Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

# 222-S RCRA Analytical Laboratory

**Project:** 242-A EVAPORATOR FEED CHARACTERIZATION

**Tank:** 103AP

**Customer Id. Number:** 3AP891-5

**Report Revision:** 0

**Date Printed:** May 19, 1992

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**This report consists of pages 1 through 213, plus pages 5.1-5.23, 6.1-6.3, 136.1 and 136.2.**

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# S I G N A T U R E  P A G E

I have reviewed the Inorganic and Radiochemistry results reported in this data package (when applicable). The results meet the requirements of "242-A Evaporator Feed Characterization Project - Statement of Work" - WHC-SOW-91-0002. This data is an accurate representation of the data generated for the requested laboratory analyses performed.

J. H. Tillman
242-A Evaporator Project Manager

9/5/92
Date

I have reviewed the compiled report and certify that this data package meets the document standards of the RCRA Data Packaging Procedure LO-150-151. This data package is complete and contains the data generated from the requested laboratory analysis performed on this sample.

L. R. Webb
Records Management Specialist
Data Coordinator

9/5/92
Date

I have reviewed this report and certify that this data package meets the requirements of "Quality Assurance Project Plan for the Chemical Analysis of Highly Radioactive Samples in Support of Environmental Activities on the Hanford Site" - WHC-SD-CP-QAPP-002, unless superseded by the Statement of Work or Waste Characterization Plan. This data package is a complete and accurate representation of the data generated from the requested laboratory analyses performed on this sample based on the QA Review Process.

L. P. Markel
Laboratory Q.A. Officer

9/15/92
Date

The data contained in this hardcopy data package has been approved and authorized for release by the Laboratory Manager or Manager's designee as verified by the following signature.

M. A. Bell
Manager
Processing and Analytical Laboratories

9-16-92
Date

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# NARRATIVE

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# 242-EVAPORATOR FEED CHARACTERIZATION

## INORGANIC CASE NARRATIVE

### Introduction

The analysis of samples in support of the 242-A Evaporator Feed Characterization Project for Fiscal Year 1991, was performed by the 222-S Laboratory during the last quarter of 1991 and completed during the first quarter of 1992. Samples received and analyzed for the inorganic and conventional parameters were performed using methods specified in the Statement of Work (SOW), WHC-SOW-91-0002 Westinghouse Hanford Company, 242-A Evaporator Feed Characterization Project Fiscal Year 1991, September 1991.

Samples submitted to the laboratory were identified as:

1. TK-102-AW (referred to as 102AW in the remainder of this report) the feed tank prior to the evaporator.

2. TK-106-AW (referred to as 106AW in the remainder of this report) one of the candidate feed tanks into 102AW.

3. TK-103-AP (referred to as 103AP in the remainder of this report) the other candidate feed tank into 102AW.

The inorganic constituents requested for analysis on the three tanks were divided into the following categories; metals by Inductively Coupled Plasma (ICP), metals by Atomic Absorption Spectroscopy (AAS), and conventional parameters by specified methods. The results were obtained using approved methods as specified in Table I of the SOW. Quality analyses, including number and frequency, were performed in accordance to guidance found in Table 2 of the SOW. The parameters analyzed for from the three tanks are:

### Metals by ICP

| | |
|---|---|
| Silver | Ag |
| Aluminum | Al |
| Barium | Ba |
| Cadmium | Cd |
| Chromium | Cr |
| Iron | Fe |
| Magnesium | Mg |
| Manganese | Mn |
| Sodium | Na |
| Lead | Pb |
| Zinc | Zn |



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Metals (AAS)

| | |
|---|---|
| Arsenic | As |
| Selenium | Se |
| Mercury | Hg |

Conventionals (IC)

| | |
|---|---|
| Fluoride | F |
| Chloride | Cl |
| Nitrite | NO2 |
| Nitrate | NO3 |
| Phosphate | PO4 |
| Sulfate | SO4 |

Conventional (Specified Methods)

| | |
|---|---|
| Total Organic Carbon | TOC |
| Total Inorganic Carbon | TIC |
| Cyanide | CN |
| Hydroxide | OH |
| Ph | |
| Specific Gravity | SpG |
| Differential Scanning Calorimetry | DSC |

The analysis of the samples for Cyanide, Total Ammonia, Total Inorganic Carbon (TIC), Specific Gravity, and Differential Scanning Calorimetry (DSC) were performed using methods traceable to ASTM or EPA. All other analytes were determined based on EPA SW-846 methods or current approved WHC golden rod procedures.

The Quality Objectives and requirements for this work effort were set to achieve the highest quality data. Factors relevant to sample matrix and the applicability of the methods to these complex matrices of samples from the evaporator candidate and feed tanks may have lead to biased results for some analytes of concern. The Quality Objectives were:

1. Matrix Spike and Matrix Spike Duplicate per batch or for no more than 20 samples which ever is less. The calculated Percent Recovery for these analyses to be within 75 to 125% and the Relative Percent Difference (RPD) must not exceed ± 20%.

2. One sample in twenty was to be analyzed in duplicate where specified. The duplicate results must agree with an RPD of ± 20%.

3. A blank must be run for each batch or for every 20 samples.

John H. Tillman 9/5/92

J. H. Tillman, Manager
Inorganic Chemistry PAL



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# 242-EVAPORATOR FEED CHARACTERIZATION

## INORGANICS CASE NARRATIVE

**Problems encountered:**

Samples from the two candidate and one feed tank into the evaporator were received into the 222-S laboratory during the laboratory's transition period from process to environmental analysis. This transition period signaled a change in the analytical protocols required to meet different, and in some cases, more stringent conditions. Most of the problems encountered during this work effort can be attributed to the response of the laboratory to these changing requirements. Nevertheless, the data generated for these samples was obtained using the best available laboratory practice at the time of sample analysis. The following problems were observed to have occurred throughout the samples submitted from tanks 102AW, 103AP, and 106AW:

(1) In a few cases, the analytical data cards are not corrected with one line, an initial and a date. Also, due to insufficient training, the chemists signed the analytical data card in the incorrect location. Though the analytical data cards were signed by the cognizant chemists, they were often signed in the inappropriate location on the card. This indicated the need for appropriate training to address this problem. This training effort has begun.

The Extension "1621" on the data cards represent an old extension which specifically denotes "TOC" analysis.

(2) Instrument Detection Limits (IDL). Detection limits for the parameters determined were obtained using the method prescribed by the US EPA. The instrument detection limits for the metals determined by Inductively Coupled Plasma (ICP), Atomic Absorption (AA), Ion Chromatograph (IC) and classical methods are obtained from an aqueous matrix. The instrument detection limits for the analytes on actual evaporator feed or candidate tanks would probably be higher due to matrix efforts. The standards used to prepare the solutions for the detection limit determinations were obtained from bonifide and reliable sources. The procedure basically requires the analysis of seven replicates of the analyte at a concentration two times the noise level for the instrument. Following this protocol, the instrument detection limits were met or exceeded when compared to the IDC's in the Request for Special Analyses (RSA). Typical instrument detection limits obtained during this work effort are listed below:



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| Analyte | Detection Limit (ppm) Required | Actual |
|---|---|---|
| Arsenic (As) | 5 | .005 |
| Cyanide (CN) | .10 | .010 |
| Mercury (Hg) | .20 | .002 |
| Ammonia (NH4) | 500 | .100 |
| Hydroxide (OH-) | 1700 | 17.000 |
| Selenium (Se) | 1 | .005 |
| Total Inorganic Carbon (TIC) | 5000 | 5.000 |
| Total Organic Carbon (TOC) | 500 | 5.500 |
| Fluoride (F) | 6000 | .090 |
| Nitrate (NO3) | 5000 | .240 |
| Chloride (Cl) | 4000 | .040 |
| Nitrite (NO2) | 5000 | .180 |
| Phosphate (PO4) | 10000 | .130 |
| Sulfate (SO4) | 10000 | .130 |
| Aluminum (Al) | 50 | .075 |
| Barium (Ba) | 2 | .003 |
| Cadmium (Cd) | 1 | .004 |
| Chromium (Cr) | 5 | .004 |
| Iron (Fe) | 10 | .007 |
| Lead (Pb) | 5 | .030 |
| Magnesium (Mg) | 1 | .0001 |
| Manganese (Mn) | 2 | .001 |
| Silver (Ag) | 5 | .018 |
| Sodium (Na) | 60 | .048 |
| Zinc (Zn) | 2 | .002 |

Detection limits for the analytes required in the Statement of Work are listed for each set of samples. These instrument detection limits vary according to the analyte and instrument and were generated in accordance with the Request for Special Analysis (RSA), the internal memo, "Recommendations for Tank Farm Waste Analysis" by T. D. Blankenship, dated November 26, 1990, and references the document, "Detection Limit Package, Appendix B" for the 241-U-110 Single Shell Tank Waste Characterization data package, dated August 9, 1991. The detection limit study performed for Core 5 followed recommended EPA protocol.

J. H. Tillman 9/5/92

J. H. Tillman, Manager
Inorganic Chemistry PAL



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## Detection Limits of Radionuclides

Listed below are the detection limits for indicated radionuclides for sample R937.

| Radionuclide | DL uCi/L |
|---|---|
| Co-60 | $1.3 \times 10^{+1}$ |
| Cs-134 | $9.0 \times 10^{+0}$ |
| Cs-137 | $1.4 \times 10^{+1}$ |
| Ce-144 | $7.8 \times 10^{+1}$ |
| Eu-154 | $2.6 \times 10^{+1}$ |
| Eu-155 | $2.5 \times 10^{+1}$ |
| Nb-94 | $9.0 \times 10^{+0}$ |
| Ra-226* | $1.5 \times 10^{+1}$ |
| Ru-106 | $1.4 \times 10^{+2}$ |
| Sn-113 | $1.0 \times 10^{+1}$ |

*Based on the gamma peak of daughter Bi-204

These limits are based on the background spectrum of the Ge detector which was used for counting of the above mentioned sample. The data reduction of the background gamma spectrum was done under the same parameters (sample size, sample geometry, and counting time) as used for the sample. Note that the limits will change in the sample depending on the presence of other radionuclides, their gamma-ray energies, intensities, and their levels of activity.

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# 242-EVAPORATOR FEED CHARACTERIZATION

## INORGANICS CASE NARRATIVE

## TANK: 103AP

**Problems encountered:**

A Non-Conformance Report (NCR) was generated for three samples from Tank 103AP. The samples involved were 3AP891-1, 3AP891-2 and 3AP891-3. Sample 3AP891-1 and 3AP891-2 were received into the laboratory with the custody seal improperly attached. The client reviewed these sample containers and granted permission to proceed with the analysis for 3AP891-1 and 3AP891-2 because the custody seals were over the locking pin, indicating sample integrity was preserved. Sample 3AP891-3 was resampled and replaced by Sample 3AP1191-1. This sample was analyzed for the parameters stated. Please reference NCR #B06110, dated September 19, 1991. In addition, the custody seal for Sample 3AP891-1 (R933) was not on properly. This sample was approved for analysis after consideration and review by the client.

3AP891-5 (R937)

No spikes or duplicates were run for any of the parameters for Sample 3AP891-5 (R937).

The Phosphate concentration should read 1.39E+2 ppm instead of 1.35E+2 ppm. This agrees with the data on the analytical card. Also, the date was inadvertently changed to 01/10/92. It should read 01/08/92 which also coincides with the data on the analytical printout.

The percent deviation values for Iron and Sodium were outside the control limits of ±25%.

| Analyte | Percent Deviation | |
|---|---|---|
| | Initial | Final |
| Iron | -- | 126% |
| Sodium | 156.5 | 177.5% |

John H. Tillman 9/15/92

John Tillman, Manager
Inorganic Chemistry PAL

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Internal
Memo

From: Office of Sample Management 16500-90-090
Phone: 3-3869 MO-346/200W T6-08
Date: November 26, 1990
Subject: RECOMMENDATIONS FOR TANK FARM WASTE ANALYSES

To: T. D. Blankenship R1-62

cc: J. D. Briggs JEA for T6-14
J. A. Eacker R1-51
D. L. Halgren R1-51
J. H. Kessner T6-08
E. J. Kosiancic SO-61
C. R. Stroup T6-07
RLW File/LB

Reference: Internal Memo, T. D. Blankenship to E. J. Kosiancic, "Tank Farm Waste Analysis Requirements," dated September 10, 1990.

The referenced Internal Memo requests information regarding laboratory analytical capacity for a variety of analytes to support Tank Farm and Evaporator operations. Specific comments and suggestions for each have been prepared along with information on suggested minimum quantitation limits (MQLs) for the needed analyses and recommended reporting formats. With the exception of $Nb^{94}$, all requested analyses are currently performed on-site. Laboratory capacity exists to support these programs if sufficient prescheduling of activities is done to coordinate with times of high sample throughput in the laboratory (e.g., single shell tank sampling).

The discussions that follow are based on the assumption that the laboratory will be performing "standard" regulatory type analysis. Analysis MQLs are based on proven laboratory experience, turnaround times are based on requirements in the Tri-Party agreement, and reporting/validation formats based on WHC-CM-5-3, Section 2.0, "Data Validation for RCRA Analyses." This information is summarized in the following attached tables:

| | |
|---|---|
| Table 1 | MQLs for Inorganic Analysis |
| Table 2 | MQLs for Radionuclide Analysis |
| Table 3 | MQLs for Organic Analysis (these are CLP requirements but will form the basis for all organic analysis) |
| Table 4 | Sample Turnaround Times |
| Table 5 | Result Reporting/Validation |
| Table 6 | Validation Criteria - Generic Data Quality Objectives (DQOs) |

If specific needs different from this standard are required for a given program, these needs must be defined in the program's Waste Analysis Plan (WAP) or equivalent documentation and negotiated with the laboratory to assure

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compliance. While it is expected that in most cases specific needs will be more stringent, if less stringent requirements are appropriate, these should also be defined in the WAP. This could significantly reduce analytical costs and turnaround times.

Characterization of Waste Streams Discharged to Double Shell Tanks (DSTs):

These streams are from ongoing operations of the site and will need analysis for two requirements; verification of compliance to tank farm storage specifications (processing parameters), and determination of composition for regulatory based designation of the waste (hazardous waste designation). Processing parameter based analysis will be equivalent to current practice and should be predefined using laboratory "routine set" analysis. The analysis will be performed under the quality assurance requirements of NQA-1 with typical result turnarounds of 1 to 5 days. Results will be available via the laboratory reporting system (LCCS).

Analysis of the samples to meet the needs for hazardous waste designation will require more stringent quality assurance than for processing parameters. Those components that fall under both needs will likely be required to be analyzed by both protocols. Unfortunately, analysis turnaround times for designation will likely exceed needs for normal processing parameters. If processing parameter analysis results show a component to significantly exceed a hazardous waste designation limit (e.g., a sample is sufficiently caustic to qualify as a extremely hazardous waste based on corrosiveness) reanalysis of the sample under the more stringent protocols would not be necessary. In no case will analysis performed to processing parameter protocols be suitable for designation as an intermediate level or as nonhazardous waste.

DST Characterization Analysis:

All of these analyses will be required to be performed to hazardous waste designation protocols. Currently, no analytical capacity exists to perform $Nb^{94}$ analysis. This long lived ($2x10^4$ y) beta emitter is not expected to be present in significant quantities and will require development efforts to analyze for. Addition of total beta (TB) analysis to the analysis request should allow for screening for significant levels of unaccounted for beta activity and assessment of the needs for additional specific beta emitting radionuclide component quantification.

Analysis for $Pu^{238}$ at the 222-S Laboratory is complicated by the presence of this isotope in the spike ($Pu^{236}$) added to the analysis to allow correction for overall yield in the procedure. For most expected samples, $Pu^{238}$ activity will be only a small fraction of the $Pu^{239/240}$ activity and may be approximated using isotopic ratios based on historical irradiated uranium processing.

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Samples having greater than normal $Pu^{238}$ (e.g., associated with previous irradiated thorium processing) activity will be detectable using the current procedures. In these cases, $Pu^{238}$ activity can be quantified either using a special analysis or through determination of isotopic ratios based on mass spectral analysis.

Analysis of Samples for the 242-A Evaporator:

All analyses identified in the Internal Memo appear to be for hazardous waste designation needs. It should be noted that analysis of the vent stack will require the installation of specialized gas sampling equipment.

General Comments:

Analysis of two major hazardous waste designation groups were not requested for any of the streams; semivolatile organics and Toxicity Characteristic Leaching Procedure (TCLP). If these analyses have not been assessed for inclusion in the requested analysis, it is recommended that they are reviewed for inclusion.

The current schedule for implementation of organic analysis capacity at 222-S Laboratory is for early in 1991, most probably after March 1, 1991. Until capacity becomes available at 222-S Laboratory, organic analyses (VOA and TOX) will be performed by the Pacific Northwest Laboratories (PNL). This will require transhipping of samples sent to 222-S Laboratory, but should not seriously affect result turnaround or quality.

Estimated cost information for the requested analyses is shown in Table 7. These costs are based on analysis of organic components at PNL. When organic capability is available at 222-S Laboratory, costs will be reduced slightly. Addition of semivolatile organic analysis to the lists would increase costs $2000 per analysis. Addition of TCLP to the list would increase analysis costs $1500 for those samples containing greater than 1% solids. For liquid only samples, no additional preparation is required for TCLP and the analytes of concern are already included in the analysis requests.

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T. D. Blankenship
Page 4
November 26, 1990

16500-90-090

If you need any additional information or have any questions, please call me on 3-3869.

Richard L. Weiss

R. L. Weiss, Principal Scientist
Office of Sample Management

jmd

Attachments - 7

CONCURRENCE:

Curtis R. Stroup Date 11/28/90
C. R. Stroup, Manager
Analytical Laboratories

JDB J. E. Attaway for Date 11/29/90
J. D. Briggs, Manager
222-S Analytical Laboratory Complex

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**TABLE 1**
**RECOMMENDED ANALYSIS MINIMUM QUANTITATION LEVELS**
**for TANK FARM WASTE ANALYSES**

| Analyte | High Salt Liquid or Solid/Slurry | Low Salt Liquid | Analyte | High Salt Liquid or Solid/Slurry | Low Salt Liquid |
|---|---|---|---|---|---|
| **Analyzed by Inductively Coupled Plasma Spectroscopy (ICP)** | | | | | |
| Al | 50 | 0.5 | As | 20 | 0.2 |
| Ba | 2 | 0.02 | Bi | 100 | 0.5 |
| B | 20 | 0.05 | Cd | 2 | 0.02 |
| Ca | 0.2 | 0.002 | Ce | 100 | 1 |
| Cr | 5 | 0.05 | Co | 20 | 0.2 |
| Cu | 20 | 0.2 | Eu | 2 | 0.02 |
| Fe | 10 | 0.01 | La | 20 | 0.2 |
| Pb | 30 | 0.3 | Li | 3 | 0.03 |
| Mg | 0.1 | 0.001 | Mn | 2 | 0.02 |
| Hg | 5 | 0.05 | Mo | 5 | 0.05 |
| Nd | 250 | 2.5 | Ni | 20 | 0.2 |
| P | 50 | 0.5 | K | 250 | 2.5 |
| Sm | 200 | 2 | Se | 100 | 1 |
| Si | 100 | 0.5 | Ag | 30 | 0.3 |
| Na | 60 | 0.6 | Sr | 2 | 0.02 |
| S | 60 | 0.6 | Ta | 50 | 0.5 |
| Th | 20 | 0.2 | Sn | 2 | 0.02 |
| Ti | 30 | 0.06 | W | 200 | 0.5 |
| U | 1500 | 15 | Zn | 2 | 0.02 |
| Zr | 80 | 0.1 | | | |
| **Analyzed by Specific Atomic Absorption Techniques** | | | | | |
| As | 5 | 0.05 | Hg | 3 | 0.03 |
| Se | 5 | 0.05 | | | |
| **Anion Analysis by DIONEX** | | | | | |
| F | 6000 | 10 | Cl | 4000 | 5 |
| $NO_3$ | 20000 | 10 | $NO_2$ | 20000 | 10 |
| $PO_4$ | 10000 | 10 | $SO_4$ | 10000 | 10 |
| **Specific Analysis** | | | | | |
| $CO_3$ | 5000 | 50 | TOC(carbon) | 5000 | 50 |
| CN | 0.1 | 0.01 | $NH_4$ | 5000 | 50 |
| U | 100 | 1 | TOX(chlorine) | 100 | 10 |
| OH | 0.2 | 0.002 | DSC | * | * |

Values for solids are as ug/g
Values for liquids are as ug/ml
*DSC will be used to screen for the presence of exothermic reactions. Specific quantitation limits are not required for this screening

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# TABLE 2
## RECOMMENDED ANALYSIS MINIMUM QUANTITATION LEVELS for TANK FARM WASTE ANALYSES

| Analyte | Solid/Slurry | High Salt Liquid | Low Salt Liquid |
|---|---|---|---|
| Alpha Total | 100 | 1 | 0.01 |
| Beta Total | 350 | 3.5 | 0.035 |
| **Radionuclides Analyzed by Gamma Energy Analysis** | | | |
| $Co^{60}$ | 4 | 4 | 0.04 |
| $Cs^{137}$ | 5 | 5 | 0.05 |
| $RuRh^{106}$ | 50 | 50 | 0.5 |
| **Radionuclides Analyzed by Separation with Beta Counting** | | | |
| $H^{3}$ | 75 | 1.5 | 1.5 |
| $C^{14}$ | 50 | 0.5 | 0.25 |
| $Nb^{94}$ | * | * | * |
| $Se^{79}$ | 50 | 0.5 | 0.25 |
| $Sr^{90}$ | 150 | 1.5 | 0.015 |
| $Tc^{99}$ | 250 | 2.5 | 0.025 |
| $I^{129}$ | 900 | 9 | 0.09 |
| **Radionuclides Analyzed by Separation with Alpha Counting/Alpha Energy Analysis** | | | |
| $Pu^{238}$ | 200[1] | 2[1] | 0.02[1] |
| $Pu^{239/240}$ | 50 | 0.5 | 0.005 |
| $Am^{241}$ | 100 | 1 | 0.01 |
| $Cm^{244}$ | 100 | 1 | 0.01 |

Values for solids are as pCi/g
Values for liquids are as pCi/ml

* No current analysis capacity for $Nb^{94}$
[1]Potential interferrence on $Pu^{238}$ analysis from contamination in $Pu^{236}$ spike added to the analysis

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# TABLE 3

## TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

| Pesticides/Aroclors | CAS Number | Quantitation Limits* Water ug/L | Soil ug/Kg | On Column (pg) |
|---|---|---|---|---|
| 98. alpha-BHC | 319-84-6 | 0.05 | 1.7 | 5 |
| 99. beta-BHC | 319-85-7 | 0.05 | 1.7 | 5 |
| 100. delta-BHC | 319-86-8 | 0.05 | 1.7 | 5 |
| 101. gamma-BHC (Lindane) | 58-89-9 | 0.05 | 1.7 | 5 |
| 102. Heptachlor | 76-44-8 | 0.05 | 1.7 | 5 |
| 103. Aldrin | 309-00-2 | 0.05 | 1.7 | 5 |
| 104. Heptachlor epoxide | 1024-57-3 | 0.05 | 1.7 | 5 |
| 105. Endosulfan I | 959-98-8 | 0.05 | 1.7 | 5 |
| 106. Dieldrin | 60-57-1 | 0.10 | 3.3 | 10 |
| 107. 4,4'-DDE | 72-55-9 | 0.10 | 3.3 | 10 |
| 108. Endrin | 72-20-8 | 0.10 | 3.3 | 10 |
| 109. Endosulfan II | 33213-65-9 | 0.10 | 3.3 | 10 |
| 110. 4,4'-DDD | 72-54-8 | 0.10 | 3.3 | 10 |
| 111. Endosulfan sulfate | 1031-07-8 | 0.10 | 3.3 | 10 |
| 112. 4,4'-DDT | 50-29-3 | 0.10 | 3.3 | 10 |
| 113. Methoxychlor | 72-43-5 | 0.50 | 17.0 | 50 |
| 114. Endrin ketone | 53494-70-5 | 0.10 | 3.3 | 10 |
| 115. Endrin aldehyde | 7421-36-3 | 0.10 | 3.3 | 10 |
| 116. alpha-Chlordane | 5103-71-9 | 0.05 | 1.7 | 5 |
| 117. gamma-Chlordane | 5103-74-2 | 0.05 | 1.7 | 5 |
| 118. Toxaphene | 8001-35-2 | 5.0 | 170.0 | 500 |
| 119. Aroclor-1016 | 12674-11-2 | 1.0 | 33.0 | 100 |
| 120. Aroclor-1221 | 11104-28-2 | 1.0 | 33.0 | 100 |
| 121. Aroclor-1232 | 11141-16-5 | 2.0 | 67.0 | 200 |
| 122. Aroclor-1242 | 53469-21-9 | 1.0 | 33.0 | 100 |
| 123. Aroclor-1248 | 12672-29-6 | 1.0 | 33.0 | 100 |
| 124. Aroclor-1254 | 11097-69-1 | 1.0 | 33.0 | 100 |
| 125. Aroclor-1260 | 11096-82-5 | 1.0 | 33.0 | 100 |

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of Pesticides/Aroclors.

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TABLE 3 (cont)

(continued)

| Semivolatiles | CAS Number | Quantitation Limits* Water ug/L | Low Soil ug/Kg | Med. Soil ug/Kg | On Column (ng) |
|---|---|---|---|---|---|
| 69. Dibenzofuran | 132-64-9 | 10 | 330 | 10000 | (20) |
| 70. 2,4-Dinitrotoluene | 121-14-2 | 10 | 330 | 10000 | (20) |
| 71. Diethylphthalate | 84-66-2 | 10 | 330 | 10000 | (20) |
| 72. 4-Chlorophenyl-phenyl ether | 7005-72-3 | 10 | 330 | 10000 | (20) |
| 73. Fluorene | 86-73-7 | 10 | 330 | 10000 | (20) |
| 74. 4-Nitroaniline | 100-01-6 | 50 | 1700 | 50000 | (100) |
| 75. 4,6-Dinitro-2-methylphenol | 534-52-1 | 50 | 1700 | 50000 | (100) |
| 76. N-nitrosodiphenylamine | 86-30-6 | 10 | 330 | 10000 | (20) |
| 77. 4-Bromophenyl-phenylether | 101-55-3 | 10 | 330 | 10000 | (20) |
| 78. Hexachlorobenzene | 118-74-1 | 10 | 330 | 10000 | (20) |
| 79. Pentachlorophenol | 87-86-5 | 50 | 1700 | 50000 | (100) |
| 80. Phenanthrene | 85-01-8 | 10 | 330 | 10000 | (20) |
| 81. Anthracene | 120-12-7 | 10 | 330 | 10000 | (20) |
| 82. Carbazole | 86-74-8 | 10 | 330 | 10000 | (20) |
| 83. Di-n-butylphthalate | 84-74-2 | 10 | 330 | 10000 | (20) |
| 84. Fluoranthene | 206-44-0 | 10 | 330 | 10000 | (20) |
| 85. Pyrene | 129-00-0 | 10 | 330 | 10000 | (20) |
| 86. Butylbenzylphthalate | 85-68-7 | 10 | 330 | 10000 | (20) |
| 87. 3,3'-Dichlorobenzidine | 91-94-1 | 10 | 330 | 10000 | (20) |
| 88. Benzo(a)anthracene | 56-55-3 | 10 | 330 | 10000 | (20) |
| 89. Chrysene | 218-01-9 | 10 | 330 | 10000 | (20) |
| 90. bis(2-Ethylhexyl)phthalate | 117-81-7 | 10 | 330 | 10000 | (20) |
| 91. Di-n-octylphthalate | 117-84-0 | 10 | 330 | 10000 | (20) |
| 92. Benzo(b)fluoranthene | 205-99-2 | 10 | 330 | 10000 | (20) |
| 93. Benzo(k)fluoranthene | 207-08-9 | 10 | 330 | 10000 | (20) |
| 94. Benzo(a)pyrene | 50-32-8 | 10 | 330 | 10000 | (20) |
| 95. Indeno(1,2,3-cd)pyrene | 193-39-5 | 10 | 330 | 10000 | (20) |
| 96. Dibenz(a,h)anthracene | 53-70-3 | 10 | 330 | 10000 | (20) |
| 97. Benzo(g,h,i)perylene | 191-24-2 | 10 | 330 | 10000 | (20) |

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

TPZ
9-12-92
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TABLE 3 (cont)

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

| Semivolatiles | CAS Number | Quantitation Limits* Water ug/L | Low Soil ug/Kg | Med. Soil ug/Kg | On Column (ng) |
|---|---|---|---|---|---|
| 34. Phenol | 108-95-2 | 10 | 330 | 10000 | (20) |
| 35. bis(2-Chloroethyl) ether | 111-44-4 | 10 | 330 | 10000 | (20) |
| 36. 2-Chlorophenol | 95-57-8 | 10 | 330 | 10000 | (20) |
| 37. 1,3-Dichlorobenzene | 541-73-1 | 10 | 330 | 10000 | (20) |
| 38. 1,4-Dichlorobenzene | 106-46-7 | 10 | 330 | 10000 | (20) |
| 39. 1,2-Dichlorobenzene | 95-50-1 | 10 | 330 | 10000 | (20) |
| 40. 2-Methylphenol | 95-48-7 | 10 | 330 | 10000 | (20) |
| 41. 2,2'-oxybis (1-Chloropropane)# | 108-60-1 | 10 | 330 | 10000 | (20) |
| 42. 4-Methylphenol | 106-44-5 | 10 | 330 | 10000 | (20) |
| 43. N-Nitroso-di-n-dipropylamine | 621-64-7 | 10 | 330 | 10000 | (20) |
| 44. Hexachloroethane | 67-72-1 | 10 | 330 | 10000 | (20) |
| 45. Nitrobenzene | 98-95-3 | 10 | 330 | 10000 | (20) |
| 46. Isophorone | 78-59-1 | 10 | 330 | 10000 | (20) |
| 47. 2-Nitrophenol | 88-75-5 | 10 | 330 | 10000 | (20) |
| 48. 2,4-Dimethylphenol | 105-67-9 | 10 | 330 | 10000 | (20) |
| 49. bis(2-Chloroethoxy) methane | 111-91-1 | 10 | 330 | 10000 | (20) |
| 50 2,4-Dichlorophenol | 120-83-2 | 10 | 330 | 10000 | (20) |
| 51. 1,2,4-Trichlorobenzene | 120-82-1 | 10 | 330 | 10000 | (20) |
| 52. Naphthalene | 91-20-3 | 10 | 330 | 10000 | (20) |
| 53. 4-Chloroaniline | 106-47-8 | 10 | 330 | 10000 | (20) |
| 54. Hexachlorobutadiene | 87-68-3 | 10 | 330 | 10000 | (20) |
| 55. 4-Chloro-3-methylphenol | 59-50-7 | 10 | 330 | 10000 | (20) |
| 56. 2-Methylnaphthalene | 91-57-6 | 10 | 330 | 10000 | (20) |
| 57. Hexachlorocyclopentadiene | 77-47-4 | 10 | 330 | 10000 | (20) |
| 58. 2,4,6-Trichlorophenol | 88-06-2 | 10 | 330 | 10000 | (20) |
| 59. 2,4,5-Trichlorophenol | 95-95-4 | 50 | 1700 | 50000 | (100) |
| 60. 2-Chloronaphthalene | 91-58-7 | 10 | 330 | 10000 | (20) |
| 61. 2-Nitroaniline | 88-74-4 | 50 | 1700 | 50000 | (100) |
| 62. Dimethylphthalate | 131-11-3 | 10 | 330 | 10000 | (20) |
| 63. Acenaphthylene | 208-96-8 | 10 | 330 | 10000 | (20) |
| 64. 2,6-Dinitrotoluene | 606-20-2 | 10 | 330 | 10000 | (20) |
| 65. 3-Nitroaniline | 99-09-2 | 50 | 1700 | 50000 | (100) |
| 66. Acenaphthene | 83-32-9 | 10 | 330 | 10000 | (20) |
| 67. 2,4-Dinitrophenol | 51-28-5 | 50 | 1700 | 50000 | (100) |
| 68. 4-Nitrophenol | 100-02-7 | 50 | 1700 | 50000 | (100) |

# Previously known by the name bis(2-Chloroisopropyl) ether

TFZ 9-13-92

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TABLE 3 (cont)

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

| Volatiles | CAS Number | Quantitation Limits* Water ug/L | Low Soil ug/Kg | Med. Soil ug/Kg | On Column (ng) |
|---|---|---|---|---|---|
| 1. Chloromethane | 74-87-3 | 10 | 10 | 1200 | (50) |
| 2. Bromomethane | 74-83-9 | 10 | 10 | 1200 | (50) |
| 3. Vinyl Chloride | 75-01-4 | 10 | 10 | 1200 | (50) |
| 4. Chloroethane | 75-00-3 | 10 | 10 | 1200 | (50) |
| 5. Methylene Chloride | 75-09-2 | 10 | 10 | 1200 | (50) |
| 6. Acetone | 67-64-1 | 10 | 10 | 1200 | (50) |
| 7. Carbon Disulfide | 75-15-0 | 10 | 10 | 1200 | (50) |
| 8. 1,1-Dichloroethene | 75-35-4 | 10 | 10 | 1200 | (50) |
| 9. 1,1-Dichloroethane | 75-34-3 | 10 | 10 | 1200 | (50) |
| 10. 1,2-Dichloroethene (total) | 540-59-0 | 10 | 10 | 1200 | (50) |
| 11. Chloroform | 67-66-3 | 10 | 10 | 1200 | (50) |
| 12. 1,2-Dichloroethane | 107-06-2 | 10 | 10 | 1200 | (50) |
| 13. 2-Butanone | 78-93-3 | 10 | 10 | 1200 | (50) |
| 14. 1,1,1-Trichloroethane | 71-55-6 | 10 | 10 | 1200 | (50) |
| 15. Carbon Tetrachloride | 56-23-5 | 10 | 10 | 1200 | (50) |
| 16. Bromodichloromethane | 75-27-4 | 10 | 10 | 1200 | (50) |
| 17. 1,2-Dichloropropane | 78-87-5 | 10 | 10 | 1200 | (50) |
| 18. cis-1,3-Dichloropropene | 10061-01-5 | 10 | 10 | 1200 | (50) |
| 19. Trichloroethene | 79-01-6 | 10 | 10 | 1200 | (50) |
| 20. Dibromochloromethane | 124-48-1 | 10 | 10 | 1200 | (50) |
| 21. 1,1,2-Trichloroethane | 79-00-5 | 10 | 10 | 1200 | (50) |
| 22. Benzene | 71-43-2 | 10 | 10 | 1200 | (50) |
| 23. trans-1,3-Dichloropropene | 10061-02-6 | 10 | 10 | 1200 | (50) |
| 24. Bromoform | 75-25-2 | 10 | 10 | 1200 | (50) |
| 25. 4-Methyl-2-pentanone | 108-10-1 | 10 | 10 | 1200 | (50) |
| 26. 2-Hexanone | 591-78-6 | 10 | 10 | 1200 | (50) |
| 27. Tetrachloroethene | 127-18-4 | 10 | 10 | 1200 | (50) |
| 28. Toluene | 108-88-3 | 10 | 10 | 1200 | (50) |
| 29. 1,1,2,2-Tetrachloroethane | 79-34-5 | 10 | 10 | 1200 | (50) |
| 30. Chlorobenzene | 108-90-7 | 10 | 10 | 1200 | (50) |
| 31. Ethyl Benzene | 100-41-4 | 10 | 10 | 1200 | (50) |
| 32. Styrene | 100-42-5 | 10 | 10 | 1200 | (50) |
| 33. Xylenes (Total) | 1330-20-7 | 10 | 10 | 1200 | (50) |

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

TFZ 9-12-92
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**TABLE 4**
**SAMPLE RESULT TURNAROUND TIMES**

Laboratory analysis and quality assurance documentation, excluding validation, shall be limited to the following schedule:

Transuranic and hot cell analyses - 100 days annual average, but not to exceed 140 days

Low-level and mixed waste (up to 100 mr/hr) analyses - 75 days annual average, but not to exceed 90 days

Nonradioactive waste analyses - 50 days

Validated data packages will be issued within 21 days of receipt of the results by the Office of Sample Management.

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TFL 9-12-92
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# TABLE 5
# RESULT REPORTING/VALIDATION

The RCRA validation documentation package consists of the Office of Sample Management Data Validation cover sheet (different sheets for Level A, B, or C validation), supplemental Quality Control (QC) attachment pages, a copy of the Chain of Custody, and all sample data. One documentation package is completed for each sample or delivery group.

Three levels of validation are offered:

Level A The minimum requirement for all RCRA data. The primary application is for data used in waste designation/disposal. The additional QC required by SW-846 will be assessed through laboratory audits and Performance Evaluation (PE) samples.

Review Requirements:

- o Requested Versus Reported Analyses
- o Analysis Holding Times

Level B Provides a more in-depth review for programs whose data are compiled for use in later reports.

Review Requirements in Addition to Those Listed for Level A:

- o Matrix Spike/Matrix Spike Duplicate Analysis
- o Surrogate Recoveries
- o Duplicate Analysis
- o Analytical Blank Analysis

Level C Requires that the data be reported in Sample Delivery Group (SDG) data packages and is applicable to RCRA governed programs requiring Contract Laboratory Program (CLP) quality data from analytical work done in non-CLP laboratories

Review Requirements in Addition to Those Above:

- o Initial and Continuing Instrument Calibrations
- o Gas Chromatography - Mass Spectrograph (GC/MS) Tune Criteria
- o Internal Standards for Gas Chromatograph Analysis
- o Laboratory Control Samples
- o Interference Check Samples (for ICP analysis)
- o Any Other QC Checks Performed or Required by the Methods of Analysis

TPL 9-12-92

# TABLE 6
## VALIDATION CRITERIA - GENERIC DATA QUALITY OBJECTIVES

1. REQUESTED VERSUS REPORTED ANALYSES

   All requested analyses shall be reported of accounted for.

2. HOLDING TIMES

   Holding times shall be equivalent to RCRA defined times. If no RCRA holding time exists, holding times will be 6 months unless specifically defined in project specific documentation.

3. SURROGATE RECOVERY

   Sample and blank surrogate recoveries must be between 80 and 120%.

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

   A matrix spike or matrix spike duplicate must be analyzed with every analytical batch of every 20 samples, whichever is more frequent. Control limits will be between 75 and 125% with ±20% relative percent differences.

5. DUPLICATE ANALYSIS

   Duplicate analysis must be performed with every analytical batch or every 20 samples, whichever is more frequent. Control limits will be ±20%. If both sample and duplicate results are below the method detection limit of sample quantitation limit, then no control limit applies.

6. ANALYTICAL BLANKS

   A minimum of one analytical blank must be analyzed for every batch or every 20 samples, whichever is more frequent. No contaminants should be detected in the blanks.

7. INITIAL AND CONTINUING CALIBRATION

   Analytical instrumentation shall be calibrated in accordance with requirements specific to the instrumentation and methods of procedures employed.

8. GC/MS TUNE

   Ion abundance results and tuning frequency requirements must be as specified in the method employed for analysis.

9. INTERNAL STANDARDS

   Internal Standard area counts and retention time differences from the associated calibration standard must be within the control limits specified by the methods or procedure used.

TPL 9-12-92
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5.17

**TABLE 6 (cont)**

10. LABORATORY CONTROL SAMPLE

All Laboratory Control Sample recoveries must be within 80-120% for all sample matrices.

11. INTERFERENCE CHECK SAMPLE

Frequency of analysis and all Interference Check Sample solution results must meet the requirements specified in the procedure used.

12. OTHER QUALITY CONTROL CHECKS

As specified in project specific documentation.

**TABLE 7**
**ESTIMATED COSTS**

| | |
|---|---|
| CHARACTERIZATION OF WASTE STREAMS DICHSRGED TO DOUBLE SHELL TANKS | |
| Analysis for processing parameters | $500/sample |
| Analysis for hazwaste designation | $5000/sample |
| DOUBLE SHELL TANK CHARACTERIZATION | |
| Analysis for hazewaste designation | $10000/sample |
| ANALYSIS OF SAMPLES FROM 242-A EVAPORTOR | |
| Analysis of feed tank | $5000/sample |
| Analysis of Process Condensate | $2500/sample |
| Analysis of Slurry Product | $5000/sample |
| Analysis of Steam Condensate | $4000/sample |
| Analysis of Cooling Water | $4000/sample |
| Analysis of Vent Gases | $2000/sample |

For info only

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

Westinghouse Hanford Company

Hanford Operations and Engineering Contractor for the US Department of Energy
P.O. Box 1970 Richland, Wa. 98352

# NONCONFORMANCE REPORT

Page 1 of 2 | No. B 06110

MFR/ORG: TANK FARMS OPERATIONS
200E / AP Farm

ITEM/MATERIAL NAME: 3 samples from TK-103-AP
PART NO.: N/A
DRAWING/SPEC. NO.: N/A
REV.: N/A
PROGRAM/PROJECT: Evaporator Restart
P.O./W.O. NO.: 1W1T6C0E
SYSTEM/END USE: Waste Characterization
DATE: 9/19/91

UNUSUAL OCCURRENCE REPORT REQUIRED: ☐ YES ☒ NO

**2. DESCRIPTION OF NONCONFORMANCE**

Custody seals placed improperly, so that recipient was unable to detect if there was evidence of tampering with 3 samples. (222-S Laboratories will not breakdown or analyze samples until this NCR is resolved.)

HW-27
PN-003 PRIORITY/SEVERITY: D3

**3. REQUIREMENT VIOLATED**

| | DOCUMENT | REV | ZONE/PAR |
|---|---|---|---|
| Attach seal on cask such that seal must be broken to remove sample. | TO-080-030 | C-2 | 3.20. |

Deborah Y. Bisenius — ORIGINATOR D.Y. Bisenius
28600 — ORGANIZATION
9/26/91 — DATE

**4. ASME CODE ITEM(s)** ☒ NO ☐ YES. NOTIFY AUTHORIZED INSPECTOR.

WHC QAR

**5. CAUSE OF NONCONFORMANCE**

☐ PROCEDURES ☒ PERSONNEL ☐ MATERIALS
☐ EQUIPMENT ☐ OTHERS

REMARKS:
proper placement of custody seal for environmental samples.

**6. CORRECTIVE ACTION TO ELIMINATE CAUSE**

~~Operations personnel that retrieve samples shall be reminded of the importance of proper custody seal placement.~~ T.W. 11/26/91
See page 2.

INITIATION DATE _____ SERIAL NO. _____

RESPONSIBLE ORG. REP. — TITLE: Engineer — DATE: 03 DEC 91

**7. RECOMMENDED DISPOSITION** ☐ ACCEPT ☐ REJECT ☐ REPAIR ☐ REWORK ☒ OTHER

**8A. DISPOSITION JUSTIFICATION AND INSTRUCTIONS**

See page 2.

