784	0 A	OMSACTA1 NP237-A1	LIQUID	<u>N/A</u> <	7.617e-01	0.762	ug/mL
8 SAMPLE	S98T002784	0 A	OMSACTA1 PU239-A1	LIQUID	<u>N/A</u> <	6.052e-01	0.605	ug/mL
8 SAMPLE	S98T002784	0 A	OMSACTA1 PU240-A1	LIQUID	<u>N/A</u> <	2.285e-01	0.229	ug/mL
8 SAMPLE	S98T002784	0 A	OMSACTA1 PU242-A1	LIQUID	<u>N/A</u> <	5.564e-01	0.556	ug/mL
8 SAMPLE	S98T002784	0 A	OMSACTA1 241-A1	LIQUID	<u>N/A</u> <	3.545e-01	0.354	ug/mL
8 SAMPLE	S98T002784	0 A	OMSACTA1 243-A1	LIQUID	<u>N/A</u> <	5.361e-01	0.536	ug/mL
8 SAMPLE	S98T002784	0 A	OMSACTA1 244-A1	LIQUID	<u>N/A</u> <	3.206e-01	0.321	ug/mL
9 DUP	S98T002784	0 A	OMSACTA1 PA231-A1	LIQUID	<5.34e-1	<5.34e-1		RPD
9 DUP	S98T002784	0 A	OMSACTA1 TH229-A1	LIQUID	<1.46e0	<1.46e0		RPD
9 DUP	S98T002784	0 A	OMSACTA1 TH230-A1	LIQUID	<1.42e0	<1.42e0		RPD
9 DUP	S98T002784	0 A	OMSACTA1 TH232-A1	LIQUID	<8.26e-1	<8.26e-1		RPD
9 DUP	S98T002784	0 A	OMSACTA1 NP237-A1	LIQUID	<7.62e-1	<7.62e-1		RPD
9 DUP	S98T002784	0 A	OMSACTA1 PU239-A1	LIQUID	<6.05e-1	<6.05e-1		RPD
9 DUP	S98T002784	0 A	OMSACTA1 PU240-A1	LIQUID	<2.29e-1	<2.29e-1		RPD
9 DUP	S98T002784	0 A	OMSACTA1 PU242-A1	LIQUID	<5.56e-1	<5.56e-1		RPD
9 DUP	S98T002784	0 A	OMSACTA1 241-A1	LIQUID	<3.54e-1	<3.54e-1		RPD
9 DUP	S98T002784	0 A	OMSACTA1 243-A1	LIQUID	<5.36e-1	<5.36e-1		RPD
9 DUP	S98T002784	0 A	OMSACTA1 244-A1	LIQUID	<3.21e-1	<3.21e-1		RPD
10 SAMPLE	S98T002794	0 A	OMSACTA1 PA231-A1	LIQUID	<u>N/A</u> <	1.318e-04	1.32e-004	ug/mL
10 SAMPLE	S98T002794	0 A	OMSACTA1 TH229-A1	LIQUID	<u>N/A</u> <	3.603e-04	3.60e-004	ug/mL
10 SAMPLE	S98T002794	0 A	OMSACTA1 TH230-A1	LIQUID	<u>N/A</u> <	3.495e-04	3.49e-004	ug/mL
10 SAMPLE	S98T002794	0 A	OMSACTA1 TH232-A1	LIQUID	<u>N/A</u> <	1.717e-02	2.04e-004	ug/mL
10 SAMPLE	S98T002794	0 A	OMSACTA1 NP237-A1	LIQUID	<u>N/A</u> <	1.881e-04	1.88e-004	ug/mL
10 SAMPLE	S98T002794	0 A	OMSACTA1 PU239-A1	LIQUID	<u>N/A</u> <	1.494e-04	1.49e-004	ug/mL
10 SAMPLE	S98T002794	0 A	OMSACTA1 PU240-A1	LIQUID	<u>N/A</u> <	5.641e-05	5.64e-005	ug/mL
10 SAMPLE	S98T002794	0 A	OMSACTA1 PU242-A1	LIQUID	<u>N/A</u> <	1.374e-04	1.37e-004	ug/mL
10 SAMPLE	S98T002794	0 A	OMSACTA1 241-A1	LIQUID	<u>N/A</u> <	8.753e-05	8.75e-005	ug/mL

LABCORE Completed Worklist Report for Worklist# 26328

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
10 SAMPLE	S98T002794	0 A	OMSACTA1 243-A1	LIQUID	N/A <	1.324e-04	1.32e-004	ug/mL
10 SAMPLE	S98T002794	0 A	OMSACTA1 244-A1	LIQUID	N/A <	7.915e-05	7.91e-005	ug/mL
11 DUP	S98T002794	0 A	OMSACTA1 PA231-A1	LIQUID	<1.32e-4	<1.32e-4		RPD
11 DUP	S98T002794	0 A	OMSACTA1 TH229-A1	LIQUID	<3.60e-4	<3.60e-4		RPD
11 DUP	S98T002794	0 A	OMSACTA1 TH230-A1	LIQUID	<3.49e-4	<3.49e-4		RPD
11 DUP	S98T002794	0 A	OMSACTA1 TH232-A1	LIQUID	1.72e-02	2.71e-03	145.555	RPD
11 DUP	S98T002794	0 A	OMSACTA1 NP237-A1	LIQUID	<1.88e-4	<1.88e-4		RPD
11 DUP	S98T002794	0 A	OMSACTA1 PU239-A1	LIQUID	<1.49e-4	<1.49e-4		RPD
11 DUP	S98T002794	0 A	OMSACTA1 PU240-A1	LIQUID	<5.64e-5	<5.64e-5		RPD
11 DUP	S98T002794	0 A	OMSACTA1 PU242-A1	LIQUID	<1.37e-4	<1.37e-4		RPD
11 DUP	S98T002794	0 A	OMSACTA1 241-A1	LIQUID	<8.75e-5	<8.75e-5		RPD
11 DUP	S98T002794	0 A	OMSACTA1 243-A1	LIQUID	<1.32e-4	<1.32e-4		RPD
11 DUP	S98T002794	0 A	OMSACTA1 244-A1	LIQUID	<7.91e-5	<7.92e-5		RPD
12 CCV	0		OMSACT TH232	QC	1.0e-2	9.61e-03	96.100 % Recovery	
12 CCV	0		OMSACT NP237	QC	9.84e-3	1.35e-02	137.195 % Recovery	
12 CCV	0		OMSACT PU239	QC	1.05e-2	1.55e-02	147.619 % Recovery	
12 CCV	0		OMSACT 241	QC	8.91e-3	2.10e-05	0.236 % Recovery	
13 CCB	0		OMSACTA1 PA231-A1	LIQUID	1	<1.32e-5		ug/mL
13 CCB	0		OMSACTA1 TH229-A1	LIQUID	1	<3.60e-5		ug/mL
13 CCB	0		OMSACTA1 TH230-A1	LIQUID	1	<3.49e-5		ug/mL
13 CCB	0		OMSACTA1 TH232-A1	LIQUID	1	<2.04e-5		ug/mL
13 CCB	0		OMSACTA1 PU239-A1	LIQUID	1	<1.49e-5		ug/mL
13 CCB	0		OMSACTA1 PU240-A1	LIQUID	1	<5.64e-6		ug/mL
13 CCB	0		OMSACTA1 PU242-A1	LIQUID	1	<1.37e-5		ug/mL
13 CCB	0		OMSACTA1 241-A1	LIQUID	1	<8.75e-6		ug/mL
13 CCB	0		OMSACTA1 243-A1	LIQUID	1	<1.32e-5		ug/mL
13 CCB	0		OMSACTA1 244-A1	LIQUID	1	<7.92e-6		ug/mL

Final page for worklist# 26328

Analyst Signature

Date

Analyst Signature

Date

Sam M. Pong 1/29/99
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 26328

Analyst: _____ Instrument: ICPMS1 _____ Book# 5B59

Method: LA-506-101 Rev/Mod A-0

Worklist Comment: ICP/MS AW-101 (DIRECT)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 ICV			@MSACT	QC		
2 ICB			@MSACTA1	LIQUID		
3 SAMPLE	S98T002782	0 A	@MSACTA1	LIQUID	98000261	AW-101 LAW
	Analytes Requested: 241-A1 , 243-A1 , 244-A1 , NP237-A1, PA231-A1, PU239-A1, PU240-A1, PU242-A1, TH229-A1, TH230-A1, TH232-A1					
4 DUP	S98T002782	0 A	@MSACTA1	LIQUID		
5 SPK	S98T002782	0 A	@MSACTA1	LIQUID		
6 SAMPLE	S98T002783	0 A	@MSACTA1	LIQUID	98000261	AW-101 LAW
	Analytes Requested: 241-A1 , 243-A1 , 244-A1 , NP237-A1, PA231-A1, PU239-A1, PU240-A1, PU242-A1, TH229-A1, TH230-A1, TH232-A1					
7 DUP	S98T002783	0 A	@MSACTA1	LIQUID		
8 SAMPLE	S98T002784	0 A	@MSACTA1	LIQUID	98000261	AW-101 LAW
	Analytes Requested: 241-A1 , 243-A1 , 244-A1 , NP237-A1, PA231-A1, PU239-A1, PU240-A1, PU242-A1, TH229-A1, TH230-A1, TH232-A1					
9 DUP	S98T002784	0 A	@MSACTA1	LIQUID		
10 SAMPLE	S98T002794	0 A	@MSACTA1	LIQUID	98000261	AW-101 LAW
	Analytes Requested: 241-A1 , 243-A1 , 244-A1 , NP237-A1, PA231-A1, PU239-A1, PU240-A1, PU242-A1, TH229-A1, TH230-A1, TH232-A1					
11 DUP	S98T002794	0 A	@MSACTA1	LIQUID		
12 CCV			@MSACT	QC		
13 CCB			@MSACTA1	LIQUID		

Data Entry Comments:

Uploaded by:
Paul M. Peng
4/29/99

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

LABCORE Data Entry Template for Worklist# 26328

S Type	Sample#	R A	Test	Matrix	Group#	Project
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Final page for worklist # 26328

see attached

Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Analysis Report

HNF-1652 REV. 0

11/23/98 13:31:13

page 1

Method: MS_TUNE

Sample Name: ms-tune

Operator: kjt

Comment:

Run Time: 11/23/98

13:30 Type: Unk

Mode: INT

Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	133500.
Stddev	898.
%RSD	.6725

#1	132700.
#2	133600.
#3	133300.
#4	132600.
#5	132300.
#6	133100.
#7	133200.
#8	134700.
#9	134000.
#10	135000.

LS Phenolike 11-23-98

File ac1123a.txt

AW-101 Wt 26328

987002782-84 Y 1-10-.025-10

987002794 1-9

Scans: 00 98002782

2783

2784

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 443 TO 475.

Method: ACTINIDE Sample Name: cal blank

Operator: kjt

Comment: background

Run Time: 11/23/98 13:35 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U [238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.4649	.4825	.4940	.5810	.4915
Stddev	.0543	.0587	.0413	.0304	.0244
%RSD	11.68	12.17	8.357	5.227	4.972
#1	.4098	.4499	.5078	.6058	.5212
#2	.4644	.4957	.5090	.5358	.4778
#3	.4555	.4064	.4913	.5851	.4689
#4	.5546	.5635	.4260	.5679	.5147
#5	.4401	.4968	.5360	.6101	.4750

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.5001	.5192	.4853	.5253	.5118
Stddev	.0380	.0338	.0192	.0515	.0324
%RSD	7.602	6.512	3.965	9.810	6.334
#1	.4900	.5167	.4544	.4633	.5390
#2	.5135	.5269	.5046	.5402	.4912
#3	.4823	.5717	.4823	.5315	.5225
#4	.4570	.4970	.4970	.5990	.4659
#5	.5578	.4837	.4881	.4924	.5404

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.4995	.4806
Stddev	.0313	.0519
%RSD	6.263	10.80
#1	.5212	.3965
#2	.4957	.4823
#3	.5270	.5136
#4	.4481	.4792
#5	.5055	.5316

Analysis Report

HNF-1652 REV. 0

11/23/98 13:38:43

page 2

Sample Name: cal blank Run Time: 11/23/98 13:35

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	75.146
Stddev	.778
%RSD	1.0349
#1	74.828
#2	74.649
#3	74.636
#4	75.124
#5	76.492

Method: ACTINIDE Sample Name: cal std
 Comment: 0.010 ppm cal
 Run Time: 11/23/98 13:40 Type: Unk

Operator: kjt

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U[238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.4154	.4927	142.2	214.7	.7797
Stddev	.0517	.0533	2.7	3.7	.0693
%RSD	12.46	10.82	1.922	1.724	8.885

#1	.3741	.4687	141.9	216.5	.8924
#2	.3526	.4268	141.9	213.8	.7886
#3	.4212	.5690	138.0	208.7	.7124
#4	.4742	.4831	145.2	216.4	.7381
#5	.4550	.5157	143.9	218.1	.7670

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.9957	.5583	.5118	.4854	.4860
Stddev	.0631	.0849	.0459	.0622	.0597
%RSD	6.332	15.21	8.960	12.81	12.28

#1	1.068	.6039	.5589	.4507	.4417
#2	1.011	.5845	.4825	.4778	.5706
#3	.9947	.6407	.5287	.4929	.4436
#4	.8946	.4205	.4473	.4205	.5278
#5	1.010	.5417	.5417	.5850	.4463

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.4610	.5441
Stddev	.0591	.0409
%RSD	12.82	7.519

#1	.5363	.5769
#2	.5103	.5984
#3	.4257	.5108
#4	.4339	.5099
#5	.3987	.5243

Analysis Report

Sample Name: cal std Run Time: 11/23/98 13:40

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	74.329
Stddev	1.804
%RSD	2.4278
#1	73.959
#2	71.853
#3	74.394
#4	74.517
#5	76.921

Analysis Report

HNF-1652 REV.0

11/23/98 13:49:39

page 1

Method: ACTINIDE Sample Name: cal std

Operator: kjt

Comment: 0.100 ppm cal

Run Time: 11/23/98 13:45 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U_[238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.4938	.6210	1464.	2160.	3.918
Stddev	.0584	.0260	31.	32.	.129
RSD	11.84	4.184	2.120	1.470	3.289
#1	.4597	.6269	1412.	2112.	3.803
#2	.5612	.6174	1479.	2188.	4.054
#3	.5330	.5834	1461.	2151.	3.777
#4	.5008	.6562	1481.	2189.	4.041
#5	.4140	.6210	1489.	2158.	3.916

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6.298	1.065	.5158	.4889	.4851
Stddev	.313	.055	.0704	.0468	.0406
RSD	4.966	5.159	13.66	9.580	3.363
#1	5.922	.9947	.5517	.4723	.5141
#2	6.200	1.066	.6087	.4619	.4360
#3	6.518	1.070	.4407	.5624	.5372
#4	6.708	1.045	.5267	.5051	.4619
#5	6.144	1.147	.4513	.4430	.4761

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.4595	.4990
Stddev	.0806	.0393
RSD	17.54	7.869
1	.3971	.4347
2	.3885	.4922
3	.5540	.5330
4	.5396	.5094
5	.4181	.5258

Analysis Report

HNF-1652 REV. 0

11/23/98 13:49:39

page 2

Sample Name: cal std Run Time: 11/23/98 13:45

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	78.824
Stddev	1.522
%RSD	1.9315
#1	79.754
#2	77.210
#3	79.422
#4	77.217
#5	80.516

Method: ACTINIDE

Sample Name: icv

Operator: kjt

Comment: act lcs std

Run Time: 11/23/98 13:54 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U [238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3695	.3803	140.0	16.42	.7021
Stddev	.0732	.0370	2.5	.43	.0496
%RSD	19.80	9.728	1.766	2.606	7.066

#1	.2935	.4003	138.1	16.49	.6710
#2	.4426	.3509	140.5	15.81	.7297
#3	.3248	.4343	138.0	16.41	.6652
#4	.3335	.3701	144.1	17.01	.7768
#5	.4532	.3459	139.4	16.35	.6679

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	280.2	358.2	9.460	.4215	.3934
Stddev	4.0	9.0	.978	.0418	.0473
%RSD	1.427	2.515	10.34	9.926	12.03

#1	278.9	348.5	9.184	.3888	.3317
#2	278.2	349.4	7.911	.4546	.3948
#3	277.2	360.0	10.04	.4265	.3796
#4	287.2	368.7	10.43	.4677	.4636
#5	279.6	364.5	9.736	.3697	.3975

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	1.164	.4212
Stddev	.071	.0445
%RSD	6.068	10.57

#1	1.102	.4155
#2	1.109	.3668
#3	1.139	.3952
#4	1.269	.4474
#5	1.201	.4810

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	84.406
Stddev	2.046
%RSD	2.4245
#1	87.438
#2	83.596
#3	85.187
#4	81.960
#5	83.848

Analysis Report

HNF-1652 REV. 0

11/23/98 14:06:24

page 1

Method: ACTINIDE Sample Name: icb

Operator: kjt

Comment: 2% nitric

Run Time: 11/23/98 14:02 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U [238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3964	.4090	.4941	.5432	.4381
Stddev	.0386	.0221	.0514	.0327	.0230
RSD	9.735	5.399	10.39	6.023	5.252
#1	.3606	.4110	.5312	.5080	.4575
#2	.4466	.4039	.5320	.5902	.4000
#3	.3543	.4283	.4867	.5607	.4439
#4	.4083	.4275	.5123	.5354	.4352
#5	.4121	.3743	.4083	.5218	.4537

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.4068	.6281	.4762	.4500	.4714
Stddev	.0409	.0367	.0408	.0624	.0512
RSD	10.05	5.840	8.576	13.88	10.87

#1	.4614	.6747	.4537	.3877	.4343
#2	.4155	.6135	.5048	.5009	.4427
#3	.4244	.6035	.5335	.4478	.5607
#4	.3621	.6586	.4391	.5238	.4545
#5	.3705	.5898	.4499	.3894	.4651

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.4631	.4525
Stddev	.0498	.0338
RSD	10.75	7.477

1	.4459	.4304
2	.4854	.4272
3	.5374	.4517
4	.4083	.4430
5	.4386	.5104

Analysis Report

HNF-1652 REV. 0

11/23/98 14:06:24

page 2

Sample Name: icb Run Time: 11/23/98 14:02

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	86.422
Stddev	1.031
BRSD	1.1925
#1	85.966
#2	85.840
#3	85.605
#4	86.541
#5	88.160

Analysis Report

HNF-1652 REV. 0

11/23/98 14:11:16

page 1

Method: ACTINIDE Sample Name: s98t002782

Operator: kjt

Comment: 40501 df

Run Time: 11/23/98 14:07 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U [238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3634	.3571	.4454	1.750	.3753
Stddev	.0510	.0512	.0728	.101	.0561
SRSD	14.02	14.32	16.34	5.752	14.94

#1	.4027	.3675	.5279	1.853	.4027
#2	.3258	.2776	.3924	1.729	.2887
#3	.3366	.3643	.3921	1.691	.3762
#4	.3195	.3559	.3923	1.626	.3680
#5	.4325	.4203	.5223	1.852	.4407

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.4034	.4912	.3895	.3685	.4071
Stddev	.0600	.0353	.0537	.0636	.0397
SRSD	14.88	7.182	13.78	17.31	9.751

#1	.4340	.4653	.4418	.3245	.3910
#2	.3295	.4442	.3147	.3443	.4146
#3	.4000	.5188	.4317	.4594	.3525
#4	.3680	.5015	.4044	.4085	.4165
#5	.4855	.5264	.3550	.3060	.4611

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.4072	.4127
Stddev	.0474	.0500
SRSD	11.64	12.11

#1	.4184	.3715
#2	.3332	.3776
#3	.4396	.3802
#4	.4529	.4732
#5	.3917	.4611

Analysis Report

HNF-1652 REV. 0

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page 2

Sample Name: s98t002782 Run Time: 11/23/98 14:07

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	84.717
Stdddev	3.292
%RSD	3.8860
#1	85.251
#2	90.044
#3	84.172
#4	82.424
#5	81.694

Method: ACTINIDE

Sample Name: s98t002782_d

Operator: kjt

Comment: 40501 df

Run Time: 11/23/98 14:15 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U[238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.4115	.4176	.4975	1.826	.4034
Stddev	.0285	.0465	.0771	.104	.0200
RSRSD	6.917	11.13	15.49	5.697	4.951

#1	.4119	.4386	.4043	1.756	.3891
#2	.4323	.3526	.5650	1.740	.4133
#3	.4264	.4776	.5799	1.944	.3880
#4	.4247	.4207	.4367	1.935	.3926
#5	.3624	.3982	.5018	1.752	.4341

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.4154	.5075	.4458	.4587	.4568
Stddev	.0337	.0491	.0293	.0769	.0553
RSRSD	8.124	9.681	6.583	16.77	12.10

#1	.4234	.5302	.4806	.4386	.5378
#2	.4512	.5081	.4285	.4209	.4171
#3	.3795	.5160	.4094	.5757	.4307
#4	.3806	.5569	.4407	.3726	.4087
#5	.4420	.4261	.4699	.4858	.4898

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.4279	.4559
Stddev	.0485	.0541
RSRSD	11.33	11.86

#1	.4310	.3662
#2	.3564	.4474
#3	.4776	.5032
#4	.4087	.4768
#5	.4659	.4858

Sample Name: s98t002782_d Run Time: 11/23/98 14:15

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	84.075
Stddev	3.920
%RSD	4.6625

#1	87.392
#2	87.907
#3	78.170
#4	83.198
#5	83.706

Method: ACTINIDE

Sample Name: s98t002782_a

Operator: kjt

Comment: 40501 df

Run Time: 11/23/98 14:20

Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U [238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3797	.4087	253.3	3.730	.9318
Stddev	.0280	.0336	4.0	.066	.0720
%RSD	7.383	8.223	1.561	1.778	7.728

#1	.4163	.3608	248.1	3.731	.8326
#2	.3431	.3910	257.5	3.631	.8897
#3	.3900	.4458	253.8	3.801	1.019
#4	.3622	.4151	256.4	3.711	.9644
#5	.3870	.4309	250.5	3.779	.9536

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	529.6	694.1	18.43	.4072	.4307
Stddev	5.9	11.2	.48	.0298	.0657
%RSD	1.111	1.606	2.592	7.316	15.25

#1	520.2	680.0	17.82	.4083	.4837
#2	536.0	693.8	18.57	.3750	.3591
#3	528.3	687.7	18.10	.3821	.5015
#4	532.0	709.0	18.61	.4476	.3662
#5	531.3	700.0	19.04	.4228	.4429

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	1.823	.4015
Stddev	.094	.0311
%RSD	5.162	7.750

#1	1.756	.4123
#2	1.708	.4189
#3	1.823	.3463
#4	1.937	.4191
#5	1.891	.4110

Analysis Report

HNF-1652 REV. 0

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page 2

Sample Name: s98t002782_a Run Time: 11/23/98 14:20

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	83.366
Stddev	.841
%RSD	1.0088

#1	84.079
#2	83.546
#3	83.752
#4	81.914
#5	83.540

Analysis Report

HNF-1652 REV. 0

11/23/98 14:32:40

page 1

Method: ACTINIDE Sample Name: s98t002783

Operator: kjt

Comment: 40501 df

Run Time: 11/23/98 14:29 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U[238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3294	.3445	.4291	1.765	.3704
Stddev	.0290	.0445	.0367	.077	.0399
%RSD	8.809	12.92	8.543	4.384	10.78

#1	.2945	.3377	.4084	1.854	.4202
#2	.3606	.4081	.4359	1.751	.3804
#3	.3211	.3013	.4519	1.736	.3251
#4	.3127	.3682	.4711	1.659	.3919
#5	.3583	.3071	.3780	1.827	.3347

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.4013	.7243	.3902	.4402	.4178
Stddev	.0592	.0716	.0468	.0633	.0300
%RSD	14.76	9.884	11.98	14.38	7.175

#1	.3652	.8286	.4006	.3299	.4673
#2	.3408	.6816	.3963	.4676	.4002
#3	.4083	.7373	.3171	.4876	.3964
#4	.3959	.7363	.4473	.4473	.3998
#5	.4961	.6378	.3898	.4685	.4252

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.4006	.4069
Stddev	.0341	.0275
%RSD	8.523	6.760

#1	.3495	.4202
#2	.4161	.4042
#3	.4361	.4123
#4	.3840	.4355
#5	.4173	.3622

Analysis Report

HNF-1652 REV. C

11/23/98 14:32:40

page 2

Sample Name: s98t002783 Run Time: 11/23/98 14:29

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	84.391
Stddev	.361
%RSD	.42719

#1	84.883
#2	84.121
#3	84.085
#4	84.200
#5	84.665

Analysis Report

HNF-1652 REV. 0

11/23/98 14:38:49

page 1

Method: ACTINIDE Sample Name: s98t002783_d Operator: kjt
 Comment: 40501 df
 Run Time: 11/23/98 14:35 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U_[238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3999	.3849	.4551	1.660	.3664
Stddev	.0201	.0311	.0449	.062	.0449
%RSD	5.019	8.075	9.860	3.796	12.24
#1	.3943	.3768	.4187	1.549	.3350
#2	.3932	.3814	.5033	1.671	.3735
#3	.4127	.3854	.4633	1.701	.3504
#4	.3736	.3472	.4906	1.691	.3321
#5	.4260	.4335	.3996	1.689	.4411

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.4063	.5896	.4077	.4200	.4517
Stddev	.0477	.1233	.0509	.0561	.1014
%RSD	11.74	20.92	12.50	13.36	22.44
#1	.4571	.4013	.3175	.3664	.2826
#2	.4325	.5504	.4404	.4246	.5544
#3	.3387	.6385	.4244	.4906	.4711
#4	.4265	.6265	.4340	.4566	.4906
#5	.3770	.7313	.4222	.3619	.4599

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.3883	.4535
Stddev	.0411	.0566
%RSD	10.59	12.49
#1	.3629	.3838
#2	.4364	.4089
#3	.3348	.4750
#4	.4189	.5246
#5	.3883	.4750

Analysis Report

HNF-1652 REV. 0

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Sample Name: s98t002783_d Run Time: 11/23/98 14:35

Ent. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	88.536
Stddev	4.233
%RSD	4.7811
#1	95.535
#2	84.779
#3	85.617
#4	88.326
#5	88.423

Analysis Report

HNF-1652 REV. 0

11/23/98 14:43:17

page 1

Method: ACTINIDE Sample Name: s98t002784

Operator: kjt

Comment: 40501 df

Run Time: 11/23/98 14:39 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U [238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3626	.4257	.4262	1.828	.3693
Stddev	.0281	.0378	.0539	.100	.0273
%RSD	7.739	8.873	12.64	5.447	7.396

#1	.3612	.4113	.3791	1.781	.3648
#2	.4023	.4546	.5150	1.899	.4144
#3	.3698	.4697	.3957	1.901	.3476
#4	.3554	.3739	.4368	1.673	.3480
#5	.3243	.4191	.4045	1.884	.3717

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3962	.5566	.4201	.4218	.4403
Stddev	.0570	.0393	.0336	.0477	.0567
%RSD	14.38	7.059	8.007	11.32	12.87

#1	.3648	.4971	.4577	.3934	.4220
#2	.4868	.5673	.3943	.4345	.5311
#3	.3439	.5806	.4031	.4956	.4068
#4	.3702	.5405	.4553	.3703	.4553
#5	.4154	.5976	.3899	.4154	.3863

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.4261	.4275
Stddev	.0379	.0409
%RSD	8.899	9.561

#1	.3683	.3934
#2	.4667	.4667
#3	.4401	.4734
#4	.4109	.3850
#5	.4446	.4191

Analysis Report

HNF-1652 REV. 0

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page 2

Sample Name: s98t002784 Run Time: 11/23/98 14:39

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	89.544
Stddev	3.955
%RSD	4.4164
#1	93.211
#2	82.853
#3	90.135
#4	90.046
#5	91.476

Analysis Report

HNF-1652 REV. 0

11/23/98 14:48:59

page 1

Method: ACTINIDE Sample Name: s98t002784_d

Operator: kjt

Comment: 40501 df

Run Time: 11/23/98 14:45 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U [238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3283	.3461	.4258	1.859	.4093
Stddev	.0298	.0463	.0491	.076	.0490
%RSD	9.075	13.39	11.52	4.069	11.98

#1	.3660	.3516	.4485	1.837	.3839
#2	.2832	.3827	.4134	1.929	.4248
#3	.3381	.3307	.4199	1.739	.4867
#4	.3272	.2751	.3569	1.881	.3606
#5	.3270	.3902	.4905	1.910	.3902

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3702	.5172	.3941	.3814	.3802
Stddev	.0171	.0726	.0186	.0771	.0129
%RSD	4.632	14.04	4.731	20.22	3.392

#1	.3803	.5095	.3839	.3193	.3624
#2	.3559	.6124	.3789	.4095	.3827
#3	.3753	.4087	.3827	.2935	.3753
#4	.3904	.5280	.4015	.4871	.3978
#5	.3493	.5277	.4236	.3976	.3827

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.3690	.3851
Stddev	.0261	.0397
%RSD	7.081	10.30

#1	.3660	.3265
#2	.3789	.4248
#3	.3976	.3901
#4	.3755	.3681
#5	.3270	.4162

Analysis Report

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Sample Name: s98t002784_d Run Time: 11/23/98 14:45

Int: Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	89.814
Stddev	2.062
%RSD	2.2954

#1	92.904
#2	87.093
#3	89.711
#4	89.654
#5	89.706

Analysis Report

HNF-1652 REV.0

11/23/98 14:53:31

page 1

Method: ACTINIDE Sample Name: s98t002794

Operator: kjt

Comment: 10 df

Run Time: 11/23/98 14:49 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U[238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3289	.3736	24.82	5.901	.4102
Stddev	.0423	.0111	.28	.191	.0054
%RSD	12.86	2.960	1.114	3.233	1.311

#1	.3576	.3802	24.78	5.953	.4103
#2	.2945	.3653	24.89	5.897	.4175
#3	.3631	.3594	24.62	6.181	.4081
#4	.3567	.3864	24.56	5.811	.4124
#5	.2723	.3768	25.26	5.663	.4029

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3789	.4536	.3288	.4087	.3930
Stddev	.0457	.0245	.0425	.0267	.0385
%RSD	12.05	5.409	12.93	6.528	9.793

#1	.4028	.4405	.3200	.4179	.3727
#2	.2982	.4361	.2945	.3839	.3355
#3	.3931	.4792	.3893	.3781	.4081
#4	.4087	.4310	.3530	.4236	.4236
#5	.3917	.4812	.2873	.4402	.4253

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.3586	.3624
Stddev	.0379	.0309
%RSD	10.57	8.537

#1	.3689	.3878
#2	.3839	.3839
#3	.2920	.3107
#4	.3678	.3604
#5	.3805	.3693

Analysis Report

HNF-1652 REV. 0

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page 2

Sample Name: s98t002794 Run Time: 11/23/98 14:49

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	89.215
Stddev	.445
%RSD	.49917

#1	88.543
#2	89.425
#3	89.040
#4	89.714
#5	89.351

Analysis Report

HNF-1652 REV.0

11/23/98 14:58:54

page 1

Method: ACTINIDE Sample Name: s98t002794_d Operator: kjt
 Comment: 10 df
 Run Time: 11/23/98 14:55 Type: Unk Mode: IR Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U [238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3040	.3058	4.338	4.252	.3188
Stddev	.0450	.0438	1.561	.105	.0414
%RSD	14.81	14.34	35.99	2.468	12.99

#1	.2525	.2813	7.117	4.343	.3138
#2	.2864	.3782	3.892	4.200	.3745
#3	.2784	.2894	3.674	4.311	.3040
#4	.3530	.3134	3.494	4.312	.2630
#5	.3496	.2667	3.514	4.091	.3388

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3652	.4450	.4077	.3471	.3417
Stddev	.0367	.0373	.0348	.0236	.0476
%RSD	10.06	8.387	8.524	6.801	13.94

#1	.3571	.3859	.4401	.3174	.2994
#2	.3708	.4736	.3855	.3672	.2901
#3	.3773	.4322	.3663	.3735	.3407
#4	.3098	.4575	.4467	.3458	.3819
#5	.4109	.4758	.4001	.3316	.3965

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.3580	.3696
Stddev	.0428	.0290
%RSD	11.96	7.854

#1	.3030	.3571
#2	.4112	.3525
#3	.3370	.4213
#4	.3891	.3566
#5	.3496	.3604

Analysis Report

HNF-1652 REV.0

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page 2

Sample Name: s98t002794_d Run Time: 11/23/98 14:55

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	91.842
Stddev	.871
%RSD	.94800

#1	92.413
#2	90.788
#3	90.998
#4	92.529
#5	92.483

Analysis Report

HNF-1652 REV.0

11/23/98 15:05:31

page 1

Method: ACTINIDE Sample Name: ccv

Operator: kjt

Comment: msact lcs std

Run Time: 11/23/98 15:01 Type: Unk

Mode: TR

Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U [238]	Pa[231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3230	.3303	136.7	15.68	.5991
Stddev	.0178	.0306	4.6	.53	.0591
%RSD	5.512	9.266	3.340	3.410	9.861

#1	.3315	.3389	141.3	16.33	.5194
#2	.3264	.3098	129.5	15.07	.5563
#3	.3118	.3649	138.1	15.84	.6307
#4	.3455	.3490	139.3	15.98	.6624
#5	.2995	.2891	135.2	15.19	.6269

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	273.0	351.8	9.266	.3405	.3498
Stddev	11.2	13.7	.354	.0221	.0435
%RSD	4.110	3.904	3.824	6.500	12.43

#1	285.4	357.3	9.449	.3647	.3794
#2	255.3	328.1	8.641	.3531	.3031
#3	276.1	356.6	9.439	.3508	.3933
#4	277.7	363.4	9.324	.3170	.3704
#5	270.8	353.6	9.476	.3169	.3030

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	1.024	.3705
Stddev	.069	.0141
%RSD	6.690	3.819

#1	1.127	.3500
#2	.9360	.3664
#3	1.031	.3685
#4	1.008	.3846
#5	1.017	.3831

Analysis Report

HNF-1652 REV.0

11/23/98 15:05:31

page 2

Sample Name: ccv Run Time: 11/23/98 15:01

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	94.788
Stddev	3.507
%RSD	3.7004

#1	90.485
#2	100.07
#3	94.078
#4	93.593
#5	95.715

Method: ACTINIDE
Sample Name: ccb
Operator: kjt

Comment: 2% nitric

Run Time: 11/23/98 15:10
Type: Unk
Mode: IR
Corr.Fact: 1.000000

Elem	Th[229]	Th[230]	Th[232]	U [238]	Pa [231]
Line	229/pulse	230/pulse	232/pulse	238/pulse	231/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3303	.3535	.4030	.4334	.3427
Stddev	.0396	.0244	.0279	.0464	.0344
%RSD	11.99	6.898	6.915	10.70	10.04

#1	.3630	.3430	.4296	.4929	.4030
#2	.3665	.3773	.4281	.4680	.3265
#3	.3139	.3809	.3985	.4267	.3385
#4	.2705	.3253	.3972	.3870	.3185
#5	.3375	.3409	.3616	.3926	.3272

Elem	Np[237]	Pu[239]	Pu[240]	Pu[242]	Pu[244]
Line	237/pulse	239/pulse	240/pulse	242/pulse	244/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.3485	.5608	.3485	.3770	.3445
Stddev	.0203	.0318	.0223	.0524	.0307
%RSD	5.813	5.674	6.408	13.90	8.920

#1	.3164	.5362	.3297	.3630	.3230
#2	.3592	.6023	.3701	.4608	.3919
#3	.3562	.5290	.3562	.3914	.3174
#4	.3424	.5856	.3664	.3356	.3322
#5	.3685	.5510	.3203	.3341	.3582

Elem	Am[241]	Am[243]
Line	241/pulse	243/pulse
Units	Cts/S	Cts/S
Avg	.3631	.3273
Stddev	.0176	.0298
%RSD	4.839	9.095

#1	.3430	.3264
#2	.3882	.3302
#3	.3526	.3244
#4	.3596	.3698
#5	.3719	.2858

Analysis Report

HNF-1652 REV.0

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page 2

Sample Name: ccb Run Time: 11/23/98 15:10

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	96.123
Stddev	3.095
%RSD	3.2197
#1	100.09
#2	91.871
#3	94.524
#4	97.341
#5	96.789

LABCORE Completed Worklist Report for Worklist# 26330

Analyst: bjg

Instrument: ICPMS1

Book#: 39855A

Method: LA-506-101 Rev/Mod A-0

Worklist Comment: ICP/MS AW-101 (DIRECT)

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	ICV	0	EMSU-QC U235	QC	0.000714	7.31e-04	102.381 % Recovery	
1	ICV	0	EMSU-QC U238	QC	0.100	1.02e-01	102.000 % Recovery	
2	ICB	0	EMSU-QC U233	QC	1	<4.73e-5		ug/mL
2	ICB	0	EMSU-QC U234	QC	1	<5.49e-5		ug/mL
2	ICB	0	EMSU-QC U235	QC	1	<3.79e-5		ug/mL
2	ICB	0	EMSU-QC U236	QC	1	<3.49e-5		ug/mL
2	ICB	0	EMSU-QC U238	QC	1	<5.16e-5		ug/mL
3	SAMPLE	S98T002782	0 A EMSU-D1 U233-D1	LIQUID	N/A <	1.917e+00	1.917	ug/mL
3	SAMPLE	S98T002782	0 A EMSU-D1 U234-D1	LIQUID	N/A <	2.224e+00	2.224	ug/mL
3	SAMPLE	S98T002782	0 A EMSU-D1 U235-D1	LIQUID	N/A <	1.534e+00	1.534	ug/mL
3	SAMPLE	S98T002782	0 A EMSU-D1 U236-D1	LIQUID	N/A <	1.413e+00	1.413	ug/mL
3	SAMPLE	S98T002782	0 A EMSU-D1 U238-D1	LIQUID	N/A	2.284e+00	2.088	ug/mL
4	DUP	S98T002782	0 A EMSU-D1 U233-D1	LIQUID	<1.92e0	<1.92e0		RPD
4	DUP	S98T002782	0 A EMSU-D1 U234-D1	LIQUID	<2.22e0	<2.22e0		RPD
4	DUP	S98T002782	0 A EMSU-D1 U235-D1	LIQUID	<1.53e0	<1.53e0		RPD
4	DUP	S98T002782	0 A EMSU-D1 U236-D1	LIQUID	<1.41e0	<1.41e0		RPD
4	DUP	S98T002782	0 A EMSU-D1 U238-D1	LIQUID	2.28e+00	2.20e+00	3.571	RPD
5	SPK	S98T002782	0 A EMSU-D1 U233-D1	LIQUID	n/a	-1.16e-1		% Recovery
5	SPK	S98T002782	0 A EMSU-D1 U234-D1	LIQUID	n/a	1.13e-01		% Recovery
5	SPK	S98T002782	0 A EMSU-D1 U235-D1	LIQUID	n/a	4.93e+00		% Recovery
5	SPK	S98T002782	0 A EMSU-D1 U236-D1	LIQUID	n/a	1.07e-01		% Recovery
5	SPK	S98T002782	0 A EMSU-D1 U238-D1	LIQUID	810.02	7.18e+02	88.640	% Recovery
6	SAMPLE	S98T002783	0 A EMSU-D1 U233-D1	LIQUID	N/A <	1.917e+00	1.917	ug/mL
6	SAMPLE	S98T002783	0 A EMSU-D1 U234-D1	LIQUID	N/A <	2.224e+00	2.224	ug/mL
6	SAMPLE	S98T002783	0 A EMSU-D1 U235-D1	LIQUID	N/A <	1.534e+00	1.534	ug/mL
6	SAMPLE	S98T002783	0 A EMSU-D1 U236-D1	LIQUID	N/A <	1.413e+00	1.413	ug/mL
6	SAMPLE	S98T002783	0 A EMSU-D1 U238-D1	LIQUID	N/A	2.357e+00	2.088	ug/mL
7	DUP	S98T002783	0 A EMSU-D1 U233-D1	LIQUID	<1.92e0	<1.92e0		RPD
7	DUP	S98T002783	0 A EMSU-D1 U234-D1	LIQUID	<2.22e0	<2.22e0		RPD
7	DUP	S98T002783	0 A EMSU-D1 U235-D1	LIQUID	<1.53e0	<1.53e0		RPD
7	DUP	S98T002783	0 A EMSU-D1 U236-D1	LIQUID	<1.41e0	<1.41e0		RPD
7	DUP	S98T002783	0 A EMSU-D1 U238-D1	LIQUID	2.36e+00	2.24e+00	5.217	RPD
8	SAMPLE	S98T002784	0 A EMSU-D1 U233-D1	LIQUID	N/A <	1.917e+00	1.917	ug/mL
8	SAMPLE	S98T002784	0 A EMSU-D1 U234-D1	LIQUID	N/A <	2.224e+00	2.224	ug/mL
8	SAMPLE	S98T002784	0 A EMSU-D1 U235-D1	LIQUID	N/A <	1.534e+00	1.534	ug/mL
8	SAMPLE	S98T002784	0 A EMSU-D1 U236-D1	LIQUID	N/A <	1.413e+00	1.413	ug/mL
8	SAMPLE	S98T002784	0 A EMSU-D1 U238-D1	LIQUID	N/A <	2.088e+00	2.088	ug/mL
9	DUP	S98T002784	0 A EMSU-D1 U233-D1	LIQUID	<1.92e0	<1.92e0		RPD
9	DUP	S98T002784	0 A EMSU-D1 U234-D1	LIQUID	<2.22e0	<2.22e0		RPD
9	DUP	S98T002784	0 A EMSU-D1 U235-D1	LIQUID	<1.53e0	<1.53e0		RPD
9	DUP	S98T002784	0 A EMSU-D1 U236-D1	LIQUID	<1.41e0	<1.41e0		RPD

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

LABCORE Completed Worklist Report for Worklist# 26330

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
9 DUP	S98T002784	0 A	QMSU-D1 U238-D1	LIQUID	<2.09e0	2.34e+00		RFD
10 SAMPLE	S98T002794	0 A	QMSU-D1 U233-D1	LIQUID	N/A	4.734e-04	4.73e-004	ug/mL
10 SAMPLE	S98T002794	0 A	QMSU-D1 U234-D1	LIQUID	N/A	5.491e-04	5.49e-004	ug/mL
10 SAMPLE	S98T002794	0 A	QMSU-D1 U235-D1	LIQUID	N/A	3.788e-04	3.79e-004	ug/mL
10 SAMPLE	S98T002794	0 A	QMSU-D1 U236-D1	LIQUID	N/A	3.490e-04	3.49e-004	ug/mL
10 SAMPLE	S98T002794	0 A	QMSU-D1 U238-D1	LIQUID	N/A	2.115e-03	5.16e-004	ug/mL
11 DUP	S98T002794	0 A	QMSU-D1 U233-D1	LIQUID	<4.73e-4	<4.73e-4		RFD
11 DUP	S98T002794	0 A	QMSU-D1 U234-D1	LIQUID	<5.49e-4	<5.49e-4		RFD
11 DUP	S98T002794	0 A	QMSU-D1 U235-D1	LIQUID	<3.79e-4	<3.79e-4		RFD
11 DUP	S98T002794	0 A	QMSU-D1 U236-D1	LIQUID	<3.49e-4	<3.49e-4		RFD
11 DUP	S98T002794	0 A	QMSU-D1 U238-D1	LIQUID	2.12e-03	2.18e-03	2.791	RFD
12 CCV		0	QMSU-QC U235	QC	0.000714	7.09e-04	99.300	% Recovery
12 CCV		0	QMSU-QC U238	QC	0.100	1.00e-01	100.000	% Recovery
13 CCB		0	QMSU-QC U233	QC	1	<4.73e-5		ug/mL
13 CCB		0	QMSU-QC U234	QC	1	<5.49e-5		ug/mL
13 CCB		0	QMSU-QC U235	QC	1	<3.79e-5		ug/mL
13 CCB		0	QMSU-QC U236	QC	1	<3.49e-5		ug/mL
13 CCB		0	QMSU-QC U238	QC	1	<5.16e-5		ug/mL

Final page for worklist# 26330

for: Saul H. Pang

BLG

12/8/98

Analyst Signature

Date

Analyst Signature

Date

Saul H. Pang

12/8/98

Reviewer Signature

Date

09/28/98 09:18
A-0004-1

FILE # 01120A-172

HNF-1652 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 26330

Analyst: B. GORM Instrument: ICPMS1 _____ Book# 398587Method: LA-506-101 Rev/Mod A-0

Worklist Comment: ICP/MS AW-101 (DIRECT) ISO-U

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 ICV			@MSU-QC	QC		
2 ICB			@MSU-QC	QC		
3 SAMPLE	S98T002782 0 A		@MSU-D1	LIQUID	98000261	AW-101 LAW
	Analytes Requested: U233-D1 , U234-D1 , U235-D1 , U236-D1 , U238-D1.					
4 DUP	S98T002782 0 A		@MSU-D1	LIQUID		
5 SPK	S98T002782 0 A		@MSU-D1	LIQUID		
6 SAMPLE	S98T002783 0 A		@MSU-D1	LIQUID	98000261	AW-101 LAW
	Analytes Requested: U233-D1 , U234-D1 , U235-D1 , U236-D1 , U238-D1					
7 DUP	S98T002783 0 A		@MSU-D1	LIQUID		
8 SAMPLE	S98T002784 0 A		@MSU-D1	LIQUID	98000261	AW-101 LAW
	Analytes Requested: U233-D1 , U234-D1 , U235-D1 , U236-D1 , U238-D1					
9 DUP	S98T002784 0 A		@MSU-D1	LIQUID		
10 SAMPLE	S98T002794 0 A		@MSU-D1	LIQUID	98000261	AW-101 LAW
	Analytes Requested: U233-D1 , U234-D1 , U235-D1 , U236-D1 , U238-D1					
11 DUP	S98T002794 0 A		@MSU-D1	LIQUID		
12 CCV			@MSU-QC	QC		
13 CCB			@MSU-QC	QC		

Final page for worklist # 26330

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

Analysis Report

HNF-1652 REV. 0

11/20/98 17:26:25

page 1

Method: MS_TUNE Sample Name: ms-tune

Operator: bjg

Comment:

Run Time: 11/20/98 17:25 Type: Unk

Mode: INT

Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	111300.
Stddev	1769.
%RSD	1.589

#1	110400.
#2	110700.
#3	108900.
#4	113500.
#5	109400.
#6	112900.
#7	114400.
#8	110500.
#9	111000.
#10	111500.

DJ/Beck
*11-20-98**AW-101*
59800 2782-84, 2784 1ml-2-1
1-10 - .025-10-1
FILE # 11204-784

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 479 TO 505.

Method: ISO_U Sample Name: icv

Operator: bjg

Comment: iso-u lcs

Run Time: 11/20/98 17:28 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7.114	8.586	184.3	10.65	22680.
Stddev	.922	.652	5.2	.85	368.
%RSD	12.96	7.599	2.833	7.948	1.623
#1	6.099	8.131	179.4	11.15	22330.
#2	8.383	8.241	187.9	9.378	23020.
#3	7.654	9.072	182.3	11.13	22280.
#4	6.987	9.482	180.4	10.19	23060.
#5	6.446	8.004	191.5	11.40	22700.

Int. Std. Ir[193]

Line	193/pulse
Units	Cts/S
Avg	7.0596
Stddev	.0447
%RSD	.63363

#1	7.1328
#2	7.0376
#3	7.0549
#4	7.0134
#5	7.0590

Method: ISO_U Sample Name: icv

Operator: bjg

Comment: iso-u lcs

Run Time: 11/20/98 17:28 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	7.114	8.586	.7311	10.65	102.0
Stddev	.922	.652	.0216	.85	1.7
%RSD	12.96	7.599	2.951	7.948	1.624
#1	6.099	8.131	.7108	11.15	100.4
#2	8.383	8.241	.7460	9.378	103.5
#3	7.654	9.072	.7228	11.13	100.2
#4	6.987	9.482	.7148	10.19	103.7
#5	6.446	8.004	.7610	11.40	102.1

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/s
Avg	7.0596
Stddev	.0447
%RSD	.63363

#1	7.1328
#2	7.0376
#3	7.0549
#4	7.0134
#5	7.0590

Analysis Report

Method: ISO_U

Sample Name: ich

Operator: bjg

Comment: 2% hno3

Run Time: 11/20/98 17:37 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6.631	7.140	6.439	6.599	7.193
Stddev	.992	.612	.902	1.299	.576
%RSD	14.96	8.576	14.00	19.68	3.012
#1	6.444	7.518	6.579	6.981	6.713
#2	5.664	7.342	5.804	8.531	6.433
#3	5.857	7.219	5.652	6.674	7.559
#4	7.094	6.071	7.913	5.321	7.572
#5	8.098	7.549	6.245	5.490	7.686

Int. Std.

Line	Ir[193]
Units	193/pulse
	Cts/S
Avg	7.3113
Stddev	.1080
%RSD	1.4776
#1	7.4484
#2	7.1502
#3	7.3419
#4	7.3297
#5	7.2860

Analysis Report

11/20/98 17:41:31

page 1

Method: ISO_U Sample Name: icb
 Comment: 2% hno3
 Run Time: 11/20/98 17:37 Type: Unk

Operator: bjg

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	6.631	7.140	-.0039	6.599	-.0074
Stddev	.992	.612	.0037	1.299	.0026
RSD	14.96	8.576	95.42	19.68	34.81
#1	6.444	7.518	-.0033	6.981	-.0096
#2	5.664	7.342	-.0065	8.531	-.0109
#3	5.857	7.219	-.0072	6.674	-.0058
#4	7.094	6.071	.0022	5.321	-.0057
#5	8.098	7.549	-.0047	5.490	-.0052

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	7.3113
Stddev	.1080
RSD	1.4776
#1	7.4484
#2	7.1502
#3	7.3419
#4	7.3297
#5	7.2860

Method: ISO_U

Sample Name: s98t002782

Operator: bjg

Comment: 40501 df

Run Time: 11/20/98 17:43 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	U_ [233]	U_ [234]	U_ [235]	U_ [236]	U_ [238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	8.086	6.721	7.905	7.199	21.38
Stddev	.409	.757	.333	1.063	1.16
SRSD	5.061	11.26	4.214	14.77	5.408
#1	8.113	7.031	7.842	6.625	22.92
#2	7.542	5.740	7.608	6.340	20.22
#3	8.089	6.992	8.431	7.746	21.87
#4	7.997	7.655	7.997	8.817	21.67
#5	8.690	6.187	7.647	6.465	20.23

Int. Std.

Line	Ir [193]
193/pulse	
Units	Cts/S
Avg	7.3378
Stddev	.1125
SRSD	1.5338
#1	7.3958
#2	7.4917
#3	7.2942
#4	7.3153
#5	7.1922

Method: ISO_U
Comment: 40501 df
Run Time: 11/20/98 17:43 Type: Unk

Sample Name: s98t002782

Operator: bjg
Mode: CONC
Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
avg	8.086	6.721	.0022	7.199	.0564
Stddev	.409	.757	.0014	1.063	.0052
SRSD	5.061	11.26	63.85	14.77	9.226
#1	8.113	7.031	.0019	6.625	.0633
#2	7.542	5.740	.0009	6.340	.0512
#3	8.089	6.992	.0043	7.746	.0586
#4	7.997	7.655	.0025	8.817	.0577
#5	8.690	6.187	.0011	6.465	.0512

Ent. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
avg	7.3378
Stddev	.1125
SRSD	1.5338
#1	7.3958
#2	7.4917
#3	7.2942
#4	7.3153
#5	7.1922

Method: ISO_U

Sample Name: s98t002782_d

Operator: bjg

Comment: 40501 df

Run Time: 11/20/98

17:45 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7.001	7.537	7.336	8.267	20.93
Stddev	.386	.509	.659	.453	1.94
%RSD	5.509	6.753	8.979	5.478	9.265
#1	6.421	8.129	6.285	7.788	20.36
#2	7.082	6.804	7.498	8.193	21.25
#3	6.872	7.843	7.982	7.913	22.84
#4	7.453	7.311	7.737	8.873	22.29
#5	7.177	7.595	7.177	8.571	17.91

Int. Std.

Ir[193]

Line	193/pulse
Units	Cts/S
Avg	7.1888
Stddev	.0983
%RSD	1.3670
#1	7.3194
#2	7.2016
#3	7.2035
#4	7.0438
#5	7.1754

Analysis Report

11/20/98 17:46:44

page 1

Method: ISO_U

Sample Name: s98t002782_d

Operator: bjg

Comment: 40501 df

Run Time: 11/20/98 17:45

Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
avg	7.001	7.537	-.0002	8.267	.0543
Stddev	.386	.509	.0027	.453	.0087
RSD	5.509	6.753	1386.	5.478	16.05
#1	6.421	8.129	-.0045	7.788	.0518
#2	7.082	6.804	.0005	8.193	.0558
#3	6.872	7.843	.0025	7.913	.0629
#4	7.453	7.311	.0015	8.873	.0605
#5	7.177	7.595	-.0009	8.571	.0408

Ent. Std.

Ir[193]

Line	193/pulse
Units	Cts/S
avg	7.1888
Stddev	.0983
RSD	1.3670
#1	7.3194
#2	7.2016
#3	7.2035
#4	7.0438
#5	7.1754

Analysis Report

HNF-1652 REV. 0

11/20/98 17:53:58

page 1

Method: ISO_U

Sample Name: s98t002782_a

Operator: bjg

Comment: 40501 df

Run Time: 11/20/98

17:52 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7.046	7.699	36.87	7.915	3962.
Stddev	.534	.756	3.34	1.008	180.
RSRSD	7.576	9.823	9.063	12.73	4.557
F1	7.249	7.449	36.71	8.912	3900.
F2	7.637	8.054	39.44	8.540	4215.
F3	7.294	7.024	32.89	6.281	3793.
F4	6.257	7.122	34.41	7.988	3821.
F5	6.792	8.844	40.89	7.853	4080.

Int. Std.

Ir[193]

Line	193/pulse
Units	Cts/S
Avg	7.3402
Stddev	.1993
RSRSD	2.7149

F1	7.5180
F2	7.2015
F3	7.4029
F4	7.5117
F5	7.0670

Analysis Report

HNF-1652 REV. 0

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page 1

Method: ISO_U

Sample Name: s98t002782_a

Operator: objg

Comment: 40501 df

Run Time: 11/20/98 17:52 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
avg	7.046	7.699	.1218	7.915	17.78
Stddev	.534	.756	.0138	1.008	.81
RSD	7.576	9.823	11.33	12.73	4.567
#1	7.249	7.449	.1212	8.912	17.50
#2	7.637	8.054	.1325	8.540	18.92
#3	7.294	7.024	.1054	6.281	17.02
#4	6.257	7.122	.1117	7.988	17.15
#5	6.792	8.844	.1385	7.853	18.32

Int. Std.

Line	Ir[193]
	193/pulse
Units	Cts/S
avg	7.3402
Stddev	.1993
RSD	2.7149
#1	7.5180
#2	7.2015
#3	7.4029
#4	7.5117
#5	7.0670

Post Spike:

$$U_{238} = \frac{17.78 - 0.0564}{20} \times 100 = 88.6\%$$

Analysis Report

HNF-1652 REV.0

11/20/98 18:00:52

page 1

Method: ISO_U

Sample Name: s98t002783

Operator: bjg

Comment: 40501 df

Run Time: 11/20/98 17:58

Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7.211	7.430	7.403	7.204	21.78
Stddev	.732	.874	.599	1.570	1.04
SRSD	10.15	11.76	8.094	21.79	4.785
#1	6.241	7.656	7.335	5.726	20.01
#2	6.861	8.455	7.762	6.376	21.69
#3	7.720	6.036	7.931	7.650	22.32
#4	7.121	7.504	7.580	9.724	22.59
#5	8.111	7.497	6.407	6.543	22.29

Int. Std.

Line	Ir[193]
193/pulse	
Units	Cts/S
Avg	7.1953
Stddev	.4472
SRSD	6.2150

#1	7.7714
#2	7.2150
#3	7.1241
#4	6.5299
#5	7.3361

Method: ISO_U

Sample Name: s98t002783

Operator: bjg

Comment: 40501 df

Run Time: 11/20/98 17:58

Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	7.211	7.430	.0001	7.204	.0582
Stddev	.732	.874	.0025	1.570	.0047
SRSD	10.15	11.76	3099.	21.79	8.059
#1	6.241	7.656	-.0002	5.726	.0502
#2	6.861	8.455	.0016	6.376	.0578
#3	7.720	6.036	.0023	7.650	.0606
#4	7.121	7.504	.0008	9.724	.0618
#5	8.111	7.497	-.0040	6.543	.0605

Ent. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
avg	7.1953
Stddev	.4472
SRSD	6.2150
#1	7.7714
#2	7.2150
#3	7.1241
#4	6.5299
#5	7.3361

Analysis Report

HNF-1652 REV. 0

11/20/98 18:02:54

page 1

Method: ISO_U

Sample Name: s98t002783_d

Operator: bjg

Comment: 40501 df

Run Time: 11/20/98 18:01 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	U [233]	U [234]	U [235]	U [236]	U [238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6.936	7.375	6.826	7.266	21.14
Stddev	1.119	.305	.656	.413	1.43
SRSD	16.14	4.133	9.613	5.690	6.786
#1	5.387	7.433	6.615	6.956	21.28
#2	7.939	7.525	5.799	7.249	22.71
#3	6.711	6.848	7.396	6.985	21.09
#4	6.529	7.629	7.354	7.972	18.83
#5	8.115	7.439	6.965	7.168	21.78

Ent. Std.

Line	Ir[193]
193/pulse	
Units	Cts/S
Avg	7.3090
Stddev	.0578
SRSD	.79007

#1	7.3322
#2	7.2425
#3	7.3010
#4	7.2753
#5	7.3937

Analysis Report

HNF-1652 REV. C

11/20/98 18:02:58

page 1

Method: ISO_U

Sample Name: s98t002783_d

Operator: bjg

Comment: 40501 df

Run Time: 11/20/98 18:01 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	6.936	7.375	-.0023	7.266	.0553
Stddev	1.119	.305	.0027	.413	.0065
ERSD	16.14	4.133	117.7	5.690	11.67
#1	5.387	7.433	-.0032	6.956	.0559
#2	7.939	7.525	-.0065	7.249	.0624
#3	6.711	6.848	.0001	6.985	.0551
#4	6.529	7.629	-.0001	7.972	.0449
#5	8.115	7.439	-.0017	7.168	.0582

Int. Std.

Ir[193]

Line	193/pulse
Units	Cts/S
Avg	7.3090
Stddev	.0578
ERSD	.79007

#1	7.3322
#2	7.2425
#3	7.3010
#4	7.2753
#5	7.3937

Method: ISO_U
Sample Name: s98t002784
Operator: bjg

Comment: 40501 df

Run Time: 11/20/98 18:04 Type: Unk
Mode: IR
Corr.Fact: 1.000000

Item	U_ [233]	U_ [234]	U_ [235]	U_ [236]	U_ [238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
avg	6.814	6.703	6.843	6.576	19.66
stddev	.840	.526	.743	.883	1.56
RSD	12.33	7.848	10.86	13.43	7.952
F1	8.036	7.024	6.548	6.072	18.10
F2	6.944	6.944	6.944	7.672	19.11
F3	6.758	7.256	6.474	7.256	20.13
F4	6.652	6.245	8.077	6.380	22.13
F5	5.681	6.048	6.170	5.498	18.81

nt. Std.
Ir [193]

Line
193/pulse

Units
Cts/S

avg
7.7079

stddev
.5716

RSD
7.4152

1	8.3998
2	7.5601
3	7.0283
4	7.3663
5	8.1851

Analysis Report

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Method: ISO_U

Sample Name: s98t002784

Operator: bjg

Comment: 40501 df

Run Time: 11/20/98 18:04 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U [233]	U [234]	U [235]	U [236]	U [238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	6.814	6.703	-.0022	6.576	.0486
Stddev	.840	.526	.0031	.883	.0070
RSD	12.33	7.848	137.4	13.43	14.46
#1	8.036	7.024	-.0035	6.072	.0416
#2	6.944	6.944	-.0018	7.672	.0462
#3	6.758	7.256	-.0038	7.256	.0508
#4	6.652	6.245	.0029	6.380	.0597
#5	5.681	6.048	-.0050	5.498	.0448

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	7.7079
Stddev	.5716
RSD	7.4152

1	8.3998
2	7.5601
3	7.0283
4	7.3663
5	8.1851

Method: ISO_U
Comment: 40501 df
Run Time: 11/20/98 18:06 Type: Unk

Sample Name: s98t002784_d
Mode: IR

Operator: bjj
Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
avg	6.892	6.934	6.984	7.600	21.70
Stddev	.630	.545	.269	.824	1.05
RSD	9.144	7.859	3.857	10.85	4.856
F1	6.560	6.494	6.560	7.150	21.19
F2	6.333	7.059	7.124	7.652	21.31
F3	6.416	6.747	6.879	7.408	20.70
F4	7.527	6.546	7.135	8.967	23.43
F5	7.624	7.824	7.223	6.821	21.87

Ent. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
avg	7.5752
Stddev	.0637
RSD	.84146
F1	7.6221
F2	7.5795
F3	7.5591
F4	7.6387
F5	7.4765

Method: ISO_U
Comment: 40501 df
Run Time: 11/20/98 18:06 Type: Unk

Sample Name: s98t002784_d

Operator: bjg
Mode: CONC
Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
avg	6.892	6.934	-.0017	7.600	.0578
stddev	.630	.545	.0011	.824	.0047
RSD	9.144	7.859	67.46	10.85	8.199
F1	6.560	6.494	-.0034	7.150	.0555
F2	6.333	7.059	-.0011	7.652	.0560
F3	6.416	6.747	-.0021	7.408	.0533
F4	7.527	6.546	-.0010	8.967	.0656
F5	7.624	7.824	-.0007	6.821	.0586

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/s
avg	7.5752
stddev	.0637
RSD	.84146
F1	7.6221
F2	7.5795
F3	7.5591
F4	7.6387
F5	7.4765

Method: ISO_U
Comment: 10 df
Run Time: 11/20/98 18:08 Type: Unk

Sample Name: s98t002794

Operator: bjg
Mode: IR
Corr.Fact: 1.000000

	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
avg	5.722	6.604	7.080	6.589	55.87
stddev	.305	1.009	.533	.952	2.12
RSD	5.336	15.28	7.530	14.45	3.796
F1	5.530	5.074	6.614	5.986	52.45
F2	5.284	6.275	7.200	6.935	57.33
F3	5.885	6.943	6.678	6.348	56.14
F4	5.885	6.944	7.935	5.621	55.55
F5	6.024	7.784	6.971	8.054	57.87

nt. Std.	Ir[193]
line	193/pulse
Units	Cts/S
avg	7.7700
stddev	.5642
RSD	7.2610
1	8.7698
2	7.5699
3	7.5619
4	7.5610
5	7.3872

Analysis Report

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Method: ISO_U

Sample Name: s98t002794

Operator: bjg

Comment: 10 df

Run Time: 11/20/98 18:08 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U [233]	U [234]	U [235]	U [236]	U [238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
avg	5.722	6.604	-.0013	6.589	.2115
Stddev	.305	1.009	.0022	.952	.0095
RSD	5.336	15.28	175.5	14.45	4.510
#1	5.530	5.074	-.0032	5.986	.1961
#2	5.284	6.275	-.0008	6.935	.2181
#3	5.885	6.943	-.0029	6.348	.2127
#4	5.885	6.944	.0023	5.621	.2101
#5	6.024	7.784	-.0017	8.054	.2205

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
avg	7.7700
Stddev	.5642
RSD	7.2610

#1	8.7698
#2	7.5699
#3	7.5619
#4	7.5610
#5	7.3872

Method: ISO_U

Sample Name: s98t002794_d

Operator: bjg

Comment: 10 df

Run Time: 11/20/98 18:09 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
avg	6.086	7.257	6.924	6.942	57.23
stddev	1.241	.205	.950	.962	2.12
RSD	20.39	2.824	13.73	13.86	3.706
F1	4.755	7.004	8.482	5.655	57.64
F2	6.242	7.238	6.375	7.305	56.65
F3	8.023	7.440	6.341	6.276	55.71
F4	5.304	7.117	7.184	8.057	60.70
F5	6.104	7.482	6.235	7.417	55.46

nt. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
avg	7.6205
stddev	.1377
RSD	1.8070

1	7.7808
2	7.5292
3	7.7280
4	7.4466
5	7.6180

Analysis Report

HNF-1652 REV. C

11/20/98 18:11:36

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Method: ISO_U

Sample Name: s98t002794_d

Operator: bjg

Comment: 10 df

Run Time: 11/20/98 18:09 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U [233]	U [234]	U [235]	U [236]	U [238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
avg	6.086	7.257	-.0019	6.942	.2176
Stddev	1.241	.205	.0039	.962	.0095
RSD	20.39	2.824	206.6	13.86	4.384
F1	4.755	7.004	.0045	5.655	.2195
F2	6.242	7.238	-.0042	7.305	.2150
F3	8.023	7.440	-.0043	6.276	.2108
F4	5.304	7.117	-.0008	8.057	.2332
F5	6.104	7.482	-.0047	7.417	.2097

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
avg	7.6205
Stddev	.1377
RSD	1.8070

F1	7.7808
F2	7.5292
F3	7.7280
F4	7.4466
F5	7.6180

Analysis Report

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Method: ISO_U

Sample Name: ccv

Operator: bjg

Comment: iso-u lcs

Run Time: 11/20/98

18:12 Type: Unk

Mode: IR

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5.893	8.179	179.0	11.07	23310.
Stddev	.596	.166	3.3	.69	591.
RSD	10.11	2.025	1.829	6.246	3.650
#1	6.328	8.024	176.7	10.24	23350.
#2	5.678	8.246	183.2	10.61	23870.
#3	6.427	8.216	176.3	11.13	23250.
#4	6.071	8.005	176.9	11.34	23710.
#5	4.962	8.402	181.8	12.04	23360.

Int. Std.

Ir[193]

Line	193/pulse
Units	Cts/S
avg	7.5320
Stddev	.0973
RSD	1.2920

#1	7.6641
#2	7.3972
#3	7.5459
#4	7.4950
#5	7.5578

Analysis Report

HNF-1652 REV. C

11/20/98 18:13:50

page 1

Method: ISO_U

Sample Name: ccv

Operator: bjg

Comment: iso-u lcs

Run Time: 11/20/98 18:12 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	5.893	8.179	.7091	11.07	100.3
Stddev	.596	.166	.0135	.69	2.7
SRSD	10.11	2.025	1.908	6.246	2.651
#1	6.328	8.024	.6998	10.24	96.00
#2	5.678	8.246	.7267	10.61	102.8
#3	6.427	8.216	.6978	11.13	100.0
#4	6.071	8.005	.7006	11.34	102.1
#5	4.962	8.402	.7208	12.04	100.5

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	7.5320
Stddev	.0973
SRSD	1.2920

#1	7.6641
#2	7.3972
#3	7.5459
#4	7.4950
#5	7.5578

Method: ISO_U		Sample Name: ccb		Operator: bjg	
Comment: 2% hno3					
Run Time: 11/20/98 18:16		Type: Unk	Mode: IR	Corr.Fact: 1.000000	
Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6.322	6.092	5.917	5.915	7.473
Stddev	1.156	.937	.640	.602	1.021
RSD	18.29	15.38	10.82	10.18	13.66
#1	7.228	7.093	5.337	6.350	9.120
#2	6.569	5.740	5.867	5.867	7.079
#3	7.347	6.762	6.957	6.177	7.542
#4	5.956	4.702	5.454	4.890	7.272
#5	4.510	6.162	5.972	6.289	6.353
Int. Std.		Ir[193]			
Line	193/pulse				
Units	Cts/S				
Avg	7.7555				
Stddev	.2227				
RSD	2.8720				
#1	7.4015				
#2	7.8402				
#3	7.6898				
#4	7.9755				
#5	7.8705				

Method: ISO_U

Sample Name: ccb

Operator: bjg

Comment: 2% hno3

Run Time: 11/20/98 18:16

Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	U_[233]	U_[234]	U_[235]	U_[236]	U_[238]
Line	233/pulse	234/pulse	235/pulse	236/pulse	238/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	6.322	6.092	-.0061	5.915	-.0062
Stddev	1.156	.937	.0026	.602	.0046
RSD	18.29	15.38	43.66	10.18	74.24
#1	7.228	7.093	-.0085	6.350	.0012
#2	6.569	5.740	-.0063	5.867	-.0080
#3	7.347	6.762	-.0018	6.177	-.0059
#4	5.956	4.702	-.0080	4.890	-.0071
#5	4.510	6.162	-.0058	6.289	-.0112

Int. Std.	Ir[193]
Line	193/pulse
Units	Cts/S
Avg	7.7555
Stddev	.2227
RSD	2.8720

1	7.4015
2	7.8402
3	7.6898
4	7.9755
5	7.8705

LABCORE Completed Worklist Report for Worklist# 26371

Analyst: bjg

Instrument: ICPMS1

Book#: 42 B57

Method: LA-506-101 Rev/Mod A-0

Worklist Comment: ICP/MS AW-101 (DIRECT)

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	ICV	0	QMSPR-QC TC99	QC	0.0197	1.57e-02	79.695 %	Recovery
1	ICV	0	QMSPR-QC SN117	QC	0.01925	1.68e-02	87.273 %	Recovery
1	ICV	0	QMSPR-QC SN126	QC	n/a	<1.50e-4	%	Recovery
1	ICV	0	QMSPR-QC CS133	QC	0.020	1.97e-02	98.500 %	Recovery
1	ICV	0	QMSPR-QC CS135	QC	n/a	1.98e-05	%	Recovery
1	ICV	0	QMSPR-QC CS137	QC	n/a	3.58e-05	%	Recovery
2	ICB	0	QMSPR-QC TC99	QC	1	<2.00e-6	ug/mL	
2	ICB	0	QMSPR-QC SN117	QC	1	<1.50e-4	ug/mL	
2	ICB	0	QMSPR-QC SN126	QC	1	<1.50e-4	ug/mL	
2	ICB	0	QMSPR-QC CS133	QC	1	2.40e-06	2.400e-006	ug/mL
2	ICB	0	QMSPR-QC CS135	QC	1	<2.00e-6	ug/mL	
2	ICB	0	QMSPR-QC CS137	QC	1	<2.00e-6	ug/mL	
3	SAMPLE	S98T002782	D	QMSPR-D1 TC99-D1 LIQUID	N/A	8.444e+00	8.10e-002	ug/mL
3	SAMPLE	S98T002782	D	QMSPR-D1 SN117-D1 LIQUID	N/A	1.300e+02	6.075	ug/mL
3	SAMPLE	S98T002782	D	QMSPR-D1 SN126-D1 LIQUID	N/A	6.075e+00	6.075	ug/mL
3	SAMPLE	S98T002782	D	QMSPR-D1 CS133-D1 LIQUID	N/A	1.221e+01	8.10e-002	ug/mL
3	SAMPLE	S98T002782	D	QMSPR-D1 CS135-D1 LIQUID	N/A	3.260e+00	8.10e-002	ug/mL
3	SAMPLE	S98T002782	D	QMSPR-D1 CS137-D1 LIQUID	N/A	4.880e+00	8.10e-002	ug/mL
4	DUP	S98T002782	D	QMSPR-D1 TC99-D1 LIQUID	8.44e+00	8.13e+00	3.742	RPD
4	DUP	S98T002782	D	QMSPR-D1 SN117-D1 LIQUID	1.30e+02	1.26e+02	3.125	RPD
4	DUP	S98T002782	D	QMSPR-D1 SN126-D1 LIQUID	<6.08e0	<6.08e0		RPD
4	DUP	S98T002782	D	QMSPR-D1 CS133-D1 LIQUID	1.22e+01	1.21e+01	0.823	RPD
4	DUP	S98T002782	D	QMSPR-D1 CS135-D1 LIQUID	3.26e+00	3.22e+00	1.235	RPD
4	DUP	S98T002782	D	QMSPR-D1 CS137-D1 LIQUID	4.88e+00	4.81e+00	1.445	RPD
5	SPK-POST	S98T002782	D	QMSPR-D1 TC99-D1 LIQUID	0.020	1.72e-02	86.000 %	Recovery
5	SPK-POST	S98T002782	D	QMSPR-D1 SN117-D1 LIQUID	0.0219	1.30e-01	593.607 %	Recovery
5	SPK-POST	S98T002782	D	QMSPR-D1 SN126-D1 LIQUID	n/a	1.81e-05	%	Recovery
5	SPK-POST	S98T002782	D	QMSPR-D1 CS133-D1 LIQUID	0.02008	1.95e-02	97.112 %	Recovery
5	SPK-POST	S98T002782	D	QMSPR-D1 CS135-D1 LIQUID	n/a	-3.00e-7	%	Recovery
5	SPK-POST	S98T002782	D	QMSPR-D1 CS137-D1 LIQUID	n/a	-2.30e-6	%	Recovery
6	SAMPLE	S98T002783	D	QMSPR-D1 TC99-D1 LIQUID	N/A	7.946e+00	8.10e-002	ug/mL
6	SAMPLE	S98T002783	D	QMSPR-D1 SN117-D1 LIQUID	N/A	1.322e+02	6.075	ug/mL
6	SAMPLE	S98T002783	D	QMSPR-D1 SN126-D1 LIQUID	N/A	6.075e+00	6.075	ug/mL
6	SAMPLE	S98T002783	D	QMSPR-D1 CS133-D1 LIQUID	N/A	1.181e+01	8.10e-002	ug/mL
6	SAMPLE	S98T002783	D	QMSPR-D1 CS135-D1 LIQUID	N/A	3.090e+00	8.10e-002	ug/mL
6	SAMPLE	S98T002783	D	QMSPR-D1 CS137-D1 LIQUID	N/A	4.564e+00	8.10e-002	ug/mL
7	DUP	S98T002783	D	QMSPR-D1 TC99-D1 LIQUID	7.95e+00	8.07e+00	1.498	RPD
7	DUP	S98T002783	D	QMSPR-D1 SN117-D1 LIQUID	1.32e+02	1.31e+02	0.760	RPD
7	DUP	S98T002783	D	QMSPR-D1 SN126-D1 LIQUID	<6.08e0	<6.08e0		RPD
7	DUP	S98T002783	D	QMSPR-D1 CS133-D1 LIQUID	1.18e+01	1.19e+01	0.844	RPD
7	DUP	S98T002783	D	QMSPR-D1 CS135-D1 LIQUID	3.09e+00	3.09e+00	0.000	RPD

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

LABCORE Completed Worklist Report for Worklist# 26371

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
7 DUP	S98T002783	0 D	MSPR-D1 CS137-D1	LIQUID	4.56e+00	4.55e+00	0.220	RPD
8 SAMPLE	S98T002784	0 D	MSPR-D1 TC99-D1	LIQUID	N/A	8.870e+00	8.10e-002	ug/mL
8 SAMPLE	S98T002784	0 D	MSPR-D1 SN117-D1	LIQUID	N/A	1.416e+02	6.075	ug/mL
8 SAMPLE	S98T002784	0 D	MSPR-D1 SN126-D1	LIQUID	N/A	6.075e+00	6.075	ug/mL
8 SAMPLE	S98T002784	0 D	MSPR-D1 CS133-D1	LIQUID	N/A	1.282e+01	8.10e-002	ug/mL
8 SAMPLE	S98T002784	0 D	MSPR-D1 CS135-D1	LIQUID	N/A	3.386e+00	8.10e-002	ug/mL
8 SAMPLE	S98T002784	0 D	MSPR-D1 CS137-D1	LIQUID	N/A	5.127e+00	8.10e-002	ug/mL
9 DUP	S98T002784	0 D	MSPR-D1 TC99-D1	LIQUID	8.87e+00	8.56e+00	3.557	RPD
9 DUP	S98T002784	0 D	MSPR-D1 SN117-D1	LIQUID	1.42e+02	1.36e+02	4.317	RPD
9 DUP	S98T002784	0 D	MSPR-D1 SN126-D1	LIQUID	<6.08e0	<6.08e0		RPD
9 DUP	S98T002784	0 D	MSPR-D1 CS133-D1	LIQUID	1.28e+01	1.23e+01	3.984	RPD
9 DUP	S98T002784	0 D	MSPR-D1 CS135-D1	LIQUID	3.39e+00	3.33e+00	1.786	RPD
9 DUP	S98T002784	0 D	MSPR-D1 CS137-D1	LIQUID	5.13e+00	4.89e+00	4.790	RPD
10 SAMPLE	S98T002794	0 D	MSPR-D1 TC99-D1	LIQUID	N/A	1.011e-03	2.00e-005	ug/mL
10 SAMPLE	S98T002794	0 D	MSPR-D1 SN117-D1	LIQUID	N/A	3.323e-03	1.50e-003	ug/mL
10 SAMPLE	S98T002794	0 D	MSPR-D1 SN126-D1	LIQUID	N/A	1.500e-03	1.50e-003	ug/mL
10 SAMPLE	S98T002794	0 D	MSPR-D1 CS133-D1	LIQUID	N/A	8.180e-04	2.00e-005	ug/mL
10 SAMPLE	S98T002794	0 D	MSPR-D1 CS135-D1	LIQUID	N/A	1.030e-04	2.00e-005	ug/mL
10 SAMPLE	S98T002794	0 D	MSPR-D1 CS137-D1	LIQUID	N/A	1.070e-04	2.00e-005	ug/mL
11 DUP	S98T002794	0 D	MSPR-D1 TC99-D1	LIQUID	1.01e-03	9.68e-04	4.247	RPD
11 DUP	S98T002794	0 D	MSPR-D1 SN117-D1	LIQUID	3.32e-03	3.37e-03	1.495	RPD
11 DUP	S98T002794	0 D	MSPR-D1 SN126-D1	LIQUID	<1.50e-3	<1.50e-3		RPD
11 DUP	S98T002794	0 D	MSPR-D1 CS133-D1	LIQUID	8.18e-04	8.04e-04	1.726	RPD
11 DUP	S98T002794	0 D	MSPR-D1 CS135-D1	LIQUID	1.03e-04	9.20e-05	11.282	RPD
11 DUP	S98T002794	0 D	MSPR-D1 CS137-D1	LIQUID	1.07e-04	9.00e-05	17.259	RPD
12 CCV	0		MSPR-QC TC99	QC	0.0197	1.57e-02	79.695	% Recovery
12 CCV	0		MSPR-QC SN117	QC	0.01925	1.65e-02	85.714	% Recovery
12 CCV	0		MSPR-QC SN126	QC	n/a	<1.50e-4		% Recovery
12 CCV	0		MSPR-QC CS133	QC	0.0200	1.95e-02	97.500	% Recovery
12 CCV	0		MSPR-QC CS135	QC	n/a	1.88e-05		% Recovery
12 CCV	0		MSPR-QC CS137	QC	n/a	3.57e-05		% Recovery
13 CCB	0		MSPR-QC TC99	QC	1	<2.00e-6		ug/mL
13 CCB	0		MSPR-QC SN117	QC	1	<1.50e-4		ug/mL
13 CCB	0		MSPR-QC SN126	QC	1	<1.50e-4		ug/mL
13 CCB	0		MSPR-QC CS133	QC	1	<2.00e-6		ug/mL
13 CCB	0		MSPR-QC CS135	QC	1	<2.00e-6		ug/mL
13 CCB	0		MSPR-QC CS137	QC	1	<2.00e-6		ug/mL

Final page for worklist# 26371

Analyst Signature

Date

Analyst Signature

Date

Sam M. Pang 1/29/99
Reviewer Signature Date

FILE # PR 430A.TXT

HNF-1652 REV. 0

09/28/98 09:13

E-0004-1

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LABCORE Data Entry Template for Worklist# 26371

Analyst: B. GOSICK Instrument: ICPMS1 _____ Book# 421357Method: LA-506-101 Rev/Mod A-0

Worklist Comment: ICP/MS AW-101 (DIRECT)

Sl	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@MSPR-QC	QC		
2	ICB				@MSPR-QC	QC		
3	SAMPLE	S98T002782	0	D	@MSPR-D1	LIQUID	98000261	AW-101 LAW
		Analytes Requested: CS133-D1, CS135-D1, CS137-D1, I129-D1, SN117-D1, SN126-D1, TC99-D1						
4	DUP	S98T002782	0	D	@MSPR-D1	LIQUID		
5	SPK-POST 8/11/98	S98T002782	0	D	@MSPR-D1	LIQUID		
6	SAMPLE	S98T002783	0	D	@MSPR-D1	LIQUID	98000261	AW-101 LAW
		Analytes Requested: CS133-D1, CS135-D1, CS137-D1, I129-D1, SN117-D1, SN126-D1, TC99-D1						
7	DUP	S98T002783	0	D	@MSPR-D1	LIQUID		
8	SAMPLE	S98T002784	0	D	@MSPR-D1	LIQUID	98000261	AW-101 LAW
		Analytes Requested: CS133-D1, CS135-D1, CS137-D1, I129-D1, SN117-D1, SN126-D1, TC99-D1						
9	DUP	S98T002784	0	D	@MSPR-D1	LIQUID		
0	SAMPLE	S98T002794	0	D	@MSPR-D1	LIQUID	98000261	AW-101 LAW
		Analytes Requested: CS133-D1, CS135-D1, CS137-D1, I129-D1, SN117-D1, SN126-D1, TC99-D1						
1	DUP	S98T002794	0	D	@MSPR-D1	LIQUID		
2	CCV				@MSPR-QC	QC		
3	CCB				@MSPR-QC	QC		

Data Entry Comments:

Uploaded & Validated by:
Sam M. Pang
 12/8/98

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

09/28/98 09:13
A-0004-1

HNF-1652 REV. C

Page: 2

LABCORE Data Entry Template for Worklist# 26371

S Type	Sample#	R A Test	Matrix	Group#	Project
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Final page for worklist # 26371

[Signature] 11-30-98
 Analyst Signature Date

Analyst Signature Date

598T00 2782
 2782-D
 2782-A

1-10-1 1025-10-1

DF.
40501

598T00 2783
 2783-D

598T00 2784
 2784-D

598T00 2794
 2794-D

1ml-9-1
 1ml-9-1

10
 10

* 598T00 2782-A (post spike) .1 ml of 44 B57 in
 10ml of 22 H₂O₂ + spike

SCANS = 9802782
 9802783
 9802784
 9802794

Data Entry Comments:

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

509

Method: MS_TUNE Sample Name: ms-tune

Comment:

Operator: bjg

Run Time: 11/30/98 13:12 Type: Unk

Mode: INT

Corr.Fact: 1.000000

Elem	In[115]
Line	115/pulse
Units	Cts/S
Avg	130400.
Stddev	765.
ERSD	.5866

#1	130200.
#2	129900.
#3	130700.
#4	130700.
#5	129400.
#6	129800.
#7	131200.
#8	129800.
#9	132000.
#10	130300.

[Signature]

11-30-98

AW-101

598700 2782-84, 94

11-10-98 12:45-10

File # 1130A.FLT

SCANS = 9802782

980 2783

980 2784

980 2784

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 510 TO 526.

Method: TC_SN_CS
Comment:
Run Time: 11/30/98 13:14

Sample Name: Blank
Type: Std
Mode: IR
Corr. Fact: 1.000000

Operator:

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.7700	2.143	8.819	3.015	.9130
Stddev	.0938	.140	.457	.285	.0865
RSD	12.18	6.536	5.184	9.462	9.474
#1	.7540	2.262	9.010	3.129	.8671
#2	.8354	2.316	9.114	2.696	.8354
#3	.8808	2.068	8.731	2.795	1.034
#4	.6370	1.986	9.181	3.035	.9743
#5	.7430	2.080	8.061	3.418	.8544

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5.211	17.77	28.61	169.2
Stddev	.088	1.10	1.38	2.7
RSD	1.694	6.193	4.807	1.615
1	5.316	17.72	30.20	165.4
2	5.165	19.56	27.99	168.6
3	5.093	17.65	29.64	172.8
4	5.209	16.56	26.72	168.7
5	5.275	17.35	28.49	170.5

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	13.258
Stddev	.155
RSD	1.1710
1	13.262
2	13.167
3	13.057
4	13.343
5	13.459

Method: TC_SN_CS Sample Name: PRIV Std

Operator:

Comment:
Run Time: 11/30/98 13:18 Type: Std Mode: IR Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]
Line	99/pulse	100/pulse	117/pulse	126/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S
Avg	12610.	12650.	486.6	486.6
Stddev	157.	170.	27.5	27.5
RSD	1.243	1.342	5.647	5.647

#1	12850.	12710.	471.6	471.6
#2	12420.	12350.	454.5	454.5
#3	12590.	12690.	483.1	483.1
#4	12580.	12770.	527.2	527.2
#5	12600.	12720.	496.7	496.7

Elem	Te[125]	Cs[133]	Cs[135]	Cs[137]
Line	125/pulse	133/pulse	135/pulse	137/pulse
Units	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1571.	8978.	5822.	9918.
Stddev	36.	144.	96.	222.
RSD	2.323	1.606	1.656	2.242

#1	1560.	9096.	5975.	10100.
#2	1511.	8760.	5772.	9773.
#3	1592.	9120.	5860.	10200.
#4	1594.	8971.	5757.	9688.
#5	1597.	8943.	5746.	9825.

Elem	Ba[138]
Line	138/pulse
Units	Cts/S
Avg	59250.
Stddev	559.
RSD	.9439

#1	60110.
#2	59140.
#3	58570.
#4	59060.
#5	59350.

Sample Name: PRIV Std Run Time: 11/30/98 13:18

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	12.928
Stddev	.156
%RSD	1.2044
#1	12.818
#2	13.163
#3	12.758
#4	12.950
#5	12.949

Method: TC_SN_CS Sample Name: icv
Comment: msprv lcs
Run Time: 11/30/98 13:56 Type: Unk

Operator: bjg
Mode: CONC Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	15.73	.0053	16.75	-.0042	.0005
Stddev	.32	.0006	.47	.0061	.0006
%RSD	2.018	11.75	2.824	146.8	116.0
#1	15.99	.0052	16.51	-.0093	.0003
#2	15.51	.0062	16.61	.0035	.0014
#3	15.98	.0057	16.93	-.0081	.0001
#4	15.89	.0048	17.47	-.0083	.0007
#5	15.28	.0047	16.24	.0014	.0000

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	19.66	.0198	.0358	.2393
Stddev	.23	.0009	.0013	.0072
%RSD	1.195	4.788	3.710	3.007
#1	19.61	.0202	.0377	.2459
#2	19.38	.0185	.0345	.2285
#3	19.93	.0193	.0352	.2438
#4	19.88	.0210	.0366	.2427
#5	19.52	.0200	.0349	.2355

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	13.456
Stddev	.185
%RSD	1.3749

1	13.379
2	13.609
3	13.369
4	13.237
5	13.684

Analysis Report

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Method: TC_SN_CS Sample Name: icb

Comment: 2% hno3

Operator: bjb

Run Time: 11/30/98 14:02 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0004	-.0001	-.0028	-.0016	.0003
Stddev	.0002	.0003	.0092	.0055	.0008
%RSD	40.49	227.9	331.0	342.0	244.7

#1	.0004	-.0004	-.0040	.0056	-.0009
#2	.0004	.0002	.0066	-.0048	.0004
#3	.0006	-.0003	-.0152	-.0064	.0000
#4	.0002	-.0002	.0060	.0031	.0008
#5	.0006	.0001	-.0073	-.0055	.0013

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	.0024	-.0006	.0011	.0040
Stddev	.0003	.0003	.0008	.0027
%RSD	12.95	54.80	75.35	66.48

#1	.0027	-.0003	.0018	.0060
#2	.0027	-.0008	.0017	.0069
#3	.0022	-.0002	.0001	.0035
#4	.0022	-.0009	.0015	.0000
#5	.0021	-.0008	.0003	.0038

Ent. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	13.681
Stddev	.178
RSD	1.2980

1	13.822
2	13.437
3	13.587
4	13.876
5	13.685

Analysis Report

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Method: TC_SN_CS Sample Name: s98t002782

Operator: bjg

Comment: 40501 df

Run Time: 11/30/98 14:05 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	Te[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.2085	.2671	3.210	.0146	.0001
Stddev	.0017	.0032	.059	.0065	.0007
%RSD	.7981	1.216	1.830	44.67	643.8

#1	.2096	.2706	3.125	.0117	-.0009
#2	.2102	.2629	3.236	.0233	.0011
#3	.2089	.2646	3.283	.0101	-.0001
#4	.2060	.2695	3.220	.0083	.0005
#5	.2078	.2681	3.188	.0198	.0000

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	.3014	.0805	.1205	-.0893
Stddev	.0045	.0028	.0027	.0048
%RSD	1.502	3.508	2.268	5.378

#1	.2988	.0778	.1186	-.0894
#2	.2958	.0800	.1191	-.0973
#3	.3035	.0779	.1187	-.0886
#4	.3012	.0839	.1210	-.0846
#5	.3077	.0829	.1251	-.0869

Int. Std.	In[115]
Line	115/pulse
Units	Cts/s
Avg	13.320
Stddev	.217
%RSD	1.6304

1	13.478
2	13.519
3	13.425
4	13.152
5	13.029

Method: TC_SN_CS Sample Name: s98t002782_d

Operator: bjg

Comment: 40501 df

Run Time: 11/30/98 14:10 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.2008	.2562	3.120	.0241	.0005
Stddev	.0079	.0114	.127	.0038	.0005
%RSD	3.927	4.466	4.082	15.61	92.68
#1	.2142	.2732	3.334	.0264	.0012
#2	.1950	.2473	3.008	.0198	.0006
#3	.1960	.2445	3.044	.0203	.0002
#4	.1974	.2557	3.120	.0265	.0007
#5	.2014	.2605	3.096	.0276	.0000

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	.2981	.0796	.1187	-.0964
Stddev	.0088	.0044	.0037	.0046
%RSD	2.968	5.558	3.116	4.755
#1	.3078	.0858	.1237	-.0885
#2	.2889	.0804	.1145	-.0994
#3	.2968	.0773	.1186	-.0961
#4	.3067	.0808	.1207	-.0988
#5	.2904	.0738	.1159	-.0991

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	13.139
Stddev	.252
%RSD	1.9151

#1	12.727
#2	13.394
#3	13.168
#4	13.136
#5	13.270

Analysis Report

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page 1

Method: TC_SN_CS Sample Name: s98t002782_a Operator: bjg
 Comment: 40501 df
 Run Time: 11/30/98 14:13 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	17.41	.2533	133.2	.0181	-.0004
Stddev	.43	.0048	1.9	.0028	.0010
%RSD	2.469	1.876	1.459	15.55	239.6
#1	16.72	.2508	132.2	.0199	.0010
#2	17.83	.2603	133.4	.0215	-.0012
#3	17.69	.2554	132.5	.0156	-.0012
#4	17.43	.2518	136.5	.0148	-.0007
#5	17.36	.2480	131.5	.0185	.0001

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	19.77	.0802	.1182	-.0829
Stddev	.20	.0022	.0043	.0032
%RSD	1.025	2.737	3.670	3.893
#1	19.70	.0775	.1208	-.0806
#2	19.67	.0813	.1229	-.0867
#3	19.76	.0832	.1176	-.0840
#4	20.12	.0799	.1185	-.0786
#5	19.61	.0789	.1114	-.0845

Int. Std.	In[115]
Line	115/pulse
Units	Cts/s
Avg	13.205
Stddev	.096
%RSD	.72995
#1	13.243
#2	13.178
#3	13.260
#4	13.050
#5	13.293

Method: TC_SN_CS Sample Name: s98t002783 Operator: bjg

Comment: 40501 df

Run Time: 11/30/98 14:20 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.1962	.2673	3.264	.0184	-.0005
Stddev	.0064	.0058	.107	.0089	.0007
%RSD	3.265	2.187	3.278	48.40	154.7

#1	.1914	.2643	3.204	.0231	-.0001
#2	.2015	.2724	3.269	.0100	-.0006
#3	.1992	.2688	3.372	.0104	-.0009
#4	.1876	.2586	3.116	.0311	-.0014
#5	.2016	.2723	3.356	.0174	.0006

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	.2916	.0763	.1127	-.0935
Stddev	.0067	.0011	.0041	.0027
%RSD	2.310	1.506	3.673	2.879

#1	.2932	.0748	.1080	-.0898
#2	.2888	.0758	.1172	-.0940
#3	.2893	.0779	.1150	-.0918
#4	.2844	.0766	.1085	-.0962
#5	.3023	.0763	.1146	-.0956

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	13.256
Stddev	.195
%RSD	1.4697

#1	13.554
#2	13.303
#3	13.215
#4	13.182
#5	13.025

Analysis Report

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page 1

Method: TC_SN_CS Sample Name: s98t002783_d Operator: bjg
 Comment: 40501 df
 Run Time: 11/30/98 14:23 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.1992	.2644	3.237	.0226	-.0004
Stddev	.0047	.0046	.095	.0094	.0009
%RSD	2.344	1.741	2.922	41.65	239.0

#1	.1924	.2616	3.070	.0113	-.0017
#2	.1996	.2658	3.284	.0367	.0003
#3	.2040	.2619	3.263	.0187	-.0003
#4	.1972	.2606	3.273	.0254	-.0009
#5	.2029	.2718	3.298	.0207	.0006

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	.2927	.0763	.1123	-.0946
Stddev	.0063	.0028	.0067	.0051
%RSD	2.147	3.716	5.973	5.345

#1	.2830	.0740	.1042	-.1019
#2	.3006	.0784	.1155	-.0949
#3	.2923	.0759	.1087	-.0901
#4	.2940	.0732	.1112	-.0966
#5	.2936	.0798	.1218	-.0897

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	13.094
Stddev	.363
%RSD	2.7754

#1	13.703
#2	12.788
#3	13.007
#4	13.115
#5	12.858

Method: TC_SN_CS Sample Name: s98t002784 Operator: bjg
 Comment: 40501 df
 Run Time: 11/30/98 14:27 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.2190	.2922	3.497	.0276	-.0007
Stddev	.0185	.0239	.292	.0041	.0011
%RSD	8.448	8.174	8.351	14.70	148.0

#1	.2182	.2933	3.454	.0291	-.0001
#2	.2154	.2876	3.402	.0317	-.0022
#3	.1991	.2650	3.173	.0225	.0001
#4	.2493	.3304	3.972	.0307	-.0016
#5	.2129	.2846	3.484	.0242	.0001

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	.3165	.0836	.1266	-.0908
Stddev	.0260	.0099	.0091	.0087
%RSD	8.204	11.79	7.175	9.558

#1	.3136	.0828	.1307	-.0889
#2	.3181	.0833	.1247	-.0885
#3	.2909	.0712	.1134	-.1027
#4	.3588	.0988	.1383	-.0792
#5	.3009	.0818	.1261	-.0948

Int. Std.	In[115]
Line	115/pulse
Units	Cts/s
Avg	12.928
Stddev	.862
%RSD	6.6647

#1	13.016
#2	12.981
#3	13.884
#4	11.530
#5	13.230

Method: TC_SN_CS Sample Name: s98t002784_d

Operator: bjg

Comment: 40501 df

Run Time: 11/30/98 14:30 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.2114	.2828	3.346	.0198	-.0001
Stddev	.0021	.0069	.037	.0026	.0007
%RSD	.9812	2.444	1.103	13.20	585.1

#1	.2088	.2868	3.355	.0216	.0008
#2	.2119	.2736	3.322	.0213	.0001
#3	.2113	.2876	3.388	.0152	-.0006
#4	.2106	.2771	3.370	.0203	-.0010
#5	.2145	.2888	3.297	.0206	.0001

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	.3035	.0821	.1207	-.0935
Stddev	.0029	.0032	.0031	.0026
%RSD	.9552	3.863	2.567	2.816

#1	.3018	.0844	.1257	-.0928
#2	.3005	.0824	.1214	-.0970
#3	.3071	.0810	.1202	-.0899
#4	.3061	.0853	.1185	-.0948
#5	.3021	.0773	.1179	-.0928

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	12.874
Stddev	.112
%RSD	.87191

#1	12.818
#2	12.873
#3	12.849
#4	13.063
#5	12.769

Analysis Report

HNF-1652 REV. 0

11/30/98 14:36:54

page 1

Method: TC_SN_CS Sample Name: s98t002794

Operator: bjg

Comment: 10 df

Run Time: 11/30/98 14:34 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.1011	.1307	.3323	.0048	-.0002
Stddev	.0024	.0016	.0231	.0068	.0015
%RSD	2.423	1.253	6.940	140.9	797.4

#1	.1013	.1311	.3116	.0032	.0004
#2	.1052	.1291	.3418	.0160	-.0016
#3	.0993	.1332	.3668	.0057	-.0014
#4	.0992	.1295	.3290	-.0019	-.0002
#5	.1005	.1304	.3121	.0013	.0020

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	.0818	.0103	.0107	-.1540
Stddev	.0015	.0011	.0020	.0027
%RSD	1.840	10.18	18.79	1.765

#1	.0839	.0095	.0075	-.1517
#2	.0802	.0121	.0115	-.1554
#3	.0826	.0097	.0120	-.1510
#4	.0819	.0098	.0124	-.1542
#5	.0806	.0106	.0101	-.1577

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	12.790
Stddev	.207
%RSD	1.6205

#1	13.052
#2	12.571
#3	12.602
#4	12.792
#5	12.931

Analysis Report

HNF-1652 REV.0

11/30/98 14:39:00

page 1

Method: TC_SN_CS Sample Name: s98t002794_d

Operator: bjg

Comment: 10 df

Run Time: 11/30/98 14:37 Type: Unk

Mode: CONC

Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0968	.1281	.3371	.0096	.0004
Stddev	.0040	.0052	.0128	.0061	.0015
%RSD	4.159	4.027	3.803	63.40	370.2

#1	.0973	.1248	.3260	.0126	-.0007
#2	.0943	.1293	.3278	.0022	.0018
#3	.0915	.1237	.3546	.0153	-.0001
#4	.1014	.1365	.3468	.0040	.0022
#5	.0997	.1261	.3303	.0142	-.0012

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	.0804	.0092	.0090	-.1545
Stddev	.0035	.0019	.0019	.0025
%RSD	4.364	20.33	20.80	1.621

#1	.0783	.0087	.0109	-.1547
#2	.0844	.0101	.0083	-.1530
#3	.0755	.0063	.0061	-.1587
#4	.0820	.0098	.0102	-.1524
#5	.0818	.0112	.0097	-.1537

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	13.018
Stddev	.364
%RSD	2.7993

#1	13.014
#2	13.014
#3	13.576
#4	12.558
#5	12.928

Method: TC_SN_CS Sample Name: ccv Operator: bjg

Comment: msprv lcs

Run Time: 11/30/98 14:42 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	Te[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	15.74	.0050	16.52	.0070	.0003
Stddev	.19	.0003	.21	.0073	.0007
%RSD	1.234	6.907	1.259	103.7	195.7

#1	15.80	.0056	16.70	-.0033	-.0001
#2	15.59	.0052	16.20	.0101	.0002
#3	16.05	.0047	16.67	.0155	.0003
#4	15.59	.0049	16.62	.0030	.0015
#5	15.66	.0048	16.43	.0099	-.0001

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	19.47	.0188	.0357	.2375
Stddev	.15	.0014	.0030	.0033
%RSD	.7930	7.564	8.531	1.407

#1	19.32	.0208	.0338	.2410
#2	19.52	.0176	.0398	.2380
#3	19.61	.0178	.0341	.2335
#4	19.60	.0198	.0382	.2405
#5	19.29	.0180	.0329	.2347

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	12.968
Stddev	.104
%RSD	.80129

#1	13.011
#2	13.024
#3	12.796
#4	12.951
#5	13.059

Method: TC_SN_CS Sample Name: ccb Operator: bjg

Comment: 2% hno3

Run Time: 11/30/98 14:49 Type: Unk Mode: CONC Corr.Fact: 1.000000

Elem	Tc[99]	Ru[100]	Sn[117]	Sn[126]	Te[125]
Line	99/pulse	100/pulse	117/pulse	126/pulse	125/pulse
Units	ppb	ppb	ppb	ppb	ppb
Avg	.0003	-.0002	-.0046	.0017	-.0005
Stddev	.0001	.0001	.0099	.0027	.0009
%RSD	24.51	42.82	214.8	158.6	189.1

#1	.0005	-.0003	-.0165	-.0003	..0002
#2	.0004	-.0002	-.0117	-.0014	-.0012
#3	.0003	-.0003	.0089	.0050	.0005
#4	.0002	-.0001	-.0001	.0035	-.0003
#5	.0003	-.0002	-.0038	.0017	-.0017

Elem	Cs[133]	Cs[135]	Cs[137]	Ba[138]
Line	133/pulse	135/pulse	137/pulse	138/pulse
Units	ppb	ppb	ppb	ppb
Avg	.0011	-.0007	.0004	-.0030
Stddev	.0004	.0012	.0017	.0130
%RSD	42.00	184.2	429.1	439.6

#1	.0005	-.0021	-.0011	-.0195
#2	.0015	-.0011	.0024	-.0027
#3	.0015	.0007	.0012	.0161
#4	.0011	-.0014	-.0015	-.0085
#5	.0007	.0005	.0010	-.0002

Int. Std.	In[115]
Line	115/pulse
Units	Cts/S
Avg	12.831
Stddev	.528
%RSD	4.1150

#1	13.532
#2	12.479
#3	12.161
#4	12.995
#5	12.986

LABCORE Completed Worklist Report for Worklist# 26397

Analyst: jds

Instrument: CARB2

Book#: _____

Method: LA-342-100 Rev/Mod F-1

Worklist Comment: AW101 LAW, @TICTOC1 STD: TIC=1.0mL, TOC=0.200mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	LIQUID	1	2.00E-1	0.200	ug/mL
1 BLNK	0		@TICTOC1 TOC-02	LIQUID	1	8.00E+0	8.000	ug/mL
2 STD	0		@TICTOC1 TIC-02	LIQUID	6.02E+02	6.02E+2	100.000	% Recovery
2 STD	0		@TICTOC1 TOC-02	LIQUID	3.00E+03	2.80E+3	93.333	% Recovery
3 SAMPLE	S98T002779	0	@TICTOC1 TIC-02	LIQUID	N/A	1.93E+03	5.000	ug/mL
3 SAMPLE	S98T002779	0	@TICTOC1 TOC-02	LIQUID	N/A	3.03E+03	40.000	ug/mL
4 DUP	S98T002779	0	@TICTOC1 TIC-02	LIQUID	1.93E+3	1.76E+3	9.214	RPD
4 DUP	S98T002779	0	@TICTOC1 TOC-02	LIQUID	3.03E+3	2.98E+3	1.664	RPD
5 SPK	S98T002779	0	@TICTOC1 TIC-02	LIQUID	1.00E+02	9.48E+01	94.800	% Recovery
5 SPK	S98T002779	0	@TICTOC1 TOC-02	LIQUID	1.00E+02	9.40E+01	94.000	% Recovery
6 SAMPLE	S98T002780	0	@TICTOC1 TIC-02	LIQUID	N/A	1.69E+03	5.000	ug/mL
6 SAMPLE	S98T002780	0	@TICTOC1 TOC-02	LIQUID	N/A	2.98E+03	40.000	ug/mL
7 DUP	S98T002780	0	@TICTOC1 TIC-02	LIQUID	1.69E+3	1.65E+3	2.395	RPD
7 DUP	S98T002780	0	@TICTOC1 TOC-02	LIQUID	2.98E+3	2.47E+3	18.716	RPD

Final page for worklist# 26397

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

10/20/98 16:07
A-0004-1

HNF-1652 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 26397

Analyst: SJS Instrument: CARB2Book# 25412D 25412D
26412F

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AW101 LAW, @TICTOC1 STD: TIC=1.0mL, TOC=1.200mL skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	LIQUID		
2	STD				@TICTOC1	LIQUID		
3	SAMPLE	S98T002779 0			@TICTOC1	LIQUID	98000261	AW-101 LAW
		Analytes Requested: TIC-02 , TOC-02						
4	DUP	S98T002779 0			@TICTOC1	LIQUID		
5	SPK	S98T002779 0			@TICTOC1	LIQUID		
6	SAMPLE	S98T002780 0			@TICTOC1	LIQUID	98000261	AW-101 LAW
		Analytes Requested: TIC-02 , TOC-02						
7	DUP	S98T002780 0			@TICTOC1	LIQUID		

Final page for worklist # 26397

Analyst Signature SJS Date 10/20/98

Analyst Signature _____ Date _____

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	12.2	49.7
26397	µg of Carbon from Baseline (C2)	12.4	41.7
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98004976			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
BLK			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
10/21/98			
Analysis Date			
10/20/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
09:00 PM		5	40
Sample Point	µg of Carbon	2.00E-01	8.00E+00
AW101 LAW			

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	MJL	Date:	

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in µg (C1)	614.2	600.9
26397	µg of Carbon from Baseline (C2)	12.4	41.7
Test Code	Standard Book Number	25N12D	26N12F
@TICTOC1	Standard Value (µg/ml)	602	3000

Matrix
LIQUID
Batch Number
98004976
Retrun
0
Sample Prep
N/A
Sample #
STD
Instrument Code
CARB2
Prepared By
JDS
Chemist
MJL
Analyst
JDS
Date Complete
10/21/98
Analysis Date
10/20/98
Analysis Time
09:00 PM
Sample Point
AW101 LAW

QC Actual in µg/mL = Standard Value (µg/mL)

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in µg/mL	5	40
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	6.02E+02	2.80E+03
Percent Standard Recovery	100.0	93.2

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NA</i>	Date:	

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

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

LIQUIDS

Type	Sample Size in mL (SS)	TIC	TOC
SAMPLE	Dilution Factor (DF)	0.1000	0.1000
Work List	µg of Carbon in Sample (C1)	1	1
26397	µg of Carbon from Baseline (C2)	205.5	344.4
Test Code		12.4	41.7
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98004976			
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 #			
S98T002779			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
10/21/98			
Analysis Date			
10/20/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
09:00 PM		5	40
Sample Point	µg of Carbon/mL	1.93E+03	3.03E+03
AW101 LAW			

Data Entered By:

JDS

Date: 10/21/98

Signature of Chemist:

N/A

Date:

WORKBOOK PAGE: DUP4

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	188.3	339.7
26397	µg of Carbon from Baseline (C2)	12.4	41.7
Test Code	Known µg of C from Original Sample	1.93E+3	3.03E+3
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98004976			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T002779			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
10/21/98			
Analysis Date			
10/20/98			
Analysis Time	Method Detection Limit in µg/mL	5	40
09:00 PM			
Sample Point	µg of Carbon/mL	1.76E+03	2.98E+03
AW101 LAW			

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

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>N A</i>	Date:	

WORKBOOK PAGE: SPIKE5

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	0.1000	0.1000
Work List	Final Coulometer Reading in µg (C1)	205.5	344.4
26397	Spike Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	0.1000
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	490.8	626.4
LIQUID	Spike Book Number	25N12D	26N12F
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	3000
98004976	µg C in baseline (BL)	12.4	41.7
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = ((C2-BL) - (C1-BL)) * (SPK SS) / SS / ((SPK CONC) * (SPK VOL)) * 100		
S98T002779			
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			
JDS			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
10/21/98			
Analysis Date			
10/20/98			
Analysis Time			
09:00 PM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.71E+02	2.82E+03
AW101 LAW	Percent Spike Recovery	94.8	94.0

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>N/A</i>	Date:	

SPIKE.WB1 REV 1.3

342100ML

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

LIQUIDS

Type	Sample Size in mL (SS)	TIC	TOC
SAMPLE	Dilution Factor (DF)	0.1000	0.1000
Work List	µg of Carbon in Sample (C1)	1	1
26397	µg of Carbon from Baseline (C2)	181.5	340
Test Code		12.4	41.7
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98004976			
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 #			
S98T002780			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
10/21/98			
Analysis Date			
10/20/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
09:00 PM		5	40
Sample Point	µg of Carbon/mL	1.69E+03	2.98E+03
AW101 LAW			

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>N A</i>	Date:	

WORKBOOK PAGE: DUP7

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	177.1	289
26397	µg of Carbon from Baseline (C2)	12.4	41.7
Test Code	Known µg of C from Original Sample	1.69E+3	2.98E+3
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98004976			
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 #			
S98T002780			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
10/21/98			
Analysis Date			
10/20/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
09:00 PM		5	40
Sample Point	µg of Carbon/mL	1.65E+03	2.47E+03
AW101 LAW			

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NA</i>	Date:	

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 10/20/98

Time: 10:05:13

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.60	57.14
3	1.01	1.40	100.00
4	1.51	1.80	22.22
5	2.00	2.50	28.00
6	2.50	3.10	19.35
7	3.00	3.70	16.22
8	3.50	4.40	15.91
9	4.00	4.90	10.20
10	4.50	5.60	12.50
11	5.00	6.20	9.68
12	5.50	6.70	7.46
13	6.00	7.30	8.22
14	6.50	7.90	7.59
15	7.00	8.30	4.82
16	7.50	8.80	5.68
17	8.00	9.40	6.38
18	8.50	10.00	6.00
19	9.00	10.60	5.66
20	9.50	11.10	4.50
21	10.00	11.60	4.31
22	10.50	12.40	6.45

BLANK VALUE = 12.4 micrograms carbon

BLANK FACTOR = 12.4 / 10.49902 =

+1.18E-00 ug/min Carbon

Sample Run By:

JD SPELLMAN

22222

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 536 TO 551.

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 10/20/98

Time: 11:19:50

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time =====	Coulometer =====	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.60	100.00
3	1.01	3.00	80.00
4	1.50	8.40	64.29
5	2.00	16.20	48.15
6	2.50	22.10	26.70
7	3.00	26.10	15.33
8	3.50	28.30	7.77
9	4.00	30.00	5.67
10	4.50	31.60	5.06
11	5.00	32.80	3.66
12	5.50	34.30	4.37
13	6.00	35.10	2.28
14	6.50	36.40	3.57
15	7.00	37.20	2.15
16	7.50	38.10	2.36
17	8.00	38.70	1.55
18	8.50	39.40	1.78
19	9.00	40.10	1.75
20	9.50	40.60	1.23
21	10.00	41.10	1.22
22	10.50	41.70	1.44

BLANK VALUE = 41.7 micrograms carbon

BLANK FACTOR = 41.7 / 10.49896 =

+3.97E-00 ug/min Carbon

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

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV.0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV.2.0

Sample: STD

Date: 10/20/98

Time: 11:33:24

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.18 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.60	100.00
3	1.01	52.90	98.87
4	1.51	245.60	78.46
5	2.00	400.80	38.72
6	2.50	488.10	17.89
7	3.00	534.70	8.72
8	3.50	560.10	4.53
9	4.00	575.70	2.71
10	4.50	585.20	1.62
11	5.00	591.70	1.10
12	5.50	596.90	0.87
13	6.00	600.70	0.63
14	6.50	603.30	0.43
15	7.00	606.00	0.45
16	7.50	607.50	0.25
17	8.00	609.20	0.28
18	8.50	610.30	0.18
19	9.00	611.50	0.20
20	9.50	612.80	0.21
21	10.00	613.70	0.15
22	10.50	614.20	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 12.38877 micrograms carbon

BLANK FACTOR = 12.38877 / 10.49896 =

+1.2E+00

ug/min Carbon

SAMPLE RESULTS:

(614.2 - 12.38784) (1)/(1) =

(614.2 - 12.38784) (1)/(1) (12) =

-6.018E+02 g/L Carbon

-5.015E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2:0

Sample: STD

Date: 10/20/98

Time: 13:41:38

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.97 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
1              0.08              0.00              0.00
2              0.51              4.00             100.00
3              1.01             45.70             91.25
4              1.51            134.10             65.92
5              2.00            350.00             61.69
6              2.50            491.40             28.77
7              3.00            532.00              7.63
8              3.50            550.60              3.38
9              4.04            562.90              2.19
10             4.54            571.20              1.45
11             5.04            577.40              1.07
12             5.54            582.10              0.81
13             6.04            585.50              0.58
14             6.54            588.40              0.49
15             7.03            591.10              0.46
16             7.53            592.80              0.29
17             8.03            594.60              0.30
18             8.53            596.30              0.29
19             9.03            597.50              0.20
20             9.53            598.90              0.23
21            10.03            599.80              0.15
22            10.53            600.90              0.18

```

USER INPUT BLANK VALUE

BLANK VALUE = 41.68088 micrograms carbon

BLANK FACTOR = 41.68088 / 10.49896 = +4.0E+00 ug/min Carbon

SAMPLE RESULTS:

(600.9 - 41.81536) (1)/(1) =

(600.9 - 41.81536) (1)/(1)(12) =

-5.591E+02 g/L Carbon

-4.659E+01 Molar Carbon

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

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: BLK

Date: 10/20/98

Time: 14:03:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.18 ug/minute. C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	1.40	100.00
3	1.00	2.40	41.67
4	1.50	3.60	33.33
5	2.00	4.00	10.00
6	2.50	4.80	16.67
7	3.00	5.50	12.73
8	3.50	5.90	6.78
9	4.00	6.60	10.61
10	4.50	7.40	10.81
11	5.00	7.70	3.90
12	5.50	8.10	4.94
13	6.00	8.40	3.57
14	6.50	8.60	2.33
15	7.00	8.70	1.15
16	7.50	9.20	5.43
17	8.00	9.40	2.13
18	8.50	9.40	0.00
19	9.00	9.70	3.09
20	9.50	9.70	0.00
21	10.00	10.20	4.90
22	10.50	12.20	16.39

USER INPUT BLANK VALUE

BLANK VALUE = 12.38877 micrograms carbon

BLANK FACTOR = 12.38877 / 10.49896 = +1.2E+00

ug/min Carbon

SAMPLE RESULTS:

(12.2 - 12.38661) (1)/(1) =

(12.2 - 12.38661) (1)/(1) (12) =

5.00 E-3 g/L Carbon

4.17 E-4 Molar Carbon

<<<< WARNING- PERCENT DIFFERENCE EXCEEDS 10 PERCENT >>>>

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 10/20/98

Time: 14:18:02

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.97 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
1              0.08              0.00              0.00
2              0.51              4.20             100.00
3              1.01             11.10             62.16
4              1.50             19.00             41.58
5              2.00             25.60             25.78
6              2.50             28.40              9.86
7              3.00             30.80              7.79
8              3.50             32.30              4.64
9              4.00             34.60              6.65
10             4.50             36.00              3.89
11             5.00             37.30              3.49
12             5.50             38.80              3.87
13             6.00             40.10              3.24
14             6.50             41.20              2.67
15             7.00             42.70              3.51
16             7.50             43.60              2.06
17             8.00             44.80              2.68
18             8.50             45.90              2.40
19             9.00             47.10              2.55
20             9.50             47.70              1.26
21            10.00             48.50              1.65
22            10.50             49.70              2.41

```

USER INPUT BLANK VALUE

BLANK VALUE = 41.68088 micrograms carbon

BLANK FACTOR = 41.68088 / 10.49896 = +4.0E+00 ug/min Carbon

SAMPLE RESULTS:

(49.7 - 41.67701) (1)/(1) =

(49.7 - 41.67701) (1)/(1) (12) =

-8.02E+00

g/L Carbon

-6.69E-01

Molar Carbon

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

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002779

Date: 10/20/98

Time: 17:09:40

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.18 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	5.00	100.00
3	1.01	11.80	57.63
4	1.50	35.70	66.95
5	2.00	78.30	54.41
6	2.50	128.90	39.26
7	3.00	160.10	19.49
8	3.50	174.60	8.30
9	4.00	182.10	4.12
10	4.50	186.20	2.20
11	5.00	189.50	1.74
12	5.50	192.20	1.40
13	6.00	194.50	1.18
14	6.50	196.30	0.92
15	7.00	197.60	0.66
16	7.50	198.80	0.60
17	8.00	200.20	0.70
18	8.50	201.40	0.60
19	9.00	202.60	0.59
20	9.50	203.60	0.49
21	10.00	204.60	0.49
22	10.50	205.50	0.44

USER INPUT BLANK VALUE

BLANK VALUE = 12.38877 micrograms carbon

BLANK FACTOR = 12.38877 / 10.49896 =

+1.2E+00 ug/min Carbon

SAMPLE RESULTS:

(205.5 - 12.38762) (1)/(1) =
 (205.5 - 12.38762) (1)/(1) (12) =

-1.931E+02 g/L Carbon
 -1.609E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002779

Date: 10/20/98

Time: 17:24:26

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.97 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	2.00	100.00
3	1.01	56.50	96.46
4	1.51	175.30	67.77
5	2.00	265.20	33.90
6	2.50	292.90	9.46
7	3.00	305.60	4.16
8	3.50	313.00	2.36
9	4.00	318.00	1.57
10	4.50	322.60	1.43
11	5.00	326.50	1.19
12	5.50	328.90	0.73
13	6.00	331.20	0.69
14	6.50	333.40	0.66
15	7.00	335.10	0.51
16	7.50	336.50	0.42
17	8.00	338.10	0.47
18	8.50	339.80	0.50
19	9.00	340.90	0.32
20	9.50	341.90	0.29
21	10.00	343.30	0.41
22	10.50	344.40	0.32

USER INPUT BLANK VALUE

BLANK VALUE = 41.68088 micrograms carbon

BLANK FACTOR = 41.68088 / 10.49896 = +4.0E+00 ug/min Carbon

SAMPLE RESULTS:

(344.4 - 41.68112) (1)/(1) = -3.027E+02 g/L Carbon
 (344.4 - 41.68112) (1)/(1) (12) = -2.523E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002779DUP

Date: 10/20/98

Time: 17:52:30

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.18 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	1.60	100.00
3	1.01	19.00	91.58
4	1.51	67.70	71.94
5	2.00	109.70	38.29
6	2.50	136.50	19.63
7	3.00	151.70	10.02
8	3.50	160.90	5.72
9	4.00	166.00	3.07
10	4.50	169.90	2.30
11	5.00	172.70	1.62
12	5.50	175.10	1.37
13	6.00	176.90	1.02
14	6.50	178.60	0.95
15	7.00	180.00	0.78
16	7.50	181.50	0.83
17	8.00	182.60	0.60
18	8.50	184.00	0.76
19	9.00	185.10	0.59
20	9.50	186.00	0.48
21	10.00	187.30	0.69
22	10.50	188.30	0.53

USER INPUT BLANK VALUE

BLANK VALUE = 12.38877 micrograms carbon

BLANK FACTOR = 12.38877 / 10.49896 = +1.2E+00 ug/min Carbon

SAMPLE RESULTS:

(188.3 - 12.38784) (1) / (1) =

-1.759E+02 g/L Carbon

(188.3 - 12.38784) (1) / (1) (12) =

-1.466E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002779DUP

Date: 10/20/98

Time: 18:05:29

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.97 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1          0.08          0.00          0.00
  2          0.51          5.10         100.00
  3          1.01         53.40         90.45
  4          1.51        145.80         63.37
  5          2.04        240.90         39.48
  6          2.54        279.80         13.90
  7          3.04        295.70          5.38
  8          3.54        304.20          2.79
  9          4.04        311.20          2.25
 10         4.54        315.90          1.49
 11         5.04        319.60          1.16
 12         5.54        322.80          0.99
 13         6.04        324.70          0.59
 14         6.54        327.50          0.85
 15         7.04        329.40          0.58
 16         7.54        331.00          0.48
 17         8.04        332.60          0.48
 18         8.54        334.60          0.60
 19         9.04        335.70          0.33
 20         9.54        336.80          0.33
 21        10.04        338.00          0.36
 22        10.54        339.70          0.50

```

USER INPUT BLANK VALUE

BLANK VALUE = 41.68088 micrograms carbon

BLANK FACTOR = 41.68088 / 10.49896 =

+4.0E+00

ug/min Carbon

SAMPLE RESULTS:

(339.7 - 41.83039) (1)/(1) =

(339.7 - 41.83039) (1)/(1) (12) =

-2.979E+02

g/L Carbon

-2.482E+01

Molar Carbon

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

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002779SPK

Date: 10/20/98

Time: 18:19:08

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.18 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.08	0.00	0.00
2	0.51	1.10	100.00
3	1.01	51.10	97.85
4	1.51	231.10	77.89
5	2.00	352.00	34.35
6	2.50	411.20	14.40
7	3.00	438.20	6.16
8	3.50	452.00	3.05
9	4.00	459.70	1.68
10	4.50	465.40	1.22
11	5.00	470.30	1.04
12	5.50	473.80	0.74
13	6.00	476.60	0.59
14	6.50	478.90	0.48
15	7.00	480.50	0.33
16	7.50	482.80	0.48
17	8.00	484.10	0.27
18	8.50	485.60	0.31
19	9.00	486.80	0.25
20	9.50	488.20	0.29
21	10.00	489.20	0.20
22	10.50	490.80	0.33

USER INPUT BLANK VALUE

BLANK VALUE = 12.38877 micrograms carbon

BLANK FACTOR = 12.38877 / 10.49896 = +1.2E+00 ug/min Carbon

SAMPLE RESULTS:

(490.8 - 12.38784) (1)/(1)

(490.8 - 12.38784) (1)/(1)(12) =

-4.784E+02 g/L Carbon

-3.987E+01 Molar Carbon

Sample Run By:

JD SPELLEMAN

22222

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002779SPK

Date: 10/20/98

Time: 13:43:24

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.97 ug/minute.C

Analyst : JD SPELLMAN

Min. Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.08          0.00          0.00
 2          0.51          26.90         100.00
 3          1.01          115.70         76.75
 4          1.50          273.60         57.71
 5          2.00          458.40         40.31
 6          2.50          535.80         14.45
 7          3.00          564.70          5.12
 8          3.50          580.60          2.74
 9          4.00          589.70          1.54
10          4.50          596.80          1.19
11          5.00          602.60          0.96
12          5.50          606.60          0.66
13          6.00          609.50          0.48
14          6.50          612.70          0.52
15          7.00          615.50          0.45
16          7.50          617.50          0.32
17          8.00          619.00          0.24
18          8.50          621.00          0.32
19          9.00          622.70          0.27
20          9.50          624.00          0.21
21         10.00          625.50          0.24
22         10.50          626.40          0.14

```

USER INPUT BLANK VALUE

BLANK VALUE = 41.68088 micrograms carbon

BLANK FACTOR = 41.68088 / 10.49896 =

+4.0E+00

ug/min Carbon

SAMPLE RESULTS:

(626.4 - 41.67773) (1)/(1) =

-5.847E+02

g/L Carbon

(626.4 - 41.67773) (1)/(1) (12) =

-4.873E+01

Molar Carbon

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

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002780

Date: 10/20/98

Time: 18:56:02

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.18 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.08          0.00          0.00
 2          0.51          1.40         100.00
 3          1.01         28.40         95.07
 4          1.51         83.20         65.87
 5          2.00        121.60         31.58
 6          2.50        141.60         14.12
 7          3.00        152.00          6.84
 8          3.50        157.80          3.68
 9          4.00        161.60          2.35
10          4.50        164.80          1.94
11          5.00        167.20          1.44
12          5.50        169.10          1.12
13          6.00        171.00          1.11
14          6.50        172.50          0.87
15          7.00        173.90          0.81
16          7.50        175.20          0.74
17          8.00        176.70          0.85
18          8.50        177.40          0.39
19          9.00        178.40          0.56
20          9.50        179.60          0.67
21         10.00        180.50          0.50
22         10.50        181.50          0.55

```

USER INPUT BLANK VALUE

BLANK VALUE = 12.38877 micrograms carbon

BLANK FACTOR = 12.38877 / 10.49896 =

+1.2E+00

ug/min Carbon

SAMPLE RESULTS:

(181.5 - 12.38885) (1)/(1) =

(181.5 - 12.38885) (1)/(1) (12) =

-1.691E+02 g/L Carbon

-1.409E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002780

Date: 10/20/98

Time: 13:08:29

Sample Size = 1 uL

Dil Factor = 1.

Blank ID # =

Blank Value = 3.97 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.08          0.00          0.00
 2          0.51          14.60         100.00
 3          1.01          69.20          78.90
 4          1.50          172.20         59.81
 5          2.00          290.90         31.37
 6          2.50          283.10         11.37
 7          3.00          296.90          4.65
 8          3.50          305.70          2.88
 9          4.00          312.20          2.08
10          4.50          317.00          1.51
11          5.00          319.80          1.18
12          5.50          313.80          0.93
13          6.00          316.30          0.77
14          6.50          318.70          0.73
15          7.00          310.90          0.66
16          7.50          312.40          0.45
17          8.00          313.60          0.36
18          8.50          315.40          0.54
19          9.00          316.40          0.30
20          9.50          317.70          0.38
21         10.00          319.00          0.38
22         10.50          310.00          0.29

```

USER INPUT BLANK VALUE

BLANK VALUE = 41.68088 micrograms carbon

BLANK FACTOR = 41.68088 / 10.49896 = +4.0E+00 ug/min Carbon

SAMPLE RESULTS:

```

( 340 - 41.67676 ) (1)/(1) = -2.983E+02 g/L Carbon
( 340 - 41.67676 ) (1)/(1) (12) = -2.486E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

```

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV.0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV.2.0

Sample: S98T002780DUP

Date: 10/20/98

Time: 11:23:20

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.18 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1          0.08          0.00          0.00
  2          0.51          46.60         100.00
  3          1.01          95.50         51.20
  4          1.50         126.10         24.27
  5          2.00         141.80         11.07
  6          2.50         149.70          5.28
  7          3.00         154.20          2.92
  8          3.50         157.60          2.16
  9          4.00         160.20          1.62
 10          4.50         162.80          1.60
 11          5.00         164.30          0.91
 12          5.50         166.00          1.02
 13          6.00         167.70          1.01
 14          6.50         168.90          0.71
 15          7.00         170.10          0.71
 16          7.50         170.90          0.47
 17          8.00         172.30          0.81
 18          8.50         173.50          0.69
 19          9.00         174.10          0.34
 20          9.50         175.00          0.51
 21         10.00         176.10          0.62
 22         10.50         177.10          0.56

```

USER INPUT BLANK VALUE

BLANK VALUE = 12.38877 micrograms carbon

BLANK FACTOR = 12.38877 / 10.49896

+1.2E+00 ug/min Carbon

SAMPLE RESULTS:

(177.1 - 12.38784) (1)/(1) =

-1.647E+02 g/L Carbon

(177.1 - 12.38784) (1)/(1) (12) =

-1.373E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

22222

HNF-1652 REV. 0

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

Sample: S98T002780DUP

Date: 10/20/98

Time: 19:48:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.97 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
1      0.08      0.00      0.00
2      0.51      1.10      100.00
3      1.01      56.90      98.07
4      1.51      154.40      63.15
5      2.00      207.20      25.48
6      2.50      238.70      13.20
7      3.00      256.00      6.76
8      3.50      263.70      2.92
9      4.00      270.00      2.33
10     4.50      273.70      1.35
11     5.00      276.30      0.94
12     5.50      278.10      0.65
13     6.00      280.00      0.68
14     6.50      281.20      0.43
15     7.00      282.60      0.50
16     7.50      283.80      0.42
17     8.00      284.90      0.39
18     8.50      285.40      0.18
19     9.00      286.60      0.42
20     9.50      287.40      0.28
21     10.00     287.90      0.17
22     10.50     289.00      0.38

```

USER INPUT BLANK VALUE

BLANK VALUE = 41.68088 micrograms carbon

BLANK FACTOR = 41.68088 / 10.49896 =

+4.0E+00 ug/min Carbon

SAMPLE RESULTS:

(289 - 41.67773) (1)/(1) =

(289 - 41.67773) (1)/(1) (12) =

+4.473E+02 g/L Carbon

+4.061E+01 Molar Carbon

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

Sample Run By:

JD SPELLMAN

22222

LABCORE Completed Worklist Report for Worklist# 26398

Analyst: jis

Instrument: CARB2

Book#: _____

Method: LA-342-100 Rev/Mod F-1

Worklist Comment: AW101 LAW, @TICTOC1 STD: TIC=1.0mL, TOC=0.200mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	LIQUID	1	3.80E+0	3.800	ug/mL
1 BLNK	0		@TICTOC1 TOC-02	LIQUID	1	1.22E+1	12.200	ug/mL
2 STD	0		@TICTOC1 TIC-02	LIQUID	6.02E+02	6.00E+2	99.668 % Recovery	
2 STD	0		@TICTOC1 TOC-02	LIQUID	3.00E+03	2.80E+3	93.333 % Recovery	
3 SAMPLE	S98T002794	0	@TICTOC1 TIC-02	LIQUID	N/A	2.30E+01	5.000	ug/mL
3 SAMPLE	S98T002794	0	@TICTOC1 TOC-02	LIQUID	N/A	4.00E+01	40.000	ug/mL
4 DUP	S98T002794	0	@TICTOC1 TIC-02	LIQUID	2.30E+1	2.90E+1	23.077	RPD
4 DUP	S98T002794	0	@TICTOC1 TOC-02	LIQUID	<4.00E+1	<4.00E+1		RPD
5 SAMPLE	S98T002781	0	@TICTOC1 TIC-02	LIQUID	N/A	1.93E+03	5.000	ug/mL
5 SAMPLE	S98T002781	0	@TICTOC1 TOC-02	LIQUID	N/A	2.80E+03	40.000	ug/mL
6 DUP	S98T002781	0	@TICTOC1 TIC-02	LIQUID	1.93E+3	1.20E+3	46.645	RPD
6 DUP	S98T002781	0	@TICTOC1 TOC-02	LIQUID	2.80E+3	2.83E+3	1.066	RPD
7 TRIPL	S98T002781	0	@TICTOC1 TIC-02	LIQUID	1.93E+3	2.00E+3	3.562	RPD
7 TRIPL	S98T002781	0	@TICTOC1 TOC-02	LIQUID	2.80E+3	2.97E+3	5.893	RPD

Final page for worklist# 26398

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

09/29/98 13:29
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 26398

Analyst: DIS Instrument: CARB2 Book# 25112-C
26112-E

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AW101 LAW, @TICTOC1 STD: TIC=1.0mL, TOC=0.200mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	LIQUID		
2 STD			@TICTOC1	LIQUID		
3 SAMPLE	S98T002781 0		@TICTOC1	LIQUID	98000261	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
4 DUP	S98T002781 0		@TICTOC1	LIQUID		
5 SAMPLE	S98T002794 0		@TICTOC1	LIQUID	98000261	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
6 DUP	S98T002794 0		@TICTOC1	LIQUID		

Final page for worklist # 26398

Jeff Solbeck
Analyst Signature Date 9.30.98_____
Analyst Signature Date

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	12.5	27
26398	µg of Carbon from Baseline (C2)	8.7	39.2
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98004977			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
BLK			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
10/09/98			
Analysis Date			
09/30/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:15 AM		5	40
Sample Point	µg of Carbon	3.80E+00	1.22E+01
AW101 LAW			

Data Entered By:	JDS	Date:	10/09/98
Signature of Chemist:	NA	Date:	

BLANK.WB1 REV 1.0

342100ML

554

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in μg (C1)	608.3	598.4
26398	μg of Carbon from Baseline (C2)	8.7	39.2
Test Code	Standard Book Number	25N12C	26N12E
@TICTOC1	Standard Value ($\mu\text{g}/\text{mL}$)	602	3000

Matrix
LIQUID
Batch Number
98004977
Rerun
0
Sample Prep
N/A
Sample #
STD
Instrument Code
CARB2
Prepared By
JDS
Chemist
MJI
Analyst
JIS
Date Complete
10/09/98
Analysis Date
09/30/98
Analysis Time
05:15 AM
Sample Point
AW101 LAW

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	5	40
05:15 AM	6.02E+02	3.00E+03
Sample Point	6.00E+02	2.80E+03
AW101 LAW	99.6	93.2

Data Entered By:	JDS	Date:	10/09/98
Signature of Chemist:	N/A	Date:	

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	11	25.4
26398	µg of Carbon from Baseline (C2)	8.7	39.2
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98004977			
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 #			
S98T002794			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
10/09/98			
Analysis Date	NOTE: FOR TOC: The Reported Result is	<	40.
09/30/98			
Analysis Time	Method Detection Limit in µg/mL		
05:15 AM			
Sample Point	µg of Carbon/mL Note:	<	
AW101 LAW			

Data Entered By:	JDS	Date:	10/09/98
Signature of Chemist:	NA	Date:	

WORKBOOK PAGE: DUP4

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	11.6	25.4
26398	µg of Carbon from Baseline (C2)	8.7	39.2
Test Code	Known µg of C from Original Sample	2.30E+1	<4.00E+1
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98004977			
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 #			
S98T002794			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
10/09/98			
Analysis Date	NOTE: FOR TOC: The Reported Result is	<	40.
09/30/98			
Analysis Time	Method Detection Limit in µg/mL		
05:15 AM			
Sample Point	µg of Carbon/mL Note: <	2.90E+01	4.00E+01
AW101 LAW			

Data Entered By:	JDS	Date:	10/09/98
Signature of Chemist:	NA	Date:	

WORKBOOK PAGE: SAM5

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	201.8	319.7
26398	µg of Carbon from Baseline (C2)	8.7	39.2
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98004977			
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 #			
S98T002781			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
10/09/98			
Analysis Date			
09/30/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:15 AM		5	40
Sample Point	µg of Carbon/mL	1.93E+03	2.80E+03
AW101 LAW			

Data Entered By:

JDS

Date:

10/09/98

Signature of Chemist: NA

Date:

WORKBOOK PAGE: DUP6

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	128.3	322.3
26398	µg of Carbon from Baseline (C2)	8.7	39.2
Test Code	Known µg of C from Original Sample	1.93E+3	2.80E+3
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98004977			
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 #			
S98T002781			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
10/09/98			
Analysis Date			
09/30/98			
Analysis Time	Method Detection Limit in µg/mL	5	40
05:15 AM			
Sample Point	µg of Carbon/mL	1.20E+03	2.83E+03
AW101 LAW			

Data Entered By:	JDS	Date:	10/09/98
Signature of Chemist:	NA	Date:	

WORKBOOK PAGE: TRIPL7

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
TRIPL	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	208.5	336.3
26398	µg of Carbon from Baseline (C2)	8.7	39.2
Test Code	Known µg of C from Original Sample	1.93E+3	2.80E+3
@TICTOC1	Duplicate Result	1.20E+3	2.83E+3
Matrix			
LIQUID			
Batch Number			
98004977			
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 #			
S98T002781			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JIS			
Date Complete			
10/09/98			
Analysis Date			
09/30/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
05:15 AM		5	40
Sample Point	µg of Carbon/mL	2.00E+03	2.97E+03
AW101 LAW			

Data Entered By:	JDS	Date:	10/09/98
Signature of Chemist:	NA	Date:	

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BASE

Date: 09/29/98

Time: 22:16:40

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 0 ug/minute C

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.01	0.80	62.50
3	1.50	1.40	42.86
4	2.00	2.00	30.00
5	2.50	2.40	16.67
6	3.00	2.80	14.29
7	3.50	3.10	15.15
8	4.00	3.70	10.81
9	4.50	4.00	7.50
10	5.00	4.40	9.09
11	5.50	4.70	6.38
12	6.00	5.10	7.84
13	6.50	5.40	5.56
14	7.00	5.80	6.90
15	7.50	6.20	6.45
16	8.00	6.50	4.62
17	8.50	6.90	5.80
18	9.00	7.30	5.48
19	9.50	7.60	3.95
20	10.00	8.00	5.00
21	10.50	8.30	3.61
22	11.00	8.70	4.60

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+0.0E+00

ug/min Carbon

SAMPLE RESULTS:

(8.7 - 0) (1) / (1) =

+8.7E+00

g/L Carbon

(8.7 - 0) (1) / (1) (12) =

+7.2E-01

Molar Carbon

Sample Run By:

JI SOLBRACK

00002

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 561 TO 576.

