SEP 25 1997

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT 620423

2. To: (Receiving Organization) Distribution		3. From: (Originating Organization) Production Planning and Control		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: Tank 241-BY-101/Waste Management/PPC/AS		6. Design Authority/ Design Agent/Cog. Engr.: Jennifer L. Nuzum		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-BY-101	
11. Receiver Remarks: 11A. Design Baseline Document? ☐ Yes ☒ No For release.				12. Major Assm. Dwg. No.: N/A	
				13. Permit/Permit Application No.: N/A	
				14. Required Response Date: 09/23/97	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	HNF-SD-WM-DP-258	N/A	0	Tnak 241-BY-101, Cores 189 and 199 Analytical Results for the Final Report	Q	2	1	1

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

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
		Design Authority									
		Design Agent									
2	1	Cog.Eng. J. L. Nuzum	<i>J. L. Nuzum</i>	9/27/97							
2	1	Cog. Mgr. A. D. Rice	<i>A. D. Rice</i>	9-27-97							
2	1	QA T. L. Tung	<i>T. L. Tung</i>	9/27/97							
		Safety									
		Env.									

18. M. T. Ellsworth <i>M. T. Ellsworth</i> 9-23-97 Signature of EDT Date Originator		19. N/A Authorized Representative Date for Receiving Organization		20. A/D. Rice <i>A. D. Rice</i> 9-25-97 Design Authority/ Cognizant Manager		21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
--	--	---	--	--	--	---	--

Tank 241-BY-101, Cores 189 and 199 Analytical Results for the Final Report

Jennifer L. Nuzum

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

EDT/ECN: EDT-620423 UC: 2070
Org Code: 7576B Charge Code: MD378
B&R Code: EW 3120074 Total Pages: 177

Key Words: Tank 241-BY-101, 241-BY-101, BY-101, Core 189, Core 199, Analytical Results, Final Report

Abstract: N/A

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact: Document Control Services, P.O. Box 950, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.

Release/Approval

Date

Approved for Public Release

HNF-SD-WM-DP-258, REV. 0

ANALYTICAL SERVICES

**TANK 241-BY-101, CORES 189 AND 199
ANALYTICAL RESULTS FOR THE FINAL REPORT**

Project Coordinator: JENNIFER L. NUZUM

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

by

222-S Laboratory
Waste Management of Hanford, Inc.
P.O. Box 700
Richland, Washington

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

Narrative	1
BY-101 Sample Breakdown (Attachment 1)	11
Sample Data Summary	17
Chain of Custody Forms	23
Photographs	32
Sample Handling	38
Extrusion Worklist # 18452 (1239)	40
Extrusion Worklist # 18454 (1236)	41
Extrusion Worklist # 18546 (1237)	42
Extrusion Worklist # 18573 (1335)	43
Sample Preparations	44
Fusion Digestion Worklist # 18696 (1358, 1363)	46
Water Digestion Worklist # 18697 (1360, 1364)	47
BY-101 Bulk Density Worksheets	48
Inorganic Analysis	52
Differential Scanning Calorimetry (DSC)	
DSC Worklist # 19193 (1362)	54
DSC Worklist # 19383 (1365)	59
DSC Worklist # 19384 (1357)	63
DSC Worklist # 19431 (1365)	67
DSC Worklist # 19432 (1357, 1362)	68
DSC Worklist # 20371 (1362)	68.1
Thermogravimetric Analysis (TGA)	
TGA Worklist # 18781 (1362)	69
TGA Worklist # 19381 (1365)	75
TGA Worklist # 19382 (1357)	79
Specific Gravity Analysis (SpG)	
SpG Worklist # 19389 (1365)	83
Ion Chromatographic Analysis (IC)	
IC Worklist # 18654 (1241)	87
IC Worklist # 19380 (1365)	93
IC Worklist # 19401 (1360, 1364)	92.1

TABLE OF CONTENTS (Continued)

Inductively Coupled Plasma Spectroscopy Analysis (ICP)	
ICP Worklist # 18729 (1241)	99
ICP Worklist # 19395 (1365)	106
ICP Worklist # 19462 (1358, 1363)	110
Radiochemical Analysis	135.1
Alpha Total Analysis (AT)	
AT Worklist # 19397 (1365)	136
AT Worklist # 19405 (1358, 1363)	143
Opportunistic Analysis (Appendix A)	152

This document consists of pages 1 through 157. Pages ii, 2, 12, 18, 24, 33, 39, 49, 53, 58 and 135.2 were intentionally left blank.

Also includes pages 135.1 and 135.2.

TRADEMARKS:

Perkin-Elmer is a Registered Trademark of Research and Manufacturing Company, Inc. Mettler is a Registered Trademark of Mettler Electronics.

HNH-SD-WM-DP-258, REV. 0

NARRATIVE

HNF-SD-WM-DP-258, REV. 0

THIS PAGE INTENTIONALLY LEFT BLANK

222-S ANALYTICAL SERVICES

TANK 241-BY-101, CORES 189 AND 199,
ANALYTICAL RESULTS FOR THE FINAL REPORT

Summary

This document is the final laboratory report for Tank 241-BY-101. Push mode core segments were removed from Risers 10B and 10D between May 27, 1997, and June 1, 1997. Segments were received and extruded at 222-S Laboratory. Analyses were performed in accordance with *Tank 241-BY-101 Push Core Sampling and Analysis Plan* (TSAP) (Bell, 1997) and *Tank Safety Screening Data Quality Objective* (DQO) (Dukelow, et al., 1995).

None of the subsamples submitted for total alpha activity (AT) or differential scanning calorimetry (DSC) analysis exceeded the notification limits as stated in TSAP and DQO. The statistical results of the 95% confidence interval on the mean calculations are provided by the Tank Waste Remediation Systems (TWRS) Technical Basis Group, and are not considered in this report.

Near Infrared Spectroscopy (NIR) analysis was requested in order to compare NIR results with those obtained from percent water gravimetry analysis (%H₂O) and thermal gravimetric analysis (TGA). The TWRS Technical Basis Group rescinded the request for this analysis (Schreiber, 1997a), and neither NIR nor %H₂O analyses were performed.

Appearance and Sample Handling

Two cores, each consisting of eight segments, were expected from Tank 241-BY-101. Complete cores were not obtained.

Attachment 1 illustrates subsamples generated in the laboratory for analysis and identifies their sources. This reference also relates tank farm identification numbers to their corresponding 222-S Laboratory sample numbers.

Core 189

Segments 1-3 were removed from Tank 241-BY-101, Riser 10B, between May 27, 1997, and May 28, 1997. All segments were received by 222-S Laboratory on May 30, 1997. Table 1 summarizes extrusion information.

Segment 3 was sampled using a Retained Gas Sampler (RGS) and extruded by the Process Chemistry and Statistical Analysis Group.

HNF-SD-WM-DP-258, REV. 0

Core 199

Segments 1-2 were removed from Tank 241-BY-101, Riser 10D, on May 28, 1997. All segments were received by 222-S Laboratory between May 29, 1997, and May 30, 1997. Table 2 summarizes extrusion information.

Segment 2 was sampled using a RGS and extruded by the Process Chemistry and Statistical Analysis Group.

Field Blank

A field blank was provided to 222-S Laboratory with Core 199. This sample was treated as a drainable liquid in accordance with TSAP.

Hydrostatic Head Fluid Blank

A hydrostatic head fluid (HHF) blank (a lithium bromide solution), was provided to 222-S Laboratory with Core 199. This sample was analyzed by ion chromatography and inductively coupled plasma spectroscopy.

Table 1. Sample Receipt and Extrusion Information for BY-101, Core 189.

Customer ID	Segment	Date Sampled	Date Received	Date Extruded	Index Extruded*	Liquid Recovered (g)	Solids Recovered (g)	Sample Description
189-01	1	5/27/97	5/30/97	6/6/97	N/A	0.0	Trace	No drainable liquid. Minute amount of solid sample present. Did not retain.
189-02	2	5/27/97	5/30/97	6/6/97	N/A	0.0	107.0-Lower Half	Solids were speckled gray and white and resembled a dry salt.
189-03	3	5/27/97	5/30/97	N/A	N/A	N/A	N/A	This segment was sampled using a RGS and extruded by the Process Chemistry and Statistical Analysis Group. The RGS was empty.

*Approximate Inches Extruded

Table 2. Sample Receipt and Extrusion Information for BY-101, Core 199.

Customer ID	Segment	Date Sampled	Date Received	Date Extruded	Index Extruded*	Liquid Recovered (g)	Solids Recovered (g)	Sample Description
Field Blank	N/A	6/1/97	6/9/97	6/10/97	0.0	262.9	0.0	Drainable liquid was clear and colorless. No organic layer.
199-01	1	5/28/97	5/30/97	6/6/97	2.5	0.0	32.5-Lower Half	Solids were speckled gray and white and resembled a dry salt.
199-02	2	5/28/97	5/30/97	N/A	N/A	N/A	N/A	This segment was sampled using a RGS and extruded by the Process Chemistry and Statistical Analysis Group. The RGS was empty.

*Approximate Inches Extruded

HNF-SD-WM-DP-258, REV. 0

Analytical Results Summary

The Data Summary Table (Table 3) included in this report compiles analytical results associated with each subsample submitted in accordance with TSAP and DQO.

Liquid subsamples prepared for analysis by an acid adjustment of the direct subsample are indicated by a "D" in the A# column of Table 3. Solid subsamples prepared for analysis by performing a fusion digest are indicated by a "F" in the A# column of Table 3. Solid subsamples prepared for analysis by performing a water digest are indicated by a "W" in the A# column of Table 3.

Inorganic Analyses

Differential Scanning Calorimetry (DSC) Analysis

DSC analysis was performed on all direct subsamples. The exothermic energy based on dry weight of subsample was calculated for all subsamples. The average of the TGA results for each subsample was used in the dry weight correction for that subsample. All results were below DSC notification limits.

A second analysis of Lower Half Segment 1 of Core 199 (S97T001362) was performed (denoted by a "1" in the replicate (R) column of Table 3) was performed due to differences in appearance between the sample and duplicate. These differences were not seen in the replicate analyses. Results for original and replicate analyses are presented in Table 3. More information may be obtained by examining the raw data.

Thermogravimetric Analysis (TGA)

TGA was performed on all direct subsamples. TGA results were typically determined by summing weight loss steps below 200°C. Weight loss steps above this were not used to determine the result. More information may be obtained by examining the raw data.

RPD between sample and duplicate for Lower Half Segment 1 of Core 199 (S97T001362) was 20.2. TGA results were near the detection level of the method, and precision was compromised. Rerun analysis was not requested.

Density

Bulk density was performed on solid half segments. There were no quality control (QC) parameters stated in TSAP for bulk density analysis.

Bulk density could not be determined for Lower Half Segment 1 of Core 199 (S97T001361) due to large void spaces in the bulk density tube.

Specific Gravity (SpG)

Specific gravity analyses were performed on direct liquid subsamples. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

Ion Chromatography (IC)

IC analysis was performed on direct liquid and solid subsamples. For these subsamples, only bromide (Br) was reviewed for QC in accordance with TSAP. Results are included in Table 3. There were no exceptions to the QC parameters stated in TSAP for Br.

All other analyte results are presented in Appendix A. These results are opportunistic, and do not have customer defined QC parameters. Any anomalies associated with the results are not discussed.

Inductively Coupled Plasma Spectrophotometry (ICP)

ICP was performed on direct liquid and solid subsamples. For these subsamples, only lithium (Li) was reviewed for QC in accordance with TSAP. Results are included in Table 3. There were no exceptions to the QC parameters stated in TSAP for Li.

All other analyte results are presented in Appendix A. These results are opportunistic, and do not have customer defined QC parameters. Any anomalies associated with the results are not discussed.

Radiochemistry Analyses

Total Alpha (AT) Analysis

AT analyses were requested for direct liquid subsamples and solid lower half segments. All results were below the total alpha activity notification limits.

RPD between sample and duplicate for Lower Half Segment 1 of Core 199 (S97T001363) was 44.6. This was caused by counting uncertainties greater than 100%. Spike recoveries for S97T001363 and Lower Half Segment 2 of Core 189 (S97T001358) were 65.8% and 70.3%, respectively. In both cases, the spike recovery was within method control limits for the standard. Rerun analyses were not requested.

HNF-SD-WM-DP-258, REV. 0

Procedures

Table 4 lists the analytical procedures used for performing sample analyses. Abbreviations for analyses are defined in the table notes.

Table 4. Analytical Procedures

Analysis	Matrix	Preparation Procedure	Analysis Procedure
DSC	Solid Liquid	N/A	LA-514-114 Rev. D-1
TGA	Solid Liquid	N/A	LA-514-114 Rev. D-0 & D-1
Bulk Density	Solid	N/A	LO-160-103 Rev. C-0
AT	Liquid Solid	N/A +LA-549-141 Rev. F-0	LA-508-101 Rev. G-0
Sp.G	Liquid	N/A	LA-510-112 Rev. D-1
IC	Liquid Solid	N/A ++LA-504-101 Rev F-0	LA-533-105 Rev. D-1
ICP	Liquid Solid	N/A +LA-549-141 Rev F-0	LA-505-151, Rev. E-1 LA-505-161 Rev. C-1

HNF-SD-WM-DP-258, REV. 0

Table Notes:

N/A	not applicable (these are direct samples)
DSC	differential scanning calorimetry
TGA	thermogravimetric analysis
AT	total alpha
Sp.G	specific gravity
IC	ion chromatography
ICP	inductively coupled plasma
+	fusion digest
++	water digest

HNF-SD-WM-DP-258, REV. 0

References

- Dukelow, G. T., J. W. Hunt, H. Babad, and J. E. Meacham, 1995, *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, WA 99352.
- Bell, K.E., 1997, *Tank 241-BY-101 Push Core Sampling and Analysis Plan*, HNF-SD-WM-TSAP-128, Rev. 0, Lockheed Martin Hanford Corporation, Richland, WA 99352.
- Markel, L.P., 1997, *222-S Laboratory Quality Assurance Plan*, HNF-SD-CP-QAPP-016, Revision 0, Waste Management Federal Services of Hanford, Richland, WA 99352
- Schreiber, R. D. 1997a, *Clarification Regarding Near Infrared Spectroscopy Analysis Request for Tank Waste Samples*, Interoffice memo 74610-97-038 to B. A. Crawford, August 12, Lockheed Martin Hanford Company, Richland, WA 99352.

HNF-SD-WM-DP-258, REV. 0

BY-101 SAMPLE BREAKDOWN (ATTACHMENT 1)

HNF-SD-WM-DP-258, REV. 0

THIS PAGE INTENTIONALLY LEFT BLANK

BY-101
Core:189
Seg: 2 (189-02)
S97T001237

ATTACHMENT 1

Lower
Half

HOMGN201
BLK DEN01
APC-HV01

S97T001356

SAMPANT1
DOSE-01
DSC-01
DSC-02
TGA-01

S97T001357

FUSION01
DOSE-02
@ALPHA01
@ICP-F01

S97T001358

H200IG01
DOSE-02
@IC-01

S97T001360

HNF-SD-WM-DP-258, REV. 0

ATTACHMENT 1

BY-101
 Core:199
 Seg: Field Blank
 S97T001335

BY-101
Core:199
Seg: HHF (LiBr Blank)
S97T001241

ATTACHMENT 1

@IC-01
@ICP-D01

BY-101

Core:199

Seg: 1 (199-01)

S97T001239

ATTACHMENT 1

HNF-SD-WM-DP-258, REV. 0

SAMPLE DATA SUMMARY

HNF-SD-WM-DP-258, REV. 0

THIS PAGE INTENTIONALLY LEFT BLANK

CORE NUMBER: 189
SEGMENT #: 2Table 3. Data Summary Table
8Y-101

SEGMENT PORTION: L Lower Half of Segment

Sample#	RI#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Error
S97T001356		Bulk Density of Sample	g/mL	n/a	n/a	1.870	n/a	n/a	n/a	n/a	5.00e-01	n/a
S97T001357		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001357		DSC Exotherm on Perkin Elmer	Joules/g	99.40	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001357		% Water by TGA on Perkin Elmer	%	99.90	n/a	26.34	26.36	26.36	0.15	n/a	n/a	n/a
S97T001358	F	Lithium -ICP-Fusion	ug/g	104.0	<1.00e-02	3.71e+02	386.0	378.5	3.98	96.0	239.7	n/a
S97T001358	F	Alpha of Digested Solid	uCi/g	95.50	<1.69e-03	<3.09e-03	<1.69E-3	n/a	n/a	70.34	3.00e-03	5.00E+02
S97T001360	W	Bromide by Ion Chromatograph	ug/g	95.08	<1.25e-01	2.31e+03	2.26e+03	2.29e+03	2.19	90.83	1.28e+03	n/a

Table 3. Data Summary Table
BY-101

CORE NUMBER: 199
SEGMENT #: Field Blank

SEGMENT PORTION: Field Blank

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001365			DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001365			DSC Exotherm on Perkin Elmer	Joules/g	99.40	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001365			Specific Gravity	Sp.G.	97.03	n/a	9.60e-01	9.72e-01	9.66e-01	1.24	n/a	1.00e-03	n/a
S97T001365			% Water by TGA on Perkin Elmer	%	99.90	n/a	99.48	99.47	99.47	0.01	n/a	n/a	n/a
S97T001365	D		Lithium-ICP-Acid Dil.	ug/mL	105.0	<1.00e-02	1.16e-01	1.15e-01	1.16e-01	0.87	n/a	2.00e-02	n/a
S97T001365			Bromide by Ion Chromatograph	ug/mL	95.76	<1.25e-01	1.146	1.140	1.143	0.87	n/a	1.25e-01	n/a
S97T001365			Alpha in Liquid Samples	uCi/mL	91.50	<7.81e-07	<7.81e-07	<7.81E-7	n/a	n/a	n/a	1.87e-06	5.00E+02

Table 3. Data Summary Table
BY-101

CORE NUMBER: 199
SEGMENT #: n/a

SEGMENT PORTION: Hydrostatic Head Fluid

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001241	D		Lithium-ICP-Acid Dil.	ug/mL	99.00	<1.00e-02	2.18e+03	2.17e+03	2.18e+03	0.46	n/a	2.00e-01	n/a
S97T001241			Bromide by Ion Chromatograph	ug/mL	103.2	<1.25e-01	2.43e+04	2.48e+04	2.46e+04	2.04	n/a	138.9	n/a

Table 3. Data Summary Table
BY-101

CORE NUMBER: 199
SEGMENT #: 1

SEGMENT PORTION: L Lower Half of Segment

Sample#	R A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001361		Bulk Density of Sample	g/ml	n/a	n/a	na	n/a	n/a	n/a	n/a	5.00e-01	n/a
S97T001362		DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	54.70	0.00e+00	27.35	200	n/a	n/a	n/a
S97T001362	1	DSC Exotherm Dry Calculated	Joules/g Dry	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001362		DSC Exotherm on Perkin Elmer	Joules/g	96.66	n/a	44.27	0.00e+00	22.14	200	n/a	n/a	n/a
S97T001362	1	DSC Exotherm on Perkin Elmer	Joules/g	101.8	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S97T001362		% Water by TGA on Perkin Elmer	%	98.49	n/a	17.14	21.00	19.07	20.2	n/a	n/a	n/a
S97T001363	F	Lithium -ICP-Fusion	ug/g	104.0	<1.00e-02	<2.04e+02	<2.01e2	n/a	n/a	98.20	204.0	n/a
S97T001363	F	Alpha of Digested Solid	uCi/g	95.50	<1.69e-03	2.74e-03	1.74e-03	2.24e-03	44.6	65.78	3.00e-03	1.06E+02
S97T001364	W	Bromide by Ion Chromatograph	ug/g	95.08	<1.25e-01	<1.29e+03	<1.26e3	n/a	n/a	97.28	1.29e+03	n/a

HNF-SD-WM-DP-258, REV. 0

CHAIN OF CUSTODY FORMS

HNF-SD-WM-DP-258, REV. 0

THIS PAGE INTENTIONALLY LEFT BLANK

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

Shipment Number <u>200W-08-TF</u>	Sample Number <u>189-01</u>	Supervisor <u>D.C. Hartney</u>
Tank <u>BY101</u>	Riser <u>10B</u>	Segment <u>1</u>
Core <u>189</u>	Cask Serial Number <u>7-6</u>	
Radiation Survey Data:		
Over Top Dose Rate <u>< 0.005 mSv</u>	(33) LABORATORY <u>< 5 mR/hr</u>	(10) Shipment Description <u>ES-96-00800/0</u>
Side Dose Rate <u>< 0.005 mSv</u>	<u>< 5 mR/hr</u>	A. Work Package Number <u>13021</u>
Bottom Dose Rate <u>< 0.005 mSv</u>	<u>< 5 mR/hr</u>	B. Cask Seal Number <u>96-371</u>
Smearable Contamination <u>< 0.334 Bq</u>	<u>< BKG</u>	C. Sampler Serial Number <u>5-27-97 0237</u>
(Alpha)	(Alpha)	D. Date and Time Sampler Unseated <u>10%</u>
<u>< 16-7 Bq</u>	<u>< BKG</u>	E. Expected Liquid Content <u>90%</u>
(Beta-Gamma)	(Beta-Gamma)	F. Expected Solid Content <u>4 mR/hr</u>
ACT* <u>[Signature]</u>	ACT* <u>[Signature]</u>	G. Dose Rate Through Drill String <u>742</u>
(HPT)	(HPT)	H. Expected Sample Length
<u>α BKG ≤ 3cpm, β & BKG ≤ 150 cpm</u>		

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

Field Comments		(34) Laboratory Comments	
<u>Lithium Bromide used for Hydrostatic Head Liquid</u>		<u>S97T001236</u>	
Point of Origin <u>34101</u>	(14) Destination <u>2225</u>	(15) Sender Name (Sign and PRINT) <u>Steve R Spearnik</u>	(16) Date/Time <u>5/30/97/1400</u>
Relinquished By (Sign and PRINT) <u>[Signature]</u>	(20) Received By (Sign and PRINT) <u>Garry Wallace</u>	(21) Date/Time <u>5-30-97/1400</u>	(17) Sender Comments
Relinquished By (Sign and PRINT) <u>Garry Wallace</u>	(24) Received By (Sign and PRINT) <u>[Signature]</u>	(25) Date/Time <u>5-30-97/1445</u>	(22) Receiver Comments
Relinquished By (Sign and PRINT)	(28) Received By (Sign and PRINT)	(29) Date/Time	(26) Receiver Comments
(18) Seal Intact Upon Release? ☒ Yes ☐ No		(32) Seal Date Consistent with this Record? ☒ Yes ☐ No	
(31) Seal Intact Upon Receipt? ☒ Yes ☐ No		Shipment No. ☒ Yes ☐ No	
Sample No. ☒ Yes ☐ No		Cask Seal No. ☒ Yes ☐ No	

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

Shipment Number 200W-08-TF (2) Sample Number 189-02 (3) Supervisor McLi Jones
 Tank BY-101 (5) Riser 10B (6) Segment 2 (7) Core 189 (8) Cask Serial Number SN-57

Radiation Survey Data: (9) FIELD Over Top Dose Rate <u>2.005 mSv</u> Side Dose Rate <u>2.005 mSv</u> Bottom Dose Rate <u>2.005 mSv</u> Smearable Contamination <u>2.334 Bq</u> (Alpha) <u>2.16.7 Bq</u> (Beta-Gamma) RCT* <u>Kemi Odeh</u> (HPT) (Signature) <u>2 BK6 ≤ 3cpm, B8 BK6 ≤ 150 cpm</u>		(33) LABORATORY <u>2.5 mSv/hr</u> <u>2.5 mSv/hr</u> <u>2.5 mSv/hr</u> <u>2 BK6</u> (Alpha) <u>2 BK6</u> (Beta-Gamma) RCT* <u>ALL</u> (HPT) (Signature)		(10) Shipment Description A. Work Package Number <u>ES-96-00800</u> B. Cask Seal Number <u>12489</u> C. Sampler Serial Number <u>96-377</u> D. Date and Time Sampler Unseated <u>5-27-97 11735</u> E. Expected Liquid Content <u>20%</u> F. Expected Solid Content <u>90%</u> G. Dose Rate Through Drill String <u>2 MR/HR</u> H. Expected Sample Length <u>19'</u>	
---	--	---	--	---	--

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

(1) Field Comments <u>IBR WAS USED FOR HEAD FLUID.</u>	(34) Laboratory Comments <u>S97T001237</u>
---	---

(1) Point of Origin <u>BY-101</u>	(14) Destination <u>222-S</u>	(15) Receiver Name (Sign and PRINT) <u>John R3 Penzvik</u>	(16) Date/Time <u>5/30/97</u>	(17) Sender Comments
Relinquished By (Sign and PRINT) <u>John R3 Penzvik</u>	(20) Received By (Sign and PRINT) <u>Ginny Wallace</u>	(21) Date/Time <u>5-30-97/616P</u>	(22) Receiver Comments	
Relinquished By (Sign and PRINT) <u>Ginny Wallace</u>	(24) Received By (Sign and PRINT) <u>Richard</u>	(25) Date/Time <u>5-30-97/1145</u>	(26) Receiver Comments	
Relinquished By (Sign and PRINT)	(28) Received By (Sign and PRINT)	(29) Date/Time	(30) Receiver Comments	

(8) Seal Intact Upon Release? ☒ Yes ☐ No	(31) Seal Intact Upon Receipt? ☒ Yes ☐ No	(32) Seal Date Consistent with this Record? ☒ Yes ☐ No	Shipment No. ☒ Yes ☐ No	Cask Seal No. ☒ Yes ☐ No	Sample No. ☒ Yes ☐ No
--	---	--	---	--	---

JUN 9 1997 10:38AM WNC 222S LAB ROOM 2F BACKSIDE No. 3772 P. 5/6

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

Shipment Number <u>200W-08-TF</u>		(2) Sample Number <u>189-03</u>		(3) Supervisor <u>D.C. Hartley, R. Whitely</u>	
Tank <u>BY101</u>		(5) Riser <u>10B</u>		(6) Segment <u>3</u>	
(7) Core <u>189</u>		(8) Cask Serial Number <u>C2012</u>			
Irradiation Survey Data:		(9) FIELD		(33) LABORATORY	
Over Top Dose Rate <u>L. 005 mSv</u>		<u>L. 5 mSv/hr</u>		(10) Shipment Description <u>ES-96-00800/0</u>	
Side Dose Rate <u>L. 005 mSv</u>		<u>L. 5 mSv/hr</u>		A. Work Package Number <u>13055</u>	
Bottom Dose Rate <u>L. 005 mSv</u>		<u>L. 5 mSv/hr</u>		B. Cask Seal Number <u>R63-064</u>	
Smearable Contamination <u>L. 334 Bq</u>		<u>L. PKA</u>		C. Sampler Serial Number <u>5-28-97, 02.15</u>	
(Alpha)		(Alpha)		D. Date and Time Sampler Unsealed <u>10/20, 90%</u>	
<u>L. 16.7 Bq</u>		<u>L. PK 9</u>		E. Expected Liquid Content <u>90%</u>	
(Beta-Gamma)		(Beta-Gamma)		F. Expected Solid Content <u>L. 5 mm/HR</u>	
RCT* <u>Sam O'Brien</u>		RCT* <u>Sam O'Brien</u>		G. Dose Rate Through Drill String <u>19"</u>	
(HPT)		(HPT)		H. Expected Sample Length	
<u>L. PK 6 ≤ 3 cpm At PK 9 ≤ 150 cpm</u>					

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

Field Comments <u>Sample pushed 1 1/2' x hit high down force</u>		(34) Laboratory Comments <u>S 97T00 1238</u>	
(1) Point of Origin <u>BY101</u>	(14) Destination <u>222S</u>	(15) Sender Name (Sign and PRINT) <u>Blue R S Peaznik</u>	(16) Date/Time <u>5/30/97/1355</u>
(17) Sender Comments	(21) Date/Time <u>5/30-97/1410</u>	(22) Receiver Comments	(25) Date/Time <u>5-30-97/1500</u>
(2) Relinquished By (Sign and PRINT) <u>Blue R S Peaznik</u>	(23) Received By (Sign and PRINT) <u>Shelley Covey, Shelley Covey</u>	(26) Receiver Comments	(29) Date/Time
(3) Relinquished By (Sign and PRINT) <u>Shelley Covey, Shelley Covey</u>	(24) Received By (Sign and PRINT) <u>R. Chamber, R. Chamber</u>	(30) Receiver Comments	

18) Seal Intact Upon Release? ☒ Yes ☐ No		31) Seal Intact Upon Receipt? ☒ Yes ☐ No		32) Seal Date Consistent with this Record? ☒ Yes ☐ No	
Shipment No. ☒ Yes ☐ No		Cask Seal No. ☒ Yes ☐ No		Sample No. ☒ Yes ☐ No	

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number 200W-08-TF (2) Sample Number Field Blank (3) Supervisor M.C. Jones
 (4) Tank BY-101 (5) Rise/ 100 (6) Segment N/A (7) Core 199 (8) Cask Serial Number SN-59

Radiation Survey Data:

Over Top Dose Rate

Side Dose Rate

Bottom Dose Rate

Smearable Contamination

(9) FIELD

(33) LABORATORY

(10) Shipment Description

A. Work Package Number

B. Cask Serial Number

C. Sampler Serial Number

D. Date and Time Sampler Unseated

E. Expected Liquid Content

F. Expected Solid Content

G. Dose Rate Through Drill String

H. Expected Sample Length

RCT*
(HPT)

(Signature)

RCT*
(HPT)

(Signature)

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

(12) Field Comments

(34) Laboratory Comments

(13) Point of Origin

(14) Destination

(15) Sender Name (Sign and PRINT)

(16) Date/Time

(17) Sender Comments

(19) Relinquished By (Sign and PRINT)

(20) Received By (Sign and PRINT)

(21) Date/Time

(22) Receiver Comments

(23) Relinquished By (Sign and PRINT)

(24) Received By (Sign and PRINT)

(25) Date/Time

(26) Receiver Comments

(27) Relinquished By (Sign and PRINT)

(28) Received By (Sign and PRINT)

(29) Date/Time

(30) Receiver Comments

(18) Seal Intact Upon Release?