**9. ADDITIONAL REVIEWS REQUIRED (WHC ONLY)** ☒ YES ☐ NO
IF YES, IDENTIFY:
Vida Johansen

**8B. SUPPLIER ENG.** N/A SUPPLIER QA N/A

**10. DISPOSITION APPROVAL (WHC ONLY)**

☒ APPROVED ☐ DISAPPROVED
☐ OTHER (SEE CONTINUATION SHEET)

P. G. Haigh — COGNIZANT ENGINEER — 76420 — DATE 08 NOV 91
J. J. Verderber — COGNIZANT QA ENGINEER — 32200 — DATE 11/26/91
AUTHORIZED INSPECTOR REVIEW — DATE

**11. ADDITIONAL APPROVALS**

| NAME | TITLE | DATE | NAME | TITLE | DATE |
|---|---|---|---|---|---|
| Vida Johansen | Sample Custodian | 12-5-91 | | | |

TF2 9-12-92
~~5.19~~

**12. DISPOSITION ACTION COMPLETE**

NAME _____ DATE _____ QTY. ACCEPT _____ QTY. REJ. _____

FOLLOW ON NCR 5.20

... in no way limits or affects the warranty provisions of the order

FOLLOW-UP A B

| NONCONFORMANCE REPORT (CONTINUATION SHEET) | Page 2 of 2 | Part No. | NCR No. B06110 |
|---|---|---|---|

IDENTIFY EACH CONTINUATION BY THE BLOCK NUMBER FROM THE FIRST PAGE

8A. DISPOSITION JUSTIFICATION AND INSTRUCTIONS

Samples 3AP891-1 and 3A891-2 will be accepted because the custody seals were over the locking pins. The seals would have to be broken to open the sample pig. Sample 3AP891-3 is rejected because the seal was place flat on top of the pig. A new sample will be taken for analysis.

Sample 3AP891-3 shall be disposed of by laboratory personnel in accordance with their approved procedures. Upon disposal, laboratory personnel shall notify Quality Assurance via DSI that the action has been completed for NCR closure.

6. CORRECTIVE ACTION TO ELIMINATE CAUSE

Have supervision verify that each worker is capable of applying custody seals through demonstration. T.W. 11/26/91

TFL 1-12-92
~~5.20~~
5.21

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

COPY

~~R0119~~ R933 **LABORATORY ID**

| Date Sampled | Time Sampled |
|---|---|
| 9-19-91 | 0500 |

| Sample Site or Sampling ID | Date Received at 222-S | Time Received at 222-S |
|---|---|---|
| 3AP891-1 103-AP | 9-21-91 | 0610 |

| Delivered by (Signature) | RPT Release (Signature) | Dose Rate |
|---|---|---|
| John J Vrac | [signature] | <0.5 |

| Custodian (Signature) | Date Analysis Complete | Disposal Date |
|---|---|---|
| Raymond Akita | | |

Comments
R-SER #1 SEAL # R003 C of C

| Payroll No. | Tech/Receiver (Signature) | Date | Entry Code | Comments |
|---|---|---|---|---|
| 9/22/91 | Sample seal not on properly | | | |
| | Debbie Bejrenius put an NCR | | | |
| | on sample. Sample integrity | | | |
| | could have been violated. Paul | | | |
| | Haigh notified | | | |
| 11.1.91 | Paul Haigh examined seal | | | |
| 11.5.91 | QA. lifted NCR - will accept | | | |
| | sample as is - | | | |
| | | | | |
| | Sample is Archived in room 2B 4/21/92 | | | |
| | | | | |
| | | | | |
| | | | | TFZ 9-12-92 |
| | | | | ~~5.21~~ |

BD-6000-347 (10/89)

5.22

SAMPLE CHECK IN LIST

Date/Time Received 9/21/91 0610 Sample ID 3AP891-1

Project TK 103AP Client 241 Tank farm

Shipping Container ID# TF-6 Shipping # R0119

1. Condition of Shipping container? Good
2. Custody Seals on container intact? Yes [ ] No [X]
3. Custody Seals dated and signed? Yes [X] No [ ]
4. Custody Seals ID # 3003
5. Condition of Samples: _____ in good condition
   _____ broken
   _____ leaking
6. Samples have: _____ custody seals
   _____ appropriate sample labels
7. The following paperwork should be accounted for (N/A if not applicable):
   Chain of Custody #(s) Yes
   Request for Special Analysis #(s) no
8. Have any anomalies been identified? Yes [X] No [ ]
9. Memos have been initiated for all anomalies identified? Yes [ ]

Printed Name VIDA JOHANSEN

Signature Vida Johansen

Date/Time 10/2/91 0800

Please send copy to Office of Sample Management Data Administrator, T6-08

9/23/91 Custody seal not attached properly: to 'PIG' making the sample integrity questionable Paul Haigh was notified and an NCR generated by Debbie Bisenius

TPZ 9-12-92 ~~5.22~~

10/2/91 C.C. mail sent to Debbie Bisenius

11-5-91 - telephone mess: Paul Haigh: ~~Slump~~ VJ accept sample for analysis

5.23

9 3 1 2 1 3 2 2 0 2

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# SINGLE SHELL TANK PROJECT
## Analytical Detection Limits
## October 12, 1990

The following detection limits are derived on ideal matrices. These values were derived by using either calibration standards or pure matrix standards. Detection limits on actual single shell tank samples are likely to be much higher. No information regarding procedure detection limits is available for procedures not listed in this report.

**Procedure** LA-355-131
Arsenic Analysis by Hydride Generation Atomic Absorption

Detection Limit = 0.005 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.

**Procedure** LA-325-102
Mercury Analysis by Atomic Absorption Manual Cold Vapor Technique

Detection Limit = 0.002 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.
Solids were analyzed directly.

**Procedure** LA-362-131
Selenium Analysis by Hydride Generation Atomic Absorption

Detection Limit = 0.005 ppm in solution
Typical sample dilution for the Fusion Dissolution was 0.0025g/mL.
Typical sample dilution for the Water Digestion was 0.010g/mL.
Typical sample dilution for the acid Digestion was 0.010g/mL.

**Procedure** LA-533-105
Anion Analysis on Dionex Model 40001

Typical sample dilution was 0.000099g/mL

Fluoride
Detection Limit in solution = 0.09 ppm.

Chloride
Detection Limit in solution = 0.04 ppm.

Nitrate
Detection Limit in solution = 0.24 ppm.

Phosphate
Detection Limit in solution = 0.13 ppm.

Sulfate
Detection Limit in solution = 0.13 ppm.

**Procedure** LA-622-102
Determination of Carbonate in Solutions by Coulometry

Detection Limit = 5 ppm in solution
Typical sample dilution was 0.01g/mL

**Procedure** LA-344-105
Total Organic Carbon
Determination of Carbon Insolation by Combustion and Coulometry

Detection Limit = 5.5 ppm in solution
Typical sample dilution was 0.01 g/mL

**Procedure** LA-695-101
Cyanide = 0.1 ppm CN in solution
Spectrophotometric Determination of Cyanide

**Procedure** LA-634-102
Ammonia = 0.1 ppm $NH_4^+$ in solution
Ammonia by Kjeldahl

**Procedure** LA-645-001
Nitrite = 0.184 ppm $NO_2$ in solution
Spectrophotometric Determination of Nitrite

**Procedure** LA-265-101
Chromium VI = 0.1004 ppm $Cr^{6+}$ in solution
Spectrophotometric Determination of Hexavalent Chromium

**Procedure: LA-505-151 (Nominal Detection Limits)**

Inductively Coupled Plasma (ICP) Emission Spectrometer Operations and Analysis.

Typical sample dilution for the Fusion Dissolution was 0.00019 g/mL.

Typical sample dilution for the Water Digestion was 0.000476 g/mL.

Typical sample dilution for the Acid Digestion was 0.000476 g/mL

Instrument Detection Limit ppm.

| | | | |
|---|---|---|---|
| Aluminum | 0.0745 | Antimony | 0.1424 |
| Arsenic | 0.0223 | Barium | 0.0026 |
| Beryllium | 0.0006 | Bismuth | 0.0839 |
| Boron | 0.0083 | Cadmium | 0.0039 |
| Calcium | 0.0002 | Cerium | 0.1359 |
| Chromium | 0.0039 | Cobalt | 0.0246 |
| Copper | 0.0158 | Europium | 0.0024 |
| Iron | 0.0073 | Lanthanum | 0.0141 |
| Lead | 0.0273 | Lithium | 0.0032 |
| Magnesium | 0.0001 | Manganese | 0.0011 |
| Mercury | 0.0036 | Molybdenum | 0.0049 |
| Neodymium | 0.2130 | Nickel | 0.0147 |
| Phosphorous | 0.0308 | Potassium | 0.2122 |
| Samarium | 0.1525 | Selenium | 0.0631 |
| Silicon | 0.0314 | Silver | 0.0183 |
| Sodium | 0.0483 | Strontium | 0.0010 |
| Sulfur | 0.0163 | Tantalum | 0.0273 |
| Thallium | 0.0646 | Thorium | 0.0122 |
| Tin | 0.0144 | Titanium | 0.0035 |
| Tungsten | 0.0273 | Uranium | 1.1405 |
| Vanadium | 0.0186 | Zinc | 0.0017 |
| Zirconium | 0.0141 | | |

# SAMPLING AND CUSTODY DATA

9 3 1 2 1 1 3 1 2 0 7

# TANK FARM PLANT OPERATING PROCEDURE

## CHAIN OF CUSTODY

| | | | |
|---|---|---|---|
| Company Contact | Paul Haigh | Telephone | 373-4655 |
| Bill of Lading No. | N/A | Offsite Property No. | N/A |
| Method of Shipment | B-Plant Sample Truck | | |
| Shipped to | 222-S Lab | | |

### SAMPLING INFORMATION

| | | | | | |
|---|---|---|---|---|---|
| Sample Collected by | KEVIN GEORGE | Date | 9-24-91 | Time | 0600 |
| Sample Locations | TK 103-AP, Riser #27 | | Custody Seal # | 3007 | |
| Remarks | ~~Seal #3007~~ VJ | | | | |
| Ice Chest or Sample Pig No. | B-23 | Field Logbook and Page No. | N/A | | |

SUPERVISION REVIEW: DJ Sauerenz DATE: 9/26/91

### SAMPLE IDENTIFICATION

| Sample Number | Sample Schedule Number |
|---|---|
| 3AP891-5 | 242-A Statement of Work WHC-SOW-91-0002 |
| R0123 (R937) | |

### CHAIN OF POSSESSION

| | | |
|---|---|---|
| Relinquished by: R Addl | Received by: [signature] | Date/Time: 9-26-91 1340 |
| Relinquished by: [signature] | Received by: Vida Johansen | Date/Time: 9-26-91 1500 |
| Relinquished by: | Received by: | Date/Time: |
| Relinquished by: | Received by: | Date/Time: |

| Document No. | Rev/Mod | Page |
|---|---|---|
| TO-080-030 | C-3 | 16 |

8

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

**SAMPLE CHECK IN LIST**

Date/Time Received 9/26/91 1340 Sample ID 3AP 891-5

Project TK 103AP Client 241 TANK FARMS

Shipping Container ID# B-23 Shipping # R0123

1. Condition of Shipping container? Good
2. Custody Seals on container intact? Yes [X] No [ ]
3. Custody Seals dated and signed? Yes [X] No [ ]
4. Custody Seals ID # 3007
5. Condition of Samples: OK in good condition
   ____ broken
   ____ leaking
6. Samples have: NO custody seals
   N/A appropriate sample labels
7. The following paperwork should be accounted for (N/A if not applicable):
   Chain of Custody #(s) yes
   Request for Special Analysis #(s) no
8. Have any anomalies been identified? Yes [ ] No [X]
9. Memos have been initiated for all anomalies identified? Yes [ ]

Printed Name VIDA JOHANSEN

Signature Vida Johansen

Date/Time 10/2/91 0800

Please send copy to Office of Sample Management Data Administrator, T6-08

COPY

~~R0123~~ R937 **LABORATORY ID**

| Date Sampled | Time Sampled |
|---|---|
| | |

| Sample Site or Sampling ID | Date Received at 222-S | Time Received at 222-S |
|---|---|---|
| 103-Ap891-5 | 9/26/91 | 1500 |

| Delivered by (Signature) | RPT Release (Signature) | Dose Rate |
|---|---|---|
| M W Hulsey | [signature] | <.5 Exterior |

| Custodian (Signature) | Date Analysis Complete | Disposal Date |
|---|---|---|
| Vida Johanse | | |

Comments: Seal #3007 C of C

| Payroll No. | Tech/Receiver (Signature) | Date | Entry Code | Comments |
|---|---|---|---|---|
| | Sample archived to Room 2B - 4/21/92 | | | |
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10

BD-6000-347 (10/89)

COPY



# SAMPLE IN/OUT LOG

| DATE | TIME OUT | TIME IN | UNIT # | SAMPLE ID. | TECHNOLOGIST SIGNATURE | PAYROLL NUMBER |
|---|---|---|---|---|---|---|
| 1-9-92 | 0015 | 0045 | 7 | R941-744 R765, R766, R783 | Jerry M. Kunkel | 80518 |
| 1-9-92 | 0045 | 0100 | 20 | R1049 | Jerry M. Kunkel | 80518 |
| 1-9-92 | 0730 | 0800 | 20 | R-1021 | [illegible] | 80027 |
| 1-9-92 | 8:10 | 9:00 | Ref. #4 | R902-906, R959-967 | David R. Jackson | 6C275 |
| 1-9-92 | 8:15 | 9:00 | 25 92 | B6408, 6444, 6481 | David R. Jackson | 6C275 |
| 1-9-92 | 830 | 1400 | 20 | R1043, 46, 49, 52 | M. Francy | 6C269 |
| 1-9-92 | 11:20 | 11:25 | Ref. 4 | R959, R965 DRJ 8-24-92 | David R. Jackson | 6C275 |
| 1-9-92 | 12:15 | 1330 | 40 | 699 754 | S. B. Kunkler | 60368 |
| 1-9-92 | 1340 | 1415 | 40 | 701 696 | S. B. Kunkler | 60368 |
| 1-9-92 | 13:50 | 14:05 | Ref #4 | R959, R965 | David R. Jackson | 6C275 |
| 1-9-92 | 1415 | 1500 | 40 | 712 767 667 759 | S. B. Kunkler | 60368 |
| 1-9-92 | 17:50 | 18:35 | shelf | S-1075/1076 | Sandra L. Hood | 82372 |
| 1-9-92 | 11:10 | 14:30 | shelf | R1055 (1285) | Sue Lai | 6C916 |
| 1-10-92 | 0130 | 0200 | | R937 R941-745 | Melanie Hyer | 6C823 |
| 1-10-92 | 16:30 | 16:45 | shelf | U4593/4591 | Sandra L. Hood | 82372 |
| 1-12-92 | 02:30 | 06:55 | frig #6 | S-1048, 1049 | Valerie L. Massie | 82016 |
| 1-13-92 | 00:30 | 05:30 | #6 frig | S-1048, 1049 | Valerie L. Massie | 82016 |
| 1-13-92 | 0715 | 0720 | 40 | J-11 J164 | S. B. Kunkler | 60368 |
| 1-13-92 | 0720 | 0750 | 40 | 701 696 | S. B. Kunkler | 60368 |
| 1-13-92 | 0750 | 0930 | 40 | 697 698 | S. B. Kunkler | 60368 |
| DRJ 1-24-92 1-13-92 | 8:00 | 8:20 | Frig. 4 | R902, 903, 904, R959, 960, 961 | David R. Jackson | 6C275 |
| 1-13-92 | 8:50 | 8:20 | Frig. 4 | DRJ 8-24-92 R965-67 | David R. Jackson | 6C275 |
| 1-13-92 | 8:20 | 8:30 | 25 | B6408, 6444 B6481 | David R. Jackson | DRJ 8-24-92 6C275 |
| 1-13-92 | 10:30 | 15:00 | 18 | 941-945 | Sue Lai | 6C916 |
| 1/13/92 | 10:00 | 13:30 | 32 | 51XC0110-51XC030 31XC0110 31XC030 | [illegible] | 6B090 |
| 1/13-92 | 11:20 | 11:25 | Frig 5 | R959, R965 | David R. Jackson | 6C275 |
| 1-13-92 | 1300 | 1400 | 20 | R1067 | Melanie Hyer | 6C823 |
| 1-14-92 | 02:45 | 06:15 | #6 frig | R-1042-1052 | Valerie L. Massie | 82016 |
| 1-14-92 | 0800 | 0820 | Frig 6 | R1042-1052 | Melanie Hyer | 6C823 |
| DRJ 8-26-92 1-14-92 | 0900 | 1100 | 20 | R1070, 1086 | Mary Francy | 6C269 |
| 1-14-92 | 0850 | 0940 | 23 | R423 R424 R425 R426 | John Smith | 65286 |

10 or WHC-SD-WM-DP-025
ADDENDUM 9 REV 0 SAMPLE LOG IN/OUT

storage unit #___
date_____to_____

Refrigerator

Sample Group
_____

COPY

| SAMPLE IN/OUT | SAMPLE DATE | SAMPLE TIME | SAMPLE ID | TECHNICIAN SIGNATURE | PAYROLL NUMBER | CUSTODIAN SIGNATURE |
|---|---|---|---|---|---|---|
| ✓ | 12/16/91 | 1050 | CEL-5.1a-F-60 | E.V. Allerson | 82712 | Vida Johansen |
| ✓ | 12/16/91 | 1052 | CEL-3.1a-F-20 | E.V. Allerson | 82712 | Vida Johansen |
| ✓ | 12/16/91 | 1053 | CEL-6.5a-F-60 | E.V. Allerson | 82712 | Vida Johansen |
| ✓ | 12/16/91 | 1055 | CEL-6.5a-E-4 | E.V. Allerson | 82712 | Vida Johansen |
| ✓ | 12/16/91 | 1059 | RYCE-TANK R927 | E.V. Allerson | 82712 | Vida Johansen |
| ✓ | 12/26/91 | 11:30 | ~~[illegible]~~ | Sue C Lai | 6C916 | Vida Johansen |
| ✓ | 12/26/91 | 14:05 | R933, R941 | Sue C Lai | 6C916 | Vida Johansen |
| ✓ | 12/26/91 | 10:50 | L991 | Todd McCabe | 81805 | Vida Johansen |
| ✓ | 12/26/91 | 1310 | L991 | Todd McCabe | 81805 | Vida Johansen |
| ✓ | 12-30-91 | 1340 | R994, 995, 996, 997, 998, 999 | S.L. Cobb | 82583 | Wrong book |
| ✓ | 12-31-91 | 1530 | 902, 3, 4, 6 | H. Sollnick | 82020 | |
| ✓ | 1-2-92 | 8:20 | 933, 934, 935, 116, 937 | David R. Jaker | 6C275 | Vida Johansen |
| ✓ | 1-2-92 | 8:20 | 941, 942, 943, 944, 945 | David R. Jaker | 6C275 | Vida Johansen |
| ✓ | 1-2-92 | 10:55 | 933 | DE Nelson | 62059 | V. Johansen |
| | 1-2-92 | 14:20 | R933 | DE Nelson | 62059 | V. Johansen |
| ✓ | 1-2-92 | 14:25 | R934, R935 | DE Nelson | 62059 | V. Johansen |
| ✓ | 1-2-92 | 1917 | R934, R935 | DE Nelson | 62059 | V. Johansen |
| | ~~1-3-92~~ | ~~0745~~ | ~~R902-4, 6, R959-61, R965-4~~ | ~~Liliana Hagen~~ | ~~6C023~~ | VS |
| ✓ | 1-7-92 | 1005 | R936, R937 | DE Nelson | 62059 | V. Johansen |
| ✓ | 1-7-92 | 1433 | R936, R937 | E.V. Allerson | 82712 | V. Johansen |
| ✓ | 1-7-92 | 1434 | R941, R942 | E.V. Allerson | 82712 | V. Johansen |
| ✓ | 1-7-92 | 1710 | R941 | E.V. Allerson | 82712 | V. Johansen |
| ✓ | 1-7-92 | 1712 | R943 | E.V. Allerson | 82712 | V. Johansen |
| ✓ | 1-7-92 | 1901 | R943 R942 | E.V. Allerson | 82712 | V. Johansen |
| | ~~1-8-92~~ | ~~0730~~ | ~~R959, 960, 961~~ | ~~[illegible]~~ | ~~[illegible]~~ | VS |
| ✓ | 1-8-92 | 1311 | R944, R945 | E.V. Allerson | 82712 | Vida Johansen |
| ✓ | 1-8-92 | 1601 | R944, R945 | E.V. Allerson | 82712 | Vida Johansen |
| ✓ | 1-29-92 | 1036 | R1121, R1122, R1125 | RE Shoda | 81524 | Vida Johansen |
| ✓ | 1-29-92 | 1055 | R1121, 1125, 1122 | RE Shoda | 81524 | Vida Johansen |
| ✓ | 1/30/92 | 0715 | R1121, 1125, 1122 | D.J. Ottman | 82768 | Vida Johansen |
| ✓ | 1/30/92 | 0910 | R1121, 1125, 1122 | D.J. Ottman | 82768 | Vida Johansen |

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

**SAMPLE LOG IN/OUT**
storage unit #
date 3/9/92 to 4-1-92

Sample Group
Refrigerator 60 Shim

| SAMPLE IN | SAMPLE OUT | DATE | TIME | SAMPLE ID | TECHNICIAN SIGNATURE | PAYROLL NUMBER | CUSTODIAN SIGNATURE |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | 3/09/92 | 1330 | R9593 | R. J. Ray | 82627 | [illegible] |
| | ✓ | 3/09/92 | 1330 | R9591 | R. J. Ray | 82627 | [illegible] |
| ✓ | | 3/09/92 | 1630 | R9591 | R. J. Ray | 82627 | [illegible] |
| ✓ | | 3/09/92 | 1630 | R9597 | R. J. Ray | 82627 | [illegible] |
| ✓ | | 3-10-92 | 16:50 | MB-87-A | Mark A. Beck | 82628 | [illegible] |
| ✓ | | 3-10-92 | 16:50 | MB-87-B MB-87-C | Mark A. Beck | 82628 | [illegible] |
| ✓ | | 3-23-92 | 1031 | R1226 - R1227 R330 | R. J. RAY | 82627 | [illegible] |
| ✓ | | 3/23/92 | 1440 | R330 R1226, R1227 | R. J. Ray | 82627 | Vida Johansen |
| | ✓ | 3/24/92 | 820 | R933 - 937 R941 - 945 | T. H. Bellus | 82703 | Reyl |
| ✓ | | 3/24/92 | 1025 | R933 - 937 R941 - 945 | T. H. Bellus | 82703 | Reyl |
| | ✓ | 3/26/92 | 855 | R1344 R1349 R1346 R1350 | Keith Fuller | 67528 | Vida Johansen |
| | ✓ | 3/26/92 | 855 | R1351 R1352 | RKF | 67528 | Vida Johansen |
| | ✓ | 3/26/92 | 0855 | R1355 R1356 | RKF | 67528 | Vida Johansen |
| | ✓ | 3/26/92 | 0855 | R1360-61 R1365-66 | RKF | 67528 | Vida Johansen |
| | ✓ | 3/26/92 | 0855 | R1370-71 R1375-76 | RKF | 67528 | Vida Johansen |
| | ✓ | 3/26/92 | 0855 | R1380-81 | RKF | 67528 | Vida Johansen |
| ✓ | | 3/26/92 | 1430 | R1344 R1349 R1346 R1350 | Keith Fuller | 67528 | Reyl |
| ✓ | | 3/26/92 | 1430 | R1351-52 R1355-56 | Keith Fuller | 67528 | Reyl |
| ✓ | | 3/26/92 | 1430 | R1360-61 R1365-66 R1370-71 | Keith Fuller | 67528 | Reyl |
| ✓ | | 3/26/92 | 1430 | R1375-76 R1380-81 | Keith Fuller | 67528 | Reyl |
| | ✓ | 3/30/92 | 1300 | R933-937 R941-945 | T. H. Bellus | 82703 | Reyl |
| ✓ | | 3/30 | 1435 | R933-937 R941-945 | T. H. Bellus | 82703 | Vida Johansen |
| | ✓ | 3-31-92 | 0945 | R1344 R1349 R1346 R1350 | Keith Fuller | 67528 | Vida Johansen |
| | ✓ | 3-31-92 | 0945 | R1351-52 R1355-56 | Keith Fuller | 67528 | Vida Johansen |
| | ✓ | 3-31-92 | 0945 | R1360-61 R1365-66 R1370-71 | Keith Fuller | 67528 | Vida Johansen |
| | ✓ | 3-31-92 | 0945 | R1375-76 R1380-81 | Keith Fuller | 67528 | Vida Johansen |
| ✓ | | 3-31-92 | 1125 | R1344 R1349 R1346 R1350 | Keith Fuller | 67528 | Vida Johansen |
| ✓ | | 3-31-92 | 1125 | R1351-52 R1355-56 | Keith Fuller | 67528 | Vida Johansen |
| ✓ | | 3-31-92 | 1125 | R1360-61 R1365-66 R1370-71 | Keith Fuller | 67528 | Vida Johansen |
| ✓ | | 3-31-92 | 1125 | R1375-76 R1380-81 | Keith Fuller | 67528 | Vida Johansen |
| | ✓ | 4-1-92 | 1003 | R1380-81 | Keith Fuller | 67528 | [illegible] |
| ✓ | | 4-1-92 | 1427 | R1380 81 | Keith Fuller | 67528 | Vida Johansen |

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

SAMPLE LOG IN/OUT
storage unit #___
date 4-1-92 to 4.2.92

Ref. 1 thru 3 Sample Group

| SAMPLE IN/OUT | SAMPLE DATE | SAMPLE TIME | SAMPLE ID | TECHNICIAN SIGNATURE | PAYROLL NUMBER | CUSTODIAN SIGNATURE |
|---|---|---|---|---|---|---|
| ✓ | 4/1/92 | 1325 | R 943 | Robert Ray | 82627 | [illegible] |
| ✓ | 4/1/92 | 1325 | R 944 | Robert Ray | 82627 | [illegible] |
| ✓ | 4/1/92 | 1325 | R 945 | Robert Ray | 82627 | [illegible] |
| ✓ | 4/1/92 | 1325 | R933 | Robert Ray | 82627 | [illegible] |
| ✓ | 4/1/92 | 1325 | R934 | Robert Ray | 82627 | [illegible] |
| ✓ | 4/1/92 | 1325 | R935 | Robert Ray | 82627 | [illegible] |
| ✓ | 4/1/92 | 1325 | R936 | Robert Ray | 82627 | [illegible] |
| ✓ | 4/1/92 | 1325 | R937 | Robert Ray | 82627 | [illegible] |
| ✓ | 4/1/92 | 1325 | R941 | Robert Ray | 82627 | [illegible] |
| ✓ | 4/1/92 | 1325 | R942 | Robert Ray | 82627 | [illegible] |
| ✓ | 4/1/92 | 1655 | R943 R944 | Robert Ray | 82627 | R Akita |
| ✓ | 4/1/92 | 1655 | R945 R933 | Robert Ray | 82627 | R Akita |
| ✓ | 4/1/92 | 1655 | R934 R935 | Robert Ray | 82627 | R Akita |
| ✓ | 4/1/92 | 1655 | R936 R937 | Robert Ray | 82627 | R Akita |
| ✓ | 4/1/92 | 1655 | R941 R942 | Robert Ray | 82627 | R Akita |
| ✓ | 4/2/92 | 0900 | R1291 R1292 | Robert Ray | 82627 | Vida Johansen |
| ✓ | 4/2/92 | 0900 | R1293 R1294 | Robert Ray | 82627 | Vida Johansen |
| ✓ | 4/2/92 | 0900 | R1295 R1296 | Robert Ray | 82627 | Vida Johansen |
| ✓ | 4/2/92 | 0900 | R1287 R1288 | Robert Ray | 82627 | Vida Johansen |
| ✓ | 4/2/92 | 0900 | R1285 R1286 | Robert Ray | 82627 | Vida Johansen |
| ✓ | 4/2/92 | 0900 | R1289 R1290 | Robert Ray | 82627 | Vida Johansen |
| ✓ | 4/2/92 | 1020 | R1380-81 | Keith Fuller | 67528 | RE [illegible] |
| ✓ | 4/2/92 | 1040 | R1291 R1292 | Robert Ray | 82627 | RE [illegible] |
| ✓ | 4/2/92 | 1040 | R1293 R1294 | Robert Ray | 82627 | RE [illegible] |
| ✓ | 4/2/92 | 1040 | R1295 R1296 | Robert Ray | 82627 | RE [illegible] |
| ✓ | 4/2/92 | 1040 | R1287 R1288 | Robert Ray | 82627 | RE [illegible] |
| ✓ | 4/2/92 | 1040 | R1285 R1286 | Robert Ray | 82627 | RE [illegible] |
| ✓ | 4/2/92 | 1040 | R1289 R1290 | Robert Ray | 82627 | RE [illegible] |
| ✓ | 4-2-92 | 1250 | R1380-81 | Keith Fuller | 67528 | RE [illegible] |
| ✓ | 4-2-92 | 1327 | R1375-76 R1380-81 | R E Sheda | 81524 | RE [illegible] |
| ✓ | 4-2-92 | 1337 | R1375-76 R1380-81 | R E Sheda | 81524 | RE [illegible] |

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COPY

# SAMPLE IN/OUT LOG

| DATE | TIME OUT | TIME IN | UNIT # | SAMPLE ID. | TECHNOLOGIST SIGNATURE | PAYROLL NUMBER |
|---|---|---|---|---|---|---|
| 12-28-91 | 10:00 | 1120 | 7 | R753, 754 | Valerie L Massai | 82016 |
| 1-28-92 | 1000 | 1030 | 24 | R-985 | Ed Cole | 80028 |
| 1-28-92 | 1030 | 1230 | COLO | R-785 | Ed Cole | 80028 |
| 1-28-92 | 1300 | | | 12-13 | [illegible] | 68823 |
| 1/28/92 | 1620 | 2000 | 35 | J183-89 Direct | Teresa L Stagier | 67768 |
| 1-28-92 | 1640 | 2000 | 18 | R941, R942, R943 R944, R945 | Linda Conlin | 6C949 |
| 1-28-92 | 1640 | 2315 | 17 | N-8, N-9, N-10 | [illegible] | 82577 |
| 1-28-92 | 1640 | 2000 | 18 | R-941, R-942, R-943 R-944 R-945 | Jeff Sobrak | 82020 |
| 1-29-92 | 1635 | 2245 | 17 | N-16, N-17, N-18 | [illegible] | 82577 |
| 1-30-92 | 0730 | 0830 | 24 | R-933-934 | Ed Cole | 80028 |
| 1-30-92 | 0730 | 0830 | 18 | R-935-937 | Ed Cole | 80028 |
| 1-30-92 | 13:30 | 13:50 | Ref. #5 | R1141 PR 5 1-24-92 | [illegible] | 6C275 |
| 1-30-92 | 1:30 | 10:20 | 54 | R-1152 | [illegible] | 6C483 |
| 1-30-92 | 1425 | | 35 | J230-242 | Teresa L Stagier | 67768 |
| 1-30-92 | 1425 | | 35 | J223-229 | Teresa L Stagier | 67768 |
| 1-30-92 | 08:15 | 14:10 | 18 | R944, R945 | [illegible] | 6C916 |
| 2-1-92 | 0045 | 0230 | Frig 5 | R1141 | Jerry M. Kunkel | 80518 |
| 2-1-92 | 18:35 | 22:30 | 28 | T8895 | Valerie L Massai | 82016 |
| 2-3-92 | 0730 | 0800 | 18 | R-941-945 | Ed Cole | 80028 |
| 2-3-92 | 0745 | 0750 | 28 | T8852 Fus 2 T8869 Fus | [illegible] | 64865 |
| 2-3-92 | 0745 | 1400 | Frig 5 | R1141 | [illegible] | 68823 |
| 2-3-92 | 08:05 | 15:00 | [illegible] | R423, 424, 425 | [illegible] | 6C916 |
| 2/3/92 | 1310 | 1335 | 40 | J84, J245 | Teresa L Stagier | 67768 |
| 2/3/92 | 1350 | 1430 | 46 | R1141 | Teresa L Stagier | 67768 |
| 2-3-92 | 17:15 | 18:50 | 17 | N-61 | Valerie L Massai | 82016 |
| 2-3-92 | 18:50 | 21:15 | 17 | N-62 | Valerie L Massai | 82016 |
| 2-3-92 | 21:15 | 23:00 | 17 | N-63 | Valerie L Massai | 82016 |
| 2-4-92 | 0800 | 1308 | 17 | N-28+29 | [illegible] | 68823 |
| 2-4-92 | 08:40 | 14:30 | 17 | N 35, 40, 41, 44 | [illegible] | 6C916 |
| 2-4-92 | 10:00 | 10:40 | 40 | S163-S158 | [illegible] | 60368 |
| 2/04/92 | 10:15 | 13:05 | 32 | 31XC0110 31XC0310 | [illegible] | 6B090 |

COPY



# SAMPLE IN/OUT LOG

| DATE | TIME OUT | TIME IN | UNIT # | SAMPLE ID. | TECHNOLOGIST SIGNATURE | PAYROLL NUMBER |
|---|---|---|---|---|---|---|
| 1-14-92 | | 1750 | 28 | T-8760 | [signature] | 82370 |
| 1-15-92 | 02:10 | 02:40 | 20 | R-1067 | Valerie L Massie | 82016 |
| 1-15-92 | 0730 | 1230 | COLD | R-607-610 R-994 | [signature] | 80028 |
| DH 8-24-92 | | | | | | |
| 1/15/92 | 08:00 | 13:10 | 32 | 51XC0110 51XC0310 | [signature] | 6B090 |
| 1/15/92 | 0800 | 0825 | 20 | R1080 R1067, R1076 | [signature] | 6C823 |
| 1/15/92 | 10:30 | 13:25 | 20 | R 1067 | Sue Lai | 6C916 |
| 1-15-92 | 1115 | 1135 | 30 | T 8852 | Jerry M. Kunkel | 80518 |
| 1-15-92 | 1140 | 1305 | 28 | T-8760 | [signature] | 82577 |
| 1-15-92 | 1230 | 1430 | 20 | DH 8-27-92 R 1023, 1064, 1083 | Mary Franz | 6C269 |
| 1-15-92 | 11:00 | 13:10 | 22 | R 1086 | Sue Lai | 6C916 |
| 1-15-92 | 13:10 | 13:20 | 16 | R 1070 | Sue Lai | 6C916 |
| 1-15-92 | 13:20 | 13:25 | 28 | T-8760 | [signature] | 82020 |
| 1/15/92 | 1400 | 1500 | 20 | T 1076 | [signature] | 6C559 |
| 1-15-92 | 1700 | 1900 | shelf | P 303 | Sandra L Hood | 82372 |
| 1-15-92 | 1700 | 1900 | shelf | B6508-15 | Sandra L Hood | 82372 |
| DH 8-27-92 1-15-92 | 17:35 | 17:40 | shelf | B6502 | Sandra L Hood | 82372 |
| 1-16-92 | 00:10 | | 28 | T 8852 | Valerie L Massie | 82016 |
| 1-16-92 | 10:15 | 13:30 | 22 | R 1085, 1086, 1049 | Sue Lai | 6C916 |
| 1-16-92 | 1000 | ALL SAMPLE USED | COLD | R-994 | [signature] | 80028 |
| 1-16-92 | 10:30 | 11:45 | Frig. DRS #5 8-29 | R959-961 R65-967 | [signature] | DRS 8-24-92 6C275 |
| 1-16-92 | 10:45 | 11:00 | 24 | R933-934 | [signature] | 6C275 |
| 1-16-92 | 10:45 | 11:00 | 18 | R935-931 DRS 8-24-92 | [signature] | 6C275 |
| 1/16/92 | 1045 | 1115 | 20 | R-1080 | [signature] | 6C559 |
| 1-16-92 | 1100 | 1105 | DH 8-27-92 28 | R8852 Fusion | [signature] | 64965 |
| 1-16-92 | 11:00 | 11:10 | 18 | R941-945 DRS 8-24-92 | [signature] | 6C275 |
| 1-16-92 | 11:10 | 11:25 | 29 | S676 | [signature] | 6C275 |
| 1-16-92 | 11:10 | 11:25 | 25 | DRS 8-24-92 B6126, B6157 B6210, B6233 | [signature] | 6C275 |
| 1-16-92 | 11:10 | 11:25 | 25 | B6408, B6444 B6481 | [signature] | 6C275 |
| 1-16-92 | 11:15 | 11:35 | 28 | B8852 | [signature] | 82577 |
| 1-16-92 | 1315 | 1330 | 30 | B8852 | Jerry M. Kunkel | 80518 |

J.K. 1-16-92

9312232216

COPY



# SAMPLE IN/OUT LOG

| DATE | TIME OUT | TIME IN | UNIT # | SAMPLE ID. | TECHNOLOGIST SIGNATURE | PAYROLL NUMBER |
|---|---|---|---|---|---|---|
| 1-2-92 | 08:10 | 11:00 | # 44 | J213 ~ J215 | Sue Lai | 6C916 |
| 1-2-92 | 08:15 | 1415 | Frig 5 | R904-906 R965-7967 | Melanie Myers | 6C823 |
| 1-2-92 | 0840 | 1415 | " | R959-7961 | Melanie Myers | 6C823 |
| ~~1-2-92~~ | ~~08:45~~ (SL) 8-24-92 | | | ~~R994 ~ R999~~ (SL) 8-28-92 | | |
| 1-2-92 | 08:45 | 15:00 | shelf | R994 ~ R999 | Sue Lai | 6C916 |
| 1-2-92 | 10:55 | 11:05 | shelf | S-988 | Sandra L Hood | 82372 |
| 1-2-92 | 13:30 | 15:05 | Shelf | U4552 U4553 | Teresa L Frazier | 67768 |
| 1-2-92 | 1330 | 15:05 | Shelf | 8-28-92 R1002-7 | Teresa L Frazier | 67768 |
| 1-2-92 | 13:30 | 15:05 | 25 | B6494, B6408 | Teresa L Frazier | 67768 |
| 1-3-92 | 0745 | 0900 | Frig 5 | R902 thru 906 957 thru 961 965 → 967 | Melanie Myers | 6C823 |
| 1-3-92 | 0744 | 0830 | COLD | R-1010-1012 | Ed Cohn | 80028 |
| 1-3-92 | 0800 | 0830 | 18 | R949 | S M Cutter | 64965 |
| 1-3-96 | 0900 | 1500 | Frig 5 | R959-7 61 | Melanie Myers | 6C823 |
| 1-3-96 | 0915 | 0940 | 14 | R551 | Melanie Myers | 6C823 |
| 1-3-92 | 15:30 | 22:10 | Fzioge 5 | R 861, 863, 870, 857 | A. Lee | 82580 |
| 01-03-92 | 1800 | 1815 | 18 | R949 | SL Cobb | 82583 |
| 1-3-92 | 18 30 | 22:10 | 18 | R949 | A. LEE | 82580 |
| 1-4-92 | 0010 | 0030 | 18 | R949 | Jerry M. Kunkel | 80518 |
| 1-4-92 | 0030 | 0615 | Shelf | R994-999 | Jerry M. Kunkel | 80518 |
| 1-4-92 | 0030 | 0130 | 19 | R941-945 | [illegible] | 81808 |
| 1-4-92 | 0245 | 0310 | 18 | R949 | Jeff Sollbach | 82020 |
| 1-4-92 | 1800 | 1830 | 18 | R949 | SL Cobb | 82583 |
| 01-04-92 | 1930 | 2045 | 24 | R935, 936, 937 | SL Cobb | 82583 |
| 01-04-92 | 1930 | 2045 | 18 | R934 | SL Cobb | 82583 |
| 1-5-92 | 0015 | 0645 | Refrig 5 | R 902-906 | Jerry M. Kunkel | 80518 |
| 1-05-92 | 0020 | 0125 | REFRIG 5 | R965-967 | [illegible] | 82577 |
| 01-05-92 | 0035 | 0335 | 35 | S-213, 14, 15 | Jeff Sollbach | 82020 |
| 1-5-92 | 16:30 | 18:40 | Refrig #5 | R959 8-28-92 | Valerie L Massie | 82016 |
| 1-5-92 | 18:40 | 19:15 | Refrig #5 | R-960, 961 | Valerie L Massie | 82016 |
| 1-6-92 | 0012 | 0020 | REFRIG #5 | R 1015 | [illegible] | 82577 |
| 1-6-92 | ~~0012~~ | 0600 | Refrig 5 | R965-967 | Jerry M. Kunkel | 80518 |

0215 J.K. 1-6-92

9 3 1 2 3 5 3 2 2 1 7

COPY



# SAMPLE IN/OUT LOG

| DATE | TIME OUT | TIME IN | UNIT # | SAMPLE ID. | TECHNOLOGIST SIGNATURE | PAYROLL NUMBER |
|---|---|---|---|---|---|---|
| 1-6-91 | 0800 | 11:20 | 18 | R941-945 | [illegible] | 65731 |
| 1-6-91 | 0800 | 1430 | 25 | B6481 | Sandra L Hood | 82372 |
| 1-6-91 | 0800 | 1400 | Cold | R994-999 | Mary Tracy | 6C269 |
| 1-6-92 | 0800 | 1030 | 5 | R-902-906 | Ed Cohen | 80028 |
| 1/6/92 | 0850 | 1300 | 24/18 | 2M 8.27.92 R933 → 937 | [illegible] | 81805 |
| 1/6/92 | 10:00 | 11:00 | 20 | R551 | Sue Lai | 6C916 |
| 1/6/92 | 11:46 | 12:00 | 18 | R941-945 | Dai D R. [illegible] | 60775 |
| 1/6/92 | 1445 | 1450 | 18 | R947 | S A Catlow | 64965 |
| 01-06-92 | 1630 | 1700 | 5 | R960,961 | SL Cobb | 82583 |
| 01-06-92 | 1830 | 20:30 | 5 | R1015 | SL Cobb | 82583 |
| 1-6-92 | 2000 | 20:10 | 25 | B6481 | Valerie L Massie | 82016 |
| 01-06-92 | 18:00 | 22:45 | FRIDGE 5 | R-959-967 | [illegible] | 82580 |
| 01-07-92 | 0100 | 0415 | FRIDGE #2 | R-941-5 | [illegible] | 82577 |
| 1-7-92 | 0820 | 1030 | 47 3M 8.27.92 | R-929 | S. B. Kunkler | 60368 |
| 1-7-92 | 0830 | 1430 | 24/48 | R933 → R937 | [illegible] | 81805 |
| 1-7-92 | 1030 | 1400 | 40 | 54-786 + 55 651 | S. B. Kunkler | 60368 |
| 1-7-92 | 14:30 | 14:50 | 20 | R551 | Sue Lai | 6C916 |
| 1-8-92 | 0008 | 0032 | 18 | R949 | [illegible] | 81808 |
| 1-8-92 | 0015 | 0030 | 7 | R783 | Jerry M. Kunkel | 80518 |
| 1-8-92 | 0015 | 0030 | 28 J.X. 1-8-92 | T8526, T8579 | Jerry M. Kunkel | 80518 |
| 1-8-92 | 0015 | 0030 | Refrig 5 | R1015 | Jerry M. Kunkel | 80518 |
| 1-8-92 | 0030 | 0230 | 18 | R-941 | Jeff Sollrack | 81020 |
| 1-8-92 | 0730 | 0930 | 5 | R-1021 | Ed Cohen | 80027 |
| 1-8-92 | 0730 | 1030 | 5 | R959,60,61 | [illegible] | 65731 |
| 1-8-92 | 0830 | 0900 | 24/48 | R933 → 37 | Lulanne Myers | 6C823 |
| 1-8-92 | 0845 | 0850 | 18 | R-949 | [illegible] | 81805 |
| 1-8-92 | 0900 | 11:00 | 24/18 | R933 → 37 | Sue Lai | 6C916 |
| 1-8-92 | 0900 | 0915 | 28 2M 8.27.92 | R941 → 47 | Lulanne Myers | 6C823 |
| 1-8-92 | 1100 | 1210 | 18 | R943 → 44 | Lulanne Myers | 6C823 |
| ~~1-8-92~~ | ~~0900~~ | ~~11:00~~ | ~~24/18~~ | ~~R933 → 937~~ | (VS) 8.24.92 | |
| 1-8-92 | 1315 | 1510 | 40 | 786-651 | S. B. Kunkler | 60368 |

# REQUEST FOR SPECIAL ANALYSIS (RSA)

| | | | |
|---|---|---|---|
| (1) Sample Point: CD-A 54 Set No. 2 | (2) Date/Time Issued: | (3) Date/Time Required: 11-26-91 | (4) Charge Code: |
| | | | (5) Work Package: INIA16ØLØ1 |
| (6) Number of Samples: 10 — Dose Rate mRad/Hr | (7) Customer I.D.: 3AP891-1, 3AP891-2, ~~3AP891-3~~ 3AP891-4, 3AP891-5, 3AP891-6, 3AP891-7, 3AP891-8, 3AP891-9, 3AP891-10 (3AP1191-1) | (8) Laboratory I.D.: | (9) Requester Name/Phone: P.G. Haigh 3-4655 |
| (10) Release: RPT | | | (11) Volume of Sample: 100 mL |

| (12) Determination | (13) Expected Range | (14) Minimum Detection Level | (15) Method |
|---|---|---|---|
| Silver (Ag) | | 5 mg/L | |
| Aluminum (Al) | | 50 mg/L | |
| Barium (Ba) | | 2 mg/L | |
| Cadmium (Cd) | | 1 mg/L | |
| Chromium (Cr) | | 5 mg/L | |
| Iron (Fe) | | 10 mg/L | |
| Magnesium (Mg) | | 1 mg/L | |
| Manganese (Mn) | | 2 mg/L | |
| Sodium (Na) | | 60 mg/L | |
| Lead (Pb) | | 5 mg/L | |
| Zinc (Zn) | | 2 mg/L | |
| Total Inorganic Carbon | | 5000 mg/L | |

(16) Matrix (Other Metals or Anions Present)
Liquid mixed waste, Radioactive contamination; natural, activation products and reactor fission products. Possible detectable halogenated and non-halogenated organic compounds. Hydroxide - pH = 12.5 or greater. Anions - sodium salts of nitrate, nitrite, phosphate, carbonate and sulfate. Metals - calcium and potassium salts, lead, chromium, cadmium.