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BASE

Date: 09/29/98

Time: 22:43:00

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 0 ug/minute C

Analyst : JI SOLBRACK
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.40	0.00
2	1.01	9.60	95.83
3	1.51	18.20	47.25
4	2.00	22.30	18.39
5	2.50	24.90	10.44
6	3.00	26.90	7.43
7	3.50	28.30	4.95
8	4.00	29.30	3.41
9	4.50	30.20	2.98
10	5.00	31.20	3.21
11	5.50	31.90	2.19
12	6.00	32.60	2.15
13	6.50	33.30	2.10
14	7.00	34.00	2.06
15	7.50	34.60	1.73
16	8.00	35.20	1.70
17	8.50	35.70	1.40
18	9.00	36.40	1.92
19	9.50	37.50	2.93
20	10.00	38.00	1.32
21	10.50	38.50	1.30
22	11.00	39.20	1.79

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+0.0E+00

ug/min Carbon

SAMPLE RESULTS:

(39.2 - 0) (1) / (1) =

+3.92E+01

g/L Carbon

(39.2 - 0) (1) / (1) (12) =

+3.27E+00

Molar Carbon

Sample Run By:

JI SOLBRACK

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: 25N12-C

Date: 09/30/98

Time: 00:11:34

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 0 ug/minute C

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	1.00	0.00
2	1.01	20.00	95.00
3	1.50	208.20	90.39
4	2.00	280.90	45.34
5	2.50	481.20	20.84
6	3.00	535.20	10.26
7	3.50	564.00	4.93
8	4.00	577.90	2.41
9	4.50	585.90	1.37
10	5.00	590.90	0.85
11	5.50	594.60	0.62
12	6.00	597.70	0.52
13	6.50	599.80	0.35
14	7.00	601.50	0.28
15	7.50	602.80	0.22
16	8.00	604.00	0.20
17	8.50	604.90	0.15
18	9.00	605.70	0.13
19	9.50	606.40	0.12
20	10.00	607.10	0.12
21	10.50	607.70	0.10
22	11.00	608.30	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+0.0E+00

ug/min Carbon

SAMPLE RESULTS:

(608.3 - 0) (1) / (1) =

+6.083E+02 g/L Carbon

(608.3 - 0) (1) / (1) (12) =

+5.069E+01 Molar Carbon

Sample Run By:

JI SOLBRACK

00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 26N12-E

Date: 09/30/98

Time: 01:13:08

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 0 ug/minute C

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.00	11.50	95.17
3	1.50	95.60	84.83
4	2.00	355.10	73.15
5	2.50	487.00	26.88
6	3.00	523.80	7.90
7	3.50	549.80	3.82
8	4.00	562.50	2.26
9	4.50	571.00	1.49
10	5.00	577.20	1.07
11	5.50	581.60	0.76
12	5.00	585.10	0.60
13	5.50	587.80	0.46
14	7.00	590.10	0.39
15	7.50	591.80	0.29
16	3.00	593.10	0.22
17	3.50	594.30	0.20
18	9.00	595.40	0.18
19	9.50	596.30	0.15
20	10.00	597.10	0.13
21	10.50	597.70	0.10
22	11.00	598.40	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 0 micrograms carbon

BLANK FACTOR = 0 / 0 =

+0.0E+00 ug/min Carbon

SAMPLE RESULTS:

(598.4 - 0) (1) / (1) =

+5.984E+02 g/L Carbon

(598.4 - 0) (1) / (1) (12) =

+4.987E+01 Molar Carbon

Sample Run By:

JI SOLBRACK

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TIC/TOC RE 12.0
 <<< BLANK ANALYSIS >>>

Sample: BLK

Date: 09/30/98

Time: 01:29:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = N/A

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.80	0.00
2	1.01	2.50	68.00
3	1.50	4.00	37.50
4	2.00	4.60	13.04
5	2.50	5.10	9.80
6	3.00	5.70	10.53
7	3.50	6.20	8.06
8	4.00	6.70	7.46
9	4.50	7.10	5.63
10	5.00	7.60	6.58
11	5.50	8.10	6.17
12	5.00	8.50	4.71
13	5.50	9.00	5.56
14	7.00	9.40	4.26
15	7.50	9.70	3.09
16	3.00	10.10	3.96
17	3.50	10.50	3.81
18	9.00	11.00	4.55
19	9.50	11.40	3.51
20	10.00	11.80	3.39
21	10.50	12.10	2.48
22	11.00	12.50	3.20

BLANK VALUE = 12.5 micrograms carbon

BLANK FACTOR = 12.5 / 10.998 =

+1.14E+00 ug/min Carbon

Sample Run By:

JI SOLBRACK

00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.30

<<< BLANK ANALYSIS >>>

Sample: BLK

Date: 09/30/98

Time: 02:10:51

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BLK

Blank Value = N/A

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.50	0.00
2	1.00	2.90	82.76
3	1.50	6.90	57.97
4	2.00	10.20	32.35
5	2.50	13.80	26.09
6	3.00	16.10	14.29
7	3.50	17.30	6.94
8	4.00	18.40	5.98
9	4.50	19.30	4.66
10	5.00	20.10	3.98
11	5.50	21.00	4.29
12	6.00	21.50	2.33
13	6.50	22.00	2.27
14	7.00	22.70	3.08
15	7.50	23.60	3.81
16	8.00	24.00	1.67
17	8.50	24.60	2.44
18	9.00	25.00	1.60
19	9.50	25.40	1.57
20	10.00	25.00	2.31
21	10.50	25.60	2.26
22	11.00	27.00	1.48

BLANK VALUE = 27 micrograms carbon

BLANK FACTOR = 27 / 10.99883 =

+2.45E+00 ug/min Carbon

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

Sample Run By:

JI SOLBRACK

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002794

Date: 09/30/98

Time: 02:37:58

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.14 ug/minute C

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.80	0.00
2	1.00	2.20	63.64
3	1.50	3.20	31.25
4	2.00	3.90	17.95
5	2.50	4.50	13.33
6	3.00	5.00	10.00
7	3.50	5.40	7.41
8	4.00	5.80	6.90
9	4.50	6.20	6.45
10	5.00	6.60	6.06
11	5.50	7.00	5.71
12	6.00	7.40	5.41
13	6.50	7.80	5.13
14	7.00	8.20	4.88
15	7.50	8.50	3.53
16	8.00	8.90	4.49
17	8.50	9.30	4.30
18	9.00	9.70	4.12
19	9.50	10.00	3.00
20	10.00	10.40	3.85
21	10.50	10.80	3.70
22	11.00	11.10	2.70

USER INPUT BLANK VALUE

BLANK VALUE = 12.53867 micrograms carbon

BLANK FACTOR = 12.53867 / 10.99883 = +1.1E+00 ug/min Carbon

SAMPLE RESULTS:

(11.1 - 12.53659) (1)/(1) =

< 5.00 E-3 g/L Carbon

(11.1 - 12.53659) (1)/(1) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

JI SOLBRACK

00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T00279408 Date: 09/30/98 Time: 02:51:18

Sample Size = 1 uL Analyst : JI SOLBRACK
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 2.45 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	2.60	80.77
3	1.50	6.90	62.32
4	2.00	11.40	37.84
5	2.50	13.70	18.98
6	3.00	15.60	12.18
7	3.50	16.70	6.59
8	4.00	17.70	5.65
9	4.50	18.50	4.32
10	5.00	19.10	3.14
11	5.50	19.70	3.05
12	6.00	20.20	2.48
13	6.50	20.80	2.88
14	7.00	21.30	2.35
15	7.50	22.00	3.18
16	8.00	22.60	2.65
17	8.50	23.10	2.16
18	9.00	23.50	1.70
19	9.50	24.10	2.49
20	10.00	24.40	1.23
21	10.50	24.90	2.01
22	11.00	25.30	1.58

USER INPUT BLANK VALUE

BLANK VALUE = 26.94714 micrograms carbon

BLANK FACTOR = 26.94714 / 10.99883 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

(25.3 - 26.93819) (1)/(1) = < 5.00 E-3 g/L Carbon
 (25.3 - 26.93819) (1)/(1)(12) = < 4.17 E-4 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

JI SOLBRACK

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV-2.0

Sample: S98T002794DWP

Date: 09/30/98

Time: 03:06:23

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.14 ug/minute C

Analyst: JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	% Difference ==
1	0.51	0.60	0.00
2	1.00	2.40	75.00
3	1.50	3.70	35.14
4	2.00	4.40	15.91
5	2.50	5.10	13.73
6	3.00	5.50	7.27
7	3.50	6.00	8.33
8	4.00	6.30	4.76
9	4.50	6.70	5.97
10	5.00	7.10	5.63
11	5.50	7.40	4.05
12	6.00	7.70	3.90
13	6.50	8.10	4.94
14	7.00	8.50	4.71
15	7.50	8.90	4.49
16	8.00	9.20	3.26
17	8.50	9.50	3.16
18	9.00	10.20	6.86
19	9.50	10.60	3.77
20	10.00	10.90	2.75
21	10.50	11.20	2.68
22	11.00	11.60	3.45

USER INPUT BLANK VALUE

BLANK VALUE = 12.53867 micrograms carbon

BLANK FACTOR = 12.53867 / 10.99883 = +1.1E+00 ug/min Carbon

SAMPLE RESULTS:

(11.6 - 12.53868) (1)/(1) =

(11.6 - 12.53868) (1)/(1) (12) =

< 5.00 E-3 g/L Carbon

< 4.17 E-4 Molar Carbon

Sample Run By:

JI SOLBRACK

00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002794DUP

Date: 09/30/98

Time: 03:20:05

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.45 ug/minute C

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	4.10	90.24
3	1.51	9.60	57.29
4	2.00	12.60	23.81
5	2.50	14.40	12.50
6	3.00	16.00	10.00
7	3.50	16.80	4.76
8	4.00	17.60	4.55
9	4.50	18.50	4.86
10	5.00	19.00	2.63
11	5.50	19.60	3.06
12	6.00	20.20	2.97
13	6.50	20.90	3.35
14	7.00	21.50	2.79
15	7.50	22.10	2.71
16	8.00	22.60	2.21
17	8.50	23.10	2.16
18	9.00	23.50	1.70
19	9.50	24.00	2.08
20	10.00	24.40	1.64
21	10.50	25.00	2.40
22	11.00	25.40	1.57

USER INPUT BLANK VALUE

BLANK VALUE = 26.94/14 micrograms carbon

BLANK FACTOR = 26.94/14 / 10.99883 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

(25.4 - 26.94062) (1) / (1) = < 5.00 E-3 g/L Carbon
 (25.4 - 26.94062) (1) / (1) (12) = < 4.17 E-4 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

JI SOLBRACK

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC-REV 2.0

Sample: S98T002781

Date: 09/30/98

Time: 03:34:54

Sample Size = 1 uL

Analyst : JI SOLBRACK

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 1.14 ug/minute C

% Difference = 10

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

1	0.51	0.60	0.00
2	1.01	4.10	85.37
3	1.51	42.70	90.40
4	2.00	96.10	52.61
5	2.50	126.10	28.55
6	3.00	147.50	14.51
7	3.50	157.20	6.17
8	4.00	164.10	4.20
9	4.50	169.30	3.07
10	5.00	173.80	2.59
11	5.50	177.60	2.14
12	6.00	181.00	1.88
13	6.50	183.70	1.47
14	7.00	186.50	1.50
15	7.50	189.10	1.37
16	8.00	191.20	1.10
17	8.50	193.10	0.98
18	9.00	195.10	1.03
19	9.50	196.90	0.91
20	10.00	198.50	0.81
21	10.50	200.10	0.80
22	11.00	201.80	0.84

USER INPUT BLANK VALUE

BLANK VALUE = 12.53867 micrograms carbon

BLANK FACTOR = 12.53867 / 10.99883 =

+1.1E+00

ug/min Carbon

SAMPLE RESULTS:

(201.8 - 12.53868) (1) / (1) =

+1.893E+02 g/L Carbon

(201.8 - 12.53868) (1) / (1) (12) =

+1.577E+01 Molar Carbon

Sample Run By:

JI SOLBRACK

00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002781

Date: 09/30/98

Time: 03:48:23

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.45 ug/minute C

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	1.60	0.00
2	1.01	17.40	90.80
3	1.51	73.00	76.16
4	2.00	163.20	55.27
5	2.50	230.90	29.32
6	3.00	262.20	11.94
7	3.50	278.80	5.95
8	4.00	287.60	3.06
9	4.50	294.00	2.18
10	5.00	298.80	1.61
11	5.50	302.30	1.16
12	6.00	305.30	0.98
13	6.50	307.70	0.78
14	7.00	309.60	0.61
15	7.50	311.30	0.55
16	8.00	312.90	0.51
17	8.50	314.00	0.35
18	9.00	315.50	0.48
19	9.50	316.60	0.35
20	10.00	317.70	0.35
21	10.50	318.80	0.35
22	11.00	319.70	0.28

USER INPUT BLANK VALUE

BLANK VALUE = 26.94714 micrograms carbon

BLANK FACTOR = 26.94714 / 10.99883 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

(319.7 - 26.94714) (1)/(1) = +2.928E+02 g/L Carbon
 (319.7 - 26.94714) (1)/(1) (12) = +2.440E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

JI SOLBRACK

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002781DUF

Date: 09/30/98

Time: 04:03:54

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.14 ug/minute C

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.50	0.00
2	1.00	1.10	54.55
3	1.50	2.60	57.69
4	2.00	17.40	85.06
5	2.50	41.80	58.37
6	3.00	62.70	33.33
7	3.50	80.30	21.92
8	4.00	92.00	12.72
9	4.50	98.50	6.60
10	5.00	103.00	4.37
11	5.50	106.70	3.47
12	6.00	109.70	2.73
13	6.50	112.40	2.40
14	7.00	114.90	2.18
15	7.50	116.90	1.71
16	8.00	118.90	1.68
17	8.50	120.50	1.33
18	9.00	122.30	1.47
19	9.50	123.90	1.29
20	10.00	125.30	1.12
21	10.50	126.90	1.26
22	11.00	128.30	1.09

USER INPUT BLANK VALUE

BLANK VALUE = 12.53867 micrograms carbon

BLANK FACTOR = 12.53867 / 10.99883 = +1.1E+00 ug/min Carbon

SAMPLE RESULTS:

(128.3 - 12.53962) (1)/(1) = +1.158E+02 g/L Carbon
 (128.3 - 12.53962) (1)/(1) (12) = +9.647E+00 Molar Carbon

Sample Run By:

JI SOLBRACK

00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: S98T002781DUF

Date: 09/30/98

Time: 04:19:16

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.45 ug/minute C

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.80	0.00
2	1.01	5.90	86.44
3	1.50	44.80	86.83
4	2.00	124.30	63.96
5	2.50	213.20	41.70
6	3.00	256.30	16.82
7	3.50	278.70	8.04
8	4.00	289.90	3.86
9	4.50	297.50	2.55
10	5.00	302.50	1.65
11	5.50	306.20	1.21
12	6.00	309.20	0.97
13	6.50	311.60	0.77
14	7.00	313.80	0.70
15	7.50	315.30	0.48
16	8.00	316.60	0.41
17	8.50	317.90	0.41
18	9.00	319.00	0.34
19	9.50	320.10	0.34
20	10.00	320.80	0.22
21	10.50	321.70	0.28
22	11.00	322.30	0.19

USER INPUT BLANK VALUE

BLANK VALUE = 26.94714 micrograms carbon

BLANK FACTOR = 26.94714 / 10.99883 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

(322.3 - 26.94264) (1)/(1) = +2.954E+02 g/L Carbon
 (322.3 - 26.94264) (1)/(1) (12) = +2.461E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

JI SOLBRACK

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC: REV. 2.0

Sample: S98T002781TRI

Date: 09/30/98

Time: 04:33:51

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.14 ug/minute C

Analyst : JI SOLBRACK

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.50	0.00
2	1.00	3.50	85.71
3	1.50	35.30	90.08
4	2.00	83.00	57.47
5	2.50	122.60	32.30
6	3.00	147.90	17.11
7	3.50	160.60	7.91
8	4.00	168.30	4.58
9	4.50	173.50	3.00
10	5.00	178.20	2.64
11	5.50	182.30	2.25
12	6.00	185.80	1.88
13	6.50	188.70	1.54
14	7.00	191.60	1.51
15	7.50	194.30	1.39
16	8.00	196.90	1.32
17	8.50	198.90	1.01
18	9.00	201.30	1.19
19	9.50	203.20	0.94
20	10.00	205.00	0.88
21	10.50	206.80	0.87
22	11.00	208.50	0.82

USER INPUT BLANK VALUE

BLANK VALUE = 12.53867 micrograms carbon

BLANK FACTOR = 12.53867 / 10.99883 = +1.1E+00 ug/min Carbon

SAMPLE RESULTS:

(208.5 - 12.53548) (1)/(1) =

+1.960E+02 g/L Carbon

(208.5 - 12.53548) (1)/(1) (12) =

+1.633E+01 Molar Carbon

Sample Run By:

JI SOLBRACK

00002

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S98T002781TRI Date: 09/30/98 Time: 04:47:03

Sample Size = 1 uL Analyst : JI SOLBRACK
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 2.45 ug/minute C % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	1.50	0.00
2	1.01	16.40	90.85
3	1.51	71.40	77.03
4	2.01	165.20	56.78
5	2.51	238.20	30.65
6	3.00	272.70	12.65
7	3.50	290.60	6.16
8	4.00	309.40	3.26
9	4.50	307.40	2.28
10	5.00	312.40	1.60
11	5.50	316.20	1.20
12	6.00	319.40	1.00
13	6.50	322.00	0.81
14	7.00	324.30	0.71
15	7.50	326.30	0.61
16	8.00	328.10	0.55
17	8.50	330.00	0.58
18	9.00	331.60	0.48
19	9.50	332.50	0.27
20	10.00	333.70	0.36
21	10.50	335.20	0.45
22	11.00	336.30	0.33

USER INPUT BLANK VALUE

BLANK VALUE = 26.94714 micrograms carbon

BLANK FACTOR = 26.94714 / 10.99883 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

(336.3 - 26.94499) (1)/(1) = +3.094E+02 g/L Carbon
 (336.3 - 26.94499) (1)/(1)(12) = +2.578E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By: JI SOLBRACK 00002

LABCORE Completed Worklist Report for Worklist# 26579

Analyst: rdm Instrument: CARB2 Book#: _____

Method: LA-342-100 Rev/Mod F-1

Worklist Comment: AW101 LAW JDS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	SOLID	1	6.20E+0	6.200	ug/g
1 BLNK	0		@TICTOC1 TOC-02	SOLID	1	2.76E+1	27.600	ug/g
2 STD	0		@TICTOC1 TIC-02	SOLID	6.02E+02	5.55E+2	92.193 % Recovery	
2 STD	0		@TICTOC1 TOC-02	SOLID	3.00E+03	2.97E+3	99.000 % Recovery	
3 SAMPLE	S98T002747	0	@TICTOC1 TIC-02	SOLID	N/A	7.54E+03	5.000	ug/g
3 SAMPLE	S98T002747	0	@TICTOC1 TOC-02	SOLID	N/A	7.76E+03	40.000	ug/g
4 SAMPLE	S98T002748	0	@TICTOC1 TIC-02	SOLID	N/A	6.61E+03	5.000	ug/g
4 SAMPLE	S98T002748	0	@TICTOC1 TOC-02	SOLID	N/A	6.58E+03	40.000	ug/g

Final page for worklist# 26579

Analyst Signature _____ Date _____

10/14/98
Analyst Signature _____ Date _____

10/15/98
Reviewer Signature _____ Date _____

10/13/98 15:15

A-0004-1

Page: 1

LABCORP Data Entry Template for Worklist# 26579

Analyst: RDM Instrument: CARB2 25N1213
Book# 26N1213

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AW101 LAW JDS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	SOLID		
2 STD			@TICTOC1	SOLID		
3 SAMPLE	S98T002747 0		@TICTOC1	SOLID	98000261	AW-101 LAW
	Analytes Requested:		TIC-02	, TOC-02		
4 SAMPLE	S98T002748 0		@TICTOC1	SOLID	98000261	AW-101 LAW
	Analytes Requested:		TIC-02	, TOC-02		

Final page for worklist # 26579

Analyst Signature RDM Date 10/14/98

Analyst Signature _____ Date _____

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	13.6	62.9
26579	µg of Carbon from Baseline (C2)	7.4	35.3
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
98005182			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
BLK			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
RDM			
Date Complete			
10/15/98			
Analysts Date			
10/14/98			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
11:00 PM		5	40
Sample Point	µg of Carbon	6.20E+00	2.76E+01
AW101 LAW			

Data Entered By:	JDS	Date:	10/15/98
Signature of Chemist:	NA	Date:	

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in µg (C1)	562.6	628.6
26579	µg of Carbon from Baseline (C2)	7.4	35.3
Test Code	Standard Book Number	25N12D	26N12F
@TICTOC1	Standard Value (µg/ml)	602	3000

Matrix
LIQUID
Batch Number
98005182
Rerun
0
Sample Prep
N/A
Sample #
STD
Instrument Code
CARB2
Prepared By
JDS
Chemist
MJL
Analyst
RDM
Date Complete
10/15/98
Analysis Date
10/14/98
Analysis Time
11:00 PM
Sample Point
AW101 LAW

QC Actual in µg/mL = Standard Value (µg/mL)

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in µg/mL	5	40
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	5.55E+02	2.97E+03
Percent Standard Recovery	92.2	98.9

Data Entered By:	JDS	Date:	10/15/98
Signature of Chemist: A A		Date:	

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0928	0.0928
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	706.8	755.7
26579	µg of Carbon from Baseline (C2)	7.4	35.3
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
98005182			
Rerun	µg of Carbon/g = (C1-C2) * DF / SS		
0	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S98T002747			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
RDM			
Date Complete			
10/15/98			
Analysis Date			
10/14/98			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
11:00 PM		5	40
Sample Point	µg of Carbon/g	7.54E+03	7.76E+03
AW101 LAW			

Data Entered By:	JDS	Date:	10/15/98
Signature of Chemist:	N/A	Date:	

WORKBOOK PAGE: SAM4

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1148	0.1148
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	766.1	790.5
26579	µg of Carbon from Baseline (C2)	7.4	35.3
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
98005182			
Rerun	µg of Carbon/g = (C1-C2) * DF / SS		
0	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S98T002748			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
RDM			
Date Complete			
10/15/98			
Analysis Date			
10/14/98			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
11:00 PM		5	40
Sample Point	µg of Carbon/g	6.61E+03	6.58E+03
AW101 LAW			

Data Entered By:	JDS	Date:	10/15/98
Signature of Chemist:	NA	Date:	

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 10/14/98

Time: 19:10:22

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.70	57.14
3	1.51	1.10	36.36
4	2.00	1.60	31.25
5	2.50	2.20	27.27
6	3.00	2.40	8.33
7	3.50	2.80	14.29
8	4.00	3.20	12.50
9	4.50	3.50	8.57
10	5.00	3.90	10.26
11	5.50	4.20	7.14
12	6.00	4.50	6.67
13	6.50	4.80	6.25
14	7.00	5.00	4.00
15	7.50	5.30	5.66
16	8.00	5.70	7.02
17	8.50	5.90	3.39
18	9.00	6.20	4.84
19	9.50	6.50	4.62
20	10.00	6.80	4.41
21	10.50	7.10	4.23
22	11.00	7.40	4.05

BLANK VALUE = 7.4 micrograms carbon
 BLANK FACTOR = 7.4 $\frac{1.40 - 0.99792}{0.99792} = +6.7E-01$ ug/min Carbon

Sample Run By:

RD MEYERS

00002

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 583 TO 592

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV#270

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 10/14/98 Time: 19:31:39

Sample Size = 1 uL

Analyst : RD MEYERS

Dil Factor = 1

Min Readings = 22

Blank ID # = BASE

Max Readings = 22

Blank Value = N/A

% Difference = 10

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

1	0.51	9.40	0.00
2	1.01	10.00	60.00
3	1.51	7.10	85.92
4	2.00	14.50	51.03
5	3.50	20.00	27.50
6	3.00	23.10	13.42
7	0.50	25.40	9.06
8	0.00	26.90	5.58
9	0.50	28.20	4.61
10	0.00	28.90	2.42
11	0.50	29.60	2.36
12	0.00	30.30	2.31
13	0.50	30.90	1.94
14	0.00	31.90	3.13
15	0.50	32.40	1.54
16	0.00	33.00	1.82
17	0.50	33.40	1.20
18	0.00	33.80	1.18
19	0.50	34.20	1.17
20	10.00	34.60	1.16
21	10.50	34.90	0.86
22	12.00	35.30	1.13

BLANK VALUE = 35.3 micrograms carbon

BLANK FACTOR = 35.3 / 11.00073 = 3.21E+00 ug/min Carbon

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

Sample Run By:

RD MEYERS

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

Sample: 25N12-D

Date: 10/14/98

Time: 19:46:30

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .67 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1      0.51      0.80      0.00
 2      1.00      33.40     97.60
 3      1.50     113.40    70.55
 4      2.00     159.80    29.04
 5      2.50     232.29    31.18
 6      3.00     319.70    27.37
 7      3.50     396.40    19.35
 8      4.00     452.10    12.32
 9      4.50     488.10     7.38
10      5.00     510.50     4.39
11      5.50     524.70     2.71
12      6.00     534.30     1.80
13      6.50     540.80     1.20
14      7.00     546.10     0.97
15      7.50     550.20     0.75
16      8.00     553.30     0.56
17      8.50     555.50     0.40
18      9.00     557.80     0.41
19      9.50     559.30     0.27
20     10.00     560.60     0.23
21     10.50     561.60     0.18
22     11.00     562.60     0.18

```

USER INPUT BLANK VALUE

BLANK VALUE = 7.370491 micrograms carbon

BLANK FACTOR = 7.370491 / 11.00073 = +6.7E-01 ug/min Carbon

SAMPLE RESULTS:

(562.6 - 7.367301) (1)/(1) =

+5.552E+02 g/L Carbon

(562.6 - 7.367301) (1)/(1) (12) =

+4.627E+01 Molar Carbon

Sample Run By:

RD MEYERS

00002

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

Sample: 26N12-F

Date: 10/14/98

Time: 20:01:15

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.21 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1      0.51      0.80      0.00
 2      0.01      1.40      42.86
 3      0.50      24.20      94.21
 4      0.00      128.40      81.15
 5      0.50      325.40      60.54
 6      0.00      461.90      29.55
 7      0.50      520.80      11.31
 8      0.00      551.10      5.50
 9      0.50      570.70      3.43
10      0.00      584.30      2.33
11      0.50      594.50      1.72
12      0.00      602.20      1.28
13      0.50      607.90      0.94
14      0.00      612.10      0.69
15      0.50      616.10      0.65
16      0.00      619.30      0.52
17      0.50      621.40      0.34
18      0.00      623.60      0.35
19      0.50      625.30      0.27
20      0.00      626.50      0.19
21      0.50      627.50      0.16
22      0.00      628.60      0.17
  
```

USER INPUT BLANK VALUE

BLANK VALUE = 35.31235 micrograms carbon

BLANK FACTOR = 35.31235 / 11.00073 = +3.2E+00 ug/min Carbon

SAMPLE RESULTS:

(628.6 - 35.29785) (1) / (1) =

+5.933E+02 g/L Carbon

(628.6 - 35.29785) (1) / (1) (12) =

+4.944E+01 Molar Carbon

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

Sample Run By:

RD MEYERS

00002

TIC- TOTAL INORGANIC-CARBON-ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 10/14/98

Time: 20:14:44

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .67 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1      0.51      0.70      0.00
 2      1.01      1.20     41.67
 3      1.51      2.80     57.14
 4      2.01      4.30     34.88
 5      3.51      5.70     24.56
 6      3.01      6.50     12.31
 7      3.50      7.60     14.47
 8      4.00      8.30      8.43
 9      4.50      8.90      6.74
10      5.00      9.50      6.32
11      5.50      9.90      4.04
12      6.00     10.40      4.81
13      6.50     10.70      2.80
14      7.00     11.10      3.60
15      7.50     11.40      2.63
16      8.00     11.80      3.39
17      8.50     12.10      2.48
18      9.00     12.40      2.42
19      9.50     12.70      2.36
20     10.00     13.00      2.31
21     10.50     13.30      2.26
22     11.00     13.60      2.21

```

USER INPUT BLANK VALUE

BLANK VALUE = 7.370491 micrograms carbon

BLANK FACTOR = 7.370491 / 11.00073 = +6.7E-01 ug/min Carbon

SAMPLE RESULTS:

(13.6 - 7.369182) (1)/(1) = +6.23E+00 g/L Carbon
 (13.6 - 7.369182) (1)/(1) (12) = +5.19E-01 Molar Carbon

Sample Run By:

RD MEYERS

00002

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 10/14/98

Time: 21:50:51

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.21 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          3.20          0.00
 2          1.01          5.70         43.86
 3          1.51          7.80         26.92
 4          2.00         15.70         50.32
 5          3.50         25.10         37.45
 6          1.00         33.60         25.30
 7          1.50         38.50         12.73
 8          4.00         41.50          7.23
 9          4.50         43.90          5.47
10          5.00         45.70          3.94
11          5.50         47.30          3.38
12          6.00         48.30          2.07
13          6.50         49.30          2.03
14          7.00         49.90          1.20
15          7.50         50.80          1.77
16          8.00         51.60          1.55
17          8.50         52.40          1.53
18          9.00         52.80          0.76
19          9.50         54.00          2.22
20         10.00         56.90          5.10
21         10.50         60.60          6.11
22         11.00         62.90          3.66

```

USER INPUT BLANK VALUE:

BLANK VALUE = 35.31235 micrograms carbon

BLANK FACTOR = 35.31235 / 11.00073 = +3.2E+00 ug/min Carbon

SAMPLE RESULTS:

```

( 62.9 - 35.30608 ) (1)/(1) = +2.76E+01 g/L Carbon
( 62.9 - 35.30608 ) (1)/(1) (12) = +2.30E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

```

Sample Run By:

RD MEYERS

00002

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2747

Date: 10/14/98

Time: 22:06:53

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .67 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	1.60	0.00
2	1.00	104.40	98.47
3	1.50	323.50	67.73
4	2.00	453.30	28.63
5	2.50	528.20	14.18
6	3.00	579.70	8.88
7	3.50	622.90	6.94
8	4.00	649.00	4.02
9	4.50	669.50	3.06
10	5.00	681.80	1.80
11	5.50	688.50	0.97
12	6.00	693.10	0.66
13	6.50	696.90	0.55
14	7.00	699.00	0.30
15	7.50	700.50	0.21
16	8.00	702.00	0.21
17	8.50	703.10	0.16
18	9.00	704.10	0.14
19	9.50	705.00	0.13
20	10.00	705.50	0.07
21	10.50	706.30	0.11
22	11.00	706.80	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 7.370491 micrograms carbon

BLANK FACTOR = 7.370491 / 11.00073 = +6.7E-01 ug/min Carbon

SAMPLE RESULTS:

(706.8 - 7.368691) (1)/(1) = +6.994E+02 g/L Carbon
 (706.8 - 7.368691) (1)/(1)(12) = +5.829E+01 Molar Carbon

Sample Run By:

RD MEYERS

00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2747

Date: 10/14/98

Time: 22:21:51

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.21 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	22.90	0.00
2	1.01	298.40	92.33
3	1.51	486.30	38.64
4	2.00	579.50	16.08
5	2.50	622.40	6.89
6	3.01	646.30	3.70
7	3.51	665.00	2.81
8	4.01	681.40	2.41
9	4.50	692.80	1.65
10	5.00	702.40	1.37
11	5.50	711.20	1.24
12	6.00	718.20	0.97
13	6.50	724.20	0.83
14	7.00	730.10	0.81
15	7.50	734.60	0.61
16	8.00	738.50	0.53
17	8.50	742.10	0.49
18	9.00	745.40	0.44
19	9.50	748.10	0.36
20	10.00	751.00	0.39
21	10.50	753.30	0.31
22	11.00	755.70	0.32

USER INPUT BLANK VALUE

BLANK VALUE = 35.31235 micrograms carbon

BLANK FACTOR = 35.31235 / 11.00073 = +3.2E+00 ug/min Carbon

SAMPLE RESULTS:

(755.7 - 35.30961) (1)/(1) = +7.204E+02 g/L Carbon
 (755.7 - 35.30961) (1)/(1) (12) = +6.003E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

RD MEYERS

00002

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT TICTOC REV:2.0

Sample: 2748

Date: 10/14/98

Time: 22:36:46

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .67 ug/minute C

Analyst : RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Time	Coulometer	% Difference ==
1	0.51	2.20	0.00
2	1.01	65.30	96.63
3	1.50	254.00	74.29
4	2.00	386.20	34.23
5	2.50	477.20	19.07
6	3.00	546.80	12.73
7	3.50	598.20	8.59
8	4.00	642.80	6.94
9	4.50	679.10	5.35
10	5.00	706.40	3.86
11	5.50	726.00	2.70
12	6.00	738.60	1.71
13	6.50	746.90	1.11
14	7.00	752.20	0.70
15	7.50	756.10	0.52
16	8.00	758.80	0.36
17	8.50	760.60	0.24
18	9.00	762.00	0.18
19	9.50	763.20	0.16
20	10.00	764.30	0.14
21	10.50	765.30	0.13
22	11.00	766.10	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 7.370491 micrograms carbon

BLANK FACTOR = 7.370491 / 11.00073 = +6.7E-01 ug/min Carbon

SAMPLE RESULTS:

(766.1 - 7.367383) (1)/(1) = +7.587E+02 g/L Carbon
(766.1 - 7.367383) (1)/(1)(12) = +6.323E+01 Molar Carbon

Sample Run By:

RD MEYERS

00002

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 2748

Date: 10/14/98

Time: 22:54:06

Sample Size = 1 ul

Dil Factor = 1

Blank ID # =

Blank Value = 3.2 ug/minute C

Analyst: RD MEYERS

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1          0.51          55.00          0.00
  2          1.01          358.30          84.65
  3          1.50          339.20          33.55
  4          2.00          337.10          15.37
  5          2.50          332.60          6.67
  6          3.00          309.10          3.74
  7          3.50          226.20          2.35
  8          4.00          241.00          2.00
  9          4.50          251.00          1.33
 10          5.00          257.80          0.90
 11          5.50          263.90          0.80
 12          6.00          268.40          0.59
 13          6.50          271.90          0.45
 14          7.00          275.40          0.45
 15          7.50          278.20          0.36
 16          8.00          280.50          0.29
 17          8.50          282.50          0.26
 18          9.00          284.40          0.24
 19          9.50          286.20          0.23
 20         10.00          287.50          0.17
 21         10.50          289.30          0.23
 22         11.00          290.50          0.15

```

USER INPUT BLANK VALUE

BLANK VALUE = 35.31235 micrograms carbon

BLANK FACTOR = 35.31235 / 11.00073

+3.2E+00 ug/min Carbon

SAMPLE RESULTS:

(790.5 - 35.29785) (1) / (1) =

+7.552E+02 g/L Carbon

(790.5 - 35.29785) (1) / (1) (12) =

+6.293E+01 Molar Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 11.5 ug/min Carbon!!!!>>>>

Sample Run By:

RD MEYERS

00002

LABCORE Completed Worklist Report for Worklist# 26617

Analyst: krm

Instrument: CARB2

Book#: _____

Method: LA-342-100 Rev/Mod F-1

Worklist Comment: AW101 LAW, @TICTOC1, STD: TIC = 1.0mL, TOC = 0.200mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	LIQUID	1	3.70E+0	3.700	ug/mL
1 BLNK	0		@TICTOC1 TOC-02	LIQUID	1	7.50E+0	7.500	ug/mL
2 STD	0		@TICTOC1 TIC-02	LIQUID	6.02E+02	6.03E+2	100.168 % Recovery	
2 STD	0		@TICTOC1 TOC-02	LIQUID	3.00E+03	2.99E+3	99.667 % Recovery	
3 SAMPLE	S98T003058	0	@TICTOC1 TIC-02	LIQUID	N/A	5.19E+03	5.000	ug/mL
3 SAMPLE	S98T003058	0	@TICTOC1 TOC-02	LIQUID	N/A	2.63E+03	40.000	ug/mL
4 SPK	S98T003058	0	@TICTOC1 TIC-02	LIQUID	1.00E+02	6.21E+01	62.100 % Recovery	
4 SPK	S98T003058	0	@TICTOC1 TOC-02	LIQUID	1.00E+02	1.11E+02	111.000 % Recovery	
5 SAMPLE	S98T003059	0	@TICTOC1 TIC-02	LIQUID	N/A	4.29E+03	5.000	ug/mL
5 SAMPLE	S98T003059	0	@TICTOC1 TOC-02	LIQUID	N/A	2.06E+03	40.000	ug/mL
6 SAMPLE	S98T003060	0	@TICTOC1 TIC-02	LIQUID	N/A	4.08E+03	5.000	ug/mL
6 SAMPLE	S98T003060	0	@TICTOC1 TOC-02	LIQUID	N/A	2.04E+03	40.000	ug/mL
7 SAMPLE	S98T003061	0	@TICTOC1 TIC-02	LIQUID	N/A	1.51E+03	5.000	ug/mL
7 SAMPLE	S98T003061	0	@TICTOC1 TOC-02	LIQUID	N/A	3.25E+03	40.000	ug/mL
8 SAMPLE	S98T003062	0	@TICTOC1 TIC-02	LIQUID	N/A	2.16E+03	5.000	ug/mL
8 SAMPLE	S98T003062	0	@TICTOC1 TOC-02	LIQUID	N/A	4.97E+03	40.000	ug/mL

Final page for worklist# 26617

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

HNF-1652 REV. 0

10/16/98 10:29
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 26617

Analyst: KRM Instrument: CARB2Book# 25 N17D
26A12F

Method: LA-342-100 Rev/Mod _____

*Ensure flow rate at 30 cm
is $\pm$ 50 μ m/hr prior to
performing this analysis.*

Worklist Comment: AW101 LAW, @TICTOC1, STD: TIC= 1.0mL, TOC= 0.200mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	LIQUID		
2 STD			@TICTOC1	LIQUID		
3 SAMPLE	S98T003058 0		@TICTOC1	LIQUID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
4 SPK	S98T003058 0		@TICTOC1	LIQUID		
5 SAMPLE	S98T003059 0		@TICTOC1	LIQUID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
6 SAMPLE	S98T003060 0		@TICTOC1	LIQUID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
7 SAMPLE	S98T003061 0		@TICTOC1	LIQUID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
8 SAMPLE	S98T003062 0		@TICTOC1	LIQUID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					

Final page for worklist # 26617

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	12.7	43
26617	µg of Carbon from Baseline (C2)	9	35.5
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98005220			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
BLK			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/21/98			
Analysis Date			
10/17/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
02:12 PM		5	40
Sample Point	µg of Carbon	3.70E+00	7.50E+00
AW101 LAW			

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NA</i>	Date:	

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in µg (C1)	612.2	633.1
26617	µg of Carbon from Baseline (C2)	9	35.5
Test Code	Standard Book Number	25N12D	26N12F
@TICTOC1	Standard Value (µg/ml)	602	3000

Matrix
LIQUID
Batch Number
98005220
Rerun
0
Sample Prep
N/A
Sample #
STD
Instrument Code
CARB2
Prepared By
JDS
Chemist
MJL
Analyst
KRM
Date Complete
10/21/98
Analysis Date
10/17/98
Analysis Time
02:12 PM
Sample Point
AW101 LAW

QC Actual in µg/mL = Standard Value (µg/mL)

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

TIC	TOC
5	40
6.02E+02	3.00E+03
6.03E+02	2.99E+03
100.2	99.6

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>IV H</i>	Date:	

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

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

LIQUIDS

Type		TIC	TOC
SAMPLE	Sample Size in mL (SS)	0.1000	0.1000
Work List	Dilution Factor (DF)	1	1
26617	µg of Carbon in Sample (C1)	527.9	298.2
Test Code	µg of Carbon from Baseline (C2)	9	35.5
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98005220			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T003058			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/21/98			
Analysis Date			
10/17/98			
Analysis Time	Method Detection Limit in µg/mL	5	40
02:12 PM			
Sample Point	µg of Carbon/mL	5.19E+03	2.63E+03
AW101 LAW			

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

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: SPIKE4

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	0.1000	0.1000
Work List	Final Coulometer Reading in μg (C1)	527.9	298.2
26617	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	0.1000
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in μg (C2)	714.8	630.4
LIQUID	Spike Book Number	25N12D	26N12F
Batch Number	Spike Standard Value in $\mu\text{g}/\text{ml}$ (SPK CONC)	602	3000
98005220	μg C in baseline (BL)	9	35.5

Rerun

0

Sample Prep

N/A

Sample #

S98T003058

$$\text{Percent Spike Recovery} = ((C2-BL) - (C1-BL)) * (SPK SS) / SS / ((SPK CONC) * (SPK VOL)) * 100$$

Instrument Code

CARB2

QC Actual in $\mu\text{g}/\text{mL}$ = Spike Value ($\mu\text{g}/\text{mL}$)QC Found in $\mu\text{g}/\text{mL}$ = (Percent Spike Recovery)*(QC Actual) / 100

Prepared By

JDS

Chemist

MJL

Analyst

KRM

Date Complete

10/21/98

Analysis Date

10/17/98

Analysis Time

02:12 PM

QC Actual in $\mu\text{g}/\text{mL}$

TIC

TOC

6.02E+02

3.00E+03

Sample Point

QC Found in $\mu\text{g}/\text{mL}$

3.74E+02

3.32E+03

AW101 LAW

Percent Spike Recovery

62.1

110.7

Data Entered By:

JDS

Date:

10/21/98

Signature of Chemist:

NA

Date:

WORKBOOK PAGE: SAM5

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	437.5	241.8
26617	µg of Carbon from Baseline (C2)	9	35.5
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98005220			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T003059			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/21/98			
Analysis Date			
10/17/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
02:12 PM		5	40
Sample Point	µg of Carbon/mL	4.29E+03	2.06E+03
AW101 LAW			

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

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>N/A</i>	Date:	

This document was too large to scan as a single document; therefore, it has been divided into smaller sections.

Section 3 of 4

Document Information			
Document #	HNH-1652	Revision	0
Title	TANK 241AW101 LOW ACTIVITY WASTE ENVELOPE A ANALYTICAL RESULTS FOR THE FINAL REPORT		
Date	02/08/1999		
Originator	ESCH RA	Originator Co.	WMH
Recipient		Recipient Co.	
References	EDT-626134		
Keywords	CHARACTERIZATION,CORE,AW FARM		
Projects			
Other Information			

WORKBOOK PAGE: SAM7

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	0.1000
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	159.5	360.6
26617	µg of Carbon from Baseline (C2)	9	35.5
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98005220			
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 #			
S98T003061			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/21/98			
Analysis Date			
10/17/98			
Analysis Time	Method Detection Limit in µg/mL	TIC	TOC
02:12 PM		5	40
Sample Point	µg of Carbon/mL	1.51E+03	3.25E+03
AW101 LAW			

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: SAM8

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

LIQUIDS

Type	Sample Size in mL (SS)	TIC	TOC
SAMPLE	Dilution Factor (DF)	0.1000	0.1000
Work List	µg of Carbon in Sample (C1)	1	1
26617	µg of Carbon from Baseline (C2)	225	532.5
Test Code		9	35.5
@TICTOC1			

Matrix
LIQUID
Batch Number
98005220
Rerun
0
Sample Prep
N/A
Sample #
S98T003062
Instrument Code
CARB2
Prepared By
JDS
Chemist
MJL
Analyst
KRM
Date Complete
10/21/98
Analysis Date
10/17/98
Analysis Time
02:12 PM
Sample Point
AW101 LAW

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

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL	2.16E+03	4.97E+03

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	N/A	Date:	

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV. 2.0
<<< BLANK ANALYSIS >>>

Sample: BASE2

Date: 10/17/98

Time: 08:15:33

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE2
Blank Value = N/AAnalyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.70	100.00
3	1.01	1.20	41.67
4	1.51	1.70	29.41
5	2.00	2.20	22.73
6	2.50	2.80	21.43
7	3.00	3.10	9.68
8	3.50	3.40	8.82
9	4.00	3.90	12.82
10	4.50	4.30	9.30
11	5.00	4.60	6.52
12	5.50	5.00	8.00
13	6.00	5.30	9.09
14	6.50	5.20	5.17
15	7.00	6.20	6.45
16	7.50	6.60	6.06
17	8.00	7.00	5.71
18	8.50	7.40	5.41
19	9.00	7.80	5.13
20	9.50	8.30	6.02
21	10.00	8.60	3.49
22	10.50	9.00	4.44

BLANK VALUE = 9 micrograms carbon
BLANK FACTOR = 9 / 10.49817 =

+8.6E-01 ug/min Carbon

Sample Run By:

KR MONTEITH

00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 603 TO 619

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV:2.0

<<< BLANK ANALYSIS >>>

Sample: BASE2

Date: 10/17/98

Time: 09:30:45

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE2
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	0.80	100.00
3	1.00	8.20	90.24
4	1.50	14.90	44.97
5	2.00	18.70	20.32
6	2.50	21.20	11.79
7	3.00	22.80	7.02
8	3.50	23.90	4.60
9	4.00	24.80	3.63
10	4.50	25.90	4.25
11	5.00	26.80	3.36
12	5.50	28.00	4.29
13	6.00	28.80	2.78
14	6.50	29.70	3.03
15	7.00	30.40	2.30
16	7.50	31.50	3.49
17	8.00	32.10	1.87
18	8.50	32.70	1.83
19	9.00	33.60	2.68
20	9.50	34.20	1.75
21	10.00	34.80	1.72
22	10.50	35.50	1.97

BLANK VALUE = 35.5 micrograms carbon

BLANK FACTOR = 35.5 / 10.49799

+3.38E+00 ug/min Carbon

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

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. C

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD2

Date: 10/17/98

Time: 09:43:49

Sample Size = 1000 uL

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .86 ug/minute C

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	1.40	100.00
3	1.01	140.30	99.00
4	1.50	336.10	58.26
5	2.00	470.30	28.53
6	2.50	539.50	12.83
7	3.00	571.40	5.58
8	3.50	585.40	2.39
9	4.00	592.50	1.20
10	4.50	597.40	0.82
11	5.00	600.60	0.53
12	5.50	602.90	0.38
13	6.00	604.60	0.28
14	6.50	606.10	0.25
15	7.00	607.40	0.21
16	7.50	608.30	0.15
17	8.00	609.20	0.15
18	8.50	609.70	0.08
19	9.00	610.60	0.15
20	9.50	611.10	0.08
21	10.00	611.70	0.10
22	10.50	612.20	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 9.028268 micrograms carbon

BLANK FACTOR = 9.028268 / 10.49799 = +8.6E-01 ug/min Carbon

SAMPLE RESULTS:

(612.2 - 9.028268) (1)/(1000) = -6.032E-01 g/L Carbon
 (612.2 - 9.028268) (1)/(1000) (12) = -5.026E-02 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV. 2.0

Sample: STD2

Date: 10/17/98

Time: 09:59:24

Sample Size = 200 uL

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 3.38 ug/minute C

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	2.10	100.00
3	1.01	124.70	98.32
4	1.51	417.40	70.12
5	2.00	519.30	19.62
6	2.50	557.70	6.89
7	3.00	577.90	3.50
8	3.50	590.80	2.18
9	4.00	599.90	1.52
10	4.50	606.30	1.06
11	5.00	611.30	0.82
12	5.50	615.70	0.71
13	6.00	618.40	0.44
14	6.50	621.40	0.48
15	7.00	623.70	0.37
16	7.50	625.30	0.26
17	8.00	626.80	0.24
18	8.50	628.30	0.24
19	9.00	629.60	0.21
20	9.50	630.80	0.19
21	10.00	632.20	0.22
22	10.50	633.10	0.14

USER INPUT BLANK VALUE

BLANK VALUE = 35.48319 micrograms carbon

BLANK FACTOR = 35.48319 / 10.49799 = +3.4E+00 ug/min Carbon

SAMPLE RESULTS:

(633.1 - 35.48381) (1)/(200) = -2.988E+00 g/L Carbon
(633.1 - 35.48381) (1)/(200) (12) = -2.490E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: BLK2

Date: 10/17/98

Time: 10:14:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .86 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	0.90	100.00
3	1.00	1.60	43.75
4	1.50	2.30	30.43
5	2.00	3.10	25.81
6	2.50	3.70	16.22
7	3.00	4.20	11.90
8	3.50	4.90	14.29
9	4.00	5.40	9.26
10	4.50	5.90	8.47
11	5.00	6.50	9.23
12	5.50	7.00	7.14
13	6.00	7.60	7.89
14	6.50	8.10	6.17
15	7.00	8.70	6.90
16	7.50	9.20	5.43
17	8.00	9.90	7.07
18	8.50	10.30	3.88
19	9.00	11.00	6.36
20	9.50	11.50	4.35
21	10.00	12.00	4.17
22	10.50	12.70	5.51

USER INPUT BLANK VALUE

BLANK VALUE = 9.028268 micrograms carbon

BLANK FACTOR = 9.028268 / 10.49799 =

+8.6E-01 ug/min Carbon

SAMPLE RESULTS:

(12.7 - 9.029108) (1)/(1) =
(12.7 - 9.029108) (1)/(1) (12) =-3.67E+00 g/L Carbon
-3.06E-01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK2

Date: 10/17/98

Time: 10:25:46

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.38 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	1.40	100.00
3	1.01	8.10	82.72
4	1.50	14.00	42.14
5	2.04	18.50	24.32
6	2.54	21.70	14.75
7	3.04	24.30	10.70
8	3.54	25.90	6.18
9	4.04	27.50	5.82
10	4.54	28.40	3.17
11	5.04	29.80	4.70
12	5.54	31.50	5.40
13	6.04	33.00	4.55
14	6.54	34.00	2.94
15	7.04	35.20	3.41
16	7.53	36.30	3.03
17	8.03	37.60	3.46
18	8.53	38.80	3.09
19	9.03	39.70	2.27
20	9.53	40.80	2.70
21	10.03	41.70	2.16
22	10.53	43.00	3.02

USER INPUT BLANK VALUE

BLANK VALUE = 35.48319 micrograms carbon

BLANK FACTOR = 35.48319 / 10.49799 = +3.4E+00 ug/min Carbon

SAMPLE RESULTS:

(43 - 35.60099) (1)/(1) = -7.40E+00 g/L Carbon
 (43 - 35.60099) (1)/(1) (12) = -6.17E-01 Molar Carbon

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

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

Sample: S98T3058-2

Date: 10/17/98

Time: 10:39:27

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .86 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	58.20	100.00
3	1.01	218.70	73.39
4	1.51	347.30	37.03
5	2.00	424.60	18.21
6	2.50	465.30	8.75
7	3.00	486.50	4.36
8	3.50	499.10	2.52
9	4.00	505.30	1.23
10	4.50	509.20	0.77
11	5.00	512.50	0.64
12	5.50	514.80	0.45
13	6.00	516.90	0.41
14	6.50	518.40	0.29
15	7.00	519.80	0.27
16	7.50	521.40	0.31
17	8.00	522.40	0.19
18	8.50	523.70	0.25
19	9.00	524.80	0.21
20	9.50	525.80	0.19
21	10.00	526.80	0.19
22	10.50	527.90	0.21

USER INPUT BLANK VALUE

BLANK VALUE = 9.028268 micrograms carbon

BLANK FACTOR = 9.028268 / 10.49799 = +8.6E-01 ug/min Carbon

SAMPLE RESULTS:

(527.9 - 9.028425) (1) / (1) = +5.189E+02 g/L Carbon
 (527.9 - 9.028425) (1) / (1) (12) = +4.324E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3058-2

Date: 10/17/98

Time: 10:51:46

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.38 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	3.70	100.00
3	1.01	37.00	90.00
4	1.51	124.80	70.35
5	2.00	197.60	36.84
6	2.50	227.90	13.30
7	3.00	242.60	6.06
8	3.50	252.00	3.73
9	4.00	258.70	2.59
10	4.50	263.70	1.90
11	5.00	267.90	1.57
12	5.50	271.20	1.22
13	6.00	274.10	1.06
14	6.50	278.00	1.40
15	7.00	281.00	1.07
16	7.50	283.80	0.99
17	8.00	286.20	0.84
18	8.50	289.20	1.04
19	9.00	291.60	0.82
20	9.50	294.20	0.88
21	10.00	296.10	0.64
22	10.50	298.20	0.70

USER INPUT BLANK VALUE

BLANK VALUE = 35.48319 micrograms carbon

BLANK FACTOR = 35.48319 / 10.49799 = +3.4E+00 ug/min Carbon

SAMPLE RESULTS:

(298.2 - 35.48381) (1) / (1) = -2.627E+02 g/L Carbon
 (298.2 - 35.48381) (1) / (1) (12) = -2.189E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: S98T3058SPK-2

Date: 10/17/98

Time: 12:26:43

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .86 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	10.10	100.00
3	1.01	80.60	87.47
4	1.51	318.20	74.67
5	2.00	504.50	36.93
6	2.50	602.50	16.27
7	3.00	648.30	7.06
8	3.50	670.50	3.31
9	4.00	682.20	1.72
10	4.50	689.10	1.00
11	5.00	694.20	0.73
12	5.50	697.60	0.49
13	6.00	700.70	0.44
14	6.50	702.90	0.31
15	7.00	705.00	0.30
16	7.50	706.50	0.21
17	8.00	708.00	0.21
18	8.50	709.50	0.21
19	9.00	711.10	0.23
20	9.50	712.10	0.14
21	10.00	713.60	0.21
22	10.50	714.80	0.17

USER INPUT BLANK VALUE

BLANK VALUE = 9.028268 micrograms carbon

BLANK FACTOR = 9.028268 / 10.49799 = +8.6E-01 ug/min Carbon

SAMPLE RESULTS:

(714.8 - 9.028268) (1) / (1) = +7.058E+02 g/L Carbon
 (714.8 - 9.028268) (1) / (1) (12) = +5.881E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF 1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: S98T3058SPK-2

Date: 10/17/98

Time: 12:39:18

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.38 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	1.70	100.00
3	1.01	79.90	97.87
4	1.51	312.80	74.46
5	2.00	451.30	30.69
6	2.50	504.90	10.62
7	3.00	532.10	5.11
8	3.50	549.80	3.22
9	4.00	561.40	2.07
10	4.50	571.10	1.70
11	5.00	580.90	1.69
12	5.50	590.10	1.56
13	6.00	597.20	1.19
14	6.50	603.10	0.98
15	7.00	608.00	0.81
16	7.50	612.50	0.73
17	8.00	616.20	0.60
18	8.50	619.40	0.52
19	9.00	622.50	0.50
20	9.50	625.50	0.48
21	10.00	627.90	0.38
22	10.50	630.40	0.40

USER INPUT BLANK VALUE

BLANK VALUE = 35.48319 micrograms carbon

BLANK FACTOR = 35.48319 / 10.49799 = +3.4E+00 ug/min Carbon

SAMPLE RESULTS:

(630.4 - 35.4867) (1) / (1) = +5.949E+02 g/L Carbon
 (630.4 - 35.4867) (1) / (1) (12) = +4.958E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF 1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3059-2

Date: 10/17/98

Time: 13:15:26

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .86 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.50	2.00	100.00
3	1.00	4.30	53.49
4	1.50	41.90	89.74
5	2.00	143.20	70.74
6	2.50	244.20	41.36
7	3.00	315.80	22.67
8	3.50	360.20	12.33
9	4.00	384.50	6.32
10	4.50	398.50	3.51
11	5.00	407.20	2.14
12	5.50	413.30	1.48
13	6.00	417.70	1.05
14	6.50	421.40	0.88
15	7.00	424.40	0.71
16	7.50	426.70	0.54
17	8.00	429.10	0.56
18	8.50	430.80	0.39
19	9.00	432.60	0.42
20	9.50	434.20	0.37
21	10.00	435.90	0.39
22	10.50	437.50	0.37

USER INPUT BLANK VALUE

BLANK VALUE = 9.028268 micrograms carbon

BLANK FACTOR = 9.028268 / 10.49799 = +8.6E-01 ug/min Carbon

SAMPLE RESULTS:

(437.5 - 9.028268) (1) / (1) = +4.285E+02 g/L Carbon
 (437.5 - 9.028268) (1) / (1) (12) = +3.571E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REP'DRT
TIC/TOC REV 2.0

Sample: S98T3059-2

Date: 10/17/98

Time: 13:26:46

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.38 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.06	0.00	0.00
2	0.51	1.60	100.00
3	1.04	5.00	68.00
4	1.54	50.20	90.04
5	2.04	121.50	58.68
6	2.54	165.90	26.76
7	3.04	185.90	10.76
8	3.54	197.50	5.87
9	4.04	205.40	3.85
10	4.54	211.70	2.98
11	5.04	216.10	2.04
12	5.54	220.20	1.86
13	6.04	223.10	1.30
14	6.54	225.80	1.20
15	7.04	228.70	1.27
16	7.54	230.50	0.78
17	8.04	232.70	0.95
18	8.54	234.30	0.68
19	9.04	236.40	0.89
20	9.54	238.50	0.88
21	10.04	239.90	0.58
22	10.54	241.80	0.79

USER INPUT BLANK VALUE

BLANK VALUE = 35.48319 micrograms carbon

BLANK FACTOR = 35.48319 / 10.49799 = +3.4E+00 ug/min Carbon

SAMPLE RESULTS:

(241.8 - 35.61357) (1) / (1) = +2.062E+02 g/L Carbon
 (241.8 - 35.61357) (1) / (1) (12) = +1.718E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNP 1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3060-2

Date: 10/17/98

Time: 13:38:19

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .86 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	1.70	100.00
3	1.01	3.60	52.78
4	1.51	4.90	91.41
5	2.00	133.80	68.68
6	2.50	228.80	40.21
7	3.00	290.30	22.91
8	3.50	335.10	13.37
9	4.01	361.90	7.41
10	4.50	375.30	3.83
11	5.00	385.00	2.51
12	5.50	392.30	1.61
13	6.00	396.70	1.11
14	6.50	400.20	0.87
15	7.00	402.80	0.65
16	7.50	405.70	0.71
17	8.00	407.80	0.51
18	8.50	410.20	0.59
19	9.00	411.60	0.34
20	9.50	413.60	0.48
21	10.00	415.10	0.36
22	10.50	416.90	0.43

USER INPUT BLANK VALUE

BLANK VALUE = 9.028268 micrograms carbon

BLANK FACTOR = 9.028268 / 10.49799 = +8.6E-01 ug/min Carbon

SAMPLE RESULTS:

(416.9 - 9.029318) (1) / (1) = +4.079E+02 g/L Carbon
(416.9 - 9.029318) (1) / (1) (12) = +3.399E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

Sample: S98T3060-2

Date: 10/17/98

Time: 13:49:47

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.38 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	1.70	100.00
3	1.01	5.00	66.00
4	1.51	51.20	90.23
5	2.00	16.00	55.86
6	2.50	53.60	24.48
7	3.00	73.90	11.67
8	3.50	85.40	6.20
9	4.00	93.70	4.28
10	4.50	99.60	2.96
11	5.00	104.70	2.49
12	5.50	108.80	1.96
13	6.00	112.50	1.74
14	6.50	116.30	1.76
15	7.00	119.60	1.50
16	7.50	122.70	1.39
17	8.00	125.60	1.29
18	8.50	128.30	1.18
19	9.00	131.40	1.34
20	9.50	134.30	1.24
21	10.00	136.90	1.10
22	10.50	139.80	1.21

USER INPUT BLANK VALUE

BLANK VALUE = 35.48319 micrograms carbon

BLANK FACTOR = 35.48319 / 10.49799 = +3.4E+00 ug/min Carbon

SAMPLE RESULTS:

(239.8 - 35.48381) (1) / (1) = -2.043E+02 g/L Carbon
 (239.8 - 35.48381) (1) / (1) (12) = -1.703E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 10.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV.0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

Sample: S98T3061-2

Date: 10/17/98

Time: 12:52:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .86 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.00	0.00	0.00
2	0.51	12.70	100.00
3	1.01	47.70	73.38
4	1.50	82.40	42.11
5	2.00	106.60	22.70
6	2.50	120.10	11.24
7	3.00	127.20	5.58
8	3.50	132.50	4.00
9	4.00	136.30	2.79
10	4.50	139.20	2.08
11	5.00	141.80	1.83
12	5.50	144.10	1.60
13	6.00	146.10	1.37
14	6.50	147.60	1.02
15	7.00	149.50	1.27
16	7.50	151.00	0.99
17	8.00	152.40	0.92
18	8.50	154.20	1.17
19	9.00	155.50	0.84
20	9.50	156.70	0.77
21	10.00	158.20	0.95
22	10.50	159.50	0.82

USER INPUT BLANK VALUE

BLANK VALUE = 9.028268 micrograms carbon

BLANK FACTOR = 9.028268 / 10.49799 = +8.6E-01 ug/min Carbon

SAMPLE RESULTS:

(159.5 - 9.029108) (1) / (1) = -1.505E+02 g/L Carbon
 (159.5 - 9.029108) (1) / (1) (12) = -1.254E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

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

Sample: S98T3061-2

Date: 10/17/98

Time: 13:03:56

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.38 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	1.60	100.00
3	1.01	4.80	66.67
4	1.50	58.20	91.75
5	2.00	63.20	64.34
6	2.50	48.00	34.19
7	3.00	81.30	12.77
8	3.50	202.50	6.02
9	4.00	13.50	3.51
10	4.50	21.90	2.61
11	5.00	28.30	1.95
12	5.50	38.00	1.41
13	6.00	36.90	1.16
14	6.50	39.90	0.88
15	7.00	43.20	0.96
16	7.50	45.40	0.64
17	8.00	47.90	0.72
18	8.50	50.90	0.85
19	9.00	53.80	0.82
20	9.50	56.20	0.67
21	10.00	58.20	0.56
22	10.50	60.60	0.67

USER INPUT BLANK VALUE

BLANK VALUE = 35.48319 micrograms carbon

BLANK FACTOR = 35.48319 / 10.49799 = +3.4E+00 ug/min Carbon

SAMPLE RESULTS:

(360.6 - 35.48319) (1) / (1) = -3.251E+02 g/L Carbon
 (360.6 - 35.48319) (1) / (1) (12) = -2.709E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 10 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. C

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

Sample: S98T3062-2

Date: 10/17/98

Time: 14:01:11

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .86 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.00	0.00	0.00
2	0.51	3.10	100.00
3	1.01	6.30	50.79
4	1.50	16.50	61.82
5	2.00	45.60	63.82
6	2.50	84.40	45.97
7	3.00	116.30	27.43
8	3.50	139.40	16.57
9	4.00	155.70	10.47
10	4.50	167.80	7.21
11	5.00	175.60	4.44
12	5.50	181.60	3.30
13	6.00	187.30	3.04
14	6.50	192.30	2.60
15	7.00	196.70	2.24
16	7.50	201.10	2.19
17	8.00	205.50	2.14
18	8.50	210.00	2.14
19	9.00	214.00	1.87
20	9.50	217.70	1.70
21	10.00	221.70	1.80
22	10.50	225.00	1.47

USER INPUT BLANK VALUE

BLANK VALUE = 9.028268 micrograms carbon

BLANK FACTOR = 9.028268 / 10.49799 = +8.6E-01 ug/min Carbon

SAMPLE RESULTS:

(225 - 9.027534) (1)/(1) =

+2.160E+02 g/L Carbon

(225 - 9.027534) (1)/(1) (12) =

+1.800E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3062-2

Date: 10/17/98

Time: 14:12:27

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.38 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Conductometer	% Difference
1	0.08	0.00	0.00
2	0.51	1.00	100.00
3	1.00	0.30	81.13
4	1.50	25.10	78.88
5	2.00	119.30	78.96
6	2.50	193.40	38.31
7	3.00	234.40	17.49
8	3.50	266.00	11.88
9	4.00	293.60	9.40
10	4.50	318.60	7.85
11	5.00	341.70	6.76
12	5.50	363.50	6.00
13	6.00	384.40	5.44
14	6.50	404.30	4.92
15	7.00	423.30	4.49
16	7.50	441.40	4.10
17	8.00	458.80	3.79
18	8.50	475.40	3.49
19	9.00	491.00	3.18
20	9.50	506.60	2.89
21	10.00	519.50	2.68
22	10.50	532.50	2.44

USER INPUT BLANK VALUE

BLANK VALUE = 35.48319 micrograms carbon

BLANK FACTOR = 35.48319 / 10.49799 = +3.4E+00 ug/min Carbon

SAMPLE RESULTS:

(532.5 - 35.4867) (1)/(1) = +4.970E+02 g/L Carbon
 (532.5 - 35.4867) (1)/(1) (12) = +4.142E+01 Molar Carbon

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

Sample Run By:

KR MONTEITH

00000

LABCORE Completed Worklist Report for Worklist# 26618

Analyst: krm Instrument: CARB2 Book#: _____

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AW101 LAW, @TICTOC1, STD: TIC = 1.0mL, TOC = 0.200mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	@TICTOC1 TIC-02	SOLID	1	2.10E+0	2.100	ug/g
1 BLNK	0	@TICTOC1 TOC-02	SOLID	1	9.20E+0	9.200	ug/g
2 STD	0	@TICTOC1 TIC-02	SOLID	6.02E+02	5.97E+2	99.169 % Recovery	
2 STD	0	@TICTOC1 TOC-02	SOLID	3.00E+03	2.97E+3	99.000 % Recovery	
3 SAMPLE	S98T003063	0 @TICTOC1 TIC-02	SOLID	N/A	4.67E+03	5.000	ug/g
3 SAMPLE	S98T003063	0 @TICTOC1 TOC-02	SOLID	N/A	1.39E+04	40.000	ug/g
4 SPK	S98T003063	0 @TICTOC1 TIC-02	SOLID	1.00E+02	1.04E+02	104.000 % Recovery	
4 SPK	S98T003063	0 @TICTOC1 TOC-02	SOLID	1.00E+02	1.11E+02	111.000 % Recovery	
5 SAMPLE	S98T003064	0 @TICTOC1 TIC-02	SOLID	N/A	4.07E+03	5.000	ug/g
5 SAMPLE	S98T003064	0 @TICTOC1 TOC-02	SOLID	N/A	3.51E+04	40.000	ug/g
6 SAMPLE	S98T003066	0 @TICTOC1 TIC-02	SOLID	N/A	1.01E+04	5.000	ug/g
6 SAMPLE	S98T003066	0 @TICTOC1 TOC-02	SOLID	N/A	8.06E+03	40.000	ug/g

Final page for worklist# 26618

Analyst Signature _____ Date _____

10/22/98
Analyst Signature Date

10/27/98
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 26618

Analyst: _____ Instrument: CARB2 _____ Book# _____

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AW101 LAW, @TICTOC1, STD: TIC = 1.0mL, TOC = 0.200mL skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	SOLID		
2	STD				@TICTOC1	SOLID		
3	SAMPLE	S98T003063 0			@TICTOC1	SOLID	98000554	AW-101 LAW
		Analytes Requested: TIC-02 , TOC-02						
4	SPK	S98T003063 0			@TICTOC1	SOLID		
5	SAMPLE	S98T003064 0			@TICTOC1	SOLID	98000554	AW-101 LAW
		Analytes Requested: TIC-02 , TOC-02						
6	SAMPLE	S98T003066 0			@TICTOC1	SOLID	98000554	AW-101 LAW
		Analytes Requested: TIC-02 , TOC-02						

Final page for worklist # 26618

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Data Entry Comments:

10/16/98 10:30
A-0004-1

HNF-1652 TWO

Page: 1

LABCORE Data Entry Template for Worklist# 26618

Analyst: KRM Instrument: CARB2Book# 25N17 D
26N17 F

Method: LA-342-100 Rev/Mod _____

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

Worklist Comment: AW101 LAW, @TICTOC1, STD: TIC= 1.0mL, TOC= 0.200mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	SOLID		
2 STD			@TICTOC1	SOLID		
3 SAMPLE	S98T003063 0		@TICTOC1	SOLID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
4 SPK	S98T003063 0		@TICTOC1	SOLID		
5 SAMPLE	S98T003064 0		@TICTOC1	SOLID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
6 SAMPLE	S98T003065 0		@TICTOC1	SOLID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
7 SAMPLE	S98T003066 0		@TICTOC1	SOLID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
8 SAMPLE	S98T003067 0		@TICTOC1	SOLID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					

Final page for worklist # 26618

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

Did Not Finish Due To Cell Being Bad

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

623

WORKBOOK PAGE: BLANK1

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	ug of Carbon in Sample (C1)	12.9	36.9
26618	ug of Carbon from Baseline (C2)	10.8	27.7
Test Code			
@TIC/TOC1			
Matrix			
SOLID			
Batch Number			
98005221			
Rerun	ug of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
BLK			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/22/98			
Analysis Date			
10/17/98			
Analysis Time	Method Detection Limit in ug/g	5	40
10:10 PM			
Sample Point	ug of Carbon	2.10E+00	9.20E+00
AW101			

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>N/A</i>	Date:	

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in µg (C1)	608.1	622.3
26618	µg of Carbon from Baseline (C2)	10.8	27.7
Test Code	Standard Book Number	25N12D	26N12F
@TICTOC1	Standard Value (µg/ml)	602	3000

Matrix
LIQUID
Batch Number
98005221
Rerun
0
Sample Prep
N/A
Sample #
STD
Instrument Code
CARB2
Prepared By
JDS
Chemist
MJL
Analyst
KRM
Date Complete
10/22/98
Analysis Date
10/17/98
Analysis Time
10:10 PM
Sample Point
AW101

QC Actual in µg/mL = Standard Value (µg/mL)

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in µg/mL	5	40
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	5.97E+02	2.97E+03
Percent Standard Recovery	99.2	99.1

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>N/A</i>	Date:	

STANDARD.WB1 REV 1.0

342100ML

625

WORKBOOK PAGE: SAM3

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1176	0.1176
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	559.6	1660.7
26618	µg of Carbon from Baseline (C2)	10.8	27.7
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
98005221			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T003063			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/22/98			
Analysis Date			
10/17/98			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
10:10 PM		5	40
Sample Point	µg of Carbon/g	4.67E+03	1.39E+04
AW101			

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

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:		Date:	

WORKBOOK PAGE: SPIKE4

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

SOLIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.1176	0.1176
Work List	Final Coulometer Reading in µg (C1)	559.6	1660.7
26618	Spiked Vial Data		
Test Code	Sample Size in g (SPK SS)	0.0748	0.0748
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	673.3	1399.1
SOLID	Spike Book Number	25N12D	26N12F
Batch Number	Spike Standard Value in µg/ml (SPK CONC)	602	3000
98005221	µg C in baseline (BL)	10.8	27.7

Rerun
0Sample Prep
N/ASample #
S98T003063

Percent Spike Recovery = ((C2-BL) - (C1-BL) * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100

Instrument Code
CARB2

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100

Prepared By
JDSChemist
MJLAnalyst
KRMDate Complete
10/22/98Analysis Date
10/17/98Analysis Time
10:10 PM

QC Actual in µg/mL

TIC

TOC

Sample Point

QC Found in µg/mL

6.02E+02

3.00E+03

AW101

Percent Spike Recovery

6.27E+02

3.33E+03

104.1

110.9

Data Entered By:

JDS

Date:

10/22/98

Signature of Chemist:

IV A

Date:

SPIKE.WB1 REV 1.3

342100ML

WORKBOOK PAGE: SAM5

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1291	0.1291
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	536.5	4561.6
26618	µg of Carbon from Baseline (C2)	10.8	27.7
Test Code			
@TICTOC1			

Matrix
SOLID
Batch Number
98005221
Rerun
0
Sample Prep
N/A
Sample #
S98T003064
Instrument Code
CARB2
Prepared By
JDS
Chemist
MJL
Analyst
KRM
Date Complete
10/22/98
Analysis Date
10/17/98
Analysis Time
10:10 PM
Sample Point
AW101

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

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon/g	4.07E+03	3.51E+04

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>NA</i>	Date:	

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1093	0.1093
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	1116.4	908.6
26618	µg of Carbon from Baseline (C2)	10.8	27.7
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
98005221			
Rerun			
0	µg of Carbon/g = (C1-C2) * DF / SS		
	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S98T003066			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/22/98			
Analysis Date			
10/17/98			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
10:10 PM		5	40
Sample Point	µg of Carbon/g	1.01E+04	8.06E+03
AW101			

Data Entered By:

JDS

Date: 10/22/98

Signature of Chemist:

Date:

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TIC/TOC REV. 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE1

Date: 09/07/98

Time: 17:52:46

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE1

Blank Value = N/A

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	2.60	0.00
2	1.00	3.70	29.73
3	1.50	4.40	15.91
4	2.00	5.00	12.00
5	2.50	5.40	7.41
6	3.00	5.90	8.47
7	3.50	6.20	4.84
8	4.00	6.50	4.62
9	4.50	6.90	5.80
10	5.00	7.20	4.17
11	5.50	7.50	4.00
12	6.00	7.80	3.85
13	6.50	8.10	3.70
14	7.00	8.40	3.57
15	7.50	8.70	3.45
16	8.00	9.00	3.33
17	8.50	9.40	4.26
18	9.00	9.60	2.08
19	9.50	9.90	3.03
20	10.00	10.30	3.88
21	10.50	10.50	1.90
22	11.00	10.80	2.78

BLANK VALUE = 10.8 micrograms carbon

BLANK FACTOR = $10.8 / 10.99792$ =

+9.82E-01 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 630 TO 643.

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE1

Date: 09/07/98

Time: 18:49:40

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE1

Blank Value = N/A

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.30	0.00
2	1.00	0.70	57.14
3	1.50	2.10	66.67
4	2.00	6.20	66.13
5	2.50	11.10	44.14
6	3.00	14.80	25.00
7	3.50	17.90	17.32
8	4.00	19.40	7.73
9	4.50	20.70	6.28
10	5.00	21.60	4.17
11	5.50	22.30	3.14
12	6.00	22.90	2.62
13	6.50	23.50	2.55
14	7.00	24.00	2.08
15	7.50	24.50	2.04
16	8.00	24.90	1.61
17	8.50	25.40	1.97
18	9.00	26.00	2.31
19	9.50	26.50	1.89
20	10.00	27.00	1.85
21	10.50	27.20	0.74
22	11.00	27.70	1.81

BLANK VALUE = 27.7 micrograms carbon

BLANK FACTOR = 27.7 / 10.99805. = +2.52E+00 ug/min Carbon

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

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV.0

TIC-- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD1

Date: 09/07/98

Time: 19:03:16

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = .982 ug/minute C

Analyst : KR MONTEITH

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	1.60	50.00
4	2.00	23.20	93.10
5	2.50	122.00	81.14
6	3.04	262.10	53.07
7	3.54	385.20	31.96
8	4.04	470.80	18.18
9	4.54	524.40	10.22
10	5.04	556.30	5.73
11	5.54	575.50	3.34
12	6.04	586.60	1.89
13	6.54	593.40	1.15
14	7.04	597.50	0.69
15	7.53	600.70	0.53
16	8.03	602.50	0.30
17	8.53	604.20	0.28
18	9.03	605.30	0.18
19	9.53	606.10	0.13
20	10.03	606.80	0.12
21	10.53	607.50	0.12
22	11.03	608.10	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 10.80008 micrograms carbon

BLANK FACTOR = 10.80008 / 10.99805 = +9.8E-01 ug/min Carbon

SAMPLE RESULTS:

(608.1 - 10.83317) (1)/(1000)	=	+5.973E-01	g/L Carbon
(608.1 - 10.83317) (1)/(1000) (12)	=	+4.977E-02	Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD1

Date: 09/07/98

Time: 19:15:38

Sample Size = 200 uL

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.52 ug/minute C

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.70	0.00
2	1.00	3.10	86.27
3	1.50	137.00	96.28
4	2.00	380.90	64.03
5	2.50	519.20	26.64
6	3.00	565.70	8.22
7	3.50	586.60	3.56
8	4.00	598.40	1.97
9	4.50	605.10	1.11
10	5.00	609.10	0.66
11	5.50	611.90	0.46
12	6.00	613.80	0.31
13	6.50	615.30	0.24
14	7.00	616.50	0.19
15	7.50	617.60	0.18
16	8.00	618.50	0.15
17	8.50	619.10	0.10
18	9.00	619.80	0.11
19	9.50	620.60	0.13
20	10.00	621.10	0.08
21	10.50	621.70	0.10
22	11.00	622.30	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 27.71508 micrograms carbon

BLANK FACTOR = 27.71508 / 10.99805 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

(622.3 - 27.71262) (1) / (200) = +2.973E+00 g/L Carbon
 (622.3 - 27.71262) (1) / (200) (12) = +2.477E-01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TIC/OC REV 2.0

Sample: BLK1

Date: 09/07/98

Time: 19:27:43

Sample Size = 1 uL

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .982 ug/minute C

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.51	0.60	0.00
2	1.01	2.10	71.43
3	1.51	4.10	48.78
4	2.00	4.90	16.33
5	2.50	5.70	14.04
6	3.00	6.20	8.06
7	3.50	6.70	7.46
8	4.00	7.10	5.63
9	4.50	7.60	6.58
10	5.00	8.00	5.00
11	5.50	8.40	4.76
12	6.00	8.90	5.62
13	6.50	9.40	5.32
14	7.00	9.80	4.08
15	7.50	10.20	3.92
16	8.00	10.60	3.77
17	8.50	11.00	3.64
18	9.00	11.30	2.65
19	9.50	11.80	4.24
20	10.00	12.20	3.28
21	10.50	12.60	3.17
22	11.00	12.90	2.33

USER INPUT BLANK VALUE

BLANK VALUE = 10.80008 micrograms carbon

BLANK FACTOR = 10.80008 / 10.99805 = +9.8E-01 ug/min Carbon

SAMPLE RESULTS:

(12.9 - 10.799) (1)/(1)	=	+2.10E+00	g/L Carbon
(12.9 - 10.799) (1)/(1) (12)	=	+1.75E-01	Molar Carbon

Sample Run By:

KR MONTEITH

00000

INF-1652 REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK1

Date: 09/07/96

Time: 19:40:38

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.52 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	0.30	0.00
2	1.01	1.50	80.00
3	1.51	8.00	81.25
4	2.00	14.80	45.95
5	2.50	20.10	26.37
6	3.00	22.40	10.27
7	3.50	24.10	7.05
8	4.00	25.00	3.60
9	4.50	26.20	4.58
10	5.00	28.30	7.42
11	5.50	29.70	4.71
12	6.00	30.70	3.26
13	6.50	31.40	2.23
14	7.00	32.00	1.88
15	7.50	32.60	1.84
16	8.00	33.20	1.81
17	8.50	33.90	2.06
18	9.00	34.60	2.02
19	9.50	35.30	1.98
20	10.00	35.90	1.67
21	10.50	36.50	1.64
22	11.00	36.90	1.08

USER INPUT BLANK VALUE

BLANK VALUE = 27.71508 micrograms carbon

BLANK FACTOR = 27.71508 / 10.99805 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

(36.9 - 27.71723) (1)/(1) = +9.18E+00 g/L Carbon
 (36.9 - 27.71723) (1)/(1) (12) = +7.65E-01 Molar Carbon

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

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICIOC REV 2.0

Sample: S98T3063-1

Date: 09/07/98

Time: 19:54:52

Sample Size = 1 uL

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .982 ug/minute C

% Difference = 10

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

1	0.51	0.50	0.00
2	1.01	3.60	86.11
3	1.50	78.10	95.39
4	2.00	222.50	64.90
5	2.50	345.30	35.56
6	3.00	430.80	19.85
7	3.50	480.80	10.40
8	4.00	509.10	5.56
9	4.50	523.70	2.79
10	5.00	532.30	1.62
11	5.50	537.50	0.97
12	6.00	541.20	0.68
13	6.50	544.20	0.55
14	7.00	546.60	0.48
15	7.50	548.70	0.35
16	8.00	550.70	0.36
17	8.50	552.20	0.27
18	9.00	553.80	0.29
19	9.50	555.30	0.27
20	10.00	556.80	0.27
21	10.50	558.30	0.27
22	11.00	559.60	0.23

USER INPUT BLANK VALUE :

BLANK VALUE = 10.80008 micrograms carbon

BLANK FACTOR = 10.80008 / 10.99805 =

+9.8E-01 ug/min Carbon

SAMPLE RESULTS:

(559.6 - 10.8008) (1)/(1) =

+5.488E+02 g/L Carbon

(559.6 - 10.8008) (1)/(1) (12) =

+4.573E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV.0
TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV.2.0

Sample: S98T3063-1

Date: 09/07/98

Time: 21:12:11

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.52 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.51	1.10	0.00
2	1.01	192.20	99.43
3	1.50	875.30	78.04
4	2.00	1282.80	31.77
5	2.50	1445.50	11.26
6	3.00	1524.30	5.17
7	3.50	1571.80	3.02
8	4.00	1597.90	1.63
9	4.50	1614.80	1.05
10	5.00	1628.10	0.82
11	5.50	1634.60	0.40
12	6.00	1639.60	0.30
13	6.50	1643.20	0.22
14	7.00	1646.10	0.18
15	7.50	1648.60	0.15
16	8.00	1650.80	0.13
17	8.50	1652.90	0.13
18	9.00	1654.50	0.10
19	9.50	1656.30	0.11
20	10.00	1657.80	0.09
21	10.50	1659.30	0.09
22	11.00	1660.70	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 27.71508 micrograms carbon

BLANK FACTOR = 27.71508 / 10.99805 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

(1660.7 - 27.71262) (1)/(1) = +1.6330E+03 g/L Carbon
(1660.7 - 27.71262) (1)/(1) (12) = +1.3608E+02 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3063SPK-1

Date: 09/07/98

Time: 21:30:41

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .982 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.60	0.00
2	1.01	6.60	90.91
3	1.51	128.90	94.88
4	2.00	318.50	59.14
5	2.50	453.20	30.38
6	3.00	540.30	16.12
7	3.50	590.10	8.44
8	4.00	617.90	4.50
9	4.50	632.70	2.34
10	5.00	640.90	1.28
11	5.50	648.50	0.87
12	6.00	650.40	0.60
13	6.50	654.00	0.55
14	7.00	656.80	0.43
15	7.50	659.20	0.36
16	8.00	661.60	0.36
17	8.50	663.80	0.33
18	9.00	665.80	0.30
19	9.50	667.70	0.28
20	10.00	669.60	0.28
21	10.50	671.70	0.31
22	11.00	673.30	0.24

USER INPUT BLANK VALUE

BLANK VALUE = 10.80008 micrograms carbon

BLANK FACTOR = 10.80008 / 10.99805 =

+9.8E-01 ug/min Carbon

SAMPLE RESULTS:

(673.3 - 10.80008) (1)/(1) =

+6.625E+02 g/L Carbon

(673.3 - 10.80008) (1)/(1) (12) =

+5.521E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

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

Sample: S98T3063SPK-1 Date: 09/07/98 Time: 21:44:16

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.52 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.51	1.60	0.00
2	1.01	44.50	96.40
3	1.50	493.80	90.99
4	2.00	955.90	48.34
5	2.50	1167.70	18.14
6	3.00	1259.40	7.28
7	3.50	1309.20	3.80
8	4.00	1333.50	1.82
9	4.50	1348.60	1.12
10	5.00	1360.40	0.87
11	5.50	1370.80	0.76
12	6.00	1377.20	0.46
13	6.50	1381.20	0.29
14	7.00	1384.60	0.25
15	7.50	1387.20	0.19
16	8.00	1389.40	0.16
17	8.50	1391.40	0.14
18	9.00	1393.20	0.13
19	9.50	1394.80	0.11
20	10.00	1396.30	0.11
21	10.50	1397.70	0.10
22	11.00	1399.10	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 27.71508 micrograms carbon

BLANK FACTOR = 27.71508 / 10.99805 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

(1399.1 - 27.71446) (1)/(1) = +1.3714E+03 g/L Carbon
 (1399.1 - 27.71446) (1)/(1) (12) = +1.1428E+02 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3064-1

Date: 09/07/98

Time: 22:20:51

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .982 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	1.60	0.00
2	1.01	3.70	56.76
3	1.51	32.30	88.54
4	2.00	105.40	69.35
5	2.50	192.60	45.28
6	3.00	256.60	27.76
7	3.50	319.20	16.22
8	4.00	350.40	9.19
9	4.50	370.20	5.35
10	5.00	383.30	3.42
11	5.50	392.10	2.24
12	6.00	400.80	2.17
13	6.50	408.30	1.96
14	7.00	417.50	2.08
15	7.50	427.30	2.29
16	8.00	438.80	2.62
17	8.50	452.10	2.94
18	9.00	467.10	3.21
19	9.50	483.60	3.41
20	10.00	500.90	3.45
21	10.50	518.70	3.43
22	11.00	536.50	3.32

USER INPUT BLANK VALUE

BLANK VALUE = 10.80008 micrograms carbon

BLANK FACTOR = 10.80008 / 10.99805 = +9.8E-01 ug/min Carbon

SAMPLE RESULTS:

(536.5 - 10.80092) (1)/(1)

+5.257E+02 g/L Carbon

(536.5 - 10.80092) (1)/(1) (12)

+4.381E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3064-1

Date: 09/07/98

Time: 22:33:43

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.52 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	13.20	0.00
2	1.01	217.90	93.94
3	1.50	964.20	77.40
4	2.00	1711.00	43.65
5	2.50	2457.20	30.37
6	3.00	3203.80	23.30
7	3.50	3050.90	18.91
8	4.00	4278.60	7.66
9	4.50	4329.50	1.18
10	5.00	4369.90	0.92
11	5.50	4404.00	0.77
12	6.00	4434.90	0.70
13	6.50	4462.40	0.62
14	7.00	4487.10	0.55
15	7.50	4509.00	0.49
16	8.00	4527.80	0.42
17	8.50	4543.70	0.35
18	9.00	4556.30	0.28
19	9.50	4561.60	0.12
20	10.00	4561.60	0.00
21	10.50	4561.60	0.00
22	11.00	4561.60	0.00

USER INPUT BLANK VALUE

BLANK VALUE = 27.71508 micrograms carbon

BLANK FACTOR = 27.71508 / 10.99805 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

(4561.6 - 27.71692) (1)/(1) = +4.5339E+03 g/L Carbon
 (4561.6 - 27.71692) (1)/(1)(12) = +3.7782E+02 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3066-1

Date: 09/07/98

Time: 21:56:20

Sample Size = 1 uL

Analyst : KR MONTEITH

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .982 ug/minute C

% Difference = 10

```

== Reading ==== Analysis Time ==== Conlometer ==== % Difference ==
 1          0.51          1.90          0.00
 2          1.01         109.30         98.26
 3          1.51         494.30         77.89
 4          2.00         744.80         33.63
 5          2.50         884.10         15.76
 6          3.00         966.70          8.54
 7          3.50        1013.60          4.63
 8          4.00        1040.30          2.57
 9          4.50        1056.10          1.50
10          5.00        1066.50          0.98
11          5.50        1074.20          0.72
12          6.00        1080.90          0.62
13          6.50        1086.60          0.52
14          7.00        1090.80          0.39
15          7.50        1094.90          0.37
16          8.00        1098.70          0.35
17          8.50        1101.90          0.29
18          9.00        1104.90          0.27
19          9.50        1108.20          0.30
20         10.03        1111.20          0.27
21         10.53        1113.50          0.21
22         11.03        1116.40          0.26

```

USER INPUT BLANK VALUE

BLANK VALUE = 10.80008 micrograms carbon

BLANK FACTOR = 10.80008 / 10.99805 = +9.8E-01 ug/min Carbon

SAMPLE RESULTS:

```

( 1116.4 - 10.83496 ) (1)/(1) = +1.1056E+03 g/L Carbon
( 1116.4 - 10.83496 ) (1)/(1) (12) = +9.2130E+01 Molar Carbon

```

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: S98T3066-1

Date: 09/07/98

Time: 22:08:46

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.52 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          2.50          0.00
 2          1.01          22.10         88.69
 3          1.50          34.20         93.67
 4          2.00          61.20         43.42
 5          2.50          74.50         16.76
 6          3.00          80.80          7.87
 7          3.50          83.80          4.05
 8          4.00          85.60          2.19
 9          4.50          86.90          1.30
10          5.00          87.20          0.83
11          5.50          88.10          0.56
12          6.00          88.50          0.44
13          6.50          88.90          0.44
14          7.00          89.20          0.37
15          7.50          89.40          0.25
16          8.00          89.60          0.28
17          8.50          89.90          0.23
18          9.00          90.00          0.19
19          9.50          90.10          0.27
20         10.00          90.20          0.19
21         10.50          90.60          0.22
22         11.00          90.80          0.20

```

USER INPUT BLANK VALUE

BLANK VALUE = 27.71508 micrograms carbon

BLANK FACTOR = 27.71508 / 10.99805 = +2.5E+00 ug/min Carbon

SAMPLE RESULTS:

```

( 908.6 - 27.71723 ) (1)/(1) = +8.809E+02 g/L Carbon
( 908.6 - 27.71723 ) (1)/(12) = +7.341E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.0 ug/min Carbon!!!!>>>>

```

Sample Run By:

KR MONTEITH

00000

LABCORE Completed Worklist Report for Worklist# 26636

Analyst: jds

Instrument: CARB2

Book#: _____

Method: LA-342-100 Rev/Mod F-1

Worklist Comment: AW101 @tictoc jds rerun

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	SOLID	1	1.10E+0	1.100	ug/g
1 BLNK	0		@TICTOC1 TOC-02	SOLID	1	1.14E+1	11.400	ug/g
2 STD	0		@TICTOC1 TIC-02	SOLID	6.02E+02	5.97E+2	99.169 %	Recovery
2 STD	0		@TICTOC1 TOC-02	SOLID	3.00E+03	2.62E+3	87.333 %	Recovery
3 SAMPLE	S98T002746	0	@TICTOC1 TIC-02	SOLID	N/A	6.84E+03	5.000	ug/g
3 SAMPLE	S98T002746	0	@TICTOC1 TOC-02	SOLID	N/A	4.87E+03	40.000	ug/g
4 SPK	S98T002746	0	@TICTOC1 TIC-02	SOLID	1.00E+02	1.10E+02	110.000 %	Recovery
4 SPK	S98T002746	0	@TICTOC1 TOC-02	SOLID	1.00E+02	1.47E+02	147.000 %	Recovery

Final page for worklist# 26636

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

10/20/98 16:07
A-0004-1

HNF-1652 REV. 0

Page: 1

LABCORE Data Entry Template for Worklist# 26636Analyst: Jds Instrument: CARB2 Book# _____Method: LA-342-100 Rev/Mod F-1

Worklist Comment: AW101 @tictoc jds rerun

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@TICTOC1	SOLID		
2 BLNK			@TICTOC1	SOLID		
3 SAMPLE	S98T002746 0		@TICTOC1	SOLID	98000261	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
4 SPK	S98T002746 0		@TICTOC1	SOLID		

Final page for worklist # 26636Analyst Signature Jds Date 10/20/98

Analyst Signature _____ Date _____

Data Entry Comments:

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

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	10.1	24.3
26636	µg of Carbon from Baseline (C2)	11.2	35.7

Test Code	
@TICTOC1	
Matrix	
SOLID	
Batch Number	
98005240	
Rerun	µg of Carbon = C1-C2
0	
Sample Prep	
N/A	
Sample #	
BLK	
Instrument Code	
CARB2	
Prepared By	
JDS	
Chemist	
MJL	
Analyst	
JDS	
Date Complete	
10/21/98	
Analysis Date	
10/20/98	
Analysis Time	Method Detection Limit in ug/g
06:30 PM	
Sample Point	µg of Carbon
AW101 LAW	

TIC	TOC
5	40
1.10E+00	1.14E+01

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NA</i>	Date:	

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in µg (C1)	608.4	559.4
26636	µg of Carbon from Baseline (C2)	11.2	35.7
Test Code	Standard Book Number	25N12D	26N12F
@TICTOC1	Standard Value (µg/ml)	602	3000

Matrix
LIQUID
Batch Number
98005240
Rerun
0
Sample Prep
N/A
Sample #
STD
Instrument Code
CARB2
Prepared By
JDS
Chemist
MJL
Analyst
JDS
Date Complete
10/21/98
Analysis Date
10/20/98
Analysis Time
06:30 PM
Sample Point
AW101 LAW

QC Actual in µg/mL = Standard Value (µg/mL)

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in µg/mL	5	40
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	5.97E+02	2.62E+03
Percent Standard Recovery	99.2	87.3

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>n/ #</i>	Date:	

STANDARD.WB1 REV 1.0

342100ML

647

WORKBOOK PAGE: SAM3

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

SOLIDS

Type	Sample Size in g (SS)	TIC	TOC
SAMPLE	Dilution Factor (DF)	0.1508	0.1508
Work List	µg of Carbon in Sample (C1)	1	1
26636	µg of Carbon from Baseline (C2)	1042.7	770.4
Test Code		11.2	35.7
@TICTOC1			
Matrix			
SOLID			
Batch Number			
98005240			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
S98T002746			
Instrument Code			
CARB2			
Prepared By			
JDS			
Chemist			
MJL			
Analyst			
JDS			
Date Complete			
10/21/98			
Analysis Date			
10/20/98			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
06:30 PM		5	40
Sample Point	µg of Carbon/g	6.84E+03	4.87E+03
AW101 LAW			

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

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>N/A</i>	Date:	

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

SOLIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.1508	0.1508
Work List	Final Coulometer Reading in µg (C1)	1042.7	770.4
26636	Spiked Vial Data		
Test Code	Sample Size in g (SPK SS)	0.0950	0.0950
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Matrix	Final Coulometer Reading in µg (C2)	990.7	940.8
SOLID	Spike Book Number	25N12D	26N12F
Batch Number	Spike Standard Value in µg/mL (SPK CONC)	602	3000
98005240	µg C in baseline (BL)	11.2	35.7

Rerun

0

Sample Prep

N/A

Sample #

S98T002746

$$\text{Percent Spike Recovery} = ((C2-BL) - (C1-BL)) * (SPK SS) / SS / ((SPK CONC) * (SPK VOL)) * 100$$

Instrument Code

CARB2

QC Actual in µg/mL = Spike Value (µg/mL)

$$\text{QC Found in } \mu\text{g/mL} = (\text{Percent Spike Recovery}) * (\text{QC Actual}) / 100$$

Prepared By

JDS

Chemist

MJL

Analyst

JDS

Date Complete

10/21/98

Analysis Date

10/20/98

Analysis Time

06:30 PM

QC Actual in µg/mL

TIC

6.02E+02

TOC

3.00E+03

Sample Point

QC Found in µg/mL

6.59E+02

4.42E+03

AW101 LAW

Percent Spike Recovery

109.5

147.4

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>N/A</i>	Date:	

HNF-1652 REV. C

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 09/08/98

Time: 16:41:06

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		0.50	0.00
2	1.00		1.00	50.00
3	1.50		1.50	33.33
4	2.00		2.00	25.00
5	2.50		2.50	20.00
6	3.00		3.00	16.67
7	3.50		3.70	18.92
8	4.00		4.20	11.90
9	4.50		4.70	10.64
10	5.00		5.20	9.62
11	5.50		5.80	10.34
12	6.00		6.30	7.94
13	6.50		6.80	7.35
14	7.00		7.30	6.85
15	7.50		7.90	7.59
16	8.00		8.30	4.82
17	8.50		8.80	5.68
18	9.00		9.30	5.38
19	9.50		9.80	5.10
20	10.00		10.20	3.92
21	10.50		10.70	4.67
22	11.00		11.20	4.46

BLANK VALUE = 11.2 micrograms carbon

BLANK FACTOR = 11.2 / 10.99774 =

+1.02E+00 ug/min Carbon

Sample Run By:

JD SPELLMAN

11111

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 658 TO 659.

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 09/08/98

Time: 11:51:01

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.40	0.00
2	1.01	0.80	50.00
3	1.50	1.00	20.00
4	2.00	1.60	37.50
5	2.50	2.20	27.27
6	3.00	3.20	31.25
7	3.50	6.30	49.21
8	4.00	11.00	42.73
9	4.50	16.40	32.93
10	5.00	20.90	21.53
11	5.50	24.20	13.64
12	6.00	26.50	8.68
13	6.50	28.10	5.69
14	7.00	29.40	4.42
15	7.50	30.50	3.61
16	8.00	31.40	2.87
17	8.50	32.30	2.79
18	9.00	33.10	2.42
19	9.50	33.70	1.78
20	10.00	34.40	2.03
21	10.50	35.00	1.71
22	11.00	35.70	1.96

BLANK VALUE = 35.7 micrograms carbon

BLANK FACTOR = 35.7 / 10.9978 =

+3.25E+00 ug/min Carbon

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

Sample Run By:

JD SPELLMAN

11111

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: STD

Date: 09/08/98

Time: 13:11:55

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.02 ug/minute C.

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          0.40          0.00
 2          1.01          0.80          50.00
 3          1.50          23.10          96.54
 4          2.00          157.10          85.30
 5          2.50          328.00          52.10
 6          3.00          452.40          27.50
 7          3.50          523.50          13.58
 8          4.00          560.40          6.58
 9          4.50          579.60          3.31
10          5.00          590.20          1.80
11          5.50          596.00          0.97
12          6.00          599.50          0.58
13          6.50          601.60          0.35
14          7.00          603.10          0.25
15          7.50          604.20          0.18
16          8.00          605.10          0.15
17          8.50          605.80          0.12
18          9.03          606.40          0.10
19          9.53          606.90          0.08
20         10.03          607.40          0.08
21         10.53          607.90          0.08
22         11.03          608.40          0.08

```

USER INPUT BLANK VALUE

BLANK VALUE = 11.21776 micrograms carbon

BLANK FACTOR = 11.21776 / 10.9978 = +1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(608.4 - 11.25225) (1) / (1) =

+5.971E+02 g/L Carbon

(608.4 - 11.25225) (1) / (1) (12) =

+4.976E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

11111

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: STD

Date: 09/08/98

Time: 1#:30:20

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.25 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1          0.51          0.50          0.00
  2          1.01          25.60          98.05
  3          1.50         123.50          79.27
  4          2.00         280.20          55.92
  5          2.50         416.20          32.68
  6          3.00         479.70          13.24
  7          3.50         510.20           5.98
  8          4.00         528.10           3.39
  9          4.50         537.80           1.80
 10          5.00         543.90           1.12
 11          5.50         547.80           0.71
 12          6.00         550.30           0.45
 13          6.50         552.10           0.33
 14          7.00         553.50           0.25
 15          7.50         554.70           0.22
 16          8.00         555.60           0.16
 17          8.50         556.40           0.14
 18          9.00         557.00           0.11
 19          9.50         557.70           0.13
 20         10.00         558.30           0.11
 21         10.50         558.90           0.11
 22         11.00         559.40           0.09

```

USER INPUT BLANK VALUE

BLANK VALUE = 35.74286 micrograms carbon

BLANK FACTOR = 35.74286 / 10.9978 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

```

( 559.4 - 35.74603 ) (1)/(1) = +5.237E+02 g/L Carbon
( 559.4 - 35.74603 ) (1)/(1) (12) = +4.364E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

```

Sample Run By:

JD SPELLMAN

11111

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 09/08/98

Time: 11:44:43

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.02 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          0.50          0.00
 2          1.01          1.30          61.54
 3          1.51          2.20          40.91
 4          2.00          2.90          24.14
 5          2.50          3.40          14.71
 6          3.00          3.90          12.82
 7          3.50          4.40          11.36
 8          4.00          4.80          8.33
 9          4.50          5.20          7.69
10          5.00          5.60          7.14
11          5.50          6.10          8.20
12          6.00          6.50          6.15
13          6.50          6.80          4.41
14          7.00          7.20          5.56
15          7.50          7.60          5.26
16          8.00          8.00          5.00
17          8.50          8.30          3.61
18          9.00          8.70          4.60
19          9.50          9.10          4.40
20          10.00         9.40          3.19
21          10.50         9.80          4.08
22          11.00        10.10          2.97

```

USER INPUT BLANK VALUE

BLANK VALUE = 11.21776 micrograms carbon

BLANK FACTOR = 11.21776 / 10.9978 =

+1.0E+00

ug/min Carbon

SAMPLE RESULTS:

(10.1 - 11.21801) (1)/(1) =

(10.1 - 11.21801) (1)/(1) (12) =

< 5.00 E-3 g/L Carbon

< 4.17 E-4 Molar Carbon

Sample Run By:

JD SPELLMAN

11111

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLKJ

Date: 09/08/98

Time: 21:48:21

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.25 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.60	50.00
3	1.50	0.90	33.33
4	2.00	1.30	30.77
5	2.50	2.00	35.00
6	3.00	3.50	42.86
7	3.50	5.60	37.50
8	4.00	8.60	34.88
9	4.50	14.60	41.10
10	5.00	15.50	5.81
11	5.50	17.20	9.88
12	6.00	18.40	6.52
13	6.50	19.30	4.66
14	7.00	19.90	3.02
15	7.50	20.60	3.40
16	8.00	21.20	2.83
17	8.50	21.90	3.20
18	9.00	22.40	2.23
19	9.50	22.90	2.18
20	10.00	23.40	2.14
21	10.50	23.90	2.09
22	11.00	24.30	1.65

USER INPUT BLANK VALUE

BLANK VALUE = 35.74286 micrograms carbon

BLANK FACTOR = 35.74286 / 10.9978 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(24.3 - 35.74326) (1)/(1) =

(24.3 - 35.74326) (1)/(1)(12) =

< 5.00 E-3 g/L Carbon

< 4.17 E-4 Molar Carbon

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

Sample Run By:

JD SPELLMAN

11111

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002746

Date: 09/08/98

Time: 21:38:50

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.02 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.90	0.00
2	1.01	5.00	22.00
3	1.51	8.70	42.53
4	2.00	73.40	88.15
5	2.50	305.70	75.99
6	3.00	586.40	47.87
7	3.50	772.20	24.06
8	4.00	878.70	12.12
9	4.50	941.70	6.69
10	5.00	978.80	3.79
11	5.50	1000.60	2.18
12	6.00	1013.60	1.28
13	6.50	1021.50	0.77
14	7.00	1026.80	0.52
15	7.50	1030.40	0.35
16	8.00	1033.20	0.27
17	8.50	1035.30	0.20
18	9.00	1037.20	0.18
19	9.50	1038.80	0.15
20	10.00	1040.20	0.13
21	10.50	1041.40	0.12
22	11.00	1042.70	0.12

USER INPUT BLANK VALUE

BLANK VALUE = 11.21776 micrograms carbon

BLANK FACTOR = 11.21776 / 10.9978 =

+1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(1042.7 - 11.21888) (1) / (1) =

(1042.7 - 11.21888) (1) / (1) (12) =

+1.0315E+03 g/L Carbon

+8.5957E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

11111

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

Sample: S98T002746

Date: 09/08/98

Time: 21:54:07

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.25 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	107.30	0.00
2	1.00	400.30	73.20
3	1.50	593.50	32.55
4	2.00	671.80	11.66
5	2.50	706.20	4.87
6	3.00	726.80	2.83
7	3.50	739.20	1.68
8	4.00	746.60	0.99
9	4.50	751.40	0.64
10	5.00	754.80	0.45
11	5.50	757.50	0.36
12	6.00	759.60	0.28
13	6.50	761.30	0.22
14	7.00	762.80	0.20
15	7.50	764.10	0.17
16	8.00	765.20	0.14
17	8.50	766.20	0.13
18	9.00	767.10	0.12
19	9.50	768.10	0.13
20	10.00	768.90	0.10
21	10.50	769.70	0.10
22	11.00	770.40	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 35.74286 micrograms carbon

BLANK FACTOR = 35.74286 / 10.9978 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(770.4 - 35.74246) (1)/(1) =

+7.347E+02 g/L Carbon

(770.4 - 35.74246) (1)/(1) (12) =

+6.122E+01 Molar Carbon

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

Sample Run By:

JD SPELLMAN

11111

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002746SPK

Date: 09/08/98

Time: 23:17:55

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.02 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.60	62.50
3	1.50	55.30	97.11
4	2.00	273.80	79.80
5	2.50	515.60	46.90
6	3.00	694.90	25.80
7	3.50	812.60	14.48
8	4.00	883.90	8.07
9	4.50	926.80	4.63
10	5.00	952.10	2.66
11	5.50	965.20	1.36
12	6.00	972.20	0.72
13	6.50	976.40	0.43
14	7.00	979.40	0.31
15	7.50	981.50	0.21
16	8.00	983.20	0.17
17	8.50	984.80	0.16
18	9.00	986.20	0.14
19	9.50	987.40	0.12
20	10.00	988.50	0.11
21	10.50	989.60	0.11
22	11.00	990.70	0.11

USER INPUT BLANK VALUE

BLANK VALUE = 11.21776 micrograms carbon

BLANK FACTOR = 11.21776 / 10.9978 =

+1.0E+00 ug/min Carbon

SAMPLE RESULTS:

(990.7 - 11.21776) (1)/(1) =

(990.7 - 11.21776) (1)/(1) (12) =

+9.795E+02 g/L Carbon

-8.162E+01 Molar Carbon

Sample Run By:

JD SPELLMAN

11111

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002746SPK

Date: 09/08/98

Time: 21:36:18

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.25 ug/minute C

Analyst : JD SPELLMAN

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1           0.51           1.20           0.00
 2           1.01          110.60          98.92
 3           1.50          361.90          69.44
 4           2.00          596.70          39.35
 5           2.50          749.50          20.39
 6           3.00          826.40           9.31
 7           3.50          870.70           5.09
 8           4.00          896.70           2.90
 9           4.50          909.90           1.45
10           5.00          916.90           0.76
11           5.50          921.40           0.49
12           6.00          924.90           0.38
13           6.50          927.70           0.30
14           7.00          929.90           0.24
15           7.50          931.80           0.20
16           8.00          933.40           0.17
17           8.50          934.90           0.16
18           9.00          936.30           0.15
19           9.50          937.60           0.14
20          10.00          938.70           0.12
21          10.50          939.80           0.12
22          11.00          940.80           0.11

```

USER INPUT BLANK VALUE

BLANK VALUE = 35.74286 micrograms carbon

BLANK FACTOR = 35.74286 / 10.9978 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(940.8 - 35.74286) (1)/(1) =

(940.8 - 35.74286) (1)/(1) (12) =

+3.051E+02 g/L Carbon

+7.542E+01 Molar Carbon

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

Sample Run By:

JD SPELLMAN

11111

LABCORE Completed Worklist Report for Worklist# 26699

Analyst: krm

Instrument: CARB2

Book#: _____

Method: LA-342-100 Rev/Mod F-1

Worklist Comment: AW 101 LAW TICTOC JDS

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	SOLID	1	1.50E+0	1.500	ug/g
1 BLNK	0		@TICTOC1 TOC-02	SOLID	1	2.70E+0	2.700	ug/g
2 STD	0		@TICTOC1 TIC-02	SOLID	6.02E+02	5.89E+2	97.841 % Recovery	
2 STD	0		@TICTOC1 TOC-02	SOLID	3.00E+03	2.97E+3	99.000 % Recovery	
3 SAMPLE	S98T003065	0	@TICTOC1 TIC-02	SOLID	N/A	3.19E+03	5.000	ug/g
3 SAMPLE	S98T003065	0	@TICTOC1 TOC-02	SOLID	N/A	4.36E+04	40.000	ug/g
4 SAMPLE	S98T003067	0	@TICTOC1 TIC-02	SOLID	N/A	1.08E+04	5.000	ug/g
4 SAMPLE	S98T003067	0	@TICTOC1 TOC-02	SOLID	N/A	9.14E+03	40.000	ug/g

Final page for worklist# 26699

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

HNF-1652 REV. 0

Page: 1

10/22/98 10:58
A-0004-1**LABCORE Data Entry Template for Worklist# 26699**Analyst: KRM Instrument: CARB2 Book# 25112D
26112F

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AW 101 LAW TICTOC JDS

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	SOLID		
2 STD			@TICTOC1	SOLID		
3 SAMPLE	S98T003065 0		@TICTOC1	SOLID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					
4 SAMPLE	S98T003067 0		@TICTOC1	SOLID	98000554	AW-101 LAW
	Analytes Requested: TIC-02 , TOC-02					

Final page for worklist # 26699

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	13.2	26.6
26699	µg of Carbon from Baseline (C2)	14.7	29.3
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
98005313			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
BLK			
Instrument Code			
CARB2			
Prepared By			
JRO			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/26/98			
Analysis Date			
10/23/98			
Analysis Time	Method Detection Limit in ug/g	5	40
11:21 PM			
Sample Point	µg of Carbon	1.50E+00	2.70E+00
AW101			

Data Entered By:	JRO	Date:	10/26/98
Signature of Chemist:	<i>N/A</i>	Date:	

BLANK.WB1 REV 1.0

342100ML

662

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in µg (C1)	603.7	623.7
26699	µg of Carbon from Baseline (C2)	14.7	29.3
Test Code	Standard Book Number	25N12D	26N12F
@TICTOC1	Standard Value (µg/ml)	602	3000
Matrix	QC Actual in µg/mL = Standard Value (µg/mL) QC Found in µg/mL = (C1 - C2) * DF / SS QC Found in µg/mL for TIC = 5 if C1 < C2 QC Found in µg/mL for TOC = 40 if C1 < C2 % Recovery = QC Found / QC Actual * 100		
LIQUID			
Batch Number			
98005313			
Rerun			
0			
Sample Prep			
N/A			
Sample #			
Instrument Code	QC Actual in µg/mL = Standard Value (µg/mL) QC Found in µg/mL = (C1 - C2) * DF / SS QC Found in µg/mL for TIC = 5 if C1 < C2 QC Found in µg/mL for TOC = 40 if C1 < C2 % Recovery = QC Found / QC Actual * 100		
CARB2			
Prepared By			
JRO			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/26/98			
Analysis Date			
10/23/98			
Analysis Time	Method Detection Limit in µg/mL	5	40
11:21 PM	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	5.89E+02	2.97E+03
AW101	Percent Standard Recovery	97.8	99.1

Data Entered By:	JRO	Date:	10/26/98
Signature of Chemist:	<i>N/A</i>	Date:	

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1427	0.1427
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	469.6	6255.2
26699	µg of Carbon from Baseline (C2)	14.7	29.3
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
98005313			
Rerun	µg of Carbon/g = (C1-C2) * DF / SS		
0	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S98T003065			
Instrument Code			
CARB2			
Prepared By			
JRC			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/26/98			
Analysis Date			
10/23/98			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
11:21 PM		5	40
Sample Point	µg of Carbon/g	3.19E+03	4.36E+04
AW101			

Data Entered By:	JRC	Date:	10/26/98
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: SAM4

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

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0948	0.0948
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	1036.3	895.5
26699	µg of Carbon from Baseline (C2)	14.7	29.3
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
98005313			
Rerun	µg of Carbon/g = (C1-C2) * DF / SS		
0	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S98T003067			
Instrument Code			
CARB2			
Prepared By			
JRO			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
10/26/98			
Analysis Date			
10/23/98			
Analysis Time	Method Detection Limit in ug/g	TIC	TOC
11:21 PM		5	40
Sample Point	µg of Carbon/g	1.08E+04	9.14E+03
AW101			

Data Entered By:	JRO	Date:	10/26/98
Signature of Chemist:	<i>NA</i>	Date:	

HNF-1652 REV. 0

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 10/22/98

Time: 23:21:33

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE
Blank Value = N/AAnalyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.90	100.00
3	1.01	2.20	59.09
4	1.50	3.40	35.29
5	2.00	4.10	17.07
6	2.50	4.90	16.33
7	3.00	5.50	10.91
8	3.50	6.30	12.70
9	4.00	6.80	7.35
10	4.50	7.50	9.33
11	5.00	8.00	6.25
12	5.50	8.80	9.09
13	6.00	9.20	4.35
14	6.50	9.80	6.12
15	7.00	10.50	6.67
16	7.50	11.10	5.41
17	8.00	11.60	4.31
18	8.50	12.40	6.45
19	9.00	12.80	3.13
20	9.50	13.40	4.48
21	10.00	14.00	4.29
22	10.50	14.70	4.76

BLANK VALUE = 14.7 micrograms carbon

BLANK FACTOR = 14.7 / 10.4989 =

+1.40E+00

ug/min Carbon

Sample Run By:

KR MONTEITH

00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 666 TO 675

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV. 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 10/22/98

Time: 23:36:53

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.04	3.00	86.67
4	1.50	9.30	67.74
5	2.00	13.20	29.55
6	2.50	15.90	16.98
7	3.00	17.90	11.17
8	3.50	19.20	6.77
9	4.00	20.20	4.95
10	4.50	21.30	5.16
11	5.00	22.20	4.05
12	5.50	22.90	3.06
13	6.00	23.50	2.55
14	6.50	24.40	3.69
15	7.00	24.80	1.61
16	7.50	25.60	3.13
17	8.00	26.10	1.92
18	8.50	26.80	2.61
19	9.00	27.40	2.19
20	9.50	28.10	2.49
21	10.00	28.70	2.09
22	10.50	29.30	2.05

BLANK VALUE = 29.3 micrograms carbon

BLANK FACTOR = 29.3 / 10.4989 = +2.79E+00 ug/min Carbon

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

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV.0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV.2.0

Sample: STD

Date: 10/23/98

Time: 00:32:17

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.4 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.50	100.00
3	1.01	4.00	87.50
4	1.50	103.40	96.13
5	2.00	273.40	62.18
6	2.50	403.10	32.18
7	3.00	484.00	16.71
8	3.50	530.90	8.83
9	4.00	557.80	4.82
10	4.50	572.50	2.57
11	5.00	581.70	1.58
12	5.50	587.50	0.99
13	6.00	591.70	0.71
14	6.50	594.60	0.49
15	7.00	597.00	0.40
16	7.50	598.50	0.25
17	8.00	600.00	0.25
18	8.50	601.00	0.17
19	9.00	601.80	0.13
20	9.50	602.60	0.13
21	10.00	603.20	0.10
22	10.50	603.70	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 14.69846 micrograms carbon

BLANK FACTOR = 14.69846 / 10.4989 = +1.4E+00 ug/min Carbon

SAMPLE RESULTS:

(603.7 - 14.69603) (1) / (1000)	=	+5.890E-01	g/L Carbon
(603.7 - 14.69603) (1) / (1000) (12)	=	+4.908E-02	Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 10/23/98

Time: 00:45:02

Sample Size = 200 uL

Analyst : KR MONTEITH

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	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.01	2.70	85.19
4	1.50	85.30	96.83
5	2.00	270.30	68.44
6	2.50	440.50	38.64
7	3.04	524.40	16.00
8	3.54	560.80	6.49
9	4.04	579.40	3.21
10	4.54	590.70	1.91
11	5.04	598.50	1.30
12	5.54	604.10	0.93
13	6.04	608.10	0.66
14	6.54	611.00	0.47
15	7.03	613.80	0.46
16	7.53	616.20	0.39
17	8.03	617.90	0.28
18	8.53	619.40	0.24
19	9.03	620.70	0.21
20	9.53	621.70	0.16
21	10.03	622.70	0.16
22	10.53	623.70	0.16

USER INPUT BLANK VALUE

BLANK VALUE = 29.29193 micrograms carbon

BLANK FACTOR = 29.29193 / 10.4989 = +2.8E+10 ug/min Carbon

SAMPLE RESULTS:

(623.7 - 29.3866) (1)/(200) +2.972E+00 g/L Carbon
 (623.7 - 29.3866) (1)/(200) (12) +2.476E-01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 10/23/98

Time: 00:59:39

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.4 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	1.40	100.00
3	1.01	3.30	57.58
4	1.50	4.30	23.26
5	2.00	5.10	15.69
6	2.50	6.00	15.00
7	3.00	6.50	7.69
8	3.50	6.90	5.80
9	4.00	7.50	8.00
10	4.50	8.00	6.25
11	5.00	8.40	4.76
12	5.50	8.80	4.55
13	6.00	9.30	5.38
14	6.50	9.70	4.12
15	7.00	10.10	3.96
16	7.50	10.70	5.61
17	8.00	11.00	2.73
18	8.50	11.40	3.51
19	9.00	11.80	3.39
20	9.50	12.30	4.07
21	10.00	12.80	3.91
22	10.50	13.20	3.03

USER INPUT BLANK VALUE

BLANK VALUE = 14.69846 micrograms carbon

BLANK FACTOR = 14.69846 / 10.4989 = +1.4E+00 ug/min Carbon

SAMPLE RESULTS:

(13.2 - 14.6972) (1)/(1) =
 (13.2 - 14.6972) (1)/(1) (12) =

< 5.00 E-3 g/L Carbon
 < 4.17 E-4 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 10/23/98

Time: 03:26:08

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.79 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	0.40	100.00
3	1.01	4.20	90.48
4	1.51	10.20	58.82
5	2.01	13.60	25.00
6	2.51	16.10	15.53
7	3.00	17.20	6.40
8	3.50	18.30	6.01
9	4.00	19.20	4.69
10	4.50	20.10	4.48
11	5.00	20.80	3.37
12	5.50	21.50	3.26
13	6.00	22.00	2.27
14	6.50	22.60	2.65
15	7.00	23.30	3.00
16	7.50	23.70	1.69
17	8.00	24.30	2.47
18	8.50	24.70	1.62
19	9.00	25.10	1.59
20	9.50	25.60	1.95
21	10.00	26.10	1.92
22	10.50	26.60	1.88

USER INPUT BLANK VALUE

BLANK VALUE = 29.29193 micrograms carbon

BLANK FACTOR = 29.29193 / 10.4989 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:

(26.6 - 29.2922) (1)/(1) = 5.00 E-3 g/L Carbon
(26.6 - 29.2922) (1)/(1) (12) = 4.17 E-4 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3065

Date: 10/23/98

Time: 04:02:24

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.4 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	1.40	100.00
3	1.00	6.30	77.78
4	1.50	62.20	89.87
5	2.00	158.70	60.81
6	2.50	253.80	37.47
7	3.00	322.20	21.23
8	3.50	365.80	11.92
9	4.00	392.60	6.83
10	4.50	409.10	4.03
11	5.00	419.80	2.55
12	5.50	427.50	1.80
13	6.00	434.40	1.59
14	6.50	439.70	1.21
15	7.00	444.80	1.15
16	7.50	449.10	0.96
17	8.00	453.30	0.93
18	8.50	457.20	0.85
19	9.00	460.80	0.78
20	9.50	463.60	0.60
21	10.00	466.40	0.60
22	10.50	469.60	0.68

USER INPUT BLANK VALUE

BLANK VALUE = 14.69846 micrograms carbon

BLANK FACTOR = 14.69846 / 10.4989 = +1.4E+00 ug/min Carbon

SAMPLE RESULTS:

(469.6 - 14.69742) (1)/(1) = +4.549E+02 g/L Carbon
 (469.6 - 14.69742) (1)/(1) (12) = +3.791E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

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

Sample: S98T3065

Date: 10/23/98

Time: 04:13:55

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.79 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	2.90	100.00
3	1.00	429.20	99.32
4	1.50	1176.80	63.53
5	2.00	1924.00	38.84
6	2.50	2671.50	27.98
7	3.00	3418.40	21.85
8	3.50	4165.30	17.93
9	4.00	4912.90	15.22
10	4.50	5660.60	13.21
11	5.00	6020.10	5.97
12	5.50	6077.80	0.95
13	6.00	6120.20	0.69
14	6.50	6152.60	0.53
15	7.00	6176.50	0.39
16	7.50	6195.40	0.31
17	8.00	6210.20	0.24
18	8.50	6222.10	0.19
19	9.00	6232.60	0.17
20	9.50	6241.20	0.14
21	10.00	6248.70	0.12
22	10.50	6255.20	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 29.29193 micrograms carbon

BLANK FACTOR = 29.29193 / 10.4989 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:

(6255.2 - 29.28985) (1)/(1) = -6.2259E+03 g/L Carbon
(6255.2 - 29.28985) (1)/(1) (12) = +5.1883E+02 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3067

Date: 10/23/98

Time: 04:25:38

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.4 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

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

1	0.08	0.00	0.00
2	0.51	5.40	100.00
3	1.00	10.70	49.53
4	1.50	118.40	90.96
5	2.00	370.60	68.05
6	2.50	569.60	34.94
7	3.00	708.50	19.60
8	3.50	802.10	11.67
9	4.00	862.80	7.04
10	4.50	902.50	4.40
11	5.00	929.50	2.90
12	5.50	949.60	2.12
13	6.00	965.30	1.63
14	6.50	978.20	1.32
15	7.03	989.10	1.10
16	7.53	998.80	0.97
17	8.03	1006.70	0.78
18	8.53	1013.80	0.70
19	9.03	1020.10	0.62
20	9.53	1025.80	0.56
21	10.03	1031.10	0.51
22	10.53	1036.30	0.50

USER INPUT BLANK VALUE

BLANK VALUE = 14.69846 micrograms carbon

BLANK FACTOR = 14.69846 / 10.4989 = +1.4E+00 ug/min Carbon

SAMPLE RESULTS:

(1036.3 - 14.74458) (1)/(1) =

+1.0216E+03 g/L Carbon

(1036.3 - 14.74458) (1)/(1) (12) =

+8.5130E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3067

Date: 10/23/98

Time: 04:36:59

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.79 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	4.60	100.00
3	1.01	24.20	80.99
4	1.51	360.00	91.93
5	2.00	515.40	41.79
6	2.50	644.50	20.03
7	3.00	717.20	10.14
8	3.50	762.30	5.92
9	4.00	792.20	3.77
10	4.50	813.10	2.57
11	5.00	828.60	1.87
12	5.50	840.80	1.45
13	6.00	850.40	1.13
14	6.50	858.60	0.96
15	7.00	865.00	0.74
16	7.50	870.40	0.62
17	8.00	875.70	0.61
18	8.50	880.00	0.49
19	9.00	884.60	0.52
20	9.50	888.00	0.38
21	10.00	892.00	0.45
22	10.50	895.50	0.39

USER INPUT BLANK VALUE

BLANK VALUE = 29.29193 micrograms carbon

BLANK FACTOR = 29.29193 / 10.4989 = +2.8E+00 ug/min Carbon

SAMPLE RESULTS:

(895.5 - 29.29219) (1)/(1) =

+6.662E+02 g/L Carbon

(895.5 - 29.29219) (1)/(1) (12) =

+7.218E+01 Molar Carbon

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

Sample Run By:

KR MONTEITH

00000

LABCORE Completed Worklist Report for Worklist# 26707

Analyst: krm

Instrument: CARB2

Book#: 25N12D

Method: LA-342-100 Rev/Mod F-1

Worklist Comment: AW101 LAW TICTOC jds

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	LIQUID	1	1.50e+0	1.500	ug/mL
1 BLNK	0		@TICTOC1 TOC-02	LIQUID	1	n/a		ug/mL
2 STD	0		@TICTOC1 TIC-02	LIQUID	6.02e2	5.89e+2	97.841	% Recovery
2 STD	0		@TICTOC1 TOC-02	LIQUID	n/a	n/a		% Recovery
3 SAMPLE	S98T003058	0	@TICTOC1 TIC-02	LIQUID	N/A	4.88e+3	5.000	ug/mL
4 SPK	S98T003058	0	@TICTOC1 TIC-02	LIQUID	100	98.4	98.400	% Recovery
4 SPK	S98T003058	0	@TICTOC1 TOC-02	LIQUID	100	n/a		% Recovery

Final page for worklist# 26707

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

LABCORE Data Entry Template for Worklist# 26707

Analyst: KRM Instrument: CARB2 Book# 251121

Method: LA-342-100 Rev/Mod _____

Worklist Comment: AW101 LAW TICTOC jds TIC ONLY

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	LIQUID		
2 STD			@TICTOC1	LIQUID		
3 SAMPLE	S98T003058 0		@TICTOC1	LIQUID	98000554	AW-101 LAW
	Analytes Requested: TIC-02					
4 SPK	S98T003058 0		@TICTOC1	LIQUID		

Final page for worklist # 26707

[Signature]
Analyst Signature

10-23-98
Date

[Signature]
Analyst Signature

11/5/98
Date

Data Entry Comments:

WORKBOOK PAGE: BLANK1

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.0000	N/A
BLNK	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	13.2	N/A
26707	µg of Carbon from Baseline (C2)	14.7	N/A
Test Code			
@TIC/TOC1			
Matrix			
LIQUID			
Batch Number			
98005316			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample #			
BLANK			
Instrument Code			
CARB2			
Prepared By			
CJO			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
11/05/98			
Analysis Date			
10/23/98			
Analysis Time	Method Detection Limit in µg/mL	5	40
03:50 AM			
Sample Point	µg of Carbon	1.50E+00	0.00E+00
AW 101			

Data Entered By:	CJO	Date:	11/05/98
Signature of Chemist:	N/A	Date:	

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	N/A
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in μg (C1)	603.7	N/A
26707	μg of Carbon from Baseline (C2)	14.7	0
Test Code	Standard Book Number	25N12D	N/A
@TIC/TOC1	Standard Value ($\mu\text{g}/\text{mL}$)	602	ERR

Matrix
LIQUID
Batch Number
98005316
Rerun
0
Sample Prep
N/A
Sample #
STD
Instrument Code
CARB2
Prepared By
CJO
Chemist
MJL
Analyst
KRM
Date Complete
11/05/98
Analysis Date
10/23/98
Analysis Time
03:50 AM
Sample Point
AW 101

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

% Recovery = QC Found / QC Actual * 100

ERR ERR

ERR

		TIC	TOC
Analysis Time	Method Detection Limit in $\mu\text{g}/\text{mL}$	5	40
03:50 AM	QC Actual in $\mu\text{g}/\text{mL}$	6.02E+02	ERR
Sample Point	ERR	5.89E+02	ERR
AW 101	Percent Standard Recovery	97.8	ERR

Data Entered By:	CJO	Date:	11/05/98
Signature of Chemist:	N/A	Date:	

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

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

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	0.1000	N/A
SAMPLE	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	503	N/A
26707	µg of Carbon from Baseline (C2)	14.7	0
Test Code			
@TICTOC1			
Matrix			
LIQUID			
Batch Number			
98005316			
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 #			
S98T003058			
Instrument Code			
CARB2			
Prepared By			
CJO			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
11/05/98			
Analysis Date			
10/23/98			
Analysis Time	Method Detection Limit in µg/mL		
03:50 AM			
Sample Point			
AW 101			

ERR *****

ERR

TIC	TOC
5	40
4.88E+03	ERR

ERR *****

Data Entered By:	CJO	Date:	11/05/98
Signature of Chemist:	<i>MJL</i>	Date:	

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

LIQUIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	0.1000	N/A
Work List	Final Coulometer Reading in µg (C1)	503	N/A
26707	Spiked Vial Data		
Test Code	Sample Volume in mL (SPK SS)	0.1000	N/A
@TIC/TOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	N/A
Matrix	Final Coulometer Reading in µg (C2)	799.2	N/A
LIQUID	Spike Book Number	25N12D	N/A
Batch Number	Spike Standard Value in µg/mL (SPK CONC)	602	ERR
98005316	µg C in baseline (BL)	14.7	N/A
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = ((C2-BL) - (C1-BL) * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100		
S98T003058			
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			
CJO			
Chemist			
MJL			
Analyst			
KRM			
Date Complete			
11/05/98			
Analysis Date			
10/23/98			
Analysis Time			
03:50 AM	QC Actual in µg/mL	6.02E+02	ERR
Sample Point	QC Found in µg/mL	5.92E+02	ERR
AW 101	Percent Spike Recovery	98.4	ERR

Data Entered By:	CJO	Date:	11/05/98
Signature of Chemist:	<i>MA</i>	Date:	

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 10/22/98

Time: 21:21:33

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.90	100.00
3	1.01	2.20	59.09
4	1.50	3.40	35.29
5	2.00	4.10	17.07
6	2.50	4.90	16.33
7	3.00	5.50	10.91
8	3.50	6.30	12.70
9	4.00	6.80	7.35
10	4.50	7.50	9.33
11	5.00	8.00	6.25
12	5.50	8.80	9.09
13	6.00	9.20	4.35
14	6.50	9.80	6.12
15	7.00	10.50	6.67
16	7.50	11.10	5.41
17	8.00	11.60	4.31
18	8.50	12.40	6.45
19	9.00	12.80	3.13
20	9.50	13.40	4.48
21	10.00	14.00	4.29
22	10.50	14.70	4.76

BLANK VALUE = 14.7 micrograms carbon

BLANK FACTOR = 14.7 / 10.4989 =

+1.40E+00

ug/min Carbon

Sample Run By:

KR MONTEITH

00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 682 TO 686.

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: BLK

Date: 10/23/98

Time: 00:59:39

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.4 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.08	0.00	0.00
2	0.51	1.40	100.00
3	1.01	3.30	57.58
4	1.50	4.30	23.26
5	2.00	5.10	15.69
6	2.50	6.00	15.00
7	3.00	6.50	7.69
8	3.50	6.90	5.80
9	4.00	7.50	8.00
10	4.50	8.00	6.25
11	5.00	8.40	4.76
12	5.50	8.80	4.55
13	6.00	9.30	5.38
14	6.50	9.70	4.12
15	7.00	10.10	3.96
16	7.50	10.70	5.61
17	8.00	11.00	2.73
18	8.50	11.40	3.51
19	9.00	11.80	3.39
20	9.50	12.30	4.07
21	10.00	12.80	3.91
22	10.50	13.20	3.03

USER INPUT BLANK VALUE

BLANK VALUE = 14.69846 micrograms carbon

BLANK FACTOR = 14.69846 / 10.4989 = +1.4E+00 ug/min Carbon

SAMPLE RESULTS:

(13.2 - 14.6972) (1)/(1) =

< 5.00 E-3 g/L Carbon

(13.2 - 14.6972) (1)/(1) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV.2.0

Sample: STD

Date: 10/23/98

Time: 00:32:17

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.4 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.08	0.00	0.00
2	0.51	0.50	100.00
3	1.01	4.00	87.50
4	1.50	103.40	96.13
5	2.00	273.40	62.18
6	2.50	403.10	32.18
7	3.00	484.00	16.71
8	3.50	530.90	8.83
9	4.00	557.80	4.82
10	4.50	572.50	2.57
11	5.00	581.70	1.58
12	5.50	587.50	0.99
13	6.00	591.70	0.71
14	6.50	594.60	0.49
15	7.00	597.00	0.40
16	7.50	598.50	0.25
17	8.00	600.00	0.25
18	8.50	601.00	0.17
19	9.00	601.80	0.13
20	9.50	602.60	0.13
21	10.00	603.20	0.10
22	10.50	603.70	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 14.69846 micrograms carbon

BLANK FACTOR = 14.69846 / 10.4989 =

+1.4E+00

ug/min Carbon

SAMPLE RESULTS:

(603.7 - 14.69603) (1)/(1000) =

+5.890E-01 g/L Carbon

(603.7 - 14.69603) (1)/(1000) (12) =

+4.908E-02 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOG REV 2.0

Sample: S98T3058

Date: 10/23/98

Time: 03:38:47

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.4 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.08	0.00	0.00
2	0.50	0.30	100.00
3	1.01	2.00	85.00
4	1.50	64.80	96.91
5	2.00	191.50	66.16
6	2.50	301.50	36.48
7	3.00	378.80	20.41
8	3.50	423.60	10.58
9	4.00	449.10	5.68
10	4.50	466.10	3.65
11	5.00	475.80	2.04
12	5.50	482.20	1.33
13	6.00	486.70	0.92
14	6.50	490.00	0.67
15	7.00	493.00	0.61
16	7.50	495.20	0.44
17	8.00	496.90	0.34
18	8.50	498.70	0.36
19	9.00	499.80	0.22
20	9.50	501.00	0.24
21	10.00	502.00	0.20
22	10.50	503.00	0.20

USER INPUT BLANK VALUE

BLANK VALUE = 14.69846 micrograms carbon

BLANK FACTOR = 14.69846 / 10.4989 = +1.4E+00 ug/min Carbon

SAMPLE RESULTS:

(503 - 14.69859) (1) / (1) = +4.883E+02 g/L Carbon
 (503 - 14.69859) (1) / (1) (12) = +4.069E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

HNF-1652 REV. 0

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T3058SPK

Date: 10/23/98

Time: 03:50:56

Sample Size = 1 ul.