(31) Seal Intact Upon Receipt?

(32) Seal Date Consistent with this Record?

☒ Yes ☐ No

☒ Yes ☐ No

Shipment No.
☒ Yes ☐ No

Cask Seal No.
☒ Yes ☐ No

Sample No.
☒ Yes ☐ No

HNF-SD-WM-DP-258, REV. 0

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number N/A (2) Sample Number LIBR BLANK (3) Supervisor M.C. Jones
 (4) Tank BY-101 (5) Riser 10D (6) Segment N/A (7) Core 199 (8) Cask Serial Number N/A

Initiation Survey Data:

Over Top Dose Rate

Side Dose Rate

Bottom Dose Rate

Smearable Contamination

(9) FIELD

(Alpha)

(Beta/Gamma)

RCT*
(HPT)

(Signature)

53091

RCT*
(HPT)

(33) LABORATORY

(Alpha)

(Beta/Gamma)

(Signature)

(10) Shipment Description

A. Work Package Number

B. Cask Seal Number

C. Sampler Serial Number

D. Date and Time Sampler Unseated

E. Expected Liquid Content

F. Expected Solid Content

G. Dose Rate Through Drill String

H. Expected Sample Length

ES-96-00799

12494

N/A

5-29-97 2000

100%

0%

1.5 MR/HR

100 ML

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

2) Field Comments

LIBR Field BLANK For Tank BY-101.

(34) Laboratory Comments

597T001241

(1) Point of Origin

BY-101

(14) Destination

222-S

(15) Sender Name (Sign and PRINT)

R.J. PRAZNIK

(16) Date/Time

125X/530-97

(17) Sender Comments

(18) Relinquished By (Sign and PRINT)

R.J. PRAZNIK

(20) Received By (Sign and PRINT)

Shelley Covey

(21) Date/Time

5-30-97/1410

(22) Receiver Comments

(19) Relinquished By (Sign and PRINT)

Shelley Covey

(23) Received By (Sign and PRINT)

R. Chamber

(25) Date/Time

5-30-97

(26) Receiver Comments

(2) Relinquished By (Sign and PRINT)

(28) Received By (Sign and PRINT)

(29) Date/Time

(30) Receiver Comments

18) Seal Intact Upon Release?

(31) Seal Intact Upon Receipt?

(32) Seal Data Consistent with this Record?

☒ Yes ☐ No

☒ Yes ☐ No

Shipment No.
☒ Yes ☐ No

Cask Seal No.
☒ Yes ☐ No

Sample No.
☒ Yes ☐ No

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

Shipment Number 200W-08-TF (2) Sample Number 199-01 (3) Supervisor M.C. Jones
 Tank BY-101 (5) Riser 10 D (6) Segment 1 (7) Core 199 (8) Cask Serial Number 1033

Radiation Survey Data: Over Top Dose Rate <u>L. 0.05 m Sv</u> Side Dose Rate <u>L. 0.05 m Sv</u> Bottom Dose Rate <u>L. 0.05 m Sv</u> Smearable Contamination <u>L. 334 Bq</u> (Alpha) <u>L. 16.7 Bq</u> (Beta-Gamma) <u>Ken Ahn</u> RCT* (HPT) (Signature)		(33) LABORATORY <u>L. 5 mR/hr</u> <u>L. 5 mR/hr</u> <u>L. 5 mR/hr</u> <u>< 87 Bq</u> (Alpha) <u>< 87 Bq</u> (Beta-Gamma) <u>L. M. Trin</u> RCT* (HPT) (Signature)		(10) Shipment Description A. Work Package Number <u>ES-96-00799</u> B. Cask Seal Number <u>12490</u> C. Sampler Serial Number <u>96-375</u> D. Date and Time Sampler Unseated <u>5-28-97 1830</u> E. Expected Liquid Content <u>80%</u> F. Expected Solid Content <u>80%</u> G. Dose Rate Through Drill String <u>4 mR/hr</u> H. Expected Sample Length <u>19"</u>	
--	--	--	--	--	--

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

(3) Field Comments <u>Br ADD TO DRILL STRING</u>		(34) Laboratory Comments <u>597T 00 1234</u>	
---	--	---	--

(1) Point of Origin <u>BY-101</u>	(14) Destination <u>222-S</u>	(15) Sender Name (Sign and PRINT) <u>Ken Ahn</u>	(16) Date/Time <u>5/30/97 1345</u>	(17) Sender Comments
Relinquished By (Sign and PRINT) <u>Ken Ahn</u>		(20) Received By (Sign and PRINT) <u>Shelley Covey</u>	(21) Date/Time <u>5-30-97/1410</u>	(22) Receiver Comments
Relinquished By (Sign and PRINT) <u>Shelley Covey</u>		(24) Received By (Sign and PRINT) <u>Richard</u>	(25) Date/Time <u>5-30-97</u>	(26) Receiver Comments
Relinquished By (Sign and PRINT)		(28) Received By (Sign and PRINT)	(29) Date/Time	(30) Receiver Comments

(18) Seal Intact Upon Release? ☒ Yes ☐ No		(31) Seal Intact Upon Receipt? ☒ Yes ☐ No		(32) Seal Data Consistent with this Record? ☒ Yes ☐ No		Shipment No. ☒ Yes ☐ No	Cask Seal No. ☒ Yes ☐ No	Sample No. ☒ Yes ☐ No
---	--	---	--	--	--	---	--	---

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

1) Shipment Number <u>200W-08-TF</u>		2) Sample Number <u>199-02</u>		3) Supervisor <u>M.C. Jones</u>	
4) Tank <u>BY-101</u>		5) Riser <u>100</u>		6) Segment <u>2</u>	
		7) Core <u>199</u>		8) Cask Serial Number <u>C-1028</u>	
9) FIELD			33) LABORATORY		
Radiation Survey Date: <u>L. 005 m Sv</u>			(10) Shipment Description		
Over Top Dose Rate <u>L. 005 m Sv</u>			A. Work Package Number <u>ES-96-00799</u>		
Side Dose Rate <u>L. 005 m Sv</u>			B. Cask Seal Number <u>1183</u>		
Bottom Dose Rate <u>L. 005 m Sv</u>			C. Sampler Serial Number <u>RGS-067</u>		
Smearable Contamination <u>L. 334 Bq</u>			D. Date and Time Sampler Unseated <u>5-28-97 1907</u>		
(Alpha) <u>L. 16.7 Bq</u>			E. Expected Liquid Content <u>20%0</u>		
(Beta-Gamma) <u>L. 16.7 Bq</u>			F. Expected Solid Content <u>80%0</u>		
RCT* <u>[Signature]</u> (HPT) (Signature)			G. Dose Rate Through Drill String <u>4 MRI HR</u>		
RCT* <u>[Signature]</u> (HPT) (Signature)			H. Expected Sample Length <u>19"</u>		
1) INFORMATION (Include statement of laboratory tests to be performed.)					

2) Field Comments		34) Laboratory Comments	
<u>RGS Sample LiBr Added To The Drill String</u>		<u>5977001240</u>	
3) Point of Origin <u>BY-101</u>	14) Destination <u>222-S</u>	15) Sender Name (Sign and PRINT) <u>[Signature] R.J. Pranznik</u>	16) Date/Time <u>53097/1345</u>
17) Sender Comments	18) Received By (Sign and PRINT) <u>[Signature] R.J. Pranznik</u>	19) Date/Time <u>5-30-97/1400</u>	20) Receiver Comments
21) Date/Time <u>5-30-97/1500</u>	22) Received By (Sign and PRINT) <u>[Signature] Shelley Covey</u>	23) Date/Time <u>5-30-97/1500</u>	24) Receiver Comments
25) Date/Time	26) Received By (Sign and PRINT) <u>[Signature] R. L. Chambers</u>	27) Date/Time	28) Receiver Comments
29) Date/Time	30) Received By (Sign and PRINT)	31) Date/Time	32) Receiver Comments
31) Seal Intact Upon Receipt?		32) Seal Data Consistent with this Record?	
☒ Yes ☐ No		☒ Yes ☐ No	

HNF-SD-WM-DP-258, REV. 0

PHOTOGRAPHS

THIS PAGE INTENTIONALLY LEFT BLANK

BY-101 Core 189 Segment 1

6-5-97

PM 3:12
JUN. 5 1997

BY-101 Core 189 Segment 2

6-5-97

HNF-SD-WM-DP-258, REV. 0

BY-101 Core 199 segment 1 LB EXTRA
6-5-97

PM 4:11
JUN. 5 1997

BY-101 CORE 199 SEG 1 RISE 100

BY-101 Core 199 Field Blank

6-10-97

HNH-SD-WM-DP-258, REV. 0

SAMPLE HANDLING

HNF-SD-WM-DP-258, REV. 0

THIS PAGE INTENTIONALLY LEFT BLANK

LABCORE Data Entry Template for Worklist# 18452

Analyst: CL Instrument: BA000 Book # NA

Method: LO-160-103 Rev/Mod 30

Worklist Comment: BY-101 C-199 SEG #1 RISER 10D EXTRUSION

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>19.99</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>500.08</u>	<u>N/A</u>	
97000397	BY-101	3 SAMPLE	S97T001239	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		mL
97000397	BY-101	4 SAMPLE	S97T001239	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
97000397	BY-101	5 SAMPLE	S97T001239	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/mL
97000397	BY-101	6 SAMPLE	S97T001239	0	EXTRUD01	SOLID	<u>N/A</u>	<u>Complete</u>		
97000397	BY-101	7 SAMPLE	S97T001239	0	LLIQWT01	SOLID	<u>N/A</u>	<u>25</u>		g
97000397	BY-101	8 SAMPLE	S97T001239	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1391</u>		
97000397	BY-101	9 SAMPLE	S97T001239	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		mL
97000397	BY-101	10 SAMPLE	S97T001239	0	SLDWT-01	SOLID	<u>N/A</u>	<u>32.5</u>		g
97000397	BY-101	11 SAMPLE	S97T001239	0	APPEAR01	SOLID	<u>N/A</u>	<u>complete</u>		
97000397	BY-101	12 SAMPLE	S97T001239	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		mL

Final page for worklist # 18452

Analyst Signature CL Date 6/6/97

Analyst Signature CL Date 6/6/97

Validated by N. Lopez 6-9-97

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 18454

Analyst: EC Instrument: BA000 Book # NA

Method: LO-160-103 Rev/Mod BU

Worklist Comment: BY-101 C-189 SEG #1 RISER 10B

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>19.99</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>500.08</u>	<u>N/A</u>	
97000396	BY-101	3 SAMPLE	S97T001236	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		ml.
97000396	BY-101	4 SAMPLE	S97T001236	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
97000396	BY-101	5 SAMPLE	S97T001236	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/ml
97000396	BY-101	6 SAMPLE	S97T001236	0	EXTRUD01	SOLID	<u>N/A</u>	<u>complete</u>		
97000396	BY-101	7 SAMPLE	S97T001236	0	LLIQWT01	SOLID	<u>N/A</u>	<u>LS</u>		g
97000396	BY-101	8 SAMPLE	S97T001236	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1391</u>		
97000396	BY-101	9 SAMPLE	S97T001236	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		ml.
97000396	BY-101	10 SAMPLE	S97T001236	0	SLDWT-01	SOLID	<u>N/A</u>	<u>0</u>		g
97000396	BY-101	11 SAMPLE	S97T001236	0	APPEAR01	SOLID	<u>N/A</u>	<u>complete</u>		
97000396	BY-101	12 SAMPLE	S97T001236	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		ml.

Final page for worklist # 18454

CSA 6/6/97
Analyst Signature Date
Validated by N. Lapins 6-9-97

CSA 6/6/97
Analyst Signature Date

Data Entry Comments:

LABCORE Data Entry Template for Worklist# 18456

Analyst: EC Instrument: BA000 Book # NAMethod: LO-160-103 Rev/Mod B0

Worklist Comment: BY-101 C-189 SEG #2 RISER 10B

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>19.99</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>500.08</u>	<u>N/A</u>	
97000396	BY-101	3 SAMPLE	S97T001237	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		mL
97000396	BY-101	4 SAMPLE	S97T001237	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
97000396	BY-101	5 SAMPLE	S97T001237	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/mL
97000396	BY-101	6 SAMPLE	S97T001237	0	EXTRUD01	SOLID	<u>N/A</u>	<u>complete</u>		
97000396	BY-101	7 SAMPLE	S97T001237	0	LLIQWT01	SOLID	<u>N/A</u>	<u>55</u>		g
97000396	BY-101	8 SAMPLE	S97T001237	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1391</u>		
97000396	BY-101	9 SAMPLE	S97T001237	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		mL
97000396	BY-101	10 SAMPLE	S97T001237	0	SLDWT-01	SOLID	<u>N/A</u>	<u>107.0</u>		g
97000396	BY-101	11 SAMPLE	S97T001237	0	APPEAR01	SOLID	<u>N/A</u>	<u>complete</u>		
97000396	BY-101	12 SAMPLE	S97T001237	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		mL

Final page for worklist # 18456

EC 6/6/97
Analyst Signature Date

CSL 6/6/97
Analyst Signature Date

Validated by Wiggins 6-9-97

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 18573

Analyst: CE Instrument: BA000 Book # NAMethod: LO-160-103 Rev/Mod BO

Worklist Comment: BY-101 C199 FIELD BLANK RISER 10D EXTRUSION

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>20.00</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>500.10</u>	<u>N/A</u>	
97000397	BY-101	3 SAMPLE	S97T001335	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>250</u>		ml
97000397	BY-101	4 SAMPLE	S97T001335	0	DLIQWT01	SOLID	<u>N/A</u>	<u>262.9</u>		g
97000397	BY-101	5 SAMPLE	S97T001335	0	EST.G/ML	SOLID	<u>N/A</u>	<u>1.05</u>		g/ml
97000397	BY-101	6 SAMPLE	S97T001335	0	EXTRUD01	SOLID	<u>N/A</u>	<u>complete</u>		
97000397	BY-101	7 SAMPLE	S97T001335	0	LLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
97000397	BY-101	8 SAMPLE	S97T001335	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1391</u>		
97000397	BY-101	9 SAMPLE	S97T001335	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		ml
97000397	BY-101	10 SAMPLE	S97T001335	0	SLDWT-01	SOLID	<u>N/A</u>	<u>0</u>		g
97000397	BY-101	11 SAMPLE	S97T001335	0	APPEAR01	SOLID	<u>N/A</u>	<u>complete</u>		
97000397	BY-101	12 SAMPLE	S97T001335	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		ml

Final page for worklist # 18573

Analyst Signature CE Date 6/11/97Analyst Signature CE Date 6/11/97Validated by Notkins 6-11-97

Data Entry Comments:

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

SAMPLE PREPARATIONS

HNF-SD-WM-DP-258, REV. 0

THIS PAGE INTENTIONALLY LEFT BLANK

LABCORE Data Entry Template for Worklist# 18696

Analyst: DCD Instrument: FUS01 Book # N/A

Method: LA-549-141 Rev/Mod F-O

Worklist Comment: BY-101 FUSION DIGEST C189S2 C199S1 lad

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>	<u>N/A</u>	g/L
97000396	BY-101	2 SAMPLE	S97T001358	0 F	FUSION01	SOLID	<u>N/A</u>	<u>1.964</u>		g/L
		<u>0.4910 g</u>								
97000396	BY-101	3 SAMPLE	S97T001358	0 F	DOSE-02	SOLID	<u>N/A</u>	<u>2.5</u>		mrad/hour
97000396	BY-101	4 DUP	S97T001358	0 F	FUSION01	SOLID	<u>1.964</u>	<u>1.960</u>	<u>N/A</u>	g/L
		<u>0.4900 g</u>								
97000396	BY-101	5 DUP	S97T001358	0 F	DOSE-02	SOLID	<u>2.5</u>	<u>2.5</u>	<u>N/A</u>	mrad/hour
97000397	BY-101	6 SAMPLE	S97T001363	0 F	FUSION01	SOLID	<u>N/A</u>	<u>2.008</u>		g/L
		<u>0.5027 g</u>								
97000397	BY-101	7 SAMPLE	S97T001363	0 F	DOSE-02	SOLID	<u>N/A</u>	<u>1.5</u>		mrad/hour
97000397	BY-101	8 DUP	S97T001363	0 F	FUSION01	SOLID	<u>2.008</u>	<u>2.0424</u>	<u>N/A</u>	g/L
		<u>0.5106 g</u>								
97000397	BY-101	9 DUP	S97T001363	0 F	DOSE-02	SOLID	<u>1.5</u>	<u>1.5</u>	<u>N/A</u>	mrad/hour

Final page for worklist # 18696

David C. Dunham 7-19-97
Analyst Signature Date

AKM Lina 7-21-97
Analyst Signature Date

Validated 7-21-97
SLT

Data Entry Comments:

HPT surveyed by Joe Valdez 7/18/97

Added 40 mls of HNO₃.

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# 18697

Analyst: DCD Instrument: H2001 Book # N/A

Method: LA-504-101 Rev/Mod F-0

Worklist Comment: BY-101 H2O DIGEST C189S2 C199S1 lad

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			H2001G01	SOLID	<u>1</u>	<u>0.100</u>	<u>N/A</u>	<u>g/L</u>
97000396	BY-101	2 SAMPLE	S97T001360 0 W		H2001G01	SOLID	<u>N/A</u>	<u>5.061</u>		<u>g/L</u>
		<u>0.5061 g → 0.100 L</u>								
97000396	BY-101	3 SAMPLE	S97T001360 0 W		DOSE-02	SOLID	<u>N/A</u>	<u>1</u>		<u>mrad/hour</u>
97000396	BY-101	4 DUP	S97T001360 0 W		H2001G01	SOLID	<u>5.061</u>	<u>5.001</u>	<u>N/A</u>	<u>g/L</u>
		<u>0.5001 g → 0.100 L</u>								
97000396	BY-101	5 DUP	S97T001360 0 W		DOSE-02	SOLID	<u>1</u>	<u>1</u>	<u>N/A</u>	<u>mrad/hour</u>
97000397	BY-101	6 SAMPLE	S97T001364 0 W		H2001G01	SOLID	<u>N/A</u>	<u>4.948</u>		<u>g/L</u>
		<u>0.4948 g → 0.100 L</u>								
97000397	BY-101	7 SAMPLE	S97T001364 0 W		DOSE-02	SOLID	<u>N/A</u>	<u>1</u>		<u>mrad/hour</u>
97000397	BY-101	8 DUP	S97T001364 0 W		H2001G01	SOLID	<u>4.948</u>	<u>5.061</u>	<u>N/A</u>	<u>g/L</u>
		<u>0.5004 g → 0.100 L</u>								
97000397	BY-101	9 DUP	S97T001364 0 W		DOSE-02	SOLID	<u>1</u>	<u>1</u>	<u>N/A</u>	<u>mrad/hour</u>

Final page for worklist # 18697

David C. Durham 7/19/97
Analyst Signature Date

K. M. Lawrence 7-21-97
Analyst Signature Date

Validated 7/21/97

cds

Data Entry Comments:

HPT surveyed by Joe Valdez 7/18/97.

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

HNF-SD-WM-DP-258, REV. 0

BY-101 BULK DENSITY WORKSHEETS

HNF-SD-WM-DP-258, REV. 0

THIS PAGE INTENTIONALLY LEFT BLANK

HNF-SD-WM-DP-258, REV. 0

Bulk Density Worksheet

Date: 7-17-97Requestor: J. MuzumTank: BY-101Core: 189Seg: 2 LHA

Auger: _____

Sample ID: _____

Tank: _____

Core: _____

Seg: _____

Auger: _____

Sample ID: _____

Start Time: _____
End Time: _____
Homogenization Time (Min.): _____

Jar#:

Jar/Vial Size: _____ mL

Initial Weight: _____ g

Final Weight: _____ g

Net Weight: _____ g

Start Time: _____
End Time: _____
Homogenization Time (Min.): _____

Jar#:

Jar/Vial Size: _____ mL

Initial Weight: _____ g

Final Weight: _____ g

Net Weight: _____ g

Cone#:

Final Vol: _____ mL

Initial Weight: _____ g

Final Weight: _____ g

Net Weight: _____ g

Sample ID: _____

Cone#: 695Final Vol: 10.3 mLInitial Weight: 7.702gFinal Weight: 27.008gNet Weight: 19.306gSample ID: 5977001356

Appearance/Narrative:

Blk Den 01 = 19.306g / 10.3ml" = 1.87dg / ml

Appearance/Narrative:

Bulk Density Worksheet

Requestor: WU 24m

Date: 6-16-97

Tank: 61-101

Core: 149

Seg: 11H

Auger: ---

Sample ID: 97T001361

Jar#: 12696

Jar/Vial Size: --- mL

Initial Weight: --- g

Final Weight: --- g

Net Weight: --- g

Start Time: ---
End Time: ---
Homogenization Time (Min.): ---

Jar#: ---

Jar/Vial Size: --- mL

Initial Weight: --- g

Final Weight: --- g

Net Weight: --- g

Start Time: ---
End Time: ---
Homogenization Time (Min.): ---

Cone#: 96

Final Vol: 8.8 mL *

Initial Weight: 7.54 g

Final Weight: --- g

Net Weight: N/A g

Cone#: ---

Final Vol: --- mL

Initial Weight: --- g

Final Weight: --- g

Net Weight: --- g

Sample ID: ---

Appearance/Narrative: (void, spind)

* 146.6 voids in bulk density

Appearance/Narrative: ---

Sample ID: ---

INORGANIC ANALYSIS

HNH-SD-WM-DP-258, REV. 0

THIS PAGE INTENTIONALLY LEFT BLANK

LABCORE Data Entry Template for Worklist# 20320

Analyst: KOM Instrument: DSC0 3 Book # 12N14BMethod: LA-514-114 Rev/Mod D-1Worklist Comment: BY-101 DSC ~~PERUN~~ RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	SOLID	<u>28.45</u>	<u>28.95</u>	N/A	Joules/g
97000397	BY-101	2 SAMPLE	S97T001362	1	DSC-03	SOLID	N/A	<u>Ø</u>		Joules/g
97000397	BY-101	3 DUP	S97T001362	1	DSC-03	SOLID	<u>Ø</u>	<u>Ø</u>	N/A	Joules/g

Final page for worklist # 20320

Analyst Signature: KOM Date: 9/17/97

Analyst Signature: _____ Date: _____

Data entry + validation
by HAnests 9-18-97

Data Entry Comments:

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

Curve 1: DSC

File info: IND091701 Wed Sep 17 19:48:53 1997

Sample Weight: 21.070 mg

12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 55 TO 58.

N2, EXOTHERM DOWN

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

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Sep 17 20:34:57 1997

Curve 1: DSC
 File info: SAM091702 Thu Sep 18 00:38:14 1997
 Sample Weight: 27.500 mg
 S97T001362

N2 10C/min
 TEMPERATURE 85.8 °C
 TIME: 0.0 min RATE: 10.0 C/min
 RD MEYERS
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Thu Sep 18 02:04:22 1997

Curve 1: DSC
 File info: SAM091801 Thu Sep 18 02:57:31 1997
 Sample Weight: 43.090 mg
 S97T001362DUP

THIS PAGE INTENTIONALLY LEFT BLANK

LABCORE Data Entry Template for Worklist# 19383

Analyst: SMA Instrument: DSC0 3 Book # 12N14B

Method: LA-514-114 Rev/Mod D-1

Worklist Comment: BY-101 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	LIQUID	<u>28.45</u>	<u>28.28#</u>	<u>N/A</u>	Joules/g
97000397	BY-101	2 SAMPLE	S97T001365	0	DSC-03	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g
97000397	BY-101	3 DUP	S97T001365	0	DSC-03	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 19383

Susie M. Fulton 7-18-97 Susie M. Bu 7/22/97
Analyst Signature Date Analyst Signature Date
Validated 7/22/97 Rachelor

Data Entry Comments:

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

Curve 1: DSC

File info: IND071801 Fri Jul 18 08:26:22 1997

Sample Weight: 21.590 mg

12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 60 TO 62.

