~~XXXX~~ RMIS View/Print Document Cover Sheet ~~XXXX~~

This document was retrieved from the Documentation and Records Management (DRM) ISEARCH System. It is intended for Information only and may not be the most recent or updated version. Contact a Document Service Center (see Hanford Info for locations) if you need additional retrieval information.

Accession #: D195066659

Document #: SD-WM-DP-144

Title/Desc:

FINAL REPORT FOR TANK 241T109 AUGER SAMPLES
95-AUG-040 & 95-AUG-041 [SEC 1 OF 2]

Pages: 101

COMPLETE

ENGINEERING CHANGE NOTICE

Page 1 of 21. ECN **627027**Proj.
ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. John M. Conner, Characterization Plans, Coordination and Reports, R2- 12, 373-2711		3a. USQ Required? ☐ Yes ☒ No	4. Date 12/04/95
	5. Project Title/No./Work Order No. Tank 241-T-109		6. Bldg./Sys./Fac. No. N/A	7. Approval Designator Q
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-DP-144, Rev. 0		9. Related ECN No(s). N/A	10. Related PO No. N/A
11a. Modification Work ☐ Yes (fill out Blk. 11b) ☒ No (NA Blks. 11b, 11c, 11d)	11b. Work Package No. N/A	11c. Modification Work Complete N/A _____ Cog. Engineer Signature & Date		11d. Restored to Original Condition (Temp. or Standby ECN only) N/A _____ Cog. Engineer Signature & Date
12. Description of Change This ECN is being generated in order to update/add additional information to the existing document.				
13a. Justification (mark one) Criteria Change ☐ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const ☐ Const. Error/Omission ☐ Design Error/Omission ☒				
13b. Justification Details This ECN will assist in the completion of the documentation process for this document.				
14. Distribution (include name, MSIN, and no. of copies) See attached distribution sheet.			RELEASE STAMP OFFICIAL RELEASE BY WHC DATE DEC 07 1995 <i>Sta. 4</i>	

ECN-627027

ADDITIONAL

Final Report for Tank 241-T-109, Auger Samples 95-AUG-040 and 95-AUG-041

John M. Conner

Westinghouse Hanford Company, Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: ECN-627027

UC: 2070

Org Code: 75310

Charge Code: MD378

B&R Code: EW 3120074

Total Pages: 204

Key Words: Final, Final Report, Tank 241-T-109, Tank T-109, T-109, T
Farm, Auger Sample, 95-AUG-040, 95-AUG-041

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: WHC/BCS Document Control Services, P.O. Box 1970, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.

Release Approval

Date

OFFICIAL RELEASE
BY WHC

DATE DEC 07 1995

Sta. 4

Release Stamp

Approved for Public Release

[illegible]

**Westinghouse
Hanford Company**

P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-144, REV. 1

ANALYTICAL SERVICES

**FINAL REPORT FOR TANK 241-T-109, AUGER SAMPLES
95-AUG-040 AND 95-AUG 041**

DATE PRINTED:

DECEMBER 1, 1995

TABLE OF CONTENTS

Narrative	1
Sample Data Summary	11
Chain of Custody Forms	18
Photographs	21
Sample Handling	24
Extrusion Worklist # 2096	25
Extrusion Worklist # 2089	26
Sample Preparations	27
Fusion Digestion Worklist # 2105	28
Fusion Digestion Worklist # 2106	29
Water Digestion Worklist # 2263	30
Water Digestion Worklist # 2494	31
Acid Digestion Worklist # 2457	32
Inorganic Analyses	33
Percent Solid/Percent Water Analysis Worklist # 2887	34
Percent Solid/Percent Water Analysis Worklist # 3687	39.1
Ion Chromatographic Analysis (IC)	
IC Worklist # 2456	40
IC Worklist # 2601	62
IC Worklist # 2668	72
Inductively Coupled Plasma Spectrographic Analysis (ICP)	
ICP Worklist # 2511 (Direct)	88
ICP Worklist # 2211 (Fusion)	94
ICP Worklist # 2213 (Fusion)	100
Radiochemical Analyses	121
Total Alpha Analysis (AT)	
AT Worklist # 2235	122
AT Worklist # 2236	128

WHC-SD-WM-DP-144, REV. 1
TABLE OF CONTENTS (Continued)

PART II	45-Day Safety Screening Results for Tank 241-T-109, Auger Samples 95-AUG-040 and 95-AUG-041	138
Narrative		140
Sample Data Summary		147
Inorganic Analyses		150
	Differential Scanning Calorimetry (DSC)	
	DSC Worklist # 2118	151
	DSC Worklist # 2138	156
	Thermogravimetric Analyses (TGA)	
	TGA Worklist # 2184	162
	TGA Worklist # 2195	168
	TGA Worklist # 2197	175

This Document consists of pages 1 through 180, plus pages 10.1 and 39.1 - 39.18..

WMC-SD-MM-DP-144, REV. 1

NARRATIVE

FINAL REPORT FOR TANK 241-T-109,
AUGER SAMPLES 95-AUG-040 AND 95-AUG-041

ANALYTICAL SUMMARY

Two 50 cm (20 inch) auger samples were taken from tank 241-T-109 (T-109) in August, 1995. The samples were received at the 222-S Laboratories and underwent safety screening analyses, consisting of differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), and determination of total alpha activity. The results were compared to the safety screening limits at a confidence level of 95%. Two of the samples submitted for moisture content determination by TGA did not meet the minimum criterion of 17 weight percent water stated in the Sampling and Analysis Plan (SAP) [1]. Written notification was provided to all appropriate parties as required in the SAP. All analytical results for the remaining safety screening analyses were within the action limits stated in the SAP. The low moisture content of the samples is not a cause for concern, as moisture is necessary only as a mitigating factor in the case of an energetic event. The lack of exothermic activity (no exotherms detected by DSC for any sample) precludes an exothermic event. In addition, results of gravimetric analyses performed on the same samples indicate that the TGA scans were interpreted conservatively; the gravimetric results indicate that the moisture content of these samples is between 47-51 percent.

Based on the results of combustible gas monitoring prior to auger sampling, the T-109 vapor space is at zero percent of the Lower Flammability Limit (LFL).

None of the analytical results indicate that the tank should be declared "unsafe" per the criteria (energetics, criticality, and flammability) in the *Tank Safety Screening Data Quality Objective* [2]. As the auger samples did not recover a full length profile of the waste in tank, the tank cannot be declared "safe." Additional sampling has been recommended [3].

The tank was evaluated against the *Historical Model Data Evaluation Requirements* [4]. The auger samples did not pass the "gateway" review specified in this document. The cumulative concentration (measured) of the specified gateway analytes, sodium, nitrate, fluoride, and phosphate, was within 85% of the cumulative values given in the DQO (expected). However, the fluoride results for sample 95-AUG-040, and the nitrate results for sample 95-AUG-041 were less than 10% of the expected concentration stated in the DQO. As requested in the DQO, the full range of analytes detected by inductively coupled plasma (ICP) and ion chromatography (IC) are reported in the data summary tables.

SCOPE

This document serves as the final report for the tank T-109 auger samples collected on August 18 and 21, 1995 (samples 95-AUG-040 and 95-AUG-041). The 222-S Laboratories received, extruded, and analyzed each sample in accordance with the SAP [1]. Part I of this report consists of the updated narrative and data summary tables, photographs of the auger samples, and raw data and laboratory worklists not included in the 45-day report. Part II contains the

45-day report in its entirety, including the raw data scans for the DSC and TGA analyses.

FLAMMABILITY SCREENING

Prior to intrusion into a tank, the working zone above the tank and the vapor space of the tank are screened for flammability issues. The results of combustible gas monitoring inside riser 6 of tank T-109 are presented in Table 1. This measurement is conducted in the field and recorded in the work package [5]. These results demonstrate that there were no flammability concerns in the vapor space of tank T-109 at the time of the sampling event.

Table 1. Characteristics of T-109 Vapor Space as Determined by Combustible Gas Monitoring.

Measurement	Result
Total Organic Carbon (TOC)	< 1 ppm
Lower Explosive Limit (LEL)	0% of LEL
Oxygen (O ₂)	21.0%
Ammonia (NH ₃)	0 ppm

SAMPLE RECEIPT, EXTRUSION, AND SUBSAMPLING

95-AUG-040

Auger sample 95-AUG-040 was collected from riser 6 of tank T-109 on August 18, 1995 and extruded on August 24, 1995. Most of the sample fell onto the extrusion tray. The bulk of the sample appeared to come from flutes 1-6 at the top of the auger, with only a thin coating on the remaining flutes. A total of 67.5 g of dirty-white, crystalline solids were recovered. A subsample was taken for an immediate, unhomogenized TGA analysis as required by the SAP. The remainder of the sample was homogenized and subsampled for further laboratory analyses and archiving. Due to the relatively low recovery, the sample was not divided into subsegments, but was analyzed on a whole-segment basis. Extrusion and subsampling information is also recorded in the hot cell logbook [6].

95-AUG-041

Auger sample 95-AUG-041 was collected from riser 2 of Tank T-109 on August 21, 1995, and extruded on August 25, 1995. Most of the sample fell onto the extrusion tray. A total of 232.5 g of solids was recovered. The sample was divided into upper and lower half-segments, with the upper half appearing to be gray-black crystals and the lower half appearing to be dirty white crystals. Subsamples were taken from the each half-segment for unhomogenized TGA analyses as required in the SAP. The remaining material was subsampled into upper and lower half-segments, homogenized, and subsampled further for laboratory analyses and archiving.

Subsamples of each half-segment were then recombined and subsampled for composite analyses and for shipment to Pacific Northwest National Laboratory for use in pretreatment studies. Extrusion and subsampling information is also recorded in the hot cell logbook [6].

ANALYTICAL RESULTS

The analyses are discussed below. The data summary tables are attached. For prepared samples (alpha, ICP, and IC analyses), the reported detection limits are based on the dilution factor for the sample result. The duplicate results are calculated from a different dilution; therefore the results reported as "<" ("less-than") may differ slightly from the reported detection limit.

THERMOGRAVIMETRIC ANALYSIS (TGA)

Three unhomogenized and three homogenized samples were submitted for moisture content determination by TGA per procedures LA-560-112, Rev. B-0, or LA-514-114, Rev. C-0. The samples were analyzed in duplicate. The results are presented in the summary tables, and the raw data scans included in Part II of this report. Per the safety screening DQO [2], the sample results were compared to the action limit at a 95% confidence level. These comparisons are presented in Part II. The lower 95% confidence level for two of the samples fell below the limit of 17 weight percent water stated in the SAP. These two samples were the immediate, unhomogenized sample, and the homogenized sample from auger 95-AUG-040 (samples S95T001597 and S95T001600). Since all DSC results on these auger samples were zero J/g (no exotherms detected), the low moisture content reported for these samples is not a cause for concern. In fact, inspection of the thermograms (included in Part II) revealed that the weight loss curves for these two samples were interpreted conservatively (first integration is only up to a slight inflection of the curves at about 105 °C). The second weight loss step is also integrated; if the two steps are added, the weight loss is similar to what is recorded for the other samples from this tank. Gravimetric analyses were performed for the T-109 subsamples to assess the accuracy of the TGA results. Comparison of the TGA (first and second weight loss steps) and gravimetric results is presented in Table 2.

GRAVIMETRIC ANALYSIS

Gravimetric analyses were conducted in duplicate on samples S95T001597 and S95T001600, which fell below the 17% moisture criterion as determined by TGA. The analytical procedure is method LA-564-101, Rev. F-1. The results are presented in the data summary tables.

Gravimetric analyses were also performed for the remaining T-109 subsamples to allow for a full comparison of the TGA and gravimetric results. The mean moisture results from the TGA and gravimetric analyses are compared in Table 2. These results appear to confirm that the TGA scans for samples S95T001597 and S95T001600 were interpreted conservatively.

Table 2. Moisture Results by TGA and Gravimetric Analysis
for Tank T-109 Auger Samples

Sample Description	Sample Number	Thermogravimetric Analysis (TGA) (percent water)						Gravimetric Analysis (percent water)			Differential Scanning Calorimetry (DSC) (J/g)
		1st transition			2nd transition			Sample Result	Duplicate Result	Mean Result	
		Sample Result	Dup. Result	Mean	Sample Result	Dup. Result	Mean				
AUG-040, whole-segment, immediate moisture	S95T001597	15.57	16.87	16.22	40.98	46.87	43.93	50.70	50.40	50.55	0
AUG-040, whole-segment	S95T001600	12.79	12.21	12.46	50.11	48.29	49.20	47.60	49.30	48.45	0
AUG-041, lower half, immediate moisture	S95T001616	n/a	n/a	n/a	44.39	46.58	45.42	45.60	45.50	45.55	0
AUG-041, upper half, immediate moisture	S95T001626	n/a	n/a	n/a	49.11	51.95	50.53	48.90	49.20	49.05	0
AUG-041, lower half	S95T001618	n/a	n/a	n/a	59.57	63.76	61.56	46.60	45.70	46.15	0
AUG-041, upper half	S95T001629	n/a	n/a	n/a	48.87	49.50	49.08	48.10	47.30	47.40	0

Note:

Shading denotes TGA values officially reported.

DIFFERENTIAL SCANNING CALORIMETRY (DSC)

Three samples were submitted for determination of energetics by DSC per procedure LA-514-113, Rev. C-0 or procedure LA-514-114, Rev. C-0, depending on which DSC instrument was used. The samples were analyzed in duplicate. The results are presented in the summary tables, and the raw data scans are included in Part II. None of the samples exhibited exotherms. Since none of the samples exhibited any exotherms, the statistical calculation of an upper 95% confidence level for each sample is unnecessary.

ALPHA TOTAL

Three solids samples were submitted for total alpha analysis per procedure LA-508-101, Rev. D-2. The samples were fusion digested per procedure LA-549-141, Rev. D-0 prior to analysis. Two fusions were prepared per sample (for duplicate results). Each fused dilution was analyzed twice; the results were averaged and reported as one value. The highest result returned was 0.00653 $\mu\text{Ci/g}$, almost four orders of magnitude below the action limit of 41 $\mu\text{Ci/g}$. The upper 95% confidence level for each sample has been calculated and is presented in Part II. All of the adjusted results are far below the action limit.

Results for the two blanks run with these samples were below detection limits. The two standards run with these samples exhibited recoveries within the 90-110% range specified in the SAP. A spike was run with each of the three samples. Spike recoveries ranged from 79.30% to 83.30%, which, although somewhat low, are within the laboratory control range of 75-125%. Reruns to improve spike recovery were deemed unnecessary as the sample results were far below the action limit. These quality control results are presented in the summary tables.

ION CHROMATOGRAPHY

Samples for IC analysis were prepared by water digestion and performed in duplicate per procedure LA-533-105, Rev. D-1. All analytes reported by the IC instrument were requested (except for oxalate). However, only the fluoride, nitrate, and phosphate results are discussed here, as these are the only anions requested by the Historical DQO [4] for this tank. If other data are to be used, the quality control criteria and raw data should be evaluated. Of the remaining IC analytes reported, only the chloride results for auger 95-AUG-040 are above detection limits.

The average concentrations of fluoride, nitrate, and phosphate in the samples are presented in Table 3. The concentrations of fluoride and nitrate in the two auger samples are markedly different. The mean concentration of fluoride detected in auger 95-AUG-040 is approximately 30 times lower than the concentrations detected in auger 95-AUG-041. The mean concentration of nitrate in the sample from auger 95-AUG-040 is approximately ten times higher than the levels detected in the samples from auger 95-AUG-041. The nitrate results for the composite sample from auger 95-AUG-041 were low compared to the upper and lower half-segment results for the same auger.

The phosphate results appeared to be more uniform throughout the the samples than the fluoride and nitrate results. The phosphate results for the whole segment sample from auger 95-AUG-040 are close to the average concentrations determined for the samples from auger 95-AUG-041. The lower results for the composite could be attributed to inhomogeneity of the sample. The large salt crystals and range of particle sizes evident in the extrusion photographs could easily lead to poor reproducibility in subsampling. Subsample size is typically limited to approximately 5-10 g in order to conserve sample and limit dosage. Homogenization of the subsamples does not appear to have been problematic, as most of the sample/duplicate pairs exhibited low RPDs (exceptions discussed below). Another possible concern, additional evaporation of water from the composite sample (due to additional handling) also does not appear to have been a problem; had this been the case, the composite results would have been higher, not lower, than the subsegment results. The phosphate results are compared to the phosphorus results (by ICP) in the following section, "Inductively Coupled Plasma Analysis."

The standards recovery, sample/duplicate RPDs, and spike recovery data for the target analytes (F, NO₃, PO₄) were evaluated to assess the quality of the data. All of the standards data were within the limits stated in the SAP. The high RPDs for nitrate (samples S95T001631 and S95T002176) can be explained by the fact the the phosphate peak interferes with the resolution of the much smaller nitrate peak. The high RPD (34.0%) and low spike recovery (86.10%) for fluoride on sample S95T001613 (whole segment subsample from 95-AUG-040) can be attributed to the fact that the fluoride peak is very near the baseline and suffers interference from the slightly larger chloride peak. The spike result is still within the method control limits. All these quality control issues were discussed with and accepted by the Historical DQO point of contact.

Table 3. Average Results for F, NO₃, and PO₄ by IC

Labcore #	Sample Description	Mean Fluoride by IC (µg/g)	Mean Nitrate (µg/g)	Mean Phosphate (µg/g)
S95T001613	AUG-040, whole segment	821.5	38,000	268,000
S95T002176	AUG-041, core composite	24,000	2840	238,000
S95T001631	AUG-041, upper half	23,000	3380	268,000
S95T001620	AUG-041, lower half	27,600	3530	274,000

INDUCTIVELY COUPLED PLASMA ANALYSIS

Samples were prepared by either fusion or acid digests (the customer revised their DQO [4] to indicate that acid digests are now preferred, as fusion digests require large dilutions, leading to higher detection limits). The ICP analyses were performed per procedures LA-505-161, Rev. B-0, or LA-505-151, Rev. D-3, depending on the ICP instrument used. The full range of analytes available from the instruments are reported; however, only the sodium and phosphorus results are discussed here (sodium is the only metal analyte

specifically requested by the Historical DQO [4], and phosphorus is discussed as a cross-check for the phosphate results reported from IC analyses). If other data are to be used, the quality control criteria should be evaluated. Results for silver, aluminum, boron, bismuth, calcium, chromium, iron, manganese, lead, sulfur, silicon, and zinc are above detection limits in some (if not all) of the samples. The potassium and nickel results for the ICP-fusion analyses (samples S95T001612, S95T001619, and S95T001630) should be disregarded, as the samples were prepared in a nickel crucible by fusion using potassium hydroxide.

The average sodium and phosphorus results are presented in Table 4. The sodium results for auger 95-AUG-040 appear slightly lower than the results for auger 95-AUG-041. The phosphorus results appear to be very similar for all of the samples.

Table 4. Average Results for Sodium and Phosphorus by ICP

Labcore #	Sample Description	Mean Sodium ($\mu\text{g/g}$)	Mean Phosphorus ($\mu\text{g/g}$)
S95T001612	AUG-040, whole segment	166,000	83,300
S95T002177	AUG-041, core composite	183,000	81,000
S95T001630	AUG-041, upper half	189,000	81,100
S95T001619	AUG-041, lower half	203,000	80,400

Recoveries for the standards (for sodium and phosphorus) run with these samples were within the 90-110% range specified by the SAP. Spike recoveries for sodium ranges from 79.17% to 117.0% (within the method control limits of 75-125%). The relatively poor spike recoveries for sodium may be attributed to high concentration of sodium in the samples (samples cannot be spiked to levels much greater than already present). Spike recoveries for phosphorus exceeded the method control limits for two samples (S95T001630 and S95T001619). Reruns were not necessary, as phosphorus was not requested by the customer, but is discussed only for comparative purposes.

The phosphorus results are compared to the phosphate results (by IC) in Table 5 by assuming that all phosphorus is present in the waste as phosphate. The ICP results are adjusted by the ratio of the relative masses of phosphate to phosphorus. The RPDs between the IC results and the adjusted ICP results are presented for each subsample analyzed. The low RPDs indicate that the results are in good agreement. As discussed above, the spike recoveries for some of the phosphorus samples were outside of the method control limits. Therefore, the phosphate results are considered a better measure of actual concentrations in the waste.

Table 5. Comparison of Phosphorus and Phosphate Results, Assuming Phosphorus is Present as Phosphate

Sample Description	Mean Phosphorus by ICP ($\mu\text{g/g}$)	Adjusted PO_4 by ICP ($\mu\text{g/g}$)	Mean Phosphate by IC ($\mu\text{g/g}$)	Relative Percent Difference
AUG-040, whole segment	83,300	255,000	268,000	4.97
AUG-041, core composite	81,000	248,000	238,000	4.12
AUG-041, upper half	81,100	249,000	268,000	7.35
AUG-041, lower half	80,400	247,000	274,000	10.4

* Calculated using molar equivalence, assuming all phosphorus is present as phosphate:
 $30.97 \mu\text{g P equals } 94.97 \mu\text{g PO}_4$.

HISTORICAL DQO EVALUATION

The historical DQO [4] requires that certain "gateway" analyses be performed in order to determine whether the targeted sample is of the waste type predicted by the tank layer model. The results from the gateway analyses are compared to the minimum expected concentrations given in the DQO. If the sum of the concentrations of the measured analytes are within 85% of the sum of the expected concentrations given in the DQO, and all target analytes are within 10% of their expected concentrations, then a more extensive suite of analyses is required by the DQO. The analytical results for the T-109 auger samples are compared to the minimum expected concentrations given in the DQO in Table 5. The samples did not pass the gateway review, since the analytical results for fluoride from auger 95-AUG-040 and for nitrate for auger 95-AUG-041 were less than 10% of their expected concentrations.

Table 6. T-109 Auger Samples: Comparison of Analytical Results to Expected Concentrations*

Analytes	Expected Conc. [†]	Analytical Results							
		95-AUG-040		95-AUG-041 (lower half)		95-AUG-041 (upper half)		95-AUG-041 (composite)	
		Mean Results ⁺	% of Expected	Mean Results ⁺	% of Expected	Mean Results ⁺	% of Expected	Mean Results ⁺	% of Expected
Sodium	144,000	166,000	115%	203,000	141%	189,000	131%	183,000	127%
Fluoride	11,000	821.5	7.5%	27,600	251%	23,000	209%	24,000	218%
Nitrate	86,000	38,000	44%	3530	4.1%	3380	3.9%	2840	3.3%
Phosphate	96,900	268,000	277%	274,000	283%	268,000	277%	238,000	254%
Percent H ₂ O (Gravimetric)	36.1	48.45	134%	46.15	128%	47.70	132%	-	n/a
Summary of Expected/ Measured Analytes (not including H ₂ O)	337,900	472,800	140%	508,100	150%	483,400	143%	447,800	133%

* Expected concentrations given in the Historical DQO (Ref. 4, WHC-SD-MM-DQO-018, Rev. 0A).

[†] All results are in µg/g, except for % H₂O (gravimetric), which is in g/cm³.

Shading denotes cases where measured concentration is less than 10% of expected (fails historical "gateway" analysis).

Project Coordinator: J. M. Conner

REFERENCES

- [1] J. M. Conner, *Tank 241-T-109 Auger Sampling and Analysis Plan*, WHC-SD-WM-TSAP-014, Rev. 0A, Westinghouse Hanford Company, Richland, Washington, November 29, 1995.
- [2] G. T. Dukelow, et al., *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, Washington, August 31, 1995.
- [3] Internal Memo, J. M. Conner to T. J. Kelley, "Need Identified to Resample Tank 241-T-109," IM# 75310-95-098, October 24, 1995.
- [4] B. C. Simpson and D. J. McCain, *Historical Model Evaluation Data Requirements*, WHC-SD-WM-DQO-018, Rev. 0A, Westinghouse Hanford Company, Richland, Washington, October 3, 1995.
- [5] Work Package #WS-95-00109.
- [6] WHC Controlled Notebook WHC-N-1186.

WMC-SD-MM-DP-144, REV. 1

SAMPLE DATA SUMMARY

Final Report for Auger Samples 95-AUG-040 and 95-AUG-041
T-109

CORE NUMBER: n/a
SEGMENT #: 95-AUG-040

SEGMENT PORTION: Immediate Sampling (to check moisture loss)

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD % Spk Rec %	Det Limit	Count Err%
S95T001597		% Water by Gravimetric	%	100.8	n/a	50.70	50.40	50.55	0.59	1.00e-02	n/a
S95T001597		% Water by IGA using Mettler	%	101.1	n/a	15.57	16.87	16.22	8.01	n/a	n/a

Whole Segment: V Whole Segment

Sample#	R#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD % Spk Rec %	Det Limit	Count Err%
S95T001600		% Water by Gravimetric	%	100.8	n/a	47.60	49.30	48.45	3.51	1.00e-02	n/a
S95T001600		% Water by IGA using Mettler	%	101.1	n/a	12.70	12.21	12.46	3.93	n/a	n/a
S95T001600		BSC Exotherm on Perkin Elmer	Joules/g	95.85	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a
S95T001612	F	Alpha of Digested Solid	Ug/g	106.4	<9.61e-04	1.91e-02	<121.541	2.05e-02	13.7	2.38e-03	20.2
S95T001612	F	Silver - ICP-Fusion	Ug/g	100.2	3.00e-04	<122.5260	<121.541	n/a	n/a	80.00	123.0
S95T001612	F	Aluminum - ICP-Fusion	Ug/g	100.9	2.80e-03	1.37e+03	1.46e+03	1.41e+03	6.77	94.30	613.0
S95T001612	F	Arsenic - ICP-Fusion	Ug/g	104.0	2.30e-03	<612.6300	<607.705	n/a	n/a	101.0	613.0
S95T001612	F	Barium - ICP-Fusion	Ug/g	101.4	5.10e-03	<612.6300	<607.705	n/a	n/a	94.70	613.0
S95T001612	F	Beryllium - ICP-Fusion	Ug/g	101.8	7.00e-04	<612.6300	<607.705	n/a	n/a	92.71	613.0
S95T001612	F	Bismuth - ICP-Fusion	Ug/g	105.3	1.00e-04	<61.2630	<60.7705	n/a	n/a	96.94	61.30
S95T001612	F	Cadmium - ICP-Fusion	Ug/g	102.7	6.20e-03	<1225.260	<1215.41	n/a	n/a	99.90	1.23e+03
S95T001612	F	Calcium - ICP-Fusion	Ug/g	102.8	7.50e-02	1.41e+03	1.32e+03	1.36e+03	6.42	100.0	1.23e+03
S95T001612	F	Cerium - ICP-Fusion	Ug/g	104.1	5.00e-04	<1225.260	<1215.41	n/a	n/a	96.18	1.23e+03
S95T001612	F	Cobalt - ICP-Fusion	Ug/g	102.7	1.60e-03	<245.8520	<243.082	n/a	n/a	96.86	245.0
S95T001612	F	Chromium - ICP-Fusion	Ug/g	104.5	9.00e-04	<122.5260	<121.541	n/a	n/a	101.2	123.0
S95T001612	F	Copper - ICP-Fusion	Ug/g	102.8	1.10e-03	<122.5260	<121.541	n/a	n/a	95.56	123.0
S95T001612	F	Iron - ICP-Fusion	Ug/g	104.1	9.00e-04	3.40e+03	6.34e+03	3.87e+03	24.2	99.59	613.0
S95T001612	F	Potassium - ICP-Fusion	Ug/g	99.86	4.20e-02	5.22e+06	n/a	n/a	n/a	n/a	3.68e+03
S95T001612	F	Lanthanum - ICP-Fusion	Ug/g	102.3	0.00e+00	<612.6300	<607.705	n/a	n/a	94.85	613.0
S95T001612	F	Lithium - ICP-Fusion	Ug/g	99.43	1.50e-03	<122.5260	<121.541	n/a	n/a	89.63	123.0
S95T001612	F	Magnesium - ICP-Fusion	Ug/g	100.0	4.60e-03	<1225.260	<1215.41	n/a	n/a	96.24	1.23e+03
S95T001612	F	Manganese - ICP-Fusion	Ug/g	101.5	9.00e-04	1.38e+03	1.63e+03	1.50e+03	16.4	95.66	123.0
S95T001612	F	Molybdenum - ICP-Fusion	Ug/g	103.5	2.00e-03	<612.6300	<607.705	n/a	n/a	99.46	613.0
S95T001612	F	Sodium - ICP-Fusion	Ug/g	99.36	1.35e-01	1.69e+05	1.64e+05	1.66e+05	2.61	79.17	1.23e+03
S95T001612	F	Neodymium - ICP-Fusion	Ug/g	105.0	2.00e-03	<1225.260	<1215.41	n/a	n/a	96.85	1.23e+03
S95T001612	F	Nickel - ICP-Fusion	Ug/g	104.0	3.40e-03	2.84e+03	1.67e+03	2.26e+03	52.3	98.53	245.0
S95T001612	F	Phosphorus - ICP-Fusion	Ug/g	107.6	4.81e-02	8.38e+04	8.28e+04	8.33e+04	1.21	98.67	2.45e+03
S95T001612	F	Lead - ICP-Fusion	Ug/g	103.5	1.35e-02	<1225.260	<1215.41	n/a	n/a	102.3	1.23e+03
S95T001612	F	Sulfur - ICP-Fusion	Ug/g	102.7	1.20e-02	<612.6300	<607.705	n/a	n/a	101.7	613.0
S95T001612	F	Antimony - ICP-Fusion	Ug/g	96.79	2.00e-03	<2450.520	<2430.82	n/a	n/a	95.86	2.45e+03
S95T001612	F	Selenium - ICP-Fusion	Ug/g	101.2	5.34e-02	<1225.260	<1215.41	n/a	n/a	101.9	1.23e+03
S95T001612	F	Silicon - ICP-Fusion	Ug/g	97.40	2.52e-02	1.05e+03	1.24e+03	1.15e+03	16.5	95.08	613.0
S95T001612	F	Samarium - ICP-Fusion	Ug/g	102.3	1.72e-02	<1225.260	<1215.41	n/a	n/a	96.36	1.23e+03
S95T001612	F	Strontium - ICP-Fusion	Ug/g	100.9	4.00e-04	<122.5260	<121.541	n/a	n/a	95.28	123.0
S95T001612	F	Titanium - ICP-Fusion	Ug/g	99.03	0.00e+00	<122.5260	<121.541	n/a	n/a	95.70	123.0
S95T001612	F	Thallium - ICP-Fusion	Ug/g	101.2	6.20e-03	<2450.520	<2430.82	n/a	n/a	98.36	2.45e+03

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-144, REV. 1

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
				Lower	Upper									
S95T001612	F	Uranium - ICP-Fusion	ug/g	None	None	101.0	-4.69e-02	<4901.040	<4361.64	n/a	n/a	92.35	4.90e+03	n/a
S95T001612	F	Vanadium - ICP-Fusion	ug/g	None	None	102.5	3.40e-03	<612.6306	<607.705	n/a	n/a	98.35	613.0	n/a
S95T001612	F	Zinc - ICP-Fusion	ug/g	None	None	102.8	1.99e-02	255.3	255.2	254.2	0.72	99.77	123.0	n/a
S95T001612	F	Zirconium - ICP-Fusion	ug/g	None	None	101.1	1.60e-03	<122.5260	<121.541	n/a	n/a	95.26	123.0	n/a
S95T001613	V	Bromide by Ion Chromatograph	ug/g	None	None	100.7	-6.32e-01	<1.30E03	<1.30E03	n/a	n/a	101.2	1.30e+03	n/a
S95T001613	V	Chloride by IC - Dionex 4000i	ug/g	None	None	98.59	-8.30e-02	578.0	569.0	573.3	1.57	95.00	171.0	n/a
S95T001613	V	Fluoride by IC - Dionex 4000i	ug/g	None	None	103.5	-6.20e-02	941.0	682.0	821.5	34.0	96.10	128.0	n/a
S95T001613	V	Nitrite by IC - Dionex 4000i	ug/g	None	None	100.5	-5.47e-01	<1.15E02	<1.15E03	n/a	n/a	98.10	113.0	n/a
S95T001613	V	Nitrate by IC - Dionex 4000i	ug/g	None	None	100.9	-6.99e-01	3.88e+04	3.74e+04	3.80e+04	3.94	104.6	6.92e+03	n/a
S95T001613	V	Phosphate by IC - Dionex 4000i	ug/g	None	None	103.4	-5.96e-01	2.85e+05	2.50e+05	2.68e+05	13.1	91.10	5.90e+03	n/a
S95T001613	V	Sulfate by IC - Dionex 4000i	ug/g	None	None	102.5	-6.78e-01	<1.40E03	<1.40E03	n/a	n/a	103.8	1.40e+03	n/a

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-144, REV.1

Final Report for Auger Samples 95-AUG-040 and 95-AUG-041
T-109CORE NUMBER: n/a
SEGMENT #: 95-AUG-041