Dil Factor = 1

Blank ID # =

Blank Value = 1.4 ug/minute C

Analyst :

KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.08	0.00	0.00
2	0.51	1.10	100.00
3	1.01	3.00	63.33
4	1.51	100.50	97.01
5	2.00	342.30	70.64
6	2.50	523.60	34.63
7	3.00	631.70	17.11
8	3.50	692.50	8.78
9	4.00	727.80	4.85
10	4.50	748.00	2.70
11	5.00	760.50	1.64
12	5.50	769.00	1.11
13	6.00	775.50	0.84
14	6.50	780.30	0.62
15	7.00	784.00	0.47
16	7.50	787.20	0.41
17	8.00	790.00	0.35
18	8.50	792.20	0.28
19	9.00	794.30	0.26
20	9.50	796.10	0.23
21	10.00	797.80	0.21
22	10.50	799.20	0.18

USER INPUT BLANK VALUE

BLANK VALUE = 14.69846 micrograms carbon

BLANK FACTOR = 14.69846 / 10.4989 =

+1.4E+00

ug/min Carbon

SAMPLE RESULTS:

(799.2 - 14.69861) (1)/(1) =

+7.845E+02 g/L Carbon

(799.2 - 14.69861) (1)/(1) (12) =

+6.538E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

LABCORE Completed Worklist Report for Worklist# 26619

Analyst: knt

Instrument: TOC01

Book#: _____

Method: LA-344-105 Rev/Mod F-Ø

Worklist Comment: AW101 LAW, TOC-01, STD: TOC= 0.200 -2.0- 0.200mL skm

Seq	Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK	0		TOC-01	LIQUID	1	1.50E+0	1.500	ug/mL
2	STD	0		TOC-01	LIQUID	3.00E+03	2.92E+3	97.333 %	Recovery
3	SAMPLE	S98T003058	0	TOC-01	LIQUID	N/A	3.21E+03	55.000	ug/mL
4	SPK	S98T003058	0	TOC-01	LIQUID	1.00E+02	9.06E+01	90.600 %	Recovery
5	SAMPLE	S98T003059	0	TOC-01	LIQUID	N/A	2.90E+03	55.000	ug/mL
6	SAMPLE	S98T003060	0	TOC-01	LIQUID	N/A	2.30E+03	55.000	ug/mL
7	SAMPLE	S98T003061	0	TOC-01	LIQUID	N/A	5.42E+03	55.000	ug/mL
8	SAMPLE	S98T003062	0	TOC-01	LIQUID	N/A	5.77E+03	55.000	ug/mL

Final page for worklist# 26619

Analyst Signature _____

Date _____

Analyst Signature _____

Date 10-26-98

Reviewer Signature MLA

Date 10/27/98

LABCORE Data Entry Template for Worklist# 26619

Analyst: KNT Instrument: TOC01 Book # 26N12-F CHECK

Method: LA-344-105 Rev/Mod F-0

Worklist Comment: AW101 LAW, TOC-01, STD: TOC = 0.200 -2.0- 0.200mL skm
650m Pen/hr
@ 30cm
Red screened low
risk THIS 10/12/98

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			TOC-01	LIQUID			N/A	ug/mL
		2 STD			TOC-01	LIQUID			N/A	ug/mL
98000554	AW-101 LAW	3 SAMPLE	S98T003058	0	TOC-01	LIQUID	N/A			ug/mL
98000554	AW-101 LAW	4 SPK	S98T003058	0	TOC-01	LIQUID			N/A	ug/mL
98000554	AW-101 LAW	5 SAMPLE	S98T003059	0	TOC-01	LIQUID	N/A			ug/mL
98000554	AW-101 LAW	6 SAMPLE	S98T003060	0	TOC-01	LIQUID	N/A			ug/mL
98000554	AW-101 LAW	7 SAMPLE	S98T003061	0	TOC-01	LIQUID	N/A			ug/mL
98000554	AW-101 LAW	8 SAMPLE	S98T003062	0	TOC-01	LIQUID	N/A			ug/mL

Final page for worklist # 26619

Kin Thomas 10-21-98
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

WORKBOOK PAGE: BLANK1

TOC : LA-344-105 (E-0)

LIQUIDS

		BLNK
Type	Sample Volume in mL (SS)	0.200
BLNK	H2SO4 Volume in mL (VR)	0.000
Work List	Volume Injected in mL (VI)	0.200
26619	Dilution Factor (calculated) (DF)	1.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Blank (C1)	3.3
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID		
Batch Number		
98005222	µg of Carbon = C1-C2	
Rerun		
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
Sample Prep		
N/A		
Sample #		
BLK		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
KNT		
Date Complete		
10/26/98		
Analysis Date		
10/21/98		
Analysis Time	Method Detection Limit in µg/mL	5.00E+00
03:45 PM		
Sample Point	µg of Carbon	1.50E+00
AW101		

Data Entered By:

JRO

Date:

10/26/98

Signature of Chemist:

NA

Date:

TOC : LA-344-105 (E-0)

LIQUIDS

		STD
Type	Sample Volume in mL (SS)	0.200
STD	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26619	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon Found (C1)	54.8
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID	Standard Book Number	26N12F
Batch Number	Standard Value (µg/ml)	3000
98005222		
Rerun		
0	$\mu\text{g of Carbon/mL} = (C1 - C2) * DF * DDF / VI$	
Sample Prep		
N/A	Method Detection Limit (µg/mL) = $1 \mu\text{g C} * DF * DDF / VI$	
Sample #		
26N12F		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
KNT		
Date Complete		
10/26/98		
Analysis Date		
10/21/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
03:45 PM	QC Actual in µg/mL	3.00E+03
Sample Point	QC Found in µg/mL	2.91E+03
AW101	Percent Standard Recovery	97.2

Data Entered By:	JRO	Date:	10/26/98
Signature of Chemist:	<i>NA</i>	Date:	

TOC : LA-344-105 (E-0)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26619	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	60.2
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID		
Batch Number		
98005222		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T003058		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
KNT		
Date Complete		
10/26/98		
Analysis Date		
10/21/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
03:45 PM		
Sample Point	µg of Carbon/mL	3.21E+03
AW101		

Data Entered By:	JRO	Date:	10/26/98
Signature of Chemist:	<i>NA</i>	Date:	

TOC : LA-344-105 (E-0)

LIQUIDS

SPIKE

Type	Sample Vial Data		Spiked Vial Data	
SPK	Sample Volume in mL (SS)	0.200	Was the sample dilution used? (yes/no)	YES
Work List	H2SO4 Volume in mL (VR)	2.000	Sample Volume in mL (SPK SS)	0.400
26619	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.000
Test Code	µg of Carbon in Sample (C1)	60.2	Amount of Spike Std. in mL (SPK VOL)	0.400
TOC-01	µg of Carbon from Baseline (C2)	1.8	Volume Injected in mL (SPK VI)	0.200
Matrix			µg C in Sample + Spike (C3)	302.9
LIQUID			Pre-Spike Dilution Factor (PDF)	11.00
Batch Number			Spike Book Number	26N12F
98005222			Spike Value in µg/ml	3000
Rerun				
0	Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI			
Sample Prep	Sample Correction Factor (SAM CF) = (SS + VR) / (VI)			
N/A	Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)			
Sample #	QC Actual in µg/mL = Spike Value (µg/mL)			
S98T003058	QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)/(SS CF)/(PDF)] / (SPK VOL)			
Instrument Code	Percent Spike Recovery = (QC Found) / (QC Actual) * 100			
TOC01				
Prepared By				
JRO				
Chemist				
MJL				
Analyst				
KNT				
Date Complete				
10/26/98				
Analysis Date				
10/21/98				
Analysis Time				
03:45 PM	QC Actual in µg/mL			3.00E+03
Sample Point	QC Found in µg/mL			2.72E+03
AW101	Percent Spike Recovery			90.6

Data Entered By:

JRO

Date: 10/26/98

Signature of Chemist:

NA

Date:

WORKBOOK PAGE: SAM5

TOC : LA-344-105 (E-0)

LIQUIDS

SAMPLE

Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26619	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	54.5
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID		
Batch Number		
98005222		
Rerun	$\mu\text{g of Carbon/mL} = (C1 - C2) * DF * DDF / VI$	
0		
Sample Prep	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
N/A		
Sample #		
S98T003059		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
KNT		
Date Complete		
10/26/98		
Analysis Date		
10/21/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
03:45 PM		
Sample Point	µg of Carbon/mL	2.90E+03
AW101		

Data Entered By:

JRO

Date:

10/26/98

Signature of Chemist:

N/A

Date:

SAMPLE.WB1 REV 2.0

344105ML

TOC : LA-344-105 (E-0)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26619	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	43.6
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID		
Batch Number		
98005222		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T003060		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
KNT		
Date Complete		
10/26/98		
Analysis Date		
10/21/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
03:45 PM		
Sample Point	µg of Carbon/mL	2.30E+03
AW101		

Data Entered By:	JRO	Date:	10/26/98
Signature of Chemist:	<i>N/A</i>	Date:	

TOC : LA-344-105 (E-0)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26619	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	100.4
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID		
Batch Number		
98005222		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T003061		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
KNT		
Date Complete		
10/26/98		
Analysis Date		
10/21/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
03:45 PM		
Sample Point	µg of Carbon/mL	5.42E+03
AW101		

Data Entered By:	JRO	Date:	10/26/98
Signature of Chemist:	<i>NA</i>	Date:	

SAMPLE.WB1 REV.2.0

344105ML

TOC : LA-344-105 (E-0)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26619	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	106.7
Matrix	µg of Carbon from Baseline (C2)	1.8
LIQUID		
Batch Number		
98005222		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T003062		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
KNT		
Date Complete		
10/26/98		
Analysis Date		
10/21/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
03:45 PM		
Sample Point	µg of Carbon/mL	5.77E+03
AW101		

Data Entered By:

JRO

Date:

10/26/98

Signature of Chemist:

NA

Date:

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV. 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 10/23/98

Time: 12:37:06

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.30	66.67
3	1.51	0.80	62.50
4	2.01	0.90	11.11
5	2.51	1.10	18.18
6	3.01	1.20	8.33
7	3.51	1.30	7.69
8	4.01	1.40	7.14
9	4.51	1.50	6.67
10	5.01	1.60	6.25
11	5.51	1.60	0.00
12	6.01	1.70	5.88
13	6.51	1.80	5.56
14	7.00	1.80	0.00

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.004883 =

+2.6E-01 ug/min Carbon

Sample Run By:

KN THOMAS

Kim Thomas 10-21-98

00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 697 TO 705

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: 26N12-F

Date: 10/23/98

Time: 12:48:34

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2569636 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.01	19.20	99.48
3	1.50	44.30	56.66
4	2.00	51.50	13.98
5	2.50	52.90	2.65
6	3.00	53.60	1.31
7	3.50	53.70	0.19
8	4.00	54.00	0.56
9	4.50	54.20	0.37
10	5.00	54.30	0.18
11	5.50	54.30	0.00
12	6.00	54.50	0.37
13	6.50	54.60	0.18
14	7.00	54.80	0.36

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7:004883 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(54.8 - 1.3) (11)/(200) =

+2.91E+00 g/L Carbon

(54.8 - 1.3) (11)/(200) (12) =

+2.43E-01 Molar Carbon

Sample Run By:

KN THOMAS

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV. 2.0

Sample: BLK

Date: 10/23/98

Time: 13:13:19

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = .2569636 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.60	50.00
3	1.51	1.00	40.00
4	2.01	1.30	23.08
5	2.51	1.50	13.33
6	3.01	1.70	11.76
7	3.51	1.90	10.53
8	4.01	2.20	13.64
9	4.50	2.40	8.33
10	5.00	2.50	4.00
11	5.51	2.70	7.41
12	6.01	3.00	10.00
13	6.51	3.20	6.25
14	7.00	3.30	3.03

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.004883 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(3.3 - 1.8) (1)/(200) =

+7.5E-03

g/L Carbon

(3.3 - 1.8) (1)/(200) (12) =

+6.2E-04

Molar Carbon

Sample Run By:

KN THOMAS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T003058

Date: 10/23/98

Time: 13:53:01

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2569636 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		0.30	0.00
2	1.01		19.10	98.43
3	1.51		45.20	57.74
4	2.01		53.40	15.36
5	2.51		56.10	4.81
6	3.01		57.30	2.09
7	3.51		58.00	1.21
8	4.01		58.40	0.68
9	4.51		58.80	0.68
10	5.01		59.10	0.51
11	5.51		59.40	0.51
12	6.01		59.60	0.34
13	6.51		59.90	0.50
14	7.00		60.20	0.50

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.004883 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(0.2 - 1.799984) (11)/(200) =

+3.21E+00 g/L Carbon

(0.2 - 1.799984) (11)/(200) (12) =

+2.68E-01 Molar Carbon

Sample Run By:

KN THOMAS

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: S98T003058SPK

Date: 10/23/98

Time: 14:02:46

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2569636 ug/minute_C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	129.30	99.77
3	1.51	253.50	48.99
4	2.01	286.80	11.61
5	2.51	295.70	3.01
6	3.01	298.50	0.94
7	3.51	299.90	0.47
8	4.00	300.60	0.23
9	4.51	301.10	0.17
10	5.01	301.60	0.17
11	5.51	302.00	0.13
12	6.01	302.30	0.10
13	6.51	302.60	0.10
14	7.00	302.90	0.10

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.004883 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(302.9 - 1.799984) (11)/(200) =

+1.656E+01 g/L Carbon

(302.9 - 1.799984) (11)/(200) (12) =

+1.380E+00 Molar Carbon

Sample Run By:

KN THOMAS

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T003059

Date: 10/23/98

Time: 14:13:35

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2569636 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	23.80	98.74
3	1.50	42.60	44.13
4	2.00	48.40	11.98
5	2.50	50.50	4.16
6	3.00	51.50	1.94
7	3.50	52.10	1.15
8	4.00	52.50	0.76
9	4.50	52.90	0.76
10	5.00	53.30	0.75
11	5.50	53.60	0.56
12	6.00	53.90	0.56
13	6.50	54.20	0.55
14	7.00	54.50	0.55

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.004883 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(54.5 - 1.799263) (11)/(200) =

+2.90E+00 g/L Carbon

(54.5 - 1.799263) (11)/(200) (12) =

+2.42E-01 Molar Carbon

Sample Run By:

KN THOMAS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T003060

Date: 10/23/98

Time: 14:27:31

Sample Size = 200 uL

Lil Factor = 11

Elank ID # = BASE

Elank Value = .2569636 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

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

1	0.51	0.30	0.00
2	1.01	24.70	98.79
3	1.51	35.60	30.62
4	2.00	38.80	8.25
5	2.50	40.20	3.48
6	3.00	40.90	1.71
7	3.50	41.40	1.21
8	4.00	41.70	0.72
9	4.50	42.10	0.95
10	5.00	42.40	0.71
11	5.50	42.70	0.70
12	6.00	43.10	0.93
13	6.50	43.30	0.46
14	7.00	43.60	0.69

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.004883 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(43.6 - 1.799733) (11)/(200) =

+2.30E+00 g/L Carbon

(43.6 - 1.799733) (11)/(200) (12) =

+1.92E-01 Molar Carbon

Sample Run By:

KN THOMAS

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T003061

Date: 10/23/98

Time: 14:36:58

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2569636 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.51	0.40	0.00
2	1.01	61.90	99.35
3	1.51	84.70	26.92
4	2.01	92.20	8.13
5	2.51	95.10	3.05
6	3.01	96.50	1.45
7	3.50	97.40	0.92
8	4.00	98.00	0.61
9	4.50	98.50	0.51
10	5.00	98.80	0.30
11	5.50	99.30	0.50
12	6.00	99.60	0.30
13	6.50	100.00	0.40
14	7.00	100.40	0.40

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.004883 =

+2.6E-01 ug/min Carbon

SAMPLE RESULTS:

(100.4 - 1.799514) (11)/(200) =

+5.423E+00 g/L Carbon

(100.4 - 1.799514) (11)/(200) (12) =

+4.519E-01 Molar Carbon

Sample Run By:

KN THOMAS

00000

HNF-1652 REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0

Sample: S98T003062

Date: 10/23/98

Time: 14:47:12

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2569636 ug/minute C

Analyst : KN THOMAS

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	1.20	0.00
2	1.01	70.40	98.30
3	1.51	90.60	22.30
4	2.01	97.90	7.46
5	2.51	100.80	2.88
6	3.01	102.20	1.37
7	3.51	103.20	0.97
8	4.01	103.80	0.58
9	4.51	104.40	0.57
10	5.01	105.00	0.57
11	5.51	105.40	0.38
12	6.01	105.90	0.47
13	6.51	106.20	0.28
14	7.00	106.70	0.47

BLANK VALUE = 1.8 micrograms carbon

BLANK FACTOR = 1.8 / 7.004883 =

+2.6E-01

ug/min Carbon

SAMPLE RESULTS:

(106.7 - 1.799984) (11)/(200) =

+5.770E+00 g/L Carbon

(106.7 - 1.799984) (11)/(200) (12) =

+4.808E-01 Molar Carbon

Sample Run By:

KN THOMAS

00000

LABCORE Completed Worklist Report for Worklist# 26401

Analyst: slh

Instrument: CARB2

Book#: _____

Method: LA-344-105 Rev/Mod F-Ø

Worklist Comment: AW101 LAW, TOC-01 STD: TOC= 0.200 - 2.0 - 0.200mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0	TOC-01	LIQUID	1	3.00E-1	0.300	ug/mL
2 STD	0	TOC-01	LIQUID	3.00E+03	2.95E+3	98.333 % Recovery	
3 SAMPLE	S98T002779 0	TOC-01	LIQUID	N/A	3.58E+03	55.000	ug/mL
4 DUP	S98T002779 0	TOC-01	LIQUID	3.58E+3	3.70E+3	3.297	RPD
5 SPK	S98T002779 0	TOC-01	LIQUID	1.00E+02	9.58E+01	95.800 % Recovery	
6 SAMPLE	S98T002780 0	TOC-01	LIQUID	N/A	2.82E+03	55.000	ug/mL
7 DUP	S98T002780 0	TOC-01	LIQUID	2.82E+3	3.90E+3	32.143	RPD
8 TRIPL	S98T002780 0	TOC-01	LIQUID	2.82E+3	3.67E+3	26.194	RPD
9 SAMPLE	S98T002781 0	TOC-01	LIQUID	N/A	2.44E+03	55.000	ug/mL
10 DUP	S98T002781 0	TOC-01	LIQUID	2.44E+3	3.31E+3	30.261	RPD
11 TRIPL	S98T002781 0	TOC-01	LIQUID	2.44E+3	3.55E+3	37.062	RPD
12 SAMPLE	S98T002794 0	TOC-01	LIQUID	N/A	2.37E+02	55.000	ug/mL
13 DUP	S98T002794 0	TOC-01	LIQUID	2.37E+2	2.15E+2	9.735	RPD

Final page for worklist# 26401

Analyst Signature _____ Date _____

10/22/98
Analyst Signature _____ Date _____

10/27/98
Reviewer Signature _____ Date _____

LABCORIE Data Entry Template for Worklist# 26401

Analyst: SLH Instrument: TOC01 Book# 26N12-F
 Method: LA-344-105 Rev/Mod _____ * within dose + distance limits
 Worklist Comment: AW101 LAW, TOC-01 STD: TOC = 0.200 - 2.0 - 0.200mL skm SLH

S Type	Sample#	R	Test	Matrix	Group#	Project
1 BLNK			TOC-01	LIQUID		
2 STD			TOC-01	LIQUID		
3 SAMPLE	S98T002779 0		TOC-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: TOC-01					
4 DUP	S98T002779 0		TOC-01	LIQUID		
5 SPK	S98T002779 0		TOC-01	LIQUID		
6 SAMPLE	S98T002780 0		TOC-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: TOC-01					
7 DUP	S98T002780 0		TOC-01	LIQUID		
8 SAMPLE	S98T002781 0		TOC-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: TOC-01					
9 DUP	S98T002781 0		TOC-01	LIQUID		
10 SAMPLE	S98T002794 0		TOC-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: TOC-01					
11 DUP	S98T002794 0		TOC-01	LIQUID		

Final page for worklist # 26401

Andrew Howard Barton
 Analyst Signature Date
 10.17.98

 Analyst Signature Date

Data Entry Comments:

Ran Trp on S98T002780 + S98T002781

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

WORKBOOK PAGE: BLANK1

TOC : LA-344-105 (E-0)

LIQUIDS

		BLNK
Type	Sample Volume in mL (SS)	0.200
BLNK	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Blank (C1)	2
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID		
Batch Number		
98004979	µg of Carbon = C1-C2	
Rerun		
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
Sample Prep		
N/A		
Sample #		
BLK		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:00 AM		
Sample Point	µg of Carbon	3.00E-01
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>NA</i>	Date:	

TOC : LA-344-105 (E-0)

LIQUIDS

		STD
Type	Sample Volume in mL (SS)	0.200
STD	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon Found (C1)	55.4
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID	Standard Book Number	26N12F
Batch Number	Standard Value (µg/ml)	3000
98004979		
Rerun		
0	$\mu\text{g of Carbon/mL} = (C1 - C2) * DF * DDF / VI$	
Sample Prep		
N/A	Method Detection Limit ($\mu\text{g/mL}$) = $1 \mu\text{g C} * DF * DDF / VI$	
Sample #		
STD		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in $\mu\text{g/mL}$	5.50E+01
01:00 AM	QC Actual in $\mu\text{g/mL}$	3.00E+03
Sample Point	QC Found in $\mu\text{g/mL}$	2.95E+03
AW101	Percent Standard Recovery	98.5

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>N#</i>	Date:	

WORKBOOK PAGE: SAM3

TOC : LA-344-105 (E-0)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	66.7
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID		
Batch Number		
98004979		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T002779		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:00 AM		
Sample Point	µg of Carbon/mL	3.58E+03
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>NA</i>	Date:	

SAMPLE.WB1 REV.2.0

344105ML

WORKBOOK PAGE: DUP4

TOC : LA-344-105 (E-0)

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	0.200
DUP	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	68.9
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID	Result from Sample Page	3.58E+3
Batch Number		
98004979		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T002779		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:00 AM		
Sample Point	µg of Carbon/mL	3.70E+03
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>N/A</i>	Date:	

WORKBOOK PAGE: SPIKES

TOC : LA-344-105 (E-0)

LIQUIDS

SPIKE

Type	Sample Vial Data		Spiked Vial Data	
SPK	Sample Volume in mL (SS)	0.200	Was the sample dilution used? (yes/no)	YES
Work List	H2SO4 Volume in mL (VR)	2.000	Sample Volume in mL (SPK SS)	0.400
26401	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.000
Test Code	µg of Carbon in Sample (C1)	66.7	Amount of Spike Std. in mL (SPK VOL)	0.400
TOC-01	µg of Carbon from Baseline (C2)	1.7	Volume Injected in mL (SPK VI)	0.200
Matrix			µg C in Sample + Spike (C3)	107.9
LIQUID			Pre-Spike Dilution Factor (PDF)	11.00
Batch Number			Spike Book Number	23N12D
98004979			Spike Value in µg/ml	769
Rerun				
0	Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI			
Sample Prep	Sample Correction Factor (SAM CF) = (SS + VR) / (VI)			
N/A	Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)			
Sample #				
S98T002779	QC Actual in µg/mL = Spike Value (µg/mL)			
Instrument Code	QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)			
TOC01	Percent Spike Recovery = (QC Found) / (QC Actual) * 100			
Prepared By				
JDS				
Chemist				
MJL				
Analyst				
SLH				
Date Complete				
10/22/98				
Analysis Date				
10/17/98				
Analysis Time				
01:00 AM	QC Actual in µg/mL		7.69E+02	
Sample Point	QC Found in µg/mL		7.37E+02	
AW101	Percent Spike Recovery		95.8	

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>N/A</i>	Date:	

SPIKE.WB1 REV 2.0

344105ML

712

WORKBOOK PAGE: SAM6

TOC : LA-344-105 (E-0)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	52.9
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID		
Batch Number		
98004979		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T002780		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:00 AM		
Sample Point	µg of Carbon/mL	2.82E+03
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>NH</i>	Date:	

WORKBOOK PAGE: DUP7

TOC : LA-344-105 (E-0)

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	0.200
DUP	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	72.6
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID	Result from Sample Page	2.82E+3
Batch Number		
98004979		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T002780		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:00 AM		
Sample Point	µg of Carbon/mL	3.90E+03
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: TRIPL8

TOC : LA-344-105 (E-0)

LIQUIDS

		TRIPL
Type	Sample Volume in mL (SS)	0.200
TRIPL	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	68.4
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID	Result from Sample Page	2.82E+3
Batch Number	Result from Duplicate Page	3.90E+3
98004979		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T002780		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:00 AM		
Sample Point	µg of Carbon/mL	3.67E+03
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>NA</i>	Date:	

SAMPLE.WB1 REV2.0

344105ML

TOC : LA-344-105 (E-0)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	46
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID		
Batch Number		
98004979		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T002781		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:00 AM		
Sample Point	µg of Carbon/mL	2.44E+03
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>N/A</i>	Date:	

WORKBOOK PAGE: DUP10

TOC : LA-344-105 (E-0)

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	0.200
DUP	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	61.8
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID	Result from Sample Page	2.44E+3
Batch Number		
98004979		
Rerun	$\mu\text{g of Carbon/mL} = (C1-C2) * DF * DDF / VI$	
0		
Sample Prep	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
N/A		
Sample #		
S98T002781		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:00 AM		
Sample Point	µg of Carbon/mL	3.31E+03
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>NA</i>	Date:	

SAMPLE.WB1 REV 2.0

344105ML

717

WORKBOOK PAGE: TRIPL11

TOC : LA-344-105 (E-0)

LIQUIDS

		TRIPL
Type	Sample Volume in mL (SS)	0.200
TRIPL	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	66.2
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID	Result from Sample Page	2.44E+3
Batch Number	Result from Duplicate Page	3.31E+3
98004979		
Rerun	$\mu\text{g of Carbon/mL} = (C1-C2) * DF * DDF / VI$	
0		
Sample Prep	Method Detection Limit = $1 \mu\text{g C} * DF * DDF / VI$	
N/A		
Sample #		
S98T002781		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:00 AM		
Sample Point	µg of Carbon/mL	3.55E+03
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>MA</i>	Date:	

SAMPLE.WB1 REV2.0

344105ML

TOC : LA-344-105 (E-0)

LIQUIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.200
SAMPLE	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	6
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID		
Batch Number		
98004979		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T002794		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01.00 AM		
Sample Point	µg of Carbon/mL	2.37E+02
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: DUP13

TOC : LA-344-105 (E-0)

LIQUIDS

		DUP
Type	Sample Volume in mL (SS)	0.200
DUP	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26401	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon in Sample (C1)	5.6
Matrix	µg of Carbon from Baseline (C2)	1.7
LIQUID	Result from Sample Page	2.37E+2
Batch Number		
98004979		
Rerun	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
0		
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
S98T002794		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/22/98		
Analysis Date		
10/17/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:00 AM		
Sample Point	µg of Carbon/mL	2.14E+02
AW101		

Data Entered By:	JDS	Date:	10/22/98
Signature of Chemist:	<i>MJL</i>	Date:	

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT TICTOC REV 2.0 <<< BLANK ANALYSIS >>>

Sample: BASE

Date: 10/16/98

Time: 20:44:37

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	0.00	0.00
3	1.51	0.00	0.00
4	2.01	0.00	0.00
5	2.51	100.00	100.00
6	3.01	57.14	57.14
7	3.51	22.22	22.22
8	4.01	10.00	10.00
9	4.50	9.09	9.09
10	5.00	15.38	15.38
11	5.50	7.14	7.14
12	6.00	0.00	0.00
13	6.50	6.67	6.67
14	7.00	6.25	6.25

Time: 10/16/98 20:44:37

Time: 10/16/98 20:44:37

Time: 10/16/98 20:44:37

Time: 10/16/98 20:44:37

Time: 10/16/98 20:44:37

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Time: 10/16/98 20:44:37

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 (7.003052) ± 2.4E-01

ug/min Carbon

Sample Run By:

SL HOOD

10-1798 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 721 TO 734

721

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 230

Sample: STD

Date: 10/16/98 Time: 21:28:27

Sample Size = 200 μ L Analyst: SL HOOD
 Dil Factor = 11 Min Readings = 14
 Blank ID # = BASE Max Readings = 14
 Blank Value = .2427518 μ g/minute-C % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.01	0.10	0.00
3	1.50	1.30	92.31
4	2.00	20.90	93.78
5	3.50	39.80	47.49
6	3.01	48.20	17.43
7	3.51	51.80	6.95
8	4.00	53.40	3.00
9	4.50	54.10	1.29
10	5.00	54.60	0.92
11	5.51	54.90	0.55
12	6.01	55.00	0.18
13	6.50	55.20	0.36
14	7.00	55.40	0.36

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052

+2.4E-01

 μ g/min Carbon

SAMPLE RESULTS:

(55.4 - 1.700415) (1.1) / (200) =

+2.95E+00

g/L Carbon

(55.4 - 1.700415) (1.1) / (200) (12) =

+2.46E-01

Molar Carbon

Sample Run By:

SL HOOD

00000

.200 ml 26N12-F

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK

Date: 10/16/98

Time: 21:39:06

Sample Size = 200 μ L

Dil Factor = 1

Blank ID # = BASE

Blank Value = .2427513 μ g/minute C

Analyst: SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.01	0.10	0.00
3	1.50	0.30	0.00
4	2.00	0.60	66.67
5	2.50	0.90	50.00
6	3.00	1.10	33.33
7	3.51	1.20	18.18
8	4.01	1.40	8.33
9	4.51	1.50	14.29
10	5.01	1.60	6.67
11	5.51	1.70	6.25
12	6.01	1.80	5.88
13	6.50	1.90	5.56
14	7.00	2.00	5.26

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01

 μ g/min Carbon

SAMPLE RESULTS:

(2 - 1.700415) (1) / (200) =

(2 - 1.700415) (1) / (200) (12) =

< 5.00 E-3 g/L Carbon

< 4.17 E-4 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002779

Date: 10/16/98

Time: 21:49:17

Sample Size = 200 μ L

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2427513 μ g/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.01	0.20	50.00
3	1.50	8.30	97.59
4	2.01	33.50	75.22
5	2.51	47.80	29.92
6	3.01	54.90	12.93
7	3.51	59.10	7.11
8	4.01	61.70	4.21
9	4.50	63.20	2.37
10	5.00	64.30	1.71
11	5.50	65.10	1.23
12	6.00	65.70	0.91
13	6.50	66.30	0.90
14	7.00	66.70	0.60

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01 μ g/min Carbon

SAMPLE RESULTS:

(66.7 - 1.7) (11) / (200) =

(66.7 - 1.7) (11) / (200) (12) =

+3.57E+00

g/L Carbon

+2.98E-01

Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T02779 DUP

Date: 10/16/98

Time: 21:59:04

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2427513 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.60	33.33
3	1.51	6.30	90.48
4	2.01	35.10	82.05
5	2.51	49.10	28.51
6	3.01	56.10	12.48
7	3.51	60.20	6.81
8	4.01	63.10	4.60
9	4.50	64.90	2.77
10	5.00	66.20	1.96
11	5.50	67.10	1.34
12	6.00	67.90	1.18
13	6.50	68.40	0.73
14	7.00	68.90	0.73

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01

ug/min Carbon

SAMPLE RESULTS:

(68.9 - 1.700207) (11) / (200) =

+3.70E+00

g/L Carbon

(68.9 - 1.700207) (11) / (200) (12) =

+3.08E-01

Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T02779 SPK

Date: 10/16/98

Time: 22:09:51

Sample Size = 200 mL

Dil Factor = 22

Blank ID # = BASE

Blank Value = .2427513 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.50	0.00
2	1.01	0.70	28.57
3	1.51	26.50	97.36
4	2.01	65.90	59.79
5	2.51	80.40	18.03
6	3.01	88.60	9.26
7	3.51	94.40	6.14
8	4.01	98.50	4.16
9	4.50	101.40	2.86
10	5.00	103.50	2.03
11	5.50	105.10	1.52
12	6.00	106.20	1.04
13	6.51	107.10	0.84
14	7.00	107.90	0.74

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01 ug/min Carbon

SAMPLE RESULTS:

(107.9 - 1.700415) (22) / (200) =

(107.9 - 1.700415) (22) / (200) (12) =

+1.168E+01 g/L Carbon

+9.735E-01 Molar Carbon

Sample Run By:

SL HOOD

00000

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

Sample: S98T002780

Date: 10/16/98

Time: 22:21:03

Sample Size = 200 μ L

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2427513 μ g/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis	Time	Coulometer	% Difference
1	0.51		0.50	0.00
2	1.01		0.70	28.57
3	1.50		15.30	95.42
4	1.00		31.50	51.43
5	1.50		39.20	19.64
6	1.00		43.60	10.09
7	1.50		46.30	5.83
8	1.00		48.20	3.94
9	1.50		49.50	2.63
10	1.00		50.50	1.98
11	1.50		51.30	1.56
12	1.00		52.00	1.35
13	1.50		52.50	0.95
14	1.00		52.90	0.76

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01 μ g/min Carbon

SAMPLE RESULTS:

(52.9 - 1.700178) (11) / (200) =

(52.9 - 1.700178) (11) / (200) (12) =

+2.82E+00 g/L Carbon

+2.35E-01 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T02780 DUP

Date: 10/16/98

Time: 22:37:32

Sample Size = 200 mL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2427513 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.40	0.00
2	1.01	0.60	33.33
3	1.51	20.90	97.13
4	2.01	44.60	53.14
5	2.50	54.90	18.76
6	3.01	61.20	10.29
7	3.51	65.00	5.85
8	4.01	67.30	3.42
9	4.51	68.80	2.18
10	5.00	70.00	1.71
11	5.50	70.90	1.27
12	6.00	71.60	0.98
13	6.50	72.10	0.69
14	7.00	72.60	0.69

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01

ug/min Carbon

SAMPLE RESULTS:

(72.6 - 1.700207) (11)/(200) =

+3.90E+00

g/L Carbon

(72.6 - 1.700207) (11)/(200) (12) =

+3.25E-01

Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T02780 TRP

Date: 10/16/98

Time: 22:46:59

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2427513 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.01	0.50	40.00
3	1.51	17.80	97.19
4	2.01	41.30	56.90
5	2.51	51.20	19.34
6	3.01	57.00	10.18
7	3.51	60.50	5.79
8	4.01	63.00	3.97
9	4.50	64.60	2.48
10	5.00	65.70	1.67
11	5.50	66.70	1.50
12	6.00	67.40	1.04
13	6.50	67.90	0.74
14	7.00	68.40	0.73

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01 ug/min Carbon

SAMPLE RESULTS:

(68.4 - 1.700237) (11)/(200) =

(68.4 - 1.700237) (11)/(200) (12) =

+3.67E+00 g/L Carbon
+3.06E-01 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002781

Date: 10/16/98

Time: 22:56:08

Sample Size = 200 µL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2427513

ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis	Time	Coulometer	% Difference
1	0.51	0.40	0.00	
2	1.01	0.70	42.86	
3	1.51	15.80	95.57	
4	2.01	28.40	44.37	
5	2.51	34.70	18.16	
6	3.01	38.20	9.16	
7	3.51	40.50	5.68	
8	4.00	42.00	3.57	
9	4.50	42.90	2.10	
10	5.00	43.80	2.05	
11	5.50	44.40	1.35	
12	6.00	45.00	1.33	
13	6.50	45.40	0.88	
14	7.00	46.00	1.30	

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01 ug/min Carbon

SAMPLE RESULTS:

(46 - 1.700178) (11)/(200) =

+2.44E+00 g/L Carbon

(46 - 1.700178) (11)/(200) (12) =

+2.03E-01 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV: 2.0

Sample: S98T02781 DUE

Date: 10/16/98

Time: 23:07:32

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2427513

ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.10	63.64
3	1.51	22.50	95.11
4	2.00	39.80	43.47
5	2.50	47.70	16.56
6	3.00	52.30	8.80
7	3.50	55.20	5.25
8	4.00	57.10	3.33
9	4.50	58.40	2.23
10	5.00	59.30	1.52
11	5.50	60.10	1.33
12	6.00	60.70	0.99
13	6.50	61.30	0.98
14	7.00	61.80	0.81

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01 ug/min Carbon

SAMPLE RESULTS:

(61.8 - 1.69997) (11.) / (200) =

+3.31E+00 g/L Carbon

(61.8 - 1.69997) (11.) / (200) (12) =

+2.75E-01 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T02781 TRF

Date: 10/16/98

Time: 23:17:46

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2427513 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Time	Coulometer	% Difference
1	0.51	0.50	0.00
2	1.01	1.10	54.55
3	1.51	22.00	95.00
4	1.01	41.90	47.49
5	1.50	50.60	17.19
6	1.01	55.90	9.48
7	1.50	59.20	5.57
8	1.01	61.30	3.43
9	1.51	62.60	2.08
10	1.01	63.60	1.57
11	1.51	64.50	1.40
12	1.01	65.10	0.92
13	1.50	65.60	0.76
14	1.00	66.20	0.91

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01 ug/min Carbon

SAMPLE RESULTS:

(66.2 - 1.700415) (1) / (200) =
 (66.2 - 1.700415) (1) / (200) (12) =

+3.55E+00 g/L Carbon
 +2.96E-01 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: S98T002794

Date: 10/16/98

Time: 23:27:12

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2427513 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.50	0.00
2	1.01	0.80	37.50
3	1.51	1.30	38.46
4	2.01	1.90	31.58
5	2.51	2.40	20.83
6	3.01	2.80	14.29
7	3.51	3.20	12.50
8	4.01	3.60	11.11
9	4.51	4.00	10.00
10	5.00	4.40	9.09
11	5.50	4.80	8.33
12	6.00	5.20	7.69
13	6.50	5.60	7.14
14	7.00	6.00	6.67

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01 ug/min Carbon

SAMPLE RESULTS:

(6 - 1.700237) (11) / (200) =

+2.4E-01

g/L Carbon

(6 - 1.700237) (11) / (200) (12) =

+2.0E-02

Molar Carbon

Sample Run By:

SL HOOD

00000

HNF-1652 REV. C

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T02794 DWP

Date: 10/16/98

Time: 23:41:22

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASE

Blank Value = .2427513 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	0.80	37.50
3	1.51	1.30	38.46
4	2.01	1.80	27.78
5	2.51	2.30	21.74
6	3.01	2.70	14.81
7	3.51	3.00	10.00
8	4.01	3.50	14.29
9	4.51	3.80	7.89
10	5.00	4.20	9.52
11	5.50	4.60	8.70
12	6.00	4.90	6.12
13	6.50	5.30	7.55
14	7.00	5.60	5.36

BLANK VALUE = 1.7 micrograms carbon

BLANK FACTOR = 1.7 / 7.003052 =

+2.4E-01 ug/min Carbon

SAMPLE RESULTS:

(5.6 - 1.70003) (11)/(200) =

+2.1E-01 g/L Carbon
+1.8E-02 Molar Carbon

Sample Run By:

SL HOOD

00000

LABCORE Completed Worklist Report for Worklist# 26520

Analyst: slh

Instrument: TOC01

Book#: 26N12F

Method: LA-344-105 Rev/Mod F-Ø

Worklist Comment: AW101 LAW TOC-01 skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	TOC-01	SOLID	3.00e3	3.01e3	100.333 % Recovery	
2 BLNK-PREP	0	TOC-01	SOLID	1	1.7	1.700 ug/g	
3 SAMPLE	S98T002758 0 W	TOC-01	SOLID	N/A	5.05e3	500.000 ug/g	
4 DUP	S98T002758 0 W	TOC-01	SOLID	5.05e3	4.94e3	2.202 RPD	
5 SPK	S98T002758 0 W	TOC-01	SOLID	7.69e2	7.1e2	92.328 % Recovery	
6 SAMPLE	S98T002759 0 W	TOC-01	SOLID	N/A	5.87e3	500.000 ug/g	
7 SAMPLE	S98T002760 0 W	TOC-01	SOLID	N/A	5.40e3	500.000 ug/g	

Final page for worklist# 26520

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

LABCORE Data Entry Template for Worklist# 26520

Analyst: SLH Instrument: TOC01 Book# 26N12-F CHECK
 Method: LA-344-105 Rev/Mod _____ 250 mL/min/hr @ 30 cm
 Worklist Comment: AW101 LAW, TOC-01, STD: .200- 2.0- .200mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK-PREP			TOC-01	SOLID		
2 STD			TOC-01	SOLID		
3 SAMPLE	S98T002758 0 W		TOC-01	SOLID	98000261	AW-101 LAW
	Analytes Requested: TOC-01					
4 DUP	S98T002758 0 W		TOC-01	SOLID		
5 SPK	S98T002758 0 W		TOC-01	SOLID		
6 SAMPLE	S98T002759 0 W		TOC-01	SOLID	98000261	AW-101 LAW
	Analytes Requested: TOC-01					
7 SAMPLE	S98T002760 0 W		TOC-01	SOLID	98000261	AW-101 LAW
	Analytes Requested: TOC-01					

Final page for worklist # 26520

Sandra Hood Boedjelt
 Analyst Signature Date 10-19-98

 Analyst Signature Date

Data Entry Comments:

TOC : LA-344-105 (E-0)

SOLIDS

		PREP-BLNK
Type	Sample Volume in mL (SS)	2.000
PREP-BLNK	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26520	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	1
TOC-01	µg of Carbon in Blank (C1)	4
Matrix	µg of Carbon from Baseline (C2)	5.7
SOLID		
Batch Number		
	µg of Carbon = C1-C2	
Rerun		
0	Method Detection Limit (µg/g) = $1 \mu\text{g C} * \text{DF} * 1000 / (\text{VI} * \text{D g/L})$	
Sample Prep		
N/A		
Sample #		
PREP BLK		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/21/98		
Analysis Date		
10/19/98		
Analysis Time	Method Detection Limit in ug/g	5.50E+03
05:15 AM		
Sample Point	µg of Carbon	1.70E+00
AW101 LAW		

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NA</i>	Date:	

TOC : LA-344-105 (E-0)

LIQUIDS

		STD
Type	Sample Volume in mL (SS)	0.200
STD	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26520	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon Found (C1)	60.4
Matrix	µg of Carbon from Baseline (C2)	5.7
LIQUID	Standard Book Number	26N12F
Batch Number	Standard Value (µg/ml)	3000
Rerun		
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
Sample Prep		
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
Sample #		
STD		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/21/98		
Analysis Date		
10/19/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
05:15 AM	QC Actual in µg/mL	3.00E+03
Sample Point	QC Found in µg/mL	3.01E+03
AW101 LAW	Percent Standard Recovery	100.3

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NH</i>	Date:	

WORKBOOK PAGE: SAM3

TOC : LA-344-105 (E-0)

SOLIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26520	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	5.008
TOC-01	µg of Carbon in Sample (C1)	10.3
Matrix	µg of Carbon from Baseline (C2)	5.7
SOLID		
Batch Number		
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/g) = 1 µg C * DF * 1000 / (VI * D g/L)	
N/A		
Sample #		
S98T002758		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/21/98		
Analysis Date		
10/19/98		
Analysis Time	Method Detection Limit in ug/g	1.10E+03
05:15 AM		
Sample Point	µg of Carbon/g	5.05E+03
AW101 LAW		

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NA</i>	Date:	

SAMPLE.WB1 REV 2.0

344105ML

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WORKBOOK PAGE: DUP4

TOC : LA-344-105 (E-0)

SOLIDS

DUP

Type	Sample Volume in mL (SS)	2.000
DUP	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26520	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	5.008
TOC-01	µg of Carbon in Sample (C1)	10.2
Matrix	µg of Carbon from Baseline (C2)	5.7
SOLID	Result from Sample Page	2.53E4
Batch Number		
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/g) = 1 µg C * DF * 1000 / (VI * D g/L)	
N/A		
Sample #		
S98T002758		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/21/98		
Analysis Date		
10/19/98		
Analysis Time	Method Detection Limit in ug/g	1.10E+03
05:15 AM		
Sample Point	µg of Carbon/g	4.94E+03
AW101 LAW		

Data Entered By:

JDS

Date:

10/21/98

Signature of Chemist:

N/A

Date:

WORKBOOK PAGE: SPIKE5

TOC : LA-344-105 (E-0)

SOLIDS

SPIKE

Type	Sample Vial Data	Spiked Vial Data	SPIKE
SPK	Sample Volume in mL (SS) 2.000	Was the sample dilution used? (yes/no) NO	
Work List	H2SO4 Volume in mL (VR) 0.200	Sample Volume in mL (SPK SS) 0.400	
25688	Volume Injected in mL (VI) 0.200	H2SO4 Volume in mL (SPK VR) 0.200	
Test Code	µg of Carbon in Sample (C1) 10.3	Amount of Spike Std. in mL (SPK VOL) 0.400	
TOC-01	µg of Carbon from Baseline (C2) 5.7	Volume Injected in mL (SPK VI) 0.200	
Matrix		µg C in Sample + Spike (C3) 64.5	
SOLID		Pre-Spike Dilution Factor (PDF) 1.00	
Batch Number		Spike Book Number 23N12D	
		Spike Value in µg/ml 769	
Rerun			
0	Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI		
Sample Prep	Sample Correction Factor (SAM CF) = (SS + VR) / (VI)		
N/A	Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)		
Sample #			
S98T002422	QC Actual in µg/mL = Spike Value (µg/mL)		
Instrument Code	QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)		
TOC01	Percent Spike Recovery = (QC Found) / (QC Actual) * 100		
Prepared By			
JRO			
Chemist			
MJL			
Analyst			
SLH			
Date Complete			
08/26/98			
Analysis Date			
08/25/98			
Analysis Time			
03:50 AM	QC Actual in µg/mL	7.69E+02	
Sample Point	QC Found in µg/mL	7.10E+02	
ER-311	Percent Spike Recovery	92.3	

Data Entered By:	JRO	Date:	08/26/98
Signature of Chemist:	<i>NA</i>	Date:	

SPIKE WB1 REV 2.0

344105ML

WORKBOOK PAGE: SAM6

TOC : LA-344-105 (E-0)

SOLIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26520	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	5.056
TOC-01	µg of Carbon in Sample (C1)	11.1
Matrix	µg of Carbon from Baseline (C2)	5.7
SOLID		
Batch Number		
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/g) = 1 µg C * DF * 1000 / (VI * D g/L)	
N/A		
Sample #		
S98T002759		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/21/98		
Analysis Date		
10/19/98		
Analysis Time	Method Detection Limit in ug/g	1.09E+03
05:15 AM		
Sample Point	µg of Carbon/g	5.87E+03
AW101 LAW		

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NH</i>	Date:	

SAMPLE.WB1 REV 2.0

344105ML

742

WORKBOOK PAGE: SAM6

TOC : LA-344-105 (E-0)

SOLIDS

SAM

Type	Sample Volume in mL (SS)	2.000
SAM	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26520	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	5.093
TOC-01	µg of Carbon in Sample (C1)	10.7
Matrix	µg of Carbon from Baseline (C2)	5.7
SOLID		
Batch Number		
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/g) = 1 µg C * DF * 1000 / (VI * D g/L)	
N/A		
Sample #		
S98T002760		
Instrument Code		
TOC01		
Prepared By		
JDS		
Chemist		
MJL		
Analyst		
SLH		
Date Complete		
10/21/98		
Analysis Date		
10/19/98		
Analysis Time	Method Detection Limit in ug/g	1.08E+03
05:15 AM		
Sample Point	µg of Carbon/g	5.40E+03
AW101 LAW		

Data Entered By:	JDS	Date:	10/21/98
Signature of Chemist:	<i>NH</i>	Date:	

SAMPLE.WB1 REV 2.0

344105ML

743

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE

Date: 10/18/98

Time: 22:22:05

Sample Size = 200 μ L

Dil Factor = 1

Blank ID # = BASE

Blank Value = N/A

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis	Time	Coulometer	% Difference
1	5.51		0.30	0.00
2	1.01		0.50	40.00
3	1.51		1.00	50.00
4	1.00		1.70	41.18
5	2.50		2.30	26.09
6	1.00		2.60	11.54
7	1.50		3.10	16.13
8	4.00		3.40	8.82
9	4.50		3.90	12.82
10	1.00		4.40	11.36
11	1.50		4.60	4.35
12	1.00		5.10	9.80
13	1.50		5.30	3.77
14	1.00		5.70	7.02

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.002075 =

+8.1E-01

ug/min Carbon

Sample Run By:

SL HOOD

00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
 COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 744 751

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD

Date: 10/19/98

Time: 02:27:03

Sample Size = 200 μ L

Dil Factor = 11

Blank ID # = BASE

Blank Value = .8140444 μ g/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.80	75.00
3	1.51	22.70	96.48
4	2.01	40.40	43.81
5	2.51	48.30	16.36
6	3.01	52.40	7.82
7	3.51	55.00	4.73
8	4.00	56.70	3.00
9	4.50	57.70	1.73
10	5.00	58.50	1.37
11	5.50	59.20	1.18
12	6.00	59.50	0.50
13	6.50	60.00	0.83
14	7.00	60.40	0.66

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.002075 =

+8.1E-01

 μ g/min Carbon

SAMPLE RESULTS:

(60.4 - 5.701431) (11)/(200) =

+3.01E+00

g/L Carbon

(60.4 - 5.701431) (11)/(200) (12) =

+2.51E-01

Molar Carbon

Sample Run By:

SL HOOD

00000

745

200 ml
26N12-F

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.10

Sample: BLK PREP

Date: 10/19/98

Time: 03:12:07

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASE

Blank Value = .814(444 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

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

1	0.51	0.30	0.00
2	1.01	0.50	40.00
3	1.51	0.90	44.44
4	2.01	1.40	35.71
5	2.51	1.80	22.22
6	3.01	2.00	10.00
7	3.51	2.30	13.04
8	4.00	2.50	8.00
9	4.50	2.80	10.71
10	5.00	3.00	6.67
11	5.50	3.30	9.09
12	6.00	3.50	5.71
13	6.50	3.70	5.41
14	7.00	4.00	7.50

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.002075 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(4 - 5.701565) (1.1)/(200) =

< 5.00 E-3 g/L Carbon

(4 - 5.701565) (1.1)/(200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002758

Date: 10/19/98

Time: 03:21:02

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASE

Blank Value = .8140444 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

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

1	0.51	0.30	0.00
2	1.01	0.50	40.00
3	1.51	1.00	87.50
4	2.01	1.60	33.33
5	2.51	2.10	15.49
6	3.01	2.70	7.79
7	3.51	3.20	6.10
8	4.00	3.60	4.65
9	4.50	4.00	4.44
10	5.00	4.20	2.17
11	5.50	4.50	3.16
12	6.00	4.70	2.06
13	6.50	10.00	3.00
14	7.00	10.30	2.91

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.002075 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(10.3 - 5.702248) (1.1) / (200) =

+2.53E-02 g/L Carbon

(10.3 - 5.702248) (1.1) / (200) (12) =

+2.11E-03 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T02758 DUP Date: 10/19/98

Time: 03:34:03

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASE

Blank Value = .8140444 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	1.51	0.10	0.00
2	1.01	0.40	75.00
3	1.51	0.70	89.19
4	2.00	0.00	38.33
5	2.50	0.80	11.76
6	2.00	0.70	11.69
7	2.50	0.20	6.10
8	4.00	0.50	3.53
9	4.50	0.90	4.49
10	5.00	0.20	3.26
11	5.50	0.40	2.13
12	6.00	0.70	3.09
13	6.50	0.90	2.02
14	7.00	10.20	2.94

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.002075 =

+8.1E-01

ug/min Carbon

SAMPLE RESULTS:

(10.2 - 5.701441) (1.1) / (200) =

+2.47E-02

g/L Carbon

(10.2 - 5.701441) (1.1) / (200) (12) =

+2.06E-03

Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV-2.0

Sample: S98T02758 SPK

Date: 10/19/98

Time: 03:43:30

Sample Size = 200 uL

Dil Factor = 2.5

Blank ID # = BASE

Blank Value = .8140444 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis	Time	Coulometer	% Difference
1	0.51		0.20	0.00
2	1.01		0.80	75.00
3	1.51		27.30	97.07
4	2.01		44.90	39.20
5	2.51		52.60	14.64
6	3.01		56.90	7.56
7	3.51		59.60	4.53
8	4.01		61.10	2.45
9	4.51		62.10	1.61
10	5.01		62.80	1.11
11	5.51		63.40	0.95
12	6.01		63.80	0.63
13	6.51		64.20	0.62
14	7.00		64.50	0.47

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.002075 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(64.5 - 5.702236) (2.5) / (200) =
 (64.5 - 5.702236) (2.5) / (200) (12) =

+7.35E-01 g/L Carbon
 +6.12E-02 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T002759

Date: 10/19/98

Time: 03:52:27

Sample Size = 200 µL

Dil Factor = 1.1

Blank ID # = BASE

Blank Value = .8140444 ug/minute C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	== Analysis Time ==	== Kilometer ==	== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.50	60.00
3	1.51	4.40	88.64
4	2.00	6.60	33.33
5	2.50	7.80	15.38
6	3.01	8.40	7.14
7	3.51	9.00	6.67
8	4.01	9.30	3.23
9	4.50	9.70	4.12
10	5.00	10.00	3.00
11	5.50	10.30	2.91
12	6.00	10.60	2.83
13	6.50	10.80	1.85
14	7.00	11.10	2.70

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.002075 =

+8.1E-01 ug/min Carbon

SAMPLE RESULTS:

(11.1 - 5.701577) (1.1) / (200) =

+2.97E-02 g/L Carbon

(11.1 - 5.701577) (1.1) / (200) (12) =

+2.47E-03 Molar Carbon

Sample Run By:

SL HOOD

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: S98T002760

Date: 10/19/98

Time: 04:02:29

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASH

Blank Value = .8140444 ug/minute.C

Analyst : SL HOOD

Min Readings = 14

Max Readings = 14

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	4.10	90.24
4	2.01	6.20	33.87
5	2.51	7.40	16.22
6	3.01	8.10	8.64
7	3.51	8.60	5.81
8	4.01	9.00	4.44
9	4.51	9.40	4.26
10	5.01	9.60	2.08
11	5.51	9.90	3.03
12	6.01	10.10	1.98
13	6.50	10.40	2.88
14	7.00	10.70	2.80

BLANK VALUE = 5.7 micrograms carbon

BLANK FACTOR = 5.7 / 7.002075 =

+8.1E-01

ug/min Carbon

SAMPLE RESULTS:

(10.7 - 5.702248) (1.1)/(200)

+2.75E-02

g/L Carbon

(10.7 - 5.702248) (1.1)/(200) (12)

+2.29E-03

Molar Carbon

Sample Run By:

SL HOOD

00000

LABCORE Completed Worklist Report for Worklist# 26702

Analyst: rdm Instrument: TOC01 Book#: _____

Method: LA-344-105 Rev/Mod _____

Worklist Comment: AW101 LAW, TOC-01 STD: .200- 2.0- .200mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK-PREP	0	TOC-01	SOLID	1	5.00E-1	0.500	ug/g
2 STD	0	TOC-01	SOLID	3.00E+03	2.91E+3	97.000 % Recovery	
3 SAMPLE	S98T003092 0 W	TOC-01	SOLID	N/A	1.23E+04	1100.000	ug/g
4 SPK	S98T003092 0 W	TOC-01	SOLID	1.00E+02	9.29E+01	92.900 % Recovery	
5 SAMPLE	S98T003093 0 W	TOC-01	SOLID	N/A	3.55E+04	1120.000	ug/g
6 SAMPLE	S98T003094 0 W	TOC-01	SOLID	N/A	4.14E+04	1090.000	ug/g
7 SAMPLE	S98T003095 0 W	TOC-01	SOLID	N/A	7.05E+03	1070.000	ug/g
8 SAMPLE	S98T003096 0 W	TOC-01	SOLID	N/A	6.20E+03	1070.000	ug/g

Final page for worklist# 26702

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date 11/17/98

LABCORE Data Entry Template for Worklist# 26702

Analyst: NR Instrument: TOC01 Book# 26712E

Method: LA-344-105 Rev/Mod E-0

Worklist Comment: AW101 LAW, TOC-01 STD: .200- 2.0- .200mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK-PREP			TOC-01	SOLID		
2 STD			TOC-01	SOLID		
3 SAMPLE	S98T003092 0 W		TOC-01	SOLID	98000554	AW-101 LAW
Analytes Requested: TOC-01						
4 SPK	S98T003092 0 W		TOC-01	SOLID		
5 SAMPLE	S98T003093 0 W		TOC-01	SOLID	98000554	AW-101 LAW
Analytes Requested: TOC-01						
6 SAMPLE	S98T003094 0 W		TOC-01	SOLID	98000554	AW-101 LAW
Analytes Requested: TOC-01						
7 SAMPLE	S98T003095 0 W		TOC-01	SOLID	98000554	AW-101 LAW
Analytes Requested: TOC-01						
8 SAMPLE	S98T003096 0 W		TOC-01	SOLID	98000554	AW-101 LAW
Analytes Requested: TOC-01						

Final page for worklist # 26702

Moh Kim 10/25/98
Analyst Signature Date

[Signature] 11-3-98
Analyst Signature Date

Data Entry Comments:

WORKBOOK PAGE: BLANK1

TOC : LA-344-105 (E-0)

SOLIDS

		BLNK-PREP
Type	Sample Volume in mL (SS)	2.000
BLNK-PREP	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26702	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	1
TOC-01	µg of Carbon in Blank (C1)	4.5
Matrix	µg of Carbon from Baseline (C2)	5
SOLID		
Batch Number	µg of Carbon = C1-C2	
98005301		
Rerun		
0	Method Detection Limit (µg/g) = $1 \mu\text{g C} * \text{DF} * 1000 / (\text{VI} * \text{D g/L})$	
Sample Prep		
N/A		
Sample #		
BLK		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
RDM		
Date Complete		
11/03/98		
Analysis Date		
10/25/98		
Analysis Time	Method Detection Limit in ug/g	5.50E+03
01:33 AM		
Sample Point	µg of Carbon	5.00E-01
AW101		

Data Entered By:

JRO

Date:

11/03/98

Signature of Chemist:

N/A

Date:

WORKBOOK PAGE: STD2

TOC : LA-344-105 (E-0)

LIQUIDS

		STD
Type	Sample Volume in mL (SS)	0.200
STD	H2SO4 Volume in mL (VR)	2.000
Work List	Volume Injected in mL (VI)	0.200
26702	Dilution Factor (calculated) (DF)	11.000
Test Code	Digest Dilution Factor (DDF)	1
TOC-01	µg of Carbon Found (C1)	57.9
Matrix	µg of Carbon from Baseline (C2)	5
LIQUID	Standard Book Number	26N12F
Batch Number	Standard Value (µg/ml)	3000
98005301		
Rerun		
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI	
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI	
N/A		
Sample #		
26N12F		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
RDM		
Date Complete		
11/03/98		
Analysis Date		
10/25/98		
Analysis Time	Method Detection Limit in µg/mL	5.50E+01
01:33 AM	QC Actual in µg/mL	3.00E+03
Sample Point	QC Found in µg/mL	2.91E+03
AW101	Percent Standard Recovery	97.0

Data Entered By:	JRO	Date:	11/03/98
Signature of Chemist:	<i>NH</i>	Date:	

WORKBOOK PAGE: SAM3

TOC : LA-344-105 (E-0)

SOLIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26702	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	5
TOC-01	µg of Carbon in Sample (C1)	16.2
Matrix	µg of Carbon from Baseline (C2)	5
SOLID		
Batch Number		
98005301		
Rerun	$\mu\text{g of Carbon/g} = (C1-C2) * DF * 1000 / (VI * D \text{ g/L})$	
0		
Sample Prep	Method Detection Limit ($\mu\text{g/g}$) = $1 \mu\text{g C} * DF * 1000 / (VI * D \text{ g/L})$	
H2ODIG01		
Sample #		
S98T003092		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
RDM		
Date Complete		
11/03/98		
Analysis Date		
10/25/98		
Analysis Time	Method Detection Limit in $\mu\text{g/g}$	1.10E+03
01:33 AM		
Sample Point	$\mu\text{g of Carbon/g}$	1.23E+04
AW101		

Data Entered By:	JRO	Date:	11/03/98
Signature of Chemist:	<i>MJL</i>	Date:	

WORKBOOK PAGE: SPIKE4

TOC : LA-344-105 (E-0)

SOLIDS

SPIKE

Type	Sample Vial Data		Spiked Vial Data	
SPK	Sample Volume in mL (SS)	2.000	Was the sample dilution used? (yes/no)	NO
Work List	H2SO4 Volume in mL (VR)	0.200	Sample Volume in mL (SPK SS)	0.400
26702	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.200
Test Code	µg of Carbon in Sample (C1)	16.2	Amount of Spike Std. in mL (SPK VOL)	0.400
TOC-01	µg of Carbon from Baseline (C2)	5	Volume Injected in mL (SPK VI)	0.200
Matrix			µg C in Sample + Spike (C3)	67.1
SOLID			Pre-Spike Dilution Factor (PDF)	1.00
Batch Number			Spike Book Number	23N12D
98005301			Spike Value in µg/ml	769
Rerun				
0	Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI			
Sample Prep	Sample Correction Factor (SAM CF) = (SS + VR) / (VI)			
H2ODIG01	Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)			
Sample #				
S98T003092	QC Actual in µg/mL = Spike Value (µg/mL)			
Instrument Code	QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)			
TOC01	Percent Spike Recovery = (QC Found) / (QC Actual) * 100			
Prepared By				
JRO				
Chemist				
MJL				
Analyst				
RDM				
Date Complete				
11/03/98				
Analysis Date				
10/25/98				
Analysis Time				
01:33 AM	QC Actual in µg/mL		7.69E+02	
Sample Point	QC Found in µg/mL		7.15E+02	
AW101	Percent Spike Recovery		92.9	

Data Entered By:	JRO	Date:	11/03/98
Signature of Chemist:	<i>IV A</i>	Date:	

SPIKE.WB1 REV 2.0

344105ML

757

WORKBOOK PAGE: SAM5

TOC : LA-344-105 (E-0)

SOLIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26702	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	4.926
TOC-01	µg of Carbon in Sample (C1)	36.8
Matrix	µg of Carbon from Baseline (C2)	5
SOLID		
Batch Number		
98005301		
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/g) = 1 µg C * DF * 1000 / (VI * D g/L)	
H2ODIG01		
Sample #		
S98T003093		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
RDM		
Date Complete		
11/03/98		
Analysis Date		
10/25/98		
Analysis Time	Method Detection Limit in µg/g	1.12E+03
01:33 AM		
Sample Point	µg of Carbon/g	3.55E+04
AW101		

Data Entered By:	JRO	Date:	11/03/98
Signature of Chemist:	<i>N #</i>	Date:	

SAMPLE.WB1 REV 2.0

344105ML

758

WORKBOOK PAGE: SAM6

TOC : LA-344-105 (E-0)

SOLIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26702	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	5.029
TOC-01	µg of Carbon in Sample (C1)	42.9
Matrix	µg of Carbon from Baseline (C2)	5
SOLID		
Batch Number		
98005301		
Rerun	$\mu\text{g of Carbon/g} = (C1-C2) * DF * 1000 / (VI * D \text{ g/L})$	
0		
Sample Prep	Method Detection Limit ($\mu\text{g/g}$) = $1 \mu\text{g C} * DF * 1000 / (VI * D \text{ g/L})$	
H2ODIG01		
Sample #		
S98T003094		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
RDM		
Date Complete		
11/03/98		
Analysis Date		
10/25/98		
Analysis Time	Method Detection Limit in $\mu\text{g/g}$	1.09E+03
01:33 AM		
Sample Point	$\mu\text{g of Carbon/g}$	4.14E+04
AW101		

Data Entered By:	JRO	Date:	11/03/98
Signature of Chemist:	<i>NA</i>	Date:	

WORKBOOK PAGE: SAM7

TOC : LA-344-105 (E-0)

SOLIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26702	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	5.15
TOC-01	µg of Carbon in Sample (C1)	11.6
Matrix SOLID	µg of Carbon from Baseline (C2)	5
Batch Number		
98005301		
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/g) = 1 µg C * DF * 1000 / (VI * D g/L)	
H2ODIG01		
Sample #		
S98T003095		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
RDM		
Date Complete		
11/03/98		
Analysis Date		
10/25/98		
Analysis Time	Method Detection Limit in ug/g	1.07E+03
01:33 AM		
Sample Point	µg of Carbon/g	7.05E+03
AW101		

Data Entered By:	JRO	Date:	11/03/98
Signature of Chemist:	<i>WA</i>	Date:	

SAMPLE.WB1 REV 2.0

344105ML

760

WORKBOOK PAGE: SAM8

TOC : LA-344-105 (E-0)

SOLIDS

		SAMPLE
Type	Sample Volume in mL (SS)	2.000
SAMPLE	H2SO4 Volume in mL (VR)	0.200
Work List	Volume Injected in mL (VI)	0.200
26702	Dilution Factor (calculated) (DF)	1.100
Test Code	Digest grams of Solids / L (D g/L)	5.146
TOC-01	µg of Carbon in Sample (C1)	10.8
Matrix	µg of Carbon from Baseline (C2)	5
SOLID		
Batch Number		
98005301		
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)	
0		
Sample Prep	Method Detection Limit (µg/g) = 1 µg C * DF * 1000 / (VI * D g/L)	
H2ODIG01		
Sample #		
S98T003096		
Instrument Code		
TOC01		
Prepared By		
JRO		
Chemist		
MJL		
Analyst		
RDM		
Date Complete		
11/03/98		
Analysis Date		
10/25/98		
Analysis Time	Method Detection Limit in ug/g	1.07E+03
01:33 AM		
Sample Point	µg of Carbon/g	6.20E+03
AW101		

Data Entered By:	JRO	Date:	11/03/98
Signature of Chemist:	<i>MA</i>	Date:	

HNF-1652 REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TIC/IOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 10/24/98

Time: 23:14:45

Sample Size = 200 uL

Dil Factor = 1

Blank ID # = BASELINE

Blank Value = N/A

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time	Conductometer	% Difference ==
1	0.51	0.50	0.00
2	1.01	0.30	37.50
3	1.50	1.30	38.46
4	2.01	1.70	23.53
5	2.51	2.20	22.73
6	3.01	2.50	12.00
7	3.51	2.80	10.71
8	4.00	3.10	9.68
9	4.50	3.50	11.43
10	5.00	3.70	5.41
11	5.50	4.00	7.50
12	6.00	4.40	9.09
13	6.50	4.80	8.33
14	7.00	5.00	4.00

BLANK VALUE = 5 micrograms carbon

BLANK FACTOR = 5 / 7.003784 =

+7.1E-01

ug/min Carbon

Sample Run By:

RW King 10/28/98
RW KING 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 762 TO 772.

HNF-1652 REV. 0

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

Sample: STD

Date: 10/24/98

Time: 23:24:02

Sample Size = 200 uL

Dil Factor = 11

Blank ID # = BASELINE

Blank Value = .7138998 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	19.90	96.98
3	1.51	41.30	51.82
4	2.00	49.20	16.06
5	2.50	52.40	6.11
6	3.00	54.10	3.14
7	3.50	55.10	1.81
8	4.00	55.70	1.08
9	4.50	56.20	0.89
10	5.00	56.50	0.53
11	5.50	56.90	0.70
12	6.00	57.20	0.52
13	6.50	57.60	0.69
14	7.00	57.90	0.52

BLANK VALUE = 5 micrograms carbon

BLANK FACTOR = 5 / 7.003784 =

+7.1E-01 ug/min Carbon

SAMPLE RESULTS:

(57.9 - 4.999477) (11) / (200) =

+2.91E+00 g/L Carbon

(57.9 - 4.999477) (11) / (200) (12) =

+2.42E-01 Molar Carbon

Sample Run By:

RW KING

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: PREP BLK

Date: 10/25/98

Time: 01:23:48

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASELINE

Blank Value = .7138998 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

```

== Reading ==== Analysis Time ===== Coulometer ===== % Difference ==
 1           0.51           0.30           0.00
 2           1.01           0.90          66.67
 3           1.51           1.40          35.71
 4           2.01           1.70          17.65
 5           2.51           2.00          15.00
 6           3.01           2.30          13.04
 7           3.51           2.60          11.54
 8           4.01           2.90          10.34
 9           4.50           3.10           6.45
10           5.00           3.40           8.82
11           5.50           3.60           5.56
12           6.00           4.00          10.00
13           6.51           4.20           4.76
14           7.01           4.50           6.67

```

BLANK VALUE = 5 micrograms carbon

BLANK FACTOR = 5 / 7.003784 =

+7.1E-01 ug/min Carbon

SAMPLE RESULTS:

(4.5 - 5.00146) (1.1) / (200) =

< 5.00 E-3 g/L Carbon

(4.5 - 5.00146) (1.1) / (200) (12) =

< 4.17 E-4 Molar Carbon

Sample Run By:

RW KING

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T003092

Date: 10/25/98

Time: 01:33:16

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASELINE

Blank Value = .7138998 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.51	0.10	0.00
2	1.01	7.10	98.59
3	1.51	10.90	34.86
4	2.01	12.30	11.38
5	2.51	13.00	5.38
6	3.01	13.70	5.11
7	3.51	14.10	2.84
8	4.01	14.40	2.08
9	4.50	14.90	3.36
10	5.01	15.10	1.32
11	5.51	15.30	1.31
12	6.01	15.70	2.55
13	6.51	15.90	1.26
14	7.00	16.20	1.85

BLANK VALUE = 5 micrograms carbon

BLANK FACTOR = 5 / 7.003784 =

+7.1E-01 ug/min Carbon

SAMPLE RESULTS:

(16.2 - 5.000751) (1.1)/(200) =

+6.16E-02 g/L Carbon

(16.2 - 5.000751) (1.1)/(200) (12) =

+5.13E-03 Molar Carbon

Sample Run By:

RW KING

00000

HNF-1652 REV.0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T003092 SP

Date: 10/25/98

Time: 01:45:05

Sample Size = 200 uL

Dil Factor = 2.5

Blank ID # = BASELINE

Blank Value = .7138998 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.29	0.00
2	1.01	26.00	99.23
3	1.50	49.30	47.26
4	2.00	57.50	14.26
5	2.50	61.20	6.05
6	3.01	63.90	2.86
7	3.51	64.20	1.87
8	4.00	65.10	1.38
9	4.50	65.50	0.61
10	5.00	66.00	0.76
11	5.50	66.30	0.45
12	6.00	66.50	0.30
13	6.50	67.00	0.75
14	7.00	67.10	0.15

BLANK VALUE = 5 micrograms carbon

BLANK FACTOR = 5 / 7.003784 =

+7.1E-01 ug/min Carbon

SAMPLE RESULTS:

(67.1 - 5.000038) (2.5)/(200) =

+7.76E-01 g/L Carbon

(67.1 - 5.000038) (2.5)/(200) (12) =

+6.47E-02 Molar Carbon

Sample Run By:

RW KING

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T003093

Date: 10/25/98

Time: 01:53:39

Sample Size = 200 uL

Analyst : RW KING

Dil Factor = 1.1

Min Readings = 14

Blank ID # = BASELINE

Max Readings = 14

Blank Value = .7138998 ug/minute C

% Difference = 10

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

1	0.51	0.40	0.00
2	1.01	14.20	97.18
3	1.51	26.50	46.42
4	2.01	30.60	13.40
5	2.51	32.70	6.42
6	3.01	33.80	3.25
7	3.51	34.50	2.03
8	4.00	35.00	1.43
9	4.50	35.40	1.13
10	5.00	35.80	1.12
11	5.50	36.00	0.56
12	6.00	36.30	0.83
13	6.50	36.50	0.55
14	7.00	36.80	0.82

BLANK VALUE = 5 micrograms carbon

BLANK FACTOR = 5 / 7.003784

+7.1E-01 ug/min Carbon

SAMPLE RESULTS:

(36.8 - 5.000147) (1.1)/(200) =

+1.75E-01 g/L Carbon

(36.8 - 5.000147) (1.1)/(200) (12) =

+1.46E-02 Molar Carbon

Sample Run By:

RW KING

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S98T003094

Date: 10/25/98

Time: 02:02:03

Sample Size = 200 uL

Analyst : RW KING

Dil Factor = 1.1

Min Readings = 14

Blank ID # = BASELINE

Max Readings = 14

Blank Value = .7138998 ug/minute C

% Difference = 10

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

1	0.51	0.30	0.00
2	1.01	16.90	98.22
3	1.51	31.90	45.31
4	2.01	38.90	13.93
5	2.51	38.40	6.51
6	3.01	39.80	3.52
7	3.51	40.50	1.73
8	4.00	41.20	1.70
9	4.50	41.50	0.72
10	5.00	41.90	0.95
11	5.50	42.10	0.48
12	6.00	42.40	0.71
13	6.50	42.60	0.47
14	7.00	42.90	0.70

BLANK VALUE = 5 micrograms carbon

BLANK FACTOR = 5 / 7.003784 =

+7.1E-01 ug/min Carbon

SAMPLE RESULTS:

(42.9 - 5.000153) (1.1)/(200) =

+2.08E-01 g/L Carbon

(42.9 - 5.000153) (1.1)/(200) (1.2) =

+1.74E-02 Molar Carbon

Sample Run By:

RW KING

00000

HNF-1652 REV. 0

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV. 2.0

Sample: S98T003095

Date: 10/25/98

Time: 02:10:09

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASELINE

Blank Value = .7138998 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	3.90	94.87
3	1.50	6.90	43.48
4	2.00	8.30	16.87
5	2.50	8.90	6.74
6	3.00	9.40	5.32
7	3.50	9.80	4.08
8	4.00	10.00	2.00
9	4.50	10.40	3.85
10	5.00	10.60	1.89
11	5.50	10.90	2.75
12	6.00	11.10	1.80
13	6.50	11.40	2.63
14	7.00	11.60	1.72

BLANK VALUE = 5 micrograms carbon

BLANK FACTOR = 5 / 7.003784 =

+7.1E-01 ug/min Carbon

SAMPLE RESULTS:

(11.6 - 5.000038) (1.1)/(200) =

+3.63E-02 g/L Carbon

(11.6 - 5.000038) (1.1)/(200) (12) =

+3.02E-03 Molar Carbon

Sample Run By:

RW KING

00000

HNF-1652 REV 0
 TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
 TIC/TOC REV 2.0

Sample: S98T003096

Date: 10/25/98

Time: 02:20:19

Sample Size = 200 uL

Dil Factor = 1.1

Blank ID # = BASELINE

Blank Value = .7138998 ug/minute C

Analyst : RW KING

Min Readings = 14

Max Readings = 14

% Difference = 10

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

1	0.51	8.40	0.00
2	1.01	2.30	82.61
3	1.51	6.10	62.30
4	2.00	7.40	17.57
5	2.50	8.20	9.76
6	3.00	8.70	5.75
7	3.50	9.10	4.40
8	4.01	9.40	3.19
9	4.50	9.70	3.09
10	5.00	9.90	2.02
11	5.50	10.10	1.98
12	6.00	10.40	2.88
13	6.50	10.60	1.89
14	7.00	10.80	1.85

BLANK VALUE = 5 micrograms carbon

BLANK FACTOR = 5 / 7.003784 =

+7.1E-01 ug/min Carbon

SAMPLE RESULTS:

(10.8 - 5.000153) (1.1)/(200) =

+3.19E-02 g/L Carbon

(10.8 - 5.000153) (1.1)/(200) (12) =

+2.66E-03 Molar Carbon

Sample Run By:

RW KING

00000

HNF-1652 REV. 0

RADIOCHEMICAL ANALYSIS

HNF-1652 REV. 0

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LABCORE Completed Worklist Report for Worklist# 26389

Analyst: crj

Instrument: LSC03

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW101 LAW, @H3-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit	
1 STD	0	0H3-01	H3-01	LIQUID	5.43E-04	5.40E-4	99.448 % Recovery		
1 STD	0	0H3-01	H3-01E	LIQUID	1	1.32E+00	1.320 % Ct. Error		
2 BLNK	0	0H3-01	H3-01	LIQUID	1	<4.09E-4		uCi/mL	
2 BLNK	0	0H3-01	H3-01E	LIQUID	1	6.32E+00	6.320	uCi/mL	
3 SAMPLE	S98T002779	0	0H3-01	H3-01	N/A	3.85E-03	4.08E-004	uCi/mL	
3 SAMPLE	S98T002779	0	0H3-01	H3-01E	N/A	3.83E+00	1.00E-004	% Ct. Error	
4 DUP	S98T002779	0	0H3-01	H3-01	LIQUID	3.85E-3	3.73E-3	3.166 RPD	
4 DUP	S98T002779	0	0H3-01	H3-01E	LIQUID	1	3.86E+00	3.860 % Ct. Error	
5 SPK	S98T002779	0	0H3-01	H3-01	LIQUID	5.43E-04	5.20E-04	95.764 % Recovery	
6 SAMPLE	S98T002780	0	0H3-01	H3-01	LIQUID	N/A	3.92E-03	3.12E-004	uCi/mL
6 SAMPLE	S98T002780	0	0H3-01	H3-01E	LIQUID	N/A	3.53E+00	1.00E-004	% Ct. Error
7 DUP	S98T002780	0	0H3-01	H3-01	LIQUID	3.92E-3	4.06E-3	3.509 RPD	
7 DUP	S98T002780	0	0H3-01	H3-01E	LIQUID	1	3.77E+00	3.770 % Ct. Error	
8 SAMPLE	S98T002781	0	0H3-01	H3-01	LIQUID	N/A	4.26E-03	4.09E-004	uCi/mL
8 SAMPLE	S98T002781	0	0H3-01	H3-01E	LIQUID	N/A	3.72E+00	1.00E-004	% Ct. Error
9 DUP	S98T002781	0	0H3-01	H3-01	LIQUID	4.26E-3	3.94E-3	7.805 RPD	
9 DUP	S98T002781	0	0H3-01	H3-01E	LIQUID	1	3.81E+00	3.810 % Ct. Error	
10 SAMPLE	S98T002795	0	0H3-01	H3-01	LIQUID	N/A	3.13E-04	3.13E-004	uCi/mL
10 SAMPLE	S98T002795	0	0H3-01	H3-01E	LIQUID	N/A	6.11E+00	1.00E-004	% Ct. Error
11 DUP	S98T002795	0	0H3-01	H3-01	LIQUID	<3.13E-4	<3.12E-4	RPD	
11 DUP	S98T002795	0	0H3-01	H3-01E	LIQUID	1	6.37E+00	6.370 % Ct. Error	

Final page for worklist# 26389

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# 26389

Analyst: CR5 Instrument: LSC00 6580 Book# 33B57

Method: LA-218-114 Rev/Mod B-4

Worklist Comment: AW101 LAW, @H3-01 skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@H3-01	LIQUID		
2 BLNK			@H3-01	LIQUID		
3 SAMPLE	S98T002779 0		@H3-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: H3-01			, H3-01E		
4 DUP	S98T002779 0		@H3-01	LIQUID		
5 SPK	S98T002779 0		@H3-01	LIQUID		
6 SAMPLE	S98T002780 0		@H3-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: H3-01			, H3-01E		
7 DUP	S98T002780 0		@H3-01	LIQUID		
8 SAMPLE	S98T002781 0		@H3-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: H3-01			, H3-01E		
9 DUP	S98T002781 0		@H3-01	LIQUID		
10 SAMPLE	S98T002795 0		@H3-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: H3-01			, H3-01E		
11 DUP	S98T002795 0		@H3-01	LIQUID		

Final page for worklist # 26389

[Signature]
Analyst Signature

10/7/98
Date

[Signature]
Analyst Signature

10/8/98
Date

Data Entry Comments:

WORKBOOK PAGE: STD1

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS

		STANDARD
Type	Disintegrations per minute from Counter (dpm)	899.48
STD	Sample Volume in mL (SS)	0.75
Worklist	Dilution Factor (DF)	1
26389	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	23.72
@H3-01	Background Count Time in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.4861
LIQUID	% Counting Error	1.32
Batch Number	Detection Limit (Ld)	6.71
98004966	Critical Level (Lc)	1.60
Rerun	Tritium Concentration in $\mu\text{Ci/L}$	5.40E-01
0	Standard Book No.	33B57
Sample Prep	Standard Value in $\mu\text{Ci/mL}$	5.4283E-04
N/A		
Sample #	$\text{Critical Level (Lc)} = 2.33 * \text{the Square Root of (BKG cpm / BKG Time)}$ $\text{Detection Limit (Ld)} = ((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$ $\text{H3 } \mu\text{Ci/L} = (\text{dpm} * (1000\text{mL/L}) * \text{DF} * \text{DDF}) / (\text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$ $\text{H3 } \mu\text{Ci/mL} = \mu\text{Ci/L} / 1000\text{mL/L}$ $\text{Detection Limit } (\mu\text{Ci/mL}) = (\text{Ld})(\text{DF})(\text{DDF}) / [(\text{SS}) (2220000 \text{ dpm}/\mu\text{Ci})]$	
WL26389		
Instrument Code		
WC51586		
Prepared By		
SZC		
Chemist		
SAC		
Analyst	Tritium Concentration in $\mu\text{Ci/L}$	5.40E-01
CRJ		
Date Complete	Tritium Concentration in $\mu\text{Ci/mL}$	5.40E-04
10/08/98	Detection Limit in $\mu\text{Ci/mL}$	4.03E-06
Analysis Date	% Counting Error	1.32
10/07/98		
Analysis Time		
02:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date: 10/08/98
Signature of Chemist:	SAC	Date: 8/28/98

STANDARD.WB1 REV 2.0

21811NML

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WORKBOOK PAGE: BLANK2

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS/ SOLIDS

		BLANK
Type	Disintegrations per minute from Counter (dpm)	-6.74
BLNK	Sample Volume in mL (SS)	0.75
Work List	Dilution Factor (DF)	101
26389	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	23.72
@H3-01	Background Count Time in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.4839
LIQUID	% Counting Error	6.32
Batch Number	Detection Limit (Ld)	6.75
98004966	Critical Level (Lc)	1.60
Rerun	Tritium Concentration in $\mu\text{Ci/L}$ <	4.09E-01
0		
Sample Prep	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG Time)}$	
N/A	Detection Limit (Ld) = $((2.72 / \text{BKG Time}) * (2 * \text{Lc})) / \text{EFF}$	
Sample #	H3 $\mu\text{Ci/L}$ = $(\text{dpm} * (1000\text{mL/L}) * \text{DF} * \text{DDF}) / (\text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$	
WL26389	H3 $\mu\text{Ci/mL}$ = $\mu\text{Ci/L}/1000\text{mL/L}$	
Instrument Code	Detection Limit ($\mu\text{Ci/mL}$) = $(\text{Ld})(\text{DF})(\text{DDF}) / [(\text{SS})(2220000 \text{ dpm}/\mu\text{Ci})]$	
WC51586		
Prepared By	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).	
SZC		
Chemist		
SAC		
Analyst	Tritium Concentration in $\mu\text{Ci/L}$ <	4.09E-01
CRJ		
Date Complete	Tritium Concentration in $\mu\text{Ci/mL}$ <	4.09E-04
10/08/98	Detection Limit in $\mu\text{Ci/mL}$	4.09E-04
Analysis Date	% Counting Error	6.32
10/07/98		
Analysis Time		
02:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date: 10/08/98
Signature of Chemist: <i>SCCath</i>	SAC	Date: <i>8 Oct 98</i>

WORKBOOK PAGE: SAM3

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS/ SOLIDS

		SAMPLE
Type	Disintegrations per minute from Counter (dpm)	63.4
SAMPLE	Sample Volume in mL (SS)	0.75
Work List	Dilution Factor (DF)	101
26389	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	23.72
@H3-01	Background Count Time in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.4857
LIQUID	% Counting Error	3.83
Batch Number	Detection Limit (Ld)	6.72
98004966	Critical Level (Lc)	1.60
Rerun	Tritium Concentration in $\mu\text{Ci/L}$	3.85E+00
0		
Sample Prep	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG Time)}$	
N/A	Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$	
Sample #	H3 $\mu\text{Ci/L}$ = $(\text{dpm} * (1000\text{mL/L}) * \text{DF} * \text{DDF}) / (\text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$	
S98T002779	H3 $\mu\text{Ci/mL}$ = $\mu\text{Ci/L}/1000\text{mL/L}$	
Instrument Code	Detection Limit ($\mu\text{Ci/mL}$) = $(\text{Ld})(\text{DF})(\text{DDF}) / [(\text{SS})(2220000 \text{ dpm}/\mu\text{Ci})]$	
WC51586		
Prepared By		
SZC		
Chemist		
SAC		
Analyst	Tritium Concentration in $\mu\text{Ci/L}$	3.85E+00
CRJ		
Date Complete	Tritium Concentration in $\mu\text{Ci/mL}$	3.85E-03
10/08/98	Detection Limit in $\mu\text{Ci/mL}$	4.08E-04
Analysis Date	% Counting Error	3.83
10/07/98		
Analysis Time		
02:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date: 10/08/98
Signature of Chemist:	SAC	Date: 10/08/98

SAMPLE.WB1 REV 2.0

21811NML

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WORKBOOK PAGE: DUP4

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS/ SOLIDS

DUPLICATE

Type	Disintegrations per minute from Counter (dpm)	61.56
DUP	Sample Volume in mL (SS)	0.75
Work List	Dilution Factor (DF)	101
26389	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	23.72
@H3-01	Background Count Time in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.4858
LIQUID	% Counting Error	3.86
Batch Number	Detection Limit (Ld)	6.72
98004966	Critical Level (Lc)	1.60
Rerun	Tritium Concentration in $\mu\text{Ci/L}$	3.73E+00
0		
Sample Prep	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG Time)}$	
N/A	Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$	
Sample #	H3 $\mu\text{Ci/L}$ = $(\text{dpm} * (1000\text{mL/L}) * \text{DF} * \text{DDF}) / (\text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$	
S98T002779	H3 $\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Detection Limit ($\mu\text{Ci/mL}$) = $(\text{Ld})(\text{DF})(\text{DDF}) / [(\text{SS})(2220000 \text{ dpm}/\mu\text{Ci})]$	
WC51586		
Prepared By		
SZC		
Chemist		
SAC		
Analyst	Tritium Concentration in $\mu\text{Ci/L}$	3.73E+00
CRJ		
Date Complete	Tritium Concentration in $\mu\text{Ci/mL}$	3.73E-03
10/08/98	Detection Limit in $\mu\text{Ci/mL}$	4.08E-04
Analysis Date	% Counting Error	3.86
10/07/98		
Analysis Time		
02:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date:	10/08/98
Signature of Chemist:	SAC	Date:	10/08/98

SAMPLE.WB1 REV 2.0

21811NML

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WORKBOOK PAGE: SPIKE5

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS/ SOLIDS

		SPIKE
Type	dpm of Sample from Counter (dpm1)	63.4
SPK	dpm of Sample + Spike from Counter (dpm2)	320.04
Work List	Volume of Sample in Distillation Vial in mL (Svol)	1.5
26389	Volume of Spike in Distillation Vial in mL (SPK vol)	1.5
Test Code	Volume Transferred to Scintillation Vial in mL (TR vol)	0.5
@H3-01	Spike Book Number (Spk BN)	33B57
Matrix	Spike Value in $\mu\text{Ci/mL}$ (SPK val)	5.4283E-04
LIQUID	Background Count Rate in cpm (BKG cpm)	23.72
Batch Number	Background Count Time in Minutes (BKG Time)	50
98004966	Instrument Fractional Efficiency of Sample (EFF)	0.4857
Rerun	Detection Limit (Ld)	6.72
0	Critical Level (Lc)	1.60
Sample Prep	H3 $\mu\text{Ci/mL}$ in Sample Vial (Rsam)	5.71E-05
N/A	H3 $\mu\text{Ci/mL}$ in Sample + Spike Vial (Rs+s)	2.88E-04
Sample #	Vol. Ratio Sample Vol. to Total Vol. (VRsam)	5.00E-01
S98T002779	Vol. Ratio Spike Vol. to Total Vol. (VRspike)	5.00E-01
Instrument Code		
WC51586	Spk val = value taken from RCTABLE and then decayed using a $\frac{1}{2}$ life of 29.1 years	
Prepared By	Detection Limit (Ld) = $((2.72 / \text{BKG time}) + (2 * \text{Lc})) / \text{EFF}$	
SZC	Critical Level (Lc) = $2.33 * \text{the Square Root of } (\text{BKG cpm} / \text{BKG time})$	
Chemist	H3 $\mu\text{Ci/mL}$ in Sample Vial (Rsam) = $\text{dpm1} / (\text{TR vol} * (2220000 \text{dpm}/\mu\text{Ci}))$	
SAC	H3 $\mu\text{Ci/mL}$ in Sample + Spike Vial (Rs+s) = $\text{dpm2} / (\text{TR vol} * (2220000 \text{dpm}/\mu\text{Ci}))$	
Analyst	Volume Ratio of Sample Volume to Total Volume (VRsam) = $\text{Svol} / (\text{Svol} + \text{SPK vol})$	
CRJ	Volume Ratio of Spike Volume to Total Volume (VRspike) = $\text{SPK vol} / (\text{Svol} + \text{SPK vol})$	
Date Complete	QC Actual in $\mu\text{Ci/mL}$ = SPK val	
10/08/98	QC Found in $\mu\text{Ci/mL}$ = $((\text{Rs+s}) - (\text{Rsam} * \text{VRsam})) / (\text{VRspike})$	
Analysis Date	Percent Spike Recovery = $\text{QC Found} / \text{QC Actual} * 100$	
10/07/98		
Analysis Time		
02:45 PM	QC Actual in $\mu\text{Ci/mL}$	= 5.43E-04
Sample Point	QC Found in $\mu\text{Ci/mL}$	= 5.20E-04
AW-101 LAW	Percent Spike Recovery	= 95.7%

Analyst:	CRJ	Date: 10/08/98
Signature of Chemist:	SA	Date: 8/08/98

WORKBOOK PAGE: SAM6

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS/ SOLIDS

		SAMPLE
Type	Disintegrations per minute from Counter (dpm)	86.09
SAMPLE	Sample Volume in mL (SS)	1
Work List	Dilution Factor (DF)	101
26389	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	23.72
@H3-01	Background Count Time in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.4763
LIQUID	% Counting Error	3.53
Batch Number	Detection Limit (Ld)	6.85
98004966	Critical Level (Lc)	1.60
Rerun	Tritium Concentration in $\mu\text{Ci/L}$	3.92E+00
0		
Sample Prep	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG Time)}$	
N/A	Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$	
Sample #	H3 $\mu\text{Ci/L}$ = $(\text{dpm} * (1000\text{mL/L}) * \text{DF} * \text{DDF}) / (\text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$	
S98T002780	H3 $\mu\text{Ci/mL}$ = $\mu\text{Ci/L}/1000\text{mL/L}$	
Instrument Code	Detection Limit ($\mu\text{Ci/mL}$) = $(\text{Ld})(\text{DF})(\text{DDF}) / [(\text{SS})(2220000 \text{ dpm}/\mu\text{Ci})]$	
WC51586		
Prepared By		
SZC		
Chemist		
SAC		
Analyst	Tritium Concentration in $\mu\text{Ci/L}$	3.92E+00
CRJ		
Date Complete	Tritium Concentration in $\mu\text{Ci/mL}$	3.92E-03
10/08/98	Detection Limit in $\mu\text{Ci/mL}$	3.12E-04
Analysis Date	% Counting Error	3.53
10/07/98		
Analysis Time		
02:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date:	10/08/98
Signature of Chemist:	SAC	Date:	10/08/98

SAMPLE.WB1 REV 2.0

21811NML

780

WORKBOOK PAGE: DUP7

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS/ SOLIDS

DUPLICATE

Type	Disintegrations per minute from Counter (dpm)	66.9
DUP	Sample Volume in mL (SS)	0.75
Work List	Dilution Factor (DF)	101
26389	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	23.72
@H3-01	Background Count Time in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.4857
LIQUID	% Counting Error	3.77
Batch Number	Detection Limit (Ld)	6.72
98004966	Critical Level (Lc)	1.60
Rerun	Tritium Concentration in $\mu\text{Ci/L}$	4.06E+00
0		
Sample Prep	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG Time)}$	
N/A	Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$	
Sample #	H3 $\mu\text{Ci/L}$ = $(\text{dpm} * (1000\text{mL/L}) * \text{DF} * \text{DDF}) / (\text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$	
S98T002780	H3 $\mu\text{Ci/mL}$ = $\mu\text{Ci/L}/1000\text{mL/L}$	
Instrument Code	Detection Limit ($\mu\text{Ci/mL}$) = $(\text{Ld})(\text{DF})(\text{DDF}) / [(\text{SS})(2220000 \text{ dpm}/\mu\text{Ci})]$	
WC51586		
Prepared By		
SZC		
Chemist		
SAC		
Analyst	Tritium Concentration in $\mu\text{Ci/L}$	4.06E+00
CRJ		
Date Complete	Tritium Concentration in $\mu\text{Ci/mL}$	4.06E-03
10/08/98	Detection Limit in $\mu\text{Ci/mL}$	4.08E-04
Analysis Date	% Counting Error	3.77
10/07/98		
Analysis Time		
02:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date:	10/08/98
Signature of Chemist:		SAC	Date:

SAMPLE.WB1 REV 2.0

21811NML

WORKBOOK PAGE: SAM8

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS/ SOLIDS

		SAMPLE
Type	Disintegrations per minute from Counter (dpm)	70.23
SAMPLE	Sample Volume in mL (SS)	0.75
Work List	Dilution Factor (DF)	101
26389	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	23.72
@H3-01	Background Count Time in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.4837
LIQUID	% Counting Error	3.72
Batch Number	Detection Limit (Ld)	6.75
98004966	Critical Level (Lc)	1.60
Rerun	Tritium Concentration in $\mu\text{Ci/L}$	4.26E+00
0		
Sample Prep	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG Time)}$	
N/A	Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$	
Sample #	H3 $\mu\text{Ci/L}$ = $(\text{dpm} * (1000\text{mL/L}) * \text{DF} * \text{DDF}) / (\text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$	
S98T002781	H3 $\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Detection Limit ($\mu\text{Ci/mL}$) = $(\text{Ld})(\text{DF})(\text{DDF}) / [(\text{SS})(2220000 \text{ dpm}/\mu\text{Ci})]$	
WC51586		
Prepared By		
SZC		
Chemist		
SAC		
Analyst	Tritium Concentration in $\mu\text{Ci/L}$	4.26E+00
CRJ		
Date Complete	Tritium Concentration in $\mu\text{Ci/mL}$	4.26E-03
10/08/98	Detection Limit in $\mu\text{Ci/mL}$	4.09E-04
Analysis Date	% Counting Error	3.72
10/07/98		
Analysis Time		
02:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date: 10/08/98
Signature of Chemist:	SAC	Date: 8/20/98

WORKBOOK PAGE: DUP9

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS/ SOLIDS

DUPLICATE

Type	Disintegrations per minute from Counter (dpm)	64.96
DUP	Sample Volume in mL (SS)	0.75
Work List	Dilution Factor (DF)	101
26389	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	23.72
@H3-01	Background Count Time in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.4833
LIQUID	% Counting Error	3.81
Batch Number	Detection Limit (Ld)	6.75
98004966	Critical Level (Lc)	1.60
Rerun	Tritium Concentration in $\mu\text{Ci/L}$	3.94E+00
0		
Sample Prep	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG Time)}$	
N/A	Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$	
Sample #	H3 $\mu\text{Ci/L}$ = $(\text{dpm} * (1000\text{mL/L}) * \text{DF} * \text{DDF}) / (\text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$	
S98T002781	H3 $\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Detection Limit ($\mu\text{Ci/mL}$) = $(\text{Ld})(\text{DF})(\text{DDF}) / [(\text{SS})(2220000 \text{ dpm}/\mu\text{Ci})]$	
WC51586		
Prepared By		
SZC		
Chemist		
SAC		
Analyst	Tritium Concentration in $\mu\text{Ci/L}$	3.94E+00
CRJ		
Date Complete	Tritium Concentration in $\mu\text{Ci/mL}$	3.94E-03
10/08/98	Detection Limit in $\mu\text{Ci/mL}$	4.10E-04
Analysis Date	% Counting Error	3.81
10/07/98		
Analysis Time		
02:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date:	10/08/98
Signature of Chemist:		SAC	Date: 8/2/98

WORKBOOK PAGE: SAM10

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS/ SOLIDS

		SAMPLE
Type	Disintegrations per minute from Counter (dpm)	-4.09
SAMPLE	Sample Volume in mL (SS)	1
Work List	Dilution Factor (DF)	101
26389	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	23.72
@H3-01	Background Count Time in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.4751
LIQUID	% Counting Error	6.11
Batch Number	Detection Limit (Ld)	6.87
98004966	Critical Level (Lc)	1.60
Rerun	Tritium Concentration in $\mu\text{Ci/L}$ <	3.13E-01
0		
Sample Prep	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG Time)}$	
N/A	Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$	
Sample #	H3 $\mu\text{Ci/L}$ = $(\text{dpm} * (1000\text{mL/L}) * \text{DF} * \text{DDF}) / (\text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$	
S98T002795	H3 $\mu\text{Ci/mL}$ = $\mu\text{Ci/L}/1000\text{mL/L}$	
Instrument Code	Detection Limit ($\mu\text{Ci/mL}$) = $(\text{Ld})(\text{DF})(\text{DDF}) / [(\text{SS})(2220000 \text{ dpm}/\mu\text{Ci})]$	
WC51586		
Prepared By	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).	
SZC		
Chemist		
SAC		
Analyst	Tritium Concentration in $\mu\text{Ci/L}$ <	3.13E-01
CRJ		
Date Complete	Tritium Concentration in $\mu\text{Ci/mL}$ <	3.13E-04
10/08/98	Detection Limit in $\mu\text{Ci/mL}$	3.13E-04
Analysis Date	% Counting Error	6.11
10/07/98		
Analysis Time		
02:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date:	10/08/98
Signature of Chemist:		SAC	800498

SAMPLE.WB1 REV 2.0

21811NML

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WORKBOOK PAGE: DUP11

H3 : LA-218-114 (B-3), LA-218-115(B-0) TRITIUM LIQUIDS/ SOLIDS

DUPLICATE

Type	Disintegrations per minute from Counter (dpm)	-7.76
DUP	Sample Volume in mL (SS)	1
Work List	Dilution Factor (DF)	101
26389	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	23.72
@H3-01	Background Count Time in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.4761
LIQUID	% Counting Error	6.37
Batch Number	Detection Limit (Ld)	6.86
98004966	Critical Level (Lc)	1.60
Rerun	Tritium Concentration in $\mu\text{Ci/L}$ <	3.12E-01
0		
Sample Prep	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG Time)}$	
N/A	Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$	
Sample #	H3 $\mu\text{Ci/L}$ = $(\text{dpm} * (1000\text{mL/L}) * \text{DF} * \text{DDF}) / (\text{SS} * (2220000\text{dpm}/\mu\text{Ci}))$	
S98T002795	H3 $\mu\text{Ci/mL}$ = $\mu\text{Ci/L}/1000\text{mL/L}$	
Instrument Code	Detection Limit ($\mu\text{Ci/mL}$) = $(\text{Ld})(\text{DF})(\text{DDF}) / ((\text{SS})(2220000 \text{ dpm}/\mu\text{Ci}))$	
WC51586		
Prepared By	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).	
SZC		
Chemist		
SAC		
Analyst	Tritium Concentration in $\mu\text{Ci/L}$ <	3.12E-01
CRJ		
Date Complete	Tritium Concentration in $\mu\text{Ci/mL}$ <	3.12E-04
10/08/98	Detection Limit in $\mu\text{Ci/mL}$	3.12E-04
Analysis Date	% Counting Error	6.37
10/07/98		
Analysis Time		
02:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date:	10/08/98
Signature of Chemist:		SAC	Date:

SAMPLE.WB1 REV 2.0

21811NML

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LABCORE Completed Worklist Report for Worklist# 26522

Analyst: crj Instrument: AB15 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW101 LAW, @ALPHA01, SS by Ludlum. STD: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@ALPHA01 ALPHA01	SOLID	1.80E-04	1.76E-4	97.778 % Recovery	
1 STD	0	@ALPHA01 ALPHA01E	SOLID	1.00	3.50E+00	3.500 % Ct. Error	
2 BLNK-PREP	0	@ALPHA01 ALPHA01	SOLID	1	<1.54E-2	uCi/g	
2 BLNK-PREP	0	@ALPHA01 ALPHA01E	SOLID	1.00	5.00E+02	500.000 uCi/g	
3 BLNK/BKG	0	@ALPHA01 ALPHA01	SOLID	1.00E+00	1.30E+00	1.300 BLNK/BKG	
4 SAMPLE	S98T002752	0 F @ALPHA01 ALPHA01	SOLID	N/A	8.79E-02	1.97e-002 uCi/g	
4 SAMPLE	S98T002752	0 F @ALPHA01 ALPHA01E	SOLID	N/A	2.75E+01	% Ct. Error	
5 SPK	S98T002752	0 F @ALPHA01 ALPHA01	SOLID	4.05E-02	3.28E-02	80.988 % Recovery	
6 SAMPLE	S98T002753	0 F @ALPHA01 ALPHA01	SOLID	N/A	1.08E-01	2.00e-002 uCi/g	
6 SAMPLE	S98T002753	0 F @ALPHA01 ALPHA01E	SOLID	N/A	2.54E+01	% Ct. Error	
7 SAMPLE	S98T002754	0 F @ALPHA01 ALPHA01	SOLID	N/A	8.94E-02	2.00e-002 uCi/g	
7 SAMPLE	S98T002754	0 F @ALPHA01 ALPHA01E	SOLID	N/A	2.85E+01	% Ct. Error	

Final page for worklist# 26522

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date 13 Oct 98

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

LABCORE Data Entry Template for Worklist# 26522

Analyst: CRJ Instrument: AB00 15 Book# 31BS7

Method: LA-508-101 Rev/Mod G-0

Worklist Comment: AW101 LAW, @ALPHA01, SS by Ludlum. STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	SOLID		
2 BLNK-PREP			@ALPHA01	SOLID		
3 BLNK/BKG			@ALPHA01	SOLID		
4 SAMPLE	S98T002752	0 F	@ALPHA01	SOLID	98000261	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					
5 SPK	S98T002752	0 F	@ALPHA01	SOLID		
6 SAMPLE	S98T002753	0 F	@ALPHA01	SOLID	98000261	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					
7 SAMPLE	S98T002754	0 F	@ALPHA01	SOLID	98000261	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					

Final page for worklist # 26522

Analyst Signature

Date

10/12/98

Analyst Signature

Date

Lana Z. Gichorn 10/13/98

M. B. 10/13/98

Data Entry Comments:

HNF-1652 REV. 0

WORKBOOK PAGE: STD1

AT : LA-508-101 (G-0) LA-508-113 (B-0) STANDARD

	STANDARD	REPLICATE
Type	DETECTOR NUMBER	15
STD	DISH SIZE (1, 2, or 5) (MS)	2
Worklist	GROSS COUNTS (GC)	3164
26522	COUNT TIME in MINUTES (CT)	30
AT or IB?	BACKGROUND in cpm (BKG)	0.27
AT	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	31B57
Matrix	EFFICIENCY FACTOR (EFF)	0.2695
LIQUID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	105.197
Batch Number	Standard Value in $\mu\text{Ci/mL}$	1.80E-04
98005110	Concentration in $\mu\text{Ci/L}$ =	1.76E-01
Re-run	Replicate Concentration in $\mu\text{Ci/L}$ =	1.77E-01
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.7644E-01
Sample Prep		
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
WL26522	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
SZC		
Chemist		
SAC	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	1.76E-04
Analyst		DETECTION LEVEL
CRJ		8.92E-07
Date Complete	RELATIVE COUNTING ERROR =	$\mu\text{Ci/mL}$
10/13/98		3.5%
Analysis Date		
10/12/98		
Analysis Time		
02:15 PM		
Sample Point		
AW-101 LAW		

Analyst:	SZC	Date: 13-Oct-98
Signature of Chemist:	SAC	Date: 13 Oct 98
STANDARD.WB1 Rev. 1.0 508101ML		

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (G-0)

SOLIDS

	BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER	15
BLNK-PREP	DISH SIZE (1, 2, or 5)	2
Work List	GROSS COUNTS	8
26522	COUNT TIME in MINUTES	30
AT KoraTB?	BACKGROUND in cpm	0.27
AT	SAMPLE SIZE in mL	0.250
Test Code	DILUTION FACTOR	11
@ALPHA01	DIGEST GRAMS of SOLIDS / L	1.9912
Matrix	EFFICIENCY FACTOR	0.2695
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.221
Batch Number		
98005110	Blank Concentration in $\mu\text{Ci/g}$	< 8.18E-03
Re-run	Replicate Concentration in $\mu\text{Ci/g}$	< 1.54E-02
0	Maximum Concentration in $\mu\text{Ci/g}$	< 1.5364E-02
Sample Prep		
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG	
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$	
WL26522	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$	
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
WB26872		
Prepared By		
SZC		
Chemist		
SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 1.54E-02
Analyst	CRJ	DETECTION LEVEL
Date Complete	10/13/98	1.97E-02 $\mu\text{Ci/g}$
Analysis Date	10/12/98	
Analysis Time	02:15 PM	
Sample Point	AW-101 LAW	

Analyst:	CRJ	Date: 13-Oct-98
Signature of Chemist:	<i>[Signature]</i>	SAC
BLANK.WB1 Rev. 1.0	50810TML	Date: 13 Oct 98

WORKBOOK PAGE: SAM4

AT : LA-508-101 (G-0) SOLIDS

	SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2
Worklist	GROSS COUNTS (GC)	87
26522	COUNT TIME in MINUTES (CT)	30
ALPHA B?	BACKGROUND in cpm (BKG)	0.27
AT	SAMPLE SIZE in mL (SS)	0.250
Test Code	DILUTION FACTOR (DF)	11
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.9912
Matrix	EFFICIENCY FACTOR (EFF)	0.2695
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.630
Batch Number		
98005110	Blank Concentration in $\mu\text{Ci/g}$	9.71E-02
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	7.87E-02
0	Average Concentration in $\mu\text{Ci/g}$	8.7903E-02
Sample Prep		
FUSION01	Rs (Sample Count Rate) = $(TC / CT) - BKG$	
Sample	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$	
S98T002752		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
SZC		
Chemist		
SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	8.79E-02
Analyst		
CRJ		
Date Complete		
10/13/98	RELATIVE COUNTING ERROR	27.5%
Analysis Date		
10/12/98		
Analysis Time		
02:15 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL1.97E-02
 $\mu\text{Ci/g}$

Analyst:	CRJ	Date: 13-Oct-98
Signature of Chemist:	SAC	Date: 10/13/98
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: SPK5

AT : LA-508-101 (G-0) LA-508-113 (B-0) SPIKED SAMPLE

Type	DETECTOR NUMBER	SPIKE	REPLICATE
SPK	DISH SIZE 1, 2, or 5 (MS)	15	15
Worklist	TOTAL COUNTS (TC)	2	2
26522	COUNT TIME in MINUTES (CT)	58107	59740
Atom/B?	BACKGROUND in cpm (BKG)	30	30
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.27	0.27
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	0.250	0.250
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	11	11
Matrix	SPIKE VOLUME in mL (SVol)	1.9912	1.9912
SOLID	SPIKE DILUTION FACTOR (SDF)	0.100	0.100
Batch Number	SPIKE BOOK NUMBER (Spk BN)	1	1
98005110	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	148B43	148B43
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	4.0549E-02	4.0549E-02
0	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	0.2695	0.2695
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	7.15E+01	7.35E+01
FUSION01		8.7903E-02	
Sample #			
S98T002752	R_s (Sample Count Rate) = (TC / CT) - BKG		
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$		
WB26872	QC ACTUAL = SVal		
Prepared By	QC FOUND = $((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))$		
SZC	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100		
Chemist			
SAC			
Analyst			
CRJ			
Date Complete			
10/13/98			
Analysis Date			
10/12/98	QC ACTUAL =	4.05E-02	
Analysis time	QC FOUND =	3.28E-02	
02:15 PM	AVG. PERCENT SPIKE RECOVERY =	80.9%	
Sample Point			
AW-101 LAW			

Analyst:	SZC	Date: 13-Oct-98
Signature of Chemist:	<i>MA Carter</i>	SAC Date: 13-Oct-98
SPIKE.WB1 Rev. 1.0	508101ML	

AT : LA-508-101 (G-0)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	107	81
26522	COUNT TIME in MINUTES (CT)	30	30
At or IB?	BACKGROUND in cpm (BKG)	0.27	0.27
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	11	11
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.9572	1.9572
Matrix	EFFICIENCY FACTOR (EFF)	0.2695	0.2695
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	3.297	2.430
Batch Number			
98005110	Blank Concentration in $\mu\text{Ci/g}$	1.24E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	9.13E-02	
0	Average Concentration in $\mu\text{Ci/g}$	1.0759E-01	
Sample Prep			
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
S98T002753			
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SZC			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	1.08E-01	DETECTION LEVEL
Analyst			
CRJ			
Date Complete			2.00E-02 $\mu\text{Ci/g}$
10/13/98	RELATIVE COUNTING ERROR	25.4%	
Analysis Date			
10/12/98			
Analysis Time			
02:15 PM			
Sample Point			
AW-101 LAW			

Analyst:	CRJ	Date: 13-Oct-98
Signature of Chemist:	<i>John C. Carter</i>	SAC Date: <i>12 Oct 98</i>
SAMPLE.WB1 Rev. 1.	508101ML	

AT : LA-508-101 (G-0)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
WorkList	GROSS COUNTS (GC)	68	91
26522	COUNT TIME in MINUTES (CT)	30	30
At or B?	BACKGROUND in cpm (BKG)	0.27	0.27
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	11	11
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.9588	1.9588
Matrix	EFFICIENCY FACTOR (EFF)	0.2695	0.2695
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	1.997	2.763

Batch Number	
98005110	Blank Concentration in $\mu\text{Ci/g}$ 7.50E-02
Rerun	Replicate Concentration in $\mu\text{Ci/g}$ 1.04E-01
0	Average Concentration in $\mu\text{Ci/g}$ 8.9357E-02

Sample Prep	
FUSION01	Rs (Sample Count Rate) = $(TC / CT) - BKG$
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$
S98T002754	

Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By	
SZC	
Chemist	

SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) = 8.94E-02	DETECTION LEVEL
Analyst		
CRJ		
Date Complete		2.00E-02 $\mu\text{Ci/g}$
10/13/98	RELATIVE COUNTING ERROR 28.5%	

Analysis Date	
10/12/98	
Analysis Time	
02:15 PM	
Sample Point	
AW-101 LAW	

Analyst:	CRJ	Date: 13-Oct-98
Signature of Chemist:		Date: 13 Oct 98
SAMPLE.WB1 Rev. 1.	SAC	
508101ML		

LABCORE Completed Worklist Report for Worklist# 26549

Analyst: crj Instrument: AB18 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW101 LAW, @AB-01, SS by Ludlum. STD: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	QAB-01	ALPHA01	LIQUID	1.80E-04	1.73E-4	96.111 % Recovery	
1 STD	0	QAB-01	ALPHA01E	LIQUID	1	3.58E+00	3.580 % Ct. Error	
1 STD	0	QAB-01	BETA-01	LIQUID	1.99E-03	2.17E-3	109.045 % Recovery	
1 STD	0	QAB-01	BETA-01E	LIQUID	1	7.96E-01	0.796 % Ct. Error	
2 BLNK	0	QAB-01	ALPHA01	LIQUID	1	<2.02E-6		uCi/mL
2 BLNK	0	QAB-01	ALPHA01E	LIQUID	1.00	2.45E+02	245.000	uCi/mL
2 BLNK	0	QAB-01	BETA-01	LIQUID	1	<9.02E-6		uCi/mL
2 BLNK	0	QAB-01	BETA-01E	LIQUID	1.00	1.71E+02	171.000	uCi/mL
3 BLNK/BKG	0	QAB-01	ALPHA01	LIQUID	1.00E+00	1.96E+00	1.960	BLNK/BKG
3 BLNK/BKG	0	QAB-01	BETA-01	LIQUID	1.00E+00	1.20E+00	1.200	BLNK/BKG
4 SAMPLE	S98T002794	0	QAB-01	ALPHA01	LIQUID	N/A	8.72E-06	3.01e-006 uCi/mL
4 SAMPLE	S98T002794	0	QAB-01	ALPHA01E	LIQUID	N/A	3.71E+01	% Ct. Error
4 SAMPLE	S98T002794	0	QAB-01	BETA-01	LIQUID	N/A	3.01E-02	1.03e-005 uCi/mL
4 SAMPLE	S98T002794	0	QAB-01	BETA-01E	LIQUID	N/A	4.28E-01	% Ct. Error
5 DUP	S98T002794	0	QAB-01	ALPHA01	LIQUID	8.72E-6	7.13E-6	20.063 RPD
5 DUP	S98T002794	0	QAB-01	ALPHA01E	LIQUID	1.00	4.44E+01	44.400 % Ct. Error
5 DUP	S98T002794	0	QAB-01	BETA-01	LIQUID	3.01E-2	3.01E-2	0.000 RPD
5 DUP	S98T002794	0	QAB-01	BETA-01E	LIQUID	1.00	4.26E-01	0.426 % Ct. Error

Final page for worklist# 26549

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date _____

Alpha RPD exceeds the limit, however, the beta RPD is 0%.
Alpha RPD is most likely due to the low count rate. on

LABCORE Data Entry Template for Worklist# 26549

Analyst: CRS Instrument: AB00 18 Book# 31857

Method: LA-508-101 Rev/Mod G-0

Worklist Comment: AW101 LAW, @AB-01, SS by Ludlum. STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AB-01	LIQUID		
2 BLNK			@AB-01	LIQUID		
3 BLNK/BKG			@AB-01	LIQUID		
4 SAMPLE	S98T002794 0		@AB-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E, BETA-01 , BETA-01E					
5 DUP	S98T002794 0		@AB-01	LIQUID		

Final page for worklist # 26549

Analyst Signature

Date

10/22/98

Analyst Signature

Date

10-23-98
10-23-98

Data Entry Comments:

WORKBOOK PAGE: STD1

TB : LA-508-101 (G-0) LA-508-113 (B-0) STANDARD

	STANDARD	REPLICATE
Type	DETECTOR NUMBER	18
STD	DISH SIZE (1, 2, or 5) (MS)	2
Worklist	GROSS COUNTS (GC)	62559
26549	COUNT TIME in MINUTES (CT)	30
Alarm/Bt?	BACKGROUND in cpm (BKG)	7.5
TB	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	1
@AB-01	STANDARD BOOK NUMBER (Std BN)	31B57
Matrix	EFFICIENCY FACTOR (EFF)	0.4260
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2077.800
Batch Number	Standard Value in $\mu\text{Ci/mL}$	1.99E-03
98005143	Concentration in $\mu\text{Ci/L}$ =	2.20E+00
Rep Unit	Replicate Concentration in $\mu\text{Ci/L}$ =	2.15E+00
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	2.1744E+00
Sample Prep		
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample	TOTAL BETA $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
WL26549-STD	TOTAL BETA $\mu\text{Ci/mL}$ = TOTAL BETA $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
EMB		
Chemist		
SAC	TOTAL BETA CONCENTRATION in $\mu\text{Ci/mL}$ =	2.17E-03
Analyst		
CRJ		
Date Complete	RELATIVE COUNTING ERROR =	0.8%
10/23/98		
Analysis Date		
10/22/98		
Analysis Time		
03:00 PM		
Sample Point		
AW-101 LAW		

Analyst:	EMB	Date: 23-Oct-98
Signature of Chemist: <i>21A Carter</i>	SAC	Date: <i>26 Oct 98</i>

STANDARD.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: STD2

AT : LA-508-101 (G-0) LA-508-113 (B-0) STANDARD

	STANDARD	REPLICATE
Type	DETECTOR NUMBER	18
STD	DISH SIZE (1, 2, or 5) (MS)	2
Worklist	GROSS COUNTS (GC)	3079
26549	COUNT TIME in MINUTES (CT)	30
At for Bk?	BACKGROUND in cpm (BKG)	0.17
AT	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	1
@AB-01	STANDARD BOOK NUMBER (Std BN)	31B57
Matrix	EFFICIENCY FACTOR (EFF)	0.2644
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	102.463
Batch Number	Standard Value in $\mu\text{Ci/mL}$	1.80E-04
98005143	Concentration in $\mu\text{Ci/L}$ =	1.75E-01
Rep Run	Replicate Concentration in $\mu\text{Ci/L}$ =	1.71E-01
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.7292E-01
Sample Prep		
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/L} = R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
WL26549-STD	$\text{ALPHA TOTAL } \mu\text{Ci/mL} = \text{ALPHA TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
EMB		
Chemist		
SAC	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	1.73E-04
Analyst		
CRJ		
Date Complete		
10/23/98	RELATIVE COUNTING ERROR =	3.6%
Analysis Date		
10/22/98		
Analysis Time		
03:00 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL7.53E-07
 $\mu\text{Ci/mL}$

Analyst:	EMB	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 26 Oct 98

STANDARD.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: BLANK3

TB : LA-508-101 (G-0)

LIQUIDS

		BLNK	REPLICATE
Type	DETECTOR NUMBER	18	18
BLNK	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	250	289
26549	COUNT TIME in MINUTES (CT)	30	30
At or TB?	BACKGROUND in cpm (BKG)	7.5	7.5
TB	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	1	1
@AB-01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.4260	0.4260
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	2.032	2.133
Batch Number			
98005143	Blank Concentration in $\mu\text{Ci/L}$	< 8.59E-03	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	9.02E-03	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 9.0231E-03	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	TOTAL BETA $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
WL26549-BLNK	TOTAL BETA $\mu\text{Ci/mL}$ = TOTAL BETA $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = $\left[\frac{1}{(\text{The Square Root of TC} + \text{BKG} * \text{CT})} \right] / (\text{TC} - \text{BKG} * \text{CT}) \cdot 1.96 * 100$		
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	TOTAL BETA in $\mu\text{Ci/mL}$ (Maximum) =	< 9.02E-06	DETECTION LEVEL
Analyst	LESS THAN Value was Determined from Rmax.		
CRJ			1.03E-05
Date Complete	RELATIVE COUNTING ERROR	170.9%	$\mu\text{Ci/mL}$
10/23/98			
Analysis Date			
10/22/98			
Analysis Time			
03:00 PM			
Sample Point			
AW-101 LAW			

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 20 Oct 98
BLANK.WB1 Rev. 1.0	508101ML	

AT : LA-508-101 (G-0)

LIQUIDS

		BLNK	REPLICATE
Type	DETECTOR NUMBER	18	18
BLNK	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	8	12
26549	COUNT TIME in MINUTES (CT)	30	30
Alion TB?	BACKGROUND in cpm (BKG)	0.17	0.17
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	1	1
@AB-01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2644	0.2644
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.296	0.230
Batch Number			
98005143	Blank Concentration in $\mu\text{Ci/L}$	< 2.02E-03	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.57E-03	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 2.0153E-03	
Sample Prep			
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
WL26549-BLNK	ALPHA TOTAL $\mu\text{Ci/L}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 2.02E-06	DETECTION LEVEL
Analyst	CRJ		
Date Complete	LESS THAN Value was Determined from Rmax.		3.01E-06
10/23/98	RELATIVE COUNTING ERROR	244.6%	$\mu\text{Ci/mL}$
Analysis Date			
10/22/98			
Analysis Time			
03:00 PM			
Sample Point			
AW-101 LAW			

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 20 Oct 98
BLANK.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM8

AT : LA-508-101 (G-0)

LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	18	18
SAMPLE	DISH SIZE (1, 2, or 5)	(MS)	2
Work List	GROSS COUNTS	(GC)	46
26549	COUNT TIME in MINUTES	(CT)	30
Alora B?	BACKGROUND in cpm	(BKG)	0.17
AT	SAMPLE SIZE in mL	(SS)	0.250
Test Code	DILUTION FACTOR	(DF)	1
@AB-01	DIGEST DILUTION FACTOR	(DDF)	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2644
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	1.363	1.197
Batch Number			
98005143	Blank Concentration in $\mu\text{Ci/L}$	9.29E-03	
Re-run	Replicate Concentration in $\mu\text{Ci/L}$	8.15E-03	
0	Average Concentration in $\mu\text{Ci/L}$	8.7228E-03	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S98T002794	ALPHA TOTAL $\mu\text{Ci/mL}$ = $ALPHA TOTAL \mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	8.72E-06	DETECTION LEVEL
Analyst			
CRJ			
Date Complete			3.01E-06
10/23/98	RELATIVE COUNTING ERROR	37.1%	$\mu\text{Ci/mL}$
Analysis Date			
10/22/98			
Analysis Time			
03:00 PM			
Sample Point			
AW-101 LAW			

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 26 Oct 98
SAMPLE.WB1 Rev. 1.	508101ML	

800

TB : LA-508-101 (G-0)

LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	18	18
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
WorkList	GROSS COUNTS (GC)	210068	217883
26549	COUNT TIME in MINUTES (CT)	30	30
At or TB ?	BACKGROUND in cpm (BKG)	7.5	7.5
TB	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	1	1
@AB-01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.4260	0.4260
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	6994.767	7255.267
Batch Number			
98005143	Blank Concentration in $\mu\text{Ci/L}$	2.96E+01	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	3.07E+01	
0	Average Concentration in $\mu\text{Ci/L}$	3.0136E+01	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
Sample #	TOTAL BETA $\mu\text{Ci/L}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} * \text{DDF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$		
S98T002794	TOTAL BETA $\mu\text{Ci/mL}$ = $\text{TOTAL BETA } \mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})]^2 * 1.96 * 100$		
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	TOTAL BETA in $\mu\text{Ci/mL}$ (Average) =	3.01E-02	DETECTION LEVEL
Analyst			
CRJ			
Date Complete			1.03E-05
10/23/98	RELATIVE COUNTING ERROR	0.4%	$\mu\text{Ci/mL}$
Analysis Date			
10/22/98			
Analysis Time			
03:00 PM			
Sample Point			
AW-101 LAW			

Analyst	CRJ	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 20 Oct 98
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: DUP10

AT : LA-508-101 (G-0)

LIQUIDS

	DUP	REPLICATE
Type	DETECTOR NUMBER	18
DUP	DISH SIZE (1, 2, or 5)	2
Work List	GROSS COUNTS	32
26549	COUNT TIME in MINUTES	30
At or in B?	BACKGROUND in cpm	0.17
AT	SAMPLE SIZE in mL	0.250
Test Code	DILUTION FACTOR	1
@AB-01	DIGEST DILUTION FACTOR	1
Matrix	EFFICIENCY FACTOR	0.2644
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.897
Batch Number		
98005143	Blank Concentration in $\mu\text{Ci/L}$	6.11E-03
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	8.15E-03
0	Average Concentration in $\mu\text{Ci/L}$	7.1327E-03
Sample Prep		
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S98T002794	ALPHA TOTAL $\mu\text{Ci/mL}$ = $ALPHA TOTAL \mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
EMB		
Chemist		
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	7.13E-06
Analyst		DETECTION LEVEL
CRJ		
Date Complete		3.01E-06
10/23/98	RELATIVE COUNTING ERROR	$\mu\text{Ci/mL}$
Analysis Date		
10/22/98		
Analysis Time		
03:00 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist: <i>St. O. O. O.</i>	SAC	Date: <i>23 Oct 98</i>
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: DUP9

TB : LA-508-101 (G-0)

LIQUIDS

	DUP	REPLICATE
Type	DETECTOR NUMBER	18
DUP	DISH SIZE (1, 2, or 5)	2
Work List	GROSS COUNTS	212441
26549	COUNT TIME in MINUTES	30
Alt on TB?	BACKGROUND in cpm	7.5
TB	SAMPLE SIZE in mL	0.250
Test Code	DILUTION FACTOR	1
@AB-01	DIGEST DILUTION FACTOR	1
Matrix	EFFICIENCY FACTOR	0.4260
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	7073.867
Batch Number		7173.267
98005143	Blank Concentration in $\mu\text{Ci/L}$	2.99E+01
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	3.03E+01
0	Average Concentration in $\mu\text{Ci/L}$	3.0130E+01
Sample Prep		
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	TOTAL BETA $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S98T002794	TOTAL BETA $\mu\text{Ci/mL}$ = $TOTAL BETA \mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
EMB		
Chemist		
SAC	TOTAL BETA in $\mu\text{Ci/mL}$ (Average) =	3.01E-02
Analyst		DETECTION LEVEL
CRJ		
Date Complete		1.03E-05
10/23/98	RELATIVE COUNTING ERROR	$\mu\text{Ci/mL}$
Analysis Date		
10/22/98		
Analysis Time		
03:00 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 23-Oct-98
SAMPLE.WB1 Rev. 1.	508101ML	

LABCORE Completed Worklist Report for Worklist# 26860

Analyst: scl

Instrument: AB16

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW101, @ALPHA01, tdm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	QALPHA01 ALPHA01 LIQUID		1.80E+04	1.68E+4	93.333 % Recovery	
1 STD	0	QALPHA01 ALPHA01E LIQUID		1.00	3.57E+00	3.570 % Ct. Error	
2 BLNK-PREP	0	QALPHA01 ALPHA01 LIQUID		1	<6.63E-3		uCi/mL
2 BLNK-PREP	0	QALPHA01 ALPHA01E LIQUID		1.00	2.55E+02	255.000	uCi/mL
3 BLNK/BKG	0	QALPHA01 ALPHA01 LIQUID		1.00E+00	1.90E+00	1.900	BLNK/BKG
4 SAMPLE	S98T003077 0 B	QALPHA01 ALPHA01 LIQUID		N/A	4.33E-03	1.05E-002	uCi/mL
4 SAMPLE	S98T003077 0 B	QALPHA01 ALPHA01E LIQUID		N/A	1.43E+02		% Ct. Error
5 SPK	S98T003077 0 B	QALPHA01 ALPHA01 LIQUID		4.05E-02	3.55E-02	87.654 % Recovery	
6 SAMPLE	S98T003078 0 B	QALPHA01 ALPHA01 LIQUID		N/A	8.21E-03	1.05E-002	uCi/mL
6 SAMPLE	S98T003078 0 B	QALPHA01 ALPHA01E LIQUID		N/A	1.06E+02		% Ct. Error
7 SAMPLE	S98T003079 0 B	QALPHA01 ALPHA01 LIQUID		N/A	7.66E-03	1.05E-002	uCi/mL
7 SAMPLE	S98T003079 0 B	QALPHA01 ALPHA01E LIQUID		N/A	1.06E+02		% Ct. Error
8 SAMPLE	S98T003080 0 B	QALPHA01 ALPHA01 LIQUID		N/A	1.36E-02	2.63E-002	uCi/mL
8 SAMPLE	S98T003080 0 B	QALPHA01 ALPHA01E LIQUID		N/A	1.43E+02		% Ct. Error
9 SAMPLE	S98T003081 0 B	QALPHA01 ALPHA01 LIQUID		N/A	2.02E-02	2.63E-002	uCi/mL
9 SAMPLE	S98T003081 0 B	QALPHA01 ALPHA01E LIQUID		N/A	1.80E+02		% Ct. Error

Final page for worklist# 26860

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date 2/2/98

LABCORE Data Entry Template for Worklist# 26860

Analyst: S.L Instrument: AB00 #16 Book# 3157

Method: LA-508-101 Rev/Mod GT-0

Worklist Comment: AW101, @ALPHA01, tdm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	LIQUID		
2 BLNK-PREP			@ALPHA01	LIQUID		
3 BLNK/BKG			@ALPHA01	LIQUID		
4 SAMPLE	S98T003077 0 B		@ALPHA01	LIQUID	98000554	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					
5 SPK	S98T003077 0 B		@ALPHA01	LIQUID		
6 SAMPLE	S98T003078 0 B		@ALPHA01	LIQUID	98000554	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					
7 SAMPLE	S98T003079 0 B		@ALPHA01	LIQUID	98000554	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					
8 SAMPLE	S98T003080 0 B		@ALPHA01	LIQUID	98000554	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					
9 SAMPLE	S98T003081 0 B		@ALPHA01	LIQUID	98000554	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					

Final page for worklist # 26860

Sue Lee 10-27-98
Analyst Signature Date

Sue Lee 10/30/98
Analyst Signature Date
Raymond 10.30.98

Data Entry Comments:

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

WORKBOOK PAGE: STD1

AT : LA-508-101 (G-0) LA-508-113 (B-0) STANDARD

	STANDARD	REPLICATE
Type	DETECTOR NUMBER	16
STD	DISH SIZE (1, 2, or 5) (MS)	5
Work List	GROSS COUNTS (GC)	3028
26860	COUNT TIME in MINUTES (CT)	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.07
AT	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	31B57
Matrix	EFFICIENCY FACTOR (EFF)	0.2733
LIQUID	Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE	100.863
Batch Number	Standard Value in $\mu\text{Ci/mL}$	1.80E-04
98005464	Concentration in $\mu\text{Ci/L}$ =	1.66E-01
Repun	Replicate Concentration in $\mu\text{Ci/L}$ =	1.70E-01
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.6803E-01
Sample Prep		
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
WL 26860	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
SZC		
Chemist		
SAC	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	1.68E-04
Analyst		
SCL		
Date Complete		
10/30/98	RELATIVE COUNTING ERROR =	3.6%
Analysis Date		
10/29/98		
Analysis Time		
01:00 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL5.21E-07
 $\mu\text{Ci/mL}$

Analyst:	SZC	Date: 30-Oct-98
Signature of Chemist:	SAC	Date: 2/26/98

STANDARD.WB1 Rev. 1.0

508101ML

AT : LA-508-101 (G-0)

LIQUIDS

		BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER	16	16
BLNK-PREP	DISH SIZE (1, 2, or 5) (MS)	5	5
Work List	GROSS COUNTS (GC)	4	4
26860	COUNT TIME in MINUTES (CT)	30	30
At or TB?	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	50	50
Matrix	EFFICIENCY FACTOR (EFF)	0.2733	0.2733
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.199	0.199

Batch Number	
98005464	Blank Concentration in $\mu\text{Ci/L}$ < 6.63E+00
Rerun	Replicate Concentration in $\mu\text{Ci/L}$ < 6.63E+00
0	Maximum Concentration in $\mu\text{Ci/L}$ < 6.6312E+00

Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)
WL26860	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By			
SZC			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum)	=	< 6.63E-03
Analyst			DETECTION LEVEL
SCL	LESS THAN Value was Determined from Rmax.		
Date Complete			1.05E-02
10/30/98	RELATIVE COUNTING ERROR	254.8%	$\mu\text{Ci/mL}$
Analysis Date			
10/29/98			
Analysis Time			
01:00 PM			
Sample Point			
AW-101 LAW			

Analyst:	SCL	Date: 30-Oct-98
Signature of Chemist:	SAC	Date: 27 Oct 98
BLANK WB1 Rev. 1.0	508101ML	

AT : LA-508-101 (G-0)

LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	5	5
Work List	GROSS COUNTS (GC)	6	6
26860	COUNT TIME in MINUTES (CT)	30	30
AT Front B?	BACKGROUND in cpm (BKg)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	50	50
Matrix	EFFICIENCY FACTOR (EFF)	0.2733	0.2733
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.130	0.130
Batch Number			
98005464	Blank Concentration in $\mu\text{Ci/L}$	4.33E+00	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	4.33E+00	
0	Average Concentration in $\mu\text{Ci/L}$	4.3281E+00	
Sample Prep			
ACIDIG02	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
S98T003077	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = $\left[\left(\frac{\text{The Square Root of TC} + \text{BKG} * \text{CT}}{\text{TC} - \text{BKG} * \text{CT}} \right) \right]^2 * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SZC			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	4.33E-03	DETECTION LEVEL
Analyst			
SCL			
Date Complete	RELATIVE COUNTING ERROR	143.0%	1.05E-02 $\mu\text{Ci/mL}$
10/30/98			
Analysis Date			
10/29/98			
Analysis Time			
01:00 PM			
Sample Point			
AW-101 LAW			

Analyst	SCL	Date: 30-Oct-98
Signature of Chemist:		Date: 27/10/98
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: SPK5

AT : LA-508-101 (G-0) LA-508-113 (B-0) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	16	16
SPK	DISH SIZE 1, 2, or 5 (MS)	5	5
Work List	TOTAL COUNTS (TC)	63840	65550
26860	COUNT TIME in MINUTES (CT)	30	30
AT on TB?	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.250	0.250
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	50	50
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	148B43	148B43
98005464	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	4.0546E-02	4.0546E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2733	0.2733
0	SAMPLE + SPIKE $\mu\text{Ci/mL}$ (S+S)	7.08E+01	7.27E+01
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE	4.3281E-03	
ACIDIG02			
Sample #			
S98T003077	R_s (Sample Count Rate) = (TC / CT) - BKG		
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/mL}$ = $R_s * DF * DDF / (EFF * SS * 2220000 \text{ dpm}/\mu\text{Ci})$		
WB27806	QC ACTUAL = SVal		
Prepared By	QC FOUND = $((S+S \mu\text{Ci/mL} - \text{SAMPLE } \mu\text{Ci/mL}) * (SDF/SVol)/(DF*DDF/SS)))$		
SZC	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100		
Chemist			
SAC			
Analyst			
SCL			
Date Complete			
10/30/98			
Analysis Date			
10/29/98	QC ACTUAL =	4.05E-02	
Analysis Time	QC FOUND =	3.55E-02	
01:00 PM	AVG. PERCENT SPIKE RECOVERY =	87.7%	
Sample Point			
AW-101 LAW			

Analyst:	SZC	Date: 30-Oct-98
Signature of Chemist:		SAC Date: 27/10/98
SPIKE.WB1 Rev. 1.0 508101ML		

AT : LA-508-101 (G-0)

LIQUIDS

	SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	5
Worklist	GROSS COUNTS (GC)	11
26860	COUNT TIME in MINUTES (CT)	30
Attorn TB?	BACKGROUND in cpm (BKG)	0.07
AT	SAMPLE SIZE in mL (SS)	0.250
Test Code	DILUTION FACTOR (DF)	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	50
Matrix	EFFICIENCY FACTOR (EFF)	0.2733
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.297
Batch Number		
98005464	Blank Concentration in $\mu\text{Ci/L}$	9.88E+00
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	6.55E+00
0	Average Concentration in $\mu\text{Ci/L}$	8.2124E+00
Sample Prep		
ACIDIG02	Rs (Sample Count Rate) = (TC / CT) - BKG	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S98T003078	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
SZC		
Chemist		
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	8.21E-03
Analyst		
SCL		
Date Complete		
10/30/98	RELATIVE COUNTING ERROR	105.6%
Analysis Date		
10/29/98		
Analysis Time		
01:00 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL1.05E-02
 $\mu\text{Ci/mL}$

Analyst	SCL	Date: 30-Oct-98
Signature of Chemist:	SAC	Date: 2/2/98
SAMPLE.WB1 Rev. 1.	508101ML	

AT : LA-508-101 (G-0) LIQUIDS

	SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	5
Work List	GROSS COUNTS (GC)	8
26860	COUNT TIME in MINUTES (CT)	30
Atom B?	BACKGROUND in cpm (BKG)	0.07
AT	SAMPLE SIZE in mL (SS)	0.250
Test Code	DILUTION FACTOR (DF)	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	50
Matrix	EFFICIENCY FACTOR (EFF)	0.2733
LIQUID	Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE	0.197
Batch Number		0.263
98005464	Blank Concentration in $\mu\text{Ci/L}$	6.55E+00
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	8.77E+00
0	Average Concentration in $\mu\text{Ci/L}$	7.6575E+00

Sample Prep
 ACIDIG02 Rs (Sample Count Rate) = $(TC / CT) - BKG$
 Sample# ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
 S98T003079 ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
 Instrument Code Relative Counting Error = $[|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100$
 WB27806 Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By	SZC	
Chemist	SAC	
Analyst	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	7.66E-03
SCL		
Date Complete		
10/30/98	RELATIVE COUNTING ERROR	105.6%
Analysis Date		
10/29/98		
Analysis Time		
01:00 PM		
Sample Point		
AW-101 LAW		

Analyst	SCL	Date: 30-Oct-98
Signature of Chemist	<i>SCL</i>	Date: 2/2/98
SAMPLE.WB1 Rev. 1.	SAC	
	508101ML	

AT : LA-508-101 (G-0) LIQUIDS

	SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	5
Work List	GROSS COUNTS (GC)	8
26860	COUNT TIME in MINUTES (CT)	30
AT or TB?	BACKGROUND in cpm (BKG)	0.07
AT	SAMPLE SIZE in mL (SS)	0.100
Test Code	DILUTION FACTOR (DF)	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	50
Matrix	EFFICIENCY FACTOR (EFF)	0.2733
LIQUID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	0.130
Batch Number		
98005464	Blank Concentration in $\mu\text{Ci/L}$	1.64E+01
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	1.08E+01
0	Average Concentration in $\mu\text{Ci/L}$	1.3595E+01
Sample Prep		
ACIDIG02	Rs (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S98T003080	ALPHA TOTAL $\mu\text{Ci/mL}$ = $ALPHA\ TOTAL\ \mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
SZC		
Chemist		
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	1.36E-02
Analyst		
SCL		
Date Complete		
10/30/98	RELATIVE COUNTING ERROR	143.0%
Analysis Date		
10/29/98		
Analysis Time		
01:00 PM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date: 30-Oct-98
Signature of Chemist:	SAC	Date: 2/1/98
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: SAM9

AT : LA-508-101 (G-0)

LIQUIDS

	SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	5
Work List	GROSS COUNTS (GC)	5
26860	COUNT TIME in MINUTES (CT)	30
AT on TB?	BACKGROUND in cpm (BKG)	0.07
AT	SAMPLE SIZE in mL (SS)	0.100
Test Code	DILUTION FACTOR (DF)	101
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	50
Matrix	EFFICIENCY FACTOR (EFF)	0.2733
LIQUID	Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE	0.230
Batch Number		
98005464	Blank Concentration in $\mu\text{Ci/L}$	1.91E+01
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	< 2.02E+01
0	Maximum Concentration in $\mu\text{Ci/L}$	< 2.0244E+01
Sample Prep		
ACIDIG02	Rs (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S98T003081	ALPHA TOTAL $\mu\text{Ci/mL}$ = $ALPHA TOTAL \mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
SZC		
Chemist		
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 2.02E-02
Analyst	LESS THAN Value was Determined from Rs.	DETECTION LEVEL
SCL		
Date Complete	RELATIVE COUNTING ERROR	180.1%
10/30/98		2.63E-02 $\mu\text{Ci/mL}$
Analysis Date		
10/29/98		
Analysis Time		
01:00 PM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date: 30-Oct-98
Signature of Chemist:	SAC	Date: 27 Nov 98

SAMPLE.WB1 Rev. 1.