(17) Radioactivity Level (Actual ☐ Estimated ☐)
Total Alpha _____ µ Ci/L
Total Beta _____ µ Ci/L
Total Gamma _____ µ Ci/L

(18) Additional Information (Measurement Uncertainty or Other Pertinent Information) ±25% Precision + Accuracy

(20) Samples Received

Received Date: | By: | From: | Date: | Time:

Total Number of Samples Received

(21) Distribution of Final Results/Sample Disposal Instructions
Minimum storage time - until April, 1992. Customer will direct OSM re: sample disposal.

# REQUEST FOR SPECIAL ANALYSIS (RSA)

| | | | |
|---|---|---|---|
| (1) Sample Point: FD-A 54 Set No. 2 | (2) Date/Time Issued: | (3) Date/Time Required: 11/26/91 | (4) Charge Code: |
| | | | (5) Work Package: 1N1A16ØLØ1 |
| (6) Number of Samples: 10 — Dose Rate mRad/Hr | (7) Customer I.D.: 3AP891-1, 3AP891-2, ~~3AP891-3~~, 3AP891-4, 3AP891-5, 3AP891-6, 3AP891-7, 3AP891-8, 3AP891-9, 3AP891-10 | (8) Laboratory I.D.: | (9) Requester Name/Phone: P.G. Haigh 3-4655 |
| (10) Release: RPT — 3AP1191-1 | | | (11) Volume of Sample: 100 mL |

| (12) Determination | (13) Expected Range | (14) Minimum Detection Level | (15) Method |
|---|---|---|---|
| Selenium (Se) | | 1 mg/L | |
| Arsenic (As) | | 5 mg/L | |
| Mercury (Hg) | | 0.2 mg/L | |
| Differential Scanning Calorimetry (DSC) | | Exotherm | |
| Specific Gravity | | 1.0 mg/L | |
| Tritium (H-3) | | 1.5E-3 µCi/L | |
| Total Uranium | | 100 mg/L | 103 APR |
| Sr-90 | | 1.5E-3 µCi/L | 3APR Comp |
| Am-241 | | 1E-3 µCi/L | R949 |
| Pu-239/240 | | 0.5E-3 µCi/L | |
| I-129 | | 9E-3 µCi/L | |
| Cs-134/137 | | 5E-3 µCi/L | |

(16) Matrix (Other Metals or Anions Present)
Liquid mixed waste. Radioactive contamination: natural, activation products and reactor fission products. Possible detectable halogenated and non-halogenated organic compounds. Hydroxide - pH = 12.5 or greater. Anions - sodium salts of nitrate, nitrite, phosphate, carbonate and sulfate. Metals - calcium and potassium salts, lead, chromium, cadmium.

(17) Radioactivity Level (Actual ☐ Estimated ☐)
Total Alpha _____ µ Ci/L
Total Beta _____ µ Ci/L
Total Gamma _____ µ Ci/L

(18) Additional Information (Measurement Uncertainty or Other Pertinent Information) ± 25% Precision + Accuracy

(19) Estimated Cost

(20) Samples Received

| By | From | Date | Time |
|---|---|---|---|
| | | | |

Laboratory Manager

(21) Distribution of Final Results/Sample Disposal Instructions
Minimum storage time - until April, 1992. Customer will direct OSM re: sample disposal



BC-6700-181 (1/87)

# REQUEST FOR SPECIAL ANALYSIS (RSA)

| | | | |
|---|---|---|---|
| (1) Sample Point<br>FD-A54<br>Set No. 2 | (2) Date/Time Issued | (3) Date/Time Required<br>11-26-91 | (4) Chief of Code<br>(5) Work Package<br>IN/A16ØLØ1 |
| (6) Number of Samples<br>10<br>Dose Rate mRad/Hr<br>(10) Release<br>RPT | (7) Customer I.D.<br>3AP891-1 3AP891-7<br>3AP891-2 3AP891-8<br>3AP891-3 3AP891-9<br>3AP891-4 3AP891-10<br>3AP891-5<br>3AP891-6 | (8) Laboratory I.D. | (9) Requester Name/Phone<br>P.G. Haigh<br>3-4655<br>(11) Volume of Sample<br>100 mL |

| (12) Determination | (13) Expected Range | (14) Minimum Detection Level | (15) Method |
|---|---|---|---|
| Total Ammonia | | 500 mg/L | 3AP891-1-1R933 |
| Fluoride by IC | | 6000 mg/L | 3AP891-2-1R934 |
| Chloride by IC | | 4,000 mg/L | 3AP891-3-1R935 |
| Nitrite by IC | | 5000 mg/L | 3AP891-4-1R936 |
| Nitrate by IC | | 5000 mg/L | 3AP891-5-1R937 |
| Phosphate by IC | | 10,000 mg/L | 3AP891-6-1R938 |
| Sulfate by IC | | 10,000 mg/L | 3AP891-7-1R939 |
| Hydroxide | | 0.1 M | 3AP891-8-1R940 |
| Total Organic Carbon | | 500 mg/L | 3AP891-9-1R941 |
| Volatile Organic Analysis | | Exhibit C, CLP-SOW Organics 3/90 | 3AP891-10-1R942 |
| Semi-Volatile (A/B/N) | | Exhibit C, CLP-SOW Organics 3/90 | |
| Cyanide (CN-) | | 0.01 mg/L | |

(16) Matrix (Other Metals or Anions Present)
Liquid mixed waste. Radioactive contamination: natural, activation products and reactor fission products. Possible detectable halogenated and non-halogenated organic compounds. Hydroxide - pH = 12.5 or greater. Anions - sodium salts of nitrate, nitrite, phosphate, carbonate and sulfate. Metals - calcium and potassium salts, lead, chromium, cadmium.

(17) Radioactivity Level (Actual ☐ Estimated ☐)
Total Alpha _____ µ Ci/L
Total Beta _____ µ Ci/L
Total Gamma _____ µ Ci/L

(18) Additional Information (Measurement Uncertainty or Other Pertinent Information) ± 25% Precision & Accuracy

(20) Samples Received

| Estimated Cost | | From | Date | Time |
|---|---|---|---|---|
| | | | | |

Delivery Method

(21) Distribution of Final Results/Sample Disposal Instructions
Minimum storage time - until April 1992. Customer will direct OSM re: sample disposal

BEST AVAILABLE COPY

# SAMPLE DATA SUMMARY

# SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 103AP
Customer ID: 3AP891-5

Undigested Sample Results

| | Sample R937 | | Sample Duplicate NA |
|---|---|---|---|
| SpG | 1.017 | | NA |
| DSC | NO EXOTHERM | | NA |
| TOC | 1.50E+2 | ppm | NA |
| TIC | 4.60E+2 | ppm | NA |
| NH4 | <2.25E+1 | ppm | NA |
| OH | 1.50E+3 | ppm | NA |
| CN | 5.27E-1 | ppm | NA |
| ATOMIC ABSORPTION | | | |
| As | 4.90E-2 | ppm | NA |
| Hg | 1.70E-3 | ppm | NA |
| Se | <5.00E-3 | ppm | NA |
| ION CHROMATOGRAPHIC | | | |
| Cl | 1.78E+1 | ppm | NA |
| F | 5.41E+1 | ppm | NA |
| NO3 | 3.25E+3 | ppm | NA |
| NO2 (1-10-92) | 1.28E+3 | ppm | NA |
| PO4 (1-10-92) | 1.35E+2 | ppm | NA |
| SO4 | 1.96E+2 | ppm | NA |
| GEA | | | |
| Cs 137 | 6.59E+3 | uCi/L | NA |
| Cs 134 | <8.32E+0 | uCi/L | NA |
| Eu 155 | <5.02E+1 | uCi/L | NA |

# SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 103AP
Customer ID: 3AP891-5

Acid Digestion Sample Results

| | Sample R937 | | Sample Duplicate NA |
|---|---|---|---|
| Acid Digestion | Complete | | NA |
| ICP | | | |
| Al | 2.30E+5 | ug/L | NA |
| Ba | <6.50E+1 | ug/L | NA |
| Cd | 1.24E+2 | ug/L | NA |
| Cr | 4.48E+3 | ug/L | NA |
| Fe | <4.35E+2 | ug/L | NA |
| Pb | <4.00E+2 | ug/L | NA |
| Mg | 1.14E+3 | ug/L | NA |
| Mn | <1.50E+1 | ug/L | NA |
| Ag | <4.00E+1 | ug/L | NA |
| Na | 2.05E+6 | ug/L | NA |
| Zn | 2.21E+2 | ug/L | NA |

# UNDIGESTED SAMPLE ANALYSIS RESULTS

# UNDIGESTED SAMPLE RESULTS

Tank: 103AP
Sample No.: R937
Customer ID: 3AP891-5

| | Check Standard | | Blank | | Sample | | Duplicate Sample | | Spike of Sample | | Check Standard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID: | R931 | | R932 | | R937 | | NA | | NA | | R938 | |
| Specific Gravity | 99.99 | % | .995 | | 1.017 | | NA | | NA | | 98.92 | % |
| DSC | Exotherm | | NA | | No Exotherm | | NA | | NA | | Exotherm | |
| Total Organic Carbon | 99 | % | 2.80E+0 | ug | 1.50E+2 | ppm | NA | | NA | | 100.3 | % |
| Total Inorganic Carbon | 99.9 | % | 2.70E+0 | ug | 4.60E+2 | ppm | NA | | NA | | 102.4 | % |
| Ammonia | 100.45 | % | <2.25E+1 | ppm | <2.25E+1 | ppm | NA | | NA | | 99.2 | % |
| OH | 102.8 | % | Complete | | 1.50E+3 | ppm | NA | | NA | | 102.3 | % |
| Cyanide | 96.2 | % | <2.00E-2 | ppm | 5.27E-1 | ppm | NA | | NA | | 98.7 | % |
| ATOMIC ABSORPTION | | | | | | | | | | | | |
| Arsenic | 97.4 | % | <5.00E-4 | ppm | 4.90E-2 | ppm | NA | | NA | | 103 | % |
| Mercury | 100.2 | % | <5.00E-4 | ppm | 1.70E-3 | ppm | NA | | NA | | 105.17 | % |
| Selenium | 113.5 | % | <5.00E-4 | ppm | <5.00E-3 | ppm | NA | | NA | | 111.34 | % |
| ION CHROMATOGRAPHIC | | | | | | | | | | | | |
| Chloride (1-08-92) | 97.5 | % | <1.00E-1 | ppm | 1.78E+1 | ppm | NA | | NA | | 93.1 | % |
| Fluoride (1-08-92) | 94.3 | % | <1.00E-1 | ppm | 5.41E+1 | ppm | NA | | NA | | 90.2 | % |
| Nitrate (1-08-92) | 106 | % | <1.00E+0 | ppm | 3.25E+3 | ppm | NA | | NA | | 101.4 | % |
| Nitrite (1-08-92) | 103 | % | <1.00E+0 | ppm | 1.28E+3 | ppm | NA | | NA | | 102 | % |
| Lab ID: | R938 | | | | | | | | | | | |
| Phosphate (1-10-92) | 104 | % | <1.00E+0 | ppm | 1.39E+2 | ppm | NA | | NA | | 101 | % |
| Sulfate (1-08-92) | 98.9 | % | <1.00E+0 | ppm | 1.96E+2 | ppm | NA | | NA | | 99.3 | % |
| GEA | | | | | | | | | | | | |
| Cesium 137 | 102 | % | <2.80E+0 | uCi/L | 6.59E+3 | uCi/L | NA | | NA | | 103.3 | % |
| Cesium 134 | NA | | NA | | <8.32E+0 | uCi/L | NA | | NA | | NA | |
| Europium 155 | NA | | NA | | <5.02E+1 | uCi/L | NA | | NA | | NA | |

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: SPECIFIC GRAVITY | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: WA90787 | Procedure/Rev: LA-510-112/C-2 |
| Technologist: S. LAI | Date: 1-21-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: R. K. FULLER |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5506 | 11 | | |
| 2 | REAGENT BLANK | R932-5606 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5706 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5506 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 15C11-BJ/.250 mL | | | N/A |
| | | | | |
| | | | | |
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| | | | | |

A-6000-881 (03/92)

# SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

Serial No: K 931.-5506 | Sample Point: 103AP | Date: 12-16-91 | Time Issued: 15:43 | Priority: 25

Determination: SPG | Method/Standard: LA-510-112 | Result Units: % RECOVERY | Charge Code: N124W | Reruns: 0

Sample Size: 0.250mL | Customer ID: STD

Remarks, Calculations, Results:
S332 ZNCL2
STDH 15C11-8J RESULT 1.4384 g/mL
STD VAL 1.4386 g/mL %REC 99.99%

| | A | B |
|---|---|---|
| $W_1$: | 1.8378 | 1.8297 |
| $W_2$: | 2.1991 | 2.1876 |
| | 0.3613 | 0.3579 |

0.3596g / 0.250mL = 1.4384 g/mL

Analyst-1: Sue Li | Analyst-2: | Analyst-3: Leslie Diaz | Analyst-4: | Analyst-5: RK Fuller 1-21-92
Hrs: 1c916 | Date: 1-21-92 | Time Completed: | Lab Unit Mgr:

Serial No: K 932.-5506 | Sample Point: 103AP | Date: 12-16-91 | Time Issued: 15:44 | Priority:

Determination: SPG | Method/Standard: LA-510-112 JK 5-20-92 | Result Units: | Charge Code: N124W | Reruns:

Sample Size: 0.250mL | Customer ID: BLNK

Remarks, Calculations, Results:
REAGENT BLANK

| | A | B |
|---|---|---|
| $W_1$: | 1.8748 | 1.8438 |
| $W_2$: | 2.1232 | 2.0928 |
| | 0.2484 g | 0.2490 |

0.2489g / 0.250mL = 0.9948 g/mL
0.2487 g AVG

Analyst-1: Sue Li | Analyst-2: | Analyst-3: | Analyst-4: | Analyst-5: RK Fuller 1-21-92
Hrs: 1c916 | Date: 1-21-92 | Time Completed: | Lab Unit Mgr:

Serial No: K 937.-5506 | Sample Point: 103AP | Date: 12-16-91 | Time Issued: 15:54 | Priority: 25

Determination: SPG | Method/Standard: LA-510-112 JK 5-24-92 | Result Units: | Charge Code: N124W | Reruns: 0

Sample Size: 250λ | Customer ID: SAPB91-5

Remarks, Calculations, Results:

| | A | B |
|---|---|---|
| $W_1$: | 1.9355 | 1.8919 |
| $W_2$: | 2.1897 | 2.1462 |
| | 0.2542 | 0.2543 |

NG = 0.2543g

0.2543g / 0.250mL = 1.0170 g/mL

Analyst-1: Sue Li | Analyst-2: | Analyst-3: | Analyst-4: | Analyst-5: RK Fuller 1-21-92
Hrs: 1c916 | Date: 1-21-92 | Time Completed: | Lab Unit Mgr:

Serial No: K 938.-5506 | Sample Point: 103AP | Date: 12-16-91 | Time Issued: 15:56 | Priority:

Determination: SPG | Method/Standard: LA-510-112 | Result Units: % RECOVERY | Charge Code: N124W | Reruns: 0

Sample Size: 0.25mL | Customer ID: STD

Remarks, Calculations, Results:
S332 ZNCL2
STDH 15C11-8J RESULT 1.4230 g/mL
STD VAL 1.4386 g/mL %REC 98.92%

| | A | B |
|---|---|---|
| $W_1$: | 1.8931 | 1.9003 |
| $W_2$: | 2.2488 | 2.2561 |
| | 0.3557 | 0.3558 |

0.3558g / 0.250mL = 1.4230 g/mL
98.92%

Analyst-1: Sue Li | Analyst-2: | Analyst-3: Leslie Diaz | Analyst-4: | Analyst-5: RK Fuller 1-21-92
Hrs: 1c916 | Date: 1-21-92 | Time Completed: | Lab Unit Mgr:

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: DIFFERENTIAL THERMAL | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: WC16134, WC16129 | Procedure/Rev: LA-514-113/A-0 |
| Technologist: T. McCOLLOCH | Date: 1-07-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. HERT |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5511 | 11 | | |
| 2 | SAMPLE 3AP891-5 | R937-5711 | 12 | | |
| 3 | FINAL LMCS CHECK STD | R938-5511 | 13 | | |
| 4 | | | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 27C11-BH/.500 mL | | | N/A |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
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| | | | | |

A-6000-881 (03/92)

# DIFFERENTIAL THERMAL ANALYSIS - UNDIGESTED SAMPLE

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5511 | 103AP | 12-16-91 | 15:43 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| DSC | LA-514-113 | % RECOVERY | N124W | 0 |

| Sample Size | Customer ID |
|---|---|
| 7 ~~10.2~~ 0.010mL | STD |

Remarks, Calculations, Results:

11.046 mg

Exotherm OK

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| Pts 81805 | Pts | Pts | Pts | Pts |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1/7/92 | | |

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5711 | 103AP | 12-16-91 | 15:44 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| DSC | LA-514-113 | EXOTHERMS | N124W | 0 |

| Sample Size | Customer ID |
|---|---|
| 7 .010ml ~~110 1-9-92~~ 1-13-92 | SAMPLY1-5 |

Remarks, Calculations, Results:

9.870 mg

No exotherm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| Pts 81805 | Pts | Pts | Pts | Pts |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1/7/92 | | |

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-5511 | 103AP | 12-16-91 | 15:52 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| DSC | LA-514-113 | % RECOVERY | N124W | 0 |

| Sample Size | Customer ID |
|---|---|
| 7 ~~10.0~~ 0.010mL | STD |

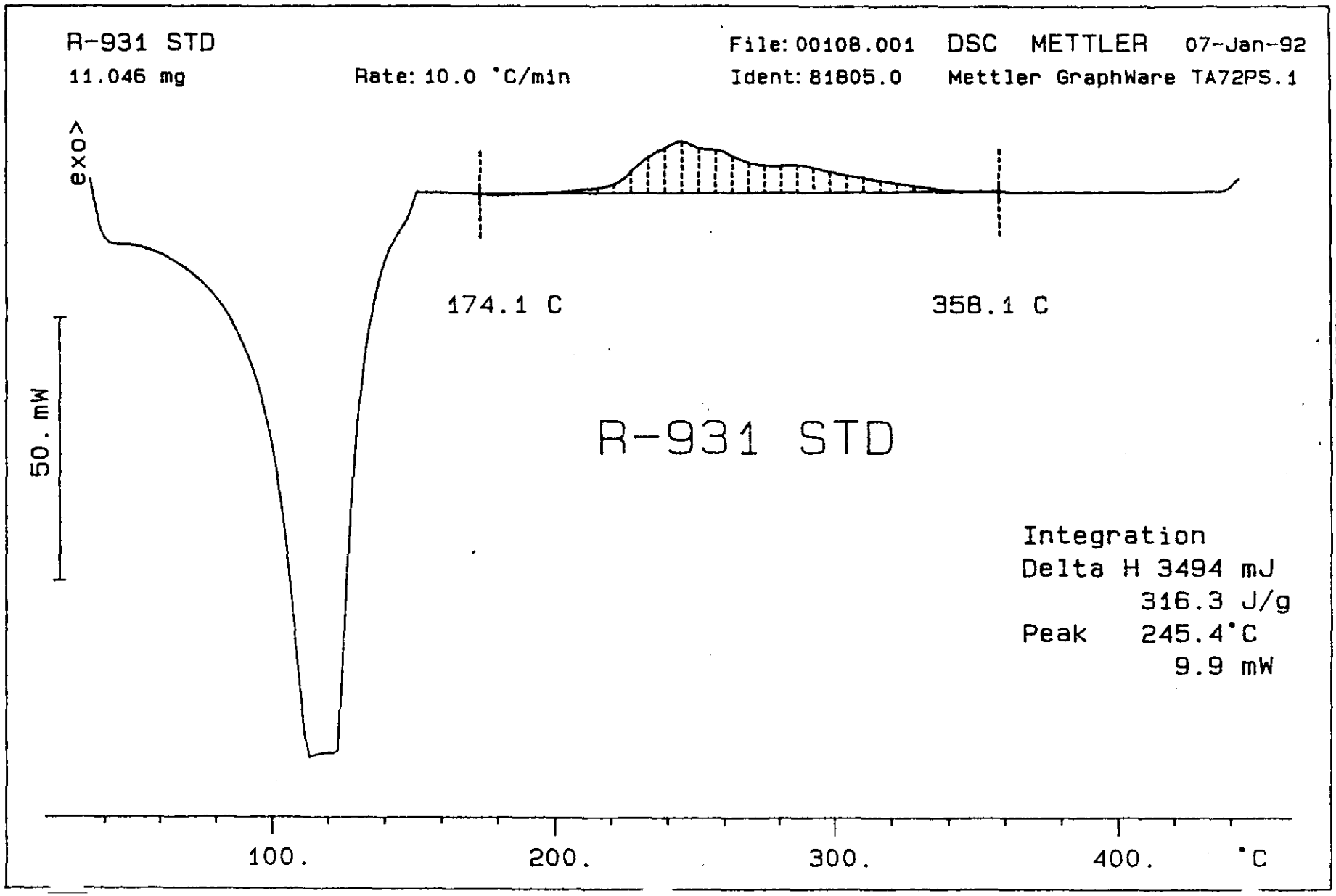
Remarks, Calculations, Results:

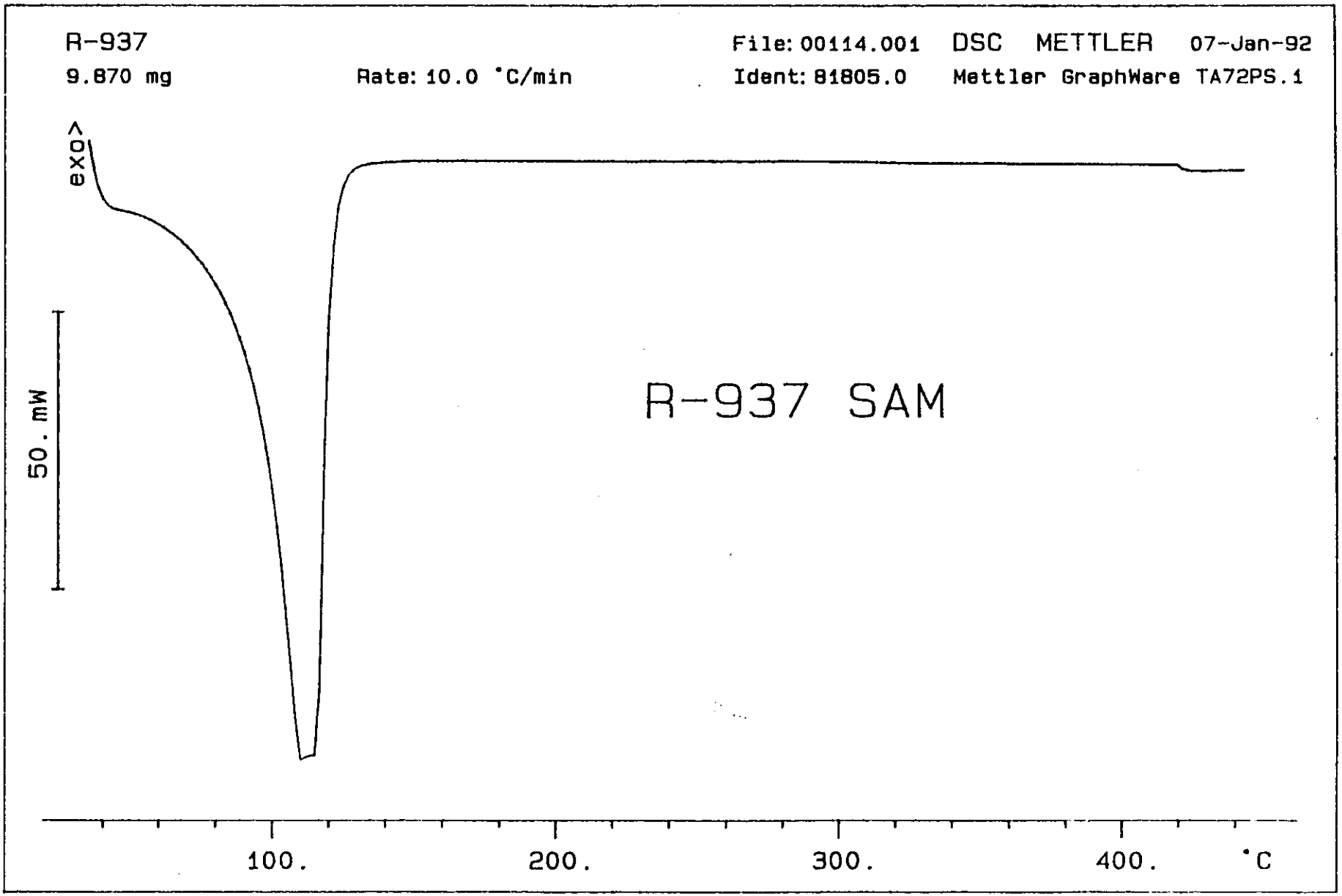
12.756 mg

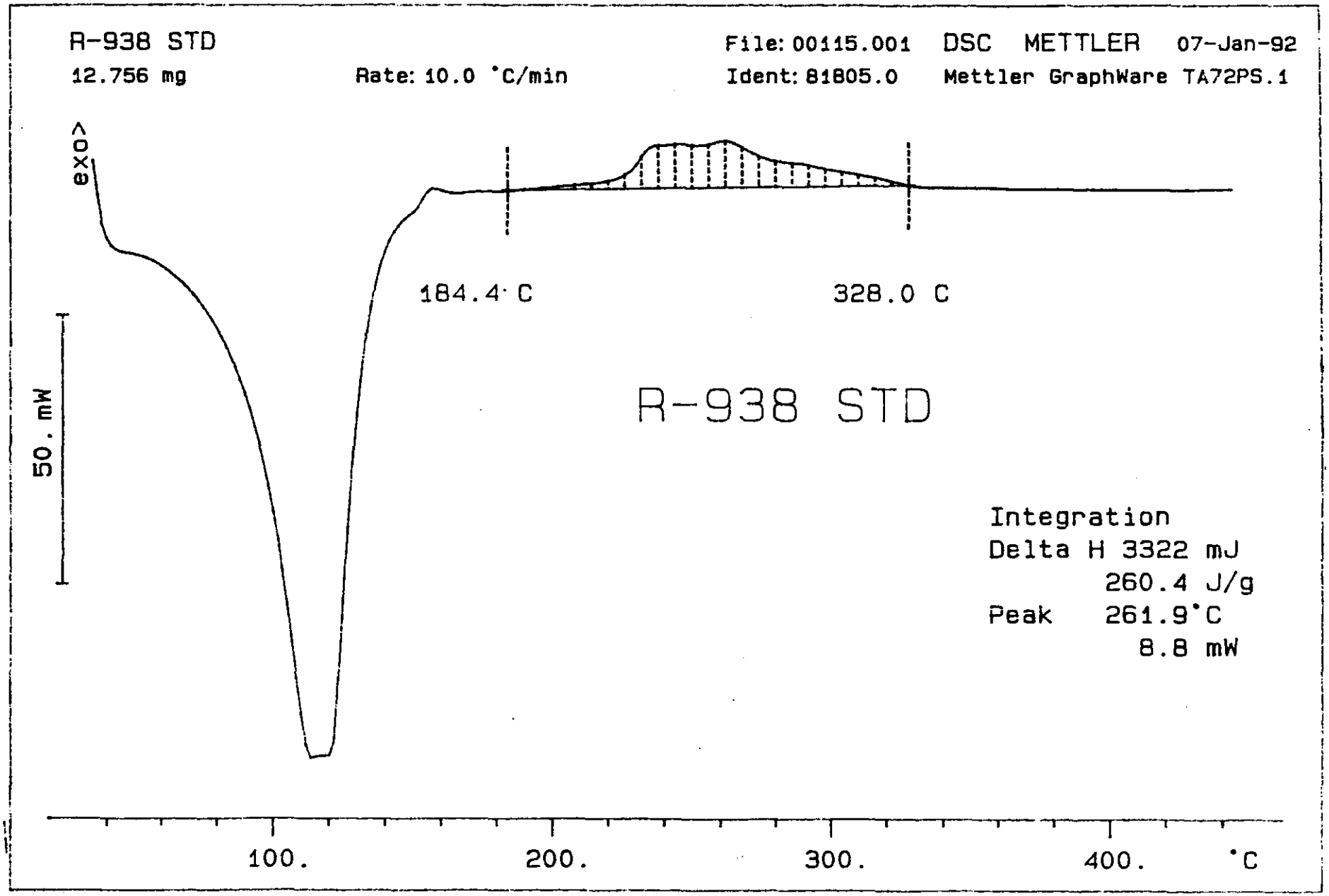
Exotherm OK

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| Pts 81805 | Pts | Pts | Pts | Pts |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1/7/92 | | |


R-931 STD
11.046 mg
Rate: 10.0 °C/min
File: 00108.001
Ident: 81805.0
DSC METTLER 07-Jan-92
Mettler GraphWare TA72PS.1
exo>
50. mW
174.1 C
358.1 C
R-931 STD
Integration
Delta H 3494 mJ
316.3 J/g
Peak 245.4°C
9.9 mW
100.
200.
300.
400.
°C


R-937
9.870 mg
Rate: 10.0 °C/min
File: 00114.001
Ident: 81805.0
DSC METTLER 07-Jan-92
Mettler GraphWare TA72PS.1
exo>
50. mW
R-937 SAM
100.
200.
300.
400.
°C


R-938 STD
12.756 mg
Rate: 10.0 °C/min
File: 00115.001
Ident: 81805.0
DSC METTLER 07-Jan-92
Mettler GraphWare TA72PS.1
<exo
50. mW
184.4 C
328.0 C
R-938 STD
Integration
Delta H 3322 mJ
260.4 J/g
Peak 261.9°C
8.8 mW
100.
200.
300.
400.
°C

26. Nov. 91
Denise J Hart

DSC

Calibrated Nov 26, 91

NFIGURATION

26-NOV-91 11:24

| | |
|---|---|
| E INDIUM | 255 |
| DSC SIGN ICTA | 1 |
| TAU LAG | 12 |
| TAU SIGNAL | 0 |
| E DIMIN. FACT. | .93 |
| S | 2400 |
| TAU LAG 2 | 16 |
| TAU SIGNAL 2 | 0 |
| E DIMIN. F. 2 | .93 |
| 2 | 1850 |
| MAX. TEMP. | 600. |
| MIN. TEMP. | -50. |
| A PT100 | .21437 |
| B PT100 | .74509 |
| C PT100 | -.10370 |
| HEAT P | 3000 |
| HEAT I | 250 |
| HEAT D | 30 |
| COOL 1 | 0 |
| COOL 2 | 0 |
| COOL 3 | 0 |
| A1 | 10773 |
| B1 | 58.121 |
| C1 | .14689 |
| T1 | -100 |
| A2 | 8940 |
| B2 | 17.884 |
| C2 | -.072 |
| T2 | 363 |
| A3 | 9360.3 |
| B3 | -15.043 |
| C3 | .01538 |

******** METTLER TA4000 SYSTEM *********

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: TOTAL ORGANIC CARBON | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: MODEL 5011 WC16130 | Procedure/Rev: LA-344-105/B-1 |
| Technologist: T. LEE | Date: 1-14-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. BISENIUS |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5526 | 11 | | |
| 2 | REAGENT BLANK | R932-5626 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5726 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5526* | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 70C11-J/.200 mL | | | N/A |
| | | | | |
| | | | | |
| * SAMPLE RERUN. | | | | |
| | | | | |
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A-6000-881 (03/92)

# TOTAL ORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5526 | 103AP | 12-16-91 | 15:43 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| TOC | LA-344-105 | % RECOVERY | N124W | 0 |

Sample Size: ? .200 - 2mL - .200 ($H_2SO_4$)
Customer ID: STD

Remarks, Calculations, Results:
S356 CO3TOC
STDN 70C11-J RESULT 2.97 g/L
STD VAL 3.000 g/L %REC 99%
% Rec = $\frac{2.97}{3.00}$ x100 = 99%

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| T. LEE | | | | |
| Hrs 82580 | Hrs | Hrs | Hrs | Hrs |

| Date | Time Completed | Lab Unit Mgr | |
|---|---|---|---|
| 01-14-92 | | D Y Bisenius | [signature] |

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-5626 | 103AP | 12-16-91 | 15:45 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| TOC | LA-344-105 | ug Carbon | N124W | 0 |

Sample Size: ? .200 mL $H_2SO_4$
Customer ID: BLK

Remarks, Calculations, Results:
REAGENT BLANK
2.8 ug C

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| T. LEE | | | | |
| Hrs 82580 | Hrs | Hrs | Hrs | Hrs |

| Date | Time Completed | Lab Unit Mgr | |
|---|---|---|---|
| 01-14-92 | | D Y Bisenius | [signature] |

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5726 | 103AP | 12-16-91 | 15:54 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| TOC | LA-344-105 | G/L | N124W | 0 |

Sample Size: ? .200 - 2mL - .200
Customer ID: 3AP891-5

Remarks, Calculations, Results:
1.5 E-1 g/L C

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| T. LEE | | | | |
| Hrs 82580 | Hrs | Hrs | Hrs | Hrs |

| Date | Time Completed | Lab Unit Mgr | |
|---|---|---|---|
| 01-14-92 | | D Y Bisenius | [signature] |

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-5526 | 103AP | 12-16-91 | 15:56 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| TOC | LA-344-105 | % RECOVERY | N124W | 1 |

Sample Size: ? .200 - 2ml - .200ml
Customer ID: STD

Remarks, Calculations, Results:
S356 CO3TOC
STDN 70C11-J RESULT 3.01
STD VAL 3.0000 %REC 100.33%

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| T. LEE | | | | |
| Hrs 82580 | Hrs | Hrs | Hrs | Hrs |

| Date | Time Completed | Lab Unit Mgr | |
|---|---|---|---|
| 01-14-92 ~~04-07-92~~ | | D Y Bisenius | [signature] |

T.L. - 6-4-92

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD R931-5526 Date: 01/14/92 Time: 02:47:43

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3997813 ug/minute C

Analyst : TB LEE
Min Readings = 14
Max Readings = 14
% Difference = 10

| == Reading | ==== Analysis Time | ==== Coulometer | ==== % Difference == |
|---|---|---|---|
| 1 | 0.51 | 0.00 | 0.00 |
| 2 | 1.01 | 0.00 | 0.00 |
| 3 | 1.51 | 19.60 | 100.00 |
| 4 | 2.01 | 38.40 | 48.96 |
| 5 | 2.51 | 45.20 | 15.04 |
| 6 | 3.01 | 49.30 | 8.32 |
| 7 | 3.51 | 51.50 | 4.27 |
| 8 | 4.00 | 53.40 | 3.56 |
| 9 | 4.50 | 54.60 | 2.20 |
| 10 | 5.00 | 55.00 | 0.73 |
| 11 | 5.50 | 55.60 | 1.08 |
| 12 | 6.00 | 56.10 | 0.89 |
| 13 | 6.50 | 56.40 | 0.53 |
| 14 | 7.00 | 56.80 | 0.70 |

9 3 1 2 5 5 2 6

**BEST AVAILABLE COPY**

BLANK VALUE = 2.8 micrograms carbon
BLANK FACTOR = 2.8 / 7.00383 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
( 56.8 - 2.799664 )(11)/(200) = +2.97E+00 g/L Carbon
( 56.8 - 2.799664 )(11)/(200)(12) = +2.48E-01 Molar Carbon

Sample Run By: Tania Lee 82580
TB LEE 82580

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST
THAT COMPLETED THE ANALYSIS RUN ON PAGES 37 TO 40.

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK R932-5626 Date: 01/14/92 Time: 02:36:31

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : TB LEE
Min Readings = 14
Max Readings = 14
% Difference = 10

| == Reading | ==== Analysis Time | ==== Coulometer | ==== % Difference == |
|---|---|---|---|
| 1 | 0.51 | 0.00 | 0.00 |
| 2 | 1.01 | 0.00 | 0.00 |
| 3 | 1.51 | 0.40 | 100.00 |
| 4 | 2.01 | 1.00 | 60.00 |
| 5 | 2.51 | 1.00 | 0.00 |
| 6 | 3.01 | 1.30 | 23.08 |
| 7 | 3.51 | 1.60 | 18.75 |
| 8 | 4.01 | 1.80 | 11.11 |
| 9 | 4.51 | 2.10 | 14.29 |
| 10 | 5.00 | 2.30 | 8.70 |
| 11 | 5.50 | 2.30 | 0.00 |
| 12 | 6.00 | 2.60 | 11.54 |
| 13 | 6.50 | 2.70 | 3.70 |
| 14 | 7.00 | 2.80 | 3.57 |

BEST AVAILABLE COPY

BLANK VALUE = 2.8 micrograms carbon
BLANK FACTOR = 2.8 / 7.00383 = +4.0E-01 ug/min Carbon

Sample Run By: _____
TB LEE 82580

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 937 Date: 01/14/92 Time: 05:58:17

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3997813 ug/minute C

Analyst : TB LEE
Min Readings = 14
Max Readings = 14
% Difference = 10

| == Reading ==== | Analysis Time ==== | Coulometer ==== | % Difference == |
|---|---|---|---|
| 1 | 0.51 | 0.10 | 0.00 |
| 2 | 1.01 | 1.10 | 90.91 |
| 3 | 1.51 | 2.40 | 54.17 |
| 4 | 2.01 | 3.00 | 20.00 |
| 5 | 2.51 | 3.50 | 14.29 |
| 6 | 3.01 | 3.70 | 5.41 |
| 7 | 3.51 | 4.00 | 7.50 |
| 8 | 4.01 | 4.30 | 6.98 |
| 9 | 4.50 | 4.50 | 4.44 |
| 10 | 5.00 | 4.80 | 6.25 |
| 11 | 5.50 | 5.00 | 4.00 |
| 12 | 6.00 | 5.20 | 3.85 |
| 13 | 6.50 | 5.40 | 3.70 |
| 14 | 7.00 | 5.60 | 3.57 |

**BEST AVAILABLE COPY**

BLANK VALUE = 2.8 micrograms carbon
BLANK FACTOR = 2.8 / 7.00383 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
( 5.6 - 2.800079 )(11)/(200) = +1.5E-01 g/L Carbon
( 5.6 - 2.800079 )(11)/(200)(12) = +1.3E-02 Molar Carbon

Sample Run By: _____
TB LEE 82580

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

Sample: STD R938-5526 Date: 01/14/92 Time: 06:12:24

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .3997813 ug/minute C

Analyst : TB LEE
Min Readings = 14
Max Readings = 14
% Difference = 10

| == Reading | ==== Analysis Time | ==== Coulometer | ==== % Difference == |
|---|---|---|---|
| 1 | 0.51 | 0.00 | 0.00 |
| 2 | 1.01 | 7.40 | 100.00 |
| 3 | 1.51 | 37.20 | 80.11 |
| 4 | 2.01 | 47.60 | 21.85 |
| 5 | 2.51 | 51.60 | 7.75 |
| 6 | 3.00 | 53.60 | 3.73 |
| 7 | 3.50 | 54.90 | 2.37 |
| 8 | 4.00 | 55.50 | 1.08 |
| 9 | 4.50 | 55.80 | 0.54 |
| 10 | 5.00 | 56.30 | 0.89 |
| 11 | 5.50 | 56.50 | 0.35 |
| 12 | 6.00 | 56.90 | 0.70 |
| 13 | 6.50 | 57.10 | 0.35 |
| 14 | 7.00 | 57.50 | 0.70 |

**BEST AVAILABLE COPY**

BLANK VALUE = 2.8 micrograms carbon
BLANK FACTOR = 2.8 / 7.00383 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
( 57.5 - 2.800006 )(11)/(200) = +3.01E+00 g/L Carbon
( 57.5 - 2.800006 )(11)/(200)(12) = +2.51E-01 Molar Carbon

Sample Run By: Tonia Lee 82580
TB LEE 82580

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: TOTAL INORGANIC CARBON | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: WB39927 | Procedure/Rev: LA-622-102/B-1 |
| Technologist: E. COLVIN | Date: 1-30-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. BISENIUS |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5527 | 11 | | |
| 2 | REAGENT BLANK | R932-5627 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5727 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5527 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 69C11-L/.100 mL | | | N/A |
| | | | | |
| | | | | |
| | | | | |
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| | | | | |

A-6000-881 (03/92)

# TOTAL INORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5527 | 103AP | 12-16-91 | 15:45 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Range |
|---|---|---|---|---|
| TIC | LA-622-102 | % RECOVERY | H124W | 0 |

Sample Size: ? ~~200mL-2mL 200mL 50mL~~ 0.050 RE 8/19/91
Customer ID: STD
Remarks, Calculations, Results: 8223 LDJ
STDW ~~70C11-J~~ 69C11-L RESULT 1.9986-1 M
STD VAL 2.000E-1M % REC 99.9%

$$\%Rec = \frac{1.9986\text{-}1M}{2.000E\text{-}1M} \times 100 = 99.9\%$$

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 80027 | | | | |
| Pos | Pos | Pos | Pos | Pos |
| RLR | | | | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-30-92 | | D Y Bisenius |

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-5527 | 103AP | 12-16-91 | 15:45 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Range |
|---|---|---|---|---|
| TIC | LA-622-102 | mg Carbon | H124W | 0 |

Sample Size: ? ~~200mL 50mL~~ 0.050 RE 8/19/91
Customer ID: BLK
Remarks, Calculations, Results: REAGENT BLANK

2.70 µgC

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 80027 | | | | |
| Pos | Pos | Pos | Pos | Pos |
| RLR | | | | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-30-92 | | D Y Bisenius |

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5727 | 103AP | 12-16-91 | 15:54 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Range |
|---|---|---|---|---|
| TIC | LA-622-102 | G/L | H124W | |

Sample Size: ? ~~50mL 50mL~~ 0.050
Customer ID: LA-891-5
Remarks, Calculations, Results:

4.60 E-1 g/L

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 80027 | | | | |
| Pos | Pos | Pos | Pos | Pos |
| RLR | | | | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-30-92 | | D Y Bisenius |

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-5527 | 103AP | 12-16-91 | 15:52 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Range |
|---|---|---|---|---|
| TIC | LA-622-102 | % RECOVERY | H124W | |

Sample Size: ? ~~50mL 50mL~~ 0.050
Customer ID: STD
Remarks, Calculations, Results: 8223 LDJ
STDW 69C11-L RESULT 2.048 E-1 M
STD VAL 2.000E-1M % REC 102.4%

$$\%Rec = \frac{2.048\ E\text{-}1M}{2.000\ E\text{-}1M} \times 100 = 102.4\%$$

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 80027 | | | | |
| Pos | Pos | Pos | Pos | Pos |
| RLR | | | | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-30-92 | | D Y Bisenius |

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R-931 SID - 5527 Date: 01/30/92 Time: 09:46:06

Sample Size = 50 uL
Dil Factor = 1
Blank ID # = R-932 BLANK
Blank Value = .3854488 ug/minute C

Analyst : EH COLVIN
Min Readings = 14
Max Readings = 14
% Difference = 10

| == Reading | ==== Analysis Time | ==== Coulometer | ==== % Difference == |
|---|---|---|---|
| 1 | 0.51 | 0.20 | 0.00 |
| 2 | 1.01 | 14.40 | 98.61 |
| 3 | 1.51 | 48.40 | 70.25 |
| 4 | 2.00 | 81.20 | 40.39 |
| 5 | 2.50 | 100.10 | 18.88 |
| 6 | 3.00 | 110.70 | 9.58 |
| 7 | 3.50 | 116.00 | 4.57 |
| 8 | 4.00 | 118.80 | 2.36 |
| 9 | 4.50 | 120.20 | 1.16 |
| 10 | 5.00 | 120.70 | 0.41 |
| 11 | 5.50 | 121.20 | 0.41 |
| 12 | 6.00 | 121.60 | 0.33 |
| 13 | 6.50 | 122.00 | 0.33 |
| 14 | 7.00 | 122.60 | 0.49 |

**BEST AVAILABLE COPY**

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 7.004822 = +3.9E-01 ug/min Carbon

SAMPLE RESULTS:
( 122.6 - 2.6996 )(1)/(50) = +2.398E+00 g/L Carbon
( 122.6 - 2.6996 )(1)/(50)(12) = +1.998E-01 Molar Carbon

Sample Run By: Ed Colvin 1-30-1992
EH COLVIN 80028

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 43 TO 46 .