SEGMENT PORTION: Core Composite

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
				Lower	Upper									
S95T002176	U	Bromide by Ion Chromatograph	ug/g	None	None	99.29	<6.32e-01	< 5.63e2	<5.63e02	n/a	n/a	n/a	563.0	n/a
S95T002176	U	Chloride by IC - Dionex 4000i	ug/g	None	None	103.8	<8.30e-02	80.90	<7.48e01	n/a	n/a	n/a	74.80	n/a
S95T002176	U	Fluoride by IC - Dionex 4000i	ug/g	None	None	97.46	<6.30e-02	2.35e+04	2.45e+04	2.40e+04	4.17	n/a	512.0	n/a
S95T002176	U	Nitrite by IC - Dionex 4000i	ug/g	None	None	97.14	<5.54e-01	< 4.92e2	<4.92e02	n/a	n/a	n/a	492.0	n/a
S95T002176	U	Nitrate by IC - Dionex 4000i	ug/g	None	None	99.30	<6.99e-01	3.21e+03	2.46e+03	2.84e+03	26.5	n/a	622.0	n/a
S95T002176	U	Oxalate by IC - Dionex 4000i	ug/g	None	None	92.59	<4.96e-01	< 4.68e2	<4.68e02	n/a	n/a	n/a	468.0	n/a
S95T002176	U	Phosphate by IC - Dionex 4000i	ug/g	None	None	98.96	<5.96e-01	2.37e+05	2.38e+05	2.38e+05	0.42	n/a	4.87e+03	n/a
S95T002176	U	Sulfate by IC - Dionex 4000i	ug/g	None	None	98.15	<6.78e-01	< 6.04e2	<6.04e02	n/a	n/a	n/a	604.0	n/a
S95T002177	A	Silver -ICP-Acid Digest	ug/g	None	None	85.70	-1.00e-05	18.70	18.40	18.55	1.62	465.0	10.00	n/a
S95T002177	A	Aluminum -ICP-Acid Digest	ug/g	None	None	96.60	1.54e-02	1.41e+03	1.42e+03	1.42e+03	0.71	99.90	50.00	n/a
S95T002177	A	Arsenic -ICP-Acid Digest	ug/g	None	None	95.20	-4.70e-03	<1.00e+02	<1.00e2	n/a	n/a	103.0	100.0	n/a
S95T002177	A	Boron -ICP-Acid Digest	ug/g	None	None	95.40	8.13e-03	217.0	217.0	217.0	0.00	99.30	50.00	n/a
S95T002177	A	Barium -ICP-Acid Digest	ug/g	None	None	93.80	1.50e-04	<5.00e+01	<5.00e1	n/a	n/a	96.00	50.00	n/a
S95T002177	A	Beryllium -ICP-Acid Digest	ug/g	None	None	104.4	-6.00e-05	<5.00e+00	<5.00e0	n/a	n/a	101.0	5.000	n/a
S95T002177	A	Bismuth -ICP-Acid Digest	ug/g	None	None	91.60	-7.79e-03	158.0	158.0	159.5	13.6	99.00	100.0	n/a
S95T002177	A	Calcium -ICP-Acid Digest	ug/g	None	None	98.20	1.63e-01	396.0	396.0	396.5	0.92	103.4	100.0	n/a
S95T002177	A	Calcium -ICP-Acid Digest	ug/g	None	None	95.00	5.20e-04	<5.00e+00	<5.00e0	n/a	n/a	100.0	5.000	n/a
S95T002177	A	Cadmium -ICP-Acid Digest	ug/g	None	None	96.20	3.80e-04	<1.00e+02	<1.00e2	n/a	n/a	99.80	100.0	n/a
S95T002177	A	Cobalt -ICP-Acid Digest	ug/g	None	None	95.40	1.32e-04	<2.00e+01	<2.00e1	n/a	n/a	100.0	20.00	n/a
S95T002177	A	Chromium -ICP-Acid Digest	ug/g	None	None	95.20	2.05e-03	39.70	39.50	39.60	0.51	101.0	10.00	n/a
S95T002177	A	Copper -ICP-Acid Digest	ug/g	None	None	98.60	1.80e-03	<1.00e+01	<1.00e1	n/a	n/a	99.60	10.00	n/a
S95T002177	A	Iron -ICP-Acid Digest	ug/g	None	None	96.00	1.97e-02	1.59e+04	1.59e+04	1.59e+04	0.00	109.6	50.00	n/a
S95T002177	A	Potassium -ICP-Acid Digest	ug/g	None	None	94.00	-1.31e-02	<5.00e+02	<5.00e2	n/a	n/a	88.60	500.0	n/a
S95T002177	A	Lanthanum -ICP-Acid Digest	ug/g	None	None	95.60	-3.70e-04	<5.00e+01	<5.00e1	n/a	n/a	98.00	50.00	n/a
S95T002177	A	Lithium -ICP-Acid Digest	ug/g	None	None	95.80	-6.90e-04	<1.00e+01	<1.00e1	n/a	n/a	96.70	10.00	n/a
S95T002177	A	Neonmium -ICP-Acid Digest	ug/g	None	None	92.40	2.13e-02	<1.00e+02	111.0	n/a	n/a	108.0	100.0	n/a
S95T002177	A	Manganese -ICP-Acid Digest	ug/g	None	None	93.00	3.80e-04	1.12e+03	1.11e+03	1.12e+03	0.90	97.20	10.00	n/a
S95T002177	A	Molybdenum -ICP-Acid Digest	ug/g	None	None	96.60	-1.70e-04	<5.00e+01	<5.00e1	n/a	n/a	101.0	50.00	n/a
S95T002177	A	Sodium -ICP-Acid Digest	ug/g	None	None	97.20	6.34e-02	1.82e+05	1.84e+05	1.83e+05	1.09	320.4	100.0	n/a
S95T002177	A	Neodymium -ICP-Acid Digest	ug/g	None	None	95.40	2.02e-03	<1.00e+02	<1.00e2	n/a	n/a	101.0	100.0	n/a
S95T002177	A	Nickel -ICP-Acid Digest	ug/g	None	None	94.60	2.83e-03	<2.00e+01	<2.00e1	n/a	n/a	101.0	20.00	n/a
S95T002177	A	Phosphorus -ICP-Acid Digest	ug/g	None	None	97.00	1.67e-02	8.10e+04	8.10e+04	8.10e+04	0.00	85.80	200.0	n/a
S95T002177	A	Lead -ICP-Acid Digest	ug/g	None	None	92.60	1.93e-03	344.0	231.0	302.5	27.4	94.60	100.0	n/a
S95T002177	A	Sulfur -ICP-Acid Digest	ug/g	None	None	94.00	5.88e-02	173.0	172.0	172.5	0.58	99.70	100.0	n/a
S95T002177	A	Antimony -ICP-Acid Digest	ug/g	None	None	88.80	1.75e-03	<6.00e+01	<6.00e1	n/a	n/a	96.10	60.00	n/a
S95T002177	A	Selenium -ICP-Acid Digest	ug/g	None	None	96.60	9.47e-03	<1.00e+02	<1.00e2	n/a	n/a	98.90	100.0	n/a
S95T002177	A	Silicon -ICP-Acid Digest	ug/g	None	None	111.2	1.71e-02	2.58e+03	2.58e+03	2.58e+03	0.00	101.6	50.00	n/a
S95T002177	A	Samarium -ICP-Acid Digest	ug/g	None	None	95.60	-8.46e-03	<1.00e+02	<1.00e2	n/a	n/a	97.90	100.0	n/a
S95T002177	A	Strontium -ICP-Acid Digest	ug/g	None	None	94.20	2.30e-04	<1.00e+01	<1.00e1	n/a	n/a	97.00	10.00	n/a
S95T002177	A	Titanium -ICP-Acid Digest	ug/g	None	None	93.60	5.90e-04	<1.00e+01	<1.00e1	n/a	n/a	97.40	10.00	n/a
S95T002177	A	Thallium -ICP-Acid Digest	ug/g	None	None	92.60	-2.12e-03	<2.00e+02	<2.00e2	n/a	n/a	97.50	200.0	n/a
S95T002177	A	Uranium -ICP-Acid Digest	ug/g	None	None	95.60	-3.65e-02	<5.00e+02	<5.00e2	n/a	n/a	99.50	500.0	n/a
S95T002177	A	Vanadium -ICP-Acid Digest	ug/g	None	None	93.80	-1.19e-03	<5.00e+01	<5.00e1	n/a	n/a	98.80	50.00	n/a

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-144, REV. 1

A-0002-1

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T002177	A		Zinc -ICP-Acid Digest	ug/g	None	None	91.60	1.65e-02	48.10	55.90	52.00	15.0	102.2	10.00	n/a
S95T002177	A		Zirconium -ICP-Acid Digest	ug/g	None	None	96.80	-1.08e-03	12.60	11.80	12.20	6.56	97.70	10.00	n/a

Immediate Sampling (to check moisture loss): Immediate Sampling (to check moisture loss)

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T001616			% Water by Gravimetric	%	None	115.0	100.4	n/a	45.60	45.50	45.55	0.22	n/a	1.00e-02	n/a
S95T001616			% Water by TGA on Perkin Elmer	%	None	115.0	100.5	n/a	44.35	46.50	45.42	4.73	n/a	n/a	n/a
S95T001626			% Water by Gravimetric	%	None	115.0	100.4	n/a	48.90	49.20	49.05	0.61	n/a	1.00e-02	n/a
S95T001626			% Water by TGA on Perkin Elmer	%	None	115.0	100.5	n/a	49.11	51.95	50.53	5.62	n/a	n/a	n/a

U Upper Half of Segment: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S95T001629			% Water by Gravimetric	%	None	115.0	100.4	n/a	48.10	47.30	47.70	1.68	n/a	1.00e-02	n/a
S95T001629			% Water by TGA using Mettler	%	None	115.0	100.9	n/a	48.87	49.30	49.08	0.88	n/a	n/a	n/a
S95T001629			DSC Exotherm using Mettler	Joules/g	-9.9e+01	None	103.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T001630	F		Alpha of Digested Solid	uCi/g	-9.9e+01	None	108.1	<1.32e-03	9.47e-03	5.16e-03	7.31e-03	58.9	81.90	1.75e-03	25.8
S95T001630	F		Silver -ICP-Fusion	ug/g	None	None	98.66	-1.00e-04	<125.7010	<124.568	n/a	n/a	99.15	126.0	n/a
S95T001630	F		Aluminum -ICP-Fusion	ug/g	None	None	100.5	7.30e-03	1.43e+03	859.2	1.13e+03	52.8	96.80	629.0	n/a
S95T001630	F		Arsenic -ICP-Fusion	ug/g	None	None	102.5	-5.00e-03	<628.5051	<622.844	n/a	n/a	100.5	629.0	n/a
S95T001630	F		Boron -ICP-Fusion	ug/g	None	None	101.7	1.40e-03	<628.5051	<622.844	n/a	n/a	96.54	629.0	n/a
S95T001630	F		Barium -ICP-Fusion	ug/g	None	None	101.1	9.00e-04	<628.5051	<622.844	n/a	n/a	98.65	629.0	n/a
S95T001630	F		Beryllium -ICP-Fusion	ug/g	None	None	104.9	3.00e-04	<62.8505	<62.8044	n/a	n/a	99.19	62.90	n/a
S95T001630	F		Bismuth -ICP-Fusion	ug/g	None	None	101.0	-2.90e-03	<1257.010	<1245.68	n/a	n/a	98.60	1.26e+03	n/a
S95T001630	F		Calcium -ICP-Fusion	ug/g	None	None	99.39	-1.95e-01	<1257.010	<1245.68	n/a	n/a	81.77	1.26e+03	n/a
S95T001630	F		Cadmium -ICP-Fusion	ug/g	None	None	102.1	1.20e-03	<125.7010	<124.568	n/a	n/a	99.14	126.0	n/a
S95T001630	F		Cerium -ICP-Fusion	ug/g	None	None	101.8	0.00e+00	<1257.010	<1245.68	n/a	n/a	100.6	1.26e+03	n/a
S95T001630	F		Cobalt -ICP-Fusion	ug/g	None	None	99.36	0.00e+00	<628.5051	<622.844	n/a	n/a	97.25	251.0	n/a
S95T001630	F		Chromium -ICP-Fusion	ug/g	None	None	101.5	3.00e-03	<125.7010	<124.568	n/a	n/a	100.5	126.0	n/a
S95T001630	F		Copper -ICP-Fusion	ug/g	None	None	101.9	2.10e-03	<125.7010	<124.568	n/a	n/a	100.0	126.0	n/a
S95T001630	F		Iron -ICP-Fusion	ug/g	None	None	105.7	1.46e-02	1.43e+04	3.90e+03	9.09e+03	114	215.4	629.0	n/a
S95T001630	F		Potassium -ICP-Fusion	ug/g	None	None	102.0	-7.72e-02	7.72e+06	n/a	n/a	n/a	n/a	3.77e+03	n/a
S95T001630	F		Lanthanum -ICP-Fusion	ug/g	None	None	103.0	-4.80e-04	<628.5051	<622.844	n/a	n/a	101.1	629.0	n/a
S95T001630	F		Lithium -ICP-Fusion	ug/g	None	None	102.1	-2.00e-04	<1257.010	<1245.68	n/a	n/a	93.01	126.0	n/a
S95T001630	F		Magnesium -ICP-Fusion	ug/g	None	None	99.34	2.40e-03	<1257.010	<1245.68	n/a	n/a	96.98	1.26e+03	n/a
S95T001630	F		Manganese -ICP-Fusion	ug/g	None	None	101.5	2.00e-03	753.8	493.3	626.5	41.8	99.45	126.0	n/a
S95T001630	F		Molybdenum -ICP-Fusion	ug/g	None	None	100.0	-2.50e-03	<628.5051	<622.844	n/a	n/a	97.39	629.0	n/a
S95T001630	F		Sodium -ICP-Fusion	ug/g	None	None	101.0	1.90e-01	1.84e+05	1.94e+05	1.89e+05	5.35	117.0	1.26e+03	n/a
S95T001630	F		Neodymium -ICP-Fusion	ug/g	None	None	108.6	1.04e-02	<1257.010	<1245.68	n/a	n/a	101.8	1.26e+03	n/a
S95T001630	F		Nickel -ICP-Fusion	ug/g	None	None	101.7	3.66e-01	4.75e+03	8.45e+03	6.59e+03	56.4	98.87	251.0	n/a
S95T001630	F		Phosphorus -ICP-Fusion	ug/g	None	None	102.2	7.50e-03	8.02e+04	8.20e+04	8.11e+04	2.25	137.3	2.51e+03	n/a
S95T001630	F		Lead -ICP-Fusion	ug/g	None	None	101.8	-2.44e-02	<1257.010	<1245.68	n/a	n/a	99.86	1.26e+03	n/a
S95T001630	F		Sulfur -ICP-Fusion	ug/g	None	None	98.62	1.87e-02	<628.5051	<622.844	n/a	n/a	98.87	629.0	n/a
S95T001630	F		Antimony -ICP-Fusion	ug/g	None	None	93.12	6.90e-03	<628.5051	<622.844	n/a	n/a	87.39	2.51e+03	n/a
S95T001630	F		Selenium -ICP-Fusion	ug/g	None	None	102.4	2.25e-02	<1257.010	<1245.68	n/a	n/a	98.00	1.26e+03	n/a
S95T001630	F		Silicon -ICP-Fusion	ug/g	None	None	93.95	-3.00e-03	774.2	<622.844	n/a	n/a	90.94	629.0	n/a
S95T001630	F		Samarium -ICP-Fusion	ug/g	None	None	101.7	5.60e-03	<1257.010	<1245.68	n/a	n/a	96.74	1.26e+03	n/a
S95T001630	F		Strontium -ICP-Fusion	ug/g	None	None	100.7	3.00e-04	<125.7010	<124.568	n/a	n/a	98.87	126.0	n/a
S95T001630	F		Titanium -ICP-Fusion	ug/g	None	None	96.46	1.50e-03	<125.7010	<124.568	n/a	n/a	95.06	126.0	n/a

=> Limit violated
=> Selected Limit

15

WHC-SD-WM-DP-144, REV. 1

A-0002-1

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S95T001630	F		Thallium -ICP-Fusion	ug/g	None	None	97.00	-1.24e-02	<2514.020	<2491.37	n/a	n/a	97.02	2.51e+03	n/a	n/a
S95T001630	F		Uranium -ICP-Fusion	ug/g	None	None	94.58	3.93e-02	<5028.041	<4982.75	n/a	n/a	89.94	5.03e+03	n/a	n/a
S95T001630	F		Vanadium -ICP-Fusion	ug/g	None	None	99.58	-2.30e-03	<628.5051	<622.844	n/a	n/a	97.97	629.0	n/a	n/a
S95T001630	F		Zinc -ICP-Fusion	ug/g	None	None	100.1	1.99e-02	270.8	266.2	268.5	1.72	96.32	126.0	n/a	n/a
S95T001630	F		Zirconium -ICP-Fusion	ug/g	None	None	98.89	1.00e-04	<125.7010	<124.568	n/a	n/a	97.05	126.0	n/a	n/a
S95T001631	W		Bromide by Ion Chromatograph	ug/g	None	None	108.2	<6.32e-01	<1.01e03	<1.01e03	n/a	n/a	n/a	1.01e+03	n/a	n/a
S95T001631	W		Chloride by IC - Dionex 4000i	ug/g	None	None	104.5	<6.30e-02	<1.32e02	<1.32e02	n/a	n/a	n/a	132.0	n/a	n/a
S95T001631	W		Fluoride by IC - Dionex 4000i	ug/g	None	None	108.7	<6.20e-02	2.31e+04	2.29e+04	2.30e+04	0.87	n/a	475.0	n/a	n/a
S95T001631	W		Nitrite by IC - Dionex 4000i	ug/g	None	None	95.11	<5.47e-01	<8.72e02	<8.72e02	n/a	n/a	n/a	8.72e+03	n/a	n/a
S95T001631	W		Nitrate by IC - Dionex 4000i	ug/g	None	None	109.3	<6.99e-01	3.78e+03	2.97e+03	3.38e+03	24.0	n/a	1.11e+03	n/a	n/a
S95T001631	W		Oxalate by IC - Dionex 4000i	ug/g	None	None	98.58	<4.96e-01	<7.91e02	<7.91e02	n/a	n/a	n/a	791.0	n/a	n/a
S95T001631	W		Phosphate by IC - Dionex 4000i	ug/g	None	None	111.7	<5.96e-01	2.66e+05	2.71e+05	2.68e+05	1.86	n/a	4.57e+03	n/a	n/a
S95T001631	W		Sulfate by IC - Dionex 4000i	ug/g	None	None	104.3	<6.78e-01	<1.08e03	<1.08e03	n/a	n/a	n/a	1.08e+03	n/a	n/a

L Lower Half of Segment: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S95T001618			% Water by Gravimetric	%		115.0	100.4	n/a	46.60	45.70	46.15	1.95	n/a	1.00e-02	n/a	n/a
S95T001618			% Water by TGA using Mettler	%		115.0	100.9	n/a	39.37	45.76	42.56	15.0	n/a	n/a	n/a	n/a
S95T001618			DSC Exotherm using Mettler	Joules/g	-9.9e+01		103.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S95T001619	F		Alpha of Digested Solid	ug/g	-9.9e+01		108.1	<1.32e-03	6.23e-03	6.53e-03	6.38e-03	4.70	83.30	1.58e-03	31.5	n/a
S95T001619	F		Silver -ICP-Fusion	ug/g	None	None	98.66	-1.00e-04	<115.0042	<114.577	n/a	n/a	62.54	113.0	n/a	n/a
S95T001619	F		Aluminum -ICP-Fusion	ug/g	None	None	100.5	7.30e-03	1.89e+03	1.01e+03	1.05e+03	7.58	98.69	565.0	n/a	n/a
S95T001619	F		Arsenic -ICP-Fusion	ug/g	None	None	102.5	-5.00e-03	<565.0209	<572.889	n/a	n/a	99.72	565.0	n/a	n/a
S95T001619	F		Boron -ICP-Fusion	ug/g	None	None	101.7	1.40e-03	<565.0209	<572.889	n/a	n/a	96.33	565.0	n/a	n/a
S95T001619	F		Barium -ICP-Fusion	ug/g	None	None	101.1	9.00e-04	<565.0209	<572.889	n/a	n/a	99.05	565.0	n/a	n/a
S95T001619	F		Beryllium -ICP-Fusion	ug/g	None	None	104.9	3.00e-04	<56.5021	<57.2889	n/a	n/a	98.63	56.50	n/a	n/a
S95T001619	F		Bismuth -ICP-Fusion	ug/g	None	None	101.0	-2.90e-03	<1130.041	<1145.77	n/a	n/a	95.78	1.13e+03	n/a	n/a
S95T001619	F		Calcium -ICP-Fusion	ug/g	None	None	99.39	-1.95e-01	<1130.041	<1145.77	n/a	n/a	76.57	1.13e+03	n/a	n/a
S95T001619	F		Cadmium -ICP-Fusion	ug/g	None	None	102.1	1.20e-03	<113.0042	<114.577	n/a	n/a	98.41	113.0	n/a	n/a
S95T001619	F		Cerium -ICP-Fusion	ug/g	None	None	101.8	0.00e+00	<1130.041	<1145.77	n/a	n/a	100.8	1.13e+03	n/a	n/a
S95T001619	F		Cobalt -ICP-Fusion	ug/g	None	None	99.36	0.00e+00	<226.0083	<229.155	n/a	n/a	95.43	226.0	n/a	n/a
S95T001619	F		Chromium -ICP-Fusion	ug/g	None	None	101.5	3.00e-03	<113.0042	<114.577	n/a	n/a	98.99	113.0	n/a	n/a
S95T001619	F		Copper -ICP-Fusion	ug/g	None	None	101.9	2.10e-03	<113.0042	<114.577	n/a	n/a	100.6	113.0	n/a	n/a
S95T001619	F		Iron -ICP-Fusion	ug/g	None	None	103.7	1.46e-02	5.45e+03	4.80e+03	5.13e+03	12.8	101.4	565.0	n/a	n/a
S95T001619	F		Potassium -ICP-Fusion	ug/g	None	None	102.0	-7.27e-02	7.20e+06	n/a	n/a	n/a	n/a	3.39e+03	n/a	n/a
S95T001619	F		Lanthanum -ICP-Fusion	ug/g	None	None	103.0	-4.00e-04	<565.0209	<572.889	n/a	n/a	102.0	565.0	n/a	n/a
S95T001619	F		Lithium -ICP-Fusion	ug/g	None	None	102.1	-2.00e-04	<113.0042	<114.577	n/a	n/a	92.59	113.0	n/a	n/a
S95T001619	F		Magnesium -ICP-Fusion	ug/g	None	None	99.34	2.40e-03	<1130.041	<1145.77	n/a	n/a	95.97	1.13e+03	n/a	n/a
S95T001619	F		Manganese -ICP-Fusion	ug/g	None	None	101.5	2.00e-03	555.1	423.3	489.2	26.9	98.76	113.0	n/a	n/a
S95T001619	F		Molybdenum -ICP-Fusion	ug/g	None	None	100.0	-2.50e-03	<565.0209	<572.889	n/a	n/a	95.63	565.0	n/a	n/a
S95T001619	F		Sodium -ICP-Fusion	ug/g	None	None	101.0	1.90e-01	2.05e+05	2.04e+05	2.03e+05	0.62	94.98	1.13e+03	n/a	n/a
S95T001619	F		Niobium -ICP-Fusion	ug/g	None	None	108.6	1.04e-02	<1130.041	<1145.77	n/a	n/a	110.4	1.13e+03	n/a	n/a
S95T001619	F		Nickel -ICP-Fusion	ug/g	None	None	101.7	3.66e-01	5.24e+03	5.77e+03	5.51e+03	9.54	97.79	226.0	n/a	n/a
S95T001619	F		Phosphorus -ICP-Fusion	ug/g	None	None	102.2	7.50e-03	8.14e+04	7.94e+04	8.04e+04	2.53	72.85	2.26e+03	n/a	n/a
S95T001619	F		Lead -ICP-Fusion	ug/g	None	None	101.8	-2.44e-02	<1130.041	<1145.77	n/a	n/a	98.21	1.13e+03	n/a	n/a
S95T001619	F		Sulfur -ICP-Fusion	ug/g	None	None	98.62	1.87e-02	<565.0209	<572.889	n/a	n/a	94.08	565.0	n/a	n/a
S95T001619	F		Antimony -ICP-Fusion	ug/g	None	None	93.12	6.90e-03	not dete	n/a	n/a	n/a	93.06	1.00e-02	n/a	n/a
S95T001619	F		Selenium -ICP-Fusion	ug/g	None	None	102.4	2.25e-02	<1130.041	<1145.77	n/a	n/a	99.50	1.13e+03	n/a	n/a
S95T001619	F		Silicon -ICP-Fusion	ug/g	None	None	93.95	-3.00e-03	<565.0209	<572.889	n/a	n/a	94.27	565.0	n/a	n/a

=> Limit violated
=> Selected Limit

16

WHC-SD-WM-DP-144, REV. 1

Sample#	R#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T001619	F	Samarium - ICP-Fusion	ug/g	None	Upper	101.7	5.60e-03	<1130.041	<1145.77	n/a	n/a	98.81	1.13e+03	n/a
S95T001619	F	Strontium - ICP-Fusion	ug/g	None	None	100.7	3.00e-04	<113.0043	<114.577	n/a	n/a	98.85	113.0	n/a
S95T001619	F	Titanium - ICP-Fusion	ug/g	None	None	96.46	1.20e-03	<113.0042	<114.577	n/a	n/a	94.34	113.0	n/a
S95T001619	F	Thallium - ICP-Fusion	ug/g	None	None	97.00	-1.24e-02	<2260.083	<2571.35	n/a	n/a	98.60	2.26e+03	n/a
S95T001619	F	Uranium - ICP-Fusion	ug/g	None	None	94.58	3.94e-02	<4570.166	<4583.11	n/a	n/a	94.39	4.52e+03	n/a
S95T001619	F	Vanadium - ICP-Fusion	ug/g	None	None	99.53	-2.30e-01	<565.0209	<572.889	n/a	n/a	97.17	565.0	n/a
S95T001619	F	Zinc - ICP-Fusion	ug/g	None	None	100.1	1.99e-02	267.1	267.7	267.4	0.22	94.52	113.0	n/a
S95T001619	F	Zirconium - ICP-Fusion	ug/g	None	None	98.89	1.00e-04	<113.0043	<114.577	n/a	n/a	96.98	113.0	n/a
S95T001620	M	Bromide by Ion Chromatograph	ug/g	None	None	100.7	<6.32e-01	<1.10E03	<1.10E03	n/a	n/a	n/a	1.10e+03	n/a
S95T001620	M	Chloride by IC - Dionex 4000i	ug/g	None	None	98.59	<8.30e-02	<1.44E02	<1.44E02	n/a	n/a	n/a	144.0	n/a
S95T001620	M	Fluoride by IC - Dionex 4000i	ug/g	None	None	103.5	<9.20e-02	2.72e+04	2.79e+04	2.76e+04	2.54	n/a	519.0	n/a
S95T001620	M	Nitrite by IC - Dionex 4000i	ug/g	None	None	100.5	<5.47e-01	<9.52E02	<9.52E02	n/a	n/a	n/a	952.0	n/a
S95T001620	M	Nitrate by IC - Dionex 4000i	ug/g	None	None	100.9	<6.99e-01	3.04e+03	3.42e+03	3.53e+03	6.23	n/a	1.22e+03	n/a
S95T001620	M	Oxalate by IC - Dionex 4000i	ug/g	None	None	95.30	<4.96e-01	<8.63E02	<8.63E02	n/a	n/a	n/a	863.0	n/a
S95T001620	M	Phosphate by IC - Dionex 4000i	ug/g	None	None	103.4	<5.96e-01	2.71e+05	2.78e+05	2.74e+05	2.55	n/a	4.99e+03	n/a
S95T001620	M	Sulfate by IC - Dionex 4000i	ug/g	None	None	102.5	<6.78e-01	<1.18E03	<1.18E03	n/a	n/a	n/a	1.18e+03	n/a

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP- 144, REV. 1

WHC-SD-WM-DP-144, REV. 1

CHAIN OF CUSTODY FORMS

MPV

CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

JAMES SICKELS

(1) Shipment Number 200W-08-TF (2) Sample Number 95-AUG-041 (3) Supervisor JAMES SICKELS

(4) Tank T-109 (5) Riser 2 (6) Cask Serial Number 1008 C

(8) Shipment Description

A. Work Package Number	<u>WS-95-00109</u>
B. Cask Seal Number	<u>2586</u>
C. Date and Time Sample Removed from Tank	<u>8-21-95 11:00 AM</u>
D. Expected Liquid Content	<u>10%</u>
E. Expected Solid Content	<u>90%</u>
F. Dose Rate Through Drill String	<u>1 mR/hr</u>
G. Expected Sample Length	<u>15"</u>

(7) FIELD

Radiation Survey Data:

Over Top Dose Rate	<u>< 0.5 mR/hr</u>
Side Dose Rate	<u>< 0.5 mR/hr</u>
Bottom Dose Rate	<u>< 0.5 mR/hr</u>
Measurable Contamination	<u>< 20 dpm</u>

(31) LABORATORY

(Alpha)	<u>< 0.5 mR/hr</u>
(Beta-Gamma)	<u>< 0.5 mR/hr</u>
(Signature)	<u>[Signature]</u>

RCT* [Signature] RCT* [Signature]

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

14 C

(10) Field Comments

WHC-SD-WM-DP-144, REV. 1

(11) Point of Origin <u>T-109</u>	(12) Destination <u>2225 Labs</u>	(13) Sender Name (Sign and PRINT) <u>James Sickels</u>	(14) Date/Time <u>8/21/95</u>	(15) Sender Comments
(17) Relinquished By (Sign and PRINT) <u>James Sickels</u>	(18) Received By (Sign and PRINT) <u>James Sickels</u>	(19) Date/Time <u>8/21/95</u>	(20) Receiver Comments	
(21) Relinquished By (Sign and PRINT) <u>James Sickels</u>	(22) Received By (Sign and PRINT) <u>V. L. APPIERS</u>	(23) Date/Time <u>8/21/95</u>	(24) Receiver Comments	
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments	

(30) Seal Date Consistent with this Record?

(29) Seal Intact Upon Receipt?

(16) Seal Intact Upon Release? ☒ Yes ☐ No

(29) Seal Intact Upon Receipt? ☒ Yes ☐ No

Shipment No. ☒ Yes ☐ No

Cask Seal No. ☒ Yes ☐ No

Sample No. ☒ Yes ☐ No

COPY

CHAIN-OF-CUSTODY RECORD FOR AUGER SAMPLING

(1) Shipment Number 200W-08-TF (2) Sample Number 95-AUG-40 (3) Supervisor JAMES SICKELS
 (4) Tank T-109 (5) Riser 6 (6) Cask Serial Number 156

Radiation Survey Date:		(7) FIELD	(31) LABORATORY	(8) Shipment Description	
Over Top Dose Rate	<u>4.5 mR/hr</u>	<u>< 0.5 mR/hr</u>	<u>< 0.5 mR/hr</u>	A. Work Package Number	<u>WS-95-00109</u>
Side Dose Rate	<u>4.5 mR/hr</u>	<u>< 0.5 mR/hr</u>	<u>< 0.5 mR/hr</u>	B. Cask Seal Number	<u>2556</u>
Bottom Dose Rate	<u>4.5 mR/hr</u>	<u>< 0.5 mR/hr</u>	<u>< 0.5 mR/hr</u>	C. Date and Time Sample Removed from Tank	<u>8-18-95 10:20A</u>
Smearable Contamination	<u>< 20 dpm</u>	<u>< 20 dpm</u>	<u>< 20 dpm</u>	D. Expected Liquid Content	<u>10%</u>
	(Alpha)	(Alpha)	(Alpha)	E. Expected Solid Content	<u>90%</u>
	<u>< 1000 dpm</u>	<u>< 1000 dpm</u>	<u>< 1000 dpm</u>	F. Dose Rate Through Drill String	<u>1 mR/hr</u>
	(Beta-Gamma)	(Beta-Gamma)	(Beta-Gamma)	G. Expected Sample Length	<u>15"</u>
RCT*	<u>J. Sickels</u>	RCT*	<u>[Signature]</u>		
	(Signature)		(Signature)		

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

(10) Field Comments

(32) Laboratory Comments

WHC-SD-WM-DP-144, REV. 1

(11) Point of Origin <u>T-109</u>	(12) Destination <u>2225 Labs</u>	(13) Sender Name (Sign and PRINT) <u>JAMES SICKELS James Sickels</u>	(14) Date/Time <u>8/18/95 9:45</u>	(15) Sender Comments
(17) Relinquished By (Sign and PRINT) <u>JAMES SICKELS James Sickels</u>	(18) Received By (Sign and PRINT) <u>Julius Helms Julius Helms</u>	(19) Date/Time <u>8-21-95 9:50</u>	(20) Receiver Comments	
(21) Relinquished By (Sign and PRINT) <u>Julius Helms Julius Helms</u>	(22) Received By (Sign and PRINT) <u>EE Dubois EE Dubois</u>	(23) Date/Time <u>8-22-95 11:15</u>	(24) Receiver Comments	
(25) Relinquished By (Sign and PRINT)	(26) Received By (Sign and PRINT)	(27) Date/Time	(28) Receiver Comments	
(16) Seal Intact Upon Release? ☒ Yes ☐ No	(29) Seal Intact Upon Receipt? ☒ Yes ☐ No	(30) Seal Date Consistent with this Record? ☒ Yes ☐ No		
Shipment No. ☒ Yes ☐ No		Cask Seal No. ☒ Yes ☐ No		Sample No. ☒ Yes ☐ No

WHC-SD-WM-DP-144, REV. 1

PHOTOGRAPHS

T-109 95-AUG-040 Riser 6

8/25/95

95-AUG-041

T-109

WHC-SD-WM-DP-144, REV. 1

SAMPLE HANDLING

LABCORE Data Entry Template for Worklist#

2096

Analyst: EC Instrument: BA000 Book # NA

Method: LO-160-103 Rev/Mod A-7

Worklist Comment: T-109 95-AUG-041 RISER 2 EXTRUSION

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>19.98</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>499.69</u>	<u>N/A</u>	
95000121	T-109	3 SAMPLE	S95T001596	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		ml
95000121	T-109	4 SAMPLE	S95T001596	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
95000121	T-109	5 SAMPLE	S95T001596	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/mL
95000121	T-109	6 SAMPLE	S95T001596	0	EXTRUD01	SOLID	<u>N/A</u>	<u>complete</u>		
95000121	T-109	7 SAMPLE	S95T001596	0	LLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
95000121	T-109	8 SAMPLE	S95T001596	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1186</u>		
95000121	T-109	9 SAMPLE	S95T001596	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		ml
95000121	T-109	10 SAMPLE	S95T001596	0	SLDWT-01	SOLID	<u>N/A</u>	<u>232.5</u>		g
95000121	T-109	11 SAMPLE	S95T001596	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		ml

Final page for worklist #

2096

EC 8-28-95
Analyst Signature Date

EC 8-28-95
Analyst Signature Date

Reviewed by SPK B. Benay 8-28-95

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#

2089

Analyst: EC Instrument: BA000 Book # NA

Method: LO-160-103 Rev/Mod A-7 WHC-CD-WM-DP-144, REV. 1

Worklist Comment: T-109 95-AUG-40 RISER 6 EXTRUSION

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>19.98</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>499.68</u>	<u>N/A</u>	
95000121	T-109	3 SAMPLE	S95T001540	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		mL
95000121	T-109	4 SAMPLE	S95T001540	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
95000121	T-109	5 SAMPLE	S95T001540	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/mL
95000121	T-109	6 SAMPLE	S95T001540	0	EXTRUD01	SOLID	<u>N/A</u>	<u>complete</u>		
95000121	T-109	7 SAMPLE	S95T001540	0	LLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
95000121	T-109	8 SAMPLE	S95T001540	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1186</u>		
95000121	T-109	9 SAMPLE	S95T001540	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		mL
95000121	T-109	10 SAMPLE	S95T001540	0	SLDWT-01	SOLID	<u>N/A</u>	<u>67.5</u>		g
95000121	T-109	11 SAMPLE	S95T001540	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		mL

Final page for worklist #

2089

EC 8-28-95
Analyst Signature Date

EC 8-28-95
Analyst Signature Date

Reviewed by Art B. Boney 8-28-95

Data Entry Comments:

WHC-SD-WM-DP-144, REV. 1

SAMPLE PREPARATIONS

LABCORE Data Entry Template for Worklist#

2105

Analyst: EAL Instrument: FUS01 AL11066 Book # N/A

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

Worklist Comment: T-109 FUSION - 1600->1612; PUT DOSE RATE W/COMMENTS

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	250ml total Vol	N/A		g/L
95000121	T-109	2 SAMPLE	S95T001612 0 F		FUSION01	SOLID	N/A	2.1220		g/L
			.5305g → .250g							
95000121	T-109	3 DUP	S95T001612 0 F		FUSION01	SOLID	2.1220	2.1392	N/A	g/L
			.5348 → .250g							

Final page for worklist #

2105

[Signature] 08/31/95
Analyst Signature Date

[Signature] 08/31/95
Analyst Signature Date

Data Entry Comments:

Prep BLANK - 10ml HCL
S95T001612 - 10ml HCL, 15ml Con H₂O 3 15min
S95T001612 Dup 10ml HCL, 20ml Con H₂O 3 15min

Scale balanced @ 150.000g. HPT Bill Bishop
Both Sample & Dup are pale yellow & clear.