N2, EXOTHERM DOWN

TEMP: 149.8 °C TIME: 0.0 min RATE: 10.0 °C/min

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jul 18 08:30:48 1997

HNF-SD-WM-DP-258, REV. 0

Curve 1: DSC

File info: SAM071814 Sat Jul 19 00:08:33 1997

Sample Weight: 10.070 mg

S97T001365

N2 10C/min

TEMP: 35.0 °C
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jul 19 01:13:48 1997

HNF-SD-WM-DP-258, REV. 0

Curve 1: DSC

File info: SAM071815 Sat Jul 19 02:03:23 1997

Sample Weight: 10.090 mg

S97T001365 DUP

N2 10C/min

TEMP: 38.8 °C
TIME: 600.0 s

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jul 19 02:07:13 1997

HNF-SD-WM-DP-258, REV.0

LABCORE Data Entry Template for Worklist# 19384Analyst: SNF Instrument: DSC0 3 Book # 12N14-BMethod: LA-514-114 Rev/Mod D-1

Worklist Comment: BY-101 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	SOLID	<u>28.45</u>	<u>28.28</u>	<u>N/A</u>	Joules/g
97000396	BY-101	2 SAMPLE	S97T001357	0	DSC-03	SOLID	<u>N/A</u>	<u>0</u>		Joules/g
97000396	BY-101	3 DUP	S97T001357	0	DSC-03	SOLID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g

Final page for worklist # 19384

Surie M. Zulton 7-18-97
Analyst Signature Date

Susan Bee 7/22/97
Analyst Signature Date

Validated 7/22/97 Brachlor

Data Entry Comments:

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

Curve 1: DSC

File info: IND071801 Fri Jul 18 06:26:22 1997

Sample Weight: 21.590 mg

12N14-B

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 114 TO 116.

HNF-SD-WM-DP-258, REV. 0

N2, EXOTHERM DOWN

TIME: 140.0 8

TIME: 0.0 min RATE: 10.0 °/min

Temperature (°C)

JD SPELLMAN
PERKIN-ELMER

7 Series Thermal Analysis System
Fri Jul 18 06:30:48 1997

Curve 1: DSC
File info: SAM071812 Sat Jul 19 02:56:39 1997
Sample Weight: 31.360 mg
S97T001357

65

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

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jul 19 04:36:03 1997

HNF-SD-WM-DP-258, REV.0

Curve 1: DSC

File info: SAM071813 Sat Jul 19 05:25:48 1997

Sample Weight: 13.940 mg

S97T001357 DUP

N2 10C/min

TEMP: 35.0 °C
TIME: 600.0 s

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Sat Jul 19 06:49:08 1997

HNF-SD-WM-DP-258, REV. 0

LABCORE Data Entry Template for Worklist# 19431

Analyst: ppb Instrument: DSC0 32^{888 7/22/97} Book # N/A

Method: LA-514-113 Rev/Mod 888 7/22/97

Worklist Comment: DSC-02 BY-101 liquid. -ppb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
97000397	BY-101	1 SAMPLE	S97T001365	0	DSC-02	LIQUID	<u>N/A</u>	<u>0</u>		Joules/g Dry
97000397	BY-101	2 DUP	S97T001365	0	DSC-02	LIQUID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g Dry

Final page for worklist # 19431

ppb
Analyst Signature Date 7/22/97

Analyst Signature Date

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 19432

Analyst: ppb Instrument: DSC0 2 Book # NA

Method: ~~LA-514-113~~ Rev/Mod 98 7/22/97

Worklist Comment: DSC-02 BY-101 solid. -ppb

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
97000396	BY-101	1 SAMPLE	S97T001357	0	DSC-02	SOLID	<u>N/A</u>	<u>0</u>		Joules/g Dry
97000396	BY-101	2 DUP	S97T001357	0	DSC-02	SOLID	<u>0</u>	<u>0</u>	<u>N/A</u>	Joules/g Dry
97000397	BY-101	3 SAMPLE	S97T001362	0	DSC-02	SOLID	<u>N/A</u>	<u>54.70</u>		Joules/g Dry
97000397	BY-101	4 DUP	S97T001362	0	DSC-02	SOLID	<u>54.70</u>	<u>0</u>	<u>N/A</u>	Joules/g Dry

Final page for worklist # 19432

ppb 7/22/97
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.

LABCORE Data Entry Template for Worklist# 20371

Analyst: HLA Instrument: DSC0 3 Book # N/A

Method: LA-514-113 Rev/Mod _____

Worklist Comment: BY-101 Dry DSC

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
97000397	BY-101	1 SAMPLE	S97T001362	1	DSC-02	SOLID	N/A	Ø		Joules/g Dry
97000397	BY-101	2 DUP	S97T001362	1	DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry

Final page for worklist # 20371

HLA 9-19-97
 Analyst Signature Date

 Analyst Signature Date

Data entry + validation HLA 9-19-97

Wet DSC = Ø SAM
 Ø DUP

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# 18781

Analyst: DPB Instrument: TGA0 3 Book # 103N8A

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

Worklist Comment: BX110, BY101 TGA-03 Run under Nitrogen. skm

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	SOLID	<u>59.0</u>	<u>58.11</u>	N/A	%
97000390	BX-110	2 SAMPLE	S97T001270	0	TGA-03	SOLID	N/A	<u>11.81</u>		%
97000390	BX-110	3 DUP	S97T001270	0	TGA-03	SOLID	<u>11.81</u>	<u>14.98</u>	N/A	% *
97000397	BY-101	4 SAMPLE	S97T001362	0	TGA-03	SOLID	N/A	<u>17.14</u>		%
97000397	BY-101	5 DUP	S97T001362	0	TGA-03	SOLID	<u>17.14</u>	<u>21.00</u>	N/A	% *

Final page for worklist # 18781

David P. Brandy 6/25/97
Analyst Signature Date

Frank Muck 7-2-97
Analyst Signature Date

Validated 7/9/97 JML

* QC exceeds UCL

Data Entry Comments:

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

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 70 TO 74.

Curve 1: TGA

File info: TER062701 Fri Jun 27 06:23:21 1997

Sample Weight: 27.279 mg

STD 103N8-A

1 STD 103N8-A: TER062701

% Weight (Wt. %)

Result: ΔY 6/27/97 8:02 AM
STD 103N8-A

X1	24.045 °C
X2	245.656 °C
Y1	99.932 Wt. %
Y2	41.825 Wt. %
ΔY	-58.108 Wt. %

DP BROMLEY
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jun 27 18:11:44 1997

HNF-SD-WM-DP-258, REV. 0

Curve 1: TGA
 File info: SAM062703 Fri Jun 27 13:17:13 1997
 Sample Weight: 13.248 mg
 S97T001270SAM

10C/MIN N2

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

Temperature (°C)

DP BROMLEY
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Jun 27 13:36:32 1997

HNF-SD-WM-DP-258, REV. 0

DATA
 NOT USED

Curve 1: TGA

File info: SAM062704 Fri Jun 27 14:28:31 1997

Sample Weight: 9.128 mg

S977001270DUP

10C/MIN N2

TEMP: 30.0 C
TEMP: 500.0 C

TIMES: 0.0 min RATES: 10.0 C/min

Temperature (°C)

DP BROMLEY
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jun 27 15:32:38 1997

HNF-SD-WM-DP-258, REV. 0

DATA
NOT USED

Curve 1: TGA

File info: SAM062705 Fri Jun 27 18:52:24 1997

Sample Weight: 18.733 mg

S97T001362 SAM

10C/MIN N2

TEMP1: 35.0 C
TEMP2: 500.0 C

TIME1: 0.0 min RATE1: 10.0 C/min

Temperature (°C)

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jun 27 20:14:01 1997

HNF-SD-WM-DP-258, REV. 0

Curve 1: TGA

File info: SAM062706 Fri Jun 27 21:11:38 1997

Sample Weight: 16.876 mg

S97T001362 DUP

10C/MIN N2
TEMP: 35.0 C
TEMP: 500.0 C

TIME: 0.0 min RATE: 10.0 C/min

AD PURINTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jun 27 22:08:56 1997

HNF-SD-WM-DP-258, REV. 0

LABCORE Data Entry Template for Worklist# 19381

Analyst: SMF Instrument: TGA0 3 Book # 103N8-17

Method: LA-514-114 Rev/Mod D-1

Worklist Comment: BY-101 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	LIQUID	<u>59.0</u>	<u>58.944</u>	<u>N/A</u>	%
97000397	BY-101	2 SAMPLE	S97T001365	0	TGA-03	LIQUID	<u>N/A</u>	<u>99.48</u>		%
97000397	BY-101	3 DUP	S97T001365	0	TGA-03	LIQUID	<u>99.48</u>	<u>99.47</u>	<u>N/A</u>	%

Final page for worklist # 19381

Susie M. Decker 7/18/97
Analyst Signature Date

Susan Bu 7/22/97
Analyst Signature Date

Validated 7/22/97 SMF

Data Entry Comments:

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

Curve 1: TGA

File info: TER071801 Fri Jul 18 06:47:53 1997

Sample Weight: 13.856 mg

STD 103NB-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 76 TO 78.

HNF-SD-WM-DP-258, REV. 0

Curve 1: TGA

File info: SAM071814 Fri Jul 18 23:13:43 1997

Sample Weight: 10.410 mg

S97T001365

10C/MIN N2

TIME: 35.0 s
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jul 18 23:22:40 1997

HNF-SD-WM-DP-258, REV.0

Curve 1: TGA

File info: SAM071815 Sat Jul 19 00:33:00 1997

Sample Weight: 10.161 mg

S97T001365 DUP

10C/MIN N2

TEMP: 35.0 °C

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

SM FULTON

PERKIN-ELMER

7 Series Thermal Analysis System

Sat Jul 19 01:17:33 1997

LABCORE Data Entry Template for Worklist# 19382

Analyst: OME Instrument: TGA0 3 Book # 130N8-A

Method: LA-514-114 Rev/Mod D-1

Worklist Comment: BY-101 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	SOLID	<u>59.0</u>	<u>58.94%</u>	<u>N/A</u>	<u>%</u>
97000396	BY-101	2 SAMPLE	S97T001357	0	TGA-03	SOLID	<u>N/A</u>	<u>26.34</u>		<u>%</u>
97000396	BY-101	3 DUP	S97T001357	0	TGA-03	SOLID	<u>26.34</u>	<u>26.38</u>	<u>N/A</u>	<u>%</u>

Final page for worklist # 19382

Susie M. Dalton 7-18-97
Analyst Signature Date

Susan Bee 7/22/97
Analyst Signature Date

Validated 7/22/97 Rachelor

Data Entry Comments:

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

Curve 1: TGA

File info: TER071801 Fri Jul 18 06:47:53 1997

Sample Weight: 13.856 mg

STD 103N8-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 80 TO 82.

10C/MIN N2

TEMP: 355.8 °C

TIME: 0.0 min

RATE: 10.0 C/min

Temperature (°C)

JO SPELLMAN

PERKIN-ELMER

7 Series Thermal Analysis System

Fri Jul 18 08:51:14 1997

HNF-SD-WM-DP-268, REV. 0

Curve 1: TGA

File info: SAM071812 Fri Jul 18 20:06:56 1997

Sample Weight: 23.494 mg

SS97T001357

10C/MIN N2

TEMP: 35.0 °C
TIME: 655.0 s

TIMES: 0.0 min RATES: 10.0 g/min

Temperature (°C)

SM FULTON
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Jul 18 21:11:14 1997

HNF-SD-WM-DP-258, REV.0

Curve 1: TGA
 File info: SA071813 Fri Jul 18 22:03:28 1997
 Sample Weight: 26.734 mg
 S97T001357 DUP

LABCORE Data Entry Template for Worklist# 19389Analyst: RMM Instrument: BA001 Book # 13316AMethod: LA-510-112 Rev/Mod 2-1

Worklist Comment: BY-101 SPG. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.39755</u>	<u>1.356</u>	<u>N/A</u>	Sp.G.
97000397	BY-101	2 SAMPLE	S97T001365	0	SPG-01	LIQUID	<u>N/A</u>	<u>0.960</u>		Sp.G.
97000397	BY-101	3 DUP	S97T001365	0	SPG-01	LIQUID	<u>0.960</u>	<u>0.472</u>	<u>N/A</u>	Sp.G.

Final page for worklist # 19389Analyst Signature: RMM Date: 7/22/97Analyst Signature: R. Jones Date: 7-23-97Approved: RW Schneider
7/23/97

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER.

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

Type		STANDARD	STANDARD
STANDARD	Gross Weight (W2)	1.9518	1.9465
Work List	Tare Weight (W1)	1.8511	1.8443
19389	Weight of Solution (W2-W1)	0.10072	0.10223
Test Code	Volume of Solution μ L	74.8300	74.8300
SPG-01	Specific Gravity	1.3460	1.3662
Matrix	Specific Gravity (Average)	1.3561	
LIQUID			
Sample #			
133N16A			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
07/22/97	v RESULT v		
Time	Specific Gravity Average =	1.356	

Data Entry by:

Date: 07/23/97

Approved by:

Date: 7/24/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9888	1.9163
Work List	Tare Weight (W1)	1.9161	1.8453
19389	Weight of Solution (W2-W1)	0.07264	0.07102
Test Code	Volume of Solution μ L	74.8300	74.8300
SPG-01	Specific Gravity	0.9707	0.9491
Matrix	Specific Gravity (Average)	0.9599	
LIQUID			
Sample #			
S97T001365			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
07/22/97	v RESULT v		
Time	Specific Gravity Average =	0.960	

Data Entry by:		Date:	07/23/97
Approved by:		Date:	7/23/97

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

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

Type		DUPLICATE	REPLICATE
DUPLICATE	Gross Weight (W2)	1.9389	1.9936
Work List	Tare Weight (W1)	1.8666	1.9205
19389	Weight of Solution (W2-W1)	0.0723	0.07311
Test Code	Volume of Solution μ L	74.8300	74.8300
SPG-01	Specific Gravity	0.9662	0.9770
Matrix	Specific Gravity (Average)	0.9716	
LIQUID			
Sample #			
S97T001365			
Instrument Code	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
BA001	Tare Weight (W1) = Wt. of vial + cap + cotton		
Analyst			
RDM	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
Date			
07/22/97	v RESULT v		
Time	Specific Gravity Average =	0.972	

Data Entry by: <i>RG</i>	Date: 07/23/97
Approved by: <i>R. W. Schneider</i>	Date: 7/24/97
Form 510112L1 Rev. 1.1	Page 1 of 1

LABCORE Completed Worklist Report for Worklist# 18654

Analyst: rag

Instrument: IC02

Book# 22A20A

Method: 1A533-105 Rev/Mod D-1

Worklist Comment: BY101, @IC-01 skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	②IC-QC F	QC	1	<1.20e-2		ug/mL
1 CCB	0	②IC-QC CL	QC	1	<1.70e-2		ug/mL
1 CCB	0	②IC-QC NO2	QC	1	<1.08e-1		ug/mL
1 CCB	0	②IC-QC BR	QC	1	<1.25e-1		ug/mL
1 CCB	0	②IC-QC NO3	QC	1	1.85e-01	0.185	ug/mL
1 CCB	0	②IC-QC PO4	QC	1	<1.20e-1		ug/mL
1 CCB	0	②IC-QC SO4	QC	1	<1.38e-1		ug/mL
1 CCB	0	②IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2 CCV	0	②IC-QC F	QC	5.90e01	6.17e+01	104.576 % Recovery	
2 CCV	0	②IC-QC CL	QC	7.90e01	7.94e+01	100.506 % Recovery	
2 CCV	0	②IC-QC NO2	QC	5.43e02	5.44e+02	100.184 % Recovery	
2 CCV	0	②IC-QC BR	QC	5.89e02	6.08e+02	103.226 % Recovery	
2 CCV	0	②IC-QC NO3	QC	5.94e02	6.19e+02	104.203 % Recovery	
2 CCV	0	②IC-QC PO4	QC	5.45e02	5.76e+02	105.688 % Recovery	
2 CCV	0	②IC-QC SO4	QC	6.32e02	6.75e+02	106.804 % Recovery	
2 CCV	0	②IC-QC OXALATE2	QC	5.34e02	5.52e+02	103.371 % Recovery	
3 SAMPLE	S97T001241 0	②IC-01 F-02	LIQUID	N/A	<1.33e+01	13.330	ug/mL
3 SAMPLE	S97T001241 0	②IC-01 CL-02	LIQUID	N/A	3.478e+01	18.890	ug/mL
3 SAMPLE	S97T001241 0	②IC-01 NO2-02	LIQUID	N/A	<1.200e+02	120.000	ug/mL
3 SAMPLE	S97T001241 0	②IC-01 BR-02	LIQUID	N/A	2.434e+04	138.900	ug/mL
3 SAMPLE	S97T001241 0	②IC-01 NO3-02	LIQUID	N/A	<1.544e+02	154.400	ug/mL
3 SAMPLE	S97T001241 0	②IC-01 PO4-02	LIQUID	N/A	<1.333e+02	133.300	ug/mL
3 SAMPLE	S97T001241 0	②IC-01 SO4-02	LIQUID	N/A	2.367e+02	153.300	ug/mL
3 SAMPLE	S97T001241 0	②IC-01 OXALATE2	LIQUID	N/A	<1.167e+02	116.700	ug/mL
4 DUP	S97T001241 0	②IC-01 F-02	LIQUID	<1.33e1	<1.33e1		RPD
4 DUP	S97T001241 0	②IC-01 CL-02	LIQUID	3.48e+01	3.73e+01	6.935	RPD
4 DUP	S97T001241 0	②IC-01 NO2-02	LIQUID	<1.20e2	<1.20e2		RPD
4 DUP	S97T001241 0	②IC-01 BR-02	LIQUID	2.43e+04	2.48e+04	2.037	RPD
4 DUP	S97T001241 0	②IC-01 NO3-02	LIQUID	<1.54e2	2.08e+02		RPD
4 DUP	S97T001241 0	②IC-01 PO4-02	LIQUID	<1.33e2	<1.33e2		RPD
4 DUP	S97T001241 0	②IC-01 SO4-02	LIQUID	2.37e+02	2.87e+02	19.084	RPD
4 DUP	S97T001241 0	②IC-01 OXALATE2	LIQUID	<1.17e2	<1.17e2		RPD

Final page for worklist# 18654

Analyst Signature

Date

Analyst Signature

Date

James M. Lutz 6/20/97

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

LABCORE Data Entry Template for Worklist# 18654

Analyst: RA Instrument: IC0 2 Book# 7 2N 20-A

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

Worklist Comment: BY101, @IC-01 skm

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S97T001241 0			@IC-01	LIQUID	97000397	BY-101
		Analytes Requested:	BR-02		CL-02		F-02	NO2-02
					OXALATE2,	PO4-02		NO3-02
							SO4-02	
4	DUP	S97T001241 0			@IC-01	LIQUID		

Final page for worklist # 18654

Rae Ann Green 06-18-97
Analyst Signature Date

Analyst Signature Date

Validated 4/20/97 gmk

Data Entry Comments:

18654 Jun. SCH

18654 Jun. CSV

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

Sample Name: CCB Date: 06/18/1997 14:38:43
Data File : C:\DX\DATA\97061801.D06
Method : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 1 Inject#: 6 Detector: CDM-1
Analyst *Rae Ann Ince* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	11	52	1	
2	1.14		0.000	22	84	1	
3	1.39		0.000	21	112	1	
4	3.14	nitrate	0.185	75	670	1	-0.95
5	5.81	sulfate	0.119	48	1140	1	1.81
Totals			0.305	177	2058

LAD 5/15/97
Above
SIGNATURE ~~BELOW~~ REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 89 TO 92

Sample Name: STD 72N20-A Date: 06/18/1997 09:26:56
 Data File : C:\DX\DATA\97061721.D02
 Method : C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 2 Detector: CDM-1
 Analyst *Rae Ann Green* Column: AG4A/AS4A anion column

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 101 3000 5Hz 0.00 10.00 50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	85	348	2	
2	1.02	fluoride	61.705	2044	11264	2	0.99
3	1.53	chloride	79.419	2494	11270	1	-0.87
4	1.82	nitrite	543.637	10065	52776	1	-2.50
5	2.69	bromide	608.049	6269	38165	1	-3.46
6	3.05	nitrate	618.603	6942	50606	1	-3.68
7	4.45	phosphate	576.312	1832	22607	1	0.00
8	5.76	sulfate	674.907	5563	74354	1	0.88
9	7.52	oxalate	552.007	2541	46291	1	-5.41
Totals			3714.640	37835	307682		

File: 97061721.D02 Sample: STD 72N20-A

Sample Name: S97T001241 Date: 06/18/1997 13:46:11
 Data File : C:\DX\DATA\97061801.D04
 Method : C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 4 Detector: CDM-1
 Analyst : *RaeAnn Green* Column: AG4A/AS4A anion column

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 1111 3000 5Hz 0.00 10.00 50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	55	301	2	
2	1.13		0.000	95	557	2	
3	1.38		0.000	18	84	1	
4	1.53	chloride	34.785	64	292	1	-0.87
5	2.71	bromide	24335.120	19665	150699	1	-2.75
6	3.13	nitrate	145.778	39	224	1	-1.16
7	5.81	sulfate	236.698	100	2164	1	1.81
Totals			24752.382	20035	154320		

File: 97061801.D04 Sample: S97T001241

Sample Name: S97T001241 DUP Date: 06/18/1997 14:25:51
Data File : C:\DX\DATA\97061801.D05
Method : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 1 Inject#: 5 Detector: CDM-1
Analyst : *RaeAnn Green* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1111	3000	5Hz	0.00	10.00		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.88		0.000	67	397	2	
2	1.13		0.000	102	584	2	
3	1.38		0.000	43	218	1	
4	1.54	chloride	37.346	75	325	1	0.00
5	2.71	bromide	24756.222	19884	153596	1	-2.75
6	3.13	nitrate	207.622	96	683	1	-1.37
7	5.81	sulfate	287.188	116	2662	1	1.81
Totals			25288.379	20383	158465		

File: 97061801.D05 Sample: S97T001241 DUP

LABCORE Completed Worklist Report for Worklist# 19401

Analyst: kgh

Instrument: IC01

Book# 83N208

Method: LA-53-105 Rev/Mod D-1

Worklist Comment: BY-101 IC. RCJ

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	⊖IC-QC F	QC	1	<1.20e-2		ug/mL
1 CCB	0	⊖IC-QC CL	QC	1	<1.70e-2		ug/mL
1 CCB	0	⊖IC-QC NO2	QC	1	<1.08e-1		ug/mL
1 CCB	0	⊖IC-QC BR	QC	1	<1.25e-1		ug/mL
1 CCB	0	⊖IC-QC NO3	QC	1	<1.39e-1		ug/mL
1 CCB	0	⊖IC-QC P04	QC	1	<1.20e-1		ug/mL
1 CCB	0	⊖IC-QC S04	QC	1	<1.38e-1		ug/mL
1 CCB	0	⊖IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2 CCV	0	⊖IC-QC F	QC	5.90e01	6.63e+01	112.373 % Recovery	
2 CCV	0	⊖IC-QC CL	QC	7.90e01	7.35e+01	93.038 % Recovery	
2 CCV	0	⊖IC-QC NO2	QC	5.44e02	5.13e+02	94.301 % Recovery	
2 CCV	0	⊖IC-QC BR	QC	5.89e02	5.60e+02	95.076 % Recovery	
2 CCV	0	⊖IC-QC NO3	QC	5.94e02	5.54e+02	93.266 % Recovery	
2 CCV	0	⊖IC-QC P04	QC	5.45e02	5.39e+02	98.899 % Recovery	
2 CCV	0	⊖IC-QC S04	QC	6.32e02	5.88e+02	93.038 % Recovery	
2 CCV	0	⊖IC-QC OXALATE2	QC	5.33e02	5.06e+02	94.934 % Recovery	
3 BLNK-PREP	0	⊖IC-01 F-02	SOLID	1	<1.20e-2		ug/g
3 BLNK-PREP	0	⊖IC-01 CL-02	SOLID	1	<1.70e-2		ug/g
3 BLNK-PREP	0	⊖IC-01 NO2-02	SOLID	1	2.26e-01	0.226	ug/g
3 BLNK-PREP	0	⊖IC-01 BR-02	SOLID	1	<1.25e-1		ug/g
3 BLNK-PREP	0	⊖IC-01 NO3-02	SOLID	1	<1.39e-1		ug/g
3 BLNK-PREP	0	⊖IC-01 P04-02	SOLID	1	<1.20e-1		ug/g
3 BLNK-PREP	0	⊖IC-01 S04-02	SOLID	1	<1.38e-1		ug/g
3 BLNK-PREP	0	⊖IC-01 OXALATE2	SOLID	1	<1.05e-1		ug/g
4 SAMPLE	S97T001360	0 W ⊖IC-01 F-02	SOLID	N/A	4.134e+03	120.900	ug/g
4 SAMPLE	S97T001360	0 W ⊖IC-01 CL-02	SOLID	N/A	1.713e+02	171.300	ug/g
4 SAMPLE	S97T001360	0 W ⊖IC-01 NO2-02	SOLID	N/A	1.088e+03	1088.000	ug/g
4 SAMPLE	S97T001360	0 W ⊖IC-01 BR-02	SOLID	N/A	2.314e+03	1260.000	ug/g
4 SAMPLE	S97T001360	0 W ⊖IC-01 NO3-02	SOLID	N/A	4.113e+05	1400.000	ug/g
4 SAMPLE	S97T001360	0 W ⊖IC-01 P04-02	SOLID	N/A	4.481e+04	1209.000	ug/g
4 SAMPLE	S97T001360	0 W ⊖IC-01 S04-02	SOLID	N/A	1.391e+03	1391.000	ug/g
4 SAMPLE	S97T001360	0 W ⊖IC-01 OXALATE2	SOLID	N/A	7.849e+03	1058.000	ug/g
5 DUP	S97T001360	0 W ⊖IC-01 F-02	SOLID	4.13e+03	6.13e+03	38.986	RPD
5 DUP	S97T001360	0 W ⊖IC-01 CL-02	SOLID	<1.71e2	<1.73e2		RPD
5 DUP	S97T001360	0 W ⊖IC-01 NO2-02	SOLID	<1.09e3	<1.10e3		RPD
5 DUP	S97T001360	0 W ⊖IC-01 BR-02	SOLID	2.31e+03	2.26e+03	2.188	RPD
5 DUP	S97T001360	0 W ⊖IC-01 NO3-02	SOLID	4.11e+05	3.27e+05	22.764	RPD
5 DUP	S97T001360	0 W ⊖IC-01 P04-02	SOLID	4.48e+04	6.45e+04	36.048	RPD
5 DUP	S97T001360	0 W ⊖IC-01 S04-02	SOLID	<1.39e3	<1.41e3		RPD
5 DUP	S97T001360	0 W ⊖IC-01 OXALATE2	SOLID	7.85e+03	7.94e+03	1.140	RPD
6 SPK	S97T001360	0 W ⊖IC-01 F-02	SOLID	5.90e01	5.20e+01	88.136 % Recovery	