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: R-932 BLANK-5627 Date: 01/30/92 Time: 09:36:55

Sample Size = 50 uL
Dil Factor = 1
Blank ID # = R-932 BLANK
Blank Value = N/A

Analyst : EH COLVIN
Min Readings = 14
Max Readings = 14
% Difference = 10

| == Reading | ==== Analysis Time | ==== Coulometer | ==== % Difference == |
|---|---|---|---|
| 1 | 0.51 | 0.00 | 0.00 |
| 2 | 1.01 | 0.10 | 100.00 |
| 3 | 1.51 | 0.40 | 75.00 |
| 4 | 2.01 | 0.70 | 42.86 |
| 5 | 2.51 | 1.00 | 30.00 |
| 6 | 3.01 | 1.10 | 9.09 |
| 7 | 3.51 | 1.60 | 31.25 |
| 8 | 4.01 | 1.60 | 0.00 |
| 9 | 4.51 | 1.70 | 5.88 |
| 10 | 5.01 | 2.10 | 19.05 |
| 11 | 5.51 | 2.10 | 0.00 |
| 12 | 6.01 | 2.40 | 12.50 |
| 13 | 6.51 | 2.40 | 0.00 |
| 14 | 7.00 | 2.70 | 11.11 |

BEST AVAILABLE COPY

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 7.004822 = +3.9E-01 ug/min Carbon

Sample Run By: _____
EH COLVIN 80028

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R-937-5727 Date: 01/30/92 Time: 12:28:08

Sample Size = 50 uL
Dil Factor = 1
Blank ID # = R-932 BLANK
Blank Value = .3854488 ug/minute C

Analyst : EH COLVIN
Min Readings = 14
Max Readings = 14
% Difference = 10

| == Reading | ==== Analysis Time | ==== Coulometer | ==== % Difference == |
|---|---|---|---|
| 1 | 0.51 | 0.30 | 0.00 |
| 2 | 1.01 | 3.10 | 90.32 |
| 3 | 1.51 | 9.20 | 66.30 |
| 4 | 2.01 | 15.00 | 38.67 |
| 5 | 2.51 | 19.30 | 22.28 |
| 6 | 3.01 | 21.50 | 10.23 |
| 7 | 3.51 | 23.00 | 6.52 |
| 8 | 4.00 | 23.60 | 2.54 |
| 9 | 4.50 | 24.50 | 3.67 |
| 10 | 5.00 | 24.50 | 0.00 |
| 11 | 5.50 | 24.90 | 1.61 |
| 12 | 6.00 | 25.00 | 0.40 |
| 13 | 6.50 | 25.40 | 1.57 |
| 14 | 7.00 | 25.70 | 1.17 |

**BEST AVAILABLE COPY**

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 7.004822 = +3.9E-01 ug/min Carbon

SAMPLE RESULTS:
( 25.7 - 2.699318 )(1)/(50) = +4.60E-01 g/l Carbon
( 25.7 - 2.699318 )(1)/(50)(12) = +3.83E-02 Molar Carbon

Sample Run By:
EH COLVIN 80028

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R-938 STD -5527 Date: 01/30/92 Time: 12:37:51

Sample Size = 50 uL
Dil Factor = 1
Blank ID # = R-932 BLANK
Blank Value = .3854488 ug/minute C

Analyst : EH COLVIN
Min Readings = 14
Max Readings = 14
% Difference = 10

| Reading | Analysis Time | Coulometer | % Difference |
|---|---|---|---|
| 1 | 0.51 | 0.20 | 0.00 |
| 2 | 1.01 | 16.30 | 98.77 |
| 3 | 1.51 | 52.40 | 68.89 |
| 4 | 2.01 | 83.90 | 37.54 |
| 5 | 2.51 | 102.80 | 18.39 |
| 6 | 3.01 | 113.50 | 9.43 |
| 7 | 3.50 | 118.80 | 4.46 |
| 8 | 4.00 | 121.80 | 2.46 |
| 9 | 4.50 | 123.30 | 1.22 |
| 10 | 5.00 | 124.20 | 0.72 |
| 11 | 5.50 | 124.60 | 0.32 |
| 12 | 6.00 | 125.00 | 0.32 |
| 13 | 6.50 | 125.30 | 0.24 |
| 14 | 7.00 | 125.60 | 0.24 |

**BEST AVAILABLE COPY**

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 7.004822 = +3.9E-01 ug/min Carbon

SAMPLE RESULTS:
( 125.6 - 2.699294 )(1)/(50) = +2.458E+00 g/l Carbon
( 125.6 - 2.699294 )(1)/(50)(12) = +2.048E-01 Molar Carbon

Sample Run By: Ed Colvin 1-30-1992
EH COLVIN 80028

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: AMMONIA | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: AL10665, AL10696 | Procedure/Rev: LA-634-102/D-0 |
| Technologist: S. LAI | Date: 1-28-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. BISENIUS |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5528* | 11 | | |
| 2 | REAGENT BLANK | R932-5628* | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5728* | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5528 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 4C11-QY/0.250 mL | | | N/A |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| *SAMPLES RERUN. | | | | |
| | | | | |
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A-6000-881 (03/92)

# AMMONIA ANALYSIS - UNDIGESTED SAMPLE

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5528 | 103AP | 12-16-91 | 15:43 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| NH4 | LA-634-102 | % RECOVERY | N124W | 1 |

Sample Size: ? ~~250 µg/ml~~ 0.250 mL 0.0205 M — Customer ID: STD

Remarks, Calculations, Results: HCl RERUN

S235 NH4CL

STD# 4C11-QY RESULT 0.0522 — Blank : 85 λ

STD VAL $5.2 \times 10^{-2}$ [M] %REC 100.45%

$\frac{(922-85)(0.0205)}{250} = 0.0522$ [M] — STD : 722 λ

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| Sue Lai | | | | RK Fuller 1-29-92 |
| Hrs: 6C916 | Hrs | Hrs | Hrs | Hrs |

Date: 1-28-92 — Time Completed: — Lab Unit Mgr: [signature]

54-0000-001 (R-10-83)

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-5628 | 103AP | 12-16-91 | 15:45 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| NH4 | LA-634-102 | PPM | N124W | 1 |

Sample Size: ? 1 ml 0.0205 M — Customer ID: BLK

Remarks, Calculations, Results: HCl RERUN

REAGENT BLANK

$< \frac{22.5 \mu g}{1 ml} = < 22.5$ ppm — Blank : 85 λ

reg Blank : 85 λ

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| Sue Lai | | | | RK Fuller 1-29-92 |
| Hrs: 6C916 | Hrs | Hrs | Hrs | Hrs |

Date: 1-28-92 — Time Completed: — Lab Unit Mgr: [signature]

54-0000-001 (R-10-83)

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5728 | 103AP | 12-16-91 | 15:54 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| NH4 | LA-634-102 | PPM | N124W | 1 |

Sample Size: ? ~~1000 µg/ml~~ 1 mL 0.0205 M — Customer ID: 3AP891-5

Remarks, Calculations, Results: HCl RERUN

$\frac{(136-85)(0.0205)}{1000} = 0.0010$ [M] — Blank : 85 λ

$0.0010$ [M] $\times 18 \frac{g}{mole} \times \frac{1000 mg}{g} = 18.82$ ppm — Sample : 136 λ

$< 22.5$ ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| Sue Lai | | | | RK Fuller 1-29-92 |
| Hrs: 6C916 | Hrs | Hrs | Hrs | Hrs |

Date: 1-28-92 — Time Completed: — Lab Unit Mgr: [signature]

54-0000-001 (R-10-83)

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-5528 | 103AP | 12-16-91 | 15:56 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| NH4 | LA-634-102 | % RECOVERY | N124W | 0 |

Sample Size: ? ~~250 µg/ml~~ 0.250 mL 0.0205 M — Customer ID: STD

Remarks, Calculations, Results: HCl

S235 NH4CL

STD# 4C11-QY RESULT 0.0516 [M] — Blank : 85 λ

STD VAL $5.2 \times 10^{-2}$ [M] %REC 99.2%

$\frac{(714-85)(0.0205)}{250} = 0.0516$ [M] — STD : 714 λ

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| Sue Lai | | | | RK Fuller 1-29-92 |
| Hrs: 6C916 | Hrs | Hrs | Hrs | Hrs |

Date: 1-28-92 — Time Completed: — Lab Unit Mgr: [signature]

54-0000-001 (R-10-83)

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: DETERMINATION OF HYDROXIDE IONS IN SOLUTION | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: FISHER WA77509 | Procedure/Rev: LA-661-102/F-1 |
| Technologist: V. MASSIE | Date: 1-04-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: S. ISAACSON |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5529 | 11 | | |
| 2 | REAGENT BLANK | R932-5629 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5729 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5529 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 9C11AG/.100 mL | | | N/A |
| | | | | |
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A-6000-881 (03/92)

# DETERMINATION OF HYDROXIDE ION IN SOLUTION - UNDIGESTED SAMPLE

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5529 | 103AP | 12-16-91 | 15:43 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| OH | LA-661-102 | % RECOVERY | N124W | 0 |

Sample Size: ? 100 ml + 1 ml 1M BaCl — Customer ID: STD

Remarks, Calculations, Results: S273 ITS-OH — titrant .1899M HNO3

STD# 9C11AG RESULT 8.81E-1 480+474/2 = 477

STD VAL 8.570E-1 %REC 102.8%

$$\frac{(477-13)(.1899)}{100} = 8.81E^{-1}$$

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] 82016 | | | [signature] | [signature] |
| Hrs | Hrs | Hrs | Hrs | Hrs |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-4-92 | | Stacie Isaacson |

54-6600-061 (R-10-63)

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-5629 | 103AP | 12-16-91 | 15:45 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| OH | LA-661-102 | M | N124W | 0 |

Sample Size: ? 3 ml 9 $H_2O$ titrant .1899M HNO3 — Customer ID: BLK

Remarks, Calculations, Results: REAGENT BLANK

Complete

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] 82016 | | | [signature] | [signature] |
| Hrs | Hrs | Hrs | Hrs | Hrs |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-4-92 | | Stacie Isaacson |

54-6600-061 (R-10-63)

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5729 | 103AP | 12-16-91 | 15:54 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| OH | LA-661-102 | M | N124W | |

Sample Size: ? 1 ml + 1 ml 1M BaCl — Customer ID: 3AP891-5

Remarks, Calculations, Results: .1899M $HNO_3$

$$\frac{(466)(.1899)}{1000} = 8.85E^{-2}$$

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] 82016 | | | [signature] | [signature] |
| Hrs | Hrs | Hrs | Hrs | Hrs |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-4-92 | | Stacie Isaacson |

54-6600-061 (R-10-63)

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-5529 | 103AP | 12-16-91 | 15:56 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| OH | LA-661-102 | % RECOVERY | N124W | 0 |

Sample Size: ? 100 ml + 1 ml 1M BaCl — Customer ID: STD

Remarks, Calculations, Results: S273 ITS-OH — titrant .1899M $HNO_3$

STD# 9C11AG RESULT 8.77E-1

STD VAL 8.57E-1 %REC 102.3%

$$\frac{(475-13)(.1899)}{100} = 8.77E^{-1}$$

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] 82016 | | | [signature] | [signature] |
| Hrs | Hrs | Hrs | Hrs | Hrs |

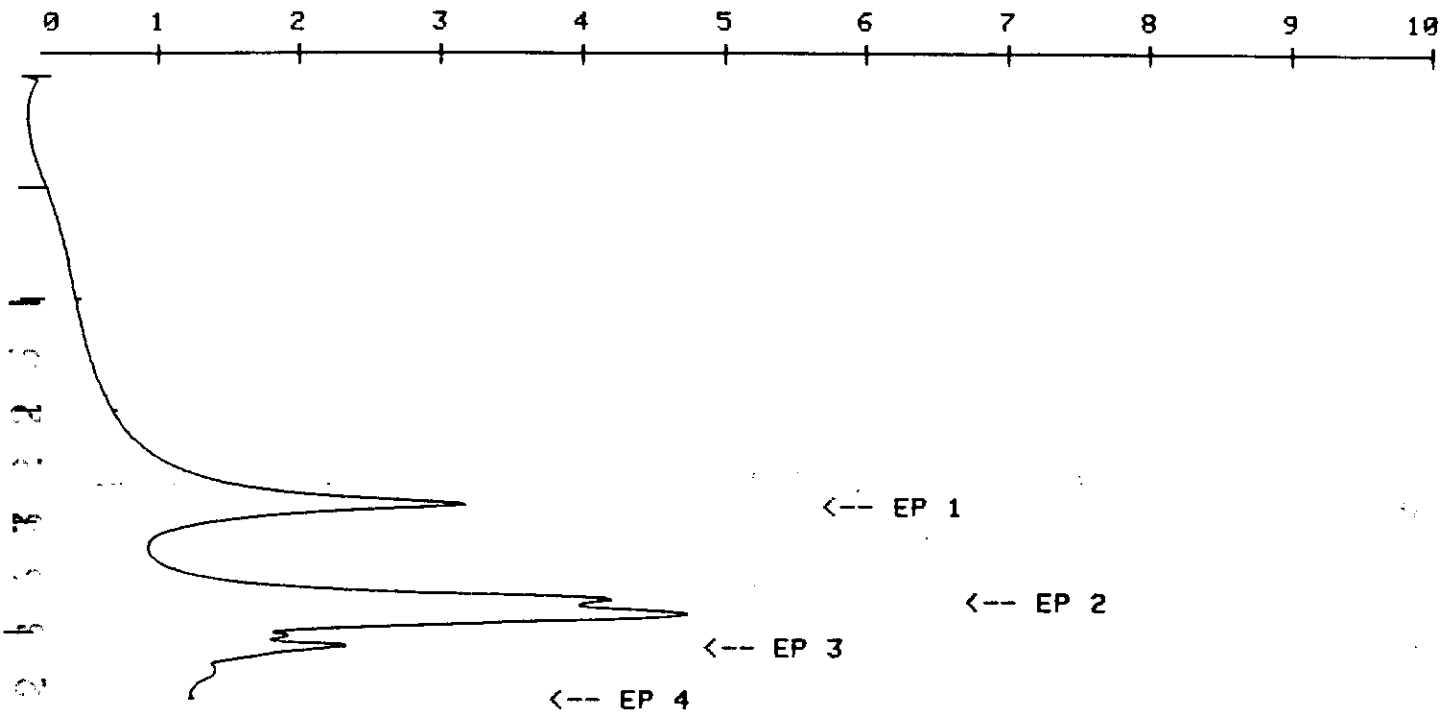
| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-4-92 | | Stacie Isaacson |

54-6600-061 (R-10-63)

9 3 1 2 9 3 2 2 0

ɜMPLE NUMBER: 4 Std #1
SAMPLE DATA: 522.
DIRECT READ PH: 11.996

DERIVATIVE OUTPUT, dE/dV




DRV TITRATION:

| EQUIVALENCE PH | TITRANT VOLUME | COMPUTATION |
|---|---|---|
| 9.72 | 0.480 | 0.0000 |
| 7.47 | 0.586 | 0.0000 |
| 4.25 | 0.638 | 0.0000 |
| 3.58 | 0.696 | 0.0000 |

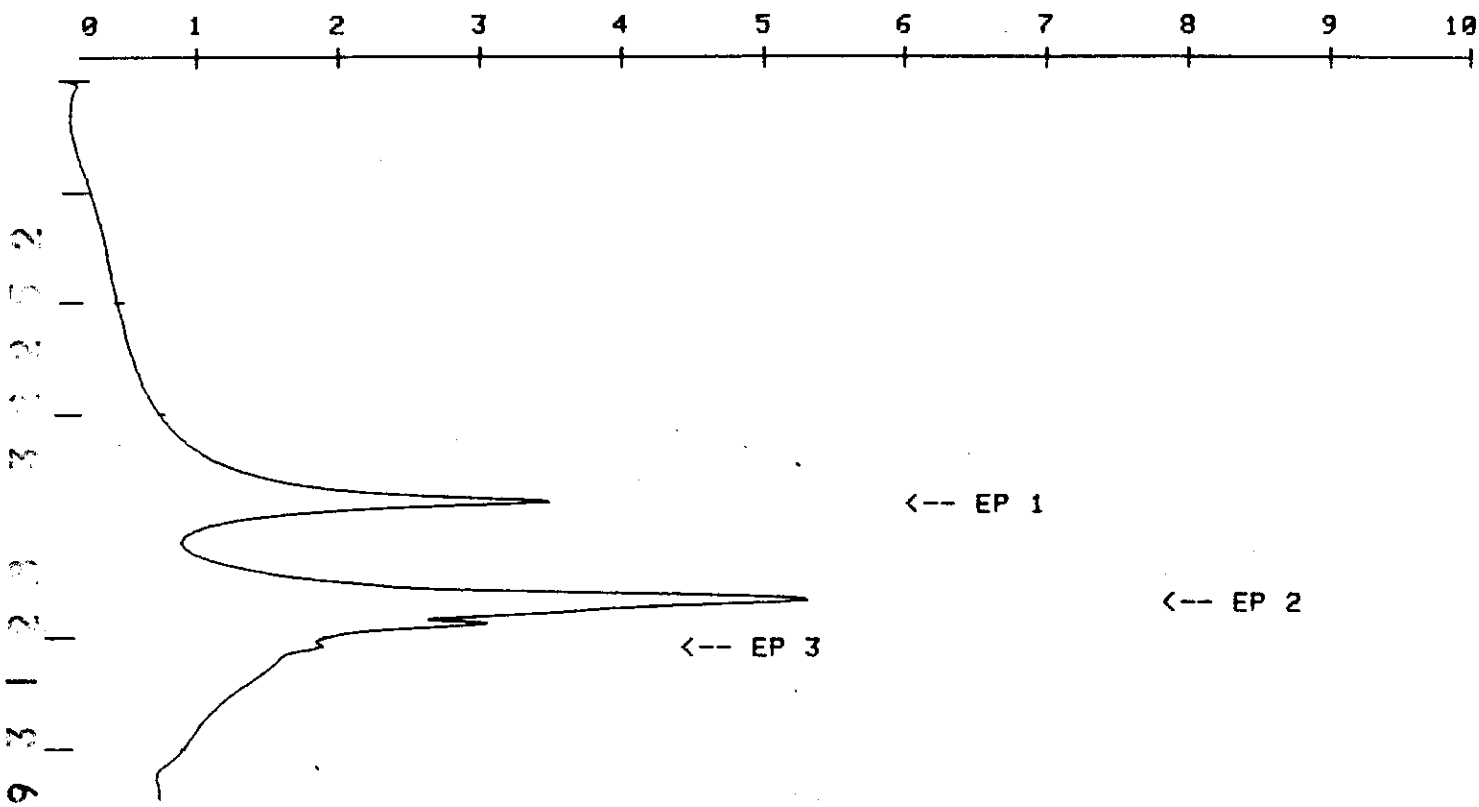
TITRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

JAN 4 1992 5:12 PM

Std #2

SAMPLE NUMBER: 5
SAMPLE DATA: 897.
DIRECT READ PH: 12.022

DERIVATIVE OUTPUT, dE/dV




DRV TITRATION:

| EQUIVALENCE PH | TITRANT VOLUME | COMPUTATION |
|---|---|---|
| 9.62 | 0.474 | 0.0000 |
| 6.76 | 0.583 | 0.0000 |
| 4.18 | 0.634 | 0.0000 |

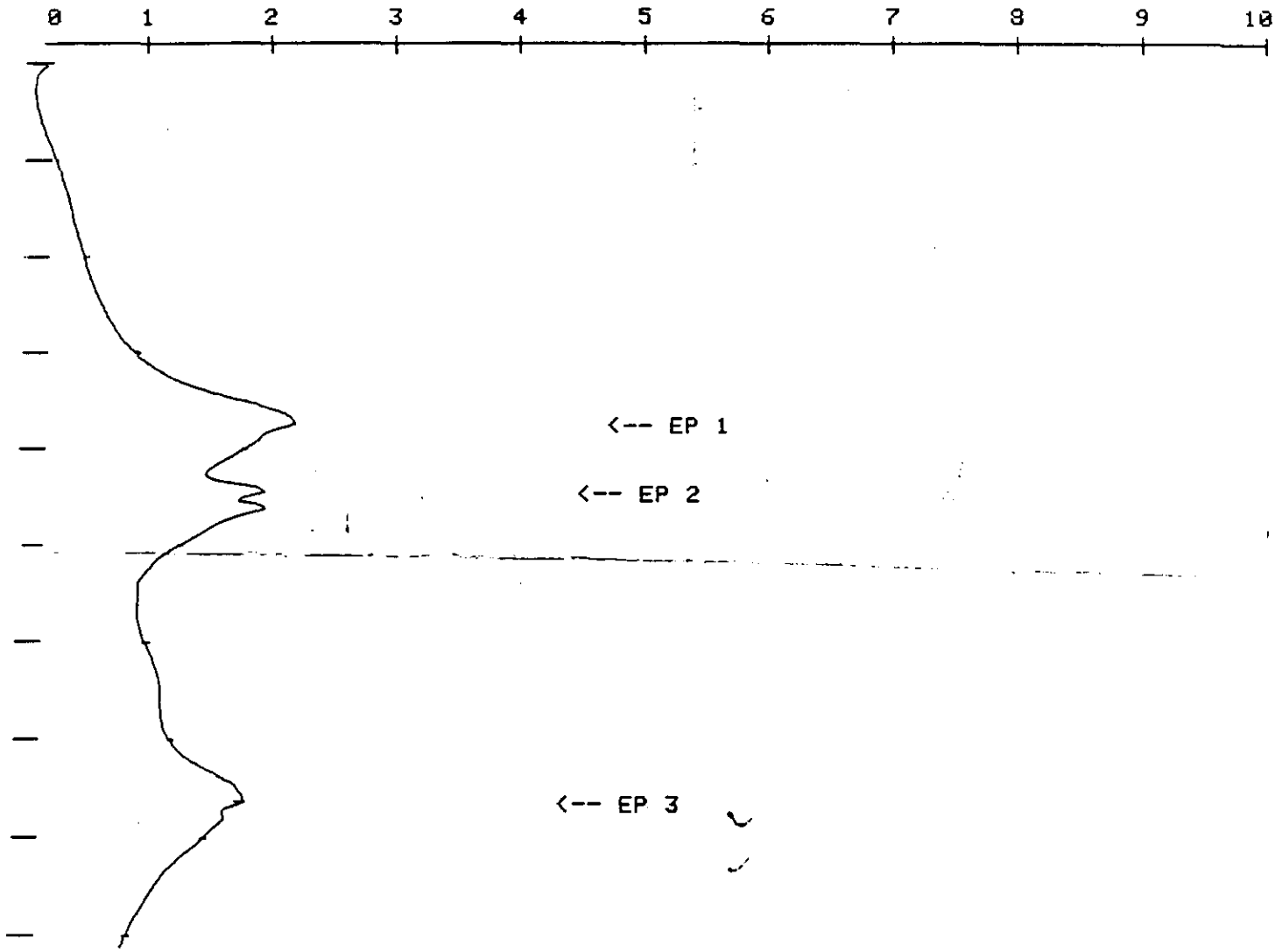
TITRATION TERMINATED BY PH LIMIT.

JAN 4 1992 6:25 PM

R-937 #1

SAMPLE NUMBER: 35
SAMPLE DATA: 580.
DIRECT READ PH: 11.708

DERIVATIVE OUTPUT, dE/dV




DRV TITRATION:

| EQUIVALENCE PH | TITRANT VOLUME | COMPUTATION |
|---|---|---|
| 9.54 | 0.466 | 0.0000 |
| 8.04 | 0.554 | 0.0000 |
| 4.46 | 0.952 | 0.0000 |

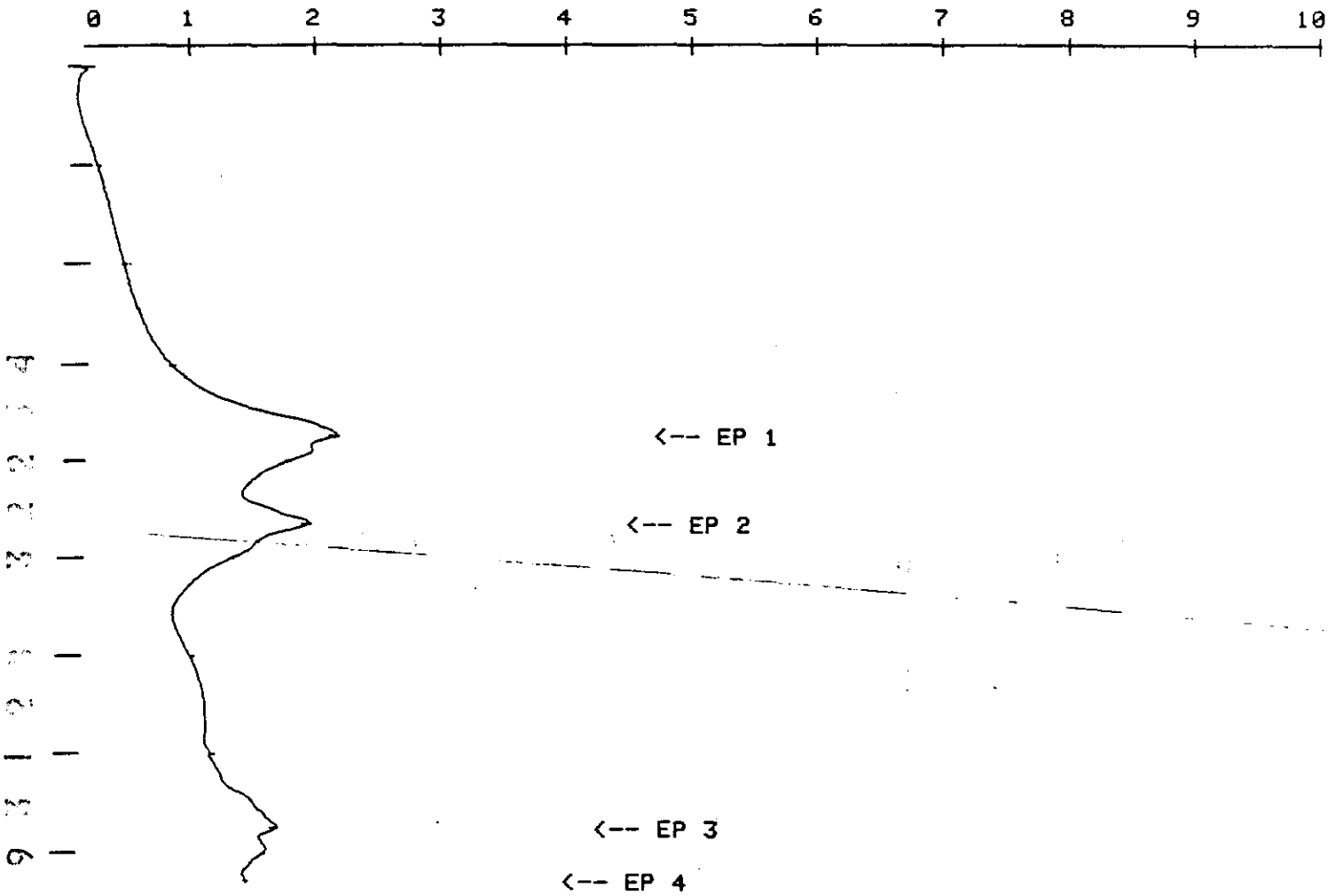
TITRATION TERMINATED BY PH LIMIT.

JAN 4 1992 11:18 PM

R-937 #2

SAMPLE NUMBER: 34
SAMPLE DATA: 228.
DIRECT READ PH: 11.731

DERIVATIVE OUTPUT, dE/dV




DRV TITRATION:

| EQUIVALENCE PH | TITRANT VOLUME | COMPUTATION |
|---|---|---|
| 9.64 | 0.466 | 0.0000 |
| 7.70 | 0.579 | 0.0000 |
| 4.50 | 0.966 | 0.0000 |
| 3.60 | 1.031 | 0.0000 |

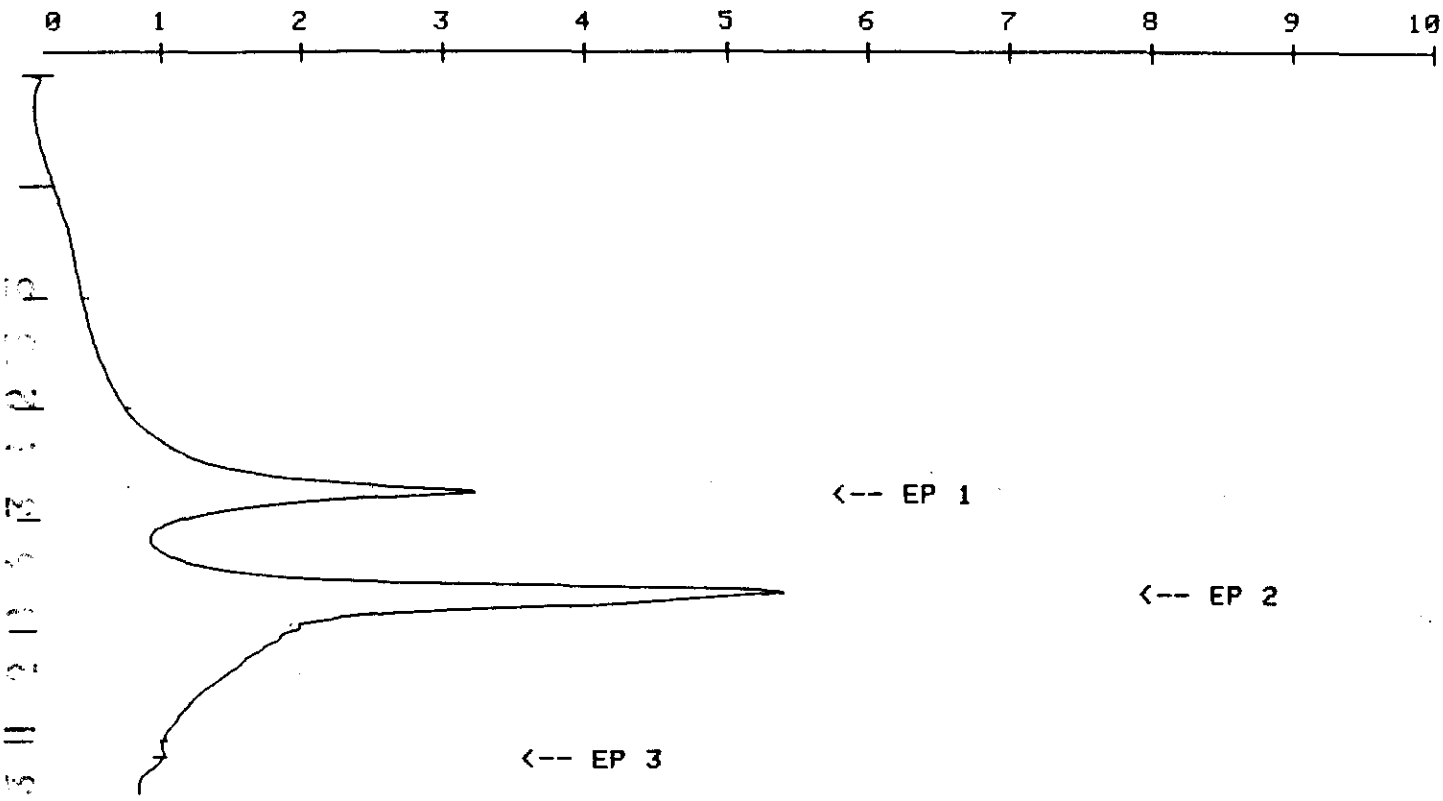
TITRATION TERMINATED BY LIMIT ON NUMBER OF EQUIVALENCES PERMISSIBLE.

JAN 4 1992 11:08 PM

SAMPLE NUMBER: 36
SAMPLE DATA: 522.
DIRECT READ PH: 12.016

R-938 Std #1

DERIVATIVE OUTPUT, dE/dV




OBRV TITRATION:

| EQUIVALENCE PH | TITRANT VOLUME | COMPUTATION |
|---|---|---|
| 9.75 | 0.469 | 0.0000 |
| 7.07 | 0.581 | 0.0000 |
| 3.22 | 0.767 | 0.0000 |

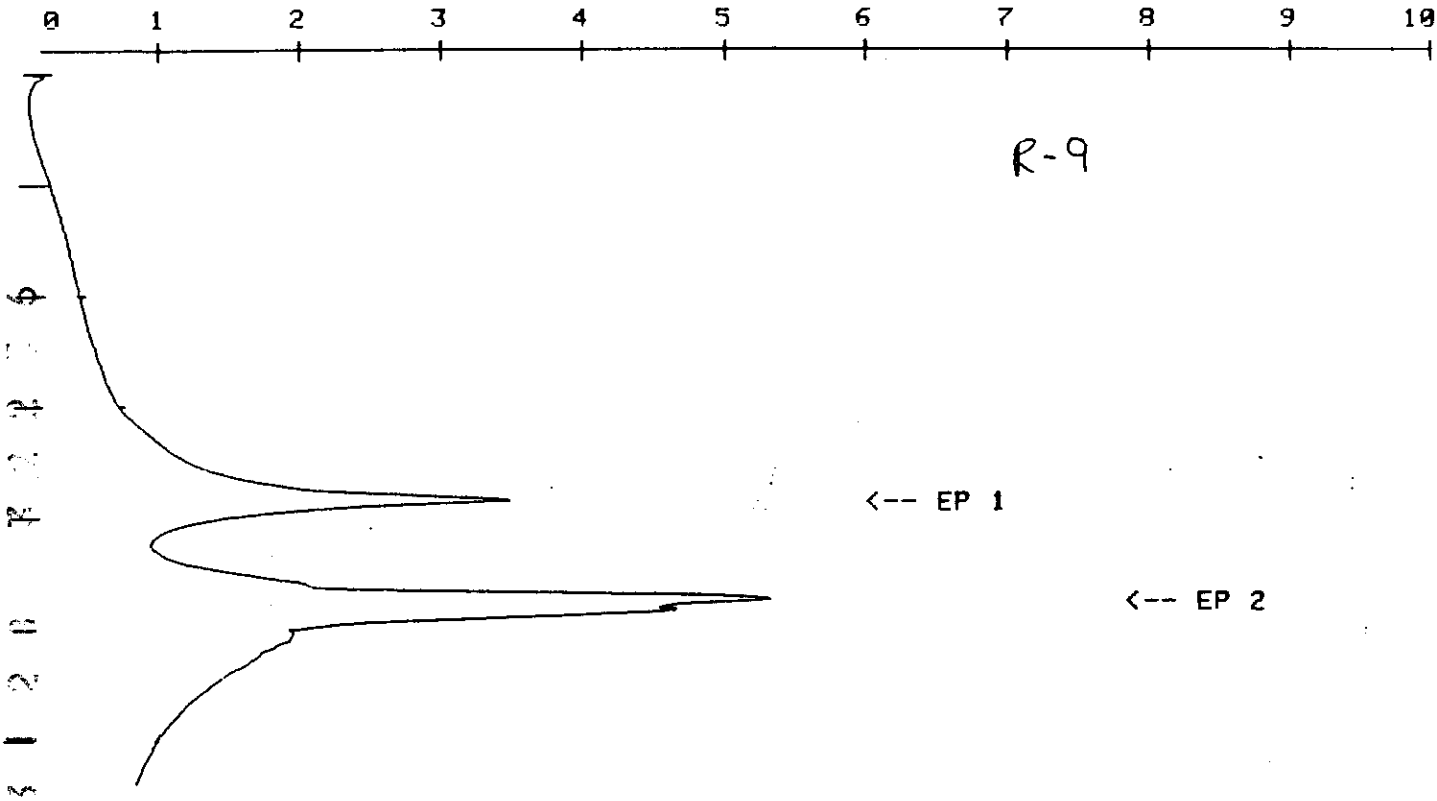
TITRATION TERMINATED BY PH LIMIT.

JAN 4 1992 11:26 PM

R-938 Std #2

MPLE NUMBER: 37
SAMPLE DATA: 897.
DIRECT READ PH: 12.022

DERIVATIVE OUTPUT, dE/dV




DRV TITRATION:

| EQUIVALENCE PH | TITRANT VOLUME | COMPUTATION |
|---|---|---|
| 9.64 | 0.481 | 0.0000 |
| 6.87 | 0.591 | 0.0000 |

TITRATION TERMINATED BY PH LIMIT.