508101ML

LABCORE Completed Worklist Report for Worklist# 26668

Analyst: crj Instrument: AB16 Book#: _____

Method: LA-508-101 Rev/Mod _____

Worklist Comment: AW101 LAW, @ALPHA01 SS by Ludlum. Std: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@ALPHA01 ALPHA01	SOLID	1.80E-04	1.78E-4	98.889 % Recovery	
1 STD	0	@ALPHA01 ALPHA01E	SOLID	1.00	3.49E+00	3.490 % Ct. Error	
2 BLNK-PREP	0	@ALPHA01 ALPHA01	SOLID	1	2.57E-2	0.026 uCi/g	
2 BLNK-PREP	0	@ALPHA01 ALPHA01E	SOLID	1.00	9.62E+01	96.200 uCi/g	
3 BLNK/BKG	0	@ALPHA01 ALPHA01	SOLID	1.00E+00	2.94E+00	2.940 BLNK/BKG	
4 SAMPLE	S98T003082	0 F @ALPHA01 ALPHA01	SOLID	N/A	3.34E-01	3.45E-002 uCi/g	
4 SAMPLE	S98T003082	0 F @ALPHA01 ALPHA01E	SOLID	N/A	1.92E+01	% Ct. Error	
5 SPK	S98T003082	0 F @ALPHA01 ALPHA01	SOLID	4.05E-02	3.81E-02	94.074 % Recovery	
6 SAMPLE	S98T003083	0 F @ALPHA01 ALPHA01	SOLID	N/A	1.02E+00	7.00E-002 uCi/g	
6 SAMPLE	S98T003083	0 F @ALPHA01 ALPHA01E	SOLID	N/A	1.51E+01	% Ct. Error	
7 SAMPLE	S98T003084	0 F @ALPHA01 ALPHA01	SOLID	N/A	1.12E+00	7.44E-002 uCi/g	
7 SAMPLE	S98T003084	0 F @ALPHA01 ALPHA01E	SOLID	N/A	1.43E+01	% Ct. Error	
8 SAMPLE	S98T003085	0 F @ALPHA01 ALPHA01	SOLID	N/A	1.67E+01	3.16E-002 uCi/g	
8 SAMPLE	S98T003085	0 F @ALPHA01 ALPHA01E	SOLID	N/A	2.66E+01	% Ct. Error	
9 SAMPLE	S98T003086	0 F @ALPHA01 ALPHA01	SOLID	N/A	1.53E-01	3.26E-002 uCi/g	
9 SAMPLE	S98T003086	0 F @ALPHA01 ALPHA01E	SOLID	N/A	2.69E+01	% Ct. Error	

Final page for worklist# 26668

Analyst Signature	Date	Analyst Signature	Date

Reviewer Signature	Date		
	26 Oct 98		

LABCORE Data Entry Template for Worklist# 26668

Analyst: CJS Instrument: AB00 16 Book# 31B57

Method: LA-508-101 Rev/Mod G-0

Worklist Comment: AW101 LAW, @ALPHA01 SS by Ludlum. Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	SOLID		
2 BLNK-PREP			@ALPHA01	SOLID		
3 BLNK/BKG			@ALPHA01	SOLID		
4 SAMPLE	S98T003082 0 F		@ALPHA01	SOLID	98000554	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					
5 SPK	S98T003082 0 F		@ALPHA01	SOLID		
6 SAMPLE	S98T003083 0 F		@ALPHA01	SOLID	98000554	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					
7 SAMPLE	S98T003084 0 F		@ALPHA01	SOLID	98000554	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					
8 SAMPLE	S98T003085 0 F		@ALPHA01	SOLID	98000554	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					
9 SAMPLE	S98T003086 0 F		@ALPHA01	SOLID	98000554	AW-101 LAW
	Analytes Requested: ALPHA01 , ALPHA01E					

Final page for worklist # 26668

Analyst Signature

Date

10/22/98

Analyst Signature

Date

10-23-98

10-23-98

Data Entry Comments:

AT : LA-508-101 (G-0) LA-508-113 (B-0) STANDARD

		STANDARD	REPLICATE
Typo	DETECTOR NUMBER	16	16
STD	DISH SIZE (1, 2, or 5)	(MS)	2
Work List	GROSS COUNTS	(GC)	3174
26668	COUNT TIME in MINUTES	(CT)	30
Att for BI?	BACKGROUND in cpm	(BKG)	0.17
AT	SAMPLE SIZE in mL	(SS)	1.000
Test Code	DILUTION FACTOR	(DF)	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	31B57
Matrix	EFFICIENCY FACTOR	(EFF)	0.2683
LIQUID	Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE		105.630
Batch Number	Standard Value in $\mu\text{Ci/mL}$		1.80E-04
98005279	Concentration in $\mu\text{Ci/L}$	=	1.77E-01
Re-run	Replicate Concentration in $\mu\text{Ci/L}$	=	1.79E-01
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$	=	1.7827E-01
Sample Prep			
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL26668-STD	ALPHA TOTAL $\mu\text{Ci/mL}$ = $ALPHA TOTAL \mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	1.78E-04	DETECTION LEVEL
Analyst			
CRJ			
Date Complete	RELATIVE COUNTING ERROR =	3.5%	7.42E-07 $\mu\text{Ci/mL}$
10/23/98			
Analysis Date			
10/22/98			
Analysis time			
03:45 PM			
Sample Point			
AW-101 LAW			

Analyst:	EMB	Date: 23-Oct-98
Signature of Chemist: <i>DA Cottrell</i>	SAC	Date: <i>26 Oct 98</i>
STANDARD.WB1 Rev. 1.0	508101ML	

AT : LA-508-101 (G-0)

SOLIDS

		BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER	16	16
BLNK-PREP	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	16	14
26668	COUNT TIME in MINUTES (CT)	30	30
Alt or Bkg	BACKGROUND in cpm (BKG)	0.17	0.17
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1744	2.1744
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.363	0.297
Batch Number			
98005279	Blank Concentration in $\mu\text{Ci/g}$	2.83E-02	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	2.31E-02	
0	Average Concentration in $\mu\text{Ci/g}$	2.5735E-02	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$		
WL26668-BLNK-PREP			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	2.57E-02	DETECTION LEVEL
Analyst			
CRJ			
Date Complete			3.45E-02 $\mu\text{Ci/g}$
10/23/98	RELATIVE COUNTING ERROR	96.2%	
Analysis Date			
10/22/98			
Analysis Time			
03:45 PM			
Sample Point			
AW-101 LAW			

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist:	<i>[Signature]</i>	Date: <i>26 Oct 98</i>
BLANK.WB1 Rev. 1.0	508101ML	

AT : LA-508-101 (G-0)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	148	119
26668	COUNT TIME in MINUTES (CT)	30	30
Al or B?	BACKGROUND in cpm (BKG)	0.17	0.17
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1744	2.1744
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	4.763	3.797
Batch Number			
98005279	Blank Concentration in $\mu\text{Ci/g}$	3.71E-01	
ReRun	Replicate Concentration in $\mu\text{Ci/g}$	2.96E-01	
0	Average Concentration in $\mu\text{Ci/g}$	3.3377E-01	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	$ALPHA \text{ TOTAL } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S98T003082			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	3.34E-01	DETECTION LEVEL
Analyst			
CRJ			
Date Complete			3.45E-02 $\mu\text{Ci/g}$
10/23/98	RELATIVE COUNTING ERROR	19.2%	
Analysis Date			
10/22/98			
Analysis Time			
03:45 PM			
Sample Point			
AW-101 LAW			

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 26 Oct 98
SAMPLE.WB1 Rev. 1.	508101ML	

AT : LA-508-101 (G-0) LA-508-113 (B-0) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	16	16
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	68568	67894
26668	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.17	0.17
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	1.000	1.000
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1744	2.1744
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	148B43	148B43
98005279	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	4.0548E-02	4.0548E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2683	0.2683
0	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	1.78E+02	1.76E+02
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	3.3377E-01	
FUSION01			
Sample #			
S98T003082	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / ((EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci}))$		
WB27806	QC ACTUAL = SVal		
Prepared By	QC FOUND = $((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))$		
EMB	PERCENT SPIKE RECOVERY = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
Chemist			
SAC			
Analyst			
CRJ			
Date Complete			
10/23/98			
Analysis Date			
10/22/98	QC ACTUAL =	4.05E-02	
Analysis Time	QC FOUND =	3.81E-02	
03:45 PM	AVG. PERCENT SPIKE RECOVERY =	94.0%	
Sample Point			
AW-101 LAW			

Analyst:	EMB	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 26 Oct 98
SPIKE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM6

AT : LA-508-101 (G-0)

SOLIDS

	SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2
Work List	GROSS COUNTS (GC)	212
26668	COUNT TIME in MINUTES (CT)	30
Alcora B?	BACKGROUND in cpm (BKG)	0.17
AT	SAMPLE SIZE in mL (SS)	0.500
Test Code	DILUTION FACTOR (DF)	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1428
Matrix	EFFICIENCY FACTOR (EFF)	0.2683
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	6.897
Batch Number		
98005279	Blank Concentration in $\mu\text{Ci/g}$	1.09E+00
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	9.44E-01
0	Average Concentration in $\mu\text{Ci/g}$	1.0177E+00
Sample Prep		
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG	
Sample	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)	
S98T003083		
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
EMB		
Chemist		
SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	1.02E+00
Analyst		
CRJ		
Date Complete		
10/23/98	RELATIVE COUNTING ERROR	15.1%
Analysis Date		
10/22/98		
Analysis Time		
03:45 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL7.00E-02
 $\mu\text{Ci/g}$

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 20/2/98
SAMPLE.WB1 Rev. 1.	508101ML	

AT : LA-508-101 (G-0)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	202	208
26668	COUNT TIME in MINUTES (CT)	30	30
At or Bk	BACKGROUND in cpm (BKG)	0.17	0.17
AT	SAMPLE SIZE in mL (SS)	0.500	0.500
Test Code	DILUTION FACTOR (DF)	101	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0148	2.0148
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	6.563	6.763
Batch Number			
98005279	Blank Concentration in $\mu\text{Ci/g}$	1.10E+00	
ReRun	Replicate Concentration in $\mu\text{Ci/g}$	1.14E+00	
0	Average Concentration in $\mu\text{Ci/g}$	1.1216E+00	
Sample Prep			
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S98T003084			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
EMB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	1.12E+00	DETECTION LEVEL
Analyst			
CRJ			
Date Completed			7.44E-02 $\mu\text{Ci/g}$
10/23/98	RELATIVE COUNTING ERROR	14.3%	
Analysis Date			
10/22/98			
Analysis Time			
03:45 PM			
Sample Point			
AW-101 LAW			

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 26 Oct 98
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: SAM8

AT : LA-508-101 (G-0)

SOLIDS

	SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2
Work List	GROSS COUNTS (GC)	68
26668	COUNT TIME in MINUTES (CT)	30
Alpha Br	BACKGROUND in cpm (BKG)	0.17
AT	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	101
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.3696
Matrix	EFFICIENCY FACTOR (EFF)	0.2683
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.563
Batch Number		
98005279	Blank Concentration in $\mu\text{Ci/g}$	1.83E-01
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	1.50E-01
0	Average Concentration in $\mu\text{Ci/g}$	1.6674E-01
Sample Prep		
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample	$\text{ALPHA TOTAL } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$	
S98T003085		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
EMB		
Chemist		
SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	1.67E-01
Analyst		
CRJ		
Date Complete		
10/23/98	RELATIVE COUNTING ERROR	26.6%
Analysis Date		
10/22/98		
Analysis Time		
03:45 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist:	SAC	Date: 26 Oct 98
SAMPLE.WB1 Rev. 1.	508101ML	

AT : LA-508-101 (G-0)

SOLIDS

Type	DETECTOR NUMBER	SAMPLE	REPLICATE
SAMPLE	DISH SIZE (1, 2, or 5)	16	16
Work List	GROSS COUNTS (MS)	2	2
26668	(GC)	67	68
At For Bkg	COUNT TIME in MINUTES (CT)	30	30
AT	BACKGROUND in cpm (BKG)	0.17	0.17
Test Code	SAMPLE SIZE in mL (SS)	1.000	1.000
@ALPHA01	DILUTION FACTOR (DF)	101	101
Matrix	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.3012	2.3012
SOLID	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
Batch Number	Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE	2.063	2.097
98005279	Blank Concentration in $\mu\text{Ci/g}$	1.52E-01	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	1.54E-01	
0	Average Concentration in $\mu\text{Ci/g}$	1.5327E-01	

Sample Prep
FUSION01
Sample #
S98T003086
Instrument Code
WB27806
Prepared By
EMB
Chemist
SAC
Analyst
CRJ
Date Complete
10/23/98
Analysis Date
10/22/98
Analysis Time
03:45 PM
Sample Point
AW-101 LAW

$$Rs \text{ (Sample Count Rate)} = (TC / CT) - BKG$$

$$\text{ALPHA TOTAL } \mu\text{Ci/g} = Rs * 1000\text{mL/L} * DF / (EFF * SS * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$$

$$\text{Relative Counting Error} = [(The \text{ Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$$

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SAC	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	1.53E-01	DETECTION LEVEL
Analyst				
CRJ				
Date Complete				
10/23/98	RELATIVE COUNTING ERROR		26.9%	3.26E-02 $\mu\text{Ci/g}$

Analyst:	CRJ	Date: 23-Oct-98
Signature of Chemist:	<i>CRJ</i>	SAC
SAMPLE.WB1 Rev. 1.	508101ML	Date: 20 Oct 98

LABCORE Completed Worklist Report for Worklist# 26548

Analyst: scl

Instrument: AB16

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW-101 LAW, @AB-01, SS by Ludlum. STD: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	0AB-01	ALPHA01	LIQUID	1.80E-04	1.76E-4	97.778 % Recovery
1 STD		0	0AB-01	ALPHA01E	LIQUID	1	3.50E+00	3.500 % Ct. Erro
1 STD		0	0AB-01	BETA-01	LIQUID	1.99E-03	2.19E-3	110.050 % Recovery
1 STD		0	0AB-01	BETA-01E	LIQUID	1	8.00E-01	0.800 % Ct. Erro
2 BLNK-PREP		0	0AB-01	ALPHA01	LIQUID	1	<1.51E-2	uCi/mL
2 BLNK-PREP		0	0AB-01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000 uCi/mL
2 BLNK-PREP		0	0AB-01	BETA-01	LIQUID	1	<1.22E-1	uCi/mL
2 BLNK-PREP		0	0AB-01	BETA-01E	LIQUID	1.00	1.67E+02	167.000 uCi/mL
3 BLNK/BKG		0	0AB-01	ALPHA01	LIQUID	1.00E+00	1.33E+00	1.330 BLNK/BKG
3 BLNK/BKG		0	0AB-01	BETA-01	LIQUID	1.00E+00	1.11E+00	1.110 BLNK/BKG
4 SAMPLE	S98T002788	0 B	0AB-01	ALPHA01	LIQUID	N/A	<1.51E-02	2.44e-002 uCi/mL
4 SAMPLE	S98T002788	0 B	0AB-01	ALPHA01E	LIQUID	N/A	5.00E+02	% Ct. Error
4 SAMPLE	S98T002788	0 B	0AB-01	BETA-01	LIQUID	N/A	5.46E+02	0.143 uCi/mL
4 SAMPLE	S98T002788	0 B	0AB-01	BETA-01E	LIQUID	N/A	3.21E-01	% Ct. Error
5 DUP	S98T002788	0 B	0AB-01	ALPHA01	LIQUID	<1.51E-2	<1.80E-2	RPD
5 DUP	S98T002788	0 B	0AB-01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000 % Ct. Erro
5 DUP	S98T002788	0 B	0AB-01	BETA-01	LIQUID	5.46E+2	5.57E+2	1.995 RPD
5 DUP	S98T002788	0 B	0AB-01	BETA-01E	LIQUID	1.00	3.17E-01	0.317 % Ct. Erro
6 SPK	S98T002788	0 B	0AB-01	ALPHA01	LIQUID	4.05E-02	3.81E-02	94.074 % Recovery
6 SPK	S98T002788	0 B	0AB-01	BETA-01	LIQUID	1.40E-01	1.59E-01	113.571 % Recovery
7 SAMPLE	S98T002789	0 B	0AB-01	ALPHA01	LIQUID	N/A	1.81E-02	2.44e-002 uCi/mL
7 SAMPLE	S98T002789	0 B	0AB-01	ALPHA01E	LIQUID	N/A	1.01E+02	% Ct. Error
7 SAMPLE	S98T002789	0 B	0AB-01	BETA-01	LIQUID	N/A	5.37E+02	0.143 uCi/mL
7 SAMPLE	S98T002789	0 B	0AB-01	BETA-01E	LIQUID	N/A	3.22E-01	% Ct. Error
8 DUP	S98T002789	0 B	0AB-01	ALPHA01	LIQUID	1.81E-2	<2.26E-2	RPD
8 DUP	S98T002789	0 B	0AB-01	ALPHA01E	LIQUID	1.00	1.96E+02	196.000 % Ct. Erro
8 DUP	S98T002789	0 B	0AB-01	BETA-01	LIQUID	5.37E+2	5.52E+2	2.755 RPD
8 DUP	S98T002789	0 B	0AB-01	BETA-01E	LIQUID	1.00	3.18E-01	0.318 % Ct. Erro
9 SAMPLE	S98T002790	0 B	0AB-01	ALPHA01	LIQUID	N/A	1.96E-02	2.44e-002 uCi/mL
9 SAMPLE	S98T002790	0 B	0AB-01	ALPHA01E	LIQUID	N/A	5.00E+02	% Ct. Error
9 SAMPLE	S98T002790	0 B	0AB-01	BETA-01	LIQUID	N/A	5.21E+02	0.143 uCi/mL
9 SAMPLE	S98T002790	0 B	0AB-01	BETA-01E	LIQUID	N/A	3.27E-01	% Ct. Error
10 DUP	S98T002790	0 B	0AB-01	ALPHA01	LIQUID	<1.36E-2	<1.36E-2	RPD
10 DUP	S98T002790	0 B	0AB-01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000 % Ct. Erro
10 DUP	S98T002790	0 B	0AB-01	BETA-01	LIQUID	5.21E+2	5.47E+2	4.869 RPD
10 DUP	S98T002790	0 B	0AB-01	BETA-01E	LIQUID	1.00	3.19E-01	0.319 % Ct. Erro

Final page for worklist# 26548

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

LABCORE Completed Worklist Report for Worklist# 26548

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
Analyst Signature		Date		Analyst Signature		Date				
				Matthew		21 Oct 98				
				Reviewer Signature		Date				

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

LABCORE Data Entry Template for Worklist# 26548 ✓

Analyst: S. L Instrument: AB00 10 Book# 31857

Method: LA-508-101 Rev/Mod G-0

Worklist Comment: AW-101 LAW, @AB-01, SS by Ludlum. STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AB-01	LIQUID		
2 BLNK-PREP			@AB-01	LIQUID		
3 BLNK/BKG			@AB-01	LIQUID		
4 SAMPLE	S98T002788	0 B	@AB-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: ALPHA01 , ALPHA01E, BETA-01 , BETA-01E						
5 DUP	S98T002788	0 B	@AB-01	LIQUID		
6 SPK	S98T002788	0 B	@AB-01	LIQUID		
7 SAMPLE	S98T002789	0 B	@AB-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: ALPHA01 , ALPHA01E, BETA-01 , BETA-01E						
8 DUP	S98T002789	0 B	@AB-01	LIQUID		
9 SAMPLE	S98T002790	0 B	@AB-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: ALPHA01 , ALPHA01E, BETA-01 , BETA-01E						
10 DUP	S98T002790	0 B	@AB-01	LIQUID		

Final page for worklist # 26548

Sue Lai 10-18-98
Analyst Signature Date

Ray L. Phet 10/19/98
Analyst Signature Date
Kevin Wright 10/19/98
M. B. ... 10/20/98

Data Entry Comments:

HNF-1652 REV. 0

WORKBOOK PAGE: STD1

TB : LA-508-101 (G-0) LA-508-113 (B-0) STANDARD

	STANDARD	REPLICATE
Type	DETECTOR NUMBER	16
STD	DISH SIZE (1, 2, or 5) (MS)	2
Worklist	GROSS COUNTS (GC)	61237
26548	COUNT TIME in MINUTES (CT)	30
Amount?	BACKGROUND in cpm (BKG)	14.2
TB	SAMPLE SIZE in mL (SS)	1.000
Code	DILUTION FACTOR (DF)	1
@AB-01	STANDARD BOOK NUMBER (Std BN)	31B57
Matrix	EFFICIENCY FACTOR (EFF)	0.4195
LIQUID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	2027.033
Batch Number	Standard Value in $\mu\text{Ci/mL}$	1.99E-03
98005141	Concentration in $\mu\text{Ci/L}$ =	2.18E+00
Rerun	Replicate Concentration in $\mu\text{Ci/L}$ =	2.20E+00
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	2.1895E+00
Sample Prep		
N/A	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$	
Sample#	TOTAL BETA $\mu\text{Ci/L}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$	
WL26548-STD	TOTAL BETA $\mu\text{Ci/mL}$ = $\text{TOTAL BETA } \mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SAC	TOTAL BETA CONCENTRATION in $\mu\text{Ci/mL}$ =	2.19E-03
Analyst		
SCL		
Date Complete		
10/20/98	RELATIVE COUNTING ERROR =	0.8%
Analysis Date		
10/18/98		
Analysis Time		
10:20 AM		
Sample Point		
AW-101 LAW		

DETECTION LEVEL
3.55E-06 $\mu\text{Ci/mL}$

Analyst:	MCB	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 21 Oct 98

STANDARD.WB1 Rev. 1.0

508101ML

827

AT : LA-508-101 (G-0) LA-508-113 (B-0) STANDARD

	STANDARD	REPLICATE
Type	DETECTOR NUMBER	16
STD	DISH SIZE (1, 2, or 5) (MS)	2
Work Net	GROSS COUNTS (GC)	3139
26548	COUNT TIME in MINUTES (CT)	30
AT or B?	BACKGROUND in cpm (BKG)	0.1
AT	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	1
@AB-01	STANDARD BOOK NUMBER (Std BN)	31B57
Matrix	EFFICIENCY FACTOR (EFF)	0.2683
LIQUID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	104.533
Batch Number	Standard Value in $\mu\text{Ci/mL}$	1.80E-04
98005141	Concentration in $\mu\text{Ci/L}$ =	1.76E-01
Re-run	Replicate Concentration in $\mu\text{Ci/L}$ =	1.76E-01
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.7564E-01
Sample Prep		
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
WL26548-STD	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SAC	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	1.76E-04
Analyst		
SCL		
Date Complete		
10/20/98	RELATIVE COUNTING ERROR =	3.5%
Analyst Date		
10/18/98		
Analysis Time		
10:20 AM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL6.05E-07
 $\mu\text{Ci/mL}$

Analyst:	MCB	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 2/2/98
STANDARD.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: BLANK3

TB : LA-508-101 (G-0) LIQUIDS

	BLNK-PREP	REPLICATE
TYPE	DETECTOR NUMBER	16
BLNK-PREP	DISH SIZE (1, 2, or 5) (MS)	2
Worklist	GROSS COUNTS (GC)	461
26548	COUNT TIME in MINUTES (CT)	30
ALPHA BKG	BACKGROUND in cpm (BKG)	14.2
TB	SAMPLE SIZE in mL (SS)	0.250
Test Code	DILUTION FACTOR (DF)	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100
Matrix	EFFICIENCY FACTOR (EFF)	0.4195
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.805
Batch Number		
98005141	Blank Concentration in $\mu\text{Ci/L}$	< 1.22E+02
ReRun	Replicate Concentration in $\mu\text{Ci/L}$	8.82E+01
0	Maximum Concentration in $\mu\text{Ci/L}$	< 1.2167E+02
Sample Prep		
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	TOTAL BETA $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
WL26548-BLNK	TOTAL BETA $\mu\text{Ci/mL}$ = TOTAL BETA $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SAC	TOTAL BETA in $\mu\text{Ci/mL}$ (Maximum) =	< 1.22E-01
Analyst		
SCL	LESS THAN Value was Determined from Rmax.	
Date Complete		
10/20/98	RELATIVE COUNTING ERROR	166.8%
Analysis Date		
10/18/98		
Analysis Time		
10:20 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 2/2/98
BLANK.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: BLANK4

AT : LA-508-101 (G-0)

LIQUIDS

		BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER	16	16
BLNK-PREP	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	3	5
26548	COUNT TIME IN MINUTES (CT)	30	30
Acquired By	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
ISINCode	DILUTION FACTOR (DF)	101	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100	100
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.135	0.222
Batch Number			
98005141	Blank Concentration in $\mu\text{Ci/L}$	< 9.14E+00	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	< 1.51E+01	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 1.5073E+01	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL26548-BLNK	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 1.51E-02	DETECTION LEVEL
Analyst	LESS Than Value was Determined from Lc.		
SCL			
Date Complete	RELATIVE COUNTING ERROR	500.0%	2.44E-02 $\mu\text{Ci/mL}$
10/20/98			
Analyst Date			
10/18/98			
Analysis time			
10:20 AM			
Sample Point			
AW-101 LAW			

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 21 Oct 98
BLANK.WB1 Rev. 1.0	508101ML	

TB : LA-508-101 (G-0)

LIQUIDS

		SAMPLE	REPLICATE
TYPE	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	374763	381369
26548	COUNT TIME IN MINUTES (CT)	30	30
ANALYST	BACKGROUND in cpm (BKG)	14.2	14.2
TB	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	101	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100	100
Matrix	EFFICIENCY FACTOR (EFF)	0.4195	0.4195
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	12477.900	12698.100
Batch Number			
98005141	Blank Concentration in $\mu\text{Ci/L}$	5.41E+05	
Rorun	Replicate Concentration in $\mu\text{Ci/L}$	5.51E+05	
0	Average Concentration in $\mu\text{Ci/L}$	5.4608E+05	

Sample Prep	
ACIDIG02	$R_s \text{ (Sample Count Rate)} = (TC / CT) - BKG$
Sample #	$TOTAL \text{ BETA } \mu\text{Ci/L} = R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
S98T002788	$TOTAL \text{ BETA } \mu\text{Ci/mL} = TOTAL \text{ BETA } \mu\text{Ci/L} / 1000\text{mL/L}$
Instrument Code	$Relative \text{ Counting Error} = [(The \text{ Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By	
MCB	
Chemist	
SAC	
Analyst	
SCL	
Date Complete	
10/20/98	
Analysis Date	
10/18/98	
Analysis Time	
10:20 AM	
Sample Point	
AW-101 LAW	

TOTAL BETA in $\mu\text{Ci/mL}$ (Average)	=	5.46E+02	DETECTION LEVEL
RELATIVE COUNTING ERROR		0.3%	1.43E-01 $\mu\text{Ci/mL}$

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 21 Oct 98
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM8

AT : LA-508-101 (G-0) LIQUIDS

	SAMPLE	REPLICATE
TYPE	DETECTOR NUMBER	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2
Worklist	GROSS COUNTS (GC)	5
26548	COUNT TIME IN MINUTES (CT)	30
Acquired By	BACKGROUND in cpm (BKG)	0.1
AT	SAMPLE SIZE in mL (SS)	0.250
Test Code	DILUTION FACTOR (DF)	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100
Matrix	EFFICIENCY FACTOR (EFF)	0.2683
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.222
		0.167

Batch Number	Blank Concentration in $\mu\text{Ci/L}$	< 1.51E+01
98005141	Replicate Concentration in $\mu\text{Ci/L}$	1.13E+01
ReRun	Maximum Concentration in $\mu\text{Ci/L}$	< 1.5073E+01
0		

Sample Prep	Rs (Sample Count Rate) = (TC / CT) - BKG
ACIDIG02	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)
Sample #	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L
S98T002788	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
WB27806	

Prepared By	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 1.51E-02	DETECTION LEVEL
MCB			
Chemist			
SAC			
Analyst	LESS THAN Value was Determined from Rmax.		
SCL			
Date Complete			2.44E-02
10/20/98	RELATIVE COUNTING ERROR	500.0%	$\mu\text{Ci/mL}$
Analysis Date			
10/18/98			
Analysis Time			
10:20 AM			
Sample Point			
AW-101 LAW			

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 2/2/98
SAMPLE:WB1 Rev. 1.0	508101ML	

TB : LA-508-101 (G-0)

LIQUIDS

	DUP	REPLICATE
Type	DETECTOR NUMBER	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2
Worksheet	GROSS COUNTS (GC)	384473
26548	COUNT TIME IN MINUTES (CT)	30
Analysis	BACKGROUND in cpm (BKG)	14.2
TB	SAMPLE SIZE in mL (SS)	0.250
Test Code	DILUTION FACTOR (DF)	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100
Matrix	EFFICIENCY FACTOR (EFF)	0.4195
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	12801.567
Batch Number		12874.833
98005141	Blank Concentration in $\mu\text{Ci/L}$	5.55E+05
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	5.59E+05
0	Average Concentration in $\mu\text{Ci/L}$	5.5693E+05
Sample Prep		
ACIDIG02	R_s (Sample Count Rate) = $(\text{CT} / \text{CT}) - \text{BKG}$	
Sampler	TOTAL BETA $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * \text{DF} * \text{DDF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$	
S98T002788	TOTAL BETA $\mu\text{Ci/mL}$ = TOTAL BETA $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SAC	TOTAL BETA in $\mu\text{Ci/mL}$ (Average) =	5.57E+02
Analyst		DETECTION LEVEL
SCL		
Date/Complete		1.43E-01
10/20/98	RELATIVE COUNTING ERROR	$\mu\text{Ci/mL}$
Analysis Date		
10/18/98		
Analysis Time		
10:20 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 2/2/98
SAMPLE.WB1 Rev. 1.0	508101ML	

AT : LA-508-101 (G-0)

LIQUIDS

		DUP	REPLICATE
TYPE	DETECTOR NUMBER	16	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	2	6
26548	COUNT TIME IN MINUTES (CT)	30	30
AT or UST	BACKGROUND IN cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	101	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100	100
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.135	0.265
Batch Number			
98005141	Blank Concentration in $\mu\text{Ci/L}$	< 9.14E+00	
Re-run	Replicate Concentration in $\mu\text{Ci/L}$	< 1.80E+01	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 1.7974E+01	
Sample Prep			
ACIDIG02	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S98T002788	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = $\{ [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] \} * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 1.80E-02	DETECTION LEVEL
Analyst	LESS Than Value was Determined from Lc.		
SCL			
Date Complete	RELATIVE COUNTING ERROR	500.0%	2.44E-02 $\mu\text{Ci/mL}$
10/20/98			
Analyst Date			
10/18/98			
Analyst Time			
10:20 AM			
Sample Point			
AW-101 LAW			

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 2/2/98
SAMPLE.WB1 Rev. 1.0 508101ML		

HNF-1652 REV. 0

WORKBOOK PAGE: SPK11

TB : LA-508-101 (G-0) LA-508-113 (B-0) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	16	16
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Worklist	TOTAL COUNTS (TC)	818772	825058
26548	COUNT TIME in MINUTES (CT)	30	30
Alton/B-7	BACKGROUND in cpm (BKG)	14.2	14.2
TB	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.250	0.250
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	101	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100	100
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	36B57	36B57
98005141	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	1.3968E-01	1.3968E-01
Rorin	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.4195	0.4195
0	SAMPLE + SPIKE $\mu\text{Ci/mL}$ (S+S)	1.18E+03	1.19E+03
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE	5.4608E+02	
ACIDIG02			
Sample #			
S98T002788			
Instrument Code	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
WB27806	SAMPLE + SPIKE $\mu\text{Ci/mL}$ = $Rs * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
Prepared By	QC ACTUAL = SVal		
MCB	QC FOUND = $((S+S \mu\text{Ci/mL} - \text{SAMPLE } \mu\text{Ci/mL}) * ((SDF/SVol)/(DF*DDF/SS)))$		
Chemist	PERCENT SPIKE RECOVERY = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
SAC			
Analyst			
SCL			
Date Complete			
10/20/98			
Analysis Date			
10/18/98	QC ACTUAL =	1.40E-01	
Analysis Time	QC FOUND =	1.59E-01	
10:20 AM	AVG. PERCENT SPIKE RECOVERY =	113.7%	
Sample Point			
AW-101 LAW			

Analyst:	MCB	Date: 20-Oct-98
Signature of Chemist:	<i>S. A. Carter</i>	SAC Date: <i>21 Oct 98</i>
SPIKE.WB1 Rev. 1.0 508101ML		

WORKBOOK PAGE: SPK12

AT : LA-508-101 (G-0) LA-508-113 (B-0) SPIKED SAMPLE

		SPIKE	REPLICATE
SPK	DETECTOR NUMBER	16	16
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Worklist	TOTAL COUNTS (TC)	67883	68372
26548	COUNT TIME in MINUTES (CT)	30	30
Alcor/B7	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.250	0.250
Post Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	101	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100	100
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	148B43	148B43
98005141	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	4.0548E-02	4.0548E-02
Reruns	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2683	0.2683
0	SAMPLE + SPIKE $\mu\text{Ci/mL}$ (S+S)	1.53E+02	1.55E+02
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE	<	1.5073E-02
ACIDIG02			
Sample #			
S98T002788			
Instrument Code	Rs (Sample Count Rate) = (TC / CT) - BKG		
WB27806	SAMPLE + SPIKE $\mu\text{Ci/mL}$ = Rs * DF * DDF / (EFF * SS * 222000dpm/ μCi)		
Prepared By	QC ACTUAL = SVal		
MCB	QC FOUND = (((S+S $\mu\text{Ci/mL}$ - SAMPLE $\mu\text{Ci/mL}$) * ((SDF/SVol)/(DF*DDF/SS))))		
Chemist	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100		
SAC			
Analyst			
SCL			
Date Complete	NOTE: Original Sample result was a LESS THAN value. Zero (0) was subtracted from the spiked value for QC found calculation.		
10/20/98			
Analysis Date			
10/18/98	QC ACTUAL =	4.05E-02	
Analysis Time	QC FOUND =	3.81E-02	
10:20 AM	AVG. PERCENT SPIKE RECOVERY =	94.0%	
Sample Point			
AW-101 LAW			

Analyst:	MCB	Date: 20-Oct-98
Signature of Chemist:		SAC Date: 20 Oct 98
SPIKE.WB1 Rev. 1.0 508101ML		

WORKBOOK PAGE: SAM13

TB : LA-508-101 (G-0)

LIQUIDS

		SAMPLE	REPLICATE
INSTRUMENT	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
WORKLIST	GROSS COUNTS (GC)	370748	372943
26548	COUNT TIME in MINUTES (CT)	30	30
ANALYST	BACKGROUND in cpm (BKG)	14.2	14.2
TB	SAMPLE SIZE in mL (SS)	0.250	0.250
TEST CODE	DILUTION FACTOR (DF)	101	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100	100
MATRIX	EFFICIENCY FACTOR (EFF)	0.4195	0.4195
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	12344.067	12417.233
BATCH NUMBER			
98005141	Blank Concentration in $\mu\text{Ci/L}$	5.35E+05	
RECUR	Replicate Concentration in $\mu\text{Ci/L}$	5.39E+05	
0	Average Concentration in $\mu\text{Ci/L}$	5.3708E+05	
SAMPLE PREP			
ACIDIG02	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
SAMPLE	TOTAL BETA $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S98T002789	TOTAL BETA $\mu\text{Ci/mL}$ = TOTAL BETA $\mu\text{Ci/L} / 1000\text{mL/L}$		
INSTRUMENT CODE	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
PREPARED BY			
MCB			
CHEMIST			
SAC	TOTAL BETA in $\mu\text{Ci/mL}$ (Average) =	5.37E+02	DETECTION LEVEL
ANALYST			
SCL			
DATE COMPLETE			1.43E-01
10/20/98	RELATIVE COUNTING ERROR	0.3%	$\mu\text{Ci/mL}$
ANALYSIS DATE			
10/18/98			
ANALYSIS TIME			
10:20 AM			
SAMPLE POINT			
AW-101 LAW			

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 20 Oct 98
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM14

AT : LA-508-101 (G-0)

LIQUIDS

		SAMPLE	REPLICATE
WFO	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	10	12
26548	COUNT TIME in MINUTES (CT)	30	30
AT or BKG	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	101	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100	100
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.233	0.300
Batch Number			
98005141	Blank Concentration in $\mu\text{Ci/L}$	1.58E+01	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	2.03E+01	
0	Average Concentration in $\mu\text{Ci/L}$	1.8087E+01	
Sample Prep			
ACIDIG02	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S98T002789	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Average) =	1.81E-02	DETECTION LEVEL
Analyst			
SCL			
Date Complete			2.44E-02
10/20/98	RELATIVE COUNTING ERROR	101.0%	$\mu\text{Ci/mL}$
Analysis Date			
10/18/98			
Analysis Time			
10:20 AM			
Sample Point			
AW-101 LAW			

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 20 Oct 98
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP15

TB : LA-508-101 (G-0)

LIQUIDS

	DUP	REPLICATE
TYPE	DETECTOR NUMBER	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2
Worklist	GROSS COUNTS (GC)	382129
26548	COUNT TIME in MINUTES (CT)	30
ANALYST	BACKGROUND in cpm (BKG)	14.2
TB	SAMPLE SIZE in mL (SS)	0.250
Test Code	DILUTION FACTOR (DF)	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100
Matrix	EFFICIENCY FACTOR (EFF)	0.4195
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	12723.433
Batch Number		12706.933
98005141	Blank Concentration in $\mu\text{Ci/L}$	5.52E+05
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	5.51E+05
0	Average Concentration in $\mu\text{Ci/L}$	5.5159E+05
Sample Prep		
ACIDIG02	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	TOTAL BETA $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S98T002789	TOTAL BETA $\mu\text{Ci/mL}$ = TOTAL BETA $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SAC	TOTAL BETA in $\mu\text{Ci/mL}$ (Average) =	5.52E+02
Analyst		
SCL		
Date Complete		
10/20/98	RELATIVE COUNTING ERROR	0.3%
Analyst Date		
10/18/98		
Analyst Time		
10:20 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 21 Oct 98
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP16

AT : LA-508-101 (G-0)

LIQUIDS

		DUP	REPLICATE
WFO	DETECTOR NUMBER	16	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	6	13
26548	COUNT TIME IN MINUTES (CT)	30	30
AT or TEL	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	101	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100	100
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.265	0.333
Batch Number			
98005141	Blank Concentration in $\mu\text{Ci/L}$	< 1.80E+01	
Re-run	Replicate Concentration in $\mu\text{Ci/L}$	2.26E+01	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 2.2609E+01	
Sample Prep			
ACIDIG02	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/L} = R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S98T002789	$\text{ALPHA TOTAL } \mu\text{Ci/mL} = \text{ALPHA TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 2.26E-02	DETECTION LEVEL
Analyst			
SCL	LESS THAN Value was Determined from Rmax.		
Date Complete			2.44E-02 $\mu\text{Ci/mL}$
10/20/98	RELATIVE COUNTING ERROR	196.0%	
Analysis Date			
10/18/98			
Analysis Time			
10:20 AM			
Sample Point			
AW-101 LAW			

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 20-Oct-98
SAMPLE:WB1 Rev. 1.0	508101ML	

TB : LA-508-101 (G-0)

LIQUIDS

		SAMPLE	REPLICATE
WFO	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	360987	360373
26548	COUNT TIME IN MINUTES (CT)	30	30
Analysis	BACKGROUND in cpm (BKG)	14.2	14.2
TB	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	101	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100	100
Matrix	EFFICIENCY FACTOR (EFF)	0.4195	0.4195
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	12018.700	11998.233

Batch Number	
98005141	Blank Concentration in $\mu\text{Ci/L}$ 5.21E+05
Rerun	Replicate Concentration in $\mu\text{Ci/L}$ 5.20E+05
0	Average Concentration in $\mu\text{Ci/L}$ 5.2094E+05

Sample Prep	Rs (Sample Count Rate) = (TC / CT) - BKG
ACIDIG02	TOTAL BETA $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
Sample#	TOTAL BETA $\mu\text{Ci/mL}$ = TOTAL BETA $\mu\text{Ci/L} / 1000\text{mL/L}$
S98T002790	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
WB27806	

Prepared By			
MCB			
Chemist			
SAC	TOTAL BETA in $\mu\text{Ci/mL}$ (Average) =	5.21E+02	DETECTION LEVEL
Analyst			
SCL			
Date Complete			1.43E-01
10/20/98	RELATIVE COUNTING ERROR	0.3%	$\mu\text{Ci/mL}$
Analyst Date			
10/18/98			
Analysis Time			
10:20 AM			
Sample Point			
AW-101 LAW			

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 2/2/98
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM18

AT : LA-508-101 (G-0)

LIQUIDS

		SAMPLE	REPLICATE
Detector Number	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	9	3
26548	COUNT TIME IN MINUTES (CT)	30	30
Attorney By	BACKGROUND in cpm (BKG)	0.1	0.1
AT	SAMPLE SIZE in mL (SS)	0.250	0.250
Test Code	DILUTION FACTOR (DF)	101	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100	100
Matrix	EFFICIENCY FACTOR (EFF)	0.2683	0.2683
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.200	0.135

Batch Number	Blank Concentration in $\mu\text{Ci/L}$	1.36E+01
98005141	Replicate Concentration in $\mu\text{Ci/L}$	< 9.14E+00
Recur	Maximum Concentration in $\mu\text{Ci/L}$	< 1.3566E+01
0		

Sample Prop	Rs (Sample Count Rate) = (TC / CT) - BKG
ACIDIG02	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)
Sample #	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L
S98T002790	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
WB27806	

Prepared By	MCB		
Chemist	SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 1.36E-02
Analyst	SCL	LESS THAN Value was Determined from Rs.	DETECTION LEVEL
Date Complete	10/20/98	RELATIVE COUNTING ERROR	500.0%
Analyst Date	10/18/98		2.44E-02 $\mu\text{Ci/mL}$
Analyst Time	10:20 AM		
Sample Point	AW-101 LAW		

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 2/0/98
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP19

TB : LA-508-101 (G-0) LIQUIDS

	DUP	REPLICATE
Type	DETECTOR NUMBER	16
DUP	DISH SIZE (1, 2, or 5) (MS)	2
Worklist	GROSS COUNTS (GC)	379068
26548	COUNT TIME in MINUTES (CT)	30
At or 1/2	BACKGROUND in cpm (BKG)	14.2
1B	SAMPLE SIZE in mL (SS)	0.250
Test Code	DILUTION FACTOR (DF)	101
@AB-01	DIGEST DILUTION FACTOR (DDF)	100
Matrix	EFFICIENCY FACTOR (EFF)	0.4195
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	12621.400
Batch Number		12607.733
98005141	Blank Concentration in $\mu\text{Ci/L}$	5.48E+05
ReRun	Replicate Concentration in $\mu\text{Ci/L}$	5.47E+05
0	Average Concentration in $\mu\text{Ci/L}$	5.4723E+05
Sample Prep		
ACIDIG02	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	TOTAL BETA $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S98T002790	TOTAL BETA $\mu\text{Ci/mL}$ = TOTAL BETA $\mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SAC	TOTAL BETA in $\mu\text{Ci/mL}$ (Average) =	5.47E+02
Analyst		DETECTION LEVEL
SCL		
Date Complete		1.43E-01
10/20/98	RELATIVE COUNTING ERROR	0.3%
Analysis Date		$\mu\text{Ci/mL}$
10/18/98		
Analysis Time		
10:20 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 20-Oct-98
SAMPLE.WB1 Rev. 1.0	508101ML	

AT : LA-508-101 (G-0)

LIQUIDS

	DUP	REPLICATE
Type	DETECTOR NUMBER	16
DUP	DISH SIZE (1, 2, or 5)	2
Worksheet	GROSS COUNTS (MS)	2
26548	(GC)	9
Alfort/B17	COUNT TIME in MINUTES (CT)	30
AT	BACKGROUND in cpm (BKG)	0.1
Test Code	SAMPLE SIZE in mL (SS)	0.250
@AB-01	DILUTION FACTOR (DF)	101
Matrix	DIGEST DILUTION FACTOR (DDF)	100
LIQUID	EFFICIENCY FACTOR (EFF)	0.2683
Batch Number	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	0.200
98005141	Blank Concentration in $\mu\text{Ci/L}$	1.36E+01
ReRun	Replicate Concentration in $\mu\text{Ci/L}$	< 9.14E+00
0	Maximum Concentration in $\mu\text{Ci/L}$	< 1.3566E+01
Sample Prep		
ACIDIG02	$R_s (\text{Sample Count Rate}) = (TC / CT) - BKG$	
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/L} = R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
S98T002790	$\text{ALPHA TOTAL } \mu\text{Ci/mL} = \text{ALPHA TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	$\text{Relative Counting Error} = [(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SAC	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 1.36E-02
Analyst	LESS THAN Value was Determined from Rs.	DETECTION LEVEL
SCL		
Date Complete		2.44E-02
10/20/98	RELATIVE COUNTING ERROR	500.0%
Analysis Date		$\mu\text{Ci/mL}$
10/18/98		
Analysis Time		
10:20 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date: 20-Oct-98
Signature of Chemist:	SAC	Date: 2/2/98
SAMPLE.WB1 Rev. 1.0	508101ML	

LABCORE Completed Worklist Report for Worklist# 26387

Analyst: gay

Instrument: GEA01

Book#: 28B57

Method: LA-548-121

Rev/Mod F-φ

Worklist Comment: AW101 LAW, @GEA-02 See traveler for SS. Std: 1.0mL skm

Seq Type	Sample#	RA	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		GEA-02 C060-02 LIQUID		4.590e-03	4.86e-03	105.882	% Recovery
1 STD	0		GEA-02 C060-02E LIQUID		1	3.05	3.050	% Ct Error
1 STD	0		GEA-02 CS13702 LIQUID		7.470e-03	7.60e-03	101.740	% Recovery
1 STD	0		GEA-02 CS13702E LIQUID		1	2.87	2.870	% Ct Error
2 BLNK	0		GEA-02 C060-02 LIQUID		1	<5.38e-3		uCi/mL
2 BLNK	0		GEA-02 SB12502 LIQUID		1	<1.47e-2		uCi/mL
2 BLNK	0		GEA-02 CS13702 LIQUID		1	<6.44e-3		uCi/mL
2 BLNK	0		GEA-02 EU15402 LIQUID		1	<1.72e-2		uCi/mL
2 BLNK	0		GEA-02 EU15502 LIQUID		1	<8.72e-3		uCi/mL
2 BLNK	0		GEA-02 AM24102 LIQUID		1	<7.06e-3		uCi/mL
3 SAMPLE	S98T002779	0	GEA-02 C060-02 LIQUID		N/A	< 6.356e-03	6.36e-003	uCi/mL
3 SAMPLE	S98T002779	0	GEA-02 C060-02E LIQUID		N/A		n/a	% Ct. Error
3 SAMPLE	S98T002779	0	GEA-02 SB12502 LIQUID		N/A	< 3.148e-01	0.315	uCi/mL
3 SAMPLE	S98T002779	0	GEA-02 SB12502E LIQUID		N/A		n/a	% Ct. Error
3 SAMPLE	S98T002779	0	GEA-02 CS13702 LIQUID		N/A	< 4.590e+02		uCi/mL
3 SAMPLE	S98T002779	0	GEA-02 CS13702E LIQUID		N/A	0.0900		% Ct. Error
3 SAMPLE	S98T002779	0	GEA-02 EU15402 LIQUID		N/A	< 1.918e-02	1.92e-002	uCi/mL
3 SAMPLE	S98T002779	0	GEA-02 EU15402E LIQUID		N/A		n/a	% Ct. Error
3 SAMPLE	S98T002779	0	GEA-02 EU15502 LIQUID		N/A	< 7.871e-02	7.87e-002	uCi/mL
3 SAMPLE	S98T002779	0	GEA-02 EU15502E LIQUID		N/A		n/a	% Ct. Error
3 SAMPLE	S98T002779	0	GEA-02 AM24102 LIQUID		N/A	< 6.867e-02	6.87e-002	uCi/mL
3 SAMPLE	S98T002779	0	GEA-02 AM24102E LIQUID		N/A		n/a	% Ct. Error
4 DUP	S98T002779	0	GEA-02 C060-02 LIQUID		<6.36e-3	< 6.44e-3		RPD
4 DUP	S98T002779	0	GEA-02 C060-02E LIQUID		1	n/a		% Ct Error
4 DUP	S98T002779	0	GEA-02 SB12502 LIQUID		<3.15e-1	<3.12e-1		RPD
4 DUP	S98T002779	0	GEA-02 SB12502E LIQUID		1	n/a		% Ct Error
4 DUP	S98T002779	0	GEA-02 CS13702 LIQUID		4.59e+02	4.49e+02	2.203	RPD
4 DUP	S98T002779	0	GEA-02 CS13702E LIQUID		1	0.0900	0.090	% Ct Error
4 DUP	S98T002779	0	GEA-02 EU15402 LIQUID		<1.92e-2	<1.90e-2		RPD
4 DUP	S98T002779	0	GEA-02 EU15402E LIQUID		1	n/a		% Ct Error
4 DUP	S98T002779	0	GEA-02 EU15502 LIQUID		<7.87e-2	<7.79e-2		RPD
4 DUP	S98T002779	0	GEA-02 EU15502E LIQUID		1	n/a		% Ct Error
4 DUP	S98T002779	0	GEA-02 AM24102 LIQUID		<6.87e-2	<6.81e-2		RPD
4 DUP	S98T002779	0	GEA-02 AM24102E LIQUID		1	n/a		% Ct Error
5 SAMPLE	S98T002780	0	GEA-02 C060-02 LIQUID		N/A	< 1.704e-02	1.70e-002	uCi/mL
5 SAMPLE	S98T002780	0	GEA-02 C060-02E LIQUID		N/A		n/a	% Ct. Error
5 SAMPLE	S98T002780	0	GEA-02 SB12502 LIQUID		N/A	< 6.269e-01	0.627	uCi/mL
5 SAMPLE	S98T002780	0	GEA-02 SB12502E LIQUID		N/A		n/a	% Ct. Error
5 SAMPLE	S98T002780	0	GEA-02 CS13702 LIQUID		N/A	< 4.730e+02		uCi/mL
5 SAMPLE	S98T002780	0	GEA-02 CS13702E LIQUID		N/A	0.160		% Ct. Error
5 SAMPLE	S98T002780	0	GEA-02 EU15402 LIQUID		N/A	< 6.071e-02	6.07e-002	uCi/mL

LABCORE Completed Worklist Report for Worklist# 26387

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
5 SAMPLE	S98T002780	0	QGEA-02	EUI5402E LIQUID	N/A	n/a		% Ct. Error
5 SAMPLE	S98T002780	0	QGEA-02	EUI5502 LIQUID	N/A	< 1.885e-01	0.189	uCi/mL
5 SAMPLE	S98T002780	0	QGEA-02	EUI5502E LIQUID	N/A	n/a		% Ct. Error
5 SAMPLE	S98T002780	0	QGEA-02	AM24102 LIQUID	N/A	< 1.605e-01	0.161	uCi/mL
5 SAMPLE	S98T002780	0	QGEA-02	AM24102E LIQUID	N/A	n/a		% Ct. Error
6 DUP	S98T002780	0	QGEA-02	CO60-02 LIQUID	<1.70e-2	<1.70e-2		RPD
6 DUP	S98T002780	0	QGEA-02	CO60-02E LIQUID	1	n/a		% Ct. Error
6 DUP	S98T002780	0	QGEA-02	SB12502 LIQUID	<6.27e-1	<6.24e-1		RPD
6 DUP	S98T002780	0	QGEA-02	SB12502E LIQUID	1	n/a		% Ct. Error
6 DUP	S98T002780	0	QGEA-02	CS13702 LIQUID	4.73e+02	4.69e+02	0.849	RPD
6 DUP	S98T002780	0	QGEA-02	CS13702E LIQUID	1	0.160	0.160	% Ct. Error
6 DUP	S98T002780	0	QGEA-02	EUI5402 LIQUID	<6.07e-2	<5.63e-2		RPD
6 DUP	S98T002780	0	QGEA-02	EUI5402E LIQUID	1	n/a		% Ct. Error
6 DUP	S98T002780	0	QGEA-02	EUI5502 LIQUID	<1.89e-1	<1.89e-1		RPD
6 DUP	S98T002780	0	QGEA-02	EUI5502E LIQUID	1	n/a		% Ct. Error
6 DUP	S98T002780	0	QGEA-02	AM24102 LIQUID	<1.61e-1	<1.59e-1		RPD
6 DUP	S98T002780	0	QGEA-02	AM24102E LIQUID	1	n/a		% Ct. Error
7 SAMPLE	S98T002781	0	QGEA-02	CO60-02 LIQUID	N/A	< 1.999e-02	2.00e-002	uCi/mL
7 SAMPLE	S98T002781	0	QGEA-02	CO60-02E LIQUID	N/A	n/a		% Ct. Error
7 SAMPLE	S98T002781	0	QGEA-02	SB12502 LIQUID	N/A	< 6.290e-01	0.629	uCi/mL
7 SAMPLE	S98T002781	0	QGEA-02	SB12502E LIQUID	N/A	n/a		% Ct. Error
7 SAMPLE	S98T002781	0	QGEA-02	CS13702 LIQUID	N/A	4.740e+02		uCi/mL
7 SAMPLE	S98T002781	0	QGEA-02	CS13702E LIQUID	N/A	0.160		% Ct. Error
7 SAMPLE	S98T002781	0	QGEA-02	EUI5402 LIQUID	N/A	< 5.970e-02	5.97e-002	uCi/mL
7 SAMPLE	S98T002781	0	QGEA-02	EUI5402E LIQUID	N/A	n/a		% Ct. Error
7 SAMPLE	S98T002781	0	QGEA-02	EUI5502 LIQUID	N/A	< 1.897e-01	0.190	uCi/mL
7 SAMPLE	S98T002781	0	QGEA-02	EUI5502E LIQUID	N/A	n/a		% Ct. Error
7 SAMPLE	S98T002781	0	QGEA-02	AM24102 LIQUID	N/A	< 1.597e-01	0.160	uCi/mL
7 SAMPLE	S98T002781	0	QGEA-02	AM24102E LIQUID	N/A	n/a		% Ct. Error
8 DUP	S98T002781	0	QGEA-02	CO60-02 LIQUID	<2.00e-2	<1.85e-2		RPD
8 DUP	S98T002781	0	QGEA-02	CO60-02E LIQUID	1	n/a		% Ct. Error
8 DUP	S98T002781	0	QGEA-02	SB12502 LIQUID	<6.29e-1	<6.36e-1		RPD
8 DUP	S98T002781	0	QGEA-02	SB12502E LIQUID	1	n/a		% Ct. Error
8 DUP	S98T002781	0	QGEA-02	CS13702 LIQUID	4.74e+02	4.89e+02	3.115	RPD
8 DUP	S98T002781	0	QGEA-02	CS13702E LIQUID	1	0.160	0.160	% Ct. Error
8 DUP	S98T002781	0	QGEA-02	EUI5402 LIQUID	<5.97e-2	<5.21e-2		RPD
8 DUP	S98T002781	0	QGEA-02	EUI5402E LIQUID	1	n/a		% Ct. Error
8 DUP	S98T002781	0	QGEA-02	EUI5502 LIQUID	<1.90e-1	<1.92e-1		RPD
8 DUP	S98T002781	0	QGEA-02	EUI5502E LIQUID	1	n/a		% Ct. Error
8 DUP	S98T002781	0	QGEA-02	AM24102 LIQUID	<1.60e-1	<1.62e-1		RPD
8 DUP	S98T002781	0	QGEA-02	AM24102E LIQUID	1	n/a		% Ct. Error
9 SAMPLE	S98T002794	0	QGEA-02	CO60-02 LIQUID	N/A	< 2.887e-05	2.89e-005	uCi/mL
9 SAMPLE	S98T002794	0	QGEA-02	CO60-02E LIQUID	N/A	n/a		% Ct. Error
9 SAMPLE	S98T002794	0	QGEA-02	SB12502 LIQUID	N/A	< 7.893e-05	7.89e-005	uCi/mL
9 SAMPLE	S98T002794	0	QGEA-02	SB12502E LIQUID	N/A	n/a		% Ct. Error
9 SAMPLE	S98T002794	0	QGEA-02	CS13702 LIQUID	N/A	1.260e-03		uCi/mL
9 SAMPLE	S98T002794	0	QGEA-02	CS13702E LIQUID	N/A	4.49		% Ct. Error
9 SAMPLE	S98T002794	0	QGEA-02	EUI5402 LIQUID	N/A	< 8.705e-05	8.71e-005	uCi/mL
9 SAMPLE	S98T002794	0	QGEA-02	EUI5402E LIQUID	N/A	n/a		% Ct. Error

LABCORE Completed Worklist Report for Worklist# 26387

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
9 SAMPLE	S98T002794	0	@GEA-02	EU15502 LIQUID	N/A <	4.307e-05	4.31e-005	uCi/mL
9 SAMPLE	S98T002794	0	@GEA-02	EU15502E LIQUID	N/A	n/a		% Ct. Error
9 SAMPLE	S98T002794	0	@GEA-02	AM24102 LIQUID	N/A <	3.644e-05	3.64e-005	uCi/mL
9 SAMPLE	S98T002794	0	@GEA-02	AM24102E LIQUID	N/A	n/a		% Ct. Error
10 DUP	S98T002794	0	@GEA-02	CO60-02 LIQUID	<2.89e-5	<2.52e-5		RPD
10 DUP	S98T002794	0	@GEA-02	CO60-02E LIQUID	1	n/a		% Ct Error
10 DUP	S98T002794	0	@GEA-02	SB12502 LIQUID	<7.89e-5	<8.13e-5		RPD
10 DUP	S98T002794	0	@GEA-02	SB12502E LIQUID	1	n/a		% Ct Error
10 DUP	S98T002794	0	@GEA-02	CS13702 LIQUID	1.26e-03	1.17e-03	7.407	RPD
10 DUP	S98T002794	0	@GEA-02	CS13702E LIQUID	1	4.69	4.690	% Ct Error
10 DUP	S98T002794	0	@GEA-02	EU15402 LIQUID	<8.71e-5	<8.48e-5		RPD
10 DUP	S98T002794	0	@GEA-02	EU15402E LIQUID	1	n/a		% Ct Error
10 DUP	S98T002794	0	@GEA-02	EU15502 LIQUID	<4.31e-5	<4.34e-5		RPD
10 DUP	S98T002794	0	@GEA-02	EU15502E LIQUID	1	n/a		% Ct Error
10 DUP	S98T002794	0	@GEA-02	AM24102 LIQUID	<3.64e-5	<3.61e-5		RPD
10 DUP	S98T002794	0	@GEA-02	AM24102E LIQUID	1	n/a		% Ct Error

Comments Section:

Comments for sample# S98T002780 and test @GEA-02 .
DL=0 => n/a.

Comments for sample# S98T002781 and test @GEA-02 .
DL=0 => n/a.

Final page for worklist# 26387

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature

10-8-98
Date

LABCORE Data Entry Template for Worklist# 26387

Analyst: 997 Instrument: GEA00 Book# 28B57

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

Worklist Comment: AW101 LAW, @GEA-02 See traveler for SS. Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-02	LIQUID		
2 BLNK			@GEA-02	LIQUID		
3 SAMPLE	S98T002779 0		@GEA-02	LIQUID	98000261	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
4 DUP	S98T002779 0		@GEA-02	LIQUID		
5 SAMPLE	S98T002780 0		@GEA-02	LIQUID	98000261	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
6 DUP	S98T002780 0		@GEA-02	LIQUID		
7 SAMPLE	S98T002781 0		@GEA-02	LIQUID	98000261	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
8 DUP	S98T002781 0		@GEA-02	LIQUID		
9 SAMPLE	S98T002794 0		@GEA-02	LIQUID	98000261	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
10 DUP	S98T002794 0		@GEA-02	LIQUID		

Final page for worklist # 26387

J. Yang 10-6-98

A. L. L. A

Data Entry Comments:

 * 222-S Laboratory Counting Room 7-OCT-1998 04:56:42.79 *

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

Worklist #: 26387
 Sample ID: WL26387-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Raymond

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

Detector ID: GEAL
 File Number: dka300:[spec.GEAL]191823.cnf
 Geometry: 41
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:14.64 sec
 Dead Time: 0.5%

Verified by:

John Ridge 8 Oct 98

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

Sample Count Time: 7-OCT-1998 04:05:57.35
 Decayed to: 7-OCT-1998 04:05:57.35
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEAL]1GBACK

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

Date of last energy calibration: 23-SEP-1998 14:57:30.35
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	31.94	1036	1.13	64.00	60	10	13.3			
0	36.42	329	1.22	72.95	69	9	32.0			
1	57.53	91	0.98	115.18	114	11	39.2	4.27E+00	U-232	11.4
1	59.53	352	0.98	119.17	114	11	23.5		AM-241	0.244
0	352.51*	99	1.48	705.10	701	11	94.7			
0	661.54*	6277	1.44	1323.18	1315	16	2.9		CS-137	7.60
0	1172.92	2778	1.80	2346.14	2339	14	4.3		CO-60	4.78
0	1332.12	2592	1.90	2664.64	2657	19	4.3		CO-60	4.94

Summary of Nuclide Activity

Sample ID : WL26387-STD

Acquisition date : 7-OCT-1998 04:05:57

Total number of lines in spectrum	8	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	6	75.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma
			Uncorrected	Decay Corr	Decay Corr	2-Sigma
			uCi/L	uCi/L	2-Sigma Error	%Error
CO-60	5.27Y	1.00	4.859E+00	4.859E+00	0.148E+00	3.05
CS-137	30.00Y	1.00	7.600E+00	7.600E+00	0.218E+00	2.87
U-232	68.90Y	1.00	1.138E+01	1.138E+01	0.446E+01	39.21
AM-241	432.20Y	1.00	2.442E-01	2.442E-01	0.575E-01	23.54
Total Activity :			2.409E+01	2.409E+01		

10/8/98

Grand Total Activity :	2.409E+01	2.409E+01
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Flags: "K" = Keyline not found
 "E" = Manually edited

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

Minimum Detectable Activity Report

Acquisition date : 7-OCT-1998 04:05:57

Sample ID : WL26387-STD

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	412.	477.59	7.1512E-01
NA-24	24.	1368.55	5.0373E-02
K-40	577.	1460.75	2.1960E+00
AR-41	58.	1293.60	8.3424E-02
SC-46	197.	1120.55	1.1250E-01
CR-51	400.	320.08	5.0574E-01
MN-54	218.	834.83	9.1205E-02
CO-56	197.	846.76	8.8057E-02
CO-58	170.	810.78	7.9258E-02
FE-59	182.	1099.25	1.8874E-01
ZN-65	178.	1115.55	2.1074E-01
SE-75	514.	264.66	8.4057E-02
KR-85	305.	514.00	1.5781E+01
SR-85	305.	514.01	7.1335E-02
Y-88	6.	1836.06	3.4257E-02
Y-91	82.	1204.67	2.6311E+01
NB-94	197.	871.09	9.0418E-02
NB-95	204.	765.78	8.1723E-02
ZR-95	181.	756.73	1.3995E-01
ZRNB-95	172.	724.18	3.2785E-01
RU-103	302.	497.08	7.2599E-02
RURH-106	203.	621.93	1.3551E+00
AG-108m	185.	722.94	8.1274E-02
CD-109	591.	88.03	8.0641E-01
AG-110M	397.	657.76	1.0345E-01
SN-113	417.	391.69	9.7091E-02
TE-123m	631.	159.00	4.5301E-02
SB-124	202.	602.73	6.6527E-02
SB-125	449.	427.89	2.3710E-01
TE-125m	691.	109.27	1.1823E+01
I-129	442.	39.60	3.8430E-01
I-131	397.	364.48	7.0106E-02
XE-131m	668.	163.93	2.0347E+00
BA-133	374.	356.02	8.7246E-02
CS-134	207.	604.70	6.7729E-02
CS-136	197.	818.51	8.5584E-02
CS-138	14.	1435.86	8.7706E-02
CE-139	698.	165.85	5.1289E-02
BA-140	288.	537.31	2.8474E-01
LA-140	15.	1596.21	4.7935E-02
CE-141	741.	145.44	8.1307E-02
CE-144	731.	133.51	3.3590E-01
CEPR-144	731.	133.51	6.7112E-01
EU-152	696.	121.78	1.2286E-01
EU-154	45.	1274.51	1.8079E-01
EU-155	571.	86.54	8.7012E-02
HF-181	348.	482.18	8.5498E-02
TA-182	512.	67.75	6.4441E-02
HG-203	535.	279.20	6.4271E-02
BI-207	232.	569.70	6.7436E-02
TL-208	524.	277.36	8.1698E-01

HNF-1652 REV. 0

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL26387-STD

Acquisition date : 7-OCT-1998 04:05:57

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	483.	46.50	6.8938E-01
BI-212	199.	727.18	1.1553E+00
PB-212	685.	238.63	1.1967E-01
BI-214	362.	609.31	1.9445E-01
PB-214	546.	351.92	3.2142E-01
RA-224	638.	240.99	1.2828E+00
RA-226	768.	186.10	1.3193E+00
AC-228	329.	911.21	4.5197E-01
TH-228	623.	84.37	2.3427E+00
TH-229	602.	88.47	1.1904E-01
PA-233	459.	312.17	1.3821E-01
UTH-233	583.	245.34	4.4795E+01
PA-234M	210.	1001.03	1.6196E+01
TH-234	532.	63.29	7.1453E-01
U-235	772.	185.71	8.0429E-02
NP-237	573.	86.48	2.3058E-01
U-237	891.	59.54	1.0223E-01
NP-238	195.	984.45	3.6213E-01
NP-239	666.	106.12	1.4228E-01
PU-239	655.	129.30	5.4245E+02
AM-243	706.	74.67	5.1874E-02

HNF-1652 REV. 0

 * 222-S Laboratory Counting Room 7-OCT-1998 07:31:21.00 *

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

Worklist #: 26387
 Sample ID: WL26387-BLK
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

W. Baule

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

Detector ID: GEA1
 File Number: dka300:[spec.GEA1]1g1824.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:32.51 sec
 Dead Time: 0.4%

Verified by:

John Relyea 8 Oct 98

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

Sample Count Time: 7-OCT-1998 05:00:21.91
 Decayed to: 7-OCT-1998 05:00:21.91
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

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

Date of last energy calibration: 23-SEP-1998 14:57:30.35
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uci/L
5	12.93	156	0.82	25.99	23	15	57.9	3.04E+00		
5	16.18	270	1.23	32.47	23	15	44.0			

HNF-1652 REV. 0

Summary of Nuclide Activity

Page : 2

Sample ID : WL26387-BLK

Acquisition date : 7-OCT-1998 05:00:21

Total number of lines in spectrum

2

Number of unidentified lines

2

Number of lines tentatively identified by NID

0

0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : WL26387-BLK

Acquisition date : 7-OCT-1998 05:00:21

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	338.	477.59	4.3755E+01
NA-24	56.	1368.55	5.2195E+00
K-40	1758.	1460.75	2.5552E+02
AR-41	97.	1293.60	9.5045E+00
SC-46	271.	1120.55	8.8405E+00
CR-51	545.	320.08	3.9633E+01
MN-54	181.	834.83	5.6127E+00
CO-56	160.	846.76	5.3663E+00
CO-58	153.	810.78	5.0819E+00
FE-59	136.	1099.25	1.1041E+01
CO-60	71.	1332.50	5.3835E+00
ZN-65	122.	1115.55	1.1814E+01
SE-75	800.	264.66	7.0293E+00
KR-85	397.	514.00	1.2067E+03
SR-85	396.	514.01	5.4533E+00
Y-88	33.	1836.06	4.8350E+00
Y-91	137.	1204.67	2.2521E+03
NB-94	149.	871.09	5.3222E+00
NB-95	194.	765.78	5.3845E+00
ZR-95	178.	756.73	9.3478E+00
ZRNB-95	213.	724.18	2.4462E+01
RU-103	332.	497.08	5.1163E+00
RURH-106	235.	621.93	9.7910E+01
AG-108m	201.	722.94	5.6966E+00
CD-109	1243.	88.03	7.8206E+01
AG-110M	185.	657.76	4.8205E+00
SN-113	408.	391.69	6.4633E+00
TE-123m	1371.	159.00	4.4638E+00
SB-124	244.	602.73	4.9082E+00
SB-125	380.	427.89	1.4730E+01
TE-125m	1348.	109.27	1.1049E+03
I-129	745.	39.60	3.3386E+01
I-131	472.	364.48	5.1503E+00
XE-131m	1350.	163.93	1.9380E+02
BA-133	472.	356.02	6.5768E+00
CS-134	246.	604.70	4.9505E+00
CS-136	155.	818.51	5.1536E+00
CS-137	269.	661.66	6.4391E+00
CS-138	54.	1435.86	2.2154E+01
CE-139	1302.	165.85	4.6919E+00
BA-140	296.	537.31	1.9447E+01
LA-140	34.	1596.21	4.7037E+00
CE-141	1449.	145.44	7.6120E+00
CE-144	1442.	133.51	3.1580E+01
CEPR-144	1442.	133.51	6.3109E+01
EU-152	1494.	121.78	1.2036E+01
EU-154	94.	1274.51	1.7171E+01
EU-155	1285.	86.54	8.7195E+00
HF-181	304.	482.18	5.3882E+00
TA-182	1026.	67.75	6.1007E+00
HG-203	733.	279.20	5.0511E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL26387-BLK

Acquisition date : 7-OCT-1998 05:00:21

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-207	256.	569.70	4.7654E+00
TL-208	740.	277.36	6.5123E+01
PB-210	881.	46.50	6.2461E+01
BI-212	255.	727.18	8.7771E+01
PB-212	1217.	238.63	1.0682E+01
BI-214	686.	609.31	1.7884E+01
PB-214	866.	351.92	6.0302E+01
RA-224	1017.	240.99	1.0931E+02
RA-226	1280.	186.10	1.1419E+02
AC-228	348.	911.21	3.1281E+01
TH-228	1404.	84.37	2.3499E+02
TH-229	1244.	88.47	1.1446E+01
U-232	1060.	57.78	1.2972E+03
PA-233	621.	312.17	1.0797E+01
UTH-233	824.	245.34	3.5712E+03
PA-234M	158.	1001.03	9.5043E+02
TH-234	1053.	63.29	6.7221E+01
U-235	1281.	185.71	6.9430E+00
NP-237	1292.	86.48	2.3122E+01
U-237	1021.	59.54	7.3864E+00
NP-238	130.	984.45	2.0293E+01
NP-239	1345.	106.12	1.3665E+01
PU-239	1405.	129.30	5.3121E+04
AM-241	1021.	59.54	7.0602E+00
AM-243	1308.	74.67	4.7256E+00

HNF-1652 REV. 0

 * 222-S Laboratory Counting Room 7-OCT-1998 10:53:56.92 *

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

Worklist #: 26387
 Sample ID: S98T2779-SAM
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Em Baulch

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

Detector ID: GEAl
 File Number: dka300:[spec.GEAl]1g1825.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:56:13.08 sec
 Dead Time: 15% ← 14.9% JTR

Verified by:

John Relyea 8 OCT 98

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

Sample Count Time: 7-OCT-1998 07:57:15.51
 Decayed to: 7-OCT-1998 07:57:15.51
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEAl]1GBACK

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

Date of last energy calibration: 23-SEP-1998 14:57:30.35
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uci/L
7	8.68	22793	0.98	17.49	16	7	2.5	8.62E+03		
7	9.66	18840	1.26	19.45	16	7	4.5			
0	12.51	3375	0.77	25.14	22	8	39.2			
0	21.93	28069	1.38	43.99	41	8	5.3			
0	31.98	979169	1.25	64.08	59	11	0.3			
0	36.52	230681	1.23	73.16	69	8	0.9			
0	75.05*	2071	1.18	150.20	148	6	51.5		AM-243	57.3
0	84.85*	2151	1.81	169.80	167	7	56.0		TH-228	2.857E+03
0	187.94	26831	4.78	375.97	370	15	10.4			
0	604.77	1425	1.67	1209.63	1207	7	35.1		CS-134	93.3
0	661.59*	5625469	1.68	1323.28	1315	17	0.1		CS-137	4.586E+05
0	692.30	3141	2.71	1384.70	1378	15	11.7			
0	795.72*	1170	1.66	1591.58	1586	12	9.1		CS-134	113.
0	801.45	134	1.51	1603.03	1599	9	50.8		CS-134	127.
0	1322.66	1345	1.87	2645.71	2637	18	7.3			
0	1365.55	31	0.94	2731.51	2728	8	76.2			

Summary of Nuclide Activity

Page : 2

Sample ID : S98T2779-SAM

Acquisition date : 7-OCT-1998 07:57:15

Total number of lines in spectrum 16
 Number of unidentified lines 10
 Number of lines tentatively identified by NID 6 37.50%

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-134	2.06Y	1.00	1.114E+02	1.114E+02	0.097E+02	8.72	
CS-137	30.00Y	1.00	4.586E+05	4.586E+05	0.004E+05	0.09	
TH-228	1.91Y	1.00	2.856E+03	2.857E+03	1.600E+03	56.02	
AM-243	7380.00Y*****		5.727E+01	5.727E+01	2.949E+01	51.50	
Total Activity :			4.616E+05	4.616E+05			

JFR
JFR
10/8/98

Grand Total Activity : 4.616E+05 4.616E+05

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

HNF-1652 REV. 0

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T2779-SAM

Acquisition date : 7-OCT-1998 07:57:15

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	177505.	477.59	9.7327E+02
NA-24	62.	1368.55	5.5305E+00
K-40	1722.	1460.75	2.5292E+02
AR-41	107.	1293.60	1.0664E+01
SC-46	439.	1120.55	1.1164E+01
CR-51	136696.	320.08	6.1350E+02
MN-54	351.	834.83	7.7306E+00
CO-56	355.	846.76	7.8748E+00
CO-58	351.	810.78	7.5709E+00
FE-59	279.	1099.25	1.5605E+01
CO-60	101.	1332.50	6.3556E+00
ZN-65	297.	1115.55	1.8126E+01
SE-75	137701.	264.66	9.0500E+01
KR-85	88107.	514.00	1.7500E+04
SR-85	88098.	514.01	7.9162E+01
Y-88	29.	1836.06	4.5137E+00
Y-91	184.	1204.67	2.5935E+03
NB-94	363.	871.09	8.1631E+00
NB-95	401.	765.78	7.6462E+00
ZR-95	373.	756.73	1.3356E+01
ZRNB-95	496.	724.18	3.6825E+01
RU-103	107177.	497.08	8.9318E+01
RURH-106	27018.	621.93	1.0142E+03
AG-108m	505.	722.94	8.9004E+00
CD-109	107103.	88.03	7.1538E+02
AG-110M	253413.	657.76	1.7118E+02
SN-113	156066.	391.69	1.2313E+02
TE-123m	125118.	159.00	4.2054E+01
SB-124	29341.	602.73	5.2085E+01
SB-125	183615.	427.89	3.1481E+02
TE-125m	115371.	109.27	1.0080E+04
I-129	101348.	39.60	3.8198E+02
I-131	145282.	364.48	8.8248E+01
XE-131m	126267.	163.93	1.8494E+03
BA-133	143440.	356.02	1.1180E+02
CS-136	338.	818.51	7.4934E+00
CS-138	58.	1435.86	2.6338E+01
CE-139	126448.	165.85	4.5577E+01
BA-140	62130.	537.31	2.7350E+02
LA-140	42.	1596.21	5.1977E+00
CE-141	123045.	145.44	6.9229E+01
CE-144	124182.	133.51	2.8912E+02
CEPR-144	124183.	133.51	5.7771E+02
EU-152	123300.	121.78	1.0790E+02
EU-154	118.	1274.51	1.9181E+01
EU-155	107714.	86.54	7.8706E+01
HF-181	139967.	482.18	1.1215E+02
TA-182	101263.	67.75	5.9638E+01
HG-203	136597.	279.20	6.7635E+01
BI-207	36265.	569.70	5.4886E+01
TL-208	136520.	277.36	8.6746E+02

HNF-1652 REV. 0

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T2779-SAM

Acquisition date : 7-OCT-1998 07:57:15

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	98165.	46.50	6.4824E+02
BI-212	488.	727.18	1.2022E+02
PB-212	142323.	238.63	1.1379E+02
BI-214	28291.	609.31	1.1271E+02
PB-214	142404.	351.92	8.8032E+02
RA-224	141633.	240.99	1.2708E+03
RA-226	189255.	186.10	1.3680E+03
AC-228	538.	911.21	3.8681E+01
TH-229	107099.	88.47	1.0464E+02
U-232	100159.	57.78	1.2410E+04
PA-233	136153.	312.17	1.5652E+02
UTH-233	141146.	245.34	4.5884E+04
PA-234M	274.	1001.03	1.2400E+03
TH-234	101220.	63.29	6.4878E+02
U-235	186148.	185.71	8.2472E+01
NP-237	107758.	86.48	2.0820E+02
U-237	99785.	59.54	7.1912E+01
NP-238	286.	984.45	2.9755E+01
NP-239	111466.	106.12	1.2299E+02
PU-239	123882.	129.30	4.9204E+05
AM-241	99785.	59.54	6.8675E+01

HNF-1652 REV. 0

 * 222-S Laboratory Counting Room 7-OCT-1998 13:52:52.03 *

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

Worklist #: 26387
 Sample ID: S98T2779-DUP
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

McBee

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

Detector ID: GE1
 File Number: dka300:[spec.GE1]1g1826.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:55:40.23 sec
 Dead Time: 15% *14.6 % JRR*

Verified by:

John Relyea 8 Oct 98

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

Sample Count Time: 7-OCT-1998 10:56:44.49
 Decayed to: 7-OCT-1998 10:56:44.49
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GE1]1GBACK

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

Date of last energy calibration: 23-SEP-1998 14:57:30.35
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	9.16	38592	1.65	18.45	16	7	2.4			
0	12.49	3221	0.76	25.11	22	8	40.8			
0	21.92	26561	1.31	43.96	41	8	5.5			
0	31.97	958080	1.25	64.06	59	11	0.3			
0	36.50	227773	1.23	73.12	69	8	0.9			
0	75.08*	2012	1.14	150.28	148	6	52.5		AM-243	55.7
0	84.97*	2449	1.34	170.05	168	6	43.1		TH-228	3.252E+03
0	187.96	26243	4.48	376.00	370	16	11.1			
0	605.18	846	1.26	1210.45	1208	7	58.9		CS-134	55.4
2	651.77	4151	1.82	1303.63	1294	44	15.6	2.86E+03		
2	661.59*	5512122	1.78	1323.28	1294	44	0.1		CS-137	4.494E+05
0	692.41	2691	2.86	1384.92	1378	15	13.4			
0	795.66*	1265	1.79	1591.46	1582	19	10.7		CS-134	122.
0	1322.62	1300	2.14	2645.63	2636	18	7.6			
0	1594.09	97	3.11	3188.78	3180	24	35.8			

HNF-1652 REV. 0

Page : 2

Summary of Nuclide Activity

Sample ID : S98T2779-DUP

Acquisition date : 7-OCT-1998 10:56:44

Total number of lines in spectrum 15
 Number of unidentified lines 10
 Number of lines tentatively identified by NID 5 33.33%

Nuclide Type :

Nuclide	Hlfe	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr		2-Sigma Error	
			uCi/L	uCi/L			
CS-134	2.06Y	1.00	1.220E+02	1.220E+02	0.130E+02	10.66	
CS-137	30.00Y	1.00	4.494E+05	4.494E+05	0.004E+05	0.09	
TH-228	1.91Y	1.00	3.252E+03	3.252E+03	1.403E+03	43.15	
AM-243	7380.00Y	1.00	5.565E+01	5.565E+01	2.920E+01	52.47	
Total Activity :			4.528E+05	4.528E+05			

10/8/98

Grand Total Activity : 4.528E+05 4.528E+05

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

HNF-1652 REV. 0

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T2779-DUP

Acquisition date : 7-OCT-1998 10:56:44

Nuclide	Bkgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	174331.	477.59	9.6454E+02
NA-24	65.	1368.55	5.6328E+00
K-40	1709.	1460.75	2.5195E+02
AR-41	89.	1293.60	9.7417E+00
SC-46	405.	1120.55	1.0739E+01
CR-51	134257.	320.08	6.0801E+02
MN-54	344.	834.83	7.6529E+00
CO-56	393.	846.76	8.2743E+00
CO-58	360.	810.78	7.6671E+00
FE-59	276.	1099.25	1.5532E+01
CO-60	104.	1332.50	6.4413E+00
ZN-65	274.	1115.55	1.7437E+01
SE-75	135154.	264.66	8.9660E+01
KR-85	85888.	514.00	1.7278E+04
SR-85	85878.	514.01	7.8160E+01
Y-88	27.	1836.06	4.3810E+00
Y-91	191.	1204.67	2.6467E+03
NB-94	334.	871.09	7.8494E+00
NB-95	378.	765.78	7.4238E+00
ZR-95	408.	756.73	1.3953E+01
ZRNB-95	497.	724.18	3.6861E+01
RU-103	104987.	497.08	8.8402E+01
RURH-106	26471.	621.93	1.0040E+03
AG-108m	495.	722.94	8.8147E+00
CD-109	104789.	88.03	7.0762E+02
AG-110M	246748.	657.76	1.6891E+02
SN-113	153150.	391.69	1.2198E+02
TE-123m	122237.	159.00	4.1568E+01
SB-124	28597.	602.73	5.1422E+01
SB-125	180215.	427.89	3.1188E+02
TE-125m	112866.	109.27	9.9703E+03
I-129	99225.	39.60	3.7796E+02
I-131	142780.	364.48	8.7484E+01
XE-131m	123557.	163.93	1.8294E+03
BA-133	140248.	356.02	1.1056E+02
CS-136	317.	818.51	7.2660E+00
CS-138	55.	1435.86	2.5758E+01
CE-139	123764.	165.85	4.5092E+01
BA-140	60885.	537.31	2.7075E+02
LA-140	43.	1596.21	5.2793E+00
CE-141	121646.	145.44	6.8835E+01
CE-144	121905.	133.51	2.8646E+02
CEPR-144	121905.	133.51	5.7240E+02
EU-152	121006.	121.78	1.0689E+02
EU-154	115.	1274.51	1.8960E+01
EU-155	105605.	86.54	7.7933E+01
HF-181	138167.	482.18	1.1142E+02
TA-182	99505.	67.75	5.9119E+01
HG-203	134433.	279.20	6.7097E+01
BI-207	35576.	569.70	5.4364E+01
TL-208	134381.	277.36	8.6064E+02

HNF-1652 REV. 0

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T2779-DUP

Acquisition date : 7-OCT-1998 10:56:44

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	96761.	46.50	6.4358E+02
BI-212	499.	727.18	1.2154E+02
PB-212	139135.	238.63	1.1251E+02
BI-214	27823.	609.31	1.1178E+02
PB-214	138967.	351.92	8.6708E+02
RA-224	139244.	240.99	1.2600E+03
RA-226	184967.	186.10	1.3524E+03
AC-228	525.	911.21	3.8211E+01
TH-229	104998.	88.47	1.0361E+02
U-232	97138.	57.78	1.2221E+04
PA-233	133908.	312.17	1.5522E+02
UTH-233	138201.	245.34	4.5403E+04
PA-234M	263.	1001.03	1.2161E+03
TH-234	99347.	63.29	6.4276E+02
U-235	182065.	185.71	8.1564E+01
NP-237	105707.	86.48	2.0621E+02
U-237	98218.	59.54	7.1345E+01
NP-238	255.	984.45	2.8130E+01
NP-239	109226.	106.12	1.2175E+02
PU-239	121563.	129.30	4.8742E+05
AM-241	98218.	59.54	6.8135E+01

HNF-1652 REV.0

 * 222-S Laboratory Counting Room 7-OCT-1998 16:48:12.83 *

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

Worklist #: 26387
 Sample ID: S98T2780-SAM
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Em Davela

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

Detector ID: GEAL
 File Number: dka300:[spec.GEAL]1g1829.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:37:27.76 sec
 Dead Time: 4.7%

Verified by:

John Redgen 8 Oct 98

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

Sample Count Time: 7-OCT-1998 14:10:17.33
 Decayed to: 7-OCT-1998 14:10:17.33
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEAL]1GBACK

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

Date of last energy calibration: 23-SEP-1998 14:57:30.35
 Date of last efficiency calibration: 20-MAR-1996 09:12:15.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	9.16	10319	1.64	18.45	15	8	4.9			
0	12.33	909	0.66	24.79	22	7	67.3			
0	21.79	8952	1.19	43.70	40	8	8.5			
8	26.61	4758	0.97	53.34	51	29	9.7	1.04E+03		
8	29.71	35804	1.59	59.54	51	29	3.8		I-129	1.662E+03
8	31.93	274836	1.16	63.98	51	29	0.5			
8	36.29	86481	1.73	72.70	51	29	1.2			
4	72.64*	1308	0.93	145.39	143	11	43.6	2.56E+00		
4	74.93*	2774	0.99	149.97	143	11	20.8			
0	84.65*	1650	1.05	169.42	167	7	39.6		AM-243	348.
0	189.79	20176	7.24	379.66	370	23	11.7		TH-228	9.796E+03
0	604.97	548	1.20	1210.04	1206	8	54.9		CS-134	131.
0	661.51*	1609337	1.47	1323.11	1315	16	0.2		CS-137	4.730E+05
0	785.64	57	1.41	1571.40	1567	9	85.1			
0	795.58*	340	1.82	1591.30	1585	15	24.7		CS-134	115.
0	1322.74	129	1.06	2645.87	2639	17	38.5			
0	1407.79	31	1.25	2816.03	2810	11	86.2			
0	1460.32*	58	1.91	2921.12	2912	161	73.2		K-40	236.

HNH-1652 REV. 0

Summary of Nuclide Activity

Page : 2

Sample ID : S98T2780-SAM

Acquisition date : 7-OCT-1998 14:10:17

Total number of lines in spectrum 18
 Number of unidentified lines 9
 Number of lines tentatively identified by NID 9 50.00%

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	2.364E+02	2.364E+02	4.694E+02	173.15	JAR
I-129	5.73E+09D	1.00	1.662E+03	1.662E+03	0.063E+03	3.76	JAR
CS-134	2.06Y	1.00	1.167E+02	1.167E+02	0.263E+02	22.52	
CS-137	30.00Y	1.00	4.730E+05	4.730E+05	0.008E+05	0.16	
TH-228	1.91Y	1.00	9.795E+03	9.796E+03	3.880E+03	39.61	JAR
AM-243	7380.00Y*****		3.484E+02	3.484E+02	0.724E+02	20.79	JAR
Total Activity :			4.852E+05	4.852E+05			11/8/98

Grand Total Activity : 4.852E+05 4.852E+05

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

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

HNF-1652 REV. 0

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T2780-SAM

Acquisition date : 7-OCT-1998 14:10:17

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uci/L)
BE-7	49610.	477.59	1.9064E+03
NA-24	48.	1368.55	1.5326E+01
AR-41	91.	1293.60	2.9731E+01
SC-46	277.	1120.55	2.8879E+01
CR-51	39053.	320.08	1.2043E+03
MN-54	175.	834.83	1.9099E+01
CO-56	167.	846.76	1.8859E+01
CO-58	158.	810.78	1.7905E+01
FE-59	129.	1099.25	3.5022E+01
CO-60	72.	1332.50	1.7040E+01
ZN-65	139.	1115.55	4.0798E+01
SE-75	38195.	264.66	1.7413E+02
KR-85	24972.	514.00	3.4457E+04
SR-85	24968.	514.01	1.5585E+02
Y-88	32.	1836.06	1.5911E+01
Y-91	142.	1204.67	7.3274E+03
NB-94	179.	871.09	1.9864E+01
NB-95	220.	765.78	2.0117E+01
ZR-95	210.	756.73	3.5623E+01
ZRNB-95	260.	724.18	9.5625E+01
RU-103	30646.	497.08	1.7683E+02
RURH-106	7995.	621.93	2.0114E+03
AG-108m	256.	722.94	2.2759E+01
CD-109	30460.	88.03	1.6931E+03
AG-110M	57641.	657.76	2.9494E+02
SN-113	45155.	391.69	2.4509E+02
TE-123m	37860.	159.00	8.8042E+01
SB-124	8479.	602.73	1.0243E+02
SB-125	52995.	427.89	6.2693E+02
TE-125m	33439.	109.27	2.2728E+04
I-131	41652.	364.48	1.7436E+02
XE-131m	38559.	163.93	3.8664E+03
BA-133	40985.	356.02	2.2046E+02
CS-136	155.	818.51	1.7865E+01
CS-138	61.	1435.86	7.6790E+01
CE-139	38903.	165.85	9.5479E+01
BA-140	17757.	537.31	5.3947E+02
LA-140	40.	1596.21	1.6082E+01
CE-141	36479.	145.44	1.4615E+02
CE-144	35606.	133.51	6.1299E+02
CEPR-144	35605.	133.51	1.2249E+03
EU-152	35813.	121.78	2.3605E+02
EU-154	118.	1274.51	6.0708E+01
EU-155	31134.	86.54	1.8848E+02
HF-181	39200.	482.18	2.1988E+02
TA-182	28845.	67.75	1.4460E+02
HG-203	38533.	279.20	1.3135E+02
BI-207	10330.	569.70	1.0772E+02
TL-208	38302.	277.36	1.6800E+03
PB-210	26932.	46.50	1.2275E+03
BI-212	284.	727.18	3.2798E+02

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Minimum Detectable Activity Report (continued)

Sample ID : S98T2780-SAM

Acquisition date : 7-OCT-1998 14:10:17

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-212	38736.	238.63	2.1695E+02
BI-214	8456.	609.31	2.2516E+02
PB-214	40931.	351.92	1.5653E+03
RA-224	38442.	240.99	2.4162E+03
RA-226	62639.	186.10	2.9224E+03
AC-228	376.	911.21	1.0995E+02
TH-229	30293.	88.47	2.4672E+02
U-232	27483.	57.78	2.8281E+04
PA-233	39109.	312.17	3.0778E+02
UTH-233	38203.	245.34	8.7206E+04
PA-234M	148.	1001.03	3.0585E+03
TH-234	27985.	63.29	1.5325E+03
U-235	61485.	185.71	1.7604E+02
NP-237	31246.	86.48	4.9946E+02
U-237	28069.	59.54	1.6798E+02
NP-238	141.	984.45	7.0305E+01
NP-239	32008.	106.12	2.7785E+02
PU-239	35664.	129.30	1.0542E+06
AM-241	28069.	59.54	1.6052E+02

 * 222-S Laboratory Counting Room 7-OCT-1998 19:28:32.88 *

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

Worklist #: 26387
 Sample ID: S98T2780-DUP
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Raymond

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

Detector ID: GEAl
 File Number: dka300:[spec.GEAl]1g1830.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:37:23.10 sec
 Dead Time: 4.7%

Verified by:

John Relyea 8 Oct 98

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

Sample Count Time: 7-OCT-1998 16:50:42.04
 Decayed to: 7-OCT-1998 16:50:42.04
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEAl]1GBACK

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

Date of last energy calibration: 23-SEP-1998 14:57:30.35
 Date of last efficiency calibration: 20-MAR-1996 09:12:15.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.34	1065	0.66	24.79	23	5	43.9			
4	21.27	2897	1.15	42.66	40	8	18.2	9.98E+00		
4	22.13	5275	0.80	44.38	40	8	10.2			
8	29.87	42347	1.74	59.86	51	28	3.2	8.88E+02	I-129	1.965E+03
8	31.98	259220	1.08	64.08	51	28	0.5			
8	36.32	87062	1.73	72.75	51	28	1.2			
1	72.92*	1314	1.01	145.96	143	11	43.4	2.57E+00		
1	74.97*	2997	0.98	150.05	143	11	19.2		AM-243	377.
0	84.64*	1919	1.20	169.38	167	7	33.8		TH-228	1.139E+04
0	189.99	15252	7.12	380.06	371	20	13.8			
0	603.94	274	1.36	1207.96	1206		8109.4		CS-134	65.5
0	661.49*	1595484	1.47	1323.08	1315	16	0.2		CS-137	4.689E+05
0	795.51*	321	1.88	1591.14	1586	13	24.8		CS-134	108.
0	1323.13	102	1.74	2646.65	2638	19	64.6			
0	1764.43*	33	2.04	3529.62	3521	19	115.1			

Summary of Nuclide Activity

Page : 2

Sample ID : S98T2780-DUP

Acquisition date : 7-OCT-1998 16:50:42

Total number of lines in spectrum 15
 Number of unidentified lines 8
 Number of lines tentatively identified by NID 7 46.67%

Nuclide Type :

Nuclide	Hliffe	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			uCi/L	uCi/L	2-Sigma Error	%Error	
I-129	5.73E+09D	1.00	1.965E+03	1.965E+03	0.062E+03	3.17	gtr
CS-134	2.06Y	1.00	1.029E+02	1.029E+02	0.251E+02	24.39	
CS-137	30.00Y	1.00	4.689E+05	4.689E+05	0.008E+05	0.16	
TH-228	1.91Y	1.00	1.139E+04	1.139E+04	0.385E+04	33.81	gtr
AM-243	7380.00Y	1.00	3.765E+02	3.765E+02	0.724E+02	19.23	gtr
Total Activity :			4.828E+05	4.828E+05			10/8/98

Grand Total Activity : 4.828E+05 4.828E+05

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T2780-DUP

Acquisition date : 7-OCT-1998 16:50:42

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	49400.	477.59	1.9024E+03
NA-24	65.	1368.55	1.7602E+01
K-40	1723.	1460.75	7.9730E+02
AR-41	90.	1293.60	2.9571E+01
SC-46	271.	1120.55	2.8546E+01
CR-51	38980.	320.08	1.2032E+03
MN-54	173.	834.83	1.8963E+01
CO-56	173.	846.76	1.9175E+01
CO-58	195.	810.78	1.9807E+01
FE-59	149.	1099.25	3.7494E+01
CO-60	71.	1332.50	1.6990E+01
ZN-65	151.	1115.55	4.2446E+01
SE-75	37781.	264.66	1.7319E+02
KR-85	24953.	514.00	3.4444E+04
SR-85	24951.	514.01	1.5580E+02
Y-88	16.	1836.06	1.1769E+01
Y-91	143.	1204.67	7.3584E+03
NB-94	185.	871.09	2.0187E+01
NB-95	235.	765.78	2.0748E+01
ZR-95	223.	756.73	3.6732E+01
ZRNB-95	250.	724.18	9.3947E+01
RU-103	30323.	497.08	1.7590E+02
RURH-106	7788.	621.93	1.9854E+03
AG-108m	232.	722.94	2.1710E+01
CD-109	30755.	88.03	1.7013E+03
AG-110M	58011.	657.76	2.9589E+02
SN-113	44744.	391.69	2.4397E+02
TE-123m	38031.	159.00	8.8240E+01
SB-124	8523.	602.73	1.0269E+02
SB-125	52512.	427.89	6.2407E+02
TE-125m	33307.	109.27	2.2683E+04
I-131	41651.	364.48	1.7436E+02
XE-131m	38708.	163.93	3.8738E+03
BA-133	40654.	356.02	2.1957E+02
CS-136	185.	818.51	1.9419E+01
CS-138	54.	1435.86	7.2748E+01
CE-139	38892.	165.85	9.5466E+01
BA-140	17468.	537.31	5.3509E+02
LA-140	42.	1596.21	1.6606E+01
CE-141	36446.	145.44	1.4609E+02
CE-144	35578.	133.51	6.1275E+02
CEPR-144	35579.	133.51	1.2244E+03
EU-152	35548.	121.78	2.3518E+02
EU-154	101.	1274.51	5.6321E+01
EU-155	31280.	86.54	1.8892E+02
HF-181	39196.	482.18	2.1987E+02
TA-182	28285.	67.75	1.4319E+02
HG-203	38133.	279.20	1.3067E+02
BI-207	10233.	569.70	1.0722E+02
TL-208	37753.	277.36	1.6680E+03
PB-210	26506.	46.50	1.2178E+03

HNF-1652 REV. 0

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T2780-DUP

Acquisition date : 7-OCT-1998 16:50:42

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	296.	727.18	3.3500E+02
PB-212	39072.	238.63	2.1789E+02
BI-214	8332.	609.31	2.2351E+02
PB-214	40808.	351.92	1.5623E+03
RA-224	38356.	240.99	2.4135E+03
RA-226	62443.	186.10	2.9178E+03
AC-228	389.	911.21	1.1184E+02
TH-229	30616.	88.47	2.4803E+02
U-232	27101.	57.78	2.8084E+04
PA-233	38769.	312.17	3.0644E+02
UTH-233	37759.	245.34	8.6700E+04
PA-234M	152.	1001.03	3.0965E+03
TH-234	28172.	63.29	1.5376E+03
U-235	61304.	185.71	1.7578E+02
NP-237	31387.	86.48	5.0058E+02
U-237	27621.	59.54	1.6664E+02
NP-238	151.	984.45	7.2599E+01
NP-239	31840.	106.12	2.7713E+02
PU-239	35885.	129.30	1.0574E+06
AM-241	27622.	59.54	1.5924E+02

HNF-1652 REV. 0

 * 222-S Laboratory Counting Room 8-OCT-1998 00:28:38.77 *

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

Worklist #: 26387
 Sample ID: S98T002781-SAM
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Raymond

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

Detector ID: GEAL
 File Number: dka300:[spec.GEA1]1g1831.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:37:29.09 sec
 Dead Time: 4.8%

Verified by:

John Relyea 8 Oct 98

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

Sample Count Time: 7-OCT-1998 21:50:39.90
 Decayed to: 7-OCT-1998 21:50:39.90
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

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

Date of last energy calibration: 23-SEP-1998 14:57:30.35
 Date of last efficiency calibration: 20-MAR-1996 09:12:15.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uci/L
0	9.06	4923	1.70	18.25	17	5	8.3			
0	12.31	1180	0.75	24.74	21	9	63.9			
0	21.80	8223	1.24	43.73	40	7	8.3			
8	29.87	42571	1.74	59.86	51	29	3.2	8.39E+02	I-129	1.976E+03
8	31.98	263026	1.08	64.08	51	29	0.5			
8	36.31	87877	1.75	72.74	51	29	1.3			
3	72.81*	1610	1.03	145.73	143	11	35.5	1.72E+00		
3	74.95*	3003	0.99	150.01	143	11	19.2		AM-243	377.
0	84.73*	1506	1.05	169.56	168	6	38.4		TH-228	8.942E+03
0	190.25	40424	9.13	380.58	368	31	7.4			
0	604.16	410	1.84	1208.41	1206	8	73.2		CS-134	97.8
0	661.49*	1611975	1.47	1323.09	1315	16	0.2		CS-137	4.738E+05
0	795.46*	400	1.98	1591.06	1584	13	18.9		CS-134	135.
0	1119.50*	76	1.72	2239.28	2231	15	84.9			
0	1322.67	135	2.18	2645.73	2640	12	31.3			

Summary of Nuclide Activity
Sample ID : S98T002781-SAM

Page : 2
Acquisition date : 7-OCT-1998 21:50:39

Total number of lines in spectrum 15
Number of unidentified lines 8
Number of lines tentatively identified by NID 7 46.67%

Nuclide Type :

Nuclide	Hlflife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
I-129	5.73E+09D	1.00	1.976E+03	1.976E+03	0.063E+03	3.17	JFR
CS-134	2.06Y	1.00	1.306E+02	1.306E+02	0.240E+02	18.37	
CS-137	30.00Y	1.00	4.738E+05	4.738E+05	0.008E+05	0.16	
TH-228	1.91Y	1.00	8.941E+03	8.942E+03	3.434E+03	38.41	JFR
AM-243	7380.00Y*****	1.00	3.772E+02	3.772E+02	0.725E+02	19.21	JFR
Total Activity :			4.852E+05	4.852E+05			10/8/98

Grand Total Activity : 4.852E+05 4.852E+05

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

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

HNF-1652 REV. 0

Minimum Detectable Activity Report
 Sample ID : S98T002781-SAM

Page : 3
 Acquisition date : 7-OCT-1998 21:50:39

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	50016.	477.59	1.9142E+03
NA-24	53.	1368.55	1.6100E+01
K-40	1745.	1460.75	8.0220E+02
AR-41	95.	1293.60	3.0369E+01
SC-46	317.	1120.55	3.0800E+01
CR-51	39071.	320.08	1.2046E+03
MN-54	184.	834.83	1.9535E+01
CO-56	165.	846.76	1.8756E+01
CO-58	187.	810.78	1.9407E+01
FE-59	140.	1099.25	3.6327E+01
CO-60	101.	1332.50	1.9991E+01
ZN-65	147.	1115.55	4.1822E+01
SE-75	37908.	264.66	1.7348E+02
KR-85	25108.	514.00	3.4551E+04
SR-85	25104.	514.01	1.5628E+02
Y-88	21.	1836.06	1.3054E+01
Y-91	124.	1204.67	6.8655E+03
NB-94	190.	871.09	2.0424E+01
NB-95	231.	765.78	2.0570E+01
ZR-95	202.	756.73	3.5036E+01
ZRNB-95	231.	724.18	9.0363E+01
RU-103	30814.	497.08	1.7731E+02
RURH-106	7964.	621.93	2.0075E+03
AG-108m	230.	722.94	2.1597E+01
CD-109	31271.	88.03	1.7154E+03
AG-110M	58386.	657.76	2.9684E+02
SN-113	45306.	391.69	2.4550E+02
TE-123m	38130.	159.00	8.8355E+01
SB-124	8518.	602.73	1.0266E+02
SB-125	53339.	427.89	6.2895E+02
TE-125m	33679.	109.27	2.2809E+04
I-131	41986.	364.48	1.7505E+02
XE-131m	38730.	163.93	3.8749E+03
BA-133	41182.	356.02	2.2099E+02
CS-136	163.	818.51	1.8272E+01
CS-138	65.	1435.86	7.9036E+01
CE-139	39463.	165.85	9.6161E+01
BA-140	17830.	537.31	5.4058E+02
LA-140	44.	1596.21	1.6899E+01
CE-141	36590.	145.44	1.4637E+02
CE-144	36129.	133.51	6.1746E+02
CEPR-144	36129.	133.51	1.2338E+03
EU-152	35759.	121.78	2.3588E+02
EU-154	114.	1274.51	5.9698E+01
EU-155	31547.	86.54	1.8972E+02
HF-181	39679.	482.18	2.2122E+02
TA-182	28765.	67.75	1.4440E+02
HG-203	38244.	279.20	1.3086E+02
BI-207	10462.	569.70	1.0841E+02
TL-208	38284.	277.36	1.6796E+03
PB-210	26766.	46.50	1.2237E+03

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HNF-1652 REV. 0

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Minimum Detectable Activity Report (continued)

Sample ID : S98T002781-SAM

Acquisition date : 7-OCT-1998 21:50:39

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	256.	727.18	3.1196E+02
PB-212	38808.	238.63	2.1715E+02
BI-214	8440.	609.31	2.2495E+02
PB-214	41107.	351.92	1.5689E+03
RA-224	38587.	240.99	2.4207E+03
RA-226	62611.	186.10	2.9217E+03
AC-228	407.	911.21	1.1430E+02
TH-229	31224.	88.47	2.5047E+02
U-232	27416.	57.78	2.8246E+04
PA-233	38981.	312.17	3.0728E+02
UTH-233	38541.	245.34	8.7590E+04
PA-234M	159.	1001.03	3.1628E+03
TH-234	28580.	63.29	1.5486E+03
U-235	61347.	185.71	1.7585E+02
NP-237	31642.	86.48	5.0260E+02
U-237	27765.	59.54	1.6707E+02
NP-238	137.	984.45	6.9430E+01
NP-239	32083.	106.12	2.7818E+02
PU-239	36293.	129.30	1.0634E+06
AM-241	27765.	59.54	1.5966E+02

HNF-1652 REV.0

 * 222-S Laboratory Counting Room 8-OCT-1998 03:10:42.12 *

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

Worklist #: 26387
 Sample ID: S98T002781-DUP
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Raymond

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

Detector ID: GEA1
 File Number: dka300:[spec.GEA1]1g1832.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:37:40.29 sec
 Dead Time: 4.9%

Verified by:

John Relyea 8 Oct 98

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

Sample Count Time: 8-OCT-1998 00:32:34.40
 Decayed to: 8-OCT-1998 00:32:34.40
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

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

Date of last energy calibration: 23-SEP-1998 14:57:30.35
 Date of last efficiency calibration: 20-MAR-1996 09:12:15.61

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	12.58	1055	0.61	25.28	23	6	52.3			
0	21.78	7999	1.06	43.69	40	8	9.7			
8	27.36	14775	1.73	54.84	51	29	5.7	8.14E+02		
8	29.87	43909	1.74	59.86	51	29	3.1		I-129	2.038E+03
8	31.95	290343	1.16	64.01	51	29	0.4			
8	36.31	91788	1.74	72.74	51	29	1.2			
0	74.97*	2302	0.77	150.04	148	6	25.5		AM-243	289.
0	84.66*	1880	1.18	169.43	167	7	35.2		TH-228	1.116E+04
0	189.96	21037	7.87	380.00	370	23	11.4			
0	604.47	422	1.56	1209.03	1206	8	71.8		CS-134	101.
0	661.49*	1663549	1.47	1323.08	1315	16	0.2		CS-137	4.889E+05
0	795.67*	302	1.77	1591.48	1586	11	25.0		CS-134	102.
0	1322.92	94	2.42	2646.22	2640	17	59.7			

Summary of Nuclide Activity

Sample ID : S98T002781-DUP

Acquisition date : 8-OCT-1998 00:32:34

Total number of lines in spectrum 13
 Number of unidentified lines 7
 Number of lines tentatively identified by NID 6 46.15%

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
I-129	5.73E+09D	1.00	2.038E+03	2.038E+03	0.064E+03	3.13	97R
CS-134	2.06Y	1.00	1.014E+02	1.014E+02	0.239E+02	23.58	
CS-137	30.00Y	1.00	4.889E+05	4.889E+05	0.008E+05	0.16	
TH-228	1.91Y	1.00	1.116E+04	1.116E+04	0.392E+04	35.15	97R
AM-243	7380.00Y*****	1.00	2.892E+02	2.892E+02	0.739E+02	25.54	97R
Total Activity :			5.025E+05	5.025E+05			10/8/98

Grand Total Activity : 5.025E+05 5.025E+05

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

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

Minimum Detectable Activity Report

Sample ID : S98T002781-DUP

Acquisition date : 8-OCT-1998 00:32:34

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	51109.	477.59	1.9350E+03
NA-24	58.	1368.55	1.6760E+01
K-40	1744.	1460.75	8.0207E+02
AR-41	104.	1293.60	3.1576E+01
SC-46	297.	1120.55	2.9841E+01
CR-51	40412.	320.08	1.2251E+03
MN-54	217.	834.83	2.1163E+01
CO-56	182.	846.76	1.9643E+01
CO-58	173.	810.78	1.8697E+01
FE-59	150.	1099.25	3.7643E+01
CO-60	85.	1332.50	1.8513E+01
ZN-65	159.	1115.55	4.3513E+01
SE-75	38899.	264.66	1.7573E+02
KR-85	25900.	514.00	3.5089E+04
SR-85	25897.	514.01	1.5872E+02
Y-88	21.	1836.06	1.3290E+01
Y-91	135.	1204.67	7.1566E+03
NB-94	166.	871.09	1.9188E+01
NB-95	230.	765.78	2.0541E+01
ZR-95	214.	756.73	3.5958E+01
ZRNB-95	255.	724.18	9.4808E+01
RU-103	31581.	497.08	1.7949E+02
RURH-106	7911.	621.93	2.0009E+03
AG-108m	240.	722.94	2.2073E+01
CD-109	31749.	88.03	1.7285E+03
AG-110M	61302.	657.76	3.0414E+02
SN-113	46710.	391.69	2.4926E+02
TE-123m	38987.	159.00	8.9339E+01
SB-124	8675.	602.73	1.0360E+02
SB-125	54612.	427.89	6.3640E+02
TE-125m	34223.	109.27	2.2992E+04
I-131	43201.	364.48	1.7756E+02
XE-131m	39769.	163.93	3.9264E+03
BA-133	42494.	356.02	2.2447E+02
CS-136	187.	818.51	1.9519E+01
CS-138	63.	1435.86	7.8361E+01
CE-139	40192.	165.85	9.7043E+01
BA-140	18109.	537.31	5.4478E+02
LA-140	26.	1596.21	1.3294E+01
CE-141	37684.	145.44	1.4854E+02
CE-144	36923.	133.51	6.2420E+02
CEPR-144	36925.	133.51	1.2473E+03
EU-152	36798.	121.78	2.3927E+02
EU-154	85.	1274.51	5.2078E+01
EU-155	32289.	86.54	1.9193E+02
HF-181	41067.	482.18	2.2505E+02
TA-182	29770.	67.75	1.4689E+02
HG-203	39259.	279.20	1.3258E+02
BI-207	10405.	569.70	1.0811E+02
TL-208	39330.	277.36	1.7023E+03
PB-210	27642.	46.50	1.2435E+03

Minimum Detectable Activity Report (continued)

Sample ID : S98T002781-DUP

Acquisition date : 8-OCT-1998 00:32:34

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	275.	727.18	3.2315E+02
PB-212	40529.	238.63	2.2190E+02
BI-214	8484.	609.31	2.2554E+02
PB-214	42561.	351.92	1.5981E+03
RA-224	40008.	240.99	2.4648E+03
RA-226	64628.	186.10	2.9683E+03
AC-228	369.	911.21	1.0896E+02
TH-229	31596.	88.47	2.5195E+02
U-232	28310.	57.78	2.8702E+04
PA-233	40098.	312.17	3.1164E+02
UTH-233	39582.	245.34	8.8762E+04
PA-234M	151.	1001.03	3.0873E+03
TH-234	28964.	63.29	1.5590E+03
U-235	63446.	185.71	1.7882E+02
NP-237	32401.	86.48	5.0858E+02
U-237	28653.	59.54	1.6971E+02
NP-238	130.	984.45	6.7589E+01
NP-239	33023.	106.12	2.8222E+02
PU-239	37065.	129.30	1.0746E+06
AM-241	28653.	59.54	1.6218E+02

HNF-1652 REV. 0

 * 222-S Laboratory Counting Room 8-OCT-1998 09:53:12.98 *

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

Worklist #: 26387
 Sample ID: S98T2794-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Em. Bullock

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

Detector ID: GEA1
 File Number: NI3AF:2.cmf 19 1835.cmf
 Geometry: 41 12547 GAC
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:33.70 sec
 Dead Time: 0.4%

Verified by:

John Relyea 8oct98

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

Sample Count Time: 8-OCT-1998 07:10:14.36
 Decayed to: 8-OCT-1998 07:10:14.36
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

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

Date of last energy calibration: 23-SEP-1998 14:57:30.35
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uci/L
0	12.72	124	1.00	25.57	24	6	84.4			
0	16.30	385	1.30	32.73	29	9	37.3			
0	31.93	476	1.03	63.98	60	8	27.6			
0	661.58*	3113	1.52	1323.26	1315	16	4.5		CS-137	1.26
0	1620.44	33	1.51	3241.51	3234	15	72.7	1.85E+00		

HNF-1652 REV. 0

Summary of Nuclide Activity

Page : 2

Sample ID : S98T2794-SAM

Acquisition date : 8-OCT-1998 07:10:14

Total number of lines in spectrum	5	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	2	40.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma
			Uncorrected	Decay Corr	2-Sigma Error	%Error Flags
			uCi/L	uCi/L		
CS-137	30.00Y	1.00	1.257E+00	1.257E+00	0.056E+00	4.49
Total Activity :			1.257E+00	1.257E+00		

Grand Total Activity : 1.257E+00 1.257E+00

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T2794-SAM

Acquisition date : 8-OCT-1998 07:10:14

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	418.	477.59	2.4011E-01
NA-24	52.	1368.55	2.5014E-02
K-40	1747.	1460.75	1.2608E+00
AR-41	102.	1293.60	4.8181E-02
SC-46	258.	1120.55	4.2713E-02
CR-51	686.	320.08	2.1948E-01
MN-54	177.	834.83	2.7485E-02
CO-56	157.	846.76	2.6348E-02
CO-58	154.	810.78	2.5200E-02
FE-59	124.	1099.25	5.2272E-02
CO-60	84.	1332.50	2.8872E-02
ZN-65	130.	1115.55	6.0327E-02
SE-75	869.	264.66	3.6236E-02
KR-85	419.	514.00	6.1327E+00
SR-85	419.	514.01	2.7725E-02
Y-88	24.	1836.06	2.0503E-02
Y-91	154.	1204.67	1.1787E+01
NB-94	166.	871.09	2.7766E-02
NB-95	190.	765.78	2.6396E-02
ZR-95	188.	756.73	4.7475E-02
ZRNB-95	190.	724.18	1.1461E-01
RU-103	390.	497.08	2.7420E-02
RURH-106	229.	621.93	4.7812E-01
AG-108m	181.	722.94	2.6819E-02
CD-109	1225.	88.03	3.8429E-01
AG-110M	297.	657.76	2.9939E-02
SN-113	521.	391.69	3.6066E-02
TE-123m	1474.	159.00	2.2898E-02
SB-124	239.	602.73	2.4046E-02
SB-125	447.	427.89	7.8931E-02
TE-125m	1479.	109.27	5.7263E+00
I-129	852.	39.60	1.7646E-01
I-131	519.	364.48	2.6718E-02
XE-131m	1443.	163.93	9.9154E-01
BA-133	578.	356.02	3.5937E-02
CS-134	242.	604.70	2.4301E-02
CS-136	158.	818.51	2.5711E-02
CS-138	52.	1435.86	1.0788E-01
CE-139	1409.	165.85	2.4146E-02
BA-140	322.	537.31	1.0041E-01
LA-140	38.	1596.21	2.4488E-02
CE-141	1533.	145.44	3.8746E-02
CE-144	1522.	133.51	1.6053E-01
CEPR-144	1522.	133.51	3.2076E-01
EU-152	1484.	121.78	5.9388E-02
EU-154	98.	1274.51	8.7047E-02
EU-155	1279.	86.54	4.3069E-02
HF-181	397.	482.18	3.0393E-02
TA-182	1030.	67.75	3.0264E-02
HG-203	850.	279.20	2.6886E-02
BI-207	295.	569.70	2.5252E-02

HNF-1652 REV. 0

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T2794-SAM

Acquisition date : 8-OCT-1998 07:10:14

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	858.	277.36	3.4660E-01
PB-210	978.	46.50	3.2543E-01
BI-212	250.	727.18	4.2998E-01
PB-212	1260.	238.63	5.3786E-02
BI-214	659.	609.31	8.6809E-02
PB-214	906.	351.92	3.0532E-01
RA-224	1041.	240.99	5.4721E-01
RA-226	1363.	186.10	5.8306E-01
AC-228	384.	911.21	1.6244E-01
TH-228	1463.	84.37	1.1873E+00
TH-229	1229.	88.47	5.6316E-02
U-232	1148.	57.78	6.6765E+00
PA-233	667.	312.17	5.5369E-02
UTH-233	960.	245.34	1.9053E+01
PA-234M	136.	1001.03	4.3789E+00
TH-234	1154.	63.29	3.4813E-01
U-235	1356.	185.71	3.5349E-02
NP-237	1292.	86.48	1.1449E-01
U-237	1112.	59.54	3.8124E-02
NP-238	132.	984.45	1.0116E-01
NP-239	1428.	106.12	6.9673E-02
PU-239	1574.	129.30	2.7811E+02
AM-241	1111.	59.54	3.6440E-02
AM-243	1498.	74.67	2.5008E-02

 * 222-S Laboratory Counting Room 8-OCT-1998 12:26:24.92 *

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

Worklist #: 26387
 Sample ID: S98T2794-DUP
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Em. Buck

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

Detector ID: GEA1
 File Number: dka300:[spec.GEA1]1g1836.cnf
 Geometry: 41
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:33.12 sec
 Dead Time: 0.4%

Verified by:

John Rehyer 8 Oct 98

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

Sample Count Time: 8-OCT-1998 09:55:24.40
 Decayed to: 8-OCT-1998 09:55:24.40
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA1]1GBACK

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

Date of last energy calibration: 23-SEP-1998 14:57:30.35
 Date of last efficiency calibration: 20-MAR-1996 09:10:52.48

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uci/L
0	12.86	259	1.09	25.84	23	7 47.5			
0	16.12	236	1.32	32.37	30	7 51.5			
0	31.81	493	0.92	63.74	60	9 29.2			
0	36.53	107	1.05	73.18	71	7106.0			
0	661.55*	2891	1.48	1323.21	1316	14 4.7		CS-137	1.17

Summary of Nuclide Activity

Page : 2

Sample ID : S98T2794-DUP

Acquisition date : 8-OCT-1998 09:55:24

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

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	1.167E+00	1.167E+00	0.055E+00	4.69	
Total Activity :			1.167E+00	1.167E+00			

Grand Total Activity : 1.167E+00 1.167E+00

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

HNF-1652 REV. 0

Page : 3

Minimum Detectable Activity Report

Sample ID : S98T2794-DUP

Acquisition date : 8-OCT-1998 09:55:24

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	396.	477.59	2.3396E-01
NA-24	64.	1368.55	2.7340E-02
K-40	1714.	1460.75	1.2491E+00
AR-41	96.	1293.60	4.6874E-02
SC-46	263.	1120.55	4.3121E-02
CR-51	693.	320.08	2.2067E-01
MN-54	183.	834.83	2.7982E-02
CO-56	163.	846.76	2.6765E-02
CO-58	160.	810.78	2.5656E-02
FE-59	145.	1099.25	5.6341E-02
CO-60	63.	1332.50	2.5186E-02
ZN-65	138.	1115.55	6.2090E-02
SE-75	863.	264.66	3.6112E-02
KR-85	449.	514.00	6.3436E+00
SR-85	449.	514.01	2.8674E-02
Y-88	15.	1836.06	1.6786E-02
Y-91	147.	1204.67	1.1543E+01
NB-94	160.	871.09	2.7271E-02
NB-95	194.	765.78	2.6656E-02
ZR-95	192.	756.73	4.7993E-02
ZRNB-95	191.	724.18	1.1478E-01
RU-103	359.	497.08	2.6342E-02
RURH-106	239.	621.93	4.8863E-01
AG-108m	184.	722.94	2.7049E-02
CD-109	1252.	88.03	3.8857E-01
AG-110M	295.	657.76	2.9850E-02
SN-113	523.	391.69	3.6116E-02
TE-123m	1425.	159.00	2.2522E-02
SB-124	279.	602.73	2.5931E-02
SB-125	476.	427.89	8.1346E-02
TE-125m	1423.	109.27	5.6180E+00
I-129	792.	39.60	1.7026E-01
I-131	601.	364.48	2.8708E-02
XE-131m	1425.	163.93	9.8529E-01
BA-133	577.	356.02	3.5907E-02
CS-134	270.	604.70	2.5639E-02
CS-136	170.	818.51	2.6637E-02
CS-138	48.	1435.86	1.0371E-01
CE-139	1412.	165.85	2.4173E-02
BA-140	315.	537.31	9.9221E-02
LA-140	38.	1596.21	2.4597E-02
CE-141	1531.	145.44	3.8723E-02
CE-144	1530.	133.51	1.6096E-01
CEPR-144	1530.	133.51	3.2166E-01
EU-152	1540.	121.78	6.0472E-02
EU-154	93.	1274.51	8.4780E-02
EU-155	1302.	86.54	4.3446E-02
HF-181	375.	482.18	2.9538E-02
TA-182	996.	67.75	2.9766E-02
HG-203	804.	279.20	2.6177E-02
BI-207	275.	569.70	2.4423E-02

HNF-1652 REV. 0

Page : 4

Minimum Detectable Activity Report (continued)

Sample ID : S98T2794-DUP

Acquisition date : 8-OCT-1998 09:55:24

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	830.	277.36	3.4100E-01
PB-210	879.	46.50	3.0878E-01
BI-212	245.	727.18	4.2634E-01
PB-212	1327.	238.63	5.5185E-02
BI-214	643.	609.31	8.5720E-02
PB-214	915.	351.92	3.0676E-01
RA-224	1142.	240.99	5.7285E-01
RA-226	1363.	186.10	5.8308E-01
AC-228	346.	911.21	1.5447E-01
TH-228	1444.	84.37	1.1795E+00
TH-229	1248.	88.47	5.6743E-02
U-232	1075.	57.78	6.4643E+00
PA-233	707.	312.17	5.6946E-02
UTH-233	921.	245.34	1.8667E+01
PA-234M	171.	1001.03	4.8950E+00
TH-234	1185.	63.29	3.5272E-01
U-235	1371.	185.71	3.5535E-02
NP-237	1315.	86.48	1.1547E-01
U-237	1088.	59.54	3.7720E-02
NP-238	123.	984.45	9.7823E-02
NP-239	1389.	106.12	6.8732E-02
PU-239	1504.	129.30	2.7194E+02
AM-241	1088.	59.54	3.6055E-02
AM-243	1386.	74.67	2.4069E-02

LABCORE Completed Worklist Report for Worklist# 26523

Analyst: crj

Instrument: GEA02

Book# 28857

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

Worklist Comment: AW101 LAW, @GEA-02 SS: See traveler. STD: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@GEA-02 CO60-02 SOLID		4.581e-03	4.75e-03	103.689 % Recovery	
1 STD	0	@GEA-02 CO60-02E SOLID		1	3.22	3.220 % Ct Error	
1 STD	0	@GEA-02 CS13702 SOLID		7.468e-03	7.71e-03	103.240 % Recovery	
1 STD	0	@GEA-02 CS13702E SOLID		1	2.93	2.930 % Ct Error	
2 BLNK-PREP	0	@GEA-02 CO60-02 SOLID		1	<1.91e-2	uCi/g	
2 BLNK-PREP	0	@GEA-02 SB12502 SOLID		1	<4.86e-2	uCi/g	
2 BLNK-PREP	0	@GEA-02 CS13702 SOLID		1	2.48e-01	0.248 uCi/g	
2 BLNK-PREP	0	@GEA-02 EU15402 SOLID		1	<4.93e-2	uCi/g	
2 BLNK-PREP	0	@GEA-02 EU15502 SOLID		1	<4.47e-2	uCi/g	
2 BLNK-PREP	0	@GEA-02 AM24102 SOLID		1	<1.11e-1	uCi/g	
3 SAMPLE	S98T002752	0 F @GEA-02 CO60-02 SOLID		N/A	< 2.167e-02	2.17e-002 uCi/g	
3 SAMPLE	S98T002752	0 F @GEA-02 CO60-02E SOLID		N/A	n/a	% Ct. Error	
3 SAMPLE	S98T002752	0 F @GEA-02 SB12502 SOLID		N/A	< 5.580e-01	0.558 uCi/g	
3 SAMPLE	S98T002752	0 F @GEA-02 SB12502E SOLID		N/A	n/a	% Ct. Error	
3 SAMPLE	S98T002752	0 F @GEA-02 CS13702 SOLID		N/A	2.456e-02	uCi/g	
3 SAMPLE	S98T002752	0 F @GEA-02 CS13702E SOLID		N/A	0.290	% Ct. Error	
3 SAMPLE	S98T002752	0 F @GEA-02 EU15402 SOLID		N/A	< 8.139e-02	8.14e-002 uCi/g	
3 SAMPLE	S98T002752	0 F @GEA-02 EU15402E SOLID		N/A	n/a	% Ct. Error	
3 SAMPLE	S98T002752	0 F @GEA-02 EU15502 SOLID		N/A	< 3.345e-01	0.335 uCi/g	
3 SAMPLE	S98T002752	0 F @GEA-02 EU15502E SOLID		N/A	n/a	% Ct. Error	
3 SAMPLE	S98T002752	0 F @GEA-02 AM24102 SOLID		N/A	< 8.058e-01	0.806 uCi/g	
3 SAMPLE	S98T002752	0 F @GEA-02 AM24102E SOLID		N/A	n/a	% Ct. Error	
4 SAMPLE	S98T002753	0 F @GEA-02 CO60-02 SOLID		N/A	< 2.263e-02	2.26e-002 uCi/g	
4 SAMPLE	S98T002753	0 F @GEA-02 CO60-02E SOLID		N/A	n/a	% Ct. Error	
4 SAMPLE	S98T002753	0 F @GEA-02 SB12502 SOLID		N/A	< 5.602e-01	0.560 uCi/g	
4 SAMPLE	S98T002753	0 F @GEA-02 SB12502E SOLID		N/A	n/a	% Ct. Error	
4 SAMPLE	S98T002753	0 F @GEA-02 CS13702 SOLID		N/A	2.396e-02	uCi/g	
4 SAMPLE	S98T002753	0 F @GEA-02 CS13702E SOLID		N/A	0.290	% Ct. Error	
4 SAMPLE	S98T002753	0 F @GEA-02 EU15402 SOLID		N/A	< 7.484e-02	7.48e-002 uCi/g	
4 SAMPLE	S98T002753	0 F @GEA-02 EU15402E SOLID		N/A	n/a	% Ct. Error	
4 SAMPLE	S98T002753	0 F @GEA-02 EU15502 SOLID		N/A	< 3.326e-01	0.333 uCi/g	
4 SAMPLE	S98T002753	0 F @GEA-02 EU15502E SOLID		N/A	n/a	% Ct. Error	
4 SAMPLE	S98T002753	0 F @GEA-02 AM24102 SOLID		N/A	< 8.000e-01	0.800 uCi/g	
4 SAMPLE	S98T002753	0 F @GEA-02 AM24102E SOLID		N/A	n/a	% Ct. Error	
5 SAMPLE	S98T002754	0 F @GEA-02 CO60-02 SOLID		N/A	< 1.405e-02	1.40e-002 uCi/g	
5 SAMPLE	S98T002754	0 F @GEA-02 CO60-02E SOLID		N/A	n/a	% Ct. Error	
5 SAMPLE	S98T002754	0 F @GEA-02 SB12502 SOLID		N/A	< 3.862e-01	0.386 uCi/g	
5 SAMPLE	S98T002754	0 F @GEA-02 SB12502E SOLID		N/A	n/a	% Ct. Error	
5 SAMPLE	S98T002754	0 F @GEA-02 CS13702 SOLID		N/A	2.323e-02	uCi/g	
5 SAMPLE	S98T002754	0 F @GEA-02 CS13702E SOLID		N/A	0.210	% Ct. Error	
5 SAMPLE	S98T002754	0 F @GEA-02 EU15402 SOLID		N/A	< 4.544e-02	4.54e-002 uCi/g	

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

LABCORE Completed Worklist Report for Worklist# 26523

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
5 SAMPLE	S98T002754	0	F	@GEA-02	HU15402E SOLID	N/A	n/a		% Ct. Error
5 SAMPLE	S98T002754	0	F	@GEA-02	HU15502 SOLID	N/A	< 2.310e-01	0.231	uCi/g
5 SAMPLE	S98T002754	0	F	@GEA-02	HU15502E SOLID	N/A	n/a		% Ct. Error
5 SAMPLE	S98T002754	0	F	@GEA-02	AM24102 SOLID	N/A	< 5.573e-01	0.557	uCi/g
5 SAMPLE	S98T002754	0	F	@GEA-02	AM24102E SOLID	N/A	n/a		% Ct. Error

Comments Section:

Comments for sample# S98T002752 and test @GEA-02 .
DL=0 => n/a.

Comments for sample# S98T002753 and test @GEA-02 .
DL=0 => n/a.

Comments for sample# S98T002754 and test @GEA-02 .
DL=0 => n/a.