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.

Bertando Giffen II 28 8-31-95

LABCORE Data Entry Template for Worklist#

2106

Analyst: YAM

Instrument: FUS01 AL1066

Book # N/A

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

Worklist Comment: T-109 FUSION - 1618->1619, 1629->1630

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	<u>250ml</u>		N/A	g/L
95000121	T-109	2 SAMPLE	S95T001619	0 F	FUSION01	SOLID	N/A	<u>23008</u>		g/L
		<u>.5752g → 250ml</u>								
95000121	T-109	3 SAMPLE	S95T001619	0	DOSE-02	SOLID	N/A	<u>5</u>		mrads/hour
95000121	T-109	4 DUP	S95T001619	0 F	FUSION01	SOLID	<u>2.3008</u>	<u>2.2692</u>	N/A	g/L
		<u>.5673g → 250ml</u>								
95000121	T-109	5 DUP	S95T001619	0	DOSE-02	SOLID	<u>5</u>	<u>5</u>	N/A	mrads/hour
95000121	T-109	6 SAMPLE	S95T001630	0 F	FUSION01	SOLID	N/A	<u>2.0684</u>		g/L
		<u>.5171g → 250ml</u>								
95000121	T-109	7 SAMPLE	S95T001630	0	DOSE-02	SOLID	N/A	<u>5</u>		mrads/hour
95000121	T-109	8 DUP	S95T001630	0 F	FUSION01	SOLID	<u>2.0684</u>	<u>2.0872</u>	N/A	g/L
		<u>.5218g → 250ml</u>								
95000121	T-109	9 DUP	S95T001630	0	DOSE-02	SOLID	<u>5</u>	<u>5</u>	N/A	mrads/hour

Final page for worklist #

2106

YAMurphy 8-31-95
Analyst Signature Date

[Signature] 8-31-95
Analyst Signature Date

Data Entry Comments:

Blank - 20ml HCl, 20ml HNO₃, <1% solids. Sample 1619 - 20ml HCl, 30ml HNO₃, <1% solids. Sample 1630 - 20ml HCl, 30ml HNO₃, <1% solids. HPT was not Valued.

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.

Bernard Griffin II ²⁹ 8-31-95

LABCORE Data Entry Template for Worklist#

2263

Analyst: QJM

Instrument: H2001 H2001

Book # N/A

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

Worklist Comment: T-109, H2ODIG, 1600->1613, 1618->1620, 1629->1631.gjh

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				H2ODIG01	SOLID	<u>100ml</u>		N/A	g/L
95000121	T-109	2	SAMPLE	S95T001613	0	W	H2ODIG01	SOLID	N/A	<u>10.2000</u>		g/L
				<u>1.0200g > 100ml</u>								
95000121	T-109	3	SAMPLE	S95T001613	0		DOSE-02	SOLID	N/A	<u>1</u>		mrad/hour
95000121	T-109	4	DUP	S95T001613	0	W	H2ODIG01	SOLID	<u>10.2000</u>	<u>10.5940</u>	N/A	g/L
				<u>1.0549g > 100ml</u>								
95000121	T-109	5	DUP	S95T001613	0		DOSE-02	SOLID		<u>1</u>	N/A	mrad/hour
95000121	T-109	6	SAMPLE	S95T001620	0	W	H2ODIG01	SOLID	N/A	<u>12.0680</u>		g/L
				<u>1.2068g > 100ml</u>								
95000121	T-109	7	SAMPLE	S95T001620	0		DOSE-02	SOLID	N/A	<u>2</u>		mrad/hour
95000121	T-109	8	DUP	S95T001620	0	W	H2ODIG01	SOLID	<u>12.0680</u>	<u>11.9880</u>	N/A	g/L
				<u>1.1988g > 100ml</u>								
95000121	T-109	9	DUP	S95T001620	0		DOSE-02	SOLID		<u>1</u>	N/A	mrad/hour
95000121	T-109	10	SAMPLE	S95T001631	0	W	H2ODIG01	SOLID	N/A	<u>13.1710</u>		g/L
				<u>1.3171g > 100ml</u>								
95000121	T-109	11	SAMPLE	S95T001631	0		DOSE-02	SOLID	N/A	<u>1</u>		mrad/hour
95000121	T-109	12	DUP	S95T001631	0	W	H2ODIG01	SOLID	<u>13.1710</u>	<u>13.2990</u>	N/A	g/L
				<u>1.3299g > 100ml</u>								
95000121	T-109	13	DUP	S95T001631	0		DOSE-02	SOLID		<u>13.2990</u>	N/A	mrad/hour

Final page for worklist # 2263

QJM 9-13-95
Analyst Signature Date

QJM 9-14-95
Analyst Signature Date

Date Entry Comments:

HPC was used

Berhard Griffin II 9-18-95

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#

2494

Analyst: QAM Instrument: H2O01 AL11066 Book # N/A

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

Worklist Comment: T-109 H2O DGST - 2173->2176; REPRINTED

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			H2ODIG01	SOLID	<u>100</u>	<u>150</u>	<u>N/A</u>	g/L
95000121	T-109	2 SAMPLE	S95T002176	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>12.3540</u>		g/L
		<u>1.2354g → 100ml</u>								
95000121	T-109	3 SAMPLE	S95T002176	0	DOSE-02	SOLID	<u>N/A</u>	<u><.5</u>		mrads/hour
95000121	T-109	4 DUP	S95T002176	0 W	H2ODIG01	SOLID	<u>12.3540</u>	<u>12.1060</u>	<u>N/A</u>	g/L
		<u>1.2106g → 100ml</u>								
95000121	T-109	5 DUP	S95T002176	0	DOSE-02	SOLID		<u><.5</u>	<u>N/A</u>	mrads/hour

Final page for worklist #

2494

QAMurphy 9-26-95
Analyst Signature Date

Donna 9/27/95
Analyst Signature Date

Data Entry Comments:

HPT was Scott Claenderback

Bernard Bliffen II

9-28-95

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#

2457

Analyst: l m h Instrument: ACD01 AL11066 Book # WHC1A/G4JWHC1A2/10
WHC2/G3MWHC2U1G

Method: LA-505-159 Rev/Mod C-0

Worklist Comment: T-109, ACID DGST, 2173 -> 2177 SKM

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			ACID1G01	SOLID	<u>100</u>	<u>100</u>	<u>N/A</u>	g/L
		2 STD-PREP			ACID1G01	SOLID	<u>20</u>	<u>20</u>	<u>N/A</u>	g/L
		<u>5 mL → 100 mL</u>								
95000121	T-109	3 SAMPLE	S95T002177	0 A	ACID1G01	SOLID	<u>N/A</u>	<u>10.0030</u>		g/L
		<u>1.0003g → 100 mL</u>								
95000121	T-109	4 SAMPLE	S95T002177	0	DOSE-02	SOLID	<u>N/A</u>	<u>25</u>		mrad/hour
95000121	T-109	5 DUP	S95T002177	0 A	ACID1G01	SOLID	<u>0.0030</u>	<u>10.0020</u>	<u>N/A</u>	g/L
		<u>1.0002g → 100 mL</u>								
95000121	T-109	6 DUP	S95T002177	0	DOSE-02	SOLID		<u>25</u>	<u>N/A</u>	mrad/hour

Final page for worklist #

2457

[Signature] 9-22-95
Analyst Signature Date

[Signature] 9-22-95
Analyst Signature Date

Data Entry Comments:

OTR - 1 mrad p/hr
HPT - Charlene Cooper ^{AND} Scot Lauderdale ⁹⁻²²⁻⁹⁵
NOTE: This is the second wklist I've filled out for this batch.

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.

Bernard Luffin II 32 9-25-95

WHC-SD-WM-DP-144, REV. 1

INORGANIC ANALYSES

LABCORE Data Entry Template for Worklist#

2887

Analyst: SMF Instrument: BA001 Book # 65N8A

Method: LA-564-101 Rev/Mod F-1

Worklist Comment: T-109 Gravimetric % Water -. Do not run replicates

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			WATER-01	SOLID	<u>59.74</u>	<u>60.23</u>	<u>N/A</u>	%
95000121	T-109	2 SAMPLE	S95T001597	0	WATER-01	SOLID	<u>N/A</u>	<u>50.7</u>	<u>0.01</u>	%
95000121	T-109	3 DUP	S95T001597	0	WATER-01	SOLID	<u>50.7</u>	<u>50.7</u>	<u>N/A</u>	%
95000121	T-109	4 SAMPLE	S95T001600	0	WATER-01	SOLID	<u>N/A</u>	<u>47.6</u>	<u>0.01</u>	%
95000121	T-109	5 DUP	S95T001600	0	WATER-01	SOLID	<u>47.6</u>	<u>49.3</u>	<u>N/A</u>	%

Final page for worklist #

2887

Lucie M. Fulton 10.15.95
Analyst Signature Date 1515

Ray Schmidt 10-16-95
Analyst Signature Date 10/16/95

STD
W1 15.03789g
W2 16.38696g
W3 15.57454g
W4 15.57437g

S95T001597
W1 15.02544g
W2 15.19502g
W3 15.10907g
W4 15.10905g

S95T001600
W1 15.00649g
W2 15.50124g
W3 ~~14.98825g~~ 15.26570g
W4 ~~14.98836g~~ 15.26568g
SMF 10.15.95

S95T001597Dup
W1 14.90157g
W2 15.07632g
W3 ~~14.98825g~~ 15.26570g
W4 14.98836g
SMF 10.15.95

S95T001600Dup
W1 14.95458g
W2 15.86253g
W3 15.41506g
W4 15.41495g

Data Entry Comments:

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

% WATER : LA-564-101 (F-1)

		STANDARD	REPLICATE
Type	Tare Weight (W1) grams	15.0379	
STANDARD	Gross Weight (W2) grams	16.3870	
Work List	First Residue Weight (W3) grams	15.5745	
2887	Second Residue Weight (W4) grams	15.5744	
Test Code	Percent Difference	0.0011	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	60.23	N/A
LIQUID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
STD			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W2 - W4	= Gross Weight - Residue Weight	
SM FULTON	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.0	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/15/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
03:15 PM			

RESULT

% H2O = **60.2**

Data Entry by: <i>Tracy</i>	Date: 10/16/95
Approved by: <i>R. J. Schneider</i>	Date: 10/16/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP- 144, REV. 1

% WATER : LA-564-101 (F-1)

		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.0254	
SAMPLE	Gross Weight (W2) grams	15.1950	
Work List	First Residue Weight (W3) grams	15.1091	
2887	Second Residue Weight (W4) grams	15.1091	
Test Code	Percent Difference	0.0001	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	50.70	N/A
LIQUID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #	Sample = W2 - W1	= Gross Weight - Tare Weight	
S95T001597	Weight = W2 - W4	= Gross Weight - Residue Weight	
Instrument Code	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.0	
BA001	QC Check "Pass" if % Difference	= < +/- 0.1500%	
Analyst	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
SM FULTON	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
Date			
10/15/95			
Time			
03:15 PM			

RESULT

% H2O = 50.7

Data Entry by: [Signature] Date: 10/16/95
 Approved by: [Signature] Date: 10/16/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP- 144, REV. 1

% WATER : LA-564-101 (F-1)

		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	14.9016	
SAMPLE	Gross Weight (W2) grams	15.0763	
Work List	First Residue Weight (W3) grams	14.9883	
2887	Second Residue Weight (W4) grams	14.9883	
Test Code	Percent Difference	0.0003	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	50.37	N/A
LIQUID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S95T001597 / dup			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W2 - W4	= Gross Weight - Residue Weight	
SM FULTON	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.0	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/15/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
03:15 PM			

RESULT

% H2O = 50.4

Data Entry by: Dany Hammit Date: 10/16/95
 Approved by: Rui Schneider Date: 10/16/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP- 144, REV. 1

% WATER : LA-564-101 (F-1)

		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.0065	
SAMPLE	Gross Weight (W2) grams	15.5012	
Work List	First Residue Weight (W3) grams	15.2657	
2887	Second Residue Weight (W4) grams	15.2656	
Test Code	Percent Difference	0.0007	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	47.63	N/A
LIQUID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S95T001600			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W2 - W4	= Gross Weight - Residue Weight	
SM FULTON	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.0	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/15/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
03:15 PM			

RESULT

% H2O = 47.6

Data Entry by: <u>Dan Arnold</u>	Date: <u>10/16/95</u>
Approved by: <u>Ben Schneider</u>	Date: <u>10/16/95</u>

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-V/M-DP-144, REV. 1

% WATER : LA-564-101 (F-1)

		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	14.9546	
SAMPLE	Gross Weight (W2) grams	15.8625	
Work List	First Residue Weight (W3) grams	15.4151	
2887	Second Residue Weight (W4) grams	15.4150	
Test Code	Percent Difference	0.0007	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	49.30	N/A
LIQUID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S95T001600 / dup			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W2 - W4	= Gross Weight - Residue Weight	
SM FULTON	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.0	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
10/15/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
03:15 PM			

RESULT

% H2O = **49.3**

Data Entry by: [Signature] Date: 10/16/95
 Approved by: [Signature] Date: 10/16/95

LABCORE Data Entry Template for Worklist#

3687

Analyst: Blu SMF Instrument: BA001 Book # 65N8A

Method: LA-564-101 Rev/Mod F-1

Worklist Comment: T-109 & S-107 % Water

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK			WATER-01	SOLID	<u>1</u>	<u>1.32</u>	<u>2-3</u> <u>5</u> N/A	<u>11/30/95</u> %
		2 STD			WATER-01	SOLID		<u>6.00</u>	<u>1</u> N/A	%
95000121	T-109	3 SAMPLE	S95T001616	0	WATER-01	SOLID	<u>N/A</u>	<u>45.6</u>	<u>0.01</u>	%
95000121	T-109	4 DUP	S95T001616	0	WATER-01	SOLID	<u>45.6</u>	<u>45.5</u>	<u>N/A</u>	%
95000121	T-109	5 SAMPLE	S95T001618	0	WATER-01	SOLID	<u>N/A</u>	<u>46.6</u>	<u>0.01</u>	%
95000121	T-109	6 DUP	S95T001618	0	WATER-01	SOLID	<u>46.6</u>	<u>45.7</u>	<u>N/A</u>	%
95000121	T-109	7 SAMPLE	S95T001626	0	WATER-01	SOLID	<u>N/A</u>	<u>48.9</u>	<u>0.01</u>	%
95000121	T-109	8 DUP	S95T001626	0	WATER-01	SOLID	<u>48.9</u>	<u>49.2</u>	<u>N/A</u>	%
95000121	T-109	9 SAMPLE	S95T001629	0	WATER-01	SOLID	<u>N/A</u>	<u>48.1</u>	<u>0.01</u>	%
95000121	T-109	10 DUP	S95T001629	0	WATER-01	SOLID	<u>48.1</u>	<u>47.3</u>	<u>N/A</u>	%
95000138	S-107	11 SAMPLE	S95T003538	0	WATER-01	SOLID	<u>N/A</u>	<u>43.7</u>	<u>0.01</u>	%
95000138	S-107	12 DUP	S95T003538	0	WATER-01	SOLID	<u>43.7</u>	<u>43.5</u>	<u>N/A</u>	%
95000138	S-107	13 SAMPLE	S95T003539	0	WATER-01	SOLID	<u>N/A</u>	<u>21.4</u>	<u>0.01</u>	%
95000138	S-107	14 DUP	S95T003539	0	WATER-01	SOLID	<u>21.4</u>	<u>22.8</u>	<u>N/A</u>	%
95000138	S-107	15 SAMPLE	S95T003540	0	WATER-01	SOLID	<u>N/A</u>	<u>20.6</u>	<u>0.01</u>	%
95000138	S-107	16 DUP	S95T003540	0	WATER-01	SOLID	<u>20.6</u>	<u>20.5</u>	<u>N/A</u>	%

Data Entry Comments:

Placed in oven at 21:00 11/27/95

Reviewed by H. Quaster 12-1-95

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

BLK

STD

595T001616

595T001616
DUP

W1 15.13000g	W1 14.92355g	W1 15.02137g	W1 15.04020g
W2 15.13015g	W2 14.44523g	W2 15.31164g	W2 15.43327g
W3 15.12997g	W3 15.53416g	W3 15.17959g	W3 15.25467g
W4 15.19983g 15.12983g	W4 15.53154g	W4 15.17940g	W4 15.25455g

595T001618

595T001618
DUP

595T001626

595T001626
DUP

W1 14.92313g	W1 14.99480g	W1 15.16249g	W1 15.10871g
W2 15.52074g	W2 15.50513g	W2 15.67342g	W2 15.75032g
W3 15.24218g	W3 15.27170g	W3 15.42371g	W3 15.43467g
W4 15.24233g	W4 15.27167g	W4 15.42363g	W4 15.43476g

595T001629

595T001629
DUP

595T003538

595T003538
DUP

W1 15.13468g	W1 15.10552g	W1 15.17783g	W1 14.96932g
W2 15.64754g	W2 15.64952g	W2 15.79106g	W2 15.29274g
W3 15.40095g	W3 15.39213g	W3 15.52226g	W3 15.15152g
W4 15.40096g	W4 15.39212g	W4 15.52325g	W4 15.15216g

595T003539

595T003539
DUP

595T003540

595T003540
DUP

W1 15.04413g	W1 15.60056g	W1 14.96837g	W1 15.13767g
W2 15.61143g	W2 15.72187g	W2 15.55663g	W2 15.84522g
W3 15.48953g	W3 15.55621g	W3 15.43518g	W3 15.69957g
W4 15.49023g	W4 15.55730g	W4 15.43560g	W4 15.70020g

LABCORE Data Entry Template for Worklist#

3687

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

Final page for worklist # 3687

RJ McCann 11/27/95
Analyst Signature Date

St. Peter 11-30-95
Analyst Signature Date

Susie M. Fulton 11-28-95
1700

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.

39.2

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

% WATER : LA-564-101 (F-1)

		BLANK	REPLICATE
Type	Tare Weight (W1) grams	15.1300	0.0000
BLANK	Gross Weight (W2) grams	15.1302	
Work List	First Residue Weight (W3) grams	15.1300	
3687	Second Residue Weight (W4) grams	15.1298	
Test Code	Percent Difference	0.0009	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	213.33	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
BLANK			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W2 - W4	= Gross Weight - Residue Weight	
SMF	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
11/28/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
05:00 PM			

RESULT

% H2O = $0.0002/15.13 \times 100 =$
1.32e-5 213.3

RWS
11/30/95

Data Entry by: <u>Dan J. Smith</u>	Date: 11/29/95
Approved by: <u>RW Schneider</u>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

% WATER : LA-564-101 (F-1)

		STANDARD	REPLICATE
Type	Tare Weight (W1) grams	14.9236	
STANDARD	Gross Weight (W2) grams	16.4452	
Work List	First Residue Weight (W3) grams	15.5342	
3687	Second Residue Weight (W4) grams	15.5315	
Test Code	Percent Difference	0.0169	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	60.04	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
STANDARD			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W2 - W4	= Gross Weight - Residue Weight	
SMF	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
11/28/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
05:00 PM			

RESULT

% H2O = 60.0

Data Entry by: <i>Jay Hammett</i>	Date: 11/29/95
Approved by: <i>RW Smooren</i>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP- 144, REV. 1

% WATER : LA-564-101 (F-1)

	SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.0214
SAMPLE	Gross Weight (W2) grams	15.3116
Work List	First Residue Weight (W3) grams	15.1796
3687	Second Residue Weight (W4) grams	15.1794
Test Code	Percent Difference	0.0013
WATER-01	QC Check	Pass
Matrix	Percent Weight Loss	45.56
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)	
Sample #		
S95T001616		
Instrument Code		
BA001		
Analyst		
SMF		
Date		
11/28/95		
Time		
05:00 PM		

Sample = W2 - W1	= Gross Weight - Tare Weight
Weight = W2 - W4	= Gross Weight - Residue Weight
Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00
QC Check "Pass" if % Difference	= < +/- 0.1500%
Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O
Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2

RESULT

% H2O = **45.6**

Data Entry by: <i>Gay Shumett</i>	Date: 11/29/95
Approved by: <i>Rw. Schreder</i>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

% WATER : LA-564-101 (F-1)

% WATER : LA-564-101 (F-1)		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.0402	
DUPLICATE	Gross Weight (W2) grams	15.4333	
Work List	First Residue Weight (W3) grams	15.2547	
3687	Second Residue Weight (W4) grams	15.2546	
Test Code	Percent Difference	0.0008	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	45.47	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S95T001616			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W2 - W4	= Gross Weight - Residue Weight	
SMF	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
11/28/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
05:00 PM			

RESULT

% H2O = **45.5**

Data Entry by: <i>Dany Smith</i>	Date: 11/29/95
Approved by: <i>EW Schroeder</i>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP- 144, REV. 1

% WATER : LA-564-101 (F-1)

% WATER : LA-564-101 (F-1)		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	14.9231	
SAMPLE	Gross Weight (W2) grams	15.5207	
Work List	First Residue Weight (W3) grams	15.2422	
3687	Second Residue Weight (W4) grams	15.2423	
Test Code	Percent Difference	0.0010	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	46.59	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S95T001618			
Instrument Code			
BA001			
Analyst	Sample = W2 - W1	= Gross Weight - Tare Weight	
SMF	Weight = W2 - W4	= Gross Weight - Residue Weight	
	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
11/28/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
05:00 PM			

RESULT

% H2O = **46.6**

Data Entry by: <i>[Signature]</i>	Date: 11/29/95
Approved by: <i>[Signature]</i>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP- 144, REV. 1

% WATER : LA-564-101 (F-1)

	SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	14.9948
DUPLICATE	Gross Weight (W2) grams	15.5051
Work List	First Residue Weight (W3) grams	15.2717
3687	Second Residue Weight (W4) grams	15.2717
Test Code	Percent Difference	0.0002
WATER-01	QC Check	Pass
Matrix	Percent Weight Loss	45.75
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)	
Sample #	Sample = W2 - W1 = Gross Weight - Tare Weight	
S95T001618	Weight = W2 - W4 = Gross Weight - Residue Weight	
Instrument Code	Percent Difference = Absolute Value of [(W3-W4)/W4]*100.00	
BA001	QC Check "Pass" if % Difference = < +/- 0.1500%	
Analyst	Percent Water Weight Loss = [(W2-W4)/(W2-W1)]*100 = % H2O	
SMF	Percent Water (Average) = [(% H2O for A) + (% H2O for B)] / 2	
Date		
11/28/95		
Time		
05:00 PM		

RESULT

% H2O = **45.7**

Data Entry by: <i>Jay Summit</i>	Date: 11/29/95
Approved by: <i>RW Schuch</i>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP- 144, REV. 1

% WATER : LA-564-101 (F-1)

		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.1625	
SAMPLE	Gross Weight (W2) grams	15.6734	
Work List	First Residue Weight (W3) grams	15.4237	
3687	Second Residue Weight (W4) grams	15.4236	
Test Code	Percent Difference	0.0005	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	48.89	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S95T001626			
Instrument Code			
BA001			
Analyst			
SMF			
Date			
11/28/95			
Time			
05:00 PM			

Sample = W2 - W1	= Gross Weight - Tare Weight
Weight = W2 - W4	= Gross Weight - Residue Weight
Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00
QC Check "Pass" if % Difference	= < +/- 0.1500%
Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O
Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2

RESULT

% H2O = **48.9**

Data Entry by: <i>Mary Hunter</i>	Date: 11/29/95
Approved by: <i>Rui Schneider</i>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP- 144, REV. 1

% WATER : LA-564-101 (F-1)

		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.1087	
DUPLICATE	Gross Weight (W2) grams	15.7503	
Work List	First Residue Weight (W3) grams	15.4347	
3687	Second Residue Weight (W4) grams	15.4348	
Test Code	Percent Difference	0.0006	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	49.18	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S95T001626			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W2 - W4	= Gross Weight - Residue Weight	
SMF	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
11/28/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
05:00 PM			

RESULT

% H2O = 49.2

Data Entry by: [Signature] Date: 11/29/95
 Approved by: [Signature] Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

% WATER : LA-564-101 (F-1)

		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.1347	
SAMPLE	Gross Weight (W2) grams	15.6475	
Work List	First Residue Weight (W3) grams	15.4010	
3687	Second Residue Weight (W4) grams	15.4010	
Test Code	Percent Difference	0.0001	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	48.08	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S95T001629			
Instrument Code			
BA001			
Analyst			
SMF			
Date			
11/28/95			
Time			
05:00 PM			

Sample = W2 - W1	= Gross Weight - Tare Weight
Weight = W2 - W4	= Gross Weight - Residue Weight
Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00
QC Check "Pass" if % Difference	= < +/- 0.1500%
Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O
Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2

RESULT

% H2O = 48.1

Data Entry by: <i>Ray Smith</i>	Date: 11/29/95
Approved by: <i>RW Johnson</i>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP- 144 , REV. 1

% WATER : LA-564-101 (F-1)

	SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.1055
DUPLICATE	Gross Weight (W2) grams	15.6495
Work List	First Residue Weight (W3) grams	15.3921
3687	Second Residue Weight (W4) grams	15.3921
Test Code	Percent Difference	0.0000
WATER-01	QC Check	Pass
Matrix	Percent Weight Loss	47.31
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)	
Sample #	Sample = W2 - W1	= Gross Weight - Tare Weight
S95T001629	Weight = W2 - W4	= Gross Weight - Residue Weight
Instrument Code	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00
BA001	QC Check "Pass" if % Difference	= < +/- 0.1500%
Analyst	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O
SMF	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2
Date		
11/28/95		
Time		
05:00 PM		

RESULT

% H2O = **47.3**

Data Entry by: Dany D... Date: 11/29/95
 Approved by: RW Schneider Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

% WATER : LA-564-101 (F-1)

	SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.1778
SAMPLE	Gross Weight (W2) grams	15.7911
Work List	First Residue Weight (W3) grams	15.5223
3687	Second Residue Weight (W4) grams	15.5233
Test Code	Percent Difference	0.0064
WATER-01	QC Check	Pass
Matrix	Percent Weight Loss	43.67
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)	
Sample #		
S95T003538		
Instrument Code		
BA001		
Analyst		
SMF		
Date		
11/28/95		
Time		
05:00 PM		

RESULT

% H2O = 43.7

Data Entry by: *Dan Schaefer* Date: 11/29/95
 Approved by: *Pat Schaefer* Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

% WATER : LA-564-101 (F-1)

	SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	14.9693
DUPLICATE	Gross Weight (W2) grams	15.2927
Work List	First Residue Weight (W3) grams	15.1515
3687	Second Residue Weight (W4) grams	15.1522
Test Code	Percent Difference	0.0042
WATER-01	QC Check	Pass
Matrix	Percent Weight Loss	43.47
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)	
Sample #		
S95T003538		
Instrument Code		
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight
Analyst	Weight = W2 - W4	= Gross Weight - Residue Weight
SMF	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%
11/28/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2
05:00 PM		

RESULT

% H2O = 43.5

Data Entry by: *Dan Smith* Date: 11/29/95
 Approved by: *BW Schreier* Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV.1

% WATER : LA-564-101 (F-1)

	SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.0441
SAMPLE	Gross Weight (W2) grams	15.6114
Work List	First Residue Weight (W3) grams	15.4895
3687	Second Residue Weight (W4) grams	15.4902
Test Code	Percent Difference	0.0045
WATER-01	QC Check	Pass
Matrix	Percent Weight Loss	21.36
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)	
Sample #		
S95T003539		
Instrument Code		
BA001		
Analyst		
SMF		
Date		
11/28/95		
Time		
05:00 PM		

RESULT

% H2O = 21.4

Data Entry by: <i>Ray Smith</i>	Date: 11/29/95
Approved by: <i>RW Schuler</i>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

% WATER : LA-564-101 (F-1)

		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.0006	
DUPLICATE	Gross Weight (W2) grams	15.7219	
Work List	First Residue Weight (W3) grams	15.5562	
3687	Second Residue Weight (W4) grams	15.5573	
Test Code	Percent Difference	0.0070	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	22.82	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S95T003539			
Instrument Code			
BA001			
Analyst			
SMF			
Date			
11/28/95			
Time			
05:00 PM			

RESULT

% H2O = **22.8**

Data Entry by: <i>Dary L. Smith</i>	Date: 11/29/95
Approved by: <i>Rw. Schaefer</i>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP- 144, REV. 1

% WATER : LA-564-101 (F-1)

% WATER : LA-564-101 (F-1)		SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	14.9684	
SAMPLE	Gross Weight (W2) grams	15.5566	
Work List	First Residue Weight (W3) grams	15.4352	
3687	Second Residue Weight (W4) grams	15.4356	
Test Code	Percent Difference	0.0027	N/A
WATER-01	QC Check	Pass	N/A
Matrix	Percent Weight Loss	20.57	N/A
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)		
Sample #			
S95T003540			
Instrument Code			
BA001	Sample = W2 - W1	= Gross Weight - Tare Weight	
Analyst	Weight = W2 - W4	= Gross Weight - Residue Weight	
SMF	Percent Difference	= Absolute Value of [(W3-W4)/W4]*100.00	
Date	QC Check "Pass" if % Difference	= < +/- 0.1500%	
11/28/95	Percent Water Weight Loss	= [(W2-W4)/(W2-W1)]*100 = % H2O	
Time	Percent Water (Average)	= [(% H2O for A) + (% H2O for B)] / 2	
05:00 PM			

RESULT

% H2O = **20.6**

Data Entry by: <i>Dany Hammett</i>	Date: 11/29/95
Approved by: <i>RW Schneider</i>	Date: 11/30/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

% WATER : LA-564-101 (F-1)

	SAMPLE	REPLICATE
Type	Tare Weight (W1) grams	15.1377
DUPLICATE	Gross Weight (W2) grams	15.8452
Work List	First Residue Weight (W3) grams	15.6996
3687	Second Residue Weight (W4) grams	15.7002
Test Code	Percent Difference	0.0040
WATER-01	QC Check	Pass
Matrix	Percent Weight Loss	20.50
SOLID	(If it is necessary to do a 3rd heating then substitute the last weight measured for W4 and the second to last weight measured for W3 in the calculations above.)	
Sample #		
S95T003540		
Instrument Code		
BA001		
Analyst		
SMF		
Date		
11/28/95		
Time		
05:00 PM		

RESULT

% H2O = 20.5

Data Entry by:	<i>May Smith</i>	Date:	11/29/95
Approved by:	<i>Rai Schrock</i>	Date:	11/30/95

LABCORE Data Entry Template for Worklist#

2456

Analyst: FHC Instrument: IC01 IC01 Book # 10609D

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

Worklist Comment: Analyze for all anions, especially want NO3, PO4, F. JMF

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			@IC-01 F-02	SOLID		2.062	N/A	ug/g
		1 BLNK-PREP			@IC-01 CL-02	SOLID		2.083	N/A	ug/g
		1 BLNK-PREP			@IC-01 NO2-02	SOLID		2.537	N/A	ug/g
		1 BLNK-PREP			@IC-01 BR-02	SOLID		2.632	N/A	ug/g
		1 BLNK-PREP			@IC-01 NO3-02	SOLID		2.699	N/A	ug/g
		1 BLNK-PREP			@IC-01 PO4-02	SOLID		2.596	N/A	ug/g
		1 BLNK-PREP			@IC-01 SO4-02	SOLID		2.678	N/A	ug/g
		1 BLNK-PREP			@IC-01 OXALATE2	SOLID		2.496	N/A	ug/g
		2 STD			@IC-01 F-02	SOLID		66.06	N/A	ug/g
		2 STD			@IC-01 CL-02	SOLID		77.89	N/A	ug/g
		2 STD			@IC-01 NO2-02	SOLID		636.8	N/A	ug/g
		2 STD			@IC-01 BR-02	SOLID		579.3	N/A	ug/g
		2 STD			@IC-01 NO3-02	SOLID		619.6	N/A	ug/g
		2 STD			@IC-01 PO4-02	SOLID		564.6	N/A	ug/g
		2 STD			@IC-01 SO4-02	SOLID		646.6	N/A	ug/g
		2 STD			@IC-01 OXALATE2	SOLID		501.3	N/A	ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	@IC-01 F-02	SOLID	N/A	9.61e2	1.28e2	ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	@IC-01 CL-02	SOLID	N/A	5.78e2	1.71e2	ug/g