JAN 4 1992 11:35 PM

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: CYANIDE | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: MILTON ROY SPEC 301 AL10724 | Procedure/Rev: LA-695-102/B-0 |
| Technologist: E. COLVIN | Date: 1-31-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. BISENIUS |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5578 | 11 | | |
| 2 | REAGENT BLANK | R932-5678 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5778 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5578 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 75C11-X/0.100 mL | | | N/A |
| | | | | |
| | | | | |
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A-6000-881 (03/92)

Serial No: R 931.-5578 | Sample Point: 103AP | Date: 12-16-91 | Time Issued: 15:44 | Priority: 25
Determination: CN | Method/Standard: LA-695-102 | Result Units: % RECOVERY | Charge Code: N124W | Rerun:
Sample Size: 100uL-10mL-500uL | Customer ID: STD
Remarks, Calculations, Results:
S244 KCN
STD# 75C11-X RESULT 8.64E2ppm ABS .703
Blank = .004
STD VAL 8.98E2ppm %REC 96.2%
%Rec = $\frac{8.64E2\ ppm}{8.98E2\ ppm} \times 100 = 96.2\%$
$\frac{(.703-.004)-(-.004303)}{.162726} = 4.322\ mg\ CN^-$
DF = $\frac{10mL}{0.1mL} = 100$
$\frac{4.322\ mg\ CN^- \times 100}{0.5\ mL} = 864\ ug/mL = 864\ ppm$
Analyst-1: 80028 | Analyst-2: | Analyst-3: | Analyst-4: | Analyst-5:
Date: 1-31-92 | Time Completed: | Lab Unit Mgr: D Y Bisenius

Serial No: R 932.-5578 | Sample Point: 103AP | Date: 12-16-91 | Time Issued: 15:44 | Priority: 25
Determination: CN | Method/Standard: LA-695-102 | Result Units: PPM | Charge Code: N124W
Sample Size: ? | Customer ID: BLK
Remarks, Calculations, Results:
REAGENT BLANK
$\frac{<0.1\ mg\ CN^-}{5\ mL} = <2E-2\ ppm$ ABS .004
$\frac{.004-(-.004303)}{.162726} = .05\ mg\ CN = <0.1\ mg\ CN^-$
Analyst-1: 80028 | Analyst-2: | Analyst-3: | Analyst-4: | Analyst-5:
Date: 1-31-92 | Time Completed: | Lab Unit Mgr: D Y Bisenius

Serial No: R 937.-5578 | Sample Point: 103AP | Date: 12-16-91 | Time Issued: 15:55 | Priority: 25
Determination: CN | Method/Standard: LA-695-102 | Result Units: PPM | Charge Code: N124W | Rerun: 0
Sample Size: 750uL | Customer ID: SAP891-5
Remarks, Calculations, Results:
$\frac{3.95E-1\ mg\ CN^-}{0.75\ mL} = 5.27E-1\ ppm$ ABS. .064
Blank = .004
$\frac{(.064-.004)-(-.004303)}{.162726} = 3.95E-1\ mg\ CN^-$
Analyst-1: 80028 | Analyst-2: | Analyst-3: | Analyst-4: | Analyst-5:
Date: 1-31-92 | Time Completed: | Lab Unit Mgr: D Y Bisenius

Serial No: R 938.-5578 | Sample Point: 103AP | Date: 12-16-91 | Time Issued: 15:56 | Priority: 25
Determination: CN | Method/Standard: LA-695-102 | Result Units: % RECOVERY | Charge Code: N124W | Rerun: 0
Sample Size: 100uL-10mL-500uL | Customer ID: STD
Remarks, Calculations, Results:
S244 KCN
STD# 75C11-X RESULT 8.86E2ppm ABS .721
Blank = .004
STD VAL 8.98E2ppm %REC 98.7%
DF = $\frac{10mL}{0.1mL} = 100$
$\frac{(.721-.004)-(-.004303)}{.162726} = 4.43\ mg\ CN^-$
%Rec = $\frac{8.86E2\ ppm}{8.98E2\ ppm} \times 100$
$\frac{4.43\ mg\ CN^- \times 100}{0.5\ mL} = 886\ ug/mL = 886E2\ ppm$
%Rec = 98.7%
Analyst-1: 80028 | Analyst-2: | Analyst-3: | Analyst-4: | Analyst-5:
Date: 1-31-92 | Time Completed: | Lab Unit Mgr: D Y Bisenius

TODAYS DATE: 1-31-1992

ROLL NO.: 80028

Y-INTERCEPT= -.004303
SLOPE= .16726

SAMPLE ID#: R-932 BLANK
SAMPLE SIZE: 0
WVL AND ABS= 580NM 0.004 A

SAMPLE ID#: R-931 75C11-X STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.703 A

SAMPLE ID#: R-933
SAMPLE SIZE: 100UL
WVL AND ABS= 580NM 0.015 A

SAMPLE ID#: R-934
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.060 A

SAMPLE ID#: R-934 DUPLICATE
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.062 A

SAMPLE ID#: R-934 + SPIKE
SAMPLE SIZE: 750UL + 100UL-10ML-500UL 75C11-X SPIKE
WVL AND ABS= 580NM 0.752 A

SAMPLE ID#: R-935
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.071 A

SAMPLE ID#: R-936
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.057 A

SAMPLE ID#: ~~R-936~~ R-937 [illegible] 08/26/92
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.064 A

SAMPLE ID#: R-938 75C11-X STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.721 A

TECHNOLOGIST SIGNATURE: Ed Cohen

DATE SIGNED: 1-31-1992

CALIBRATION CURVE LACHAT NON-DISTILLED 25ML

CYANIDE DATE: 12-02-1991

CALIBRATION STANDARD # 351-R, 998 MG/ML CYANIDE

DILUTION FACTOR = 10/.1 = 100, WORKING STANDARD = 998 /100 = 9.9800

| PIPET SIZE | MICROGRAMS CYANIDE | TOTAL ABS | NET ABS |
|---|---|---|---|
| BLANK | 0 | .012 | 0 |
| 50UL | .499 | .0900 | .0780 |
| 500UL | 4.990 | .8090 | .7970 |
| 1000UL | 9.980 | 1.6370 | 1.6250 |

Y INTERCEPT =-.004303
SLOPE = .162726
C C = .999953

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: ARSENIC | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: PERKIN ELMER WA77479 | Procedure/Rev: LA-355-131/B-0 |
| Technologist: D. R. JACKSON | Date: 1-7-92 |
| Starting Time: 8:00 | Temperature: N/A |
| Ending Time: 3:00 | Chemist: R. K. FULLER |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5595 | 11 | | |
| 2 | REAGENT BLANK | R932-5695 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5795 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5595 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 129B38D/.500 mL | | | N/A |
| | | | | |
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A-6000-881 (03/92)

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
**CALIBRATION RECORD**

| | | | |
|---|---|---|---|
| Analyte: | As | | |
| Procedure: | LA-355-131 | Revision: | B-0 |
| Instrument: | PERKIN ELMER | Property No.: | WA77479 |
| Technologist: | D. R. JACKSON | Payroll No.: | 6C275 |
| Date: | 1-7-92 | | |

Calibration Standard: 128B38C
Analyte Concentration: 0.100 ppm
Type of Calibration: LINEAR

| | Dilution | Concentration | Instrument Reading Unit |
|---|---|---|---|
| 1 | 0.000 mL | 0.0 ng | 0.000 |
| 2 | 0.200 mL | 20.0 ng | 0.344 |
| 3 | 0.400 mL | 40.0 ng | 0.662 |
| 4 | 1.000 mL | 100.0 ng | 1.501 |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |
| 21 | | | |

Comments:

A-6000-882 (03/92)

# ARSENIC ANALYSIS - UNDIGESTED SAMPLE

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5595 | 103AP | 12-16-91 | 15:44 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| AS | LA-355-131 | % RECOVERY | N124W | 0 |

Sample Size: 0.500 ml — Customer ID: STD

Remarks, Calculations, Results: EDP R741 AS/HYDRD

STD#129B38C RESULT 0.0974 ppm ~~47.8311 ng / 50.0 ng X100 = 95.66~~ DRJ 1-7-92

STD VAL 0.10 ppm %REC 97.4%

DRJ ~~0.700~~ PKHT=.756 1-7-92

$\frac{48.7}{500X} = 0.0974$ ppm

$\frac{0.974 \text{ ppm}}{0.100 \text{ ppm}} \times 100 = 97.40\%$

| Analyst-1 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5 |
|---|---|---|---|---|
| 6C275 | | Leslie Dian | | RK Fuller 1-7-92 |
| Date 1-7-92 DRJ 1-7-92 | Time Completed | Lab Unit Mgr | | |

54-6600-061 (R-10-83)

R931-5595

| ng | PKHT |
|---|---|
| 0 ng | 0.000 |
| 20 ng | 0.344 |
| 40 ng | 0.662 |
| 100 ng | 1.501 |

$r^2 = 0.9977$

Intercept = 0.0326

slope = 0.0149

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-5695 | 103AP | 12-16-91 | 15:45 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| AS | LA-355-131 | PPM | N124W | 0 |

Sample Size: 10.0 ml — Customer ID: BLK

Remarks, Calculations, Results: REAGENT BLANK

~~0.085~~ DRJ 1-7-92

0.066 pkht = 2.3 ngs $\frac{< 5 \text{ ng}}{10.0 \text{ ml}}$ < 0.0005 ppm

| Analyst-1 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5 |
|---|---|---|---|---|
| 6C275 | | | | RK Fuller 1-7-92 |
| Date 1-7-92 ~~1-6-92~~ | Time Completed | Lab Unit Mgr | | |

54-6600-061 (R-10-83)

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5795 | 103AP | 12-16-91 | 15:55 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| AS | LA-355-131 | PPM | N124W | 0 |

Sample Size: 1.0 ml — Customer ID: SAPU91-5

Remarks, Calculations, Results: DRJ ~~0.457~~ 1-7-92

0.769 = PKHT

$\frac{0.769 - 0.0326}{0.0149} = 49.42$ ngs

$\frac{49.42 \text{ ngs}}{1000X} = 0.049$ ppm

| Analyst-1 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5 |
|---|---|---|---|---|
| 6C275 | | | | RK Fuller 1-7-92 |
| Date 1-7-92 ~~1-6-92~~ | Time Completed | Lab Unit Mgr | | |

54-6600-061 (R-10-83)

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 930.-5595 | 103AP | 12-16-91 | 15:56 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| AS | LA-355-131 | % RECOVERY | N124W | 0 |

Sample Size: 0.500 ml — Customer ID: STD

Remarks, Calculations, Results: EDP R741 AS/HYDRD

STD#129B38C RESULT 0.103 ppm

STD VAL 0.10 ppm %REC 103.0%

0.799 = PKHT

$\frac{0.799 - 0.0326}{0.0149} = 51.44$ ngs

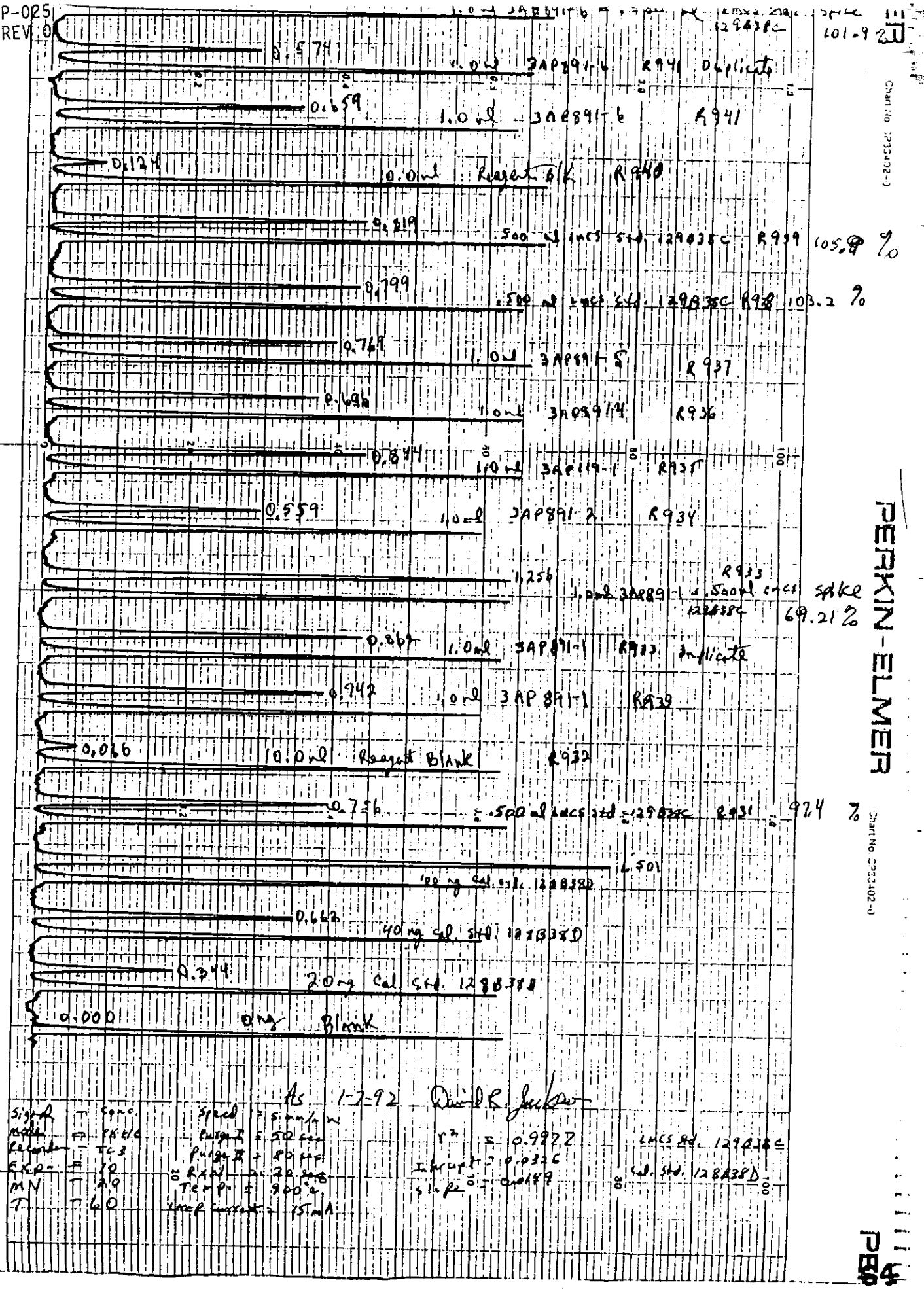
$\frac{51.44 \text{ ngs}}{1000X} = 0.103$ ppm

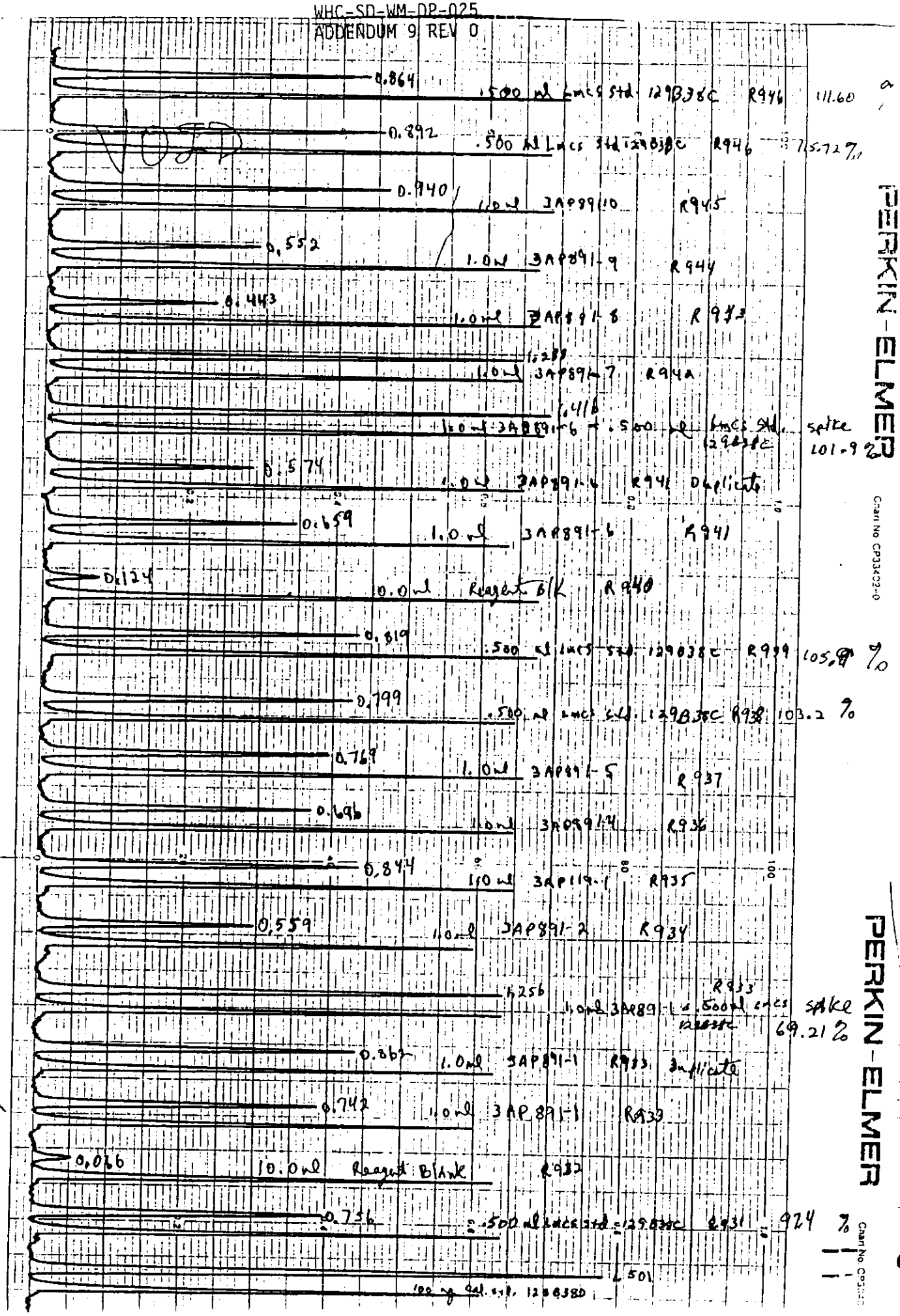
DRJ 1-7-92

$\frac{0.103 \text{ ppm}}{0.100 \text{ ppm}} \times 100 = 103.0\%$

| Analyst-1 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5 |
|---|---|---|---|---|
| 6C275 | | Leslie Dian | | RK Fuller 1-7-92 |
| Date 1-7-92 ~~1-6-92~~ | Time Completed | Lab Unit Mgr | | |

54-6600-061 (R-10-83)


0.574
1.0 ml 3AP891-6 R941 Duplicate
0.659
1.0 ml 3AP891-6 R941
0.124
10.0 ml Reagent blk R940
0.819
.500 ml LNCS std. 129838C R939 105.8 %
0.799
.500 ml LNCS std. 129838C R938 103.2 %
0.769
1.0 ml 3AP891-5 R937
0.696
1.0 ml 3AP891-4 R936
0.844
1.0 ml 3AP119-1 R935
0.559
1.0 ml 3AP891-2 R934
1.256
1.0 ml 3AP891-1 + .500 ml LNCS 129838C R933 spike 69.21 %
0.367
1.0 ml 3AP891-1 R933 Duplicate
0.742
1.0 ml 3AP891-1 R932
0.066
10.0 ml Reagent Blank R932
0.756
.500 ml LNCS std. 129838C R931 92.4 %
1.501
100 ng cal. std. 129838D
0.662
40 ng cal. std. 129838D
0.344
20 ng cal. std. 129838D
0.000
0 ng Blank
As 1-7-92
Signal = conc.
mode = PEAK
Recorder = TC3
Exp = 10
MN = 20
T = 60
Speed = 5 mm/min
Purge I = 50 cc
Purge II = 80 cc
RXN = 20 sec
Temp = 900°C
Laser current = 15 mA
r² = 0.9977
Intercept = 0.0326
Slope = 0.0149
LNCS Std. 129838C
Cal. Std. 129838D
PERKIN-ELMER
Chart No. 0933402-0
Chart No. 0933402-0




David R. Parker 1-7-92

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: MERCURY | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: PERKIN ELMER WA77479 | Procedure/Rev: LA-325-102/B-0 |
| Technologist: D. R. JACKSON | Date: 1-21-92 |
| Starting Time: 8:00 | Temperature: N/A |
| Ending Time: 3:30 | Chemist: R. K. FULLER |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5597 | 11 | | |
| 2 | REAGENT BLANK | R932-5697 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5797 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5597 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 129B38D/.300 mL | | | N/A |
| | | | | |
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A-6000-881 (03/92)

# WESTINGHOUSE HANFORD COMPANY
## 222-S LABORATORY
## CALIBRATION RECORD

| | | | | | |
|---|---|---|---|---|---|
| Analyte: | Hg | | | | |
| Procedure: | LA-325-102 | Revision: | B-0 | | |
| Instrument: | PERKIN ELMER | Property No.: | WA77479 | | |
| Technologist: | D. R. JACKSON | Payroll No.: | 6C275 | Date: | 1-21-92 |

Calibration Standard: 129B38D
Analyte Concentration: 0.1000 ppm
Type of Calibration: LINEAR

| | Dilution | Concentration | Instrument Reading Unit |
|---|---|---|---|
| 1 | 0.000 mL | 0.0 ng | 0.000 |
| 2 | 0.100 mL | 15.2 ng | 0.090 |
| 3 | 0.250 mL | 38.0 ng | 0.236 |
| 4 | 0.500 mL | 76.0 ng | 0.458 |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 3 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |
| 21 | | | |

Comments:

A-6000-882 (03/

# MERCURY ANALYSIS - UNDIGESTED SAMPLE

Serial No. R931-5597 | Sample Point TOSAP | Date 12-16-91 | Time Issued 15:44 | Priority 25
Determination Hg | Method/Standard LA-525-102 | Result Units % RECOVERY | Charge Code TT2HW | Range 0
Sample Size 300 ml | Customer ID STD
Remarks, Calculations, Results
EDF K/TS HG/HYDRD
STD# 29238D RESULT 0.1002 ppm
STD VAL 0.1000 ppm %REC 100.2%
PKHT = 0.181
PKHT = 0.191
OVER

$\frac{0.191 - -0.0036}{0.0057}$ DRJ = 34.14 ngp

$\frac{34.14 \text{ ngp}}{300\lambda}$ = 0.1138 ppm 1-21-92

$\frac{0.1138 \text{ ppm}}{0.1000 \text{ ppm}} \times 100 = 113.8\%$

Analyst 1: 6C275 | Analyst 2 | Analyst 3 | Analyst 4 | Analyst 5: RK Tuller 1-22-92
Date 1-21-92 | Time Completed | Lab Unit Mgr

| ng | PKHt |
|---|---|
| 0 | 0.0000 |
| 15.2 | 0.0830 |
| 38.0 | 0.2040 |
| 76.0 | 0.4310 |

R931-5597 DRJ $r^2 = 0.9992$
Intercept = -0.0036
1-21-92 Slope = 0.0057

| ngp | PKHt |
|---|---|
| 0.000 | 0.000 |
| 15.2 | 0.090 |
| 38.0 | 0.236 |
| 76.0 | 0.458 |

$r^2 = 0.8896$ Intercept = 0.0007
Slope = 0.0060

PKHt = 0.181

$\frac{0.181 - 0.0007}{0.0060} = 30.05$ ngp

$\frac{30.05 \text{ ngp}}{300\lambda} = 0.1002$ ppm

$\frac{0.1002 \text{ ppm}}{0.1000 \text{ ppm}} \times 100 = 100.2\%$

Serial No. R932-5697 | Sample Point TOSAP | Date 12-16-91 | Time Issued 15:45 | Priority 25
Determination Hg | Method/Standard LA-525-102 | Result Units PPM | Charge Code TT2HW | Range 0
Sample Size 10.0 ml | Customer ID BLK
Remarks, Calculations, Results
RESULT BLANK
PKHt = 0.007
over

$\frac{0.018 - -0.0036}{0.0057}$ DRJ 1-21-92 = 3.79 ngp < 5 ngp

$\frac{< 5 \text{ ngp}}{10000}$ = < 0.0005 ppm

Analyst 1: 6C275 | Analyst 2 | Analyst 3 | Analyst 4 | Analyst 5: RK Tuller 1-22-92
Date 1-21-92 | Time Completed | Lab Unit Mgr

R932-5697

$\frac{0.007 - 0.0007}{0.0060} = 1.05$ ngp = < 5 ngp

$\frac{< 5 \text{ ngp}}{10000}$ = < 0.0005 ppm

PKHt = 0.007

Serial No. R937-5797 | Sample Point TOSAP | Date 12-16-91 | Time Issued 15:55 | Priority 25
Determination Hg | Method/Standard LA-525-102 | Result Units PPM | Charge Code TT2HW | Range
Sample Size 3.0 ml | Customer ID SAPG91-5
Remarks, Calculations, Results
PKHt = 0.006
over

$\frac{0.006 - -0.0036}{0.0057}$ DRJ 1-21-92 = 1.68 ngp < 5 ngp

$\frac{< 5 \text{ ngp}}{1000\lambda}$ = < 0.005 ppm

Analyst 1: 6C275 | Analyst 2 | Analyst 3 | Analyst 4 | Analyst 5: RK Tuller 1-22-92
Date 1-21-92 | Time Completed | Lab Unit Mgr

R937-5797

PKHt = -0.006

$\frac{-0.006 - 0.0007}{0.0060} = -1.12$ ngp = < 5 ngp

$\frac{< 5 \text{ ngp}}{3000\lambda}$ = < 0.0017 ppm

# MERCURY ANALYSIS - UNDIGESTED SAMPLE

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938-5597 | 103AP | 12-16-91 | [illegible] | [illegible] |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| Hg | LA-325-102 | % RECOVERY | [illegible] | [illegible] |

| Sample Size | Customer ID |
|---|---|
| 0.300 ml | STD |

Remarks, Calculations, Results
EDP R/15 HG/HYDRD
STD# 129636D RESULT 0.1052 ppm
STD VAL 0.100 ppm %REC 105.17 %
~~PK Ht = 0.176~~ DRJ 1-21-92
PK Ht = 0.190 over

$\frac{0.176 - 0.0036}{0.0057}$ = 31.51 ng

$\frac{31.51 \text{ ng}}{300 \lambda}$ = 0.1051 ppm

$\frac{0.1051 \text{ ppm}}{0.1000 \text{ ppm}} \times 100 = 105.1\%$

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 05275 | | | [signature] | RK 1-22-92 |
| Hrs | Hrs | Hrs | Hrs | Hrs |
| [signature] | | | [signature] | |

| Date | Time Completed | Lab Unit Mgr | |
|---|---|---|---|
| 1-21-92 | | | [signature] |

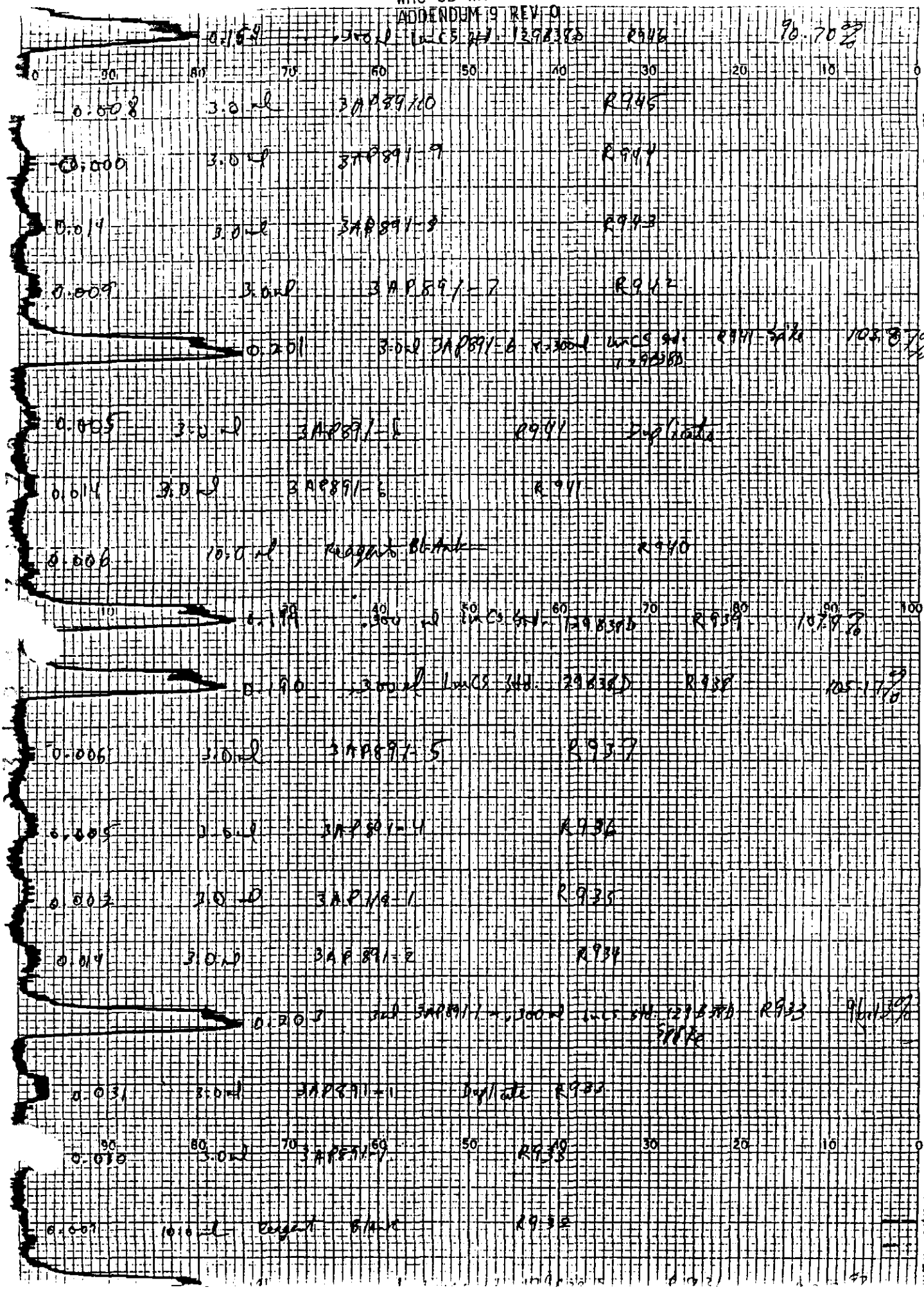
54-6600-061 (10-83)

PK Ht = 0.190 R938-5597

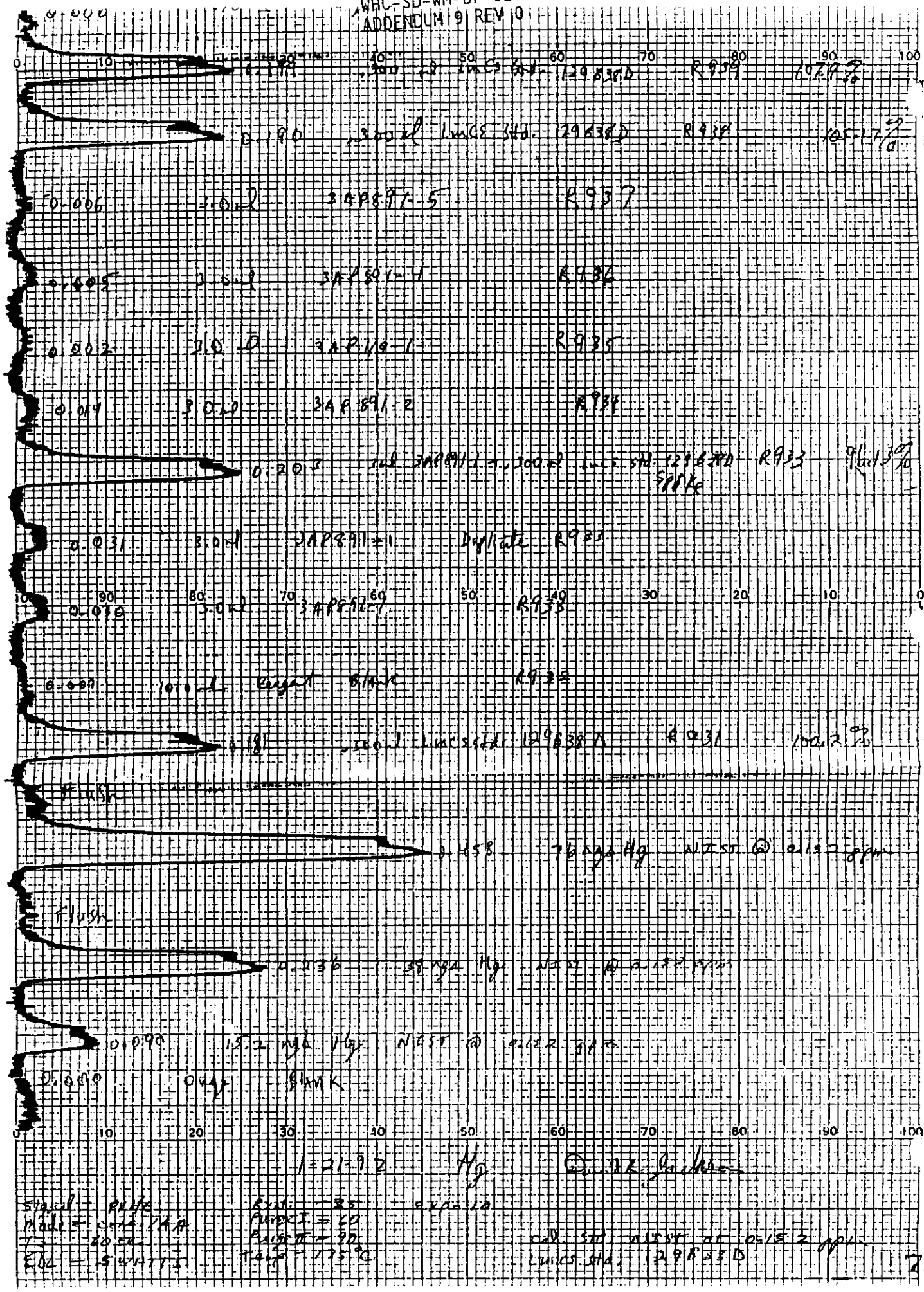
$\frac{0.190 - 0.0007}{0.0060}$ = 31.55 ng

$\frac{31.55 \text{ ng}}{300 \lambda}$ = 0.1052 ppm

$\frac{0.1052 \text{ ppm}}{0.1000 \text{ ppm}} \times 100$ = 105.17




Lindsey Jackson 1-21-92 Hg


0.199 .300 ml LMCS Std. 129B38D R939 107.9%
0.190 .300 ml LMCS Std. 129B38D R938 105.17%
0.006 3.0 ml 3AP891-5 R937
0.005 3.0 ml 3AP891-4 R936
0.002 3.0 ml 3AP891-1 R935
0.014 3.0 ml 3AP891-2 R934
0.203 3ml 3AP891-1 + .300 ml LMCS Std. 129B38D R933 96.13%
0.031 3.0 ml 3AP891-1 Duplicate R933
0.030 3.0 ml 3AP891-1 R933
0.007 10.0 ml Reagent Blank R932
0.181 .300 ml LMCS Std. 129B38D R931 100.2%
Flush
0.458 76 ngs Hg NIST @ 0.152 ppm
Flush
0.236 38 ngs Hg NIST @ 0.152 ppm
0.090 15.2 ngs Hg NIST @ 0.152 ppm
0.000 0 ngs Blank
1-21-92 Hg
Signal = PKHT
Mode = Conc. PAA
Ts = 60 sec
EDL = 5 WATTS
Run = 25
Purge I = 60
Purge II = 90
Temp = 175 °C
Exp = 10
Cal. Std. NIST at 0.152 ppm
LMCS Std. 129B38D

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: SELENIUM | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: PERKIN ELMER WA77479 | Procedure/Rev: LA-365-131/B-1 |
| Technologist: D. R. JACKSON | Date: 1-29-92 |
| Starting Time: 8:00 | Temperature: N/A |
| Ending Time: 2:00 | Chemist: R. K. FULLER |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5596 | 11 | | |
| 2 | REAGENT BLANK | R932-5696 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5796 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5596 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 133B38A/0.500 mL | | | N/A |
| | | | | |
| | | | | |
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A-6000-881 (03/92)

# SELENIUM ANALYSIS - UNDIGESTED SAMPLE

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5596 | 103AP | 12-16-91 | 15:44 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| Se | LA-365-131 | % RECOVERY | [illegible] | |

Sample Size: ? 0.500 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R/43 SE/HYDRD
STD# 133838A RESULT 0.1135
STD VAL 0.100 ppm %REC 113.5%
PK Ht = 0.658

$\frac{0.658 - 0.0225}{0.0112} = 56.74$ ngs

$\frac{56.74 \text{ ngs}}{500 \lambda} = 0.1135$ ppm

$\frac{0.1135 \text{ ppm}}{0.100 \text{ ppm}} \times 100 = 113.5\%$

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 6C275 | | | | RK Fuller 1-30-92 |
| Hrs | Hrs | Hrs | Hrs | Hrs |
| [signature] | | | [signature] | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-29-92 | | [signature] |

R931 - .5596

| ngs | pk Ht |
|---|---|
| 0.00 | 0.000 |
| 20 ngs | 0.274 |
| 40 ngs | 0.468 |
| 100 ngs | 1.132 |

$r^2 = 0.9981$

Intercept = 0.0225

Slope = 0.0112

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-5696 | 103AP | 12-16-91 | 15:45 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| Se | LA-365-131 | PPM | N124W | 0 |

Sample Size: ? 10.0 ml — Customer ID: BLK

Remarks, Calculations, Results:
REAGENT BLANK
PK Ht = -0.008

-0.008 = < 5 ng

$\frac{< 5 \text{ ngs}}{10000 \lambda} = < 0.0005$ ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 6C275 | | | | RK Fuller 1-30-92 |
| Hrs | Hrs | Hrs | Hrs | Hrs |
| [signature] | | | | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-29-92 | | [signature] |

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5796 | 103AP | 12-16-91 | 15:55 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| Se | LA-365-131 | PPM | N124W | 0 |

Sample Size: ? 1.0 ml — Customer ID: 3APB91-5

Remarks, Calculations, Results:
PK Ht = 0.029

$\frac{0.029 - 0.0225}{0.0112} = 0.58$ ngs = < 5 ng

$\frac{< 5 \text{ ngs}}{1000 \lambda} = < 0.005$ ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 6C275 | | | | RK Fuller 1-30-92 |
| Hrs | Hrs | Hrs | Hrs | Hrs |
| [signature] | | | | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-29-92 | | [signature] |

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-5596 | 103AP | 12-16-91 | 15:56 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| Se | LA-365-131 | % RECOVERY | N124W | 0 |

Sample Size: ? 0.500 ml — Customer ID: STD

Remarks, Calculations, Results:
EDP R/43 SE/HYDRD
STD# 133838A RESULT 0.1113 ppm
STD VAL 0.100 ppm %REC 111.34%
PK Ht = 0.646

$\frac{0.646 - 0.0225}{0.0112} = 55.67$ ngs

$\frac{55.67 \text{ ngs}}{500 \lambda} = 0.1113$ ppm

$\frac{0.1113 \text{ ppm}}{0.1000 \text{ ppm}} \times 100 = 111.34\%$

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 6C275 | | | | RK Fuller 1-30-92 |
| Hrs | Hrs | Hrs | Hrs | Hrs |
| [signature] | | | [signature] | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-29-92 | | [signature] |

# WESTINGHOUSE HANFORD COMPANY
## 222-S LABORATORY
## CALIBRATION RECORD

Analyte: Se

Procedure: LA-365-131 | Revision: B-1

Instrument: PERKIN ELMER | Property No.: WA77479

Technologist: D. R. JACKSON | Payroll No.: 6C275 | Date: 1-29-92

Calibration Standard: 132B38A

Analyte Concentration: 0.100 ppm

Type of Calibration: LINEAR

| | Dilution | Concentration | Instrument Reading Unit |
|---|---|---|---|
| 1 | 0.000 mL | 0.0 ng | 0.000 |
| 2 | 0.200 mL | 20.0 ng | 0.274 |
| 3 | 0.400 mL | 40.0 ng | 0.468 |
| 4 | 1.000 mL | 100.0 ng | 1.132 |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |
| 21 | | | |

Comments:

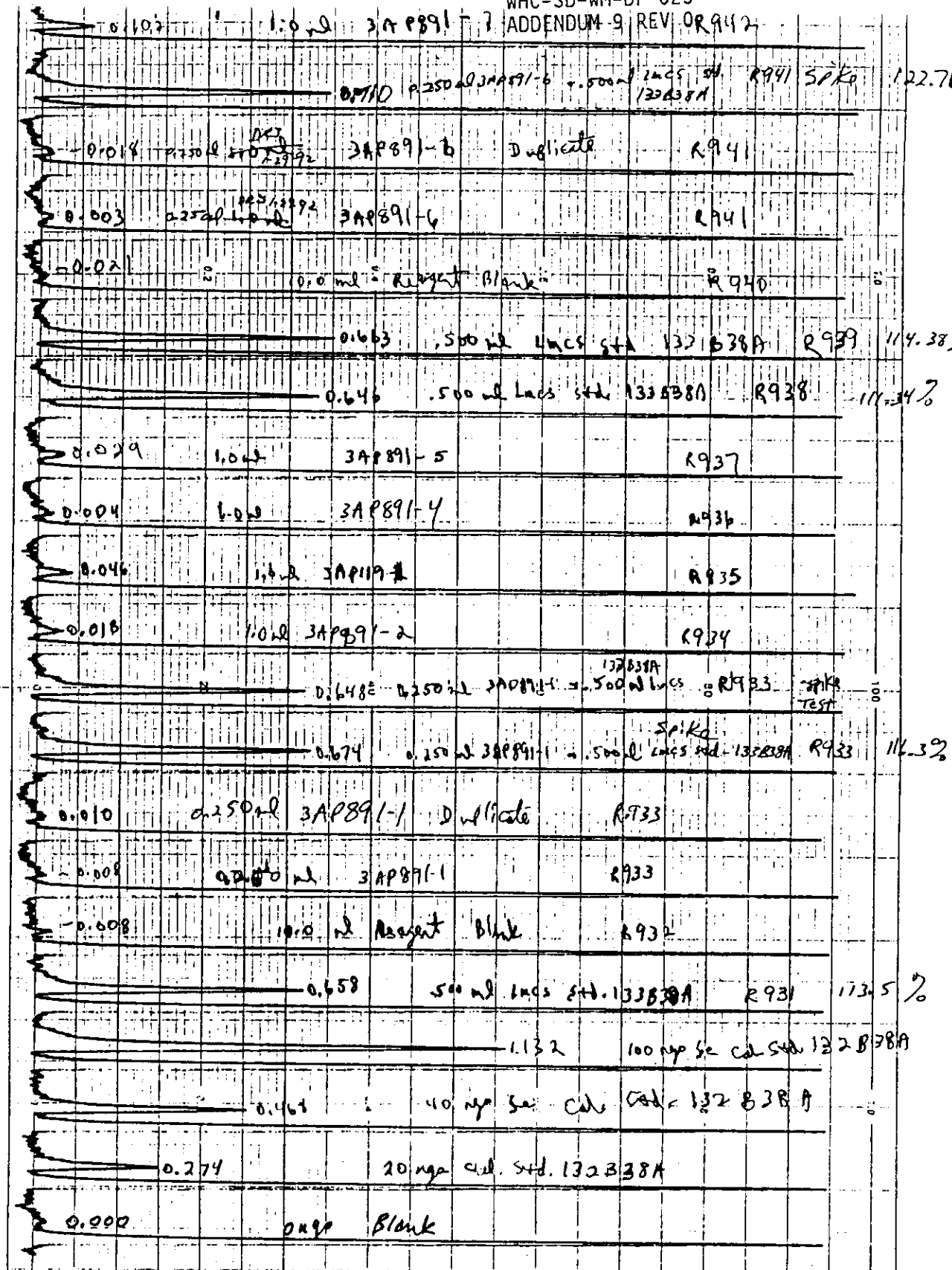
A-6000-882 (03/92)

| | | | | | |
|---|---|---|---|---|---|
| 0.016 | 0.0250 ml | 25-2 | | B6542 | |
| 0.016 | 0.0250 ml | 25-2 | | B6481 | |
| -0.002 | 0.0250 ml | 25-2 | | B6444 | |
| -0.003 | 0.0250 ml | 25-2 | | B6408 | |
| | 0.450 | .500 ml Lmcs std | 133B38A | R946 | 112.06% |
| VOID | 0.764 | .500 ml Lmcs std | 133B38A | R946 | 122.6% Too High |
| 0.089 | 1.0 ml | 3AP89110 | | R945 | |
| 0.009 | 1.0 ml | 3AP891-9 | | R944 | |
| -0.002 | 1.0 ml | 3AP89-8 | | R943 | |
| 0.107 | 1.0 ml | 3AP891-7 | | R942 | |
| | 0.710 | 0.250 ml 3AP891-6 | + .500 ml LMCS std 133A38A | R941 | Spike 122.76% |
| -0.018 | 0.250 ml 1.0 ml DCS 1-29-92 | 3AP891-6 | Duplicate | R941 | |
| 0.003 | 0.250 ml 1.0 ml DCS 1-29-92 | 3AP891-6 | | R941 | |
| -0.021 | 0.0 ml | Reagent Blank | | R940 | |
| | 0.663 | .500 ml Lmcs std | 133B38A | R939 | 114.38% |
| | 0.646 | .500 ml Lmcs std | 133B38A | R938 | 111.34% |
| 0.029 | 1.0 ml | 3AP891-5 | | R937 | |
| 0.004 | 1.0 ml | 3AP891-4 | | R936 | |
| 0.046 | 1.0 ml | 3AP119-1 | | R935 | |
| 0.018 | 1.0 ml | 3AP891-2 | | R934 | |
| | 0.648 | 0.250 ml 3AP891-1 | + .500 ml Lmcs 133B38A | R933 | Spike Test |
| | 0.674 | 0.250 ml 3AP891-1 | + .500 ml Spike Lmcs std 133B38A | R933 | 116.3% |
| 0.010 | 0.250 ml | 3AP891-1 | Duplicate | R933 | |