Final page for worklist# 26523

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date 10-13-98

LABCORE Data Entry Template for Worklist# 26523

Analyst: CRJ Instrument: GEA00 2 Book# 28B57

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

Worklist Comment: AW101 LAW, @GEA-02 SS: See traveler. STD: 1.0mL skm

S Type	Sample#	R	A	Test	Matrix	Group#	Project
1 STD				@GEA-02	SOLID		
2 BLNK-PREP				@GEA-02	SOLID		
3 SAMPLE	S98T002752	0	F	@GEA-02	SOLID	98000261	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E							
4 SAMPLE	S98T002753	0	F	@GEA-02	SOLID	98000261	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E							
5 SAMPLE	S98T002754	0	F	@GEA-02	SOLID	98000261	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E							

Final page for worklist # 26523

Analyst Signature

10/12/98 Date

Analyst Signature

10/13/98 Date

Data Entry Comments:

 * 222-S Laboratory Counting Room 12-OCT-1998 13:09:50.55 *

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

Worklist #: 26523
 Sample ID: WL26523-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

[Signature]

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2537.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:21.94 sec
 Dead Time: 0.7%

Verified by:

John Relyea 13 Oct 98

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

Sample Count Time: 12-OCT-1998 12:18:57.99
 Decayed to: 12-OCT-1998 12:18:57.99
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: MB
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.36*	5301	1.46	1322.72	1316	14	2.9		CS-137	7.71
0	1172.72	2370	1.81	2345.49	2336	19	4.6		CO-60	4.70
0	1331.88	2182	1.91	2663.85	2654	18	4.5		CO-60	4.81

Summary of Nuclide Activity

Page : 2

Sample ID : WL26523-STD

Acquisition date : 12-OCT-1998 12:18:57

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	Hliffe	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr			
			uCi/L	uCi/L	2-Sigma Error	%Error	
CO-60	5.27Y	1.00	4.753E+00	4.753E+00	0.153E+00	3.22	
CS-137	30.00Y	1.00	7.710E+00	7.710E+00	0.226E+00	2.93	
Total Activity :			1.246E+01	1.246E+01			

Grand Total Activity :	1.246E+01	1.246E+01
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Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : WL26523-STD

Acquisition date : 12-OCT-1998 12:18:57

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	248.	477.59	6.7831E-01
NA-24	8.	1368.55	3.7190E-02
K-40	116.	1460.75	1.1795E+00
AR-41	21.	1293.60	6.0139E-02
SC-46	106.	1120.55	9.6390E-02
CR-51	277.	320.08	5.0628E-01
MN-54	125.	834.83	8.2238E-02
CO-56	147.	846.76	9.0029E-02
CO-58	141.	810.78	8.5660E-02
FE-59	112.	1099.25	1.7288E-01
ZN-65	116.	1115.55	1.9805E-01
SE-75	358.	264.66	8.3792E-02
KR-85	183.	514.00	1.4964E+01
SR-85	183.	514.01	6.7627E-02
Y-88	4.	1836.06	3.6707E-02
Y-91	52.	1204.67	2.4461E+01
NB-94	127.	871.09	8.6107E-02
NB-95	118.	765.78	7.4679E-02
ZR-95	113.	756.73	1.3304E-01
ZRNB-95	103.	724.18	3.0712E-01
RU-103	185.	497.08	6.9618E-02
RURH-106	130.	621.93	1.3210E+00
AG-108m	111.	722.94	7.6124E-02
CD-109	324.	88.03	1.4482E+00
AG-110M	277.	657.76	1.0434E-01
SN-113	269.	391.69	9.4651E-02
TE-123m	329.	159.00	4.2545E-02
SB-124	147.	602.73	6.9023E-02
SB-125	269.	427.89	2.2413E-01
TE-125m	276.	109.27	1.3078E+01
I-129	276.	39.60	1.5417E+01
I-131	255.	364.48	6.8123E-02
XE-131m	355.	163.93	1.9048E+00
BA-133	255.	356.02	8.7143E-02
CS-134	131.	604.70	6.5594E-02
CS-136	113.	818.51	7.7621E-02
CS-138	11.	1435.86	8.9781E-02
CE-139	348.	165.85	4.6338E-02
BA-140	170.	537.31	2.6775E-01
LA-140	6.	1596.21	3.9249E-02
CE-141	343.	145.44	7.5272E-02
CE-144	319.	133.51	3.1997E-01
CEPR-144	320.	133.51	6.3951E-01
EU-152	343.	121.78	1.3388E-01
EU-154	37.	1274.51	1.9137E-01
EU-155	350.	86.54	1.7045E-01
HF-181	199.	482.18	7.9087E-02
TA-182	286.	67.75	2.1917E-01
HG-203	300.	279.20	5.7669E-02
BI-207	130.	569.70	6.1796E-02
TL-208	324.	277.36	7.6843E-01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL26523-STD

Acquisition date : 12-OCT-1998 12:18:57

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	261.	46.50	1.0336E+01
BI-212	100.	727.18	9.9230E-01
PB-212	406.	238.63	1.1023E-01
BI-214	180.	609.31	1.6742E-01
PB-214	289.	351.92	2.8373E-01
RA-224	372.	240.99	1.1727E+00
RA-226	383.	186.10	1.1508E+00
AC-228	179.	911.21	3.9462E-01
TH-228	289.	84.37	4.2129E+00
TH-229	312.	88.47	2.0610E-01
U-232	284.	57.78	7.8152E+01
PA-233	281.	312.17	1.3009E-01
UTH-233	337.	245.34	4.0737E+01
PA-234M	117.	1001.03	1.4216E+01
TH-234	248.	63.29	2.7558E+00
U-235	376.	185.71	6.9376E-02
NP-237	350.	86.48	4.5113E-01
U-237	307.	59.54	4.2020E-01
NP-238	149.	984.45	3.6995E-01
NP-239	294.	106.12	1.7138E-01
PU-239	344.	129.30	5.7914E+02
AM-241	307.	59.54	4.0306E-01
AM-243	284.	74.67	1.1492E-01

 * 222-S Laboratory Counting Room 12-OCT-1998 16:30:40.25 *

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

Worklist #: 26523
 Sample ID: WL26523-BLNK
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

S. L. L.

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2539.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:31.45 sec
 Dead Time: 0.3%

Verified by:

John R. Lye 13 Oct 98

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

Sample Count Time: 12-OCT-1998 13:59:42.15
 Decayed to: 12-OCT-1998 13:59:42.15
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SZC
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.44*	509	1.60	1322.88	1317	11	12.7		CS-137	0.493
0	1460.23*	37	1.69	2920.57	2913	161	24.9		K-40	0.546
0	1485.69	16	1.12	2971.50	2966	9	50.0			

Summary of Nuclide Activity

Page : 2

Sample ID : WL26523-BLNK

Acquisition date : 12-OCT-1998 13:59:42

Total number of lines in spectrum	3	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	2	66.67%

Nuclide Type :

Nuclide	Hliffe	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/L	uCi/L					
K-40	1.28E+09Y	1.00	5.462E-01	5.462E-01	6.821E-01	124.87	124.87	124.87	124.87
CS-137	30.00Y	1.00	4.932E-01	4.932E-01	0.628E-01	12.73	12.73	12.73	12.73
Total Activity :			1.039E+00	1.039E+00					

Grand Total Activity :	1.039E+00	1.039E+00
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Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

HNF-1652 REV. 0

Minimum Detectable Activity Report

Page : 3

Sample ID : WL26523-BLNK

Acquisition date : 12-OCT-1998 13:59:42

Nuclide	Bkgdnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	101.	477.59	2.9436E-01
NA-24	19.	1368.55	3.6398E-02
AR-41	22.	1293.60	5.5167E-02
SC-46	62.	1120.55	5.0239E-02
CR-51	149.	320.08	2.5097E-01
MN-54	52.	834.83	3.6536E-02
CO-56	47.	846.76	3.5074E-02
CO-58	44.	810.78	3.3054E-02
FE-59	41.	1099.25	7.1772E-02
CO-60	25.	1332.50	3.8106E-02
ZN-65	32.	1115.55	7.2425E-02
SE-75	184.	264.66	4.0510E-02
KR-85	118.	514.00	8.0997E+00
SR-85	118.	514.01	3.6629E-02
Y-88	5.	1836.06	2.6303E-02
Y-91	41.	1204.67	1.4552E+01
NB-94	36.	871.09	3.1906E-02
NB-95	47.	765.78	3.2294E-02
ZR-95	45.	756.73	5.7558E-02
ZRNB-95	65.	724.18	1.6515E-01
RU-103	101.	497.08	3.4791E-02
RURH-106	48.	621.93	5.4956E-01
AG-108m	61.	722.94	3.8182E-02
CD-109	214.	88.03	7.8950E-01
AG-110M	68.	657.76	3.5701E-02
SN-113	121.	391.69	4.3088E-02
TE-123m	216.	159.00	2.3141E-02
SB-124	77.	602.73	3.3921E-02
SB-125	108.	427.89	9.6706E-02
TE-125m	209.	109.27	7.6152E+00
I-129	180.	39.60	8.3660E+00
I-131	143.	364.48	3.4460E-02
XE-131m	229.	163.93	1.0294E+00
BA-133	118.	356.02	4.0155E-02
CS-134	71.	604.70	3.2779E-02
CS-136	42.	818.51	3.2533E-02
CS-138	20.	1435.86	1.6172E-01
CE-139	230.	165.85	2.5268E-02
BA-140	71.	537.31	1.1793E-01
LA-140	7.	1596.21	2.7760E-02
CE-141	211.	145.44	3.9679E-02
CE-144	230.	133.51	1.8196E-01
CEPR-144	230.	133.51	3.6346E-01
EU-152	245.	121.78	7.5928E-02
EU-154	21.	1274.51	9.8182E-02
EU-155	211.	86.54	8.9030E-02
HF-181	114.	482.18	4.0450E-02
TA-182	178.	67.75	1.1636E-01
HG-203	167.	279.20	2.9054E-02
BI-207	65.	569.70	2.9720E-02
TL-208	164.	277.36	3.6934E-01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL26523-BLNK

Acquisition date : 12-OCT-1998 13:59:42

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	160.	46.50	5.4710E+00
BI-212	66.	727.18	5.4495E-01
PB-212	222.	238.63	5.4889E-02
BI-214	170.	609.31	1.0878E-01
PB-214	206.	351.92	3.5720E-01
RA-224	201.	240.99	5.8397E-01
RA-226	269.	186.10	6.4660E-01
AC-228	78.	911.21	1.7719E-01
TH-228	218.	84.37	2.4534E+00
TH-229	206.	88.47	1.1246E-01
U-232	180.	57.78	4.1849E+01
PA-233	149.	312.17	6.3962E-02
UTH-233	192.	245.34	2.0702E+01
PA-234M	29.	1001.03	4.9537E+00
TH-234	198.	63.29	1.6499E+00
U-235	270.	185.71	3.9393E-02
NP-237	214.	86.48	2.3700E-01
U-237	206.	59.54	2.3175E-01
NP-238	29.	984.45	1.1561E-01
NP-239	207.	106.12	9.7393E-02
PU-239	241.	129.30	3.2503E+02
AM-241	206.	59.54	2.2151E-01
AM-243	246.	74.67	7.1583E-02

HNF-1652 REV. 0

* 222-S Laboratory Counting Room 12-OCT-1998 20:53:23.53 *

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

Worklist #: 26523
Sample ID: S98T2752-SAM
Sample Size: 5.00000E-04 L
Dilution Factor: 1.00000E+00

Removed by:

Subler

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

Detector ID: GEA2
File Number: dka300:[spec.GEA2]2g2540.cnf
Geometry: 42
Count Time: 0 02:30:00.00 sec
Real Time: 0 02:33:05.95 sec
Dead Time: 2.0%

Verified by:

John Delany 13 Oct 98

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

Sample Count Time: 12-OCT-1998 18:19:48.87
Decayed to: 12-OCT-1998 18:19:48.87
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: SLH2
Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	286.44	486	1.48	572.90	571	6	67.6			
0	661.35*	504477	1.47	1322.69	1315	16	0.3		CS-137	489.
0	795.71	92	1.55	1591.42	1586	15	47.8			

Summary of Nuclide Activity

Page : 2

Sample ID : S98T2752-SAM

Acquisition date : 12-OCT-1998 18:19:48

Total number of lines in spectrum	3	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	2	66.67%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	4.892E+02	4.892E+02	0.014E+02	0.29	
Total Activity :			4.892E+02	4.892E+02			

Grand Total Activity :	4.892E+02	4.892E+02
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Flags: "K" = Keyline not found
 "E" = Manually edited

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

Minimum Detectable Activity Report
 Sample ID : S98T2752-SAM

Page : 3
 Acquisition date : 12-OCT-1998 18:19:48

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	15051.	477.59	3.4158E+00
NA-24	15.	1368.55	3.2665E-02
K-40	307.	1460.75	1.2544E+00
AR-41	32.	1293.60	6.5607E-02
SC-46	67.	1120.55	5.1782E-02
CR-51	12836.	320.08	2.2323E+00
MN-54	59.	834.83	3.8632E-02
CO-56	56.	846.76	3.8089E-02
CO-58	50.	810.78	3.5250E-02
FE-59	35.	1099.25	6.6998E-02
CO-60	33.	1332.50	4.3153E-02
ZN-65	37.	1115.55	7.7813E-02
SE-75	14332.	264.66	3.4442E-01
KR-85	7583.	514.00	6.1961E+01
SR-85	7582.	514.01	2.8025E-01
Y-88	12.	1836.06	3.7912E-02
Y-91	38.	1204.67	1.4063E+01
NB-94	48.	871.09	3.6443E-02
NB-95	77.	765.78	4.0766E-02
ZR-95	61.	756.73	6.6432E-02
ZRNB-95	106.	724.18	2.0734E-01
RU-103	9413.	497.08	3.1933E-01
RURH-106	3199.	621.93	4.1948E+00
AG-108m	105.	722.94	4.9352E-02
CD-109	12536.	88.03	5.8472E+00
AG-110M	16913.	657.76	5.2794E-01
SN-113	13526.	391.69	4.3473E-01
TE-123m	14475.	159.00	1.8317E-01
SB-124	3365.	602.73	2.1229E-01
SB-125	15809.	427.89	1.1111E+00
TE-125m	13391.	109.27	5.8939E+01
I-129	11770.	39.60	6.5219E+01
I-131	12889.	364.48	3.1402E-01
XE-131m	14372.	163.93	7.8879E+00
BA-133	12946.	356.02	4.0108E-01
CS-134	3386.	604.70	2.1388E-01
CS-136	39.	818.51	3.1674E-02
CS-138	19.	1435.86	1.6147E-01
CE-139	14220.	165.85	1.9246E-01
BA-140	5707.	537.31	9.9992E-01
LA-140	19.	1596.21	4.2268E-02
CE-141	14597.	145.44	3.1921E-01
CE-144	14594.	133.51	1.4033E+00
CEPR-144	14595.	133.51	2.8041E+00
EU-152	14416.	121.78	5.6393E-01
EU-154	62.	1274.51	1.6207E-01
EU-155	12655.	86.54	6.6596E-01
HF-181	12070.	482.18	3.9709E-01
TA-182	11675.	67.75	9.0765E-01
HG-203	13792.	279.20	2.5378E-01
BI-207	3594.	569.70	2.0845E-01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T2752-SAM

Acquisition date : 12-OCT-1998 18:19:48

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	13909.	277.36	3.2693E+00
PB-210	11526.	46.50	4.4591E+01
BI-212	85.	727.18	6.1297E-01
PB-212	16013.	238.63	4.5067E-01
BI-214	3283.	609.31	4.6192E-01
PB-214	12939.	351.92	2.7754E+00
RA-224	15595.	240.99	4.9699E+00
RA-226	18537.	186.10	5.2086E+00
AC-228	81.	911.21	1.8082E-01
TH-228	12579.	84.37	1.8018E+01
TH-229	12500.	88.47	8.4625E-01
U-232	11518.	57.78	3.2258E+02
PA-233	12839.	312.17	5.7002E-01
UTH-233	15450.	245.34	1.7911E+02
PA-234M	34.	1001.03	5.3405E+00
TH-234	11518.	63.29	1.2147E+01
U-235	18335.	185.71	3.1504E-01
NP-237	12652.	86.48	1.7637E+00
U-237	11576.	59.54	1.6788E+00
NP-238	42.	984.45	1.3773E-01
NP-239	12958.	106.12	7.4470E-01
PU-239	14531.	129.30	2.4455E+03
AM-241	11576.	59.54	1.6045E+00
AM-243	12079.	74.67	4.8581E-01

HNF-1652 REV.0

 * 222-S Laboratory Counting Room 12-OCT-1998 23:32:12.04 *

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

Worklist #: 26523
 Sample ID: S98T2753-SAM
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

gllak

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2541.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:32:59.38 sec
 Dead Time: 2.0%

Verified by:

John Relyea 13 Oct 98

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

Sample Count Time: 12-OCT-1998 20:58:44.25
 Decayed to: 12-OCT-1998 20:58:44.25
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.36*	483660	1.46	1322.71	1315	16	0.3		CS-137	469.
0	723.16	34	1.39	1446.32	1442	9	96.7			
0	795.75	106	1.54	1591.49	1587	11	30.4			
0	1460.11*	26	2.36	2920.34	2911	16166.8			K-40	0.389
0	1763.76*	12	2.96	3527.75	3522	12130.9				

Summary of Nuclide Activity

Page : 2

Sample ID : S98T2753-SAM

Acquisition date : 12-OCT-1998 20:58:44

Total number of lines in spectrum	5	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	5	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma Error	2-Sigma	Flags
			Uncorrected uCi/L	Decay Corr uCi/L				
K-40	1.28E+09Y	1.00	3.888E-01	3.888E-01	6.487E-01	166.84	99.2	
CS-137	30.00Y	1.00	4.690E+02	4.690E+02	0.014E+02	0.29		10/13/98
Total Activity :			4.694E+02	4.694E+02				

Grand Total Activity :	4.694E+02	4.694E+02
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Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T2753-SAM

Acquisition date : 12-OCT-1998 20:58:44

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	14356.	477.59	3.3365E+00
NA-24	34.	1368.55	4.7387E-02
AR-41	23.	1293.60	5.5948E-02
SC-46	78.	1120.55	5.5765E-02
CR-51	11918.	320.08	2.1514E+00
MN-54	54.	834.83	3.7170E-02
CO-56	56.	846.76	3.8191E-02
CO-58	48.	810.78	3.4474E-02
FE-59	35.	1099.25	6.6832E-02
CO-60	35.	1332.50	4.4296E-02
ZN-65	47.	1115.55	8.6642E-02
SE-75	13929.	264.66	3.3956E-01
KR-85	7379.	514.00	6.1127E+01
SR-85	7380.	514.01	2.7651E-01
Y-88	9.	1836.06	3.3347E-02
Y-91	34.	1204.67	1.3357E+01
NB-94	67.	871.09	4.2429E-02
NB-95	58.	765.78	3.5863E-02
ZR-95	82.	756.73	7.6061E-02
ZRNB-95	101.	724.18	2.0232E-01
RU-103	8932.	497.08	3.1110E-01
RURH-106	3031.	621.93	4.0843E+00
AG-108m	106.	722.94	4.9689E-02
CD-109	12055.	88.03	5.7346E+00
AG-110M	15767.	657.76	5.0982E-01
SN-113	13127.	391.69	4.2831E-01
TE-123m	13870.	159.00	1.7932E-01
SB-124	3229.	602.73	2.0801E-01
SB-125	15390.	427.89	1.0964E+00
TE-125m	12531.	109.27	5.7023E+01
I-129	11360.	39.60	6.4080E+01
I-131	12498.	364.48	3.0924E-01
XE-131m	13718.	163.93	7.7070E+00
BA-133	12280.	356.02	3.9067E-01
CS-134	3278.	604.70	2.1049E-01
CS-136	52.	818.51	3.5951E-02
CS-138	21.	1435.86	1.6935E-01
CE-139	13781.	165.85	1.8948E-01
BA-140	5373.	537.31	9.7045E-01
LA-140	15.	1596.21	3.8631E-02
CE-141	13898.	145.44	3.1151E-01
CE-144	13854.	133.51	1.3674E+00
CEPR-144	13853.	133.51	2.7323E+00
EU-152	13708.	121.78	5.4998E-01
EU-154	50.	1274.51	1.4648E-01
EU-155	12088.	86.54	6.5095E-01
HF-181	11588.	482.18	3.8912E-01
TA-182	11402.	67.75	8.9700E-01
HG-203	12945.	279.20	2.4590E-01
BI-207	3503.	569.70	2.0583E-01
TL-208	12934.	277.36	3.1532E+00

HNF-1652 REV. 0

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T2753-SAM

Acquisition date : 12-OCT-1998 20:58:44

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	11082.	46.50	4.3728E+01
BI-212	76.	727.18	5.8301E-01
PB-212	15378.	238.63	4.4167E-01
BI-214	3180.	609.31	4.5473E-01
PB-214	12446.	351.92	2.7204E+00
RA-224	15064.	240.99	4.8850E+00
RA-226	17778.	186.10	5.1013E+00
AC-228	73.	911.21	1.7224E-01
TH-228	11829.	84.37	1.7476E+01
TH-229	12062.	88.47	8.3137E-01
U-232	11029.	57.78	3.1568E+02
PA-233	12241.	312.17	5.5665E-01
UTH-233	14819.	245.34	1.7544E+02
PA-234M	49.	1001.03	6.2979E+00
TH-234	11234.	63.29	1.1996E+01
U-235	17547.	185.71	3.0823E-01
NP-237	12085.	86.48	1.7239E+00
U-237	11022.	59.54	1.6383E+00
NP-238	45.	984.45	1.4183E-01
NP-239	12702.	106.12	7.3733E-01
PU-239	14019.	129.30	2.4022E+03
AM-241	11022.	59.54	1.5657E+00
AM-243	11528.	74.67	4.7465E-01

 * 222-S Laboratory Counting Room 13-OCT-1998 02:26:21.40 *

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

Worklist #: 26523
 Sample ID: S98T2754-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

John L. Hulse

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2542.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:34:53.03 sec
 Dead Time: 3.2%

Verified by:

John Relyea 13 Oct 98

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

Sample Count Time: 12-OCT-1998 23:51:00.03
 Decayed to: 12-OCT-1998 23:51:00.03
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	661.36*	938813	1.47	1322.71	1315	16 0.2		CS-137	455.
0	715.74	44	0.90	1431.48	1427	9 96.1			
0	795.72	189	1.87	1591.43	1585	13 25.6			
0	969.41*	43	1.81	1938.82	1933	16 83.2			
0	1273.53	60	1.54	2547.14	2540	13 45.4			
0	1460.25*	43	1.98	2920.62	2911	20103.3		K-40	0.323
0	1764.05*	31	1.94	3528.34	3523	11 57.2			

Summary of Nuclide Activity

Page : 2

Sample ID : S98T2754-SAM

Acquisition date : 12-OCT-1998 23:51:00

Total number of lines in spectrum	7	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	6	85.71%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean 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	3.228E-01	3.228E-01	3.335E-01	103.29	8/8
CS-137	30.00Y	1.00	4.552E+02	4.552E+02	0.001E+03	0.21	10/12/98
Total Activity :			4.555E+02	4.555E+02			

Grand Total Activity :	4.555E+02	4.555E+02
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Flags: "K" = Keyline not found
 "E" = Manually edited

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

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T2754-SAM

Acquisition date : 12-OCT-1998 23:51:00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	27570.	477.59	2.3087E+00
NA-24	29.	1368.55	2.2256E-02
AR-41	23.	1293.60	2.8546E-02
SC-46	70.	1120.55	2.6539E-02
CR-51	23082.	320.08	1.4948E+00
MN-54	62.	834.83	1.9683E-02
CO-56	74.	846.76	2.1743E-02
CO-58	82.	810.78	2.2089E-02
FE-59	32.	1099.25	3.2104E-02
CO-60	56.	1332.50	2.7520E-02
ZN-65	45.	1115.55	4.2478E-02
SE-75	26398.	264.66	2.3342E-01
KR-85	14167.	514.00	4.2269E+01
SR-85	14165.	514.01	1.9119E-01
Y-88	9.	1836.06	1.6629E-02
Y-91	39.	1204.67	7.1444E+00
NB-94	82.	871.09	2.3347E-02
NB-95	108.	765.78	2.3921E-02
ZR-95	114.	756.73	4.4429E-02
ZRNB-95	179.	724.18	1.3311E-01
RU-103	17531.	497.08	2.1755E-01
RURH-106	5831.	621.93	2.8241E+00
AG-108m	186.	722.94	3.2427E-02
CD-109	23231.	88.03	3.9745E+00
AG-110M	30721.	657.76	3.5536E-01
SN-113	25564.	391.69	2.9843E-01
TE-123m	26571.	159.00	1.2393E-01
SB-124	6275.	602.73	1.4457E-01
SB-125	29379.	427.89	7.5643E-01
TE-125m	24322.	109.27	3.9663E+01
I-129	21684.	39.60	4.4199E+01
I-131	23906.	364.48	2.1355E-01
XE-131m	26592.	163.93	5.3581E+00
BA-133	23784.	356.02	2.7145E-01
CS-134	6350.	604.70	1.4605E-01
CS-136	73.	818.51	2.1074E-02
CS-138	11.	1435.86	6.4638E-02
CE-139	26894.	165.85	1.3216E-01
BA-140	10481.	537.31	6.7623E-01
LA-140	16.	1596.21	1.9953E-02
CE-141	26668.	145.44	2.1546E-01
CE-144	27070.	133.51	9.5436E-01
CEPR-144	27071.	133.51	1.9071E+00
EU-152	26450.	121.78	3.8145E-01
EU-154	76.	1274.51	8.9005E-02
EU-155	23428.	86.54	4.5244E-01
HF-181	22354.	482.18	2.6983E-01
TA-182	21490.	67.75	6.1484E-01
HG-203	25189.	279.20	1.7127E-01
BI-207	6703.	569.70	1.4198E-01
TL-208	25181.	277.36	2.1967E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T2754-SAM

Acquisition date : 12-OCT-1998 23:51:00

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	21722.	46.50	3.0563E+01
BI-212	131.	727.18	3.7630E-01
PB-212	29762.	238.63	3.0682E-01
BI-214	6233.	609.31	3.1738E-01
PB-214	23545.	351.92	1.8896E+00
RA-224	29354.	240.99	3.4055E+00
RA-226	34090.	186.10	3.5278E+00
AC-228	84.	911.21	9.1976E-02
TH-228	23092.	84.37	1.2190E+01
TH-229	23098.	88.47	5.7439E-01
U-232	21450.	57.78	2.1979E+02
PA-233	24031.	312.17	3.8940E-01
UTH-233	28674.	245.34	1.2186E+02
PA-234M	62.	1001.03	3.5241E+00
TH-234	21530.	63.29	8.2912E+00
U-235	33815.	185.71	2.1368E-01
NP-237	23432.	86.48	1.1984E+00
U-237	21501.	59.54	1.1424E+00
NP-238	47.	984.45	7.2420E-02
NP-239	24333.	106.12	5.0964E-01
PU-239	26972.	129.30	1.6637E+03
AM-241	21501.	59.54	1.0917E+00
AM-243	22365.	74.67	3.3006E-01

LABCORE Completed Worklist Report for Worklist# 26627

Analyst: crj

Instrument: GEA02

Book#: 28B57

Method: LA-548-121

Rev/Mod

Worklist Comment: AW101 LAW, @GEA-02 See traveler for SS. Std: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	GEA-02 C060-02	LIQUID	4.563e-03	4.79e-03	104.275	% Recovery
1 STD	0	GEA-02 C060-02E	LIQUID	1	3.14	3.140	% Ct Error
1 STD	0	GEA-02 CS13702	LIQUID	7.462e-03	7.70e-03	103.189	% Recovery
1 STD	0	GEA-02 CS13702E	LIQUID	1	3.02	3.020	% Ct Error
2 BLNK	0	GEA-02 C060-02	LIQUID	1	<3.56e-3		uCi/mL
2 BLNK	0	GEA-02 SB12502	LIQUID	1	<8.94e-3		uCi/mL
2 BLNK	0	GEA-02 CS13702	LIQUID	1	<8.05e-3		uCi/mL
2 BLNK	0	GEA-02 EU15402	LIQUID	1	<9.96e-3		uCi/mL
2 BLNK	0	GEA-02 EU15502	LIQUID	1	<8.72e-3		uCi/mL
2 BLNK	0	GEA-02 AM24102	LIQUID	1	<1.97e-2		uCi/mL
3 SAMPLE	S98T003058	0 GEA-02 C060-02	LIQUID	N/A	< 5.173e-03	5.17e-003	uCi/mL
3 SAMPLE	S98T003058	0 GEA-02 C060-02E	LIQUID	N/A	n/a		% Ct. Error
3 SAMPLE	S98T003058	0 GEA-02 SB12502	LIQUID	N/A	< 2.768e-01	0.277	uCi/mL
3 SAMPLE	S98T003058	0 GEA-02 SB12502E	LIQUID	N/A	n/a		% Ct. Error
3 SAMPLE	S98T003058	0 GEA-02 CS13702	LIQUID	N/A	5.010e+02		uCi/mL
3 SAMPLE	S98T003058	0 GEA-02 CS13702E	LIQUID	N/A	0.120		% Ct. Error
3 SAMPLE	S98T003058	0 GEA-02 EU15402	LIQUID	N/A	< 1.214e-02	1.21e-002	uCi/mL
3 SAMPLE	S98T003058	0 GEA-02 EU15402E	LIQUID	N/A	n/a		% Ct. Error
3 SAMPLE	S98T003058	0 GEA-02 EU15502	LIQUID	N/A	< 1.627e-01	0.163	uCi/mL
3 SAMPLE	S98T003058	0 GEA-02 EU15502E	LIQUID	N/A	n/a		% Ct. Error
3 SAMPLE	S98T003058	0 GEA-02 AM24102	LIQUID	N/A	< 3.956e-01	0.396	uCi/mL
3 SAMPLE	S98T003058	0 GEA-02 AM24102E	LIQUID	N/A	n/a		% Ct. Error
4 SAMPLE	S98T003059	0 GEA-02 C060-02	LIQUID	N/A	< 2.511e-03	2.51e-003	uCi/mL
4 SAMPLE	S98T003059	0 GEA-02 C060-02E	LIQUID	N/A	n/a		% Ct. Error
4 SAMPLE	S98T003059	0 GEA-02 SB12502	LIQUID	N/A	< 1.530e-01	0.153	uCi/mL
4 SAMPLE	S98T003059	0 GEA-02 SB12502E	LIQUID	N/A	n/a		% Ct. Error
4 SAMPLE	S98T003059	0 GEA-02 CS13702	LIQUID	N/A	1.840e+02		uCi/mL
4 SAMPLE	S98T003059	0 GEA-02 CS13702E	LIQUID	N/A	0.110		% Ct. Error
4 SAMPLE	S98T003059	0 GEA-02 EU15402	LIQUID	N/A	< 7.072e-03	7.07e-003	uCi/mL
4 SAMPLE	S98T003059	0 GEA-02 EU15402E	LIQUID	N/A	n/a		% Ct. Error
4 SAMPLE	S98T003059	0 GEA-02 EU15502	LIQUID	N/A	< 8.991e-02	8.99e-002	uCi/mL
4 SAMPLE	S98T003059	0 GEA-02 EU15502E	LIQUID	N/A	n/a		% Ct. Error
4 SAMPLE	S98T003059	0 GEA-02 AM24102	LIQUID	N/A	< 2.181e-01	0.218	uCi/mL
4 SAMPLE	S98T003059	0 GEA-02 AM24102E	LIQUID	N/A	n/a		% Ct. Error
5 SAMPLE	S98T003060	0 GEA-02 C060-02	LIQUID	N/A	< 2.147e-03	2.15e-003	uCi/mL
5 SAMPLE	S98T003060	0 GEA-02 C060-02E	LIQUID	N/A	n/a		% Ct. Error
5 SAMPLE	S98T003060	0 GEA-02 SB12502	LIQUID	N/A	< 1.423e-01	0.142	uCi/mL
5 SAMPLE	S98T003060	0 GEA-02 SB12502E	LIQUID	N/A	n/a		% Ct. Error
5 SAMPLE	S98T003060	0 GEA-02 CS13702	LIQUID	N/A	1.590e+02		uCi/mL
5 SAMPLE	S98T003060	0 GEA-02 CS13702E	LIQUID	N/A	0.110		% Ct. Error
5 SAMPLE	S98T003060	0 GEA-02 EU15402	LIQUID	N/A	< 6.207e-03	6.21e-003	uCi/mL

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

LABCORE Completed Worklist Report for Worklist# 26627

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
5 SAMPLE	S98T003060	0	QGEA-02	EUI5402E LIQUID	N/A	n/a		% Ct. Error
5 SAMPLE	S98T003060	0	QGEA-02	EUI5502 LIQUID	N/A	8.336e-02	8.34e-002	uCi/mL
5 SAMPLE	S98T003060	0	QGEA-02	EUI5502E LIQUID	N/A	n/a		% Ct. Error
5 SAMPLE	S98T003060	0	QGEA-02	AM24102 LIQUID	N/A	2.031e-01	0.203	uCi/mL
5 SAMPLE	S98T003060	0	QGEA-02	AM24102E LIQUID	N/A	n/a		% Ct. Error
6 SAMPLE	S98T003061	0	QGEA-02	CO60-02 LIQUID	N/A	4.697e-03	4.70e-003	uCi/mL
6 SAMPLE	S98T003061	0	QGEA-02	CO60-02E LIQUID	N/A	n/a		% Ct. Error
6 SAMPLE	S98T003061	0	QGEA-02	SB12502 LIQUID	N/A	3.386e-01	0.339	uCi/mL
6 SAMPLE	S98T003061	0	QGEA-02	SB12502E LIQUID	N/A	n/a		% Ct. Error
6 SAMPLE	S98T003061	0	QGEA-02	CS13702 LIQUID	N/A	4.470e+02		uCi/mL
6 SAMPLE	S98T003061	0	QGEA-02	CS13702E LIQUID	N/A	0.100		% Ct. Error
6 SAMPLE	S98T003061	0	QGEA-02	EUI5402 LIQUID	N/A	1.166e-02	1.17e-002	uCi/mL
6 SAMPLE	S98T003061	0	QGEA-02	EUI5402E LIQUID	N/A	n/a		% Ct. Error
6 SAMPLE	S98T003061	0	QGEA-02	EUI5502 LIQUID	N/A	1.983e-01	0.198	uCi/mL
6 SAMPLE	S98T003061	0	QGEA-02	EUI5502E LIQUID	N/A	n/a		% Ct. Error
6 SAMPLE	S98T003061	0	QGEA-02	AM24102 LIQUID	N/A	4.819e-01	0.482	uCi/mL
6 SAMPLE	S98T003061	0	QGEA-02	AM24102E LIQUID	N/A	n/a		% Ct. Error
7 SAMPLE	S98T003062	0	QGEA-02	CO60-02 LIQUID	N/A	8.602e-03	8.60e-003	uCi/mL
7 SAMPLE	S98T003062	0	QGEA-02	CO60-02E LIQUID	N/A	n/a		% Ct. Error
7 SAMPLE	S98T003062	0	QGEA-02	SB12502 LIQUID	N/A	4.632e-01	0.463	uCi/mL
7 SAMPLE	S98T003062	0	QGEA-02	SB12502E LIQUID	N/A	n/a		% Ct. Error
7 SAMPLE	S98T003062	0	QGEA-02	CS13702 LIQUID	N/A	4.340e+02		uCi/mL
7 SAMPLE	S98T003062	0	QGEA-02	CS13702E LIQUID	N/A	0.130		% Ct. Error
7 SAMPLE	S98T003062	0	QGEA-02	EUI5402 LIQUID	N/A	2.259e-02	2.26e-002	uCi/mL
7 SAMPLE	S98T003062	0	QGEA-02	EUI5402E LIQUID	N/A	n/a		% Ct. Error
7 SAMPLE	S98T003062	0	QGEA-02	EUI5502 LIQUID	N/A	3.106e-01	0.311	uCi/mL
7 SAMPLE	S98T003062	0	QGEA-02	EUI5502E LIQUID	N/A	n/a		% Ct. Error
7 SAMPLE	S98T003062	0	QGEA-02	AM24102 LIQUID	N/A	7.250e-01	0.725	uCi/mL
7 SAMPLE	S98T003062	0	QGEA-02	AM24102E LIQUID	N/A	n/a		% Ct. Error

Final page for worklist# 26627

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Pelyea 27 Oct 98
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 26627

Analyst: CS Instrument: GEA00 Book# 28B57

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

Worklist Comment: AW101 LAW, @GEA-02 See traveler for SS. Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-02	LIQUID		
2 BLNK			@GEA-02	LIQUID		
3 SAMPLE	S98T003058 0		@GEA-02	LIQUID	98000554	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
4 SAMPLE	S98T003059 0		@GEA-02	LIQUID	98000554	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
5 SAMPLE	S98T003060 0		@GEA-02	LIQUID	98000554	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
6 SAMPLE	S98T003061 0		@GEA-02	LIQUID	98000554	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
7 SAMPLE	S98T003062 0		@GEA-02	LIQUID	98000554	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						

Final page for worklist # 26627

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

 * 222-S Laboratory Counting Room 23-OCT-1998 16:54:07.88 *

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

Worklist #: 26627
 Sample ID: WL26627-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

Em Barthe

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2610.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:21.90 sec
 Dead Time: 0.7%

Verified by:

John Pelyea 26 Oct 98

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

Sample Count Time: 23-OCT-1998 16:03:16.45
 Decayed to: 23-OCT-1998 16:03:16.45
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.26*	5295	1.40	1322.52	1315	15	3.0		CS-137	7.70
0	1172.51	2408	1.72	2345.07	2337	16	4.5		CO-60	4.78
0	1331.69	2179	1.97	2663.45	2654	18	4.4		CO-60	4.80
0	1460.05*	10	1.97	2920.22	2913	14231.0			K-40	0.223

Summary of Nuclide Activity

Page : 2

Sample ID : WL26627-STD

Acquisition date : 23-OCT-1998 16:03:16

Total number of lines in spectrum	4	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	4	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	2.232E+01	2.232E+01	5.156E+01	231.63	27R
CO-60	5.27Y	1.00	4.788E+00	4.788E+00	0.150E+00	3.14	
CS-137	30.00Y	1.00	7.702E+00	7.702E+00	0.233E+00	3.02	10/20/98
Total Activity :			1.271E+01	1.271E+01			

Grand Total Activity :	1.271E+01	1.271E+01
------------------------	-----------	-----------

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

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

HNF-1652 REV. 0

Minimum Detectable Activity Report

Page : 3

Sample ID : WL26627-STD

Acquisition date : 23-OCT-1998 16:03:16

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	270.	477.59	7.0629E-01
NA-24	8.	1368.55	3.6812E-02
AR-41	17.	1293.60	5.4786E-02
SC-46	125.	1120.55	1.0446E-01
CR-51	289.	320.08	5.1653E-01
MN-54	113.	834.83	7.8627E-02
CO-56	139.	846.76	8.7651E-02
CO-58	125.	810.78	8.0949E-02
FE-59	104.	1099.25	1.6706E-01
ZN-65	101.	1115.55	1.8555E-01
SE-75	355.	264.66	8.3447E-02
KR-85	191.	514.00	1.5254E+01
SR-85	190.	514.01	6.8951E-02
Y-88	4.	1836.06	3.5942E-02
Y-91	37.	1204.67	2.0905E+01
NB-94	140.	871.09	9.0105E-02
NB-95	124.	765.78	7.6566E-02
ZR-95	114.	756.73	1.3318E-01
ZRNB-95	115.	724.18	3.2300E-01
RU-103	227.	497.08	7.6763E-02
RURH-106	170.	621.93	1.5015E+00
AG-108m	121.	722.94	7.9219E-02
CD-109	273.	88.03	1.3323E+00
AG-110M	330.	657.76	1.1360E-01
SN-113	261.	391.69	9.3317E-02
TE-123m	315.	159.00	4.1649E-02
SB-124	132.	602.73	6.5621E-02
SB-125	283.	427.89	2.2954E-01
TE-125m	292.	109.27	1.3427E+01
I-129	281.	39.60	1.5546E+01
I-131	240.	364.48	6.6105E-02
XE-131m	316.	163.93	1.7991E+00
BA-133	245.	356.02	8.5419E-02
CS-134	147.	604.70	6.9445E-02
CS-136	130.	818.51	8.2778E-02
CS-138	8.	1435.86	8.0015E-02
CE-139	326.	165.85	4.4873E-02
BA-140	163.	537.31	2.6242E-01
LA-140	5.	1596.21	3.5838E-02
CE-141	363.	145.44	7.7388E-02
CE-144	338.	133.51	3.2865E-01
CEPR-144	337.	133.51	6.5646E-01
EU-152	313.	121.78	1.2805E-01
EU-154	30.	1274.51	1.7404E-01
EU-155	277.	86.54	1.5228E-01
HF-181	263.	482.18	9.0549E-02
TA-182	297.	67.75	2.2332E-01
HG-203	328.	279.20	6.0265E-02
BI-207	144.	569.70	6.4933E-02
TL-208	356.	277.36	8.0464E-01
PB-210	289.	46.50	1.0861E+01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL26627-STD

Acquisition date : 23-OCT-1998 16:03:16

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	107.	727.18	1.0262E+00
PB-212	408.	238.63	1.1048E-01
BI-214	174.	609.31	1.6496E-01
PB-214	301.	351.92	2.8929E-01
RA-224	418.	240.99	1.2409E+00
RA-226	393.	186.10	1.1665E+00
AC-228	160.	911.21	3.7377E-01
TH-228	290.	84.37	4.2254E+00
TH-229	271.	88.47	1.9266E-01
U-232	289.	57.78	7.8903E+01
PA-233	270.	312.17	1.2755E-01
UTH-233	353.	245.34	4.1694E+01
PA-234M	126.	1001.03	1.4726E+01
TH-234	263.	63.29	2.8366E+00
U-235	382.	185.71	6.9946E-02
NP-237	278.	86.48	4.0398E-01
U-237	315.	59.54	4.2486E-01
NP-238	139.	984.45	3.5819E-01
NP-239	306.	106.12	1.7460E-01
PU-239	349.	129.30	5.8308E+02
AM-241	315.	59.54	4.0752E-01
AM-243	305.	74.67	1.1908E-01

 * 222-S Laboratory Counting Room 23-OCT-1998 19:45:03.42

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

Worklist #: 26627
 Sample ID: WL26627-BLK
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

glded

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2611.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:28.88 sec
 Dead Time: 0.3%

Verified by:

John Belgen 26 Oct 98

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

Sample Count Time: 23-OCT-1998 17:14:03.37
 Decayed to: 23-OCT-1998 17:14:03.37
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	35.02	122	1.45	70.10	67	7 56.8			
0	1119.69*	36	1.13	2239.41	2234	12 74.7			

Summary of Nuclide Activity

Sample ID : WL26627-BLK

Acquisition date : 23-OCT-1998 17:14:03

Total number of lines in spectrum	2	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	1	50.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report
 Sample ID : WL26627-BLK

Page : 3
 Acquisition date : 23-OCT-1998 17:14:03

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	75.	477.59	2.5890E+01
NA-24	9.	1368.55	2.7014E+00
K-40	325.	1460.75	1.3025E+02
AR-41	27.	1293.60	6.0362E+00
SC-46	72.	1120.55	5.4141E+00
CR-51	141.	320.08	2.4631E+01
MN-54	45.	834.83	3.4415E+00
CO-56	48.	846.76	3.5816E+00
CO-58	43.	810.78	3.3113E+00
FE-59	31.	1099.25	6.4096E+00
CO-60	21.	1332.50	3.5557E+00
ZN-65	37.	1115.55	7.8506E+00
SE-75	171.	264.66	3.9530E+00
KR-85	112.	514.00	7.9736E+02
SR-85	112.	514.01	3.6026E+00
Y-88	10.	1836.06	3.5215E+00
Y-91	33.	1204.67	1.3336E+03
NB-94	44.	871.09	3.5232E+00
NB-95	52.	765.78	3.4234E+00
ZR-95	50.	756.73	6.0821E+00
ZRNB-95	47.	724.18	1.4362E+01
RU-103	82.	497.08	3.1814E+00
RURH-106	53.	621.93	5.8400E+01
AG-108m	49.	722.94	3.5021E+00
CD-109	179.	88.03	7.3225E+01
AG-110M	63.	657.76	3.4789E+00
SN-113	109.	391.69	4.1348E+00
TE-123m	222.	159.00	2.3669E+00
SB-124	78.	602.73	3.4467E+00
SB-125	90.	427.89	8.9370E+00
TE-125m	204.	109.27	7.6059E+02
I-129	167.	39.60	8.1645E+02
I-131	110.	364.48	3.0802E+00
XE-131m	194.	163.93	9.5962E+01
BA-133	127.	356.02	4.2015E+00
CS-134	65.	604.70	3.1674E+00
CS-136	43.	818.51	3.3273E+00
CS-137	292.	661.66	8.0528E+00
CS-138	11.	1435.86	1.2733E+01
CE-139	208.	165.85	2.4340E+00
BA-140	75.	537.31	1.2277E+01
LA-140	9.	1596.21	3.0927E+00
CE-141	223.	145.44	4.1168E+00
CE-144	185.	133.51	1.6563E+01
CEPR-144	185.	133.51	3.3099E+01
EU-152	199.	121.78	6.9398E+00
EU-154	21.	1274.51	9.9619E+00
EU-155	198.	86.54	8.7206E+00
HF-181	86.	482.18	3.5785E+00
TA-182	183.	67.75	1.1920E+01
HG-203	173.	279.20	2.9859E+00

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : WL26627-BLK

Acquisition date : 23-OCT-1998 17:14:03

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-207	62.	569.70	2.9444E+00
TL-208	172.	277.36	3.8170E+01
PB-210	144.	46.50	5.2535E+02
BI-212	53.	727.18	4.9528E+01
PB-212	235.	238.63	5.6980E+00
BI-214	167.	609.31	1.0878E+01
PB-214	213.	351.92	3.6584E+01
RA-224	214.	240.99	6.0816E+01
RA-226	250.	186.10	6.3100E+01
AC-228	69.	911.21	1.6946E+01
TH-228	234.	84.37	2.5638E+02
TH-229	180.	88.47	1.0659E+01
U-232	145.	57.78	3.8127E+03
PA-233	128.	312.17	6.0083E+00
UTH-233	191.	245.34	2.0839E+03
PA-234M	39.	1001.03	5.7114E+02
TH-234	172.	63.29	1.5590E+02
U-235	255.	185.71	3.8689E+00
NP-237	202.	86.48	2.3281E+01
U-237	159.	59.54	2.0654E+01
NP-238	32.	984.45	1.2355E+01
NP-239	191.	106.12	9.4649E+00
PU-239	227.	129.30	3.1935E+04
AM-241	159.	59.54	1.9743E+01
AM-243	196.	74.67	6.4746E+00

 * 222-S Laboratory Counting Room 23-OCT-1998 22:34:24.92 *

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

Worklist #: 26627
 Sample ID: S98T3058-SAM
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

gldw

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2612.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:44:02.35 sec
 Dead Time: 8.6%

Verified by:

John Rehyer 26 Oct 98

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

Sample Count Time: 23-OCT-1998 19:49:50.45
 Decayed to: 23-OCT-1998 19:49:50.45
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	604.21	778	1.09	1208.41	1206	7 54.5		CS-134	61.5
0	661.30*	3075158	1.49	1322.59	1315	16 0.1		CS-137	3.012E+05
0	795.46	637	1.59	1590.92	1584	12 13.8		CS-134	72.7
0	1322.18	467	2.05	2644.44	2637	15 10.3			
0	1365.14	27	1.50	2730.38	2722	13 67.9			
0	1460.10*	51	1.83	2920.32	2913	14 84.2		K-40	77.2

Summary of Nuclide Activity

Sample ID : S98T3058-SAM

Acquisition date : 23-OCT-1998 19:49:50

Total number of lines in spectrum	6
Number of unidentified lines	2
Number of lines tentatively identified by NID	4

66.67%

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					
K-40	1.28E+09Y	1.00	7.723E+01	7.723E+01	6.501E+01	84.18			
CS-134	2.06Y	1.00	7.176E+01	7.177E+01	0.960E+01	13.37			
CS-137	30.00Y	1.00	3.012E+05	3.012E+05	0.004E+05	0.12			
Total Activity :			3.013E+05	3.013E+05					

Grand Total Activity : 3.013E+05

3.013E+05

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

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

Minimum Detectable Activity Report
 Sample ID : S98T3058-SAM

Acquisition date : 23-OCT-1998 19:49:50

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	91708.	477.59	8.4926E+02
NA-24	14.	1368.55	3.2927E+00
AR-41	37.	1293.60	7.2560E+00
SC-46	118.	1120.55	6.8303E+00
CR-51	77528.	320.08	5.5248E+02
MN-54	172.	834.83	6.4577E+00
CO-56	172.	846.76	6.5481E+00
CO-58	186.	810.78	6.5867E+00
FE-59	79.	1099.25	9.8449E+00
CO-60	48.	1332.50	5.1732E+00
ZN-65	88.	1115.55	1.1724E+01
SE-75	86239.	264.66	8.5089E+01
KR-85	46988.	514.00	1.5516E+04
SR-85	46983.	514.01	7.0186E+01
Y-88	7.	1836.06	3.0329E+00
Y-91	56.	1204.67	1.7081E+03
NB-94	160.	871.09	6.4613E+00
NB-95	444.	765.78	9.5369E+00
ZR-95	548.	756.73	1.9159E+01
ZRNB-95	967.	724.18	6.0943E+01
RU-103	57303.	497.08	7.9299E+01
RURH-106	19286.	621.93	1.0340E+03
AG-108m	978.	722.94	1.4682E+01
CD-109	74984.	88.03	1.4400E+03
AG-110M	120000.	657.76	1.4164E+02
SN-113	83803.	391.69	1.0897E+02
TE-123m	87329.	159.00	4.5313E+01
SB-124	20845.	602.73	5.3052E+01
SB-125	96721.	427.89	2.7682E+02
TE-125m	79176.	109.27	1.4432E+04
I-129	70776.	39.60	1.6102E+04
I-131	79001.	364.48	7.8307E+01
XE-131m	87250.	163.93	1.9577E+03
BA-133	78154.	356.02	9.9230E+01
CS-136	209.	818.51	7.0118E+00
CS-138	24.	1435.86	1.9296E+01
CE-139	87232.	165.85	4.8007E+01
BA-140	34592.	537.31	2.4757E+02
LA-140	10.	1596.21	3.2727E+00
CE-141	87867.	145.44	7.8882E+01
CE-144	87377.	133.51	3.4581E+02
CEPR-144	87377.	133.51	6.9101E+02
EU-152	85136.	121.78	1.3802E+02
EU-154	33.	1274.51	1.2138E+01
EU-155	74451.	86.54	1.6265E+02
HF-181	74931.	482.18	9.9619E+01
TA-182	70315.	67.75	2.2426E+02
HG-203	82490.	279.20	6.2507E+01
BI-207	22617.	569.70	5.2511E+01
TL-208	82812.	277.36	8.0339E+02
PB-210	69646.	46.50	1.1039E+04

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T3058-SAM

Acquisition date : 23-OCT-1998 19:49:50

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	888.	727.18	1.9215E+02
PB-212	97470.	238.63	1.1199E+02
BI-214	19800.	609.31	1.1390E+02
PB-214	77731.	351.92	7.3042E+02
RA-224	96260.	240.99	1.2446E+03
RA-226	111497.	186.10	1.2870E+03
AC-228	176.	911.21	2.6377E+01
TH-228	73972.	84.37	4.3998E+03
TH-229	74951.	88.47	2.0865E+02
U-232	68963.	57.78	7.9466E+04
PA-233	77719.	312.17	1.4123E+02
UTH-233	94825.	245.34	4.4693E+04
PA-234M	90.	1001.03	8.4436E+02
TH-234	69042.	63.29	2.9940E+03
U-235	110410.	185.71	7.7885E+01
NP-237	74425.	86.48	4.3073E+02
U-237	69422.	59.54	4.1406E+02
NP-238	110.	984.45	2.1835E+01
NP-239	78314.	106.12	1.8455E+02
PU-239	86924.	129.30	6.0238E+05
AM-241	69422.	59.54	3.9557E+02
AM-243	71099.	74.67	1.1867E+02

 * 222-S Laboratory Counting Room 24-OCT-1998 01:32:54.67 *

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

Worklist #: 26627
 Sample ID: S98T3059-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

John

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2614.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:47:04.57 sec
 Dead Time: 10%

Verified by:

John Pelzer 26 Oct 98

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

Sample Count Time: 23-OCT-1998 22:45:17.90
 Decayed to: 23-OCT-1998 22:45:17.90
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	185.65	1755	1.88	371.34	369	6 62.3		U-235	44.2
								RA-226	726.
0	604.31	962	1.04	1208.61	1206	7 48.9		CS-134	38.0
0	661.33*	3747198	1.51	1322.66	1314	18 0.1		CS-137	1.835E+05
0	795.48	768	1.60	1590.95	1585	13 13.9		CS-134	43.9
0	1119.85*	37	1.09	2239.74	2235	10105.8			
0	1322.27	665	1.70	2644.62	2636	17 9.3			
0	1460.06*	24	1.99	2920.25	2913	15178.6		K-40	18.1
0	1763.39*	17	1.71	3527.01	3520	15112.4			

Summary of Nuclide Activity

Page : 2

Sample ID : S98T3059-SAM

Acquisition date : 23-OCT-1998 22:45:17

Total number of lines in spectrum	8	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	7	87.50%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean 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	1.813E+01	1.813E+01	3.238E+01	178.64	27R
CS-134	2.06Y	1.00	4.329E+01	4.329E+01	0.578E+01	13.35	
CS-137	30.00Y	1.00	1.835E+05	1.835E+05	0.002E+05	0.11	
RA-226	1600.00Y	1.00	7.260E+02	7.260E+02	4.520E+02	62.25	27R
U-235	7.04E+08Y	1.00	4.415E+01	4.415E+01	2.749E+01	62.25	27R
Total Activity :			1.843E+05	1.843E+05			10/26/98

Grand Total Activity : 1.843E+05 1.843E+05

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

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

Minimum Detectable Activity Report
 Sample ID : S98T3059-SAM

Page : 3
 Acquisition date : 23-OCT-1998 22:45:17

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	112093.	477.59	4.6938E+02
NA-24	30.	1368.55	2.2607E+00
AR-41	33.	1293.60	3.4805E+00
SC-46	155.	1120.55	3.8919E+00
CR-51	94417.	320.08	3.0480E+02
MN-54	234.	834.83	3.7431E+00
CO-56	235.	846.76	3.7973E+00
CO-58	285.	810.78	4.0425E+00
FE-59	103.	1099.25	5.5831E+00
CO-60	45.	1332.50	2.5106E+00
ZN-65	111.	1115.55	6.5280E+00
SE-75	106206.	264.66	4.7205E+01
KR-85	57495.	514.00	8.5796E+03
SR-85	57486.	514.01	3.8808E+01
Y-88	8.	1836.06	1.6077E+00
Y-91	57.	1204.67	8.5687E+02
NB-94	191.	871.09	3.5190E+00
NB-95	624.	765.78	5.6325E+00
ZR-95	779.	756.73	1.1373E+01
ZRNB-95	1384.	724.18	3.6343E+01
RU-103	70552.	497.08	4.3985E+01
RURH-106	23672.	621.93	5.7253E+02
AG-108m	1372.	722.94	8.6713E+00
CD-109	91376.	88.03	7.9464E+02
AG-110M	135223.	657.76	7.5170E+01
SN-113	102869.	391.69	6.0354E+01
TE-123m	107114.	159.00	2.5087E+01
SB-124	25442.	602.73	2.9294E+01
SB-125	118254.	427.89	1.5302E+02
TE-125m	96738.	109.27	7.9747E+03
I-129	86610.	39.60	8.9041E+03
I-131	96818.	364.48	4.3340E+01
XE-131m	106582.	163.93	1.0818E+03
BA-133	95491.	356.02	5.4832E+01
CS-136	278.	818.51	4.0294E+00
CS-138	8.	1435.86	6.1405E+00
CE-139	107778.	165.85	2.6676E+01
BA-140	41807.	537.31	1.3605E+02
LA-140	10.	1596.21	1.6212E+00
CE-141	107615.	145.44	4.3642E+01
CE-144	106844.	133.51	1.9116E+02
CEPR-144	106846.	133.51	3.8199E+02
EU-152	103650.	121.78	7.6131E+01
EU-154	45.	1274.51	7.0724E+00
EU-155	91042.	86.54	8.9913E+01
HF-181	91276.	482.18	5.4965E+01
TA-182	85699.	67.75	1.2377E+02
HG-203	101308.	279.20	3.4629E+01
BI-207	27685.	569.70	2.9038E+01
TL-208	101564.	277.36	4.4477E+02
PB-210	85361.	46.50	6.1096E+03

Minimum Detectable Activity Report (continued)

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Sample ID : S98T3059-SAM

Acquisition date : 23-OCT-1998 22:45:17

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	1272.	727.18	1.1462E+02
PB-212	118718.	238.63	6.1789E+01
BI-214	24474.	609.31	6.3288E+01
PB-214	95389.	351.92	4.1152E+02
RA-224	118023.	240.99	6.8906E+02
AC-228	207.	911.21	1.4237E+01
TH-228	90665.	84.37	2.4350E+03
TH-229	91468.	88.47	1.1523E+02
U-232	84780.	57.78	4.4045E+04
PA-233	95699.	312.17	7.8347E+01
UTH-233	115323.	245.34	2.4640E+04
PA-234M	107.	1001.03	4.5873E+02
TH-234	84864.	63.29	1.6593E+03
NP-237	91041.	86.48	2.3815E+02
U-237	84430.	59.54	2.2829E+02
NP-238	134.	984.45	1.1991E+01
NP-239	95855.	106.12	1.0210E+02
PU-239	105678.	129.30	3.3203E+05
AM-241	84430.	59.54	2.1808E+02
AM-243	87680.	74.67	6.5879E+01

 * 222-S Laboratory Counting Room 24-OCT-1998 04:21:43.90 *

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

Worklist #: 26627
 Sample ID: S98T3060-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

SL Hale

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2615.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:44:49.96 sec
 Dead Time: 9.0%

Verified by:

John Relyea 26 Oct 98

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

Sample Count Time: 24-OCT-1998 01:36:25.25
 Decayed to: 24-OCT-1998 01:36:25.25
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	604.59	1169	1.39	1209.18	1206	8 41.3		CS-134	46.2
0	661.32*	3241192	1.50	1322.64	1315	16 0.1		CS-137	1.587E+05
0	795.33	685	1.65	1590.67	1584	14 13.9		CS-134	39.1
0	1322.12	528	2.15	2644.33	2634	18 9.7			

Summary of Nuclide Activity

Sample ID : S98T3060-SAM

Acquisition date : 24-OCT-1998 01:36:25

Total number of lines in spectrum	4	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	3	75.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-134	2.06Y	1.00	3.965E+01	3.965E+01	0.522E+01	13.17	
CS-137	30.00Y	1.00	1.587E+05	1.587E+05	0.002E+05	0.11	
Total Activity :			1.588E+05	1.588E+05			

Grand Total Activity :	1.588E+05	1.588E+05
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Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T3060-SAM

Acquisition date : 24-OCT-1998 01:36:25

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	97109.	477.59	4.3693E+02
NA-24	18.	1368.55	1.8311E+00
K-40	307.	1460.75	6.3397E+01
AR-41	29.	1293.60	3.2615E+00
SC-46	110.	1120.55	3.3162E+00
CR-51	82067.	320.08	2.8420E+02
MN-54	202.	834.83	3.4871E+00
CO-56	209.	846.76	3.5944E+00
CO-58	231.	810.78	3.6515E+00
FE-59	81.	1099.25	4.9809E+00
CO-60	32.	1332.50	2.1474E+00
ZN-65	85.	1115.55	5.7513E+00
SE-75	91962.	264.66	4.3931E+01
KR-85	49784.	514.00	7.9850E+03
SR-85	49776.	514.01	3.6118E+01
Y-88	12.	1836.06	1.9185E+00
Y-91	47.	1204.67	7.8446E+02
NB-94	178.	871.09	3.4020E+00
NB-95	467.	765.78	4.8891E+00
ZR-95	541.	756.73	9.5204E+00
ZRNB-95	1057.	724.18	3.1834E+01
RU-103	60653.	497.08	4.0789E+01
RURH-106	20512.	621.93	5.3309E+02
AG-108m	1059.	722.94	7.6333E+00
CD-109	78875.	88.03	7.3839E+02
AG-110M	119325.	657.76	7.0620E+01
SN-113	88902.	391.69	5.6115E+01
TE-123m	92787.	159.00	2.3352E+01
SB-124	21989.	602.73	2.7241E+01
SB-125	102191.	427.89	1.4227E+02
TE-125m	84076.	109.27	7.4355E+03
I-129	74585.	39.60	8.2642E+03
I-131	83471.	364.48	4.0245E+01
XE-131m	92963.	163.93	1.0104E+03
BA-133	82644.	356.02	5.1017E+01
CS-136	216.	818.51	3.5616E+00
CS-138	23.	1435.86	9.4570E+00
CE-139	92568.	165.85	2.4725E+01
BA-140	36087.	537.31	1.2643E+02
LA-140	19.	1596.21	2.1446E+00
CE-141	92702.	145.44	4.0510E+01
CE-144	92832.	133.51	1.7821E+02
CEPR-144	92830.	133.51	3.5610E+02
EU-152	90438.	121.78	7.1123E+01
EU-154	34.	1274.51	6.2068E+00
EU-155	78233.	86.54	8.3360E+01
HF-181	78951.	482.18	5.1126E+01
TA-182	73551.	67.75	1.1468E+02
HG-203	87749.	279.20	3.2232E+01
BI-207	23947.	569.70	2.7014E+01
TL-208	88066.	277.36	4.1422E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T3060-SAM

Acquisition date : 24-OCT-1998 01:36:25

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uci/L)
PB-210	73966.	46.50	5.6877E+03
BI-212	987.	727.18	1.0120E+02
PB-212	103384.	238.63	5.7668E+01
BI-214	21089.	609.31	5.8767E+01
PB-214	82224.	351.92	3.7730E+02
RA-224	101467.	240.99	6.3890E+02
RA-226	117857.	186.10	6.6154E+02
AC-228	170.	911.21	1.2962E+01
TH-228	78336.	84.37	2.2637E+03
TH-229	78931.	88.47	1.0705E+02
U-232	73126.	57.78	4.0912E+04
PA-233	83301.	312.17	7.3104E+01
UTH-233	99276.	245.34	2.2864E+04
PA-234M	96.	1001.03	4.3642E+02
TH-234	73639.	63.29	1.5459E+03
U-235	116734.	185.71	4.0040E+01
NP-237	78214.	86.48	2.2077E+02
U-237	73242.	59.54	2.1265E+02
NP-238	78.	984.45	9.3105E+00
NP-239	82339.	106.12	9.4621E+01
PU-239	92235.	129.30	3.1023E+05
AM-241	73243.	59.54	2.0314E+02
AM-243	75436.	74.67	6.1116E+01

 * 222-S Laboratory Counting Room 24-OCT-1998 09:47:18.28 *

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

Worklist #: 26627
 Sample ID: S98T3061-SAM
 Sample Size: 5.00000E-04 L
 Dilution Factor: 1.01000E+02

Removed by:

Em Bouba

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2617.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:50:47.84 sec
 Dead Time: 12%

Verified by:

John Pelya 26 Oct 98

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

Sample Count Time: 24-OCT-1998 06:56:02.12
 Decayed to: 24-OCT-1998 06:56:02.12
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	604.73	877	1.46	1209.46	1206	8 66.5		CS-134	69.3
0	661.35*	4561885	1.52	1322.69	1314	18 0.1		CS-137	4.468E+05
0	795.62	923	1.65	1591.24	1585	13 13.8		CS-134	105.
0	1322.36	980	1.90	2644.81	2637	18 7.6			
0	1365.23	36	3.86	2730.56	2723	18 69.4			

Summary of Nuclide Activity

Sample ID : S98T3061-SAM

Acquisition date : 24-OCT-1998 06:56:02

Total number of lines in spectrum	5	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	3	60.00%

Nuclide Type :

Nuclide	Hlfe	Decay	Wtd Mean	Wtd Mean	Decay Corr	2-Sigma	Flags
			Uncorrected	Decay Corr	Decay Corr	Error	
			uCi/L	uCi/L		%Error	
CS-134	2.06Y	1.00	1.021E+02	1.021E+02	0.139E+02	13.57	
CS-137	30.00Y	1.00	4.468E+05	4.468E+05	0.004E+05	0.10	
Total Activity :			4.469E+05	4.469E+05			

Grand Total Activity :	4.469E+05	4.469E+05
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Flags: "K" = Keyline not found
 "E" = Manually edited

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

Minimum Detectable Activity Report

Sample ID : S98T3061-SAM

Page : 3

Acquisition date : 24-OCT-1998 06:56:02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	137779.	477.59	1.0406E+03
NA-24	19.	1368.55	3.6887E+00
K-40	308.	1460.75	1.2690E+02
AR-41	41.	1293.60	7.6968E+00
SC-46	170.	1120.55	8.1504E+00
CR-51	115637.	320.08	6.7453E+02
MN-54	386.	834.83	9.5360E+00
CO-56	339.	846.76	9.0677E+00
CO-58	433.	810.78	9.9042E+00
FE-59	116.	1099.25	1.1855E+01
CO-60	39.	1332.50	4.6967E+00
ZN-65	134.	1115.55	1.4255E+01
SE-75	129708.	264.66	1.0432E+02
KR-85	70097.	514.00	1.8942E+04
SR-85	70092.	514.01	8.5686E+01
Y-88	7.	1836.06	3.0330E+00
Y-91	72.	1204.67	1.9174E+03
NB-94	272.	871.09	8.3414E+00
NB-95	888.	765.78	1.3389E+01
ZR-95	1137.	756.73	2.7382E+01
ZRNB-95	1972.	724.18	8.6555E+01
RU-103	86424.	497.08	9.7346E+01
RURH-106	29310.	621.93	1.2736E+03
AG-108m	2048.	722.94	2.1127E+01
CD-109	111003.	88.03	1.7514E+03
AG-110M	161382.	657.76	1.6422E+02
SN-113	125243.	391.69	1.3317E+02
TE-123m	129534.	159.00	5.5168E+01
SB-124	31059.	602.73	6.4712E+01
SB-125	144785.	427.89	3.3858E+02
TE-125m	118053.	109.27	1.7616E+04
I-129	105457.	39.60	1.9647E+04
I-131	117819.	364.48	9.5614E+01
XE-131m	129559.	163.93	2.3851E+03
BA-133	116816.	356.02	1.2127E+02
CS-136	360.	818.51	9.1319E+00
CS-138	22.	1435.86	1.9299E+01
CE-139	129544.	165.85	5.8483E+01
BA-140	51500.	537.31	3.0194E+02
LA-140	17.	1596.21	4.0717E+00
CE-141	130871.	145.44	9.6240E+01
CE-144	130167.	133.51	4.2193E+02
CEPR-144	130165.	133.51	8.4310E+02
EU-152	126347.	121.78	1.6808E+02
EU-154	30.	1274.51	1.1660E+01
EU-155	110752.	86.54	1.9830E+02
HF-181	111439.	482.18	1.2145E+02
TA-182	104246.	67.75	2.7296E+02
HG-203	124311.	279.20	7.6707E+01
BI-207	33787.	569.70	6.4136E+01
TL-208	125030.	277.36	9.8679E+02

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T3061-SAM

Acquisition date : 24-OCT-1998 06:56:02

Nuclide	Bkgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	104331.	46.50	1.3508E+04
BI-212	1903.	727.18	2.7961E+02
PB-212	145565.	238.63	1.3682E+02
BI-214	29535.	609.31	1.3900E+02
PB-214	116439.	351.92	9.2828E+02
RA-224	143637.	240.99	1.5205E+03
RA-226	166215.	186.10	1.5708E+03
AC-228	284.	911.21	3.3178E+01
TH-228	110033.	84.37	5.3641E+03
TH-229	110943.	88.47	2.5376E+02
U-232	102967.	57.78	9.7062E+04
PA-233	116328.	312.17	1.7273E+02
UTH-233	140891.	245.34	5.4460E+04
PA-234M	138.	1001.03	1.0351E+03
TH-234	103050.	63.29	3.6563E+03
U-235	164438.	185.71	9.5020E+01
NP-237	110742.	86.48	5.2521E+02
U-237	103126.	59.54	5.0459E+02
NP-238	170.	984.45	2.6936E+01
NP-239	116090.	106.12	2.2477E+02
PU-239	129307.	129.30	7.3444E+05
AM-241	103126.	59.54	4.8194E+02
AM-243	106925.	74.67	1.4547E+02

 * 222-S Laboratory Counting Room 24-OCT-1998 15:52:06.75 *

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

Worklist #: 26627
 Sample ID: S87T3062-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.01000E+02

Removed by:

Em Bulla

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2621.cnf
 Geometry: 43
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:41:39.68 sec
 Dead Time: 7.2%

Verified by:

John Relyea 26 Oct 98

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

Sample Count Time: 24-OCT-1998 13:09:58.32
 Decayed to: 24-OCT-1998 13:09:58.32
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: EMB
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:09:16.15

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	84.22	1176	1.29	168.50	167	6	68.2		TH-228	8.433E+03
0	604.20	638	1.57	1208.40	1206	7	60.1		CS-134	92.8
0	661.30*	2410586	1.48	1322.60	1315	16	0.1		CS-137	4.340E+05
0	795.20	475	1.45	1590.40	1583	15	17.8		CS-134	99.3
0	1322.34	278	1.86	2644.76	2638	14	15.8			

Summary of Nuclide Activity

Sample ID : S87T3062-SAM

Acquisition date : 24-OCT-1998 13:09:58

Total number of lines in spectrum	5	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	4	80.00%

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-134	2.06Y	1.00	9.870E+01	9.870E+01	1.687E+01	17.09	
CS-137	30.00Y	1.00	4.340E+05	4.340E+05	0.006E+05	0.13	
TH-228	1.91Y	1.00	8.432E+03	8.433E+03	5.753E+03	68.22	0.78
Total Activity :			4.425E+05	4.425E+05			10/24/98

Grand Total Activity : 4.425E+05 4.425E+05

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

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

Minimum Detectable Activity Report

Acquisition date : 24-OCT-1998 13:09:58

Sample ID : S87T3062-SAM

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	71902.	477.59	1.3950E+03
NA-24	14.	1368.55	5.7512E+00
K-40	332.	1460.75	2.3307E+02
AR-41	26.	1293.60	1.0937E+01
SC-46	65.	1120.55	9.3326E+00
CR-51	68048.	320.08	9.7904E+02
MN-54	134.	834.83	1.0494E+01
CO-56	99.	846.76	9.1982E+00
CO-58	146.	810.78	1.0723E+01
FE-59	52.	1099.25	1.4639E+01
CO-60	41.	1332.50	8.6018E+00
ZN-65	64.	1115.55	1.8185E+01
SE-75	76537.	264.66	1.5366E+02
KR-85	37834.	514.00	2.5767E+04
SR-85	37828.	514.01	1.1655E+02
Y-88	11.	1836.06	6.2940E+00
Y-91	38.	1204.67	2.5532E+03
NB-94	103.	871.09	9.5842E+00
NB-95	317.	765.78	1.4830E+01
ZR-95	341.	756.73	2.7871E+01
ZRNB-95	603.	724.18	8.8697E+01
RU-103	45895.	497.08	1.3147E+02
RURH-106	16400.	621.93	1.7556E+03
AG-108m	621.	722.94	2.1567E+01
CD-109	63962.	88.03	2.7478E+03
AG-110M	90081.	657.76	2.2565E+02
SN-113	69464.	391.69	1.8556E+02
TE-123m	78395.	159.00	8.5926E+01
SB-124	16796.	602.73	8.7759E+01
SB-125	78050.	427.89	4.6324E+02
TE-125m	70132.	109.27	2.7909E+04
I-129	58196.	39.60	2.6436E+04
I-131	66340.	364.48	1.3470E+02
XE-131m	78486.	163.93	3.7064E+03
BA-133	66306.	356.02	1.7180E+02
CS-136	137.	818.51	1.0482E+01
CS-138	16.	1435.86	2.8165E+01
CE-139	78698.	165.85	9.0931E+01
BA-140	27395.	537.31	4.0721E+02
LA-140	12.	1596.21	6.1944E+00
CE-141	79153.	145.44	1.5095E+02
CE-144	78532.	133.51	6.6537E+02
CEPR-144	78530.	133.51	1.3295E+03
EU-152	76546.	121.78	2.6729E+02
EU-154	35.	1274.51	2.2588E+01
EU-155	63598.	86.54	3.1058E+02
HF-181	58933.	482.18	1.6383E+02
TA-182	58322.	67.75	4.1755E+02
HG-203	73864.	279.20	1.1293E+02
BI-207	18380.	569.70	8.7359E+01
TL-208	74033.	277.36	1.4510E+03

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S87T3062-SAM

Acquisition date : 24-OCT-1998 13:09:58

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-210	57553.	46.50	1.9184E+04
BI-212	597.	727.18	2.9027E+02
PB-212	81745.	238.63	1.9822E+02
BI-214	16499.	609.31	1.9154E+02
PB-214	65806.	351.92	1.2469E+03
RA-224	81376.	240.99	2.2095E+03
RA-226	99637.	186.10	2.4018E+03
AC-228	145.	911.21	4.3741E+01
TH-229	64116.	88.47	3.9872E+02
U-232	57010.	57.78	1.4487E+05
PA-233	68574.	312.17	2.5133E+02
UTH-233	80409.	245.34	7.9364E+04
PA-234M	82.	1001.03	1.4717E+03
TH-234	58493.	63.29	5.5949E+03
U-235	98458.	185.71	1.4523E+02
NP-237	63601.	86.48	8.2265E+02
U-237	57483.	59.54	7.5884E+02
NP-238	72.	984.45	3.2600E+01
NP-239	68205.	106.12	3.5427E+02
PU-239	78453.	129.30	1.1641E+06
AM-241	57483.	59.54	7.2502E+02
AM-243	60693.	74.67	2.2565E+02

LABCORE Completed Worklist Report for Worklist# 26670

Analyst: scl

Instrument: GEA02

Book#: 28B57

Method: LA-548-121 Rev/Mod _____

Worklist Comment: AW101 LAW, @GEA-02 See traveler for SS. Std: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	GEA-02 C060-02 SOLID		4.566e-03	4.83e-03	105.782 % Recovery	
1 STD	0	GEA-02 C060-02E SOLID		1	3.14	3.140 % Ct. Error	
1 STD	0	GEA-02 CS13702 SOLID		7.463e-03	7.61e-03	101.970 % Recovery	
1 STD	0	GEA-02 CS13702E SOLID		1	3.08	3.080 % Ct. Error	
2 BLNK-PREP	0	GEA-02 C060-02 SOLID		1	<3.50e-2	uCi/g	
2 BLNK-PREP	0	GEA-02 SB12502 SOLID		1	<8.94e-2	uCi/g	
2 BLNK-PREP	0	GEA-02 CS13702 SOLID		1	1.86e-01	0.186 uCi/g	
2 BLNK-PREP	0	GEA-02 EU15402 SOLID		1	<9.92e-2	uCi/g	
2 BLNK-PREP	0	GEA-02 EU15502 SOLID		1	<8.54e-2	uCi/g	
2 BLNK-PREP	0	GEA-02 AM24102 SOLID		1	<1.91e-1	uCi/g	
3 SAMPLE	S98T003082	0 F GEA-02 C060-02 SOLID		N/A	< 4.331e-02	4.334-002 uCi/g	
3 SAMPLE	S98T003082	0 F GEA-02 C060-02E SOLID		N/A	n/a	% Ct. Error	
3 SAMPLE	S98T003082	0 F GEA-02 SB12502 SOLID		N/A	< 6.624e-01	0.662 uCi/g	
3 SAMPLE	S98T003082	0 F GEA-02 SB12502E SOLID		N/A	n/a	% Ct. Error	
3 SAMPLE	S98T003082	0 F GEA-02 CS13702 SOLID		N/A	1.844e+02	uCi/g	
3 SAMPLE	S98T003082	0 F GEA-02 CS13702E SOLID		N/A	0.450	% Ct. Error	
3 SAMPLE	S98T003082	0 F GEA-02 EU15402 SOLID		N/A	< 1.338e-01	0.134 uCi/g	
3 SAMPLE	S98T003082	0 F GEA-02 EU15402E SOLID		N/A	n/a	% Ct. Error	
3 SAMPLE	S98T003082	0 F GEA-02 EU15502 SOLID		N/A	< 4.073e-01	0.407 uCi/g	
3 SAMPLE	S98T003082	0 F GEA-02 EU15502E SOLID		N/A	n/a	% Ct. Error	
3 SAMPLE	S98T003082	0 F GEA-02 AM24102 SOLID		N/A	< 9.744e-01	0.974 uCi/g	
3 SAMPLE	S98T003082	0 F GEA-02 AM24102E SOLID		N/A	n/a	% Ct. Error	
4 SAMPLE	S98T003083	0 F GEA-02 C060-02 SOLID		N/A	9.194e-02	uCi/g	
4 SAMPLE	S98T003083	0 F GEA-02 C060-02E SOLID		N/A	30.1	% Ct. Error	
4 SAMPLE	S98T003083	0 F GEA-02 SB12502 SOLID		N/A	< 5.409e-01	0.541 uCi/g	
4 SAMPLE	S98T003083	0 F GEA-02 SB12502E SOLID		N/A	n/a	% Ct. Error	
4 SAMPLE	S98T003083	0 F GEA-02 CS13702 SOLID		N/A	1.176e+02	uCi/g	
4 SAMPLE	S98T003083	0 F GEA-02 CS13702E SOLID		N/A	0.570	% Ct. Error	
4 SAMPLE	S98T003083	0 F GEA-02 EU15402 SOLID		N/A	4.088e-01	uCi/g	
4 SAMPLE	S98T003083	0 F GEA-02 EU15402E SOLID		N/A	20.4	% Ct. Error	
4 SAMPLE	S98T003083	0 F GEA-02 EU15502 SOLID		N/A	< 0.000e+00	uCi/g	
4 SAMPLE	S98T003083	0 F GEA-02 EU15502E SOLID		N/A	n/a	% Ct. Error	
4 SAMPLE	S98T003083	0 F GEA-02 AM24102 SOLID		N/A	< 8.776e-01	0.878 uCi/g	
4 SAMPLE	S98T003083	0 F GEA-02 AM24102E SOLID		N/A	n/a	% Ct. Error	
5 SAMPLE	S98T003084	0 F GEA-02 C060-02 SOLID		N/A	1.290e-01	uCi/g	
5 SAMPLE	S98T003084	0 F GEA-02 C060-02E SOLID		N/A	42.6	% Ct. Error	
5 SAMPLE	S98T003084	0 F GEA-02 SB12502 SOLID		N/A	< 9.241e-01	0.924 uCi/g	
5 SAMPLE	S98T003084	0 F GEA-02 SB12502E SOLID		N/A	n/a	% Ct. Error	
5 SAMPLE	S98T003084	0 F GEA-02 CS13702 SOLID		N/A	1.072e+02	uCi/g	
5 SAMPLE	S98T003084	0 F GEA-02 CS13702E SOLID		N/A	1.02	% Ct. Error	
5 SAMPLE	S98T003084	0 F GEA-02 EU15402 SOLID		N/A	4.799e-01	uCi/g	

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

LABCORE Completed Worklist Report for Worklist# 26670

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
5 SAMPLE	S98T003084	0 F	QGEA-02	EU15402E	SOLID	N/A	44.2	% Ct. Error
5 SAMPLE	S98T003084	0 F	QGEA-02	EU15502	SOLID	N/A <	6.819e-01	0.682 uCi/g
5 SAMPLE	S98T003084	0 F	QGEA-02	EU15502E	SOLID	N/A	n/a	% Ct. Error
5 SAMPLE	S98T003084	0 F	QGEA-02	AM24102	SOLID	N/A <	1.535e+00	1.535 uCi/g
5 SAMPLE	S98T003084	0 F	QGEA-02	AM24102E	SOLID	N/A	n/a	% Ct. Error
6 SAMPLE	S98T003085	0 F	QGEA-02	CO60-02	SOLID	N/A <	3.267e-02	3.27e-002 uCi/g
6 SAMPLE	S98T003085	0 F	QGEA-02	CO60-02E	SOLID	N/A	n/a	% Ct. Error
6 SAMPLE	S98T003085	0 F	QGEA-02	SB12502	SOLID	N/A <	7.070e-01	0.707 uCi/g
6 SAMPLE	S98T003085	0 F	QGEA-02	SB12502E	SOLID	N/A	n/a	% Ct. Error
6 SAMPLE	S98T003085	0 F	QGEA-02	CS13702	SOLID	N/A	2.338e+02	uCi/g
6 SAMPLE	S98T003085	0 F	QGEA-02	CS13702E	SOLID	N/A	0.380	% Ct. Error
6 SAMPLE	S98T003085	0 F	QGEA-02	EU15402	SOLID	N/A <	1.072e-01	0.107 uCi/g
6 SAMPLE	S98T003085	0 F	QGEA-02	EU15402E	SOLID	N/A	n/a	% Ct. Error
6 SAMPLE	S98T003085	0 F	QGEA-02	EU15502	SOLID	N/A <	4.276e-01	0.428 uCi/g
6 SAMPLE	S98T003085	0 F	QGEA-02	EU15502E	SOLID	N/A	n/a	% Ct. Error
6 SAMPLE	S98T003085	0 F	QGEA-02	AM24102	SOLID	N/A <	1.038e+00	1.038 uCi/g
6 SAMPLE	S98T003085	0 F	QGEA-02	AM24102E	SOLID	N/A	n/a	% Ct. Error
7 SAMPLE	S98T003086	0 F	QGEA-02	CO60-02	SOLID	N/A <	3.838e-02	3.84e-002 uCi/g
7 SAMPLE	S98T003086	0 F	QGEA-02	CO60-02E	SOLID	N/A	n/a	% Ct. Error
7 SAMPLE	S98T003086	0 F	QGEA-02	SB12502	SOLID	N/A <	7.265e-01	0.727 uCi/g
7 SAMPLE	S98T003086	0 F	QGEA-02	SB12502E	SOLID	N/A	n/a	% Ct. Error
7 SAMPLE	S98T003086	0 F	QGEA-02	CS13702	SOLID	N/A	2.403e+02	uCi/g
7 SAMPLE	S98T003086	0 F	QGEA-02	CS13702E	SOLID	N/A	0.380	% Ct. Error
7 SAMPLE	S98T003086	0 F	QGEA-02	EU15402	SOLID	N/A <	1.199e-01	0.120 uCi/g
7 SAMPLE	S98T003086	0 F	QGEA-02	EU15402E	SOLID	N/A	n/a	% Ct. Error
7 SAMPLE	S98T003086	0 F	QGEA-02	EU15502	SOLID	N/A <	4.396e-01	0.440 uCi/g
7 SAMPLE	S98T003086	0 F	QGEA-02	EU15502E	SOLID	N/A	n/a	% Ct. Error
7 SAMPLE	S98T003086	0 F	QGEA-02	AM24102	SOLID	N/A <	1.046e+00	1.046 uCi/g
7 SAMPLE	S98T003086	0 F	QGEA-02	AM24102E	SOLID	N/A	n/a	% Ct. Error

Comments Section:

Comments for sample# S98T003083 and test @GEA-02 .

DL=0 => n/a.
DL=0 => n/a.

Final page for worklist# 26670

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Deluca 27 Oct 98
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 26670

Analyst: S. L Instrument: GEA00 Book# 28857

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

Worklist Comment: AW101 LAW, @GEA-02 See traveler for SS. Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@GEA-02	SOLID		
2 BLNK-PREP			@GEA-02	SOLID		
3 SAMPLE	S98T003082 0 F		@GEA-02	SOLID	98000554	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
4 SAMPLE	S98T003083 0 F		@GEA-02	SOLID	98000554	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
5 SAMPLE	S98T003084 0 F		@GEA-02	SOLID	98000554	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
6 SAMPLE	S98T003085 0 F		@GEA-02	SOLID	98000554	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						
7 SAMPLE	S98T003086 0 F		@GEA-02	SOLID	98000554	AW-101 LAW
Analytes Requested: AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E, SB12502 , SB12502E						

Final page for worklist # 26670

Sue L 10-21-98
Analyst Signature Date

Gay L. Ph.D. 10-26-98
Analyst Signature Date

Data Entry Comments:

 * 222-S Laboratory Counting Room 22-OCT-1998 02:04:34.59

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

Worklist #: 26670
 Sample ID: WL26670-STD
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.00000E+00

Removed by:

SL Usher

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2591.cnf
 Geometry: 42
 Count Time: 0 00:50:00.00 sec
 Real Time: 0 00:50:23.42 sec
 Dead Time: 0.8%

Verified by:

John Pelzer 26 Oct 98

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

Sample Count Time: 22-OCT-1998 01:13:41.44
 Decayed to: 22-OCT-1998 01:13:41.44
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.24*	5234	1.42	1322.48	1314	16	3.1		CS-137	7.61
0	1172.49	2411	1.71	2345.02	2336	17	4.4		CO-60	4.78
0	1331.68	2217	1.97	2663.44	2654	17	4.5		CO-60	4.88
0	1460.07*	7	2.00	2920.25	2914	14291.0			K-40	0.165

Summary of Nuclide Activity

Page : 2

Sample ID : WL26670-STD

Acquisition date : 22-OCT-1998 01:13:41

Total number of lines in spectrum	4	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	4	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	1.646E-01	1.646E-01	4.789E-01	290.97	94R
CO-60	5.27Y	1.00	4.832E+00	4.832E+00	0.152E+00	3.14	
CS-137	30.00Y	1.00	7.614E+00	7.614E+00	0.235E+00	3.08	10/26/98
Total Activity :			1.261E+01	1.261E+01			

Grand Total Activity :	1.261E+01	1.261E+01
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Flags: "K" = Keyline not found
 "E" = Manually edited

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

Minimum Detectable Activity Report

Sample ID : WL26670-STD

Acquisition date : 22-OCT-1998 01:13:41

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	273.	477.59	7.1010E-01
NA-24	12.	1368.55	4.2700E-02
AR-41	19.	1293.60	5.8103E-02
SC-46	96.	1120.55	9.2019E-02
CR-51	288.	320.08	5.1563E-01
MN-54	134.	834.83	8.5040E-02
CO-56	149.	846.76	9.0709E-02
CO-58	124.	810.78	8.0573E-02
FE-59	106.	1099.25	1.6847E-01
ZN-65	122.	1115.55	2.0298E-01
SE-75	333.	264.66	8.0850E-02
KR-85	183.	514.00	1.4957E+01
SR-85	183.	514.01	6.7651E-02
Y-88	3.	1836.06	3.2389E-02
Y-91	33.	1204.67	1.9909E+01
NB-94	139.	871.09	8.9881E-02
NB-95	108.	765.78	7.1713E-02
ZR-95	111.	756.73	1.3150E-01
ZRNB-95	94.	724.18	2.9362E-01
RU-103	197.	497.08	7.1645E-02
RURH-106	152.	621.93	1.4200E+00
AG-108m	95.	722.94	7.0665E-02
CD-109	297.	88.03	1.3872E+00
AG-110M	337.	657.76	1.1472E-01
SN-113	261.	391.69	9.3416E-02
TE-123m	322.	159.00	4.2119E-02
SB-124	129.	602.73	6.4863E-02
SB-125	298.	427.89	2.3551E-01
TE-125m	323.	109.27	1.4106E+01
I-129	270.	39.60	1.5263E+01
I-131	271.	364.48	7.0136E-02
XE-131m	307.	163.93	1.7736E+00
BA-133	242.	356.02	8.4833E-02
CS-134	132.	604.70	6.5783E-02
CS-136	142.	818.51	8.6313E-02
CS-138	4.	1435.86	6.2110E-02
CE-139	330.	165.85	4.5125E-02
BA-140	159.	537.31	2.5915E-01
LA-140	9.	1596.21	4.5555E-02
CE-141	308.	145.44	7.1402E-02
CE-144	339.	133.51	3.2941E-01
CEPR-144	339.	133.51	6.5812E-01
EU-152	311.	121.78	1.2778E-01
EU-154	22.	1274.51	1.4984E-01
EU-155	300.	86.54	1.5819E-01
HF-181	230.	482.18	8.4927E-02
TA-182	281.	67.75	2.1726E-01
HG-203	304.	279.20	5.8086E-02
BI-207	133.	569.70	6.2512E-02
TL-208	311.	277.36	7.5353E-01
PB-210	251.	46.50	1.0149E+01

Minimum Detectable Activity Report (continued)

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Sample ID : WL26670-STD

Acquisition date : 22-OCT-1998 01:13:41

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	103.	727.18	1.0072E+00
PB-212	384.	238.63	1.0728E-01
BI-214	149.	609.31	1.5331E-01
PB-214	305.	351.92	2.9127E-01
RA-224	375.	240.99	1.1765E+00
RA-226	371.	186.10	1.1339E+00
AC-228	176.	911.21	3.9127E-01
TH-228	308.	84.37	4.3447E+00
TH-229	303.	88.47	2.0322E-01
U-232	282.	57.78	7.7927E+01
PA-233	298.	312.17	1.3388E-01
UTH-233	326.	245.34	4.0095E+01
PA-234M	123.	1001.03	1.4557E+01
TH-234	279.	63.29	2.9169E+00
U-235	381.	185.71	6.9874E-02
NP-237	301.	86.48	4.1959E-01
U-237	306.	59.54	4.1891E-01
NP-238	132.	984.45	3.4908E-01
NP-239	297.	106.12	1.7218E-01
PU-239	343.	129.30	5.7867E+02
AM-241	306.	59.54	4.0183E-01
AM-243	278.	74.67	1.1378E-01

 * 222-S Laboratory Counting Room 22-OCT-1998 04:37:36.29

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

Worklist #: 26670
 Sample ID: WL26670-BLNK
 Sample Size: 2.50000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

SLH

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2592.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:30:35.68 sec
 Dead Time: 0.4%

Verified by:

John Relyea 26 Oct 98

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

Sample Count Time: 22-OCT-1998 02:06:33.78
 Decayed to: 22-OCT-1998 02:06:33.78
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	351.72*	86	1.13	703.45	699	10 68.0			
0	608.64*	51	1.39	1217.27	1212	14108.9			
0	661.23*	209	1.39	1322.46	1317	12 26.9		CS-137	0.405

Summary of Nuclide Activity

Sample ID : WL26670-BLNK

Acquisition date : 22-OCT-1998 02:06:33

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	4.050E-01	4.050E-01	1.088E-01	26.87	
Total Activity :			4.050E-01	4.050E-01			

Grand Total Activity :	4.050E-01	4.050E-01
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Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : WL26670-BLNK

Acquisition date : 22-OCT-1998 02:06:33

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	94.	477.59	5.7063E-01
NA-24	23.	1368.55	7.9292E-02
K-40	310.	1460.75	2.5207E+00
AR-41	23.	1293.60	1.1217E-01
SC-46	71.	1120.55	1.0634E-01
CR-51	155.	320.08	5.1122E-01
MN-54	42.	834.83	6.6248E-02
CO-56	44.	846.76	6.8347E-02
CO-58	40.	810.78	6.3344E-02
FE-59	38.	1099.25	1.3924E-01
CO-60	25.	1332.50	7.6052E-02
ZN-65	36.	1115.55	1.5227E-01
SE-75	174.	264.66	7.8941E-02
KR-85	104.	514.00	1.5224E+01
SR-85	104.	514.01	6.8773E-02
Y-88	7.	1836.06	6.0830E-02
Y-91	39.	1204.67	2.8512E+01
NB-94	39.	871.09	6.6378E-02
NB-95	57.	765.78	7.0773E-02
ZR-95	48.	756.73	1.1895E-01
ZRNB-95	54.	724.18	3.0166E-01
RU-103	92.	497.08	6.6510E-02
RURH-106	51.	621.93	1.1378E+00
AG-108m	56.	722.94	7.3612E-02
CD-109	231.	88.03	1.6380E+00
AG-110M	82.	657.76	7.7987E-02
SN-113	121.	391.69	8.6265E-02
TE-123m	227.	159.00	4.7403E-02
SB-124	70.	602.73	6.4994E-02
SB-125	110.	427.89	1.9434E-01
TE-125m	204.	109.27	1.5076E+01
I-129	191.	39.60	1.7232E+01
I-131	113.	364.48	6.1733E-02
XE-131m	215.	163.93	1.9968E+00
BA-133	120.	356.02	8.0902E-02
CS-134	70.	604.70	6.4986E-02
CS-136	42.	818.51	6.4912E-02
CS-138	8.	1435.86	2.2481E-01
CE-139	229.	165.85	5.0530E-02
BA-140	58.	537.31	2.1510E-01
LA-140	16.	1596.21	7.9487E-02
CE-141	225.	145.44	8.1940E-02
CE-144	227.	133.51	3.6166E-01
CEPR-144	227.	133.51	7.2260E-01
EU-152	229.	121.78	1.4688E-01
EU-154	26.	1274.51	2.1565E-01
EU-155	230.	86.54	1.8556E-01
HF-181	98.	482.18	7.5316E-02
TA-182	168.	67.75	2.2644E-01
HG-203	180.	279.20	6.0205E-02
BI-207	72.	569.70	6.2597E-02

Minimum Detectable Activity Report (continued)

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Sample ID : WL26670-BLNK

Acquisition date : 22-OCT-1998 02:06:33

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	174.	277.36	7.5888E-01
PB-210	163.	46.50	1.1014E+01
BI-212	65.	727.18	1.0838E+00
PB-212	250.	238.63	1.1617E-01
BI-214	225.	609.31	2.4885E-01
PB-214	290.	351.92	8.4217E-01
RA-224	231.	240.99	1.2491E+00
RA-226	239.	186.10	1.2219E+00
AC-228	75.	911.21	3.4798E-01
TH-228	210.	84.37	4.8222E+00
TH-229	218.	88.47	2.3110E-01
U-232	188.	57.78	8.5414E+01
PA-233	149.	312.17	1.2819E-01
UTH-233	189.	245.34	4.1114E+01
PA-234M	49.	1001.03	1.2600E+01
TH-234	170.	63.29	3.0688E+00
U-235	237.	185.71	7.4072E-02
NP-237	230.	86.48	4.9173E-01
U-237	180.	59.54	4.3386E-01
NP-238	20.	984.45	1.9787E-01
NP-239	224.	106.12	2.0231E-01
PU-239	200.	129.30	5.9510E+02
AM-241	179.	59.54	4.1466E-01
AM-243	224.	74.67	1.3668E-01

 * 222-S Laboratory Counting Room 22-OCT-1998 07:14:23.45 *

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

Worklist #: 26670
 Sample ID: S98T3082-SAM
 Sample Size: 2.50000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2593.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:31:51.46 sec
 Dead Time: 1.2%

Verified by:

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

Sample Count Time: 22-OCT-1998 04:42:02.51
 Decayed to: 22-OCT-1998 04:42:02.51
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	608.86*	125	1.76	1217.72	1214	8100.6			BI-214	0.429
0	661.22*	206574	1.44	1322.44	1314	16	0.4		CS-137	401.
0	903.54	25	1.53	1807.09	1802	8	73.1			
0	1119.89*	41	1.49	2239.81	2235	11	62.6		BI-214	0.697
2	1270.82	26	1.98	2541.71	2538	26	47.7	2.72E+00		
2	1273.53	45	2.14	2547.13	2538	26	46.0			
0	1763.46*	15	2.69	3527.15	3521	14124.3			BI-214	0.367

Summary of Nuclide Activity
 Sample ID : S98T3082-SAM

HNF-1652 REV. 0

Page : 2
 Acquisition date : 22-OCT-1998 04:42:02

Total number of lines in spectrum 7
 Number of unidentified lines 2
 Number of lines tentatively identified by NID 5 71.43%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.00	4.006E+02	4.006E+02	0.018E+02	0.45	
BI-214	28700.00D	1.00	5.010E-01	5.010E-01	2.547E-01	50.84	10/26/98
Total Activity :			4.011E+02	4.011E+02			

Grand Total Activity : 4.011E+02 4.011E+02

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

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

Minimum Detectable Activity Report

Sample ID : S98T3082-SAM

Acquisition date : 22-OCT-1998 04:42:02

Nuclide	Bkgdnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	6021.	477.59	4.3326E+00
NA-24	20.	1368.55	7.4297E-02
K-40	296.	1460.75	2.4669E+00
AR-41	27.	1293.60	1.1958E-01
SC-46	79.	1120.55	1.1211E-01
CR-51	5260.	320.08	2.8661E+00
MN-54	61.	834.83	7.8517E-02
CO-56	58.	846.76	7.7558E-02
CO-58	52.	810.78	7.1696E-02
FE-59	42.	1099.25	1.4525E-01
CO-60	40.	1332.50	9.4182E-02
ZN-65	35.	1115.55	1.5188E-01
SE-75	5940.	264.66	4.4465E-01
KR-85	3196.	514.00	8.0738E+01
SR-85	3196.	514.01	3.6519E-01
Y-88	7.	1836.06	6.0056E-02
Y-91	41.	1204.67	2.9184E+01
NB-94	67.	871.09	8.5018E-02
NB-95	69.	765.78	7.7645E-02
ZR-95	73.	756.73	1.4385E-01
ZRNB-95	78.	724.18	3.5817E-01
RU-103	3964.	497.08	4.1576E-01
RURH-106	1362.	621.93	5.5042E+00
AG-108m	80.	722.94	8.6734E-02
CD-109	5532.	88.03	7.7889E+00
AG-110M	9266.	657.76	7.8277E-01
SN-113	5640.	391.69	5.6299E-01
TE-123m	6080.	159.00	2.3805E-01
SB-124	1481.	602.73	2.8308E-01
SB-125	6608.	427.89	1.4404E+00
TE-125m	5618.	109.27	7.6557E+01
I-129	4945.	39.60	8.4789E+01
I-131	5355.	364.48	4.0595E-01
XE-131m	6013.	163.93	1.0231E+01
BA-133	5273.	356.02	5.1342E-01
CS-134	1448.	604.70	2.8116E-01
CS-136	45.	818.51	6.7209E-02
CS-138	10.	1435.86	2.4492E-01
CE-139	6069.	165.85	2.5212E-01
BA-140	2260.	537.31	1.2641E+00
LA-140	12.	1596.21	6.8965E-02
CE-141	6277.	145.44	4.1969E-01
CE-144	6273.	133.51	1.8447E+00
CEPR-144	6273.	133.51	3.6860E+00
EU-152	6338.	121.78	7.4967E-01
EU-154	49.	1274.51	2.9093E-01
EU-155	5566.	86.54	8.8564E-01
HF-181	5034.	482.18	5.1439E-01
TA-182	5096.	67.75	1.2026E+00
HG-203	5741.	279.20	3.2835E-01
BI-207	1521.	569.70	2.7263E-01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T3082-SAM

Acquisition date : 22-OCT-1998 04:42:02

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	5867.	277.36	4.2579E+00
PB-210	4932.	46.50	5.8502E+01
BI-212	69.	727.18	1.1144E+00
PB-212	6696.	238.63	5.8430E-01
PB-214	5411.	351.92	3.5726E+00
RA-224	6622.	240.99	6.4929E+00
RA-226	7775.	186.10	6.7622E+00
AC-228	90.	911.21	3.8033E-01
TH-228	5403.	84.37	2.3682E+01
TH-229	5497.	88.47	1.1253E+00
U-232	4920.	57.78	4.2286E+02
PA-233	5238.	312.17	7.3026E-01
UTH-233	6530.	245.34	2.3348E+02
PA-234M	58.	1001.03	1.3631E+01
TH-234	4953.	63.29	1.5976E+01
U-235	7704.	185.71	4.0937E-01
NP-237	5561.	86.48	2.3447E+00
U-237	5019.	59.54	2.2169E+00
NP-238	46.	984.45	2.8846E-01
NP-239	5657.	106.12	9.8651E-01
PU-239	6180.	129.30	3.1977E+03
AM-241	5019.	59.54	2.1188E+00
AM-243	5132.	74.67	6.3509E-01

* 222-S Laboratory Counting Room 22-OCT-1998 09:48:55.05 *

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

Worklist #: 26670
 Sample ID: S98T3083
 Sample Size: 2.50000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

S. Cochran

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2594.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:31:32.21 sec
 Dead Time: 1.0%

Verified by:

John Relyea 26 Oct 98

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

Sample Count Time: 22-OCT-1998 07:16:54.51
 Decayed to: 22-OCT-1998 07:16:54.51
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: MB
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	86.49	803	1.04	173.04	169	9	36.4		NP-237	5.39
									EU-155	2.03
0	105.33	401	0.97	210.72	207	8	65.7		EU-155	1.17
0	123.07	794	1.12	246.18	243	8	33.7		EU-154	1.12
0	661.23*	129860	1.45	1322.45	1314	16	0.6		CS-137	252.
0	723.11	96	0.95	1446.22	1440	12	50.1		EU-154	0.852
									ZR-95	0.387
0	757.08	54	3.60	1514.15	1508	14	68.0		ZR-95	0.184
0	872.96	61	1.31	1745.93	1744	8	46.2		EU-154	1.06
0	997.10	45	2.00	1994.21	1983	15	83.8		EU-154	0.997
0	1004.69	68	1.92	2009.39	2001	13	60.1		EU-154	0.881
0	1173.13	70	2.17	2346.30	2337	16	57.5		CO-60	0.186
0	1273.95	85	1.61	2547.97	2543	13	36.6		EU-154	0.701
0	1331.67	69	1.42	2663.43	2657	14	35.2		CO-60	0.202
0	1459.93*	28	1.82	2919.99	2910	17	145.4		K-40	0.839
0	1763.60*	11	2.06	3527.43	3519	16	129.7			

Summary of Nuclide Activity

Page : 2

Sample ID : S98T3083

Acquisition date : 22-OCT-1998 07:16:54

Total number of lines in spectrum 14
 Number of unidentified lines 0
 Number of lines tentatively identified by NID 14 100.00%

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	8.386E-01	8.386E-01	12.20E-01	145.44	07R
CO-60	5.27Y	1.00	1.973E-01	1.973E-01	0.593E-01	30.07	
ZR-95	64.02D	1.00	1.835E-01	1.836E-01	1.249E-01	68.04	07R
CS-137	30.00Y	1.00	2.519E+02	2.519E+02	0.014E+02	0.57	
EU-154	8.59Y	1.00	8.761E-01	8.761E-01	1.784E-01	20.36	
EU-155	4.68Y	1.00	1.169E+00	1.169E+00	0.768E+00	65.68	07R
NP-237	2.14E+06Y	1.00	5.390E+00	5.390E+00	1.963E+00	36.43	07R
Total Activity :			2.605E+02	2.605E+02			10/26/98

Grand Total Activity : 2.605E+02 2.605E+02

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

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

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T3083

Acquisition date : 22-OCT-1998 07:16:54

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	3913.	477.59	3.4991E+00
NA-24	14.	1368.55	6.4896E-02
AR-41	21.	1293.60	1.0797E-01
SC-46	78.	1120.55	1.1119E-01
CR-51	3472.	320.08	2.3331E+00
MN-54	59.	834.83	7.6975E-02
CO-56	81.	846.76	9.0403E-02
CO-58	68.	810.78	8.0846E-02
FE-59	32.	1099.25	1.2829E-01
ZN-65	44.	1115.55	1.6744E-01
SE-75	3947.	264.66	3.6309E-01
KR-85	1898.	514.00	6.2415E+01
SR-85	1898.	514.01	2.8232E-01
Y-88	7.	1836.06	6.0256E-02
Y-91	41.	1204.67	2.9302E+01
NB-94	110.	871.09	1.0721E-01
NB-95	62.	765.78	7.3725E-02
ZRNB-95	178.	724.18	5.2992E-01
RU-103	2509.	497.08	3.3156E-01
RURH-106	967.	621.93	4.6501E+00
AG-108m	179.	722.94	1.2748E-01
CD-109	4492.	88.03	7.0243E+00
AG-110M	5771.	657.76	6.1873E-01
SN-113	3597.	391.69	4.5045E-01
TE-123m	4261.	159.00	1.9957E-01
SB-124	1004.	602.73	2.3384E-01
SB-125	4264.	427.89	1.1590E+00
TE-125m	4429.	109.27	6.8041E+01
I-129	3676.	39.60	7.3204E+01
I-131	3378.	364.48	3.2309E-01
XE-131m	4330.	163.93	8.6933E+00
BA-133	3428.	356.02	4.1477E-01
CS-134	936.	604.70	2.2695E-01
CS-136	61.	818.51	7.7633E-02
CS-138	15.	1435.86	2.8734E-01
CE-139	4311.	165.85	2.1279E-01
BA-140	1560.	537.31	1.0529E+00
LA-140	19.	1596.21	8.4750E-02
CE-141	4491.	145.44	3.5547E-01
CE-144	4507.	133.51	1.5656E+00
CEPR-144	4506.	133.51	3.1282E+00
EU-152	4994.	121.78	6.6607E-01
HF-181	3303.	482.18	4.1743E-01
TA-182	3968.	67.75	1.0624E+00
HG-203	3809.	279.20	2.6794E-01
BI-207	1049.	569.70	2.2703E-01
TL-208	3867.	277.36	3.4629E+00
PB-210	3641.	46.50	5.0330E+01
BI-212	93.	727.18	1.2790E+00
PB-212	4566.	238.63	4.8321E-01
BI-214	1021.	609.31	5.1941E-01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T3083

Acquisition date : 22-OCT-1998 07:16:54

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PB-214	3577.	351.92	2.9041E+00
RA-224	4506.	240.99	5.3637E+00
RA-226	5392.	186.10	5.6389E+00
AC-228	116.	911.21	4.2787E-01
TH-228	4279.	84.37	2.1096E+01
TH-229	4271.	88.47	9.9292E-01
U-232	3769.	57.78	3.7054E+02
PA-233	3601.	312.17	6.0648E-01
UTH-233	4289.	245.34	1.8952E+02
PA-234M	71.	1001.03	1.4953E+01
TH-234	3786.	63.29	1.3983E+01
U-235	5351.	185.71	3.4163E-01
U-237	3946.	59.54	1.9676E+00
NP-238	47.	984.45	2.9031E-01
NP-239	4716.	106.12	9.0142E-01
PU-239	4559.	129.30	2.7498E+03
AM-241	3946.	59.54	1.8806E+00
AM-243	4114.	74.67	5.6914E-01

 * 222-S Laboratory Counting Room 22-OCT-1998 14:21:12.47 *

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

Worklist #: 26670
 Sample ID: S98T3084-SAM
 Sample Size: 1.00000E-03 L
 Dilution Factor: 1.10000E+01

Removed by:

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2595.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:31:04.07 sec
 Dead Time: 0.7%

Verified by:

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

Sample Count Time: 22-OCT-1998 11:49:37.72
 Decayed to: 22-OCT-1998 11:49:37.72
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SZC
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	105.18	301	1.30	210.41	207	8	52.4			
0	122.64	200	1.07	245.33	242	9	91.0			
0	661.25*	40488	1.43	1322.49	1314	16	1.0		EU-154	0.772
0	722.94	49	0.83	1445.88	1437	13	78.3		CS-137	216.
0	1172.64	27	1.56	2345.32	2340	12	105.0		EU-154	1.20
0	1273.94	45	1.48	2547.95	2542	13	64.3		CO-60	0.200
0	1331.70	35	2.31	2663.49	2657	11	46.0		EU-154	1.02
									CO-60	0.282

Summary of Nuclide Activity

Page : 2

Sample ID : S98T3084-SAM

Acquisition date : 22-OCT-1998 11:49:37

Total number of lines in spectrum	7	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	7	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	2.595E-01	2.595E-01	1.105E-01	42.56	
CS-137	30.00Y	1.00	2.159E+02	2.159E+02	0.022E+02	1.02	
EU-154	8.59Y	1.00	9.665E-01	9.665E-01	4.276E-01	44.24	
Total Activity :			2.172E+02	2.172E+02			

Grand Total Activity : 2.172E+02 2.172E+02

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

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

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T3084-SAM

Acquisition date : 22-OCT-1998 11:49:37

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	1267.	477.59	5.5133E+00
NA-24	10.	1368.55	1.5497E-01
K-40	285.	1460.75	6.6580E+00
AR-41	19.	1293.60	2.8517E-01
SC-46	67.	1120.55	2.8531E-01
CR-51	1168.	320.08	3.7471E+00
MN-54	59.	834.83	2.1168E-01
CO-56	38.	846.76	1.7646E-01
CO-58	46.	810.78	1.8598E-01
FE-59	40.	1099.25	3.9224E-01
ZN-65	41.	1115.55	4.4808E-01
SE-75	1400.	264.66	5.9830E-01
KR-85	736.	514.00	1.0775E+02
SR-85	736.	514.01	4.8717E-01
Y-88	4.	1836.06	1.3666E-01
Y-91	34.	1204.67	7.4023E+01
NB-94	63.	871.09	2.2618E-01
NB-95	60.	765.78	1.9948E-01
ZR-95	62.	756.73	3.6775E-01
ZRNB-95	102.	724.18	1.1168E+00
RU-103	814.	497.08	5.2370E-01
RURH-106	368.	621.93	7.9771E+00
AG-108m	99.	722.94	2.6471E-01
CD-109	1643.	88.03	1.1749E+01
AG-110M	1819.	657.76	9.6096E-01
SN-113	1188.	391.69	7.1712E-01
TE-123m	1590.	159.00	3.3715E-01
SB-124	343.	602.73	3.8067E-01
SB-125	1437.	427.89	1.8619E+00
TE-125m	1642.	109.27	1.1456E+02
I-129	1357.	39.60	1.2306E+02
I-131	1203.	364.48	5.3370E-01
XE-131m	1602.	163.93	1.4624E+01
BA-133	1139.	356.02	6.6219E-01
CS-134	356.	604.70	3.8924E-01
CS-136	51.	818.51	1.9697E-01
CS-138	20.	1435.86	9.0397E-01
CE-139	1665.	165.85	3.6556E-01
BA-140	512.	537.31	1.6766E+00
LA-140	13.	1596.21	1.9811E-01
CE-141	1669.	145.44	5.9919E-01
CE-144	1608.	133.51	2.5864E+00
CEPR-144	1608.	133.51	5.1682E+00
EU-152	1913.	121.78	1.1393E+00
EU-155	1750.	86.54	1.3738E+00
HF-181	1071.	482.18	6.5850E-01
TA-182	1436.	67.75	1.7680E+00
HG-203	1287.	279.20	4.3115E-01
BI-207	380.	569.70	3.8044E-01
TL-208	1301.	277.36	5.5607E+00
PB-210	1302.	46.50	8.3309E+01

Minimum Detectable Activity Report (continued)

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Sample ID : S98T3084-SAM

Acquisition date : 22-OCT-1998 11:49:37

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BI-212	67.	727.18	3.0104E+00
PB-212	1638.	238.63	8.0057E-01
BI-214	388.	609.31	8.8963E-01
PB-214	1261.	351.92	4.7588E+00
RA-224	1534.	240.99	8.6593E+00
RA-226	1810.	186.10	9.0355E+00
AC-228	81.	911.21	9.9427E-01
TH-228	1587.	84.37	3.5532E+01
TH-229	1592.	88.47	1.6766E+00
U-232	1339.	57.78	6.1125E+02
PA-233	1259.	312.17	9.9278E-01
UTH-233	1541.	245.34	3.1429E+02
PA-234M	46.	1001.03	3.3716E+01
TH-234	1387.	63.29	2.3416E+01
U-235	1822.	185.71	5.5134E-01
NP-237	1755.	86.48	3.6441E+00
U-237	1394.	59.54	3.2358E+00
NP-238	48.	984.45	8.0252E-01
NP-239	1727.	106.12	1.5083E+00
PU-239	1684.	129.30	4.6209E+03
AM-241	1394.	59.54	3.0927E+00
AM-243	1521.	74.67	9.5726E-01

* 222-S Laboratory Counting Room 22-OCT-1998 17:30:56.26 *

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

Worklist #: 26670
 Sample ID: S98T3085-SAM
 Sample Size: 2.50000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

Skate

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2597.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:32:10.55 sec
 Dead Time: 1.4%

Verified by:

John Relyea 26 Oct 98

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

Sample Count Time: 22-OCT-1998 14:58:15.77
 Decayed to: 22-OCT-1998 14:58:15.77
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SZC
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uCi/L
0	661.22*	285802	1.46	1322.44	1314	16 0.4		CS-137	554.
2	795.05	49	1.90	1590.10	1583	25 58.6	1.90E+00		
2	802.17	36	1.90	1604.34	1583	25 50.6			
0	995.51	29	1.69	1991.04	1987	8 65.6			
0	1730.01	8	0.71	3460.24	3453	9137.4			

Summary of Nuclide Activity

Page : 2

Sample ID : S98T3085-SAM

Acquisition date : 22-OCT-1998 14:58:15

Total number of lines in spectrum	5	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	4	80.00%

Nuclide Type :

Nuclide	Hliffe	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	5.543E+02	5.543E+02	0.021E+02	0.38	
Total Activity :			5.543E+02	5.543E+02			

Grand Total Activity :	5.543E+02	5.543E+02
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Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Sample ID : S98T3085-SAM

Acquisition date : 22-OCT-1998 14:58:15

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	8300.	477.59	5.0816E+00
NA-24	21.	1368.55	7.6904E-02
K-40	305.	1460.75	2.5031E+00
AR-41	26.	1293.60	1.1896E-01
SC-46	60.	1120.55	9.8969E-02
CR-51	7172.	320.08	3.3429E+00
MN-54	56.	834.83	7.5507E-02
CO-56	70.	846.76	8.4760E-02
CO-58	58.	810.78	7.5200E-02
FE-59	42.	1099.25	1.4546E-01
CO-60	26.	1332.50	7.7408E-02
ZN-65	44.	1115.55	1.6741E-01
SE-75	8230.	264.66	5.2279E-01
KR-85	4399.	514.00	9.4580E+01
SR-85	4398.	514.01	4.2778E-01
Y-88	8.	1836.06	6.4019E-02
Y-91	29.	1204.67	2.4986E+01
NB-94	45.	871.09	7.0472E-02
NB-95	57.	765.78	7.0646E-02
ZR-95	73.	756.73	1.4431E-01
ZRNB-95	79.	724.18	3.5977E-01
RU-103	5449.	497.08	4.8684E-01
RURH-106	1827.	621.93	6.3603E+00
AG-108m	87.	722.94	9.0213E-02
CD-109	7390.	88.03	8.9928E+00
AG-110M	12729.	657.76	9.1664E-01
SN-113	7905.	391.69	6.6573E-01
TE-123m	8260.	159.00	2.7716E-01
SB-124	1997.	602.73	3.2803E-01
SB-125	8959.	427.89	1.6754E+00
TE-125m	7692.	109.27	8.9478E+01
I-129	6785.	39.60	9.9203E+01
I-131	7346.	364.48	4.7490E-01
XE-131m	8357.	163.93	1.2047E+01
BA-133	7366.	356.02	6.0606E-01
CS-134	1921.	604.70	3.2328E-01
CS-136	40.	818.51	6.4040E-02
CS-138	18.	1435.86	3.1207E-01
CE-139	8267.	165.85	2.9394E-01
BA-140	3185.	537.31	1.4978E+00
LA-140	12.	1596.21	7.0702E-02
CE-141	8281.	145.44	4.8160E-01
CE-144	8449.	133.51	2.1386E+00
CEPR-144	8449.	133.51	4.2735E+00
EU-152	8312.	121.78	8.5770E-01
EU-154	37.	1274.51	2.5405E-01
EU-155	7301.	86.54	1.0133E+00
HF-181	6893.	482.18	6.0120E-01
TA-182	6782.	67.75	1.3858E+00
HG-203	7692.	279.20	3.7969E-01
BI-207	2125.	569.70	3.2152E-01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T3085-SAM

Acquisition date : 22-OCT-1998 14:58:15

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	7743.	277.36	4.8868E+00
PB-210	6695.	46.50	6.8079E+01
BI-212	68.	727.18	1.1081E+00
PB-212	9251.	238.63	6.8605E-01
BI-214	1985.	609.31	7.2050E-01
PB-214	7474.	351.92	4.2020E+00
RA-224	9183.	240.99	7.6379E+00
RA-226	10693.	186.10	7.9227E+00
AC-228	83.	911.21	3.6528E-01
TH-228	7105.	84.37	2.7131E+01
TH-229	7362.	88.47	1.3009E+00
U-232	6708.	57.78	4.9316E+02
PA-233	7320.	312.17	8.6223E-01
UTH-233	8870.	245.34	2.7183E+02
PA-234M	30.	1001.03	1.0112E+01
TH-234	6641.	63.29	1.8477E+01
U-235	10532.	185.71	4.7820E-01
NP-237	7307.	86.48	2.6851E+00
U-237	6776.	59.54	2.5729E+00
NP-238	44.	984.45	2.8111E-01
NP-239	7645.	106.12	1.1457E+00
PU-239	8436.	129.30	3.7321E+03
AM-241	6776.	59.54	2.4590E+00
AM-243	7028.	74.67	7.4231E-01

 * 222-S Laboratory Counting Room 22-OCT-1998 20:46:56.29
 *

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

Worklist #: 26670
 Sample ID: S98T3086-SAM
 Sample Size: 2.50000E-04 L
 Dilution Factor: 1.00000E+00

Removed by:

Slade

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

Detector ID: GEA2
 File Number: dka300:[spec.GEA2]2g2598.cnf
 Geometry: 42
 Count Time: 0 02:30:00.00 sec
 Real Time: 0 02:32:10.32 sec
 Dead Time: 1.4%

Verified by:

John Relyea 26 Oct 98

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

Sample Count Time: 22-OCT-1998 18:14:15.91
 Decayed to: 22-OCT-1998 18:14:15.91
 Standard Deviations: 2
 Analysis Library: ENVGEA
 Analyst: SLH2
 Background Subtract: DKA300:[SPEC.GEA2]2GBACK

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

Date of last energy calibration: 23-SEP-1998 19:57:04.05
 Date of last efficiency calibration: 10-NOV-1997 10:04:32.95

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.23*	285188	1.45	1322.44	1314	16	0.4		CS-137	553.
0	795.50	53	1.59	1590.99	1583	12	63.9			

Summary of Nuclide Activity
 Sample ID : S98T3086-SAM

HNF-1652 REV. 0

Page : 2
 Acquisition date : 22-OCT-1998 18:14:15

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
CS-137	30.00Y	1.00	5.531E+02	5.531E+02	0.021E+02	0.38
Total Activity :			5.531E+02	5.531E+02		

Grand Total Activity : 5.531E+02 5.531E+02

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

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

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T3086-SAM

Acquisition date : 22-OCT-1998 18:14:15

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	8403.	477.59	5.1127E+00
NA-24	17.	1368.55	6.9419E-02
K-40	328.	1460.75	2.5906E+00
AR-41	23.	1293.60	1.1138E-01
SC-46	86.	1120.55	1.1643E-01
CR-51	7240.	320.08	3.3588E+00
MN-54	46.	834.83	6.8518E-02
CO-56	50.	846.76	7.2403E-02
CO-58	49.	810.78	6.9606E-02
FE-59	38.	1099.25	1.3997E-01
CO-60	35.	1332.50	8.8320E-02
ZN-65	41.	1115.55	1.6253E-01
SE-75	8222.	264.66	5.2254E-01
KR-85	4378.	514.00	9.4353E+01
SR-85	4377.	514.01	4.2677E-01
Y-88	4.	1836.06	4.8955E-02
Y-91	30.	1204.67	2.5441E+01
NB-94	66.	871.09	8.4098E-02
NB-95	76.	765.78	8.0939E-02
ZR-95	67.	756.73	1.3822E-01
ZRNB-95	83.	724.18	3.6996E-01
RU-103	5304.	497.08	4.8034E-01
RURH-106	1955.	621.93	6.5773E+00
AG-108m	94.	722.94	9.3881E-02
CD-109	7230.	88.03	8.8955E+00
AG-110M	12481.	657.76	9.0769E-01
SN-113	7868.	391.69	6.6417E-01
TE-123m	8431.	159.00	2.8001E-01
SB-124	2020.	602.73	3.2992E-01
SB-125	8921.	427.89	1.6719E+00
TE-125m	7642.	109.27	8.9188E+01
I-129	6885.	39.60	9.9925E+01
I-131	7547.	364.48	4.8133E-01
XE-131m	8334.	163.93	1.2031E+01
BA-133	7314.	356.02	6.0393E-01
CS-134	1961.	604.70	3.2651E-01
CS-136	51.	818.51	7.1156E-02
CS-138	23.	1435.86	3.4851E-01
CE-139	8327.	165.85	2.9499E-01
BA-140	3218.	537.31	1.5054E+00
LA-140	19.	1596.21	8.4421E-02
CE-141	8264.	145.44	4.8112E-01
CE-144	8267.	133.51	2.1156E+00
CEPR-144	8267.	133.51	4.2275E+00
EU-152	8319.	121.78	8.5806E-01
EU-154	44.	1274.51	2.7601E-01
EU-155	7277.	86.54	1.0116E+00
HF-181	6890.	482.18	6.0104E-01
TA-182	6737.	67.75	1.3813E+00
HG-203	7734.	279.20	3.8071E-01
BI-207	2034.	569.70	3.1464E-01

Minimum Detectable Activity Report (continued)

Page : 4

Sample ID : S98T3086-SAM

Acquisition date : 22-OCT-1998 18:14:15

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
TL-208	7718.	277.36	4.8790E+00
PB-210	6675.	46.50	6.7981E+01
BI-212	69.	727.18	1.1147E+00
PB-212	9170.	238.63	6.8307E-01
BI-214	2007.	609.31	7.2440E-01
PB-214	7281.	351.92	4.1476E+00
RA-224	8942.	240.99	7.5375E+00
RA-226	10565.	186.10	7.8754E+00
AC-228	81.	911.21	3.6107E-01
TH-228	7159.	84.37	2.7232E+01
TH-229	7224.	88.47	1.2888E+00
U-232	6437.	57.78	4.8316E+02
PA-233	7333.	312.17	8.6299E-01
UTH-233	8823.	245.34	2.7112E+02
PA-234M	44.	1001.03	1.2002E+01
TH-234	6724.	63.29	1.8592E+01
U-235	10448.	185.71	4.7629E-01
NP-237	7270.	86.48	2.6783E+00
U-237	6486.	59.54	2.5176E+00
NP-238	38.	984.45	2.6367E-01
NP-239	7683.	106.12	1.1485E+00
PU-239	8369.	129.30	3.7173E+03
AM-241	6486.	59.54	2.4062E+00
AM-243	6899.	74.67	7.3556E-01

LABCORE Completed Worklist Report for Worklist# 26390

Analyst: akl

Instrument: GEA06

Book#: _____

Method: LA-378-103 Rev/Mod _____

Worklist Comment: AW101 LAW, @I129-01 STD: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@I129-01 I129-01 LIQUID		3.30E-04	3.02E-4	81.515 % Recovery	
1 STD	0	@I129-01 I129-01C LIQUID		100	2.23E+01	22.300 % Recovery	
1 STD	0	@I129-01 I129-01E LIQUID		1.00	3.05E+00	3.050 % Ct. Error	
2 BLNK	0	@I129-01 I129-01 LIQUID		1	<7.39E-5	uCi/mL	
2 BLNK	0	@I129-01 I129-01C LIQUID		100	1.07E+01	10.700 % Recovery	
2 BLNK	0	@I129-01 I129-01E LIQUID		1.00	0.00E+00	0.000 uCi/mL	
3 SAMPLE	S98T002779 0	@I129-01 I129-01 LIQUID	N/A		3.28E-04	2.02E-005 uCi/mL	
3 SAMPLE	S98T002779 0	@I129-01 I129-01C LIQUID	N/A		2.62E+01	% Recovery	
3 SAMPLE	S98T002779 0	@I129-01 I129-01E LIQUID	N/A		3.87E+00	% Ct. Error	
4 DUP	S98T002779 0	@I129-01 I129-01 LIQUID		3.28E-4	3.32E-4	1.212 RPD	
4 DUP	S98T002779 0	@I129-01 I129-01C LIQUID		100	2.43E+01	24.300 % Recovery	
4 DUP	S98T002779 0	@I129-01 I129-01E LIQUID		1.00	4.02E+00	4.020 % Ct. Error	
5 SAMPLE	S98T002780 0	@I129-01 I129-01 LIQUID	N/A		3.37E-04	1.88E-005 uCi/mL	
5 SAMPLE	S98T002780 0	@I129-01 I129-01C LIQUID	N/A		2.82E+01	% Recovery	
5 SAMPLE	S98T002780 0	@I129-01 I129-01E LIQUID	N/A		3.62E+00	% Ct. Error	
6 DUP	S98T002780 0	@I129-01 I129-01 LIQUID		3.37E-4	3.10E-4	8.346 RPD	
6 DUP	S98T002780 0	@I129-01 I129-01C LIQUID		100	7.48E+01	74.800 % Recovery	
6 DUP	S98T002780 0	@I129-01 I129-01E LIQUID		1.00	2.20E+00	2.200 % Ct. Error	
7 SAMPLE	S98T002781 0	@I129-01 I129-01 LIQUID	N/A		3.14E-04	1.12E-005 uCi/mL	
7 SAMPLE	S98T002781 0	@I129-01 I129-01C LIQUID	N/A		4.72E+01	% Recovery	
7 SAMPLE	S98T002781 0	@I129-01 I129-01E LIQUID	N/A		2.72E+00	% Ct. Error	
8 DUP	S98T002781 0	@I129-01 I129-01 LIQUID		3.14E-4	3.01E-4	4.228 RPD	
8 DUP	S98T002781 0	@I129-01 I129-01C LIQUID		100	4.16E+01	41.600 % Recovery	
8 DUP	S98T002781 0	@I129-01 I129-01E LIQUID		1.00	3.17E+00	3.170 % Ct. Error	
9 SAMPLE	S98T002795 0	@I129-01 I129-01 LIQUID	N/A		5.77E-05	5.77E-005 uCi/mL	
9 SAMPLE	S98T002795 0	@I129-01 I129-01C LIQUID	N/A		3.44E+01	% Recovery	
9 SAMPLE	S98T002795 0	@I129-01 I129-01E LIQUID	N/A		0.00E+00	% Ct. Error	
10 DUP	S98T002795 0	@I129-01 I129-01 LIQUID		<5.77E-5	<2.39E-5	RPD	
10 DUP	S98T002795 0	@I129-01 I129-01C LIQUID		100	2.95E+01	29.500 % Recovery	
10 DUP	S98T002795 0	@I129-01 I129-01E LIQUID		1.00	0.00E+00	0.000 % Ct. Error	

Final page for worklist# 26390

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

[Signature] 12 Oct 98
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 26390

Analyst: AKL Instrument: GEA00 #6 Book# 38857

Method: LA-378-103 Rev/Mod D3

Worklist Comment: AW101 LAW, @I129-01 STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@I129-01	LIQUID		
2 BLNK			@I129-01	LIQUID		
3 SAMPLE	S98T002779 0		@I129-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: I129-01 , I129-01C, I129-01E						
4 DUP	S98T002779 0		@I129-01	LIQUID		
5 SAMPLE	S98T002780 0		@I129-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: I129-01 , I129-01C, I129-01E						
6 DUP	S98T002780 0		@I129-01	LIQUID		
7 SAMPLE	S98T002781 0		@I129-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: I129-01 , I129-01C, I129-01E						
8 DUP	S98T002781 0		@I129-01	LIQUID		
9 SAMPLE	S98T002795 0		@I129-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: I129-01 , I129-01C, I129-01E						
10 DUP	S98T002795 0		@I129-01	LIQUID		

Final page for worklist # 26390

Alita Hansen 10/8/98
Analyst Signature Date

McBroom 10/9/98
Analyst Signature Date
A. J. Licht 10/10/98

Data Entry Comments:

WORKBOOK PAGE: STD1

I-129: LA-378-101 (D-0), 103 (D-2)**IODINE-129**

		STANDARD
Type	GROSS WEIGHT (wt2)	2.0455
STD	TARE WEIGHT (wt1)	2.0387
Work List	MASS PRECIPITATE (net wt)	0.0068
26390	I-129 μ Ci / SAMPLE from GEA (I-129 GEA)	6.724E-5
Test Code	SAMPLE VOLUME in mL (SS)	1.0000
@I129-01	DILUTION FACTOR (DF)	1.0000
Matrix	DIGEST DILUTION FACTOR (DDF)	1.0000
LIQUID	CARRIER FRACTIONAL RECOVERY (Rec)	0.2230
Batch Number	COUNT TIME IN MINUTES	100
98004967	COUNTING UNCERTAINTY (%)	3.05
Run	STANDARD BOOK NUMBER	38B57
0	STANDARD VALUE in μ Ci/mL	3.30E-04
Sample Prep		
NOT LISTED		
Sample #		
WL26390-STD	One mL of the solution is equivalent to 0.0305 grams.	
Instrument Code		
WC38931	Carrier Percent Recovery = $(wt2-wt1)*100/0.0305$	
Prepared By	I-129 μ Ci/mL = $(I-129 \text{ GEA})(DF)(DDF) / [(Rec)(SS)]$	
MCB		
Chemist		
SAC		
Analyst		
AKL		
Date Complete		
10/09/98		
Analyst Date		
10/09/98		
Analysis Time	Iodine 129 in μ Ci / mL	3.02E-04
01:45 PM	Carrier Percent Recovery	22.3%
Sample Point	Counting Uncertainty	3.1%
AW-101 LAW	Standard Recovery	91.4%

Analyst:	AKL	Date: 10/09/98
Signature of Chemist:	SAC	Date: 10/09/98

STANDARD.WB1 REV. 2.0

37810NML

WORKBOOK PAGE: BLANK2

I-129: LA-378-101 (D-0), 103 (D-2)**IODINE-129****BLANK**

Type	GROSS WEIGHT (wt2)	2.0446
BLNK	TARE WEIGHT (wt1)	2.0389
WorkList	MASS PRECIPITATE (net wt)	0.0057
26390	I-129 μ Ci / SAMPLE from GEA (I-129 GEA)	<6.9035E-6
Test Code	SAMPLE VOLUME in mL (SS)	0.5000
@I129-01	DILUTION FACTOR (DF)	1.0000
Matrix	DIGEST DILUTION FACTOR (DDF)	1.0000
LIQUID	CARRIER FRACTIONAL RECOVERY (Rec)	0.1869
Batch Number	COUNT TIME IN MINUTES	100
98004967	COUNTING UNCERTAINTY (%)	N/A
Rerun	DETECTION LIMIT in μ Ci / mL (DL)	7.3880E-05
0		
Sample Prep		
NOT LISTED		
Sample #		
WL26390-BLNK	One mL of the solution is equivalent to 0.0305 grams.	
Instrument Code		
WC38931	Carrier Percent Recovery = $(wt2-wt1)*100/0.0305$	
Prepared By	I-129 μ Ci/mL = $(I-129 \text{ GEA})(DF)(DDF) / [(Rec)(SS)]$	
MCB	Detection Limit = I-129 μ Ci/mL	
Chemist		
SAC		
Analyst		
AKL		
Date Complete		
10/09/98		
Analysis Date		
10/09/98		
Analysis Time	Iodine 129 in μ Ci / mL <	7.39E-05
01:45 PM	Carrier Percent Recovery	18.7%
Sample Point	Counting Uncertainty	0.0%
AW-101 LAW		

Analyst:	AKL	Date: 10/09/98
Signature of Chemist: <i>AKL</i>	SAC	Date: <i>12/26/98</i>

BLANK.WB1 REV 2.0

37810NML

I-129: LA-378-101 (D-0), 103 (D-2)

IODINE-129

		SAMPLE
Type	GROSS WEIGHT (wt2)	2.0419
SAMPLE	TARE WEIGHT (wt1)	2.0339
WorkList	MASS PRECIPITATE (net wt)	0.0080
26390	I-129 μ Ci / SAMPLE from GEA (I-129 GEA)	4.305E-5
Test Code	SAMPLE VOLUME in mL (SS)	0.5000
@129-01	DILUTION FACTOR (DF)	1.0000
Matrix	DIGEST DILUTION FACTOR (DDF)	1.0000
LIQUID	CARRIER FRACTIONAL RECOVERY (Rec)	0.2623
Batch Number	COUNT TIME IN MINUTES	100
98004967	COUNTING UNCERTAINTY (%)	3.87
ReRun	DETECTION LIMIT in μ Ci / mL (DL)	2.0244E-05
0		
Sample Prep		
NOT LISTED		
Sample #		
S98T002779	One mL of the solution is equivalent to 0.0305 grams.	
Instrument Code		
WC38931	Carrier Percent Recovery = $(wt2-wt1)*100/0.0305$	
Prepared By	I-129 μ Ci/mL = $(I-129 \text{ GEA})(DF)(DDF) / [(Rec)(SS)]$	
MCB	Detection Limit = $(2.655E-06)(DF)(DDF)/[(SS)(Rec)]$	
Chemist		
SAC		
Analyst		
AKL		
Date Complete		
10/09/98		
Analysis Date		
10/09/98		
Analysis Time	Iodine 129 in μ Ci / mL	3.28E-04
01:45 PM	Carrier Percent Recovery	26.2%
Sample Point	Counting Uncertainty	3.9%
AW-101 LAW		

Analyst:	AKL	Date: 10/09/98
Signature of Chemist:	SAC	Date: 12 Oct 98

SAMPLE.WB1 REV 2.

37810NML

WORKBOOK PAGE: DUP4

I-129: LA-378-101 (D-0), 103 (D-2)

IODINE-129

DUPLICATE

Type	GROSS WEIGHT	(wt2)	2.0469
DUP	TARE WEIGHT	(wt1)	2.0395
WorkList	MASS PRECIPITATE	(net wt)	0.0074
26390	I-129 μ Ci / SAMPLE from GEA	(I-129 GEA)	4.029E-5
Test Code	SAMPLE VOLUME in mL	(SS)	0.5000
@I129-01	DILUTION FACTOR	(DF)	1.0000
Matrix	DIGEST DILUTION FACTOR	(DDF)	1.0000
LIQUID	CARRIER FRACTIONAL RECOVERY	(Rec)	0.2426
Batch Number	COUNT TIME IN MINUTES		100
98004967	COUNTING UNCERTAINTY	(%)	4.02
ReRun	DETECTION LIMIT in μ Ci / mL	(DL)	2.1886E-05
0			
Sample Prep			
NOT LISTED			
Sample #			
S98T002779	One mL of the solution is equivalent to 0.0305 grams.		
Instrument Code			
WC38931	Carrier Percent Recovery = $(wt2-wt1)*100/0.0305$		
Prepared By	I-129 μ Ci/mL = $(I-129 \text{ GEA})(DF)(DDF) / [(Rec)(SS)]$		
MCB	Detection Limit = $(2.655E-06)(DF)(DDF)/[(SS)(Rec)]$		
Chemist			
SAC			
Analyst			
AKL			
Date Complete			
10/09/98			
Analysis Date			
10/09/98			
Analysis Time	Iodine 129 in μ Ci / mL		3.32E-04
01:45 PM	Carrier Percent Recovery		24.3%
Sample Point	Counting Uncertainty		4.0%
AW-101 LAW			

Analyst:	AKL	Date:	10/09/98
Signature of Chemist:	<i>SAC</i>	SAC	Date: 10/09/98

SAMPLE.WB1 REV.2.

37810NML

WORKBOOK PAGE: SAM5

I-129: LA-378-101 (D-0), 103 (D-2)**IODINE-129****SAMPLE**

Type	GROSS WEIGHT	(wt2)	2.0596
SAMPLE	TARE WEIGHT	(wt1)	2.0510
WorkList	MASS PRECIPITATE	(net wt)	0.0086
26390	I-129 μ Ci / SAMPLE from GEA	(I-129 GEA)	4.758E-5
Test Code	SAMPLE VOLUME in mL	(SS)	0.5000
@I129-01	DILUTION FACTOR	(DF)	1.0000
Matrix	DIGEST DILUTION FACTOR	(DDF)	1.0000
LIQUID	CARRIER FRACTIONAL RECOVERY	(Rec)	0.2820
Batch Number	COUNT TIME IN MINUTES		100
98004967	COUNTING UNCERTAINTY	(%)	3.62
Rerun	DETECTION LIMIT in μ Ci / mL	(DL)	1.8832E-05
0			
Sample Prop			
NOT LISTED			
Sample			
S98T002780	One mL of the solution is equivalent to 0.0305 grams.		
Instrument Code			
WC38931	Carrier Percent Recovery = $(wt2-wt1)*100/0.0305$		
Prepared By	I-129 μ Ci/mL = $(I-129 \text{ GEA})(DF)(DDF) / [(Rec)(SS)]$		
MCB	Detection Limit = $(2.655E-06)(DF)(DDF)/[(SS)(Rec)]$		
Chemist			
SAC			
Analyst			
AKL			
Data Complete			
10/09/98			
Analysis Date			
10/09/98			
Analysis Time	Iodine 129 in μ Ci / mL		3.37E-04
01:45 PM	Carrier Percent Recovery		28.2%
Sample Point	Counting Uncertainty		3.6%
AW-101 LAW			

Analyst:	AKL	Date:	10/09/98
Signature of Chemist:		SAC	Date:

SAMPLE.WB1 REV.2.

37810NML

WORKBOOK PAGE: DUP6

I-129: LA-378-101 (D-0), 103 (D-2)		IODINE-129	DUPLICATE
Type	GROSS WEIGHT	(wt2)	2.0499
DUP	TARE WEIGHT	(wt1)	2.0271
Work List	MASS PRECIPITATE	(net wt)	0.0228
26390	I-129 μ Ci / SAMPLE from GEA	(I-129 GEA)	1.159E-4
Test Code	SAMPLE VOLUME in mL	(SS)	0.5000
@I129-01	DILUTION FACTOR	(DF)	1.0000
Matrix	DIGEST DILUTION FACTOR	(DDF)	1.0000
LIQUID	CARRIER FRACTIONAL RECOVERY	(Rec)	0.7475
Batch Number	COUNT TIME IN MINUTES		100
98004967	COUNTING UNCERTAINTY	(%)	2.2
Rerun	DETECTION LIMIT in μ Ci / mL	(DL)	7.1033E-06
0			
Sample Prep			
NOT LISTED			
Sample #			
S98T002780	One mL of the solution is equivalent to 0.0305 grams.		
Instrument Code			
WC38931	Carrier Percent Recovery = $(wt2-wt1)*100/0.0305$		
Prepared By	I-129 μ Ci/mL = $(I-129 \text{ GEA})(DF)(DDF) / [(Rec)(SS)]$		
MCB	Detection Limit = $(2.655E-06)(DF)(DDF)/[(SS)(Rec)]$		
Chemist			
SAC			
Analyst			
AKL			
Date Complete			
10/09/98			
Analysis Date			
10/09/98			
Analysis Time	Iodine 129 in μ Ci / mL		3.10E-04
01:45 PM	Carrier Percent Recovery		74.8%
Sample Point	Counting Uncertainty		2.2%
AW-101 LAW			

Analyst:	AKL	Date:	10/09/98
Signature of Chemist:		SAC	Date:

SAMPLE.WB1 REV.2.

37810NML

WORKBOOK PAGE: SAM7

I-129: LA-378-101 (D-0), 103 (D-2)		IODINE-129	SAMPLE
Type	GROSS WEIGHT	(wt2)	2.0540
SAMPLE	TARE WEIGHT	(wt1)	2.0396
Work List	MASS PRECIPITATE	(net wt)	0.0144
26390	I-129 μ Ci / SAMPLE from GEA	(I-129 GEA)	7.422E-5
Test Code	SAMPLE VOLUME in mL	(SS)	0.5000
@I129-01	DILUTION FACTOR	(DF)	1.0000
Matrix	DIGEST DILUTION FACTOR	(DDF)	1.0000
LIQUID	CARRIER FRACTIONAL RECOVERY	(Rec)	0.4721
Batch Number	COUNT TIME IN MINUTES		100
98004967	COUNTING UNCERTAINTY	(%)	2.72
Rerun	DETECTION LIMIT in μ Ci / mL	(DL)	1.1247E-05
0			
Sample Prep			
NOT LISTED			
Sample #			
S98T002781	One mL of the solution is equivalent to 0.0305 grams.		
Instrument Code			
WC38931	Carrier Percent Recovery = $(wt2-wt1)*100/0.0305$		
Prepared By	I-129 μ Ci/mL = $(I-129 \text{ GEA})(DF)(DDF) / [(Rec)(SS)]$		
MCB	Detection Limit = $(2.655E-06)(DF)(DDF)/[(SS)(Rec)]$		
Chemist			
SAC			
Analyst			
AKL			
Date Complete			
10/09/98			
Analysis Date			
10/09/98			
Analysis Time	Iodine 129 in μ Ci / mL		3.14E-04
01:45 PM	Carrier Percent Recovery		47.2%
Sample Point	Counting Uncertainty		2.7%
AW-101 LAW			

Analyst:	AKL	Date:	10/09/98
Signature of Chemist: <i>SAC Cath</i>	SAC	Date:	10/09/98

SAMPLE.WB1 REV.2.

37810NML

WORKBOOK PAGE: DUP8

I-129: LA-378-101 (D-0), 103 (D-2)**IODINE-129****DUPLICATE**

Type	GROSS WEIGHT	(wt2)	2.0408
DUP	TARE WEIGHT	(wt1)	2.0281
Work List	MASS PRECIPITATE	(net wt)	0.0127
26390	I-129 μ Ci / SAMPLE from GEA	(I-129 GEA)	6.268E-5
Test Code	SAMPLE VOLUME in mL	(SS)	0.5000
@I129-01	DILUTION FACTOR	(DF)	1.0000
Matrix	DIGEST DILUTION FACTOR	(DDF)	1.0000
LIQUID	CARRIER FRACTIONAL RECOVERY	(Rec)	0.4164
Batch Number	COUNT TIME IN MINUTES		100
98004967	COUNTING UNCERTAINTY	(%)	3.17
Rerun	DETECTION LIMIT in μ Ci / mL	(DL)	1.2752E-05
0			
Sample Prep			
NOT LISTED			
Sample #			
S98T002781	One mL of the solution is equivalent to 0.0305 grams.		
Instrument Code			
WC38931	Carrier Percent Recovery = $(wt2-wt1)*100/0.0305$		
Prepared By	I-129 μ Ci/mL = $(I-129 \text{ GEA})(DF)(DDF) / [(Rec)(SS)]$		
MCB	Detection Limit = $(2.655E-06)(DF)(DDF)/[(SS)(Rec)]$		
Chemist			
SAC			
Analyst			
AKL			
Date Complete			
10/09/98			
Analysis Date			
10/09/98			
Analysis Time	Iodine 129 in μ Ci / mL		3.01E-04
01:45 PM	Carrier Percent Recovery		41.6%
Sample Point	Counting Uncertainty		3.2%
AW-101 LAW			

Analyst:	AKL	Date: 10/09/98
Signature of Chemist:	SAC	Date: 12 Oct 98

SAMPLE.WB1 REV.2.

37810NML

WORKBOOK PAGE: SAM9

I-129: LA-378-101 (D-0), 103 (D-2)**IODINE-129****SAMPLE**

Type	GROSS WEIGHT (wt2)	2.0572
SAMPLE	TARE WEIGHT (wt1)	2.0467
Work List	MASS PRECIPITATE (net wt)	0.0105
26390	I-129 μ Ci / SAMPLE from GEA (I-129 GEA)	<1.9861E-5
Test Code	SAMPLE VOLUME in mL (SS)	1.0000
@I129-01	DILUTION FACTOR (DF)	1.0000
Matrix	DIGEST DILUTION FACTOR (DDF)	1.0000
LIQUID	CARRIER FRACTIONAL RECOVERY (Rec)	0.3443
Batch Number	COUNT TIME IN MINUTES	100
98004967	COUNTING UNCERTAINTY (%)	N/A
Rerun	DETECTION LIMIT in μ Ci / mL (DL)	5.7691E-05
0		
Sample Prep		
NOT LISTED		
Sample #		
S98T002795	One mL of the solution is equivalent to 0.0305 grams.	
Instrument Code		
WC38931	Carrier Percent Recovery = (wt2-wt1)*100/0.0305	
Prepared By	I-129 μ Ci/mL = (I-129 GEA)(DF)(DDF) / [(Rec)(SS)]	
MCB	Detection Limit = I-129 μ Ci/mL	
Chemist		
SAC		
Analyst		
AKL		
Date Complete		
10/09/98		
Analysis Date		
10/09/98		
Analysis Time	Iodine 129 in μ Ci / mL <	5.77E-05
01:45 PM	Carrier Percent Recovery	34.4%
Sample Point	Counting Uncertainty	0.0%
AW-101 LAW		

Analyst:	AKL	Date: 10/09/98
Signature of Chemist:	SAC	Date: 12 Oct 98

SAMPLE.WB1 REV 2.

37810NML

WORKBOOK PAGE: DUP10

I-129: LA-378-101 (D-0), 103 (D-2)**IODINE-129****DUPLICATE**

Type	GROSS WEIGHT (wt2)	2.0379
DUP	TARE WEIGHT (wt1)	2.0289
Work List	MASS PRECIPITATE (net wt)	0.0090
26390	I-129 μ Ci / SAMPLE from GEA (I-129 GEA)	<7.0603E-6
Test Code	SAMPLE VOLUME in mL (SS)	1.0000
@I29-01	DILUTION FACTOR (DF)	1.0000
Matrix	DIGEST DILUTION FACTOR (DDF)	1.0000
LIQUID	CARRIER FRACTIONAL RECOVERY (Rec)	0.2951
Batch Number	COUNT TIME IN MINUTES	100
98004967	COUNTING UNCERTAINTY (%)	N/A
Re-run	DETECTION LIMIT in μ Ci / mL (DL)	2.3927E-05
0		
Sample Prep		
NOT LISTED		
Sample #		
S98T002795	One mL of the solution is equivalent to 0.0305 grams.	
Instrument Code		
WC38931	Carrier Percent Recovery = (wt2-wt1)*100/0.0305	
Prepared By	I-129 μ Ci/mL = (I-129 GEA)(DF)(DDF) / [(Rec)(SS)]	
MCB	Detection Limit = I-129 μ Ci/mL	
Chemist		
SAC		
Analyst		
AKL		
Date Complete		
10/09/98		
Analysis Date		
10/09/98		
Analysis Time	Iodine 129 in μ Ci / mL <	2.39E-05
01:45 PM	Carrier Percent Recovery	29.5%
Sample Point	Counting Uncertainty	0.0%
AW-101 LAW		

Analyst:	AKL	Date:	10/09/98
Signature of Chemist:	<i>AKL</i>	SAC	Date: 120 298

SAMPLE.WB1 REV.2.

37810NML

HNF-1652 REV.0

 * 222-S Laboratory Counting Room 8-OCT-1998 17:23:04.83 *

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

Worklist #: 26390
 Sample ID: WL26390-STD
 Sample Size: 1.00000E+00 ML
 Dilution Factor: 1.00000E+00

Removed by:

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

Detector ID: GEA6
 File Number: dka300:[spec.GEA6]6g6555.cnf
 Geometry: 1
 Count Time: 0 01:40:00.00 sec
 Real Time: 0 01:42:09.05 sec
 Dead Time: 2.1%

Verified by:

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

Sample Count Time: 8-OCT-1998 15:40:19.69
 Decayed to: 8-OCT-1998 15:40:19.69
 Standard Deviations: 2
 Analysis Library: I129
 Analyst: SZC
 Background Subtract: DKA300:[SPEC.GEA6]6GBACK

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

Date of last energy calibration: 1-OCT-1996 13:47:43.22
 Date of last efficiency calibration: 1-OCT-1996 13:49:27.17

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/SAMPLE
0	18.65	201	2.65	40.12	33	13	46.3			
3	28.95	5743	1.98	59.45	50	24	3.0	4.84E+00	I-129	6.724E-05
3	33.20	1451	2.05	67.42	50	24	8.7			
0	39.61	896	1.82	79.46	74	14	11.2		I-129	9.030E-05
0	542.91*	28	1.94	1024.15	1020	10	110.9			
8	701.81*	186	1.14	1322.41	1320	7	21.0	2.52E-01		
8	702.83*	186	1.14	1324.32	1320	7	29.9			

Sample ID : WL26390-STD

Acquisition date : 8-OCT-1998 15:40:19

Total number of lines in spectrum	7	
Number of unidentified lines	5	
Number of lines tentatively identified by NID	2	28.57%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/SAMPLE	Wtd Mean Decay Corr uCi/SAMPLE	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
I-129	5.73E+09D	1.00	6.724E-05	6.724E-05	0.205E-05	3.05	
Total Activity :			6.724E-05	6.724E-05			

Grand Total Activity : 6.724E-05

6.724E-05

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : WL26390-STD

PNF-1652 REV.0

Acquisition date : 8-OCT-1998 15:40:19

All nuclides have been identified. No MDA report generated.

 * 222-S Laboratory Counting Room 8-OCT-1998 22:07:55.52 *

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

Worklist #: 26390
 Sample ID: WL26390-BLK
 Sample Size: 1.00000E+00 ML
 Dilution Factor: 1.00000E+00

Removed by:

Raymond

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

Detector ID: GEA6
 File Number: dka300:[spec.GEA6]6g6556.cnf
 Geometry: 1
 Count Time: 0 01:40:00.00 sec
 Real Time: 0 01:42:56.75 sec
 Dead Time: 2.9%

Verified by:

St. Rutter 1/25/99

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

Sample Count Time: 8-OCT-1998 20:24:24.90
 Decayed to: 8-OCT-1998 20:24:24.90
 Standard Deviations: 2
 Analysis Library: I129
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA6]6GBACK

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

Date of last energy calibration: 1-OCT-1996 13:47:43.22
 Date of last efficiency calibration: 1-OCT-1996 13:49:27.17

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uci/SAMPLE
0	372.33	29	1.20	703.96	701	7 81.3			
8	701.81*	51	1.14	1322.40	1320	9 44.4	4.58E-01		
8	702.93*	49	1.14	1324.49	1320	9 62.8			

Summary of Nuclide Activity

Sample ID : WL26390-BLK

Acquisition date : 8-OCT-1998 20:24:24

Total number of lines in spectrum

3

Number of unidentified lines

3

Number of lines tentatively identified by NID

0

0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Sample ID : WL26390-BLK

Acquisition date : 8-OCT-1998 20:24:24

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/SAMPLE)
I-129	200.	39.60	6.9035E-06

 * 222-S Laboratory Counting Room 9-OCT-1998 00:40:54.54 *

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

Worklist #: 26390
 Sample ID: S98T002779-SAM
 Sample Size: 1.00000E+00 ML
 Dilution Factor: 1.00000E+00

Removed by:

Reynold

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

Detector ID: GEA6
 File Number: dka300:[spec.GEA6]6g6557.cnf
 Geometry: 1
 Count Time: 0 01:40:00.00 sec
 Real Time: 0 01:42:19.33 sec
 Dead Time: 2.3%

Verified by:

McCall 25/a 99

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

Sample Count Time: 8-OCT-1998 22:58:01.38
 Decayed to: 8-OCT-1998 22:58:01.38
 Standard Deviations: 2
 Analysis Library: I129
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA6]6GBACK

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

Date of last energy calibration: 1-OCT-1996 13:47:43.22
 Date of last efficiency calibration: 1-OCT-1996 13:49:27.17

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uci/SAMPLE
0	18.19	157	1.90	39.25	32	14	53.6			
3	28.93	3677	2.00	59.40	50	25	3.9	2.45E+00	I-129	4.305E-05
3	33.23	858	1.96	67.48	50	25	11.6			
0	39.72	615	1.62	79.65	74	13	13.5		I-129	6.198E-05
0	702.39*	69	2.09	1323.48	1320	7	49.2			

Summary of Nuclide Activity
Sample ID : S98T002779-SAM

HNF-1652 REV. 0

Page : 2

Acquisition date : 8-OCT-1998 22:58:01

Total number of lines in spectrum	5	
Number of unidentified lines	3	
Number of lines tentatively identified by NID	2	40.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/SAMPLE	Wtd Mean Decay Corr uCi/SAMPLE	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
I-129	5.73E+09D	1.00	4.305E-05	4.305E-05	0.167E-05	3.87	
Total Activity :			4.305E-05	4.305E-05			

Grand Total Activity : 4.305E-05 4.305E-05

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

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

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T002779-SAM

Acquisition date : 8-OCT-1998 22:58:01

All nuclides have been identified. No MDA report generated.

 * 222-S Laboratory Counting Room 9-OCT-1998 02:26:52.76

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

Worklist #: 26390
 Sample ID: S98T002779-DUP
 Sample Size: 1.00000E+00 ML
 Dilution Factor: 1.00000E+00

Removed by:

Raymond

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

Detector ID: GEA6
 File Number: dka300:[spec.GEA6]6g6558.cnf
 Geometry: 1
 Count Time: 0 01:40:00.00 sec
 Real Time: 0 01:42:25.35 sec
 Dead Time: 2.4%

Verified by:

McCarthy 25 Jan 99

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

Sample Count Time: 9-OCT-1998 00:43:53.40
 Decayed to: 9-OCT-1998 00:43:53.40
 Standard Deviations: 2
 Analysis Library: I129
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA6]6GBACK

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

Date of last energy calibration: 1-OCT-1996 13:47:43.22
 Date of last efficiency calibration: 1-OCT-1996 13:49:27.17

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uci/SAMPLE
1	28.91	3409	2.12	59.36	50	25	4.1	4.96E+00	I-129	3.992E-05
1	33.32	777	2.08	67.64	50	25	13.1			
0	39.71	491	1.69	79.63	75	13	16.5		I-129	4.946E-05
0	702.37*	127	1.67	1323.45	1320	7	28.5			

Summary of Nuclide Activity

Sample ID : S98T002779-DUP

Acquisition date : 9-OCT-1998 00:43:53

Total number of lines in spectrum	4	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	2	50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/SAMPLE	Wtd Mean Decay Corr uCi/SAMPLE	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
I-129	5.73E+09D	1.00	4.029E-05	4.029E-05	0.162E-05	4.02	
Total Activity :			4.029E-05	4.029E-05			

Grand Total Activity :	4.029E-05	4.029E-05
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Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T002779-DUP

Acquisition date : 9-OCT-1998 00:43:53

All nuclides have been identified. No MDA report generated.

 * 222-S Laboratory Counting Room 9-OCT-1998 04:20:19.94 *

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

Worklist #: 26390
 Sample ID: S98T002780-SAM
 Sample Size: 1.00000E+00 ML
 Dilution Factor: 1.00000E+00

Removed by:

Raymond

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

Detector ID: GEA6
 File Number: dka300:[spec.GEA6]6g6559.cnf
 Geometry: 1
 Count Time: 0 01:40:00.00 sec
 Real Time: 0 01:42:30.78 sec
 Dead Time: 2.5%

Verified by:

25 Jan 99

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

Sample Count Time: 9-OCT-1998 02:37:14.47
 Decayed to: 9-OCT-1998 02:37:14.47
 Standard Deviations: 2
 Analysis Library: I129
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA6]6GBACK

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

Date of last energy calibration: 1-OCT-1996 13:47:43.22
 Date of last efficiency calibration: 1-OCT-1996 13:49:27.17

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uci/SAMPLE
0	19.03	112	1.69	40.83	37	9	58.0			
1	28.91	4033	2.12	59.36	50	25	3.7	7.72E+00	I-129	4.722E-05
1	33.32	947	1.99	67.64	50	25	10.8			
0	39.63	549	1.45	79.48	74	11	14.8		I-129	5.531E-05
0	702.24*	151	1.92	1323.20	1320	7	25.6			

Summary of Nuclide Activity

Sample ID : S98T002780-SAM

Acquisition date : 9-OCT-1998 02:37:14

Total number of lines in spectrum	5
Number of unidentified lines	3
Number of lines tentatively identified by NID	2 40.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/SAMPLE	Wtd Mean Decay Corr uCi/SAMPLE	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
I-129	5.73E+09D	1.00	4.758E-05	4.758E-05	0.172E-05	3.62	
Total Activity :			4.758E-05	4.758E-05			

Grand Total Activity :	4.758E-05	4.758E-05
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Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T002780-SAM

Acquisition date : 9-OCT-1998 02:37:14

All nuclides have been identified. No MDA report generated.

This document was too large to scan as a single document; therefore, it has been divided into smaller sections.

Section 4 of 4

Document Information			
Document #	HNF-1652	Revision	0
Title	TANK 241AW101 LOW ACTIVITY WASTE ENVELOPE A ANALYTICAL RESULTS FOR THE FINAL REPORT		
Date	02/08/1999		
Originator	ESCH RA	Originator Co.	WMH
Recipient		Recipient Co.	
References	EDT-626134		
Keywords	CHARACTERIZATION,CORE,AW FARM		
Projects			
Other Information			

HNF-1652 REV.0

 * 222-S Laboratory Counting Room 9-OCT-1998 06:21:25.45 *

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

Worklist #: 26390
 Sample ID: S98T002780-DUP
 Sample Size: 1.00000E+00 ML
 Dilution Factor: 1.00000E+00

Removed by:

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

Detector ID: GEA6
 File Number: dka300:[spec.GEA6]6g6560.cnf
 Geometry: 1
 Count Time: 0 01:40:00.00 sec
 Real Time: 0 01:42:02.71 sec
 Dead Time: 2.0%

Verified by: 25 Jan 99

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

Sample Count Time: 9-OCT-1998 04:38:49.50
 Decayed to: 9-OCT-1998 04:38:49.50
 Standard Deviations: 2
 Analysis Library: I129
 Analyst: VR
 Background Subtract: DKA300:[SPEC.GEA6]6GBACK

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

Date of last energy calibration: 1-OCT-1996 13:47:43.22
 Date of last efficiency calibration: 1-OCT-1996 13:49:27.17

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/SAMPLE
0	18.60	360	2.67	40.02	33	15	34.1			
2	28.90	9901	2.08	59.35	50	35	2.2	9.69E+00	I-129	1.159E-04
2	33.27	2428	2.20	67.55	50	35	6.6			
2	39.52	1429	1.81	79.29	50	35	7.1		I-129	1.440E-04
0	702.44*	173	1.74	1323.59	1320	9	22.2			
0	968.54	16	1.44	1823.05	1821	6	74.1			

Summary of Nuclide Activity

Sample ID : S98T002780-DUP

Acquisition date : 9-OCT-1998 04:38:49

Total number of lines in spectrum	6	
Number of unidentified lines	4	
Number of lines tentatively identified by NID	2	33.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/SAMPLE	Wtd Mean Decay Corr uCi/SAMPLE	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
I-129	5.73E+09D	1.00	1.159E-04	1.159E-04	0.026E-04	2.20	
Total Activity :			1.159E-04	1.159E-04			

Grand Total Activity : 1.159E-04

1.159E-04

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

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

Minimum Detectable Activity Report
Sample ID : S98T002780-DUP

Page : 3
Acquisition date : 9-OCT-1998 04:38:49

All nuclides have been identified. No MDA report generated.