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#

2456

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
95000121	T-109	3 SAMPLE	S95T001613	0 W	αIC-01 NO2-02	SOLID	N/A	1.13e2	1.13e2	ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	αIC-01 BR-02	SOLID	N/A	1.30e3	1.30e3	ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	αIC-01 NO3-02	SOLID	N/A	3.88e4	6.82e3	ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	αIC-01 PO4-02	SOLID	N/A	2.85e5	5.90e3	ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	αIC-01 SO4-02	SOLID	N/A	1.40e3	1.40e3	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	αIC-01 F-02	SOLID	9.61e2	6.82e2	N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	αIC-01 CL-02	SOLID	5.78e2	5.69e2	N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	αIC-01 NO2-02	SOLID	1.13e3	1.13e3	N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	αIC-01 BR-02	SOLID	1.30e3	1.30e3	N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	αIC-01 NO3-02	SOLID	3.88e4	3.73e4	N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	αIC-01 PO4-02	SOLID	2.85e5	2.50e5	N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	αIC-01 SO4-02	SOLID	1.40e3	1.40e3	N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	αIC-01 OXALATE2	SOLID	N/A	N/A	N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	αIC-01 CL-02	SOLID		93.0	N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	αIC-01 F-02	SOLID		88.1	N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	αIC-01 NO2-02	SOLID		98.1	N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	αIC-01 BR-02	SOLID		101.2	gmF9/20/95	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	αIC-01 NO3-02	SOLID		104.6	N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	αIC-01 PO4-02	SOLID		91.1	N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	αIC-01 SO4-02	SOLID		103.4	N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	αIC-01 OXALATE2	SOLID		103.5	N/A	ug/g

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#

2456

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000121	T-109	6 SAMPLE	S95T001620	0 W	QIC-01 F-02	SOLID	N/A	2.72e4	5.19e2	ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	QIC-01 CL-02	SOLID	N/A	1.44e2	1.44e2	ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	QIC-01 NO2-02	SOLID	N/A	9.52e2	9.52e2	ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	QIC-01 BR-02	SOLID	N/A	1.10e3	1.10e3	ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	QIC-01 NO3-02	SOLID	N/A	3.64e3	1.22e3	ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	QIC-01 PO4-02	SOLID	N/A	2.71e5	4.99e3	ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	QIC-01 SO4-02	SOLID	N/A	1.18e3	1.18e3	ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	QIC-01 OXALATE2	SOLID	N/A	8.63e2	8.63e2	gmF 9/26/95
95000121	T-109	7 DUP	S95T001620	0 W	QIC-01 F-02	SOLID	2.72e4	2.79e4	N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	QIC-01 CL-02	SOLID	1.44e2	1.44e2	N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	QIC-01 NO2-02	SOLID	9.52e2	9.52e2	N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	QIC-01 BR-02	SOLID	1.10e3	1.10e3	N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	QIC-01 NO3-02	SOLID	3.64e3	3.42e3	N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	QIC-01 PO4-02	SOLID	2.71e5	2.78e5	N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	QIC-01 SO4-02	SOLID	1.18e3	1.18e3	N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	QIC-01 OXALATE2	SOLID	8.63e2	8.63e2	N/A	ug/g

Final page for worklist #

2456

See attached for Signatures
Analyst Signature Date
Verified 10/3/95 Jenn Faye

Tom J. M. 9/27/95
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#

2456

Analyst: EE

Instrument: IC01

Book # 106N9-0

Method: LA-533-105 Rev/Mod 0-1

Worklist Comment: Analyze for all anions, especially want NO3, PO4, F. JMF

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			01C-01 F-02	SOLID			N/A	ug/g
		1 BLNK-PREP			01C-01 CL-02	SOLID			N/A	ug/g
		1 BLNK-PREP			01C-01 NO2-02	SOLID			N/A	ug/g
		1 BLNK-PREP			01C-01 BR-02	SOLID			N/A	ug/g
		1 BLNK-PREP			01C-01 NO3-02	SOLID			N/A	ug/g
		1 BLNK-PREP			01C-01 PO4-02	SOLID			N/A	ug/g
		1 BLNK-PREP			01C-01 SO4-02	SOLID			N/A	ug/g
		1 BLNK-PREP			01C-01 OXALATE2	SOLID			N/A	ug/g
		2 STD			01C-01 F-02	SOLID			N/A	ug/g
		2 STD			01C-01 CL-02	SOLID			N/A	ug/g
		2 STD			01C-01 NO2-02	SOLID			N/A	ug/g
		2 STD			01C-01 BR-02	SOLID			N/A	ug/g
		2 STD			01C-01 NO3-02	SOLID			N/A	ug/g
		2 STD			01C-01 PO4-02	SOLID			N/A	ug/g
		2 STD			01C-01 SO4-02	SOLID			N/A	ug/g
		2 STD			01C-01 OXALATE2	SOLID			N/A	ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	01C-01 F-02	SOLID	N/A			ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	01C-01 CL-02	SOLID	N/A			ug/g

SAMPLE

Duplicate

Data Entry Comments:

H₂O Digest S95T001613 10.2000g/L 10.5990g/L

S95T001620 12.0680g/L 11.9880g/L

S95T001631 13.1710g/L 13.2990g/L

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#

2456

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000121	T-109	3 SAMPLE	S95T001613	0 W	QIC-01	N02-02	SOLID	N/A		ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	QIC-01	BR-02	SOLID	N/A		ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	QIC-01	N03-02	SOLID	N/A		ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	QIC-01	PO4-02	SOLID	N/A		ug/g
95000121	T-109	3 SAMPLE	S95T001613	0 W	QIC-01	SO4-02	SOLID	N/A		ug/g
95000121	T-109	4 DUP	S95T001613	0 W	QIC-01	F-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	QIC-01	CL-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	QIC-01	N02-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	QIC-01	BR-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	QIC-01	N03-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	QIC-01	PO4-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	QIC-01	SO4-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T001613	0 W	QIC-01	OXALATE2	SOLID	N/A	N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	QIC-01	CL-02	SOLID		N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	QIC-01	F-02	SOLID		N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	QIC-01	N02-02	SOLID		N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	QIC-01	BR-02	SOLID		N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	QIC-01	N03-02	SOLID		N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	QIC-01	PO4-02	SOLID		N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	QIC-01	SO4-02	SOLID		N/A	ug/g
95000121	T-109	5 SPK	S95T001613	0 W	QIC-01	OXALATE2	SOLID	N/A	N/A	ug/g

Data Entry Comments:

LMCS 106N9-D 100ml - 10ml

SPIKE 106N9-D 100ml

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#

2456

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000121	T-109	6 SAMPLE	S95T001620	0 W	@IC-01 F-02	SOLID	N/A			ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	@IC-01 CL-02	SOLID	N/A			ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	@IC-01 NO2-02	SOLID	N/A			ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	@IC-01 BR-02	SOLID	N/A			ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	@IC-01 NO3-02	SOLID	N/A			ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	@IC-01 PO4-02	SOLID	N/A			ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	@IC-01 SO4-02	SOLID	N/A			ug/g
95000121	T-109	6 SAMPLE	S95T001620	0 W	@IC-01 OXALATE2	SOLID	N/A			ug/g
95000121	T-109	7 DUP	S95T001620	0 W	@IC-01 F-02	SOLID			N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	@IC-01 CL-02	SOLID			N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	@IC-01 NO2-02	SOLID			N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	@IC-01 BR-02	SOLID			N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	@IC-01 NO3-02	SOLID			N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	@IC-01 PO4-02	SOLID			N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	@IC-01 SO4-02	SOLID			N/A	ug/g
95000121	T-109	7 DUP	S95T001620	0 W	@IC-01 OXALATE2	SOLID			N/A	ug/g
95000121	T-109	8 SAMPLE	S95T001631	0 W	@IC-01 F-02	SOLID	N/A			ug/g
95000121	T-109	8 SAMPLE	S95T001631	0 W	@IC-01 CL-02	SOLID	N/A			ug/g
95000121	T-109	8 SAMPLE	S95T001631	0 W	@IC-01 NO2-02	SOLID	N/A			ug/g
95000121	T-109	8 SAMPLE	S95T001631	0 W	@IC-01 BR-02	SOLID	N/A			ug/g
95000121	T-109	8 SAMPLE	S95T001631	0 W	@IC-01 NO3-02	SOLID	N/A			ug/g
95000121	T-109	8 SAMPLE	S95T001631	0 W	@IC-01 PO4-02	SOLID	N/A			ug/g

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#

2456

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000121	T-109	8 SAMPLE	S95T001631	0 W	@IC-01	SO4-02	SOLID	N/A		ug/g
95000121	T-109	8 SAMPLE	S95T001631	0 W	@IC-01	OXALATE2	SOLID	N/A		ug/g
95000121	T-109	9 DUP	S95T001631	0 W	@IC-01	F-02	SOLID		N/A	ug/g
95000121	T-109	9 DUP	S95T001631	0 W	@IC-01	CL-02	SOLID		N/A	ug/g
95000121	T-109	9 DUP	S95T001631	0 W	@IC-01	NO2-02	SOLID		N/A	ug/g
95000121	T-109	9 DUP	S95T001631	0 W	@IC-01	BR-02	SOLID		N/A	ug/g
95000121	T-109	9 DUP	S95T001631	0 W	@IC-01	NO3-02	SOLID		N/A	ug/g
95000121	T-109	9 DUP	S95T001631	0 W	@IC-01	PO4-02	SOLID		N/A	ug/g
95000121	T-109	9 DUP	S95T001631	0 W	@IC-01	SO4-02	SOLID		N/A	ug/g
95000121	T-109	9 DUP	S95T001631	0 W	@IC-01	OXALATE2	SOLID		N/A	ug/g

Final page for worklist #

2456

EM-eh 9-21-95
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.

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
INORGANIC ANALYTICAL BATCH AND SUMMARY SHEET

ANION ANALYSIS ON DIONEX

SAMPLE #: S95T001613 & S95T001620 TEST CODE: @IC-01 INSTRUMENT: IC-01 WORK LIST #: 2456 BATCH ID:	ANALYST: Ed Colvin ANALYSIS DATE: 09/26/95 9/20/95 <i>gmF</i> SAMPLE POINT: T-109 SAMPLE PREP: water digest
--	---

Result Units	µg/g	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
106N9D		103.5%	98.6%	100.5%	100.9%	103.4%	102.5%	100.7%	95.3%
S95T001613		9.61E+02	5.78E+02	9.38E+02	3.88E+04	2.85E+05	<1395.88	<1301.18	<1021.18
S95T001613dup		6.82E+02	5.69E+02	1.03E+03	3.73E+04	2.50E+05	<1343.33	<1252.19	<982.73
Duplicate 1 RPD		33.9%	1.5%	9.7%	3.9%	13.1%	N/A	N/A	N/A
S95T001620		2.72E+04	<144.43	<951.86	3.64E+03	2.71E+05	<1179.81	<1099.77	<863.11
S95T001620dup		2.79E+04	<145.40	<958.21	3.42E+03	2.78E+05	<1187.69	<1107.11	<868.87
Duplicate 2 RPD		2.5%	N/A	N/A	6.1%	2.5%	N/A	N/A	N/A
S95T001613spk		86.1%	93.0%	98.9%	104.6%	91.1%	103.8%	101.2%	103.5%

NARRATIVE: **Analyst Comments:**

Chemist Comments:

Form Completed By: <i>James Faye</i>	Date: 9/26/95
Chemist Approval: <i>James Faye</i>	Date: 9/26/95

LAB LEADER INFO	
Method:	La-533-105D-1
Matrix:	solid
Test Code:	@IC-01
Work List #:	2456
Batch #:	
Result Units	
(µg/g or µg/mL):	µg/g
Spike Book Number:	106N9D
Spike Sample #:	1
Prepared By:	Jann Frye
Prepared Date:	09/26/95
Chemist:	Jann Frye
Analyst:	Ed Colvin
Analysis Date:	09/28/95 9/20/95
Time Complete:	
Instrument Code:	IC-01
Rerun:	0
Sample Prep:	water digest
Sample Point:	T-109
Sample Type	
STANDARD	106N9D
SAMPLE 1	S95T001613
DUPLICATE 1	S95T001613dup
SAMPLE 2	S95T001620
DUPLICATE 2	S95T001620dup
SAMPLE 3	
DUPLICATE 3	
SAMPLE 4	
DUPLICATE 4	
SPIKE	S95T001613apk
SPIKE DUPLICATE	

PRINT

TECH INFO								
	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Blank Data (µg/mL)	<0.062	<0.083	<0.547	<0.899	<0.596	<0.678	<0.632	<0.496

Standard Data (µg/mL)	61.06	77.89	536.8	619.6	564.6	646.6	579.3	501.3
-----------------------	-------	-------	-------	-------	-------	-------	-------	-------

Sample 1 Data (µg/mL)	9.80E+00	6.90E+00	9.57E+00	3.96E+02	2.91E+03	<0.678	<0.632	<0.496
Sample 1 Dilution Factor	21	21	21	101	101	21	21	21
Sample 1 Prep DF	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Duplicate 1 Data (µg/mL)	7.23E+00	6.03E+00	1.10E+01	3.95E+02	2.68E+03	<0.678	<0.632	<0.496
Duplicate 1 Dilution Factor	21	21	21	101	101	21	21	21
Duplicate 1 Prep DF	10.599	10.599	10.599	10.599	10.599	10.599	10.599	10.599

Sample 2 Data (µg/mL)	3.29E+02	<0.083	<0.547	4.39E+01	3.27E+03	<0.678	<0.632	<0.496
Sample 2 Dilution Factor	101	21	21	21	101	21	21	21
Sample 2 Prep DF	12.068	12.068	12.068	12.068	12.068	12.068	12.068	12.068
Duplicate 2 Data (µg/mL)	3.36E+02	<0.083	<0.547	4.11E+01	3.34E+03	<0.678	<0.632	<0.496
Duplicate 2 Dilution Factor	101	21	21	21	101	21	21	21
Duplicate 2 Prep DF	11.988	11.988	11.988	11.988	11.988	11.988	11.988	11.988

Sample 3 Data (µg/mL)								
Sample 3 Dilution Factor								
Sample 3 Prep DF								
Duplicate 3 Data (µg/mL)								
Duplicate 3 Dilution Factor								
Duplicate 3 Prep DF								

Sample 4 Data (µg/mL)								
Sample 4 Dilution Factor								
Sample 4 Prep DF								
Duplicate 4 Data (µg/mL)								
Duplicate 4 Dilution Factor								
Duplicate 4 Prep DF								

Spike + Sample 1 (µg/mL)	2.00E+01	2.06E+01	1.15E+02	1.04E+03	3.40E+03	1.31E+02	1.16E+02	1.09E+02
Spike + Dup 1 (µg/mL)								

Spike Volume (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
Total Volume (mL)	10.50	10.50	10.50	10.10	10.10	10.50	10.50	10.50
Std. Conc. (µg/mL)	59	79	534	614	546	631	575	526
Detection Limit	0.062	0.083	0.547	0.899	0.596	0.678	0.632	0.496
Matrix Detection Limit 1	1.28E+02	1.71E+02	1.13E+03	6.92E+03	5.90E+03	1.40E+03	1.30E+03	1.02E+03
Matrix Detection Limit 2	5.19E+02	1.44E+02	9.52E+02	1.22E+03	4.99E+03	1.18E+03	1.10E+03	8.63E+02
Matrix Detection Limit 3	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Matrix Detection Limit 4	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR

Spike Recovery = $\frac{((\text{Spike} + \text{Sample}) - (\text{Sample})) \cdot (\text{Total Volume})}{((\text{Spike Vol.}) \cdot (\text{Spike Std.}) \cdot (\text{Sample DF}))} \cdot 100\%$
 Note: (For spike recovery when the sample conc. is less than detection limit you do NOT subtract sample conc.)
 Duplicate Relative % Difference = $\frac{((\text{Sample} - \text{Duplicate})) \cdot ((\text{Sample} + \text{Duplicate}) / 2)}{(\text{Sample} + \text{Duplicate})} \cdot 100\%$
 Less than Values are Calculated from the Detection Limit/Dilution Factor

v RESULTS v	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Standard % Recovery	103.5%	98.6%	100.5%	100.9%	103.4%	102.5%	100.7%	96.3%
Sample 1 in µg/g	9.61E+02	6.78E+02	9.38E+02	3.88E+04	2.85E+06	<1395.88	<1301.18	<1021.18
Duplicate 1 in µg/g	6.82E+02	5.69E+02	1.03E+03	3.73E+04	2.69E+06	<1343.33	<1262.19	<882.73
Duplicate 1 RPD	33.9%	1.6%	9.7%	3.9%	13.1%	N/A	N/A	N/A
Sample 2 in µg/g	2.72E+04	<144.43	<951.86	3.84E+03	2.71E+06	<1179.81	<1099.77	<863.11
Duplicate 2 in µg/g	2.79E+04	<145.40	<968.21	3.42E+03	2.78E+06	<1187.69	<1107.11	<868.87
Duplicate 2 RPD	2.5%	N/A	N/A	6.1%	2.5%	N/A	N/A	N/A
Spike % Recovery	86.1%	93.0%	98.9%	104.6%	91.1%	103.8%	101.2%	103.5%

Data Entry by:	<i>Jann Frye</i>	Date:	09/26/95
Approved by:	<i>Jann Frye</i>	Date:	9/26/95

Form DIONEX.WB1 Rev. 1.3

=====

Sample Name: 106N9-D STD	Date: 09/20/1995 12:29:41
Data File : C:\DX\DATA\95092081.D19	
Method : C:\DX\METHOD\KIT.MET	
ACI Address: 1 System: 1 Inject#: 19	Detector: CDM-1
Analyst : <i>P.W. Cahn</i>	Column: AG4A/AS4A anion column/SRS

=====

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 101 2700 5Hz 0.00 9.00 200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.04	fluoride	61.063	1375	7680	2	-1.89
3	1.54	chloride	77.891	1438	7424	1	1.32
4	1.84	nitrite	536.813	5902	34297	1	1.10
5	2.70	bromide	579.321	3738	24776	1	0.00
6	3.09	nitrate	619.646	4465	34231	1	0.32
7	4.44	phosphate	564.647	1231	14127	1	-0.89
8	5.87	sulfate	646.614	3529	46279	1	-0.68
9	7.70	oxalate	501.322	1418	24263	1	-1.03
Totals			3587.316	23096	193076		

File: 95092081.D19 Sample: 106N9-D STD

VINO-OD-WM-DP-144, REV. 1

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 49 TO 61.

```

=====
Sample Name: INSTR BLANK                      Date: 09/20/1995 07:10:37
Data File  : C:\DX\DATA\95092081.D01
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 1           Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1    2700   5Hz   0.00  9.00         200
-----

```

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

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

File: 95092081.D01 Sample: INSTR BLANK

WING-CD-WM-DP-144, REV. 1

```

=====
Sample Name: PREP BLANK                      Date: 09/20/1995 07:40:58
Data File  : C:\DX\DATA\95092081.D02
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 2          Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1           1 2700 5Hz 0.00 9.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.25		0.000	55	405	1	
2	3.14	nitrate	0.095	66	481	1	1.95
Totals			0.095	122	886		

File: 95092081.D02 Sample: PREP BLANK

VHC-CD-WM-DP-144, REV. 1

```

=====
Sample Name: S95T001613                      Date: 09/20/1995 08:35:29
Data File  : C:\DX\DATA\95092081.D05
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 5           Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====

```

```

Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          21    2700  5Hz   0.00  9.00        200

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	224	914	2	
2	1.03	fluoride	9.800	997	5890	2	-2.83
3	1.52	chloride	5.897	475	2907	1	0.00
4	1.82	nitrite	9.572	417	2561	1	0.00
5	3.04	nitrate	410.101	13546	113943	1	-1.30
6	4.25	phosphate	1200.021	37041	498757	1	-5.13
7	5.86	sulfate	2.403	40	470	1	-0.85
Totals			1637.794	52739	625442		

File: 95092081.D05 Sample: S95T001613

VNIG-SD-VKM-DP-144, REV. 1

```

=====
Sample Name: S95T001613 DUP 80 4-20-95 Date: 09/20/1995 09:03:39
Data File : C:\DX\DATA\95092081.D07
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 7 Detector: CDM-1
Analyst : Column: AG4A/AS4A anion column/SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External 1 101 2700 5Hz 0.00 9.00 200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	54	230	2	
2	1.04	fluoride	10.208	219	1218	2	-1.89
3	1.54	chloride	3.026	117	630	1	1.32
4	1.83	nitrite	14.208	92	534	1	0.55
5	3.10	nitrate	395.661	2857	21696	1	0.65
6	4.39	phosphate	2905.221	7298	82799	1	-2.01
Totals			3328.324	10637	107108		

File: 95092081.D07 Sample: S95T001613 ~~DUP~~ 80 4-20-95

144, REV. 1

```

=====
Sample Name: S95T001613 DUP                      Date: 09/20/1995 10:33:37
Data File  : C:\DX\DATA\95092081.D11
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 11              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column/SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          21    2700   5Hz   0.00  9.00         200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	198	812	2	
2	1.03	fluoride	7.231	697	4315	2	-2.83
3	1.52	chloride	6.034	505	2966	1	0.00
4	1.82	nitrite	10.965	497	2988	1	0.00
5	3.03	nitrate	375.631	12508	103768	1	-1.62
6	4.29	phosphate	1425.026	30877	399058	1	-4.24
7	5.87	sulfate	1.915	26	304	1	-0.68
Totals			1826.802	45309	514212		

File: 95092081.D11 Sample: S95T001613 DUP

CDM-1000-DF-144, REV 1

```

=====
Sample Name: S95T001613 DUP                               Date: 09/20/1995 10:23:43
Data File  : C:\DX\DATA\95092081.D10
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 10                      Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====

```

```

Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1         101    2700   5Hz   0.00  9.00         200

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	51	224	2	
2	1.04	fluoride	9.065	178	1076	2	-1.89
3	1.53	chloride	2.939	120	622	1	0.66
4	1.83	nitrite	15.958	117	646	1	0.55
5	3.08	nitrate	395.393	2859	21681	1	0.00
6	4.41	phosphate	2647.543	6559	74406	1	-1.56
Totals			3070.898	9884	98654		

File: 95092081.D10 Sample: S95T001613 DUP

144, REV. 1

Data Reprocessed On 09/21/1995 09:31:36

```

=====
Sample Name: S95T001620                      Date: 09/20/1995 11:35:33
Data File  : C:\DX\DATA\95092081.D16
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 16          Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====
  
```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          21    2700   5Hz   0.00  9.00          200
  
```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	204	594	2	
2	1.04	fluoride	163.154	47837	259906	2	-1.89
3	1.51	chloride	-0.308	45	228	1	-0.66
4	1.81	nitrite	2.363	58	353	1	-0.55
5	3.09	nitrate	43.920	1508	11501	1	0.32
6	4.24	phosphate	608.049	43551	620932	1	-5.36
7	5.86	sulfate	5.275	105	1447	1	-0.85
Totals			822.452	93308	894961		

File: 95092081.D16 Sample: S95T001620

ANALYST: J. J. J. REV. 1


```

=====
Sample Name: S95T001620                               Date: 09/20/1995 11:07:40
Data File  : C:\DX\DATA\95092081.D14
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 14                   Detector: CDM-1
Analyst    :                                           Column: AG4A/AS4A anion column/SRS
=====

```

```

Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    2700   5Hz   0.00   9.00         200

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.03	fluoride	328.682	8798	45874	2	-2.83
4	3.08	nitrate	43.271	310	2313	1	0.00
5	4.38	phosphate	3274.979	8376	95321	1	-2.23
Totals			3646.932	17484	143508		

File: 95092081.D14 Sample: S95T001620

REC-00000001-144, REV. 1

```

=====
Sample Name: S95T001620  DUP                               Date: 09/20/1995 12:12:58
Data File  : C:\DX\DATA\95092081.D18
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 18                      Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    2700   5Hz   0.00   9.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	62	218	2	
2	1.03	fluoride	334.773	9155	46849	2	-2.83
3	1.51	chloride	0.484	74	403	1	-0.66
4	3.10	nitrate	50.349	371	2698	1	0.65
5	4.37	phosphate	3335.018	8585	97413	1	-2.46
6	5.87	sulfate	18.319	79	948	1	-0.68
Totals			3738.943	18325	148529		

File: 95092081.D18 Sample: S95T001620 DUP

WELLS-COANN OF-1441, REV. 1

Data Reprocessed On 09/21/1995 09:33:00

Sample Name: S95T001620 DUP Date: 09/20/1995 11:45:19
Data File : C:\DX\DATA\95092081.D17
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 17 Detector: CDM-1
Analyst : Column: AG4A/AS4A anion column/SRS

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	21	2700	5Hz	0.00	9.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	148	370	2	
2	1.03	fluoride	172.186	43368	229162	2	-2.83
3	1.50	chloride	0.143	73	421	1	-1.32
4	1.79	nitrite	2.252	51	320	1	-1.65
5	3.07	nitrate	41.056	1388	10744	1	-0.32
6	4.23	phosphate	1032.392	39136	541531	1	-5.58
7	5.85	sulfate	13.630	323	4294	1	-1.02
Totals			1261.660	84487	786843		

File: 95092081.D17 Sample: S95T001620 DUP

144, REV 1

Data Reprocessed On 09/25/1995 10:15:23

Sample Name: S95T001613 + SPIKE Date: 09/20/1995 10:54:33
Data File : C:\DX\DATA\95092081.D13
Method : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 13 Detector: CDM-1
Analyst : Column: AG4A/AS4A anion column/SRS

Calibration Volume Dilution Points Rate Start Stop Area Reject
External 1 21 2700 5Hz 0.00 9.00 200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	192	714	2	
2	1.04	fluoride ✓	19.958	2157	12241	2	-1.89
3	1.52	chloride ✓	20.592	1649	9381	1	0.00
4	1.82	nitrite ✓	115.172	5822	35420	1	0.00
5	2.68	bromide ✓	116.395	3670	23904	1	-0.74
6	3.02	nitrate	428.145	14455	119320	1	-1.95
7	4.30	phosphate	1447.569	28783	368462	1	-4.02
8	5.87	sulfate ✓	130.956	3386	45044	1	-0.68
9	7.69	oxalate ✓	108.853	1451	25396	1	-1.16
Totals			2387.640	61565	639883		

File: 95092081.D13 Sample: S95T001613 + SPIKE

95092081.D13-144-REV.1

```

=====
Sample Name: S95T001613 + SPIKE                      Date: 09/20/1995 10:44:48
Data File  : C:\DX\DATA\95092081.D12
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 12                   Detector: CDM-1
Analyst    :                                           Column: AG4A/AS4A anion column/SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    2700   5Hz   0.00  9.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	81	291	2	
2	1.03	fluoride	70.500	1670	8902	2	-2.83
3	1.51	chloride	87.119	1510	8276	1	-0.66
4	1.81	nitrite	547.002	5903	34965	1	-0.55
5	2.67	bromide	575.561	3787	24608	1	-1.11
6	3.03	nitrate ✓	1037.660	7255	58098	1	-1.62
7	4.38	phosphate ✓	3402.685	8798	99790 ✓	1	-2.23
8	5.86	sulfate	641.619	3489	45911	1	-0.85
9	7.69	oxalate	537.762	1500	26123	1	-1.16
Totals			6899.909	33993	306965		

File: 95092081.D12 Sample: S95T001613 + SPIKE

95092081.D12-144

LABCORE Data Entry Template for Worklist#

2601

Analyst: EHG Instrument: IC01 IC-01 Book # 106N9D

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

Worklist Comment: T-109 IC for 1631. JMF

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			@IC-01 F-02	SOLID		<u>6.062</u>	N/A	ug/g
		1 BLNK-PREP			@IC-01 CL-02	SOLID		<u>6.083</u>	N/A	ug/g
		1 BLNK-PREP			@IC-01 NO2-02	SOLID		<u>6.547</u>	N/A	ug/g
		1 BLNK-PREP			@IC-01 BR-02	SOLID		<u>6.632</u>	N/A	ug/g
		1 BLNK-PREP			@IC-01 NO3-02	SOLID		<u>6.699</u>	N/A	ug/g
		1 BLNK-PREP			@IC-01 PO4-02	SOLID		<u>6.596</u>	N/A	ug/g
		1 BLNK-PREP			@IC-01 SO4-02	SOLID		<u>6.678</u>	N/A	ug/g
		1 BLNK-PREP			@IC-01 OXALATE2	SOLID		<u>6.496</u>	N/A	ug/g
		2 STD			@IC-01 F-02	SOLID		<u>64.12</u>	N/A	ug/g
		2 STD			@IC-01 CL-02	SOLID		<u>82.53</u>	N/A	ug/g
		2 STD			@IC-01 NO2-02	SOLID		<u>507.9</u>	N/A	ug/g
		2 STD			@IC-01 BR-02	SOLID		<u>621.9</u>	N/A	ug/g
		2 STD			@IC-01 NO3-02	SOLID		<u>670.9</u>	N/A	ug/g
		2 STD			@IC-01 PO4-02	SOLID		<u>609.8</u>	N/A	ug/g
		2 STD			@IC-01 SO4-02	SOLID		<u>658.3</u>	N/A	ug/g
		2 STD			@IC-01 OXALATE2	SOLID		<u>508</u>	N/A	ug/g
95000121	T-109	3 SAMPLE	S95T001631	0 W	@IC-01 F-02	SOLID	N/A	<u>2.3124</u>	<u>4.7522</u>	ug/g
95000121	T-109	3 SAMPLE	S95T001631	0 W	@IC-01 CL-02	SOLID	N/A	<u>1.3222</u>	<u>1.3222</u>	ug/g

Data Entry Comments:

595T 001631 Sample Duplicate
13.1710g/L 13.2990g/L

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#

2601

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000121	T-109	3 SAMPLE	S95T001631	0 W	01C-01	NO2-02	SOLID	N/A	8.72e2	8.72e3 ug/g
95000121	T-109	3 SAMPLE	S95T001631	0 W	01C-01	BR-02	SOLID	N/A	1.01e3	1.01e3 ug/g
95000121	T-109	3 SAMPLE	S95T001631	0 W	01C-01	NO3-02	SOLID	N/A	3.78e3	1.11e3 ug/g
95000121	T-109	3 SAMPLE	S95T001631	0 W	01C-01	PO4-02	SOLID	N/A	2.66e5	4.57e3 ug/g
95000121	T-109	3 SAMPLE	S95T001631	0 W	01C-01	SO4-02	SOLID	N/A	1.08e3	1.08e3 ug/g
95000121	T-109	3 SAMPLE	S95T001631	0 W	01C-01	OXALATE2	SOLID	N/A	7.91e2	7.91e2 ug/g
95000121	T-109	4 DUP	S95T001631	0 W	01C-01	F-02	SOLID	2.31e4	2.29e4	N/A ug/g
95000121	T-109	4 DUP	S95T001631	0 W	01C-01	CL-02	SOLID	1.32e2	1.32e2	N/A ug/g
95000121	T-109	4 DUP	S95T001631	0 W	01C-01	NO2-02	SOLID	8.72e2	8.72e2	N/A ug/g
95000121	T-109	4 DUP	S95T001631	0 W	01C-01	BR-02	SOLID	1.01e3	1.01e3	N/A ug/g
95000121	T-109	4 DUP	S95T001631	0 W	01C-01	NO3-02	SOLID	3.78e3	2.97e3	N/A ug/g
95000121	T-109	4 DUP	S95T001631	0 W	01C-01	PO4-02	SOLID	2.66e5	2.71e5	N/A ug/g
95000121	T-109	4 DUP	S95T001631	0 W	01C-01	SO4-02	SOLID	1.08e3	1.08e3	N/A ug/g
95000121	T-109	4 DUP	S95T001631	0 W	01C-01	OXALATE2	SOLID	7.91e2	7.91e2	N/A ug/g

Final page for worklist #

2601

James Lye for Ed. Colvin
Analyst Signature Date

Thomas J. M. J.
Analyst Signature Date 9/27/95

Originally part of WKL 2456

Verified 10/3/95 J. M. Lye

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.

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
INORGANIC ANALYTICAL BATCH AND SUMMARY SHEET
ANION ANALYSIS ON DIONEX

SAMPLE #: S95T001631 & TEST CODE: @IC-01 INSTRUMENT: IC-01 WORK LIST #: 2601 BATCH ID:	ANALYST: Ed Colvin ANALYSIS DATE: 09/21/95 SAMPLE POINT: T-109 SAMPLE PREP: water digest
---	---

Result Units	µg/g	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
106N9D		108.7%	104.5%	95.1%	109.3%	111.7%	104.3%	108.2%	96.6%
S95T001631		2.31E+04	<132.34	<872.14	3.78E+03	2.66E+05	<1081.01	<1007.67	<790.83
S95T001631dup		2.29E+04	<131.06	<863.75	2.97E+03	2.71E+05	<1070.61	<997.97	<783.22
Duplicate 1 RPD		1.0%	N/A	N/A	24.0%	1.8%	N/A	N/A	N/A
		ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
		ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
ERR		ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR

NARRATIVE: **Analyst Comments:**

Chemist Comments:

Form Completed By: <i>James L. Edge</i>	Date: 9/26/95
Chemist Approval: <i>James L. Edge</i>	Date: 9/26/95

LAB LEADER INFO	
Method:	La-533-105D-1
Matrix:	solid
Test Code:	@IC-01
Work List #:	2801
Batch #:	
Result Units	
(µg/g or µg/mL):	µg/g
Spike Book Number:	
Enter Spike Sample # (1-4):	
Prepared By:	Jann Frye
Prepared Date:	09/26/95
Chemist:	Jann Frye
Analyst:	Ed Colvin
Analysis Date:	09/21/95
Time Complete:	
Instrument Code:	IC-01
Rerun:	0
Sample Prep:	water digest
Sample Point:	T-109
Sample Type	
STANDARD	106N9D
SAMPLE 1	S95T001631
DUPLICATE 1	S95T001631dup
SAMPLE 2	
DUPLICATE 2	
SAMPLE 3	
DUPLICATE 3	
SAMPLE 4	
DUPLICATE 4	
SPIKE	
SPIKE DUPLICATE	

PRINT

TECH INFO								
	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Blank Data (µg/mL)	<0.062	<0.083	<0.547	<0.699	<0.596	<0.678	<0.632	<0.496
Standard Data (µg/mL)	64.12	82.63	507.9	670.9	609.8	666.3	621.9	608
Sample 1 Data (µg/mL)	3.05E+02	<.083	<.547	4.99E+01	3.60E+03	<.678	<.632	<.496
Sample 1 Dilution Factor	101	21	21	21	101	21	21	21
Sample 1 Prep DF	13.171	13.171	13.171	13.171	13.171	13.171	13.171	13.171
Duplicate 1 Data (µg/mL)	3.04E+02	<.083	<.547	3.96E+01	3.60E+03	<.678	<.632	<.496
Duplicate 1 Dilution Factor	101	21	21	21	101	21	21	21
Duplicate 1 Prep DF	13.299	13.299	13.299	13.299	13.299	13.299	13.299	13.299
Sample 2 Data (µg/mL)								
Sample 2 Dilution Factor								
Sample 2 Prep DF								
Duplicate 2 Data (µg/mL)								
Duplicate 2 Dilution Factor								
Duplicate 2 Prep DF								
Sample 3 Data (µg/mL)								
Sample 3 Dilution Factor								
Sample 3 Prep DF								
Duplicate 3 Data (µg/mL)								
Duplicate 3 Dilution Factor								
Duplicate 3 Prep DF								
Sample 4 Data (µg/mL)								
Sample 4 Dilution Factor								
Sample 4 Prep DF								
Duplicate 4 Data (µg/mL)								
Duplicate 4 Dilution Factor								
Duplicate 4 Prep DF								
Spike + Sample (µg/mL)								
Spike + Dup (µg/mL)								

Spike Volume (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
Total Volume (mL)	10.10	10.50	10.50	10.50	10.10	10.50	10.50	10.50
Std. Conc. (µg/mL)	59	79	534	614	545	631	575	526
Detection Limit	0.062	0.083	0.547	0.699	0.596	0.678	0.632	0.496
Matrix Detection Limit 1	4.76E+02	1.32E+02	8.72E+02	1.11E+03	4.57E+03	1.08E+03	1.01E+03	7.91E+02
Matrix Detection Limit 2	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Matrix Detection Limit 3	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Matrix Detection Limit 4	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR

Spike Recovery = $\frac{((\text{Spike} + \text{Sample}) - (\text{Sample})) (\text{Total Volume})}{((\text{Spike Vol.} \times (\text{Spike Std.} \times (\text{Sample DF})))} \times 100\%$
Note: (For spike recovery when the sample conc. is less than detection limit you do NOT subtract sample conc.)
Duplicate Relative % Difference = $\frac{((\text{Sample} - \text{Duplicate}))}{((\text{Sample} + \text{Duplicate}) / 2)} \times 100\%$
 Less than Values are Calculated from the Detection Limit/Dilution Factor

[illegible]

Data Entry by: *Jeanette* Date: 09/26/95
 Approved by: *Jeanette* Date: 9/26/95
 Form DIONEX.WB1 Rev 1.3

Sample Name: S95T001631 DUP Date: 09/21/1995 11:32:43
 Data File : C:\DX\DATA\95092181.D09
 Method : C:\DX\METHOD\KIT.MET
 ACI Address: 1 System: 1 Inject#: 9 Detector: CDM-1
 Analyst : *E. W. Cohn* Column: AG4A/AS4A anion column/SRS

9/23/95

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	21	2700	5Hz	0.00	9.00		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	156	408	2	
2	1.02	fluoride	173.020	35137	192475	2	-3.77
3	1.50	chloride	0.018	71	367	1	-1.32
4	1.80	nitrite	2.394	64	363	1	-1.10
5	3.08	nitrate	39.558	1335	10349	1	0.00
6	4.22	phosphate	1048.412	39317	537869	1	-5.80
7	5.85	sulfate	3.845	77	961	1	-1.02
Totals			1267.246	76156	742792		

File: 95092181.D09 Sample: S95T001631 DUP

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 66 TO 71.

WHC-SD-WM-DP-144, REV. 1