Sec 3 1 Daniel Jackson 1-29-92

PERKIN-ELMER

Chart No CP3540-1



| | | | | | |
|---|---|---|---|---|---|
| 0.102 | 1.0 ml | 3AP891-7 | R942 | | |
| 0.710 | 0.250 ml 3AP891-6 | + .500 ml LMCS std 133B38A | R941 | Spike | 122.76% |
| -0.018 | 0.250 ml DRS 1-29-92 | 3AP891-6 | Duplicate | R941 | |
| 0.003 | 0.250 ml DRS 1-29-92 | 3AP891-6 | | R941 | |
| -0.021 | 0.0 ml | Reagent Blank | | R940 | |
| 0.663 | .500 ml LMCS std 133B38A | | | R939 | 114.38% |
| 0.646 | .500 ml LMCS std 133B38A | | | R938 | 111.34% |
| 0.029 | 1.0 ml | 3AP891-5 | | R937 | |
| 0.004 | 1.0 ml | 3AP891-4 | | R936 | |
| 0.046 | 1.0 ml | 3AP119-1 | | R935 | |
| 0.018 | 1.0 ml | 3AP891-2 | | R934 | |
| 0.648 | 0.250 ml 3AP891-1 | + .500 ml LMCS 133B38A | | R933 | Spike Test |
| 0.674 | 0.250 ml 3AP891-1 | + .500 ml LMCS std 133B38A | | R933 | Spike 116.3% |
| 0.010 | 0.250 ml | 3AP891-1 | Duplicate | R933 | |
| -0.008 | 0.250 ml | 3AP891-1 | | R933 | |
| -0.008 | 10.0 ml | Reagent Blank | | R932 | |
| 0.658 | .500 ml LMCS std. 133B38A | | | R931 | 113.5% |
| 1.132 | 100 ngs Se Cal Std 132B38A | | | | |
| 0.468 | 40 ngs Se Cal Std 132B38A | | | | |
| 0.274 | 20 ngs Cal. Std. 132B38A | | | | |
| 0.000 | 0 ngs Blank | | | | |

Se 1-29-92 David R. Jackson

Signal - conc. Exp = 8 Purge I - 50 λ - 196.3 nm
Mode - PKHT MV = 20 Purge II - 85 Slit width - 2.0 mm
Recorder - TC3 T = 50 Rvrl - 20 BKgD CORR - AA
Speed = 5 mm/min

Temp. = 975 °C 1-29-92
Lamp current = 6
Lamp # 9

LMCS std. # 133B38A Cal. Std. # 132B38A

$r^2$ = 0.9981 Intercept - 0.0225 Slope = 0.0112

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: ION CHROMATOGRAPHIC - CHLORIDE | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: DIONEX 4000, WB54428 | Procedure/Rev: LA-533-105/B-1 |
| Technologist: M. MEYERS | Date: 1-08-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. HERT |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5572 | 11 | | |
| 2 | REAGENT BLANK | R932-5672 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5772 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5572 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 73C11DC/.100 mL | | | N/A |
| | | | | |
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A-6000-881 (03/92)

# ION CHROMATOGRAPHIC ANALYSIS (CHLORIDE) - UNDIGESTED SAMPLE

| | | | | |
|---|---|---|---|---|
| Report No. K 931.-5572 | Sampling Point 103AW | Date 12-16-91 | Time Received 15:43 | Page 25 |
| Determination CL | Method/Standard LA-533-105 | Result Units % RECOVERY | Charge Code 112.4W | Rerun? 0 |
| Sample Size ? .100ml - 10ml | | | Customer ID STD | |

Remarks, Calculations, Results: EDP R972 DIONEX
STDH 73C11DC RESULT 7.5E1 ppm
STD VAL 7.5E1 ppm %REC 97.5%

Analyst 1: Indira Iyer; Analyst 2: ; Analyst 3: Leslie Dion; Analyst 4: ; Analyst 5: Alvin Gilbert
Pos: ; Pos: ; Pos: ; Pos: ; Pos:
Date: 1-8-92; Time Completed: ; Lab Unit Mgr: ; 16C823

| | | | | |
|---|---|---|---|---|
| Report No. K 932.-5572 | Sampling Point 103AW | Date 12-16-91 | Time Received 15:43 | Page 25 |
| Determination CL | Method/Standard LA-533-105 | Result Units PPM | Charge Code 112.4W | Rerun? 0 |
| Sample Size ? DIRECT | | | Customer ID DIR | |

Remarks, Calculations, Results: REAGENT BLANK
< .1 ppm

Analyst 1: Indira Iyer; Analyst 2: ; Analyst 3: ; Analyst 4: ; Analyst 5: Alvin Gilbert
Pos: ; Pos: ; Pos: ; Pos: ; Pos:
Date: 1-8-92; Time Completed: ; Lab Unit Mgr: ; 16C823

| | | | | |
|---|---|---|---|---|
| Report No. K 937.-5572 | Sampling Point 103AW | Date 12-16-91 | Time Received 15:55 | Page 25 |
| Determination CL | Method/Standard LA-533-105 | Result Units PPM | Charge Code 112.4W | Rerun? |
| Sample Size ? .100ml - 10ml | | | Customer ID JAPD91-5 | |

Remarks, Calculations, Results: 1.78E1 ppm

Analyst 1: Indira Iyer; Analyst 2: ; Analyst 3: ; Analyst 4: ; Analyst 5: Alvin Gilbert
Pos: ; Pos: ; Pos: ; Pos: ; Pos:
Date: 1-8-92; Time Completed: ; Lab Unit Mgr: ; 16C823

| | | | | |
|---|---|---|---|---|
| Report No. K 938.-5572 | Sampling Point 103AW | Date 12-16-91 | Time Received 15:55 | Page 25 |
| Determination CL | Method/Standard LA-533-105 | Result Units % RECOVERY | Charge Code 112.4W | Rerun? 0 |
| Sample Size ? .100ml - 10ml | | | Customer ID STD | |

Remarks, Calculations, Results: EDP R972 DIONEX
STDH 73C11DC RESULT 7.4E1 ppm
STD VAL 7.5E1 ppm %REC 98.1

Analyst 1: Indira Iyer; Analyst 2: ; Analyst 3: Leslie Dion; Analyst 4: ; Analyst 5: Alvin Gilbert
Pos: ; Pos: ; Pos: ; Pos: ; Pos:
Date: 1-8-92; Time Completed: ; Lab Unit Mgr: ; 16C823

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: ION CHROMATOGRAPHIC - FLUORIDE | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: DIONEX 4000, WB54428 | Procedure/Rev: LA-533-105/B-1 |
| Technologist: M. MEYERS | Date: 1-08-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. HERT |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5571 | 11 | | |
| 2 | REAGENT BLANK | R932-5671 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5771 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5571 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 73C11DC/.100 mL | | | N/A |
| | | | | |
| | | | | |
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A-6000-881 (03/92)

**ION CHROMATOGRAPHIC ANALYSIS (FLUORIDE) -** UNDIGESTED SAMPLE

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5571 | 103AP | 12-16-91 | 15:43 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| F | LA-533-105 | % RECOVERY | H124W | 0 |

Sample Size: ? .100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R974 DIONEX
STDH 73C110C RESULT 5.28E1 ppm
STD VAL 5.6E1 ppm %REC 94.3%

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | [signature] | [signature] | [signature] |
| 6C823 | | | | |

Date: 1-8-92
Time Completed:
Lab Unit Mgr:

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-5671 | 103AP | 12-16-91 | 15:45 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| F | LA-533-105 | PPM | H124W | 0 |

Sample Size: ? DIRECT
Customer ID: 14LK

Remarks, Calculations, Results:
REAGENT BLANK
< .1 ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | | | [signature] |
| 6C823 | | | | |

Date: 1-8-92
Time Completed:
Lab Unit Mgr:

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5771 | 103AP | 12-16-91 | 15:54 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| F | LA-533-105 | G/G | H124W | 0 |

Sample Size: ? .100ml - 10ml
Customer ID: 3AP091-5

Remarks, Calculations, Results:
5.41E1 ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | | | [signature] |
| 6C823 | | | | |

Date: 1-8-92
Time Completed:
Lab Unit Mgr:

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-5571 | 103AP | 12-16-91 | 15:56 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Rerun |
|---|---|---|---|---|
| F | LA-533-105 | % RECOVERY | H124W | 0 |

Sample Size: ? .100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R974 DIONEX
STDH 73C110C RESULT ~~5.60E1~~ 5.05E1 ppm
STD VAL 5.60E1 ppm %REC 90.2%

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | [signature] | [signature] | [signature] |
| 6C823 | | | | |

Date: 1-8-92
Time Completed:
Lab Unit Mgr:

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: ION CHROMATOGRAPHIC - NITRATE | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: DIONEX 4000, WB54428 | Procedure/Rev: LA-533-105/B-1 |
| Technologist: M. MEYERS | Date: 1-08-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. HERT |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5573 | 11 | | |
| 2 | REAGENT BLANK | R932-5673 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5773 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5573 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 73C11DC/.100 mL | | | N/A |
| | | | | |
| | | | | |
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A-6000-881 (03/92)

# ION CHROMATOGRAPHIC ANALYSIS (NITRATE) - UNDIGESTED SAMPLE

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5573 | 103AP | 12-16-91 | 15:44 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Results |
|---|---|---|---|---|
| NO3 | LA-533-105 | % RECOVERY | N124W | |

Sample Size: ? .100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R970 DIONEX
STD #73C11DC RESULT 6.6882 ppm
STD VAL 6.3362 %REC 106%
ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | [signature] | [signature] | [signature] |
| 6C823 | | | | |
| Date: 1-8-92 | Time Completed | Lab Unit Mgr | | |

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-5673 | 103AP | 12-16-91 | 15:45 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Results |
|---|---|---|---|---|
| NO3 | LA-533-105 | PPM | | |

Sample Size: ? DIRECT
Customer ID: DCK

Remarks, Calculations, Results:
REAGENT BLANK
21.0ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | | [signature] | [signature] |
| 6C823 | | | | |
| Date: 1-8-92 | Time Completed | Lab Unit Mgr | | |

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5773 | 103AP | 12-16-91 | 15:55 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Results |
|---|---|---|---|---|
| NO3 | LA-533-105 | PPM | N124W | 0 |

Sample Size: ? .250ml - 10ml
Customer ID: 3AP891-5

Remarks, Calculations, Results:
3.2863 ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | | [signature] | [signature] |
| 6C823 | | | | |
| Date: 1-8-92 | Time Completed | Lab Unit Mgr | | |

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-5573 | 103AP | 12-16-91 | 15:56 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Results |
|---|---|---|---|---|
| NO3 | LA-533-105 | % RECOVERY | N124W | 0 |

Sample Size: ? .100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDP R970 DIONEX
STD #73C11DC RESULT 6.4282 ppm ~~6.6882~~ 6/12/92
STD VAL 6.3362 %REC ~~[illegible]~~ 101.4

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | [signature] | [signature] | [signature] |
| 6C823 | | | | |
| Date: 1-8-92 | Time Completed | Lab Unit Mgr | | |

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: ION CHROMATOGRAPHIC - NITRITE | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: DIONEX 4000, WB54428 | Procedure/Rev: LA-533-105/B-1 |
| Technologist: M. MEYERS | Date: 1-08-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. HERT |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5576 | 11 | | |
| 2 | REAGENT BLANK | R932-5676 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5776 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5576 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 73C11DC/.100 mL | | | N/A |
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A-6000-881 (03/92)

**ION CHROMATOGRAPHIC ANALYSIS (NITRITE) -** UNDIGESTED SAMPLE

K 931.-5576 | Sample Point 103A | Date 12-16-91 | Time Received 15:44 | Priority 25
Determination NO2 | Method/Standard LA-533-105 | Report Units % RECOVERY | Charge Code 112-HW
Sample Size 7 .100ml-10ml | Customer ID STD
Remarks, Comments, Results EDP KY68 DIONEX
STD# 73C11DC RESULT 5.4742 ppm
STD VAL 4.91E2 ppm %REC 103
Analyst 1 Lulam Hagos | Analyst 2 | Analyst 3 Leslie Dray | Analyst 4 Alonzo Jackson | Analyst 5
Pos | Pos | Pos | Pos | Pos
LC8323
Date 1-8-92 | Time Completed | Lab Unit Mgr

K 932.-5576 | Sample Point 103A | Date 12-16-91 | Time Received 15:45 | Priority 25
Determination NO2 | Method/Standard LA-533-105 | Report Units PPM | Charge Code 112-HW
Sample Size 7 Direct | Customer ID WK
Remarks, Comments, Results READENT WATER
21.0 ppm
Analyst 1 Lulam Hagos | Analyst 2 | Analyst 3 | Analyst 4 Alonzo Jackson | Analyst 5
Pos | Pos | Pos | Pos | Pos
LC8323
Date 1-8-92 | Time Completed | Lab Unit Mgr

K 937.-5576 | Sample Point 103A | Date 12-16-91 | Time Received 15:55 | Priority 25
Determination NO2 | Method/Standard LA-533-105 | Report Units PPM | Charge Code 112-HW
Sample Size 7 .250ml-10ml | Customer ID SAPB91-5
Remarks, Comments, Results
1.2863 ppm
Analyst 1 Lulam Hagos | Analyst 2 | Analyst 3 | Analyst 4 Alonzo Jackson | Analyst 5
Pos | Pos | Pos | Pos | Pos
LC8323
Date 1-8-92 | Time Completed | Lab Unit Mgr

K 938.-5576 | Sample Point 103A | Date 12-16-91 | Time Received 15:45 | Priority
Determination NO2 | Method/Standard LA-533-105 | Report Units % RECOVERY | Charge Code 112-HW
Sample Size 7 100ml-10ml | Customer ID STD
Remarks, Comments, Results EDP KY68 DIONEX
STD# 73C11DC RESULT 5.0182 ppm
STD VAL 4.91E2 ppm %REC 102
Analyst 1 Lulam Hagos | Analyst 2 | Analyst 3 Leslie Dray | Analyst 4 Alonzo Jackson | Analyst 5
Pos | Pos | Pos | Pos | Pos
LC8323
Date 1-8-92 | Time Completed | Lab Unit Mgr

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: ION CHROMATOGRAPHIC -- PHOSPHATE | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: DIONEX 4000, WB54428 | Procedure/Rev: LA-533-105/B-1 |
| Technologist: M. MYERS | Date: 01-10-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. HERT |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5574 | 11 | | |
| 2 | REAGENT BLANK | R932-5674 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5774 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5574 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 73C11DC/.100 mL | | | N/A |
| | | | | |
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A-6000-881 (03/92)

# ION CHROMATOGRAPHIC ANALYSIS (PHOSPHATE) - UNDIGESTED SAMPLE

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5574 | 103AP | 12-16-91 | 15:44 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| PO4 | FA-533-105 | % RECOVERY | N124W | 0 |

| Sample Size | Customer ID |
|---|---|
| ? | STD |

Remarks, Calculations, Results
EDF R976 DIONEX
STD# 73C11DC RESULT 5.37E2 ppm
STD VAL 5.16E2 %REC 104
ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | | | [signature] |
| Hrs 6C823 | Hrs | Hrs | Hrs [signature] | Hrs |
| Date 1-8-92 | Time Completed | Lab Unit Mgr | | |

84-6000-001 (R-10-83)

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-5674 | 103AP | 12-16-91 | 15:45 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| PO4 | FA-533-105 | PPM | N124W | 0 |

| Sample Size | Customer ID |
|---|---|
| ? DIRECT | BLK |

Remarks, Calculations, Results
REAGENT BLANK

< 1.0 ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | | | [signature] |
| Hrs 6C823 | Hrs | Hrs | Hrs [signature] | Hrs |
| Date 1-8-92 | Time Completed | Lab Unit Mgr | | |

84-6000-001 (R-10-83)

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5774 | 103AP | 12-16-91 | 15:55 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| PO4 | FA-533-105 | PPM | N124W | |

| Sample Size | Customer ID |
|---|---|
| ? .200 ml - 10ml | 3AFB91-5 |

Remarks, Calculations, Results
~~1.39E2 ppm~~ HW 1-10-92
1.35E2 ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | | | [signature] |
| Hrs 6C823 | Hrs | Hrs | Hrs [signature] | Hrs |
| Date 1-10-92 ~~1-8-92~~ HW | Time Completed | Lab Unit Mgr | | |

84-6000-001 (R-10-83)

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-5574 | 103AP | 12-16-91 | 15:55 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| PO4 | FA-533-105 | % RECOVERY | N124W | |

| Sample Size | Customer ID |
|---|---|
| ? .100ml - 10ml | STD |

Remarks, Calculations, Results
EDF R976 DIONEX
STD# 73C11DC RESULT 5.31E2 ppm
STD VAL 5.16E2 %REC 101 %
ppm

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| [signature] | | [signature] | | [signature] |
| Hrs 6C823 | Hrs | Hrs | Hrs [signature] | Hrs |
| Date 1-8-92 | Time Completed | Lab Unit Mgr | | |

84-6000-001 (R-10-83)

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: ION CHROMATOGRAPHIC - SULFATE | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: DIONEX 4000, WB54428 | Procedure/Rev: LA-533-105/B-1 |
| Technologist: M. MEYERS | Date: 1-08-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: D. HERT |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5575 | 11 | | |
| 2 | REAGENT BLANK | R932-5675 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5775 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5575 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 73C11DC/.100 mL | | | N/A |
| | | | | |
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A-6000-881 (03/92)

**ION CHROMATOGRAPHIC ANALYSIS (SULFATE) -** UNDIGESTED SAMPLE

| | | | | |
|---|---|---|---|---|
| Report No. R 931.-5575 | Sample Point 1032 | Date 12-16-91 | Time Sampled 13:44 | Page 25 |
| Determination SO4 | Method Standard LA-533-105 | Report Units % RECOVERY | Charge Code N124W | Rev 0 |
| Sample Size 7 .100ml - 10ml | | | Customer ID STD | |

Remarks, Calculations, Results: EDF N970 DIONEX
STDH 73C11DC RESULT 6.0562 AM
STD VAL 6.0962 %REC 99.9 %
AM

Analyst: Lulam Lugo; Analyst: Nancy Hibbert; Analyst: Jackie Dring
Date: 1-8-92

| | | | | |
|---|---|---|---|---|
| Report No. R 932.-5575 | Sample Point 1032 | Date 12-16-91 | Time Sampled 13:44 | Page 25 |
| Determination SO4 | Method Standard LA-533-105 | Report Units PPM | Charge Code N124W | Rev 0 |
| Sample Size 7 DIRECT | | | Customer ID BLK | |

Remarks, Calculations, Results: REAGENT BLANK
21.0ppm

Analyst: Lulam Lugo; Analyst: Nancy Hibbert; Analyst: Jackie Dring
Date: 1-8-92

| | | | | |
|---|---|---|---|---|
| Report No. R 937.-5575 | Sample Point 1032 | Date 12-16-91 | Time Sampled 13:55 | Page 25 |
| Determination SO4 | Method Standard LA-533-105 | Report Units PPM | Charge Code N124W | Rev 0 |
| Sample Size 7 100ml - 10ml | | | Customer ID JAP891-5 | |

Remarks, Calculations, Results: 1462ppm

Analyst: Lulam Lugo; Analyst: Nancy Hibbert; Analyst: Jackie Dring
Date: 1-8-92

| | | | | |
|---|---|---|---|---|
| Report No. R 938.-5575 | Sample Point 1032 | Date 12-16-91 | Time Sampled 13:55 | Page 25 |
| Determination SO4 | Method Standard LA-533-105 | Report Units % RECOVERY | Charge Code N124W | Rev 0 |
| Sample Size 7 .100ml - 10ml | | | Customer ID STD | |

Remarks, Calculations, Results: EDF N970 DIONEX
STDH 73C11DC RESULT 6.0562
STD VAL 6.0962 %REC 99.3

Analyst: Lulam Lugo; Analyst: Nancy Hibbert; Analyst: Jackie Dring
Date: 1-8-92

DATA REPROCESSED ON Thu Jan 09 21:04:04 1992

R931

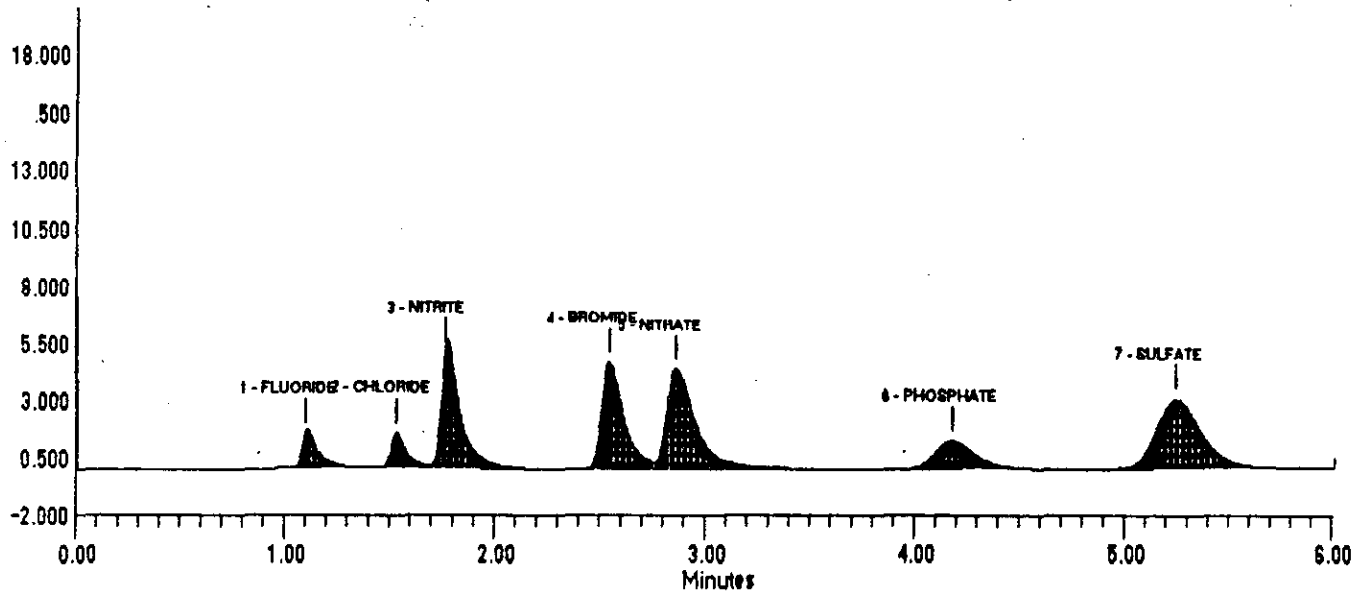
Sample Name: LMCS/73C11DC  Date: Wed Jan 08 15:09:50 1992
Data File : C:\DX\DATA\91010801.D09
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1  System : 1  Inject#: 9  Detector: CDM-1

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | ~~1~~ | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

correct to DF 101

| Pk. Num | Ret Time | Component Name | conc with 101 DF | Concentration % rec. | | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.10 | FLUORIDE | 52.8 | 94.3% rec. | 0.523 | 1491 | 8474 | 1 | 0.00 |
| 2 | 1.53 | CHLORIDE | 73.1 | 97.5% | 0.724 | 1490 | 7271 | 2 | 0.00 |
| 3 | 1.77 | NITRITE | 520 | 104% | 5.121 | 5068 | 33444 | 2 | -1.85 |
| 4 | 2.55 | BROMIDE | | | 6.854 | 4622 | 33583 | 2 | 0.00 |
| 5 | 2.87 | NITRATE | 666 | 105% | 6.599 | 4340 | 41053 | 2 | 4.24 |
| 6 | 4.18 | PHOSPHATE | 537 | 104% | 5.315 | 1215 | 15725 | 1 | 2.03 |
| 7 | 5.25 | SULFATE | 603 | 98.9% | 5.966 | 3037 | 45140 | 1 | 1.29 |

*File: C:\DX\DATA\91010801.D09 Sample: LMCS/73C11DC*




**BEST AVAILABLE COPY**

Melanie Myers 1/8/92

R931 for $NO_2$ $NO_3$

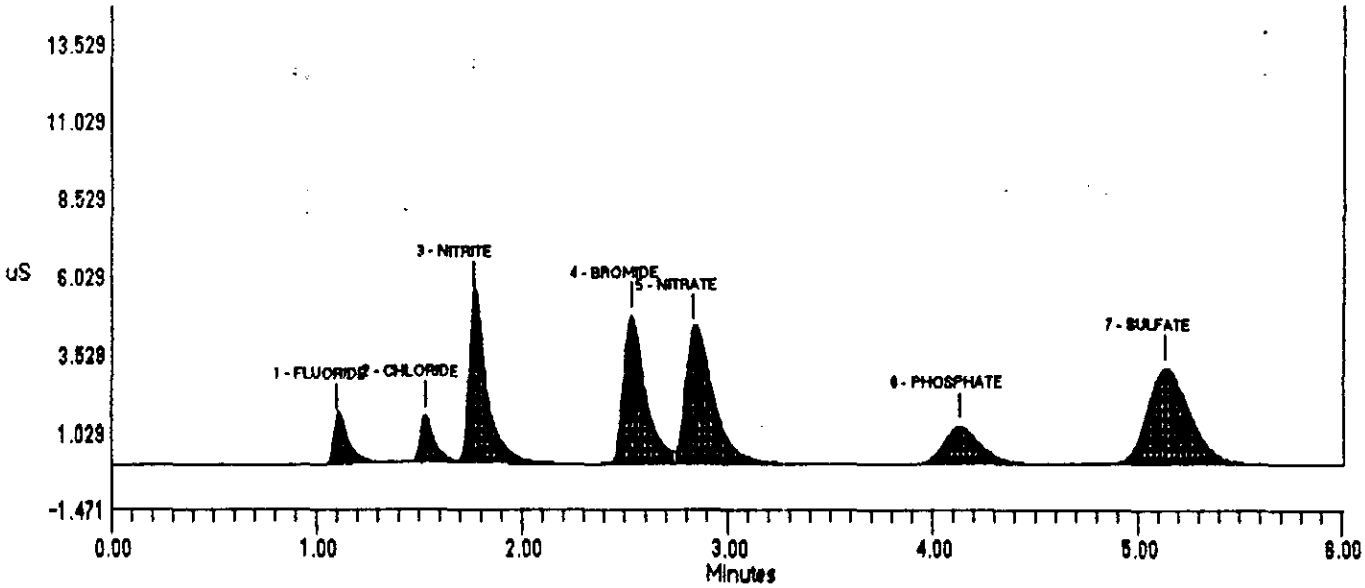


Sample Name: LMCS/73C11DB  Date: Wed Jan 08 16:37:00 1992
Data File : c:\dx\data\91010811.D10
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1  System : 1  Inject#: 10  Detector: CDM-1

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 101 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|
| 1 | 1.10 | FLUORIDE 90.1% | 50.545 | 1444 | 8044 | 1 | 0.00 |
| 2 | 1.53 | CHLORIDE 93.1% | 69.794 | 1467 | 6918 | 2 | 0.00 |
| 3 | 1.77 | NITRITE 103% | 507.433 | 5319 | 32752 | 2 | -1.85 |
| 4 | 2.53 | BROMIDE | 716.180 | 4684 | 34653 | 2 | -0.65 |
| 5 | 2.83 | NITRATE 106% | 668.220 | 4297 | 41168 | 2 | 3.03 |
| 6 | 4.13 | PHOSPHATE 101% | 521.034 | 1194 | 15218 | 1 | 0.81 |
| 7 | 5.13 | SULFATE 99.3% | 605.173 | 3059 | 45354 | 1 | -0.96 |

*File: c:\dx\data\91010811.D10 Sample: LMCS/73C11DB*

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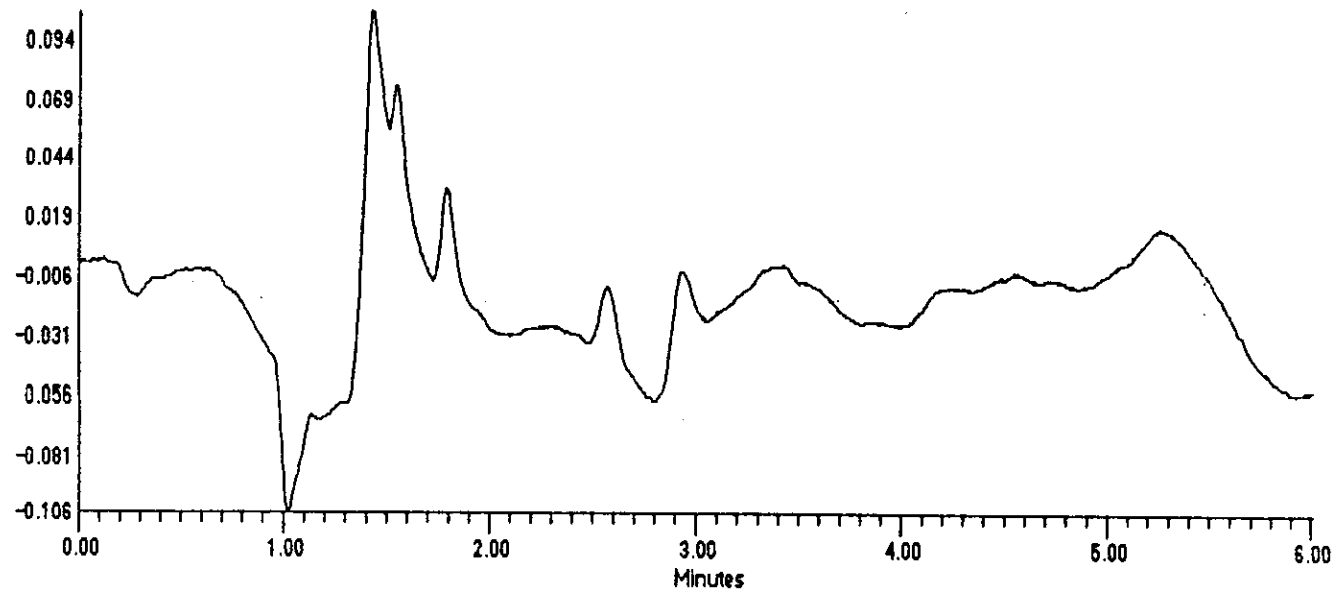
R932

Sample Name: BLANK  Date: Wed Jan 08 15:39:15 1992
Data File : c:\dx\data\91010811.D02
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1  System : 1  Inject#: 2  Detector: CDM-1

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 1 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|

*File: c:\dx\data\91010811.D02 Sample: BLANK*

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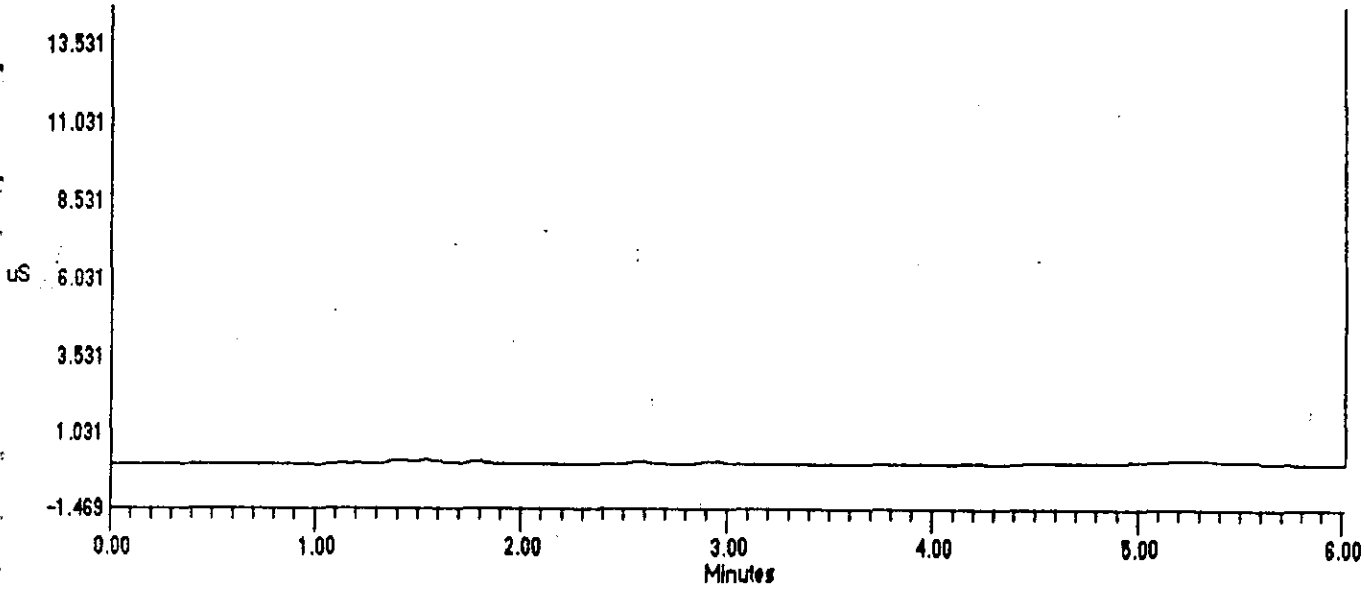
```
Sample Name: REAGANT BLANK R932                    Date: Wed Jan 08 16:51:31 1992
Data File  : c:\dx\data\91010801.D12
Method     : c:\dx\method\SYSTEM1.met
ACI Address: 1        System : 1        Inject#:  12  Detector: CDM-1
```

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 1 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|

*File: c:\dx\data\91010801.D12 Sample: REAGANT BLANK R932*



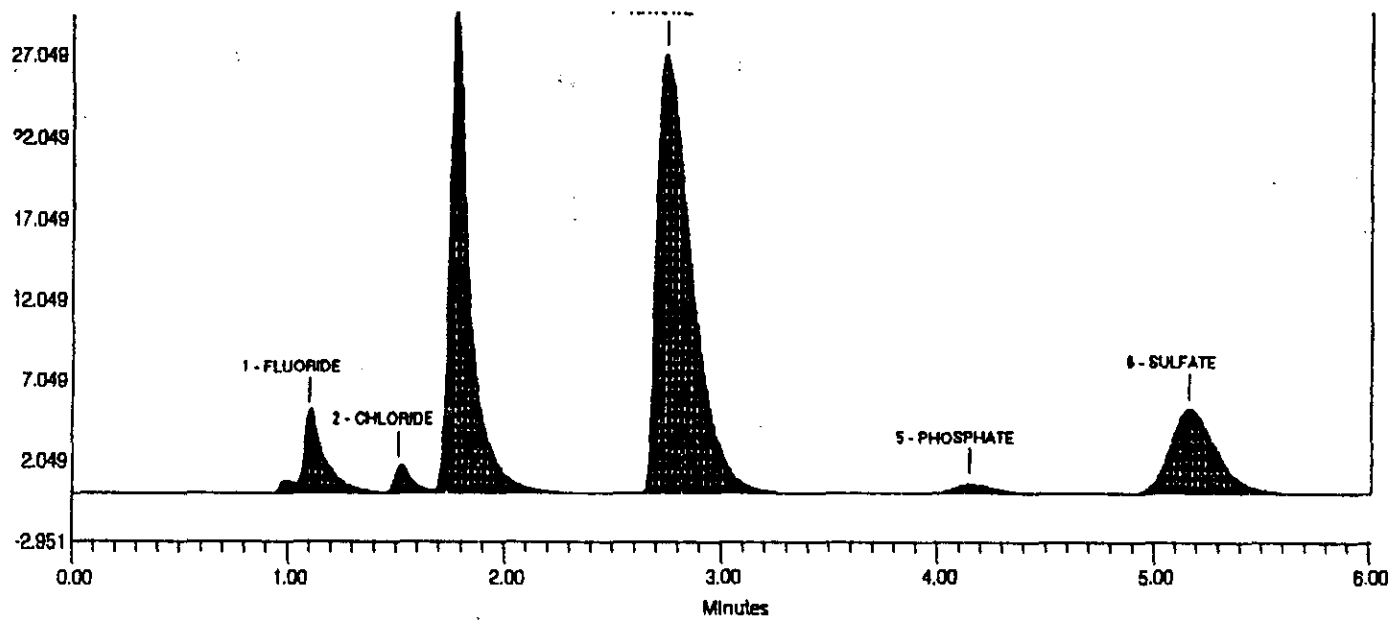

BEST AVAILABLE COPY

Sample Name: R933 Date: Wed Jan 08 16:58:32 1992
ata File : c:\dx\data\91010801.D13
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 13 Detector: CDM-1

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 41 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|
| 1 | 1.10 | FLUORIDE | 83.255 | 4971 | 37792 | 2 | 0.00 |
| 2 | 1.52 | CHLORIDE | 39.448 | 1674 | 9793 | 2 | -1.09 |
| 3 | 1.77 | NITRITE | 1128.333 | 27017 | 194173 | 2 | -1.85 |
| 4 | 2.75 | NITRATE | 1686.847 | 26793 | 303338 | 1 | 0.00 |
| 5 | 4.15 | PHOSPHATE | 112.876 | 586 | 7465 | 1 | 1.22 |
| 6 | 5.17 | SULFATE | 402.188 | 5196 | 77698 | 1 | -0.32 |

*File: c:\dx\data\91010801.D13 Sample: R933*

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DATA REPROCESSED ON Thu Jan 09 00:15:20 1992

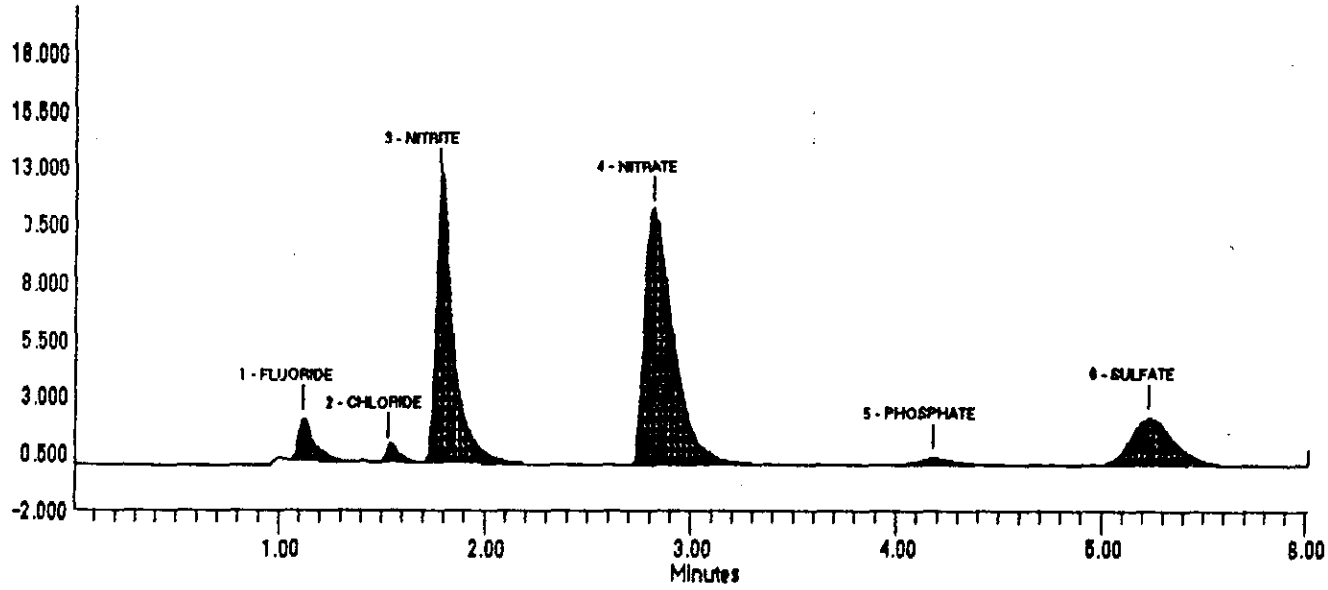
WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

Sample Name: R933 Date: Wed Jan 08 15:46:16 1992
Data File : C:\DX\DATA\91010811.D03
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1 System : 1 Inject#: 3 Detector: CDM-1

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 101 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|
| 1 | 1.12 | FLUORIDE | 60.364 | 1798 | 9875 | 1 | 1.52 |
| 2 | 1.53 | CHLORIDE | 35.541 | 646 | 3338 | 1 | 0.00 |
| 3 | 1.78 | NITRITE | 1089.512 | 12209 | 74007 | 1 | -0.93 |
| 4 | 2.82 | NITRATE | 1674.702 | 11071 | 109611 | 1 | 2.42 |
| 5 | 4.18 | PHOSPHATE | 133.717 | 239 | 2919 | 1 | 2.03 |
| 6 | 5.23 | SULFATE | 419.938 | 2025 | 30070 | 1 | 0.96 |

*File: C:\DX\DATA\91010811.D03 Sample: R933*



DATA REPROCESSED ON Thu Jan 09 00:29:30 1992

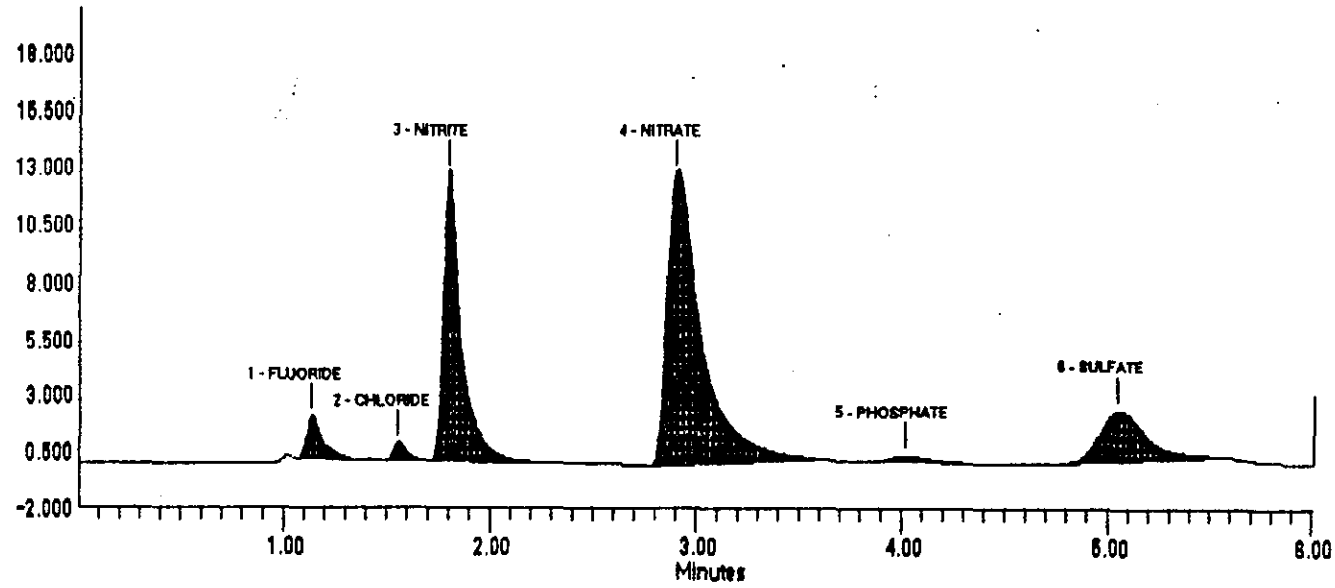
WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

| Sample Name: R933REPLICATE | Date: Wed Jan 08 15:53:29 1992 |
|---|---|
| Data File : C:\DX\DATA\91010811.D04 | |
| Method : c:\dx\method\SYSTEM1.met | |
| ACI Address: 1 System : 1 Inject#: 4 Detector: CDM-1 | |