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

LABCORE Completed Worklist Report for Worklist# 19401

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SPK	S97T001360 0 W @IC-01	CL-02	SOLID	7.90e01	7.15e+01	90.506 % Recovery	
6 SPK	S97T001360 0 W @IC-01	NO2-02	SOLID	5.44e02	5.05e+02	92.831 % Recovery	
6 SPK	S97T001360 0 W @IC-01	BR-02	SOLID	5.88e02	5.15e+02	90.832 % Recovery	
6 SPK	S97T001360 0 W @IC-01	NO3-02	SOLID	5.94e02	2.28e+02	38.384 % Recovery	
6 SPK	S97T001360 0 W @IC-01	PO4-02	SOLID	5.45e02	5.05e+02	92.661 % Recovery	
6 SPK	S97T001360 0 W @IC-01	SO4-02	SOLID	6.32e02	5.81e+02	91.930 % Recovery	
6 SPK	S97T001360 0 W @IC-01	OXALATE2	SOLID	5.33e02	4.56e+02	93.058 % Recovery	
7 SAMPLE	S97T001364 0 W @IC-01	F-02	SOLID	N/A	8.199e+03	123.700 ug/g	
7 SAMPLE	S97T001364 0 W @IC-01	CL-02	SOLID	N/A	1.752e+02	175.200 ug/g	
7 SAMPLE	S97T001364 0 W @IC-01	NO2-02	SOLID	N/A	1.113e+03	1113.000 ug/g	
7 SAMPLE	S97T001364 0 W @IC-01	BR-02	SOLID	N/A	1.288e+03	1288.000 ug/g	
7 SAMPLE	S97T001364 0 W @IC-01	NO3-02	SOLID	N/A	3.962e+05	1433.000 ug/g	
7 SAMPLE	S97T001364 0 W @IC-01	PO4-02	SOLID	N/A	8.818e+04	1237.000 ug/g	
7 SAMPLE	S97T001364 0 W @IC-01	SO4-02	SOLID	N/A	1.422e+03	1422.000 ug/g	
7 SAMPLE	S97T001364 0 W @IC-01	OXALATE2	SOLID	N/A	6.452e+03	1082.000 ug/g	
8 DUP	S97T001364 0 W @IC-01	F-02	SOLID	8.20e+03	8.99e+03	9.080 RPD	
8 DUP	S97T001364 0 W @IC-01	CL-02	SOLID	<1.75e2	<1.71e2	RPD	
8 DUP	S97T001364 0 W @IC-01	NO2-02	SOLID	<1.11e3	<1.09e3	RPD	
8 DUP	S97T001364 0 W @IC-01	BR-02	SOLID	<1.29e3	<1.26e3	RPD	
8 DUP	S97T001364 0 W @IC-01	NO3-02	SOLID	3.96e+05	3.77e+05	4.916 RPD	
8 DUP	S97T001364 0 W @IC-01	PO4-02	SOLID	8.82e+04	9.44e+04	6.791 RPD	
8 DUP	S97T001364 0 W @IC-01	SO4-02	SOLID	<1.42e3	<1.39e3	RPD	
8 DUP	S97T001364 0 W @IC-01	OXALATE2	SOLID	6.45e+03	6.59e+03	2.147 RPD	
9 SPK	S97T001364 0 W @IC-01	F-02	SOLID	5.90e01	6.37e+01	107.966 % Recovery	
9 SPK	S97T001364 0 W @IC-01	CL-02	SOLID	7.90e01	7.60e+01	96.203 % Recovery	
9 SPK	S97T001364 0 W @IC-01	NO2-02	SOLID	5.44e02	5.35e+02	98.346 % Recovery	
9 SPK	S97T001364 0 W @IC-01	BR-02	SOLID	5.89e02	5.73e+02	97.284 % Recovery	
9 SPK	S97T001364 0 W @IC-01	NO3-02	SOLID	5.94e02	7.52e+02	126.599 % Recovery	
9 SPK	S97T001364 0 W @IC-01	PO4-02	SOLID	5.45e02	6.28e+02	115.229 % Recovery	
9 SPK	S97T001364 0 W @IC-01	SO4-02	SOLID	6.32e02	6.10e+02	96.519 % Recovery	
9 SPK	S97T001364 0 W @IC-01	OXALATE2	SOLID	5.33e02	5.28e+02	99.062 % Recovery	

Final page for worklist# 19401

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

James M. Eury
Reviewer Signature _____ Date *8/25/97*

LABCORE Data Entry Template for Worklist# 19401

Analyst: KCH Instrument: IC0 1 Book# B3A620B
Method: LA-533-105 Rev/Mod D-1
Worklist Comment: BY-101 IC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 BLNK-PREP			@IC-01	SOLID		
4 SAMPLE	S97T001360 0 W		@IC-01	SOLID	97000396	BY-101
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
5 DUP	S97T001360 0 W		@IC-01	SOLID		
6 SPK	S97T001360 0 W		@IC-01	SOLID		
7 SAMPLE	S97T001364 0 W		@IC-01	SOLID	97000397	BY-101
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
8 DUP	S97T001364 0 W		@IC-01	SOLID		
9 SPK	S97T001364 0 W		@IC-01	SOLID		

Final page for worklist # 19401

Analyst Signature John W. Howell Date 8-22-97

Analyst Signature John W. Howell Date 8-22-97

Uploaded 8-22-97

John W. Howell

19401AUG.CSV

Validated 8/25/97 JMT/ey

Data Entry Comments:

Look at wet times

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

Sample Name: BLANK Date: 08/19/1997 10:56:07
 Data File : C:\DX\DATA\97081921.D01
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 1 Detector: CDM-1
 Analyst : *[Signature]* Column: AG4A/AS4A anion column

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 1 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.33		0.000	37	182	1	
2	1.57	chloride	-0.016	50	186	1	-2.88
3	3.37	nitrate	-0.019	53	358	1	-1.94
4	6.24	sulfate	-0.255	27	427	1	-2.50
Totals			-0.290	167	1152

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

Data Reprocessed On 08/22/1997 10:13:47

```

=====
Sample Name: 83N20-B STD                      Date: 08/19/1997 11:07:28
Data File  : F:\DATA\97081921.D02
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 2           Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 101 3000 5Hz 0.00 10.00 30

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.85		0.000	94	395	1	
2	1.01	fluoride	66.301	2743	13390	3	-4.13
3	1.31		0.000	25	127	4	
4	1.55	chloride	73.488	2302	10202	1	-4.12
5	1.88	nitrite	513.167	9270	46826	1	-4.08
6	2.87	bromide	560.168	5320	33340	1	-4.76
7	3.27	nitrate	554.374	5681	44188	1	-0.10
8	4.67	phosphate	538.953	1806	20057	1	-5.41
9	6.08	sulfate	588.153	3941	61656	1	-5.00
10	8.05	oxalate	505.732	2202	39691	1	-5.03
Totals			3400.337	33385	269872		

File: 97081921.D02 Sample: 83N20-B STD

```

=====
Sample Name: PREP-BLANK                      Date: 08/19/1997 11:18:39
Data File  : C:\DX\DATA\97081921.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      1    3000 5Hz    0.00 10.00      30
=====

```

```

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

```

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.56	chloride	-0.025	23	74	1	-3.70
2	1.87	nitrite	0.226	357	1688	1	-4.42
3	3.31	nitrate	0.006	84	552	1	-3.68
Totals			0.207	464	2314		

File: 97081921.D03 Sample: PREP-BLANK

Data Reprocessed On 08/22/1997 10:15:19

```

=====
Sample Name: S97T001360 SAM                      Date: 08/19/1997 13:58:17
Data File  : F:\DATA\97081921.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          51    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	0.84		0.000	114	473	2	
2	0.99	fluoride	20.921	1977	8257	2	-5.40
3	1.54	chloride	-1.152	28	104	1	-4.94
4	1.85	nitrite	3.568	53	232	1	-5.44
5	2.84	bromide	11.711	206	1153	1	0.00
6	3.11	nitrate	2081.564	36109	354281	1	-0.11
7	4.61	phosphate	226.790	1467	16637	1	-6.49
8	6.13	sulfate	-13.049	29	419	1	-4.17
9	8.00	oxalate	39.725	341	6258	1	-5.66
Totals			2370.078	40323	387814		

File: 97081921.D06 Sample: S97T001360 SAM

Data Reprocessed On 08/22/1997 10:17:33

```

=====
Sample Name: S97T001360 DUP                      Date: 08/19/1997 14:09:18
Data File  : F:\DATA\97081921.D07
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 7                Detector: CDM-1
Analyst    :                                     Column: AG4A/AS4A anion column
=====

```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
=====
External          1          51    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	0.84		0.000	102	412	2	
2	0.99	fluoride	30.645	2856	12232	2	-5.40
3	1.54	chloride	-0.465	65	283	1	-4.94
4	1.85	nitrite	3.773	61	269	1	-5.44
5	2.84	bromide	11.306	199	1106	1	0.00
6	3.13	nitrate	1635.185	29359	271996	1	-0.11
7	4.61	phosphate	322.547	2129	23890	1	-6.49
8	6.08	sulfate	-10.914	60	829	1	-5.00
9	8.00	oxalate	39.700	342	6254	1	-5.66
Totals			2031.778	35171	317273		

File: 97081921.D07 Sample: S97T001360 DUP

Data Reprocessed On 08/22/1997 10:19:18

```

=====
Sample Name: S97T001360 SPK                      Date: 08/19/1997 14:20:35
Data File  : F:\DATA\97081921.D08
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 8                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
=====
External           1           51    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	0.84		0.000	201	869	2	
2	0.99	fluoride	46.910	4546	18883	2	-5.40
3	1.53	chloride	35.743	2203	9838	1	-5.35
4	1.85	nitrite	252.720	8968	45661	1	-5.44
5	2.82	bromide	279.222	5860	32901	1	0.00
6	3.10	nitrate	2195.697	37743	376025	1	0.00
7	4.61	phosphate	479.223	3286	36031	1	-6.49
8	6.03	sulfate	290.303	4189	60300	1	-5.83
9	7.95	oxalate	287.639	2406	44791	1	-6.29
Totals			3867.457	69403	625298		

File: 97081921.D08 Sample: S97T001360 SPK

Data Reprocessed On 08/22/1997 10:20:46

```

=====
Sample Name: S97T001364 SAM                      Date: 08/19/1997 14:31:49
Data File  : F:\DATA\97081921.D09
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 9                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 51 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	0.84		0.000	128	506	2	
2	0.99	fluoride	40.567	3935	16289	2	-5.40
3	1.53	chloride	-0.568	59	256	1	-5.35
4	1.85	nitrite	5.034	104	500	1	-5.44
5	2.85	bromide	2.536	18	83	1	-0.12
6	3.11	nitrate	1960.634	34430	331567	1	0.11
7	4.61	phosphate	436.336	2917	32672	1	-6.49
8	6.08	sulfate	-10.173	66	972	1	-5.00
9	8.00	oxalate	31.926	273	5070	1	-5.66
Totals			2466.292	41930	387915		

File: 97081921.D09 Sample: S97T001364 SAM

Data Reprocessed On 08/22/1997 10:22:21

```

=====
Sample Name: S97T001364 DUP                      Date: 08/19/1997 14:42:49
Data File  : F:\DATA\97081921.D10
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 10              Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====

```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
=====
External          1          51    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	0.84		0.000	141	607	2	
2	0.99	fluoride	45.486	4374	18300	2	-5.40
3	1.53	chloride	-0.023	95	399	1	-5.35
4	1.85	nitrite	4.830	99	463	1	-5.44
5	2.83	bromide	2.527	18	82	1	0.12
6	3.11	nitrate	1910.476	33441	322241	1	-0.11
7	4.61	phosphate	477.828	3248	35921	1	-6.49
8	6.08	sulfate	-11.875	48	644	1	-5.00
9	8.00	oxalate	33.369	290	5289	1	-5.66
Totals			2462.618	41755	383946		

File: 97081921.D10 Sample: S97T001364 DUP

Data Reprocessed On 08/22/1997 10:23:44

Sample Name: S97T001364 SPK	Date: 08/19/1997 14:53:52
Data File : F:\DATA\97081921.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	51	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	0.84		0.000	247	1073	2	
2	0.99	fluoride	72.442	6919	29329	2	-5.40
3	1.53	chloride	37.975	2304	10434	1	-5.35
4	1.85	nitrite	267.422	9467	48334	1	-5.44
5	2.82	bromide	286.321	6053	33758	1	0.00
6	3.09	nitrate	2336.787	40103	403336	1	0.11
7	4.59	phosphate	750.141	5087	57910	1	-7.03
8	6.03	sulfate	305.224	4396	63328	1	-5.83
9	7.95	oxalate	296.035	2457	46123	1	-6.29
Totals			4352.346	77032	693625		

File: 97081921.D11 Sample: S97T001364 SPK

LABCORE Completed Worklist Report for Worklist# 19380

Analyst: smf

Instrument: IC02

Book# 83N204

Method: 14-533-05 Rev/Mod D-1

Worklist Comment: BY-101 IC. RCJ

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	③IC-QC F	QC	1	<1.20e-2		ug/mL
1 CCB	0	③IC-QC CL	QC	1	2.70e-02	0.027	ug/mL
1 CCB	0	③IC-QC NO2	QC	1	<1.08e-1		ug/mL
1 CCB	0	③IC-QC BR	QC	1	<1.25e-1		ug/mL
1 CCB	0	③IC-QC NO3	QC	1	1.53e-01	0.153	ug/mL
1 CCB	0	③IC-QC PO4	QC	1	<1.20e-1		ug/mL
1 CCB	0	③IC-QC SO4	QC	1	1.90e-01	0.190	ug/mL
1 CCB	0	③IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2 CCV	0	③IC-QC F	QC	5.900e01	5.43e+01	92.034 % Recovery	
2 CCV	0	③IC-QC CL	QC	7.900e01	7.51e+01	95.063 % Recovery	
2 CCV	0	③IC-QC NO2	QC	5.430e02	5.17e+02	95.212 % Recovery	
2 CCV	0	③IC-QC BR	QC	5.890e02	5.64e+02	95.756 % Recovery	
2 CCV	0	③IC-QC NO3	QC	5.940e02	5.73e+02	96.465 % Recovery	
2 CCV	0	③IC-QC PO4	QC	5.450e02	5.66e+02	103.853 % Recovery	
2 CCV	0	③IC-QC SO4	QC	6.320e02	6.38e+02	100.949 % Recovery	
2 CCV	0	③IC-QC OXALATE2	QC	5.390e02	4.94e+02	93.208 % Recovery	
3 SAMPLE	S97T001365 0	③IC-01 F-02	LIQUID	N/A	1.610e-01	1.20e-002	ug/mL
3 SAMPLE	S97T001365 0	③IC-01 CL-02	LIQUID	N/A	7.370e-01	1.70e-002	ug/mL
3 SAMPLE	S97T001365 0	③IC-01 NO2-02	LIQUID	N/A	8.729e+00	0.108	ug/mL
3 SAMPLE	S97T001365 0	③IC-01 BR-02	LIQUID	N/A	1.146e+00	0.125	ug/mL
3 SAMPLE	S97T001365 0	③IC-01 NO3-02	LIQUID	N/A	2.716e+01	0.139	ug/mL
3 SAMPLE	S97T001365 0	③IC-01 PO4-02	LIQUID	N/A	1.257e+00	0.120	ug/mL
3 SAMPLE	S97T001365 0	③IC-01 SO4-02	LIQUID	N/A	3.260e-01	0.138	ug/mL
3 SAMPLE	S97T001365 0	③IC-01 OXALATE2	LIQUID	N/A	< 1.050e-01	0.105	ug/mL
4 DUP	S97T001365 0	③IC-01 F-02	LIQUID	1.61e-01	1.61e-01	0.000	RPD
4 DUP	S97T001365 0	③IC-01 CL-02	LIQUID	7.37e-01	7.32e-01	0.681	RPD
4 DUP	S97T001365 0	③IC-01 NO2-02	LIQUID	8.73e+00	8.71e+00	0.229	RPD
4 DUP	S97T001365 0	③IC-01 BR-02	LIQUID	1.15e+00	1.14e+00	0.873	RPD
4 DUP	S97T001365 0	③IC-01 NO3-02	LIQUID	2.72e+01	2.69e+01	1.109	RPD
4 DUP	S97T001365 0	③IC-01 PO4-02	LIQUID	1.26e+00	1.22e+00	3.226	RPD
4 DUP	S97T001365 0	③IC-01 SO4-02	LIQUID	3.26e-01	3.33e-01	3.021	RPD
4 DUP	S97T001365 0	③IC-01 OXALATE2	LIQUID	<1.05e-1	<1.05e-1		RPD

Final page for worklist# 19380

Analyst Signature

Date

Analyst Signature

Date

James M. Lige 7/24/97

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

LABCORE Data Entry Template for Worklist# 19380

Analyst: SMF Instrument: IC0 7 Book# 83N20-A

Method: LA-533-105 Rev/Mod _____

Worklist Comment: BY-101 IC. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	CCB				@IC-QC	QC		
2	CCV				@IC-QC	QC		
3	SAMPLE	S97T001365 0			@IC-01	LIQUID	97000397	BY-101
		Analytes Requested:			BR-02	CL-02	F-02	NO2-02
					OXALATE2,	PO4-02	SO4-02	NO3-02
4	DUP	S97T001365 0			@IC-01	LIQUID		

Final page for worklist # 19380

Luis H. Dutton 7-20-97
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

19380 JLY. SH

19380 JLY. CSV

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

Sample Name: CCV STD 83N20-A

Date: 07/19/1997 23:34:03

Data File : C:\DX\DATA\97071921.D11

Method : C:\DX\METHOD\ANIONS.MET

ACI Address: 1 / System: 1 Inject#: 11

Detector: CDM-1

Analyst : *Lucie M. Sultana* Column: AG4A/AS4A anion column

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	3000	5Hz	0.00	10.00		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.89		0.000	61	237	1	
2	1.04	fluoride	54.297	1762	9863	1	2.97
3	1.39		0.000	78	355	1	
4	1.56	chloride	75.121	2416	10646	1	1.30
5	1.86	nitrite	516.882	9094	50105	1	-0.36
6	2.78	bromide	564.451	5294	35315	1	-0.36
7	3.15	nitrate	573.124	5939	46755	1	-0.74
8	4.48	phosphate	565.861	1529	22183	1	0.60
9	5.81	sulfate	638.498	4189	70255	1	1.81
10	7.63	oxalate	493.907	1856	41472	1	-4.07
Totals			3482.141	32218	287186		

File: 97071921.D11 Sample: CCV STD 83N20-A

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 95 TO 98.

```

=====
Sample Name: CCB ELUENT BLANK                      Date: 07/19/1997 23:23:10
Data File  : C:\DX\DATA\97071921.D10
Method     : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 1 Inject#: 10                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1           1 3000 5Hz 0.00 10.00          50
=====

```

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

Pk. Num.	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.87		0.000	18	106	1	
2	1.15		0.000	33	135	1	
3	1.39		0.000	123	738	1	
4	1.56	chloride	0.027	69	229	1	1.30
5	3.20	nitrate	0.153	57	404	1	0.95
6	5.87	sulfate	0.190	114	1916	1	2.74
Totals			0.370	413	3529		

File: 97071921.D10 Sample: CCB ELUENT BLANK

Sample Name: S97T001365 Date: 07/20/1997 01:57:24
 Data File : C:\DX\DATA\97071921.D13
 Method : C:\DX\METHOD\ANIONS.MET
 ACI Address: 1 System: 1 Inject#: 13 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		50

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.10		0.000	56	127	1	
2	1.06	fluoride	0.161	603	2758	2	4.95
3	1.24		0.000	126	893	2	
4	1.56	chloride	0.737	2219	10540	1	1.30
5	1.87	nitrite	8.729	15715	86599	1	0.36
6	2.80	bromide	1.146	1059	6516	1	0.36
7	3.09	nitrate	27.163	28756	244929	1	-2.63
8	4.51	phosphate	1.257	322	4682	1	1.20
9	5.87	sulfate	0.326	197	3405	1	2.74
10	7.68	oxalate	0.058	74	1378	1	-3.40
Totals			39.576	49127	361828		