```

=====
Sample Name: 106N9-D STD                               Date: 09/21/1995 10:44:45
Data File  : C:\DX\DATA\95092181.D05
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 5                     Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====

```

```

Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1         101    2700   5Hz   0.00  9.00         200

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.04	fluoride	64.122	1507	8076	2	-1.89
3	1.54	chloride	82.535	1497	7852	1	1.32
4	1.84	nitrite	507.987	5487	32407	1	1.10
5	2.72	bromide	621.967	3954	26685	1	0.74
6	3.10	nitrate	670.949	4784	37126	1	0.65
7	4.43	phosphate	609.893	1348	15321	1	-1.12
8	5.86	sulfate	658.390	3611	47146	1	-0.85
9	7.68	oxalate	508.055	1433	24606	1	-1.29
Totals			3723.898	23622	199219		

File: 95092181.D05 Sample: 106N9-D STD

WHC-SD-WM-DP-144, REV. 1

```

=====
Sample Name: INSTR BLANK                      Date: 09/21/1995 09:48:03
Data File  : C:\DX\DATA\95092181.D01
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 1           Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====

```

```

Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1    2700  5Hz   0.00  9.00         200

```

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

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

File: 95092181.D01 Sample: INSTR BLANK

WHC-SD-WM-DP-144, REV. 1

```

=====
Sample Name: S95T001631                      Date: 09/21/1995 11:07:46
Data File  : C:\DX\DATA\95092181.D07
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 7           Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          21   2700   5Hz   0.00  9.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.90		0.000	179	464	2	
2	1.02	fluoride	171.661	42291	232051	2	-3.77
3	1.50	chloride	0.235	88	461	1	-1.32
4	1.80	nitrite	2.732	80	466	1	-1.10
5	3.09	nitrate	49.852	1685	13071	1	0.32
6	4.20	phosphate	532.295	44878	632752	1	-6.25
7	5.84	sulfate	4.620	94	1224	1	-1.18
Totals			761.394	89295	880489		

File: 95092181.D07 Sample: S95T001631

VHC-SD-VIM-DP-144, REV. 1

```

=====
Sample Name: S95T001631                      Date: 09/21/1995 10:54:35
Data File  : C:\DX\DATA\95092181.D06
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 6           Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1         101    2700   5Hz   0.00  9.00         200

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.03	fluoride	304.640	8105	42083	2	-2.83
3	3.11	nitrate	52.557	373	2818	1	0.97
4	4.36	phosphate	3504.980	9108	103428	1	-2.68
5	5.87	sulfate	7.902	20	212	1	-0.68
Totals			3870.080	17606	148541		

File: 95092181.D06 Sample: S95T001631

WHO-CD-VIM-DP-144, REV. 1

```

=====
Sample Name: S95T001631  DUP                               Date: 09/21/1995 11:18:22
Data File  : C:\DX\DATA\95092181.D08
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 8                      Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column/SRS
=====

```

```

Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1         101    2700   5Hz   0.00  9.00         200

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.04	fluoride	304.472	8001	42057	2	-1.89
3	3.13	nitrate	50.433	369	2703	1	1.62
4	4.38	phosphate	3601.671	9441	106917	1	-2.23
Totals			3956.576	17811	151676		

File: 95092181.D08 Sample: S95T001631 DUP

WMO-CD-WM-DP-144, REV. 1

LABCORE Data Entry Template for Worklist#

2668

Analyst: EHC Instrument: IC01 IC02 Book # 10609D

Method: LA-533-105 Rev/Mod D-1 WHO-CD-MMDP-144, ELV L

Worklist Comment: T-109 IC. These hve priority over B-104, and BY-110. JMF

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			QIC-01 F-02	SOLID		2.063	N/A	ug/g
		1 BLNK-PREP			QIC-01 CL-02	SOLID		2.084	N/A	ug/g
		1 BLNK-PREP			QIC-01 NO2-02	SOLID		2.554	N/A	ug/g
		1 BLNK-PREP			QIC-01 BR-02	SOLID		2.632	N/A	ug/g
		1 BLNK-PREP			QIC-01 NO3-02	SOLID		2.699	N/A	ug/g
		1 BLNK-PREP			QIC-01 PO4-02	SOLID		2.596	N/A	ug/g
		1 BLNK-PREP			QIC-01 SO4-02	SOLID		2.678	N/A	ug/g
		1 BLNK-PREP			QIC-01 OXALATE2	SOLID		2.526	N/A	ug/g
		2 STD			QIC-01 F-02	SOLID		NA	N/A	ug/g
		2 STD			QIC-01 CL-02	SOLID		NA	N/A	ug/g
		2 STD			QIC-01 NO2-02	SOLID		NA	N/A	ug/g
		2 STD			QIC-01 BR-02	SOLID		NA	N/A	ug/g
		2 STD			QIC-01 NO3-02	SOLID		NA	N/A	ug/g
		2 STD			QIC-01 PO4-02	SOLID		NA	N/A	ug/g
		2 STD			QIC-01 SO4-02	SOLID		NA	N/A	ug/g
		2 STD			QIC-01 OXALATE2	SOLID		NA	N/A	ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	QIC-01 F-02	SOLID	N/A	2.35e4	5.12e2	ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	QIC-01 CL-02	SOLID	N/A	8.09e1	7.48e1	ug/g

Data Entry Comments:

Enter Inst. Blank in CCB, and standard in CCV. JMF
There will be an RPD override needed on NO3. This is cause
by the large PO4 peak interfering with integration of NO3

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.

JMF
10/9/95

LABCORE Data Entry Template for Worklist#

2668

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000121	T-109	3 SAMPLE	S95T002176	0 W	⊖IC-01 NO2-02	SOLID	N/A	<4.93e2	4.93e2	ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	⊖IC-01 BR-02	SOLID	N/A	<5.63e2	5.63e2	ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	⊖IC-01 NO3-02	SOLID	N/A	3.21e3	6.22e2	ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	⊖IC-01 PO4-02	SOLID	N/A	2.37e5	4.87e3	ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	⊖IC-01 SO4-02	SOLID	N/A	<6.04e2	6.04e2	ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	⊖IC-01 OXALATE2	SOLID	N/A	<4.68e2	4.68e2	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	⊖IC-01 F-02	SOLID	2.35e4	2.45e4	N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	⊖IC-01 CL-02	SOLID	8.09e1	<7.48e1	N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	⊖IC-01 NO2-02	SOLID	<4.93e2	<4.93e2	N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	⊖IC-01 BR-02	SOLID	<5.63e2	<5.63e2	N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	⊖IC-01 NO3-02	SOLID	3.21e3	2.46e3	N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	⊖IC-01 PO4-02	SOLID	2.37e5	2.38e5	N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	⊖IC-01 SO4-02	SOLID	<6.04e2	<6.04e2	N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	⊖IC-01 OXALATE2	SOLID	<4.68e2	<4.68e2	N/A	ug/g
		5 CCB			⊖IC-01 F-02	SOLID		<.063	N/A	ug/g
		5 CCB			⊖IC-01 CL-02	SOLID		<.084	N/A	ug/g
		5 CCB			⊖IC-01 NO2-02	SOLID		<.554	N/A	ug/g
		5 CCB			⊖IC-01 BR-02	SOLID		<.632	N/A	ug/g
		5 CCB			⊖IC-01 NO3-02	SOLID		<.699	N/A	ug/g
		5 CCB			⊖IC-01 PO4-02	SOLID		<.596	N/A	ug/g
		5 CCB			⊖IC-01 SO4-02	SOLID		<.678	N/A	ug/g

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.

~~XXXX~~ RMIS View/Print Document Cover Sheet ~~XXXX~~

This document was retrieved from the Documentation and Records Management (DRM) ISEARCH System. It is intended for Information only and may not be the most recent or updated version. Contact a Document Service Center (see Hanford Info for locations) if you need additional retrieval information.

Accession #: D195066660

Document #: SD-WM-DP-144

Title/Desc:

FINAL REPORT FOR TANK 241T109 AUGER SAMPLES
95-AUG-040 & 95-AUG-041 [SEC 2 OF 2]

Pages: 111

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

DOCUMENT NUMBER: WM-DP-144

SECTION 2 OF 3

TITLE: Final Report for Tank 241-T-109
Auger Samples 95-Aug-040 & 95-Aug-041

DATE: 12/07/95

ORIGINATOR: Conner JM

CO: _____

RECIPIENT: _____

CO: _____

REFERENCES: _____

LABCORE Data Entry Template for Worklist#

2668

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		5 CCB			81C-01 OXALATE2	SOLID		5.496	N/A	ug/g
		6 CCV			81C-01 F-02	SOLID		52.5	N/A	ug/g
		6 CCV			81C-01 CL-02	SOLID		82	N/A	ug/g
		6 CCV			81C-01 NO2-02	SOLID		518.7	N/A	ug/g
		6 CCV			81C-01 BR-02	SOLID		570.9 600.9	9MP 10/9/95 N/A	ug/g
		6 CCV			81C-01 NO3-02	SOLID		609.7	N/A	ug/g
		6 CCV			81C-01 PO4-02	SOLID		540.3	N/A	ug/g
		6 CCV			81C-01 SO4-02	SOLID		619.3	N/A	ug/g
		6 CCV			81C-01 OXALATE2	SOLID		487	N/A	ug/g

Final page for worklist #

2668

James L. Ford Ed Colon 10/9/95
Analyst Signature Date
See attached for signatures
Data Entry completed
+ Verified 10/10/95 J. M. Lye

Rt Steek
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#

2668

Analyst: EE Instrument: IC01 IC 02 Book # 106N9-D

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

Worklist Comment: T-109 IC. These hve priority over B-104, and BY-110. JMF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				QIC-01 F-02	SOLID			N/A	ug/g
		1	BLNK-PREP				QIC-01 CL-02	SOLID			N/A	ug/g
		1	BLNK-PREP				QIC-01 NO2-02	SOLID			N/A	ug/g
		1	BLNK-PREP				QIC-01 BR-02	SOLID			N/A	ug/g
		1	BLNK-PREP				QIC-01 NO3-02	SOLID			N/A	ug/g
		1	BLNK-PREP				QIC-01 PO4-02	SOLID			N/A	ug/g
		1	BLNK-PREP				QIC-01 SO4-02	SOLID			N/A	ug/g
		1	BLNK-PREP				QIC-01 OXALATE2	SOLID			N/A	ug/g
		2	STD				QIC-01 F-02	SOLID			N/A	ug/g
		2	STD				QIC-01 CL-02	SOLID			N/A	ug/g
		2	STD				QIC-01 NO2-02	SOLID			N/A	ug/g
		2	STD				QIC-01 BR-02	SOLID			N/A	ug/g
		2	STD				QIC-01 NO3-02	SOLID			N/A	ug/g
		2	STD				QIC-01 PO4-02	SOLID			N/A	ug/g
		2	STD				QIC-01 SO4-02	SOLID			N/A	ug/g
		2	STD				QIC-01 OXALATE2	SOLID			N/A	ug/g
95000121	T-109	3	SAMPLE	S95T002176	0	W	QIC-01 F-02	SOLID	N/A			ug/g
95000121	T-109	3	SAMPLE	S95T002176	0	W	QIC-01 CL-02	SOLID	N/A			ug/g

Data Entry Comments:

S95T002176

SAMPLE

12.3540g/L

DUP

12.1060

LMCS 106N9-D .100ml - 10ml

SPIKE 106N9-D .100ml

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#

2668

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
95000121	T-109	3 SAMPLE	S95T002176	0 W	QIC-01	NO2-02	SOLID	N/A		ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	QIC-01	BR-02	SOLID	N/A		ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	QIC-01	NO3-02	SOLID	N/A		ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	QIC-01	PO4-02	SOLID	N/A		ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	QIC-01	SO4-02	SOLID	N/A		ug/g
95000121	T-109	3 SAMPLE	S95T002176	0 W	QIC-01	OXALATE2	SOLID	N/A		ug/g
95000121	T-109	4 DUP	S95T002176	0 W	QIC-01	F-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	QIC-01	CL-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	QIC-01	NO2-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	QIC-01	BR-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	QIC-01	NO3-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	QIC-01	PO4-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	QIC-01	SO4-02	SOLID		N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0 W	QIC-01	OXALATE2	SOLID		N/A	ug/g

Final page for worklist #

2668

E. Ad. Pohn 10-2-95
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.

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
INORGANIC ANALYTICAL BATCH AND SUMMARY SHEET

ANION ANALYSIS ON DIONEX

SAMPLE #:	S95T002176	ANALYST:	Ed Colvin
TEST CODE:	@ic-01	ANALYSIS DATE:	10/02/95
INSTRUMENT:	IC-92	SAMPLE POINT:	T-108
WORK LIST #:	2668	SAMPLE PREP:	water digest
BATCH ID:			

Result Units	µg/g	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
100N9D		87.5%	163.5%	97.1%	98.3%	99.0%	98.1%	98.3%	92.0%
S95T002176		2.98E+04	8.89E+01	<493.28	3.21E+03	2.37E+05	<893.89	<862.73	<488.35
S95T002176dup		2.48E+04	<78.33	<893.39	2.48E+03	2.38E+05	<818.98	<574.26	<477.94
Duplicate 1 RPD		4.8%	N/A	N/A	26.4%	0.7%	N/A	N/A	N/A
		ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
		ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
ERR		ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
S95T002176epk		108.6%	96.6%	99.3%	99.9%	92.5%	101.9%	97.2%	88.0%

NARRATIVE: **Analyst Comments:**

Chemist Comments:

Form Completed By: <i>Jeanne Fuge</i>	Date: <i>10/9/95</i>
Chemist Approval: <i>Jeanne Fuge</i>	Date: <i>10/9/95</i>

WHC-SD-WM-DP-144, REV. 1
77

LAB LEADER INFO	
Method:	LA-535-105 D-1
Matrix:	soil
Test Code:	810-01
Work List #:	8888
Batch #:	
Result Units	
Units or multipliers:	mg/L
Sample Book Number:	100000
Sample Name #:	1
Prepared By:	Jann Frye
Prepared Date:	10/09/05
Chemist:	Jann Frye
Analyst:	Ed Cahlin
Analysis Date:	10/09/05
Time Complete:	11:00 AM
Instrument Code:	IC-02
Reagent:	0
Sample Prep:	water digest
Sample Point:	T-100
Sample Type	
STANDARD	100000
SAMPLE 1	8057022176
DUPLICATE 1	8057022176dup
SAMPLE 2	
DUPLICATE 2	
SAMPLE 3	
DUPLICATE 3	
SAMPLE 4	
DUPLICATE 4	
SPKSE	8057022176spk
SPKSE DUPLICATE	

PRINT

TECH INFO								
	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Cadmium
Blank Data (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Standard Data (ug/mL)	57.5	55	810.7	800.7	540.5	519.5	570.8	497
Sample 1 Data (ug/mL)	2.00E+00	1.00E+00	1.00E+01	3.97E+01	2.00E+00	<0.70	<0.02	<0.00
Sample 1 Dilution Factor	101	11	11	11	101	11	11	11
Sample 1 Prep DF	12.304	12.304	12.304	12.304	12.304	12.304	12.304	12.304
Duplicate 1 Data (ug/mL)	2.00E+00	1.00E+00	1.00E+01	3.97E+01	2.00E+00	<0.70	<0.02	<0.00
Duplicate 1 Dilution Factor	101	11	11	11	101	11	11	11
Duplicate 1 Prep DF	12.304	12.304	12.304	12.304	12.304	12.304	12.304	12.304
Sample 2 Data (ug/mL)								
Sample 2 Dilution Factor								
Sample 2 Prep DF								
Duplicate 2 Data (ug/mL)								
Duplicate 2 Dilution Factor								
Duplicate 2 Prep DF								
Sample 3 Data (ug/mL)								
Sample 3 Dilution Factor								
Sample 3 Prep DF								
Duplicate 3 Data (ug/mL)								
Duplicate 3 Dilution Factor								
Duplicate 3 Prep DF								
Sample 4 Data (ug/mL)								
Sample 4 Dilution Factor								
Sample 4 Prep DF								
Duplicate 4 Data (ug/mL)								
Duplicate 4 Dilution Factor								
Duplicate 4 Prep DF								
Spkse + Sample 1 (ug/mL)	2.00E+00	1.00E+00	1.00E+01	3.97E+01	2.00E+00	1.43E+01	1.43E+01	1.43E+01
Spkse + Dup 1 (ug/mL)								

Spkse Volume (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
Total Volume (mL)	10.10	11.00	11.00	11.00	10.10	11.00	11.00	11.00
Std. Conc. (ug/mL)	80	70	534	514	500	531	575	520
Dilution Limit	0.005	0.004	0.004	0.000	0.005	0.070	0.032	0.030
Matrix Dilution Limit 1	5.10E+02	7.00E+01	4.00E+02	5.22E+02	4.07E+02	5.04E+02	5.00E+02	4.00E+02
Matrix Dilution Limit 2	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Matrix Dilution Limit 3	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Matrix Dilution Limit 4	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR

Spkse Recovery = (Spkse+Sample-Sample)/(Total Volume)/(Spkse Vol)/(Sample DF)*100%
 Note: For spkse recovery when the sample conc. is less than detection limit you do NOT subtract sample conc.
 Duplicate Relative % Difference = (Sample - Duplicate)/(Sample + Duplicate) / 2 * 100%
 Less than Values are Calculated from the Dilution Limit/Dilution Factor

VELOCITY v	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Cadmium
Blank 1 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 2 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 3 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 4 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 5 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 6 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 7 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 8 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 9 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 10 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 11 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 12 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 13 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 14 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 15 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 16 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 17 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 18 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 19 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 20 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 21 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 22 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 23 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 24 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 25 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 26 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 27 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 28 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 29 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 30 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 31 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 32 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 33 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 34 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 35 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 36 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 37 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 38 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 39 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 40 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 41 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 42 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 43 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 44 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 45 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 46 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 47 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 48 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 49 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 50 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 51 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 52 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 53 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 54 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 55 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 56 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 57 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 58 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 59 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 60 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 61 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 62 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 63 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 64 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 65 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 66 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 67 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 68 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 69 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 70 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 71 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 72 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 73 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 74 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 75 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 76 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 77 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 78 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 79 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 80 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 81 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 82 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 83 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 84 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 85 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 86 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 87 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 88 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 89 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 90 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 91 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 92 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 93 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 94 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 95 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 96 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 97 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 98 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 99 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 100 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 101 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 102 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 103 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 104 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 105 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 106 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 107 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 108 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 109 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 110 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 111 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 112 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 113 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 114 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 115 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 116 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 117 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 118 (ug/mL)	<0.03	<0.04	<0.04	<0.00	<0.00	<0.70	<0.02	<0.00
Blank 119 (ug/mL)	<0.03	<						


```

=====
Sample Name: S95T002176 DUP                               Date: 10/02/1995 12:27:52
Data File  : C:\DX\DATA\95100271.D12
Method     : C:\DX\METHOD\AS12A.MET
ACI Address: 1 System: 1 Inject#: 12                      Detector: CDM-1
Analyst    : Ed Colvin Column: AG4A-SC, AS4A-SC, SRS
=====

```

Ed. Colvin 10/12/95

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	11	4898	5Hz	0.00	16.32		200

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	2251	21288	2	
2	2.23	FLUORIDE	248.448	97758	891479	2	0.90
3	3.61	CHLORIDE ✓	0.792	122	1013	1	-1.37
4	4.47	NITRITE ✓	5.181	141	1404	1	-0.89
5	8.23	NITRATE ✓	29.825	2459	29649	2	4.57
6	8.58		0.000	66820	2261283	2	
7	12.12	SULFATE ✓	5.591	135	3750	1	0.33
Totals			289.836	169686	3209867		

File: 95100271.D12 Sample: S95T002176 DUP

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 79 TO 87.

```

=====
Sample Name: 106N9-D STD                               Date: 10/02/1995 08:57:49
Data File  : C:\DX\DATA\95100271.D04
Method     : C:\DX\METHOD\AS12A.MET
ACI Address: 1 System: 1 Inject#: 4                     Detector: CDM-1
Analyst    : Ed Colvin                                  Column: AG4A-SC,AS4A-SC, SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    5400   5Hz   0.00 18.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.63		0.000	175	1628	1	
2	2.20	FLUORIDE	57.579	2378	15767	2	-0.45
3	2.67	FORMATE	32.985	240	3062	2	1.91
4	3.64	CHLORIDE	82.025	1977	15963	1	-0.55
5	4.50	NITRITE	518.795	6967	71037	1	-0.22
6	7.06	BROMIDE	570.919	3309	50111	1	2.92
7	8.25	NITRATE	609.702	3669	69149	2	4.83
8	9.27	PHOSPHATE	540.379	1289	29156	2	0.98
9	12.24	SULFATE	619.352	3241	91873	1	1.32
10	16.27	OXALATE	487.048	1259	46765	1	1.81
Totals			3518.785	24504	394510		

File: 95100271.D04 Sample: 106N9-D STD

WHO-CC-WM-DP-144, REV. 1

```

=====
Sample Name: PREP BLANK                      Date: 10/02/1995 08:13:06
Data File  : C:\DX\DATA\95100271.D02
Method     : C:\DX\METHOD\AS12A.MET
ACI Address: 1 System: 1 Inject#: 2          Detector: CDM-1
Analyst    : Ed Colvin                      Column: AG4A-SC,AS4A-SC, SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1  5400  5Hz  0.00 18.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	2.50	FORMATE	0.075	26	269	1	-4.58
2	3.66	CHLORIDE	0.036	43	300	1	0.00
3	8.40	NITRATE	0.228	35	483	1	6.73
Totals			0.339	104	1052		

File: 95100271.D02 Sample: PREP BLANK

VHC-CD-WM-DP-144, REV. 1

```

=====
Sample Name: INSTR BLANK                      Date: 10/02/1995 07:53:45
Data File  : C:\DX\DATA\95100271.D01
Method     : C:\DX\METHOD\AS12A.MET
ACI Address: 1 System: 1 Inject#: 1           Detector: CDM-1
Analyst    : Ed Colvin                      Column: AG4A-SC,AS4A-SC, SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1   5400   5Hz   0.00 18.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	2.69	FORMATE	0.288	230	2630	1	2.67
Totals			0.288	230	2630		

File: 95100271.D01 Sample: INSTR BLANK

WATKINS DP-144, REV. 1

=====

Sample Name: S95T002176	Date: 10/02/1995 10:25:09
Data File : C:\DX\DATA\95100271.D06	
Method : C:\DX\METHOD\AS12A.MET	
ACI Address: 1 System: 1 Inject#: 6	Detector: CDM-1
Analyst : Ed Colvin	Column: AG4A-SC, AS4A-SC, SRS

=====

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
-----	-----	-----	-----	-----	-----	-----	-----	-----
External	1	101	5400	5Hz	0.00	18.00		200

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

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

1	1.64		0.000	274	2839	1	
2	2.20	FLUORIDE ✓	290.487	12659	85047	2	-0.45
3	2.66	FORMATE	26.416	208	2340	2	1.53
4	3.64	CHLORIDE	4.723	66	510	1	-0.55
5	8.34	NITRATE	72.184	350	6176	2	5.97
6	9.18	PHOSPHATE ✓	2925.064	7773	178544	2	0.00

Totals			3318.874	21330	275455		

File: 95100271.D06 Sample: S95T002176

VIIIC-CD-VIIIC-PP-144, REV. 1

```

=====
Sample Name: S95T002176                      Date: 10/02/1995 10:49:43
Data File  : C:\DX\DATA\95100271.D07
Method     : C:\DX\METHOD\AS12A.MET
ACI Address: 1 System: 1 Inject#: 7           Detector: CDM-1
Analyst    : Ed Colvin                      Column: AG4A-SC,AS4A-SC, SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          11    5400   5Hz   0.00 18.00         200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	2141	19896	2	
2	2.23	FLUORIDE	244.018	95497	867133	2	0.90
3	3.61	CHLORIDE ✓	1.000	161	1393	1	-1.37
4	4.48	NITRITE ✓	5.695	201	2101	1	-0.67
5	8.22	NITRATE ✓	39.709	3154	40272	2	4.45
6	8.58		0.000	66788	2254589	2	
Totals			290.422	167942	3185382		

File: 95100271.D07 Sample: S95T002176

VHQC-CE-MEM-DP-144, REV. 1

```

=====
Sample Name: S95T002176 DUP                               Date: 10/02/1995 11:46:21
Data File  : C:\DX\DATA\95100271.D10
Method     : C:\DX\METHOD\AS12A.MET
ACI Address: 1 System: 1 Inject#: 10                      Detector: CDM-1
Analyst    : Ed Colvin Column: AG4A-SC, AS4A-SC, SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    5400   5Hz   0.00  18.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	279	2831	2	
2	2.20	FLUORIDE ✓	296.380	13195	86838	3	-0.45
3	2.65	FORMATE	35.357	246	3322	4	1.15
4	3.64	CHLORIDE	4.114	52	389	1	-0.55
5	8.34	NITRATE	58.692	272	4612	2	5.97
6	9.18	PHOSPHATE ✓	2886.602	7634	175927	2	0.00
Totals			3281.145	21680	273920		

File: 95100271.D10 Sample: S95T002176 DUP

UNIC-CD-4000-DE-144, REV. 1

```

=====
Sample Name: S95T002176 + SPIKE                      Date: 10/02/1995 11:08:47
Data File  : C:\DX\DATA\95100271.D08
Method     : C:\DX\METHOD\AS12A.MET
ACI Address: 1 System: 1 Inject#: 8                    Detector: CDM-1
Analyst    : Ed Colvin                               Column: AG4A-SC, AS4A-SC, SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          11    5400   5Hz   0.00 18.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	2311	21686	2	
2	2.23	FLUORIDE	245.807	95608	876880	2	0.90
3	3.61	CHLORIDE	8.630✓	1755	15399	1	-1.37
4	4.47	NITRITE	53.027✓	6095	66318	1	-0.89
5	7.02	BROMIDE	55.914✓	2926	44750	1	2.33
6	8.14	NITRATE	94.913✓	6472	100302	2	3.43
7	8.57		0.000	67499	2291168	2	
8	12.10	SULFATE	64.294✓	2634	87318	1	0.17
9	16.21	OXALATE	46.329✓	1059	40411	1	1.44
Totals			568.914	186360	3544233		

File: 95100271.D08 Sample: S95T002176 + SPIKE

144, REL. 1