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 101 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|
| 1 | 1.13 | FLUORIDE | 61.943 | 1837 | 10170 | 1 | 3.03 |
| 2 | 1.55 | CHLORIDE | 37.605 | 691 | 3553 | 2 | 1.09 |
| 3 | 1.80 | NITRITE | 1149.107 | 12603 | 78235 | 2 | 0.00 |
| 4 | 2.90 | NITRATE | 2267.850 | 12810 | 152283 | 1 | 5.45 |
| 5 | 4.02 | PHOSPHATE | 120.030 | 215 | 2490 | 1 | -2.03 |
| 6 | 5.05 | SULFATE | 482.908 | 2200 | 35248 | 1 | -2.37 |

*File: C:\DX\DATA\91010811.D04 Sample: R933REPLICATE*

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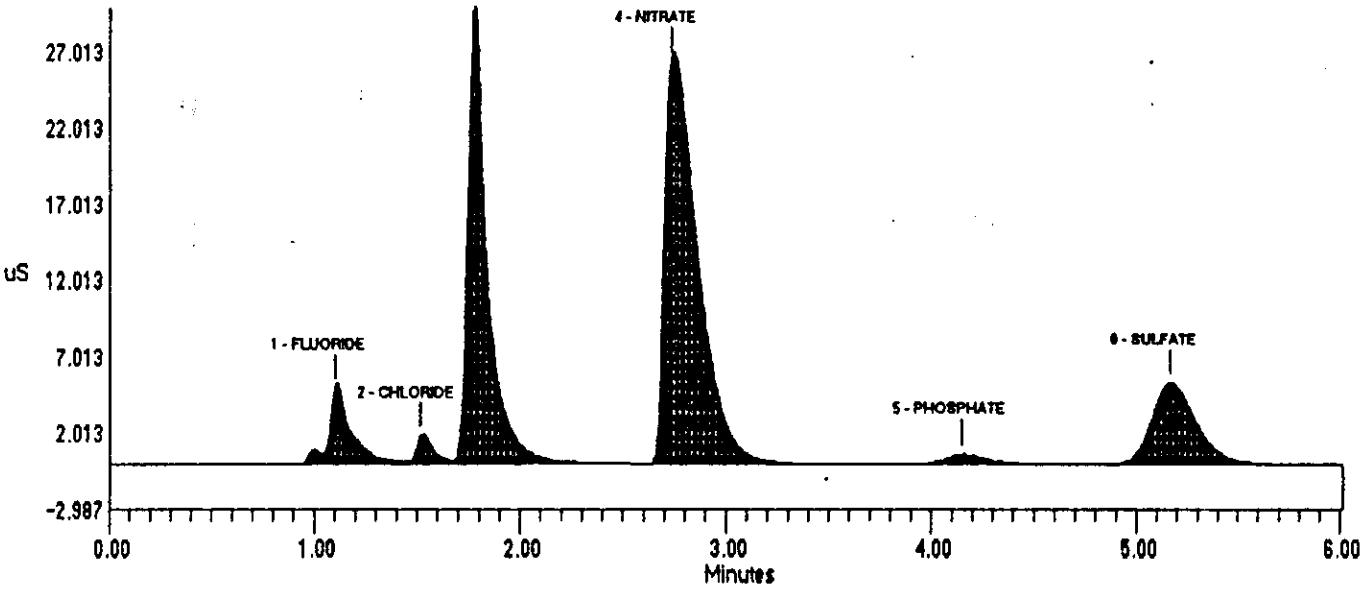
Sample Name: R933-REPLICATE  Date: Wed Jan 08 17:05:46 1992
Data File : c:\dx\data\91010801.D14
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1  System : 1  Inject#: 14  Detector: CDM-1

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 41 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|
| 1 | 1.10 | FLUORIDE | 83.846 | 4858 | 38082 | 2 | 0.00 |
| 2 | 1.52 | CHLORIDE | 41.591 | 1703 | 10348 | 2 | -1.09 |
| 3 | 1.77 | NITRITE | 1135.179 | 27320 | 195375 | 2 | -1.85 |
| 4 | 2.73 | NITRATE | 1667.989 | 26295 | 299273 | 1 | -0.61 |
| 5 | 4.15 | PHOSPHATE | 113.910 | 588 | 7546 | 1 | 1.22 |
| 6 | 5.17 | SULFATE | 403.281 | 5206 | 77927 | 1 | -0.32 |

*File: c:\dx\data\91010801.D14 Sample: R933-REPLICATE*



DATA REPROCESSED ON Thu Jan 09 00:00:17 1992

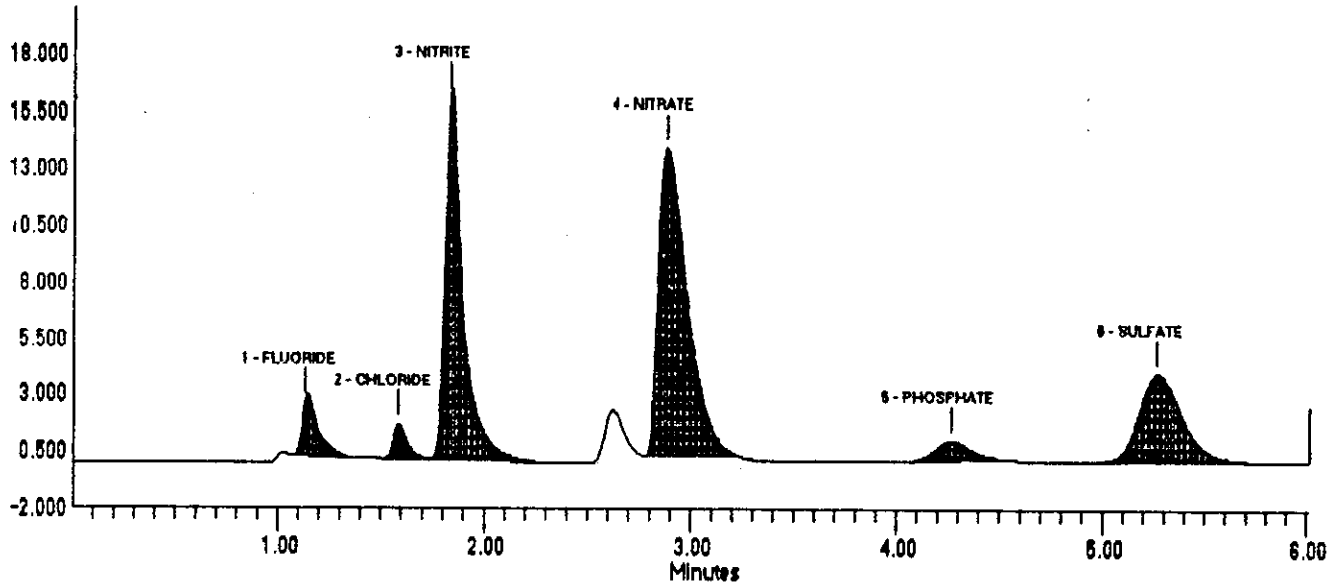
WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

Sample Name: R933SPIKE  Date: Wed Jan 08 16:00:51 1992
Data File : C:\DX\DATA\91010811.D05
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1  System : 1  Inject#: 5  Detector: CDM-1

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 101 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|
| 1 | 1.13 | FLUORIDE | 85.713 | 2386 | 14635 | 1 | 3.03 |
| 2 | 1.58 | CHLORIDE | 73.573 | 1523 | 7314 | 2 | 3.26 |
| 3 | 1.83 | NITRITE | 1464.558 | 15938 | 100624 | 2 | 1.85 |
| 4 | 2.88 | NITRATE | 2020.405 | 13538 | 134250 | 1 | 0.12 |
| 5 | 4.27 | PHOSPHATE | 376.282 | 853 | 10584 | 1 | 4.07 |
| 6 | 5.27 | SULFATE | 732.311 | 3877 | 55939 | 1 | 1.61 |

*File: C:\DX\DATA\91010811.D05 Sample: R933SPIKE*

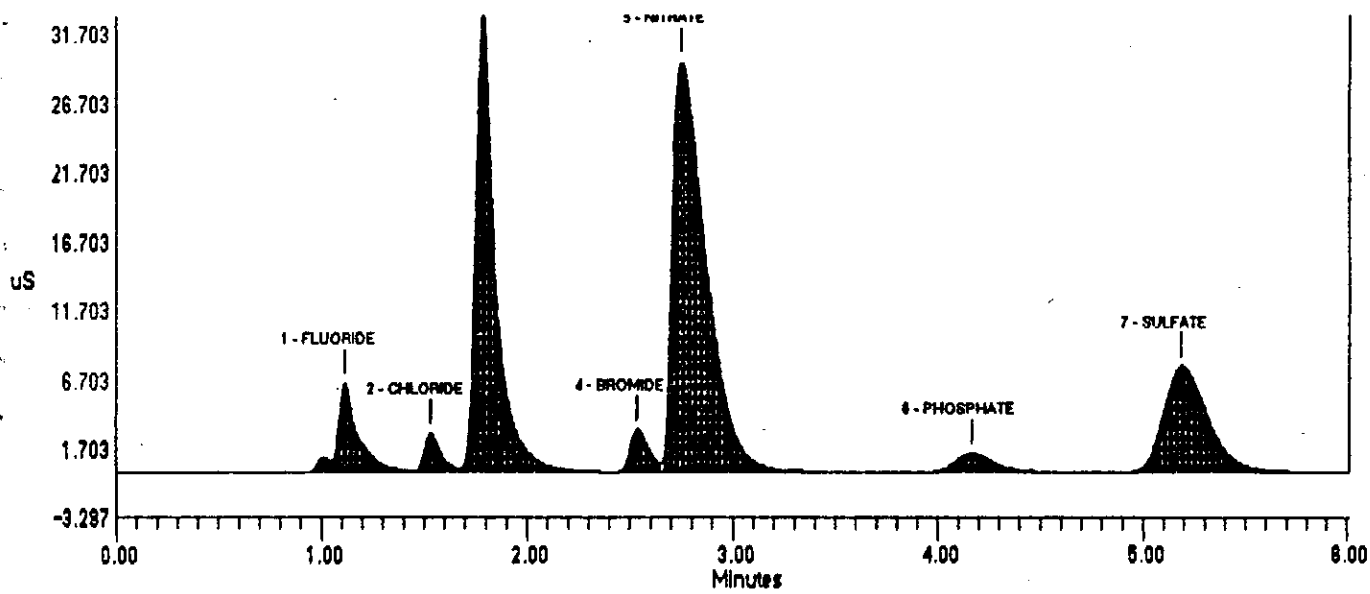


Sample Name: R933 SPIKE  Date: Wed Jan 08 17:12:59 1992
Data File : c:\dx\data\91010801.D15
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1  System : 1  Inject#: 15  Detector: CDM-1

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 41 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|
| 1 | 1.12 | FLUORIDE | 101.636 | 6411 | 46922 | 2 | 1.52 |
| 2 | 1.53 | CHLORIDE | 62.874 | 2777 | 15886 | 2 | 0.00 |
| 3 | 1.78 | NITRITE | 1314.047 | 32570 | 226801 | 2 | -0.93 |
| 4 | 2.53 | BROMIDE | 156.300 | 3046 | 19282 | 2 | -0.65 |
| 5 | 2.75 | NITRATE | 1840.693 | 29543 | 337313 | 2 | 0.00 |
| 6 | 4.17 | PHOSPHATE | 243.329 | 1367 | 17747 | 1 | 1.63 |
| 7 | 5.18 | SULFATE | 584.443 | 7611 | 116313 | 1 | 0.00 |

*File: c:\dx\data\91010801.D15 Sample: R933 SPIKE*

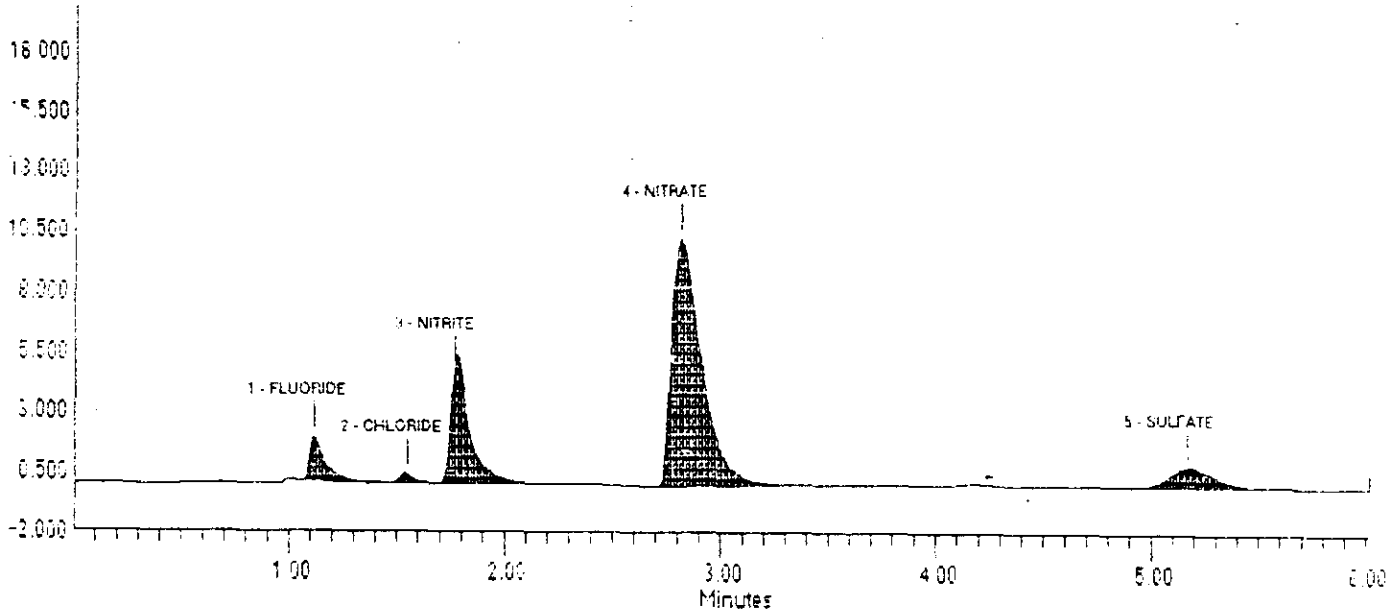


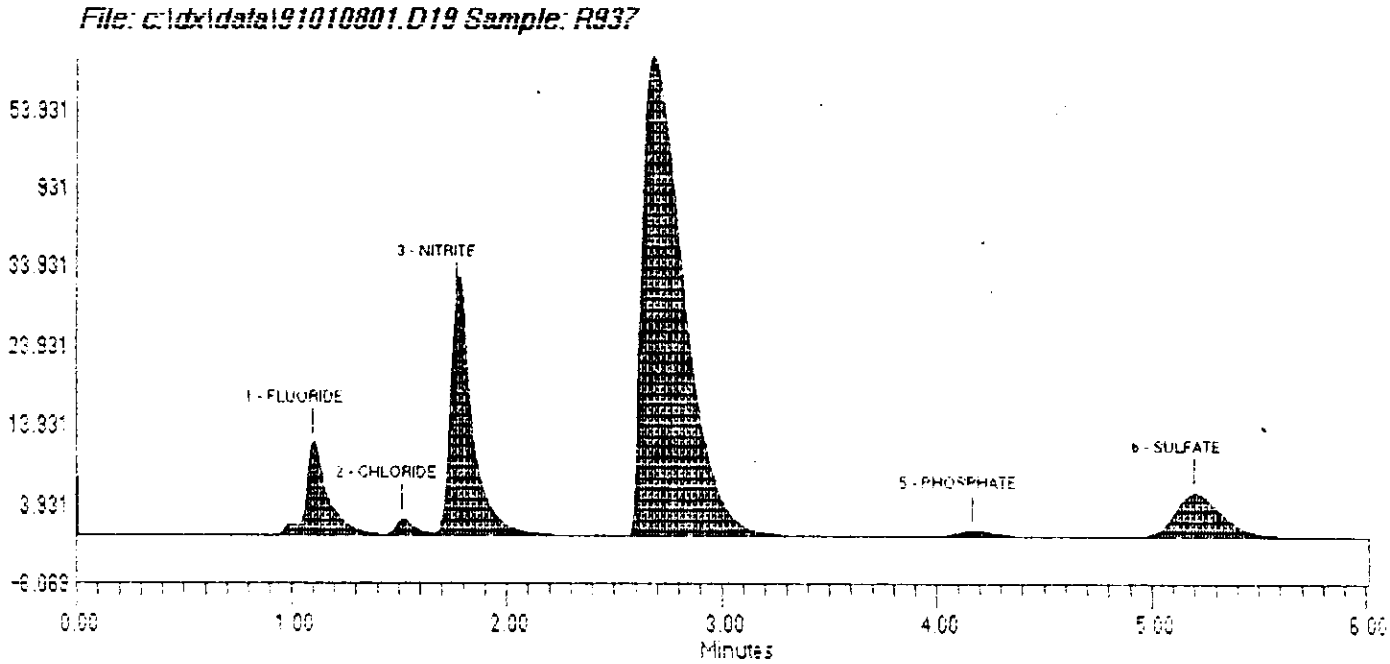
DATA REPRODUCED ON THE [illegible]

[illegible]

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

*File: C:\DX\DATA\91010811.D09 Sample: R937*




File: c:\dx\data\91010801.D19 Sample: R937
53.931
931
33.931
23.931
13.931
3.931
-6.069
1 - FLUORIDE
2 - CHLORIDE
3 - NITRITE
5 - PHOSPHATE
6 - SULFATE
0.00
1.00
2.00
3.00
4.00
5.00
6.00
Minutes

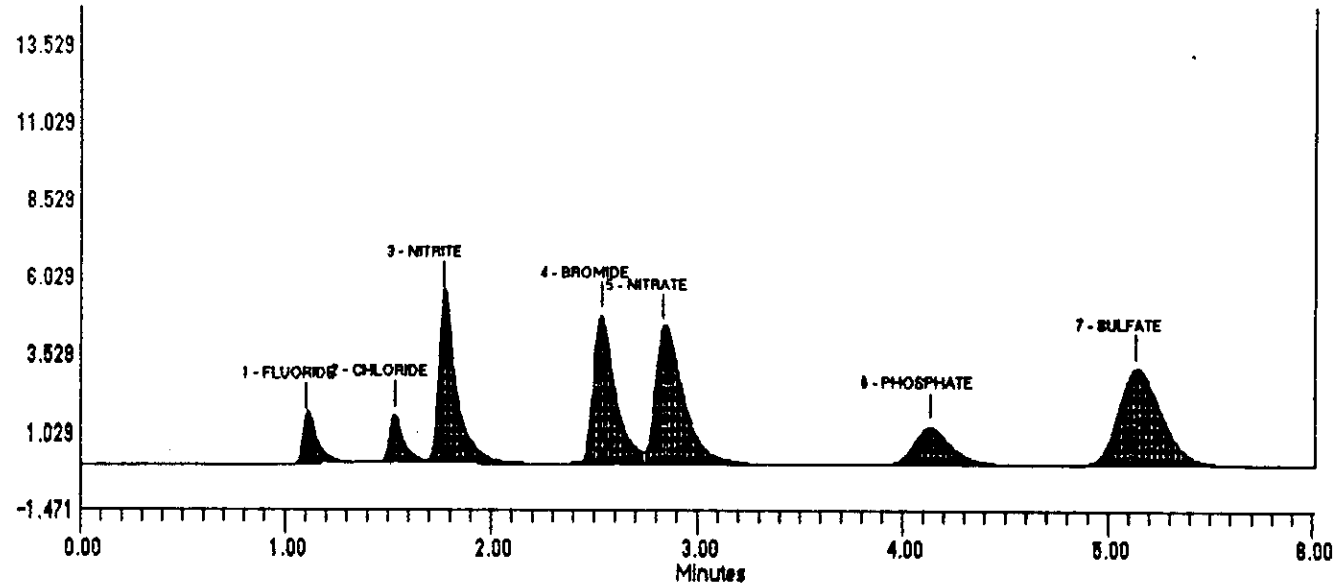
B938 for F, Cl, PO4 SO4

Sample Name: LMCS/73C11DB  Date: Wed Jan 08 16:37:00 1992
Data File : c:\dx\data\91010811.D10
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1  System : 1  Inject#: 10  Detector: CDM-1

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 101 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|
| 1 | 1.10 | FLUORIDE 90.1% | 50.545 | 1444 | 8044 | 1 | 0.00 |
| 2 | 1.53 | CHLORIDE 93.1% | 69.794 | 1467 | 6918 | 2 | 0.00 |
| 3 | 1.77 | NITRITE 103% | 507.433 | 5319 | 32752 | 2 | -1.85 |
| 4 | 2.53 | BROMIDE | 716.180 | 4684 | 34653 | 2 | -0.65 |
| 5 | 2.83 | NITRATE 106% | 668.220 | 4297 | 41168 | 2 | 3.03 |
| 6 | 4.13 | PHOSPHATE 101% | 521.034 | 1194 | 15218 | 1 | 0.81 |
| 7 | 5.13 | SULFATE 99.3% | 605.173 | 3059 | 45354 | 1 | -0.96 |

*File: c:\dx\data\91010811.D10 Sample: LMCS/73C11DB*



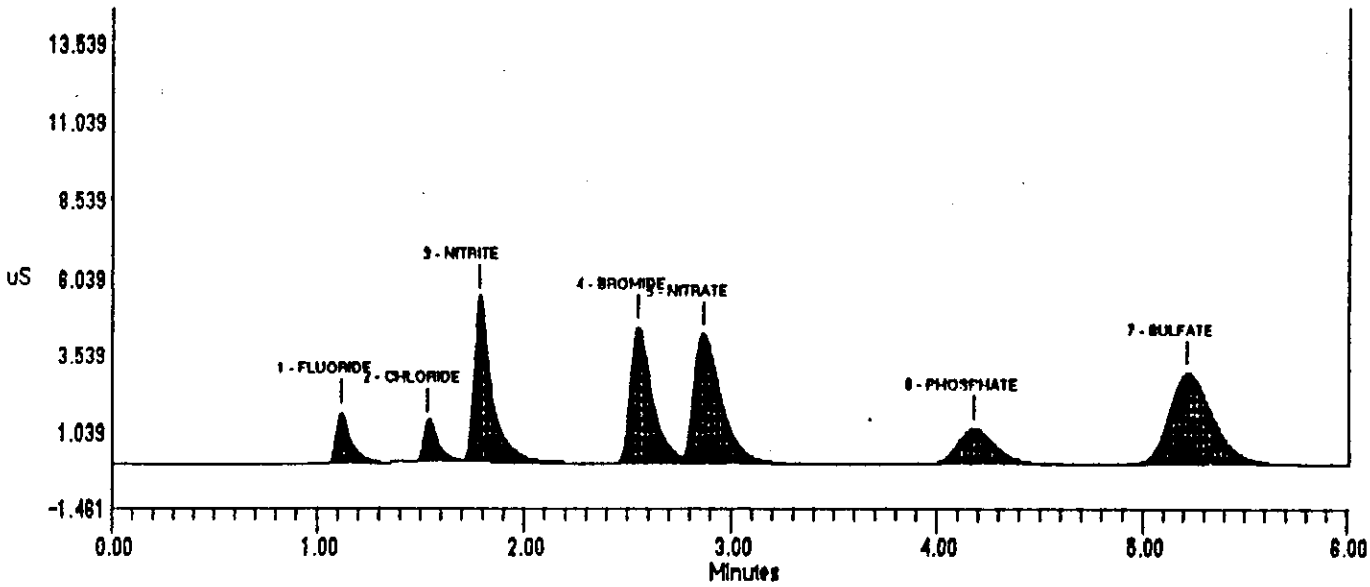
R938 for $NO_3$, $NO_2$

Sample Name: LMCS/73C11DC  Date: Wed Jan 08 17:49:22 1992
Data File : c:\dx\data\91010801.D20
Method : c:\dx\method\SYSTEM1.met
ACI Address: 1  System : 1  Inject#: 20  Detector: CDM-1

| REPORT | VOLUME | DILUTION | POINTS | RATE | START | STOP | AREA REJ |
|---|---|---|---|---|---|---|---|
| External | 1 | 101 | 1805 | 5Hz | 0.00 | 6.02 | 1000 |

| Pk. Num | Ret Time | Component Name | Concentration | Height | Area | Bl. Code | %Delta |
|---|---|---|---|---|---|---|---|
| 1 | 1.12 | FLUORIDE | 49.880 | 1616 | 7921 | 1 | 1.52 |
| 2 | 1.53 | CHLORIDE | 67.494 | 1298 | 6677 | 2 | 0.00 |
| 3 | 1.78 | NITRITE 102 | 500.760 | 5352 | 32280 | 2 | -0.93 |
| 4 | 2.55 | BROMIDE 98 | 668.992 | 4418 | 32539 | 2 | 0.00 |
| 5 | 2.87 | NITRATE 101.4 | 641.608 | 4215 | 39419 | 2 | 4.24 |
| 6 | 4.18 | PHOSPHATE 98.1 | 506.358 | 1149 | 14746 | 1 | 2.03 |
| 7 | 5.22 | SULFATE 97.5 | 593.579 | 2930 | 44393 | 1 | 0.64 |

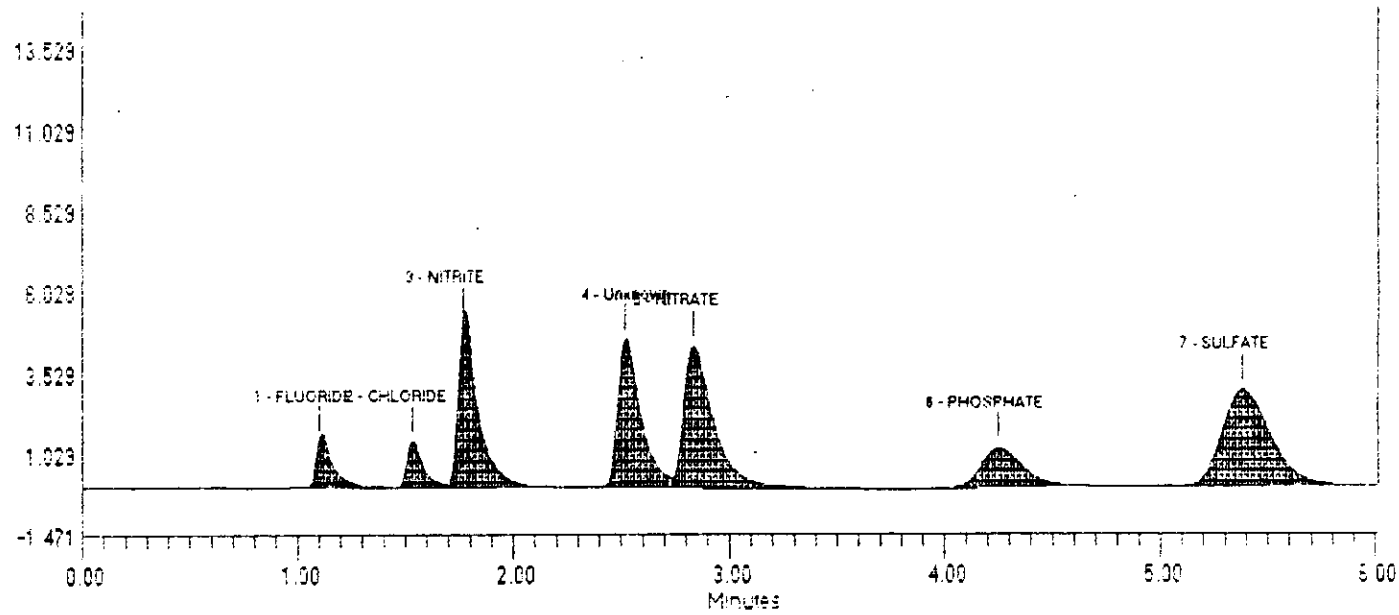
*File: c:\dx\data\91010801.D20 Sample: LMCS/73C11DC*



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 2 | 1.57 | CHLORIDE | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 3 | [illegible] | NITRITE | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 4 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 5 | [illegible] | NITRATE | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 6 | [illegible] | PHOSPHATE | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 7 | [illegible] | SULFATE | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

105.96
6-12-92

*File: c:\dx\data\91011001.D22 Sample: LMCS/73C11DC*




SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 103 TO 112 .



Melanie Meyer

1-10-92

**PAGES 104 THROUGH 106 WERE PULLED**

**NOT REQUIRED**

PAGES 104 THROUGH 106 WERE PULLED

NOT REQUIRED

**PAGES 104 THROUGH 106 WERE PULLED**

**NOT REQUIRED**

JK 6-12-92

R938 FOR PO4

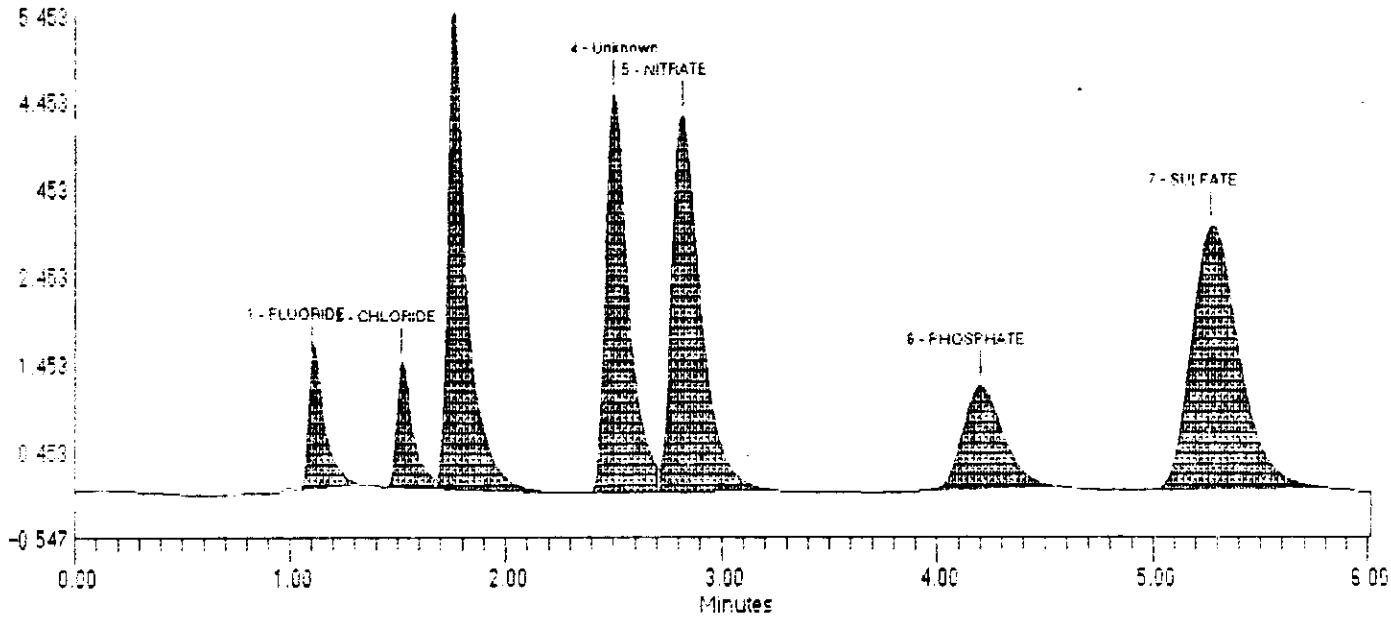
R946-5571, 5573, 5574

91.8 JK 6-12-92

102.9 JK 6-12-92

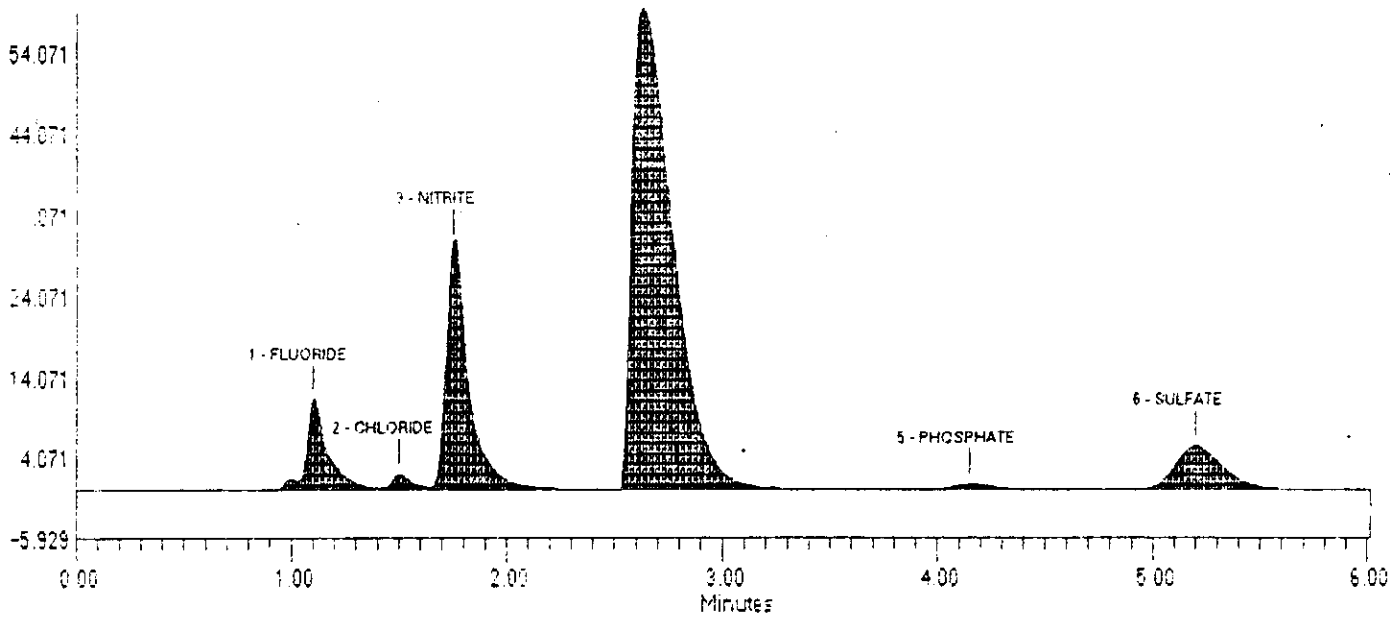
101.8 JK 6-12-92

*File: c:\dx\data\91011001.D20 Sample: LMCS/73C11DC*



[illegible]

File: c:\dx\data\91011001.D21 Sample: R937



1/8/92

# DIONEX METHOD PARAMETERS - SYSTEM1.MET

System Parameters

System Name : system1/qpm
Number of Detectors..... 1
Detector 1 Type..... CDM-1
Detector 1 real time plot scale (uS)..... 20.00
Run Time (minutes)..... 6.00
Sampling Rate (seconds)..... 0.20

**BEST AVAILABLE COPY**

-- DETECTOR 1 PARAMETERS --
Report Options

Save Data File..... Yes
Data File Name: c:\dx\data\91010801.D07
Create ASCII Report File..... No
Print Report..... Yes
List Peaks Not Found in this run..... No
Report Unknowns Found in this run..... Yes
Print Chromatogram..... Yes
AutoScale Chromatogram to Highest Peak..... Yes
Fill Peaks with Color ..... Yes
Draw Grid Lines on Chromatogram..... No
Label with Peak Number..... Yes
Label with Retention Times on Chromatogram..... No
Label with Component Name..... Yes
Format File Name: c:\dx\method\default.prt

Integration Parameters

Starting Peak Width (seconds)..... 10.0
Peak Threshold (mV or uS/data pt interval)..... 0.500
Peak Area Reject..... 1000
Area Reject for Reference Peaks..... 1000
Percent Retention Time Window for Reference Peaks..... 5.0

Integration Timed Events

| Time | Description |
|---|---|
| 1.26 | Start peak detection |
| 1.28 | Start peak detection |

Calibration Parameters

Number Of Levels for Calibration..... 6
Calibration Fit Type..... Quadratic
Replace Or Average Calibrations..... Replace
External or Internal Calibration..... External
Calibrate by Area or Height..... Area
Default Injection Volume..... 1.0
Default Dilution Factor..... 101.0
Response Factor for Unknown Peaks..... 1.0
Calibration Standard Volume ..... 1.0
Internal Standard Volume ..... 1.0
Sample Unit ..... PPM

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

Component # 1 FLUORIDE Retention Time 1.05
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 6.84259E-002
K1 = 5.41881E-005
K2 = -6.00022E-011

| Level | Amount | Area | Height |
|---|---|---|---|
| 1 | 1.10000E-001 | 1902 | 349 |
| 2 | 2.80000E-001 | 4256 | 848 |
| 3 | 5.60000E-001 | 8846 | 1706 |
| 4 | 1.12000E+000 | 17365 | 3475 |
| 5 | 2.19000E+000 | 42679 | 7321 |
| 6 | 4.22000E+000 | 84175 | 12636 |

Component # 2 CHLORIDE Retention Time 1.42
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.42635E-002
K1 = 9.53630E-005
K2 = -6.22379E-011

| Level | Amount | Area | Height |
|---|---|---|---|
| 1 | 1.30000E-001 | 1239 | 252 |
| 2 | 3.30000E-001 | 3208 | 567 |
| 3 | 6.60000E-001 | 6502 | 1337 |
| 4 | 1.31000E+000 | 12886 | 2429 |
| 5 | 2.58000E+000 | 27623 | 5058 |
| 6 | 5.00000E+000 | 53889 | 9322 |

Component # 3 NITRITE Retention Time 1.65
Reference Peak FLUORIDE Window Size 7.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.41934E-001
K1 = 1.39994E-004
K2 = -2.77337E-012

**BEST AVAILABLE COPY**

| Level | Amount | Area | Height |
|---|---|---|---|
| 1 | 1.25000E+000 | 7115 | 1213 |
| 2 | 3.10000E+000 | 19523 | 3097 |
| 3 | 6.18000E+000 | 39962 | 5860 |
| 4 | 1.22300E+001 | 81819 | 12982 |
| 5 | 2.40000E+001 | 170965 | 24711 |
| 6 | 4.62200E+001 | 328741 | 45930 |

Component # 4 NITRATE Retention Time 2.35
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 2.98060E-001
K1 = 1.56421E-004
K2 = -7.17711E-011

| Level | Amount | Area | Height |
|---|---|---|---|
| 1 | 1.10000E+000 | 6165 | 724 |
| 2 | 2.75000E+000 | 15858 | 1829 |
| 3 | 5.47000E+000 | 32863 | 3596 |
| 4 | 1.08200E+001 | 68086 | 6938 |
| 5 | 2.12300E+001 | 144490 | 14096 |
| 6 | 4.08900E+001 | 300858 | 26722 |

Component # 5 BROMIDE Retention Time 2.55
Reference Peak FLUORIDE Window Size 1.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 8.78746E-002
K1 = 1.81945E-004
K2 = 5.81300E-010

| Level | Amount | Area | Height |
|---|---|---|---|
| 1 | 1.26000E+000 | 9418 | 543 |
| 2 | 3.14000E+000 | 10041 | 957 |
| 3 | 6.26000E+000 | 45736 | 2477 |
| 4 | 1.23900E+001 | 47855 | 4298 |
| 5 | 2.43100E+001 | 98344 | 8521 |
| 6 | 4.68100E+001 | 167809 | 8473 |

Component # 6 PHOSPHATE Retention Time 3.85
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 3.99318E-001
K1 = 3.17750E-004
K2 = -3.28707E-010

| Level | Amount | Area | Height |
|---|---|---|---|
| 1 | 1.14000E+000 | 2718 | 229 |
| 2 | 2.83000E+000 | 8086 | 626 |
| 3 | 5.63000E+000 | 16751 | 1277 |
| 4 | 1.15600E+001 | 34757 | 2630 |
| 5 | 2.18800E+001 | 74341 | 5560 |
| 6 | 4.21500E+001 | 156618 | 11077 |

Component # 7 SULFATE Retention Time 4.90
Reference Peak FLUORIDE Window Size 10.00%
Amount = K0 + K1*Area + K2*Area**2
K0 = 4.93833E-001
K1 = 1.23085E-004
K2 = -4.10577E-011

| Level | Amount | Area | Height |
|---|---|---|---|
| 1 | 1.26000E+000 | 8321 | 546 |
| 2 | 3.14000E+000 | 21548 | 1429 |
| 3 | 6.26000E+000 | 46141 | 2990 |
| 4 | 1.23900E+001 | 97737 | 6333 |
| 5 | 2.43100E+001 | 210064 | 13628 |
| 6 | 4.68100E+001 | 440811 | 27239 |

BEST AVAILABLE COPY

IC Control File: C:\DX\METHOD\SYSTEM1.TE

| Step | Time | Description |
|---|---|---|
| Init | | CDM-1 AutoOffset Off |
| Init | | CDM-1 Recorder Mark OFF |
| Init | | CDM-1 Temp. Comp. = 1.7 / Deg C |
| Init | | CDM-1 Recorder Range = 0.1 uS |
| Init | | CDM-1 Cell ON |
| Init | | CHA Heater = 25 Deg. C |
| Init | | Valve A ON |
| Init | | Valve B ON |
| Init | | Inject Valve OFF |
| Init | | ACI Autosmp OFF |
| Init | | ACI RLY 2 OFF |
| Init | | ACI TTL 1 OFF |
| Init | | ACI TTL 2 OFF |
| Init | | ACI AC 1 ON |
| Init | | GPM Start |
| Init | | GPM Hold Gradient Clock |
| Init | | GPM Reset ON |
| 1 | 0.0 | CDM-1 AutoOffset ON |
| 1 | 0.0 | Start Sampling |
| 1 | 0.0 | GPM Reset OFF |
| 2 | 0.1 | CDM-1 Recorder Range = 10.0 uS |
| 2 | 0.1 | Inject Valve ON |
| 2 | 0.1 | GPM Run Gradient Clock |
| 3 | 2.6 | Inject Valve OFF |
| 4 | 3.0 | ACI Autosmp ON |

**BEST AVAILABLE COPY**

GpmFile: C:\DX\METHOD\SYSTEM1.GPM
Lo Pressure Limit = 200
Hi Pressure Limit = 2000
Eluant 1 - DI WATER
Eluant 2 - SODIUM CARBONATE
Eluant 3 - SODIUM BICARBONATE
Eluant 4 - Eluant 4

| Time | Flow | %1 | %2 | %3 | %4 | V5 | V6 | Comment |
|---|---|---|---|---|---|---|---|---|
| 0.0 | 2.0 | 84 | 8 | 8 | 0 | 0 | 0 | |

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: GAMMA ENERGY | Sample Prep: UNDIGESTED |

| | |
|---|---|
| Instrument: WB57237, WB57265 | Procedure/Rev: LA-548-121/D-0 |
| Technologist: S. LAI | Date: 1-08-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: S. CATLOW |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-5530 | 11 | | |
| 2 | REAGENT BLANK | R932-5630 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-5730 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-5530 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | 48B49/.100 mL | | | N/A |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| SAMPLES RERUN. | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