File: 97071921.D13 Sample: S97T001365

```

=====
Sample Name: S97T001365 DUP                      Date: 07/20/1997 02:10:50
Data File  : C:\DX\DATA\97071921.D14
Method     : C:\DX\METHOD\ANIONS.MET
ACI Address: 1 System: 1 Inject#: 14              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          50
=====

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.11		0.000	85	203	1	
2	1.05	fluoride	0.161	605	2769	2	4.29
3	1.24		0.000	131	928	2	
4	1.56	chloride	0.732	2238	10471	1	1.30
5	1.87	nitrite	8.705	15755	86352	1	0.00
6	2.79	bromide	1.143	1075	6500	1	0.12
7	3.07	nitrate	26.852	28735	241822	1	-3.05
8	4.51	phosphate	1.215	325	4516	1	1.20
9	5.87	sulfate	0.336	206	3514	1	2.74
10	7.68	oxalate	0.058	72	1375	1	-3.40
Totals			39.202	49227	358450		

File: 97071921.D14 Sample: S97T001365 DUP

LABCORE Data Entry Template for Worklist# 18729

Analyst: B. G. Glick Instrument: ICP⁰²01 Book# 62668A

Method: LA-505-151/161 Rev/Mod C-1
6-18-97

Worklist Comment: ICP BY-101 (DIRECT)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	LLS		@ICP-QC	QC		
4	ICSA		@ICP-QC	QC		
5	ICSAB		@ICP-QC	QC		
6	SAMPLE	S97T001241 0 D	@ICP-D01	LIQUID	97000397	BY-101
Analytes Requested: AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01						
7	DUP	S97T001241 0 D	@ICP-D01	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 # 18729

B. G. Glick
Analyst Signature

6-18-97
Date

Revised & Validated by:
Sal R. Pang
Analyst Signature 6/19/97
Date

Data Entry Comments:

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

HNF-SD-WM-DP-258, REV. 0

Analysis Report

Summary

Wed 06-18-97 01:13:51 PM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	970618B	ICP2	06/18/97	10:16	BJG	Q	CONC
2	ICB	970618B	ICP2	06/18/97	10:19	BJG	Q	CONC
3	ILS	970618B	ICP2	06/18/97	10:22	BJG	Q	CONC
4	ICSA	970618B	ICP2	06/18/97	10:25	BJG	Q	CONC
5	IC SAB	970618B	ICP2	06/18/97	10:29	BJG	Q	CONC
6	S97T001241	970618B	ICP2	06/18/97	10:33	BJG	S	CONC
7	S97T001241 D	970618B	ICP2	06/18/97	10:36	BJG	S	CONC
8	S97T001368	970618B	ICP2	06/18/97	10:39	BJG	S	CONC
9	S97T001368 D	970618B	ICP2	06/18/97	10:43	BJG	S	CONC
10	CCV	970618B	ICP2	06/18/97	10:47	BJG	Q	CONC
11	CCB	970618B	ICP2	06/18/97	10:50	BJG	Q	CONC
12	PREPSTD TJ A	970618B	ICP2	06/18/97	10:55	BJG	Q	CONC
13	PREPBLKTJ A	970618B	ICP2	06/18/97	10:59	BJG	Q	CONC
14	S97T001370 L	970618B	ICP2	06/18/97	11:06	BJG	S	CONC
15	S97T001370	970618B	ICP2	06/18/97	11:09	BJG	S	CONC
16	S97T001370 S	970618B	ICP2	06/18/97	11:12	BJG	S	CONC
17	S97T001370 D	970618B	ICP2	06/18/97	11:15	BJG	S	CONC
18	S97T001370 X	970618B	ICP2	06/18/97	11:19	BJG	S	CONC
19	S97T001370 AX	970618B	ICP2	06/18/97	11:22	BJG	S	CONC
20	ICSA	970618B	ICP2	06/18/97	11:25	BJG	Q	CONC
21	IC SAB	970618B	ICP2	06/18/97	11:28	BJG	Q	CONC
22	CCV	970618B	ICP2	06/18/97	11:31	BJG	Q	CONC
23	CCB	970618B	ICP2	06/18/97	11:36	BJG	Q	CONC

[Signature]
6-18-97

S97T001241 64-101

S97T001368 64-109

S97T001370 S-106 Acid Wash

FILE # 0970618B.TXT

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

HNF-SD-WM-DP-258, REV. 0

Analysis Report

Averages

Wed 06-18-97 01:13:51 PM

page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.900	4.892	5.207	5.061	4.969	5.120
2	ICB	-.0007	-.0026	-.0100	.0035	.0001	.0001
3	LLS	.0207	.1066	.2052	.1047	.1017	.0110
4	IGSA	.0003	245.9	-.0250	-.0071	.0001	.0005
5	IGSAB	.9654	244.1	-.0504	-.0080	.4701	.4875
6	S97T001241	-.0358	-.0452	-.1148	.0600	.0628	.0043
7	S97T001241_D	-.0163	.0847	.0163	-.0098	.0628	.0043
8	S97T001368	-.0549	-.0953	-.0772	-.0496	.0580	.0052
9	S97T001368_D	-.0547	-.3220	-.1846	.0302	.0581	-.0009
10	CCV	4.860	4.824	5.115	4.976	4.835	5.059
11	CCB	-.0016	-.0045	.0062	.0005	.0001	.0004
12	PREPSTDJTJA	.9740	4.810	5.047	4.978	4.730	5.088
13	PREPBLKTJA	-.0007	Q.0606	-.0101	Q.1709	.0011	.0002
14	S97T001370_L	.0613	58.80	-.0322	.7370	.0315	.0017
15	S97T001370	.0731	57.90	.0327	.6646	.0315	.0029
16	S97T001370_S	.0727	55.75	-.0214	.5096	.0288	.0011
17	S97T001370_D	.0724	56.67	.0015	.3067	.0302	.0020
18	S97T001370_X	.0158	58.58	-.3443	.6747	.0316	.0110
19	S97T001370_AX	.191.0	300.0	250.7	247.1	246.7	248.0
20	IGSA	.1067	240.5	-.0498	-.0046	.0003	.0006
21	IGSAB	1.004	240.2	-.0127	-.0036	.4656	.4776
22	CCV	4.830	4.833	5.141	4.999	4.885	5.057
23	CCB	Q.0289	-.0137	-.0076	-.0005	.0001	-.0000

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.072	4.917	4.993	4.937	5.071	4.960
2	ICB	.0048	.0001	.0000	.0011	.0000	.0000
3	LLS	.1943	.2137	.0097	.2063	.0399	.0203
4	IGSA	-.0167	249.8	.0009	-.0030	.0004	-.0035
5	IGSAB	-.0261	253.7	.9401	.0071	.4718	.4716
6	S97T001241	-.0725	.4011	-.0081	-.0603	-.0156	-.0086
7	S97T001241_D	-.1889	.4264	.0028	.1017	-.0234	-.0141
8	S97T001368	-.3630	.0137	.0119	-.1667	.0163	.0189
9	S97T001368_D	-.4296	.0387	-.0098	-.0584	-.0019	-.0110
10	CCV	4.992	5.003	4.960	4.807	5.054	4.949
11	CCB	.0076	-.0050	.0015	-.0077	-.0009	-.0003
12	PREPSTDJTJA	4.837	4.864	4.760	4.867	4.927	4.801
13	PREPBLKTJA	-.0358	.0502	.0004	-.0017	.0005	.0018
14	S97T001370_L	.8627	.9022	.0885	-.0109	.0084	29.66
15	S97T001370	.9047	1.011	.0899	.0277	.0103	28.90
16	S97T001370_S	.8860	1.056	.0762	.0202	.0146	27.92
17	S97T001370_D	.8869	1.152	.0808	.0210	.0103	28.27
18	S97T001370_X	.3545	.6903	.0795	-.0570	.0201	29.51
19	S97T001370_AX	251.6	252.4	245.6	246.3	245.0	275.2
20	IGSA	-.0282	249.3	.0028	.0065	.0008	-.0028
21	IGSAB	-.0344	248.4	.9215	.0044	.4599	.4612
22	CCV	4.979	4.930	4.907	4.810	5.011	4.891
23	CCB	.0219	-.0007	-.0010	.0008	-.0004	.0004

HNF-SD-WM-DP-258, REV. 0

Analysis Report

Averages

Wed 06-18-97 01:13:51 PM

page 3

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	4.908	.0037	4.681	5.068	5.027	4.948
2	ICB	.0002	.0007	-.0011	-.0579	-.0001	.0005
3	LLS	.0179	-.0002	.0935	Q.3556	.1045	.0210
4	ICSA	-.0096	-.0026	93.61	-.0706	-.0048	.0022
5	ICSAB	.4409	-.0085	93.50	-.0127	-.0041	1.024
6	S97T001241	.0177	.0068	1257	-3.360	-.0166	2185
7	S97T001241_D	.0224	-.0016	.0660	-.2473	-.0062	2169
8	S97T001368	.0098	.0211	-.0163	-2.020	-.0315	2083
9	S97T001368_D	-.0056	.0241	-.0291	-6.631	-.0103	2067
10	CCV	4.793	.0041	4.660	4.700	4.890	4.831
11	CCB	-.0006	.0008	-.0021	-.2613	-.0019	.0013
12	PREPSTD TJJA	4.357	.0034	4.676	4.906	4.884	4.928
13	PREPBLKTJJA	.0093	-.0002	.0274	-.1714	.0003	.0003
14	S97T001370_L	-.0578	.0085	4.643	1.332	.0900	.5219
15	S97T001370	-.0549	.0035	4.525	2.104	.0953	.5231
16	S97T001370_S	-.0480	.0044	2.913	1.883	.0937	.4946
17	S97T001370_D	-.0487	.0029	3.270	2.002	.0913	.5115
18	S97T001370_X	-.0637	.0098	4.580	-2.760	.0794	.5393
19	S97T001370_AX	223.4	.1864	235.5	244.5	245.2	247.7
20	ICSA	-.0094	-.0101	92.07	.0010	-.0051	.0035
21	ICSAB	.4366	-.0043	91.74	.0919	-.0051	1.028
22	CCV	4.839	.0037	4.620	4.796	4.896	4.937
23	CCB	-.0002	.0009	-.0019	-.1329	-.0009	.0016

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.038	4.880	5.064	5.138	5.029	4.978
2	ICB	.0034	.0004	.0033	-.0101	.0017	-.0076
3	LLS	.2058	.0197	.1035	.1957	.2020	.0370
4	ICSA	255.7	-.0063	-.0061	199.9	.0019	-.0133
5	ICSAB	254.1	.4466	-.0103	194.0	-.0020	.9269
6	S97T001241	.0717	.0078	.0486	5.328	-.0386	.1037
7	S97T001241_D	.1345	.0058	.0412	5.312	-.0176	.0242
8	S97T001368	-.1248	.0094	.1009	4.620	.0080	-.1126
9	S97T001368_D	-.1490	.0074	.0566	4.411	-.0208	-.0381
10	CCV	4.949	4.853	5.031	4.998	4.873	4.925
11	CCB	-.0111	.0007	.0045	-.0217	-.0015	-.0065
12	PREPSTD TJJA	4.832	4.688	4.800	4.970	4.790	4.898
13	PREPBLKTJJA	-.0008	.0006	.0022	Q.2462	-.0010	-.0047
14	S97T001370_L	.0104	1.011	.0749	1057	.0558	.2395
15	S97T001370	.1016	.9912	.0818	1034	.0525	.2864
16	S97T001370_S	.1089	.9234	.0753	1038	.0578	.2564
17	S97T001370_D	.1293	.9471	.0864	1035	.0510	.2554
18	S97T001370_X	-.0963	1.019	.0612	1046	.0114	.0921
19	S97T001370_AX	258.1	247.3	245.1	1294	238.2	245.4
20	ICSA	251.7	-.0053	-.0046	193.3	-.0006	-.0004
21	ICSAB	250.9	.4389	-.0129	192.0	-.0019	.8916
22	CCV	4.961	4.817	4.989	5.049	4.881	4.890
23	CCB	-.0080	.0003	-.0017	-.0181	.0026	-.0077

HNF-SD-WM-DP-258, REV. 0

Analysis Report

Averages

Wed 06-18-97 01:13:51 PM

page 4

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.109	4.921	4.989	4.812	4.733	4.813
2	ICB	.0023	.0142	.0001	.0028	.0069	.0046
3	LLS	.4090	.2199	.2040	.0944	.1891	.1893
4	ICSA	.0125	.0390	-.0494	.0038	.0312	-.0012
5	ICSAB	.0060	1.021	-.0294	-.0004	.0110	.0053
6	S97T001241	.1775	.3527	1.520	-.0057	.5747	2.108
7	S97T001241_D	.1517	.1893	1.617	-.0060	.5739	2.080
8	S97T001368	.1560	.4595	1.347	.0130	1.230	1.323
9	S97T001368_D	-.0507	-.0242	1.406	-.0243	.9671	1.299
10	CCV	5.028	4.925	4.935	4.760	4.673	4.783
11	CCB	.0048	.0058	-.0093	-.0029	.0336	.0080
12	PREPSTD TJJA	4.829	4.746	4.914	4.792	4.539	6.694
13	PREPBLKTJJA	.0118	.0312	Q.1037	.0006	.0363	Q.2065
14	S97T001370_L	110.6	.1837	27.24	.0113	.3034	.7748
15	S97T001370-	109.2	.2368	27.02	.0096	.0529	.7468
16	S97T001370_S	103.1	.2146	27.80	-.0158	.0415	.1722
17	S97T001370-D	104.2	.2056	22.47	-.0103	.0580	1.955
18	S97T001370-X	109.1	.6606	26.30	-.1035	.7612	.8341
19	S97T001370-AX	354.1	249.3	269.8	248.6	240.2	246.8
20	ICSA	.0337	.0233	-.0572	.0148	.0387	.0175
21	ICSAB	.0185	.9699	-.0413	.0129	.0384	.0082
22	CCV	4.972	4.873	4.922	4.763	4.696	4.757
23	CCB	-.0066	.0000	.0055	-.0128	.0176	.0061

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.928	4.977	.1198	4.958	4.766	9.702
2	ICB	.0068	.0002	-.0016	.0002	.0171	.0158
3	LLS	.2014	.0208	.0037	.0209	.4495	.4747
4	ICSA	-.0088	.0021	-.0125	.0001	.0447	.0548
5	ICSAB	.0036	.0020	-.0148	.0009	.0661	.0615
6	S97T001241	-.0013	.0082	-.1285	.0039	.2823	.6290
7	S97T001241_D	.0431	.0082	-.0068	.0044	.6403	.6436
8	S97T001368	.2574	.0109	-.1330	-.0056	.9068	1.605
9	S97T001368_D	.3251	.0108	-.2293	-.0154	.6482	1.796
10	CCV	4.803	4.853	.1249	4.882	4.728	9.461
11	CCB	.0100	.0004	-.0068	-.0000	.0233	.0307
12	PREPSTD TJJA	4.722	4.739	.1172	4.436	4.500	9.266
13	PREPBLKTJJA	-.0008	.0005	.0002	.0002	.0257	-.0101
14	S97T001370_L	.0567	.0308	.0238	.0168	.1286	1.796
15	S97T001370-	.0355	.0287	.0565	.0123	.0768	1.651
16	S97T001370_S	.0406	.0278	.0486	.0129	.0690	1.631
17	S97T001370-D	.0286	.0270	.0537	.0117	.0993	1.642
18	S97T001370-X	.1625	.0319	-.0462	.0049	.5088	1.994
19	S97T001370-AX	238.6	244.4	6.263	245.4	240.3	466.8
20	ICSA	.0016	.0021	-.0063	.0004	.0998	.0790
21	ICSAB	-.0039	.0019	-.0078	.0006	.0638	.0502
22	CCV	4.826	4.858	.1299	4.869	4.635	9.499
23	CCB	.0137	.0003	-.0012	.0000	.0170	.0340

HNF-SD-WM-DP-258, REV. 0

Analysis Report

Averages

Wed 06-18-97 01:13:51 PM

page 5

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.054	.0065	4.859	4.968
2	ICB	.0011	.0001	.0011	.0004
3	LLS	.1010	.0000	.0197	.0193
4	ICSA	-.0014	.0069	.0053	-.0028
5	ICSAB	.4675	.0075	.9410	-.0011
6	S97T001241	.0173	-.0003	-1.415	.0159
7	S97T001241_D	-.0012	.0013	-1.375	.0068
8	S97T001368	.0630	.0103	-1.330	.0487
9	S97T001368_D	.0702	.0149	-1.354	.0557
10	CCV	5.009	.0069	4.865	4.869
11	CCB	.0023	.0005	.0015	.0015
12	PREPSTDTJA	4.749	.0064	4.481	4.837
13	PREPBLKTJA	.0004	-.0002	.0065	.0000
14	S97T001370_L	.1665	.0149	.1692	.0594
15	S97T001370	.1571	.0124	.1825	.0538
16	S97T001370_S	.1502	.0128	.1675	.0511
17	S97T001370_D	.1465	.0116	.1720	.0591
18	S97T001370_X	.1824	.0187	.1824	.0602
19	S97T001370_AX	243.8	.3324	232.6	242.3
20	ICSA	.0010	.0073	.0071	-.0015
21	ICSAB	.4585	.0070	.9203	-.0025
22	CCV	4.978	.0064	4.805	4.847
23	CCB	.0023	.0005	-.0005	.0011

LABCORE Data Entry Template for Worklist# 19395

Analyst: JKS Instrument: ICP012 7-18-97 Book# 67848BMethod: LA-505-151/161 Rev/Mod C-1Worklist Comment: 7-18-97 ICP BY-101 (DIRECT)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	LLS		@ICP-QC	QC		
4	ICSA		@ICP-QC	QC		
5	ICSAB		@ICP-QC	QC		
6	SAMPLE	S97T001365 0 D	@ICP-D01	LIQUID	97000397	BY-101
	Analytes Requested: AG-D-01 , AL-D-01 , AS-D-01 , B-D-01 , BA-D-01 , BE-D-01 , BI-D-01 , CA-D-01 , CD-D-01 , CE-D-01 , CO-D-01 , CR-D-01 , CU-D-01 , FE-D-01 , K-D-01 , LA-D-01 , LI-D-01 , MG-D-01 , MN-D-01 , MO-D-01 , NA-D-01 , ND-D-01 , NI-D-01 , P-D-01 , PB-D-01 , S-D-01 , SB-D-01 , SE-D-01 , SI-D-01 , SM-D-01 , SR-D-01 , TI-D-01 , TL-D-01 , U-D-01 , V-D-01 , ZN-D-01 , ZR-D-01					
7	DUP	S97T001365 0 D	@ICP-D01	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 # 19395

Analyst Signature JKS Date 07-18-97S97T001365 , 44, JF2
S97T001365 , 44, 2Reviewed + Validated by:
Analyst Signature Sa M. Parag Date 7/18/97

Data Entry Comments:

HNF-SD-WM-DP-258, REV. 0

Analysis Report

Summary

Fri 07-18-97 12:40:22 PM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	970718A	ICP2	07/18/97	11:58	DKS	Q	CONC
2	ICB	970718A	ICP2	07/18/97	12:02	DKS	Q	CONC
3	LLS	970718A	ICP2	07/18/97	12:05	DKS	Q	CONC
4	ICSA	970718A	ICP2	07/18/97	12:08	DKS	Q	CONC
5	ICSAB	970718A	ICP2	07/18/97	12:11	DKS	Q	CONC
6	S97T001365	970718A	ICP2	07/18/97	12:16	DKS	S	CONC
7	S97T001365_D	970718A	ICP2	07/18/97	12:19	DKS	S	CONC
8	ICSA	970718A	ICP2	07/18/97	12:23	DKS	Q	CONC
9	ICSAB	970718A	ICP2	07/18/97	12:26	DKS	Q	CONC
10	CCV	970718A	ICP2	07/18/97	12:32	DKS	Q	CONC
11	CCB	970718A	ICP2	07/18/97	12:37	DKS	Q	CONC

DK *[Signature]*

07-18-97

BY-101

5977001365

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 107 TO 109.

HNF-SD-WM-DP-258, REV. 0

Analysis Report

Averages

Fri 07-18-97 12:40:22 PM

page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	5.113	5.046	5.327	5.166	5.193	5.351
2	ICB	-.0004	.0023	.0100	.0015	-.0001	.0001
3	LLS	.0225	.1031	.2013	.1031	.1032	.0107
4	ICSA	.0023	245.7	-.0360	-.0097	.0001	.0002
5	ICSAB	.9651	245.2	-.0633	-.0074	.4811	.4928
6	S97T001365	.0029	4.126	-.0738	1.259	.0005	-.0002
7	S97T001365_D	.0034	4.148	-.0814	1.231	.0004	.0002
8	ICSA	.0047	244.6	-.0616	-.0087	.0003	.0002
9	ICSAB	.9674	245.6	-.0435	-.0037	.4820	.4934
10	CCV	5.143	5.107	5.362	5.242	5.284	5.397
11	CCB	-.0000	.0061	-.0059	.0010	.0001	.0001

#	Sample Name	Bi	Ca	Cd	Ge	Co	Cr
1	ICV	5.264	5.229	5.140	5.166	5.107	5.192
2	ICB	-.0057	.0023	.0004	.0045	.0009	-.0005
3	LLS	.1887	.2187	.0101	.2173	.0418	.0209
4	ICSA	-.0348	249.6	.0011	.0142	-.0018	-.0029
5	ICSAB	-.0153	253.0	.9389	.0228	.4718	.4710
6	S97T001365	-.0535	.1533	-.0025	.0258	.0005	.0314
7	S97T001365_D	-.0232	.1467	.0007	.0250	.0018	.0327
8	ICSA	-.0349	251.0	.0027	.0296	.0000	-.0012
9	ICSAB	-.0458	254.1	.9397	.0180	.4719	.4724
10	CCV	5.255	5.271	5.165	5.244	5.122	5.214
11	CCB	.0064	.0020	-.0004	.0097	.0021	.0018

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.007	.0023	4.854	5.006	5.253	5.247
2	ICB	-.0005	-.0000	-.0007	-.0654	-.0002	.0001
3	LLS	.0171	-.0009	.0937	.4253	.1065	.0212
4	ICSA	-.0101	-.0094	93.27	.1438	-.0040	.0024
5	ICSAB	.4483	-.0136	93.64	.1224	-.0024	1.023
6	S97T001365	.0050	.0007	.0946	1.342	.0034	.1160
7	S97T001365_D	.0058	-.0005	.0913	1.191	.0031	.1153
8	ICSA	-.0094	.0127	93.23	.2795	-.0017	.0025
9	ICSAB	.4501	-.0135	93.84	.0020	-.0026	1.025
10	CCV	5.097	.0019	4.882	5.031	5.338	5.371
11	CCB	-.0004	-.0010	.0021	-.0090	.0006	-.0005

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.289	5.044	5.132	5.043	5.256	5.139
2	ICB	-.0004	-.0001	-.0011	.0046	.0002	-.0043
3	LLS	.2154	.0190	.0982	.1546	.2061	.0367
4	ICSA	255.5	-.0070	-.0122	204.1	.0015	-.0084
5	ICSAB	255.3	.4461	-.0066	200.8	.0015	.9336
6	S97T001365	.0528	.0168	.0038	31.82	.0051	.0080
7	S97T001365_D	.0463	.0165	.0030	32.01	.0051	.0030
8	ICSA	254.5	-.0065	-.0124	202.7	.0032	-.0105

HNF-SD-WM-DP-258, REV. 0

Analysis Report

Averages

Fri 07-18-97 12:40:22 PM

page 3

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
9	ICSA	255.5	.4463	-.0122	201.3	.0023	.9021
10	CCV	5.373	5.076	5.161	5.175	5.343	5.150
11	CCB	.0047	-.0004	-.0023	.0137	.0013	-.0002

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.184	5.201	5.059	4.887	5.024	4.942
2	ICB	-.0237	.0117	-.0047	.0039	.0210	.0049
3	LLS	.3967	.2063	.1883	.1154	.2148	Q.1229
4	ICSA	-.0096	.0049	-.0311	.0076	.0208	-.0006
5	ICSA	.0077	1.007	-.0412	.0084	.0370	-.0016
6	S97T001365	.4365	-.0263	1.091	-.0178	.0661	2.150
7	S97T001365_D	.4161	-.0169	1.083	.0147	.0653	2.135
8	ICSA	.0168	.0213	-.0225	.0033	.0215	.0067
9	ICSA	.0130	.9944	-.0340	-.0009	.0229	-.0012
10	CCV	5.188	5.197	5.044	4.918	5.046	4.959
11	CCB	-.0050	.0009	-.0057	.0039	.0273	.0001

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	5.105	5.139	.0913	5.033	5.019	9.934
2	ICB	-.0020	.0000	.0003	-.0005	.0095	-.0049
3	LLS	.1982	.0208	.0110	.0211	.4026	.4685
4	ICSA	-.0120	.0021	-.0073	.0006	.0381	.0999
5	ICSA	-.0073	.0021	-.0019	.0004	.0447	.1067
6	S97T001365	.0123	.0008	.0025	.0000	-.0307	.0355
7	S97T001365_D	-.0099	.0007	.0139	.0005	.0249	-.0145
8	ICSA	-.0090	.0021	-.0050	.0011	.0155	.0913
9	ICSA	-.0076	.0021	-.0029	.0009	.0563	.0964
10	CCV	5.177	5.217	.1011	5.076	5.040	10.08
11	CCB	-.0092	-.0001	.0071	.0000	-.0052	-.0293

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.045	.0071	4.870	5.045
2	ICB	-.0004	-.0001	.0008	-.0007
3	LLS	.0998	-.0001	.0190	.0173
4	ICSA	-.0028	.0065	.0053	-.0044
5	ICSA	.4684	.0068	.9345	-.0040
6	S97T001365	.0021	.0003	.0253	.0004
7	S97T001365_D	-.0012	-.0003	.0288	-.0024
8	ICSA	-.0022	.0066	.0056	-.0043
9	ICSA	.4689	.0069	.9328	-.0036
10	CCV	5.086	.0069	4.878	5.097
11	CCB	-.0022	-.0004	.0006	-.0022

JKD
07-18-97

LABCORE Data Entry Template for Worklist# 19462

Analyst: DKS Instrument: ICP01 Book# 67848BMethod: LA-505-151/46+ Rev/Mod E-1Worklist Comment: ⁷⁻¹³⁻⁹⁷ ICP BY-101 (FUSION)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	LLS		@ICP-QC	QC		
4	ICSA		@ICP-QC	QC		
5	ICSAB		@ICP-QC	QC		
6	PREPBLKARL		@ICP-F01	SOLID		
7	SERDIL	S97T001358	0 F	@ICP-F01	SOLID	
8	SAMPLE	S97T001358	0 F	@ICP-F01	SOLID	97000396 BY-101
	Analytes Requested: AG-F-01 , AL-F-01 , AS-F-01 , B-F-01 , BA-F-01 , BE-F-01 , BI-F-01 , CA-F-01 , CD-F-01 , CE-F-01 , CO-F-01 , CR-F-01 , CU-F-01 , FE-F-01 , LA-F-01 , LI-F-01 , MG-F-01 , MN-F-01 , MO-F-01 , NA-F-01 , ND-F-01 , P-F-01 , PB-F-01 , S-F-01 , SB-F-01 , SE-F-01 , SI-F-01 , SM-F-01 , SR-F-01 , TI-F-01 , TL-F-01 , U-F-01 , V-F-01 , ZN-F-01 , ZR-F-01					
9	DUP	S97T001358	0 F	@ICP-F01	SOLID	
10	SPK	S97T001358	0 F	@ICP-F01	SOLID	
11	CCV ^{Sample 1} _{Spoke of (10 ppm)}	⁷⁻¹³⁻⁹⁷		@ICP-QC	QC	
12	CCB			@ICP-QC	QC	
13	SERDIL	S97T001363	0 F	@ICP-F01	SOLID	
14	SAMPLE	S97T001363	0 F	@ICP-F01	SOLID	97000397 BY-101
	Analytes Requested: AG-F-01 , AL-F-01 , AS-F-01 , B-F-01 , BA-F-01 , BE-F-01 , BI-F-01 , CA-F-01 , CD-F-01 , CE-F-01 , CO-F-01 , CR-F-01 , CU-F-01 , FE-F-01 , LA-F-01 , LI-F-01 , MG-F-01 , MN-F-01 , MO-F-01 , NA-F-01 , ND-F-01 , P-F-01 , PB-F-01 ,					

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 19462

S Type	Sample#	R A	Test	Matrix	Group#	Project
			S-F-01 ,	SB-F-01 ,	SE-F-01 ,	SI-F-01 , SM-F-01 , SR-F-01 ,
			TI-F-01 ,	TL-F-01 ,	U-F-01 ,	V-F-01 , ZN-F-01 , ZR-F-01
15 DUP	S97T001363	0 F	@ICP-F01	SOLID		
16 SPK	S97T001363	0 F	@ICP-F01	SOLID		
17 ICSA			@ICP-QC	QC		
18 ICSAB			@ICP-QC	QC		
19 CCV			@ICP-QC	QC		
20 CCB			@ICP-QC	QC		

Final page for worklist # 19462

DK Lido 07-23-97

Analyst Signature	Date
Prep BLK RL	.25-10 , DF 1
S97T001358_L	.25-10-28 205
S97T001358	.25-10 41
S97T001358_D	.25-10 41
S97T001358_Q	.25-10 41 , .25 mL sample + 2.05 mL SST5 + 7.95 mL H403
S97T001358_Y	.25-10-19 410
S97T001358-QY	.25-10-19 410 1 mL sample + 1 mL each KWHC 28 + 35 + 7 mL H403
S97T001363_L	.25-10-28 , DF 205
S97T001363	.25-10 41
S97T001363_D	.25-10 41
S97T001363_Q	.25-10 41 , .25 mL sample + 2.05 mL SST5 + 7.95 mL H403
S97T001363_Y	.25-10-19 410
S97T001363-QY	.25-10-19 410 1 mL sample + 1 mL each KWHC 28 + 35 + 7 mL H403

Revised + Validated by:
Saul N. Pang 7/23/97
Analyst Signature Date

Data Entry Comments:

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

File # 970723B.DGT

HNF-SD-WM-DP-258, REV. 0

Identity 1: ICV Identity 2: Quality Control 10:21 AM July 23, 1997
 Task name: OPTIMA
 Sample Weight: 1.0000 Solution Volume: 1.00
 On-Peak Integrations: 3 Off-Peak Integrations: 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	4.902	5.051	5.131	4.825	5.041	4.985	5.190	5.202
S.D.	0.002	0.003	0.029	0.003	0.011	0.005	0.011	0.028
% R.S.D.	0.045	0.051	0.562	0.059	0.214	0.106	0.218	0.535

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.063	5.036	5.067	4.960	4.894	5.015	5.183	9.329
S.D.	0.004	0.009	0.019	0.027	0.007	0.015	0.037	0.004
% R.S.D.	0.070	0.187	0.372	0.537	0.148	0.292	0.722	0.046

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.009	5.153	5.105	4.956	4.834	4.873	5.190	5.031
S.D.	0.008	0.003	0.005	0.010	0.016	0.008	0.009	0.030
% R.S.D.	0.161	0.061	0.091	0.198	0.321	0.172	0.165	0.588

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	5.011	5.233	5.072	4.872	5.051	4.994	4.944	5.028
S.D.	0.004	0.003	0.010	0.002	0.010	0.017	0.056	0.006
% R.S.D.	0.070	0.060	0.190	0.032	0.198	0.331	1.128	0.118

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	4.710	4.959	5.190	5.115
S.D.	0.086	0.002	0.007	0.012
% R.S.D.	1.829	0.039	0.135	0.239

JK

07-23-97

BY-101

5977001358

5977001363

Post by h:

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 112 TO 135.

5977001358

$$Na = \frac{\left(\frac{4499.201}{410}\right) - \left(\frac{1463.8}{410}\right)}{10} \times 100 = 98.4\%$$

5977001363

$$Na = \frac{\left(\frac{4330.879}{410}\right) - \left(\frac{553.534}{410}\right)}{10} \times 100 = 92.1\%$$

HNF-SD-WM-DP-258, REV. 0

Identity 1: ICB Identity 2: Quality Control 10:25 AM July 23, 1997
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 1.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.000	-0.001	-0.014	0.002	-0.021	0.000	-0.001	-0.001
S.D.	0.002	0.000	0.010	0.005	0.014	0.002	0.001	0.000
% R.S.D.	488.003	27.152	67.265	332.871	65.173	21646.796	82.879	32.922
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.000	0.004	0.003	-0.004	0.001	-0.003	-0.029	0.038
S.D.	0.000	0.001	0.001	0.004	0.000	0.002	0.002	0.066
% R.S.D.	5.699	37.774	29.661	100.085	5.774	75.369	7.351	174.935
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.052	0.022	-0.001	0.008	-0.004	0.001	-0.003	-0.014
S.D.	0.017	0.017	0.000	0.004	0.003	0.000	0.002	0.008