```

=====
Sample Name: S95T002176 + SPIKE                      Date: 10/02/1995 11:27:29
Data File  : C:\DX\DATA\95100271.D09
Method     : C:\DX\METHOD\AS12A.MET
ACI Address: 1 System: 1 Inject#: 9                   Detector: CDM-1
Analyst    : Ed Colvin                               Column: AG4A-SC,AS4A-SC, SRS
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    5400   5Hz   0.00 18.00          200
-----

```

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

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	448	4370	2	
2	2.20	FLUORIDE ✓	352.714	15463	104066	3	-0.45
3	2.66	FORMATE	37.157	263	3520	4	1.53
4	3.63	CHLORIDE	105.421	2484	20709	1	-0.82
5	4.50	NITRITE	512.350	6806	70084	1	-0.22
6	7.04	BROMIDE	560.488	3217	49138	1	2.62
7	8.22	NITRATE	645.112	3904	73344	2	4.45
8	9.15	PHOSPHATE ✓	3430.032	9327	213680	2	-0.33
9	12.24	SULFATE	623.112	3171	92464	1	1.32
10	16.28	OXALATE	485.921	1243	46649	1	1.88
Totals			6752.308	46327	678023		

File: 95100271.D09 Sample: S95T002176 + SPIKE

144, REV. 1

09/21/95 06:47
A-0004-1

File # 0950926 B

WHC-SD-WM-DP _____, REV. _____

70131/95

Page: 1

LABCORE Data Entry Template for Worklist# 2511

Analyst: B. Goetze Instrument: ICP01 ^{ICP02} _{S-26-51} Book# 98644A

Method: LA-505-151 ¹⁶¹ _{S-26-51} Rev/Mod 8-0

Worklist Comment: ICP T-109 (All metals)

WHC-SD-WM-DP-144, REV. 1

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	ICSA		@ICP-QC	QC		
4	ICSAB		@ICP-QC	QC		
5	PREPSTD TJ A		@ICP-A01	SOLID		
6	PREPBLK TJ A		@ICP-A01	SOLID		
7	SAMPLE	S95T002177 0 A	@ICP-A01	SOLID	95000121	T-109
	Analytes Requested: AG-A-01 , AL-A-01 , AS-A-01 , B-A-01 , BA-A-01 , BE-A-01 , BI-A-01 , CA-A-01 , CD-A-01 , CE-A-01 , CO-A-01 , CR-A-01 , CU-A-01 , FE-A-01 , K-A-01 , LA-A-01 , LI-A-01 , MG-A-01 , MN-A-01 , MO-A-01 , NA-A-01 , ND-A-01 , NI-A-01 , P-A-01 , PB-A-01 , S-A-01 , SB-A-01 , SE-A-01 , SI-A-01 , SM-A-01 , SR-A-01 , TI-A-01 , TL-A-01 , U-A-01 , V-A-01 , ZN-A-01 , ZR-A-01					
8	DUP	S95T002177 0 A	@ICP-A01	SOLID		
9	SPK-PREDIG	S95T002177 0 A	@ICP-A01	SOLID		
10	ICSA		@ICP-QC	QC		
11	ICSAB		@ICP-QC	QC		
12	CCV		@ICP-QC	QC		
13	CCB		@ICP-QC	QC		

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 2511

S Type Sample# R A Test Matrix Group# Project

Final page for worklist # 2511

[Signature] 9-26-95
Analyst Signature Date

[Signature] 09/27/95
Analyst Signature Date

		DF.
PREPSTD TJA	5-6 ea. (with 1A+2) in 100-6	1
PREPBLK TJA	100-6 - Direct	1
S95T002177-L	1.0003 g in 100-6 - 1st-5-6-2nd-8-6	4998
S95T002177	1.0003 g in 100-6 - 1st-5-6	1000
S95T002177-D	1.0002 g in 100-6 - 1st-5-6	1000
S95T002177-A	1.0003 g in 100-6 - 1st-2nd-7-6	1000

Data Entry Comments:

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	950926B	ICP2	09/26/95	10:44	BJG	Q	CONC
2	ICB	950926B	ICP2	09/26/95	10:47	BJG	Q	CONC
3	ICSA	950926B	ICP2	09/26/95	10:50	BJG	Q	CONC
4	ICSAB	950926B	ICP2	09/26/95	10:54	BJG	Q	CONC
5	PREPSTD TJ A	950926B	ICP2	09/26/95	10:58	BJG	S	CONC
6	PREPBLK TJ A	950926B	ICP2	09/26/95	11:01	BJG	S	CONC
7	S95T002177 L	950926B	ICP2	09/26/95	11:04	BJG	S	CONC
8	S95T002177	950926B	ICP2	09/26/95	11:08	BJG	S	CONC
9	S95T002177 D	950926B	ICP2	09/26/95	11:11	BJG	S	CONC
10	S95T002177 A	950926B	ICP2	09/26/95	11:14	BJG	S	CONC
11	ICSA	950926B	ICP2	09/26/95	11:18	BJG	Q	CONC
12	ICSAB	950926B	ICP2	09/26/95	11:21	BJG	Q	CONC
13	CCV	950926B	ICP2	09/26/95	11:24	BJG	Q	CONC
14	CCB	950926B	ICP2	09/26/95	11:27	BJG	Q	CONC

WHO-SD-WM-DP-144, REV. 1

B. G. Smith
9-26-95
T-109
S95T002177
Acid Digest
1 mL - 9 mL

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 90 TO 93.

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.911	4.892	5.063	4.970	4.884	5.060
2	ICB	.0012	.0014	.0088	.0069	.0001	.0000
3	ICSA	-.0131	246.8	-.0707	-.0068	.0034	.0001
4	ICSAB	.9299	243.0	-.0703	.0016	.4589	.4695
5	PREPSTDITJA	.8565	4.728	4.764	4.766	4.685	5.219
6	PREPBLKTJA	-.0000	.0154	-.0047	.0081	.0001	-.0001
7	S95T002177_L	19.76	1411.	-1.051	211.7	5.769	-.3303
8	S95T002177	18.68	1411.	10.45	217.1	6.341	-.1646
9	S95T002177_D	18.43	1421.	4.730	217.0	6.332	-.1649
10	S95T002177_A	948.9	2405.	1032.	1211.	960.0	1009.
11	ICSA	-.0131	247.2	-.0730	-.0026	.0034	.0000
12	ICSAB	.9324	244.3	-.0398	-.0017	.4595	.4719
13	CCV	4.924	4.898	5.064	5.003	4.911	5.088
14	CCB	.0006	-.0023	-.0022	.0021	.0001	.0000

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	4.980	5.057	5.005	5.000	5.001	5.044
2	ICB	.0045	.0030	.0005	.0081	.0000	.0005
3	ICSA	.0058	243.7	.0002	.0043	.0002	-.0077
4	ICSAB	-.0050	244.9	.9306	.0036	.4607	.4615
5	PREPSTDITJA	4.579	4.910	4.647	4.807	4.775	4.758
6	PREPBLKTJA	-.0078	.1632	.0005	.0039	.0013	.0021
7	S95T002177_L	333.6	216.4	2.688	-6.613	-4.391	42.32
8	S95T002177	180.5	326.0	.5799	-3.262	-.0066	39.74
9	S95T002177_D	158.0	322.8	.5746	-1.902	-.4586	39.48
10	S95T002177_A	1175.	1360.	1000.	997.7	1001.	1049.
11	ICSA	.0171	249.7	-.0000	.0039	.0000	-.0077
12	ICSAB	.0159	247.6	.9310	.0040	.4612	.4626
13	CCV	4.990	5.195	5.002	5.036	5.009	5.058
14	CCB	.0046	.0020	.0011	.0028	-.0012	.0005

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.003	.0077	5.017	4.842	4.933	4.927
2	ICB	.0000	.0004	.0000	-.0171	.0006	.0004
3	ICSA	-.0099	.0045	91.83	-.2093	-.0045	.0027
4	ICSAB	.4664	.0021	91.22	-.1242	-.0046	.9486
5	PREPSTDITJA	4.676	.0058	4.705	4.704	4.776	4.686
6	PREPBLKTJA	.0018	-.0006	.0197	-.0131	-.0004	-.0007
7	S95T002177_L	1.886	4.860	16520.	-1154.	1.945	7.393
8	S95T002177	3.399	-.1150	15910.	-163.6	.9758	1.874
9	S95T002177_D	4.417	-.8406	15850.	-186.6	1.085	1.085
10	S95T002177_A	996.0	.8345	16980.	885.6	980.0	967.2
11	ICSA	-.0105	-.0074	92.59	-.1431	-.0042	.0029
12	ICSAB	.4679	-.0030	91.69	-.1166	-.0044	.9548
13	CCV	5.030	.0072	5.033	4.867	4.969	4.949
14	CCB	-.0006	.0008	.0004	-.0283	.0008	.0007

WHC-CD-WM-DP-144, REV. 1

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.904	4.907	5.068	4.922	5.092	4.973
2	ICB	.0015	.0002	.0000	.0046	.0016	-.0024
3	ICSA	248.0	-.0080	-.0157	191.6	.0158	-.0253
4	ICSAB	245.3	.4387	-.0148	189.1	.0141	.8876
5	PREPSTD TJ A	4.616	4.650	4.826	4.865	4.770	4.730
6	PREPBLKTJA	.0213	.0004	-.0002	.0634	.0020	.0028
7	S95T002177 L	58.53	1152.	-14.32	186400.	-7.164	29.22
8	S95T002177	100.4	1118.	-3.634	181900.	.5875	11.06
9	S95T002177 D	110.6	1113.	-5.171	184300.	1.699	16.40
10	S95T002177 A	1075.	2089.	1014.	184800.	1013.	1007.
11	ICSA	249.0	-.0079	-.0148	190.5	.0136	-.0182
12	ICSAB	246.7	.4391	-.0159	189.9	.0145	.8956
13	CCV	4.895	4.900	5.069	4.908	5.125	4.965
14	CCB	-.0143	.0004	.0020	.0078	-.0021	-.0042
#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.089	5.009	5.035	4.741	4.980	4.988
2	ICB	.0036	-.0003	-.0062	.0095	.0183	.0082
3	ICSA	.0085	.0353	.0326	.0011	-.0983	.0121
4	ICSAB	.0300	.9962	.0319	-.0046	-.0747	.0167
5	PREPSTD TJ A	4.848	4.630	4.697	4.436	4.733	5.564
6	PREPBLKTJA	.0167	.0019	.0589	.0018	.0095	.0171
7	S95T002177 L	82170.	267.1	136.5	51.13	73.04	2667.
8	S95T002177	80970.	344.2	173.1	-5.633	-9.412	2584.
9	S95T002177 D	80980.	261.3	171.6	-3.071	-3.180	2580.
10	S95T002177 A	81850.	1292.	1172.	961.5	989.1	3602.
11	ICSA	.0279	.0473	.0309	.0122	-.1023	.0147
12	ICSAB	-.0022	1.001	.0255	.0052	-.0825	.0158
13	CCV	5.139	5.003	5.032	4.772	4.974	4.987
14	CCB	.0080	-.0056	-.0019	.0046	.0241	.0094
#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.950	4.864	.0433	4.843	4.854	9.887
2	ICB	.0067	.0001	.0012	.0006	.0080	.0117
3	ICSA	-.0083	-.0040	.0001	.0012	.0213	-.2335
4	ICSAB	.0002	-.0039	.0057	.0020	.0045	-.2317
5	PREPSTD TJ A	4.777	4.712	.0373	4.678	4.626	9.559
6	PREPBLKTJA	-.0085	.0002	.0036	.0006	-.0021	-.0365
7	S95T002177 L	74.25	7.254	-4.688	10.02	-44.21	228.5
8	S95T002177	8.887	6.680	-.8382	6.564	4.826	38.47
9	S95T002177 D	2.745	6.603	2.424	6.767	5.392	15.26
10	S95T002177 A	978.9	970.5	13.83	974.1	975.0	1986.
11	ICSA	-.0036	-.0041	.0081	.0016	.0291	-.2657
12	ICSAB	-.0031	-.0040	.0041	.0020	.0213	-.2666
13	CCV	4.987	4.906	.0421	4.877	4.920	9.929
14	CCB	.0103	.0001	.0016	.0000	.0098	.0326

WVHC-CD-WM-DP-144, REV. 1

#	Sample Name	V	Y	Zn	Zr
1	ICV	4.944	.0138	5.022	4.947
2	ICB	.0012	.0001	.0005	-.0001
3	ICSA	-.0020	.0193	-.0075	-.0029
4	ICSAB	.4602	.0196	.9507	-.0026
5	PREPSTDJTJA	4.694	.0112	4.576	4.744
6	PREPBLKTJA	-.0012	-.0007	.0165	-.0011
7	S95T002177 L	14.75	3.527	27.26	15.95
8	S95T002177	2.767	.8625	48.14	12.60
9	S95T002177 D	.7932	.5488	55.94	11.82
10	S95T002177 A	987.8	3.372	1066.	990.5
11	ICSA	-.0006	.0198	-.0075	-.0028
12	ICSAB	.4615	.0195	.9573	-.0025
13	CCV	4.968	.0137	5.023	4.971
14	CCB	.0016	.0005	.0001	-.0002

WHC-SD-WM-DP-144, REV. 1

LABCORE Data Entry Template for Worklist# 2211

Analyst: JK Setu Instrument: ICP011 Book# 46B488
Method: LA-505-151/41 Rev/Mod B-0
Worklist Comment: T-109 (FUSION)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 ICV			@ICP-QC	QC		
2 ICB			@ICP-QC	QC		
3 ICSA			@ICP-QC	QC		
4 ICSAB			@ICP-QC	QC		
5 PREPBLKTJA			@ICP-F01	SOLID		
6 SAMPLE	S95T001612 0 F		@ICP-F01	SOLID	95000121	T-109
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 , K-F-01 , LA-F-01 , LI-F-01 , MG-F-01 , MN-F-01 , MO-F-01 , NA-F-01 , ND-F-01 , NI-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						
7 DUP	S95T001612 0 F		@ICP-F01	SOLID		
8 SPK	S95T001612 0 F		@ICP-F01	SOLID		
9 ICSA			@ICP-QC	QC		
10 ICSAB			@ICP-QC	QC		
11 CCV			@ICP-QC	QC		
12 CCB			@ICP-QC	QC		

Final page for worklist # 2211

JK Setu 09-01-95
Analyst Signature Date

Reviewed & Validated by:
Samuel M. Parry 09/01/95
Analyst Signature Date

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 2211

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

Prep 6/11/95 4-10 ml

S957001412-L, 5305 g → 250 ml, 4-10-2-8 ml, (30 x 250) / 5305 = 6142.9

S957001412, 5305 g → 250, 4-10 (26 x 250) / 5305 = 12152.6

S957001412-D, 5348 g → 250, 4-10 (26 x 250) / 5348 = 12154.1

S957001412-Q, 5305 g → 250, 4-10 (26 x 250) / 5305 = 12252.6, 4 ml sample + 2 ml SST5 + 8 ml HNO₃

Data Entry Comments:

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

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	950901A	ICP2	09/01/95	09:22	DKS	Q	CONC
2	ICB	950901A	ICP2	09/01/95	09:26	DKS	Q	CONC
3	ICSA	950901A	ICP2	09/01/95	09:29	DKS	Q	CONC
4	ICSAB	950901A	ICP2	09/01/95	09:33	DKS	Q	CONC
5	PREPBLKTJA	950901A	ICP2	09/01/95	09:40	DKS	S	CONC
6	S95T001612_L	950901A	ICP2	09/01/95	09:44	DKS	S	CONC
7	S95T001612	950901A	ICP2	09/01/95	09:48	DKS	S	CONC
8	S95T001612_D	950901A	ICP2	09/01/95	09:53	DKS	S	CONC
9	S95T001612_A	950901A	ICP2	09/01/95	09:58	DKS	S	CONC
10	ICSA	950901A	ICP2	09/01/95	10:06	DKS	Q	CONC
11	ICSAB	950901A	ICP2	09/01/95	10:09	DKS	Q	CONC
12	10 ppm std	950901A	ICP2	09/01/95	10:19		X	IR
13	CCV	950901A	ICP2	09/01/95	10:23	DKS	Q	CONC
14	CCB	950901A	ICP2	09/01/95	10:27	DKS	Q	CONC

JK Gold

09-01-95

7-109 S95T001612

100-k/15 # 2211

WHC-SD-WM-DP-144, REV/

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 96 TO 99.

#	Sample Name	Ag	Al /	As	B	Ba	Be
1	ICV	5.011	5.044	5.198	5.071	5.088	5.266
2	ICB	.0007	-.0016	.0033	.0093	.0002	-.0001
3	ICSA	-.0003	250.9	-.0000	.0036	.0019	.0001
4	ICSAB	.9665	248.4	-.0368	-.0019	.4761	.4899
5	PREPBLKTJA	.0003	.0028	.0023	.0051	.0007	-.0001
6	S95T001612 L	68.03	1458.	-654.9	172.2	18.98	-2.101
7	S95T001612-	33.55	1366. /	-23.10	57.95	16.60	-1.245
8	S95T001612 D	26.83	1461.	-119.6	35.32	16.52	-1.232
9	S95T001612-A	9802.	12920. /	12370.	11600.	11360.	12120.
10	ICSA	-.0008	250.4	.0045	.0001	.0019	-.0000
11	ICSAB	.9699	248.6	.0132	.0026	.4742	.4958
12	10 ppm std						
13	CCV	5.072	5.097	5.308	5.140	5.205	5.381
14	CCB	.0005	-.0042	-.0012	.0033	.0001	-.0000

#	Sample Name	Bi	Ca /	Cd	Ce	Co	Cr
1	ICV	5.136	5.138	5.203	5.116	5.133	5.227
2	ICB	-.0043	.0056	-.0016	-.0005	-.0001	.0014
3	ICSA	.0000	252.3	.0005	.0179	.0004	.0072
4	ICSAB	.0121	251.9	.9772	.0053	.4758	.4930
5	PREPBLKTJA	-.0062	.0756	.0005	.0027	-.0016	.0009
6	S95T001612 L	-1005.	5030.	-82.99	57.92	-97.29	65.11
7	S95T001612-	300.1	1406. /	-15.21	7.486	-2.497	51.54
8	S95T001612 D	-144.4	1319.	-20.81	-31.25	12.81	61.90
9	S95T001612-A	12240.	13660. /	12340.	11780.	12110.	12400.
10	ICSA	.0190	257.5	-.0005	.0132	-.0011	.0053
11	ICSAB	-.0036	257.0	.9826	.0129	.4799	.4986
12	10 ppm std						
13	CCV	5.159	5.420	5.334	5.203	5.255	5.360
14	CCB	.0063	.0062	-.0010	-.0005	-.0013	.0010

#	Sample Name	Cu	Eu	Fe /	K	La	Li
1	ICV	5.141	.0055	5.206	4.993	5.116	4.971
2	ICB	.0008	.0011	.0000	.0428	.0005	.0006
3	ICSA	-.0099	-.0252	95.91	.2119	-.0037	.0029
4	ICSAB	.4777	-.0250	94.95	.2006	-.0048	.9771
5	PREPBLKTJA	.0011	.0014	.0009	414.8	.0000	.0015
6	S95T001612 L	25.40	63.52	3529.	5403e3	7.313	36.34
7	S95T001612-	26.67	16.29	3398. /	5220e3	4.621	14.53
8	S95T001612 D	21.12	21.08	4336.	4998e3	-4.058	14.42
9	S95T001612-A	11710.	41.87	15600. /	5173e3	11620.	10980.
10	ICSA	-.0099	-.0361	96.53	.0109	-.0045	.0037
11	ICSAB	.4763	-.0334	95.82	.1743	-.0044	.9689
12	10 ppm std						
13	CCV	5.209	.0056	5.342	5.075	5.196	4.989
14	CCB	.0008	.0007	.0007	.0588	.0001	.0008

WHC-SD-WM-DP-144, REV. 1

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.001	5.077	5.176	4.968	5.250	5.203
2	ICB	.0029	.0005	.0032	.0076	.0015	-.0002
3	ICSA	253.2	-.0061	-.0064	193.0	.0058	-.0190
4	ICSAB	250.5	.4601	-.0102	191.6	.0033	.9377
5	PREPBLKTJA	.0046	.0009	.0020	.1352	.0020	.0034
6	S95T001612 L	252.6	1442.	41.71	174300.	59.07	3058.
7	S95T001612-	196.9	1379.✓	11.87	168600.✓	16.02	2858.✓
8	S95T001612 D	153.8	1626.	5.766	164300.	31.84	1673.✓
9	S95T001612-A	11790.	13100.✓	12250.	178300.✓	11870.	14930.✓
10	ICSA	253.4	-.0059	-.0051	191.6	.0034	-.0185
11	ICSAB	251.3	.4639	-.0065	190.3	.0032	.9713
12	10 ppm std						
13	CCV	5.074	5.223	5.293	5.000	5.298	5.309
14	CCB	.0083	.0004	.0012	.0054	.0018	.0007

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.380	5.174	5.133	4.839	5.059	4.870
2	ICB	.0316	-.0066	-.0042	.0040	.0352	.0084
3	ICSA	.1395	.0257	-.0217	.0018	-.0592	.0155
4	ICSAB	.0746	1.017	-.0250	.0139	-.0571	.0117
5	PREPBLKTJA	.0481	-.0133	.0129	.0020	.0534	.0252
6	S95T001612 L	86540.	-164.7	478.3	-1.510	2307.	1802.
7	S95T001612-	83830.✓	86.28	358.5	-84.13	450.1	1050.✓
8	S95T001612 D	82820.	-40.18	157.1	-13.23	352.5	1239.
9	S95T001612-A	95920.✓	12530.	12460.	11500.	12480.	12700.✓
10	ICSA	.1582	.0217	-.0152	.0089	-.0636	.0145
11	ICSAB	.1086 ✓	1.011	-.0191	-.0080	-.0317	.0160
12	10 ppm std	2.71519					
13	CCV	5.200 ✓	5.314	5.242	4.936	5.231	4.977
14	CCB	.0484	-.0068	-.0017	-.0034	.0264	.0075

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	5.117	5.044	-.0563	4.951	5.060	10.10
2	ICB	.0138	.0000	-.0019	.0000	-.0224	.0541
3	ICSA	.0052	.0017	-.0140	.0013	.0509	-.0467
4	ICSAB	.0056	.0018	-.0193	.0006	.0392	-.0510
5	PREPBLKTJA	.0172	.0004	.0023	.0000	-.0062	-.0469
6	S95T001612 L	934.6	20.18	36.34	1.371	-172.8	1478.
7	S95T001612-	214.9	8.205	91.20	23.48	-320.2	-667.7
8	S95T001612 D	250.0	6.087	47.99	33.56	-238.1	-407.1
9	S95T001612-A	11810.	11430.	3.525	11480.	12050.	22630.
10	ICSA	.0112	.0015	-.0116	.0006	-.0117	-.0744
11	ICSAB	.0105	.0015	-.0076	.0009	.0530	-.0826
12	10 ppm std						
13	CCV	5.200	5.114	-.0466	5.039	5.184	10.21
14	CCB	.0077	.0000	.0014	-.0004	-.0267	.0355

WHC-SD-WM-DP-146, REV. 1

#	Sample Name	V	Y	Zn /	Zr
1	ICV	5.124	.0137	5.138	5.057
2	ICB	.0029	.0009	.0004	.0013
3	ICSA	.0020	.0083	-.0041	.0002
4	ICSAB	.4760	.0082	.9835	.0006
5	PREPBLKTJA	.0034	.0011	.0199	.0016
6	S95T001612_L	223.3	52.83	1327.	66.35
7	S95T001612_	49.71	14.41	295.3 /	28.92
8	S95T001612_D	63.08	14.29	293.2	31.75
9	S95T001612_A	12050.	53.79	12520. /	11670.
10	ICSA	.0033	.0087	-.0047	-.0000
11	ICSAB	.4826	.0085	.9907	-.0004
12	10 ppm std				
13	CCV	5.231	.0143	5.240	5.150
14	CCB	.0026	.0007	.0001	.0010

JK L28

09-01-95

WHC-SO-WM-DP-144, REV. 1

LABCORE Data Entry Template for Worklist# 2213

Analyst: DK Seto Instrument: ICP01 Book# 46848B

Method: LA-505-151 Rev/Mod D-3

Worklist Comment: ICP T-109 (FUSION)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	ICSA		@ICP-QC	QC		
4	ICSAB		@ICP-QC	QC		
5	PREPBLKARL		@ICP-F01	SOLID		
6	SAMPLE	S95T001619 0 F	@ICP-F01	SOLID	95000121	T-109
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 , K-F-01 , LA-F-01 , LI-F-01 , MG-F-01 , MN-F-01 , MO-F-01 , NA-F-01 , ND-F-01 , NI-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						
7	DUP	S95T001619 0 F	@ICP-F01	SOLID		
8	SPK	S95T001619 0 F	@ICP-F01	SOLID		
9	CCV		@ICP-QC	QC		
10	CCB		@ICP-QC	QC		
11	SAMPLE	S95T001630 0 F	@ICP-F01	SOLID	95000121	T-109
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 , K-F-01 , LA-F-01 , LI-F-01 , MG-F-01 , MN-F-01 , MO-F-01 , NA-F-01 , ND-F-01 , NI-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						
12	DUP	S95T001630 0 F	@ICP-F01	SOLID		

Data Entry Comments:

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

08/31/95 15:32
A-0004-1

WHC-SD-WM-DP-144, REV. 1

Page:

LABCORE Data Entry Template for Worklist# 2213

S Type	Sample#	R A	Test	Matrix	Group#	Project
13 SPK	S95T001630	0 F	@ICP-F01	SOLID		
14 ICSA			@ICP-QC	QC		
15 ICSAB			@ICP-QC	QC		
16 CCV			@ICP-QC	QC		
17 CCB			@ICP-QC	QC		

Final page for worklist # 2213

JK [Signature]
Analyst Signature

09-05-95
Date

Reviewed + Validated by:
Samuel M. Lang
Analyst Signature

08/06/95
Date

Prepbk 212, 4-10 mL

S95T001619-L, .5752g → 250 mL, 4-10-2-8, (250 x 130) / .5752 = 56502.1

S95T001619, .5752g → 250, 4-10 (250 x 24) / .5752 = 11300.4

S95T001619-D, .5473g → 250, 4-10 (250 x 24) / .5473 = 11457.8

S95T001619-Q, .5752g → 250, 4-10 (250 x 24) / .5752 = 11300.4

S95T001630-L, .5171g → 250 mL, 4-10-2-8, (250 x 130) / .5171 = 62850.5

S95T001630, .5171g → 250, 4-10 (250 x 24) / .5171 = 12570.1

S95T001630-D, .5218g → 250, 4-10 (250 x 24) / .5218 = 12436.9

S95T001630-Q, .5171g → 250, 4-10 (250 x 24) / .5171 = 12570.1

Data Entry Comments:

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

File: 950905a

WHC-SD-WM-DP-144, REV. 1

Identity 1: ICV Identity 2: Quality Control

12:08 PM September 5, 1995

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	4.944	5.036	5.050	4.698	5.024	4.968	5.097	5.105
S.D.	0.011	0.015	0.027	0.006	0.009	0.019	0.011	0.039
% R.S.D.	0.220	0.302	0.535	0.138	0.187	0.380	0.213	0.756

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.003	5.085	5.148	5.183	4.970	5.077	5.432	9.458
S.D.	0.008	0.024	0.009	0.020	0.012	0.017	0.032	0.019
% R.S.D.	0.166	0.471	0.181	0.379	0.251	0.328	0.581	0.199

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.088	5.083	5.055	5.111	4.931	4.967	5.127	5.048
S.D.	0.016	0.008	0.016	0.159	0.056	0.015	0.043	0.039
% R.S.D.	0.313	0.161	0.307	3.116	1.128	0.293	0.842	0.764

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	5.002	5.120	4.933	5.088	4.823	5.106	5.085	5.100
S.D.	0.012	0.043	0.009	0.055	0.013	0.018	0.017	0.037
% R.S.D.	0.243	0.840	0.192	1.088	0.262	0.358	0.334	0.718

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	5.072	4.656	4.979	5.244	4.850
S.D.	0.011	0.028	0.012	0.011	0.005
% R.S.D.	0.220	0.593	0.236	0.211	0.101

JK dlt

LHC ✓ JK

09-05-95

7-109 5957001619

5957001630

work/157# 2213

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 102 TO 120.

Identity 1: ICB Identity 2: Quality Control

12:12 PM September 5, 1995

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	0.026	0.009	0.013	-0.003	0.000	0.000
S.D.	0.001	0.000	0.007	0.004	0.001	0.002	0.000	0.000
% R.S.D.	426.600	300.000	25.566	41.416	5.452	57.736	72.282	75.751
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.000	0.001	-0.000	0.003	0.001	0.002	0.003	0.049
S.D.	0.000	0.001	0.003	0.002	0.000	0.001	0.011	0.016
% R.S.D.	52.075	124.923	664.160	47.214	14.070	45.564	330.946	32.965
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.009	-0.001	0.000	0.016	-0.002	0.000	-0.006	-0.010
S.D.	0.007	0.003	0.000	0.003	0.003	0.000	0.003	0.003
% R.S.D.	75.380	291.723	169.236	21.897	147.646	173.205	53.071	30.547
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.003	-0.036	0.001	-0.018	0.001	0.001	0.003	-0.073
S.D.	0.001	0.020	0.000	0.001	0.000	0.000	0.001	0.007
% R.S.D.	57.468	55.996	23.876	5.792	32.852	50.929	33.845	9.841
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	-0.000	-0.014	-0.000	0.000	-0.054			
S.D.	0.000	0.036	0.000	0.000	0.008			
% R.S.D.	0.181	254.055	142.370	1.541	14.383			

Identity 1: ICSEA Identity 2: Quality Control

12:15 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

WHC-SD-WM-DP-144, REV. 1

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	0.008	0.001	-0.022	0.019	201.605	0.002	0.003	-0.000
S.D.	0.001	0.000	0.010	0.004	0.364	0.002	0.000	0.000
% R.S.D.	8.309	2.406	44.858	21.615	0.181	86.998	12.102	49.251

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	-0.005	0.007	0.003	100.381	101.225	-0.002	0.036	0.046
S.D.	0.001	0.002	0.001	0.138	0.073	0.003	0.007	0.009
% R.S.D.	12.147	29.440	23.231	0.137	0.072	140.017	20.181	19.660

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.005	0.027	0.004	0.062	-0.007	98.897	-0.000	188.534
S.D.	0.002	0.001	0.000	0.005	0.010	0.059	0.002	1.151
% R.S.D.	36.972	2.649	1.051	8.738	146.186	0.060	1130.213	0.610

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.000	-0.007	0.001	-0.041	0.001	-0.000	0.014	-0.097
S.D.	0.001	0.006	0.000	0.010	0.000	0.000	0.001	0.003
% R.S.D.	420.166	97.264	35.290	23.195	44.191	114.411	3.731	3.498

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.008	-0.009	-0.002	0.003	-0.002
S.D.	0.000	0.048	0.000	0.000	0.009
% R.S.D.	6.289	528.910	17.859	10.654	359.611

Identity 1: ICSAB Identity 2: Quality Control

12:18 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

WHC-SD-WM-DP-144, REV. 1

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	0.003	0.001	-0.022	0.006	206.195	0.481	0.519	1.005
S.D.	0.001	0.000	0.015	0.001	0.136	0.004	0.001	0.003
% R.S.D.	29.883	6.030	69.181	16.122	0.066	0.865	0.221	0.289
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.975	0.983	0.002	101.048	102.644	0.498	0.034	-0.032
S.D.	0.000	0.002	0.001	0.175	0.087	0.002	0.006	0.032
% R.S.D.	0.035	0.177	34.856	0.174	0.084	0.392	16.722	100.629
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.002	0.028	0.521	0.056	-0.005	99.745	-0.012	196.740
S.D.	0.011	0.006	0.002	0.010	0.002	0.154	0.004	0.391
% R.S.D.	460.229	20.452	0.289	17.234	38.680	0.154	34.765	0.199
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.000	-0.033	1.018	0.995	-0.000	1.008	0.013	-0.097
S.D.	0.001	0.014	0.001	0.023	0.000	0.002	0.001	0.007
% R.S.D.	217.168	43.062	0.137	2.319	3100.909	0.226	8.490	7.338
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	0.508	0.010	0.487	0.509	0.030			
S.D.	0.001	0.023	0.001	0.001	0.007			
% R.S.D.	0.211	228.543	0.167	0.142	22.206			

Identity 1: PREPBLK Identity 2: Quality Control

12:23 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

WHC-SD-WM-DP-144, REV. 1

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	-0.003	-0.003	0.007	0.000	0.002	-0.000
S.D.	0.001	0.000	0.002	0.001	0.004	0.003	0.000	0.000
% R.S.D.	1823.350	13.323	73.516	30.004	60.311	59082403.838	19.527	165.939
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.019	0.366	-0.000	0.015	-0.195	0.003	0.010	0.039
S.D.	0.000	0.002	0.003	0.002	0.002	0.002	0.003	0.034
% R.S.D.	0.633	0.419	687.143	16.777	1.210	52.043	25.037	85.822
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.000	0.006	0.001	0.007	0.019	0.002	-0.005	0.196
S.D.	0.010	0.006	0.000	0.010	0.005	0.000	0.001	0.003
% R.S.D.	56466.934	106.484	22.427	136.863	28.257	7.873	17.638	1.773
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.003	0.022	-0.000	-0.024	0.001	0.001	0.001	631.784
S.D.	0.001	0.006	0.001	0.007	0.000	0.000	0.001	2.486
% R.S.D.	24.999	27.298	1045.389	30.574	21.392	30.676	53.401	0.394
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	0.002	0.007	-0.002	0.000	-0.012			
S.D.	0.000	0.003	0.000	0.000	0.016			
% R.S.D.	13.752	36.227	16.794	60.283	127.471			

Identity 1: S95T001619_L Identity 2: .5752gin250.4-10-2-8

12:31 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 0.5752 Solution Volume : 32500.00

WHC-SD-WM-DP-144, REV. 1

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	-146.920	11.917	656.382	1141.524	2341.393	153.916	96.342	20.508
S.D.	84.061	3.250	325.609	150.516	331.915	88.863	18.110	15.607
% R.S.D.	57.216	27.273	49.607	13.185	14.176	57.735	18.798	76.099
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	991.358	5154.207	-118.974	5340.318	3361.763	281.480	820.726	-5604.573
S.D.	27.017	147.646	39.716	25.092	2.770	24.649	222.235	2756.397
% R.S.D.	2.725	2.865	33.382	0.470	0.082	8.757	27.078	49.181
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	843.486	-843.998	29.510	80135.141	1459.012	140.399	86.621	210806.042
S.D.	648.708	639.886	13.836	791.857	220.496	5.287	180.060	1980.426
% R.S.D.	76.908	75.816	46.886	0.988	15.113	3.765	207.871	0.939
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	38.989	1090.970	139.687	-510.671	28.173	81.413	-179.027	7681626.333
S.D.	36.841	687.150	47.566	787.259	18.039	21.036	56.198	67509.070
% R.S.D.	94.491	62.985	34.051	154.162	64.031	25.839	31.391	0.879
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	556.868	860.646	57.060	10.084	116.324			
S.D.	8.980	1048.818	25.579	6.036	2093.321			
% R.S.D.	1.613	121.864	44.829	59.857	1799.554			

Identity 1: S95T001619 Identity 2: .5752gin250.4-10ml

12:36 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 0.5752 Solution Volume : 6500.00

WHC-SD-WM-DP-144, REV. 1

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	-26.000	6.067	-4.147	377.959	1088.047	20.522	22.011	-2.637
S.D.	9.022	0.375	74.354	7.445	23.326	30.783	2.826	0.415
% R.S.D.	34.700	6.186	1792.958	1.970	2.144	150.003	12.840	15.757

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	247.120	5240.541	-3.751	5454.690	-2052.399	39.413	38.439	-79.342
S.D.	3.589	36.476	8.082	39.667	27.318	5.645	32.082	21.114
% R.S.D.	1.453	0.696	215.458	0.727	1.331	14.322	83.464	26.611

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-74.729	-100.561	11.225	81412.710	456.069	79.967	-26.329	202630.765
S.D.	48.874	22.429	1.398	765.413	38.351	1.057	39.223	1135.252
% R.S.D.	65.401	22.304	12.452	0.940	8.409	1.322	148.973	0.560

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-24.425	25.249	4.129	-107.445	33.995	2.435	10.671	7200090.351
S.D.	9.526	119.278	3.036	114.174	1.968	4.203	4.985	27684.283
% R.S.D.	39.003	472.415	73.533	106.263	5.790	172.629	46.720	0.384

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	555.139	198.094	-11.350	0.710	88.452
S.D.	4.771	136.421	5.461	1.245	32.632
% R.S.D.	0.859	68.867	48.110	175.482	36.892

Identity 1: S95T001619_D Identity 2: .5673gin250.4-10ml

12:40 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 0.5673 Solution Volume : 6500.00

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

WHC-SD-WM-DP-44, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-8.896	5.273	-28.280	362.411	1008.580	-20.808	19.563	-4.145
S.D.	7.633	1.007	38.116	3.404	23.684	36.040	4.656	3.359
% R.S.D.	85.803	19.094	134.780	0.939	2.348	173.204	23.802	81.047

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	247.660	5765.363	5.846	4797.765	-2369.661	53.199	-100.043	462.939
S.D.	1.387	14.498	16.559	131.126	34.414	19.381	47.603	398.307
% R.S.D.	0.560	0.251	283.235	2.733	1.452	36.432	47.583	86.039

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-189.709	231.235	11.574	79377.322	419.828	68.083	-106.231	203897.337
S.D.	126.449	94.187	2.020	892.165	32.255	1.072	13.262	1242.997
% R.S.D.	66.655	40.732	17.454	1.124	7.683	1.575	12.484	0.610

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	3.164	-86.095	5.773	-145.509	29.686	10.082	5.724	7518911.596
S.D.	13.444	67.097	9.780	185.404	0.678	8.981	2.206	39281.071
% R.S.D.	424.947	77.933	169.407	127.417	2.284	89.087	38.535	0.522

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	423.333	-441.876	-25.890	3.708	-135.862
S.D.	3.178	330.136	4.158	2.139	314.478
% R.S.D.	0.751	74.712	16.059	57.678	231.469

Identity 1: S95T001619_A Identity 2: .5752gin250,.4-10 ml

12:46 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 0.5752 Solution Volume : 6500.00

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

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	10958.923	11170.696	10822.986	10652.686	12172.244	10784.286	11368.900	10463.257
S.D.	24.426	41.215	100.978	15.503	67.000	71.090	54.757	80.616
% R.S.D.	0.223	0.369	0.933	0.146	0.550	0.659	0.482	0.770

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	10928.117	16290.757	11526.450	16911.458	8652.972	11186.192	12475.307	21331.840
S.D.	23.362	61.247	21.393	148.755	12.448	16.427	12.897	300.467
% R.S.D.	0.214	0.376	0.186	0.880	0.144	0.147	0.103	1.409

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	11395.940	11165.916	11192.637	89644.639	10631.444	10731.935	11269.206	213364.225
S.D.	67.508	8.229	49.475	4126.623	354.407	24.023	88.988	1555.038
% R.S.D.	0.592	0.074	0.442	4.603	3.334	0.224	0.790	0.729

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	10806.723	11243.488	7066.799	11097.816	10660.443	11120.222	10886.242	7242412.685
S.D.	36.774	190.494	77.563	19.847	27.829	34.441	30.818	42622.884
% R.S.D.	0.340	1.694	1.098	0.179	0.261	0.310	0.283	0.589

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	11715.873	10516.354	10980.176	11145.129	11142.193
S.D.	21.774	167.647	12.596	45.330	143.527
% R.S.D.	0.186	1.594	0.115	0.407	1.288

Identity 1: CCV Identity 2: Quality Control

12:58 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

WHC-SD-WM-DP-144, REV. 1

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	4.974	5.112	5.044	4.667	5.049	4.914	5.183	5.203
S.D.	0.021	0.028	0.020	0.017	0.017	0.018	0.022	0.003
% R.S.D.	0.419	0.548	0.402	0.374	0.338	0.361	0.427	0.052

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	4.923	5.037	5.214	5.177	5.029	5.012	5.576	9.722
S.D.	0.009	0.006	0.018	0.020	0.025	0.014	0.043	0.020
% R.S.D.	0.191	0.124	0.351	0.383	0.500	0.278	0.770	0.209

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.156	5.197	5.150	4.897	4.789	4.916	5.137	5.134
S.D.	0.030	0.022	0.029	0.269	0.124	0.015	0.009	0.003
% R.S.D.	0.574	0.417	0.571	5.500	2.592	0.301	0.176	0.060

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	4.971	5.163	4.879	5.076	4.843	5.073	5.107	5.120