 * 222-S Laboratory Counting Room 9-OCT-1998 09:57:30.00 *

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

Worklist #: 26390
 Sample ID: S98T2781-SAM
 Sample Size: 1.00000E+00 ML
 Dilution Factor: 1.00000E+00

Removed by:

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

Detector ID: GEA6
 File Number: dka300:[spec.GEA6]6g6561.cnf
 Geometry: 1
 Count Time: 0 01:40:00.00 sec
 Real Time: 0 01:42:11.92 sec
 Dead Time: 2.2%

Verified by:

25 Jan 99

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

Sample Count Time: 9-OCT-1998 08:14:42.50
 Decayed to: 9-OCT-1998 08:14:42.50
 Standard Deviations: 2
 Analysis Library: I129
 Analyst: SZC
 Background Subtract: DKA300:[SPEC.GEA6]6GBACK

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

Date of last energy calibration: 1-OCT-1996 13:47:43.22
 Date of last efficiency calibration: 1-OCT-1996 13:49:27.17

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/SAMPLE
0	18.73	243	2.75	40.25	34	12	36.2			
1	28.89	6292	2.12	59.33	50	24	2.8	1.37E+01	I-129	7.367E-05
1	33.32	1524	1.99	67.65	50	24	7.6			
0	39.56	826	1.77	79.36	74	11	10.1		I-129	8.326E-05

Summary of Nuclide Activity

Sample ID : S98T2781-SAM

Acquisition date : 9-OCT-1998 08:14:42

Total number of lines in spectrum	4	
Number of unidentified lines	2	
Number of lines tentatively identified by NID	2	50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/SAMPLE	Wtd Mean Decay Corr uCi/SAMPLE	Decay Corr 2-Sigma Error	2-Sigma %Error	Sigma Flags
I-129	5.73E+09D	1.00	7.422E-05	7.422E-05	0.202E-05	2.72	
Total Activity :			7.422E-05	7.422E-05			

Grand Total Activity :	7.422E-05	7.422E-05
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Flags: "K" = Keyline not found
 "E" = Manually edited

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

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T2781-SAM

Acquisition date : 9-OCT-1998 08:14:42

All nuclides have been identified. No MDA report generated.

 * 222-S Laboratory Counting Room 9-OCT-1998 11:50:50.36 *

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

Worklist #: 26390
 Sample ID: S98T2781-DUP
 Sample Size: 1.00000E+00 ML
 Dilution Factor: 1.00000E+00

Removed by:

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

Detector ID: GEA6
 File Number: dka300:[spec.GEA6]6g6562.cnf
 Geometry: 1
 Count Time: 0 01:40:00.00 sec
 Real Time: 0 01:42:15.66 sec
 Dead Time: 2.2%

Verified by:

25 Jan 99

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

Sample Count Time: 9-OCT-1998 10:07:59.66
 Decayed to: 9-OCT-1998 10:07:59.66
 Standard Deviations: 2
 Analysis Library: I129
 Analyst: MB
 Background Subtract: DKA300:[SPEC.GEA6]6GBACK

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

Date of last energy calibration: 1-OCT-1996 13:47:43.22
 Date of last efficiency calibration: 1-OCT-1996 13:49:27.17

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw %Err	Fit	Nuclides	Activity uci/SAMPLE
0	18.27	201	2.18	39.39	34	12 41.1			
2	28.91	5353	2.06	59.36	50	25 3.2	4.88E+00	I-129	6.268E-05
2	33.29	1364	2.02	67.59	50	25 8.3			
0	39.59	809	1.67	79.42	74	12 10.8		I-129	8.152E-05
0	702.34*	79	2.06	1323.40	1320	7 42.6			
0	1030.36	9	1.35	1939.08	1937	5 94.3			

Summary of Nuclide Activity

Sample ID : S98T2781-DUP

Acquisition date : 9-OCT-1998 10:07:59

Total number of lines in spectrum	6
Number of unidentified lines	4
Number of lines tentatively identified by NID	2 33.33%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/SAMPLE	Wtd Mean Decay Corr uCi/SAMPLE	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
I-129	5.73E+09D	1.00	6.268E-05	6.268E-05	0.199E-05	3.17	
Total Activity :			6.268E-05	6.268E-05			

Grand Total Activity :	6.268E-05	6.268E-05
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Flags: "K" = Keyline not found
 "E" = Manually edited

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

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T2781-DUP

Acquisition date : 9-OCT-1998 10:07:59

All nuclides have been identified. No MDA report generated.

 * 222-S Laboratory Counting Room 9-OCT-1998 13:37:37.27
 *

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

Worklist #: 26390
 Sample ID: S98T2795-SAM
 Sample Size: 1.00000E+00 ML
 Dilution Factor: 1.00000E+00

Removed by:

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

Detector ID: GEA6
 File Number: dka300:[spec.GEA6]6g6563.cnf
 Geometry: 1
 Count Time: 0 01:40:00.00 sec
 Real Time: 0 01:43:39.47 sec
 Dead Time: 3.5%

Verified by:

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

Sample Count Time: 9-OCT-1998 11:53:23.05
 Decayed to: 9-OCT-1998 11:53:23.05
 Standard Deviations: 2
 Analysis Library: I129
 Analyst: SZC
 Background Subtract: DKA300:[SPEC.GEA6]6GBACK

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

Date of last energy calibration: 1-OCT-1996 13:47:43.22
 Date of last efficiency calibration: 1-OCT-1996 13:49:27.17

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/SAMPLE
0	7.68	118784	2.23	19.52	16	11	1.0			
8	702.74*	42	1.14	1324.14	1320	8	66.6	4.12E+00		

Summary of Nuclide Activity

Sample ID : S98T279-SAM

Acquisition date : 9-OCT-1998 11:53:23

Total number of lines in spectrum	2
Number of unidentified lines	2
Number of lines tentatively identified by NID	0
	0.00%

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted

"A" = Nuclide specific abn. limit

Sample ID : S98T279-SAM

Acquisition date : 9-OCT-1998 11:53:23

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/SAMPLE)
I-129	1749.	39.60	1.9861E-05

HNF-1652 REV. 0

 * 222-S Laboratory Counting Room 9-OCT-1998 15:32:52.10 *

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

Worklist #: 26390
 Sample ID: S98T2795-DUP
 Sample Size: 1.00000E+00 ML
 Dilution Factor: 1.00000E+00

Removed by:

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

Detector ID: GEA6
 File Number: dka300:[spec.GEA6]6g6564.cnf
 Geometry: 1
 Count Time: 0 01:40:00.00 sec
 Real Time: 0 01:43:01.68 sec
 Dead Time: 2.9%

Verified by:

25 Jan 99

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

Sample Count Time: 9-OCT-1998 13:49:13.00
 Decayed to: 9-OCT-1998 13:49:13.00
 Standard Deviations: 2
 Analysis Library: I129
 Analyst: SZC
 Background Subtract: DKA300:[SPEC.GEA6]6GBACK

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

Date of last energy calibration: 1-OCT-1996 13:47:43.22
 Date of last efficiency calibration: 1-OCT-1996 13:49:27.17

Post-NID Peak Search Report

***** No peaks found *****

Summary of Nuclide Activity

Page : 2

Sample ID : S98T2795-DUP

Acquisition date : 9-OCT-1998 13:49:13

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found

"M" = Manually accepted

"E" = Manually edited

"A" = Nuclide specific abn. limit

Minimum Detectable Activity Report

Page : 3

Sample ID : S98T2795-DUP

Acquisition date : 9-OCT-1998 13:49:13

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/SAMPLE)
I-129	210.	39.60	7.0603E-06

LABCORE Completed Worklist Report for Worklist# 26386

Analyst: scl

Instrument: LSC03

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW101 LAW, @C14-01 STD: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@C14-01 C14-01	LIQUID	1.57E-03	1.38E-3	87.898 % Recovery	
1 STD	0	@C14-01 C14-01B	LIQUID	1	5.30E-01	0.530 % Ct. Error	
2 BLNK	0	@C14-01 C14-01	LIQUID	1	3.91E-5	1.910e-005 uCi/mL	
2 BLNK	0	@C14-01 C14-01B	LIQUID	1	4.29E+00	4.290 uCi/mL	
3 SAMPLE	S98T002779	0 @C14-01 C14-01	LIQUID	N/A	3.04E-04	2.01e-005 uCi/mL	
3 SAMPLE	S98T002779	0 @C14-01 C14-01B	LIQUID	N/A	2.87E+00	1.00e-006 % Ct. Error	
4 DUP	S98T002779	0 @C14-01 C14-01	LIQUID	3.04E-4	3.10E-4	1.954 RPD	
4 DUP	S98T002779	0 @C14-01 C14-01B	LIQUID	1	2.85E+00	2.850 % Ct. Error	
5 SPK	S98T002779	0 @C14-01 C14-01	LIQUID	1.57E-03	1.29E-03	82.166 % Recovery	
6 SAMPLE	S98T002780	0 @C14-01 C14-01	LIQUID	N/A	3.02E-04	2.01e-005 uCi/mL	
6 SAMPLE	S98T002780	0 @C14-01 C14-01B	LIQUID	N/A	2.88E+00	1.00e-006 % Ct. Error	
7 DUP	S98T002780	0 @C14-01 C14-01	LIQUID	3.02E-4	3.15E-4	4.214 RPD	
7 DUP	S98T002780	0 @C14-01 C14-01B	LIQUID	1	2.84E+00	2.840 % Ct. Error	
8 SAMPLE	S98T002781	0 @C14-01 C14-01	LIQUID	N/A	2.99E-04	2.01e-005 uCi/mL	
8 SAMPLE	S98T002781	0 @C14-01 C14-01B	LIQUID	N/A	2.89E+00	1.00e-006 % Ct. Error	
9 DUP	S98T002781	0 @C14-01 C14-01	LIQUID	2.99E-4	2.77E-4	7.639 RPD	
9 DUP	S98T002781	0 @C14-01 C14-01B	LIQUID	1	2.96E+00	2.960 % Ct. Error	
10 SAMPLE	S98T002794	0 @C14-01 C14-01	LIQUID	N/A	< 2.00E-06	2.00e-006 uCi/mL	
10 SAMPLE	S98T002794	0 @C14-01 C14-01B	LIQUID	N/A	4.82E+00	1.00e-006 % Ct. Error	
11 DUP	S98T002794	0 @C14-01 C14-01	LIQUID	<2.00E-6	<2.01E-6	RPD	
11 DUP	S98T002794	0 @C14-01 C14-01B	LIQUID	1	4.83E+00	4.830 % Ct. Error	

Final page for worklist# 26386

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

2/ Oct 98
Date

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

LABCORE Data Entry Template for Worklist# 26386

Analyst: S.L Instrument: LSC00 0500 Book# 37857

Method: LA-348-104 Rev/Mod C-2

Worklist Comment: AW101 LAW, @C14-01 STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@C14-01	LIQUID		
2 BLNK			@C14-01	LIQUID		
3 SAMPLE	S98T002779 0		@C14-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: C14-01			, C14-01E		
4 DUP	S98T002779 0		@C14-01	LIQUID		
5 SPK	S98T002779 0		@C14-01	LIQUID		
6 SAMPLE	S98T002780 0		@C14-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: C14-01			, C14-01E		
7 DUP	S98T002780 0		@C14-01	LIQUID		
8 SAMPLE	S98T002781 0		@C14-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: C14-01			, C14-01E		
9 DUP	S98T002781 0		@C14-01	LIQUID		
10 SAMPLE	S98T002794 0		@C14-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: C14-01			, C14-01E		
11 DUP	S98T002794 0		@C14-01	LIQUID		

Final page for worklist # 26386

Sue La 10-18-98
Analyst Signature Date

new light 10/20/98
Analyst Signature Date
McBrown 10/20/98

Data Entry Comments:

C-14 : LA-348-104 (C-2)**Carbon-14**

		STD
Type	Disintegrations per Minute from Counter (dpm)	3062.34
STD	Sample Volume in mL (SS)	1
Work List	Dilution Factor (DF)	1
26386	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	37.34
@C14-01	Background Count Time in Minutes (BKG time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9169
LIQUID	% Counting Uncertainty (from LSC)	0.53
Batch Number	Standard Book Number	37B57
98004964	Standard Value in $\mu\text{Ci/mL}$	1.57E-03
Rerun	Detection Limit (dpm) (Ld)	4.45
0	Critical Level (Lc)	2.01
Sample Prep		
N/A	Critical Level (Lc) = $2.33 \left[\text{Square Root of (BKG cpm / BKG time)} \right]$	
Sample Number	Detection Limit (Ld) = $\left[(2.72 / \text{BKG time}) + (2) (Lc) \right] / \text{EFF}$	
WL26386-STD	C-14 $\mu\text{Ci/L}$ = $(\text{dpm}) (1000\text{mL/L}) (DF) (DDF) / [(SS) (2220000\text{dpm}/\mu\text{Ci})]$	
Instrument Code	$\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
WC51586	Detection Limit ($\mu\text{Ci/mL}$) = $(Ld)(DF)(DDF) / [(SS) (2220000 \text{ dpm}/\mu\text{Ci})]$	
Prepared By		
NEW		
Chemist	% Recovery	87.87%
SAC		
Analyst	C-14 Concentration in $\mu\text{Ci/L}$	1.38E+00
SCL		
Date Complete	C-14 Concentration in $\mu\text{Ci/mL}$	1.38E-03
10/20/98	Detection Limit in $\mu\text{Ci/mL}$	2.01E-06
Analysis Date		
10/18/98		
Analysis Time		
11:30 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/20/98
Signature of Chemist:		SAC	Date: 21 Oct 98
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C-14 : LA-348-104 (C-2)**Carbon-14**

		BLNK
Type	Disintegrations per Minute from Counter (dpm)	8.69
BLNK	Sample Volume in mL (SS)	0.1
Work List	Dilution Factor (DF)	1
26386	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	37.34
@C14-01	Background Count Time in Minutes (BKG time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9233
LIQUID	% Counting Uncertainty (from LSC)	4.29
Batch Number	Detection Limit (dpm) (Ld)	4.42
98004964	Critical Level (Lc)	2.01
Rerun		
0	Critical Level (Lc) = $2.33 \left[\text{Square Root of (BKG cpm / BKG time)} \right]$	
Sample Prep	Detection Limit (Ld) = $\left[(2.72 / \text{BKG time}) + (2) (Lc) \right] / \text{EFF}$	
N/A	C-14 $\mu\text{Ci/L}$ = $(\text{dpm}) (1000\text{mL/L}) (DF) (DDF) / [(SS) (2220000\text{dpm}/\mu\text{Ci})]$	
Sample Number	$\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
WL26386-BLK	Detection Limit ($\mu\text{Ci/mL}$) = $(Ld)(DF)(DDF) / [(SS)(2220000 \text{ dpm}/\mu\text{Ci})]$	
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst	C-14 Concentration in $\mu\text{Ci/L}$ 3.91E-02	
SCL		
Date Complete	C-14 Concentration in $\mu\text{Ci/mL}$ 3.91E-05	
10/20/98	Detection Limit in $\mu\text{Ci/mL}$ 1.99E-05	
Analysis Date		
10/18/98		
Analysis Time		
11:30 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date: 10/20/98
Signature of Chemist: <i>CRV</i>	SAC	Date: 2/2/98

C-14 : LA-348-104 (C-2)**Carbon-14**

		SAMPLE
Type	Disintegrations per Minute from Counter (dpm)	67.46
SAMPLE	Sample Volume in mL (SS)	0.1
WorkList	Dilution Factor (DF)	1
26386	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	37.34
@C14-01	Background Count Time in Minutes (BKG time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9159
LIQUID	% Counting Uncertainty (from LSC)	2.87
Batch Number	Detection Limit (dpm) (Ld)	4.46
98004964	Critical Level (Lc)	2.01
Rerun		
0	Critical Level (Lc) = $2.33 \left[\text{Square Root of (BKG cpm / BKG time)} \right]$	
Sample Prep	Detection Limit (Ld) = $\left[(2.72 / \text{BKG time}) + (2) (Lc) \right] / \text{EFF}$	
N/A	C-14 $\mu\text{Ci/L}$ = $(\text{dpm}) (1000\text{mL/L}) (DF) (DDF) / [(SS) (2220000\text{dpm}/\mu\text{Ci})]$	
Sample Number	$\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
S98T002779	Detection Limit ($\mu\text{Ci/mL}$) = $(Ld)(DF)(DDF) / [(SS)(2220000 \text{ dpm}/\mu\text{Ci})]$	
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst	C-14 Concentration in $\mu\text{Ci/L}$	3.04E-01
SCL		
Date Complete	C-14 Concentration in $\mu\text{Ci/mL}$	3.04E-04
10/20/98	Detection Limit in $\mu\text{Ci/mL}$	2.01E-05
Analysis Date		
10/18/98		
Analysis Time		
11:30 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/20/98
Signature of Chemist:	<i>SA Cotton</i>	SAC	Date: <i>21 Oct 98</i>

WORKBOOK PAGE: DUP4

C-14 : LA-348-104 (C-2)**Carbon-14****DUP**

Type	Disintegrations per Minute from Counter (dpm)	68.76
DUP	Sample Volume in mL (SS)	0.1
WorkList	Dilution Factor (DF)	1
26386	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	37.34
@C14-01	Background Count Time in Minutes (BKG time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9166
LIQUID	% Counting Uncertainty (from LSC)	2.85
Batch Number	Detection Limit (dpm) (Ld)	4.45
98004964	Critical Level (Lc)	2.01
Rerun		
0	Critical Level (Lc) = $2.33 \left[\text{Square Root of (BKG cpm / BKG time)} \right]$	
Sample Prep	Detection Limit (Ld) = $\left[(2.72 / \text{BKG time}) + (2) (Lc) \right] / \text{EFF}$	
N/A	C-14 $\mu\text{Ci/L}$ = $(\text{dpm}) (1000\text{mL/L}) (DF) (DDF) / [(SS) (2220000\text{dpm}/\mu\text{Ci})]$	
Sample Number	$\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
S98T002779	Detection Limit ($\mu\text{Ci/mL}$) = $(Ld)(DF)(DDF) / [(SS)(2220000 \text{ dpm}/\mu\text{Ci})]$	
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst	C-14 Concentration in $\mu\text{Ci/L}$	3.10E-01
SCL		
Date Complete	C-14 Concentration in $\mu\text{Ci/mL}$	3.10E-04
10/20/98	Detection Limit in $\mu\text{Ci/mL}$	2.01E-05
Analysis Date		
10/18/98		
Analysis Time		
11:30 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/20/98
Signature of Chemist:	SAC	Date:	2/10/98

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WORKBOOK PAGE: SPIKE5

C-14 : LA-348-104 (C-2) CARBON-14 SPIKE

		SPIKE
Type	dpm of Sample from Counter (dpm1)	67.46
SPK	dpm of Sample + Spike from Counter (dpm2)	2940.57
Worklist	Volume of Sample in Sample Vial in mL (SS)	0.100
26386	Volume of Sample in Sample + Spike Vial in mL (SPK'D SS)	0.100
Test Code	Background Count Rate in cpm (BKG cpm)	37.34
@C14-01	Background Count Time in Minutes (BKG time)	50
Matrix	Volume of Spike in mL (SPK vol)	1.000
LIQUID	Sample Dilution Factor (SAM DF)	1
Batch Number	Spike Dilution Factor (SPK DF)	1
98004964	Book Number of Spike (Spk BN)	37B57
Rerun	Spike Value in $\mu\text{Ci/mL}$ (SPK val)	1.57E-03
0	Instrument Fractional Efficiency (EFF)	0.9154
Sample Prep	Detection Limit (Ld)	4.45
N/A	C-14 $\mu\text{Ci/mL}$ in Sample (Rsam)	3.04E-04
Sample Number	C-14 $\mu\text{Ci/mL}$ in Sample + Spike (Rs+s)	1.32E-02
S98T002779		
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist	Critical Level (Lc) = $2.33 [\text{Square Root of (BKG cpm / BKG Time)}]$	
SAC	Detection Limit (Ld) = $[(2.72 / \text{BKG Time}) + (2) (Lc)] / \text{EFF}$	
Analyst	C-14 $\mu\text{Ci/mL}$ in Sample = $(\text{dpm1}) (\text{SAM DF}) / [(\text{SS}) (2220000 \text{dpm}/\mu\text{Ci})]$	
SCL	C-14 $\mu\text{Ci/mL}$ in S+S = $(\text{dpm2}) (\text{SAM DF}) / [(\text{SS}) (2220000 \text{dpm}/\mu\text{Ci})]$	
Date Complete	QC Actual in $\mu\text{Ci/mL}$ = SPK val	
10/20/98	QC Found = $(\text{Rs}+\text{s} - \text{Rsam}) ((\text{SPK DF}/\text{SPK vol}) / (\text{SAM DF}/\text{SPK'D SS}))$	
Analysis Date	Percent Spike Recovery = $\text{QC Found} / \text{QC Actual} * 100$	
10/18/98		
Analysis Time		
11:30 AM	QC Actual in $\mu\text{Ci/mL}$ =	1.57E-03
Sample Point	QC Found in $\mu\text{Ci/mL}$ =	1.29E-03
AW-101 LAW	Percent Spike Recovery =	82.4%

Analyst:	SCL	Date: 10/20/98
Signature of Chemist:	SAC	Date: 2/10/98

WORKBOOK PAGE: SAM6

C-14 : LA-348-104 (C-2)**Carbon-14**

		SAMPLE
Type	Disintegrations per Minute from Counter (dpm)	67.12
SAMPLE	Sample Volume in mL (SS)	0.1
Worklist	Dilution Factor (DF)	1
26386	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	37.34
@C14-01	Background Count Time in Minutes (BKG time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9166
LIQUID	% Counting Uncertainty (from LSC)	2.88
Batch Number	Detection Limit (dpm) (Ld)	4.45
98004964	Critical Level (Lc)	2.01
Rerun		
0	Critical Level (Lc) = $2.33 \left[\text{Square Root of (BKG cpm / BKG time)} \right]$	
Sample Prep	Detection Limit (Ld) = $\left[(2.72 / \text{BKG time}) + (2) (Lc) \right] / \text{EFF}$	
N/A	C-14 $\mu\text{Ci/L}$ = $(\text{dpm}) (1000\text{mL/L}) (DF) (DDF) / [(SS) (2220000\text{dpm}/\mu\text{Ci})]$	
Sample Number	$\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
S98T002780	Detection Limit ($\mu\text{Ci/mL}$) = $(Ld)(DF)(DDF) / [(SS)(2220000 \text{ dpm}/\mu\text{Ci})]$	
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst	C-14 Concentration in $\mu\text{Ci/L}$	3.02E-01
SCL		
Date Complete	C-14 Concentration in $\mu\text{Ci/mL}$	3.02E-04
10/20/98	Detection Limit in $\mu\text{Ci/mL}$	2.01E-05
Analysis Date		
10/18/98		
Analysis Time		
11:30 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/20/98
Signature of Chemist:		SAC	Date: 10/20/98

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C-14 : LA-348-104 (C-2)**Carbon-14**

		DUP
Type	Disintegrations per Minute from Counter (dpm)	70.04
DUP	Sample Volume in mL (SS)	0.1
WorkList	Dilution Factor (DF)	1
26386	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	37.34
@C14-01	Background Count Time in Minutes (BKG time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9172
LIQUID	% Counting Uncertainty (from LSC)	2.84
Batch Number	Detection Limit (dpm) (Ld)	4.45
98004964	Critical Level (Lc)	2.01
Rerun		
0	Critical Level (Lc) = $2.33 \left[\text{Square Root of (BKG cpm / BKG time)} \right]$	
Sample Prep	Detection Limit (Ld) = $\left[(2.72 / \text{BKG time}) + (2) (Lc) \right] / \text{EFF}$	
N/A	C-14 $\mu\text{Ci/L}$ = $(\text{dpm}) (1000\text{mL/L}) (DF) (DDF) / [(SS) (2220000\text{dpm}/\mu\text{Ci})]$	
Sample Number	$\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
S98T002780	Detection Limit ($\mu\text{Ci/mL}$) = $(Ld)(DF)(DDF) / [(SS)(2220000 \text{ dpm}/\mu\text{Ci})]$	
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst	C-14 Concentration in $\mu\text{Ci/L}$	3.15E-01
SCL		
Date Complete	C-14 Concentration in $\mu\text{Ci/mL}$	3.15E-04
10/20/98	Detection Limit in $\mu\text{Ci/mL}$	2.00E-05
Analysis Date		
10/18/98		
Analysis Time		
11:30 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/20/98
Signature of Chemist:	<i>[Signature]</i>	SAC	Date: 21 Oct 98

C-14 : LA-348-104 (C-2)**Carbon-14**

		SAMPLE
Type	Disintegrations per Minute from Counter (dpm)	66.38
SAMPLE	Sample Volume in mL (SS)	0.1
Work List	Dilution Factor (DF)	1
26386	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	37.34
@C14-01	Background Count Time in Minutes (BKG time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9145
LIQUID	% Counting Uncertainty (from LSC)	2.89
Batch Number	Detection Limit (dpm) (Ld)	4.46
98004964	Critical Level (Lc)	2.01
Rerun		
0	Critical Level (Lc) = $2.33 \left[\text{Square Root of (BKG cpm / BKG time)} \right]$	
Sample Prep	Detection Limit (Ld) = $\left[(2.72 / \text{BKG time}) + (2) (Lc) \right] / \text{EFF}$	
N/A	C-14 $\mu\text{Ci/L}$ = $(\text{dpm}) (1000\text{mL/L}) (DF) (DDF) / [(SS) (2220000\text{dpm}/\mu\text{Ci})]$	
Sample Number	$\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
S98T002781	Detection Limit ($\mu\text{Ci/mL}$) = $(Ld)(DF)(DDF) / [(SS)(2220000 \text{ dpm}/\mu\text{Ci})]$	
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst	C-14 Concentration in $\mu\text{Ci/L}$	2.99E-01
SCL		
Date Complete	C-14 Concentration in $\mu\text{Ci/mL}$	2.99E-04
10/20/98	Detection Limit in $\mu\text{Ci/mL}$	2.01E-05
Analysis Date		
10/18/98		
Analysis Time		
11:30 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/20/98
Signature of Chemist:	SAC	Date:	20/2/98

C-14 : LA-348-104 (C-2)**Carbon-14**

	DUP
Type	Disintegrations per Minute from Counter (dpm)
DUP	61.44
WorkList	Sample Volume in mL (SS)
26386	Dilution Factor (DF)
Test Code	Digest Dilution Factor (DDF)
@C14-01	Background Count Rate in Counts per Minute (BKG cpm)
Matrix	Background Count Time in Minutes (BKG time)
LIQUID	Instrument Fractional Efficiency (EFF)
Batch Number	% Counting Uncertainty (from LSC)
98004964	Detection Limit (dpm) (Ld)
Rerun	Critical Level (Lc)
0	Critical Level (Lc) = 2.33 [Square Root of (BKG cpm / BKG time)]
Sample Prep	Detection Limit (Ld) = [(2.72 / BKG time) + (2) (Lc)] / EFF
N/A	C-14 $\mu\text{Ci/L}$ = (dpm) (1000mL/L) (DF) (DDF) / [(SS) (2220000dpm/ μCi)]
Sample Number	$\mu\text{Ci/mL}$ = $\mu\text{Ci/L}$ / 1000mL/L
S98T002781	Detection Limit ($\mu\text{Ci/mL}$) = (Ld)(DF)(DDF) / [(SS)(2220000 dpm/ μCi)]
Instrument Code	
WC51586	
Prepared By	
NEW	
Chemist	
SAC	
Analyst	C-14 Concentration in $\mu\text{Ci/L}$ 2.77E-01
SCL	
Date Complete	C-14 Concentration in $\mu\text{Ci/mL}$ 2.77E-04
10/20/98	Detection Limit in $\mu\text{Ci/mL}$ 2.01E-05
Analysis Date	
10/18/98	
Analysis Time	
11:30 AM	
Sample Point	
AW-101 LAW	

Analyst:	SCL	Date:	10/20/98
Signature of Chemist:	SAC	Date:	10/20/98

WORKBOOK PAGE: SAM10

C-14 : LA-348-104 (C-2)**Carbon-14**

		SAMPLE
Type	Disintegrations per Minute from Counter (dpm)	0.75
SAMPLE	Sample Volume in mL (SS)	1
Work List	Dilution Factor (DF)	1
26386	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	37.34
@C14-01	Background Count Time in Minutes (BKG time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9186
LIQUID	% Counting Uncertainty (from LSC)	4.82
Batch Number	Detection Limit (dpm) (Ld)	4.44
98004964	Critical Level (Lc)	2.01
Rerun		
0	Critical Level (Lc) = $2.33 \left[\text{Square Root of (BKG cpm / BKG time)} \right]$	
Sample Prep	Detection Limit (Ld) = $\left[(2.72 / \text{BKG time}) + (2) (Lc) \right] / \text{EFF}$	
N/A	C-14 $\mu\text{Ci/L}$ = $(\text{dpm}) (1000\text{mL/L}) (DF) (DDF) / [(SS) (2220000\text{dpm}/\mu\text{Ci})]$	
Sample Number	$\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
S98T002794	Detection Limit ($\mu\text{Ci/mL}$) = $(Ld)(DF)(DDF) / [(SS)(2220000\text{dpm}/\mu\text{Ci})]$	
Instrument Code	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).	
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst	C-14 Concentration in $\mu\text{Ci/L}$ < 2.00E-03	
SCL		
Date Complete	C-14 Concentration in $\mu\text{Ci/mL}$ < 2.00E-06	
10/20/98	Detection Limit in $\mu\text{Ci/mL}$ 2.00E-06	
Analysis Date		
10/18/98		
Analysis Time		
11:30 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/20/98
Signature of Chemist:	SAC	Date:	2/20/98

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348104ML

1027

C-14 : LA-348-104 (C-2)**Carbon-14**

		DUP
Type	Disintegrations per Minute from Counter (dpm)	0.78
DUP	Sample Volume in mL (SS)	1
Work List	Dilution Factor (DF)	1
26386	Digest Dilution Factor (DDF)	1
Test Code	Background Count Rate in Counts per Minute (BKG cpm)	37.34
@C14-01	Background Count Time in Minutes (BKG time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9168
LIQUID	% Counting Uncertainty (from LSC)	4.83
Batch Number	Detection Limit (dpm) (Ld)	4.45
98004964	Critical Level (Lc)	2.01
Rerun		
0	Critical Level (Lc) = $2.33 \left[\text{Square Root of (BKG cpm / BKG time)} \right]$	
Sample Prep	Detection Limit (Ld) = $\left[(2.72 / \text{BKG time}) + (2) (Lc) \right] / \text{EFF}$	
N/A	C-14 $\mu\text{Ci/L}$ = $(\text{dpm}) (1000\text{mL/L}) (DF) (DDF) / [(SS) (2220000\text{dpm}/\mu\text{Ci})]$	
Sample Number	$\mu\text{Ci/mL}$ = $\mu\text{Ci/L} / 1000\text{mL/L}$	
S98T002794	Detection Limit ($\mu\text{Ci/mL}$) = $(Ld)(DF)(DDF) / [(SS)(2220000\text{ dpm}/\mu\text{Ci})]$	
Instrument Code	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).	
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst	C-14 Concentration in $\mu\text{Ci/L}$ < 2.01E-03	
SCL		
Date Complete	C-14 Concentration in $\mu\text{Ci/mL}$ < 2.01E-06	
10/20/98	Detection Limit in $\mu\text{Ci/mL}$ 2.01E-06	
Analysis Date		
10/18/98		
Analysis Time		
11:30 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/20/98
Signature of Chemist:	SAC	Date:	21 Oct 98

LABCORE Completed Worklist Report for Worklist# 26393

Analyst: rro

Instrument: AB12

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW101 LAW, @SR90-01 SS by Ludlum. Std: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	SR90-01 SR90-01 LIQUID		1.05E-03	1.07E-3	101.905 % Recovery	
1 STD	0	SR90-01 SR90-01C LIQUID		100	7.99E+01	79.900 % Recovery	
1 STD	0	SR90-01 SR90-01E LIQUID		1.00	2.07E+00	2.070 % Ct. Err	
2 BLNK	0	SR90-01 SR90-01 LIQUID		1	2.53E-4	2.530e-004 uCi/mL	
2 BLNK	0	SR90-01 SR90-01C LIQUID		100	8.35E+01	83.500 % Recovery	
2 BLNK	0	SR90-01 SR90-01E LIQUID		1.00	1.17E+02	117.000 uCi/mL	
3 BLNK/BKG	0	SR90-01 SR90-01 LIQUID		1	1.69E+00	1.690 BLNK/BKG	
4 SAMPLE	S98T002779 0	SR90-01 SR90-01 LIQUID		N/A	5.13E-01	3.62e-004 uCi/mL	
4 SAMPLE	S98T002779 0	SR90-01 SR90-01C LIQUID		N/A	8.57E+01	% Recovery	
4 SAMPLE	S98T002779 0	SR90-01 SR90-01E LIQUID		N/A	1.30E+00	% Ct. Error	
5 DUP	S98T002779 0	SR90-01 SR90-01 LIQUID		5.13E-1	5.02E-1	2.167 RPD	
5 DUP	S98T002779 0	SR90-01 SR90-01C LIQUID		100	8.43E+01	84.300 % Recovery	
5 DUP	S98T002779 0	SR90-01 SR90-01E LIQUID		1.00	1.32E+00	1.320 % Cnt Err	
6 SAMPLE	S98T002780 0	SR90-01 SR90-01 LIQUID		N/A	4.98E-01	3.91e-004 uCi/mL	
6 SAMPLE	S98T002780 0	SR90-01 SR90-01C LIQUID		N/A	7.69E+01	% Recovery	
6 SAMPLE	S98T002780 0	SR90-01 SR90-01E LIQUID		N/A	1.37E+00	% Ct. Error	
7 DUP	S98T002780 0	SR90-01 SR90-01 LIQUID		4.98E-1	5.00E-1	0.401 RPD	
7 DUP	S98T002780 0	SR90-01 SR90-01C LIQUID		100	8.15E+01	81.500 % Recovery	
7 DUP	S98T002780 0	SR90-01 SR90-01E LIQUID		1.00	1.34E+00	1.340 % Cnt Err	
8 SAMPLE	S98T002781 0	SR90-01 SR90-01 LIQUID		N/A	4.91E-01	3.68e-004 uCi/mL	
8 SAMPLE	S98T002781 0	SR90-01 SR90-01C LIQUID		N/A	8.27E+01	% Recovery	
8 SAMPLE	S98T002781 0	SR90-01 SR90-01E LIQUID		N/A	1.34E+00	% Ct. Error	
9 DUP	S98T002781 0	SR90-01 SR90-01 LIQUID		4.91E-1	4.90E-1	0.204 RPD	
9 DUP	S98T002781 0	SR90-01 SR90-01C LIQUID		100	8.32E+01	83.200 % Recovery	
9 DUP	S98T002781 0	SR90-01 SR90-01E LIQUID		1.00	1.33E+00	1.330 % Cnt Err	
10 SAMPLE	S98T002795 0	SR90-01 SR90-01 LIQUID		N/A	2.97E-04	1.90e-006 uCi/mL	
10 SAMPLE	S98T002795 0	SR90-01 SR90-01C LIQUID		N/A	7.89E+01	% Recovery	
10 SAMPLE	S98T002795 0	SR90-01 SR90-01E LIQUID		N/A	3.93E+00	% Ct. Error	
11 DUP	S98T002795 0	SR90-01 SR90-01 LIQUID		2.97E-4	2.92E-4	1.698 RPD	
11 DUP	S98T002795 0	SR90-01 SR90-01C LIQUID		100	8.14E+01	81.400 % Recovery	
11 DUP	S98T002795 0	SR90-01 SR90-01E LIQUID		1.00	3.90E+00	3.900 % Cnt Err	

Final page for worklist# 26393

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# 26393

Analyst: RRO Instrument: AB00 12 Book# 28B57

Method: LA-220-101 Rev/Mod E-3

Worklist Comment: AW101 LAW, @SR90-01 SS by Ludlum. Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@SR90-01	LIQUID		
2 BLNK			@SR90-01	LIQUID		
3 BLNK/BKG			@SR90-01	LIQUID		
4 SAMPLE	S98T002779 0		@SR90-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 DUP	S98T002779 0		@SR90-01	LIQUID		
6 SAMPLE	S98T002780 0		@SR90-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7 DUP	S98T002780 0		@SR90-01	LIQUID		
8 SAMPLE	S98T002781 0		@SR90-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
9 DUP	S98T002781 0		@SR90-01	LIQUID		
10 SAMPLE	S98T002795 0		@SR90-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
11 DUP	S98T002795 0		@SR90-01	LIQUID		

Final page for worklist # 26393

Robin R O'Dell 10-7-98
Analyst Signature Date

Em Bach 10-8-98
Analyst Signature Date
28B57 - 10/1/98

Data Entry Comments:

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5) LIQUIDS

				STANDARD
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000
STD	TOTAL COUNTS (TC)	9023	GROSS WEIGHT (W2)	7.8649
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.7850
26393	BACKGROUND in cpm (BKG)	1.6	NET WEIGHT (W3)	0.0799
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	11.52
@SR90-01	DILUTION FACTOR (DF)	1		
Matrix	DIGEST DILUTION FACTOR DDF	1		
LIQUID	SAMPLE COUNT RATE (Rs)	900.70	Sr-90 EFFICIENCY FACTO (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	0.76	Y-90 EFFICIENCY FACTOR (C2)	0.4660
98004970	TIME OF SEPARATION (ST)	13:45	Rmax	N/A
ReRun	DATE OF SEPARATION (SD)	10/07/98	DETECTION LIMIT (Ld)	1.61
0	TIME OF COUNT (TOC)	01:16	Sr-89/90 CONC. in µCi/L	1.0747E+00
Sample Prep	DATE OF COUNT (DOC)	10/08/98		
N/A	STANDARD BOOK #	28B57		
Sample #	STANDARD VALUE in µCi/mL	1.0456E-03		
WL26393-STD				
Instrument Code				
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)			
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0			
EMB	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)			
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))			
SAC	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)			
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100			
RRO	NOTE: Expected weight = CVA * 0.1			
Data Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
10/08/98	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
Analysis Date	Sr-89/90 CONCENTRATION			DETECTION LEVEL 1.93E-06 µCi/L
10/07/98	1.07E-03 µCi/mL			
Analysis Time	RELATIVE COUNTING ERROR			
11:30 PM	2.1%			
Sample Point				
AW-101-LAW	PERCENT CARRIER RECOVERY			79.9%

Analyst:	RRO	Date:	08-Oct-98
Signature of Chemist:	SAC	Date:	8 Oct 98

STANDARD.WB1 REV 2.0

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WORKBOOK PAGE: BLANK2

LA-220-101 / E-3 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					BLNK	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLNK	TOTAL COUNTS (TC)		27	GROSS WEIGHT	(W2)	7.8755
Work List	COUNT TIME in MINUTES (CT)		10	TARE WEIGHT	(W1)	7.7920
26393	BACKGROUND in cpm (BKG)		1.6	NET WEIGHT	(W3)	0.0835
Test Code	SAMPLE VOLUME in mL (SS)		0.500	DELTA TIME (HOURS)	(DT)	11.68
@SR90-01	DILUTION FACTOR (DF)		101			
Matrix	DIGEST DILUTION FACTOR (DDF)		1			
LIQUID	SAMPLE COUNT RATE (Rs)		1.10	SR-90 EFFICIENCY FACTOR (C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)		0.76	Y-90 EFFICIENCY FACTOR (C2)		0.4660
98004970	TIME OF SEPARATION (ST)		13:45	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)		10/07/98	DETECTION LIMIT (Ld)		1.61
0	TIME OF COUNT (TOC)		01:26	Sr-89/90 CONC in µCi/L 2.5330E-01		
Sample Prep	DATE OF COUNT (DOC)		10/08/98			
N/A						
Sample #						
WL26393-BLNK						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/L Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*DF*DDF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
EMB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
10/08/98						
Analysis Date						DETECTION LEVEL
10/07/98	Sr-89/90 CONCENTRATION	2.53E-04				
Analysis Time	RELATIVE COUNTING ERROR	116.8%				
11:30 PM					3.72E-04	
Sample Point						µCi/mL
AW-101-LAW	PERCENT CARRIER RECOVERY	83.5%				

Analyst:	RRO	Date:	08-Oct-98
Signature of Chemist:	SAC	Date:	8 Oct 98

BLANK.WB1 REV 2.0

22010NML

HNF-1652 REV. 0

WORKBOOK PAGE: SAM4

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	22920	GROSS WEIGHT	(W2)	7.8765
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.7908
26393	BACKGROUND in cpm	(BKG)	1.6	NET WEIGHT	(W3)	0.0857
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	11.85
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	2290.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.76	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98004970	TIME OF SEPARATION	(ST)	13:45	Rmax		N/A
ReRun	DATE OF SEPARATION	(SD)	10/07/98	DETECTION LIMIT	(Ld)	1.61
0	TIME OF COUNT	(TOC)	01:36	Sr-89/90 CONC in µCi/L		5.1308E+02
Sample Prep	DATE OF COUNT	(DOC)	10/08/98			
N/A						
Sample #						
S98T002779						
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)					
EMB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
10/08/98						
Analysis Date						DETECTION LEVEL 3.62E-04 µCi/mL
10/07/98	Sr-89/90 CONCENTRATION	5.13E-01	µCi/mL			
Analysis Time						
11:30 PM	RELATIVE COUNTING ERROR	1.3%				
Sample Point						
AW-101-LAW	PERCENT CARRIER RECOVERY	85.7%				

Analyst:	RRO	Date:	08-Oct-98
Signature of Chemist:	SAC	Date:	8 Oct 98
SAMPLE.WB1 REV 2.0 22010NML			

WORKBOOK PAGE: DUP5

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS (TC)	22100		GROSS WEIGHT	(W2)	7.8961
WorkList	COUNT TIME in MINUTES (CT)	10		TARE WEIGHT	(W1)	7.8118
26393	BACKGROUND in cpm (BKG)	1.6		NET WEIGHT	(W3)	0.0843
TestCode	SAMPLE VOLUME in mL (SS)	0.500		DELTA TIME (HOURS) (DT)		12.05
@SR90-01	DILUTION FACTOR (DF)	101				
Matrix	DIGEST DILUTION FACTOR (DDF)	1				
LIQUID	SAMPLE COUNT RATE (Rs)	2208.40		SR-90 EFFICIENCY FACTOR (C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)	0.76		Y-90 EFFICIENCY FACTOR (C2)		0.4660
98004970	TIME OF SEPARATION (ST)	13:45		Rmax		N/A
Rerun	DATE OF SEPARATION (SD)	10/07/98		DETECTION LIMIT (Ld)		1.61
0	TIME OF COUNT (TOC)	01:48		Sr-89/90 CONC in µCi/L 5.0199E+02		
Sample Prep	DATE OF COUNT (DOC)	10/08/98				
N/A						
Sample #						
S98T002779						
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)					
EMB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
10/08/98						
Analysis Date						DETECTION LEVEL 3.67E-04 µCi/mL
10/07/98	Sr-89/90 CONCENTRATION	5.02E-01		µCi/mL		
Analysis Time						
11:30 PM	RELATIVE COUNTING ERROR	1.3%				
Sample Point						
AW-101-LAW	PERCENT CARRIER RECOVERY	84.3%				

Analyst:	RRO	Date:	08-Oct-98
Signature of Chemist:	SAC	Date:	80 Oct 98
SAMPLE.WB1 REV 2.0 22010NML			

HNF-1652 REV. 0

WORKBOOK PAGE: SAM6

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS (TC)	20580		GROSS WEIGHT	(W2)	7.8612
Work List	COUNT TIME in MINUTES (CT)	10		TARE WEIGHT	(W1)	7.7823
26393	BACKGROUND in cpm (BKG)	1.6		NET WEIGHT	(W3)	0.0789
Test Code	SAMPLE VOLUME in mL (SS)	0.500		DELTA TIME (HOURS)	(DT)	12.47
@SR90-01	DILUTION FACTOR (DF)	101				
Matrix	DIGEST DILUTION FACTOR (DDF)	1				
LIQUID	SAMPLE COUNT RATE (Rs)	2056.40		SR-90 EFFICIENCY FACTOR (C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)	0.76		Y-90 EFFICIENCY FACTOR (C2)		0.4660
98004970	TIME OF SEPARATION (ST)	13:50		Rmax		N/A
Re-run	DATE OF SEPARATION (SD)	10/07/98		DETECTION LIMIT (Ld)		1.61
0	TIME OF COUNT (TOC)	02:18		Sr-89/90 CONC in µCi/L		4.9751E+02
Sample Prep	DATE OF COUNT (DOC)	10/08/98				
N/A						
Sample #						
S98T002780						
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)					
EMB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
10/08/98						
Analysis Date						DETECTION LEVEL
10/07/98	Sr-89/90 CONCENTRATION	4.98E-01		µCi/mL		
Analysis Time						
11:30 PM	RELATIVE COUNTING ERROR	1.4%			3.91E-04	
Sample Point						µCi/mL
AW-101-LAW	PERCENT CARRIER RECOVERY	78.9%				

Analyst:	RRO	Date:	08-Oct-98
Signature of Chemist:	SAC	Date:	8 Oct 98

SAMPLE.WB1 REV 2.0

22010NML

1035

WORKBOOK PAGE: DUP7

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	21569	GROSS WEIGHT	(W2)	7.8547
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.7732
26393	BACKGROUND in cpm	(BKG)	1.6	NET WEIGHT	(W3)	0.0815
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	13.50
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	2155.30	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.76	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98004970	TIME OF SEPARATION	(ST)	13:50	Rmax		N/A
Re-run	DATE OF SEPARATION	(SD)	10/07/98	DETECTION LIMIT	(Ld)	1.61
0	TIME OF COUNT	(TOC)	03:20	Sr-89/90 CONC in µCi/L 5.0006E+02		
Sample Prep	DATE OF COUNT	(DOC)	10/08/98			
N/A						
Sample #						
S98T002780						
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					
EMB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
10/08/98						
Analysis Date						DETECTION LEVEL 3.75E-04 µCi/mL
10/07/98	Sr-89/90 CONCENTRATION	5.00E-01	µCi/mL			
Analysis Time						
11:30 PM	RELATIVE COUNTING ERROR	1.3%				
Sample Point						
AW-101-LAW	PERCENT CARRIER RECOVERY	81.5%				

Analyst:	RRO	Date:	08-Oct-98
Signature of Chemist:	SAC	Date:	8 Oct 98
SAMPLE.WB1 REV 2.0 22010NML			

WORKBOOK PAGE: SAM8

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	21541	GROSS WEIGHT	(W2)	7.8750
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.7923
26393	BACKGROUND in cpm	(BKG)	1.6	NET WEIGHT	(W3)	0.0827
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	13.77
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	2152.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.76	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98004970	TIME OF SEPARATION	(ST)	13:50	Rmax		N/A
Re-run	DATE OF SEPARATION	(SD)	10/07/98	DETECTION LIMIT	(Ld)	1.61
0	TIME OF COUNT	(TOC)	03:36	Sr-89/90 CONC in $\mu\text{Ci/L}$		4.9098E+02
Sample Prep	DATE OF COUNT	(DOC)	10/08/98			
N/A						
Sample #						
S98T002781						
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)					
EMB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
10/08/98						
Analysis Date						DETECTION LEVEL 3.68E-04 $\mu\text{Ci/mL}$
10/07/98	Sr-89/90 CONCENTRATION	4.91E-01	$\mu\text{Ci/mL}$			
Analysis Time	RELATIVE COUNTING ERROR	1.3%				
11:30 PM						
Sample Point						
AW-101-LAW	PERCENT CARRIER RECOVERY	82.7%				

Analyst:	RRO	Date:	08-Oct-98
Signature of Chemist:	SAC	Date:	8 Oct 98
SAMPLE.WB1 REV 2.0		22010NML	

HNF-1652 REV. 0

WORKBOOK PAGE: DUP9

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					DUP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	21705	GROSS WEIGHT	(W2)	7.8770
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.7938
26393	BACKGROUND in cpm	(BKG)	1.6	NET WEIGHT	(W3)	0.0832
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	14.25
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	2168.90	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.76	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98004970	TIME OF SEPARATION	(ST)	13:50	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	10/07/98	DETECTION LIMIT	(Ld)	1.61
0	TIME OF COUNT	(TOC)	04:05	Sr-89/90 CONC in $\mu\text{Ci/L}$ 4.8962E+02		
Sample Prep	DATE OF COUNT	(DOC)	10/08/98			
N/A						
Sample #						
S98T002781						
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)					
EMB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
10/08/98						
Analysis Date						DETECTION LEVEL 3.65E-04 $\mu\text{Ci/mL}$
10/07/98	Sr-89/90 CONCENTRATION	4.90E-01	$\mu\text{Ci/mL}$			
Analysis Time						
11:30 PM	RELATIVE COUNTING ERROR	1.3%				
Sample Point						
AW-101-LAW	PERCENT CARRIER RECOVERY	83.2%				

Analyst:	RRO	Date:	08-Oct-98
Signature of Chemist:	SAC	Date:	8 Oct 98
SAMPLE:WB1 REV 2.0 22010NML			

1038

WORKBOOK PAGE: SAM10

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	2541	GROSS WEIGHT	(W2)	7.8616
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.7827
26393	BACKGROUND in cpm	(BKG)	1.6	NET WEIGHT	(W3)	0.0789
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	14.35
@SR90-01	DILUTION FACTOR	DF	1			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	252.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.76	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98004970	TIME OF SEPARATION	(ST)	13:55	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	10/07/98	DETECTION LIMIT	(Ld)	1.61
0	TIME OF COUNT	(TOC)	04:16	Sr-89/90 CONC in $\mu\text{Ci/L}$		2.9730E-01
Sample Prep	DATE OF COUNT	(DOC)	10/08/98			
N/A						
Sample #						
S98T002795						
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)					
EMB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
10/08/98						
Analysis Date						DETECTION LEVEL 1.90E-06 $\mu\text{Ci/mL}$
10/07/98	Sr-89/90 CONCENTRATION	2.97E-04	$\mu\text{Ci/mL}$			
Analysis Time	RELATIVE COUNTING ERROR	3.9%				
11:30 PM						
Sample Point						
AW-101-LAW	PERCENT CARRIER RECOVERY	78.9%				

Analyst:	RRO	Date:	08-Oct-98
Signature of Chemist:	SAC	Date:	8 Oct 98
SAMPLE.WB1 REV 2.0			
22010NML			

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Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				DUP	
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS (TC)	2577	GROSS WEIGHT	(W2)	7.8706
Worklist	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT	(W1)	7.7892
26393	BACKGROUND in cpm (BKG)	1.6	NET WEIGHT	(W3)	0.0814
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)		14.58
@SR90-01	DILUTION FACTOR (DF)	1			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	256.10	Sr-90 EFFICIENCY FACTOR (C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)	0.76	Y-90 EFFICIENCY FACTOR (C2)		0.4660
98004970	TIME OF SEPARATION (ST)	13:55	Rmax		N/A
Rerun	DATE OF SEPARATION (SD)	10/07/98	DETECTION LIMIT (Ld)		1.61
0	TIME OF COUNT (TOC)	04:30	Sr-89/90 CONC in $\mu\text{Ci/L}$		2.9167E-01
Sample Prep	DATE OF COUNT (DOC)	10/08/98			
N/A					
Sample #					
S98T002795					
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	$RS * DF * DDF / ((C1 + C2 * (1 - e^{-(\ln(\text{natural log } 2) / 64.2 * DT)))) * SS * REC * 2220000$				
EMB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery $(W2 - W1) / (CVA * 0.1000)$				
Chemist	Relative Counting Error = (The Square Root of $(TC + BKG * CT) / (TC - BKG * CT) * 1.96$				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
RRO	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = $((DOC - SD) * 24) + (TOC - ST) / 100$				
10/08/98					
Analysis Date					DETECTION LEVEL 1.84E-06 $\mu\text{Ci/mL}$
10/07/98	Sr-89/90 CONCENTRATION	2.92E-04	$\mu\text{Ci/mL}$		
Analysis time	RELATIVE COUNTING ERROR	3.9%			
11:30 PM					
Sample Point					
AW-101-LAW	PERCENT CARRIER RECOVERY	81.4%			

Analyst:	RRO	Date:	08-Oct-98
Signature of Chemist:	SAC	Date:	8 Oct 98
SAMPLE.VB1 REV 2.0 22010NML			

LABCORE Completed Worklist Report for Worklist# 26524

Analyst: crj

Instrument: AB12

Book#: _____

Method: LA-220-101 Rev/Mod _____

Worklist Comment: AW101 LAW, @SR90-01 SS by Ludlum. STD: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@SR90-01 SR90-01 SOLID		1.05E-03	1.03E-3	103.510 % Recovery	
1 STD	0		@SR90-01 SR90-01C SOLID		100	8.80E+01	88.000 % Recovery	
1 STD	0		@SR90-01 SR90-01E SOLID		1.00	2.03E+00	2.030 % Ct. Error	
2 BLNK-PREP	0		@SR90-01 SR90-01 SOLID		1	4.58E-2	0.046 uCi/g	
2 BLNK-PREP	0		@SR90-01 SR90-01C SOLID		100	8.76E+01	87.600 % Recovery	
2 BLNK-PREP	0		@SR90-01 SR90-01E SOLID		1.00	2.88E+01	28.800 uCi/g	
3 BLNK/BKG	0		@SR90-01 SR90-01 SOLID		1	4.74E+00	4.740 BLNK/BKG	
4 SAMPLE	S98T002752	0 F	@SR90-01 SR90-01 SOLID	N/A		3.50E+01	1.18E-002 uCi/g	
4 SAMPLE	S98T002752	0 F	@SR90-01 SR90-01C SOLID	N/A		8.36E+01	% Recovery	
4 SAMPLE	S98T002752	0 F	@SR90-01 SR90-01E SOLID	N/A		8.61E-01	% Ct. Error	
5 SAMPLE	S98T002753	0 F	@SR90-01 SR90-01 SOLID	N/A		3.68E+01	1.12E-002 uCi/g	
5 SAMPLE	S98T002753	0 F	@SR90-01 SR90-01C SOLID	N/A		8.95E+01	% Recovery	
5 SAMPLE	S98T002753	0 F	@SR90-01 SR90-01E SOLID	N/A		8.16E-01	% Ct. Error	
6 SAMPLE	S98T002754	0 F	@SR90-01 SR90-01 SOLID	N/A		4.15E+01	1.18E-002 uCi/g	
6 SAMPLE	S98T002754	0 F	@SR90-01 SR90-01C SOLID	N/A		8.44E+01	% Recovery	
6 SAMPLE	S98T002754	0 F	@SR90-01 SR90-01E SOLID	N/A		7.90E-01	% Ct. Error	

Final page for worklist# 26524

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

LABCORE Data Entry Template for Worklist# 26524

Analyst: CRJ Instrument: AB00 #12 Book# 28B57

Method: LA-220-101 Rev/Mod E-3

Worklist Comment: AW101 LAW, @SR90-01 SS by Ludlum. STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@SR90-01	SOLID		
2 BLNK-PREP			@SR90-01	SOLID		
3 BLNK/BKG			@SR90-01	SOLID		
4 SAMPLE	S98T002752	0 F	@SR90-01	SOLID	98000261	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 SAMPLE	S98T002753	0 F	@SR90-01	SOLID	98000261	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
6 SAMPLE	S98T002754	0 F	@SR90-01	SOLID	98000261	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						

Final page for worklist # 26524

Analyst Signature

Date

10/13/98

Analyst Signature

Date

James Z. Gibson 10/14/98
H. L. L. 10/14/98

Data Entry Comments:

HNF-1652 REV. 0

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5) LIQUIDS

				STANDARD			
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000			
STD	TOTAL COUNTS (TC)	9373	GROSS WEIGHT (W2)	7.8810			
WorkList	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.7930			
26524	BACKGROUND in cpm (BKG)	1.9	NET WEIGHT (W3)	0.0880			
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	4.22			
@SR90-01	DILUTION FACTOR (DF)	1					
Matrix	DIGEST DILUTION FACTOR DDF	1					
LIQUID	SAMPLE COUNT RATE (Rs)	935.40	SR-90 EFFICIENCY FACTO (C1)	0.4180			
Batch Number	CRITICAL LEVEL (Lc)	0.83	Y-90 EFFICIENCY FACTOR (C2)	0.4660			
98005112	TIME OF SEPARATION (ST)	10:12	Rmax	N/A			
Retun	DATE OF SEPARATION (SD)	10/13/98	DETECTION LIMIT (Ld)	1.75			
0	TIME OF COUNT (TOC)	14:25	Sr-89/90 CONC. in µCi/L	1.0913E+00			
Sample Prep	DATE OF COUNT (DOC)	10/13/98					
N/A	STANDARD BOOK #	28B57					
Sample #	STANDARD VALUE in µCi/mL	1.0452E-03					
WL26524							
Instrument Code							
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0						
SZC	$RS * DF * DDF * 1000 / ((C1 + C2 * (1 - e \text{ to the power of } ((- \text{natural log } 2) / 64.2 * DT))) * SS * REC * 22200000)$						
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
SAC	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT) * 1.96)						
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
CRJ	NOTE: Expected weight = CVA * 0.1						
Date/Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
10/14/98	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
Analysis Date	Sr-89/90 CONCENTRATION			1.09E-03 µCi/mL			
10/13/98	DETECTION LEVEL 2.04E-06 µCi/L						
Analysis Time					RELATIVE COUNTING ERROR		
02:07 PM					2.0%		
Sample Point	PERCENT CARRIER RECOVERY			88.0%			
AW-101 LAW							

Analyst:	CRJ	Date:	14-Oct-98
Signature of Chemist:	SAC	Date:	14 Oct 98

STANDARD.WB1 REV 2.0

22010NML

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HNF-1652 REV. 0

WORKBOOK PAGE: BLANK2

LA-220-101 / E-3 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLNK-PREP	TOTAL COUNTS	(TC)	90	GROSS WEIGHT	(W2)	7.8679
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.7803
26524	BACKGROUND in cpm	(BKG)	1.9	NET WEIGHT	(W3)	0.0876
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	4.48
@SR90-01	DILUTION FACTOR	DF	11			
Matrix	DIGEST FACTOR (g/L)	(D g/L)	1.9912			
SOLID	SAMPLE COUNT RATE	(Rs)	7.10	Sr-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.83	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98005112	TIME OF SEPARATION	(ST)	10:12	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	10/13/98	DETECTION LIMIT	(Ld)	1.75
0	TIME OF COUNT	(TOC)	14:41	Sr-89/90 CONC in µCi/g		4.5836E-02
Sample/Prep	DATE OF COUNT	(DOC)	10/13/98			
N/A						
Sample #						
WL26524						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*(Dg/L)*REC*2220000)					
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
10/14/98						
Analysis Date						
10/13/98	Sr-89/90 CONCENTRATION		4.58E-02	µCi/g	DETECTION LEVEL	
Analysis Time						
02:07 PM	RELATIVE COUNTING ERROR		28.8%	1.13E-02		
Sample Point						
AW-101 LAW	PERCENT CARRIER RECOVERY		87.6%	µCi/g		

Analyst:	CRJ	Date:	14-Oct-98
Signature of Chemist:	SAC	Date:	14 Oct 98

BLANK.WB1 REV 2.0

22010NML

HNF-1652 REV. 0

WORKBOOK PAGE: SAM4

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	51839	GROSS WEIGHT	(W2)	7.8633
Worklist	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.7797
26524	BACKGROUND in cpm	(BKG)	1.9	NET WEIGHT	(W3)	0.0836
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	4.65
@SR90-01	DILUTION FACTOR	DF	11			
Matrix	DIGEST FACTOR (g/L)	(D g/L)	1.9912			
SOLID	SAMPLE COUNT RATE	(Rs)	5182.00	Sr-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.83	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98005112	TIME OF SEPARATION	(ST)	10:16	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	10/13/98	DETECTION LIMIT	(Ld)	1.75
0	TIME OF COUNT	(TOC)	14:55	Sr-89/90 CONC in µCi/g		3.4991E+01
Sample/Prep	DATE OF COUNT	(DOC)	10/13/98			
FUSION01						
Sample #						
S98T002752						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*(Dg/L)*REC*2220000)					
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
SAC	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
CRJ	NOTE: Expected weight = CVA * 0.1					
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
10/14/98	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
Analysis Date	Sr-89/90 CONCENTRATION					DETECTION LEVEL 1.18E-02 µCi/g
10/13/98	3.50E+01 µCi/g					
Analysis Time	RELATIVE COUNTING ERROR					
02:07 PM	0.9%					
Sample Point						
AW-101 LAW	PERCENT CARRIER RECOVERY					83.6%

Analyst:	CRJ	Date:	14-Oct-98
Signature of Chemist:	SAC	Date:	14 Oct 98
SAMPLE:WB1 REV 2.0 22010NML			

WORKBOOK PAGE: SAM5

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS	(TC)	57697	GROSS WEIGHT	(W2) 7.8800
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.7905
26524	BACKGROUND in cpm	(BKG)	1.9	NET WEIGHT	(W3) 0.0895
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 5.08
@SR90-01	DILUTION FACTOR	DF	11		
Matrix	DIGEST FACTOR (g/L)	(D g/L)	1.9572		
SOLID	SAMPLE COUNT RATE	(Rs)	5767.80	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
BATCH Number	CRITICAL LEVEL	(Lc)	0.83	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
98005112	TIME OF SEPARATION	(ST)	10:12	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	10/13/98	DETECTION LIMIT	(Ld) 1.75
0	TIME OF COUNT	(TOC)	15:17	Sr-89/90 CONC in µCi/g	3.6838E+01
Sample Prep	DATE OF COUNT	(DOC)	10/13/98		
FUSION01					
Sample #					
S98T002753					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*(Dg/L)*REC*2220000				
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date/Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
10/14/98					
Analysis Date					DETECTION LEVEL 1.12E-02 µCi/g
10/13/98	Sr-89/90 CONCENTRATION	3.68E+01	µCi/g		
Analysis Time					
02:07 PM	RELATIVE COUNTING ERROR	0.8%			
Sample Point					
AW-101 LAW	PERCENT CARRIER RECOVERY	89.5%			

Analyst:	CRJ	Date:	14-Oct-98
Signature of Chemist:	SAC	Date:	14 Oct 1998
SAMPLE.WB1 REV 2.0		22010NML	

HNF-1652 REV. 0

WORKBOOK PAGE: SAM6

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	61551	GROSS WEIGHT	(W2)	7.8765
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.7921
26524	BACKGROUND in cpm	(BKG)	1.9	NET WEIGHT	(W3)	0.0844
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	5.32
@SR90-01	DILUTION FACTOR	DF	11			
Matrix	DIGEST FACTOR (g/L)	(D g/L)	1.9588			
SOLID	SAMPLE COUNT RATE	(Rs)	6153.20	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.83	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98005112	TIME OF SEPARATION	(ST)	10:16	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	10/13/98	DETECTION LIMIT	(Ld)	1.75
0	TIME OF COUNT	(TOC)	15:35	Sr-89/90 CONC in µCi/g		4.1536E+01
Sample Prep	DATE OF COUNT	(DOC)	10/13/98			
FUSION01						
Sample #						
S98T002754						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*(Dg/L)*REC*2220000)					
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
CRJ	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
10/14/98						
Analysis Date						DETECTION LEVEL 1.18E-02 µCi/g
10/13/98	Sr-89/90 CONCENTRATION	4.15E+01			µCi/g	
Analysis Time						
02:07 PM	RELATIVE COUNTING ERROR	0.8%				
Sample Point						
AW-101 LAW	PERCENT CARRIER RECOVERY	84.4%				

Analyst:	CRJ	Date:	14 Oct 98
Signature of Chemist:	SAC	Date:	14 Oct 98
SAMPLE:WB1 REV 2.0		22010NML	

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LABCORE Completed Worklist Report for Worklist# 26669

Analyst: crj Instrument: AB12 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW101 LAW, @SR90-01 SS by Ludlum. Std: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@SR90-01 SR90-01 SOLID		1.04E-03	1.10E-3	105.769 % Recovery	
1 STD	0	@SR90-01 SR90-01C SOLID		100	9.00E+01	90.000 % Recovery	
1 STD	0	@SR90-01 SR90-01E SOLID		1.00	2.01E+00	2.010 % Ct. Error	
2 BLNK-PREP	0	@SR90-01 SR90-01 SOLID		1	1.75E-1	0.175 uCi/g	
2 BLNK-PREP	0	@SR90-01 SR90-01C SOLID		100	9.03E+01	90.300 % Recovery	
2 BLNK-PREP	0	@SR90-01 SR90-01E SOLID		1.00	2.80E+01	28.000 % Recovery	
3 BLNK/BKG	0	@SR90-01 SR90-01 SOLID		1	4.62E+00	4.620 BLNK/BKG	
4 SAMPLE	S98T003082	0 F @SR90-01 SR90-01 SOLID	N/A		9.36E+01	4.19E-002 uCi/g	
4 SAMPLE	S98T003082	0 F @SR90-01 SR90-01C SOLID	N/A		9.07E+01	% Recovery	
4 SAMPLE	S98T003082	0 F @SR90-01 SR90-01E SOLID	N/A		9.68E-01	% Ct. Error	
5 SAMPLE	S98T003083	0 F @SR90-01 SR90-01 SOLID	N/A		3.10E+02	9.86E-002 uCi/g	
5 SAMPLE	S98T003083	0 F @SR90-01 SR90-01C SOLID	N/A		8.94E+01	% Recovery	
5 SAMPLE	S98T003083	0 F @SR90-01 SR90-01E SOLID	N/A		8.16E-01	% Ct. Error	
6 SAMPLE	S98T003084	0 F @SR90-01 SR90-01 SOLID	N/A		3.78E+02	0.104 uCi/g	
6 SAMPLE	S98T003084	0 F @SR90-01 SR90-01C SOLID	N/A		9.01E+01	% Recovery	
6 SAMPLE	S98T003084	0 F @SR90-01 SR90-01E SOLID	N/A		7.58E-01	% Ct. Error	
7 SAMPLE	S98T003085	0 F @SR90-01 SR90-01 SOLID	N/A		4.48E+01	3.80E-002 uCi/g	
7 SAMPLE	S98T003085	0 F @SR90-01 SR90-01C SOLID	N/A		9.06E+01	% Recovery	
7 SAMPLE	S98T003085	0 F @SR90-01 SR90-01E SOLID	N/A		1.33E+00	% Ct. Error	
8 SAMPLE	S98T003086	0 F @SR90-01 SR90-01 SOLID	N/A		4.84E+01	3.91E-002 uCi/g	
8 SAMPLE	S98T003086	0 F @SR90-01 SR90-01C SOLID	N/A		9.03E+01	% Recovery	
8 SAMPLE	S98T003086	0 F @SR90-01 SR90-01E SOLID	N/A		1.30E+00	% Ct. Error	

Final page for worklist# 26669

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

270,898
Reviewer Signature _____ Date _____

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

LABCORE Data Entry Template for Worklist# 26669

Analyst: CRS Instrument: AB00 Book# 28B57

Method: LA-220-101 Rev/Mod E-3

Worklist Comment: AW101 LAW, @SR90-01 SS by Ludlum. Std: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@SR90-01	SOLID		
2 BLNK-PREP			@SR90-01	SOLID		
3 BLNK/BKG			@SR90-01	SOLID		
4 SAMPLE	S98T003082	0 F	@SR90-01	SOLID	98000554	AW-101 LAW
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
5 SAMPLE	S98T003083	0 F	@SR90-01	SOLID	98000554	AW-101 LAW
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
6 SAMPLE	S98T003084	0 F	@SR90-01	SOLID	98000554	AW-101 LAW
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
7 SAMPLE	S98T003085	0 F	@SR90-01	SOLID	98000554	AW-101 LAW
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					
8 SAMPLE	S98T003086	0 F	@SR90-01	SOLID	98000554	AW-101 LAW
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E					

Final page for worklist # 26669

[Signature]
Analyst Signature

10/22/98
Date

[Signature]
Analyst Signature

10-26-98
Date

Data Entry Comments:

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5) LIQUIDS

				STANDARD	
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000	
STD	TOTAL COUNTS (TC)	9615	GROSS WEIGHT (W2)	7.1390	
Worklist	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.0490	
26669	BACKGROUND in cpm (BKG)	2.1	NET WEIGHT (W3)	0.0900	
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	4.02	
@SR90-01	DILUTION FACTOR (DF)	1			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	959.40	SR-90 EFFICIENCY FACTO (C1)	0.4180	
Batch Number	CRITICAL LEVEL (Lc)	0.87	Y-90 EFFICIENCY FACTOR (C2)	0.4660	
98005281	TIME OF SEPARATION (ST)	10:14	Rmax	N/A	
Run	DATE OF SEPARATION (SD)	10/23/98	DETECTION LIMIT (Ld)	1.84	
0	TIME OF COUNT (TOC)	14:15	Sr-89/90 CONC. in µCi/L	1.0969E+00	
Sample Prep	DATE OF COUNT (DOC)	10/23/98			
N/A	STANDARD BOOK #	28B57			
Sample #	STANDARD VALUE in µCi/mL	1.0445E-03			
WL26669-STD					
Instrument Code					
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<Lc AND RS>=0 OR REPLACE RS WITH Lc IF RS<0				
SLH2	$RS * DF * DDF * 1000 / ((C1 + C2 * (1 - e^{-((\text{natural log } 2) / 64.2 * DT))}) * SS * REC * 2220000)$				
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
SAC	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT) * 1.96)				
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
CRJ	NOTE: Expected weight = CVA * 0.1				
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
10/26/98	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
Analysis Date	Sr-89/90 CONCENTRATION			1.10E-03	DETECTION LEVEL 2.10E-06 µCi/L
10/23/98					
Analysis Time	RELATIVE COUNTING ERROR			2.0%	
01:20 PM					
Sample Point	PERCENT CARRIER RECOVERY			90.0%	
AW-101 LAW					

Analyst:	CRJ	Date:	26-Oct-98
Signature of Chemist:	SAC	Date:	27 Oct 98

STANDARD.WB1 REV 2.0

22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / E-3 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				BLNK-PREP	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
BLNK-PREP	TOTAL COUNTS	(TC)	97	GROSS WEIGHT	(W2) 7.1648
Worklist	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.0745
26669	BACKGROUND in cpm	(BKG)	2.1	NET WEIGHT	(W3) 0.0903
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT) 4.18
@SR90-01	DILUTION FACTOR	DF	11		
Matrix	DIGEST FACTOR (g/L)	(D g/L)	2.1744		
SOLID	SAMPLE COUNT RATE	(Rs)	7.60	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.87	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
98005281	TIME OF SEPARATION	(ST)	10:14	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	10/23/98	DETECTION LIMIT	(Ld) 1.84
0	TIME OF COUNT	(TOC)	14:25	Sr-89/90 CONC in $\mu\text{Ci/g}$	1.7492E-01
Sample Prep	DATE OF COUNT	(DOC)	10/23/98		
N/A					
Sample #					
WL26669-BLNK					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in $\mu\text{Ci/g}$ Replace RS with RMAX if $RS < Lc$ and $RS > 0$ or Replace RS with Lc if $RS < 0$				
Prepared By	RS*1000/DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*(Dg/L)*REC*2220000)				
SLH2	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
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				
10/26/98					
Analysis Date					DETECTION LEVEL 4.23E-02 $\mu\text{Ci/g}$
10/23/98	Sr-89/90 CONCENTRATION	1.75E-01	$\mu\text{Ci/g}$		
Analysis Time	RELATIVE COUNTING ERROR	28.0%			
01:20 PM					
Sample Point					
AW-101 LAW	PERCENT CARRIER RECOVERY	90.3%			

Analyst:	CRJ	Date:	26-Oct-98
Signature of Chemist:	SAC	Date:	27-Oct-98

BLANK.WB1 REV 2.0

22010NML

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS	(TC)	41082	GROSS WEIGHT	(W2) 7.1374
Worklist	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.0467
26669	BACKGROUND in cpm	(BKG)	2.1	NET WEIGHT	(W3) 0.0907
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT) 4.67
@SR90-01	DILUTION FACTOR	-DF	11		
Matrix	DIGEST FACTOR (g/L)	(D g/L)	2.1744		
SOLID	SAMPLE COUNT RATE	(Rs)	4106.10	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.87	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
98005281	TIME OF SEPARATION	(ST)	10:10	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	10/23/98	DETECTION LIMIT	(Ld) 1.84
0	TIME OF COUNT	(TOC)	14:50	Sr-89/90 CONC in $\mu\text{Ci/g}$	9.3593E+01
Sample Prep	DATE OF COUNT	(DOC)	10/23/98		
FUSION01					
Sample #					
S98T003082					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in $\mu\text{Ci/g}$ Replace RS with RMAX if $RS \leq Lc$ and $RS \geq 0$ or Replace RS with Lc if $RS < 0$				
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*(Dg/L)*REC*2220000)				
SLH2	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
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				
10/26/98					
Analysis Date					DETECTION LEVEL
10/23/98	Sr-89/90 CONCENTRATION	9.36E+01	$\mu\text{Ci/g}$		
Analysis Time					
01:20 PM	RELATIVE COUNTING ERROR	1.0%		4.19E-02	
Sample Point					$\mu\text{Ci/g}$
AW-101 LAW	PERCENT CARRIER RECOVERY	90.7%			

Analyst:	CRJ	Date:	26-Oct-98
Signature of Chemist:	SAC	Date:	27 Oct 98

SAMPLE.WB1 REV 2.0

22010NML

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS (TC)	57753	GROSS WEIGHT (W2)	7.1565	
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.0671	
26669	BACKGROUND in cpm (BKG)	2.1	NET WEIGHT (W3)	0.0894	
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	5.02	
@SR90-01	DILUTION FACTOR (DF)	101			
Matrix	DIGEST FACTOR (g/L) (D g/L)	2.1428			
SOLID	SAMPLE COUNT RATE (Rs)	5773.20	SR-90 EFFICIENCY FACTOR (C1)	0.4180	
Batch Number	CRITICAL LEVEL (Lc)	0.87	Y-90 EFFICIENCY FACTOR (C2)	0.4660	
98005281	TIME OF SEPARATION (ST)	10:14	Rmax	N/A	
Re-run	DATE OF SEPARATION (SD)	10/23/98	DETECTION LIMIT (Ld)	1.84	
0	TIME OF COUNT (TOC)	15:15	Sr-89/90 CONC in µCi/g	3.0980E+02	
Sample Prep	DATE OF COUNT (DOC)	10/23/98			
FUSION01					
Sample #					
S98T003083					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*10000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*(Dg/L)*REC*2220000)				
SLH2	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
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				
10/26/98					
Analysis Date					DETECTION LEVEL 9.86E-02 µCi/g
10/23/98	Sr-89/90 CONCENTRATION	3.10E+02	µCi/g		
Analysis Time					
01:20 PM	RELATIVE COUNTING ERROR	0.8%			
Sample Point					
AW-101 LAW	PERCENT CARRIER RECOVERY	89.4%			

Analyst:	CRJ	Date:	26-Oct-98
Signature of Chemist:	SAC	Date:	27 Oct 98

SAMPLE.WB1 REV 2.0

22010NML

1053

WORKBOOK PAGE: SAM6

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					SAMPLE		
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000	
SAMPLE	TOTAL COUNTS	(TC)	67006	GROSS WEIGHT	(W2)	7.1175	
WorkList	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0274	
26669	BACKGROUND in cpm	(BKG)	2.1	NET WEIGHT	(W3)	0.0901	
TestCode	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	5.25	
@SR90-01	DILUTION FACTOR	DF	101				
Matrix	DIGEST FACTOR (g/L)	(D g/L)	2.0148				
SOLID	SAMPLE COUNT RATE	(Rs)	6698.50	Sr-90 EFFICIENCY FACTOR	(C1)	0.4180	
BatchNumber	CRITICAL LEVEL	(Lc)	0.87	Y-90 EFFICIENCY FACTOR	(C2)	0.4660	
98005281	TIME OF SEPARATION	(ST)	10:10	Rmax		N/A	
Refund	DATE OF SEPARATION	(SD)	10/23/98	DETECTION LIMIT	(Ld)	1.84	
0	TIME OF COUNT	(TOC)	15:25	Sr-89/90 CONC in µCi/g		3.7837E+02	
Sample Prep	DATE OF COUNT	(DOC)	10/23/98				
FUSION01							
Sample #							
S98T003084							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*(Dg/L)*REC*2220000						
SLH2	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96						
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
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						
10/26/98							
Analysis Date							
10/23/98	Sr-89/90 CONCENTRATION		3.78E+02	µCi/g	DETECTION LEVEL 1.04E-01 µCi/g		
Analysis Time							
01:20 PM	RELATIVE COUNTING ERROR		0.8%				
Sample Point							
AW-101 LAW	PERCENT CARRIER RECOVERY		90.1%				

Analyst:	CRJ	Date:	26-Oct-98
Signature of Chemist:	SAC	Date:	27 Oct 98

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM7

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS (TC)	21704	GROSS WEIGHT	(W2)		7.1307
Worklist	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT	(W1)		7.0401
26669	BACKGROUND in cpm (BKG)	2.1	NET WEIGHT	(W3)		0.0906
Test Code	SAMPLE VOLUME in mL (SS)	0.250	DELTA TIME (HOURS)	(DT)		5.92
@SR90-01	DILUTION FACTOR (DF)	11				
Matrix	DIGEST FACTOR (g/L) (D g/L)	2.3696				
SOLID	SAMPLE COUNT RATE (Rs)	2168.30	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL (Lc)	0.87	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
98005281	TIME OF SEPARATION (ST)	10:10	Rmax			N/A
Rerun	DATE OF SEPARATION (SD)	10/23/98	DETECTION LIMIT	(Ld)		1.84
0	TIME OF COUNT (TOC)	16:05	Sr-89/90 CONC in $\mu\text{Ci/g}$			4.4799E+01
Sample Prep	DATE OF COUNT (DOC)	10/23/98				
FUSION01						
Sample #						
S98T003085						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in $\mu\text{Ci/g}$ Replace RS with RMAX if $RS \leq Lc$ and $RS > 0$ or Replace RS with Lc if $RS < 0$					
Prepared By	RS * 1000 * DF / ((C1 + C2 * (1 - e to the power of ((-natural log 2) / 64.2 * DT))) * SS * (Dg/L) * REC * 2220000)					
SLH2	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT)) * 1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
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					
10/26/98						
Analysis Date						DETECTION LEVEL
10/23/98	Sr-89/90 CONCENTRATION	4.48E+01	$\mu\text{Ci/g}$			
Analysis Time						
01:20 PM	RELATIVE COUNTING ERROR	1.3%				
Sample Point						3.80E-02
AW-101 LAW	PERCENT CARRIER RECOVERY	90.6%				$\mu\text{Ci/g}$

Analyst:	CRJ	Date:	26-Oct-98
Signature of Chemist:	SAC	Date:	27 Oct 98

SAMPLE.WB1 REV 2.0

22010NML

1055

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS	(TC)	22755	GROSS WEIGHT	(W2) 7.1502
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.0599
26669	BACKGROUND in cpm	(BKG)	2.1	NET WEIGHT	(W3) 0.0903
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT) 6.10
@SR90-01	DILUTION FACTOR	DF	11		
Matrix	DIGEST FACTOR (g/L)	(D g/L)	2.3012		
SOLID	SAMPLE COUNT RATE	(Rs)	2273.40	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.87	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
98005281	TIME OF SEPARATION	(ST)	10:14	Rmax	N/A
Refun	DATE OF SEPARATION	(SD)	10/23/98	DETECTION LIMIT	(Ld) 1.84
0	TIME OF COUNT	(TOC)	16:20	Sr-89/90 CONC in µCi/g	4.8433E+01
Sample Prep	DATE OF COUNT	(DOC)	10/23/98		
FUSION01					
Sample #					
S98T003086					
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)				
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0				
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT))))*SS*(Dg/L)*REC*2220000)				
SLH2	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
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				
10/26/98					
Analysis Date					DETECTION LEVEL 3.91E-02 µCi/g
10/23/98	Sr-89/90 CONCENTRATION	4.84E+01	µCi/g		
Analysis Time	RELATIVE COUNTING ERROR	1.3%			
01:20 PM					
Sample Point					
AW-101 LAW	PERCENT CARRIER RECOVERY	90.3%			

Analyst:	CRJ	Date:	26-Oct-98
Signature of Chemist:	SAC	Date:	22 Oct 98

SAMPLE.WB1 REV 2.0

22010NML

LABCORE Completed Worklist Report for Worklist# 26700

Analyst: scl

Instrument: AB12

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Rerun of WL 26628,AW-101 LAW mcb

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	SR90-01 SR90-01 LIQUID	1.04E-03	1.09E-3	104.808	% Recovery	
1 STD	0	SR90-01 SR90-01C LIQUID	100	8.53E+01	85.300	% Recovery	
1 STD	0	SR90-01 SR90-01E LIQUID	1.00	1.99E+00	1.990	% Ct. Error	
2 BLNK	0	SR90-01 SR90-01 LIQUID	1	1.14E-4	1.140e-004	uCi/mL	
2 BLNK	0	SR90-01 SR90-01C LIQUID	100	8.47E+01	84.700	% Recovery	
2 BLNK	0	SR90-01 SR90-01E LIQUID	1.00	1.24E+02	124.000	uCi/mL	
3 BLNK/BKG	0	SR90-01 SR90-01 LIQUID	1	1.47E-00	1.470	BLNK/BKG	
4 SAMPLE	S98T003058 0	SR90-01 SR90-01 LIQUID	N/A	2.61E-01	1.78e-004	uCi/mL	
4 SAMPLE	S98T003058 0	SR90-01 SR90-01C LIQUID	N/A	8.47E+01		% Recovery	
4 SAMPLE	S98T003058 0	SR90-01 SR90-01E LIQUID	N/A	1.29E+00		% Ct. Error	
5 SAMPLE	S98T003059 0	SR90-01 SR90-01 LIQUID	N/A	2.44E-01	1.80e-004	uCi/mL	
5 SAMPLE	S98T003059 0	SR90-01 SR90-01C LIQUID	N/A	8.32E+01		% Recovery	
5 SAMPLE	S98T003059 0	SR90-01 SR90-01E LIQUID	N/A	1.35E+00		% Ct. Error	
6 SAMPLE	S98T003060 0	SR90-01 SR90-01 LIQUID	N/A	2.29E-01	1.76e-004	uCi/mL	
6 SAMPLE	S98T003060 0	SR90-01 SR90-01C LIQUID	N/A	8.52E+01		% Recovery	
6 SAMPLE	S98T003060 0	SR90-01 SR90-01E LIQUID	N/A	1.37E+00		% Ct. Error	
7 SAMPLE	S98T003061 0	SR90-01 SR90-01 LIQUID	N/A	3.00E-01	1.75e-004	uCi/mL	
7 SAMPLE	S98T003061 0	SR90-01 SR90-01C LIQUID	N/A	8.52E+01		% Recovery	
7 SAMPLE	S98T003061 0	SR90-01 SR90-01E LIQUID	N/A	1.20E+00		% Ct. Error	
8 SAMPLE	S98T003062 0	SR90-01 SR90-01 LIQUID	N/A	3.00E-01	1.74e-004	uCi/mL	
8 SAMPLE	S98T003062 0	SR90-01 SR90-01C LIQUID	N/A	8.57E+01		% Recovery	
8 SAMPLE	S98T003062 0	SR90-01 SR90-01E LIQUID	N/A	1.19E+00		% Ct. Error	

Final page for worklist# 26700

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

[Signature] 9/2/98
Reviewer Signature / Date

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

LABCORE Data Entry Template for Worklist# 26700

Analyst: S.L Instrument: AB00 #12 Book# 28B57

Method: LA-220-101 Rev/Mod E-3

Worklist Comment: Rerun of WL 26628,AW-101 LAW mcb

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	S98T003058 0		@SR90-01	LIQUID	98000554	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5 SAMPLE	S98T003059 0		@SR90-01	LIQUID	98000554	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
6 SAMPLE	S98T003060 0		@SR90-01	LIQUID	98000554	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
7 SAMPLE	S98T003061 0		@SR90-01	LIQUID	98000554	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
8 SAMPLE	S98T003062 0		@SR90-01	LIQUID	98000554	AW-101 LAW
Analytes Requested: SR90-01 , SR90-01C, SR90-01E						

Final page for worklist # 26700

Sue Lai 11-3-98
Analyst Signature Date

Sue Lai 11/4/98
Analyst Signature Date

Data Entry Comments:

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5) LIQUIDS

				STANDARD
Type	DETECTOR NUMBER	12	CARRIER ADDED in mL (CVA)	1.000
STD	TOTAL COUNTS (TC)	9771	GROSS WEIGHT (W2)	7.8612
Worklist	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT (W1)	7.7759
26700	BACKGROUND in cpm (BKG)	1.5	NET WEIGHT (W3)	0.0853
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS) (DT)	11.25
@SR90-01	DILUTION FACTOR (DF)	1		
Matrix	DIGEST DILUTION FACTOR DDF	1		
LIQUID	SAMPLE COUNT RATE (Rs)	975.60	SR-90 EFFICIENCY FACTO (C1)	0.4180
Batch Number	CRITICAL LEVEL (Lc)	0.74	Y-90 EFFICIENCY FACTOR (C2)	0.4660
98005314	TIME OF SEPARATION (ST)	10:30	Rmax	N/A
ReRun	DATE OF SEPARATION (SD)	11/03/98	DETECTION LIMIT (Ld)	1.57
0	TIME OF COUNT (TOC)	21:45	Sr-89/90 CONC. in $\mu\text{Ci/L}$	1.0931E+00
Sample/Prep	DATE OF COUNT (DOC)	11/03/98		
N/A	STANDARD BOOK #	28B57		
Sample #	STANDARD VALUE in $\mu\text{Ci/mL}$	1.0437E-03		
WL26700				
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			
SZC	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)			
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))			
SAC	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)			
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100			
SCL	NOTE: Expected weight = CVA * 0.1			
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			
11/04/98	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100			
Analysis Date				
11/03/98	Sr-89/90 CONCENTRATION	1.09E-03	$\mu\text{Ci/mL}$	DETECTION LEVEL 1.76E-06 $\mu\text{Ci/L}$
Analysis Time				
02:35 PM	RELATIVE COUNTING ERROR	2.0%		
Sample Point				
AW-101 LAW	PERCENT CARRIER RECOVERY	85.3%		

Analyst:	SCL	Date:	04-Nov-98
Signature of Chemist:	SAC	Date:	9/2/98

STANDARD.WB1 REV 2.0

22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / E-3 Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				BLNK	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
BLNK	TOTAL COUNTS	(TC)	25	GROSS WEIGHT	(W2) 7.9037
WorkList	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.8190
26700	BACKGROUND in cpm	(BKG)	1.5	NET WEIGHT	(W3) 0.0847
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 11.58
@SR90-01	DILUTION FACTOR	DF	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	1.00	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.74	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
98005314	TIME OF SEPARATION	(ST)	10:30	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	11/03/98	DETECTION LIMIT	(Ld) 1.57
0	TIME OF COUNT	(TOC)	22:05	Sr-89/90 CONC in $\mu\text{Ci/L}$	1.1361E-01
Sample Prep	DATE OF COUNT	(DOC)	11/03/98		
N/A					
Sample #					
WL26700					
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 $\text{RS} \leq \text{Lc}$ and $\text{RS} \geq 0$ or Replace RS with Lc if $\text{RS} < 0$				
Prepared By	$\text{RS} * \text{DF} * \text{DDF} / ((\text{C1} + \text{C2}) * (1 - e \text{ to the power of } ((-\text{natural log } 2) / (64.2 * \text{DT})))) * \text{SS} * \text{REC} * 2220000$				
SZC	NOTE: $64.2 = \text{Half Life for Y-90 and Rec.} = \text{Fractional Carrier Recovery } ((\text{W2} - \text{W1}) / (\text{CVA} * 0.1000))$				
Chemist	Relative Counting Error = (The Square Root of $(\text{TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})$) * 1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = $\text{CVA} * 0.1$				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = $((\text{DOC} - \text{SD}) * 24) + (\text{TOC} - \text{ST}) / 100$				
11/04/98					
Analysis Date					
11/03/98	Sr-89/90 CONCENTRATION	1.14E-04	$\mu\text{Ci/mL}$	DETECTION LEVEL	
Analysis Time					
02:35 PM	RELATIVE COUNTING ERROR	124.0%		1.78E-04	
Sample Point					
AW-101 LAW	PERCENT CARRIER RECOVERY	84.7%		$\mu\text{Ci/mL}$	

Analyst:	SCL	Date:	04-Nov-98
Signature of Chemist:	SAC	Date:	9/11/98

BLANK.WB1 REV 2.0

22010NML

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS	(TC)	23050	GROSS WEIGHT	(W2) 7.8642
WorkList	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.7795
26700	BACKGROUND in cpm	(BKG)	1.5	NET WEIGHT	(W3) 0.0847
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 11.83
@SR90-01	DILUTION FACTOR	DF	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	2303.50	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.74	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
98005314	TIME OF SEPARATION	(ST)	10:30	Rmax	N/A
Rerun	DATE OF SEPARATION	(SD)	11/03/98	DETECTION LIMIT	(Ld) 1.57
0	TIME OF COUNT	(TOC)	22:20	Sr-89/90 CONC in $\mu\text{Ci/L}$	2.6109E+02
Sample Prep	DATE OF COUNT	(DOC)	11/03/98		
N/A					
Sample #					
S98T003058					
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	$RS * DF * DDF / ((C1 + C2 * (1 - e \text{ to the power of } ((- \text{natural log } 2) / 64.2 * DT))) * SS * REC * 2220000)$				
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery $((W2 - W1) / (CVA * 0.1000))$				
Chemist	Relative Counting Error = (The Square Root of $(TC + BKG * CT) / (TC - BKG * CT)$) * 1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = $((DOC - SD) * 24) + (TOC - ST) / 100$				
11/04/98					
Analysis Date					
11/03/98	Sr-89/90 CONCENTRATION	2.61E-01	$\mu\text{Ci/mL}$	DETECTION LEVEL 1.78E-04 $\mu\text{Ci/mL}$	
Analysis Time					
02:35 PM	RELATIVE COUNTING ERROR	1.3%			
Sample Point					
AW-101 LAW	PERCENT CARRIER RECOVERY	84.7%			

Analyst:	SCL	Date:	04-Nov-98
Signature of Chemist:	SAC	Date:	11/28
SAMPLE:WB1 REV 2.0 22010NML			

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS (TC)	21191	GROSS WEIGHT	(W2) 7.8607	
Work List	COUNT TIME in MINUTES (CT)	10	TARE WEIGHT	(W1) 7.7775	
26700	BACKGROUND in cpm (BKG)	1.5	NET WEIGHT	(W3) 0.0832	
Test Code	SAMPLE VOLUME in mL (SS)	1.000	DELTA TIME (HOURS)	(DT) 12.00	
@SR90-01	DILUTION FACTOR (DF)	101			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	2117.60	SR-90 EFFICIENCY FACTOR	(C1) 0.4180	
Batch Number	CRITICAL LEVEL (Lc)	0.74	Y-90 EFFICIENCY FACTOR	(C2) 0.4660	
98005314	TIME OF SEPARATION (ST)	10:30	Rmax	N/A	
Rerun	DATE OF SEPARATION (SD)	11/03/98	DETECTION LIMIT (Ld)	1.57	
0	TIME OF COUNT (TOC)	22:30	Sr-89/90 CONC in $\mu\text{Ci/L}$	2.4397E+02	
Sample Prep	DATE OF COUNT (DOC)	11/03/98			
N/A					
Sample #					
S98T003059					
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 * 22200000)				
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT)) * 1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
11/04/98					
Analysis Date					
11/03/98	Sr-89/90 CONCENTRATION	2.44E-01	$\mu\text{Ci/mL}$	DETECTION LEVEL	
Analysis Time					
02:35 PM	RELATIVE COUNTING ERROR	1.3%	1.80E-04		
Sample Point					
AW-101 LAW	PERCENT CARRIER RECOVERY	83.2%	$\mu\text{Ci/mL}$		

Analyst:	SCL	Date:	04-Nov-98
Signature of Chemist:	SAC	Date:	9 Nov 98

SAMPLE.WB1 REV 2.0

22010NML

WORKBOOK PAGE: SAM6

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

					SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	20370	GROSS WEIGHT	(W2)	7.8543
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.7691
26700	BACKGROUND in cpm	(BKG)	1.5	NET WEIGHT	(W3)	0.0852
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	12.17
@SR90-01	DILUTION FACTOR	DF	101			
Matrix	DIGEST DILUTION FACTOR	(DDF)	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	2035.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.74	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
98005314	TIME OF SEPARATION	(ST)	10:40	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	11/03/98	DETECTION LIMIT	(Ld)	1.57
0	TIME OF COUNT	(TOC)	22:50	Sr-89/90 CONC in µCi/L		2.2865E+02
Sample/Prep	DATE OF COUNT	(DOC)	11/03/98			
N/A						
Sample #						
S98T003060						
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)					
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96					
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
11/04/98						
Analysis Date						DETECTION LEVEL 1.76E-04 µCi/mL
11/03/98	Sr-89/90 CONCENTRATION	2.29E-01	µCi/mL			
Analysis Time						
02:35 PM	RELATIVE COUNTING ERROR	1.4%				
Sample Point						
AW-101 LAW	PERCENT CARRIER RECOVERY	85.2%				

Analyst:	SCL	Date:	04-Nov-98
Signature of Chemist:	SAC	Date:	9 Nov 98

SAMPLE:WB1 REV 2.0

22010NML

1063

WORKBOOK PAGE: SAM7

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS	(TC)	26738	GROSS WEIGHT	(W2) 7.8750
Worklist	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1) 7.7898
26700	BACKGROUND in cpm	(BKG)	1.5	NET WEIGHT	(W3) 0.0852
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT) 12.33
@SR90-01	DILUTION FACTOR	DF	101		
Matrix	DIGEST DILUTION FACTOR	(DDF)	1		
LIQUID	SAMPLE COUNT RATE	(Rs)	2672.30	SR-90 EFFICIENCY FACTOR	(C1) 0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.74	Y-90 EFFICIENCY FACTOR	(C2) 0.4660
98005314	TIME OF SEPARATION	(ST)	10:40	Rmax	N/A
ReRun	DATE OF SEPARATION	(SD)	11/03/98	DETECTION LIMIT	(Ld) 1.57
0	TIME OF COUNT	(TOC)	23:00	Sr-89/90 CONC in µCi/L	2.9972E+02
Sample Prep	DATE OF COUNT	(DOC)	11/03/98		
N/A					
Sample #					
S98T003061					
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)				
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
11/04/98					
Analysis Date					DETECTION LEVEL
11/03/98	Sr-89/90 CONCENTRATION	3.00E-01	µCi/mL		
Analysis Time					
02:35 PM	RELATIVE COUNTING ERROR	1.2%			
Sample Point					1.76E-04
AW-101 LAW	PERCENT CARRIER RECOVERY	85.2%	µCi/mL		

Analyst:	SCL	Date:	04-Nov-98
Signature of Chemist:	SAC	Date:	9/11/98

SAMPLE.WB1 REV 2.0

22010NML

Sr-89/90 : LA-220-101 (E-3), 102 (INACTIVE), 104 (E-5)

				SAMPLE	
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA) 1.000
SAMPLE	TOTAL COUNTS (TC)	26948		GROSS WEIGHT (W2)	7.8754
WorkList	COUNT TIME in MINUTES (CT)	10		TARE WEIGHT (W1)	7.7897
26700	BACKGROUND in cpm (BKG)	1.5		NET WEIGHT (W3)	0.0857
TestCode	SAMPLE VOLUME in mL (SS)	1.000		DELTA TIME (HOURS) (DT)	12.50
@SR90-01	DILUTION FACTOR (DF)	101			
Matrix	DIGEST DILUTION FACTOR (DDF)	1			
LIQUID	SAMPLE COUNT RATE (Rs)	2693.30		SR-90 EFFICIENCY FACTOR (C1)	0.4180
BatchNumber	CRITICAL LEVEL (Lc)	0.74		Y-90 EFFICIENCY FACTOR (C2)	0.4660
98005314	TIME OF SEPARATION (ST)	10:40		Rmax	N/A
ReRun	DATE OF SEPARATION (SD)	11/03/98		DETECTION LIMIT (Ld)	1.57
0	TIME OF COUNT (TOC)	23:10		Sr-89/90 CONC in µCi/L	2.9985E+02
Sample Prep	DATE OF COUNT (DOC)	11/03/98			
N/A					
Sample#					
S98T003062					
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)				
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))				
Chemist	Relative Counting Error = (The Square Root of (TC + BKG * CT) / (TC - BKG * CT))*1.96				
SAC	Percent Carrier Recovery = (Net Weight / Expected weight) * 100				
Analyst	NOTE: Expected weight = CVA * 0.1				
SCL	Detection Levels and Less Than Values are determined from Procedure LA-508-002.				
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100				
11/04/98					
Analysis Date					
11/03/98	Sr-89/90 CONCENTRATION	3.00E-01		µCi/mL	DETECTION LEVEL 1.74E-04 µCi/mL
Analysis Time					
02:35 PM	RELATIVE COUNTING ERROR	1.2%			
Sample Point					
AW-101 LAW	PERCENT CARRIER RECOVERY	85.7%			

Analyst:	SCL	Date:	04-Nov-98
Signature of Chemist:	SAC	Date:	9 Nov 98

SAMPLE.WB1 REV 2.0

22010NML

LABCORE Completed Worklist Report for Worklist# 26394

Analyst: scl Instrument: LSC03 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW101 LAW, @TC99-01 STD: 1.0mL skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		ETC99-01 TC99-01T LIQUID		1.41E-03	1.26E-3	89.362 % Recovery	
1 STD	0		ETC99-01 TC99-01T LIQUID		100	7.32E+01	73.200 % Recovery	
1 STD	0		ETC99-01 TC99-01E LIQUID		1	1.24E+00	1.240 % Ct. Error	
2 BLNK	0		ETC99-01 TC99-01T LIQUID		1	<8.60E-5	uCi/mL	
2 BLNK	0		ETC99-01 TC99-01E LIQUID		1.00	1.10E+01	11.000 uCi/mL	
2 BLNK	0		ETC99-01 TC99-01T LIQUID		100	5.98E+01	59.800 % Recovery	
4 DUP	S98T002779	0	ETC99-01 TC99-01T LIQUID		1.80E-1	3.17E-1	55.131 RPD	
4 DUP	S98T002779	0	ETC99-01 TC99-01E LIQUID		1.00	3.60E-01	0.360 % Ct. Error	
4 DUP	S98T002779	0	ETC99-01 TC99-01T LIQUID		100	3.51E+01	35.100 % Recovery	
6 DUP	S98T002780	0	ETC99-01 TC99-01T LIQUID		6.27E-1	1.75E-1	112.718 RPD	
6 DUP	S98T002780	0	ETC99-01 TC99-01E LIQUID		1.00	3.70E-01	0.370 % Ct. Error	
6 DUP	S98T002780	0	ETC99-01 TC99-01T LIQUID		100	6.05E+01	60.500 % Recovery	
8 DUP	S98T002781	0	ETC99-01 TC99-01T LIQUID		1.42E-1	2.90E-1	68.519 RPD	
8 DUP	S98T002781	0	ETC99-01 TC99-01E LIQUID		1.00	3.60E-01	0.360 % Ct. Error	
8 DUP	S98T002781	0	ETC99-01 TC99-01T LIQUID		100	3.87E+01	38.700 % Recovery	
9 SAMPLE	S98T002795	0	ETC99-01 TC99-01T LIQUID	N/A	<	8.32E-05	8.32e-005 uCi/mL	
9 SAMPLE	S98T002795	0	ETC99-01 TC99-01T LIQUID	N/A		6.19E+01	% Recovery	
9 SAMPLE	S98T002795	0	ETC99-01 TC99-01E LIQUID	N/A		9.64E+00	% Ct. Error	
10 DUP	S98T002795	0	ETC99-01 TC99-01T LIQUID		<8.32E-5	<8.10E-5	RPD	
10 DUP	S98T002795	0	ETC99-01 TC99-01E LIQUID		1.00	1.01E+01	10.100 % Ct. Error	
10 DUP	S98T002795	0	ETC99-01 TC99-01T LIQUID		100	6.36E+01	63.600 % Recovery	

Final page for worklist# 26394

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Rehyen
Reviewer Signature _____ Date 9 Oct 98

S98T002779, ... 2780, ... 2781 are being
re-run. JFR New W.L. 26585

LABCORE Data Entry Template for Worklist# 26394

Analyst: S.L Instrument: LSC00 6500 Book# 28657

Method: LA-438-101 Rev/Mod E-2

Worklist Comment: AW101 LAW, @TC99-01 STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@TC99-01	LIQUID		
2 BLNK			@TC99-01	LIQUID		
3 SAMPLE	S98T002779 0		@TC99-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: TC99-01 , TC99-01E, TC99-01T						
4 DUP	S98T002779 0		@TC99-01	LIQUID		
5 SAMPLE	S98T002780 0		@TC99-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: TC99-01 , TC99-01E, TC99-01T						
6 DUP	S98T002780 0		@TC99-01	LIQUID		
7 SAMPLE	S98T002781 0		@TC99-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: TC99-01 , TC99-01E, TC99-01T						
8 DUP	S98T002781 0		@TC99-01	LIQUID		
9 SAMPLE	S98T002795 0		@TC99-01	LIQUID	98000261	AW-101 LAW
Analytes Requested: TC99-01 , TC99-01E, TC99-01T						
10 DUP	S98T002795 0		@TC99-01	LIQUID		

Final page for worklist # 26394

Sue Lee 10-8-98
Analyst Signature Date

Sue Lee 10/9/98
Analyst Signature Date
Kevin H 10/9/98

Data Entry Comments:

WORKBOOK PAGE: STD1

Tc-99 : LA-438-101 (E-2)

LIQUID

		STANDARD
Type	Tracer Book Number (Tr BN)	39B57
STD	Activity for 100µl of Spike Added in dpm	5637.7
Work List	Volume of Sample in mL (SS)	1
26394	Dilution Factor (DF)	1
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	1364.57
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	4117.2
LIQUID	Background cpm (BKG cpm)	46.5
Batch Number	Background Time Counted in Minutes (BKG time)	20
98004971	Instrument Fractional Efficiency (EFF)	0.9573
Rerun	% Counting Error	1.24
0	Standard Value µCi/mL	1.410E-03
Sample Prep	Standard Book # (Std BN)	28B57
N/A	Detection Limit (Ld)	7.56
Sample #	Critical Level (Lc)	3.55
WL26394	Tc-99 Concentration in µCi/L =	1.2589E+00
Instrument Code	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)	
WC51586	Detection Limit (Ld) = ((2.72 / BKG time) * (2 * Lc)) / EFF	
Prepared By	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
SZC	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3	
SAC		
Analyst		
SCL		
Date Complete	Tc-99 Concentration in µCi/mL =	1.26E-03
10/09/98		
Analysis Date		
10/08/98	% Counting Error =	1.2
Analysis Time		
10:00 AM	Spike (Tracer) Recovery =	73.2%
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/09/98
Signature of Chemist:	<i>John Relyea</i>	SAC	Date: 90d98

STANDARD.WB1 REV 2.0

438101ML

WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (E-2)

LIQUID

		BLNK
Type	Tracer Book Number (Tr BN)	39B57
BLNK	Activity for 100µl of Spike Added in dpm	5637.7
Worklist	Volume of Sample in mL (SS)	0.1
26394	Dilution Factor (DF)	1
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	-2.48
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	2245.23
LIQUID	Background cpm (BKG cpm)	46.5
Batch Number	Background Time Counted in Minutes (BKG time)	20
98004971	Instrument Fractional Efficiency (EFF)	0.9514
Rerun	% Counting Error	10.98
0	Detection Limit (Ld)	7.61
Sample Prep	Critical Level (Lc)	3.55
N/A	Tc-99 Concentration in µCi/L =	< 8.5996E-02
Sample #	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)	
WL26394	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF	
Instrument Code	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
WC51586	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
Prepared By	Tc-99 µCi/mL = µCi/L / (1000mL/L)	
SZC	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3	
Chemist	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).	
SAC		
Analyst		
SCL		
Date Complete		
10/09/98	Tc-99 Concentration in µCi/mL =	< 8.60E-05
Analysis Date	DETECTION LEVEL	
10/08/98	% Counting Error =	11.0
Analysis Time	8.60E-05 µCi/mL	
10:00 AM	Spike (Tracer) Recovery =	59.8%
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/09/98
Signature of Chemist:	<i>John Reilly</i>	SAC	Date: 10/09/98

BLANK.WB1 REV 2.0

438101ML

WORKBOOK PAGE: SAM9

Tc-99 : LA-438-101 (E-2)

LIQUID

		SAMPLE
Type	Tracer Book Number (Tr BN)	39B57
SAMPLE	Activity for 100µl of Spike Added in dpm (dm3)	5637.7
Work List	Volume of Sample in mL (SS)	0.1
26394	Dilution Factor (DF)	1
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	0.7
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	2326.34
LIQUID	Background cpm (BKG cpm)	46.5
Batch Number	Background Time Counted in Minutes (BKG time)	20
98004971	Instrument Fractional Efficiency (EFF)	0.9509
Rerun	% Counting Error	9.64
0	Detection Limit (Ld)	7.62
Sample Prep	Critical Level (Lc)	3.55
N/A	Tc-99 Concentration in µCi/L	< 8.3158E-02
Sample #	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)	
S98T002795	Detection Limit (Ld) = ((2.72 / BKG time) * (2 * Lc)) / EFF	
Instrument Code	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
WC51586	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
Prepared By	Tc-99 µCi/mL = µCi/L / (1000mL/L)	
SZC	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3	
Chemist	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).	
SAC		
Analyst		
SCL		
Date Complete	Tc-99 Concentration in µCi/mL	< 8.32E-05
10/09/98		DETECTION LEVEL
Analysis Date	% Counting Error	9.6
10/08/98		8.32E-05 µCi/mL
Analysis Time	Spike (Tracer) Recovery	61.9%
10:00 AM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/09/98
Signature of Chemist:	SAC	Date:	9 Oct 98

SAMPLE.WB1 REV 2.0

438101ML

1070

WORKBOOK PAGE: DUP10

Tc-99 : LA-438-101 (E-2)

LIQUID

		DUP
Type	Tracer Book Number (Tr BN)	39B57
DUP	Activity for 100µl of Spike Added in dpm (dm3)	5637.7
WorkList	Volume of Sample in mL (SS)	0.1
26394	Dilution Factor (DF)	1
TestCode	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	-2.6
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	2387.09
LIQUID	Background cpm (BKG cpm)	46.5
Batch Number	Background Time Counted in Minutes (BKG time)	20
98004971	Instrument Fractional Efficiency (EFF)	0.9506
Rerun	% Counting Error	
0	Detection Limit (Ld)	10.06
Sample Prep	Critical Level (Lc)	7.62
N/A	Tc-99 Concentration in µCi/L	3.55
Sample #		< 8.0954E-02
S98T002795	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG time)}$	
Instrument Code	Detection Limit (Ld) = $((2.72 / \text{BKG time}) + (2 * \text{Lc})) / \text{EFF}$	
WC51586	Detection Level = $\text{Ld} * \text{dm3} * \text{DF} * \text{DDF} / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
Prepared By	Tc-99 µCi/L = $(\text{dm1} * (1000 \text{mL}/\text{L}) * \text{dm3} * \text{DF} * \text{DDF}) / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
SZC	Tc-99 µCi/mL = $\mu\text{Ci}/\text{L} / (1000 \text{mL}/\text{L})$	
Chemist	Spike (Tracer) Recovery = $(\text{dm2} - \text{dm1}) * 1.5 * 100 / \text{dm3}$	
SAC		
Analyst	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).	
SCL		
Date Complete		
10/09/98	Tc-99 Concentration in µCi/mL	< 8.10E-05
Analysis Date	DETECTION LEVEL	
10/08/98	% Counting Error	10.1
Analysis Time	8.10E-05 µCi/mL	
10:00 AM	Spike (Tracer) Recovery	63.6%
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/09/98
Signature of Chemist:	<i>John Rejcek</i>	SAC	Date: 9 Oct 98

SAMPLE.WB1 REV 2.0

438101ML

1071

LABCORE Completed Worklist Report for Worklist# 26525

Analyst: scl

Instrument: LSC03

Book#

Method: Rev/Mod

Worklist Comment: Rerun of WL 26394, AW-101 LAW mcb

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	ETC99-01 TC99-01 LIQUID	1.41E-03	1.59E-3	112.057	% Recovery	
1 STD	0	ETC99-01 TC99-01T LIQUID	100	5.76E+01	57.600	% Recovery	
1 STD	0	ETC99-01 TC99-01E LIQUID	1	1.27E+00	1.270	% Ct. Error	
2 BLNK	0	ETC99-01 TC99-01 LIQUID	1	<4.24E-4	uCi/mL		
2 BLNK	0	ETC99-01 TC99-01E LIQUID	1.00	1.46E+01	14.600	uCi/mL	
2 BLNK	0	ETC99-01 TC99-01T LIQUID	100	6.01E+01	60.100	% Recovery	
3 SAMPLE	S98T002779 0	ETC99-01 TC99-01 LIQUID	N/A	1.64E-01	3.96E-004	uCi/mL	
3 SAMPLE	S98T002779 0	ETC99-01 TC99-01T LIQUID	N/A	6.43E+01	% Recovery		
3 SAMPLE	S98T002779 0	ETC99-01 TC99-01E LIQUID	N/A	8.30E-01	% Ct. Error		
4 DUP	S98T002779 0	ETC99-01 TC99-01 LIQUID	1.64E-1	2.04E-1	21.739	RPD	
4 DUP	S98T002779 0	ETC99-01 TC99-01E LIQUID	1.00	8.10E-01	0.810	% Ct. Error	
4 DUP	S98T002779 0	ETC99-01 TC99-01T LIQUID	100	5.42E+01	54.200	% Recovery	
5 SAMPLE	S98T002780 0	ETC99-01 TC99-01 LIQUID	N/A	1.73E-01	4.24E-004	uCi/mL	
5 SAMPLE	S98T002780 0	ETC99-01 TC99-01T LIQUID	N/A	6.01E+01	% Recovery		
5 SAMPLE	S98T002780 0	ETC99-01 TC99-01E LIQUID	N/A	8.30E-01	% Ct. Error		
6 DUP	S98T002780 0	ETC99-01 TC99-01 LIQUID	1.73E-1	1.79E-1	3.409	RPD	
6 DUP	S98T002780 0	ETC99-01 TC99-01E LIQUID	1.00	8.30E-01	0.830	% Ct. Error	
6 DUP	S98T002780 0	ETC99-01 TC99-01T LIQUID	100	5.90E+01	59.000	% Recovery	
7 SAMPLE	S98T002781 0	ETC99-01 TC99-01 LIQUID	N/A	1.84E-01	4.37E-004	uCi/mL	
7 SAMPLE	S98T002781 0	ETC99-01 TC99-01T LIQUID	N/A	5.83E+01	% Recovery		
7 SAMPLE	S98T002781 0	ETC99-01 TC99-01E LIQUID	N/A	8.20E-01	% Ct. Error		
8 DUP	S98T002781 0	ETC99-01 TC99-01 LIQUID	1.84E-1	1.69E-1	8.499	RPD	
8 DUP	S98T002781 0	ETC99-01 TC99-01E LIQUID	1.00	8.30E-01	0.830	% Ct. Error	
8 DUP	S98T002781 0	ETC99-01 TC99-01T LIQUID	100	6.14E+01	61.400	% Recovery	

Final page for worklist# 26525

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

Sample S98T002779 will be rerun, RPD. sse

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

LABCORE Data Entry Template for Worklist# 26525

Analyst: S. L Instrument: LSC00 6500 Book# 28857

Method: LA-438-101 Rev/Mod E-2

Worklist Comment: Rerun of WL 26394, AW-101 LAW mcb

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@TC99-01	LIQUID		
2 BLNK			@TC99-01	LIQUID		
3 SAMPLE	S98T002779 0		@TC99-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T					
4 DUP	S98T002779 0		@TC99-01	LIQUID		
5 SAMPLE	S98T002780 0		@TC99-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T					
6 DUP	S98T002780 0		@TC99-01	LIQUID		
7 SAMPLE	S98T002781 0		@TC99-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T					
8 DUP	S98T002781 0		@TC99-01	LIQUID		

Final page for worklist # 26525

Sue L 10-14-98
Analyst Signature Date

[Signature] 10/15/98
Analyst Signature Date
[Signature] 10/15/98

Data Entry Comments:

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

WORKBOOK PAGE: STD1

Tc-99 : LA-438-101 (E-2)

LIQUID

		STANDARD
Type	Tracer Book Number (Tr BN)	39B57
STD	Activity for 100µl of Spike Added in dpm	5637.7
Work List	Volume of Sample in mL (SS)	1
26525	Dilution Factor (DF)	1
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	1342.9
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	3507.53
LIQUID	Background cpm (BKG cpm)	44.75
Barch Number	Background Time Counted in Minutes (BKG time)	20
98005122	Instrument Fractional Efficiency (EFF)	0.9493
Rerun	% Counting Error	1.27
0	Standard Value µCi/mL	1.410E-03
Sample Prep	Standard Book # (Std BN)	28B57
N/A	Detection Limit (Ld)	7.49
Sample #	Critical Level (Lc)	3.49
WL26525-STD	Tc-99 Concentration in µCi/L =	1.5755E+00
Instrument Codes	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)	
WC51586	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF	
Prepared By	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
MCB	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3	
JFR		
Analyst		
SCL		
Date Complete		
10/15/98	Tc-99 Concentration in µCi/mL =	1.58E-03
Analysis Date	DETECTION LEVEL	
10/14/98	% Counting Error =	1.3
Analysis Time	8.78E-06 µCi/mL	
03:10 PM	Spike (Tracer) Recovery =	57.6%
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/15/98
Signature of Chemist:	JFR	Date:	10/16/98

STANDARD.WB1 REV 2.0

438101ML

1074

WORKBOOK PAGE: BLANK2

Tc-99 : LA-438-101 (E-2)

LIQUID

		BLNK
Type	Tracer Book Number (Tr BN)	39B57
BLNK	Activity for 100µl of Spike Added in dpm	5637.7
WorkList	Volume of Sample in mL (SS)	2
26525	Dilution Factor (DF)	101
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	1.34
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	2259.51
LIQUID	Background cpm (BKG cpm)	44.75
Batch Number	Background Time Counted in Minutes (BKG time)	20
98005122	Instrument Fractional Efficiency (EFF)	0.9521
Rerun	% Counting Error	14.62
0	Detection Limit (Ld)	7.46
Sample Prep	Critical Level (Lc)	3.49
N/A	Tc-99 Concentration in µCi/L =	< 4.2390E-01
Sample #	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)	
WL26525-BLNK	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF	
Instrument Code	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
WC51586	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
Prepared By	Tc-99 µCi/mL = µCi/L / (1000mL/L)	
MCB	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3	
Chemist	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).	
JFR		
Analyst		
SCL		
Date Complete	Tc-99 Concentration in µCi/mL =	< 4.24E-04
10/15/98		DETECTION LEVEL
Analysis Date	% Counting Error =	14.6
10/14/98		4.24E-04 µCi/mL
Analysis Time	Spike (Tracer) Recovery =	60.1%
03:10 PM		
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/15/98
Signature of Chemist:	JFR	Date:	10/15/98

BLANK.WB1 REV 2.0

438101ML

1075

WORKBOOK PAGE: SAM5

Tc-99 : LA-438-101 (E-2)

LIQUID

		SAMPLE
Type	Tracer Book Number (Tr BN)	39B57
SAMPLE	Activity for 100µl of Spike Added in dpm (dm3)	5637.7
WorkList	Volume of Sample in mL (SS)	2
26525	Dilution Factor (DF)	101
TestCode	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	3048.06
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	5308.49
LIQUID	Background cpm (BKG cpm)	44.75
BatchNumber	Background Time Counted in Minutes (BKG time)	20
98005122	Instrument Fractional Efficiency (EFF)	0.9514
Rerun	% Counting Error	0.83
0	Detection Limit (Ld)	7.47
Sample Prep	Critical Level (Lc)	3.49
N/A	Tc-99 Concentration in µCi/L	1.7293E+02
Sample#		
S98T002780	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG time)}$	
Instrument Code	Detection Limit (Ld) = $((2.72 / \text{BKG time}) + (2 * \text{Lc})) / \text{EFF}$	
WC51586	Detection Level = $\text{Ld} * \text{dm3} * \text{DF} * \text{DDF} / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
Prepared By	Tc-99 µCi/L = $(\text{dm1} * (1000 \text{mL/L}) * \text{dm3} * \text{DF} * \text{DDF}) / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
MCB	Tc-99 µCi/mL = $\mu\text{Ci/L} / (1000 \text{mL/L})$	
Chemist	Spike (Tracer) Recovery = $(\text{dm2} - \text{dm1}) * 1.5 * 100 / \text{dm3}$	
JFR		
Analyst		
SCL		
Date Complete		
10/15/98	Tc-99 Concentration in µCi/mL	1.73E-01
Analysis Date		DETECTION LEVEL
10/14/98	% Counting Error	
Analysis Time		4.24E-04 µCi/mL
03:10 PM	Spike (Tracer) Recovery	
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/15/98
Signature of Chemist:	JFR	Date:	10/16/98

SAMPLE.WB1 REV 2.0

438101ML

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WORKBOOK PAGE: DUP6

Tc-99 : LA-438-101 (E-2)

LIQUID

		DUP
Type	Tracer Book Number (Tr BN)	39B57
DUP	Activity for 100µl of Spike Added in dpm (dm3)	5637.7
Work List	Volume of Sample in mL (SS)	2
26525	Dilution Factor (DF)	101
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	3094.16
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	5310.59
LIQUID	Background cpm (BKG cpm)	44.75
Batch Number	Background Time Counted in Minutes (BKG time)	20
98005122	Instrument Fractional Efficiency (EFF)	0.9512
Rerun	% Counting Error	0.83
0	Detection Limit (Ld)	7.47
Sample Prep	Critical Level (Lc)	3.49
N/A	Tc-99 Concentration in µCi/L	1.7903E+02
Sample #		
S98T002780	Critical Level (Lc) = 2.33 * the Square Root of (BKG cpm / BKG time)	
Instrument Code	Detection Limit (Ld) = ((2.72 / BKG time) + (2 * Lc)) / EFF	
WC51586	Detection Level = Ld * dm3 * DF * DDF / ((2220000dpm/µCi) * SS * (dm2 - dm1))	
Prepared By	Tc-99 µCi/L = (dm1 * (1000mL/L) * dm3 * DF * DDF) / ((2220000dpm/µCi) * SS * (dm2 - dm1)	
MCB	Tc-99 µCi/mL = µCi/L / (1000mL/L)	
Chemist	Spike (Tracer) Recovery = (dm2 - dm1) * 1.5 * 100 / dm3	
JFR		
Analyst		
SCL		
Date Complete		
10/15/98	Tc-99 Concentration in µCi/mL	1.79E-01
Analysis Date		DETECTION
10/14/98	% Counting Error	0.8
Analysis Time		4.32E-04
03:10 PM	Spike (Tracer) Recovery	59.0%
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/15/98
Signature of Chemist:	JFR	Date:	10/15/98

SAMPLE.WB1 REV 2.0

438101ML

1077

WORKBOOK PAGE: SAM7

Tc-99 : LA-438-101 (E-2)

LIQUID

		SAMPLE
Type	Tracer Book Number (Tr BN)	39B57
SAMPLE	Activity for 100µl of Spike Added in dpm (dm3)	5637.7
WorkList	Volume of Sample in mL (SS)	2
26525	Dilution Factor (DF)	101
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	3147.92
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	5338.31
LIQUID	Background cpm (BKG cpm)	44.75
Batch Number	Background Time Counted in Minutes (BKG time)	20
98005122	Instrument Fractional Efficiency (EFF)	0.9526
Rerun	% Counting Error	0.82
0	Detection Limit (Ld)	7.46
Sample Prep	Critical Level (Lc)	3.49
N/A	Tc-99 Concentration in µCi/L	1.8431E+02
Sample #		
S98T002781	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG time)}$	
Instrument Code	Detection Limit (Ld) = $((2.72 / \text{BKG time}) + (2 * \text{Lc})) / \text{EFF}$	
WC51586	Detection Level = $\text{Ld} * \text{dm3} * \text{DF} * \text{DDF} / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
Prepared By	Tc-99 µCi/L = $(\text{dm1} * (1000 \text{mL/L}) * \text{dm3} * \text{DF} * \text{DDF}) / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
MCB	Tc-99 µCi/mL = $\mu\text{Ci/L} / (1000 \text{mL/L})$	
Chemist	Spike (Tracer) Recovery = $(\text{dm2} - \text{dm1}) * 1.5 * 100 / \text{dm3}$	
JFR		
Analyst		
SCL		
Data Complete		
10/15/98	Tc-99 Concentration in µCi/mL	1.84E-01
Analysis Date		DETECTION LEVEL
10/14/98	% Counting Error	0.8
Analysis Time		4.37E-04 µCi/mL
03:10 PM	Spike (Tracer) Recovery	58.3%
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/15/98
Signature of Chemist:	JFR	Date:	10/15/98

SAMPLE.WB1 REV 2.0

438101ML

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WORKBOOK PAGE: DUP8

Tc-99 : LA-438-101 (E-2)

LIQUID

		DUP
Type	Tracer Book Number	(Tr BN) 39B57
DUP	Activity for 100µl of Spike Added in dpm	(dm3) 5637.7
Worklist	Volume of Sample in mL	(SS) 2
26525	Dilution Factor	(DF) 101
Test Code	Digest Dilution Factor	(DDF) 1
@TC99-01	dpm of Sample from Liquid Scintillation Counter	(dm1) 3052.31
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter	(dm2) 5361.81
LIQUID	Background cpm	(BKG cpm) 44.75
Batch Number	Background Time Counted in Minutes	(BKG time) 20
98005122	Instrument Fractional Efficiency	(EFF) 0.9515
Rerun	% Counting Error	0.83
0	Detection Limit	(Ld) 7.47
Sample Prep	Critical Level	(Lc) 3.49
N/A	Tc-99 Concentration in µCi/L	1.6949E+02
Sample #		
S98T002781	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG time)}$	
Instrument Code	Detection Limit (Ld) = $((2.72 / \text{BKG time}) + (2 * \text{Lc})) / \text{EFF}$	
WC51586	Detection Level = $\text{Ld} * \text{dm3} * \text{DF} * \text{DDF} / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
Prepared By	Tc-99 µCi/L = $(\text{dm1} * (1000 \text{mL/L}) * \text{dm3} * \text{DF} * \text{DDF}) / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
MCB	Tc-99 µCi/mL = $\mu\text{Ci/L} / (1000 \text{mL/L})$	
Chemist	Spike (Tracer) Recovery = $(\text{dm2} - \text{dm1}) * 1.5 * 100 / \text{dm3}$	
JFR		
Analyst		
SCL		
Date Complete		
10/15/98	Tc-99 Concentration in µCi/mL	1.69E-01
Analysis Date	DETECTION LEVEL	
10/14/98	% Counting Error	0.8
Analysis Time	4.15E-04 µCi/mL	
03:10 PM	Spike (Tracer) Recovery	61.4%
Sample Point		
AW-101 LAW		

Analyst:	SCL	Date:	10/15/98
Signature of Chemist:	JFR	Date:	10/16/98

SAMPLE.WB1 REV 2.0

438101ML

LABCORE Completed Worklist Report for Worklist# 26642

Analyst: crj

Instrument: LSC03

Book#: _____

Method: LA-438-101 Rev/Mod _____

Worklist Comment: Rerun of WL26525, aw-101 law slh2

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		0TC99-01 TC99-01	LIQUID	1.41E-03	1.43E-3	101.41%	% Recovery
1 STD	0		0TC99-01 TC99-01T	LIQUID	100	6.51E+01	65.100	% Recovery
1 STD	0		0TC99-01 TC99-01E	LIQUID	1	1.32E+00	1.320	% Ct. Error
2 BLNK	0		0TC99-01 TC99-01	LIQUID	1	<8.13E-4		uCi/mL
2 BLNK	0		0TC99-01 TC99-01T	LIQUID	100	6.39E+01	63.900	% Recovery
2 BLNK	0		0TC99-01 TC99-01E	LIQUID	1.00	1.20E+01	12.000	uCi/mL
3 SAMPLE	S98T002779	0	0TC99-01 TC99-01	LIQUID	N/A	1.72E-01	8.25e-004	uCi/mL
3 SAMPLE	S98T002779	0	0TC99-01 TC99-01T	LIQUID	N/A	6.29E+01		% Recovery
3 SAMPLE	S98T002779	0	0TC99-01 TC99-01E	LIQUID	N/A	1.17E+00		% Ct. Error
4 DUP	S98T002779	0	0TC99-01 TC99-01	LIQUID	1.72E-1	1.65E-1	4.154	RPD
4 DUP	S98T002779	0	0TC99-01 TC99-01T	LIQUID	100	6.43E+01	64.300	% Recovery
4 DUP	S98T002779	0	0TC99-01 TC99-01E	LIQUID	1.00	1.18E+00	1.180	% Ct. Error

Final page for worklist# 26642

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Kelly
Reviewer Signature _____ Date 27 Oct 98

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

LABCORE Data Entry Template for Worklist# 26642

Analyst: CRT Instrument: LSC00 6520 Book# 28BS7

Method: LA-438-101 Rev/Mod E-2

Worklist Comment: Rerun of WL26525, aw-101 law slh2

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@TC99-01	LIQUID		
2 BLNK			@TC99-01	LIQUID		
3 SAMPLE	S98T002779 0		@TC99-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: TC99-01 , TC99-01E, TC99-01T					
4 DUP	S98T002779 0		@TC99-01	LIQUID		

Final page for worklist # 26642

[Signature]
Analyst Signature

10/26/98
Date

[Signature]
Analyst Signature

10/27/98
Date

Data Entry Comments:

Tc-99 : LA-438-101 (E-2)

LIQUID

		STANDARD
Type	Tracer Book Number (Tr BN)	39B57
STD	Activity for 100µl of Spike Added in dpm	5637.7
WorkList	Volume of Sample in mL (SS)	1
26642	Dilution Factor (DF)	1
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	1382.15
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	3829.71
LIQUID	Background cpm (BKG cpm)	46.05
Batch Number	Background Time Counted in Minutes (BKG time)	20
98005242	Instrument Fractional Efficiency (EFF)	0.948
Rerun	% Counting Error	1.32
0	Standard Value µCi/mL	1.410E-03
Sample Prep	Standard Book # (Std BN)	28B57
N/A	Detection Limit (Ld)	7.60
Sample #	Critical Level (Lc)	3.54
WL26642	Tc-99 Concentration in µCi/L =	1.4341E+00
Instrument Code	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG time)}$	
WC51586	Detection Limit (Ld) = $((2.72 / \text{BKG time}) + (2 * \text{Lc})) / \text{EFF}$	
Prepared By	Detection Level = $\text{Ld} * \text{dm3} * \text{DF} * \text{DDF} / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
SZC	Tc-99 µCi/L = $(\text{dm1} * (1000 \text{mL/L}) * \text{dm3} * \text{DF} * \text{DDF}) / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
Chemist	Spike (Tracer) Recovery = $(\text{dm2} - \text{dm1}) * 1.5 * 100 / \text{dm3}$	
JFR		
Analyst		
CRJ		
Date Complete	Tc-99 Concentration in µCi/mL =	1.43E-03
10/27/98		
Analysis Date	% Counting Error =	1.3
10/26/98		
Analysis Time	Spike (Tracer) Recovery =	65.1%
01:30 PM		
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date:	10/27/98
Signature of Chemist:	JFR	Date:	27 Oct 98

STANDARD.WB1 REV 2.0

43810TML

Tc-99 : LA-438-101 (E-2)

LIQUID

		BLNK
Type	Tracer Book Number (Tr Bn)	39B57
BLNK	Activity for 100µl of Spike Added in dpm	5637.7
Work List	Volume of Sample in mL (SS)	1
26642	Dilution Factor (DF)	101
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	-1.93
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	2399.61
LIQUID	Background cpm (BKG cpm)	46.05
Batch Number	Background Time Counted in Minutes (BKG time)	20
98005242	Instrument Fractional Efficiency (EFF)	0.9473
Rerun	% Counting Error	11.98
0	Detection Limit (Ld)	7.61
Sample Prep	Critical Level (Lc)	3.54
N/A	Tc-99 Concentration in µCi/L =	< 8.1255E-01
Sample #		
WL26642	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG time)}$	
Instrument Code	Detection Limit (Ld) = $((2.72 / \text{BKG time}) + (2 * \text{Lc})) / \text{EFF}$	
WC51586	Detection Level = $\text{Ld} * \text{dm3} * \text{DF} * \text{DDF} / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
Prepared By	Tc-99 µCi/L = $(\text{dm1} * (1000 \text{mL/L}) * \text{dm3} * \text{DF} * \text{DDF}) / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
SZC	Tc-99 µCi/mL = $\mu\text{Ci/L} / (1000 \text{mL/L})$	
Chemist	Spike (Tracer) Recovery = $(\text{dm2} - \text{dm1}) * 1.5 * 100 / \text{dm3}$	
JFR		
Analyst	NOTE: Reported result is a LESS THAN value calculated from the statistical Detection Limit (Ld).	
CRJ		
Date Complete		
10/27/98	Tc-99 Concentration in µCi/mL =	< 8.13E-04
Analysis Date		
10/26/98	% Counting Error =	12.0
Analysis Time		
01:30 PM	Spike (Tracer) Recovery =	63.9%
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date:	10/27/98
Signature of Chemist:	JFR	Date:	27 Oct 98

BLANK.WB1 REV 2.0

438101ML

Tc-99 : LA-438-101 (E-2)

LIQUID

		SAMPLE
Type	Tracer Book Number (Tr BN)	39B57
SAMPLE	Activity for 100µl of Spike Added in dpm (dm3)	5637.7
WorkList	Volume of Sample in mL (SS)	1
26642	Dilution Factor (DF)	101
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	1584.29
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	3949.72
LIQUID	Background cpm (BKG cpm)	46.05
Batch Number	Background Time Counted in Minutes (BKG time)	20
98005242	Instrument Fractional Efficiency (EFF)	0.9476
Rerun	% Counting Error	1.17
0	Detection Limit (Ld)	7.61
Sample Prep	Critical Level (Lc)	3.54
N/A	Tc-99 Concentration in µCi/L	1.7179E+02
Sample #		
S98T002779	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG time)}$	
Instrument Code	Detection Limit (Ld) = $((2.72 / \text{BKG time}) + (2 * \text{Lc})) / \text{EFF}$	
WC51586	Detection Level = $\text{Ld} * \text{dm3} * \text{DF} * \text{DDF} / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
Prepared By	Tc-99 µCi/L = $(\text{dm1} * (1000\text{mL/L}) * \text{dm3} * \text{DF} * \text{DDF}) / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
SZC	Tc-99 µCi/mL = $\mu\text{Ci/L} / (1000\text{mL/L})$	
Chemist	Spike (Tracer) Recovery = $(\text{dm2} - \text{dm1}) * 1.5 * 100 / \text{dm3}$	
JFR		
Analyst		
CRJ		
Date Complete		
10/27/98	Tc-99 Concentration in µCi/mL	1.72E-01
Analysis Date	DETECTION LEVEL	
10/26/98	% Counting Error	1.2
Analysis Time	8.25E-04 µCi/mL	
01:30 PM	Spike (Tracer) Recovery	62.9%
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date:	10/27/98
Signature of Chemist:	JFR	Date:	27 Oct 98

SAMPLE.WB1 REV 2.0

438101ML

1084

Tc-99 : LA-438-101 (E-2)

LIQUID

		DUP
Type	Tracer Book Number (Tr BN)	39B57
DUP	Activity for 100µl of Spike Added in dpm (dm3)	5637.7
Work List	Volume of Sample in mL (SS)	1
26642	Dilution Factor (DF)	101
Test Code	Digest Dilution Factor (DDF)	1
@TC99-01	dpm of Sample from Liquid Scintillation Counter (dm1)	1552.45
Matrix	dpm of Sample+Spike from Liquid Scintillation Counter (dm2)	3967.68
LIQUID	Background cpm (BKG cpm)	46.05
Batch Number	Background Time Counted in Minutes (BKG time)	20
98005242	Instrument Fractional Efficiency (EFF)	0.9475
Rerun	% Counting Error	1.18
0	Detection Limit (Ld)	7.61
Sample Prep	Critical Level (Lc)	3.54
N/A	Tc-99 Concentration in µCi/L	1.6487E+02
Sample #		
S98T002779	Critical Level (Lc) = $2.33 * \text{the Square Root of (BKG cpm / BKG time)}$	
Instrument Code	Detection Limit (Ld) = $((2.72 / \text{BKG time}) + (2 * \text{Lc})) / \text{EFF}$	
WC51586	Detection Level = $\text{Ld} * \text{dm3} * \text{DF} * \text{DDF} / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
Prepared By	Tc-99 µCi/L = $(\text{dm1} * (1000 \text{mL/L}) * \text{dm3} * \text{DF} * \text{DDF}) / ((2220000 \text{dpm}/\mu\text{Ci}) * \text{SS} * (\text{dm2} - \text{dm1}))$	
SZC	Tc-99 µCi/mL = $\mu\text{Ci/L} / (1000 \text{mL/L})$	
Chemist	Spike (Tracer) Recovery = $(\text{dm2} - \text{dm1}) * 1.5 * 100 / \text{dm3}$	
JFR		
Analyst		
CRJ		
Date Complete		
10/27/98	Tc-99 Concentration in µCi/mL	1.65E-01
Analysis Date		DETECTION LEVEL
10/26/98	% Counting Error	
Analysis Time		8.08E-04 µCi/mL
01:30 PM	Spike (Tracer) Recovery	
Sample Point		
AW-101 LAW		

Analyst:	CRJ	Date:	10/27/98
Signature of Chemist:	JFR	Date:	27 Oct 98
SAMPLE.WB1 REV 2.0			
438101ML			

LABCORE Completed Worklist Report for Worklist# 26391

Analyst: ak1

Instrument: APC01

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW101 LAW, @NP23701 STD: 0.250mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	QNP23701 NP23701	LIQUID	2.31E-02	1.61E-2	69.697 % Recovery	
1 STD	0	QNP23701 NP23701R	LIQUID	1	1.32E+00	1.320 % Recovery	
2 BLNK	0	QNP23701 NP23701	LIQUID	1	2.74E-5	2.740E-005 uCi/mL	
2 BLNK	0	QNP23701 NP23701R	LIQUID	1	1.03E+02	103.000 uCi/mL	
3 SAMPLE	S98T002779	0 QNP23701 NP23701	LIQUID	N/A	4.14E-05	4.71E-005 uCi/mL	
3 SAMPLE	S98T002779	0 QNP23701 NP23701R	LIQUID	N/A	1.54E+02	% Ct. Error	
4 DUP	S98T002779	0 QNP23701 NP23701	LIQUID	<4.14E-5	<4.06E-5	RPD	
4 DUP	S98T002779	0 QNP23701 NP23701R	LIQUID	1	1.60E+02	160.000 RPD	
5 SAMPLE	S98T002780	0 QNP23701 NP23701	LIQUID	N/A	2.67E-05	4.71E-005 uCi/mL	
5 SAMPLE	S98T002780	0 QNP23701 NP23701R	LIQUID	N/A	1.06E+02	% Ct. Error	
6 DUP	S98T002780	0 QNP23701 NP23701	LIQUID	2.67E-5	<2.78E-5	RPD	
6 DUP	S98T002780	0 QNP23701 NP23701R	LIQUID	1	5.00E+02	500.000 RPD	
7 SAMPLE	S98T002781	0 QNP23701 NP23701	LIQUID	N/A	4.29E-05	4.71E-005 uCi/mL	
7 SAMPLE	S98T002781	0 QNP23701 NP23701R	LIQUID	N/A	1.43E+02	% Ct. Error	
8 DUP	S98T002781	0 QNP23701 NP23701	LIQUID	<4.29E-5	2.74E-5	RPD	
8 DUP	S98T002781	0 QNP23701 NP23701R	LIQUID	1	1.03E+02	103.000 RPD	
9 SAMPLE	S98T002795	0 QNP23701 NP23701	LIQUID	N/A	3.98E-05	4.71E-005 uCi/mL	
9 SAMPLE	S98T002795	0 QNP23701 NP23701R	LIQUID	N/A	3.43E+02	% Ct. Error	
10 DUP	S98T002795	0 QNP23701 NP23701	LIQUID	<3.08E-5	<3.01E-5	RPD	
10 DUP	S98T002795	0 QNP23701 NP23701R	LIQUID	1	3.77E+02	377.000 RPD	

Final page for worklist# 26391

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date 2/1/98

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

LABCORE Data Entry Template for Worklist# 26391

Analyst: AKL Instrument: NP01 APC #7 Book# 144643

Method: LA-933-141 Rev/Mod H2

Worklist Comment: AW101 LAW, @NP23701 STD: 0.250mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@NP23701	LIQUID		
2 BLNK			@NP23701	LIQUID		
3 SAMPLE	S98T002779 0		@NP23701	LIQUID	98000261	AW-101 LAW
Analytes Requested: NP23701 , NP23701E						
4 DUP	S98T002779 0		@NP23701	LIQUID		
5 SAMPLE	S98T002780 0		@NP23701	LIQUID	98000261	AW-101 LAW
Analytes Requested: NP23701 , NP23701E						
6 DUP	S98T002780 0		@NP23701	LIQUID		
7 SAMPLE	S98T002781 0		@NP23701	LIQUID	98000261	AW-101 LAW
Analytes Requested: NP23701 , NP23701E						
8 DUP	S98T002781 0		@NP23701	LIQUID		
9 SAMPLE	S98T002795 0		@NP23701	LIQUID	98000261	AW-101 LAW
Analytes Requested: NP23701 , NP23701E						
10 DUP	S98T002795 0		@NP23701	LIQUID		

Final page for worklist # 26391

Gilita Huron 10/10/98
Analyst Signature Date

Neu Light 10/20/98
Analyst Signature Date
MeB... 10/20/98

Data Entry Comments:

Np-237 : LA-933-141 (H-2) LIQUIDS

		STANDARD
Type	Sample Volume in mL (SS)	0.250
STD	Dilution Factor (DF)	1
Work List	Mount Factor (1/Mount Volume in mL) (Mt F)	2
26391	Digest Dilution Factor (DDF)	1
Test Code	Gross Counts (Gc)	22451
@NP23701	Time counted in Minutes (Tc)	30
Matrix	Background in cpm (bkg)	6
LIQUID	Standard Value in uCi/mL	2.312E-02
Batch Number	Lc, Rmax, or Rs, (Sample Rate) as Appropriate	742.37
98004968	µCi/L in Sample	1.6051E+01
Rerun	Standard Book No.	144B43
0	Sample Count Rate (Rs) = (Gc / Tc) - bkg	
Sample Prep	Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)	
N/A	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Efficiency Factor.	
Sample #	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L	
WL26391-STD	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / (Gc - bkg * Tc)] * 1.96 *	
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
AL10539		
Prepared By		
NEW	Np-237 µCi/L =	1.61E+01
Chemist		
SAC	Np-237 µCi/mL =	1.61E-02
Analyst		
AKL		
Date Complete		
10/20/98	Relative Counting Error =	1.3%
Analysis Date		
10/18/98		
Analysis Time		
06:20 PM		
Sample Point		
AW-101 LAW		

**DETECTION
LEVEL**
**4.71E-05
µCi/mL**

Analyst:	AKL	Date:	10/20/98
Signature of Chemist:	SAC	Date:	2/02/98

STANDARD.WB1 REV 2.0

933141ML

WORKBOOK PAGE: BLANK2

Np-237 : LA-933-141 (H-2) LIQUIDS/SOLIDS

BLANK

Type	Sample Volume in mL	(SS)	0.250
BLNK	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
26391	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	218
@NP23701	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate		1.27
Batch Number	µCi/L in Sample =		2.7387E-02
98004968			
Rerun			
0	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Sample Prep	Np-237 µCi/L = Rs * 1000mL/L * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)		
N/A	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Efficiency Factor.		
Sample #	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L		
WL26391-BLK	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / (Gc - bkg * Tc)] * 1.96 *		
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
AL10539			
Prepared By			
NEW	Np-237 µCi/L =	2.74E-02	
Chemist			
SAC	Np-237 µCi/mL =	2.74E-05	
Analyst			
AKL			
Date Complete			
10/20/98	Relative Counting Error =	102.9%	
Analysis Date			
10/18/98			
Analysis Time			
06:20 PM			
Sample Point			
AW-101 LAW			

DETECTION
LEVEL4.71E-05
µCi/mL

Analyst:	AKL	Date:	10/20/98
Signature of Chemist:	<i>DACott</i>	SAC	Date: 210.1998

BLANK.WB1 REV 2.0

933141ML

1089

Np-237 : LA-933-141 (H-2) LIQUIDS/SOLIDS

		SAMPLE
Type	Sample Volume in mL (SS)	0.250
SAMPLE	Dilution Factor (DF)	1
Work List	Mount Factor (1/Mount Volume in mL) (Mt F)	2
26391	Digest Dilution Factor (DDF)	1
Test Code	Gross Counts (Gc)	205
@NP23701	Time counted in Minutes (Tc)	30
Matrix	Background in cpm (bkg)	6
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate	1.91
Batch Number	µCi/mL in Sample	< 4.1352E-05
98004968		
Rerun		
0	Sample Count Rate (Rs) = (Gc / Tc) - bkg	
Sample Prep	Np-237 µCi/mL = Rs * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)	
N/A	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Efficiency Factor.	
Sample #	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L	
S98T002779	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / (Gc - bkg * Tc)] * 1.96 *	
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
AL10539		
Prepared By		
NEW	Np-237 µCi/L = < 4.14E-02	
Chemist		
SAC	Np-237 µCi/mL = < 4.14E-05	
Analyst		
AKL	LESS THAN Value was Determined from Rmax.	
Date Complete	Relative Counting Error = 153.8%	
10/20/98		
Analysis Date		
10/18/98		
Analysis Time		
06:20 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL4.71E-05
µCi/mL

Analyst:	AKL	Date:	10/20/98
Signature of Chemist:		SAC	Date: 10/20/98

SAMPLE.WB1 REV 2.0

933141ML

Np-237 : LA-933-141 (H-2) LIQUIDS/SOLIDS

		DUPLICATE
Type	Sample Volume in mL (SS)	0.250
DUP	Dilution Factor (DF)	1
Work List	Mount Factor (1/Mount Volume in mL) (Mt F)	2
26391	Digest Dilution Factor (DDF)	1
Test Code	Gross Counts (Gc)	204
@NP23701	Time counted in Minutes (Tc)	30
Matrix	Background in cpm (bkg)	6
LIQUID	Lc, Rmax, or Rs, (Sample Rate) as Appropriate	1.88
Batch Number	µCi/mL in Sample	< 4.0601E-05
98004968		
Rerun		
0	Sample Count Rate (Rs) = (Gc / Tc) - bkg	
Sample Prep	Np-237 µCi/mL = Rs * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)	
N/A	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Efficiency Factor.	
Sample #	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L	
S98T002779	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / (Gc - bkg * Tc)] * 1.96 *	
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
AL10539		
Prepared By		
NEW	Np-237 µCi/L =	< 4.06E-02
Chemist		
SAC	Np-237 µCi/mL =	< 4.06E-05
Analyst		
AKL	LESS THAN Value was Determined from Rmax.	
Date Complete	Relative Counting Error =	160.0%
10/20/98		
Analysis Date		
10/18/98		
Analysis Time		
06:20 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL4.71E-05
µCi/mL

Analyst:	AKL	Date:	10/20/98
Signature of Chemist:		SAC	Date: 2/02/98

SAMPLE.WB1 REV 2.0

933141ML

1091

WORKBOOK PAGE: SAM5

Np-237 : LA-933-141 (H-2) LIQUIDS/SOLIDS

		SAMPLE
Type	Sample Volume in mL	(SS) 0.250
SAMPLE	Dilution Factor	(DF) 1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F) 2
26391	Digest Dilution Factor	(DDF) 1
Test Code	Gross Counts	(Gc) 217
@NP23701	Time counted in Minutes	(Tc) 30
Matrix	Background in cpm	(bkg) 6
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate	1.23
Batch Number	µCi/mL in Sample	2.6667E-05
98004968		
Rerun		
0	Sample Count Rate (Rs) = (Gc / Tc) - bkg	
Sample Prep	Np-237 µCi/mL = Rs * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)	
N/A	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Efficiency Factor.	
Sample #	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L	
S98T002780	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / (Gc - bkg * Tc)] * 1.96 *	
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
AL10539		
Prepared By		
NEW	Np-237 µCi/L = 2.67E-02	
Chemist		
SAC	Np-237 µCi/mL = 2.67E-05	
Analyst		
AKL		
Date Complete	Relative Counting Error = 105.5%	
10/20/98		
Analysis Date		
10/18/98		
Analysis Time		
06:20 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL4.71E-05
µCi/mL

Analyst:	AKL	Date:	10/20/98
Signature of Chemist:		SAC	Date: 21 Oct 98

SAMPLE.WB1 REV 2.0

933141ML

Np-237 : LA-933-141 (H-2) LIQUIDS/SOLIDS

DUPLICATE

Type	Sample Volume in mL	(SS)	0.250
DUP	Dilution Factor	(DF)	1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F)	2
26391	Digest Dilution Factor	(DDF)	1
Test Code	Gross Counts	(Gc)	187
@NP23701	Time counted in Minutes	(Tc)	30
Matrix	Background in cpm	(bkg)	6
LIQUID	Lc, Rmax, or Rs, (Sample Rate) as Appropriate		1.29
Batch Number	µCi/mL in Sample	<	2.7827E-05
98004968			
Rerun			
0	Sample Count Rate (Rs) = (Gc / Tc) - bkg		
Sample Prep	Np-237 µCi/mL	=	Rs * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)
N/A	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Efficiency Factor.		
Sample #	Np-237 µCi/mL	=	Np-237 µCi/L / 1000mL/L
S98T002780	Relative Counting Error	=	[The Square Root of (Gc + bkg * Tc) / (Gc - bkg * Tc)] * 1.96 *
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
AL10539			
Prepared By	Np-237 µCi/L	=	< 2.78E-02
NEW			
Chemist	Np-237 µCi/mL	=	< 2.78E-05
SAC			
Analyst	LESS THAN Value was Determined from Rmax.		
AKL	Relative Counting Error	=	500.0%
Date Complete			
10/20/98			
Analysis Date			
10/18/98			
Analysis Time			
06:20 PM			
Sample Point			
AW-101 LAW			

DETECTION
LEVEL4.71E-05
µCi/mL

Analyst:	AKL	Date:	10/20/98
Signature of Chemist:	SAC	Date:	20/10/98

SAMPLE.WB1 REV 2.0

933141ML

WORKBOOK PAGE: SAM7

Np-237 : LA-933-141 (H-2) LIQUIDS/SOLIDS

	SAMPLE	
Type	Sample Volume in mL	(SS) 0.250
SAMPLE	Dilution Factor	(DF) 1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F) 2
26391	Digest Dilution Factor	(DDF) 1
Test Code	Gross Counts	(Gc) 207
@NP23701	Time counted in Minutes	(Tc) 30
Matrix	Background in cpm	(bkg) 6
LIQUID	Lc, Rmax, or Rs, (Sample Rate) as Appropriate	1.98
Batch Number	µCi/mL in Sample	< 4.2854E-05
98004968		
Rerun		
0	Sample Count Rate (Rs) = (Gc / Tc) - bkg	
Sample Prep	Np-237 µCi/mL = Rs * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)	
N/A	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Efficiency Factor.	
Sample #	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L	
S98T002781	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / (Gc - bkg * Tc)] * 1.96 *	
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
AL10539		
Prepared By		
NEW	Np-237 µCi/L =	< 4.29E-02
Chemist		
SAC	Np-237 µCi/mL =	< 4.29E-05
Analyst		
AKL	LESS THAN Value was Determined from Rmax.	
Date Complete	Relative Counting Error = 142.8%	
10/20/98		
Analysis Date		
10/18/98		
Analysis Time		
06:20 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL4.71E-05
µCi/mL

Analyst:	AKL	Date:	10/20/98
Signature of Chemist:		SAC	Date: 2/02/98

SAMPLE:WB1 REV 2.0

933141ML

WORKBOOK PAGE: DUP8

Np-237 : LA-933-141 (H-2) LIQUIDS/SOLIDS

		DUPLICATE
Type	Sample Volume in mL (SS)	0.250
DUP	Dilution Factor (DF)	1
Work List	Mount Factor (1/Mount Volume in mL) (Mt F)	2
26391	Digest Dilution Factor (DDF)	1
Test Code	Gross Counts (Gc)	218
@NP23701	Time counted in Minutes (Tc)	30
Matrix	Background in cpm (bkg)	6
LIQUID	Lc, Rmax, or Rs, (Sample Rate) as Appropriate	1.27
Batch Number	µCi/mL in Sample	2.7387E-05
98004968		
Rerun		
0	Sample Count Rate (Rs) = (Gc / Tc) - bkg	
Sample Prep	Np-237 µCi/mL = Rs * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)	
N/A	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Efficiency Factor.	
Sample #	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L	
S98T002781	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / (Gc - bkg * Tc)] * 1.96 *	
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
AL10539		
Prepared By		
NEW	Np-237 µCi/L = 2.74E-02	
Chemist		
SAC	Np-237 µCi/mL = 2.74E-05	
Analyst		
AKL		
Date Complete		
10/20/98	Relative Counting Error = 102.9%	
Analysis Date		
10/18/98		
Analysis Time		
06:20 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL4.71E-05
µCi/mL

Analyst:	AKL	Date:	10/20/98
Signature of Chemist:	<i>[Signature]</i>	Date:	<i>21 Oct 98</i>

SAMPLE.WB1 REV 2.0

933141ML

Np-237 : LA-933-141 (H-2) LIQUIDS/SOLIDS

		SAMPLE
Type	Sample Volume in mL	(SS) 0.250
SAMPLE	Dilution Factor	(DF) 1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F) 2
26391	Digest Dilution Factor	(DDF) 1
Test Code	Gross Counts	(Gc) 191
@NP23701	Time counted in Minutes	(Tc) 30
Matrix	Background in cpm	(bkg) 6
LIQUID	Lc, Rmax, or Rs, (Sample Rate) as Appropriate	1.43
Batch Number	µCi/mL in Sample	< 3.0833E-05
98004968		
Rerun		
0	Sample Count Rate (Rs) = (Gc / Tc) - bkg	
Sample Prep	Np-237 µCi/mL = Rs * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)	
N/A	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Efficiency Factor.	
Sample #	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L	
S98T002795	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / (Gc - bkg * Tc)] * 1.96 *	
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
AL10539		
Prepared By		
NEW	Np-237 µCi/L =	< 3.08E-02
Chemist		
SAC	Np-237 µCi/mL =	< 3.08E-05
Analyst		
AKL	LESS THAN Value was Determined from Rmax.	
Date Complete	Relative Counting Error =	343.2%
10/20/98		
Analysis Date		
10/18/98		
Analysis Time		
06:20 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL4.71E-05
µCi/mL

Analyst:	AKL	Date:	10/20/98
Signature of Chemist:		SAC	Date: 2/02/98

SAMPLE.WB1 REV 2.0

933141ML

1096

WORKBOOK PAGE: DUP10

Np-237 : LA-933-141 (H-2) LIQUIDS/SOLIDS

		DUPLICATE
Type	Sample Volume in mL	(SS) 0.250
DUP	Dilution Factor	(DF) 1
Work List	Mount Factor (1/Mount Volume in mL)	(Mt F) 2
26391	Digest Dilution Factor	(DDF) 1
Test Code	Gross Counts	(Gc) 190
@NP23701	Time counted in Minutes	(Tc) 30
Matrix	Background in cpm	(bkg) 6
LIQUID	Lc, Rmax, or Rs,(Sample Rate) as Appropriate	1.39
Batch Number	µCi/mL in Sample	< 3.0082E-05
98004968		
Rerun		
0	Sample Count Rate (Rs) = (Gc / Tc) - bkg	
Sample Prep	Np-237 µCi/mL = Rs * DF * 3 * Mt F * DDF / (0.5 * SS * 2220000dpm/µCi)	
N/A	WHERE: 3 is an Internal Procedure Dilution Factor and 0.5 is the Counting Efficiency Factor.	
Sample #	Np-237 µCi/mL = Np-237 µCi/L / 1000mL/L	
S98T002795	Relative Counting Error = [The Square Root of (Gc + bkg * Tc) / (Gc - bkg * Tc)] * 1.96 *	
Instrument Code	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
AL10539		
Prepared By		
NEW	Np-237 µCi/L =	< 3.01E-02
Chemist		
SAC	Np-237 µCi/mL =	< 3.01E-05
Analyst		
AKL	LESS THAN Value was Determined from Rmax.	
Date Complete	Relative Counting Error =	377.0%
10/20/98		
Analysis Date		
10/18/98		
Analysis Time		
06:20 PM		
Sample Point		
AW-101 LAW		

DETECTION
LEVEL4.71E-05
µCi/mL

Analyst:	AKL	Date:	10/20/98
Signature of Chemist:	SAC	Date:	21 Oct 98

SAMPLE.WB1 REV 2.0

933141ML

LABCORE Completed Worklist Report for Worklist# 26384

Analyst: crj

Instrument: AB13

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: AW101 LAW, @AM24102 SS by Ludlum. STD: 1.0mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@AM24102 AM24101 LIQUID		2.27E-04	2.11E-4	92.952 % Recovery	
1 STD	0	@AM24102 AM24101E LIQUID		1.00	1.59E+00	1.590 % Ct Error	
1 STD	0	@AM24102 AM24101T LIQUID		100	9.17E+01	91.700 % Recovery	
2 BLNK	0	@AM24102 AM24101 LIQUID		1	<3.15E-5	uCi/mL	
2 BLNK	0	@AM24102 AM24101E LIQUID		1.00	1.00E+02	100.000 % Ct. Error	
2 BLNK	0	@AM24102 AM24101T LIQUID		100	8.04E+01	80.400 % Recovery	
2 BLNK	0	@AM24102 CM24301 LIQUID		1	<3.15E-5	uCi/mL	
2 BLNK	0	@AM24102 CM24301E LIQUID		1.00	1.00E+02	100.000 uCi/mL	
3 SAMPLE	S98T002779	0 @AM24102 AM24101 LIQUID		N/A	8.36E-04	8.29E-005	
3 SAMPLE	S98T002779	0 @AM24102 AM24101E LIQUID		N/A	2.47E+00	% Ct. Error	
3 SAMPLE	S98T002779	0 @AM24102 AM24101T LIQUID		N/A	8.38E+01	% Recovery	
3 SAMPLE	S98T002779	0 @AM24102 CM24301 LIQUID		N/A <	8.29E-05	8.29E-005 uCi/mL	
3 SAMPLE	S98T002779	0 @AM24102 CM24301E LIQUID		N/A	7.18E+00	% Ct. Error	
4 DUP	S98T002779	0 @AM24102 AM24101 LIQUID		8.36E-4	7.56E-4	10.050 RPD	
4 DUP	S98T002779	0 @AM24102 AM24101E LIQUID		1.00	2.38E+00	2.380 % Ct. Error	
4 DUP	S98T002779	0 @AM24102 AM24101T LIQUID		100	8.92E+01	89.200 % Recovery	
4 DUP	S98T002779	0 @AM24102 CM24301 LIQUID		<8.29E-5	<7.23E-5	RPD	
4 DUP	S98T002779	0 @AM24102 CM24301E LIQUID		1.00	7.54E+00	7.540 % Ct. Error	
5 SAMPLE	S98T002780	0 @AM24102 AM24101 LIQUID		N/A	5.62E-04	7.38E-005	uCi/mL
5 SAMPLE	S98T002780	0 @AM24102 AM24101E LIQUID		N/A	2.71E+00	% Ct. Error	
5 SAMPLE	S98T002780	0 @AM24102 AM24101T LIQUID		N/A	8.78E+01	% Recovery	
5 SAMPLE	S98T002780	0 @AM24102 CM24301 LIQUID		N/A <	7.38E-05	7.38E-005 uCi/mL	
5 SAMPLE	S98T002780	0 @AM24102 CM24301E LIQUID		N/A	8.47E+00	% Ct. Error	
6 DUP	S98T002780	0 @AM24102 AM24101 LIQUID		5.62E-4	5.62E-4	0.000 RPD	
6 DUP	S98T002780	0 @AM24102 AM24101E LIQUID		1.00	2.62E+00	2.620 % Ct. Error	
6 DUP	S98T002780	0 @AM24102 AM24101T LIQUID		100	8.92E+01	89.200 % Recovery	
6 DUP	S98T002780	0 @AM24102 CM24301 LIQUID		<7.38E-5	<7.12E-5	RPD	
6 DUP	S98T002780	0 @AM24102 CM24301E LIQUID		1.00	8.78E+00	8.780 % Ct. Error	
7 SAMPLE	S98T002781	0 @AM24102 AM24101 LIQUID		N/A	5.92E-04	6.80E-005	uCi/mL
7 SAMPLE	S98T002781	0 @AM24102 AM24101E LIQUID		N/A	2.61E+00	% Ct. Error	
7 SAMPLE	S98T002781	0 @AM24102 AM24101T LIQUID		N/A	9.01E+01	% Recovery	
7 SAMPLE	S98T002781	0 @AM24102 CM24301 LIQUID		N/A <	6.80E-05	6.80E-005 uCi/mL	
7 SAMPLE	S98T002781	0 @AM24102 CM24301E LIQUID		N/A	8.60E+00	% Ct. Error	
8 DUP	S98T002781	0 @AM24102 AM24101 LIQUID		5.92E-4	7.12E-4	18.405 RPD	
8 DUP	S98T002781	0 @AM24102 AM24101E LIQUID		1.00	2.42E+00	2.420 % Ct. Error	
8 DUP	S98T002781	0 @AM24102 AM24101T LIQUID		100	9.68E+01	96.800 % Recovery	
8 DUP	S98T002781	0 @AM24102 CM24301 LIQUID		<6.80E-5	<6.17E-5	RPD	
8 DUP	S98T002781	0 @AM24102 CM24301E LIQUID		1.00	8.07E+00	8.070 % Ct. Error	
9 SAMPLE	S98T002795	0 @AM24102 AM24101 LIQUID		N/A <	2.66E-06	2.66E-006 uCi/mL	
9 SAMPLE	S98T002795	0 @AM24102 AM24101E LIQUID		N/A	1.00E+02	% Ct. Error	
9 SAMPLE	S98T002795	0 @AM24102 AM24101T LIQUID		N/A	9.19E+01	% Recovery	

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

LABCORE Completed Worklist Report for Worklist# 26384

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
9 SAMPLE	S98T002795	0	@AM24102 CM24301	LIQUID	N/A	< 2.66E-06	2.66E-06	uCi/mL
9 SAMPLE	S98T002795	0	@AM24102 CM24301E	LIQUID	N/A	1.00E+02		% Ct. Error
10 DUP	S98T002795	0	@AM24102 AM24101	LIQUID	<2.66E-6	<3.12E-6		RPD
10 DUP	S98T002795	0	@AM24102 AM24101E	LIQUID	1.00	1.00E+02	100.000	% Ct Error
10 DUP	S98T002795	0	@AM24102 AM24101E	LIQUID	100	8.30E+01	83.000	% Recovery
10 DUP	S98T002795	0	@AM24102 CM24301	LIQUID	<2.66E-6	<3.12E-6		RPD
10 DUP	S98T002795	0	@AM24102 CM24301E	LIQUID	1.00	1.00E+02	100.000	% Ct Error

Final page for worklist# 26384

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

John Belzer 13 Oct 98
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 26384

Analyst: CRJ Instrument: AM01 13 Book# 28657

Method: LA-953-104 Rev/Mod B-O

Worklist Comment: AW101 LAW, @AM24102 SS by Ludlum. STD: 1.0mL skm

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@AM24102	LIQUID		
2 BLNK			@AM24102	LIQUID		
3 SAMPLE	S98T002779 0		@AM24102	LIQUID	98000261	AW-101 LAW
	Analytes Requested: AM24101 , AM24101E, AM24101T, CM24301 , CM24301E					
4 DUP	S98T002779 0		@AM24102	LIQUID		
5 SAMPLE	S98T002780 0		@AM24102	LIQUID	98000261	AW-101 LAW
	Analytes Requested: AM24101 , AM24101E, AM24101T, CM24301 , CM24301E					
6 DUP	S98T002780 0		@AM24102	LIQUID		
7 SAMPLE	S98T002781 0		@AM24102	LIQUID	98000261	AW-101 LAW
	Analytes Requested: AM24101 , AM24101E, AM24101T, CM24301 , CM24301E					
8 DUP	S98T002781 0		@AM24102	LIQUID		
9 SAMPLE	S98T002795 0		@AM24102	LIQUID	98000261	AW-101 LAW
	Analytes Requested: AM24101 , AM24101E, AM24101T, CM24301 , CM24301E					
10 DUP	S98T002795 0		@AM24102	LIQUID		

Final page for worklist # 26384

Analyst Signature

Date

10/9/98

Analyst Signature

Date

Sara Z. Gorman 10/12/98
Raymond 10.12.98

Data Entry Comments:

WORKBOOK PAGE: STD1

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

LIQUID

STD

Type	Date Counted	OCT-09-98	Am 241 AEA Frac. (C241)	0.663	
STD	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.293	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0	
26384	Tracer Volume in mL (SPKV)	0.200	Total AT Counts	6147	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24102	Tracer Book No.	140B43	Background in cpm (Bkg)	0.1	
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	103.47	
LIQUID	Detector Number	13	Am 243 cpm	45.8	
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	0	
98004961	Standard Book No	28B57	AEA Count Time (min)	480	
ReRun	Standard Value in µCi/mL	2.270E-04	Am 241 µCi/L =	2.1079E-01	
0			Cm 243/244 µCi/L =	< 1.7345E-02	
Sample Prep					
N/A					
Sample Number	Am-241 µCi/L = (C241 * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))				
WL 26384	Cm-243/244 µCi/L = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/µCi))				
Instrument Code	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) + (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
WB27810	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
Prepared By					
SZC					
Chemist					
JFR	Am 241 µCi/mL =	2.11E-04	DETECTION LEVELS in µCi/mL		
Analyst	Relative Counting Error =	1.6%			
CRJ					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
10/12/98	Cm 243/244 µCi/mL	< 1.73E-05		Am 241	
Analysis Date	Relative Counting Error =	100.0%	Cm 243/244	1.73E-05	
10/09/98	Am 243 Tracer Recovery =	91.7%			
Analysis Time					
11:30 AM					
Sample Point					
AW-101 LAW					

Analyst:	CRJ	Date:	10/12/98
Signature of Chemist:	JFR	Date:	13 Oct 98

STANDARD.WB1 REV 1.2

953103ML

WORKBOOK PAGE: BLANK2

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

LIQUID / SO

BLNK

Type	Date Counted	OCT-09-98	Am 241 AEA Frac. (C241)	0
BLNK	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.92
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
26384	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	861
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24102	Tracer Book No.	140B43	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0
LIQUID	Detector Number	13	Am 243 cpm	23.75
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	0
98004961			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 3.1494E-02
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 3.1494E-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))			
WL26384	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	NOTE: Am-241 Result is a LESS THAN Value.			
SZC	Am 241 $\mu\text{Ci/mL}$ =	< 3.15E-05	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Chemist	Relative Counting Error =	100.0%		
CRJ	NOTE: Cm-243/244 Result is a LESS THAN Value.			
Date Complete	Cm 243/244 $\mu\text{Ci/mL}$ =	< 3.15E-05	Am 241	
10/12/98	Relative Counting Error =	100.0%	3.15E-05	
Analysis Date	Am 243 Tracer Recovery =	80.4%	Cm 243/244	
10/09/98			3.15E-05	
Analysis Time				
11:30 AM				
Sample Point				
AW-101 LAW				

Analyst:	CRJ	Date:	10/12/98
Signature of Chemist:	JFR	Date:	13 Oct 98

BLANK.WB1 REV 1.2

John Malyca
953103ML

WORKBOOK PAGE: SAM3

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

LIQUID / SO

SAMPLE

Type	Date Counted	OCT-09-98	Am 241 AEA Frac. (C241)	0.601
SAMPLE	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.335
Worklist	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0.028
26384	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2460
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24102	Tracer Book No.	140B43	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	36.63
LIQUID	Detector Number	13	Am 243 cpm	20.4
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	1.68
98004961			AEA Count Time (min)	480
Rerin			Am 241 $\mu\text{Ci/L}$ =	8.3560E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 8.2946E-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))			
S98T002779	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				
SZC				
Chemist				
JFR	Am 241 $\mu\text{Ci/mL}$ =	8.36E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	2.5%		
CRJ				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
10/12/98	Cm 243/244 $\mu\text{Ci/mL}$	< 8.29E-05	Am 241	
Analysis Date	Relative Counting Error =	7.2%	8.29E-05	
10/09/98	Am 243 Tracer Recovery =	83.8%	Cm 243/244	
Analysis Time			8.29E-05	
11:30 AM				
Sample Point				
AW-101 LAW				

Analyst:	CRJ	Date:	10/12/98
Signature of Chemist:	JFR	Date:	13 Oct 98
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: DUP4

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

LIQUID / SO

DUP

Type	Date Counted	OCT-09-98	Am 241 AEA Frac. (C241)	0.586
DUP	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.361
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0.024
26384	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2430
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24102	Tracer Book No.	140B43	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	36.99
LIQUID	Detector Number	13	Am 243 cpm	22.77
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	1.5
98004961			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	7.5606E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.2311E-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))			
S98T002779	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				
SZC				
Chemist				
JFR	Am 241 $\mu\text{Ci/mL}$ =	7.56E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$	
Analyst	Relative Counting Error =	2.4%		
CRJ				
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
10/12/98	Cm 243/244 $\mu\text{Ci/mL}$	< 7.23E-05	Am 241	
Analysis Date	Relative Counting Error =	7.5%	7.23E-05	
10/09/98	Am 243 Tracer Recovery =	89.2%	Cm 243/244	
Analysis Time			7.23E-05	
11:30 AM				
Sample Point				
AW-101 LAW				

Analyst:	CRJ	Date:	10/12/98
Signature of Chemist:	JFR	Date:	13 OCT 98

SAMPLE.WB1 REV 1.2

053103ML

WORKBOOK PAGE: SAM5

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

LIQUID / SO

SAMPLE

Type	Date Counted	OCT-09-98	Am 241 AEA Frac. (C241)	0.433	
SAMPLE	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.359	
Worklist	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0.021	
26384	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2406	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24102	Tracer Book No.	140B43	Background in cpm (Bkg)	0.1	
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	24.1	
LIQUID	Detector Number	13	Am 243 cpm	20.01	
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	1.18	
98004961			AEA Count Time (min)	480	
Rerun			Am 241 $\mu\text{Ci/L}$ =	5.6177E-01	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 7.3850E-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))				
S98T002780	Cm-243/244 $\mu\text{Ci/L}$ = (Cm * Am-243 Tracer Value * SPKV * DF * DDF * (1000mL/L)) / (C243 * SS * (2220000dpm/ μCi))				
Instrument Code					
WB27810	Relative Counting Error = Square Root of [(1/(Am-243 cpm * min)) * (1 / (Am-241 or Cm-243/244 cpm * min))] * 1.96 * 100				
Prepared By	Am 243 Tracer Recovery = (Total AT Counts / TC - Bkg) * (1/DetEff) * C243 * 100 / Am-243 Tracer Value * SPKV				
SZC					
Chemist					
JFR	Am 241 $\mu\text{Ci/mL}$ =	5.62E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	2.7%			
CRJ					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241	
10/12/98	Cm 243/244 $\mu\text{Ci/mL}$	< 7.38E-05		7.38E-05	
Analysis Date	Relative Counting Error =	8.5%		Cm 243/244	
10/09/98	Am 243 Tracer Recovery =	87.8%		7.38E-05	
Analysis Time					
11:30 AM					
Sample Point					
AW-101 LAW					

Analyst:	CRJ	Date:	10/12/98
Signature of Chemist:	JFR	Date:	130098

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP6

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

LIQUID / SO

DUP

Type	Date Counted	OCT-09-98	Am 241 AEA Frac. (C241)	DUP	0.443
DUP	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)		0.367
Worklist	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)		0.019
26384	Tracer Volume in mL (SPKV)	0.100	Total AT Counts		2389
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)		30
@AM24102	Tracer Book No.	140B43	Background in cpm (Bkg)		0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm		25.81
LIQUID	Detector Number	13	Am 243 cpm		21.38
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm		1.09
98004981			AEA Count Time (min)		480
Re-run			Am 241 $\mu\text{Ci/L}$ =		5.6222E-01
0			Cm 243/244 $\mu\text{Ci/L}$ =	<	7.1168E-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))				
S98T002780	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					
SZC					
Chemist					
JFR	Am 241 $\mu\text{Ci/mL}$ =	5.62E-04	DETECTION LEVELS		
Analyst	Relative Counting Error =	2.6%	in $\mu\text{Ci/mL}$		
CRJ			Am 241		
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.		7.12E-05		
10/12/98	Cm 243/244 $\mu\text{Ci/mL}$	< 7.12E-05	Cm 243/244		
Analysis Date	Relative Counting Error =	8.8%	7.12E-05		
10/09/98	Am 243 Tracer Recovery =	89.2%			
Analysis Time					
11:30 AM					
Sample Point					
AW-101 LAW					

Analyst:	CRJ	Date:	10/12/98
Signature of Chemist:	JFR	Date:	13 Oct 98
SAMPLE.WB1 REV 1.2	953103ML		

WORKBOOK PAGE: SAM7

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

LIQUID / SO

SAMPLE

Type	Date Counted	OCT-09-98	Am 241 AEA Frac. (C241)	0.483	
SAMPLE	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.38	
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0.021	
26384	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2331	
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30	
@AM24102	Tracer Book No.	140B43	Background in cpm (Bkg)	0.1	
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	26.65	
LIQUID	Detector Number	13	Am 243 cpm	20.96	
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	1.14	
98004961			AEA Count Time (min)	480	
Rerun			Am 241 $\mu\text{Ci/L}$ =	5.9201E-01	
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 6.8036E-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))				
S98T002781	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					
SZC					
Chemist					
JFR	Am 241 $\mu\text{Ci/mL}$ =	5.92E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$		
Analyst	Relative Counting Error =	2.6%			
CRJ					
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.				
10/12/98	Cm 243/244 $\mu\text{Ci/mL}$	< 6.80E-05	Am 241	6.80E-05	
Analysis Date	Relative Counting Error =	8.6%	Cm 243/244	6.80E-05	
10/09/98	Am 243 Tracer Recovery =	90.1%			
Analysis Time					
11:30 AM					
Sample Point					
AW-101 LAW					

Analyst:	CRJ	Date:	10/12/98
Signature of Chemist:	JFR	Date:	13 Oct 98

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP8

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

LIQUID / SO

DUP

Type	Date Counted	OCT-10-98	Am 241 AEA Frac. (C241)	0.596		
DUP	Sample Volume in mL (SS)	0.100	Am 243 AEA Frac. (C243)	0.39		
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0.022		
26384	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	2441		
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30		
@AM24102	Tracer Book No.	140B43	Background in cpm (Bkg)	0.1		
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	34.58		
LIQUID	Detector Number	13	Am 243 cpm	22.61		
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	1.3		
98004961			AEA Count Time (min)	480		
Rerun			Am 241 $\mu\text{Ci/L}$ =	7.1179E-01		
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 6.1678E-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))					
S98T002781	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						
SZC						
Chemist						
JFR	Am 241 $\mu\text{Ci/mL}$ =	7.12E-04	DETECTION LEVELS in $\mu\text{Ci/mL}$			
Analyst	Relative Counting Error =	2.4%				
CRJ						
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			Am 241		
10/12/98	Cm 243/244 $\mu\text{Ci/mL}$	< 6.17E-05		6.17E-05		
Analysis Date	Relative Counting Error =	8.1%	Cm 243/244			
10/09/98	Am 243 Tracer Recovery =	96.8%	6.17E-05			
Analysis Time						
11:30 AM						
Sample Point						
AW-101.LAW						

Analyst:	CRJ	Date:	10/12/98
Signature of Chemist:	JFR	Date:	13 Oct 98

SAMPLE.WB1 REV 1.2

953103MIL

WORKBOOK PAGE: SAM9

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

LIQUID / SO

SAMPLE

Type	Date Counted	OCT-09-98	Am 241 AEA Frac. (C241)	0
SAMPLE	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.952
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
26384	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	951
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24102	Tracer Book No.	140B43	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0
LIQUID	Detector Number	13	Am 243 cpm	22.44
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	0
98004961			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 2.6620E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 2.6620E-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))			
S98T002795	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	NOTE: Am-241 Result is a LESS THAN Value.			
SZC	Chemist	Am 241 $\mu\text{Ci/mL}$ =	< 2.66E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$
CRJ	Analyst	Relative Counting Error =	100.0%	
Date Complete	NOTE: Cm-243/244 Result is a LESS THAN Value.			
10/12/98	Am 243/244 $\mu\text{Ci/mL}$	< 2.66E-06	Am 241	
Analysis Date	Relative Counting Error =	100.0%	2.66E-06	
10/09/98	Am 243 Tracer Recovery =	91.9%	Cm 243/244	
Analysis Time			2.66E-06	
11:30 AM				
Sample Point				
AW-101 LAW				

Analyst:	CRJ	Date:	10/12/98
Signature of Chemist:	JFR	Date:	13 Oct 98

SAMPLE.WB1 REV 1.2

953103ML

WORKBOOK PAGE: DUP10

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

LIQUID / SO

DUP

Type	Date Counted	OCT-09-98	Am 241 AEA Frac. (C241)	0
DUP	Sample Volume in mL (SS)	1.000	Am 243 AEA Frac. (C243)	0.899
Work List	Sample D.F. (DF)	1	Cm 243/244 AEA Frac. (Cm)	0
26384	Tracer Volume in mL (SPKV)	0.100	Total AT Counts	910
Test Code	Digest D.F. (DDF)	1.000	AT Count Time (min) (TC)	30
@AM24102	Tracer Book No.	140B43	Background in cpm (Bkg)	0.1
Matrix	Am-243 Tracer Value (dpm/mL)	1034	Am 241 cpm	0
LIQUID	Detector Number	13	Am 243 cpm	20.4
Batch Number	Detector Efficiency (DetEff)	0.3166	Cm 243/244 cpm	0
98004961			AEA Count Time (min)	480
Rerun			Am 241 $\mu\text{Ci/L}$ =	< 3.1201E-03
0			Cm 243/244 $\mu\text{Ci/L}$ =	< 3.1201E-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))			
S98T002795	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	NOTE: Am-241 Result is a LESS THAN Value.			
SZC	JFR	Am 241 $\mu\text{Ci/mL}$ =	< 3.12E-06	DETECTION LEVELS in $\mu\text{Ci/mL}$
Chemist	CRJ	Relative Counting Error =	100.0%	
Date Complete	10/12/98	NOTE: Cm-243/244 Result is a LESS THAN Value.		Am 241
Analysis Date	10/09/98	Cm 243/244 $\mu\text{Ci/mL}$	< 3.12E-06	3.12E-06
Analysis Time	11:30 AM	Relative Counting Error =	100.0%	Cm 243/244
Sample Point	AW-101 LAW	Am 243 Tracer Recovery =	83.0%	3.12E-06

Analyst:	CRJ	Date:	10/12/98
Signature of Chemist:	JFR	Date:	13 Oct 98

SAMPLE.WB1 REV 1.2

980103ML

HNF-1652 REV.0

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

DATA REDUCTION REPORT

SAMPLE
 WL26384-STD
 File ID: 15a1521.CNF

Counted on: 10/ 9/98 @20:32
 Detector: AEA15
 Geometry number: 1
 Count time: 28805. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1738.4	1738.4	297.043	297.043	16.000	9.046	8.000	1.590
2	715.1	715.1	251.434	250.777	14.000	8.349	7.000	1.304
3?	16.5	16.5	124.173	124.003	160.000	1.000	80.000	0.100
4?	0.0	0.1	115.036	115.036	0.000	0.100	0.000	0.100

PEAK RESULTS Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs.	Diff.	FWHM			
1	Am241	0.663	5.479	5.457	0.0220.04	103.47	0.9	455.4	0.205E-03
	Pu238		5.487	5.457	0.030			594.6	0.268E-03
2	Am243	0.293	5.266	5.244	0.0220.04	45.80	1.6	191.4	0.862E-04
3	????			4.661		1.28	8.6		
4	????			4.620		0.00	*****		
Totals:			0.956	<--valid peaks only-->			149.27		

DETECTOR CALIBRATION
 Energy(MEV) = 4.090 + (0.0046)*Channel
 Energy range (MeV): 4.090 TO 6.446
 Efficiency = 0.2417 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	74944.0	100.000
Smoothed	74944.0	100.000
Composite fit	72278.7	96.444
Residuals	2665.3	3.556

Analyzed by: _____
 MB

Spectrum 15a1521.CNF

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

Display Max.: 12224.5

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Raw Data Dump for AEA Spectrum: 15a1521.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	2.	1.	1.	6.	3.
21	3.	5.	3.	3.	2.	5.	1.	1.	2.
31	2.	3.	5.	5.	1.	3.	5.	2.	3.
41	2.	3.	3.	2.	7.	8.	5.	7.	5.
51	4.	9.	5.	8.	6.	6.	8.	6.	6.
61	9.	7.	6.	5.	5.	2.	6.	9.	8.
71	7.	6.	12.	3.	4.	7.	9.	7.	8.
81	5.	10.	6.	7.	10.	7.	6.	8.	7.
91	10.	10.	6.	10.	9.	4.	9.	10.	8.
101	11.	13.	10.	11.	5.	8.	11.	8.	11.
111	15.	17.	10.	16.	17.	20.	7.	17.	11.
121	16.	8.	16.	25.	22.	8.	13.	14.	15.
131	22.	18.	18.	27.	23.	25.	20.	19.	34.
141	26.	20.	27.	34.	27.	33.	28.	37.	36.
151	28.	30.	34.	36.	40.	38.	39.	36.	29.
161	37.	38.	37.	41.	43.	51.	46.	51.	56.
171	48.	51.	57.	46.	58.	60.	63.	62.	66.
181	67.	60.	69.	75.	84.	110.	71.	84.	96.
191	84.	104.	105.	127.	103.	114.	95.	99.	149.
201	137.	130.	141.	152.	159.	139.	159.	166.	158.
211	166.	202.	194.	166.	182.	214.	196.	234.	245.
221	221.	255.	261.	293.	292.	317.	344.	339.	356.
231	366.	369.	444.	444.	482.	497.	525.	543.	614.
241	673.	710.	711.	737.	781.	846.	865.	854.	911.
251	936.	967.	920.	898.	773.	654.	500.	428.	432.
261	379.	410.	387.	409.	432.	417.	449.	457.	473.
271	489.	535.	560.	602.	620.	637.	685.	689.	744.
281	849.	852.	936.	999.	1025.	1119.	1206.	1281.	1350.
291	1483.	1629.	1708.	1679.	1796.	1718.	1805.	1819.	1741.
301	1282.	988.	716.	495.	359.	319.	254.	204.	161.
311	76.	56.	39.	22.	11.	4.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	0.	1.	0.	0.	0.	0.
341	0.	1.	0.	0.	1.	2.	1.	1.	0.
351	0.	1.	0.	0.	1.	0.	0.	1.	0.
361	0.	0.	0.	0.	1.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	1.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	1.	0.
461	1.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	1.	0.	1.	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-1652 REV.0

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

DATA REDUCTION REPORT

SAMPLE
WL26384-BLNK
File ID: 16a1631.CNF

Counted on: 10/ 9/98 @20:33
Detector: AEA16
Geometry number: 1
Count time: 28803. Sec

PEAK ANALYSIS

Peak ID	Peak height		Peak center		FWHM		Tau	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	392.7	392.7	251.469	251.469	16.000	8.731	8.000	1.489

PEAK RESULTS
Peak Error Limit: 30%

Peak ID	AEA Isotope	AEA Frac	Peak Centroid Exp.	Peak Centroid Obs.	Diff.	FWHM	Count Rate	%err @95	d/m	Activity uCi/ea
1	Am243	0.920	5.266	5.246	0.020	0.04	23.75	1.8	88.6	0.399E-04
Totals:		0.920	<--valid peaks only-->				23.75			

DETECTOR CALIBRATION
Energy(MEV) = 4.090 + (0.0046)*Channel
Energy range (MeV): 4.090 TO 6.445
Efficiency = 0.2707 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	12398.0	100.000
Smoothed	12398.0	100.000
Composite fit	11401.9	91.965
Residuals	996.1	8.035

Analyzed by: _____
MB

[illegible]

Raw Data Dump for AEA Spectrum: 16a1631.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	0.	0.	1.
21	0.	2.	0.	1.	0.	1.	0.	0.	3.
31	0.	1.	3.	3.	1.	2.	0.	0.	0.
41	0.	3.	1.	3.	1.	0.	1.	0.	3.
51	2.	1.	0.	0.	2.	2.	3.	2.	2.
61	0.	0.	3.	1.	0.	1.	0.	0.	2.
71	3.	2.	3.	0.	0.	1.	0.	2.	3.
81	1.	2.	2.	0.	1.	5.	3.	3.	4.
91	2.	0.	3.	1.	1.	4.	0.	3.	1.
101	1.	5.	4.	2.	5.	1.	1.	5.	4.
111	1.	1.	4.	5.	2.	5.	5.	3.	5.
121	6.	3.	8.	4.	10.	9.	2.	5.	5.
131	6.	7.	3.	5.	3.	5.	8.	7.	6.
141	3.	8.	8.	14.	4.	7.	9.	8.	11.
151	6.	11.	11.	8.	10.	14.	7.	15.	11.
161	5.	10.	9.	22.	14.	15.	11.	17.	17.
171	15.	19.	20.	15.	21.	15.	22.	30.	22.
181	22.	25.	35.	27.	26.	24.	25.	37.	32.
191	33.	29.	27.	30.	29.	37.	29.	33.	48.
201	40.	36.	55.	56.	47.	37.	53.	60.	65.
211	62.	70.	77.	81.	86.	84.	73.	84.	90.
221	89.	97.	107.	130.	97.	132.	109.	151.	140.
231	148.	148.	178.	189.	198.	181.	220.	213.	246.
241	293.	274.	294.	334.	394.	352.	393.	362.	366.
251	424.	399.	378.	408.	348.	291.	188.	124.	67.
261	42.	35.	37.	28.	28.	34.	25.	15.	10.
271	6.	6.	2.	0.	0.	1.	0.	3.	0.
281	2.	2.	1.	0.	4.	0.	4.	1.	2.
291	5.	2.	4.	3.	2.	3.	1.	5.	4.
301	3.	6.	2.	0.	1.	1.	0.	0.	0.
311	0.	0.	0.	0.	1.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	1.	0.	0.	0.	0.	0.	0.	1.
341	0.	0.	0.	1.	0.	0.	1.	0.	0.
351	0.	1.	1.	0.	2.	0.	2.	1.	1.
361	0.	0.	2.	0.	0.	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.	0.
471	0.	0.	0.	0.	0.	1.	0.	0.	1.
481	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.							

HNF-1652 REV. 0

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

DATA REDUCTION REPORT

SAMPLE
 S98T2779-SAM
 File ID: 17a1776.CNF

Counted on: 10/ 9/98 @20:33
 Detector: AEA17
 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	27.0	27.0	371.238	371.238	12.000	4.804	6.000	0.718
2	668.0	668.0	301.688	301.684	14.000	8.305	7.000	1.614
3	399.7	399.7	254.985	254.586	14.000	7.323	7.000	1.535

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	Cm244	0.028	5.795	5.793	0.0020.02	1.68	6.9	0.311E-05	
	Cm243		5.779	5.793	-.014		9.5	0.426E-05	
2	Am241	0.601	5.479	5.473	0.0060.04	36.63	1.5	160.7	
	Pu238		5.487	5.473	0.014		209.8	0.945E-04	
3	Am243	0.335	5.266	5.256	0.0100.03	20.40	2.2	85.0	
Totals:		0.964	<--valid peaks only-->			58.70			

DETECTOR CALIBRATION

Energy(MEV) = 4.085 + (0.0046)*Channel
 Energy range (MeV): 4.085 TO 6.440
 Efficiency = 0.2425 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	29237.0	100.000
Smoothed	29237.0	100.000
Composite fit	28179.8	96.384
Residuals	1057.2	3.616

Analyzed by: _____

MB

Spectrum 17a1776.CNF

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

Display Max.: 5092.0

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Raw Data Dump for AEA Spectrum: 17a1776.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	1.	1.	1.	2.
21	0.	1.	1.	0.	3.	1.	0.	2.	0.	1.
31	2.	1.	2.	0.	0.	1.	0.	1.	3.	1.
41	2.	1.	0.	1.	0.	1.	3.	0.	3.	3.
51	1.	4.	0.	1.	1.	2.	0.	1.	1.	0.
61	0.	1.	2.	0.	4.	2.	0.	2.	0.	1.
71	3.	1.	0.	1.	3.	0.	2.	2.	0.	1.
81	3.	2.	1.	2.	2.	1.	4.	1.	5.	0.
91	2.	0.	3.	3.	0.	0.	1.	2.	0.	5.
101	2.	4.	3.	1.	2.	3.	2.	0.	3.	1.
111	4.	2.	2.	4.	3.	0.	2.	1.	3.	1.
121	6.	2.	8.	2.	4.	6.	4.	2.	4.	1.
131	6.	4.	5.	2.	2.	5.	7.	2.	6.	6.
141	3.	5.	6.	3.	5.	3.	4.	7.	4.	6.
151	5.	3.	1.	6.	9.	11.	6.	6.	13.	9.
161	5.	11.	8.	11.	8.	6.	10.	9.	15.	14.
171	9.	8.	12.	11.	20.	17.	13.	16.	17.	19.
181	16.	10.	10.	23.	15.	12.	17.	14.	28.	18.
191	20.	17.	17.	24.	24.	33.	30.	35.	24.	22.
201	30.	28.	21.	34.	38.	33.	36.	35.	41.	39.
211	43.	57.	52.	45.	65.	59.	69.	65.	72.	74.
221	67.	80.	77.	95.	89.	94.	105.	91.	90.	128.
231	124.	118.	136.	172.	149.	158.	178.	186.	178.	215.
241	225.	267.	242.	295.	295.	324.	330.	367.	406.	413.
251	407.	434.	466.	452.	507.	445.	467.	400.	366.	263.
261	214.	144.	113.	130.	116.	95.	133.	123.	115.	120.
271	139.	138.	124.	137.	165.	156.	168.	177.	197.	198.
281	252.	251.	256.	245.	318.	288.	338.	326.	356.	436.
291	475.	496.	507.	557.	571.	588.	597.	655.	628.	673.
301	703.	699.	690.	679.	554.	488.	287.	193.	153.	126.
311	83.	92.	67.	48.	49.	17.	14.	12.	7.	2.
321	2.	3.	2.	2.	3.	0.	0.	1.	3.	2.
331	2.	6.	8.	2.	3.	5.	4.	5.	3.	8.
341	5.	4.	6.	6.	12.	9.	11.	9.	12.	10.
351	7.	13.	7.	13.	13.	15.	15.	25.	19.	22.
361	17.	29.	23.	18.	20.	32.	26.	21.	25.	23.
371	30.	30.	26.	24.	19.	7.	3.	3.	1.	0.
381	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
391	2.	0.	0.	0.	0.	0.	0.	0.	2.	0.
401	0.	2.	0.	1.	0.	1.	0.	0.	0.	0.
411	0.	1.	0.	1.	0.	2.	2.	1.	2.	0.
421	1.	1.	0.	2.	2.	3.	0.	1.	0.	0.
431	3.	0.	0.	0.	1.	2.	2.	3.	1.	2.
441	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

DATA REDUCTION REPORT

SAMPLE
 S98T2779-DUP
 File ID: 18a1852.CNF

Counted on: 10/ 9/98 @20:33
 Detector: AEA18
 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	30.6	30.6	365.404	365.404	12.000	7.372	6.000	1.639
2	749.4	749.4	297.332	297.330	14.000	8.472	7.000	1.944
3	459.9	459.9	251.222	251.030	14.000	6.800	7.000	1.465
4	6.7	6.7	175.201	174.496	12.000	52.665	6.000	3.420

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count Rate	%err c/m @95	d/m	Activity uCi/ea		
		Exp.	Obs.	Diff.	FWHM					
1	Pu236	0.024	5.755	5.773	-0.018	0.03	1.50	7.3	6.5	0.293E-05
	Cm243		5.779	5.773	0.006				8.7	0.393E-05
2	Am241	0.586	5.479	5.460	0.019	0.04	36.99	1.5	166.7	0.751E-04
	Pu238		5.487	5.460	0.027				217.7	0.981E-04
3	Am243	0.361	5.266	5.247	0.019	0.03	22.77	2.0	97.4	0.439E-04
4	Np237	0.016	4.769	4.895	-1.126	0.24	1.01	16.4	4.9	0.222E-05
	Pu242		4.891	4.895	-0.004				4.3	0.193E-05

Totals: 0.987 <--valid peaks only--> 62.27

DETECTOR CALIBRATION

Energy(MEV) = 4.093 + (0.0046)*Channel
 Energy range (MeV): 4.093 TO 6.448
 Efficiency = 0.2360 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	30290.0	100.000
Smoothed	30290.0	100.000
Composite fit	29893.0	98.689
Residuals	397.0	1.311

[illegible]

Raw Data Dump for AEA Spectrum: 18a1852.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	2.	1.	1.	0.
21	1.	1.	1.	1.	1.	0.	0.	0.	3.
31	2.	1.	1.	1.	2.	2.	4.	0.	2.
41	3.	2.	0.	1.	0.	2.	0.	1.	0.
51	2.	3.	2.	2.	0.	1.	1.	1.	2.
61	3.	1.	2.	1.	2.	0.	0.	1.	3.
71	4.	1.	1.	1.	0.	2.	1.	2.	0.
81	1.	0.	1.	3.	3.	2.	0.	0.	3.
91	4.	2.	2.	0.	3.	1.	0.	2.	2.
101	3.	2.	3.	2.	1.	6.	1.	2.	3.
111	3.	5.	1.	6.	2.	5.	3.	4.	3.
121	4.	3.	4.	3.	6.	5.	2.	4.	4.
131	3.	3.	3.	5.	6.	5.	2.	4.	5.
141	3.	3.	7.	4.	9.	7.	10.	6.	6.
151	11.	4.	5.	8.	8.	5.	10.	4.	6.
161	9.	6.	10.	9.	9.	6.	13.	12.	7.
171	5.	11.	11.	14.	12.	16.	11.	9.	12.
181	12.	9.	16.	14.	13.	23.	17.	16.	25.
191	19.	18.	13.	23.	23.	16.	30.	28.	26.
201	27.	29.	40.	25.	50.	34.	35.	44.	37.
211	57.	50.	63.	49.	65.	54.	68.	51.	78.
221	76.	80.	107.	116.	90.	108.	127.	142.	138.
231	140.	141.	176.	184.	190.	232.	240.	260.	284.
241	306.	353.	377.	404.	437.	426.	433.	473.	465.
251	551.	511.	506.	468.	394.	299.	197.	141.	107.
261	108.	115.	95.	125.	107.	115.	108.	127.	117.
271	135.	130.	144.	183.	185.	185.	204.	202.	228.
281	268.	304.	339.	357.	382.	479.	544.	517.	539.
291	629.	652.	677.	706.	724.	770.	777.	794.	793.
301	578.	438.	285.	216.	167.	127.	114.	96.	76.
311	35.	30.	18.	9.	5.	0.	0.	1.	3.
321	2.	3.	0.	4.	4.	2.	3.	4.	4.
331	5.	1.	3.	1.	4.	4.	4.	3.	3.
341	5.	6.	7.	4.	9.	14.	11.	14.	7.
351	14.	14.	19.	18.	17.	20.	25.	27.	23.
361	27.	29.	29.	36.	31.	25.	36.	28.	28.
371	16.	9.	2.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	1.	0.	1.	0.	0.	0.
391	1.	1.	0.	0.	0.	1.	0.	1.	1.
401	0.	0.	0.	0.	2.	0.	0.	0.	0.
411	0.	0.	0.	1.	1.	0.	1.	0.	1.
421	1.	1.	1.	1.	1.	1.	2.	4.	2.
431	5.	0.	2.	0.	0.	4.	4.	1.	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.	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-1652 REV. 0

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

DATA REDUCTION REPORT

SAMPLE
 S98T2780
 File ID: 19a1975.CNF

Counted on: 10/ 9/98 @20:34
 Detector: AEA19
 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	21.1	21.1	369.194	369.194	12.000	5.700	6.000	1.000
2	548.8	548.8	301.826	301.825	12.000	6.233	6.000	1.574
3	389.9	389.9	256.368	256.277	12.000	7.323	6.000	1.523
4	30.9	30.9	157.285	157.188	138.000	1.000	69.000	0.100
5?	8.3	8.3	124.912	124.264	10.000	1.729	5.000	5.009
6?	10.5	10.5	116.837	116.084	26.000	1.961	13.000	12.551
7?	10.4	10.4	108.478	107.675	10.000	2.488	5.000	0.580
8	8.0	8.0	88.140	87.177	24.000	5.439	12.000	0.278

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid			Count	%err	Activity	
			Exp.	Obs.	Diff. FWHM	Rate c/m	@95	d/m	uCi/ea
1	Cm244	0.021	5.795	5.777	0.0180.03	1.18	8.2	4.9	0.221E-05
	Cm243		5.779	5.777	0.002			6.7	0.303E-05
2	Pu238	0.433	5.487	5.467	0.0200.03	24.10	1.8	139.4	0.628E-04
	Am241		5.479	5.467	0.012			106.7	0.481E-04
3	Am243	0.359	5.266	5.257	0.0090.03	20.01	2.1	84.1	0.379E-04
4	Np237	0.044	4.769	4.802	-0.0330.00	2.46	5.8	11.8	0.530E-05
5	????			4.650		0.11	92.5		
6	????			4.612		0.15	66.5		
7	????			4.574		0.42	23.9		
8		0.016		4.480	0.03	0.91	12.4	3.8	0.171E-05

Totals: 0.874 <--valid peaks only--> 48.66

DETECTOR CALIBRATION

Energy(MEV) = 4.078 + (0.0046)*Channel
 Energy range (MeV): 4.078 TO 6.434
 Efficiency = 0.2402 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26740.0	100.000

Smoothed	26740.0	100.000
Composite fit	23685.4	88.577
Residuals	3054.6	11.423

Analyzed by: _____

MB

Spectrum 19a1975.CNF

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

Display Max.: 3861.5

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Raw Data Dump for AEA Spectrum: 19a1975.CNF										
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	2.	6.	8.	11.	5.
21	1.	3.	5.	7.	10.	9.	12.	6.	1.	3.
31	12.	5.	12.	5.	6.	9.	5.	4.	8.	3.
41	3.	8.	9.	7.	7.	4.	7.	4.	7.	9.
51	7.	6.	8.	12.	7.	12.	8.	5.	9.	5.
61	4.	9.	11.	9.	9.	7.	11.	7.	11.	8.
71	8.	13.	14.	6.	10.	9.	14.	15.	13.	16.
81	12.	13.	11.	16.	13.	10.	12.	18.	14.	13.
91	12.	7.	15.	15.	16.	12.	10.	11.	12.	15.
101	16.	11.	16.	12.	17.	14.	20.	24.	16.	17.
111	20.	12.	19.	11.	21.	15.	23.	17.	18.	17.
121	10.	17.	18.	17.	26.	17.	22.	9.	11.	22.
131	16.	21.	16.	17.	23.	16.	19.	16.	21.	18.
141	18.	28.	30.	26.	24.	21.	21.	28.	32.	16.
151	29.	26.	24.	26.	24.	26.	37.	36.	22.	25.
161	30.	21.	27.	35.	33.	40.	30.	33.	30.	27.
171	41.	38.	26.	40.	37.	40.	40.	39.	43.	37.
181	37.	36.	50.	47.	49.	43.	39.	49.	52.	43.
191	41.	61.	54.	44.	59.	52.	58.	69.	51.	52.
201	58.	59.	66.	60.	62.	68.	69.	81.	70.	91.
211	64.	77.	75.	91.	80.	80.	103.	106.	89.	94.
221	106.	113.	101.	93.	108.	110.	117.	120.	118.	128.
231	143.	137.	152.	135.	116.	157.	139.	160.	176.	196.
241	183.	176.	190.	186.	214.	229.	293.	263.	293.	290.
251	305.	333.	332.	389.	445.	432.	463.	450.	356.	249.
261	160.	137.	156.	127.	129.	131.	135.	110.	115.	135.
271	122.	138.	113.	126.	135.	122.	137.	132.	158.	153.
281	134.	167.	161.	179.	198.	202.	205.	225.	236.	250.
291	278.	288.	341.	338.	338.	415.	378.	444.	475.	534.
301	592.	633.	578.	535.	379.	261.	193.	128.	99.	93.
311	79.	85.	38.	40.	25.	23.	11.	5.	2.	4.
321	1.	2.	1.	5.	4.	3.	4.	3.	8.	5.
331	5.	6.	5.	7.	3.	3.	3.	4.	4.	1.
341	7.	3.	6.	10.	9.	5.	13.	6.	6.	7.
351	8.	12.	6.	12.	12.	10.	12.	10.	20.	12.
361	14.	17.	18.	23.	27.	15.	20.	23.	17.	25.
371	18.	22.	20.	10.	2.	2.	0.	0.	0.	0.
381	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.
391	0.	1.	0.	1.	0.	1.	0.	0.	0.	0.
401	2.	2.	0.	1.	0.	0.	1.	1.	0.	1.
411	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.
421	0.	0.	1.	1.	2.	2.	2.	0.	1.	2.
431	2.	2.	2.	1.	3.	2.	3.	5.	2.	2.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

DATA REDUCTION REPORT

SAMPLE
 S98T2780-DUP
 File ID: 20a2042.CNF

Counted on: 10/ 9/98 @20:35
 Detector: AEA20
 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	23.0	23.0	369.140	369.140	12.000	4.036	6.000	0.837
2	555.1	555.1	299.790	299.789	12.000	6.316	6.000	1.467
3	415.6	415.6	253.697	253.583	12.000	6.857	6.000	1.400
4	20.3	20.3	124.206	124.161	222.000	1.000	111.000	0.100
5	5.0	5.0	95.618	94.925	8.000	12.706	4.000	0.615

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		FWHM	Count Rate	%err c/m @95	d/m	Activity uCi/ea
			Exp.	Obs. Diff.					
1	Cm243	0.019	5.779	5.797	-0.0180.02	1.09	8.6	6.3	0.282E-05
	Cm244		5.795	5.797	-0.002			4.6	0.206E-05
2	Pu238	0.443	5.487	5.478	0.0090.03	25.81	1.8	150.4	0.678E-04
	Am241		5.479	5.478	0.001			115.2	0.519E-04
3	Am243	0.367	5.266	5.265	0.0010.03	21.38	2.1	90.6	0.408E-04
4	Np237	0.027	4.640	4.670	-0.0300.00	1.59	7.1	110.9	0.500E-04
5		0.011		4.535	0.06	0.64	18.8	2.7	0.122E-05
Totals:			0.866	<--valid peaks only-->			50.50		

DETECTOR CALIBRATION

Energy(MEV) = 4.099 + (0.0046)*Channel
 Energy range (MeV): 4.099 TO 6.454
 Efficiency = 0.2383 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27980.0	100.000
Smoothed	27980.0	100.000
Composite fit	24244.2	86.648
Residuals	3735.8	13.352

[illegible]

Raw Data Dump for AEA Spectrum: 20a2042.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	8.	11.	4.
21	10.	6.	8.	7.	14.	7.	5.	4.	7.
31	11.	7.	5.	10.	4.	6.	7.	9.	6.
41	4.	11.	6.	4.	5.	9.	7.	8.	7.
51	7.	2.	6.	9.	11.	8.	9.	8.	8.
61	8.	2.	13.	7.	6.	5.	10.	7.	9.
71	10.	9.	13.	9.	11.	9.	10.	10.	10.
81	13.	8.	13.	13.	9.	10.	8.	14.	15.
91	13.	14.	12.	13.	12.	19.	13.	11.	12.
101	15.	8.	17.	12.	23.	18.	13.	14.	14.
111	18.	15.	6.	15.	16.	15.	14.	13.	19.
121	15.	16.	28.	16.	22.	21.	16.	22.	17.
131	18.	16.	24.	24.	18.	15.	14.	33.	17.
141	26.	24.	19.	16.	28.	16.	26.	27.	19.
151	27.	25.	29.	21.	26.	26.	20.	30.	30.
161	37.	33.	25.	21.	34.	25.	45.	39.	28.
171	47.	42.	28.	40.	45.	39.	34.	37.	46.
181	43.	47.	45.	43.	50.	51.	60.	50.	50.
191	58.	65.	48.	44.	53.	76.	60.	51.	72.
201	57.	78.	58.	66.	81.	81.	88.	70.	79.
211	88.	98.	99.	75.	99.	96.	101.	112.	89.
221	115.	104.	111.	121.	102.	123.	140.	111.	129.
231	150.	180.	154.	148.	148.	151.	207.	203.	198.
241	224.	245.	260.	260.	294.	317.	321.	339.	363.
251	393.	451.	491.	483.	482.	422.	350.	205.	165.
261	129.	128.	130.	119.	123.	147.	106.	126.	137.
271	146.	130.	136.	139.	153.	145.	173.	166.	173.
281	157.	215.	223.	210.	214.	230.	300.	271.	294.
291	345.	369.	379.	373.	406.	428.	475.	559.	586.
301	561.	547.	382.	288.	183.	125.	113.	91.	82.
311	39.	28.	25.	26.	12.	13.	5.	1.	5.
321	6.	4.	3.	3.	2.	5.	3.	4.	3.
331	3.	7.	5.	6.	7.	4.	3.	9.	8.
341	8.	4.	6.	6.	3.	9.	4.	10.	13.
351	6.	10.	8.	16.	14.	11.	4.	7.	17.
361	19.	17.	25.	17.	17.	20.	21.	25.	25.
371	28.	14.	14.	4.	0.	1.	0.	0.	1.
381	0.	0.	0.	1.	0.	2.	1.	0.	0.
391	0.	0.	1.	1.	0.	1.	0.	0.	0.
401	0.	0.	1.	1.	0.	1.	1.	0.	0.
411	1.	0.	3.	0.	1.	1.	0.	1.	0.
421	0.	0.	1.	1.	0.	0.	1.	1.	1.
431	0.	2.	2.	1.	2.	1.	1.	2.	0.
441	0.	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.	0.	0.	0.
471	0.	0.	0.	0.	0.	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-1652 REV.0

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

DATA REDUCTION REPORT

SAMPLE
S98T2781-SAM
File ID: 21a2158.CNF

Counted on: 10/ 9/98 @20:35
Detector: AEA21
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	20.4	20.4	368.002	368.002	10.000	3.271	5.000	0.530
2	535.6	535.6	298.148	298.145	14.000	7.914	7.000	1.759
3	422.0	422.0	252.742	252.599	12.000	6.401	6.000	1.354

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	Cm244	0.021	5.795	5.780	0.0150.02	1.14	8.4	4.8	0.215E-05
	Cm243		5.779	5.780	-0.001			6.6	0.295E-05
2	Am241	0.483	5.479	5.459	0.0200.04	26.65	1.7	118.5	0.534E-04
	Pu238		5.487	5.459	0.028			154.7	0.697E-04
3	Am243	0.380	5.266	5.249	0.0170.03	20.96	2.1	88.5	0.398E-04
Totals:		0.884	<--valid peaks only-->			48.76			

DETECTOR CALIBRATION

Energy(MEV) = 4.088 + (0.0046)*Channel
Energy range (MeV): 4.088 TO 6.443
Efficiency = 0.2393 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	26478.0	100.000
Smoothed	26478.0	100.000
Composite fit	23404.5	88.392
Residuals	3073.5	11.608

Analyzed by: _____

MB

[illegible]

Raw Data Dump for AEA Spectrum: 21a2158.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	2.	3.	4.
21	3.	1.	7.	3.	2.	2.	4.	0.	2.
31	3.	4.	3.	3.	3.	1.	5.	4.	2.
41	3.	2.	1.	3.	4.	2.	6.	4.	4.
51	10.	5.	4.	4.	3.	1.	3.	11.	6.
61	1.	4.	4.	4.	4.	2.	4.	3.	3.
71	7.	1.	2.	6.	4.	5.	2.	6.	3.
81	5.	5.	6.	6.	5.	5.	7.	6.	4.
91	8.	9.	3.	8.	11.	4.	2.	3.	6.
101	1.	6.	4.	3.	11.	7.	5.	13.	2.
111	9.	7.	8.	6.	3.	8.	7.	12.	12.
121	9.	12.	10.	12.	14.	10.	8.	6.	16.
131	9.	14.	13.	14.	9.	16.	22.	12.	8.
141	14.	13.	11.	18.	19.	14.	19.	16.	20.
151	14.	18.	20.	18.	17.	21.	20.	14.	11.
161	20.	18.	20.	25.	20.	21.	26.	29.	23.
171	13.	28.	36.	19.	37.	37.	28.	27.	37.
181	38.	36.	29.	28.	36.	37.	30.	40.	56.
191	34.	59.	39.	50.	51.	49.	52.	60.	49.
201	61.	56.	40.	61.	56.	63.	82.	64.	68.
211	84.	67.	99.	78.	73.	89.	87.	86.	100.
221	97.	109.	101.	107.	125.	114.	129.	128.	128.
231	143.	141.	153.	177.	180.	181.	176.	181.	223.
241	223.	278.	266.	286.	348.	356.	362.	393.	417.
251	427.	477.	505.	488.	434.	350.	228.	170.	124.
261	143.	132.	117.	106.	113.	117.	141.	139.	130.
271	148.	138.	148.	141.	136.	132.	150.	170.	188.
281	228.	200.	204.	235.	248.	257.	284.	299.	318.
291	342.	422.	471.	484.	500.	541.	544.	575.	574.
301	467.	358.	295.	182.	129.	109.	97.	73.	66.
311	38.	28.	19.	10.	9.	4.	6.	3.	3.
321	0.	3.	2.	2.	2.	4.	2.	3.	3.
331	7.	3.	3.	2.	6.	5.	5.	4.	4.
341	2.	8.	2.	9.	8.	7.	7.	2.	12.
351	6.	8.	13.	14.	7.	15.	14.	19.	26.
361	10.	16.	17.	20.	25.	13.	22.	24.	17.
371	12.	4.	1.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	2.	0.	0.	0.	0.	2.
391	0.	1.	0.	0.	1.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	1.	1.	3.	1.	2.
421	0.	2.	2.	1.	0.	3.	2.	1.	3.
431	0.	4.	1.	2.	0.	3.	0.	1.	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.	1.	0.	0.
471	0.	0.	0.	0.	0.	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-1652 REV. 0

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

DATA REDUCTION REPORT

SAMPLE
 S98T2781-DUP
 File ID: 22a2245.CNF

Counted on: 10/10/98 @ 5:30
 Detector: AEA22
 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	28.8	28.8	365.228	365.228	16.000	8.792	8.000	2.382
2	677.4	677.4	298.053	298.052	16.000	9.583	8.000	2.164
3	427.7	427.7	252.560	252.295	12.000	6.017	6.000	1.150

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		Count	%err	d/m	Activity		
		Exp.	Obs.	Diff.	Rate	c/m		uCi/ea		
1	Pu236	0.022	5.755	5.772	-0.017	0.04	1.30	7.9	5.9	0.265E-05
	Cm243		5.779	5.772	0.007				7.9	0.356E-05
2	Am241	0.596	5.479	5.463	0.016	0.04	34.58	1.5	163.5	0.736E-04
	Pu238		5.487	5.463	0.024				213.4	0.961E-04
3	Am243	0.390	5.266	5.252	0.014	0.03	22.61	2.0	101.5	0.457E-04
Totals:		1.008	<--valid peaks only-->			58.48				

DETECTOR CALIBRATION

Energy(MEV) = 4.092 + (0.0046)*Channel
 Energy range (MeV): 4.092 TO 6.447
 Efficiency = 0.2250 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	27849.0	100.000
Smoothed	27849.0	100.000
Composite fit	28074.5	100.810
Residuals	-225.5	-0.810

Analyzed by: _____

GL

1 Legend: Raw = Modeled Peaks = 1,2,..., etc Display Max.: 4681.5

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Raw Data Dump for AEA Spectrum: 22a2245.CNF										
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.
21	1.	1.	0.	0.	1.	0.	0.	0.	1.	0.
31	2.	1.	0.	1.	0.	1.	0.	0.	0.	0.
41	0.	0.	1.	2.	0.	1.	0.	1.	0.	0.
51	0.	1.	0.	0.	2.	0.	4.	0.	1.	0.
61	0.	2.	2.	0.	2.	2.	0.	2.	0.	1.
71	3.	1.	1.	3.	2.	1.	1.	0.	0.	1.
81	2.	2.	1.	3.	4.	1.	0.	1.	4.	2.
91	3.	1.	0.	0.	4.	4.	1.	0.	4.	2.
101	6.	1.	3.	1.	1.	1.	5.	0.	2.	2.
111	0.	1.	2.	3.	1.	0.	1.	1.	1.	6.
121	3.	2.	4.	0.	2.	2.	3.	1.	1.	3.
131	2.	1.	3.	3.	3.	5.	2.	5.	3.	4.
141	2.	3.	0.	1.	3.	4.	6.	5.	6.	1.
151	3.	2.	3.	7.	7.	9.	1.	5.	5.	5.
161	1.	4.	10.	3.	3.	3.	3.	7.	9.	6.
171	9.	5.	1.	9.	11.	7.	6.	7.	8.	6.
181	6.	7.	9.	10.	3.	4.	6.	9.	9.	7.
191	11.	17.	15.	11.	13.	14.	10.	26.	17.	18.
201	13.	21.	21.	23.	31.	21.	32.	17.	22.	25.
211	29.	31.	33.	36.	32.	44.	48.	46.	57.	58.
221	56.	71.	63.	84.	87.	91.	100.	96.	104.	124.
231	118.	153.	143.	193.	219.	188.	217.	256.	270.	271.
241	310.	326.	344.	362.	401.	425.	413.	449.	396.	455.
251	505.	464.	492.	493.	483.	378.	266.	178.	111.	110.
261	103.	77.	85.	90.	100.	100.	86.	93.	106.	97.
271	129.	109.	137.	120.	162.	138.	177.	219.	219.	238.
281	251.	276.	318.	338.	416.	393.	379.	437.	484.	513.
291	562.	568.	646.	603.	692.	667.	724.	709.	682.	704.
301	615.	559.	426.	277.	205.	134.	121.	114.	81.	61.
311	55.	34.	26.	18.	11.	5.	1.	0.	2.	0.
321	1.	0.	2.	2.	0.	0.	3.	1.	4.	1.
331	1.	4.	0.	3.	2.	2.	5.	3.	3.	6.
341	5.	8.	7.	9.	9.	5.	9.	11.	8.	6.
351	19.	15.	11.	11.	14.	16.	17.	19.	24.	30.
361	22.	31.	25.	27.	30.	36.	25.	22.	23.	24.
371	16.	14.	8.	1.	1.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
401	0.	0.	0.	2.	1.	1.	0.	0.	0.	0.
411	0.	0.	1.	0.	1.	0.	0.	2.	2.	0.
421	3.	1.	1.	1.	0.	1.	4.	2.	1.	3.
431	1.	5.	2.	2.	2.	6.	2.	1.	0.	2.
441	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

HNF-1652 REV.0

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

DATA REDUCTION REPORT

SAMPLE
S98T2795-SAM
File ID: 23a2328.CNF

Counted on: 10/ 9/98 @20:36
Detector: AEA23
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	468.3	468.3	254.532	254.532	14.000	7.734	7.000	1.811

PEAK RESULTS

Peak Error Limit: 30%

Peak ID	Isotope	AEA Frac	Peak Centroid		FWHM	Count Rate	%err @95	d/m	Activity uCi/ea	
		Exp.	Obs.	Diff.		c/m				
1	Am243	0.952	5.266	5.260	0.0060	0.04	22.44	1.9	90.0	0.405E-04
Totals:		0.952	<--valid peaks only-->				22.44			

DETECTOR CALIBRATION

Energy(MEV) = 4.089 + (0.0046)*Channel
Energy range (MeV): 4.089 TO 6.445
Efficiency = 0.2518 CPM/DPM
(Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	11316.0	100.000
Smoothed	11316.0	100.000
Composite fit	10771.6	95.189
Residuals	544.4	4.811

Analyzed by: _____
MB


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Raw Data Dump for AEA Spectrum: 23a2328.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	1.	0.	0.	1.	0.	0.	0.	1.	0.	1.
31	0.	0.	1.	0.	0.	0.	2.	0.	4.	1.
41	0.	0.	2.	0.	1.	0.	0.	1.	1.	1.
51	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.
61	0.	1.	0.	2.	0.	0.	0.	0.	0.	2.
71	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.
81	1.	0.	0.	0.	2.	0.	0.	0.	0.	0.
91	1.	1.	1.	0.	1.	0.	2.	2.	0.	1.
101	0.	0.	2.	1.	3.	1.	2.	0.	3.	0.
111	2.	0.	1.	1.	0.	1.	1.	0.	2.	2.
121	1.	2.	0.	1.	0.	1.	0.	2.	2.	3.
131	2.	0.	3.	1.	3.	0.	4.	1.	4.	2.
141	0.	1.	5.	0.	1.	2.	3.	4.	4.	3.
151	2.	4.	5.	2.	7.	8.	3.	1.	0.	4.
161	4.	8.	4.	7.	4.	5.	6.	6.	4.	4.
171	8.	7.	7.	4.	5.	5.	7.	10.	11.	5.
181	7.	14.	8.	7.	13.	10.	13.	13.	15.	14.
191	14.	7.	12.	17.	17.	16.	16.	14.	20.	17.
201	13.	22.	17.	24.	24.	20.	24.	26.	20.	25.
211	31.	35.	35.	35.	44.	50.	42.	45.	45.	53.
221	35.	51.	55.	74.	76.	78.	78.	63.	83.	107.
231	103.	106.	91.	131.	154.	142.	145.	161.	216.	236.
241	217.	225.	265.	255.	305.	354.	355.	399.	382.	435.
251	444.	426.	509.	477.	488.	499.	453.	362.	342.	198.
261	105.	80.	49.	44.	32.	41.	28.	28.	31.	20.
271	19.	12.	4.	3.	3.	2.	0.	3.	1.	2.
281	0.	1.	2.	0.	2.	1.	3.	0.	1.	1.
291	4.	1.	2.	3.	1.	2.	3.	2.	2.	3.
301	7.	2.	3.	2.	2.	4.	1.	0.	0.	0.
311	1.	1.	0.	0.	0.	2.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
341	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
351	2.	0.	0.	0.	0.	0.	0.	0.	1.	0.
361	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
481	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
491	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
511	0.	0.								

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

DATA REDUCTION REPORT

SAMPLE
 S98T2795-DUP
 File ID: 24a2428.CNF

Counted on: 10/ 9/98 @20:37
 Detector: AEA24
 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	456.1	456.1	252.319	252.319	12.000	5.297	6.000	1.250

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 Am243	0.899	5.266	5.259	0.0070	0.02	20.40	2.0	87.2 0.393E-04
Totals:		0.899	<--valid peaks only-->		20.40			

DETECTOR CALIBRATION

Energy(MEV) = 4.098 + (0.0046)*Channel
 Energy range (MeV): 4.098 TO 6.453
 Efficiency = 0.2362 CPM/DPM
 (Data reduction compression factor: 1.)

TOTAL COUNT DATA:

Item	Total	% Recovery
Raw spectrum	10898.0	100.000
Smoothed	10898.0	100.000
Composite fit	9793.7	89.867
Residuals	1104.3	10.133

Analyzed by: _____

MB

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Raw Data Dump for AEA Spectrum: 24a2428.CNF

1	0.	0.	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	2.	0.	1.	2.
21	1.	2.	2.	1.	1.	2.	1.	1.	1.
31	0.	1.	2.	0.	0.	1.	0.	2.	1.
41	0.	0.	1.	2.	2.	1.	1.	2.	0.
51	0.	0.	1.	3.	0.	1.	0.	0.	2.
61	1.	0.	0.	4.	0.	0.	1.	2.	1.
71	1.	1.	2.	0.	2.	1.	1.	0.	0.
81	2.	1.	0.	3.	1.	4.	3.	2.	2.
91	3.	2.	2.	2.	7.	1.	1.	1.	2.
101	1.	1.	7.	3.	2.	4.	2.	5.	6.
111	4.	3.	3.	3.	2.	2.	1.	6.	1.
121	5.	2.	2.	3.	4.	4.	4.	6.	5.
131	6.	5.	3.	2.	2.	6.	6.	2.	7.
141	8.	5.	5.	9.	6.	7.	5.	6.	6.
151	8.	8.	4.	4.	7.	4.	11.	8.	7.
161	9.	10.	6.	12.	6.	8.	9.	10.	6.
171	10.	13.	9.	14.	11.	22.	10.	9.	15.
181	14.	16.	12.	14.	16.	14.	19.	13.	23.
191	17.	18.	19.	15.	19.	23.	23.	27.	17.
201	31.	33.	34.	40.	22.	26.	32.	39.	32.
211	42.	40.	54.	40.	45.	47.	57.	56.	55.
221	72.	60.	53.	73.	76.	86.	99.	84.	113.
231	124.	120.	135.	133.	131.	188.	176.	184.	175.
241	264.	273.	294.	309.	332.	367.	381.	368.	426.
251	440.	456.	517.	483.	394.	269.	151.	83.	56.
261	40.	20.	34.	33.	21.	21.	18.	16.	6.
271	4.	5.	2.	1.	2.	0.	2.	0.	1.
281	4.	2.	2.	2.	1.	2.	2.	5.	1.
291	2.	2.	2.	4.	3.	5.	11.	7.	2.
301	3.	5.	1.	0.	0.	1.	1.	1.	1.
311	0.	0.	2.	0.	0.	0.	0.	0.	0.
321	0.	0.	0.	0.	0.	0.	0.	0.	0.
331	0.	0.	0.	2.	0.	0.	0.	0.	0.
341	0.	0.	0.	1.	0.	0.	0.	0.	0.
351	2.	0.	0.	0.	0.	0.	0.	0.	0.
361	0.	1.	1.	0.	0.	0.	0.	0.	0.
371	0.	0.	0.	0.	0.	0.	0.	0.	0.
381	0.	0.	0.	0.	0.	0.	0.	0.	0.
391	0.	0.	0.	0.	0.	0.	0.	0.	0.
401	0.	0.	0.	0.	0.	0.	0.	0.	0.
411	0.	0.	0.	0.	0.	0.	0.	0.	0.
421	0.	0.	0.	0.	0.	0.	0.	1.	0.
431	0.	0.	0.	0.	0.	0.	0.	0.	0.
441	0.	0.	0.	0.	0.	0.	0.	0.	0.
451	0.	0.	0.	0.	0.	0.	0.	0.	0.
461	0.	0.	0.	0.	0.	0.	0.	0.	0.
471	0.	0.	0.	0.	0.	0.	0.	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-1652 REV. 0

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HNF-1652 REV. 0

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LABCORE Completed Worklist Report for Worklist# 26392

Analyst: aki

Instrument: LSC03

Book#: _____

Method: LA-365-132 Rev/Mod _____

Worklist Comment: AW101 LAW, @SE79-01 skm

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		0SE79-01 SE79-01 LIQUID		1	3.55E-5	3.550e-005	uCi/mL
1 BLNK	0		0SE79-01 SE79-01C LIQUID		100	9.40E+01	94.000	% Recovery
1 BLNK	0		0SE79-01 SE79-01R LIQUID		1	3.39E+00	3.390	uCi/mL
2 SAMPLE	S98T002779	0	0SE79-01 SE79-01 LIQUID	N/A		6.95E-04	4.28e-006	uCi/mL
2 SAMPLE	S98T002779	0	0SE79-01 SE79-01C LIQUID	N/A		9.75E+01		% Recovery
2 SAMPLE	S98T002779	0	0SE79-01 SE79-01R LIQUID	N/A		1.04E+00		% Recovery
3 DUP	S98T002779	0	0SE79-01 SE79-01 LIQUID		6.95E-4	7.09E-4	1.994	RPD
3 DUP	S98T002779	0	0SE79-01 SE79-01C LIQUID		100	9.10E+01	91.000	% Recovery
3 DUP	S98T002779	0	0SE79-01 SE79-01R LIQUID		1	1.07E+00	1.070	% Cnt Err
4 SAMPLE	S98T002780	0	0SE79-01 SE79-01 LIQUID	N/A		7.11E-04	4.63e-006	uCi/mL
4 SAMPLE	S98T002780	0	0SE79-01 SE79-01C LIQUID	N/A		9.40E+01		% Recovery
4 SAMPLE	S98T002780	0	0SE79-01 SE79-01R LIQUID	N/A		1.07E+00		% Recovery
5 DUP	S98T002780	0	0SE79-01 SE79-01 LIQUID		7.11E-4	7.35E-4	3.320	RPD
5 DUP	S98T002780	0	0SE79-01 SE79-01C LIQUID		100	9.20E+01	92.000	% Recovery
5 DUP	S98T002780	0	0SE79-01 SE79-01R LIQUID		1	1.04E+00	1.040	% Cnt Err
6 SAMPLE	S98T002781	0	0SE79-01 SE79-01 LIQUID	N/A		7.07E-04	4.50e-006	uCi/mL
6 SAMPLE	S98T002781	0	0SE79-01 SE79-01C LIQUID	N/A		9.65E+01		% Recovery
6 SAMPLE	S98T002781	0	0SE79-01 SE79-01R LIQUID	N/A		1.06E+00		% Recovery
7 DUP	S98T002781	0	0SE79-01 SE79-01 LIQUID		7.07E-4	7.24E-4	2.376	RPD
7 DUP	S98T002781	0	0SE79-01 SE79-01C LIQUID		100	7.90E+01	79.000	% Recovery
7 DUP	S98T002781	0	0SE79-01 SE79-01R LIQUID		1	1.14E+00	1.140	% Cnt Err
8 SAMPLE	S98T002795	0	0SE79-01 SE79-01 LIQUID	N/A		3.79E-05	5.69e-006	uCi/mL
8 SAMPLE	S98T002795	0	0SE79-01 SE79-01C LIQUID	N/A		7.70E+01		% Recovery
8 SAMPLE	S98T002795	0	0SE79-01 SE79-01R LIQUID	N/A		3.43E+00		% Recovery
9 DUP	S98T002795	0	0SE79-01 SE79-01 LIQUID		3.79E-5	4.39E-5	14.670	RPD
9 DUP	S98T002795	0	0SE79-01 SE79-01C LIQUID		100	7.60E+01	76.000	% Recovery
9 DUP	S98T002795	0	0SE79-01 SE79-01R LIQUID		1	3.12E+00	3.120	% Cnt Err

Final page for worklist# 26392

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

09/29/98 10:55
A-0004-1**LABCORE Data Entry Template for Worklist# 26392**Analyst: ARL Instrument: LSC00 6500 Book# NAMethod: LA-365-132 Rev/Mod D4

Worklist Comment: AW101 LAW, @SE79-01 skm

S Type	Sample#	R A Test	Matrix	Group#	Project
1 BLNK		@SE79-01	LIQUID		
2 SAMPLE	S98T002779 0	@SE79-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: SE79-01 , SE79-01C, SE79-01E				
3 DUP	S98T002779 0	@SE79-01	LIQUID		
4 SAMPLE	S98T002780 0	@SE79-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: SE79-01 , SE79-01C, SE79-01E				
5 DUP	S98T002780 0	@SE79-01	LIQUID		
6 SAMPLE	S98T002781 0	@SE79-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: SE79-01 , SE79-01C, SE79-01E				
7 DUP	S98T002781 0	@SE79-01	LIQUID		
8 SAMPLE	S98T002795 0	@SE79-01	LIQUID	98000261	AW-101 LAW
	Analytes Requested: SE79-01 , SE79-01C, SE79-01E				
9 DUP	S98T002795 0	@SE79-01	LIQUID		

Final page for worklist # 26392

Alita Hansen 10/15/98
Analyst Signature Date

10/19/98
Shirley Z. Chavis 10/15/98
 Analyst Signature Date
Shirley Z. Chavis 10-16-98
newright 10/19/98

Data Entry Comments:

Se-79 : LA-365-132 (D-4)

LIQUID

		BLANK
Type	Volume of Sample (SS)	0.500
BLNK	Dilution Factor (DF)	1
Work List	Digest Dilution Factor (DDF)	1
26392	DPM of Sample from Liquid Scintillation Counter (dm)	37.05
Test Code	Background CPM (BKG cpm)	41.76
@SE79-01	Background Time Counted in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.932
LIQUID	% Counting Error	3.39
Batch Number	Gross Weight (W2)	0.781
98004969	Tare Weight (W1)	0.7622
Rerun	Carrier Recovery Factor (Rec)	0.94
0	Detection Limit (Ld)	4.63
Sample Prep	Critical Level (Lc)	2.13
N/A	Se-79 Concentration in $\mu\text{Ci/mL}$	3.55E-05
Sample #	Critical Level (Lc) = $2.33 \times \text{the square root of } ((\text{BKG cpm}) / (\text{BKG Time}))$ Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 \times \text{Lc})) / \text{EFF}$ Detection Level ($\mu\text{Ci/mL}$) = $(\text{Ld}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$ Carrier Recovery Factor (Rec) = $(\text{W2} - \text{W1}) / (2 \times 0.01)$ % Carrier Recovery = $\text{Rec} \times 100$ Se-79 Concentration ($\mu\text{Ci/mL}$) = $(\text{dm}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$	
WL26392-BLK		
Instrument Code		
WC51586		
Prepared By		
NEW	Detection Levels and less than values are determined from Procedure LA-508-002	
Chemist		
SAC		
Analyst		
AKL		
Date Complete	Se-79 Concentration in $\mu\text{Ci/mL}$ = 3.55E-05 % Counting Error = 3.4 % Carrier Recovery = 94.0 Detection Level in $\mu\text{Ci/mL}$ = 4.44E-06	
10/19/98		
Analysis Date		
10/15/98		
Analysis Time		
02:00 PM		
Sample Point		
AW-101 LAW		

Analyst:	AKL	Date: 10/19/98
Signature of Chemist:	SAC	Date: 10/19/98

SAMPLE.WB1 REV 1.0

365132ML

1147

WORKBOOK PAGE: SAM2

Se-79 : LA-365-132 (D-4)

LIQUID

		SAMPLE
Type	Volume of Sample (SS)	0.500
SAMPLE	Dilution Factor (DF)	1
Worklist	Digest Dilution Factor (DDF)	1
26392	DPM of Sample from Liquid Scintillation Counter (dm)	751.82
Test Code	Background CPM (BKG cpm)	41.76
@SE79-01	Background Time Counted in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9318
LIQUID	% Counting Error	1.04
Batch Number	Gross Weight (W2)	0.7896
98004969	Tare Weight (W1)	0.7701
Rerun	Carrier Recovery Factor (Rec)	0.975
0	Detection Limit (Ld)	4.63
Sample Prep	Critical Level (Lc)	2.13
N/A	Se-79 Concentration in $\mu\text{Ci/mL}$	6.95E-04
Sample #	<p>Critical Level (Lc) = $2.33 \times \text{the square root of } ((\text{BKG cpm}) / (\text{BKG Time}))$</p> <p>Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 \times \text{Lc})) / \text{EFF}$</p> <p>Detection Level ($\mu\text{Ci/mL}$) = $(\text{Ld}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$</p> <p>Carrier Recovery Factor (Rec) = $(\text{W2} - \text{W1}) / (2 \times 0.01)$</p> <p>% Carrier Recovery = $\text{Rec} \times 100$</p> <p>Se-79 Concentration ($\mu\text{Ci/mL}$) = $(\text{dm}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$</p> <p>Detection Levels and less than values are determined from Procedure LA-508-002</p>	
S98T002779		
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst		
AKL		
Date Complete		
10/19/98		
Analysis Date		
10/15/98		
Analysis Time	Se-79 Concentration in $\mu\text{Ci/mL}$ =	6.95E-04
02:00 PM	% Counting Error =	1.0
Sample Point	% Carrier Recovery =	97.5
AW-101 LAW	Detection Level in $\mu\text{Ci/mL}$ =	4.28E-06

Analyst:	AKL	Date:	10/19/98
Signature of Chemist:	<i>[Signature]</i>	Date:	20/02/98

SAMPLE.WB1 REV 1.0

365132ML

WORKBOOK PAGE: DUP3

Se-79 : LA-365-132 (D-4)

LIQUID

		DUPLICATE
Type	Volume of Sample (SS)	0.500
DUP	Dilution Factor (DF)	1
Worklist	Digest Dilution Factor (DDF)	1
26392	DPM of Sample from Liquid Scintillation Counter (dm)	716.07
Test Code	Background CPM (BKG cpm)	41.76
@SE79-01	Background Time Counted in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9315
LIQUID	% Counting Error	1.07
Batch Number	Gross Weight (W2)	0.7864
98004969	Tare Weight (W1)	0.7682
Rerun	Carrier Recovery Factor (Rec)	0.91
0	Detection Limit (Ld)	4.63
Sample Prep	Critical Level (Lc)	2.13
N/A	Se-79 Concentration in $\mu\text{Ci/mL}$	7.09E-04
Sample #	Critical Level (Lc) = $2.33 * \text{the square root of } ((\text{BKG cpm}) / (\text{BKG Time}))$ Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$ Detection Level ($\mu\text{Ci/mL}$) = $(\text{Ld}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$ Carrier Recovery Factor (Rec) = $(\text{W2} - \text{W1}) / (2 * 0.01)$ % Carrier Recovery = $\text{Rec} * 100$ Se-79 Concentration ($\mu\text{Ci/mL}$) = $(\text{dm}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$	
S98T002779		
Instrument Code		
WC51586		
Prepared By		
NEW	Detection Levels and less than values are determined from Procedure LA-508-002	
Chemist		
SAC		
Analyst		
AKL		
Date Complete	Se-79 Concentration in $\mu\text{Ci/mL}$ = 7.09E-04 % Counting Error = 1.1 % Carrier Recovery = 91.0 Detection Level in $\mu\text{Ci/mL}$ = 4.58E-06	
10/19/98		
Analysis Date		
10/15/98		
Analysis Time		
02:00 PM		
Sample Point		
AW-101 LAW		

Analyst:	AKL	Date:	10/19/98
Signature of Chemist:	<i>SAC</i>	Date:	20 Oct 98

SAMPLE.WB1 REV 1.0

365132ML

WORKBOOK PAGE: SAM4

Se-79 : LA-365-132 (D-4)

LIQUID

SAMPLE

Type	Volume of Sample (SS)	0.500
SAMPLE	Dilution Factor (DF)	1
Worklist	Digest Dilution Factor (DDF)	1
26392	DPM of Sample from Liquid Scintillation Counter (dm)	709.88
Test Code	Background CPM (BKG cpm)	41.76
@SE79-01	Background Time Counted in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9325
LIQUID	% Counting Error	1.07
Batch Number	Gross Weight (W2)	0.7817
98004969	Tare Weight (W1)	0.7637
Rerun	Carrier Recovery Factor (Rec)	0.9
0	Detection Limit (Ld)	4.63
Sample Prep	Critical Level (Lc)	2.13
N/A	Se-79 Concentration in $\mu\text{Ci/mL}$	7.11E-04
Sample #	<p>Critical Level (Lc) = $2.33 * \text{the square root of } ((\text{BKG cpm}) / (\text{BKG Time}))$</p> <p>Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$</p> <p>Detection Level ($\mu\text{Ci/mL}$) = $(\text{Ld}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$</p> <p>Carrier Recovery Factor (Rec) = $(\text{W2} - \text{W1}) / (2 * 0.01)$</p> <p>% Carrier Recovery = $\text{Rec} * 100$</p> <p>Se-79 Concentration ($\mu\text{Ci/mL}$) = $(\text{dm}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$</p> <p>Detection Levels and less than values are determined from Procedure LA-508-002</p>	
S98T002780		
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst		
AKL		
Date Complete		
10/19/98		
Analysis Date		
10/15/98		
Analysis Time	Se-79 Concentration in $\mu\text{Ci/mL}$ =	7.11E-04
02:00 PM	% Counting Error =	1.1
Sample Point	% Carrier Recovery =	90.0
AW-101 LAW	Detection Level in $\mu\text{Ci/mL}$ =	4.63E-06

Analyst:	AKL	Date:	10/19/98
Signature of Chemist:	<i>SA Carter</i>	SAC	Date: 20 Oct 98

SAMPLE.WB1 REV 1.0

365132ML

1150

WORKBOOK PAGE: DUP5

Se-79 : LA-365-132 (D-4)

LIQUID

		DUPLICATE
Type	Volume of Sample (SS)	0.500
DUP	Dilution Factor (DF)	1
Worklist	Digest Dilution Factor (DDF)	1
26392	DPM of Sample from Liquid Scintillation Counter (dm)	750.99
Test Code	Background CPM (BKG cpm)	41.76
@SE79-01	Background Time Counted in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.9313
LIQUID	% Counting Error	1.04
Batch Number	Gross Weight (W2)	0.7861
98004969	Tare Weight (W1)	0.7677
Rerun	Carrier Recovery Factor (Rec)	0.92
0	Detection Limit (Ld)	4.63
Sample Prep	Critical Level (Lc)	2.13
N/A	Se-79 Concentration in $\mu\text{Ci/mL}$	7.35E-04
Sample #	Critical Level (Lc) = $2.33 * \text{the square root of } ((\text{BKG cpm}) / (\text{BKG Time}))$ Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$ Detection Level ($\mu\text{Ci/mL}$) = $(\text{Ld}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$ Carrier Recovery Factor (Rec) = $(\text{W2} - \text{W1}) / (2 * 0.01)$ % Carrier Recovery = $\text{Rec} * 100$ Se-79 Concentration ($\mu\text{Ci/mL}$) = $(\text{dm}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$	
S98T002780		
Instrument Code		
WC51586		
Prepared By		
NEW	Detection Levels and less than values are determined from Procedure LA-508-002	
Chemist		
SAC		
Analyst		
AKL		
Date Complete	Se-79 Concentration in $\mu\text{Ci/mL}$ = 7.35E-04 % Counting Error = 1.0 % Carrier Recovery = 92.0 Detection Level in $\mu\text{Ci/mL}$ = 4.54E-06	
10/19/98		
Analysis Date		
10/15/98		
Analysis Time		
02:00 PM		
Sample Point		
AW-101 LAW		

Analyst:	AKL	Date:	10/19/98
Signature of Chemist:	SAC	Date:	10/19/98

SAMPLE.WB1 REV 1.0

365132ML

Se-79 : LA-365-132 (D-4)

LIQUID

		SAMPLE
Type	Volume of Sample (SS)	0.500
SAMPLE	Dilution Factor (DF)	1
Worklist	Digest Dilution Factor (DDF)	1
26392	DPM of Sample from Liquid Scintillation Counter (dm)	756.87
Test Code	Background CPM (BKG cpm)	41.76
@SE79-01	Background Time Counted in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.8957
LIQUID	% Counting Error	1.06
Batch Number	Gross Weight (W2)	0.7853
98004969	Tare Weight (W1)	0.766
Rerun	Carrier Recovery Factor (Rec)	0.965
0	Detection Limit (Ld)	4.82
Sample Prep	Critical Level (Lc)	2.13
N/A	Se-79 Concentration in $\mu\text{Ci/mL}$	7.07E-04
Sample #	Critical Level (Lc) = $2.33 * \text{the square root of } ((\text{BKG cpm}) / (\text{BKG Time}))$ Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$ Detection Level ($\mu\text{Ci/mL}$) = $(\text{Ld}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$ Carrier Recovery Factor (Rec) = $(\text{W2} - \text{W1}) / (2 * 0.01)$ % Carrier Recovery = $\text{Rec} * 100$ Se-79 Concentration ($\mu\text{Ci/mL}$) = $(\text{dm}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$ Detection Levels and less than values are determined from Procedure LA-508-002	
S98T002781		
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst		
AKL		
Date Complete		
10/19/98		
Analysis Date		
10/15/98		
Analysis Time	Se-79 Concentration in $\mu\text{Ci/mL}$ =	7.07E-04
02:00 PM	% Counting Error =	1.1
Sample Point	% Carrier Recovery =	96.5
AW-101 LAW	Detection Level in $\mu\text{Ci/mL}$ =	4.50E-06

Analyst:	AKL	Date:	10/19/98
Signature of Chemist:	<i>SAC</i>	Date:	10/19/98

SAMPLE.WB1 REV 1.0

365132ML

1152

Se-79 : LA-365-132 (D-4)

LIQUID

		DUPLICATE
Type	Volume of Sample (SS)	0.500
DUP	Dilution Factor (DF)	1
Worklist	Digest Dilution Factor (DDF)	1
26392	DPM of Sample from Liquid Scintillation Counter (dm)	634.57
Test Code	Background CPM (BKG cpm)	41.76
@SE79-01	Background Time Counted in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.8994
LIQUID	% Counting Error	1.14
Batch Number	Gross Weight (W2)	0.7782
98004969	Tare Weight (W1)	0.7624
Rerun	Carrier Recovery Factor (Rec)	0.79
0	Detection Limit (Ld)	4.80
Sample Prep	Critical Level (Lc)	2.13
N/A	Se-79 Concentration in $\mu\text{Ci/mL}$	7.24E-04
Sample #	<p>Critical Level (Lc) = $2.33 * \text{the square root of } ((\text{BKG cpm}) / (\text{BKG Time}))$</p> <p>Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$</p> <p>Detection Level ($\mu\text{Ci/mL}$) = $(\text{Ld}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$</p> <p>Carrier Recovery Factor (Rec) = $(\text{W2} - \text{W1}) / (2 * 0.01)$</p> <p>% Carrier Recovery = $\text{Rec} * 100$</p> <p>Se-79 Concentration ($\mu\text{Ci/mL}$) = $(\text{dm}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$</p> <p>Detection Levels and less than values are determined from Procedure LA-508-002</p>	
S98T002781		
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst		
AKL		
Date Complete	10/19/98	
Analysis Date	10/15/98	
Analysis Time	02:00 PM	
Sample Point	AW-101 LAW	
	Se-79 Concentration in $\mu\text{Ci/mL}$ =	7.24E-04
	% Counting Error =	1.1
	% Carrier Recovery =	79.0
	Detection Level in $\mu\text{Ci/mL}$ =	5.47E-06

Analyst:	AKL	Date:	10/19/98
Signature of Chemist:		SAC	Date: 20/09/98

SAMPLE.WB1 REV 1.0

365132ML

1153

Se-79 : LA-365-132 (D-4)

LIQUID

		SAMPLE
Type	Volume of Sample (SS)	0.500
SAMPLE	Dilution Factor (DF)	1
WorkList	Digest Dilution Factor (DDF)	1
26392	DPM of Sample from Liquid Scintillation Counter (dm)	32.41
Test Code	Background CPM (BKG cpm)	41.76
@SE79-01	Background Time Counted in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.8867
LIQUID	% Counting Error	3.43
Batch Number	Gross Weight (W2)	0.7779
98004969	Tare Weight (W1)	0.7625
Rerun	Carrier Recovery Factor (Rec)	0.77
0	Detection Limit (Ld)	4.86
Sample Prep	Critical Level (Lc)	2.13
N/A	Se-79 Concentration in $\mu\text{Ci/mL}$	3.79E-05
Sample #	<p> $\text{Critical Level (Lc)} = 2.33 * \text{the square root of } ((\text{BKG cpm}) / (\text{BKG Time}))$ $\text{Detection Limit (Ld)} = ((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$ $\text{Detection Level } (\mu\text{Ci/mL}) = (\text{Ld}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$ $\text{Carrier Recovery Factor (Rec)} = (\text{W2} - \text{W1}) / (2 * 0.01)$ $\% \text{ Carrier Recovery} = \text{Rec} * 100$ $\text{Se-79 Concentration } (\mu\text{Ci/mL}) = (\text{dm}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$ </p> <p>Detection Levels and less than values are determined from Procedure LA-508-002</p>	
S98T002795		
Instrument Code		
WC51586		
Prepared By		
NEW		
Chemist		
SAC		
Analyst		
AKL		
Date Complete		
10/19/98		
Analysis Date		
10/15/98		
Analysis Time	Se-79 Concentration in $\mu\text{Ci/mL}$ =	3.79E-05
02:00 PM	% Counting Error =	3.4
Sample Point	% Carrier Recovery =	77.0
AW-101 LAW	Detection Level in $\mu\text{Ci/mL}$ =	5.69E-06

Analyst:	AKL	Date:	10/19/98
Signature of Chemist:	SAC	Date:	20/10/98

SAMPLE.WB1 REV 1.0

365132ML

WORKBOOK PAGE: DUP9

Se-79 : LA-365-132 (D-4)

LIQUID

		DUPLICATE
Type	Volume of Sample (SS)	0.500
DUP	Dilution Factor (DF)	1
Work List	Digest Dilution Factor (DDF)	1
26392	DPM of Sample from Liquid Scintillation Counter (dm)	37.05
Test Code	Background CPM (BKG cpm)	41.76
@SE79-01	Background Time Counted in Minutes (BKG Time)	50
Matrix	Instrument Fractional Efficiency (EFF)	0.932
LIQUID	% Counting Error	3.39
Batch Number	Gross Weight (W2)	0.7748
98004969	Tare Weight (W1)	0.7596
Rerun	Carrier Recovery Factor (Rec)	0.76
0	Detection Limit (Ld)	4.63
Sample Prep	Critical Level (Lc)	2.13
N/A	Se-79 Concentration in $\mu\text{Ci/mL}$	4.39E-05
Sample #		
S98T002795		
Instrument Code	Critical Level (Lc) = $2.33 * \text{the square root of } ((\text{BKG cpm}) / (\text{BKG Time}))$	
WC51586	Detection Limit (Ld) = $((2.72 / \text{BKG Time}) + (2 * \text{Lc})) / \text{EFF}$	
Prepared By	Detection Level ($\mu\text{Ci/mL}$) = $(\text{Ld}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$	
NEW	Carrier Recovery Factor (Rec) = $(\text{W2} - \text{W1}) / (2 * 0.01)$	
Chemist	% Carrier Recovery = $\text{Rec} * 100$	
SAC	Se-79 Concentration ($\mu\text{Ci/mL}$) = $(\text{dm}) (\text{DF}) (\text{DDF}) / [(\text{SS}) (2.22\text{E}+6) (\text{Rec})]$	
Analyst	Detection Levels and less than values are determined from Procedure LA-508-002	
AKL		
Date Complete		
10/19/98		
Analysis Date		
10/15/98		
Analysis Time	Se-79 Concentration in $\mu\text{Ci/mL}$ =	4.39E-05
02:00 PM	% Counting Error =	3.4
Sample Point	% Carrier Recovery =	76.0
AW-101 LAW	Detection Level in $\mu\text{Ci/mL}$ =	5.49E-06

Analyst:	AKL	Date: 10/19/98
Signature of Chemist:	SAC	Date: 10/20/98

SAMPLE.WB1 REV 1.0

365132ML

1155

HNF-1652 REV. 0

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ORGANIC ANALYSIS

HNF-1652 REV. 0

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LABCORE Completed Worklist Report for Worklist# 26463

Analyst: trh T. H 11/11/99 Instrument: ECD402

Book#: _____

Method: ~~LA-523-136~~ LA-523-927 Rev/Mod A-0

Worklist Comment: AW101 LAW, @PCBS cjo

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLANK	0	@PCBS AR1016 LIQ		1	<4.00e0		ug/L
1 BLANK	0	@PCBS AR1221 LIQ		1	<4.00e0		ug/L
1 BLANK	0	@PCBS AR1232 LIQ		1	<4.00e0		ug/L
1 BLANK	0	@PCBS AR1242 LIQ		1	<4.00e0		ug/L
1 BLANK	0	@PCBS AR1248 LIQ		1	<4.00e0		ug/L
1 BLANK	0	@PCBS AR1254 LIQ		1	<4.00e0		ug/L
1 BLANK	0	@PCBS AR1260 LIQ		1	<4.00e0		ug/L
1 BLANK	0	@PCBS TCX-01 LIQ		80	2.68e+01	33.500 % Recovery	
1 BLANK	0	@PCBS DCB-01 LIQ		80	1.09e+01	13.625 % Recovery	
2 LCS	0	@PCBS AR1254 LIQ		160	1.44e+02	90.000 % Recovery	
2 LCS	0	@PCBS TCX-01 LIQ		80	4.33e+01	54.125 % Recovery	
2 LCS	0	@PCBS DCB-01 LIQ		80	3.18e+00	3.975 % Recovery	
3 SAMPLE	S98T002785 0	@PCBS AR1016 LIQ		N/A	<4.0000e+00	4.000 ug/L	
3 SAMPLE	S98T002785 0	@PCBS AR1221 LIQ		N/A	<4.0000e+00	4.000 ug/L	
3 SAMPLE	S98T002785 0	@PCBS AR1232 LIQ		N/A	<4.0000e+00	4.000 ug/L	
3 SAMPLE	S98T002785 0	@PCBS AR1242 LIQ		N/A	<4.0000e+00	4.000 ug/L	
3 SAMPLE	S98T002785 0	@PCBS AR1248 LIQ		N/A	<4.0000e+00	4.000 ug/L	
3 SAMPLE	S98T002785 0	@PCBS AR1254 LIQ		N/A	<4.0000e+00	4.000 ug/L	
3 SAMPLE	S98T002785 0	@PCBS AR1260 LIQ		N/A	<4.0000e+00	4.000 ug/L	
3 SAMPLE	S98T002785 0	@PCBS TCX-01 LIQ		N/A	2.8000e+01	1.000 % Recovery	
3 SAMPLE	S98T002785 0	@PCBS DCB-01 LIQ		N/A	6.3000e+01	1.000 % Recovery	
4 SURR	S98T002785 0	@PCBS TCX-01 LIQ		80	2.23e+01	27.875 % Recovery	
4 SURR	S98T002785 0	@PCBS DCB-01 LIQ		80	5.07e+01	63.375 % Recovery	
5 DUP	S98T002785 0	@PCBS AR1016 LIQ			<4.00e0		RFD
5 DUP	S98T002785 0	@PCBS AR1221 LIQ			<4.00e0		RFD
5 DUP	S98T002785 0	@PCBS AR1232 LIQ			<4.00e0		RFD
5 DUP	S98T002785 0	@PCBS AR1242 LIQ			<4.00e0		RFD
5 DUP	S98T002785 0	@PCBS AR1248 LIQ			<4.00e0		RFD
5 DUP	S98T002785 0	@PCBS AR1254 LIQ			<4.00e0		RFD
5 DUP	S98T002785 0	@PCBS AR1260 LIQ			<4.00e0		RFD
5 DUP	S98T002785 0	@PCBS TCX-01 LIQ		80	2.12e+01	26.500 % Recovery	
5 DUP	S98T002785 0	@PCBS DCB-01 LIQ		80	5.19e+01	64.875 % Recovery	
6 MS	S98T002785 0	@PCBS AR1254 LIQ		211	1.52e+02	72.038 % Recovery	
6 MS	S98T002785 0	@PCBS TCX-01 LIQ		105	2.22e+01	21.143 % Recovery	
6 MS	S98T002785 0	@PCBS DCB-01 LIQ		105	7.43e+01	71.333 % Recovery	
7 SAMPLE	S98T002786 0	@PCBS AR1016 LIQ		N/A	<4.0000e+00	4.000 ug/L	
7 SAMPLE	S98T002786 0	@PCBS AR1221 LIQ		N/A	<4.0000e+00	4.000 ug/L	
7 SAMPLE	S98T002786 0	@PCBS AR1232 LIQ		N/A	<4.0000e+00	4.000 ug/L	
7 SAMPLE	S98T002786 0	@PCBS AR1242 LIQ		N/A	<4.0000e+00	4.000 ug/L	
7 SAMPLE	S98T002786 0	@PCBS AR1248 LIQ		N/A	<4.0000e+00	4.000 ug/L	
7 SAMPLE	S98T002786 0	@PCBS AR1254 LIQ		N/A	<4.0000e+00	4.000 ug/L	

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

LABCORE Completed Worklist Report for Worklist# 26463

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
7 SAMPLE	S98T002786	0	0PCBS	AR1260	LIQ	N/A	4.0000e+00	4.000 ug/L
7 SAMPLE	S98T002786	0	0PCBS	TCX-01	LIQ	N/A	0.0000e+00	1.000 % Recovery
7 SAMPLE	S98T002786	0	0PCBS	DCB-01	LIQ	N/A	2.5000e+01	1.000 % Recovery
8 SURR	S98T002786	0	0PCBS	TCX-01	LIQ	80	1.00e-01	0.125 % Recovery
8 SURR	S98T002786	0	0PCBS	DCB-01	LIQ	80	2.00e-01	25.000 % Recovery
9 DUP	S98T002786	0	0PCBS	AR1016	LIQ	<4.00e0	<4.00e0	RPD
9 DUP	S98T002786	0	0PCBS	AR1221	LIQ	<4.00e0	<4.00e0	RPD
9 DUP	S98T002786	0	0PCBS	AR1232	LIQ	<4.00e0	<4.00e0	RPD
9 DUP	S98T002786	0	0PCBS	AR1242	LIQ	<4.00e0	<4.00e0	RPD
9 DUP	S98T002786	0	0PCBS	AR1248	LIQ	<4.00e0	<4.00e0	RPD
9 DUP	S98T002786	0	0PCBS	AR1254	LIQ	<4.00e0	<4.00e0	RPD
9 DUP	S98T002786	0	0PCBS	AR1260	LIQ	<4.00e0	<4.00e0	RPD
9 DUP	S98T002786	0	0PCBS	TCX-01	LIQ	80	3.38e+00	4.225 % Recovery
9 DUP	S98T002786	0	0PCBS	DCB-01	LIQ	80	4.03e+01	50.375 % Recovery
10 SAMPLE	S98T002787	0	0PCBS	AR1016	LIQ	N/A	4.0000e+00	4.000 ug/L
10 SAMPLE	S98T002787	0	0PCBS	AR1221	LIQ	N/A	4.0000e+00	4.000 ug/L
10 SAMPLE	S98T002787	0	0PCBS	AR1232	LIQ	N/A	4.0000e+00	4.000 ug/L
10 SAMPLE	S98T002787	0	0PCBS	AR1242	LIQ	N/A	4.0000e+00	4.000 ug/L
10 SAMPLE	S98T002787	0	0PCBS	AR1248	LIQ	N/A	4.0000e+00	4.000 ug/L
10 SAMPLE	S98T002787	0	0PCBS	AR1254	LIQ	N/A	4.0000e+00	4.000 ug/L
10 SAMPLE	S98T002787	0	0PCBS	AR1260	LIQ	N/A	4.0000e+00	4.000 ug/L
10 SAMPLE	S98T002787	0	0PCBS	TCX-01	LIQ	N/A	0.0000e+00	1.000 % Recovery
10 SAMPLE	S98T002787	0	0PCBS	DCB-01	LIQ	N/A	5.1000e+01	1.000 % Recovery
11 SURR	S98T002787	0	0PCBS	TCX-01	LIQ	80	3.30e-01	0.413 % Recovery
11 SURR	S98T002787	0	0PCBS	DCB-01	LIQ	80	4.06e+01	50.750 % Recovery
12 DUP	S98T002787	0	0PCBS	AR1016	LIQ	<4.00e0	<4.00e0	RPD
12 DUP	S98T002787	0	0PCBS	AR1221	LIQ	<4.00e0	<4.00e0	RPD
12 DUP	S98T002787	0	0PCBS	AR1232	LIQ	<4.00e0	<4.00e0	RPD
12 DUP	S98T002787	0	0PCBS	AR1242	LIQ	<4.00e0	<4.00e0	RPD
12 DUP	S98T002787	0	0PCBS	AR1248	LIQ	<4.00e0	<4.00e0	RPD
12 DUP	S98T002787	0	0PCBS	AR1254	LIQ	<4.00e0	<4.00e0	RPD
12 DUP	S98T002787	0	0PCBS	AR1260	LIQ	<4.00e0	<4.00e0	RPD
12 DUP	S98T002787	0	0PCBS	TCX-01	LIQ	80	<4.0	% Recovery
12 DUP	S98T002787	0	0PCBS	DCB-01	LIQ	80	5.25e+01	65.625 % Recovery
13 SAMPLE	S98T002797	0	0PCBS	AR1016	LIQ	N/A	4.0000e+00	4.000 ug/L
13 SAMPLE	S98T002797	0	0PCBS	AR1221	LIQ	N/A	4.0000e+00	4.000 ug/L
13 SAMPLE	S98T002797	0	0PCBS	AR1232	LIQ	N/A	4.0000e+00	4.000 ug/L
13 SAMPLE	S98T002797	0	0PCBS	AR1242	LIQ	N/A	4.0000e+00	4.000 ug/L
13 SAMPLE	S98T002797	0	0PCBS	AR1248	LIQ	N/A	4.0000e+00	4.000 ug/L
13 SAMPLE	S98T002797	0	0PCBS	AR1254	LIQ	N/A	4.0000e+00	4.000 ug/L
13 SAMPLE	S98T002797	0	0PCBS	AR1260	LIQ	N/A	4.0000e+00	4.000 ug/L
13 SAMPLE	S98T002797	0	0PCBS	TCX-01	LIQ	N/A	0.0	1.000 % Recovery
13 SAMPLE	S98T002797	0	0PCBS	DCB-01	LIQ	N/A	3.2000e+01	1.000 % Recovery
14 SURR	S98T002797	0	0PCBS	TCX-01	LIQ	80	<4.0	% Recovery
14 SURR	S98T002797	0	0PCBS	DCB-01	LIQ	80	2.54e+01	31.750 % Recovery
15 DUP	S98T002797	0	0PCBS	AR1016	LIQ	<4.00e0	<4.00e0	RPD
15 DUP	S98T002797	0	0PCBS	AR1221	LIQ	<4.00e0	<4.00e0	RPD
15 DUP	S98T002797	0	0PCBS	AR1232	LIQ	<4.00e0	<4.00e0	RPD
15 DUP	S98T002797	0	0PCBS	AR1242	LIQ	<4.00e0	<4.00e0	RPD

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

LABCORE Completed Worklist Report for Worklist# 26463

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
15	DUP	S98T002797	0	@PCBS	AR1248	LIQ	<4.00e0	<4.00e0		RPD
15	DUP	S98T002797	0	@PCBS	AR1254	LIQ	<4.00e0	<4.00e0		RPD
15	DUP	S98T002797	0	@PCBS	AR1260	LIQ	<4.00e0	<4.00e0		RPD
15	DUP	S98T002797	0	@PCBS	TCX-01	LIQ	80	<4.0		% Recovery
15	DUP	S98T002797	0	@PCBS	DCB-01	LIQ	80	1.33e+01	16.625	% Recovery

Final page for worklist# 26463

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

HNF-1652 REV.0

Simulate Run Sequence Fri Dec 18 15:19:29 1998

Instrument Name: ECD-401
Sequence File: C:\HPCHEM\7\SEQUENCE\111898.S
Comment:
Operator:
Data Path: C:\HPCHEM\7\DATA\nov\
Method Path: C:\HPCHEM\5\METHODS\

Line	Type	Vial	DataFile	Method	Sample Name
------	------	------	----------	--------	-------------

1)	SEEDNAME:	'1118TH01'			
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2)	DELETEGC:	' '			
----	-----------	-----	--	--	--

GC data files will be DELETED after conversion to MS format!

3)	Sample	1	1118TH01	PCB	hex
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Data file C:\HPCHEM\7\DATA\nov\1118TH01.D already exists!

4)	Sample	2	1118TH02	PCB	54 cc lev 4
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Data file C:\HPCHEM\7\DATA\nov\1118TH02.D already exists!

5)	Sample	3	1118TH03	PCB	433
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Data file C:\HPCHEM\7\DATA\nov\1118TH03.D already exists!

6)	Sample	4	1118TH04	PCB	420
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Data file C:\HPCHEM\7\DATA\nov\1118TH04.D already exists!

7)	Sample	5	1118TH05	PCB	422
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Data file C:\HPCHEM\7\DATA\nov\1118TH05.D already exists!

8)	Sample	6	1118TH06	PCB	424
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Data file C:\HPCHEM\7\DATA\nov\1118TH06.D already exists!

9)	Sample	7	1118TH07	PCB	426
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Data file C:\HPCHEM\7\DATA\nov\1118TH07.D already exists!

10)	Sample	8	1118TH08	PCB	434
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Data file C:\HPCHEM\7\DATA\nov\1118TH08.D already exists!

11)	Sample	9	1118TH09	PCB	435
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Data file C:\HPCHEM\7\DATA\nov\1118TH09.D already exists!

12)	Sample	10	1118TH10	PCB	436
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Data file C:\HPCHEM\7\DATA\nov\1118TH10.D already exists!

13)	Sample	11	1118TH11	PCB	437
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Data file C:\HPCHEM\7\DATA\nov\1118TH11.D already exists!

14)	Sample	12	1118TH12	PCB	438
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SEQUENCE.LOG

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Data file C:\HPCHEM\7\DATA\nov\1118TH12.D already exists!
15) Sample 13 1118TH13 PCB 439

Data file C:\HPCHEM\7\DATA\nov\1118TH13.D already exists!
16) Sample 1 1118TH14 PCB hex

Data file C:\HPCHEM\7\DATA\nov\1118TH14.D already exists!
17) Sample 2 1118TH15 PCB 54 cc lev 4

Data file C:\HPCHEM\7\DATA\nov\1118TH15.D already exists!
18) Sample 14 1118TH16 PCB 442 d10

Data file C:\HPCHEM\7\DATA\nov\1118TH16.D already exists!
19) Sample 15 1118TH17 PCB 440 d10

Data file C:\HPCHEM\7\DATA\nov\1118TH17.D already exists!
20) Sample 16 1118TH18 PCB 441 d10

Data file C:\HPCHEM\7\DATA\nov\1118TH18.D already exists!
21) Sample 17 1118TH19 PCB 443 d10

Data file C:\HPCHEM\7\DATA\nov\1118TH19.D already exists!
22) Sample 18 1118TH20 PCB 444 d10

Data file C:\HPCHEM\7\DATA\nov\1118TH20.D already exists!
23) Sample 19 1118TH21 PCB 432 d10

Data file C:\HPCHEM\7\DATA\nov\1118TH21.D already exists!
24) Sample 20 1118TH22 PCB 428 d10

Data file C:\HPCHEM\7\DATA\nov\1118TH22.D already exists!
25) Sample 21 1118TH23 PCB 429 d10

Data file C:\HPCHEM\7\DATA\nov\1118TH23.D already exists!
26) Sample 22 1118TH24 PCB 430 d10

Data file C:\HPCHEM\7\DATA\nov\1118TH24.D already exists!
27) Sample 23 1118TH25 PCB 431 d10

Data file C:\HPCHEM\7\DATA\nov\1118TH25.D already exists!
28) Sample 24 1118TH26 PCB hex

Data file C:\HPCHEM\7\DATA\nov\1118TH26.D already exists!
29) Sample 25 1118TH27 PCB 54 cc lev 4

Data file C:\HPCHEM\7\DATA\nov\1118TH27.D already exists!
30) Sample 26 1118TH28 PCB 440

Data file C:\HPCHEM\7\DATA\nov\1118TH28.D already exists!
31) Sample 27 1118TH29 PCB 441

Data file C:\HPCHEM\7\DATA\nov\1118TH29.D already exists!
32) Sample 28 1118TH30 PCB 442

Data file C:\HPCHEM\7\DATA\nov\1118TH30.D already exists!
33) Sample 29 1118TH31 PCB 432

Data file C:\HPCHEM\7\DATA\nov\1118TH31.D already exists!
34) Sample 24 1118TH32 PCB hex

Data file C:\HPCHEM\7\DATA\nov\1118TH32.D already exists!
35) Sample 25 1118TH33 PCB 54 cc lev 4

Data file C:\HPCHEM\7\DATA\nov\1118TH33.D already exists!
Bytes Needed: 1650000 Space on drive C: 495845376
Sequence Verification Done!