% R.S.D.	32.634	73.679	38.442	50.227	72.768	29.995	74.268	58.536
	Mo	Ag	Pb	Ti	Cd	B	K	Mn
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.001	-0.004	0.007	-0.001	0.001	-0.004	-0.185	0.000
S.D.	0.001	0.002	0.008	0.001	0.001	0.001	0.031	0.000
% R.S.D.	150.111	44.164	105.822	160.613	294.982	13.524	16.859	176.432
	Sb	V	Be	Tl				
	(ppm)	(ppm)	(ppm)	(ppm)				
Mean	0.024	-0.006	-0.001	-0.099				
S.D.	0.015	0.001	0.000	0.042				
% R.S.D.	61.447	18.653	14.755	42.286				

2

HNF-SD-WM-DP-258, REV. 0

Identity 1: LLS

Identity 2: Quality Control

10:27 AM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.022	0.021	0.179	0.115	0.103	0.041	0.022	0.022
S.D.	0.003	0.000	0.007	0.004	0.008	0.003	0.001	0.000
% R.S.D.	11.269	1.792	3.993	3.304	7.860	8.561	3.087	2.182

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.021	0.043	0.103	0.097	0.201	0.018	0.189	0.451
S.D.	0.000	0.000	0.002	0.004	0.001	0.003	0.011	0.055
% R.S.D.	2.129	0.482	2.046	3.695	0.581	14.601	5.789	12.294

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.180	0.243	0.105	0.422	0.210	0.198	0.219	0.205
S.D.	0.016	0.012	0.001	0.005	0.003	0.001	0.003	0.004
% R.S.D.	8.665	5.135	0.636	1.224	1.502	0.728	1.354	1.910

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	0.100	0.022	0.227	0.020	0.014	0.097	0.267	0.021
S.D.	0.001	0.001	0.004	0.001	0.001	0.003	0.017	0.001
% R.S.D.	0.894	5.718	1.683	3.765	3.742	3.231	6.471	2.523

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.085	0.099	0.010	0.319
S.D.	0.031	0.001	0.001	0.037
% R.S.D.	36.126	1.306	5.926	11.749

1

HNF-SD-WM-DP-258, REV. 0

Identity 1: ICSA Identity 2: Quality Control 10:31 AM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.001	0.002	-0.037	0.012	201.341	0.005	0.000	0.001
S.D.	0.001	0.000	0.007	0.002	0.625	0.002	0.000	0.000
% R.S.D.	100.416	1.786	19.333	17.342	0.311	36.845	34.188	17.555

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.006	0.002	-0.004	93.863	102.479	-0.002	0.039	-0.033
S.D.	0.000	0.001	0.003	0.047	0.233	0.001	0.008	0.006
% R.S.D.	4.388	51.897	85.637	0.051	0.227	50.468	21.241	19.772

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.024	0.053	0.002	0.005	-0.111	100.934	-0.049	194.021
S.D.	0.004	0.006	0.000	0.004	0.005	0.178	0.008	0.683
% R.S.D.	17.232	11.208	0.990	65.458	4.676	0.177	16.519	0.352

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	0.000	0.004	0.017	-0.001	0.003	0.006	-0.333	0.005
S.D.	0.002	0.000	0.010	0.000	0.000	0.001	0.011	0.001
% R.S.D.	863.049	3.021	58.885	14.204	10.714	20.612	3.445	14.621

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.030	-0.002	0.002	-0.042
S.D.	0.010	0.001	0.000	0.006
% R.S.D.	31.814	36.749	13.133	14.537

1

HNF-SD-WM-DP-258, REV. 0

Identity 1: ICSAB Identity 2: Quality Control

10:33 AM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.005	0.002	-0.043	0.001	198.859	0.475	0.500	0.968
S.D.	0.001	0.000	0.013	0.007	1.073	0.006	0.002	0.007
% R.S.D.	31.142	10.604	30.472	782.841	0.539	1.324	0.483	0.680
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.953	0.960	-0.003	94.540	101.848	0.481	0.032	-0.109
S.D.	0.013	0.020	0.002	1.240	1.204	0.014	0.011	0.077
% R.S.D.	1.317	2.064	62.526	1.312	1.182	2.974	33.497	70.657
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.020	0.017	0.506	0.006	-0.110	99.940	-0.037	190.365
S.D.	0.015	0.012	0.004	0.011	0.007	1.704	0.007	0.968
% R.S.D.	76.604	69.815	0.866	174.241	6.743	1.706	17.766	0.509
	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	-0.002	1.024	0.994	-0.001	0.958	0.006	-0.250	0.486
S.D.	0.003	0.011	0.010	0.001	0.013	0.002	0.026	0.009
% R.S.D.	130.165	1.038	1.033	51.127	1.376	25.260	10.294	1.755
	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)				
Mean	0.052	0.480	0.492	-0.065				
S.D.	0.035	0.008	0.006	0.033				
% R.S.D.	67.241	1.624	1.244	50.667				

Identity 1: PREPBLK Identity 2: Quality Control

10:39 AM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.000	-0.000	-0.004	0.018	0.013	-0.001	0.001	-0.000
S.D.	0.001	0.000	0.006	0.003	0.008	0.000	0.001	0.000
% R.S.D.	483.730	69.282	138.177	16.350	65.916	0.888	80.514	360.429
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.001	0.156	0.003	-0.001	0.001	0.002	-0.017	-0.022
S.D.	0.000	0.003	0.001	0.003	0.000	0.000	0.006	0.055
% R.S.D.	11.402	1.789	29.847	302.223	19.924	21.110	35.623	248.651
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.007	0.057	0.000	0.021	-0.001	0.002	-0.005	0.087
S.D.	0.013	0.010	0.000	0.002	0.001	0.000	0.002	0.003
% R.S.D.	193.225	16.968	321.667	11.190	150.459	4.225	40.142	3.985
	Mo	Ag	Pb	Ti	Cd	B	K	Mn
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.000	0.000	0.028	-0.001	0.002	-0.007	270.351	0.001
S.D.	0.002	0.001	0.007	0.000	0.001	0.001	1.779	0.000
% R.S.D.	708.634	236.191	25.612	34.982	26.010	9.866	0.658	0.693
	Sb	V	Be	Tl				
	(ppm)	(ppm)	(ppm)	(ppm)				
Mean	0.033	-0.001	-0.000	-0.059				
S.D.	0.022	0.001	0.000	0.030				
% R.S.D.	66.738	49.431	174.470	50.938				

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001358_L Identity 2: Fusion,.25-10-2-8ml

10:42 AM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 205.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.249	-0.046	-4.122	15.358	65.923	0.121	-0.046	0.687
S.D.	0.142	0.014	0.800	0.495	0.333	0.411	0.018	0.009
% R.S.D.	57.164	30.000	19.410	3.221	0.505	338.831	38.609	1.303
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.034	8.357	0.657	1.012	1.295	23.940	-4.778	-8.735
S.D.	0.039	1.857	0.166	0.400	0.015	0.340	1.399	6.196
% R.S.D.	114.439	22.217	25.241	39.511	1.132	1.422	29.276	70.928
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-5.121	10.070	-0.054	46.283	-1.230	1.087	0.325	486.541
S.D.	2.206	1.590	0.053	1.485	0.500	0.037	0.598	1.876
% R.S.D.	43.086	15.794	98.133	3.207	40.626	3.411	184.026	0.386
	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	-0.377	0.001	1.598	0.069	0.390	-1.922	19141.110	0.071
S.D.	0.212	0.164	2.354	0.072	0.062	0.199	73.119	0.083
% R.S.D.	56.177	25841.527	147.331	103.863	15.829	10.353	0.382	117.134
	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)				
Mean	3.300	-0.429	-0.184	-11.849				
S.D.	6.749	0.085	0.055	2.683				
% R.S.D.	204.521	19.922	29.844	22.643				

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001358 Identity 2: Fusion, .25-10 ml

10:45 AM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 41.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.283	0.009	-0.524	14.600	65.538	0.071	0.012	0.728
S.D.	0.079	0.007	0.252	0.135	0.275	0.001	0.018	0.005
% R.S.D.	28.050	75.498	48.224	0.926	0.420	0.774	157.088	0.651
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.113	6.356	-0.269	1.875	1.428	23.770	-1.232	-9.548
S.D.	0.012	0.044	0.144	0.037	0.002	0.393	0.438	2.468
% R.S.D.	10.710	0.689	53.493	1.988	0.119	1.652	35.565	25.847
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-1.324	0.969	0.015	44.078	-0.469	0.581	-0.108	479.301
S.D.	0.522	0.472	0.009	0.512	0.100	0.000	0.188	4.147
% R.S.D.	39.432	48.700	59.766	1.162	21.407	0.001	175.000	0.865
	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	-0.059	0.012	0.695	0.096	0.213	-0.426	18528.243	0.143
S.D.	0.007	0.046	0.430	0.031	0.033	0.077	112.133	0.016
% R.S.D.	11.311	391.298	61.811	32.631	15.345	18.126	0.605	11.405
	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)				
Mean	0.825	-0.022	-0.028	-4.942				
S.D.	1.107	0.037	0.000	1.641				
% R.S.D.	134.219	168.542	1.625	33.206				

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001358_D Identity 2: Fusion, .25-10 ml
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 41.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

10:48 AM July 23, 1997

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.183	0.032	-0.453	16.557	66.283	0.064	0.114	0.756
S.D.	0.084	0.008	0.158	0.254	0.055	0.000	0.026	0.013
% R.S.D.	45.930	25.714	34.916	1.534	0.083	0.526	22.657	1.659
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.136	6.024	-0.230	2.364	1.359	25.256	0.537	-8.701
S.D.	0.009	0.445	0.034	0.117	0.008	0.212	0.120	3.059
% R.S.D.	6.572	7.385	14.736	4.948	0.571	0.838	22.453	35.159
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	1.370	0.078	0.069	45.758	-0.409	0.605	0.589	451.361
S.D.	0.852	0.727	0.016	0.579	0.118	0.004	0.053	3.257
% R.S.D.	62.213	937.045	22.596	1.265	28.943	0.706	9.009	0.722
	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	0.090	0.151	1.762	0.107	0.287	-0.286	18996.068	0.133
S.D.	0.032	0.046	0.335	0.020	0.021	0.015	111.165	0.022
% R.S.D.	35.056	30.514	18.995	18.727	7.461	5.081	0.585	16.606
	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)				
Mean	-0.367	0.200	-0.039	-3.668				
S.D.	0.718	0.053	0.011	1.776				
% R.S.D.	195.768	26.615	28.811	48.428				

:

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001358_A Identity 2: Fusion, .25-10 ml 10:51 AM July 23, 1997

Task name: OPTIMA

Sample Weight: 1.0000 Solution Volume: 41.00

On-Peak Integrations: 3 Off-Peak Integrations: 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Sf (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	40.051	41.367	41.889	54.883	107.322	41.264	42.321	40.367
S.D.	0.043	0.077	0.169	0.090	0.357	0.082	0.095	0.234
% R.S.D.	0.108	0.187	0.403	0.164	0.333	0.199	0.224	0.579

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	41.453	47.743	41.185	42.296	40.455	66.230	41.812	67.036
S.D.	0.009	0.431	0.086	0.140	0.021	0.238	0.482	0.821
% R.S.D.	0.021	0.903	0.210	0.331	0.053	0.360	1.152	1.225

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	43.346	42.807	41.497	85.466	38.825	39.733	42.295	489.870
S.D.	0.191	0.130	0.064	0.298	0.284	0.019	0.281	2.386
% R.S.D.	0.441	0.304	0.155	0.349	0.731	0.048	0.664	0.487

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	41.230	35.317	42.937	40.055	41.395	39.333	17438.088	41.418
S.D.	0.042	0.179	0.870	0.009	0.142	0.140	42.091	0.094
% R.S.D.	0.101	0.507	2.026	0.024	0.344	0.355	0.241	0.226

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	39.839	41.103	40.938	41.031
S.D.	0.773	0.066	0.069	1.049
% R.S.D.	1.939	0.162	0.169	2.556

t

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001358_X Identity 2: Fusion, 25-10-1-9 ml

10:54 AM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 410.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.433	-0.284	-4.271	20.850	63.106	-1.297	-0.864	0.289
S.D.	0.707	0.027	1.931	1.465	0.827	0.823	0.220	0.078
% R.S.D.	163.344	9.677	45.216	7.025	1.311	63.441	25.526	26.974
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	-0.108	7.898	1.900	0.004	0.264	22.477	-16.287	24.875
S.D.	0.095	1.292	0.857	0.904	0.017	0.508	3.648	20.341
% R.S.D.	88.049	16.359	45.079	21636.782	6.415	2.260	22.396	81.773
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-26.321	24.848	-0.484	42.115	0.227	1.062	1.033	463.800
S.D.	5.612	4.414	0.114	2.933	0.318	0.000	0.667	1.608
% R.S.D.	21.320	17.763	23.500	6.964	139.923	0.002	64.538	0.347
	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	-0.310	-1.182	-0.162	0.166	1.358	-2.187	18611.351	0.044
S.D.	0.214	0.298	4.657	0.098	0.072	0.585	73.420	0.080
% R.S.D.	69.086	25.206	2879.818	58.893	5.289	26.742	0.394	180.781
	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)				
Mean	1.650	-1.885	-0.214	-35.882				
S.D.	9.242	0.201	0.129	10.620				
% R.S.D.	560.093	10.655	60.491	29.596				

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001358_AX Identity 2: Fusion, .25-10-1-9 ml

10:58 AM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 410.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bf (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	4009.527	4098.939	4117.237	4101.170	4144.569	3992.386	3947.948	4015.415
S.D.	0.855	4.969	8.987	9.803	5.931	2.966	3.279	5.755
% R.S.D.	0.021	0.121	0.218	0.239	0.143	0.074	0.083	0.143
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	3930.638	4007.183	4053.604	3913.945	3998.499	3976.491	3994.956	7664.882
S.D.	3.394	6.633	7.743	16.718	2.157	3.148	26.505	15.723
% R.S.D.	0.086	0.166	0.191	0.427	0.054	0.079	0.663	0.205
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	4117.604	4146.263	4098.632	4078.840	3876.658	4010.798	4037.089	4499.201
S.D.	15.990	1.540	12.665	12.300	5.303	2.503	8.764	10.556
% R.S.D.	0.388	0.037	0.309	0.302	0.137	0.062	0.217	0.235
	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	4010.217	2817.019	4016.394	4021.193	4009.752	3937.466	22226.529	3993.771
S.D.	4.477	20.391	12.028	1.729	7.736	10.442	190.818	12.293
% R.S.D.	0.112	0.724	0.299	0.043	0.193	0.265	0.859	0.308
	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)				
Mean	4002.281	4007.775	3995.981	4216.635				
S.D.	23.264	5.603	6.452	18.226				
% R.S.D.	0.581	0.140	0.161	0.432				

1

HNF-SD-WM-DP-258, REV. 0

Identity 1: CGV Identity 2: Quality Control 12:27 PM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	4.848	5.029	5.036	4.726	4.976	4.822	5.184	5.179
S.D.	0.008	0.016	0.024	0.011	0.010	0.005	0.023	0.043
% R.S.D.	0.169	0.317	0.481	0.234	0.196	0.111	0.440	0.824

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	4.889	4.915	5.078	4.882	4.884	4.863	5.384	9.462
S.D.	0.012	0.014	0.012	0.029	0.016	0.012	0.027	0.018
% R.S.D.	0.254	0.278	0.232	0.599	0.322	0.242	0.502	0.185

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	4.991	5.171	5.100	4.896	4.696	4.728	5.079	4.989
S.D.	0.022	0.016	0.020	0.040	0.014	0.007	0.021	0.029
% R.S.D.	0.448	0.314	0.389	0.814	0.296	0.157	0.419	0.585

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	4.861	5.091	4.951	4.788	4.949	4.955	4.837	4.915
S.D.	0.007	0.007	0.019	0.011	0.008	0.021	0.061	0.006
% R.S.D.	0.147	0.131	0.379	0.224	0.155	0.428	1.262	0.112

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	4.702	4.864	5.144	5.085
S.D.	0.036	0.006	0.019	0.024
% R.S.D.	0.772	0.127	0.370	0.470

I

HNF-SD-WM-DP-258, REV. 0

Identity 1: CCB Identity 2: Quality Control 12:31 PM July 23, 1997
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 1.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.001	0.000	-0.008	-0.002	0.009	0.003	0.001	0.000
S.D.	0.001	0.000	0.009	0.002	0.007	0.002	0.001	0.000
% R.S.D.	104.578	114.564	111.275	101.337	74.829	58.135	80.098	105.706
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.000	0.003	-0.000	-0.002	0.002	0.000	0.001	-0.069
S.D.	0.000	0.002	0.001	0.002	0.000	0.003	0.006	0.040
% R.S.D.	67.283	58.671	280.568	77.676	18.676	3930.080	421.105	57.940
	Ce	Sm	Ba	P	S	Hg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.029	0.035	0.000	-0.006	-0.004	-0.000	0.002	0.001
S.D.	0.007	0.010	0.000	0.004	0.001	0.000	0.001	0.006
% R.S.D.	25.050	30.190	86.927	68.122	17.663	115.482	74.218	754.892
	Mo	Ag	Pb	Ti	Cd	B	K	Mn
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.001	0.000	0.010	-0.000	0.002	-0.002	-0.087	0.000
S.D.	0.001	0.001	0.007	0.001	0.001	0.002	0.013	0.000
% R.S.D.	160.005	261.260	71.441	146.165	39.841	73.552	15.413	3346.546
	Sb	V	Be	Tl				
	(ppm)	(ppm)	(ppm)	(ppm)				
Mean	0.050	0.000	-0.001	-0.044				
S.D.	0.020	0.000	0.000	0.027				
% R.S.D.	39.568	385.289	57.717	62.316				

1

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001363_L Identity 2: Fusion, .25-10-2-8 ml

12:35 PM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 205.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.327	0.014	2.471	8.630	14.715	0.845	0.198	0.202
S.D.	0.280	0.029	1.124	0.625	0.943	0.411	0.121	0.056
% R.S.D.	85.401	208.167	45.489	7.243	6.406	48.587	61.181	27.738

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.136	7.276	0.192	1.324	0.244	3.828	3.862	7.178
S.D.	0.076	0.764	0.288	0.306	0.022	0.228	2.009	10.554
% R.S.D.	55.486	10.501	150.068	23.140	9.165	5.956	52.009	147.031

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.359	2.470	0.068	74.224	-0.782	0.432	2.028	543.014
S.D.	3.239	2.580	0.051	2.614	0.787	0.021	1.279	2.336
% R.S.D.	60.441	104.454	74.412	3.522	100.659	4.949	63.062	0.430

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	0.034	0.122	2.627	0.126	0.514	-0.703	18227.396	0.118
S.D.	0.133	0.225	1.367	0.069	0.282	0.168	61.350	0.071
% R.S.D.	398.161	184.806	52.033	54.988	54.896	23.890	0.337	59.881

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	-0.092	-0.182	-0.071	15.281
S.D.	7.861	0.192	0.056	6.030
% R.S.D.	8574.964	105.300	78.153	39.462

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001363 Identity 2: Fusion, .25-10 ml

12:38 PM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 41.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.112	-0.020	-0.078	4.377	13.990	-0.011	-0.045	-0.021
S.D.	0.144	0.013	0.450	0.358	0.336	0.082	0.048	0.029
% R.S.D.	129.019	62.490	579.215	8.175	2.405	758.423	106.214	142.394

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.029	6.386	0.134	-0.023	0.344	3.609	-0.912	3.541
S.D.	0.012	0.214	0.134	0.094	0.008	0.028	0.500	6.287
% R.S.D.	41.186	3.347	99.813	407.870	2.255	0.787	54.759	177.523

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-2.463	1.499	-0.038	73.223	-0.324	0.183	-0.014	537.693
S.D.	1.524	1.133	0.028	1.201	0.122	0.004	0.151	7.361
% R.S.D.	61.869	75.556	74.474	1.640	37.579	2.342	1110.763	1.369

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	-0.113	-0.147	0.282	0.066	0.054	-0.196	17556.667	0.075
S.D.	0.027	0.107	0.121	0.048	0.021	0.014	237.042	0.016
% R.S.D.	23.560	72.280	43.019	72.471	40.115	7.121	1.350	21.121

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.348	-0.115	-0.021	-3.205
S.D.	1.704	0.111	0.007	3.790
% R.S.D.	489.304	95.856	30.889	118.224

t

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001363_D Identity 2: Fusion, .25-10 ml

12:41 PM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 41.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bf (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.012	-0.008	0.242	3.624	14.510	0.090	0.002	0.014
S.D.	0.066	0.004	0.169	0.085	0.232	0.000	0.026	0.014
% R.S.D.	542.295	50.918	69.668	2.332	1.598	0.345	1274.852	99.147

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.033	4.670	0.018	-0.233	0.285	3.648	-0.728	-1.777
S.D.	0.018	0.304	0.033	0.167	0.000	0.120	0.224	1.497
% R.S.D.	54.124	6.516	184.847	71.836	0.000	3.296	30.768	84.279

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-1.131	0.872	-0.010	87.909	-0.276	0.166	0.101	567.118
S.D.	0.586	0.353	0.010	0.435	0.312	0.000	0.125	1.905
% R.S.D.	51.834	40.463	109.389	0.495	113.109	0.001	123.624	0.336

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	-0.060	-0.033	0.074	0.027	0.086	-0.296	17264.525	0.019
S.D.	0.042	0.026	0.384	0.029	0.026	0.017	30.568	0.008
% R.S.D.	69.561	78.514	520.587	106.445	29.736	5.908	0.177	43.379

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	1.027	0.016	-0.044	-4.857
S.D.	0.582	0.008	0.007	1.049
% R.S.D.	56.695	52.002	14.889	21.591

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001363_A Identity 2: Fusion,,25-10 ml

12:44 PM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 41.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	39.879	41.529	41.335	43.282	56.272	39.819	42.918	40.265
S.D.	0.026	0.263	0.322	0.260	0.368	0.296	0.389	0.579
% R.S.D.	0.064	0.634	0.780	0.601	0.654	0.744	0.907	1.437

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	39.707	46.411	41.998	39.499	39.859	43.587	43.777	68.902
S.D.	0.159	0.203	0.314	0.165	0.273	0.319	0.665	3.418
% R.S.D.	0.401	0.438	0.748	0.418	0.684	0.732	1.519	4.961

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Hg (ppm)	As (ppm)	Na (ppm)
Mean	41.289	42.592	41.933	113.954	38.012	37.949	41.386	606.184
S.D.	0.847	0.461	0.330	1.957	0.486	0.069	0.188	8.120
% R.S.D.	2.052	1.083	0.788	1.718	1.278	0.181	0.454	1.340

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	39.826	31.926	42.288	39.439	40.372	39.186	18286.573	40.465
S.D.	0.166	0.056	0.818	0.098	0.084	0.293	214.062	0.103
% R.S.D.	0.417	0.176	1.934	0.248	0.208	0.748	1.171	0.256

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	36.466	40.293	40.939	38.973
S.D.	1.536	0.048	0.168	2.559
% R.S.D.	4.213	0.119	0.411	6.565

2

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001363_X Identity 2: Fusion, .25-10-1-9ml

12:48 PM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 410.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.127	-0.018	-0.815	11.255	12.968	2.979	0.191	0.021
S.D.	0.710	0.069	3.756	1.294	4.296	0.821	0.203	0.156
% R.S.D.	599.023	377.492	460.823	11.498	33.128	27.547	106.285	755.779
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	-0.061	6.795	0.752	-2.717	-0.958	3.688	-2.409	-6.460
S.D.	0.026	0.464	0.332	0.824	0.000	1.081	6.345	10.363
% R.S.D.	42.248	6.827	44.136	30.334	0.000	29.308	263.427	160.414
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	2.298	20.755	0.008	70.966	-2.629	0.593	4.679	553.534
S.D.	5.851	3.880	0.080	3.133	1.147	0.043	0.668	2.336
% R.S.D.	254.678	18.692	964.365	4.415	43.612	7.218	14.278	0.422
	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	0.200	0.138	7.237	0.020	1.275	-1.381	18694.328	0.240
S.D.	0.657	0.249	6.835	0.070	0.247	0.180	161.477	0.142
% R.S.D.	328.050	181.052	94.441	357.269	19.332	13.044	0.864	59.038
	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)				
Mean	14.117	-0.530	-0.219	3.971				
S.D.	6.343	0.473	0.128	13.696				
% R.S.D.	44.932	89.128	58.256	344.896				

HNF-SD-WM-DP-258, REV. 0

Identity 1: S95T001363_AX Identity 2: Fusion,,25-10-1-9ml

12:51 PM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 410.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	3924.144	3925.945	4017.310	4036.731	3947.891	3972.316	3782.309	3766.375
S.D.	27.043	37.049	32.243	29.658	37.955	19.859	38.420	59.561
% R.S.D.	0.689	0.944	0.803	0.735	0.961	0.500	1.016	1.581

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	3970.000	4014.573	4004.194	3977.042	3900.093	3984.464	4020.122	7376.759
S.D.	11.943	14.894	30.502	15.644	31.297	17.964	34.486	54.582