S.D.	0.016	0.034	0.013	0.010	0.021	0.005	0.019	0.051
% R.S.D.	0.326	0.661	0.268	0.195	0.427	0.101	0.367	1.001

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	5.039	4.696	4.966	5.282	4.848
S.D.	0.007	0.025	0.016	0.020	0.015
% R.S.D.	0.133	0.538	0.315	0.373	0.319

Identity 1: CCB Identity 2: Quality Control

1:03 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

WHC-SD-WM-DP-144, REV. 1

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	0.030	0.008	0.014	0.005	-0.000	-0.000
S.D.	0.000	0.000	0.009	0.002	0.005	0.003	0.000	0.000
% R.S.D.	23.945	28.868	30.792	25.998	31.550	60.000	247.430	258.917
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.001	0.002	-0.002	0.002	0.001	0.003	-0.011	0.006
S.D.	0.000	0.003	0.000	0.001	0.000	0.001	0.007	0.016
% R.S.D.	30.097	195.199	0.296	59.865	10.940	44.048	61.548	243.384
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.004	-0.015	-0.000	0.001	-0.003	0.000	0.002	-0.002
S.D.	0.002	0.004	0.000	0.005	0.003	0.000	0.006	0.001
% R.S.D.	58.069	23.593	58.820	354.914	122.330	202914397.370	380.416	57.695
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.001	-0.019	0.001	-0.019	0.001	0.001	0.001	-0.022
S.D.	0.001	0.001	0.000	0.008	0.000	0.000	0.001	0.014
% R.S.D.	142.716	4.394	60.618	41.049	39.417	45.863	109.672	61.104
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	0.000	0.022	-0.001	0.000	-0.003			
S.D.	0.000	0.010	0.001	0.000	0.015			
% R.S.D.	57.894	45.741	77.429	28.309	550.505			

Identity 1: S95T001630_L Identity 2: .5171gin250.4-10-2-8

1:07 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 0.5171 Solution Volume : 32500.00

WHC-SD-WM-DP-144, REV. 1

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	-156.405	6.025	623.105	1493.102	1858.050	114.139	42.536	-23.961
S.D.	38.511	3.615	483.669	204.244	590.887	171.209	15.159	10.043
% R.S.D.	24.622	60.000	77.622	13.679	31.801	149.999	35.637	41.914
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	1200.398	4572.427	-76.873	14715.098	3945.208	276.709	1082.706	-1627.147
S.D.	29.633	177.253	0.722	147.926	15.933	50.334	65.313	1525.659
% R.S.D.	2.469	3.877	0.940	1.005	0.404	18.190	6.032	93.763
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-207.210	-719.102	14.646	83851.343	597.315	203.706	157.013	193392.576
S.D.	179.500	256.000	3.191	1994.237	68.428	10.185	137.564	1171.383
% R.S.D.	86.627	35.600	21.785	2.378	11.456	5.000	87.613	0.606
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-130.062	-1549.142	55.976	-1393.385	66.682	63.040	6.947	7912012.005
S.D.	47.761	788.921	30.902	673.946	9.078	17.696	10.474	24980.851
% R.S.D.	36.722	50.926	55.206	48.368	13.615	28.071	150.759	0.316
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	740.126	-564.701	-79.385	19.811	321.500			
S.D.	9.976	653.809	51.228	0.194	903.424			
% R.S.D.	1.348	115.780	64.531	0.981	281.003			

Identity 1: S95T001630 Identity 2: .5171gin250.4-10 ml

1:12 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 0.5171 Solution Volume : 6500.00

VVO-CD-WM-DP-144, REV. 1

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	3.751	7.954	10.362	774.187	1430.169	-11.414	30.273	0.234
S.D.	6.936	0.417	33.620	57.563	29.781	34.241	5.389	2.813
% R.S.D.	184.943	5.249	324.457	7.435	2.082	299.982	17.802	1201.142
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	270.798	4730.251	44.386	14276.807	-1388.888	69.681	203.059	1219.207
S.D.	6.039	22.520	8.953	122.765	20.619	21.993	129.614	155.227
% R.S.D.	2.230	0.476	20.170	0.860	1.485	31.563	63.831	12.732
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	11.952	129.838	17.170	80206.535	517.297	133.769	-46.327	183701.992
S.D.	80.134	50.966	0.890	2391.128	27.178	2.352	81.744	1164.505
% R.S.D.	670.479	39.253	5.182	2.981	5.254	1.758	176.449	0.634
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-22.543	294.027	35.402	-250.514	98.011	11.058	2.435	7223458.559
S.D.	9.551	45.239	5.152	105.432	2.651	8.133	9.434	29610.322
% R.S.D.	42.369	15.386	14.552	42.086	2.705	73.554	387.376	0.410
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	753.789	218.377	-15.173	0.956	-361.926			
S.D.	3.444	391.713	9.725	1.391	115.545			
% R.S.D.	0.457	179.375	64.090	145.478	31.925			

Identity 1: S95T001630_D Identity 2: .5218gin250.4-10 ml

1:16 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 0.5218 Solution Volume : 6500.00

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

WHC-SD-WM-DP-144, REV. 1

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-42.976	4.538	-43.942	242.068	833.168	-22.623	85.922	-6.338
S.D.	13.066	0.827	162.899	22.838	44.543	19.591	7.625	3.193
% R.S.D.	30.403	18.232	370.711	9.434	5.346	86.600	8.874	50.378
<hr/>								
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	266.175	8446.231	-14.795	3904.668	-2412.282	35.100	-30.149	-201.565
S.D.	5.086	69.423	15.576	27.066	47.208	10.520	49.803	445.521
% R.S.D.	1.911	0.822	105.283	0.693	1.957	29.972	165.188	221.031
<hr/>								
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-148.259	-223.685	13.719	82034.347	304.402	95.553	-67.425	193799.591
S.D.	148.843	60.948	2.826	1054.804	28.257	1.166	25.313	1486.750
% R.S.D.	100.394	27.247	20.596	1.286	9.283	1.220	37.542	0.767
<hr/>								
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-13.175	197.953	13.634	-344.389	12.428	-0.886	-12.466	8064663.086
S.D.	5.525	30.181	5.447	125.746	2.301	4.634	9.648	55142.786
% R.S.D.	41.931	15.246	39.948	36.513	18.512	523.087	77.397	0.684
<hr/>								
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	493.283	-266.860	-21.457	-0.819	-457.263			
S.D.	3.925	477.399	4.294	2.437	261.897			
% R.S.D.	0.796	178.895	20.011	297.488	57.275			

Identity 1: ICSAB Identity 2: Quality Control

1:36 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

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

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.003	0.002	-0.013	0.005	205.252	0.489	0.509	0.985
S.D.	0.001	0.000	0.004	0.002	0.339	0.002	0.001	0.003
% R.S.D.	20.860	2.192	32.748	51.671	0.165	0.320	0.156	0.330
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.985	1.000	0.000	101.281	102.024	0.506	0.032	-0.042
S.D.	0.000	0.000	0.001	0.150	0.178	0.003	0.006	0.023
% R.S.D.	0.027	0.045	366.283	0.148	0.175	0.655	19.799	53.938
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.017	0.010	0.514	0.090	0.015	101.663	-0.011	193.903
S.D.	0.002	0.005	0.001	0.004	0.013	0.205	0.006	0.749
% R.S.D.	8.925	45.426	0.109	4.302	83.850	0.202	57.553	0.386
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.003	-0.022	1.021	1.026	0.000	1.009	0.014	0.084
S.D.	0.002	0.026	0.000	0.013	0.000	0.001	0.001	0.013
% R.S.D.	47.683	119.962	0.038	1.257	56.520	0.104	6.067	15.381
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	0.512	0.009	0.490	0.506	-0.002			
S.D.	0.001	0.019	0.001	0.001	0.007			
% R.S.D.	0.255	201.565	0.165	0.175	459.234			

Identity 1: S95T001630_A Identity 2: .5171gin250.4-10 ml

1:21 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 0.5171 Solution Volume : 6500.00

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

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	12199.328	12427.976	12394.261	12206.045	13598.166	12224.257	12570.211	11691.169
S.D.	9.683	19.325	255.691	18.720	65.077	71.280	20.886	85.186
% R.S.D.	0.079	0.155	2.063	0.153	0.479	0.583	0.166	0.729

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	12378.863	17157.681	12707.799	27071.296	10278.673	12637.662	13411.183	22609.954
S.D.	25.055	61.214	56.104	55.762	24.172	101.312	266.027	275.628
% R.S.D.	0.202	0.357	0.441	0.206	0.235	0.802	1.984	1.219

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	12643.572	12160.814	12400.718	97460.103	12428.441	12190.972	12629.562	198406.539
S.D.	54.273	27.022	16.417	1657.582	94.689	6.143	120.501	1458.603
% R.S.D.	0.429	0.222	0.132	1.701	0.762	0.050	0.954	0.735

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	12241.781	12318.912	7435.028	12552.480	11949.483	12461.738	12135.213	7348209.968
S.D.	24.791	338.700	56.732	218.656	3.965	41.214	31.308	50128.509
% R.S.D.	0.203	2.749	0.763	1.742	0.033	0.331	0.258	0.682

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	13255.196	10984.559	12315.471	12468.488	12195.375
S.D.	13.987	378.753	12.251	20.173	182.926
% R.S.D.	0.106	3.448	0.099	0.162	1.500

Identity 1: ICSA Identity 2: Quality Control

1:32 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

WHC-SD-WM-DP-144, REV. 1

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	0.008	0.002	-0.012	0.014	205.451	0.007	0.004	-0.000
S.D.	0.000	0.000	0.009	0.003	0.215	0.004	0.000	0.000
% R.S.D.	5.877	4.277	73.571	20.322	0.104	57.694	10.049	80.148

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	-0.005	0.008	0.002	100.540	101.469	0.000	0.038	0.055
S.D.	0.000	0.001	0.002	0.197	0.053	0.001	0.002	0.038
% R.S.D.	3.382	11.092	116.108	0.196	0.052	548.434	4.331	69.503

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.017	0.016	0.004	0.085	-0.003	100.756	-0.001	195.691
S.D.	0.011	0.004	0.000	0.017	0.008	0.214	0.009	0.364
% R.S.D.	65.593	23.345	4.151	20.221	322.035	0.213	716.518	0.186

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.003	0.009	0.003	0.017	0.001	0.001	0.012	0.036
S.D.	0.001	0.015	0.000	0.013	0.000	0.001	0.001	0.005
% R.S.D.	28.133	178.574	18.564	75.377	13.119	107.282	9.658	14.431

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.008	-0.008	0.001	0.003	-0.028
S.D.	0.000	0.030	0.001	0.000	0.017
% R.S.D.	3.321	388.826	50.444	0.173	61.114

Identity 1: CCV Identity 2: Quality Control

1:41 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

WHC-SD-WM-DP-144, REV. 1

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	4.990	5.114	5.066	4.692	5.057	4.967	5.175	5.181
S.D.	0.008	0.011	0.028	0.002	0.007	0.010	0.012	0.027
% R.S.D.	0.157	0.206	0.559	0.050	0.142	0.208	0.226	0.528

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	4.974	5.094	5.220	5.213	5.029	5.077	5.578	9.623
S.D.	0.002	0.016	0.003	0.010	0.006	0.005	0.015	0.008
% R.S.D.	0.042	0.312	0.060	0.188	0.118	0.106	0.262	0.086

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.140	5.172	5.143	5.282	4.980	4.955	5.155	5.130
S.D.	0.009	0.010	0.011	0.059	0.033	0.007	0.008	0.026
% R.S.D.	0.179	0.185	0.220	1.108	0.659	0.134	0.150	0.510

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	4.998	5.168	4.915	5.087	4.859	5.120	5.129	5.195
S.D.	0.012	0.026	0.005	0.036	0.009	0.008	0.008	0.022
% R.S.D.	0.246	0.497	0.100	0.704	0.191	0.159	0.154	0.431

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	5.076	4.716	4.996	5.296	4.839
S.D.	0.005	0.054	0.006	0.010	0.016
% R.S.D.	0.098	1.146	0.114	0.190	0.329

Identity 1: CCB Identity 2: Quality Control

1:45 PM September 5, 1995

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

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

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.001	-0.000	0.016	0.005	0.017	0.001	0.000	0.000
S.D.	0.000	0.000	0.004	0.001	0.004	0.002	0.000	0.000
% R.S.D.	25.650	86.603	27.266	26.772	23.341	173.206	74.933	60.161

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.000	-0.001	-0.001	0.004	0.001	0.001	0.006	0.022
S.D.	0.000	0.001	0.001	0.002	0.000	0.002	0.004	0.015
% R.S.D.	754.103	75.352	100.295	40.401	4.167	391.362	73.983	69.522

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.000	-0.012	0.000	0.025	-0.003	0.000	-0.002	-0.000
S.D.	0.006	0.004	0.000	0.012	0.005	0.000	0.002	0.001
% R.S.D.	1873.567	34.953	60.706	47.477	153.294	173.205	83.331	718051.262

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.000	-0.016	0.002	-0.007	0.000	0.000	0.000	-0.066
S.D.	0.000	0.011	0.000	0.005	0.000	0.001	0.001	0.005
% R.S.D.	119.979	64.861	22.183	67.581	182.534	153.146	566.891	7.785

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.001	0.016	-0.000	0.000	0.009
S.D.	0.000	0.014	0.000	0.000	0.010
% R.S.D.	28.943	92.274	80.264	24.205	110.773

BK LPH

9-5-95

WHC-SD-WM-DP-144, REV. 1

RADIOCHEMICAL ANALYSES

LABCORE Data Entry Template for Worklist#

2235

Analyst: AKL Instrument: AB00 16 Book # 140 B52
was 27806
Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
		1 STD			@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		2 BLNK-PREP			@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
		2 BLNK-PREP			@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		3 BLNK/BKG	0.33		@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	4 SAMPLE	S95T001612	0 F	@ALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000121	T-109	4 SAMPLE	S95T001612	0 F	@ALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000121	T-109	5 DUP	S95T001612	0 F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	5 DUP	S95T001612	0 F	@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000121	T-109	6 SPK	S95T001612	0 F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g

Final page for worklist #

2235

AKL
Analyst Signature Date

Sharon L. Holden 9.7.95
Analyst Signature Date

Data Entry Comments:

Low SPK recovery is due to sample matrix interference (dissolve solids content). No re-man requested. AKL 9/7/95

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

WHC-SJ-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) LIQUIDS

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	16	16
STANDARD	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	4509	4340
2235	COUNT TIME in MINUTES (CT)	30	30
AT or IS ?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	10.000	10.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	150.100	144.467
Sample #	Sample Concentration in $\mu\text{Ci/L}$	3.21E-02	BOOK#
WORKLIST#2235	Replicate Concentration in $\mu\text{Ci/L}$	3.09E-02	140B52
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/L}$	3.1532E-02	
Analyst			
AKL	Rs (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
09/05/95	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Time	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
02:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

RESULTS

ALPHA TOTAL	in $\mu\text{Ci/mL}$	(Average) =	3.15E-05	DETECTION LEVEL
				1.01E-07 $\mu\text{Ci/mL}$
RELATIVE COUNTING ERROR		=	3.0%	

Data Entry by: <i>Sharon J. Galt</i>	Date: 09/06/95
Approved by: <i>[Signature]</i>	Date: 9/7/95
Form 508101_C Rev. 1.3	Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3)

SOLIDS

		BLANK	REPLICATE
Type	DETECTOR NUMBER	16	16
BLANK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	3	1
2235	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	0.200	0.200
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.122	2.122
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	0.191	0.191
Sample #	Sample Concentration in $\mu\text{Ci/g}$	< 9.61E-04	BOOK#
S95T1612	Replicate Concentration in $\mu\text{Ci/g}$	< 9.61E-04	
Instrument Code			
WB27806	Maximum Concentration in $\mu\text{Ci/g}$	< 9.6112E-04	
Analyst			
AKL	Rs (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
09/05/95			
Time	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
02:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

RESULTS

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Maximum) =	< 9.61E-04	DETECTION LEVEL
LESS Than Value was Determined from Lc.				2.38E-03
RELATIVE COUNTING ERROR	=	196.0%		$\mu\text{Ci/g}$

Data Entry by: *Sharon L. Gelfand*

Date: 09/06/95

Approved by: *LT 7/2/95*

Date: 7/2/95

Form 508101_C Rev. 1.3

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-V/M-DP- 144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	128	111
2235	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	0.200	0.200
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.122	2.122
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	4.067	3.500
Sample #	Sample Concentration in $\mu\text{Ci/g}$	2.05E-02	BOOK#
S95T1612	Replicate Concentration in $\mu\text{Ci/g}$	1.77E-02	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	1.9085E-02	
Analyst			
AKL	Rs (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
09/05/95			
Time	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
02:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

RESULTS

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Average)	=	1.91E-02	DETECTION LEVEL
					2.38E-03 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR			=	20.2%	

Data Entry by: <u>Sharon G. Hylleberg</u>	Date: 09/06/95
Approved by: <u>[Signature]</u>	Date: 9/7/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-V/M-DP- 144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
DUPLICATE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	149	126
2235	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.2	0.2
AT	SAMPLE SIZE in mL (SS)	0.200	0.200
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.1392	2.1392
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	4.767	4.000
Sample #	Sample Concentration in $\mu\text{Ci/g}$	2.39E-02	BOOK#
S95T1612	Replicate Concentration in $\mu\text{Ci/g}$	2.00E-02	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	2.1934E-02	
Analyst			
AKL	Rs (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
09/05/95			
Time	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
02:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

v RESULTS v

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Average)	=	2.19E-02	DETECTION LEVEL
					2.36E-03 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR			=	18.8%	

Data Entry by: Shirley L. Hager
 Approved by: Dr. J. H. Hager
 Form 508101_C Rev. 1.3

Date: 09/06/95
 Date: 9/7/95
 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-CD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3)

SOLIDS

Type	DETECTOR NUMBER	SPIKE	REPLICATE
SPIKE	DISH SIZE 1, 2, or 5 (MS)	16	16
Work List	TOTAL COUNTS (TC)	2	2
2235	COUNT TIME in MINUTES (CT)	49319	50390
AT or TB ?	BACKGROUND in cpm (BKG)	30	30
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.2	0.2
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	0.200	0.200
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	1	1
Matrix	SPIKE VOLUME in mL (SVol)	2.122	2.122
SOLID	SPIKE DILUTION FACTOR (SDF)	0.100	0.100
Sample #	SPIKE VALUE in µCi/L (SVal)	1	1
S95T1612	INSTRUMENT EFFICIENCY FACTOR (EFF)	44.777	44.777
Instrument Code	SAMPLE + SPIKE µCi/g (S+S)	0.2104	0.2104
WB27806	AVERAGE or MAXIMUM µCi/g from FORM C	8.29E+00	8.47E+00
Analyst	BOOK#	1.9085E-02	
AKL	Rs (Sample Count Rate) = (TC / CT) - BKG	112B43	
Date	SAMPLE + SPIKE µCi/g = $Rs * 1000 \text{ mL/L} * DF / (EFF * SS * Dg/L * 2220000 \text{ dpm/}\mu\text{Ci})$		
09/05/95	PERCENT SPIKE RECOVERY = $((S+S \text{ }\mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/SVol)/(DF/SS/Dg/L)))/(SVal) * 100$		
Time			
02:00 PM			

RESULT AVG. PERCENT SPIKE RECOVERY = 79.3%

Data Entry by: *Sharon L. Field* Date: 06-Sep-95
 Approved by: *[Signature]* Date: 9/7/95
 Form 508101_X Rev. 1.3 Page 1 of 1

LABCORE Data Entry Template for Worklist#

2236

Analyst:

AKL

Instrument: AB00

16
WD27806

Book #

140B52

Method: LA-508-101 Rev/Mod

D-2

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
		1 STD			@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		2 BLNK-PREP			@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
		2 BLNK-PREP			@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		3 BLNK/BKG	1.74		@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	4 SAMPLE	S95T001619	0 F	@ALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000121	T-109	4 SAMPLE	S95T001619	0 F	@ALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000121	T-109	5 DUP	S95T001619	0 F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	5 DUP	S95T001619	0 F	@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000121	T-109	6 SPK	S95T001619	0 F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	7 SAMPLE	S95T001630	0 F	@ALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000121	T-109	7 SAMPLE	S95T001630	0 F	@ALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000121	T-109	8 DUP	S95T001630	0 F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	8 DUP	S95T001630	0 F	@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000121	T-109	9 SPK	S95T001630	0 F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g

Final page for worklist #

2236

Q Lewis

Sharon L. Uhl 9-7-95

Data Entry Comments:

High RPD for 1630 is acceptable due to low sample
alpha activity. Low SPK recoveries are the result of
dissolved solids in sample. No recan requested. *AKL*
9-7-95

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#

2236

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
Analyst Signature		Date				Analyst Signature			Date	

Data Entry Comments:

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

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) LIQUIDS

		STANDARD	REPLICATE
Type	DETECTOR NUMBER	16	16
STANDARD	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	4644	4344
2236	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.24	0.24
AT	SAMPLE SIZE in mL (SS)	10.000	10.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	154.560	144.560
Sample #	Sample Concentration in $\mu\text{Ci/L}$	3.31E-02	BOOK#
WORKLIST#2236	Replicate Concentration in $\mu\text{Ci/L}$	3.09E-02	140B52
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/L}$	3.2020E-02	
Analyst			
AKL	Rs (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
09/06/95	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Time	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
12:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

RESULTS

ALPHA TOTAL	in $\mu\text{Ci/mL}$	(Average)	=	3.20E-05	DETECTION LEVEL
RELATIVE COUNTING ERROR		=	3.0%		1.09E-07 $\mu\text{Ci/mL}$

Data Entry by: *Shirley J. Holden* Date: 09/07/95
 Approved by: *Stefan* Date: 9/7/95
 Form 508101_C Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-244, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

		BLANK	REPLICATE
Type	DETECTOR NUMBER	16	16
BLANK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	5	20
2236	COUNT TIME in MINUTES (CT)	30	30
At or TB ?	BACKGROUND in cpm (BKG)	0.24	0.24
AT	SAMPLE SIZE in mL (SS)	0.300	0.300
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.3008	2.3008
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.209	0.427
Sample #	Sample Concentration in $\mu\text{Ci/g}$	< 6.47E-04	BOOK#
S95T1619	Replicate Concentration in $\mu\text{Ci/g}$	1.32E-03	
Instrument Code			
WB27606	Maximum Concentration in $\mu\text{Ci/g}$	< 1.3234E-03	
Analyst			
AKL	Rs (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
09/06/95			
Time	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
12:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

RESULTS

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Maximum) =	< 1.32E-03	DETECTION LEVEL
LESS THAN Value was Determined from Rs.				1.58E-03
RELATIVE COUNTING ERROR		=	500.0%	$\mu\text{Ci/g}$

Data Entry by: <i>Sharon J. Hall</i>	Date: 09/07/95
Approved by: <i>St. J. Hall</i>	Date: 9/7/95
Form 508101_C Rev. 1.3	Page 1 of 1

131

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	78	57
2236	COUNT TIME in MINUTES (CT)	30	30
AT or IS ?	BACKGROUND in cpm (BKG)	0.24	0.24
AT	SAMPLE SIZE in mL (SS)	0.300	0.300
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.3008	2.3008
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.360	1.660
Sample #	Sample Concentration in $\mu\text{Ci/g}$	7.32E-03	BOOK#
S95T1619	Replicate Concentration in $\mu\text{Ci/g}$	5.15E-03	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	6.2344E-03	
Analyst			
AKL	R_s (Sample Count Rate) = (TC / CT) - BKG		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
09/06/95			
Time	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
12:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

RESULTS

ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	6.23E-03	DETECTION LEVEL
			1.58E-03 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR	=	31.5%	

Data Entry by: *Sharon J. Hilde* Date: 09/07/95
 Approved by: *W. J. Hilde* Date: 9/7/95
 Form 508101_C Rev. 1.3 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHO-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
DUPLICATE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	76	63
2236	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.24	0.24
AT	SAMPLE SIZE in mL (SS)	0.300	0.300
Test Code	DILUTION FACTOR (DF)	1	1
ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.2692	2.2692
Matrk	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.293	1.860
Sample #	Sample Concentration in $\mu\text{Ci/g}$	7.21E-03	BOOK#
S95T1619	Replicate Concentration in $\mu\text{Ci/g}$	5.85E-03	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	6.5309E-03	
Analyst			
AKL	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
09/06/95			
Time	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
12:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

RESULTS

ALPHA TOTAL	in $\mu\text{Ci/g}$ (Average)	=	6.53E-03	DETECTION LEVEL
				1.60E-03 $\mu\text{Ci/g}$
RELATIVE COUNTING ERROR		=	29.4%	

Data Entry by: <i>Sharon J. Hallett</i>	Date: 09/07/95
Approved by: <i>[Signature]</i>	Date: 9/7/95
Form 508101_C Rev. 1.3	Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHO-95-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	16	16
SPIKE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	52637	52031
2236	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.24	0.24
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.300	0.300
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.3008	2.3008
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Sample #	SPIKE VALUE in $\mu\text{Ci/L}$ (SVal)	44.777	44.777
S95T1619	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2104	0.2104
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	5.44E+00	5.38E+00
WB27806	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ from FORM C	6.2344E-03	
Analyst	BOOK#	112B52	
AKL	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	$SAMPLE + SPIKE \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
09/06/95	$PERCENT \text{ SPIKE RECOVERY} = (((S+S \mu\text{Ci/g} - SAMPLE \mu\text{Ci/g}) * ((SDF/SVol)/(DF/SS/Dg/L))))/SVal * 100$		
Time			
12:00 PM			

RESULT **AVG. PERCENT SPIKE RECOVERY** = **83.3%**

Data Entry by: *Shannon H. Hester* Date: 07-Sep-95
 Approved by: *[Signature]* Date: 9/7/95
 Form 508101_X Rev. 1.3 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHO-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	77	102
2236	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.24	0.24
AT	SAMPLE SIZE in mL (SS)	0.300	0.300
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0684	2.0684
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	2.327	3.160
Sample #	Sample Concentration in $\mu\text{Ci/g}$	8.03E-03	BOOK#
S95T1630	Replicate Concentration in $\mu\text{Ci/g}$	1.09E-02	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	9.4651E-03	
Analyst			
AKL	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
09/06/95			
Time	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
12:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

RESULTS

ALPHA TOTAL	in $\mu\text{Ci/g}$	(Average)	=	9.47E-03	DETECTION LEVEL
					1.75E-03
RELATIVE COUNTING ERROR			=	25.8%	$\mu\text{Ci/g}$

Data Entry by: *Sharon J. Miller*
 Approved by: *[Signature]*
 Form 508101_C Rev. 1.3

Date: 09/07/95
 Date: 9/7/95
 Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-CD-VIM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	16	16
DUPLICATE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	57	48
2236	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.24	0.24
AT	SAMPLE SIZE in mL (SS)	0.300	0.300
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0872	2.0872
Matrix	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	1.660	1.360
Sample #	Sample Concentration in $\mu\text{Ci/g}$	5.68E-03	BOOK#
S95T1630	Replicate Concentration in $\mu\text{Ci/g}$	4.65E-03	
Instrument Code			
WB27806	Average Concentration in $\mu\text{Ci/g}$	5.1629E-03	
Analyst			
AKL	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Date	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
09/06/95			
Time	Relative Counting Error = $[(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
12:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		

RESULTS

ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	5.16E-03	DETECTION LEVEL
RELATIVE COUNTING ERROR	=	35.7%	1.74E-03 $\mu\text{Ci/g}$

Data Entry by: *Sharon G. Miller*

Date: 09/07/95

Approved by: *[Signature]*

Date: 9/7/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHO-SD-VMM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3)

SOLIDS

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	16	16
SPIKE	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	52543	50446
2236	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.24	0.24
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.300	0.300
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L (Dg/L)	2.0684	2.0684
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Sample #	SPIKE VALUE in $\mu\text{Ci/L}$ (SVal)	44.777	44.777
S95T1630	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2104	0.2104
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	6.04E+00	5.80E+00
WB27806	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ from FORM C	9.4651E-03	
Analyst	BOOK#	112B52	
AKL	R_s (Sample Count Rate) = (TC / CT) - BKG		
Date	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
09/06/95	PERCENT SPIKE RECOVERY = $((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/SVol)/(DF/SS/Dg/L)))/(SVal) * 100$		
Time			
12:00 PM			

RESULT AVG. PERCENT SPIKE RECOVERY = 81.9%

Data Entry by: *Sharon J. Hatcher* Date: 07-Sep-95
 Approved by: *[Signature]* Date: 9/2/95
 Form 508101_X Rev. 1.3 Page 1 of 1

Westinghouse
Hanford Company

WHC-SD-WM-DP-144, REV. 1

P.O. Box 1970 Richland, WA 99352

PART II

WHC-SD-WM-DP-144, REV. 0

ANALYTICAL SERVICES

45-DAY SAFETY SCREENING RESULTS FOR