HNF-1652 REV. 0

Lab Sample I.D.: Data File Path: C:\HPCHEM\7\DATA\NOV
Barcode I.D.: Data File Name: 1118TH02.D
Comments: CCV Lev 4 Date/Time Acquired: 11/18/98 17:56

Matrix: water (ml) Method Name: PCB.MTH
Initial Vol/Wt: 1 Calibration Updated: 11/11/98
Final Vol/Wt: 1 Calibration Type: Quad
Multiplier: 1 Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	97.75	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylylene	572076	99.84	100	100%	50-150
decachlorobipheyl	138009	74.10	100	74%	50-150

<u>SPIKE COMPOUNDS</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
Aroclor 1254	47463.83	97.75	100	98%	

COMMENTS:

Data File : C:\HPCHEM\7\DATA\NOV\1118TH02.D
Acq On : 18 Nov 98 05:56 PM
Sample : 54 cc lev 4
Misc :
Quant Time: Dec 14 14:21 1998

Vial: 2
Operator: t.h
Inst : ECD-402
Multiplr: 1.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylyene	5.03	572076	99.843 ng/ml
		Recovery	= 49.92%
8) S decachlorobipheyl	17.65	138009	74.099 ng/ml
		Recovery	= 37.05%
Target Compounds			
2) L Aroclor 1254	9.88	50687	99.085 ng/ml
3) L Aroclor 1254 {2}	10.39	65130	99.342 ng/ml
4) L Aroclor 1254 {3}	11.19	59280	97.603 ng/ml
5) L Aroclor 1254 {4}	12.25	24396	99.790 ng/ml
6) L Aroclor 1254 {5}	12.32	37551	93.920 ng/ml
7) L Aroclor 1254 {6}	12.85	47742	96.768 ng/ml
Total Aroclor 1254		284786	586.508 ng/ml
Average Aroclor 1254			97.751 ng/ml

1167

Data File : C:\HPCHEM\7\DATA\NOV\1118TH02.D
Acq On : 18 Nov 98 05:56 PM
Sample : 54 cc lev 4
Misc :
Quant Time: Dec 14 14:21 1998

Vial: 2
Operator: t.h
Inst : ECD-402
Multiplr: 1.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Lab Sample I.D.: Data File Path: C:\HPCHEM7\DATA\NOV
Barcode I.D.: 433 Data File Name: 1118TH03.D
Comments: 2nd Blank Date/Time Acquired: 11/18/98 18:29

Matrix: water (ml) Method Name: PCB.MTH
Initial Vol/Wt: 5 Calibration Updated: 11/11/98
Final Vol/Wt: 2 Calibration Type: Quad
Multiplier: 0.4 Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	<4	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylyene	416256	26.75	80	33%	50-150
decachlorobipheyl	75635	10.93	80	14%	50-150

COMMENTS:

Data File : C:\HPCHEM\7\DATA\NOV\1118TH03.D
Acq On : 18 Nov 98 06:29 PM
Sample : 433
Misc : 2nd blank
Quant Time: Dec 14 14:22 1998

Vial: 3
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylyene	5.03	416257	66.871 ng/ml
	Recovery	=	33.44%
8) S decachlorobipheyl	17.65	75635	27.330 ng/ml
	Recovery	=	13.67%
Target Compounds			
2) L Aroclor 1254	0.00	0	N.D. ng/ml
3) L Aroclor 1254 {2}	0.00	0	N.D. ng/ml
4) L Aroclor 1254 {3}	0.00	0	N.D. ng/ml
5) L Aroclor 1254 {4}	0.00	0	N.D. ng/ml
6) L Aroclor 1254 {5}	0.00	0	N.D. ng/ml
7) L Aroclor 1254 {6}	0.00	0	N.D. ng/ml
Total Aroclor 1254		0	N.D. ng/ml
Average Aroclor 1254			0.000 ng/ml

1170

Data File : C:\HPCHEM\7\DATA\NOV\1118TH03.D
Acq On : 18 Nov 98 06:29 PM
Sample : 433
Misc : 2nd blank
Quant Time: Dec 14 14:22 1998

Vial: 3
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

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Lab Sample I.D.: Data File Path: C:\HPCHEM7\DATA\NOV
Barcode I.D.: 426 Data File Name: 1118TH07.D
Comments: LCS Date/Time Acquired: 11/18/98 20:44

Matrix: water (ml) Method Name: PCB.MTH
Initial Vol/Wt: 5 Calibration Updated: 11/11/98
Final Vol/Wt: 2 Calibration Type: Quad
Multiplier: 0.4 Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	143.73	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylylene	609977	43.29	80	54%	50-150
decachlorobipheyl	47634	3.18	80	4%	50-150

<u>SPIKE COMPOUNDS</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
Aroclor 1254	119595.33	143.73	160	90%	

COMMENTS:

Data File : C:\HPCHEM\7\DATA\NOV\1118TH07.D
Acq On : 18 Nov 98 08:44 PM
Sample : 426
Misc : LCS
Quant Time: Dec 14 14:25 1998

Vial: 7
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylyene	5.03	609978	108.232 ng/ml
	Recovery	=	54.12%
8) S decachlorobipheyl	17.65	47634	7.952 ng/ml
	Recovery	=	3.98%
Target Compounds			
2) L Aroclor 1254	9.88	114971	593.055 ng/ml
3) L Aroclor 1254 {2}	10.39	149535	625.676 ng/ml
4) L Aroclor 1254 {3}	11.19	154475	736.447 ng/ml
5) L Aroclor 1254 {4}	12.25	61406	745.864 ng/ml
6) L Aroclor 1254 {5}	12.32	105417	775.436 ng/ml
7) L Aroclor 1254 {6}	12.85	131773	835.296 ng/ml
Total Aroclor 1254		717576	4311.774 ng/ml
Average Aroclor 1254			718.629 ng/ml

Data File : C:\HPCHEM\7\DATA\NOV\1118TH07.D
Acq On : 18 Nov 98 08:44 PM
Sample : 426
Misc : LCS
Quant Time: Dec 14 14:25 1998

Vial: 7
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Lab Sample I.D.: S98T2785-SAM

Data File Path: C:\HPCHEM\7\DATA\NOV\

Barcode I.D.: 420

Data File Name: 1118TH04.D

Comments:

Date/Time Acquired: 11/18/98 19:03

Matrix: water (ml)

Method Name: PCB.MTH

Initial Vol/Wt: 5

Calibration Updated: 11/11/98

Final Vol/Wt: 2

Calibration Type: Quad

Multiplier: 0.4

Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	<4	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylyene	360904	22.27	80	28%	50-150
decachlorobipheyl	199495	50.73	80	63%	50-150

COMMENTS:

Data File : C:\HPCHEM\7\DATA\NOV\1118TH04.D
Acq On : 18 Nov 98 07:03 PM
Sample : 420
Misc : S98T2785-SAM (5 ml)
Quant Time: Dec 14 14:23 1998

Vial: 4
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylyene	5.03	360905	55.684 ng/ml
	Recovery	=	27.84%
8) S decachlorobipheyl	17.65	199496	126.816 ng/ml
	Recovery	=	63.41%
Target Compounds			
2) L Aroclor 1254	0.00	0	N.D. ng/ml
3) L Aroclor 1254 {2}	0.00	0	N.D. ng/ml
4) L Aroclor 1254 {3}	11.19	12386	22.450 ng/ml
5) L Aroclor 1254 {4}	0.00	0	N.D. ng/ml
6) L Aroclor 1254 {5}	0.00	0	N.D. ng/ml
7) L Aroclor 1254 {6}	0.00	0	N.D. ng/ml
Total Aroclor 1254		12386	22.450 ng/ml
Average Aroclor 1254			22.450 ng/ml

Data File : C:\HPCHEM\7\DATA\NOV\1118TH04.D
Acq On : 18 Nov 98 07:03 PM
Sample : 420
Misc : S98T2785-SAM (5 ml)
Quant Time: Dec 14 14:23 1998

Vial: 4
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

HNF-1652 REV. C

Lab Sample I.D.: S98T2785-DUP

Data File Path: C:\HPCHEM\7\DATA\NOV\

Barcode I.D.: 422

Data File Name: 1118TH05.D

Comments:

Date/Time Acquired: 11/18/98 19:36

Matrix: water (ml)

Method Name: PCB.MTH

Initial Vol/Wt: 5

Calibration Updated: 11/11/98

Final Vol/Wt: 2

Calibration Type: Quad

Multiplier: 0.4

Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	<4	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylene	346932	21.16	80	26%	50-150
decachlorobipheyl	202743	51.94	80	65%	50-150

COMMENTS:

Data File : C:\HPCHEM\7\DATA\NOV\1118TH05.D
Acq On : 18 Nov 98 07:36 PM
Sample : 422
Misc : S98T2785-dup (5 ml)
Quant Time: Dec 14 14:23 1998

Vial: 5
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylyene	5.03	346932	52.899 ng/ml
	Recovery	=	26.45%
8) S decachlorobipheyl	17.65	202743	129.843 ng/ml
	Recovery	=	64.92%
Target Compounds			
2) L Aroclor 1254	0.00	0	N.D. ng/ml
3) L Aroclor 1254 {2}	0.00	0	N.D. ng/ml
4) L Aroclor 1254 {3}	11.19	14884	30.964 ng/ml
5) L Aroclor 1254 {4}	0.00	0	N.D. ng/ml
6) L Aroclor 1254 {5}	0.00	0	N.D. ng/ml
7) L Aroclor 1254 {6}	0.00	0	N.D. ng/ml
Total Aroclor 1254		14884	30.964 ng/ml
Average Aroclor 1254			30.964 ng/ml

1179

Data File : C:\HPCHEM\7\DATA\NOV\1118TH05.D
Acq On : 18 Nov 98 07:36 PM
Sample : 422
Misc : S98T2785-dup (5 ml)
Quant Time: Dec 14 14:23 1998

Vial: 5
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Lab Sample I.D.: S98T2785-MS
Barcode I.D.: 424
Comments: Matrix Spike

Data File Path: C:\HPCHEM\7\DATA\NOV
Data File Name: 1118TH06.D
Date/Time Acquired: 11/18/98 20:10

Matrix: water (ml) Method Name: PCB.MTH
Initial Vol/Wt: 3.8 Calibration Updated: 11/11/98
Final Vol/Wt: 2 Calibration Type: Quad
Multiplier: 0.52631 Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	152.31	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylene	292225	22.18	105	21%	50-150
decachlorobipheyI	215870	74.94	105	71%	50-150

<u>SPIKE COMPOUNDS</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
Aroclor 1254	105276.5	152.31	211	72%	

COMMENTS:

Data File : C:\HPCHEM\7\DATA\NOV\1118TH06.D
Acq On : 18 Nov 98 08:10 PM
Sample : 424
Misc : S98T2785-ms (3.8 ml)
Quant Time: Dec 14 14:24 1998

Vial: 6
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylyene	5.03	292226	42.142 ng/ml
	Recovery	=	21.07%
8) S decachlorobipheyl	17.65	215871	142.389 ng/ml
	Recovery	=	71.19%
Target Compounds			
2) L Aroclor 1254	9.88	97371	458.164 ng/ml
3) L Aroclor 1254 {2}	10.39	128997	490.543 ng/ml
4) L Aroclor 1254 {3}	11.19	136016	586.927 ng/ml
5) L Aroclor 1254 {4}	12.25	56002	624.272 ng/ml
6) L Aroclor 1254 {5}	12.32	93806	624.144 ng/ml
7) L Aroclor 1254 {6}	12.84	119470	688.692 ng/ml
Total Aroclor 1254		631662	3472.742 ng/ml
Average Aroclor 1254			578.790 ng/ml

1182

Data File : C:\HPCHEM\7\DATA\NOV\1118TH06.D
Acq On : 18 Nov 98 08:10 PM
Sample : 424
Misc : S98T2785-ms (3.8 ml)
Quant Time: Dec 14 14:24 1998

Vial: 6
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Lab Sample I.D.: S98T2786-SAM

Data File Path: C:\HPCHEM\7\DATA\NOVA

Barcode I.D.: 434

Data File Name: 1118TH08.D

Comments:

Date/Time Acquired: 11/18/98 21:18

Matrix: water (ml)

Method Name: PCB.MTH

Initial Vol/Wt: 5

Calibration Updated: 11/11/98

Final Vol/Wt: 2

Calibration Type: Quad

Multiplier: 0.4

Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	<4	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylylene	68055	0.10	80	0%	50-150
decachlorobipheyl	106701	19.97	80	25%	50-150

COMMENTS:

Data File : C:\HPCHEM\7\DATA\NOV\1118TH08.D
Acq On : 18 Nov 98 09:18 PM
Sample : 434
Misc : S98T2786-SAM (5 ml)
Quant Time: Dec 14 14:26 1998

Vial: 8
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylylene	5.03	68055	0.244 ng/ml
		Recovery =	0.12%
8) S decachlorobipheyl	17.65	106702	49.936 ng/ml
		Recovery =	24.97%
Target Compounds			
2) L Aroclor 1254	0.00	0	N.D. ng/ml
3) L Aroclor 1254 {2}	0.00	0	N.D. ng/ml
4) L Aroclor 1254 {3}	0.00	0	N.D. ng/ml
5) L Aroclor 1254 {4}	0.00	0	N.D. ng/ml
6) L Aroclor 1254 {5}	0.00	0	N.D. ng/ml
7) L Aroclor 1254 {6}	12.85	16061	40.080 ng/ml
Total Aroclor 1254		16061	40.080 ng/ml
Average Aroclor 1254			40.080 ng/ml

1185

Data File : C:\HPCHEM\7\DATA\NOV\1118TH08.D
Acq On : 18 Nov 98 09:18 PM
Sample : 434
Misc : S98T2786-SAM (5 ml)
Quant Time: Dec 14 14:26 1998

Vial: 8
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Lab Sample I.D.: S98T2786-DUP

Data File Path: C:\HPCHEM\7\DATA\NOV

Barcode I.D.: 435

Data File Name: 1118TH09.D

Comments:

Date/Time Acquired: 11/18/98 21:51

Matrix: water (ml)

Method Name: PCB.MTH

Initial Vol/Wt: 5

Calibration Updated: 11/11/98

Final Vol/Wt: 2

Calibration Type: Quad

Multiplier: 0.4

Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	<4	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylyene	113399	3.38	80	4%	50-150
decachlorobipheyl	170274	40.30	80	50%	50-150

COMMENTS:

Quantitation Report

HNF-1652 REV.0

Data File : C:\HPCHEM\7\DATA\NOV\1118TH09.D
Acq On : 18 Nov 98 09:51 PM
Sample : 435
Misc : S98T2786-dup (5 ml)
Quant Time: Dec 14 14:27 1998

Vial: 9
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylene	5.03	113399	8.459 ng/ml
		Recovery =	4.23%
8) S decachlorobipheyl	17.65	170274	100.760 ng/ml
		Recovery =	50.38%
Target Compounds			
2) L Aroclor 1254	0.00	0	N.D. ng/ml
3) L Aroclor 1254 {2}	0.00	0	N.D. ng/ml
4) L Aroclor 1254 {3}	11.19	21150	52.614 ng/ml
5) L Aroclor 1254 {4}	0.00	0	N.D. ng/ml
6) L Aroclor 1254 {5}	0.00	0	N.D. ng/ml
7) L Aroclor 1254 {6}	0.00	0	N.D. ng/ml
Total Aroclor 1254		21150	52.614 ng/ml
Average Aroclor 1254			52.614 ng/ml

1188

Quantitation Report

HNF-1652 REV. 0

Data File : C:\HPCHEM\7\DATA\NOV\1118TH09.D
Acq On : 18 Nov 98 09:51 PM
Sample : 435
Misc : S98T2786-dup (5 ml)
Quant Time: Dec 14 14:27 1998

Vial: 9
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Lab Sample I.D.: S98T2786-SAM

Data File Path: C:\HPCHEM\7\DATA\NOV\

Barcode I.D.: 436

Data File Name: 1118TH10.D

Comments:

Date/Time Acquired: 11/18/1998 22.25

Matrix: water (ml)

Method Name: PCB.MTH

Initial Vol/Wt: 5

Calibration Updated: 11/11/98

Final Vol/Wt: 2

Calibration Type: Quad

Multiplier: 0.4

Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	<4	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylene	71330	0.33	80	0%	50-150
decachlorobipheyl	171134	40.60	80	51%	50-150

COMMENTS:

Data File : C:\HPCHEM\7\DATA\NOV\1118TH10.D
Acq On : 18 Nov 98 10:25 PM
Sample : 436
Misc : S98T2787-sam (5 ml)
Quant Time: Dec 14 14:28 1998

Vial: 10
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylene	5.03	71331	0.833 ng/ml
	Recovery	=	0.42%
8) S decachlorobipheyl	17.65	171135	101.499 ng/ml
	Recovery	=	50.75%
Target Compounds			
2) L Aroclor 1254	0.00	0	N.D. ng/ml
3) L Aroclor 1254 {2}	0.00	0	N.D. ng/ml
4) L Aroclor 1254 {3}	11.19	16379	36.089 ng/ml
5) L Aroclor 1254 {4}	0.00	0	N.D. ng/ml
6) L Aroclor 1254 {5}	0.00	0	N.D. ng/ml
7) L Aroclor 1254 (6)	0.00	0	N.D. ng/ml
Total Aroclor 1254		16379	36.089 ng/ml
Average Aroclor 1254			36.089 ng/ml

Data File : C:\HPCHEM\7\DATA\NOV\1118TH10.D
Acq On : 18 Nov 98 10:25 PM
Sample : 436
Misc : S98T2787-sam (5 ml)
Quant Time: Dec 14 14:28 1998

Vial: 10
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Lab Sample I.D.: S98T2786-DUP

Data File Path: C:\HPCHEM\7\DATA\NOV

Barcode I.D.: 437

Data File Name: 1118TH11.D

Comments:

Date/Time Acquired: 11/18/98 22:58

Matrix: water (ml)

Method Name: PCB.MTH

Initial Vol/Wt: 5

Calibration Updated: 11/11/98

Final Vol/Wt: 2

Calibration Type: Quad

Multiplier: 0.4

Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	<4	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylyene	52981	<4	80	0%	50-150
decachlorobipheyl	204274	52.51	80	66%	50-150

COMMENTS:

Data File : C:\HPCHEM\7\DATA\NOV\1118TH11.D
Acq On : 18 Nov 98 10:58 PM
Sample : 437
Misc : S98T2787-dup (5 ml)
Quant Time: Dec 14 16:18 1998

Vial: 11
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Mon Dec 14 15:55:01 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylene	5.03	52981	N.D. ng/ml
	Recovery	=	0.00%
8) S decachlorobipheyl	17.65	204275	131.282 ng/ml
	Recovery	=	65.64%
Target Compounds			
2) L Aroclor 1254	0.00	0	N.D. ng/ml
3) L Aroclor 1254 {2}	0.00	0	N.D. ng/ml
4) L Aroclor 1254 {3}	11.19	17609	40.324 ng/ml
5) L Aroclor 1254 {4}	0.00	0	N.D. ng/ml
6) L Aroclor 1254 {5}	0.00	0	N.D. ng/ml
7) L Aroclor 1254 {6}	12.84	13411	28.150 ng/ml
Total Aroclor 1254		31019	68.474 ng/ml
Average Aroclor 1254			34.237 ng/ml

1194

Quantitation Report

HNF-1652 REV.0

Data File : C:\HPCHEM\7\DATA\NOV\1118TH11.D
Acq On : 18 Nov 98 10:58 PM
Sample : 437
Misc : S98T2787-dup (5 ml)
Quant Time: Dec 14 16:18 1998

Vial: 11
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Mon Dec 14 15:55:01 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Lab Sample I.D.: S98T2797-SAM

Barcode I.D.: 438

Comments:

Data File Path: C:\HPCHEM\7\DATA\NOV\

Data File Name: 1118TH12.D

Date/Time Acquired: 11/18/98 23:32

Matrix: water (ml)

Initial Vol/Wt: 5

Final Vol/Wt: 2

Multiplier: 0.4

Method Name: PCB.MTH

Calibration Updated: 11/11/98

Calibration Type: Quad

Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	<4	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylyene	57053	<4	80	0%	50-150
decachlorobipheyl	124627	25.43	80	32%	50-150

COMMENTS:

Data File : C:\HPCHEM\7\DATA\NOV\1118TH12.D
Acq On : 18 Nov 98 11:32 PM
Sample : 438
Misc : S98T2797-sam (5 ml)
Quant Time: Dec 14 16:00 1998

Vial: 12
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Mon Dec 14 15:55:01 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylyene	5.03	57054	N.D. ng/ml
	Recovery	=	0.00%
8) S decachlorobipheyl	17.65	124628	63.584 ng/ml
	Recovery	=	31.79%
Target Compounds			
2) L Aroclor 1254	0.00	0	N.D. ng/ml
3) L Aroclor 1254 {2}	10.39	5048	2091.197 ng/ml
4) L Aroclor 1254 {3}	11.20	17968	41.566 ng/ml
5) L Aroclor 1254 {4}	0.00	0	N.D. ng/ml
6) L Aroclor 1254 {5}	0.00	0	N.D. ng/ml
7) L Aroclor 1254 {6}	0.00	0	N.D. ng/ml
Total Aroclor 1254		23016	2132.764 ng/ml
Average Aroclor 1254			1066.382 ng/ml

1197

Data File : C:\HPCHEM\7\DATA\NOV\1118TH12.D
Acq On : 18 Nov 98 11:32 PM
Sample : 438
Misc : S98T2797-sam (5 ml)
Quant Time: Dec 14 16:00 1998

Vial: 12
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Mon Dec 14 15:55:01 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Lab Sample I.D.: S98T2797-DUP

Barcode I.D.: 439

Comments:

Data File Path: C:\HPCHEM\7\DATA\NOV

Data File Name: 1118TH13.D

Date/Time Acquired: 11/19/98 0:06

Matrix: water (ml)

Initial Vol/Wt: 5

Final Vol/Wt: 2

Multiplier: 0.4

Method Name: PCB.MTH

Calibration Updated: 11/11/98

Calibration Type: Quad

Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	<4	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylyene	55828	<4	80	0%	50-150
decachlorobipheyl	83898	13.29	80	17%	50-150

COMMENTS:

Quantitation Report

HNF-1652 REV. 0

Data File : C:\HPCHEM\7\DATA\NOV\1118TH13.D
 Acq On : 19 Nov 98 00:06 AM
 Sample : 439
 Misc : S98T2797-dup (5 ml)
 Quant Time: Dec 14 16:35 1998

Vial: 13
 Operator: t.h
 Inst : ECD-402
 Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
 Title : Aroclor 1254
 Last Update : Mon Dec 14 15:55:01 1998
 Response via : Multiple Level Calibration

Volume Inj. :
 Signal Phase :
 Signal Info :

Compound	R.T.	Response	Conc	Units

System Monitoring Compounds				
1) S terachloroxylene	5.03	55829	N.D.	ng/ml
		Recovery =	0.00%	
8) S decachlorobipheyl	17.65	83899	33.223	ng/ml
		Recovery =	16.61%	
Target Compounds				
2) L Aroclor 1254	0.00	0	N.D.	ng/ml
3) L Aroclor 1254 {2}	0.00	0	N.D.	ng/ml
4) L Aroclor 1254 {3}	0.00	0	N.D.	ng/ml
5) L Aroclor 1254 {4}	0.00	0	N.D.	ng/ml
6) L Aroclor 1254 {5}	0.00	0	N.D.	ng/ml
7) L Aroclor 1254 {6}	0.00	0	N.D.	ng/ml
Total Aroclor 1254		0	N.D.	ng/ml
Average Aroclor 1254			0.000	ng/ml

1200

Data File : C:\HPCHEM\7\DATA\NOV\1118TH13.D
Acq On : 19 Nov 98 00:06 AM
Sample : 439
Misc : S98T2797-dup (5 ml)
Quant Time: Dec 14 16:35 1998

Vial: 13
Operator: t.h
Inst : ECD-402
Multiplr: 2.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Mon Dec 14 15:55:01 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

Lab Sample I.D.:
Barcode I.D.:
Comments: CCV Lev 4

Data File Path: C:\HPCHEM\7\DATA\NOV
Data File Name: 1118TH15.D
Date/Time Acquired: 11/19/98 1:13

Matrix: water (ml) Method Name: PCB.MTH
Initial Vol/Wt: 1 Calibration Updated: 11/11/98
Final Vol/Wt: 1 Calibration Type: Quad
Multiplier: 1 Operator: t.h

PCB Found	Amounts	Units
Aroclor 1016	<4	ug/L
Aroclor 1221	<4	ug/L
Aroclor 1232	<4	ug/L
Aroclor 1242	<4	ug/L
Aroclor 1248	<4	ug/L
Aroclor 1254	111.09	ug/L
Aroclor 1260	<4	ug/L

<u>SURROGATES</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
terachloroxylyene	650469	117.37	100	117%	50-150
decachlorobipheyl	160790	92.72	100	93%	50-150

<u>SPIKE COMPOUNDS</u>	<u>RESPONSE</u>	<u>CONC REC ug/L</u>	<u>CONC ADDED ug/L</u>	<u>% REC</u>	<u>LIMITS</u>
Aroclor 1254	52238.5	111.09	100	111%	

COMMENTS:

Quantitation Report

Data File : C:\HPCHEM\7\DATA\NOV\1118TH15.D
 Acq On : 19 Nov 98 01:13 AM
 Sample : 54 cc lev 4
 Misc :
 Quant Time: Dec 14 14:14 1998

Vial: 2
 Operator: t.h
 Inst : ECD-402
 Multiplr: 1.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
 Title : Aroclor 1254
 Last Update : Sat Dec 12 11:18:04 1998
 Response via : Multiple Level Calibration

Volume Inj. :
 Signal Phase :
 Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S terachloroxylyene	5.03	650470	117.372 ng/ml
		Recovery	58.69%
8) S decachlorobipheyl	17.65	160791	92.715 ng/ml
		Recovery	= 46.36%
Target Compounds			
2) L Aroclor 1254	9.88	54855	109.036 ng/ml
3) L Aroclor 1254 {2}	10.39	64050	97.305 ng/ml
4) L Aroclor 1254 {3}	11.19	68185	115.896 ng/ml
5) L Aroclor 1254 {4}	12.25	27300	114.906 ng/ml
6) L Aroclor 1254 {5}	12.32	43157	110.944 ng/ml
7) L Aroclor 1254 (6)	12.84	55887	118.457 ng/ml
Total Aroclor 1254		313434	666.544 ng/ml
Average Aroclor 1254			111.091 ng/ml

T.H

Quantitation Report

HNF-1652 REV. 0

Data File : C:\HPCHEM\7\DATA\NOV\1118TH15.D
Acq On : 19 Nov 98 01:13 AM
Sample : 54 cc lev 4
Misc :
Quant Time: Dec 14 14:14 1998

Vial: 2
Operator: t.h
Inst : ECD-402
Multiplr: 1.00

Method : C:\HPCHEM\7\METHODS\54_1111.M
Title : Aroclor 1254
Last Update : Sat Dec 12 11:18:04 1998
Response via : Multiple Level Calibration

Volume Inj. :
Signal Phase :
Signal Info :

LABCORE Completed Worklist Report for Worklist# 26464

Analyst: gar

Instrument: GCECD2

Book# _____

Method: LA523-136 Rev/Mod A1

Worklist Comment: AW101 LAW, @PCBS skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLANK	0 @PCBS	AR1016 SOL		1	<6.60e2		ug/Kg
1 BLANK	0 @PCBS	AR1221 SOL		1	<6.60e2		ug/Kg
1 BLANK	0 @PCBS	AR1232 SOL		1	<6.60e2		ug/Kg
1 BLANK	0 @PCBS	AR1242 SOL		1	<6.60e2		ug/Kg
1 BLANK	0 @PCBS	AR1248 SOL		1	<6.60e2		ug/Kg
1 BLANK	0 @PCBS	AR1254 SOL		1	<6.60e2		ug/Kg
1 BLANK	0 @PCBS	AR1260 SOL		1	<6.60e2		ug/Kg
1 BLANK	0 @PCBS	TCX-01 SOL		4000	2.07e+03	51.750 % Recovery	
1 BLANK	0 @PCBS	DCB-01 SOL		4000	3.23e+03	80.750 % Recovery	
2 LCS	0 @PCBS	AR1254 SOL		8000	6.49e+03	81.125 % Recovery	
2 LCS	0 @PCBS	TCX-01 SOL		4000	2.55e+03	63.750 % Recovery	
2 LCS	0 @PCBS	DCB-01 SOL		4000	2.94e+03	73.500 % Recovery	
3 SAMPLE	S98T002749 0 @PCBS	AR1016 SOL		N/A	< 5.3400e+02	534.000 ug/Kg	
3 SAMPLE	S98T002749 0 @PCBS	AR1221 SOL		N/A	< 5.3400e+02	534.000 ug/Kg	
3 SAMPLE	S98T002749 0 @PCBS	AR1232 SOL		N/A	< 5.3400e+02	534.000 ug/Kg	
3 SAMPLE	S98T002749 0 @PCBS	AR1242 SOL		N/A	< 5.3400e+02	534.000 ug/Kg	
3 SAMPLE	S98T002749 0 @PCBS	AR1248 SOL		N/A	< 5.3400e+02	534.000 ug/Kg	
3 SAMPLE	S98T002749 0 @PCBS	AR1254 SOL		N/A	< 5.3400e+02	534.000 ug/Kg	
3 SAMPLE	S98T002749 0 @PCBS	AR1260 SOL		N/A	< 5.3400e+02	534.000 ug/Kg	
3 SAMPLE	S98T002749 0 @PCBS	TCX-01 SOL		N/A	6.6450e+01	1.000 % Recovery	
3 SAMPLE	S98T002749 0 @PCBS	DCB-01 SOL		N/A	1.0632e+02	1.000 % Recovery	
4 Surr	S98T002749 0 @PCBS	TCX-01 SOL		3240	2.15e+03	66.358 % Recovery	
4 Surr	S98T002749 0 @PCBS	DCB-01 SOL		3240	3.44e+03	106.173 % Recovery	
5 SAMPLE	S98T002750 0 @PCBS	AR1016 SOL		N/A	< 1.1400e+03	1140.000 ug/Kg	
5 SAMPLE	S98T002750 0 @PCBS	AR1221 SOL		N/A	< 1.1400e+03	1140.000 ug/Kg	
5 SAMPLE	S98T002750 0 @PCBS	AR1232 SOL		N/A	< 1.1400e+03	1140.000 ug/Kg	
5 SAMPLE	S98T002750 0 @PCBS	AR1242 SOL		N/A	< 1.1400e+03	1140.000 ug/Kg	
5 SAMPLE	S98T002750 0 @PCBS	AR1248 SOL		N/A	< 1.1400e+03	1140.000 ug/Kg	
5 SAMPLE	S98T002750 0 @PCBS	AR1254 SOL		N/A	< 1.1400e+03	1140.000 ug/Kg	
5 SAMPLE	S98T002750 0 @PCBS	AR1260 SOL		N/A	< 1.1400e+03	1140.000 ug/Kg	
5 SAMPLE	S98T002750 0 @PCBS	TCX-01 SOL		N/A	5.2050e+01	1.000 % Recovery	
5 SAMPLE	S98T002750 0 @PCBS	DCB-01 SOL		N/A	1.0442e+02	1.000 % Recovery	
6 Surr	S98T002750 0 @PCBS	TCX-01 SOL		6930	4.09e+03	59.019 % Recovery	
6 Surr	S98T002750 0 @PCBS	DCB-01 SOL		6930	7.24e+03	104.473 % Recovery	
7 MS	S98T002750 0 @PCBS	AR1254 SOL		11500	2.17e+03	72.739 % Recovery	
7 MS	S98T002750 0 @PCBS	TCX-01 SOL		5770	3.49e+03	60.485 % Recovery	
7 MS	S98T002750 0 @PCBS	DCB-01 SOL		5770	4.71e+03	81.629 % Recovery	
8 SAMPLE	S98T002751 0 @PCBS	AR1016 SOL		N/A	< 5.1000e+02	510.000 ug/Kg	
8 SAMPLE	S98T002751 0 @PCBS	AR1221 SOL		N/A	< 5.1000e+02	510.000 ug/Kg	
8 SAMPLE	S98T002751 0 @PCBS	AR1232 SOL		N/A	< 5.1000e+02	510.000 ug/Kg	
8 SAMPLE	S98T002751 0 @PCBS	AR1242 SOL		N/A	< 5.1000e+02	510.000 ug/Kg	

LABCORE Completed Worklist Report for Worklist# 26464

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
8 SAMPLE	S98T002751	0	@PCBS	AR1248	SOL	N/A <	5.1000e+02	510.000	ug/Kg
8 SAMPLE	S98T002751	0	@PCBS	AR1254	SOL	N/A <	5.1000e+02	510.000	ug/Kg
8 SAMPLE	S98T002751	0	@PCBS	AR1260	SOL	N/A <	5.1000e+02	510.000	ug/Kg
8 SAMPLE	S98T002751	0	@PCBS	TCX-01	SOL	N/A	6.5620e+01	1.000	% Recovery
8 SAMPLE	S98T002751	0	@PCBS	DCB-01	SOL	N/A	9.6290e+01	1.000	% Recovery
9 SURR	S98T002751	0	@PCBS	TCX-01	SOL	3090	2.03e+03	65.696	% Recovery
9 SURR	S98T002751	0	@PCBS	DCB-01	SOL	3090	2.98e+03	96.440	% Recovery

Final page for worklist# 26464

Analyst Signature 10-14-98
Date

Analyst Signature 10/13/98
Date

Reviewer Signature 10-14-98
Date

12 Oct 98 03:57 PM

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Sequence: C:\HPCHEM\2\SEQUENCE\101298A.SEQ

Sequence Table

Inj.	Seq.	Cal.	Method	From	To	Inj/
FRONT	Line	Line	Name	Vial	Vial	Vial
	1		PCB-FRNT	1	1	1
	2		PCB-FRNT	2	3	1
	3		PCB-FRNT	4	14	1
	4		PCB-FRNT	14	14	1
REAR						
	1		PCB-REAR	51	51	2
	2		PCB-REAR	52	53	1
	3		PCB-REAR	4	13	1
	4		PCB-REAR	54	54	1

Sample Table

Vial Num.	Sample Name	Sample Amount	Multiplier	ISTD Amount
1	2000ng/ml A1254		1	
2	400ng/ml A1254		1	
3	200ng/ml A1254		1	
4	200ng/ml A1254		1	
5	IBLANK		1	
6	LCS 00358d20		1	
7	MBLTK 00356d20		1	
8	AW101 00354d20		1	
9	AW101 00352d20MS		1	
10	AW101 00350d20		1	
11	AW101 00348d20		1	
12	IBLANK		1	
13	200ng/ml A1254		1	
14	200ng/ml A1254		1	
51	2000ng/ml A1254		1	
52	400ng/ml A1254		1	
53	200ng/ml A1254		1	
54	200ng/ml A1254		1	

Data File: /chem/gc2.i/981012.b/004f0301.d
 Report Date: 13-Oct-1998 06:47

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Data file : /chem/gc2.i/981012.b/004f0301.d
 Lab Smp Id: 200ng/ml A1254 Client Smp ID: 200ng/ml A1254
 Inj Date : 12-OCT-98 18:42
 Operator : Gerald Ross Inst ID: gc2.i
 Smp Info : 200ng/ml A1254
 Misc Info : 200ng/ml A1254
 Comment :
 Method : /chem/gc2.i/981012.b/rcrapcb.m
 Meth Date : 13-Oct-1998 06:08 Quant Type: ESTD
 Cal Date : 28-AUG-1998 17:47 Cal File: 010f0401.d
 Als bottle: 1 QC Sample: METHSPIKE
 Dil Factor: 1.000
 Integrator: HP Genie Compound Sublist: AR1254.sub
 Target Version: 3.10 Sample Matrix: WATER

CONCENTRATIONS
 ON-COL FINAL

RT	EXP RT	DLT RT	RESPONSE (ng)	(ug/L)	TARGET RANGE	RATIO
==	=====	=====	=====	=====	=====	=====
27 Aroclor-1254 CAS #: 11097-69-1						
22.894	22.894	0.000	201678	0.210	4.21	100.00
24.013	24.013	0.000	262124	0.202	4.04 112.00- 152.00	129.97
25.993	25.993	0.000	254984	0.210	4.19 120.00- 140.00	126.43
27.351	27.351	0.000	281569	0.203	4.06 136.00- 156.00	139.61
28.833	28.833	0.000	150055	0.213	4.25 68.00- 88.00	74.40
Average of Peak Concentrations =				4.15		

\$ 29 Tetrachloro-m-xylene CAS #: 877-09-8						
13.362	13.405	-0.043	1824970	0.112	2.25	100.00

\$ 30 Decachlorobiphenyl CAS #: 2051-24-3						
44.645	44.645	0.000	1151639	0.120	2.40	100.00

222-S Laboratory

RECOVERY REPORT

Client Name: Client SDG: 981012
Sample Matrix: LIQUID Fraction: PEST
Lab Smp Id: 200ng/ml A1254 Client Smp ID: 200ng/ml A1254
Level: LOW Operator: Gerald Ross
Data Type: GC MULTI COMP SampleType: METHSPIKE
SpikeList File: Aroclor-1254.spk Quant Type: ESTD
Method File: /chem/gc2.i/981012.b/rcrapcb.m
Misc Info: 200ng/ml A1254

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
27 Aroclor-1254	4.00	4.15	103.73	50-150

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 29 Tetrachloro-m-xyle	2.00	2.25	112.31	50-150
\$ 30 Decachlorobiphenyl	2.00	2.40	120.14	50-150

222-S Laboratory

TARGET COMPOUNDS

Client Name:
Lab Smp Id: 200ng/ml A1254
Sample Location:
Sample Date:
Sample Matrix: WATER
Analysis Type: PEST
Data Type: GC MULTI COMP
Misc Info: 200ng/ml A1254

Client SDG: 981012
Client Smp ID: 200ng/ml A1254
Sample Point:
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Gerald Ross

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/KG)	ug/L	
11097-69-1-----	Aroclor-1254		4.15	
877-09-8-----	Tetrachloro-m-xylene		2.25	
2051-24-3-----	Decachlorobiphenyl		2.40	

Data File: /chem/gc2.1/981012.b/004f0301.d
 Date : 12-01-98 18:42
 Client ID: 200ng/ml R1254
 Sample Info: 200ng/ml R1254
 Volume Injected (uL): 1.0
 Column phase: Xt1-5

Instrument: gc2.1
 Operator: Gerald Ross
 Column diameter: 0.25

/chem/gc2.1/981012.b/004f0301.d (Part 1 of 2)

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

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Data File: /chem/gc2.i/981012.b/005f0301.d
Report Date: 13-Oct-1998 07:02

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Data file : /chem/gc2.i/981012.b/005f0301.d
Lab Smp Id: IBLANK Client Smp ID: IBLANK
Inj Date : 12-OCT-98 19:40
Operator : Gerald Ross Inst ID: gc2.i
Smp Info : IBLANK
Misc Info : IBLANK
Comment :
Method : /chem/gc2.i/981012.b/rcrapcb.m
Meth Date : 13-Oct-1998 06:08 Quant Type: ESTD
Cal Date : 28-AUG-1998 17:47 Cal File: 010f0401.d
Als bottle: 1
Dil Factor: 1.000
Integrator: HP Genie
Target Version: 3.10
Compound Sublist: AroclorS.sub
Sample Matrix: WATER

CONCENTRATIONS

RT	EXP RT	DLT RT	ON-COL	FINAL	RESPONSE (ng)	(ug/L)	TARGET RANGE	RATIO
==	=====	=====	=====	=====	=====	=====	=====	=====
22								
Aroclor-1016				CAS #: 12674-11-2				
Peaks not detected for Quant. or Qual. signal(s).								
23								
Aroclor-1221				CAS #: 11104-28-2				
Peaks not detected for Quant. or Qual. signal(s).								
24								
Aroclor-1232				CAS #: 1114-16-5				
Peaks not detected for Quant. or Qual. signal(s).								
25								
Aroclor-1242				CAS #: 53469-21-9				
Peaks not detected for Quant. or Qual. signal(s).								
26								
Aroclor-1248				CAS #: 12672-29-6				
Peaks not detected for Quant. or Qual. signal(s).								
27								
Aroclor-1254				CAS #: 11097-69-1				
Peaks not detected for Quant. or Qual. signal(s).								

Data File: /chem/gc2.i/981012.b/005f0301.d
Report Date: 13-Oct-1998 07:02

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		CONCENTRATIONS					
		ON-COL	FINAL				
RT	EXP RT	DLT RT	RESPONSE (ng)	(ug/L)	TARGET RANGE	RATIO	
==	=====	=====	=====	=====	=====	=====	
28 Aroclor-1260			CAS #: 11096-82-5				
Peaks not detected for Quant. or Qual. signal(s).							

\$ 29	Tetrachloro-m-xylene		CAS #: 877-09-8				
13.363	13.405	-0.042	2193388	0.135	2.70	100.00	

\$ 30	Decachlorobiphenyl		CAS #: 2051-24-3				
44.647	44.645	0.002	1427049	0.149	2.98	100.00(M)	

QC Flag Legend

M - Compound response manually integrated.

Data File: /chem/gc2.i/981012.b/013f0301.d
 Report Date: 13-Oct-1998 06:49

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Data file : /chem/gc2.i/981012.b/013f0301.d
 Lab Smp Id: 200ng/ml A1254 Client Smp ID: 200ng/ml A1254
 Inj Date : 13-OCT-98 03:27
 Operator : Gerald Ross Inst ID: gc2.i
 Smp Info : 200ng/ml A1254
 Misc Info : 200ng/ml A1254
 Comment :
 Method : /chem/gc2.i/981012.b/rcrapcb.m
 Meth Date : 13-Oct-1998 06:08 Quant Type: ESTD
 Cal Date : 28-AUG-1998 17:47 Cal File: 010f0401.d
 Als bottle: 1 QC Sample: METHSPIKE
 Dil Factor: 1.000
 Integrator: HP Genie Compound Sublist: AR1254.sub
 Target Version: 3.10 Sample Matrix: WATER

CONCENTRATIONS

RT	EXP RT	DLT RT	ON-COL	FINAL	RESPONSE (ng)	(ug/L)	TARGET RANGE	RATIO
==	=====	=====	=====	=====	=====	=====	=====	=====
27 Aroclor-1254 CAS #: 11097-69-1								
22.893	22.894	-0.001	193815	0.202	4.04		100.00	
24.011	24.013	-0.002	253818	0.196	3.91	112.00- 152.00	130.96	
25.991	25.993	-0.002	247052	0.203	4.06	120.00- 140.00	127.47	
27.350	27.351	-0.001	273194	0.197	3.94	136.00- 156.00	140.96	
28.830	28.833	-0.003	147492	0.209	4.18	68.00- 88.00	76.10	
Average of Peak Concentrations =						4.03		

\$ 29 Tetrachloro-m-xylene CAS #: 877-09-8								
13.362	13.405	-0.043	1721894	0.106	2.12		100.00	

\$ 30 Decachlorobiphenyl CAS #: 2051-24-3								
44.644	44.645	-0.001	1098594	0.115	2.29		100.00	

Data File: /chem/gc2.i/981012.b/013f0301.d
Report Date: 13-Oct-1998 06:49

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RECOVERY REPORT

Client Name: Client SDG: 981012
Sample Matrix: LIQUID Fraction: PEST
Lab Smp Id: 200ng/ml A1254 Client Smp ID: 200ng/ml A1254
Level: LOW Operator: Gerald Ross
Data Type: GC MULTI COMP SampleType: METHSPIKE
SpikeList File: Aroclor-1254.spk Quant Type: ESTD
Method File: /chem/gc2.i/981012.b/rcrapcb.m
Misc Info: 200ng/ml A1254

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
27 Aroclor-1254	4.00	4.03	100.65	50-150

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 29 Tetrachloro-m-xyle	2.00	2.12	105.96	50-150
\$ 30 Decachlorobiphenyl	2.00	2.29	114.60	50-150

Data File: /chem/gc2.i/981012.b/013f0301.d
Report Date: 13-Oct-1998 06:49

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TARGET COMPOUNDS

Client Name:
Lab Smp Id: 200ng/ml A1254
Sample Location:
Sample Date:
Sample Matrix: WATER
Analysis Type: PEST
Data Type: GC MULTI COMP
Misc Info: 200ng/ml A1254

Client SDG: 981012
Client Smp ID: 200ng/ml A1254
Sample Point:
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Gerald Ross

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/KG) ug/L	Q
11097-69-1-----	Aroclor-1254	4.03	
877-09-8-----	Tetrachloro-m-xylene	2.12	
2051-24-3-----	Decachlorobiphenyl	2.29	

Date : 13-OCT-98 03:27

Client ID: 200ng/ml 61254

Sample Info: 200ng/ml 61254

Volume Injected (uL): 1.0

Column Phase: Yti-5

Instrument: gc2.i

Operator: Gerald Ross

Column diameter: 0.25

/chem/gc2.i/981012.b/013f0301.d (Part 1 of 2)

Data File: /chem/gc2.i/981012.b/013f0301.d
Date : 13-OCT-98 03:27
Client ID: 200g/ml 41254
Sample Info: 200g/ml 41254
Volume Injected (uL): 1.0
Column phase: Xti-5

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

/chem/gc2.i/981012.b/013f0301.d (Part 2 of 2)

Data File: /chem/gc2.i/981012.b/005f0301.d
Report Date: 13-Oct-1998 07:02

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RECOVERY REPORT

Client Name: Client SDG: 981012
Sample Matrix: LIQUID Fraction: PEST
Lab Smp Id: IBLANK Client Smp ID: IBLANK
Level: LOW Operator: Gerald Ross
Data Type: GC MULTI COMP SampleType: SAMPLE
SpikeList File: RESOLUTION.spk Quant Type: ESTD
Method File: /chem/gc2.i/981012.b/rcrapcb.m
Misc Info: IBLANK

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 29 Tetrachloro-m-xyle	2.00	2.70	134.98	50-150
\$ 30 Decachlorobiphenyl	2.00	2.98	148.87	50-150

Data File: /chem/gc2.i/981012.b/005f0301.d
Report Date: 13-Oct-1998 07:02

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TARGET COMPOUNDS

Client Name:
Lab Smp Id: IBLANK
Sample Location:
Sample Date:
Sample Matrix: WATER
Analysis Type: PEST
Data Type: GC MULTI COMP
Misc Info: IBLANK

Client SDG: 981012
Client Smp ID: IBLANK
Sample Point:
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Gerald Ross

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/KG)	ug/L
12674-11-2-----	Aroclor-1016	0.600	U
11104-28-2-----	Aroclor-1221	0.600	U
1114-16-5-----	Aroclor-1232	0.600	U
53469-21-9-----	Aroclor-1242	0.600	U
12672-29-6-----	Aroclor-1248	0.600	U
11097-69-1-----	Aroclor-1254	0.600	U
11096-82-5-----	Aroclor-1260	0.600	U
=====		=====	=====
877-09-8-----	Tetrachloro-m-xylene	2.70	
2051-24-3-----	Decachlorobiphenyl	2.98	

Data File: /chem/gc2.i/981012.b/005f0301.d
Date : 12-OCT-98 19:40
Client ID: IBLANK
Sample Info: IBLANK
Volume Injected (uL): 1.0
Column Phase: Xti-5

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

/chem/gc2.i/981012.b/005f0301.d (Part 1 of 2)

Data File: /chem/gc2.i/981012.b/005f0301.d

Date : 12-OCT-98 19:40

Client ID: IBLANK

Sample Info: IBLANK

Volume Injected (uL): 1.0

Column phase: Xti-5

Instrument: gc2.i

Operator: Gerald Ross

Column diameter: 0.25

/chem/gc2.i/981012.b/005f0301.d (Part 2 of 2)

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HNF-1652 REV.0

Data File: /chem/gc2.i/981012.b/007f0301.d
Report Date: 13-Oct-1998 06:48

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Data file : /chem/gc2.i/981012.b/007f0301.d
Lab Smp Id: MBLNK 00356d20 Client Smp ID: MBLNK 00356d20
Inj Date : 12-OCT-98 21:36
Operator : Gerald Ross Inst ID: gc2.i
Smp Info : MBLNK 00356d20
Misc Info : MBLNK 00356d20
Comment :
Method : /chem/gc2.i/981012.b/rcrapcb.m
Meth Date : 13-Oct-1998 06:08 Quant Type: ESTD
Cal Date : 28-AUG-1998 17:47 Cal File: 010f0401.d
Als bottle: 1
Dil Factor: 20.000
Integrator: HP Genie
Target Version: 3.10 Compound Sublist: AroclorS.sub
Sample Matrix: SOIL

CONCENTRATIONS

RT	EXP RT	DLT RT	ON-COL	FINAL	RESPONSE (ng)	(ug/Kg)	TARGET RANGE	RATIO
==	=====	=====	=====	=====	=====	=====	=====	=====
22								
Aroclor-1016			CAS #: 12674-11-2					
Peaks not detected for Quant. or Qual. signal(s).								
23								
Aroclor-1221			CAS #: 11104-28-2					
Peaks not detected for Quant. or Qual. signal(s).								
24								
Aroclor-1232			CAS #: 1114-16-5					
Peaks not detected for Quant. or Qual. signal(s).								
25								
Aroclor-1242			CAS #: 53469-21-9					
Peaks not detected for Quant. or Qual. signal(s).								
26								
Aroclor-1248			CAS #: 12672-29-6					
Peaks not detected for Quant. or Qual. signal(s).								
27								
Aroclor-1254			CAS #: 11097-69-1					
Peaks not detected for Quant. or Qual. signal(s).								

			CONCENTRATIONS			
RT	EXP RT	DLT RT	ON-COL	FINAL	TARGET RANGE	RATIO
==	=====	=====	RESPONSE (	ng)	(ug/Kg)	=====
=====	=====	=====	=====	=====	=====	=====

28 Aroclor-1260

CAS #: 11096-82-5

Peaks not detected for Quant. or Qual. signal(s).

\$	29	Tetrachloro-m-xylene			CAS #: 877-09-8	
13.363	13.405	-0.042	840832	0.0517	2070	100.00

\$	30	Decachlorobiphenyl			CAS #: 2051-24-3	
44.646	44.645	0.001	774406	0.0808	3230	100.00

Data File: /chem/gc2.i/981012.b/007f0301.d
Report Date: 13-Oct-1998 06:48

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TARGET COMPOUNDS

Client Name:
Lab Smp Id: MBLNK 00356d20
Sample Location:
Sample Date:
Sample Matrix: SOIL
Analysis Type: PEST
Data Type: GC MULTI COMP
Misc Info: MBLNK 00356d20

Client SDG: 981012
Client Smp ID: MBLNK 00356d20
Sample Point:
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Gerald Ross

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/KG)	ug/Kg
			Q
12674-11-2-----	Aroclor-1016	660	U
11104-28-2-----	Aroclor-1221	660	U
1114-16-5-----	Aroclor-1232	660	U
53469-21-9-----	Aroclor-1242	660	U
12672-29-6-----	Aroclor-1248	660	U
11097-69-1-----	Aroclor-1254	660	U
11096-82-5-----	Aroclor-1260	660	U
=====		=====	=====
877-09-8-----	Tetrachloro-m-xylene	2070	
2051-24-3-----	Decachlorobiphenyl	3230	

Data File: /chem/gc2.i/981012.b/007f0301.d
Report Date: 13-Oct-1998 06:48

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RECOVERY REPORT

Client Name: Client SDG: 981012
Sample Matrix: SOLID Fraction: PEST
Lab Smp Id: MBLNK 00356d20 Client Smp ID: MBLNK 00356d20
Level: LOW Operator: Gerald Ross
Data Type: GC MULTI COMP SampleType: SAMPLE
SpikeList File: RESOLUTION.spk Quant Type: ESTD
Method File: /chem/gc2.i/981012.b/rcrapcb.m
Misc Info: MBLNK 00356d20

SURROGATE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
\$ 29 Tetrachloro-m-xyle	4000	2070	51.74	50-150
\$ 30 Decachlorobiphenyl	4000	3230	80.79	50-150

Data File: /chem/gc2.i/981012.b/007F0301.d
Date: 12-OCT-98 21:36
Client ID: MELNK 00356d20
Sample Info: MELNK 00356d20
Volume Injected (ul): 1.0
Column phase: Xti-5

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

/chem/gc2.i/981012.b/007F0301.d (Part 1 of 2)

Data File: /chem/gc2.i/981012.b/007f0301.d
Date: 12-OCT-98 21:36
Client ID: MELNK 00356d20
Sample Info: MELNK 00356d20
Volume Injected (ul): 1.0
Column phase: Xti-5

Instrument: gc2.i

Operator: Gerald Ross

Column diameter: 0.25

/chem/gc2.i/981012.b/007f0301.d (Part 2 of 2)

Data File: /chem/gc2.i/981012.b/006f0301.d
 Report Date: 13-Oct-1998 06:48

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Data file : /chem/gc2.i/981012.b/006f0301.d
 Lab Smp Id: LCS 00358d20 Client Smp ID: LCS 00358d20
 Inj Date : 12-OCT-98 20:38
 Operator : Gerald Ross Inst ID: gc2.i
 Smp Info : LCS 00358d20
 Misc Info : LCS 00358d20
 Comment :
 Method : /chem/gc2.i/981012.b/rcrapcb.m
 Meth Date : 13-Oct-1998 06:08 Quant Type: ESTD
 Cal Date : 28-AUG-1998 17:47 Cal File: 010f0401.d
 Als bottle: 1 QC Sample: METHSPIKE
 Dil Factor: 20.000
 Integrator: HP Genie Compound Sublist: AR1254.sub
 Target Version: 3.10 Sample Matrix: SOIL

CONCENTRATIONS							
			ON-COL		FINAL		
RT	EXP RT	DLT RT	RESPONSE (	ng)	(ug/Kg)	TARGET RANGE	RATIO
==	=====	=====	=====	=====	=====	=====	=====
27 Aroclor-1254						CAS #:	11097-69-1
22.896	22.894	0.002	155987	0.163	6510		100.00
24.015	24.013	0.002	209358	0.161	6450	112.00- 152.00	134.22
25.994	25.993	0.001	200341	0.165	6580	120.00- 140.00	128.43
27.353	27.351	0.002	219767	0.158	6330	136.00- 156.00	140.89
28.833	28.833	0.000	115959	0.164	6570	68.00- 88.00	74.34
Average of Peak Concentrations =					6490		

\$ 29 Tetrachloro-m-xylene						CAS #:	877-09-8
13.364	13.405	-0.041	1037171	0.0638	2550		100.00

\$ 30 Decachlorobiphenyl						CAS #:	2051-24-3
44.647	44.645	0.002	704808	0.0735	2940		100.00

Data File: /chem/gc2.i/981012.b/006f0301.d
Report Date: 13-Oct-1998 06:48

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RECOVERY REPORT

Client Name: Client SDG: 981012
Sample Matrix: SOLID Fraction: PEST
Lab Smp Id: LCS 00358d20 Client Smp ID: LCS 00358d20
Level: LOW Operator: Gerald Ross
Data Type: GC MULTI COMP SampleType: METHSPIKE
SpikeList File: Aroclor-1254.spk Quant Type: ESTD
Method File: /chem/gc2.i/981012.b/rcrapcb.m
Misc Info: LCS 00358d20

SPIKE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
27 Aroclor-1254	8000	6490	81.12	50-150

SURROGATE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
\$ 29 Tetrachloro-m-xyle	4000	2550	63.83	50-150
\$ 30 Decachlorobiphenyl	4000	2940	73.52	50-150

Data File: /chem/gc2.i/981012.b/006f0301.d
Report Date: 13-Oct-1998 06:48

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TARGET COMPOUNDS

Client Name:
Lab Smp Id: LCS 00358d20
Sample Location:
Sample Date:
Sample Matrix: SOIL
Analysis Type: PEST
Data Type: GC MULTI COMP
Misc Info: LCS 00358d20

Client SDG: 981012
Client Smp. ID: LCS 00358d20
Sample Point:
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Gerald Ross

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/KG)	ug/Kg
11097-69-1-----	Aroclor-1254	6490	Q
877-09-8-----	Tetrachloro-m-xylene	2550	
2051-24-3-----	Decachlorobiphenyl	2940	

Data File: /chem/gc2.i/981012.b/006f0301.d
Date: 12-01-98 20:38
Client ID: LCS 00358d20
Sample Info: LCS 00358d20
Volume Injected (uL): 1.0
Column phase: Xti-5

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

/chem/gc2.i/981012.b/006f0301.d (Part 2 of 2)

Data File: /chem/gc2.i/981012.b/006f0301.d
 Date : 12-0CT-98 20:38
 Client ID: LCS 00358820
 Sample Info: LCS 00358820
 Volume Injected (ul): 1.0
 Column phase: Xtl-5

Instrument: gc2.i
 Operator: Gerald Ross
 Column diameter: 0.25

/chem/gc2.i/981012.b/006f0301.d (Part 1 of 2)

Data File: /chem/gc2.i/981012.b/011f0301.d
 Report Date: 13-Oct-1998 06:49

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Data file : /chem/gc2.i/981012.b/011f0301.d
 Lab Smp Id: S98T002749 Client Smp ID: AW101 00348d20
 Inj Date : 13-OCT-98 01:30
 Operator : Gerald Ross Inst ID: gc2.i
 Smp Info : AW101 00348d20
 Misc Info : AW101 00348d20
 Comment :
 Method : /chem/gc2.i/981012.b/rcrapcb.m
 Meth Date : 13-Oct-1998 06:08 Quant Type: ESTD
 Cal Date : 28-AUG-1998 17:47 Cal File: 010f0401.d
 Als bottle: 1
 Dil Factor: 20.000
 Integrator: HP Genie Compound Sublist: AroclorS.sub
 Target Version: 3.10 Sample Matrix: SOIL

CONCENTRATIONS							
		ON-COL		FINAL			
RT	EXP RT	DLT RT	RT	RESPONSE (ng)	(ug/Kg)	TARGET RANGE	RATIO
==	=====	=====		=====	=====	=====	=====
22	Aroclor-1016					CAS #: 12674-11-2	
Peaks not detected for Quant. or Qual. signal(s).							
23	Aroclor-1221					CAS #: 11104-28-2	
Peaks not detected for Quant. or Qual. signal(s).							
24	Aroclor-1232					CAS #: 1114-16-5	
Peaks not detected for Quant. or Qual. signal(s).							
25	Aroclor-1242					CAS #: 53469-21-9	
Peaks not detected for Quant. or Qual. signal(s).							
26	Aroclor-1248					CAS #: 12672-29-6	
Peaks not detected for Quant. or Qual. signal(s).							
27	Aroclor-1254					CAS #: 11097-69-1	
Peaks not detected for Quant. or Qual. signal(s).							

Data File: /chem/gc2.i/981012.b/011f0301.d
Report Date: 13-Oct-1998 06:49

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RT	EXP RT	DLT RT	CONCENTRATIONS		TARGET RANGE	RATIO
			ON-COL	FINAL		
==	=====	=====	RESPONSE (	ng)	(ug/Kg)	=====

28 Aroclor-1260

CAS #: 11096-82-5

Peaks not detected for Quant. or Qual. signal(s).

\$	29	Tetrachloro-m-xylene			CAS #: 877-09-8	
13.363	13.405	-0.042	1079793	0.0664	2150	100.00

\$	30	Decachlorobiphenyl			CAS #: 2051-24-3	
44.646	44.645	0.001	1019164	0.106	3440	100.00

Data File: /chem/gc2.i/981012.b/011f0301.d
Report Date: 13-Oct-1998 06:49

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RECOVERY REPORT

Client Name: Client SDG: 981012
Sample Matrix: SOLID Fraction: PEST
Lab Smp Id: S98T002749 Client Smp ID: AW101 00348d20
Level: LOW Operator: Gerald Ross
Data Type: GC MULTI COMP SampleType: SAMPLE
SpikeList File: RESOLUTION.spk Quant Type: ESTD
Method File: /chem/gc2.i/981012.b/rcrapcb.m
Misc Info: AW101 00348d20

SURROGATE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
\$ 29 Tetrachloro-m-xyle	3240	2150	66.45	50-150
\$ 30 Decachlorobiphenyl	3240	3440	106.32	50-150

HNF-1652 REV.0

Data File: /chem/gc2.i/981012.b/011f0301.d
Report Date: 13-Oct-1998 06:49

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TARGET COMPOUNDS

Client Name:
Lab Smp Id: S98T002749
Sample Location:
Sample Date:
Sample Matrix: SOIL
Analysis Type: PEST
Data Type: GC MULTI COMP
Misc Info: AW101 00348d20

Client SDG: 981012
Client Smp ID: AW101 00348d20
Sample Point:
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Gerald Ross

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/KG)	ug/Kg
12674-11-2-----	Aroclor-1016	534	U
11104-28-2-----	Aroclor-1221	534	U
1114-16-5-----	Aroclor-1232	534	U
53469-21-9-----	Aroclor-1242	534	U
12672-29-6-----	Aroclor-1248	534	U
11097-69-1-----	Aroclor-1254	534	U
11096-82-5-----	Aroclor-1260	534	U
=====			
877-09-8-----	Tetrachloro-m-xylene	2150	
2051-24-3-----	Decachlorobiphenyl	3440	

Data File: /chem/gc2.i/981012.b/011F0301.d
Date: 13-OCT-98 01:30
Client ID: RM101 00348820
Sample Info: RM101 00348820
Volume Injected (uL): 1.0
Column phase: Xti-5

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

/chem/gc2.i/981012.b/011F0301.d (Part 1 of 2)

Data File: /chem/gc2.i/981012.b/011F0301.d
Date: 13-0CT-98 01:30
Client ID: 6M101 00348d20
Sample Info: 6M101 00348d20
Volume Injected (uL): 1.0
Column phase: Xti-5

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

/chem/gc2.i/981012.b/011F0301.d (Part 2 of 2)

HNF-1652 REV.0

Data File: /chem/gc2.i/981012.b/010f0301.d
Report Date: 13-Oct-1998 06:49

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Data file : /chem/gc2.i/981012.b/010f0301.d
Lab Smp Id: S98T002750 Client Smp ID: AW101 00350d20
Inj Date : 13-OCT-98 00:32
Operator : Gerald Ross Inst ID: gc2.i
Smp Info : AW101 00350d20
Misc Info : S98T002750
Comment :
Method : /chem/gc2.i/981012.b/rcrapcb.m
Meth Date : 13-Oct-1998 06:08 Quant Type: ESTD
Cal Date : 28-AUG-1998 17:47 Cal File: 010f0401.d
Als bottle: 1
Dil Factor: 20.000
Integrator: HP Genie Compound Sublist: AroclorS.sub
Target Version: 3.10 Sample Matrix: SOIL

CONCENTRATIONS							
		ON-COL		FINAL			
RT	EXP RT	DLT RT	RT	RESPONSE (ng)	(ug/Kg)	TARGET RANGE	RATIO
==	=====	=====		=====	=====	=====	=====
22	Aroclor-1016					CAS #: 12674-11-2	
Peaks not detected for Quant. or Qual. signal(s).							
23	Aroclor-1221					CAS #: 11104-28-2	
Peaks not detected for Quant. or Qual. signal(s).							
24	Aroclor-1232					CAS #: 1114-16-5	
Peaks not detected for Quant. or Qual. signal(s).							
25	Aroclor-1242					CAS #: 53469-21-9	
Peaks not detected for Quant. or Qual. signal(s).							
26	Aroclor-1248					CAS #: 12672-29-6	
Peaks not detected for Quant. or Qual. signal(s).							
27	Aroclor-1254					CAS #: 11097-69-1	
Peaks not detected for Quant. or Qual. signal(s).							

Data File: /chem/gc2.i/981012.b/010f0301.d
Report Date: 13-Oct-1998 06:49

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RT	EXP RT	DLT RT	CONCENTRATIONS		RESPONSE (	ng)	(ug/Kg)	TARGET RANGE	RATIO
			ON-COL	FINAL					
==	=====	=====	=====	=====	=====	=====	=====	=====	=====

28 Aroclor-1260

CAS #: 11096-82-5

Peaks not detected for Quant. or Qual. signal(s).

\$ 29	Tetrachloro-m-xylene				CAS #: 877-09-8				
13.363	13.405	-0.042	959562	0.0590	4090	100.00			
\$ 30	Decachlorobiphenyl				CAS #: 2051-24-3				
44.648	44.645	0.003	1000988	0.104	7240	100.00			

Data File: /chem/gc2.i/981012.b/010f0301.d
Report Date: 13-Oct-1998 06:49

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RECOVERY REPORT

Client Name: Client SDG: 981012
Sample Matrix: SOLID Fraction: PEST
Lab Smp Id: S98T002750 Client Smp ID: AW101 00350d20
Level: LOW Operator: Gerald Ross
Data Type: GC MULTI COMP SampleType: SAMPLE
SpikeList File: RESOLUTION.spk Quant Type: ESTD
Method File: /chem/gc2.i/981012.b/rcrapcb.m
Misc Info: S98T002750

SURROGATE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
\$ 29 Tetrachloro-m-xyle	6930	4090	59.05	50-150
\$ 30 Decachlorobiphenyl	6930	7240	104.42	50-150

Data File: /chem/gc2.i/981012.b/010f0301.d
Report Date: 13-Oct-1998 06:49

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TARGET COMPOUNDS

Client Name:
Lab Smp Id: S98T002750
Sample Location:
Sample Date:
Sample Matrix: SOIL
Analysis Type: PEST
Data Type: GC MULTI COMP
Misc Info: S98T002750

Client SDG: 981012
Client Smp ID: AW101 00350d20
Sample Point:
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Gerald Ross

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/KG)	ug/Kg
			Q
12674-11-2-----	Aroclor-1016	1140	U
11104-28-2-----	Aroclor-1221	1140	U
1114-16-5-----	Aroclor-1232	1140	U
53469-21-9-----	Aroclor-1242	1140	U
12672-29-6-----	Aroclor-1248	1140	U
11097-69-1-----	Aroclor-1254	1140	U
11096-82-5-----	Aroclor-1260	1140	U
=====		=====	=====
877-09-8-----	Tetrachloro-m-xylene	4090	
2051-24-3-----	Decachlorobiphenyl	7240	

Data File: /chem/gc2.i/981012.b/010F0301.d
Date : 13-OCT-98 00:32
Client ID: RM101 00350d20
Sample Info: RM101 00350d20
Volume Injected (uL): 1.0
Column phase: Xti-5

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Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

/chem/gc2.i/981012.b/010F0301.d (Part 1 of 2)

HNF-1652 REV.0

HNF-1652 REV.0

Data File: /chem/gc2.i/981012.b/010F0301.d
Date: 13-OCT-98 00:32
Client ID: RM101 00350d20
Sample Info: RM101 00350d20
Volume Injected (uL): 1.0
Column phase: Xti-5

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

/chem/gc2.i/981012.b/010F0301.d (Part 2 of 2)

HNF-1652 REV. 0

Data File: /chem/gc2.i/981012.b/009f0301.d
Report Date: 13-Oct-1998 06:48

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Data file : /chem/gc2.i/981012.b/009f0301.d
Lab Smp Id: S98T002750MS Client Smp ID: AW101 00352d20MS
Inj Date : 12-OCT-98 23:33
Operator : Gerald Ross Inst ID: gc2.i
Smp Info : AW101 00352d20MS
Misc Info : S98T002750MS
Comment :
Method : /chem/gc2.i/981012.b/rcrapcb.m
Meth Date : 13-Oct-1998 06:08 Quant Type: ESTD
Cal Date : 28-AUG-1998 17:47 Cal File: 010f0401.d
Als bottle: 1 QC Sample: MS
Dil Factor: 20.000
Integrator: HP Genie Compound Sublist: AroclorS.sub
Target Version: 3.10 Sample Matrix: SOIL

CONCENTRATIONS

RT	EXP RT	DLT RT	ON-COL	FINAL	RESPONSE (ng)	(ug/Kg)	TARGET RANGE	RATIO
==	=====	=====	=====	=====	=====	=====	=====	=====

22 Aroclor-1016 CAS #: 12674-11-2

Peaks not detected for Quant. or Qual. signal(s).

23 Aroclor-1221 CAS #: 11104-28-2

Peaks not detected for Quant. or Qual. signal(s).

24 Aroclor-1232 CAS #: 1114-16-5

Peaks not detected for Quant. or Qual. signal(s).

25 Aroclor-1242 CAS #: 53469-21-9

Peaks not detected for Quant. or Qual. signal(s).

26 Aroclor-1248 CAS #: 12672-29-6

Peaks not detected for Quant. or Qual. signal(s).

27 Aroclor-1254	CAS #:	11097-69-1
22.895 22.894 0.001	150016	0.156 9030 100.00
24.013 24.013 0.000	202557	0.156 9010 112.00- 152.00 135.02
25.994 25.993 0.001	196425	0.161 9320 120.00- 140.00 130.94
27.352 27.351 0.001	217606	0.157 9050 136.00- 156.00 145.05
28.834 28.833 0.001	115657	0.164 9460 68.00- 88.00 77.10
Average of Peak Concentrations =		9170

Data File: /chem/gc2.i/981012.b/009f0301.d
Report Date: 13-Oct-1998 06:48

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		CONCENTRATIONS					
		ON-COL	FINAL				
RT	EXP RT	DLT RT	RESPONSE (	ng)	(ug/Kg)	TARGET RANGE	RATIO
==	=====	=====	=====	=====	=====	=====	=====

28 Aroclor-1260

CAS #: 11096-82-5

Peaks not detected for Quant. or Qual. signal(s).

\$	29	Tetrachloro-m-xylene				CAS #: 877-09-8	
	13.363	13.405	-0.042	982970	0.0605	3490	100.00

\$	30	Decachlorobiphenyl				CAS #: 2051-24-3	
	44.647	44.645	0.002	782654	0.0816	4710	100.00

Data File: /chem/gc2.i/981012.b/009f0301.d
Report Date: 13-Oct-1998 06:48

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RECOVERY REPORT

Client Name: Client SDG: 981012
Sample Matrix: SOLID Fraction: PEST
Lab Smp Id: S98T002750MS Client Smp ID: AW101 00352d20MS
Level: LOW Operator: Gerald Ross
Data Type: GC MULTI COMP SampleType: MS
SpikeList File: Aroclor-1254.spk Quant Type: ESTD
Method File: /chem/gc2.i/981012.b/rcrapcb.m
Misc Info: S98T002750MS

SPIKE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
27 Aroclor-1254	11500	9170	79.46	50-150

SURROGATE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
\$ 29 Tetrachloro-m-xyle	5770	3490	60.49	50-150
\$ 30 Decachlorobiphenyl	5770	4710	81.65	50-150

Data File: /chem/gc2.i/981012.b/009f0301.d
Report Date: 13-Oct-1998 06:48

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TARGET COMPOUNDS

Client Name:
Lab Smp Id: S98T002750MS
Sample Location:
Sample Date:
Sample Matrix: SOIL
Analysis Type: PEST
Data Type: GC MULTI COMP
Misc Info: S98T002750MS

Client SDG: 981012
Client Smp ID: AW101 00352d20MS
Sample Point:
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Gerald Ross

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/KG)	ug/Kg
			Q
12674-11-2-----	Aroclor-1016	952	U
11104-28-2-----	Aroclor-1221	952	U
1114-16-5-----	Aroclor-1232	952	U
53469-21-9-----	Aroclor-1242	952	U
12672-29-6-----	Aroclor-1248	952	U
11097-69-1-----	Aroclor-1254	9170	
11096-82-5-----	Aroclor-1260	952	U
=====		=====	
877-09-8-----	Tetrachloro-m-xylene	3490	
2051-24-3-----	Decachlorobiphenyl	4710	

Date : 12-OCT-98 23:33

Client ID: RM101 00352d20MS

Sample Info: RM101 00352d20MS

Volume Injected (uL): 1.0

Column phase: Vti-5

Instrument: gc2.i

Operator: Gerald Ross

Column diameter: 0.25

/chem/gc2.i/981012.b/009f0301.d (Part 1 of 2)

Data File: /chem/gc2.i/981012.b/009f0301.d
Date : 12-OCT-98 23:33
Client ID: RM101 00352d20MS
Sample Info: RM101 00352d20MS
Volume Injected (ul): 1.0
Column phase: Xti-5

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

/chem/gc2.i/981012.b/009f0301.d (Part 2 of 2)

Data File: /chem/gc2.i/981012.b/008f0301.d
 Report Date: 13-Oct-1998 06:48

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Data file : /chem/gc2.i/981012.b/008f0301.d
 Lab Smp Id: S98T002751 Client Smp ID: AW101 00354d20
 Inj Date : 12-OCT-98 22:35
 Operator : Gerald Ross Inst ID: gc2.i
 Smp Info : AW101 00354d20
 Misc Info : AW101 00354d20
 Comment :
 Method : /chem/gc2.i/981012.b/rcrapcb.m
 Meth Date : 13-Oct-1998 06:08 Quant Type: ESTD
 Cal Date : 28-AUG-1998 17:47 Cal File: 010f0401.d
 Als bottle: 1
 Dil Factor: 20.000
 Integrator: HP Genie
 Target Version: 3.10
 Compound Sublist: AroclorS.sub
 Sample Matrix: SOIL

CONCENTRATIONS
 ON-COL FINAL

RT	EXP RT	DLT RT	RT	RESPONSE (ng)	(ug/Kg)	TARGET RANGE	RATIO
22	-----	-----	-----	-----	-----	-----	-----
22 Aroclor-1016				CAS #: 12674-11-2			
Peaks not detected for Quant. or Qual. signal(s).							

23 Aroclor-1221				CAS #: 11104-28-2			
Peaks not detected for Quant. or Qual. signal(s).							

24 Aroclor-1232				CAS #: 1114-16-5			
Peaks not detected for Quant. or Qual. signal(s).							

25 Aroclor-1242				CAS #: 53469-21-9			
Peaks not detected for Quant. or Qual. signal(s).							

26 Aroclor-1248				CAS #: 12672-29-6			
Peaks not detected for Quant. or Qual. signal(s).							

27 Aroclor-1254				CAS #: 11097-69-1			
Peaks not detected for Quant. or Qual. signal(s).							

Data File: /chem/gc2.i/981012.b/008f0301.d
Report Date: 13-Oct-1998 06:48

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			CONCENTRATIONS				
RT	EXP RT	DLT RT	ON-COL	FINAL			
==	=====	=====	RESPONSE (	ng)	(ug/Kg)	TARGET RANGE	
=====	=====	=====	=====	=====	=====	=====	
28 Aroclor-1260			CAS #: 11096-82-5				
Peaks not detected for Quant. or Qual. signal(s).							

\$ 29	Tetrachloro-m-xylene		CAS #: 877-09-8				
13.362	13.405	-0.043	1066359	0.0656	2030	100.00	

\$ 30	Decachlorobiphenyl		CAS #: 2051-24-3				
44.646	44.645	0.001	922995	0.0963	2980	100.00	

HNF-1652 REV. 0

Data File: /chem/gc2.i/981012.b/008f0301.d
Report Date: 13-Oct-1998 06:48

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RECOVERY REPORT

Client Name:	Client SDG: 981012
Sample Matrix: SOLID	Fraction: PEST
Lab Smp Id: S98T002751	Client Smp ID: AW101 00354d20
Level: LOW	Operator: Gerald Ross
Data Type: GC MULTI COMP	SampleType: SAMPLE
SpikeList File: RESOLUTION.spk	Quant Type: ESTD
Method File: /chem/gc2.i/981012.b/rcrapcb.m	
Misc Info: AW101 00354d20	

SURROGATE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
\$ 29 Tetrachloro-m-xyle	3090	2030	65.62	50-150
\$ 30 Decachlorobiphenyl	3090	2980	96.29	50-150

Data File: /chem/gc2.i/981012.b/008f0301.d
Report Date: 13-Oct-1998 06:48

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222-S Laboratory

TARGET COMPOUNDS

Client Name:
Lab Smp Id: S98T002751
Sample Location:
Sample Date:
Sample Matrix: SOIL
Analysis Type: PEST
Data Type: GC MULTI COMP
Misc Info: AW101 00354d20

Client SDG: 981012
Client Smp ID: AW101 00354d20
Sample Point:
Date Received:
Quant Type: ESTD
Level: LOW
Operator: Gerald Ross

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/KG)	ug/Kg
			Q
12674-11-2-----	Aroclor-1016	510	U
11104-28-2-----	Aroclor-1221	510	U
11114-16-5-----	Aroclor-1232	510	U
53469-21-9-----	Aroclor-1242	510	U
12672-29-6-----	Aroclor-1248	510	U
11097-69-1-----	Aroclor-1254	510	U
11096-82-5-----	Aroclor-1260	510	U
=====		=====	
877-09-8-----	Tetrachloro-m-xylene	2030	
2051-24-3-----	Decachlorobiphenyl	2980	

Data File: /chem/gc2.i/981012.b/008F0301.d
Date: 12-OCT-98 22:35
Client ID: AH101 00354d20
Sample Info: AH101 00354d20
Volume Injected (uL): 1.0
Column phase: Xti-5

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

/chem/gc2.i/981012.b/008F0301.d (Part 1 of 2)

Data File: /chem/g2.i/981012.b/008F0301.d
Date : 12-OCT-98 22:35
Client ID: A4101 00354d20
Sample Info: A4101 00354d20
Volume Injected (uL): 1.0
Column phase: Xti-5

Instrument: gc2.i
Operator: Gerald Ross
Column diameter: 0.25

HNF-1652 REV. 0

OPPORTUNISTIC ANALYTES

HNF-1652 REV. 0

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HNF-1652 REV. 0

Appendix A. Opportunistic Analyte Results
AN-101 LAWRISER: 22
SEGMENT #: Composite

SEGMENT PORTION: Centrifuged Solids

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD	% Spk Rec.	Det Limit	Count Err%
S981002752	F	Americium-241 by GEA	uCi/g	n/a	< 1.1e-01	< 8.06e-01	n/a	n/a	n/a	n/a	8.06e-01	n/a
S981002753	F	Americium-241 by GEA	uCi/g	n/a	< 1.1e-01	< 8.06e-01	n/a	n/a	n/a	n/a	8.06e-01	n/a
S981002754	F	Americium-241 by GEA	uCi/g	n/a	< 1.1e-01	< 5.57e-01	n/a	n/a	n/a	n/a	5.57e-01	n/a
S981002755	A	Silver - ICP-Acid Digest	ug/g	33.80	< 1.00e-02	34.20	n/a	n/a	n/a	95.70	5.820	n/a
S981002755	A	Arsenic - ICP-Acid Digest	ug/g	96.00	< 1.00e-01	< 56.30	n/a	n/a	n/a	97.80	56.20	n/a
S981002755	A	Boron - ICP-Acid Digest	ug/g	105.6	4.85e-01	1.39e+02	n/a	n/a	n/a	95.20	29.10	n/a
S981002755	A	Barium - ICP-Acid Digest	ug/g	98.80	< 5.00e-02	< 2.910	n/a	n/a	n/a	97.20	2.910	n/a
S981002755	A	Beryllium - ICP-Acid Digest	ug/g	100.2	< 5.00e-03	< 2.910	n/a	n/a	n/a	100.8	2.910	n/a
S981002755	A	Bismuth - ICP-Acid Digest	ug/g	97.80	< 1.36e-01	< 56.30	n/a	n/a	n/a	98.00	56.20	n/a
S981002755	A	Calcium - ICP-Acid Digest	ug/g	94.20	< 5.00e-02	9.470	n/a	n/a	n/a	92.40	2.910	n/a
S981002755	A	Cadmium - ICP-Acid Digest	ug/g	94.20	< 5.00e-03	< 2.910	n/a	n/a	n/a	97.00	2.910	n/a
S981002755	A	Cerium - ICP-Acid Digest	ug/g	101.0	< 1.00e-01	< 56.30	n/a	n/a	n/a	98.40	56.20	n/a
S981002755	A	Cobalt - ICP-Acid Digest	ug/g	94.80	< 1.00e-02	< 11.70	n/a	n/a	n/a	95.40	11.70	n/a
S981002755	A	Copper - ICP-Acid Digest	ug/g	92.80	< 1.00e-02	< 5.830	n/a	n/a	n/a	93.40	5.820	n/a
S981002755	A	Potassium - ICP-Acid Digest	ug/g	93.00	< 5.00e-02	3.44e+02	n/a	n/a	n/a	90.00	29.10	n/a
S981002755	A	Lanthanum - ICP-Acid Digest	ug/g	100.0	< 5.00e-02	2.58e+04	n/a	n/a	n/a	16.32	291.0	n/a
S981002755	A	Lithium - ICP-Acid Digest	ug/g	100.4	< 5.00e-02	< 2.910	n/a	n/a	n/a	100.2	2.910	n/a
S981002755	A	Magnesium - ICP-Acid Digest	ug/g	101.6	< 1.00e-02	< 5.830	n/a	n/a	n/a	98.60	5.820	n/a
S981002755	A	Manganese - ICP-Acid Digest	ug/g	94.80	< 1.00e-01	81.10	n/a	n/a	n/a	95.20	56.20	n/a
S981002755	A	Molybdenum - ICP-Acid Digest	ug/g	92.80	< 5.00e-02	3.27e+02	n/a	n/a	n/a	91.60	5.820	n/a
S981002755	A	Neodymium - ICP-Acid Digest	ug/g	95.60	< 5.00e-02	< 35.40	n/a	n/a	n/a	99.00	29.10	n/a
S981002755	A	Lead - ICP-Acid Digest	ug/g	98.80	< 1.00e-01	< 58.30	n/a	n/a	n/a	98.00	56.20	n/a
S981002755	A	Antimony - ICP-Acid Digest	ug/g	89.60	< 1.00e-01	69.20	n/a	n/a	n/a	97.60	11.70	n/a
S981002755	A	Selenium - ICP-Acid Digest	ug/g	92.20	< 2.00e-02	< 58.90	n/a	n/a	n/a	91.40	56.20	n/a
S981002755	A	Strontium - ICP-Acid Digest	ug/g	92.20	< 2.00e-02	< 35.00	n/a	n/a	n/a	99.60	35.10	n/a
S981002755	A	Tantalum - ICP-Acid Digest	ug/g	90.80	< 1.00e-01	< 58.30	n/a	n/a	n/a	96.40	56.20	n/a
S981002755	A	Titanium - ICP-Acid Digest	ug/g	99.20	< 1.00e-01	< 58.30	n/a	n/a	n/a	97.20	56.20	n/a
S981002755	A	Thallium - ICP-Acid Digest	ug/g	100.2	< 1.00e-02	< 5.830	n/a	n/a	n/a	99.40	5.820	n/a
S981002755	A	Uranium - ICP-Acid Digest	ug/g	97.00	< 2.00e-02	< 5.830	n/a	n/a	n/a	99.60	5.820	n/a
S981002755	A	Vanadium - ICP-Acid Digest	ug/g	97.10	< 5.00e-01	< 1.17e+02	n/a	n/a	n/a	93.60	117.0	n/a
S981002755	A	Zinc - ICP-Acid Digest	ug/g	97.40	< 5.00e-02	< 29.10	n/a	n/a	n/a	90.20	29.10	n/a
S981002756	A	Zirconium - ICP-Acid Digest	ug/g	85.00	< 1.00e-02	9.400	n/a	n/a	n/a	97.60	5.820	n/a
S981002756	A	Silver - ICP-Acid Digest	ug/g	96.40	< 1.00e-02	94.60	n/a	n/a	n/a	99.00	5.820	n/a
S981002756	A	Arsenic - ICP-Acid Digest	ug/g	33.80	< 1.00e-02	34.30	n/a	n/a	n/a	n/a	6.150	n/a
S981002756	A	Boron - ICP-Acid Digest	ug/g	96.00	< 1.00e-01	< 61.60	n/a	n/a	n/a	n/a	61.50	n/a
S981002756	A	Barium - ICP-Acid Digest	ug/g	98.80	< 5.00e-02	< 1.40e+02	n/a	n/a	n/a	n/a	30.90	n/a
S981002756	A	Beryllium - ICP-Acid Digest	ug/g	100.2	< 5.00e-03	< 3.080	n/a	n/a	n/a	n/a	30.90	n/a
S981002756	A	Bismuth - ICP-Acid Digest	ug/g	93.80	< 5.00e-02	< 61.60	n/a	n/a	n/a	n/a	61.50	n/a
S981002756	A	Calcium - ICP-Acid Digest	ug/g	97.80	< 1.36e-01	3.14e+02	n/a	n/a	n/a	n/a	61.50	n/a
S981002756	A	Cadmium - ICP-Acid Digest	ug/g	94.20	< 5.00e-03	9.600	n/a	n/a	n/a	n/a	3.090	n/a
S981002756	A	Cerium - ICP-Acid Digest	ug/g	101.0	< 1.00e-01	< 61.60	n/a	n/a	n/a	n/a	61.50	n/a
S981002756	A	Cobalt - ICP-Acid Digest	ug/g	94.00	< 2.00e-02	< 12.30	n/a	n/a	n/a	n/a	12.30	n/a

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Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S981002756	A	Copper - ICP-Acid Digest	ug/g	92.80	< 1.00e-02	< 6.160	n/a	n/a	n/a	n/a	6.150	n/a
S981002756	A	Iron - ICP-Acid Digest	ug/g	93.00	< 5.42e+02	3.52e+02	n/a	n/a	n/a	n/a	30.90	n/a
S981002756	A	Potassium - ICP-Acid Digest	ug/g	100.00	< 5.00e-01	2.40e+04	n/a	n/a	n/a	n/a	309.0	n/a
S981002756	A	Lanthanum - ICP-Acid Digest	ug/g	100.4	< 5.00e-02	< 30.80	n/a	n/a	n/a	n/a	30.90	n/a
S981002756	A	Lithium - ICP-Acid Digest	ug/g	101.6	< 1.00e-02	< 6.160	n/a	n/a	n/a	n/a	6.150	n/a
S981002756	A	Magnesium - ICP-Acid Digest	ug/g	94.80	< 1.00e-01	80.10	n/a	n/a	n/a	n/a	61.50	n/a
S981002756	A	Manganese - ICP-Acid Digest	ug/g	93.80	< 1.00e-02	3.30e+02	n/a	n/a	n/a	n/a	6.150	n/a
S981002756	A	Niobium - ICP-Acid Digest	ug/g	95.60	< 5.00e-02	< 37.60	n/a	n/a	n/a	n/a	30.90	n/a
S981002756	A	Niodymium - ICP-Acid Digest	ug/g	98.80	< 1.00e-01	< 61.60	n/a	n/a	n/a	n/a	61.50	n/a
S981002756	A	Nickel - ICP-Acid Digest	ug/g	96.00	< 2.00e-02	60.10	n/a	n/a	n/a	n/a	12.30	n/a
S981002756	A	Lead - ICP-Acid Digest	ug/g	89.60	< 1.00e-01	71.20	n/a	n/a	n/a	n/a	61.50	n/a
S981002756	A	Antimony - ICP-Acid Digest	ug/g	92.20	< 5.00e-02	< 37.00	n/a	n/a	n/a	n/a	61.50	n/a
S981002756	A	Selenium - ICP-Acid Digest	ug/g	90.80	< 1.00e-01	< 61.60	n/a	n/a	n/a	n/a	36.90	n/a
S981002756	A	Samarium - ICP-Acid Digest	ug/g	99.20	< 1.00e-01	< 61.60	n/a	n/a	n/a	n/a	61.50	n/a
S981002756	A	Strontium - ICP-Acid Digest	ug/g	100.2	< 1.00e-02	< 6.160	n/a	n/a	n/a	n/a	6.150	n/a
S981002756	A	Titanium - ICP-Acid Digest	ug/g	97.00	< 2.00e-01	< 1.25e+02	n/a	n/a	n/a	n/a	123.0	n/a
S981002756	A	Uranium - ICP-Acid Digest	ug/g	97.40	< 5.00e-01	1.38e+03	n/a	n/a	n/a	n/a	309.0	n/a
S981002756	A	Vanadium - ICP-Acid Digest	ug/g	97.40	< 5.00e-02	< 30.80	n/a	n/a	n/a	n/a	30.90	n/a
S981002756	A	Zinc - ICP-Acid Digest	ug/g	85.00	< 1.00e-02	8.830	n/a	n/a	n/a	n/a	6.150	n/a
S981002756	A	Zirconium - ICP-Acid Digest	ug/g	96.40	< 1.00e-02	93.40	n/a	n/a	n/a	n/a	6.150	n/a
S981002757	A	Silver - ICP-Acid Digest	ug/g	33.80	< 1.00e-02	< 37.30	n/a	n/a	n/a	n/a	57.60	n/a
S981002757	A	Arsenic - ICP-Acid Digest	ug/g	96.00	< 1.00e-02	< 57.50	n/a	n/a	n/a	n/a	57.60	n/a
S981002757	A	Boron - ICP-Acid Digest	ug/g	98.80	< 5.00e-02	< 1.05e+02	n/a	n/a	n/a	n/a	28.70	n/a
S981002757	A	Barium - ICP-Acid Digest	ug/g	105.6	< 4.85e-01	< 28.70	n/a	n/a	n/a	n/a	28.70	n/a
S981002757	A	Beryllium - ICP-Acid Digest	ug/g	93.60	< 5.00e-03	< 2.870	n/a	n/a	n/a	n/a	2.870	n/a
S981002757	A	Bismuth - ICP-Acid Digest	ug/g	97.80	< 1.36e-01	3.41e+02	n/a	n/a	n/a	n/a	57.60	n/a
S981002757	A	Calcium - ICP-Acid Digest	ug/g	94.20	< 5.00e-03	10.50	n/a	n/a	n/a	n/a	57.60	n/a
S981002757	A	Cadmium - ICP-Acid Digest	ug/g	101.0	< 1.00e-01	< 11.50	n/a	n/a	n/a	n/a	11.50	n/a
S981002757	A	Cerium - ICP-Acid Digest	ug/g	94.00	< 2.00e-02	< 5.750	n/a	n/a	n/a	n/a	5.760	n/a
S981002757	A	Cobalt - ICP-Acid Digest	ug/g	92.80	< 1.00e-02	< 3.88e+02	n/a	n/a	n/a	n/a	28.70	n/a
S981002757	A	Copper - ICP-Acid Digest	ug/g	93.00	< 5.00e-01	2.71e+04	n/a	n/a	n/a	n/a	28.70	n/a
S981002757	A	Iron - ICP-Acid Digest	ug/g	100.0	< 5.00e-02	< 28.70	n/a	n/a	n/a	n/a	28.70	n/a
S981002757	A	Potassium - ICP-Acid Digest	ug/g	100.4	< 5.00e-01	< 5.750	n/a	n/a	n/a	n/a	5.760	n/a
S981002757	A	Lanthanum - ICP-Acid Digest	ug/g	101.6	< 1.00e-02	< 5.750	n/a	n/a	n/a	n/a	5.760	n/a
S981002757	A	Magnesium - ICP-Acid Digest	ug/g	94.80	< 1.00e-01	91.00	n/a	n/a	n/a	n/a	57.60	n/a
S981002757	A	Manganese - ICP-Acid Digest	ug/g	93.80	< 5.00e-02	3.70e+02	n/a	n/a	n/a	n/a	57.60	n/a
S981002757	A	Niobium - ICP-Acid Digest	ug/g	95.60	< 5.00e-02	34.20	n/a	n/a	n/a	n/a	28.70	n/a
S981002757	A	Niodymium - ICP-Acid Digest	ug/g	98.80	< 1.00e-01	< 57.50	n/a	n/a	n/a	n/a	57.60	n/a
S981002757	A	Nickel - ICP-Acid Digest	ug/g	96.00	< 2.00e-02	66.00	n/a	n/a	n/a	n/a	11.50	n/a
S981002757	A	Lead - ICP-Acid Digest	ug/g	89.60	< 1.00e-01	< 34.50	n/a	n/a	n/a	n/a	34.50	n/a
S981002757	A	Antimony - ICP-Acid Digest	ug/g	92.20	< 5.00e-02	< 57.50	n/a	n/a	n/a	n/a	57.60	n/a
S981002757	A	Selenium - ICP-Acid Digest	ug/g	90.80	< 1.00e-01	< 57.50	n/a	n/a	n/a	n/a	57.60	n/a
S981002757	A	Samarium - ICP-Acid Digest	ug/g	99.20	< 1.00e-01	< 57.50	n/a	n/a	n/a	n/a	57.60	n/a
S981002757	A	Strontium - ICP-Acid Digest	ug/g	100.2	< 1.00e-02	< 5.750	n/a	n/a	n/a	n/a	5.760	n/a
S981002757	A	Titanium - ICP-Acid Digest	ug/g	97.00	< 2.00e-01	< 1.15e+02	n/a	n/a	n/a	n/a	115.0	n/a
S981002757	A	Thallium - ICP-Acid Digest	ug/g	97.40	< 5.00e-01	1.58e+03	n/a	n/a	n/a	n/a	287.0	n/a
S981002757	A	Uranium - ICP-Acid Digest	ug/g	97.40	< 5.00e-02	< 28.70	n/a	n/a	n/a	n/a	28.70	n/a
S981002757	A	Vanadium - ICP-Acid Digest	ug/g	85.00	< 1.00e-02	8.400	n/a	n/a	n/a	n/a	5.760	n/a
S981002757	A	Zinc - ICP-Acid Digest	ug/g				n/a	n/a	n/a	n/a		n/a

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Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T002757	A	Zirconium - ICP-Acid Digest	ug/g	96.40	<1.00e-02	1.03e+02	n/a	n/a	n/a	n/a	5.760	n/a
Supernate: Supernate												
Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T002779		Americium-241 by GEA	uCi/mL	n/a	<7.00e-03	<6.87e-02	<6.87e-2	n/a	n/a	n/a	6.90e-02	n/a
S98T002780		Americium-241 by GEA	uCi/mL	n/a	<1.59e-01	<1.59e-01	<1.59e-1	n/a	n/a	n/a	1.61e-01	n/a
S98T002781		Americium-241 by GEA	uCi/mL	n/a	<1.62e-01	<1.62e-01	<1.62e-1	n/a	n/a	n/a	1.60e-01	n/a
S98T002782	D	Sn 117 by ICP/MS Acid Addition	ug/mL	87.27	<1.50e-04	1.30e+02	126.0	128.0	3.12	593.6	6.075	n/a
S98T002782	A	Thorium-232 by ICP/MS	ug/mL	n/a	<1.459	<1.459	<1.460	n/a	n/a	n/a	1.459	n/a
S98T002782	A	Thorium-232 by ICP/MS	ug/mL	n/a	<1.416	<1.416	<1.420	n/a	n/a	n/a	1.416	n/a
S98T002782	A	Thorium-232 by ICP/MS	ug/mL	98.50	<8.26e-01	<8.26e-1	<8.26e-1	n/a	n/a	84.76	8.26e-01	n/a
S98T002783	D	Oxalate-IC-B ionex 4000/450	ug/mL	99.43	<1.05e-01	<4.35e+02	<4.35e2	n/a	n/a	101.3	434.8	n/a
S98T002783	A	Thorium-232 by ICP/MS	ug/mL	87.27	<1.50e-04	1.32e+02	131.0	131.6	0.76	n/a	6.075	n/a
S98T002783	A	Thorium-232 by ICP/MS	ug/mL	n/a	<1.459	<1.459	<1.460	n/a	n/a	n/a	1.459	n/a
S98T002783	A	Thorium-232 by ICP/MS	ug/mL	n/a	<1.416	<1.416	<1.420	n/a	n/a	n/a	1.416	n/a
S98T002783	A	Oxalate-IC-B ionex 4000/450	ug/mL	98.50	<1.05e-01	<8.26e-01	<8.26e-1	n/a	n/a	n/a	8.26e-01	n/a
S98T002784	D	Sn 117 by ICP/MS Acid Addition	ug/mL	106.0	<1.05e-01	<4.35e+02	<4.35e2	n/a	n/a	n/a	434.8	n/a
S98T002784	A	Thorium-232 by ICP/MS	ug/mL	87.27	<1.50e-04	1.42e+02	136.0	136.8	4.32	n/a	6.075	n/a
S98T002784	A	Thorium-232 by ICP/MS	ug/mL	n/a	<1.459	<1.459	<1.460	n/a	n/a	n/a	1.459	n/a
S98T002784	A	Thorium-232 by ICP/MS	ug/mL	n/a	<1.416	<1.416	<1.420	n/a	n/a	n/a	1.416	n/a
S98T002784	A	Oxalate-IC-B ionex 4000/450	ug/mL	98.50	<1.05e-01	<8.26e-01	<8.26e-1	n/a	n/a	n/a	8.26e-01	n/a
S98T002784	B	Bismuth - ICP-Acid Digest-Liq	ug/mL	106.2	<1.05e-01	<1.07e+03	<1.07e3	n/a	n/a	n/a	1.07e+03	n/a
S98T002788	B	Cerium - ICP-Acid Digest-Liq	ug/mL	93.00	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	102.4	100.0	n/a
S98T002788	B	Neodymium - ICP-Acid Digest-Liq	ug/mL	97.20	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	98.00	100.0	n/a
S98T002788	B	Neodymium - ICP-Acid Digest-Liq	ug/mL	95.00	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	96.60	100.0	n/a
S98T002788	B	Samarium - ICP-Acid Digest-Liq	ug/mL	94.20	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	97.40	100.0	n/a
S98T002788	B	Thallium - ICP-Acid Digest-Liq	ug/mL	92.00	<2.00e-01	<2.00e+02	<2.00e2	n/a	n/a	100.4	200.0	n/a
S98T002789	B	Bismuth - ICP-Acid Digest-Liq	ug/mL	93.00	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	n/a	100.0	n/a
S98T002789	B	Cerium - ICP-Acid Digest-Liq	ug/mL	97.20	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	n/a	100.0	n/a
S98T002789	B	Neodymium - ICP-Acid Digest-Liq	ug/mL	95.00	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	n/a	100.0	n/a
S98T002789	B	Samarium - ICP-Acid Digest-Liq	ug/mL	94.20	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	n/a	100.0	n/a
S98T002789	B	Thallium - ICP-Acid Digest-Liq	ug/mL	92.00	<2.00e-01	<2.00e+02	<2.00e2	n/a	n/a	n/a	200.0	n/a
S98T002790	B	Bismuth - ICP-Acid Digest-Liq	ug/mL	93.00	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	n/a	100.0	n/a
S98T002790	B	Cerium - ICP-Acid Digest-Liq	ug/mL	97.20	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	n/a	100.0	n/a
S98T002790	B	Neodymium - ICP-Acid Digest-Liq	ug/mL	95.00	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	n/a	100.0	n/a
S98T002790	B	Samarium - ICP-Acid Digest-Liq	ug/mL	94.20	<1.00e-01	<1.00e+02	<1.00e2	n/a	n/a	n/a	100.0	n/a
S98T002790	B	Thallium - ICP-Acid Digest-Liq	ug/mL	92.00	<2.00e-01	<2.00e+02	<2.00e2	n/a	n/a	n/a	200.0	n/a

Appendix A. Opportunistic Analyte Results
AU-101 LAW

RISE: 22
SEGMENT #: Field Blank

SEGMENT PORTION: Field Blank

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S981002794	D	Sn 117 by ICP/MS	ug/mL	87.27	<1.50e-04	3.32e-03	3.37e-03	3.35e-03	1.49	n/a	2.00e-03	n/a
S981002794	A	Thorium-230 by ICP/MS	ug/mL	n/a	n/a	<3.60e-04	<3.60e-04	n/a	n/a	n/a	3.60e-04	n/a
S981002794	A	Thorium-230 by ICP/MS	ug/mL	n/a	n/a	<3.49e-04	<3.49e-04	n/a	n/a	n/a	3.49e-04	n/a
S981002794	A	Thorium-232 by ICP/MS	ug/mL	98.50	n/a	1.72e-02	2.71e-03	9.94e-03	146	n/a	2.04e-04	n/a
S981002794	D	Americium-241 by GEA	uc1/mL	n/a	<7.06e-03	<3.64e-05	<3.61e-5	n/a	n/a	n/a	3.64e-05	n/a
S981002796	D	Bismuth-ICP-Acid Dil.	ug/mL	98.40	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S981002796	D	Cerium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S981002796	D	Neodymium-ICP-Acid Dil.	ug/mL	97.40	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S981002796	D	Selenium-ICP-Acid Dil.	ug/mL	95.40	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S981002796	D	Thallium-ICP-Acid Dil.	ug/mL	95.60	<2.00e-01	<4.00e-01	<4.00e-1	n/a	n/a	n/a	4.00e-01	n/a
S981002796	D	Oxalate-IC-Bionex 4000/450	ug/mL	106.2	<1.05e-01	<3.15e-01	<3.15e-1	n/a	n/a	n/a	3.15e-01	n/a

HNF-1652 REV. 0

HNF-1652 REV. 0

Appendix A. Opportunistic Analyte Results
AW-101 LAW

RISER: 22

SEGMENT #: 100 PARTS COMP 100 PARTS OIL

SEGMENT PORTION: Centrifuged Solids

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003084	F	Americium-241 by GEA	uCi/g	n/a	< 1.97e-01	< 1.535	n/a	n/a	n/a	n/a	1.535	n/a
S98T003089	A	Silver - ICP-Acid Digest	ug/g	94.50	< 1.00e-02	1.97e+02	n/a	n/a	n/a	n/a	6.180	n/a
S98T003089	A	Arsenic - ICP-Acid Digest	ug/g	95.20	< 1.00e-01	< 61.90	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Boron - ICP-Acid Digest	ug/g	103.0	4.43e-01	1.50e+02	n/a	n/a	n/a	n/a	30.90	n/a
S98T003089	A	Barium - ICP-Acid Digest	ug/g	98.60	< 5.00e-02	65.30	n/a	n/a	n/a	n/a	30.90	n/a
S98T003089	A	Beryllium - ICP-Acid Digest	ug/g	104.8	< 5.00e-03	< 3.100	n/a	n/a	n/a	n/a	3.090	n/a
S98T003089	A	Bismuth - ICP-Acid Digest	ug/g	93.00	< 1.00e-01	1.08e+02	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Calcium - ICP-Acid Digest	ug/g	98.60	1.18e-01	2.44e+03	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Cadmium - ICP-Acid Digest	ug/g	95.00	< 5.00e-03	< 81.10	n/a	n/a	n/a	n/a	3.090	n/a
S98T003089	A	Cerium - ICP-Acid Digest	ug/g	94.20	< 2.00e-02	< 12.40	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Cobalt - ICP-Acid Digest	ug/g	92.40	< 1.00e-02	< 6.190	n/a	n/a	n/a	n/a	12.40	n/a
S98T003089	A	Copper - ICP-Acid Digest	ug/g	92.40	< 1.00e-02	< 6.190	n/a	n/a	n/a	n/a	6.180	n/a
S98T003089	A	Iron - ICP-Acid Digest	ug/g	93.20	< 5.00e-02	3.33e+03	n/a	n/a	n/a	n/a	30.90	n/a
S98T003089	A	Potassium - ICP-Acid Digest	ug/g	97.80	< 5.00e-01	1.16e+04	n/a	n/a	n/a	n/a	309.0	n/a
S98T003089	A	Lanthanum - ICP-Acid Digest	ug/g	99.60	< 2.00e-02	< 6.190	n/a	n/a	n/a	n/a	6.180	n/a
S98T003089	A	Lithium - ICP-Acid Digest	ug/g	99.60	< 2.00e-02	< 6.190	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Magnesium - ICP-Acid Digest	ug/g	95.20	< 1.00e-01	7.13e+02	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Manganese - ICP-Acid Digest	ug/g	94.20	< 1.00e-02	3.21e+03	n/a	n/a	n/a	n/a	30.90	n/a
S98T003089	A	Molybdenum - ICP-Acid Digest	ug/g	97.20	< 5.00e-02	< 31.00	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Neodymium - ICP-Acid Digest	ug/g	98.00	< 1.00e-01	< 61.90	n/a	n/a	n/a	n/a	30.90	n/a
S98T003089	A	Nickel - ICP-Acid Digest	ug/g	96.00	< 2.00e-02	5.45e+02	n/a	n/a	n/a	n/a	12.40	n/a
S98T003089	A	Lead - ICP-Acid Digest	ug/g	90.40	< 1.00e-01	2.85e+02	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Antimony - ICP-Acid Digest	ug/g	94.00	< 6.00e-02	< 37.10	n/a	n/a	n/a	n/a	37.20	n/a
S98T003089	A	Selenium - ICP-Acid Digest	ug/g	91.00	< 1.00e-01	< 61.90	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Samarium - ICP-Acid Digest	ug/g	98.00	< 1.00e-01	< 61.90	n/a	n/a	n/a	n/a	61.80	n/a
S98T003089	A	Strontium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	20.50	n/a	n/a	n/a	n/a	6.180	n/a
S98T003089	A	Titanium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	42.90	n/a	n/a	n/a	n/a	124.0	n/a
S98T003089	A	Thallium - ICP-Acid Digest	ug/g	91.00	< 2.00e-01	< 1.24e+02	n/a	n/a	n/a	n/a	309.0	n/a
S98T003089	A	Uranium - ICP-Acid Digest	ug/g	96.50	< 5.00e-02	< 31.00	n/a	n/a	n/a	n/a	30.90	n/a
S98T003089	A	Vanadium - ICP-Acid Digest	ug/g	97.60	< 5.00e-02	< 31.00	n/a	n/a	n/a	n/a	6.180	n/a
S98T003089	A	Zinc - ICP-Acid Digest	ug/g	86.80	< 1.00e-02	35.60	n/a	n/a	n/a	n/a	6.180	n/a
S98T003089	A	Zirconium - ICP-Acid Digest	ug/g	94.80	< 1.00e-02	8.53e+02	n/a	n/a	n/a	n/a	6.180	n/a

Supernate: Supernate

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003066	F	Americium-241 by GEA	uCi/mL	n/a	< 1.97e-02	< 2.03e-01	n/a	n/a	n/a	n/a	2.03e-01	n/a
S98T003079	B	Silver - ICP-Acid Digest-Liquid	ug/mL	101.0	< 1.00e-02	7.430	n/a	n/a	n/a	n/a	2.500	n/a
S98T003079	B	Arsenic - ICP-Acid Digest-Liquid	ug/mL	101.2	< 1.00e-01	< 25.00	n/a	n/a	n/a	n/a	25.00	n/a
S98T003079	B	Boron - ICP-Acid Digest-Liquid	ug/mL	116.2	4.70e-01	40.40	n/a	n/a	n/a	n/a	12.50	n/a
S98T003079	B	Barium - ICP-Acid Digest-Liquid	ug/mL	99.60	< 5.00e-02	< 12.50	n/a	n/a	n/a	n/a	12.50	n/a
S98T003079	B	Beryllium - ICP-Acid Digest/Liquid	ug/mL	108.8	< 5.00e-03	< 1.250	n/a	n/a	n/a	n/a	1.250	n/a
S98T003079	B	Bismuth - ICP-Acid Digest/Liquid	ug/mL	96.80	< 1.00e-01	< 25.00	n/a	n/a	n/a	n/a	25.00	n/a
S98T003079	B	Calcium - ICP-Acid Digest-Liquid	ug/mL	105.4	< 1.40e-01	< 25.00	n/a	n/a	n/a	n/a	25.00	n/a

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Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003079	B		Cadmium - ICP-Acid Digest-Liq	ug/mL	100.0	< 5.00e-03	< 1.250	N/A	N/A	N/A	N/A	1.250	N/A
S98T003079	B		Cerium - ICP-Acid Digest-Liq	ug/mL	101.2	< 1.00e-01	< 25.00	N/A	N/A	N/A	N/A	25.00	N/A
S98T003079	B		Cobalt - ICP-Acid Digest-Liq	ug/mL	98.00	< 2.00e-02	< 5.000	N/A	N/A	N/A	N/A	5.000	N/A
S98T003079	B		Copper - ICP-Acid Digest-Liquid	ug/mL	95.40	< 1.00e-02	< 2.500	N/A	N/A	N/A	N/A	2.500	N/A
S98T003079	B		Iron - ICP-Acid Digest-Liquid	ug/mL	95.80	< 5.00e-02	< 12.50	N/A	N/A	N/A	N/A	12.50	N/A
S98T003079	B		Potassium - ICP-Acid Digest-Liq	ug/mL	101.8	< 5.00e-01	1.97e+04	N/A	N/A	N/A	N/A	125.0	N/A
S98T003079	B		Lanthanum - ICP-Acid Digest-Liq	ug/mL	100.6	< 1.00e-02	< 12.50	N/A	N/A	N/A	N/A	12.50	N/A
S98T003079	B		Lithium - ICP-Acid Digest-Liq	ug/mL	101.2	< 1.00e-02	< 2.500	N/A	N/A	N/A	N/A	2.500	N/A
S98T003079	B		Magnesium - ICP-Acid Digest-Liq	ug/mL	100.8	< 1.00e-02	< 25.00	N/A	N/A	N/A	N/A	25.00	N/A
S98T003079	B		Manganese - ICP-Acid Digest-Liq	ug/mL	97.40	< 1.00e-02	< 2.500	N/A	N/A	N/A	N/A	2.500	N/A
S98T003079	B		Molybdenum - ICP-Acid Digest-Liq	ug/mL	103.0	< 5.00e-02	< 2.500	N/A	N/A	N/A	N/A	25.00	N/A
S98T003079	B		Neodymium - ICP-Acid Digest-Liq	ug/mL	98.40	< 1.00e-01	< 25.00	N/A	N/A	N/A	N/A	25.00	N/A
S98T003079	B		Lead - ICP-Acid Digest-Liquid	ug/mL	97.20	< 1.00e-02	< 5.000	N/A	N/A	N/A	N/A	25.00	N/A
S98T003079	B		Selenium - ICP-Acid Digest-Liq	ug/mL	102.8	< 6.00e-02	< 15.00	N/A	N/A	N/A	N/A	15.00	N/A
S98T003079	B		Strontium - ICP-Acid Digest-Liq	ug/mL	95.80	< 1.00e-01	< 25.00	N/A	N/A	N/A	N/A	25.00	N/A
S98T003079	B		Samarium - ICP-Acid Digest-Liq	ug/mL	98.60	< 1.00e-02	< 2.500	N/A	N/A	N/A	N/A	2.500	N/A
S98T003079	B		Titanium - ICP-Acid Digest-Liq	ug/mL	104.2	< 1.00e-02	< 2.500	N/A	N/A	N/A	N/A	2.500	N/A
S98T003079	B		Thallium - ICP-Acid Digest-Liq	ug/mL	98.00	< 2.00e-01	< 50.00	N/A	N/A	N/A	N/A	50.00	N/A
S98T003079	B		Uranium - ICP-Acid Digest-Liq	ug/mL	96.70	< 5.00e-01	< 1.25e+02	N/A	N/A	N/A	N/A	125.0	N/A
S98T003079	B		Vanadium - ICP-Acid Digest-Liq	ug/mL	99.80	< 5.00e-02	< 12.50	N/A	N/A	N/A	N/A	12.50	N/A
S98T003079	B		Zinc - ICP-Acid Digest-Liquid	ug/mL	94.00	< 1.00e-02	< 5.440	N/A	N/A	N/A	N/A	2.500	N/A
S98T003079	B		Zirconium - ICP-Acid Digest-Liq	ug/mL	99.40	< 1.00e-02	3.190	N/A	N/A	N/A	N/A	2.500	N/A

Appendix A. Opportunistic Analyte Results
AN-101 LAW

RISER: 22

SEGMENT #: 100 PARTS COMP 25 PARTS DIL

SEGMENT PORTION: Centrifuged Solids

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003082	F	Americium-241 by GEA	uCi/g	n/a	<1.91e-01	<9.74e-01	n/a	n/a	n/a	n/a	9.74e-01	n/a
S98T003087	A	Silver - ICP-Acid Digest	ug/g	94.50	<1.00e-02	52.10	n/a	n/a	n/a	102.0	5.670	n/a
S98T003087	A	Arsenic - ICP-Acid Digest	ug/g	95.20	<1.00e-01	< 56.70	n/a	n/a	n/a	99.80	56.70	n/a
S98T003087	A	Boron - ICP-Acid Digest	ug/g	103.0	4.43e-01	1.30e+02	n/a	n/a	n/a	95.00	28.30	n/a
S98T003087	A	Barium - ICP-Acid Digest	ug/g	98.60	<5.00e-02	< 28.40	n/a	n/a	n/a	99.40	28.30	n/a
S98T003087	A	Beryllium - ICP-Acid Digest	ug/g	104.8	<5.00e-03	< 2.840	n/a	n/a	n/a	102.0	2.830	n/a
S98T003087	A	Bismuth - ICP-Acid Digest	ug/g	93.00	<1.00e-01	< 56.70	n/a	n/a	n/a	100.0	56.70	n/a
S98T003087	A	Calcium - ICP-Acid Digest	ug/g	98.60	1.13e-01	6.30e+02	n/a	n/a	n/a	101.8	56.70	n/a
S98T003087	A	Cadmium - ICP-Acid Digest	ug/g	95.00	<5.00e-03	17.80	n/a	n/a	n/a	100.0	2.830	n/a
S98T003087	A	Cerium - ICP-Acid Digest	ug/g	99.00	<1.00e-01	< 56.70	n/a	n/a	n/a	100.8	56.70	n/a
S98T003087	A	Cobalt - ICP-Acid Digest	ug/g	94.20	<2.00e-02	< 11.30	n/a	n/a	n/a	98.80	11.30	n/a
S98T003087	A	Copper - ICP-Acid Digest	ug/g	93.20	<1.00e-02	< 5.670	n/a	n/a	n/a	93.20	5.670	n/a
S98T003087	A	Iron - ICP-Acid Digest	ug/g	93.20	<5.00e-02	7.01e+02	n/a	n/a	n/a	98.60	28.30	n/a
S98T003087	A	Lanthanum - ICP-Acid Digest	ug/g	97.80	<5.00e-01	2.01e+04	n/a	n/a	n/a	131.8	284.0	n/a
S98T003087	A	Lithium - ICP-Acid Digest	ug/g	99.60	<1.00e-02	< 5.670	n/a	n/a	n/a	99.20	5.670	n/a
S98T003087	A	Magnesium - ICP-Acid Digest	ug/g	95.20	<1.00e-01	1.57e+02	n/a	n/a	n/a	99.20	56.70	n/a
S98T003087	A	Manganese - ICP-Acid Digest	ug/g	99.60	<1.00e-02	< 5.670	n/a	n/a	n/a	100.8	5.670	n/a
S98T003087	A	Molybdenum - ICP-Acid Digest	ug/g	94.20	<5.00e-02	6.77e+02	n/a	n/a	n/a	103.0	28.30	n/a
S98T003087	A	Neodymium - ICP-Acid Digest	ug/g	98.00	<1.00e-01	< 56.70	n/a	n/a	n/a	99.20	56.70	n/a
S98T003087	A	Nickel - ICP-Acid Digest	ug/g	96.00	<2.00e-02	1.22e+02	n/a	n/a	n/a	100.6	11.30	n/a
S98T003087	A	Lead - ICP-Acid Digest	ug/g	90.40	<1.00e-01	< 56.70	n/a	n/a	n/a	103.8	56.70	n/a
S98T003087	A	Antimony - ICP-Acid Digest	ug/g	94.00	<6.00e-02	< 34.00	n/a	n/a	n/a	100.0	33.90	n/a
S98T003087	A	Selenium - ICP-Acid Digest	ug/g	91.00	<1.00e-01	< 56.70	n/a	n/a	n/a	97.40	56.70	n/a
S98T003087	A	Samarium - ICP-Acid Digest	ug/g	98.00	<1.00e-01	< 56.70	n/a	n/a	n/a	97.80	56.70	n/a
S98T003087	A	Strontium - ICP-Acid Digest	ug/g	99.60	<1.00e-02	9.220	n/a	n/a	n/a	100.2	5.670	n/a
S98T003087	A	Titanium - ICP-Acid Digest	ug/g	99.60	<1.00e-02	< 5.670	n/a	n/a	n/a	101.2	5.670	n/a
S98T003087	A	Thallium - ICP-Acid Digest	ug/g	91.00	<2.00e-01	<1.13e+02	n/a	n/a	n/a	94.20	113.0	n/a
S98T003087	A	Uranium - ICP-Acid Digest	ug/g	96.50	<5.00e-01	2.87e+03	n/a	n/a	n/a	102.0	284.0	n/a
S98T003087	A	Vanadium - ICP-Acid Digest	ug/g	97.60	<5.00e-02	< 28.40	n/a	n/a	n/a	100.4	28.30	n/a
S98T003087	A	Zinc - ICP-Acid Digest	ug/g	86.80	<1.00e-02	13.80	n/a	n/a	n/a	95.00	5.670	n/a
S98T003087	A	Zirconium - ICP-Acid Digest	ug/g	94.80	<1.00e-02	1.85e+02	n/a	n/a	n/a	97.40	5.670	n/a

Supernate: Supernate

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003056	F	Americium-241 by GEA	uCi/mL	n/a	<1.91e-02	<3.96e-01	n/a	n/a	n/a	n/a	3.96e-01	n/a
S98T003087	B	Silver - ICP-Acid Digest-Liquid	ug/mL	101.0	<1.00e-02	14.00	n/a	n/a	n/a	104.0	5.000	n/a
S98T003087	B	Arsenic - ICP-Acid Digest-Liquid	ug/mL	101.2	<1.00e-01	< 50.00	n/a	n/a	n/a	97.00	50.00	n/a
S98T003087	B	Boron - ICP-Acid Digest-Liquid	ug/mL	116.2	4.70e-01	66.50	n/a	n/a	n/a	97.80	25.00	n/a
S98T003087	B	Barium - ICP-Acid Digest-Liquid	ug/mL	99.60	<5.00e-03	< 25.00	n/a	n/a	n/a	98.20	25.00	n/a
S98T003087	B	Beryllium - ICP-Acid Digest-Liquid	ug/mL	108.8	<5.00e-03	< 2.500	n/a	n/a	n/a	103.6	2.500	n/a
S98T003087	B	Bismuth - ICP-Acid Digest-Liquid	ug/mL	98.80	<1.00e-01	< 50.00	n/a	n/a	n/a	104.6	50.00	n/a
S98T003087	B	Calcium - ICP-Acid Digest-Liquid	ug/mL	105.4	<1.40e-01	< 50.00	n/a	n/a	n/a	110.0	50.00	n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Skw	Rec %	Det Limit	Count	Err%
S98T003077	B		Cadmium -ICP-Acid Digest-Liq	ug/mL	100.0	< 5.00e-03	< 2.500	n/a	n/a	n/a	103.4	103.4	2.500	n/a	n/a
S98T003077	B		Cerium -ICP-Acid Digest-Liq	ug/mL	101.2	< 1.00e-01	< 50.00	n/a	n/a	n/a	100.4	100.4	50.00	n/a	n/a
S98T003077	B		Cobalt -ICP-Acid Digest-Liq	ug/mL	98.00	< 2.00e-02	< 10.00	n/a	n/a	n/a	100.0	100.0	10.00	n/a	n/a
S98T003077	B		Copper -ICP-Acid Digest-Liquid	ug/mL	95.40	< 1.00e-02	< 5.000	n/a	n/a	n/a	96.60	96.60	5.000	n/a	n/a
S98T003077	B		Iron -ICP-Acid Digest-Liquid	ug/mL	95.80	< 5.00e-02	< 25.00	n/a	n/a	n/a	100.0	100.0	25.00	n/a	n/a
S98T003077	B		Potassium -ICP-Acid Digest-Liq	ug/mL	101.8	< 5.00e-01	3.53e+04	n/a	n/a	n/a	102.0	102.0	250.0	n/a	n/a
S98T003077	B		Lanthanum -ICP-Acid Digest-Liq	ug/mL	100.6	< 5.00e-02	< 25.00	n/a	n/a	n/a	101.2	101.2	25.000	n/a	n/a
S98T003077	B		Lithium -ICP-Acid Digest-Liq	ug/mL	101.2	< 1.00e-01	< 5.000	n/a	n/a	n/a	101.2	101.2	5.000	n/a	n/a
S98T003077	B		Magnesium -ICP-Acid Digest-Liq	ug/mL	97.40	< 1.00e-02	< 5.000	n/a	n/a	n/a	101.2	101.2	5.000	n/a	n/a
S98T003077	B		Manganese -ICP-Acid Digest-Liq	ug/mL	100.8	< 1.00e-01	< 50.00	n/a	n/a	n/a	102.4	102.4	50.000	n/a	n/a
S98T003077	B		Molybdenum -ICP-Acid Digest-Liq	ug/mL	103.0	< 5.00e-02	< 44.30	n/a	n/a	n/a	102.4	102.4	25.000	n/a	n/a
S98T003077	B		Neodymium -ICP-Acid Digest-Liq	ug/mL	98.40	< 1.00e-01	< 30.00	n/a	n/a	n/a	102.4	102.4	30.000	n/a	n/a
S98T003077	B		Lead -ICP-Acid Digest-Liquid	ug/mL	100.6	< 2.00e-02	< 10.00	n/a	n/a	n/a	102.4	102.4	10.000	n/a	n/a
S98T003077	B		Selenium -ICP-Acid Digest-Liq	ug/mL	97.20	< 1.00e-01	< 50.00	n/a	n/a	n/a	102.4	102.4	50.000	n/a	n/a
S98T003077	B		Antimony -ICP-Acid Digest-Liq	ug/mL	102.8	< 5.00e-02	< 30.00	n/a	n/a	n/a	103.2	103.2	30.000	n/a	n/a
S98T003077	B		Samarium -ICP-Acid Digest-Liq	ug/mL	95.80	< 1.00e-01	< 50.00	n/a	n/a	n/a	102.4	102.4	50.000	n/a	n/a
S98T003077	B		Strontium -ICP-Acid Digest-Liq	ug/mL	98.40	< 1.00e-01	< 5.000	n/a	n/a	n/a	98.40	98.40	5.000	n/a	n/a
S98T003077	B		Titanium -ICP-Acid Digest-Liq	ug/mL	100.6	< 1.00e-02	< 5.000	n/a	n/a	n/a	101.0	101.0	5.000	n/a	n/a
S98T003077	B		Thallium -ICP-Acid Digest-Liq	ug/mL	104.2	< 2.00e-01	< 5.000	n/a	n/a	n/a	101.4	101.4	5.000	n/a	n/a
S98T003077	B		Uranium -ICP-Acid Digest-Liq	ug/mL	98.00	< 2.00e-01	< 1.00e+02	n/a	n/a	n/a	93.40	93.40	100.0	n/a	n/a
S98T003077	B		Vanadium -ICP-Acid Digest-Liq	ug/mL	96.70	< 5.00e-01	< 2.50e+02	n/a	n/a	n/a	94.80	94.80	250.0	n/a	n/a
S98T003077	B		Zinc -ICP-Acid Digest-Liquid	ug/mL	99.80	< 5.00e-02	< 25.00	n/a	n/a	n/a	101.2	101.2	25.000	n/a	n/a
S98T003077	B		Zirconium -ICP-Acid Digest-Liq	ug/mL	94.00	< 1.00e-02	10.20	n/a	n/a	n/a	98.40	98.40	5.000	n/a	n/a
S98T003077	B		Zirconium -ICP-Acid Digest-Liq	ug/mL	99.40	< 1.00e-02	7.520	n/a	n/a	n/a	90.00	90.00	5.000	n/a	n/a

Appendix A. Opportunistic Analyte Results
AH-101 LAM

RISER: 22

SEGMENT #: 100 PARTS COMP 75 PARTS DIL

SEGMENT PORTION: Centrifuged Solids

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
5981003083	F	Americium-241 by GEA	uCi/g									
5981003083	A	Silver - ICP-Acid Digest	ug/g	94.50	< 1.97e-01	< 8.78e-01	n/a	n/a	n/a	n/a	8.78e-01	n/a
5981003083	A	Arsenic - ICP-Acid Digest	ug/g	95.20	< 1.00e-01	1.63e+02	n/a	n/a	n/a	n/a	n/a	n/a
5981003083	A	Boron - ICP-Acid Digest	ug/g	103.0	4.43e-01	76.50	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Barium - ICP-Acid Digest	ug/g	98.60	< 5.00e-03	52.60	n/a	n/a	n/a	n/a	52.60	n/a
5981003083	A	Beryllium - ICP-Acid Digest	ug/g	104.8	< 5.00e-03	2.980	n/a	n/a	n/a	n/a	52.60	n/a
5981003083	A	Bismuth - ICP-Acid Digest	ug/g	93.00	< 1.00e-01	86.70	n/a	n/a	n/a	n/a	52.60	n/a
5981003083	A	Calcium - ICP-Acid Digest	ug/g	95.00	< 5.00e-03	64.10	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Cadmium - ICP-Acid Digest	ug/g	92.80	< 1.00e-01	59.70	n/a	n/a	n/a	n/a	52.60	n/a
5981003083	A	Cerium - ICP-Acid Digest	ug/g	94.20	< 2.00e-02	< 1.970	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Cobalt - ICP-Acid Digest	ug/g	92.40	< 2.00e-02	< 5.970	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Copper - ICP-Acid Digest	ug/g	93.20	< 5.00e-02	2.73e+03	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Iron - ICP-Acid Digest	ug/g	97.80	< 5.00e-01	1.30e+04	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Potassium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	46.30	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Lanthanum - ICP-Acid Digest	ug/g	95.20	< 1.00e-01	5.72e+02	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Lithium - ICP-Acid Digest	ug/g	94.20	< 1.00e-02	2.59e+03	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Magnesium - ICP-Acid Digest	ug/g	97.20	< 5.00e-02	< 2.80	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Manganese - ICP-Acid Digest	ug/g	98.00	< 1.00e-01	< 59.70	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Molybdenum - ICP-Acid Digest	ug/g	96.00	< 2.00e-02	4.31e+02	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Nickel - ICP-Acid Digest	ug/g	90.40	< 1.00e-01	2.09e+02	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Lead - ICP-Acid Digest	ug/g	94.00	< 6.00e-02	< 35.80	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Antimony - ICP-Acid Digest	ug/g	91.00	< 1.00e-01	< 59.70	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Selenium - ICP-Acid Digest	ug/g	98.00	< 1.00e-01	< 59.70	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Samarium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	34.50	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Strontium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	16.90	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Titanium - ICP-Acid Digest	ug/g	91.00	< 2.00e-01	< 1.19e+02	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Thallium - ICP-Acid Digest	ug/g	96.50	< 5.00e-02	< 2.80	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Uranium - ICP-Acid Digest	ug/g	97.60	< 5.00e-02	< 2.80	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Vanadium - ICP-Acid Digest	ug/g	86.80	< 1.00e-02	28.50	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Zinc - ICP-Acid Digest	ug/g	94.80	< 1.00e-02	6.46e+02	n/a	n/a	n/a	n/a	59.70	n/a
5981003083	A	Zirconium - ICP-Acid Digest	ug/g	105.4	1.40e-01		n/a	n/a	n/a	n/a	59.70	n/a

Supernatant: Supernate

Sample#	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
5981003085		Americium-241 by GEA	uCi/mL									
5981003078	B	Silver - ICP-Acid Digest-Liquid	ug/mL	101.0	< 1.00e-02	8.920	n/a	n/a	n/a	n/a	2.18e-01	n/a
5981003078	B	Arsenic - ICP-Acid Digest-Liq	ug/mL	116.2	4.70e-01	20.00	n/a	n/a	n/a	n/a	2.000	n/a
5981003078	B	Boron - ICP-Acid Digest-Liquid	ug/mL	99.60	< 4.00e-01	55.60	n/a	n/a	n/a	n/a	10.00	n/a
5981003078	B	Barium - ICP-Acid Digest-Liquid	ug/mL	108.8	< 5.00e-03	1.090	n/a	n/a	n/a	n/a	10.00	n/a
5981003078	B	Beryllium - ICP-Acid Digest/Liq	ug/mL	98.80	< 1.00e-01	< 20.70	n/a	n/a	n/a	n/a	1.000	n/a
5981003078	B	Bismuth - ICP-Acid Digest/Liq	ug/mL	105.4	1.40e-01		n/a	n/a	n/a	n/a	20.00	n/a
5981003078	B	Calcium - ICP-Acid Digest-Liq	ug/mL				n/a	n/a	n/a	n/a	20.00	n/a

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003078	B	Cadmium - ICP-Acid Digest-Liq	ug/ml	100.0	<5.00e-03	1.140	N/A	N/A	N/A	N/A	1.000	N/A
S98T003078	B	Cerium - ICP-Acid Digest-Liq	ug/ml	101.2	<1.00e-01	<2.00	N/A	N/A	N/A	N/A	20.00	N/A
S98T003078	B	Cobalt - ICP-Acid Digest-Liq	ug/ml	98.00	<2.00e-02	<2.00	N/A	N/A	N/A	N/A	4.000	N/A
S98T003078	B	Copper - ICP-Acid Digest-Liquid	ug/ml	95.40	<1.00e-02	<2.00	N/A	N/A	N/A	N/A	2.000	N/A
S98T003078	B	Iron - ICP-Acid Digest-Liquid	ug/ml	95.80	<5.00e-02	<10.00	N/A	N/A	N/A	N/A	10.00	N/A
S98T003078	B	Potassium - ICP-Acid Digest-Liq	ug/ml	101.8	<5.00e-01	2.25e+02	N/A	N/A	N/A	N/A	100.0	N/A
S98T003078	B	Lanthanum - ICP-Acid Digest-Liq	ug/ml	101.2	<5.00e-02	<2.00	N/A	N/A	N/A	N/A	10.00	N/A
S98T003078	B	Lithium - ICP-Acid Digest-Liq	ug/ml	101.2	<1.00e-02	<2.00	N/A	N/A	N/A	N/A	2.000	N/A
S98T003078	B	Magnesium - ICP-Acid Digest-Liq	ug/ml	100.8	<1.00e-01	<2.00	N/A	N/A	N/A	N/A	20.00	N/A
S98T003078	B	Manganese - ICP-Acid Digest-Liq	ug/ml	97.40	<1.00e-02	<2.00	N/A	N/A	N/A	N/A	10.00	N/A
S98T003078	B	Molybdenum - ICP-Acid Digest-Liq	ug/ml	103.0	<5.00e-02	<2.00	N/A	N/A	N/A	N/A	10.00	N/A
S98T003078	B	Niodymium - ICP-Acid Digest-Liq	ug/ml	98.40	<1.00e-01	<2.00	N/A	N/A	N/A	N/A	20.00	N/A
S98T003078	B	Nickel - ICP-Acid Digest-Liquid	ug/ml	100.6	<2.00e-02	6.490	N/A	N/A	N/A	N/A	4.000	N/A
S98T003078	B	Lead - ICP-Acid Digest-Liquid	ug/ml	97.20	<1.00e-01	25.70	N/A	N/A	N/A	N/A	20.00	N/A
S98T003078	B	Antimony - ICP-Acid Digest-Liq	ug/ml	102.8	<5.00e-02	<12.00	N/A	N/A	N/A	N/A	12.00	N/A
S98T003078	B	Selenium - ICP-Acid Digest-Liq	ug/ml	98.60	<1.00e-01	<2.00	N/A	N/A	N/A	N/A	20.00	N/A
S98T003078	B	Samarium - ICP-Acid Digest-Liq	ug/ml	98.40	<1.00e-01	<2.00	N/A	N/A	N/A	N/A	20.00	N/A
S98T003078	B	Strontium - ICP-Acid Digest-Liq	ug/ml	104.2	<1.00e-02	<2.00	N/A	N/A	N/A	N/A	2.000	N/A
S98T003078	B	Titanium - ICP-Acid Digest-Liq	ug/ml	100.6	<1.00e-02	<2.00	N/A	N/A	N/A	N/A	2.000	N/A
S98T003078	B	Thallium - ICP-Acid Digest-Liq	ug/ml	98.00	<2.00e-01	<40.00	N/A	N/A	N/A	N/A	6.000	N/A
S98T003078	B	Uranium - ICP-Acid Digest-Liq	ug/ml	96.70	<5.00e-01	<1.00e+02	N/A	N/A	N/A	N/A	100.0	N/A
S98T003078	B	Vanadium - ICP-Acid Digest-Liq	ug/ml	92.80	<5.00e-02	<10.00	N/A	N/A	N/A	N/A	10.00	N/A
S98T003078	B	Zinc - ICP-Acid Digest-Liquid	ug/ml	94.00	<1.00e-02	6.070	N/A	N/A	N/A	N/A	2.000	N/A
S98T003078	B	Zirconium - ICP-Acid Digest-Liq	ug/ml	99.40	<1.00e-02	4.090	N/A	N/A	N/A	N/A	2.000	N/A

Appendix A. Opportunistic Analyte Results
AW-101 LM

RISER: 22

SEGMENT #: 100 PARTS COMP NO DIL TEST#4

SEGMENT PORTION: Centrifuged Solids

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003085	F	Amerticum-241 by GE	uCi/g		< 1.97e-01	9.03E	N/A	N/A	N/A	N/A	1.03E	N/A
S98T003090	A	Silver - ICP-Acid Digest	ug/g	94.50	< 1.00e-02	34.70	N/A	N/A	N/A	N/A	6.240	N/A
S98T003090	A	Arsenic - ICP-Acid Digest	ug/g	95.20	< 1.00e-01	42.30	N/A	N/A	N/A	N/A	31.20	N/A
S98T003090	A	Boron - ICP-Acid Digest	ug/g	103.0	< 4.70e-01	67.40	N/A	N/A	N/A	N/A	25.00	N/A
S98T003090	A	Barium - ICP-Acid Digest	ug/g	99.60	< 5.00e-02	31.20	N/A	N/A	N/A	N/A	3.120	N/A
S98T003090	A	Beryllium - ICP-Acid Digest	ug/g	104.8	< 5.00e-03	3.120	N/A	N/A	N/A	N/A	3.120	N/A
S98T003090	A	Bismuth - ICP-Acid Digest	ug/g	93.00	< 1.00e-01	62.30	N/A	N/A	N/A	N/A	62.40	N/A
S98T003090	A	Calcium - ICP-Acid Digest	ug/g	98.60	< 1.18e-01	3.63e+02	N/A	N/A	N/A	N/A	3.120	N/A
S98T003090	A	Cadmium - ICP-Acid Digest	ug/g	99.60	< 5.00e-03	10.40	N/A	N/A	N/A	N/A	62.40	N/A
S98T003090	A	Cerium - ICP-Acid Digest	ug/g	99.80	< 1.00e-01	62.30	N/A	N/A	N/A	N/A	3.120	N/A
S98T003090	A	Cobalt - ICP-Acid Digest	ug/g	94.20	< 2.00e-02	12.50	N/A	N/A	N/A	N/A	12.50	N/A
S98T003090	A	Copper - ICP-Acid Digest	ug/g	92.40	< 1.00e-02	6.230	N/A	N/A	N/A	N/A	3.120	N/A
S98T003090	A	Iron - ICP-Acid Digest	ug/g	93.20	< 5.00e-02	3.73e+02	N/A	N/A	N/A	N/A	3.120	N/A
S98T003090	A	Potassium - ICP-Acid Digest	ug/g	97.80	< 5.00e-01	2.64e+04	N/A	N/A	N/A	N/A	3.120	N/A
S98T003090	A	Lanthanum - ICP-Acid Digest	ug/g	99.60	< 5.00e-02	31.20	N/A	N/A	N/A	N/A	6.240	N/A
S98T003090	A	Lithium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	6.230	N/A	N/A	N/A	N/A	6.240	N/A
S98T003090	A	Magnesium - ICP-Acid Digest	ug/g	95.20	< 1.00e-01	82.70	N/A	N/A	N/A	N/A	6.240	N/A
S98T003090	A	Manganese - ICP-Acid Digest	ug/g	94.20	< 1.00e-02	3.55e+02	N/A	N/A	N/A	N/A	6.240	N/A
S98T003090	A	Molybdenum - ICP-Acid Digest	ug/g	97.20	< 5.00e-02	34.40	N/A	N/A	N/A	N/A	62.40	N/A
S98T003090	A	Neodymium - ICP-Acid Digest	ug/g	98.00	< 1.00e-01	65.90	N/A	N/A	N/A	N/A	12.50	N/A
S98T003090	A	Nickel - ICP-Acid Digest	ug/g	96.00	< 2.00e-02	62.30	N/A	N/A	N/A	N/A	62.40	N/A
S98T003090	A	Lead - ICP-Acid Digest	ug/g	90.40	< 1.00e-01	62.30	N/A	N/A	N/A	N/A	62.40	N/A
S98T003090	A	Antimony - ICP-Acid Digest	ug/g	94.00	< 6.00e-02	37.40	N/A	N/A	N/A	N/A	37.50	N/A
S98T003090	A	Selenium - ICP-Acid Digest	ug/g	91.00	< 1.00e-01	62.30	N/A	N/A	N/A	N/A	62.40	N/A
S98T003090	A	Samarium - ICP-Acid Digest	ug/g	98.00	< 1.00e-01	62.30	N/A	N/A	N/A	N/A	62.40	N/A
S98T003090	A	Strontium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	6.230	N/A	N/A	N/A	N/A	6.240	N/A
S98T003090	A	Titanium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	6.230	N/A	N/A	N/A	N/A	6.240	N/A
S98T003090	A	Thallium - ICP-Acid Digest	ug/g	91.00	< 2.00e-01	1.23e+02	N/A	N/A	N/A	N/A	124.0	N/A
S98T003090	A	Uranium - ICP-Acid Digest	ug/g	96.50	< 5.00e-01	31.20	N/A	N/A	N/A	N/A	312.0	N/A
S98T003090	A	Vanadium - ICP-Acid Digest	ug/g	97.60	< 5.00e-02	12.30	N/A	N/A	N/A	N/A	6.240	N/A
S98T003090	A	Zinc - ICP-Acid Digest	ug/g	86.80	< 1.00e-02	99.60	N/A	N/A	N/A	N/A	6.240	N/A
S98T003090	A	Zirconium - ICP-Acid Digest	ug/g	94.80	< 1.00e-02	99.60	N/A	N/A	N/A	N/A	6.240	N/A

Supernatant: Supernatant

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003086	F	Amerticum-241 by GE	uCi/mL		< 1.97e-02	4.83e-01	N/A	N/A	N/A	N/A	4.83e-01	N/A
S98T003090	B	Silver - ICP-Acid Digest-Liquid	ug/mL	101.0	< 1.00e-02	17.70	N/A	N/A	N/A	N/A	5.000	N/A
S98T003080	B	Arsenic - ICP-Acid Digest-Liq	ug/mL	101.2	< 1.00e-01	50.00	N/A	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Boron - ICP-Acid Digest-Liquid	ug/mL	116.2	< 4.70e-01	67.40	N/A	N/A	N/A	N/A	25.00	N/A
S98T003080	B	Barium - ICP-Acid Digest-Liquid	ug/mL	99.60	< 5.00e-02	25.00	N/A	N/A	N/A	N/A	2.500	N/A
S98T003080	B	Beryllium - ICP-Acid Digest-Liq	ug/mL	108.8	< 5.00e-03	2.750	N/A	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Bismuth - ICP-Acid Digest/Liq	ug/mL	98.80	< 1.00e-01	50.00	N/A	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Calcium - ICP-Acid Digest-Liq	ug/mL	105.4	< 1.40e-01	50.00	N/A	N/A	N/A	N/A	50.00	N/A

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD % Spk Rec %	Det Limit	Count Err%
S98T003080	B	Cadmium - ICP-Acid Digest-Liq	ug/mL	100.0	< 5.00e-03	< 2.500	N/A	N/A	N/A	2.500	N/A
S98T003080	B	Cerium - ICP-Acid Digest-Liq	ug/mL	101.2	< 1.00e-01	< 50.00	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Cobalt - ICP-Acid Digest-Liq	ug/mL	98.00	< 2.00e-02	< 10.00	N/A	N/A	N/A	10.00	N/A
S98T003080	B	Copper - ICP-Acid Digest-Liquid	ug/mL	95.40	< 1.00e-02	< 7.050	N/A	N/A	N/A	2.000	N/A
S98T003080	B	Iron - ICP-Acid Digest-Liquid	ug/mL	95.80	< 5.00e-03	< 25.00	N/A	N/A	N/A	25.00	N/A
S98T003080	B	Potassium - ICP-Acid Digest-Liq	ug/mL	101.8	< 5.00e-01	3.65e+04	N/A	N/A	N/A	250.0	N/A
S98T003080	B	Lanthanum - ICP-Acid Digest-Liq	ug/mL	101.2	< 5.00e-02	< 25.00	N/A	N/A	N/A	5.000	N/A
S98T003080	B	Lithium - ICP-Acid Digest-Liq	ug/mL	101.2	< 1.00e-01	< 50.00	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Magnesium - ICP-Acid Digest-Liq	ug/mL	100.8	< 1.00e-01	< 50.00	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Manganese - ICP-Acid Digest-Liq	ug/mL	97.40	< 1.00e-02	< 50.00	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Molybdenum - ICP-Acid Digest-Liq	ug/mL	103.0	< 5.00e-02	60.80	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Neodymium - ICP-Acid Digest-Liq	ug/mL	98.40	< 1.00e-01	< 50.00	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Nickel - ICP-Acid Digest-Liquid	ug/mL	100.6	< 2.00e-02	< 10.00	N/A	N/A	N/A	10.00	N/A
S98T003080	B	Lead - ICP-Acid Digest-Liquid	ug/mL	97.20	< 1.00e-01	85.90	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Antimony - ICP-Acid Digest-Liq	ug/mL	102.8	< 5.00e-02	< 30.00	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Selenium - ICP-Acid Digest-Liq	ug/mL	95.80	< 1.00e-01	< 50.00	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Samarium - ICP-Acid Digest-Liq	ug/mL	98.60	< 1.00e-01	< 50.00	N/A	N/A	N/A	50.00	N/A
S98T003080	B	Strontium - ICP-Acid Digest-Liq	ug/mL	104.2	< 1.00e-02	< 5.000	N/A	N/A	N/A	5.000	N/A
S98T003080	B	Titanium - ICP-Acid Digest-Liq	ug/mL	98.00	< 2.00e-01	< 1.00e+02	N/A	N/A	N/A	100.0	N/A
S98T003080	B	Uranium - ICP-Acid Digest-Liq	ug/mL	96.70	< 5.00e-01	< 2.50e+02	N/A	N/A	N/A	250.0	N/A
S98T003080	B	Vanadium - ICP-Acid Digest-Liq	ug/mL	99.80	< 5.00e-02	< 25.00	N/A	N/A	N/A	25.00	N/A
S98T003080	B	Zinc - ICP-Acid Digest-Liquid	ug/mL	94.00	< 1.00e-02	15.30	N/A	N/A	N/A	5.000	N/A
S98T003080	B	Zirconium - ICP-Acid Digest-Liq	ug/mL	99.40	< 1.00e-02	11.30	N/A	N/A	N/A	5.000	N/A

Appendix A. Opportunistic Analyte Results
AW-101 LAW

RI SER: 22
SEGMENT #: 100 PARTS COMP NO DIL TESTS

SEGMENT PORTION: Centrifuged Solids

Sample #	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003062	F	Americium-241 by GEA	uCi/g	n/a	< 1.97e-01	< 1.97e-01	n/a	n/a	n/a	n/a	1.046	n/a
S98T003069	A	Silver - ICP-Acid Digest	ug/g	94.50	< 1.00e-02	34.50	n/a	n/a	n/a	n/a	5.1670	n/a
S98T003091	A	Arsenic - ICP-Acid Digest	ug/g	95.20	< 1.00e-01	55.60	n/a	n/a	n/a	n/a	36.70	n/a
S98T003091	A	Boron - ICP-Acid Digest	ug/g	103.0	< 4.23e-01	1.69e+02	n/a	n/a	n/a	n/a	28.30	n/a
S98T003091	A	Barium - ICP-Acid Digest	ug/g	98.60	< 5.00e-02	28.30	n/a	n/a	n/a	n/a	28.30	n/a
S98T003091	A	Beryllium - ICP-Acid Digest	ug/g	104.8	< 5.00e-02	2.830	n/a	n/a	n/a	n/a	2.690	n/a
S98T003091	A	Bismuth - ICP-Acid Digest	ug/g	93.00	< 1.00e-01	56.60	n/a	n/a	n/a	n/a	56.70	n/a
S98T003091	A	Calcium - ICP-Acid Digest	ug/g	98.60	< 1.18e-01	3.72e+02	n/a	n/a	n/a	n/a	5.880	n/a
S98T003091	A	Cadmium - ICP-Acid Digest	ug/g	95.00	< 5.00e-03	10.70	n/a	n/a	n/a	n/a	5.880	n/a
S98T003091	A	Cerium - ICP-Acid Digest	ug/g	99.80	< 1.00e-01	56.60	n/a	n/a	n/a	n/a	41.30	n/a
S98T003091	A	Cobalt - ICP-Acid Digest	ug/g	94.20	< 1.00e-02	5.660	n/a	n/a	n/a	n/a	5.670	n/a
S98T003091	A	Copper - ICP-Acid Digest	ug/g	92.60	< 1.00e-02	2.20e+04	n/a	n/a	n/a	n/a	283.0	n/a
S98T003091	A	Iron - ICP-Acid Digest	ug/g	93.20	< 5.00e-02	3.67e+02	n/a	n/a	n/a	n/a	5.670	n/a
S98T003091	A	Potassium - ICP-Acid Digest	ug/g	97.80	< 5.00e-01	28.30	n/a	n/a	n/a	n/a	5.670	n/a
S98T003091	A	Lanthanum - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	5.660	n/a	n/a	n/a	n/a	5.670	n/a
S98T003091	A	Lithium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	82.20	n/a	n/a	n/a	n/a	5.670	n/a
S98T003091	A	Magnesium - ICP-Acid Digest	ug/g	95.20	< 1.00e-01	3.53e+02	n/a	n/a	n/a	n/a	28.30	n/a
S98T003091	A	Manganese - ICP-Acid Digest	ug/g	94.20	< 1.00e-02	56.60	n/a	n/a	n/a	n/a	5.670	n/a
S98T003091	A	Niobium - ICP-Acid Digest	ug/g	97.20	< 5.00e-02	36.40	n/a	n/a	n/a	n/a	56.70	n/a
S98T003091	A	Niodymium - ICP-Acid Digest	ug/g	98.00	< 1.00e-01	56.60	n/a	n/a	n/a	n/a	11.30	n/a
S98T003091	A	Nickel - ICP-Acid Digest	ug/g	90.40	< 1.00e-01	56.60	n/a	n/a	n/a	n/a	56.70	n/a
S98T003091	A	Antimony - ICP-Acid Digest	ug/g	94.00	< 1.00e-02	34.00	n/a	n/a	n/a	n/a	33.90	n/a
S98T003091	A	Selenium - ICP-Acid Digest	ug/g	91.00	< 1.00e-01	56.60	n/a	n/a	n/a	n/a	56.70	n/a
S98T003091	A	Samarium - ICP-Acid Digest	ug/g	98.00	< 1.00e-01	56.60	n/a	n/a	n/a	n/a	56.70	n/a
S98T003091	A	Strontium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	5.660	n/a	n/a	n/a	n/a	5.670	n/a
S98T003091	A	Titanium - ICP-Acid Digest	ug/g	99.60	< 1.00e-02	5.660	n/a	n/a	n/a	n/a	5.670	n/a
S98T003091	A	Thallium - ICP-Acid Digest	ug/g	91.00	< 2.00e-01	1.13e+02	n/a	n/a	n/a	n/a	113.0	n/a
S98T003091	A	Uranium - ICP-Acid Digest	ug/g	96.50	< 5.00e-01	1.49e+03	n/a	n/a	n/a	n/a	283.0	n/a
S98T003091	A	Vanadium - ICP-Acid Digest	ug/g	97.60	< 5.00e-02	1.28e+03	n/a	n/a	n/a	n/a	28.30	n/a
S98T003091	A	Zinc - ICP-Acid Digest	ug/g	86.80	< 1.00e-02	14.10	n/a	n/a	n/a	n/a	5.670	n/a
S98T003091	A	Zirconium - ICP-Acid Digest	ug/g	94.80	< 1.00e-02	97.50	n/a	n/a	n/a	n/a	5.670	n/a

Supernate: Supernate

Sample #	R #	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003062	F	Americium-241 by GEA	uCi/mL	n/a	< 1.97e-02	< 1.97e-01	n/a	n/a	n/a	n/a	7.25e-01	n/a
S98T003081	B	Silver - ICP-Acid Digest-Liquid	ug/mL	101.0	< 1.00e-02	16.90	n/a	n/a	n/a	n/a	5.000	n/a
S98T003081	B	Arsenic - ICP-Acid Digest-Liq	ug/mL	101.2	< 1.00e-01	50.00	n/a	n/a	n/a	n/a	50.00	n/a
S98T003081	B	Boron - ICP-Acid Digest-Liquid	ug/mL	116.2	< 4.70e-01	86.70	n/a	n/a	n/a	n/a	25.00	n/a
S98T003081	B	Barium - ICP-Acid Digest-Liquid	ug/mL	99.60	< 5.00e-02	25.00	n/a	n/a	n/a	n/a	25.00	n/a
S98T003081	B	Beryllium - ICP-Acid Digest-Liq	ug/mL	108.8	< 5.00e-03	2.700	n/a	n/a	n/a	n/a	2.500	n/a
S98T003081	B	Bismuth - ICP-Acid Digest-Liq	ug/mL	98.80	< 1.00e-01	50.00	n/a	n/a	n/a	n/a	50.00	n/a
S98T003081	B	Calcium - ICP-Acid Digest-Liq	ug/mL	105.4	< 1.40e-01	50.00	n/a	n/a	n/a	n/a	50.00	n/a

HNF-1652 REV. 0

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicates	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S98T003081	B	Cadmium -ICP-Acid Digest-Liq	ug/mL	100.0	< 5.00e-03	< 2.500	N/A	N/A	N/A	N/A	2.500	N/A
S98T003081	B	Cerium -ICP-Acid Digest-Liq	ug/mL	101.2	< 1.00e-01	< 50.00	N/A	N/A	N/A	N/A	50.00	N/A
S98T003081	B	Cobalt -ICP-Acid Digest-Liq	ug/mL	98.00	< 2.00e-02	< 10.00	N/A	N/A	N/A	N/A	10.00	N/A
S98T003081	B	Copper -ICP-Acid Digest-Liquid	ug/mL	95.40	< 1.00e-02	< 6.330	N/A	N/A	N/A	N/A	5.000	N/A
S98T003081	B	Iron -ICP-Acid Digest-Liquid	ug/mL	95.80	< 5.00e-02	< 25.00	N/A	N/A	N/A	N/A	25.00	N/A
S98T003081	B	Potassium -ICP-Acid Digest-Liq	ug/mL	101.8	< 5.00e-01	3.55e+04	N/A	N/A	N/A	N/A	250.0	N/A
S98T003081	B	Lanthanum -ICP-Acid Digest-Liq	ug/mL	100.6	< 5.00e-02	< 25.00	N/A	N/A	N/A	N/A	25.00	N/A
S98T003081	B	Lithium -ICP-Acid Digest-Liq	ug/mL	101.2	< 1.00e-02	< 5.000	N/A	N/A	N/A	N/A	5.000	N/A
S98T003081	B	Magnesium -ICP-Acid Digest-Liq	ug/mL	100.8	< 1.00e-01	< 50.00	N/A	N/A	N/A	N/A	50.00	N/A
S98T003081	B	Manganese -ICP-Acid Digest-Liq	ug/mL	97.40	< 1.00e-02	< 5.000	N/A	N/A	N/A	N/A	5.000	N/A
S98T003081	B	Molybdenum -ICP-Acid Digest-Liq	ug/mL	103.0	< 5.00e-02	58.80	N/A	N/A	N/A	N/A	50.00	N/A
S98T003081	B	Neodymium -ICP-Acid Digest-Liq	ug/mL	98.40	< 1.00e-01	< 50.00	N/A	N/A	N/A	N/A	50.00	N/A
S98T003081	B	Nickel -ICP-Acid Digest-Liquid	ug/mL	100.6	< 2.00e-02	< 10.00	N/A	N/A	N/A	N/A	10.00	N/A
S98T003081	B	Lead -ICP-Acid Digest-Liquid	ug/mL	97.20	< 1.00e-01	73.80	N/A	N/A	N/A	N/A	50.00	N/A
S98T003081	B	Antimony -ICP-Acid Digest-Liq	ug/mL	102.8	< 6.00e-02	< 30.00	N/A	N/A	N/A	N/A	30.00	N/A
S98T003081	B	Selenium -ICP-Acid Digest-Liq	ug/mL	95.80	< 1.00e-01	< 50.00	N/A	N/A	N/A	N/A	50.00	N/A
S98T003081	B	Samarium -ICP-Acid Digest-Liq	ug/mL	98.60	< 1.00e-01	< 50.00	N/A	N/A	N/A	N/A	50.00	N/A
S98T003081	B	Strontium -ICP-Acid Digest-Liq	ug/mL	100.6	< 1.00e-02	< 5.000	N/A	N/A	N/A	N/A	5.000	N/A
S98T003081	B	Titanium-ICP-Acid Digest-Liq	ug/mL	104.2	< 1.00e-02	< 5.000	N/A	N/A	N/A	N/A	5.000	N/A
S98T003081	B	Thallium -ICP-Acid Digest-Liq	ug/mL	98.00	< 2.00e-01	< 1.00e+02	N/A	N/A	N/A	N/A	100.0	N/A
S98T003081	B	Uranium -ICP-Acid Digest-Liq	ug/mL	96.70	< 5.00e-01	< 2.50e+02	N/A	N/A	N/A	N/A	250.0	N/A
S98T003081	B	Vanadium -ICP-Acid Digest-Liq	ug/mL	99.80	< 5.00e-02	< 25.00	N/A	N/A	N/A	N/A	25.00	N/A
S98T003081	B	Zinc -ICP-Acid Digest-Liquid	ug/mL	94.00	< 1.00e-02	15.20	N/A	N/A	N/A	N/A	5.000	N/A
S98T003081	B	Zirconium -ICP-Acid Digest-Liq	ug/mL	99.40	< 1.00e-02	11.60	N/A	N/A	N/A	N/A	5.000	N/A

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DISTRIBUTION SHEET

To Distribution	From Production Planning & Control	Page 1 of 1		
		Date: 02/08/99		
Project Title/Work Order HNF-1652 Rev. 0 "Tank 241-AW-101 Low Level Waste Envelope A Analytical Results for the Final Report"		EDT NO.: EDT-626134		
		ECN NO.: N/A		
Name	MSIN	Text With all Attach	EDT/ECN ONLY	

U.S. Department of Energy, RL

C. A. Babel S7-54 X

Lockheed Martin Hanford Corp.

J. N. Appel	A3-03		X
R. A. Bechtold	K7-22	X	
T. M. Blaak	S5-13	X	
T. M. Brown	S5-05		X
K. G. Carothers	R2-11		X
J. G. Field	R2-12		X
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