% R.S.D.	0.301	0.371	0.762	0.393	0.802	0.451	0.858	0.740

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	3904.814	3955.053	3902.290	3929.309	3716.762	4002.035	3954.206	4330.879
S.D.	43.053	34.716	45.067	35.588	23.064	17.158	32.765	68.938
% R.S.D.	1.103	0.878	1.155	0.906	0.621	0.429	0.829	1.592

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	3932.731	2307.976	4022.183	3917.381	3995.954	3938.625	22119.498	4026.378
S.D.	24.438	23.541	29.791	27.615	16.424	20.960	297.992	15.243
% R.S.D.	0.621	1.020	0.741	0.705	0.411	0.532	1.347	0.379

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	3901.078	3995.186	3944.713	4160.731
S.D.	32.409	17.964	22.651	20.269
% R.S.D.	0.831	0.450	0.574	0.487

HNF-SD-WM-DP-258, REV. 0

Identity 1: ICSA Identity 2: Quality Control 1:20 PM July 23, 1997
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 1.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.005	0.002	-0.032	0.013	195.595	0.002	-0.000	0.000
S.D.	0.001	0.000	0.008	0.003	0.301	0.000	0.001	0.000
% R.S.D.	14.042	4.928	24.717	19.203	0.154	6.655	119.747	78.888

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.007	0.007	0.004	94.765	100.754	0.001	0.031	0.061
S.D.	0.000	0.003	0.002	0.148	0.211	0.001	0.009	0.036
% R.S.D.	5.414	47.480	63.582	0.156	0.210	109.130	30.204	59.567

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.021	0.084	0.002	0.002	-0.115	105.337	-0.047	176.706
S.D.	0.009	0.008	0.000	0.013	0.005	0.131	0.010	0.924
% R.S.D.	43.571	9.891	13.141	585.019	4.203	0.124	22.020	0.523

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	-0.001	0.008	0.030	0.000	0.002	0.011	0.098	0.006
S.D.	0.001	0.001	0.010	0.000	0.001	0.001	0.021	0.001
% R.S.D.	97.900	6.703	33.618	216.360	24.658	5.254	20.867	15.288

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.093	-0.000	0.003	-0.054
S.D.	0.021	0.000	0.000	0.020
% R.S.D.	22.360	484.616	5.780	37.282

Identity 1: ICSAB Identity 2: Quality Control 1:23 PM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.001	0.002	-0.020	0.009	201.434	0.494	0.489	0.932
S.D.	0.003	0.000	0.009	0.008	1.525	0.002	0.006	0.018
% R.S.D.	235.355	22.311	45.915	82.007	0.757	0.453	1.291	1.946

	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.976	0.977	-0.001	94.087	101.723	0.488	0.010	0.027
S.D.	0.003	0.003	0.004	0.353	0.569	0.008	0.011	0.146
% R.S.D.	0.322	0.318	308.005	0.375	0.560	1.564	115.334	545.042

	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.028	0.073	0.505	0.010	-0.130	104.589	-0.049	185.955
S.D.	0.035	0.030	0.006	0.008	0.008	0.428	0.007	3.308
% R.S.D.	125.798	41.892	1.121	78.414	6.060	0.410	13.351	1.779

	Mo	Ag	Pb	Ti	Cd	B	K	Mn
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.005	1.031	1.002	-0.000	0.980	0.008	-0.063	0.494
S.D.	0.002	0.002	0.023	0.001	0.006	0.001	0.035	0.002
% R.S.D.	39.059	0.234	2.321	414.877	0.616	15.040	56.368	0.333

	Sb	V	Be	Tl
	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.019	0.481	0.489	-0.151
S.D.	0.029	0.002	0.004	0.081
% R.S.D.	152.585	0.491	0.796	53.481

HNF-SD-WM-DP-258, REV. 0

Identity 1: CCV Identity 2: Quality Control 1:28 PM July 23, 1997

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	4.902	5.123	5.104	4.761	5.055	4.842	5.282	5.286
S.D.	0.010	0.017	0.007	0.005	0.009	0.019	0.017	0.035
% R.S.D.	0.197	0.326	0.130	0.103	0.175	0.398	0.328	0.663

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	4.894	4.925	5.119	4.892	4.940	4.870	5.390	9.472
S.D.	0.005	0.007	0.008	0.008	0.012	0.008	0.019	0.025
% R.S.D.	0.103	0.134	0.165	0.173	0.240	0.165	0.346	0.260

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.056	5.278	5.203	4.973	4.750	4.745	5.139	5.081
S.D.	0.017	0.016	0.019	0.021	0.012	0.005	0.016	0.032
% R.S.D.	0.332	0.303	0.358	0.430	0.257	0.106	0.315	0.632

	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	4.903	5.101	4.919	4.846	4.969	4.975	4.853	4.912
S.D.	0.012	0.005	0.028	0.013	0.005	0.001	0.029	0.005
% R.S.D.	0.237	0.104	0.575	0.275	0.110	0.017	0.591	0.101

	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	4.710	4.883	5.186	5.091
S.D.	0.037	0.011	0.011	0.026
% R.S.D.	0.783	0.227	0.203	0.509

HNF-SD-WM-DP-258, REV. 0

Identity 1: CCB Identity 2: Quality Control 1:32 PM July 23, 1997
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 1.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.002	0.000	-0.007	-0.002	0.000	0.010	0.001	0.000
S.D.	0.001	0.000	0.011	0.003	0.003	0.002	0.001	0.000
% R.S.D.	54.331	152.753	154.082	166.130	2024.681	19.224	57.151	44.607
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.000	0.001	-0.005	0.002	0.002	-0.001	-0.007	-0.061
S.D.	0.000	0.001	0.001	0.001	0.000	0.002	0.009	0.046
% R.S.D.	191.626	134.128	15.245	48.917	2.749	317.479	135.189	75.136
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.013	0.032	0.000	0.014	-0.006	0.000	0.011	0.006
S.D.	0.012	0.010	0.000	0.010	0.003	0.000	0.002	0.004
% R.S.D.	89.107	30.585	174.356	70.598	50.704	86.604	16.334	64.956
	Mo (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)	Mn (ppm)
Mean	-0.002	0.005	0.032	-0.001	0.003	-0.004	-0.033	0.000
S.D.	0.001	0.001	0.009	0.000	0.000	0.001	0.031	0.000
% R.S.D.	70.500	17.271	28.485	72.559	17.601	16.857	94.021	163.272
	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)				
Mean	-0.005	0.001	0.000	-0.040				
S.D.	0.022	0.001	0.000	0.033				
% R.S.D.	407.226	247.681	535.256	83.554				

JK JLD
 07-13-97

HNF-SD-WM-DP-258, REV. 0

RADIOCHEMICAL ANALYSIS

THIS PAGE INTENTIONALLY LEFT BLANK

worklistrad Version 1.0 05/09/96
07/22/97 08:54

Page: 1

LABCORE Completed RadChem Report for Worklist#: 19397

Analyst: scl Instrument: AB14 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: BY-101 ALPHA, DETERMINE SS USING LUDLUM. RCJ

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD	0	@ALPHA01	ALPHA01	LIQUID		2.00E-04	1.83E-4	91.500	% Recovery
1	STD	0	@ALPHA01	ALPHA01E	LIQUID		1.00	3.45E+00	3.450	% Ct. Error
2	BLNK	0	@ALPHA01	ALPHA01	LIQUID		1	<7.81E-7		uCi/mL
2	BLNK	0	@ALPHA01	ALPHA01H	LIQUID		1.00	5.00E+02	500.000	uCi/mL
3	BLNK/BKG	0	@ALPHA01	ALPHA01	LIQUID		1.00E+00	7.22E-01	0.722	BLNK/BKG
4	SAMPLE	S97T001365	0	@ALPHA01	ALPHA01	LIQUID	N/A	< 7.81E-07	187.0e-008	uCi/mL
4	SAMPLE	S97T001365	0	@ALPHA01	ALPHA01E	LIQUID	N/A	5.00E+02	0.0e+000	% Ct. Error
5	DUP	S97T001365	0	@ALPHA01	ALPHA01	LIQUID	<7.81E-7	<7.81E-7		RPD
5	DUP	S97T001365	0	@ALPHA01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error

Final page for worklist# 19397

Analyst Signature _____ Date _____ Analyst Signature _____ Date _____

 Reviewer Signature _____ Date 22 July 97

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

LABCORE Data Entry Template for Worklist# 19397

Analyst: S. L Instrument: AB00 14 Book# 71856

Method: LA-508-101 Rev/Mod G-0

Worklist Comment: BY-101 ALPHA, DETERMINE SS USING LUDLUM, RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	LIQUID		
2 BLNK			@ALPHA01	LIQUID		
3 BLNK/BKG			@ALPHA01	LIQUID		
4 SAMPLE	S97T001365 0		@ALPHA01	LIQUID	97000397	BY-101
	Analytes Requested: ALPHA01 , ALPHA01E					
5 DUP	S97T001365 0		@ALPHA01	LIQUID		

Final page for worklist # 19397

Sue Law 7-21-97
Analyst Signature Date

W. Raymond 7-22-97
Analyst Signature Date
W. C. Brown 7/22/97

Data Entry Comments:

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

WORKBOOK PAGE: STD1

AT : LA-508-101 (E-1) LA-508-113 (B-0) STANDARD

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	14	14
STD	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	3320	3249
19397	COUNT TIME in MINUTES (CT)	30	30
At or By	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	79B56	79B56
Matrix	EFFICIENCY FACTOR (EFF)	0.2692	0.2692
LIQUID	Lc, Rmax, or Rs.(SAMPLE RATE) as APPROPRIATE	110.367	108.000
Batch Number	Standard Value in $\mu\text{Ci/mL}$	2.00E-04	
97003515	Concentration in $\mu\text{Ci/L}$ =	1.85E-01	
Re-run	Replicate Concentration in $\mu\text{Ci/L}$ =	1.81E-01	
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.8270E-01	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * 2220000\text{dpm}/\mu\text{Ci})$		
79B56	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
VAR			
Chemist			
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	1.83E-04	DETECTION LEVEL
Analyst			
SCL			
Date/Complete			
07/22/97	RELATIVE COUNTING ERROR =	3.5%	9.33E-07 $\mu\text{Ci/mL}$
Analysis Date			
07/21/97			
Analysis Time			
10:20 AM			
Sample Point			
BY-101			

Analyst:	VAR	Date: 22-Jul-97
Signature of Chemist: <i>Dia Carter</i>	SLF	Date: <i>22 July 97</i>

STANDARD.WB1 Rev. 1.0

508101ML

AT : LA-508-101 (E-1)

LIQUIDS

		BLNK	REPLICATE
Type	DETECTOR NUMBER	14	14
BLNK	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	7	6
19397	COUNT TIME in MINUTES (CT)	30	30
AtorIB	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	0.500	0.500
TestCode	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2692	0.2692
LIQUID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	0.233	0.233
Batch Number			
97003515	Blank Concentration in $\mu\text{Ci/L}$	< 7.81E-04	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	< 7.81E-04	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 7.8091E-04	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Sample	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
BLANK	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
VAR			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 7.81E-07	DETECTION LEVEL
Analyst	LESS Than Value was Determined from Lc.		
SCL			1.87E-06 $\mu\text{Ci/mL}$
Date Complete	RELATIVE COUNTING ERROR	500.0%	
07/22/97			
Analysis Date			
07/21/97			
Analysis Time			
10:20 AM			
Sample Point			
BY-101			

Analyst:	SCL	Date: 22-Jul-97
Signature of Chemist:	SLF	Date: 22-Jul-97
BLANK.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM4

AT : LA-508-101 (E-1)

LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	14	14
SAMPLE	DISH SIZE (1, 2, or 5)	(MS)	2
Work List	GROSS COUNTS	(GC)	6
19397	COUNT TIME in MINUTES	(CT)	30
At or By	BACKGROUND in cpm	(BKG)	0.3
AT	SAMPLE SIZE in mL	(SS)	0.500
Test Code	DILUTION FACTOR	(DF)	1
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2692
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE		0.233

Batch Number	
97003515	Blank Concentration in $\mu\text{Ci/L}$
Rerun	Replicate Concentration in $\mu\text{Ci/L}$
0	Maximum Concentration in $\mu\text{Ci/L}$

Sample Prep	
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/L} = R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
S97T001365	$\text{ALPHA TOTAL } \mu\text{Ci/mL} = \text{ALPHA TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$
Instrument Code	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By	
VAR	
Chemist	
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) = < 7.81E-07
Analyst	
SCL	LESS Than Value was Determined from Lc.
Date Complete	
07/22/97	RELATIVE COUNTING ERROR 500.0%
Analysis Date	
07/21/97	
Analysis Time	
10:20 AM	
Sample Point	
BY-101	

Analyst:	SCL	Date: 22-Jul-97
Signature of Chemist:	<i>SCL</i>	SLF
SAMPLE.WB1 Rev. 1.0	508101ML	Date: 22 July 97

WORKBOOK PAGE: DUPS

AT : LA-508-101 (E-1)

LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	14	14
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	8	8
19397	COUNT TIME in MINUTES (CT)	30	30
Alor 1B	BACKGROUND in cpm (BKG)	0.3	0.3
AT	SAMPLE SIZE in mL (SS)	0.500	0.500
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2692	0.2692
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.233	0.233

Batch Number	97003515	Blank Concentration In $\mu\text{Ci/L}$	< 7.81E-04
Rerun	0	Replicate Concentration in $\mu\text{Ci/L}$	< 7.81E-04
Sample Prep		Maximum Concentration in $\mu\text{Ci/L}$	< 7.8091E-04

N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$
Sample /	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
S97T001365	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By	VAR		
Chemist	SLF		
ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum)	=	< 7.81E-07	DETECTION LEVEL
Analyst	LESS Than Value was Determined from Lc.		
SCL			1.87E-06
Date Complete	07/22/97	RELATIVE COUNTING ERROR	$\mu\text{Ci/mL}$
Analysis Date	07/21/97		
Analysis Time	10:20 AM		
Sample Point	BY-101		

Analyst:	SCL	Date: 22-Jul-97
Signature of Chemist:	<i>S. A. Cuth</i>	SLF
SAMPLE.WB1 Rev. 1.0	508101ML	Date: 22-Jul-97

LABCORE Completed RadChem Report for Worklist#: 19405

Analyst: smf Instrument: AB15 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: BY101, @ALPHA01, S.S. By Ludlum. STD: 1.0mL, SPK: 0.1mL skm

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	@ALPHA01 ALPHA01	SOLID	2.00E-04	1.91E-4	95.500	% Recovery
1 STD	0	@ALPHA01 ALPHA01R	SOLID	1.00	3.36E+00	3.360	% Ct. Error
2 BLNK-PREP	0	@ALPHA01 ALPHA01	SOLID	1	<1.69E-3		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	1.43E+00	1.430	BLNK/BKG
4 SAMPLE	S97T001358 0 F	@ALPHA01 ALPHA01	SOLID	N/A	< 3.09E-03	268.0e-005	uCi/g
4 SAMPLE	S97T001358 0 F	@ALPHA01 ALPHA01E	SOLID	N/A	5.00E+02	0.0e+000	% Ct. Error
5 DUP	S97T001358 0 F	@ALPHA01 ALPHA01	SOLID	<3.09E-3	<1.69E-3		RPD
5 DUP	S97T001358 0 F	@ALPHA01 ALPHA01E	SOLID	1.00	2.55E+02	255.000	% Ct. Error
6 SPK	S97T001358 0 F	@ALPHA01 ALPHA01	SOLID	2.63E-02	1.85E-02	70.342	% Recovery
7 SAMPLE	S97T001363 0 F	@ALPHA01 ALPHA01	SOLID	N/A	2.74E-03	262.0e-005	uCi/g
7 SAMPLE	S97T001363 0 F	@ALPHA01 ALPHA01E	SOLID	N/A	1.06E+02	0.0e+000	% Ct. Error
8 DUP	S97T001363 0 F	@ALPHA01 ALPHA01	SOLID	2.74E-3	1.74E-3	44.643	RPD
8 DUP	S97T001363 0 F	@ALPHA01 ALPHA01E	SOLID	1.00	1.21E+02	121.000	% Ct. Error
9 SPK	S97T001363 0 F	@ALPHA01 ALPHA01	SOLID	2.63E-02	1.73E-02	65.779	% Recovery

Final page for worklist# 19405

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

[Signature] 23 July 97
Reviewer Signature Date

*Spk results are within the control limits for this method. see
High RPD caused by counting uncertainties greater than
100%. Results will be accepted. see*

07/21/97 10:06
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 19405

Analyst: BMF Instrument: AB00 15 Book# 79 B56Method: LA-508-101 Rev/Mod G-2

Worklist Comment: BY101, @ALPHA01, S.S. By Ludlum. STD: 1.0mL, SPK: 0.1mL 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	S97T001358	0 F	@ALPHA01	SOLID	97000396	BY-101
	Analytes Requested: ALPHA01 , ALPHA01E					
5 DUP	S97T001358	0 F	@ALPHA01	SOLID		
6 SPK	S97T001358	0 F	@ALPHA01	SOLID		
7 SAMPLE	S97T001363	0 F	@ALPHA01	SOLID	97000397	BY-101
	Analytes Requested: ALPHA01 , ALPHA01E					
8 DUP	S97T001363	0 F	@ALPHA01	SOLID		
9 SPK	S97T001363	0 F	@ALPHA01	SOLID		

Final page for worklist # 19405

Analyst Signature

Date

7-22-97

Analyst Signature

Date

Sylvia Z. Charnie 7/23/97
Dave Hogan 7-23-97

Data Entry Comments:

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

WORKBOOK PAGE: STD1

AT: LA-508-101 (E-1)

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)	3487
19405	COUNT TIME in MINUTES (CT)	30
At or By?	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)	79B56
Matrix	EFFICIENCY FACTOR (EFF)	0.2701
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	116.163
Batch Number	Standard Value in $\mu\text{Ci/mL}$	2.00E-04
97003525	Concentration in $\mu\text{Ci/L}$ =	1.94E-01
Re run	Replicate Concentration in $\mu\text{Ci/L}$ =	1.89E-01
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	1.9134E-01
Sample Prep		
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$	
Sample	$\text{ALPHA TOTAL } \mu\text{Ci/L} = R_s * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
WL19405	$\text{ALPHA TOTAL } \mu\text{Ci/mL} = \text{ALPHA TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(The \text{ Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
SZC		
Chemist		
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	1.91E-04
Analyst		
SMF		
Date Complete		
07/23/97	RELATIVE COUNTING ERROR =	3.4%
Analysis Date		
07/22/97		
Analysis Time		
10:00 AM		
Sample Point		
BY-101		

DETECTION
LEVEL5.27E-07
 $\mu\text{Ci/mL}$

Analyst:

SZC

Date: 23-Jul-97

Signature of Chemist:

SA Carter

SLF

Date: 23 July 97

STANDARD.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (E-1)

SOLIDS

	BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER	15
BLNK-PREP	DISH SIZE (1, 2, or 5) (MS)	2
WorkList	GROSS COUNTS (GC)	2
19405	COUNT TIME IN MINUTES (CT)	30
AlorIB1	BACKGROUND in cpm (BKG)	0.07
AT	SAMPLE SIZE in mL (SS)	0.100
Test Code	DILUTION FACTOR (DF)	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.964
Matrix	EFFICIENCY FACTOR (EFF)	0.2701
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.113
Batch Number		
97003525	Blank Concentration in $\mu\text{Ci/g}$	< 9.57E-04
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	< 1.69E-03
0	Maximum Concentration in $\mu\text{Ci/g}$	< 1.6913E-03
Sample Prep		
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$	
Sample	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$	
WL19405		
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		
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 1.69E-03
Analyst		
SMF	LESS Than Value was Determined from Lc.	
Date Complete		
07/23/97	RELATIVE COUNTING ERROR	500.0%
Analysis Date		
07/22/97		
Analysis Time		
10:00 AM		
Sample Point		
BY-101		

Analyst:	SMF	Date: 23-Jul-97
Signature of Chemist:	SLF	Date: 23 July 97
BLANK.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM4

AT : LA-508-101 (E-1)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15	15
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	13	2
19405	COUNT TIME in MINUTES (CT)	30	30
At for (E-1)	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.964	1.964
Matrix	EFFICIENCY FACTOR (EFF)	0.2701	0.2701
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.363	0.113
Batch Number			
97003525	Blank Concentration in $\mu\text{Ci/g}$	3.09E-03	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	<	9.57E-04
0	Maximum Concentration in $\mu\text{Ci/g}$	<	3.0852E-03
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)		
S97T001358			
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			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 3.09E-03	DETECTION LEVEL
Analyst	LESS THAN Value was Determined from Rs.		
SMF			
Date Complete	RELATIVE COUNTING ERROR	500.0%	2.68E-03 $\mu\text{Ci/g}$
07/23/97			
Analysis Date			
07/22/97			
Analysis Time			
10:00 AM			
Sample Point			
BY-101			

Analyst:	SMF	Date: 23-Jul-97
Signature of Chemist:	SLF	Date: 23 Jul 97

SAMPLE.WB1 Rev. 1.

508101ML

WORKBOOK PAGE: DUP5

AT : LA-508-101 (E-1)

SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	7	4
19405	COUNT TIME in MINUTES (CT)	30	30
At or IB?	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.96	1.96
Matrix	EFFICIENCY FACTOR (EFF)	0.2701	0.2701
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.163	0.199
Batch Number			
97003525	Blank Concentration in $\mu\text{Ci/g}$	1.39E-03	
Re-run	Replicate Concentration in $\mu\text{Ci/g}$	<	1.69E-03
0	Maximum Concentration in $\mu\text{Ci/g}$	<	1.6947E-03
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)		
S97T001358			
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			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 1.69E-03	DETECTION LEVEL
Analyst	LESS THAN Value was Determined from Rs.		
SMF			
Date Complete	RELATIVE COUNTING ERROR	254.8%	2.69E-03 $\mu\text{Ci/g}$
07/23/97			
Analysis Date			
07/22/97			
Analysis Time			
10:00 AM			
Sample Point			
BY-101			

Analyst:	SMF	Date: 23-Jul-97
Signature of Chemist:	<i>SLF</i>	Date: 23 Jul 97
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: SPK6

AT : LA-508-101 (E-1) LA-508-113 (B-0) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	15	15
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	32986	33681
19405	COUNT TIME IN MINUTES (CT)	30	30
AT Port By	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.100	0.100
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.964	1.964
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	131B43	131B43
97003525	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	2.6286E-02	2.6286E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2701	0.2701
0	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	9.34E+00	9.53E+00
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	<	3.0852E-03
FUSION01			
Sample #			
S97T001358	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Instrument Code	$SAMPLE + SPIKE \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
WB26872	QC ACTUAL = SVal		
Prepared By	$QC \text{ FOUND} = (((S+S \mu\text{Ci/g} - SAMPLE \mu\text{Ci/g}) * ((SDF/(SVol*1000)))/(DF/SS/Dg/L))))$		
SZC	PERCENT SPIKE RECOVERY = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
Chemist			
SLF			
Analyst			
SMF			
Date Complete	NOTE: Original Sample result was a LESS THAN value. Zero (0) was subtracted from the spiked value for QC found calculation.		
07/23/97			
Analysis Date			
07/22/97	QC ACTUAL =	2.63E-02	
Analysis Time	QC FOUND =	1.85E-02	
10:00 AM	AVG. PERCENT SPIKE RECOVERY =	70.5%	
Sample Point			
BY-101			

Analyst:	SZC	Date: 23-Jul-97
Signature of Chemist:	SLF	Date: 23 Jul 97
SPIKE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM7

AT : LA-508-101 (E-1)

SOLIDS

	SAMPLE	REPLICATE
Type	DETECTOR NUMBER	15
SAMPLE	DISH SIZE (1, 2, or 5)	2
Work List	GROSS COUNTS	8
19405	COUNT TIME in MINUTES	30
Arion 1B7	BACKGROUND in cpm	0.07
AT	SAMPLE SIZE in mL	0.100
Test Code	DILUTION FACTOR	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	2.0108
Matrix	EFFICIENCY FACTOR	0.2701
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.197
Batch Number		
97003525	Blank Concentration in $\mu\text{Ci/g}$	1.63E-03
ReRun	Replicate Concentration in $\mu\text{Ci/g}$	3.84E-03
0	Average Concentration in $\mu\text{Ci/g}$	2.7370E-03
Sample Prep		
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG	
Sampler	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)	
S97T001363		
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		