TANK 241-T-109, AUGER SAMPLES
95-AUG-040 AND 95-AUG-041

Date Printed:

SEPTEMBER 29, 1995

TABLE OF CONTENTS

Narrative	1
Sample Data Summary	8
Inorganic Analyses	11
Differential Scanning Calorimetry (DSC)	
DSC Worklist # 2118	12
DSC Worklist # 2138	17
Thermogravimetric Analyses (TGA)	
TGA Worklist # 2184	23
TGA Worklist # 2195	29
TGA Worklist # 2197	35

This Document consists of pages 1 through 41.

WHC-SD-WM-DP-144, REV. 1

WHC-SD-WM-DP-144, REV. 0

NARRATIVE

45-DAY SAFETY SCREENING REPORT FOR TANK 241-T-109,
AUGER SAMPLES 95-AUG-040 AND 95-AUG-041ANALYTICAL SUMMARY

Two auger samples were taken from tank 241-T-109 (T-109). The samples were received at the 222-S Laboratories and underwent safety screening analyses, consisting of differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), and determination of total alpha activity. The results were compared to the safety screening limits at a confidence level of 95%. Two of the samples submitted for moisture content determination by thermogravimetric analysis (TGA) did not meet the minimum criterion of 17 weight percent water stated in the Sampling and Analysis Plan (SAP) [1]. Written notification was provided to all appropriate parties as required in the SAP. All analytical results for the other safety screening analyses (DSC and total alpha analysis) were within the action limits stated in the SAP. The low moisture content of the samples is not a cause concern, as moisture is necessary only as a mitigating factor in the case of an energetic event. The lack of exothermic activity (no exotherms detected by DSC for any sample) precludes an exothermic event.

Based on the results of combustible gas monitoring prior to auger sampling, the T-109 vapor space is at zero percent of the Lower Explosive Limit (LEL). Per the criteria (energetics, criticality, and flammability) in the newly revised *Safety Screening Data Quality Objective* (DQO) [2], the results of the auger sampling event indicate that the tank is "safe."

SCOPE

This document serves as the 45-day report deliverable for the tank T-109 auger samples collected on August 18 and 21, 1995 (samples 95-AUG-040 and 95-AUG-041). The 222-S Laboratories received, extruded, and analyzed each sample in accordance with the SAP [1]. Included in this report are the primary safety screening results obtained from the analyses, and copies of all DSC and TGA raw data scans as requested in the SAP.

No additional testing to support safety screening analyses is required. Any additional analyses conducted by the 222-S Laboratories on these auger samples will be included in a revision to this report. The T-109 samples are being further analyzed for certain chemical constituents in accordance with the SAP.

FLAMMABILITY SCREENING

Prior to intrusion into a tank, the working zone above the tank and the vapor space of the tank are screened for flammability issues. The results of combustible gas monitoring of the vapor space of tank T-109 are presented in Table 1. This measurement is conducted in the field and recorded in the work package (work package for T-109 auger sampling is #WS-95-00109). These results demonstrate that there were no flammability concerns in the vapor space of tank T-109 at the time of the sampling event.

Table 1. Characteristics of T-109 Vapor Space as Determined by Combustible Gas Monitoring Through Riser 6.

Measurement	Result
Total Organic Carbon (TOC)	< 1 ppm
Lower Explosive Limit (LEL)	0% of LEL
Oxygen (O ₂)	21.0%
Ammonia (NH ₃)	0 ppm

SAMPLE RECEIPT, EXTRUSION, AND SUBSAMPLING95-AUG-040

Auger sample 95-AUG-040 was collected from riser 6 of tank T-109 on August 18, 1995 and extruded on August 24, 1995. Most of the sample fell onto the extrusion tray. The bulk of the sample appeared to come from flutes 1-6 at the top of the auger, with only a thin coating on the remaining flutes. A total of 67.5 g of dirty, white, crystalline solids were recovered. A subsample was taken for an immediate, unhomogenized TGA analysis as required by the SAP. The remainder of the sample was homogenized and subsampled for further laboratory analyses and archiving. Due to the relatively low recovery, the sample was not divided into subsegments, but was analyzed on a whole-segment basis.

95-AUG-041

Auger sample 95-AUG-041 was collected from riser 2 of Tank T-109 on August 21, 1995, and extruded on August 25, 1995. Most of the sample fell onto the extrusion tray. A total of 232.5 g of solids was recovered. The sample was divided into upper and lower half-segments, with the upper half appearing to be gray-black crystals and the lower half appearing to be dirty white crystals. Subsamples were taken from each half-segment for unhomogenized TGA analyses as required in the SAP. The remaining material was subsampled into upper and lower half-segments, homogenized, and subsampled further for laboratory analyses and archiving.

Subsamples of each half-segment were then recombined and subsampled for additional (non-safety screening) laboratory analyses and for shipment to Pacific Northwest Laboratory for use in sludge washing studies.

ANALYTICAL RESULTS

THERMOGRAVIMETRIC ANALYSIS (TGA)

Three unhomogenized and three homogenized samples were submitted for moisture content determination by TGA. Samples S95T001616 and S95T001626 were performed using procedure LA-514-114, Rev C-0. The remaining four TGA samples were performed using procedure LA-560-112, Rev. B-0. The samples were analyzed in duplicate. The results are presented in the summary tables, and the raw data scans are attached. Per the revised safety screening DQO [2], the sample results were compared to the action limit at a 95% confidence level. This is more stringent than the requirements of the SAP, which required comparison at a 90% confidence level. These comparisons are presented in Attachment 1.

The lower 95% confidence level for two of the samples fell below the limit of 17 weight percent water stated in the SAP. These two samples were the immediate, unhomogenized sample, and the homogenized sample from auger 95-AUG-040 (samples S95T001597 and S95T001600). Since all DSC results on these auger samples were zero J/g (no exotherms detected), the low moisture content of the samples is not a cause for concern. In fact, inspection of the thermograms (attached) reveals that the weight loss curves for these two samples were integrated conservatively (integrated only up to a slight inflection of the curves at about 105 °C). Had these thermograms been integrated out to approximately 170 °C as was done for samples S95T001616 and S95T001626 from auger 950AUG-041, the moisture results would have been between 40% and 50%.

Three standards were run with these samples. The percent recovery for each standard analyzed was within the 90-110% range specified in the SAP. The results are presented in the summary tables.

DIFFERENTIAL SCANNING CALORIMETRY (DSC)

Three samples were submitted for determination of energetics by DSC. Sample S95T001600 was performed using procedure LA-514-114, Rev. C-0 (any exotherms from this sample would be evident as decreases from the baseline of the thermogram). Samples S95T001618 and S95T001629 were performed using procedure LA-514-113, Rev. C-0 (any exotherms from these samples would be evident as increases from the baseline of the thermogram). The samples were analyzed in duplicate. The results are presented in the summary tables, and the raw data scans are attached. None of the samples exhibited exotherms. Since none of the samples exhibited any exotherms, the statistical calculation of an upper 95% confidence level for each sample is unnecessary.

Two standards were run with these samples. The percent recovery for each standard analyzed was within the 90-110% range specified in the SAP. The results are presented in the summary tables.

TOTAL ALPHA

Three solids samples were submitted for total alpha analysis per procedure LA-508-101, Rev. D-2. The samples were fused per procedure LA-549-141, Rev. D-0 prior to analysis. Two fusions were prepared per sample (for duplicate results). Each fused dilution was analyzed twice; the results were averaged and reported as one value. The highest result returned was 0.0219 $\mu\text{Ci/g}$, over three orders of magnitude below the action limit of 41 $\mu\text{Ci/g}$. The upper 95% confidence level for each sample has been calculated and is presented in Attachment 1. Comparison to the limit at a 95% confidence level is more stringent than the requirements of the SAP, which required comparison at a 90% confidence level. All of the adjusted results are far below the action limit.

Results for the two blanks run with these samples were below detection limits. The two standards run with these samples exhibited recoveries within the 90-110% range specified in the SAP. A spike was run with each of the three samples. Spike recoveries ranged from 79.30% to 83.30%, which, although somewhat low, are within the laboratory control range of 75-125%. Reruns to improve spike recovery were deemed unnecessary as the sample results were far below the action limit. These quality control results are presented in the summary tables.

Project Coordinator: John M. Conner

REFERENCES

- [1] J. M. Conner, *Tank 241-T-109 Auger Sampling and Analysis Plan*, WHC-SD-WM-TSAP-014, Rev. 0, Westinghouse Hanford Company, Richland, Washington, June 15, 1995.
- [2] G. T. Dukelow, et al., *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, Washington, August 31, 1995.

WHC-SD-WM-DP- 144, REV. 1

Westinghouse
Hanford Company

ATTACHMENT 1 (page 1 of 2)

Internal
Memo

From: Process Chemistry and Statistics
 Phone: 373-4034 T6-07
 Date: September 27, 1995
 Subject: 95% CONFIDENCE INTERVALS FOR TANK T-109

75764-PCS95-083

WHC-SD-WM-DP-144, REV. 1

To: J. M. Conner R2-12

cc: L. Jensen *[Signature]* R2-12
 J. R. Jewett T6-06
 J. G. Kristofzski R2-12
 T. L. Welsh T6-07
 RDC File/LB

Confidence intervals were computed for each sample number from tank T-109 analytical data per your request. The sample numbers and confidence intervals are provided in Tables 1 and 2.

The lower limit (LL) of a one-sided 95% Confidence Interval for the mean is

$$\bar{\mu} - t_{(n-1, 0.95)} * \sqrt{\frac{\hat{\sigma}^2}{n}}$$

and the upper limit (UL) of a one-sided 95% Confidence Interval for the mean is

$$\bar{\mu} + t_{(n-1, 0.95)} * \sqrt{\frac{\hat{\sigma}^2}{n}}$$

For these two equations, $\bar{\mu}$ is the arithmetic mean of the data, n is the number of observations, $\hat{\sigma}^2$ is the variance of the data and $t_{(n-1, 0.95)}$ is a quantile from Student's t distribution with $n-1$ degrees of freedom and 0.95 confidence level.

For the tank T-109 data (per sample number), n is two and $t_{(1, 0.95)}$ is 6.314 for a one-sided 95% confidence interval.

For the thermogravimetric analysis (TGA) data, the lower limit will be used to test the null hypothesis that the mean percent water is less than or equal to 17 percent. For the Total Alpha data, the upper limit will be used to test the null hypothesis that the mean concentration is greater than or equal to 41 $\mu\text{Ci/g}$.

The lower limit of the 95% confidence interval for each sample number based on the TGA data is listed in Table 1. Each confidence interval can be used to make the following statement. If the lower limit is greater than 17%,

J. M. Conner
Page 2
September 27, 1995

ATTACHMENT 1 (page 2 of 2)

75764-PCS95-083

then one would reject the null hypothesis that the percent water is less than or equal to 17% at the 0.05 level of significance.

Table 1. 95% Confidence Interval Lower Limits for TGA for T-109.

Sample Number and Description	$\bar{p}$ (wt%)	σ^2/n	LL (wt%)
S95T001597 - AUG-040, Riser 6, WS (Mettler)	16.22	0.42	12.12
S95T001600 - AUG-040, Riser 6, WS (Mettler)	12.46	0.06	10.91
S95T001616 - AUG-041, Riser 2, LH (Perkin)	45.43	1.16	38.64
S95T001618 - AUG-041, Riser 2, LH (Mettler)	42.57	10.21	22.39
S95T001626 - AUG-041, Riser 2, UH (Perkin)	50.53	2.02	41.56
S95T001629 - AUG-041, Riser 2, UH (Mettler)	49.09	0.05	47.73

AUG Auger
WS Whole Segment
UH Upper Half of Segment
LH Lower Half of Segment
LL Lower Limit

The upper limit of the 95% confidence interval for each sample number based on the Total Alpha data is listed in Table 2. Each confidence interval can be used to make the following statement. If the upper limit is less than 41 $\mu\text{Ci/g}$, then one would reject the null hypothesis that the Total Alpha is greater than or equal to 41 $\mu\text{Ci/g}$ at the 0.05 level of significance.

Table 2. 95% Confidence Interval Upper Limits for Total Alpha for T-109.

Sample Number and Description	$\bar{p}$ ($\mu\text{Ci/g}$)	σ^2/n	UL ($\mu\text{Ci/g}$)
S95T001612 - AUG-040, Riser 6, WS	2.05E-02	1.96E-06	2.93E-02
S95T001619 - AUG-041, Riser 2, LH	7.32E-03	4.64E-06	2.09E-02
S95T001630 - AUG-041, Riser 2, UH	6.38E-03	2.25E-08	7.33E-03

AUG Auger
WS Whole Segment
UH Upper Half of Segment
LH Lower Half of Segment
UL Upper Limit

Confidence intervals could not be performed on the differential scanning calorimetry (DSC) data, since all of the results were zero.

If you have any questions, please call me at 373-4034.

R.D. Cromar

R.D. Cromar, Statistician
Process Chemistry and Statistics

WHC-SD-WM-DP-144, REV. 1

WHC-SD-WM-DP-144, REV. 1

WHC-SD-WM-DP-144, REV. 0

SAMPLE DATA SUMMARY

INTERIM

45-Day Safety Screening Report
T-109

CORE NUMBER: n/a
SEGMENT #: 95-AU-040

SEGMENT PORTION: Immediate Sampling (to check moisture loss)

Sample#	R A#	Analyte	Unit	Action Limits	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S95T001597		% Water by TGA using Mettler	%	Lower: 17.00 Upper: 115.0	101.1	n/a	15.57	16.87	16.22	8.01	n/a	n/a	n/a	n/a

W Whole Segment: W Whole Segment

Sample#	R A#	Analyte	Unit	Action Limits	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
S95T001600		% Water by TGA using Mettler	%	Lower: 17.00 Upper: 115.0	101.1	n/a	12.70	12.21	12.46	3.93	n/a	n/a	n/a	n/a
S95T001600		DSC Exotherm on Perkin Elmer	Joules/g	-9.9e+01 480.0	95.85	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S95T001612	F	Alpha of Digested Solid	UCI/g	-9.9e+01 61.00	106.4	<9.61e-04	1.91e-02	2.19e-02	2.05e-02	13.7	79.30	2.38e-03	20.2	20.2

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-144, REV. 1
WHC-SD-WM-DP-144, REV. 0

INTERIM

45-Day Safety Screening Report
T-109

CORE NUMBER: n/a
SEGMENT #: 95-AUG-041

SEGMENT PORTION: Immediate Sampling (to check moisture loss)

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
				Lower	Upper										
S95T001616		% Water by TGA on Perkin Elmer	%	17.00	115.0	100.5	n/a	44.35	46.50	45.42	4.73	n/a	n/a	n/a	n/a
S95T001626		% Water by TGA on Perkin Elmer	%	17.00	115.0	100.5	n/a	49.11	51.95	50.53	5.62	n/a	n/a	n/a	n/a

U Upper Half of Segment: U Upper Half of Segment

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
				Lower	Upper										
S95T001629		% Water by TGA using Mettler	%	17.00	115.0	100.9	n/a	48.87	49.30	49.08	0.88	n/a	n/a	n/a	n/a
S95T001629		DSC Exotherm using Mettler	Joules/g	-9.9e+01	480.0	103.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S95T001630	F	Alpha of Digested Solid	uCi/g	-9.9e+01	41.00	108.1	<1.32e-03	9.47e-03	5.16e-03	7.31e-03	58.9	81.90	1.75e-03	25.8	25.8

L Lower Half of Segment: L Lower Half of Segment

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
				Lower	Upper										
S95T001618		% Water by TGA using Mettler	%	17.00	115.0	100.9	n/a	39.37	45.76	42.56	15.0	n/a	n/a	n/a	n/a
S95T001618		DSC Exotherm using Mettler	Joules/g	-9.9e+01	480.0	103.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S95T001619	F	Alpha of Digested Solid	uCi/g	-9.9e+01	41.00	108.1	<1.32e-03	6.23e-03	6.53e-03	6.38e-03	4.70	83.30	1.58e-03	31.5	31.5

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-144, REV. 1

WHC-SD-WM-DP-144, REV. 0

WHC-SD-WM-DP-144, REV. 1

WHC-SD-WM-DP-144, REV. 0

INORGANIC ANALYSES

LABCORE Data Entry Template for Worklist#

2118

Analyst: PJM Instrument: DSC0 3 Book # 12 N14A

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

Worklist Comment: Please run T-109 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	SOLID	28.45	27.27	N/A	Joules/g
95000121	T-109	2 SAMPLE	S95T001600	0	DSC-03	SOLID	N/A	Ø		Joules/g
95000121	T-109	3 DUP	S95T001600	0	DSC-03	SOLID	Ø	Ø	N/A	Joules/g

Final page for worklist # 2118

See Attached for Signature
Analyst Signature Date

[Signature] 9-7-95
Analyst Signature Date

Verified 9/7/95. Jan M. Luy

Data Entry Comments:

S95T001600 has endotherm of 1266.9 J/g at 125°C; duplicate
has endotherm of 1372.9 J/g at 126°C. JM Luy

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#

2118

Analyst: R. McCann

Instrument: DSC0

Book # 12N14A

Method: LA-514-113 Rev/Mod C-0

Run 9/3/95

Worklist Comment: Please run T-109 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	SOLID	<u>28.45</u>	<u>27.27</u>	<u>N/A</u>	Joules/g
95000121	T-109	2 SAMPLE	S95T001600	0	DSC-01	SOLID	<u>N/A</u>	<u>φ</u>		Joules/g
95000121	T-109	3 DUP	S95T001600	0	DSC-01	SOLID	<u>φ</u>	<u>φ</u>	<u>N/A</u>	Joules/g

Final page for worklist #

2118

R. McCann
Analyst Signature

9/3/95
Date

Analyst Signature

Date

Data Entry Comments:

S95T001600 has endotherm of 124.6 J/g at 125°C; duplicate
has endotherm of 137.2 J/g at 126°C. 9 mfg.

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: IND090303 Sun Sep 3 09:32:02 1995

Sample Weight: 6.500 mg

12N14A Indium at 10C/min

BEST AVAILABLE COPY

N2, EXOTHERM DOWN

TEMP1: 150.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min
TEMP2: 170.0 °C

Temperature (°C)

PJ MCCOWN
PERKIN ELMER
222-S Lab
Sun Sep 3 09:34:00 1995

Curve 1: DSC

File info: qsav2 Sun Sep 3 12:09:59 1995

Sample Weight: 16.740 mg

S95T001600 SAMPLE

BEST AVAILABLE COPY

exotherm down, N2 purge gas

TEMP1: 35.0 °C TIME1: 0.0 min RATE: 10.0 °C/min
TEMP2: 500.0 °C

Temperature (°C)

PJ MCCOWN
PERKIN ELMER
222-S Lab
Sun Sep 3 12:12:30 1995

Curve 1: DSC

File info: SAM090302 Sun Sep 3 13:19:54 1995

Sample Weight: 19.040 mg

S95T001600 DUPLICATE

BEST AVAILABLE COPY

exotherm down, N2 purge gas

TEMP: 38.0 °C TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

PJ MCCOWN
PERKIN ELMER
222-S Lab

Sun Sep 3 14:09:56 1995

WHC-SD-WM-DP-144, REV. 1

LABCORE Data Entry Template for Worklist#

2138

Analyst: R. McCann Instrument: DSC0 1 Book # 12N14A

Method: LA-514-113 Rev/Mod C-0

Worklist Comment: Please run T-109 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	SOLID	<u>28.45</u>	<u>29.4</u>	<u>N/A</u>	Joules/g
95000121	T-109	2 SAMPLE	S95T001618	0	DSC-01	SOLID	<u>N/A</u>	<u>φ</u>		Joules/g
95000121	T-109	3 DUP	S95T001618	0	DSC-01	SOLID	<u>φ</u>	<u>φ</u>	<u>N/A</u>	Joules/g
95000121	T-109	4 SAMPLE	S95T001629	0	DSC-01	SOLID	<u>N/A</u>	<u>φ</u>		Joules/g
95000121	T-109	5 DUP	S95T001629	0	DSC-01	SOLID	<u>φ</u>	<u>φ</u>	<u>N/A</u>	Joules/g

Final page for worklist # 2138

R. McCann 9/3/95
Analyst Signature Date

R. McCann 9-5-95
Analyst Signature Date

Verified J. M. Lye 9/7/95

Data Entry Comments:

S95T001618 SPM has endotherm 1552.79/g at 101.8°C; Dup 1146.39/g at 1133°C
and endotherm of 50.07/g at 276.9°C. JMF

S95T001629 SPM has endotherms 1228.19/g at 111.3°C and 52.07/g at 286.9°C;
Dup has endotherms of 1141.09/g at 115.3°C and 45.29/g at 285°C. JMF

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.

BEST AVAILABLE COPY

DSC STD 12N14A File: 00024.001 DSC METTLER 03-Sep-95

6.620 mg Rate: 10.0 °C/min

Ident: 0.0 222-S Laboratory

Byrne-Corn
9/3/95

exo

Integration
Delta H 195 mJ
29.4 J/g
Peak 159.2°C
-12.9 mW

BEST AVAILABLE COPY

S95T001618 SAM N2
13.717 mg
Rate: 10.0 °C/min
File: 00026.001
Ident: 0.0
DSC METTLER 03-Sep-95
222-S Laboratory
Dr. H. C. Casanova
9/13/95

BEST AVAILABLE COPY

S95T001618 DUP N2

17.646 mg

Rate: 10.0 °C/min

File: 00028.001

Ident: 0.0

DSC METTLER

03-Sep-95

222-S Laboratory

D. McCowan
9/3/95

VOX

Integration

Delta H 20228 mJ

1146.3 J/g

Peak 113.3°C

-85.6 mW

Integration

Delta H 881 mJ

50.0 J/g

Peak 276.9°C

-3.2 mW

159

50. mW

100.

200.

300.

400.

°C

WHCSD-WM-DP-144, REV 1

BEST AVAILABLE COPY

WHC-SD-WM-DP-144, REV. 1

S95T001629 SAM N2

File: 00030.001 DSC METTLER 03-Sep-95

Rate: 10.0 °C/min

Ident: 0.0

16.180 mg

222-S Laboratory

Amulogun
9/3/95

BEST AVAILABLE COPY

S95T001629 DUP N2

16.084 mg

File: 00032.001 DSC METTLER 03-Sep-95

Ident: 0.0 222-S Laboratory

AmberCon
9/3/95

Rate: 10.0 °C/min

exo >

Integration
Delta H18352 mJ
Peak 1141.0 J/g
115.3 °C
-84.9 mW

Integration
Delta H 725 mJ
Peak 45.2 J/g
285.0 °C
-3.2 mW

50 mW

°C

400.

300.

200.

100.

LABCORE Data Entry Template for Worklist#

2184

Analyst: R. McCann Instrument: TGA0 1 Book # 65N8A

Method: LA-560-112 Rev/Mod B-O

Worklist Comment: Please run BY-110 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	<u>59.74</u>	<u>60.27</u>	<u>N/A</u>	%
95000121	T-109	2 SAMPLE	S95T001618	0	TGA-01	SOLID	<u>N/A</u>	<u>39.37</u>		%
95000121	T-109	3 DUP	S95T001618	0	TGA-01	SOLID	<u>39.37</u>	<u>45.76</u>	<u>N/A</u>	%
95000121	T-109	4 SAMPLE	S95T001629	0	TGA-01	SOLID	<u>N/A</u>	<u>48.87</u>		%
95000121	T-109	5 DUP	S95T001629	0	TGA-01	SOLID	<u>48.87</u>	<u>49.30</u>	<u>N/A</u>	%

Final page for worklist #

2184

R. McCann 9/3/95
Analyst Signature Date

[Signature] 9-5-95
Analyst Signature Date

Verified 9/5/95. J.M. Luy

Data Entry Comments:

BEST AVAILABLE COPY

TGA STD 65NBA

File: 00025.001

TG

222-S Laboratory

03-Sep-95

19.927 mg

Rate: 10.0 °C/min

Ident: 0.0

9/3/95

McLown

Step Analysis
Height-12.01 mg
-60.27 %
Resid. 7.91 mg
39.69 %
Dpeak 83.3°C

BEST AVAILABLE COPY

S95T001618 SAM N2 File: 00027.001 TG METTLER 04-Sep-95

12.998 mg Rate: 10.0 °C/min

Ident: 0.0 222-S Laboratory

APMCC
9/3/95

Step Analysis
Height -5.12 mg
-39.37 %
Resid. 7.86 mg
60.47 %
Dpeak 85.0 °C

BEST AVAILABLE COPY

S95T001618 DUP N2

16.549 mg

Rate: 10.0 °C/min

File: 00029.001

TG METTLER

04-Sep-95

Ident: 0.0

222-S Laboratory

Apple Core
9/3/95

Step Analysis
Height -7.57 mg
-45.76 %
Resid. 8.96 mg
54.15 %
Dpeak 97.0 °C

BEST AVAILABLE COPY

SEJUT001629 SAM 12
15.332 mg
Rate: 10.0 °C/min
File: 00031.001
Ident: 0.0
T0
222-3 Laboratory
01-Sep-95

ByrneLoun
9/13/95

Step Analysis
Height -7.49 mg
-48.87 %
Resid. 7.81 mg
50.95 %
Dpeak 95.0 °C

BEST AVAILABLE COPY

S95T001629 DUP N2

File: 00033.001

TG METTLER 04-Sep-95

18.165 mg

Rate: 10.0 °C/min

Ident: 0.0

222-S Laboratory

Bl McCown
9/3/95

Step Analysis
Height -8.96 mg
-49.30 %
ResiC. 9.21 mg
50.70 %
Dpeak 99.0 °C

LABCORE Data Entry Template for Worklist#

2195

Analyst: JDS Instrument: TGA001 Book # 65N8A

Method: LA-560-112 Rev/Mod B-0

9-19-95
BDV

Worklist Comment: Please run T-109 TGAs under N2. bdv

WHC-SD-WM-DP-144, REV. 0

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	59.74	60.39	N/A	%
95000121	T-109	2 SAMPLE	S95T001597	0	TGA-01	SOLID	N/A	15.57		%
95000121	T-109	3 DUP	S95T001597	0	TGA-01	SOLID	15.57	16.87	N/A	%
95000121	T-109	4 SAMPLE	S95T001600	0	TGA-01	SOLID	N/A	12.70		%
95000121	T-109	5 DUP	S95T001600	0	TGA-01	SOLID	12.70	12.21	N/A	%

Final page for worklist #

2195

B. Valenzuela for JDS
Analyst Signature Date
9-19-95

R. Jones
Analyst Signature Date
9-20-95

Verified by Blandina Valenzuela
9-21-95

S95T001597 produced second and third weight loss steps. The second weight loss step of 25.41% occurred at approximately 120°C and the third step of 2.79% occurred at 250°C. The sharp dip in the curve is due to a door being slammed shut, and will not affect the validity of the results.

S95T001600 produced a second and third weight loss steps. The second weight loss step of 37.41% occurred at approximately 140°C, and the third step of 2.40% occurred at approximately 290°C.

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 ____ TO ____

BEST AVAILABLE COPY

BEST AVAILABLE COPY

S95T001597 N2

15.617 mg

Rate: 10.0 °C/min

File: 00084.001

TG

METTLER

19-Sep-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height -2.43 mg

-15.57 %

Resid. 13.18 mg

84.41 %

Step Analysis

Height -3.97 mg

-25.41 %

Resid. 9.21 mg

59.00 %

Dpeak 129.0 °C

Step Analysis

Height -0.44 mg

-2.79 %

Resid. 8.69 mg

55.68 %

Dpeak 243.0 °C

5. mg

170

100.

200.

300.

400.

°C

WHC-SD-WM-DP-144, REV. 1

WHC-SD-WM-DP-144, REV. 0

BEST AVAILABLE COPY

S95T001597 DUP N2

23.374 mg

Rate: 10.0 °C/min

File: 00086.001

TG

METTLER

19-Sep-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height -3.94 mg

-16.87 %

ResiC. 19.39 mg

82.96 %

Step Analysis

Height -7.01 mg

-30.00 %

ResiC. 12.38 mg

52.96 %

Dpeak 131.0 °C

Step Analysis

Height -0.52 mg

-2.23 %

ResiC. 11.67 mg

49.91 %

Dpeak 295.0 °C

5. mg

100.

200.

300.

400.

°C

WHC-SD-WM-DP-144, REV. 1

WHC-SD-WM-DP-144, REV. 0

BEST AVAILABLE COPY

S95T001600 N2

45.550 mg

Rate: 10.0 °C/min

File: 00087.001 TG METTLER 19-Sep-95
Ident: 0.0 222-S Laboratory

Step Analysis
Height -5.78 mg
-12.70 %
ResidC. 39.71 mg
87.18 %

Step Analysis
Height-17.04 mg
-37.41 %
ResidC. 22.67 mg
49.77 %
Dpeak 155.0 °C

Step Analysis
Height -1.00 mg
-2.40 %
ResidC. 21.35 mg
46.80 %
Dpeak 291.0 °C

10. mg

WHC-SD-WM-DP-144, REV. 1

100. 200. 300. 400. °C

BEST AVAILABLE COPY

S95T001600 DUP N2

28.862 mg

Rate: 10.0 °C/min

File: 00088.001

TG

METTLER

19-Sep-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height -3.52 mg

-12.21 %

ResiC. 25.31 mg

87.68 %

Step Analysis

Height -10.41 mg

-36.08 %

ResiC. 14.89 mg

51.60 %

Dpeak 139.0 °C

Step Analysis

Height -0.56 mg

-1.93 %

ResiC. 14.13 mg

48.94 %

Dpeak 293.0 °C

173

5. mg

WHC-SD-WM-DP-144, REV. 1

WHC-SD-WM-DP-144, REV. 0

100.

200.

300.

400.

°C

LABCORE Data Entry Template for Worklist#

2197

Analyst: PSM Instrument: TGA0 3 Book # 65A/8A

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

Worklist Comment: Please run BY-110 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	SOLID	<u>59.74</u>	<u>60.06</u>	<u>N/A</u>	%
95000121	T-109	2 SAMPLE	S95T001616	0	TGA-03	SOLID	<u>N/A</u>	<u>44.35</u>		%
95000121	T-109	3 DUP	S95T001616	0	TGA-03	SOLID	<u>44.35</u>	<u>46.50</u>	<u>N/A</u>	%
95000121	T-109	4 SAMPLE	S95T001626	0	TGA-03	SOLID	<u>N/A</u>	<u>49.11</u>		%
95000121	T-109	5 DUP	S95T001626	0	TGA-03	SOLID	<u>49.11</u>	<u>51.95</u>	<u>N/A</u>	%

Final page for worklist # **2197**

See Attached for Signature
Analyst Signature PSM Date 9/6/95

9-7-95
Analyst Signature 9-7-95 Date

Verified 9/7/95. J. M. Faye

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#

2197

Analyst: ElMcCann Instrument: TGA0 Book # 6508A

Method: LA-560-112-Rev/Mod C-0
514-114

Worklist Comment: Please run BY-110 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID			N/A	%
95000121	T-109	2 SAMPLE	S95T001616	0	TGA-01	SOLID	N/A			%
95000121	T-109	3 DUP	S95T001616	0	TGA-01	SOLID			N/A	%
95000121	T-109	4 SAMPLE	S95T001626	0	TGA-01	SOLID	N/A			%
95000121	T-109	5 DUP	S95T001626	0	TGA-01	SOLID			N/A	%

Final page for worklist # 2197

ElMcCann 9/3/95
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

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

Curve 1: TGA

File info: TER090301 Sun Sep 3 15:29:46 1995

Sample Weight: 26.081 mg

65N8-A Terliq

BEST AVAILABLE COPY

N2 10C/MIN
TEMP: 35.0 °C
TEMP: 500.0 °C
TIME: 0.0 min
RATE: 10.0 °C/min

Temperature (°C)

PJ MCCOWN
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Sep 3 17:00:45 1995

BEST AVAILABLE COPY

Curve 1: TGA
 File Info: SAM090301 Sun Sep 3 18:40:48 1995
 Sample Weight: 8.655 mg
 S95T004616

N2 100/MIN
 TEMPS: 50.0 C
 TIME: 000.0 S
 0.0 min RATE: 10.0 C/min
 Temperature (°C)
 PJ MCCOWN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sun Sep 3 18:41:56 1995

Curve 1: TGA
 File Info: SA4090302 Sun Sep 3 19:52:39 1995
 Sample Weight: 9.192 mg
 S95T001616 DUP

BEST AVAILABLE COPY

N2 100/MIN
 TEMPERATURE 300.0 °C
 TIME: 0.0 min RATE: 10.0 °C/min
 PJ MCCOWN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sun Sep 3 20:05:53 1995

BEST AVAILABLE COPY

Curve 1: TGA
 File info: SAM090303 Sun Sep 3 21:25:31 1995
 Sample Weight: 12.544 mg
 S95T001526

N2 10C/MIN
 TEMPERATURE 35.0 C
 TEMPERATURE 400.0 C
 0.0 min RATE: 10.0 C/min
 Temperature (°C)
 PJ MCCOWN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sun Sep 3 21:26:31 1995

Curve 1: TGA
 File Info: SAM090304 Sun Sep 3 22:37:05 1995
 Sample Weight: 13.702 mg
 3957001626 DUPLICATE

BEST AVAILABLE COPY

N2 10C/MIN
 TEMPS: 30.0 C
 TEMPE: 600.0 C
 TIME: 0.0 min RATE: 10.0 C/min
 Temperature (°C)
 PJ MCCOON
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Sun Sep 3 22:40:59 1995

DISTRIBUTION SHEET

To Distribution	From Characterization Plans, Coordination and Reports	Page 1 of 1
		Date: 12/04/95
Project Title/Work Order WHC-SD-WM-DP-144, Rev. 1, "Final Report for Tank 241-T-109, Auger Samples 95-AUG-040 and 95-AUG-041"		EDT NO.: N/A
		ECN NO.: ECN-627027

Name	MSIN	Text With all Attach	EDT/ECN ONLY	
------	------	-------------------------	-----------------	--

Pacific Northwest Laboratory

J. R. Gormsen	K7-28		X
S. J. Harris	K7-22	X	
K. L. Silvers	P7-27		X

U.S. Department of Energy, RL

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

Westinghouse Hanford Company

J. N. Appel	G3-21		X
H. Babad	S7-30	X	
J. M. Conner	R2-12	X	
G. D. Forehand	S7-31		X
V. W. Hall	T6-03	X	
D. C. Hetzer	S6-31		X
L. Jensen	R2-12	X	
N. W. Kirch	R2-11	X	
M. J. Kupfer	H5-49	X	
J. E. Meacham	S7-15	X	
P. M. Morant	H4-25	X	
K. L. Powell	T6-04		X
L. W. Shelton	H5-49	X	
B. C. Simpson	R2-12		X
J. A. Voogd	H5-03		X
Central Files	A3-88	2	
EDMC	H6-08	X	
LTIC	T6-03		X
TCRC	R2-12	X	
TFIC (Tank Farm Information Center)	R1-20		X

Washington State Department of Ecology

Single-Shell Tank Unit Manager

A. B. Stone	B5-18	X	
-------------	-------	---	--

U. S. Department of Energy

Jim Poppiti 12800 Middlebrook Rd. Trevion II, EM-36 Germantown, MD 20874			X
---	--	--	---

Los Alamos Technical Associates

A. T. DiCenso <i>T.T. TRAN</i> 309 Bradley Blvd. Richland, WA 99352		X	
--	--	---	--