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	2.74E-03
Analyst		DETECTION LEVEL
SMF		
Date Complete	RELATIVE COUNTING ERROR	2.62E-03 $\mu\text{Ci/g}$
07/23/97	105.6%	
Analysis Date		
07/22/97		
Analysis Time		
10:00 AM		
Sample Point		
BY-101		

Analyst:	SMF	Date: 23-Jul-97
Signature of Chemist:	SLF	Date: 23 Jul 97
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: DUP8

AT : LA-508-101 (E-1)

SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	7	10
19405	COUNT TIME in MINUTES (CT)	30	30
At For By	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0424	2.0424
Matrix	EFFICIENCY FACTOR (EFF)	0.2701	0.2701
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.163	0.263
Batch Number			
97003525	Blank Concentration in $\mu\text{Ci/g}$	1.33E-03	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	2.15E-03	
0	Average Concentration in $\mu\text{Ci/g}$	1.7420E-03	
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)		
S97T001363			
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			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	1.74E-03	DETECTION LEVEL
Analyst			
SMF			
Date Complete	RELATIVE COUNTING ERROR	120.7%	2.58E-03 $\mu\text{Ci/g}$
07/23/97			
Analysis Date			
07/22/97			
Analysis Time			
10:00 AM			
Sample Point			
BY-101			

Analyst:	SMF	Date: 23-Jul-97
Signature of Chemist:	SLF	Date: 23 Jul 97
SAMPLE.WB1 Rev. 1.	508101ML	

WORKBOOK PAGE: SPK9

AT : LA-508-101 (E-1) LA-508-113 (B-0) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	15	15
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Worklist	TOTAL COUNTS (TC)	30952	31230
19405	COUNT TIME in MINUTES (CT)	30	30
AT or TB?	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.100	0.100
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0108	2.0108
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	131B43	131B43
97003525	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	2.6286E-02	2.6286E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2701	0.2701
0	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	8.56E+00	8.63E+00
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	2.7370E-03	
FUSION01			
Sample #			
S97T001363	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
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 = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
Chemist			
SLF			
Analyst			
SMF			
Date Complete			
07/23/97			
Analysis Date			
07/22/97	QC ACTUAL =	2.63E-02	
Analysis Time	QC FOUND =	1.73E-02	
10:00 AM	AVG. PERCENT SPIKE RECOVERY =	65.7%	
Sample Point			
BY-101			

Analyst:	SZC	Date: 23-Jul-97
Signature of Chemist:	<i>SLF</i>	Date: 23 July 97
SPIKE.WB1 Rev. 1.0	508101ML	

APPENDIX A : OPPORTUNISTIC ANALYTE RESULTS

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix A. Opportunistic Analyses
BY-101

CORE NUMBER: 189
SEGMENT #: 2

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S97T001358	F		Silver - ICP-Fusion	ug/g	104.6	<1.00e-02	<2.09e+02	<2.09e2	n/a	n/a	86.10	209.0	n/a	
S97T001358	F		Aluminum - ICP-Fusion	ug/g	100.8	<5.00e-02	3.34e+04	3.38e+04	3.36e+04	1.19	102.0	1.05e+03	n/a	
S97T001358	F		Arsenic - ICP-Fusion	ug/g	103.8	<1.00e-01	<2.09e+03	<2.09e3	n/a	n/a	103.0	2.09e+03	n/a	
S97T001358	F		Boron - ICP-Fusion	ug/g	99.80	<5.00e-02	<1.04e+03	<1.05e3	n/a	n/a	95.90	1.05e+03	n/a	
S97T001358	F		Barium - ICP-Fusion	ug/g	102.2	<5.00e-02	<1.04e+03	<1.05e3	n/a	n/a	101.0	1.05e+03	n/a	
S97T001358	F		Beryllium - ICP-Fusion	ug/g	103.8	<5.00e-03	<1.04e+02	<1.05e2	n/a	n/a	99.80	105.0	n/a	
S97T001358	F		Bismuth - ICP-Fusion	ug/g	102.6	<1.00e-01	<2.09e+03	<2.09e3	n/a	n/a	102.0	2.09e+03	n/a	
S97T001358	F		Calcium - ICP-Fusion	ug/g	97.80	<1.00e-01	<2.09e+03	<2.09e3	n/a	n/a	98.70	2.09e+03	n/a	
S97T001358	F		Cadmium - ICP-Fusion	ug/g	101.0	<5.00e-03	1.08e+02	146.0	127.0	29.9	100.0	105.0	n/a	
S97T001358	F		Cerium - ICP-Fusion	ug/g	100.2	<1.00e-01	<2.09e+03	<2.09e3	n/a	n/a	106.0	2.09e+03	n/a	
S97T001358	F		Cobalt - ICP-Fusion	ug/g	99.80	<2.00e-02	<4.18e+02	<4.18e2	n/a	n/a	101.0	418.0	n/a	
S97T001358	F		Chromium - ICP-Fusion	ug/g	100.4	<1.00e-02	1.21e+04	1.29e+04	1.25e+04	6.40	104.0	209.0	n/a	
S97T001358	F		Copper - ICP-Fusion	ug/g	103.8	<1.00e-02	<2.09e+02	<2.09e2	n/a	n/a	103.0	209.0	n/a	
S97T001358	F		Iron - ICP-Fusion	ug/g	99.20	<5.00e-02	<1.04e+03	1.21e+03	n/a	n/a	103.0	1.05e+03	n/a	
S97T001358	F		Lanthanum - ICP-Fusion	ug/g	101.4	<5.00e-02	<1.04e+03	<1.05e3	n/a	n/a	100.0	1.05e+03	n/a	
S97T001358	F		Magnesium - ICP-Fusion	ug/g	97.40	<1.00e-01	<2.09e+03	<2.09e3	n/a	n/a	96.90	2.09e+03	n/a	
S97T001358	F		Manganese - ICP-Fusion	ug/g	100.6	<1.00e-02	<2.09e+02	<2.09e2	n/a	n/a	101.0	209.0	n/a	
S97T001358	F		Molybdenum - ICP-Fusion	ug/g	100.2	<5.00e-02	<1.04e+03	<1.05e3	n/a	n/a	101.0	1.05e+03	n/a	
S97T001358	F		Sodium - ICP-Fusion	ug/g	100.6	<1.00e-01	2.44e+05	2.30e+05	2.37e+05	5.91	25.80	2.09e+03	n/a	
S97T001358	F		Neodymium - ICP-Fusion	ug/g	103.6	<1.00e-01	<2.09e+03	<2.09e3	n/a	n/a	102.0	2.09e+03	n/a	
S97T001358	F		Phosphorus - ICP-Fusion	ug/g	99.20	<2.00e-01	2.24e+04	2.33e+04	2.28e+04	3.94	101.0	4.18e+03	n/a	
S97T001358	F		Lead - ICP-Fusion	ug/g	101.4	<1.00e-01	<2.09e+03	<2.09e3	n/a	n/a	105.0	2.09e+03	n/a	
S97T001358	F		Sulfur - ICP-Fusion	ug/g	96.60	<1.00e-01	<2.09e+03	<2.09e3	n/a	n/a	94.70	2.09e+03	n/a	
S97T001358	F		Antimony - ICP-Fusion	ug/g	94.20	<6.00e-02	<1.25e+03	<1.26e3	n/a	n/a	97.20	1.25e+03	n/a	
S97T001358	F		Silicon - ICP-Fusion	ug/g	96.60	<5.00e-02	7.43e+03	8.45e+03	7.94e+03	12.8	98.20	1.05e+03	n/a	
S97T001358	F		Samarium - ICP-Fusion	ug/g	103.0	<1.00e-01	<2.09e+03	<2.09e3	n/a	n/a	104.0	2.09e+03	n/a	
S97T001358	F		Strontium - ICP-Fusion	ug/g	101.0	<1.00e-02	<2.09e+02	<2.09e2	n/a	n/a	101.0	209.0	n/a	
S97T001358	F		Titanium - ICP-Fusion	ug/g	97.40	<1.00e-02	<2.09e+02	<2.09e2	n/a	n/a	97.70	209.0	n/a	
S97T001358	F		Thallium - ICP-Fusion	ug/g	102.4	<2.00e-01	<4.18e+03	<4.18e3	n/a	n/a	100.0	4.18e+03	n/a	
S97T001358	F		Uranium - ICP-Fusion	ug/g	93.30	<5.00e-01	<1.04e+04	<1.05e4	n/a	n/a	82.00	1.05e+04	n/a	
S97T001358	F		Vanadium - ICP-Fusion	ug/g	99.20	<5.00e-02	<1.04e+03	<1.05e3	n/a	n/a	100.0	1.05e+03	n/a	
S97T001358	F		Zinc - ICP-Fusion	ug/g	101.2	<1.00e-02	<2.09e+02	<2.09e2	n/a	n/a	101.0	209.0	n/a	
S97T001358	F		Zirconium - ICP-Fusion	ug/g	98.00	<1.00e-02	<2.09e+02	<2.09e2	n/a	n/a	97.70	209.0	n/a	
S97T001360	W		Fluoride-IC-Dionex 4000/4500	ug/g	112.4	<1.20e-02	4.13e+03	6.13e+03	5.13e+03	39.0	88.14	120.9	n/a	
S97T001360	W		Chloride-IC-Dionex 4000/4500	ug/g	93.04	<1.70e-02	<1.71e+02	<1.73e2	n/a	n/a	90.51	171.3	n/a	
S97T001360	W		Nitrite-IC-Dionex 4000/4500	ug/g	94.30	2.26e-01	<1.09e+03	<1.10e3	n/a	n/a	92.83	1.09e+03	n/a	
S97T001360	W		Nitrate by IC-Dionex 4000/4500	ug/g	93.27	<1.39e-01	4.11e+05	3.27e+05	3.69e+05	22.8	38.38	1.40e+03	n/a	
S97T001360	W		Phosphate-IC-Dionex 4000/4500	ug/g	98.90	<1.20e-01	4.48e+04	6.45e+04	5.47e+04	36.0	92.66	1.21e+03	n/a	
S97T001360	W		Sulfate by IC-Dionex 4000/4500	ug/g	93.04	<1.38e-01	<1.39e+03	<1.41e3	n/a	n/a	91.93	1.39e+03	n/a	
S97T001360	W		Oxalate-IC-Dionex 4000/4500	ug/g	94.93	<1.05e-01	7.85e+03	7.94e+03	7.89e+03	1.14	93.06	1.06e+03	n/a	

154

HNF-SD-WM-DP-268, REV. 0

Appendix A. Opportunistic Analyses
BY-101

CORE NUMBER: 199
SEGMENT #: Field Blank

SEGMENT PORTION: Field Blank

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001365	D		Silver-ICP-Acid Dil.	ug/mL	102.2	<1.00e-02	<2.00e-02	<2.00e-2	n/a	n/a	n/a	2.00e-02	n/a
S97T001365	D		Aluminum-ICP-Acid Dil.	ug/mL	101.0	<5.00e-02	4.130	4.150	4.140	0.48	n/a	1.00e-01	n/a
S97T001365	D		Arsenic-ICP-Acid Dil.	ug/mL	106.6	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001365	D		Boron-ICP-Acid Dil.	ug/mL	103.4	<5.00e-02	1.260	1.230	1.245	2.41	n/a	1.00e-01	n/a
S97T001365	D		Barium-ICP-Acid Dil.	ug/mL	103.8	<5.00e-02	<1.00e-01	<1.00e-1	n/a	n/a	n/a	1.00e-01	n/a
S97T001365	D		Beryllium-ICP-Acid Dil.	ug/mL	107.0	<5.00e-03	<1.00e-02	<1.00e-2	n/a	n/a	n/a	1.00e-02	n/a
S97T001365	D		Bismuth-ICP-Acid Dil.	ug/mL	105.2	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001365	D		Calcium-ICP-Acid Dil.	ug/mL	104.6	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001365	D		Cadmium-ICP-Acid Dil.	ug/mL	102.8	<5.00e-03	<1.00e-02	<1.00e-2	n/a	n/a	n/a	1.00e-02	n/a
S97T001365	D		Cerium-ICP-Acid Dil.	ug/mL	103.4	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001365	D		Cobalt-ICP-Acid Dil.	ug/mL	102.2	<2.00e-02	<4.00e-02	<4.00e-2	n/a	n/a	n/a	4.00e-02	n/a
S97T001365	D		Chromium-ICP-Acid Dil.	ug/mL	103.8	<1.00e-02	3.14e-02	3.27e-02	3.20e-02	4.06	n/a	2.00e-02	n/a
S97T001365	D		Copper-ICP-Acid Dil.	ug/mL	100.2	<1.00e-02	<2.00e-02	<2.00e-2	n/a	n/a	n/a	2.00e-02	n/a
S97T001365	D		Iron-ICP-Acid Dil.	ug/mL	97.00	<5.00e-02	<1.00e-01	<1.00e-1	n/a	n/a	n/a	1.00e-01	n/a
S97T001365	D		Potassium-ICP-Acid Dil.	ug/mL	100.2	<5.00e-01	1.340	1.190	1.265	11.9	n/a	1.000	n/a
S97T001365	D		Lanthanum-ICP-Acid Dil.	ug/mL	105.0	<5.00e-02	<1.00e-01	<1.00e-1	n/a	n/a	n/a	1.00e-01	n/a
S97T001365	D		Magnesium-ICP-Acid Dil.	ug/mL	105.8	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001365	D		Manganese-ICP-Acid Dil.	ug/mL	100.8	<1.00e-02	<2.00e-02	<2.00e-2	n/a	n/a	n/a	2.00e-02	n/a
S97T001365	D		Molybdenum-ICP-Acid Dil.	ug/mL	102.6	<5.00e-02	<1.00e-01	<1.00e-1	n/a	n/a	n/a	1.00e-01	n/a
S97T001365	D		Sodium-ICP-Acid Dil.	ug/mL	100.8	<1.00e-01	31.80	32.00	31.90	0.63	n/a	2.00e-01	n/a
S97T001365	D		Neodymium-ICP-Acid Dil.	ug/mL	105.2	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001365	D		Nickel-ICP-Acid Dil.	ug/mL	102.8	<2.00e-02	<4.00e-02	<4.00e-2	n/a	n/a	n/a	4.00e-02	n/a
S97T001365	D		Phosphorus-ICP-Acid Dil.	ug/mL	103.6	<2.00e-01	4.36e-01	4.16e-01	4.26e-01	4.69	n/a	4.00e-01	n/a
S97T001365	D		Lead-ICP-Acid Dil.	ug/mL	104.0	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001365	D		Sulfur-ICP-Acid Dil.	ug/mL	101.2	<1.00e-01	1.090	1.080	1.085	0.92	n/a	2.00e-01	n/a
S97T001365	D		Antimony-ICP-Acid Dil.	ug/mL	97.80	<6.00e-02	<1.20e-01	<1.20e-1	n/a	n/a	n/a	1.20e-01	n/a
S97T001365	D		Selenium-ICP-Acid Dil.	ug/mL	100.4	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001365	D		Silicon-ICP-Acid Dil.	ug/mL	98.80	<5.00e-02	2.150	2.140	2.145	0.47	n/a	1.00e-01	n/a
S97T001365	D		Samarium-ICP-Acid Dil.	ug/mL	102.0	<1.00e-01	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001365	D		Strontium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-02	<2.00e-02	<2.00e-2	n/a	n/a	n/a	2.00e-02	n/a
S97T001365	D		Titanium-ICP-Acid Dil.	ug/mL	100.6	<1.00e-02	<2.00e-02	<2.00e-2	n/a	n/a	n/a	2.00e-02	n/a
S97T001365	D		Thallium-ICP-Acid Dil.	ug/mL	100.4	<2.00e-01	<4.00e-01	<4.00e-1	n/a	n/a	n/a	4.00e-01	n/a
S97T001365	D		Uranium-ICP-Acid Dil.	ug/mL	99.30	<5.00e-01	<1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a
S97T001365	D		Vanadium-ICP-Acid Dil.	ug/mL	101.0	<5.00e-02	<1.00e-01	<1.00e-1	n/a	n/a	n/a	1.00e-01	n/a
S97T001365	D		Zinc-ICP-Acid Dil.	ug/mL	97.40	<1.00e-02	2.53e-02	2.88e-02	2.70e-02	12.9	n/a	2.00e-02	n/a
S97T001365	D		Zirconium-ICP-Acid Dil.	ug/mL	100.8	<1.00e-02	<2.00e-02	<2.00e-2	n/a	n/a	n/a	2.00e-02	n/a
S97T001365			Fluoride-IC-Dionex 4000/4500	ug/mL	92.03	<1.20e-02	1.61e-01	1.61e-01	1.61e-01	0.00	n/a	1.20e-02	n/a
S97T001365			Chloride-IC-Dionex 4000/4500	ug/mL	95.06	2.70e-02	7.37e-01	7.32e-01	7.34e-01	0.68	n/a	1.70e-02	n/a
S97T001365			Nitrite-IC-Dionex 4000/4500	ug/mL	95.21	<1.08e-01	8.729	8.710	8.720	0.23	n/a	1.08e-01	n/a
S97T001365			Nitrate by IC-Dionex 4000/4500	ug/mL	96.47	1.53e-01	27.16	26.90	27.03	1.11	n/a	1.39e-01	n/a
S97T001365			Phosphate-IC-Dionex 4000/4500	ug/mL	103.9	<1.20e-01	1.257	1.220	1.238	3.23	n/a	1.20e-01	n/a
S97T001365			Sulfate by IC-Dionex 4000/4500	ug/mL	100.9	1.90e-01	3.26e-01	3.36e-01	3.31e-01	3.02	n/a	1.58e-01	n/a
S97T001365			Oxalate-IC-Dionex 4000/450	ug/mL	93.21	<1.05e-01	<1.05e-01	<1.05e-1	n/a	n/a	n/a	1.05e-01	n/a

HF-SB-WM-DP-258, REV. 0

155

Appendix A. Opportunistic Analyses
BY-101CORE NUMBER: 199
SEGMENT #: n/a

SEGMENT PORTION: Hydrostatic Head Fluid

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S97T001241	D		Silver-ICP-Acid Dil.	ug/mL	98.00	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001241	D		Aluminum-ICP-Acid Dil.	ug/mL	97.80	<5.00e-02	< 1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a
S97T001241	D		Arsenic-ICP-Acid Dil.	ug/mL	104.2	<1.00e-01	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S97T001241	D		Boron-ICP-Acid Dil.	ug/mL	101.2	<5.00e-02	< 1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a
S97T001241	D		Barium-ICP-Acid Dil.	ug/mL	99.40	<5.00e-02	< 1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a
S97T001241	D		Beryllium-ICP-Acid Dil.	ug/mL	102.4	<5.00e-03	<1.00e-01	<1.00e-1	n/a	n/a	n/a	1.00e-01	n/a
S97T001241	D		Bismuth-ICP-Acid Dil.	ug/mL	101.4	<1.00e-01	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S97T001241	D		Calcium-ICP-Acid Dil.	ug/mL	98.40	<1.00e-01	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S97T001241	D		Cadmium-ICP-Acid Dil.	ug/mL	99.80	<5.00e-03	<1.00e-01	<1.00e-1	n/a	n/a	n/a	1.00e-01	n/a
S97T001241	D		Cerium-ICP-Acid Dil.	ug/mL	98.80	<1.00e-01	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S97T001241	D		Cobalt-ICP-Acid Dil.	ug/mL	101.4	<2.00e-02	<4.00e-01	<4.00e-1	n/a	n/a	n/a	4.00e-01	n/a
S97T001241	D		Chromium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001241	D		Copper-ICP-Acid Dil.	ug/mL	98.20	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001241	D		Iron-ICP-Acid Dil.	ug/mL	93.60	<5.00e-02	< 1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a
S97T001241	D		Potassium-ICP-Acid Dil.	ug/mL	101.4	<5.00e-01	< 10.00	<1.00e1	n/a	n/a	n/a	10.00	n/a
S97T001241	D		Lanthanum-ICP-Acid Dil.	ug/mL	100.6	<5.00e-02	< 1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a
S97T001241	D		Magnesium-ICP-Acid Dil.	ug/mL	100.8	<1.00e-01	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S97T001241	D		Manganese-ICP-Acid Dil.	ug/mL	97.60	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001241	D		Molybdenum-ICP-Acid Dil.	ug/mL	101.2	<5.00e-02	< 1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a
S97T001241	D		Sodium-ICP-Acid Dil.	ug/mL	102.8	<1.00e-01	< 5.330	<5.330	5.320	0.38	n/a	2.000	n/a
S97T001241	D		Nickel-ICP-Acid Dil.	ug/mL	100.6	<1.00e-01	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S97T001241	D		Neodymium-ICP-Acid Dil.	ug/mL	99.60	<2.00e-02	<4.00e-01	<4.00e-1	n/a	n/a	n/a	4.00e-01	n/a
S97T001241	D		Phosphorus-ICP-Acid Dil.	ug/mL	102.2	<2.00e-01	< 4.000	<4.00e0	n/a	n/a	n/a	4.000	n/a
S97T001241	D		Lead-ICP-Acid Dil.	ug/mL	98.40	<1.00e-01	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S97T001241	D		Sulfur-ICP-Acid Dil.	ug/mL	99.80	<1.00e-01	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S97T001241	D		Antimony-ICP-Acid Dil.	ug/mL	96.20	<5.00e-02	< 1.200	<1.20e0	n/a	n/a	n/a	1.200	n/a
S97T001241	D		Selenium-ICP-Acid Dil.	ug/mL	94.60	<1.00e-01	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S97T001241	D		Silicon-ICP-Acid Dil.	ug/mL	96.20	<5.00e-02	<2.110	<2.080	2.095	1.43	n/a	1.000	n/a
S97T001241	D		Samarium-ICP-Acid Dil.	ug/mL	98.60	<1.00e-01	< 2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a
S97T001241	D		Strontium-ICP-Acid Dil.	ug/mL	99.60	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001241	D		Titanium-ICP-Acid Dil.	ug/mL	99.20	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001241	D		Thallium-ICP-Acid Dil.	ug/mL	95.40	<2.00e-01	< 4.000	<4.00e0	n/a	n/a	n/a	4.000	n/a
S97T001241	D		Uranium-ICP-Acid Dil.	ug/mL	97.00	<5.00e-01	< 10.00	<1.00e1	n/a	n/a	n/a	10.00	n/a
S97T001241	D		Vanadium-ICP-Acid Dil.	ug/mL	101.0	<5.00e-02	< 1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a
S97T001241	D		Zinc-ICP-Acid Dil.	ug/mL	97.20	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001241	D		Zirconium-ICP-Acid Dil.	ug/mL	99.40	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a
S97T001241			Fluoride-IC-Dionex 4000/4500	ug/mL	104.6	<1.20e-02	< 13.33	<1.33e1	n/a	n/a	n/a	13.33	n/a
S97T001241			Chloride-IC-Dionex 4000/4500	ug/mL	100.5	<1.70e-02	< 34.78	<37.30	36.04	6.93	n/a	18.89	n/a
S97T001241			Nitrite-IC-Dionex 4000/4500	ug/mL	100.2	<1.08e-01	<1.20e+02	<1.20e2	n/a	n/a	n/a	120.0	n/a
S97T001241			Nitrate by IC-Dionex 4000/4500	ug/mL	104.2	<85e-01	<1.54e+02	<208.0	n/a	n/a	n/a	154.4	n/a
S97T001241			Phosphate-IC-Dionex 4000/4500	ug/mL	105.7	<1.20e-01	<1.33e+02	<1.33e2	n/a	n/a	n/a	133.3	n/a
S97T001241			Sulfate by IC-Dionex 4000/4500	ug/mL	106.8	<1.38e-01	<2.37e+02	<287.0	261.9	19.1	n/a	153.3	n/a
S97T001241			Oxalate-IC-Dionex 4000/450	ug/mL	103.4	<1.05e-01	<1.17e+02	<1.17e2	n/a	n/a	n/a	116.7	n/a

HNF-SD-WM-DP-258, REV. 0

156

SEGMENT PORTION: L Lower Half of Segment

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD	Spk	Rec %	Det Limit	Count Err%
6971001365	6	Silver -ICP-fusion	µg/g	104.6	<1.00E-02	2.04E+02	<2.01E-02	7.03E+03	n/a	77.90	204.0	n/a	
6971001365	6	Aluminum -ICP-fusion	µg/g	100.8	<5.00E-02	6.96E+03	<7.10E+03	7.03E+03	1.99	103.0	1.02E+03	n/a	
6971001365	6	Arsenic -ICP-fusion	µg/g	103.8	<1.00E-01	2.04E+03	<2.01E-03	n/a	n/a	101.0	2.04E+03	n/a	
6971001365	6	Beryllium -ICP-fusion	µg/g	103.8	<5.00E-02	1.02E+02	<1.00E-02	n/a	n/a	99.80	1.20E+03	n/a	
6971001365	6	Bismuth -ICP-fusion	µg/g	102.6	<1.00E-01	2.04E+03	<2.01E-03	n/a	n/a	101.0	2.04E+03	n/a	
6971001365	6	Calcium -ICP-fusion	µg/g	97.80	<1.00E-01	2.04E+03	<2.01E-03	n/a	n/a	98.50	2.04E+03	n/a	
6971001365	6	Cadmium -ICP-fusion	µg/g	101.0	<5.00E-03	1.02E+02	<1.00E-02	n/a	n/a	101.0	2.04E+03	n/a	
6971001365	6	Cerium -ICP-fusion	µg/g	100.2	<1.00E-01	2.04E+03	<2.01E-03	n/a	n/a	97.10	2.04E+03	n/a	
6971001365	6	Chromium -ICP-fusion	µg/g	99.80	<2.00E-02	1.79E+03	<4.01E-02	1.79E+03	0.00	97.10	204.0	n/a	
6971001365	6	Cobalt -ICP-fusion	µg/g	99.80	<2.00E-02	1.08E+02	<4.01E-02	n/a	n/a	97.10	204.0	n/a	
6971001365	6	Copper -ICP-fusion	µg/g	103.8	<1.00E-02	2.04E+03	<2.01E-02	n/a	n/a	105.0	204.0	n/a	
6971001365	6	Iron -ICP-fusion	µg/g	99.20	<1.00E-02	1.02E+03	<2.01E-02	n/a	n/a	96.30	1.02E+03	n/a	
6971001365	6	Lanthanum -ICP-fusion	µg/g	101.4	<5.00E-01	1.02E+03	<1.00E-03	n/a	n/a	102.0	1.02E+03	n/a	
6971001365	6	Magnesium -ICP-fusion	µg/g	97.40	<1.00E-01	2.04E+03	<2.01E-03	n/a	n/a	92.60	2.04E+03	n/a	
6971001365	6	Manganese -ICP-fusion	µg/g	100.6	<1.00E-02	2.04E+03	<2.01E-02	n/a	n/a	97.10	2.04E+03	n/a	
6971001365	6	Molybdenum -ICP-fusion	µg/g	100.2	<5.00E-02	1.02E+03	<1.00E-02	n/a	n/a	97.10	2.04E+03	n/a	
6971001365	6	Sodium -ICP-fusion	µg/g	103.6	<1.00E-01	2.67E+03	<2.78E+03	2.78E+03	4.04	167.0	2.04E+03	n/a	
6971001365	6	Niobium -ICP-fusion	µg/g	99.20	<2.00E-01	3.64E+04	<4.30E+04	3.97E+04	16.6	99.30	4.08E+03	n/a	
6971001365	6	Lead -ICP-fusion	µg/g	101.4	<1.00E-01	2.04E+03	<2.01E-03	n/a	n/a	103.0	2.04E+03	n/a	
6971001365	6	Sulfur -ICP-fusion	µg/g	96.60	<1.00E-01	2.04E+03	<2.01E-03	n/a	n/a	92.70	2.04E+03	n/a	
6971001365	6	Antimony -ICP-fusion	µg/g	94.20	<6.00E-02	1.22E+03	<1.20E+03	n/a	n/a	88.90	1.22E+03	n/a	
6971001365	6	Silicon -ICP-fusion	µg/g	103.0	<5.00E-02	2.18E+03	<1.77E+03	1.98E+03	20.8	94.90	1.02E+03	n/a	
6971001365	6	Samarium -ICP-fusion	µg/g	103.0	<1.00E-01	2.04E+03	<2.01E-03	n/a	n/a	104.0	2.04E+03	n/a	
6971001365	6	Strontium -ICP-fusion	µg/g	101.0	<1.00E-02	2.04E+03	<2.01E-02	n/a	n/a	101.0	2.04E+03	n/a	
6971001365	6	Tantalum -ICP-fusion	µg/g	97.40	<1.00E-02	2.04E+03	<2.01E-02	n/a	n/a	96.20	204.0	n/a	
6971001365	6	Thallium -ICP-fusion	µg/g	102.4	<2.00E-01	4.08E+03	<4.01E-03	n/a	n/a	95.10	4.08E+03	n/a	
6971001365	6	Uranium -ICP-fusion	µg/g	93.50	<5.00E-01	4.08E+03	<4.01E-03	n/a	n/a	84.00	4.08E+03	n/a	
6971001365	6	Vanadium -ICP-fusion	µg/g	101.2	<5.00E-02	2.04E+03	<2.01E-02	n/a	n/a	98.30	1.02E+03	n/a	
6971001365	6	Zinc -ICP-fusion	µg/g	101.2	<1.00E-02	2.04E+03	<2.01E-02	n/a	n/a	96.80	204.0	n/a	
6971001365	6	Zirconium -ICP-fusion	µg/g	98.00	<1.00E-02	2.04E+03	<2.01E-02	n/a	n/a	97.30	204.0	n/a	
6971001365	6	Chloride -ICP-fusion	µg/g	4000/4500	<1.70E-02	1.71E+02	<1.71E+02	n/a	n/a	98.20	175.2	n/a	
6971001365	6	Fluoride -ICP-fusion	µg/g	4000/4500	<2.26E-01	1.11E+03	<1.09E+03	n/a	n/a	98.30	1.11E+03	n/a	
6971001365	6	Mercury -ICP-fusion	µg/g	4000/4500	<1.35E-01	9.47E+04	<3.77E+05	3.77E+05	n/a	112.6	1.42E+03	n/a	
6971001365	6	Phosphorus -ICP-fusion	µg/g	4000/4500	<1.20E-01	8.82E+04	<9.47E+04	9.47E+04	6.79	125.2	1.24E+03	n/a	
6971001365	6	Sulfate -ICP-fusion	µg/g	4000/4500	<1.27E-01	1.35E+03	<1.39E+03	n/a	n/a	99.50	1.42E+03	n/a	
6971001365	6	Chloride -ICP-fusion	µg/g	4000/4500	<1.05E-01	6.57E+03	<6.59E+03	6.59E+03	2.15	99.50	1.08E+03	n/a	

DISTRIBUTION SHEET

To Distribution	From Production Planning & Control	Page 1 of 1		
		Date: 09/23/97		
Project Title/Work Order HNF-SD-WM-DP-258, Rev. 0 "Tank 241-BY-101, Cores 189 and 199 Analytical Results for the Final Report"		EDT NO.: EDT-620423		
		ECN NO.: N/A		
Name	MSIN	Text With all Attach	EDT/ECN ONLY	

DE&S Hanford, Inc.

J. E. Meacham	S7-14	X		
---------------	-------	---	--	--

U.S. Department of Energy, RL

C. A. Babel	S7-54	X		
-------------	-------	---	--	--

Lockheed Martin Hanford Corp.

J. N. Appel	G3-21		X	
K. G. Carothers	R2-11		X	
J. Jo	R2-12	X		
T. J. Kelley	S7-21		X	
M. J. Kupfer	H5-49		X	
J. B. Schaffer	R2-12		X	
L. A. Stauffer	R2-11		X	
J. A. Voogd	H5-03		X	
A. E. Young	R1-10	X		

Lockheed Martin Services, Inc.

Central Files	A3-88	1		
---------------	-------	---	--	--

Los Alamos Technical Associates

M. T. Ellsworth	T6-06		X*	
-----------------	-------	--	----	--

Pacific Northwest National Laboratory

S. J. Harris	K7-22	X		
K. L. Silvers	K9-08		X	

Waste Management of Hanford, Inc.

D. C. Hetzer	S6-31		X	
J. L. Nuzum	T6-06		X	
K. L. Powell	T6-12		X	
C. M. Seidel	T6-14		X	
LTIC	T6-03		X	

SGN Furisys Services Corp.

B. A. Higley	H5-27		X	
--------------	-------	--	---	--

Defense Nuclear Federal Safety Board

Rich Tontodonato		X		
625 Indiana Ave. N. W.				
Washington D.C. 20004				

* Needs only releasing paperwork, not a copy of the released document.