A-6000-881 (03/92)

2967 (43) 2973 (43)

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-5530 | 103AP | 12-16-91 | 15:43 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| GEA | LA-548-121 | % RECOVERY | N124W | 1 |

Sample Size: ? 100 λ — Customer ID: STD

Remarks, Calculations, Results:
COLX STD# 48849
R901 7.57E STD VAL
RESULT % REC
R905 6.42E STD VAL
RESULT % REC

RERUN

Cs-137 : 7.57×10¹ uCi/L
% Recovery : 102%
Co-60 : 6.42×10¹ uCi/L
% Recovery : 107%

| Analyst-1 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5 |
|---|---|---|---|---|
| Sue Li | [signature] | [signature] 69549 | [signature] | [signature] |
| Hrs: 1c916 | Hrs: | Hrs: | Hrs: | Hrs: |

Date: 1-8-92 — Time Completed: — Lab Unit Mgr: A.K. [signature] 01/09/92 [signature]

2971 (43) (43) 2977

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-5630 | 103AP | 12-16-91 | 15:44 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| GEA | LA-548-121 | uCI/L | N124W | 1 |

Sample Size: ? 22 ml — Customer ID: BLK

Remarks, Calculations, Results:
COUNT AS uCI/L
LASER PRINTOUT

RERUN

Cs-137 : <2.8 uCi/L

| Analyst-1 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5 |
|---|---|---|---|---|
| Sue Li | [signature] 69549 | [signature] | | |
| Hrs: 1c916 | Hrs: | Hrs: | Hrs: | Hrs: |

Date: 1-8-92 — Time Completed: — Lab Unit Mgr: A.K. [signature] 01/09/92 [signature]

2985

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-5730 | 103AP | 12-16-91 | 15:54 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| GEA | LA-548-121 | uCI/L | N124W | 1 |

Sample Size: ? 100-10-500 — Customer ID: 3AP891-5

Remarks, Calculations, Results:
COUNT AS uCI/L
LASER PRINTOUT

RERUN

Cs-137 : 6.54×10³ uCi/L
Co 60 <8.3h uCi/L
Eu 155 <5.02E¹¹ uCi/L

| Analyst-1 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5 |
|---|---|---|---|---|
| Sue Li | [signature] | | | [signature] 4-28-92 |
| Hrs: 1c916 | Hrs: | Hrs: | Hrs: | Hrs: |

Date: 1-8-92 — Time Completed: — Lab Unit Mgr: A.K. [signature] 01/09/92 [signature]

~~2985~~ + 2988 [signature] 5/12/92

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-5530 | 103AP | 12-16-91 | 15:56 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| GEA | LA-548-121 | % RECOVERY | N124W | 1 |

Sample Size: ? 100 λ — Customer ID: STD

Remarks, Calculations, Results:
COLX STD# 48849
R901 STD VAL
RESULT % REC
R905 STD VAL
RESULT % REC

RERUN

Cs-137 : - 7.67×10¹ uCi/L
% Recovery = 103.3%
Co-60 : - 6.46×10¹ uCi/L
% Recovery = 105%

| Analyst-1 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5 |
|---|---|---|---|---|
| Sue Li | [signature] | [signature] | [signature] | [signature] |
| Hrs: 1c916 | Hrs: | Hrs: | Hrs: | Hrs: |

Date: 1-8-92 — Time Completed: — Lab Unit Mgr: A.K. [signature] [signature]

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* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                                                   *
          G A M M A   S P E C T R U M   A N A L Y S I S            *
                                                                   *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

ANBERRA SPECTRAN-F V2.06  SOFTWARE

22-S COUNTING ROOM                                 09-JAN-92  00:04:24

              A N A L Y S I S   P A R A M E T E R S

CA UNIT NUMBER:   1     /     ADC UNIT NUMBER: 2.0
ETECTOR NUMBER:    2    /     GEOMETRY NUMBER:  43
PECTRUM SIZE:  4096 CHANNELS
RDER OF SMOOTHING FUNCTION:     5
UMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
EAK CONFIDENCE FACTOR: 85.0%
DENTIFICATION ENERGY WINDOW: +- 1.50 KEV
RROR QUOTATION: 1.96 SIGMA UNCERTAINTY

NVIRONMENTAL BACKGROUND SUBTRACTED
LD CALCULATION PERFORMED
IEASURED ENERGY DIFFERENCES LISTED
IULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER ANO:
AN/   ED BY:        69549

SAMPLE DESCRIPTION: R931-5530
GEOMETRY DESCRIPTION:  22ML LIQ
SAMPLE SIZE:   1.0000E-03 LI       / CONVERSION FACTOR: 1.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL205

COLLECT STARTED ON  8-JAN-92 AT 23:14:13

COLLECT LIVE TIME:    3000. SECONDS
        REAL TIME:    3002. SECONDS
        DEAD TIME:     0.07 %

DECAYED TO      0. DAYS,  0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 17-MAR-89
EFFICIENCY CALIBRATION PERFORMED 16-MAY-91
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22-S COUNTING ROOM 09-JAN-92 00:04:24

# P E A K  A N A L Y S I S

| PK | CENTROID CHANNEL | ENERGY KEV | FWHM KEV | BACKGND COUNTS | NET AREA COUNTS | ERROR % | NUCLIDES |
|---|---|---|---|---|---|---|---|
| 1C | 1126.51 | 562.89 | 1.60 | 178. | 154. | 24.5 | CS-134, EU-152 |
| 2C | 1138.60 | 568.93 | 1.60 | 166. | 245. | 22.6 | CS-134, BI-207 |
| 3 | 1209.29 | 604.27 | 1.67 | 217. | 1537. | 5.8 | CS-134 |
| 4 | 1323.20 | 661.21 | 1.72 | 138. | 1705. | 5.2 | CS-137 |
| 4B | | 661.85 | | | 36. | 13.9 | |
| 5C | 1591.57 | 795.38 | 1.80 | 92. | 1114. | 7.3 | CS-134 |
| 6C | 1603.63 | 801.41 | 1.80 | 79. | 124. | 20.1 | CS-134 |
| 7 | 2345.97 | 1172.54 | 2.39 | 79. | 904. | 7.3 | CO-60 |
| 8 | 2664.37 | 1331.73 | 2.09 | 17. | 895. | 6.7 | CO-60 |
| 8B | | 1332.24 | | | 9. | 37.4 | |
| 9 | 2921.88 | 1460.48 | 2.58 | 4. | 154. | 16.4 | K-40 |
| 9B | | 1460.85 | | | 156. | 3.8 | |

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

C - MULTIPLET ANALYSIS CONVERGED NORMALLY
B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0012
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 30-AUG-88 AT 16:46:00
BACKGROUND LIVE TIME: 60000. SECONDS

:22-S COUNTING ROOM 09-JAN-92 00:04:24

;AMP' E: R931-5530
)A: )LLECTED ON 8-JAN-92 AT 23:14:13
)ECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

| NUCLIDE | ACTIVITY CONCENTRATION IN uCi/LI MEASURED | ERROR | DECAY CORRECTED | ERROR | ENERGY COMPARISON (KEV) EXPECT | DIFF | |
|---|---|---|---|---|---|---|---|
| AM-241 | LLD<9.07E+00 | | LLD<9.07E+00 | | 59.54 | | |
| AM-243 | LLD<2.51E+00 | | LLD<2.51E+00 | | 74.67 | | |
| BA-133 | LLD<2.13E+00 | | LLD<2.13E+00 | | 356.02 | | |
| BA-140 | LLD<5.64E+00 | | LLD<5.64E+00 | | 537.27 | | |
| CEPR144 | LLD<1.31E+01 | | LLD<1.31E+01 | | 133.51 | | |
| CO-60 | 6.42E+01 | +-4.75E+00 | 6.42E+01 | +-4.75E+00 | 1332.50 | -0.77 | 107.4 1. |
| | | | | | 1173.24 | -0.70 | |
| CR-51 | LLD<1.19E+01 | | LLD<1.19E+01 | | 320.09 | | 4-23-92 |
| CS-134 | 5.92E+01 | +-5.25E+00 | 5.92E+01 | +-5.25E+00 | 795.84 | -0.47 | |
| | | | | | 604.70 | -0.43 | |
| CS-137 | 7.57E+01 | +-5.79E+00 | 7.57E+01 | +-5.79E+00 | 661.65 | -0.44 | 102.1. |
| EU-152 | LLD<4.66E+00 | | LLD<4.66E+00 | | 1408.01 | | |
| EU-154 | LLD<3.70E+00 | | LLD<3.70E+00 | | 1274.45 | | |
| EU-155 | LLD<4.11E+00 | | LLD<4.11E+00 | | 105.31 | | |
| FE-59 | LLD<3.62E+00 | | LLD<3.62E+00 | | 1099.25 | | |
| I-131 | LLD<1.60E+00 | | LLD<1.60E+00 | | 364.48 | | |
| K-[illegible] | LLD<2.13E+01 | | LLD<2.13E+01 | | 1460.75 | | |
| LA-[illegible] | LLD<1.09E+00 | | LLD<1.09E+00 | | 1596.20 | | |
| MN-54 | LLD<1.33E+00 | | LLD<1.33E+00 | | 834.83 | | |
| NA-22 | LLD<1.31E+00 | | LLD<1.31E+00 | | 1274.55 | | |
| NB-95 | LLD<1.64E+00 | | LLD<1.64E+00 | | 765.78 | | |
| NP-237 | LLD<8.56E+00 | | LLD<8.56E+00 | | 86.50 | | |
| PU-239 | LLD<1.19E+04 | | LLD<1.19E+04 | | 129.30 | | |
| PU-241 | LLD<4.05E+05 | | LLD<4.05E+05 | | 148.57 | | |
| RA-224 | LLD<2.59E+01 | | LLD<2.59E+01 | | 240.99 | | |
| RA-226 | LLD<2.39E+01 | | LLD<2.39E+01 | | 186.10 | | |
| RU-103 | LLD<1.48E+00 | | LLD<1.48E+00 | | 497.08 | | |
| RU103 | LLD<1.56E+00 | | LLD<1.56E+00 | | 497.08 | | |
| RURH106 | LLD<2.91E+01 | | LLD<2.91E+01 | | 621.80 | | |
| SB-125 | LLD<1.25E+01 | | LLD<1.25E+01 | | 176.33 | | |
| SE-75 | LLD<1.83E+00 | | LLD<1.83E+00 | | 264.66 | | |
| SN-113 | LLD<2.09E+00 | | LLD<2.09E+00 | | 391.67 | | |
| SR-85 | LLD<1.74E+00 | | LLD<1.74E+00 | | 513.99 | | |
| TH-228 | LLD<1.02E+02 | | LLD<1.02E+02 | | 84.37 | | |
| U-235 | LLD<1.58E+00 | | LLD<1.58E+00 | | 185.71 | | |
| Y-88 | LLD<1.11E+00 | | LLD<1.11E+00 | | 1836.06 | | |
| ZN-65 | LLD<4.27E+00 | | LLD<4.27E+00 | | 1115.55 | | |
| ZR-95 | LLD<2.91E+00 | | LLD<2.91E+00 | | 756.73 | | |
| TOTAL | 1.99E+02 | +-9.15E+00 | 1.99E+02 | +-9.15E+00 | | | |

STANDARD DEVIATION = 0.16

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.28E-09 UC/LI
TOTAL MEASURED ACTIVITY = 1.99E+02 (+-9.15E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

QUOTATION AT 1.96 SIGMA
FIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

| ENTROID HANNEL | ENERGY KEV | NET AREA COUNTS | ERROR % | GAMMAS/SEC |
|---|---|---|---|---|
| 1126.51 | 562.89 | 154. | 24.5 | 1.90E+01 |
| 1138.60 | 568.93 | 245. | 22.6 | 3.06E+01 |
| 1603.63 | 801.41 | 124. | 20.1 | 2.10E+01 |

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

| ENTROID HANNEL | ENERGY KEV | NET AREA COUNTS | ERROR % | GAMMAS/SEC |
|---|---|---|---|---|
| 2921.88 | 1460.48 | 154. | 16.4 | 4.50E+01 |

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*                                                                             *
*              G A M M A   S P E C T R U M   A N A L Y S I S                  *
*                                                                             *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                    09-JAN-92  04:21:25

                 A N A L Y S I S   P A R A M E T E R S

MCA UNIT NUMBER:    1      /      ADC UNIT NUMBER: 2.0
DETECTOR NUMBER:     2     /      GEOMETRY NUMBER:  13
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:      5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
LLD CALCULATION PERFORMED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AND:
ANALYZED BY:          VR

S   LE DESCRIPTION: R932-5630 103AP
GEOMETRY DESCRIPTION:  22ML LIQ
SAMPLE SIZE:    2.2000E-02 LI        / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL205

COLLECT STARTED ON  9-JAN-92 AT 03:31:13

COLLECT LIVE TIME:     3000. SECONDS
        REAL TIME:     3002. SECONDS
        DEAD TIME:      0.07 %

 DECAYED TO       0. DAYS,  0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 17-MAR-89
EFFICIENCY CALIBRATION PERFORMED 16-MAY-91
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**BEST AVAILABLE COPY**

# P E A K  A N A L Y S I S

| PK | CENTROID CHANNEL | ENERGY KEV | FWHM KEV | BACKGND COUNTS | NET AREA COUNTS | ERROR % | NUCLIDES |
|---|---|---|---|---|---|---|---|
| 1 | 2921.16 | 1460.12 | 1.89 | 4. | 167. | 15.7 | K-40 |
| 1B | | 1460.85 | | | 156. | 3.8 | |

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

BEST AVAILABLE COPY

B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0012
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 30-AUG-88 AT 16:46:00
BACKGROUND LIVE TIME: 60000. SECONDS

222-S COUNTING ROOM WHC-SD-WM-DP-025 ADDENDUM 9 REV 0 09-JAN-92 03:33:23

SAMPLE: R932-5630 103AP
DATA COLLECTED ON 9-JAN-92 AT 03:31:13
DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

| NUCLIDE | ACTIVITY CONCENTRATION IN uCi/LI MEASURED | ERROR | DECAY CORRECTED | ERROR | ENERGY COMPARISON (KEV) EXPECT | DIFF |
|---|---|---|---|---|---|---|
| AM-241 | LLD<2.49E-02 | | LLD<2.49E-02 | | 59.54 | |
| AM-243 | LLD<6.99E-03 | | LLD<6.99E-03 | | 74.67 | |
| BA-133 | LLD<4.13E-03 | | LLD<4.13E-03 | | 356.02 | |
| BA-140 | LLD<1.41E-02 | | LLD<1.41E-02 | | 537.77 | |
| CEPR144 | LLD<3.77E-02 | | LLD<3.77E-02 | | 133.51 | |
| CO-60 | LLD<6.45E-03 | | LLD<6.45E-03 | | 1332.50 | |
| CR-51 | LLD<2.75E-02 | | LLD<2.75E-02 | | 320.09 | |
| CS-134 | LLD<3.57E-03 | | LLD<3.57E-03 | | 795.84 | |
| CS-137 | LLD<6.01E-03 | | LLD<6.01E-03 | | 661.65 | |
| EU-152 | LLD<3.42E-02 | | LLD<3.42E-02 | | 1408.01 | |
| EU-154 | LLD<1.34E-02 | | LLD<1.34E-02 | | 1274.45 | |
| EU-155 | LLD<1.18E-02 | | LLD<1.18E-02 | | 105.31 | |
| FE-59 | LLD<9.91E-03 | | LLD<9.91E-03 | | 1099.25 | |
| I-131 | LLD<3.39E-03 | | LLD<3.39E-03 | | 364.48 | |
| K-40 | LLD<1.02E-01 | | LLD<1.02E-01 | | 1460.75 | |
| LA-140 | LLD<7.56E-03 | | LLD<7.56E-03 | | 1596.20 | |
| MN-54 | LLD<4.01E-03 | | LLD<4.01E-03 | | 834.83 | |
| NA-22 | LLD<4.76E-03 | | LLD<4.76E-03 | | 1274.55 | |
| 95 | LLD<4.08E-03 | | LLD<4.08E-03 | | 765.78 | |
| -237 | LLD<2.77E-02 | | LLD<2.77E-02 | | 86.50 | |
| PU-239 | LLD<3.47E+01 | | LLD<3.47E+01 | | 129.30 | |
| PU-241 | LLD<1.05E+03 | | LLD<1.05E+03 | | 148.57 | |
| RA-224 | LLD<6.33E-02 | | LLD<6.33E-02 | | 240.99 | |
| RA-226 | LLD<6.05E-02 | | LLD<6.05E-02 | | 186.10 | |
| RU-103 | LLD<3.19E-03 | | LLD<3.19E-03 | | 497.08 | |
| RU103 | LLD<3.36E-03 | | LLD<3.36E-03 | | 497.08 | |
| RURH106 | LLD<7.01E-02 | | LLD<7.01E-02 | | 621.80 | |
| SB-125 | LLD<3.24E-02 | | LLD<3.24E-02 | | 176.33 | |
| SE-75 | LLD<4.33E-03 | | LLD<4.33E-03 | | 264.66 | |
| SN-113 | LLD<4.82E-03 | | LLD<4.82E-03 | | 391.67 | |
| SR-85 | LLD<4.66E-03 | | LLD<4.66E-03 | | 513.99 | |
| TH-228 | LLD<2.97E-01 | | LLD<2.97E-01 | | 84.37 | |
| U-235 | LLD<4.16E-03 | | LLD<4.16E-03 | | 185.71 | |
| Y-88 | LLD<3.12E-03 | | LLD<3.12E-03 | | 1836.06 | |
| ZN-65 | LLD<1.52E-02 | | LLD<1.52E-02 | | 1115.55 | |
| ZR-95 | LLD<6.37E-03 | | LLD<6.37E-03 | | 756.73 | |
| TOTAL | 0.00E-01 | +-0.00E-01 | 0.00E-01 | +-0.00E-01 | | |

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 95.0%

**BEST AVAILABLE COPY**

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

BEST AVAILABLE COPY

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* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                     *
*          G A M M A   S P E C T R U M   A N A L Y S I S              *
*                                                                     *
*   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
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CANBERRA SPECTRAN-F V2.06 SOFTWARE

222-S COUNTING ROOM 09-JAN-92 11:38:37

A N A L Y S I S  P A R A M E T E R S

MCA UNIT NUMBER: 1 / ADC UNIT NUMBER: 2.0
DETECTOR NUMBER: 2 / GEOMETRY NUMBER: 42
SPECTRUM SIZE: 4096 CHANNELS
ORDER OF SMOOTHING FUNCTION: 5
NUMBER OF BACKGROUND CHANNELS: 4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
LLD CALCULATION PERFORMED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER ANO:
ANALYZED BY: 61453

SAMPLE DESCRIPTION: R-937-5730
GEOMETRY DESCRIPTION: 22ML LIQ
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 4.9505E-03
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL205

COLLECT STARTED ON 9-JAN-92 AT 10:48:25

COLLECT LIVE TIME: 3000. SECONDS
REAL TIME: 3003. SECONDS
DEAD TIME: 0.10 %

DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 17-MAR-89
EFFICIENCY CALIBRATION PERFORMED 16-MAY-91

# P E A K  A N A L Y S I S

| PK | CENTROID CHANNEL | ENERGY KEV | FWHM KEV | BACKGND COUNTS | NET AREA COUNTS | ERROR % | NUCLIDES |
|---|---|---|---|---|---|---|---|
| 1 | 1323.11 | 661.17 | 1.65 | 122. | 14893. | 1.6 | CS-137 |
| 1B | | 661.85 | | | 36. | 13.9 | |
| 2 | 2921.36 | 1460.22 | 1.94 | 20. | 138. | 20.0 | K-40 |
| 2B | | 1460.85 | | | 156. | 3.8 | |

ERROR QUOTATION AT 1.96 SIGMA
PEAK CONFIDENCE LEVEL AT 85.0%

B - ENVIRONMENTAL BACKGROUND PEAK

BACKGROUND SUBTRACTION PERFORMED USING FILE BK0012
BACKGROUND DESCRIPTION: BKG
BACKGROUND COLLECT STARTED ON 30-AUG-88 AT 16:46:00
BACKGROUND LIVE TIME: 60000. SECONDS

SAMPLE: R-937-5730
D/ COLLECTED ON 9-JAN-92 AT 10:48:25
DE..ED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

# R A D I O N U C L I D E A N A L Y S I S R E P O R T

| NUCLIDE | ACTIVITY CONCENTRATION IN uCi/LI MEASURED | ERROR | DECAY CORRECTED | ERROR | ENERGY COMPARISON (KEV) EXPECT | DIFF |
|---|---|---|---|---|---|---|
| AM-241 | LLD<1.10E+02 | | LLD<1.10E+02 | | 59.54 | |
| AM-243 | LLD<2.90E+01 | | LLD<2.90E+01 | | 74.67 | |
| BA-133 | LLD<2.48E+01 | | LLD<2.48E+01 | | 356.02 | |
| BA-140 | LLD<6.57E+01 | | LLD<6.57E+01 | | 537.27 | |
| CEPR144 | LLD<1.57E+02 | | LLD<1.57E+02 | | 133.51 | |
| CO-60 | LLD<1.12E+01 | | LLD<1.12E+01 | | 1332.50 | |
| CR-51 | LLD<1.33E+02 | | LLD<1.33E+02 | | 320.09 | |
| CS-134 | LLD<8.32E+00 | | LLD<8.32E+00 | | 795.84 | |
| CS-137 | 6.59E+03 | +-1.72E+02 | 6.59E+03 | +-1.72E+02 | 661.65 | -0.48 |
| EU-152 | LLD<3.39E+01 | | LLD<3.39E+01 | | 1408.01 | |
| EU-154 | LLD<3.33E+01 | | LLD<3.33E+01 | | 1274.45 | |
| EU-155 | LLD<5.02E+01 | | LLD<5.02E+01 | | 105.31 | |
| FE-59 | LLD<1.84E+01 | | LLD<1.84E+01 | | 1099.25 | |
| I-131 | LLD<1.90E+01 | | LLD<1.90E+01 | | 364.48 | |
| K-40 | LLD<2.15E+02 | | LLD<2.15E+02 | | 1460.75 | |
| LA-140 | LLD<9.68E+00 | | LLD<9.68E+00 | | 1596.20 | |
| MN-54 | LLD<8.65E+00 | | LLD<8.65E+00 | | 834.83 | |
| NI | LLD<1.18E+01 | | LLD<1.18E+01 | | 1274.55 | |
| NB-95 | LLD<7.13E+00 | | LLD<7.13E+00 | | 765.78 | |
| NP-237 | LLD<1.08E+02 | | LLD<1.08E+02 | | 86.50 | |
| PU-239 | LLD<1.50E+05 | | LLD<1.50E+05 | | 129.30 | |
| PU-241 | LLD<4.79E+06 | | LLD<4.79E+06 | | 148.57 | |
| RA-224 | LLD<2.89E+02 | | LLD<2.89E+02 | | 240.99 | |
| RA-226 | LLD<2.96E+02 | | LLD<2.96E+02 | | 186.10 | |
| RU-103 | LLD<1.96E+01 | | LLD<1.96E+01 | | 497.08 | |
| RU103 | LLD<2.06E+01 | | LLD<2.06E+01 | | 497.08 | |
| RURH106 | LLD<3.04E+02 | | LLD<3.04E+02 | | 621.80 | |
| SB-125 | LLD<1.53E+02 | | LLD<1.53E+02 | | 176.33 | |
| SE-75 | LLD<2.15E+01 | | LLD<2.15E+01 | | 264.66 | |
| SN-113 | LLD<2.76E+01 | | LLD<2.76E+01 | | 391.67 | |
| SR-85 | LLD<1.97E+01 | | LLD<1.97E+01 | | 513.99 | |
| TH-228 | LLD<1.23E+03 | | LLD<1.23E+03 | | 84.37 | |
| U-235 | LLD<1.96E+01 | | LLD<1.96E+01 | | 185.71 | |
| Y-88 | LLD<5.89E+00 | | LLD<5.89E+00 | | 1836.06 | |
| ZN-65 | LLD<2.98E+01 | | LLD<2.98E+01 | | 1115.55 | |
| ZR-95 | LLD<1.91E+01 | | LLD<1.91E+01 | | 756.73 | |
| TOTAL | 6.59E+03 | +-1.72E+02 | 6.59E+03 | +-1.72E+02 | | |

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 6.59E+03 (+-1.72E+02) UC/LI
% H. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

DETECTED PEAKS WERE USED IN THE ANALYSIS

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

| CENTROID CHANNEL | ENERGY KEV | NET AREA COUNTS | ERROR % | GAMMAS/SEC |
|---|---|---|---|---|
| 2921.36 | 1460.22 | 138. | 20.0 | 1.81E+01 |

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                   *
*          G A M M A   S P E C T R U M   A N A L Y S I S            *
*                                                                   *
* *  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                  09-JAN-92  15:00:15

                A N A L Y S I S   P A R A M E T E R S

MCA UNIT NUMBER:   1     /     ADC UNIT NUMBER: 2.0
DETECTOR NUMBER:    2    /     GEOMETRY NUMBER:  43
SPECTRUM SIZE:  4096 CHANNELS
ORDER OF SMOOTHING FUNCTION:     5
NUMBER OF BACKGROUND CHANNELS:  4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 85.0%
IDENTIFICATION ENERGY WINDOW: +- 1.50 KEV
ERROR QUOTATION: 1.96 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
LLD CALCULATION PERFORMED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

ANALYSIS OF SPECTRUM SAVED IN DISK FILE: SD2988
ANALYZED BY:

SAMPLE DESCRIPTION: R-938-5530
GEOMETRY DESCRIPTION:  22ML LIQ
SAMPLE SIZE:   1.0000E-03 LI       / CONVERSION FACTOR: 1.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL205

COLLECT STARTED ON  9-JAN-91 AT 13:42:00

COLLECT LIVE TIME:    3000. SECONDS
        REAL TIME:    3001. SECONDS
        DEAD TIME:     0.03 %

 DECAYED TO      0. DAYS,  0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 17-MAR-89
EFFICIENCY CALIBRATION PERFORMED 16-MAY-91
```

# P E A K  A N A L Y S I S

| PK | CENTROID CHANNEL | ENERGY KEV | FWHM KEV | BACKGND COUNTS | NET AREA COUNTS | ERROR % | NUCLIDES |
|---|---|---|---|---|---|---|---|
| 1C | 1126.43 | 562.84 | 1.69 | 169. | 146. | 28.5 | CS-134, EU-152 |
| 2C | 1138.45 | 568.86 | 1.69 | 169. | 285. | 22.7 | CS-134, BI-207 |
| 3C | 1209.24 | 604.24 | 1.67 | 160. | 1598. | 6.2 | CS-134 |
| 4C | 1217.97 | 608.61 | 1.67 | 140. | 39. | 33.7 | BI-214A |
| 5 | 1323.17 | 661.20 | 1.67 | 119. | 1727. | 5.1 | CS-137 |
| 5B | | 661.85 | | | 36. | 13.9 | |
| 6C | 1591.36 | 795.28 | 1.78 | 121. | 1034. | 8.6 | CS-134 |
| 7C | 1603.48 | 801.33 | 1.78 | 121. | 79. | 34.4 | CS-134 |
| 8 | 2346.23 | 1172.67 | 2.02 | 73. | 1039. | 6.7 | CO-60 |
| 9 | 2664.44 | 1331.77 | 2.15 | 24. | 902. | 6.8 | CO-60 |
| 9B | | 1332.24 | | | 9. | 37.4 | |
| 10 | 2920.61 | 1459.85 | 2.35 | 16. | 155. | 18.0 | K-40 |
| 10B | | 1460.85 | | | 156. | 3.8 | |

'RROR QUOTATION AT 1.96 SIGMA
'EAK CONFIDENCE LEVEL AT 85.0%

'ULTIPLET ANALYSIS CONVERGED NORMALLY
'IRONMENTAL BACKGROUND PEAK

'ACKGROUND SUBTRACTION PERFORMED USING FILE BK0012
'ACKGROUND DESCRIPTION: BKG
'ACKGROUND COLLECT STARTED ON 30-AUG-88 AT 16:46:00
'ACKGROUND LIVE TIME: 60000. SECONDS

:22-S COUNTING ROOM 09-JAN-92 15:00:15

;AMPI E: R-938-5530
)A^ )LLECTED ON 9-JAN-91 AT 13:42:00
)ECA.cD TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

| NUCLIDE | ACTIVITY CONCENTRATION IN uCi/LI MEASURED | ERROR | DECAY CORRECTED | ERROR | ENERGY COMPARISON (KEV) EXPECT | DIFF |
|---|---|---|---|---|---|---|
| \M-241 | LLD<9.04E+00 | | LLD<9.04E+00 | | 59.54 | |
| \M-243 | LLD<2.38E+00 | | LLD<2.38E+00 | | 74.67 | |
| 3A-133 | LLD<2.08E+00 | | LLD<2.08E+00 | | 356.02 | |
| 3A-140 | LLD<6.08E+00 | | LLD<6.08E+00 | | 537.27 | |
| :EPR144 | LLD<1.34E+01 | | LLD<1.34E+01 | | 133.51 | |
| :O-60 | 6.46E+01 | +-4.82E+00 | 6.46E+01 | +-4.82E+00 | 1332.50 | -0.73 |
| | | | | | 1173.24 | -0.57 |
| :R-51 | LLD<1.13E+01 | | LLD<1.13E+01 | | 320.09 | |
| :S-134 | 5.49E+01 | +-5.45E+00 | 5.49E+01 | +-5.45E+00 | 795.84 | -0.57 |
| | | | | | 604.70 | -0.46 |
| :S-137 | 7.67E+01 | +-5.81E+00 | 7.67E+01 | +-5.81E+00 | 661.65 | -0.45 |
| :U-152 | LLD<5.79E+00 | | LLD<5.79E+00 | | 1408.01 | |
| :U-154 | LLD<3.83E+00 | | LLD<3.83E+00 | | 1274.45 | |
| :U-155 | LLD<4.25E+00 | | LLD<4.25E+00 | | 105.31 | |
| :E-59 | LLD<3.96E+00 | | LLD<3.96E+00 | | 1099.25 | |
| :-131 | LLD<1.65E+00 | | LLD<1.65E+00 | | 364.48 | |
| :-4^ | LLD<1.02E+01 | | LLD<1.02E+01 | | 1460.75 | |
| .A- | LLD<1.09E+00 | | LLD<1.09E+00 | | 1596.20 | |
| 1N-54 | LLD<1.57E+00 | | LLD<1.57E+00 | | 834.83 | |
| 1A-22 | LLD<1.36E+00 | | LLD<1.36E+00 | | 1274.55 | |
| 1B-95 | LLD<1.53E+00 | | LLD<1.53E+00 | | 765.78 | |
| 1P-237 | LLD<9.22E+00 | | LLD<9.22E+00 | | 86.50 | |
| )U-239 | LLD<1.27E+04 | | LLD<1.27E+04 | | 129.30 | |
| 1U-241 | LLD<3.84E+05 | | LLD<3.84E+05 | | 148.57 | |
| 1A-224 | LLD<2.53E+01 | | LLD<2.53E+01 | | 240.99 | |
| 1A-226 | LLD<2.30E+01 | | LLD<2.30E+01 | | 186.10 | |
| 1U-103 | LLD<1.52E+00 | | LLD<1.52E+00 | | 497.08 | |
| 1U103 | LLD<1.60E+00 | | LLD<1.60E+00 | | 497.08 | |
| 1URH106 | LLD<2.83E+01 | | LLD<2.83E+01 | | 621.80 | |
| 3B-125 | LLD<1.25E+01 | | LLD<1.25E+01 | | 176.33 | |
| 3E-75 | LLD<1.92E+00 | | LLD<1.92E+00 | | 264.66 | |
| 3N-113 | LLD<2.06E+00 | | LLD<2.06E+00 | | 391.67 | |
| 3R-85 | LLD<1.59E+00 | | LLD<1.59E+00 | | 513.99 | |
| :H-228 | LLD<1.08E+02 | | LLD<1.08E+02 | | 84.37 | |
| J-235 | LLD<1.54E+00 | | LLD<1.54E+00 | | 185.71 | |
| /-88 | LLD<1.13E-01 | | LLD<1.13E-01 | | 1836.06 | |
| 'N-65 | LLD<3.96E+00 | | LLD<3.96E+00 | | 1115.55 | |
| :R-95 | LLD<2.65E+00 | | LLD<2.65E+00 | | 756.73 | |
| | --- | | --- | | | |
| TOTAL | 1.96E+02 | +-9.31E+00 | 1.96E+02 | +-9.31E+00 | | |

STANDARD DEVIATION = 0.11

:BAK = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.30E-09 UC/LI
TOTAL MEASURED ACTIVITY = 1.96E+02 (+-9.31E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

F  Q QUOTATION AT 1.96 SIGMA
L.  ONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

| CENTROID CHANNEL | ENERGY KEV | NET AREA COUNTS | ERROR % | GAMMAS/SEC |
|---|---|---|---|---|
| 1126.43 | 562.84 | 146. | 28.5 | 1.81E+01 |
| 1138.45 | 568.86 | 285. | 22.7 | 3.56E+01 |
| 1603.48 | 801.33 | 79. | 34.4 | 1.34E+01 |

# ACID DIGESTION ANALYSIS RESULTS

# ACID DIGESTION RESULTS

Tank: 103AP
Sample No.: R937
Customer ID: 3AP891-5

| | Check Standard | | Blank | | Sample | | Duplicate Sample | | Spike of Sample | | Check Standard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID: | R931 | | R932 | | R937 | | NA | | NA | | R938 | |
| Acid Digestion (12-27-91) | Complete | | Complete | | Complete | | NA | | NA | | Complete | |
| ICP (01-22-92) | | | | | | | | | | | | |
| Aluminum | 112 | % | 1.50E+2 | ug/L | 2.30E+5 | ug/L | NA | | NA | | 121 | % |
| Barium | 97 | % | <1.30E+1 | ug/L | <6.50E+1 | ug/L | NA | | NA | | 100 | % |
| Cadmium | 92.5 | % | <4.00E+0 | ug/L | 1.24E+2 | ug/L | NA | | NA | | 92.5 | % |
| Chromium | 99.6 | % | <8.00E+0 | ug/L | 4.48E+3 | ug/L | NA | | NA | | 107 | % |
| Iron | 102 | % | <8.70E+1 | ug/L | <4.35E+2 | ug/L | NA | | NA | | 126 | % |
| Lead | 96 | % | <8.00E+1 | ug/L | <4.00E+2 | ug/L | NA | | NA | | 93.2 | % |
| Magnesium | 114 | % | 2.44E+2 | ug/L | 1.14E+3 | ug/L | NA | | NA | | 116 | % |
| Manganese | 95.8 | % | <3.00E+0 | ug/L | 4.50E+1 | ug/L | NA | | NA | | 97.2 | % |
| Silver | 99.2 | % | <8.00E+0 | ug/L | <4.00E+1 | ug/L | NA | | NA | | 98.3 | % |
| Sodium | 156.5 | % | 1.74E+3 | ug/L | 2.05E+6 | ug/L | NA | | NA | | 177.5 | % |
| Zinc | 96.5 | % | 2.74E+1 | ug/L | 2.21E+2 | ug/L | NA | | NA | | 101 | % |

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: ACID DIGESTION | Sample Prep: ACID DIGESTION |

| | |
|---|---|
| Instrument: METTLER BAL. SNF04495 | Procedure/Rev: LA-505-158/A-2 |
| Technologist: L. MORRISON | Date: 12-27-91 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: L. OTTMAR |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-8505 | 11 | | |
| 2 | REAGENT BLANK | R932-8605 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-8705 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-8505 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | ICP1-1B48Z/10 mL | ICP2-2B48AA/10 mL | ICP3-3B48AA/10 mL | N/A |
| | | | | |
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A-6000-881 (03/92)

# ACID DIGESTION ANALYSIS

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931.-8505 | 103AP | 12-16-91 | 15:44 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| ACD-DIG | LA-505-158 | % RECOVERY | N124W | 0 |

Sample Size: ? 10mL ea in 50mL
Customer ID: STD

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID _____
1B48Z
2B48AA
3B48AA

Complete.

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 65731 | 82768 | | | |
| [signature] | Laurine J. Ottmar | | | |

Date: 12/27/91 Time Completed: 1/6/92 Lab Unit Mgr: [signature] 1/9/92

54-6600-051 (R-10-83)

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-8605 | 103AP | 12-16-91 | 15:46 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| ACD-DIG | LA-505-158 | G/G | N124W | 0 |

Sample Size: ?
Customer ID: BLK

Remarks, Calculations, Results:
REAGENT BLANK
VOLUME ON
COMPLETION 50mL

Complete

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 65731 | 82768 | | | |
| [signature] | Laurine J. Ottmar | | | |

Date: 12/27/91 Time Completed: 1/6/92 Lab Unit Mgr: [signature] 1-9-92

54-6600-051 (R-10-83)

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-8705 | 103AP | 12-16-91 | 15:55 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| ACD-DIG | LA-505-158 | G/G | N124W | 0 |

Sample Size: ? 10mL in 50mL
Customer ID: 3APB91-5

Remarks, Calculations, Results:

Complete

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 65731 | 82768 | | | |
| [signature] | Laurine J. Ottmar | | | |

Date: 12/27/91 Time Completed: 1/6/92 Lab Unit Mgr: [signature] 1-9-92

54-6600-051 (R-10-83)

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-8505 | 103AP | 12-16-91 | 15:57 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| ACD-DIG | LA-505-158 | % RECOVERY | N124W | 0 |

Sample Size: ? 10mL ea in 50mL
Customer ID: STD

Remarks, Calculations, Results:
LMCS CHECK SAMPLE
LMCS ID _____
1B48Z
2B48AA
3B48AA

Complete

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 65731 | 82768 | | | |
| [signature] | Laurine J. Ottmar | | | |

Date: 12/27/91 Time Completed: 1/6/92 Lab Unit Mgr: [signature] 1-9-92

54-6600-051 (R-10-83)

9 3 1 2 1 3 2 3 3 4

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

# ANALYTICAL BATCH

| | |
|---|---|
| Lab Segment Serial No.: R937 | Customer ID: 3AP891-5 |
| Analysis: INDUCTIVELY COUPLED PLASMA | Sample Prep: ACID DIGESTION |

| | |
|---|---|
| Instrument: METTLER BAL. SNF04495 | Procedure/Rev: LA-505-151/B-0 |
| Technologist: T. FRAZIER | Date: 1-22-92 |
| Starting Time: N/A | Temperature: N/A |
| Ending Time: N/A | Chemist: L. OTTMAR |

| | Description | Lab ID | | Description | Lab ID |
|---|---|---|---|---|---|
| 1 | INITIAL LMCS CHECK STD | R931-8550 | 11 | | |
| 2 | REAGENT BLANK | R932-8650 | 12 | | |
| 3 | SAMPLE 3AP891-5 | R937-8750 | 13 | | |
| 4 | FINAL LMCS CHECK STD | R938-8550 | 14 | | |
| 5 | | | 15 | | |
| 6 | | | 16 | | |
| 7 | | | 17 | | |
| 8 | | | 18 | | |
| 9 | | | 19 | | |
| 10 | | | 20 | | |

| Standard Type | Primary Book No. and Aliquot Vol. | Second Book No. and Aliquot Vol. | Third Book No. and Aliquot Vol. | Final Vol. of Standard |
|---|---|---|---|---|
| LMCS CHECK STD | ICP1-1B48AC/10 mL | ICP2-2B48AD/10 mL | ICP3-3B48AD/10 mL | N/A |
| | | | | |
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A-6000-881 (03/92)

# ICP ANALYSIS - ACID DIGESTION

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 931--8550 | 103AF | 12-16-91 | 15:44 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| ICP | LA-505-151 | % RECOVERY | N1240 | 0 |

| Sample Size | | Customer ID |
|---|---|---|
| ?10ml in 50ml | DIGESTED STDS. | STD |

Remarks, Calculations, Results

1st STD Digested STD
1B482, 2B48AA, 3B48AR

2nd STD CCV OR LMCS

Zn 1.93 x 5 = 9.65 96.5%

AG .992 ppm x 5 = 4.96 = 99.2% Rec.
Al ~~1.99x5=9.95 99.5%~~ 1.125 x 5.60 112.0%
Ba 1.94 x 5 = 9.70 97.0%
Cd 1.85 x 5 = 9.25 92.5%
Cr .996 x 5 = 4.98 99.6%
Fe 1.02 x 5 = 5.10 102.0%
Mg 1.14 x 5 = 5.70 114.0%
Mn .958 x 5 = 4.79 95.8%
Na 3.13 x 5 = 15.65 156.5%
Pb 0.96 x 5 = 4.80 96.0%

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 67768 | 82768 | | | |
| His | His | His | His | His |
| Teresa L. Fraire | Lauriner J. Ottman | | Teresa L. Fraire | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-22-92 | 1/23/92 | Teresa L. Fraire |

54-6800-061 (10-83)

#R931-8550
931-
JW 1/2/92

Ag 5.21 104.2%
Al 4.68 93.6% Rec.
Ba 10.19 101.9% Rec
Cd 10.14 101.4% Rec.
Cr 5.25 105.0% wrg #7097
Fe 5.08 101.6%
Mg 5.08 101.6%
Mn 5.04 100.8%
Na 9.91 99.1%
Pb 5.10 102.0%
Zn 10.12 101.2%

reviewed 8/12/92 baf

# ICP ANALYSIS - ACID DIGESTION

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 932.-8650 | 103AP | 12-16-91 | 15:46 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| ICP | LA-505-151 | PPB | N124W | 0 |

| Sample Size | Customer ID |
|---|---|
| ? 50 ml Direct | BLK |

Remarks, Calculations, Results

REAGENT BLANK

Al 1.50E2 ug/l
Zn 2.74E1 ug/l
Fe <8.70E1 ug/l
Cr <8.0 ug/l
Ba <1.30E1 ug/l
Mg 2.44E2 ug/l
Na 1.74E3 ug/l
Ag <8.0 ug/l
Pb <8.0E1 ug/l
Cd <4.0 ug/l
Mn <3.0 ug/l

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 67768 | 82768 | | | |
| Hrs | Hrs | Hrs | Hrs | Hrs |
| Teresa L. Frazier | Laurine J. Ottmar | | | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-22-92 | 1/23/92 | Teresa L. Frazier |

54-6800-061 (R-10-83)

| Serial No | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 937.-8750 | 103AP | 12-16-91 | 15:55 | 25 |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| ICP | LA-505-151 | PPB | N124W | 0 |

| Sample Size | Customer ID |
|---|---|
| ? 10ml in 50ml -2ml-10ml (for Na) | 3AP891-5 |

Remarks, Calculations, Results

Al (4.59E4)(5) = 2.30E5 ug/l
Zn (4.41E1)(5) = 2.21E2 ug/l
Fe (<8.7E1)(5) = <4.35E2 ug/l
Cr (8.95E2)(5) = 4.48E3 ug/l
Ba (<1.30E1)(5) = <6.50E1 ug/l
Mg (2.27E2)(5) = 1.14E3 ug/l
Na (2.05E5)(5)(2) = 2.05E6 ug/l
Ag (<8.0)(5) = <4.0E1 ug/l
Pb (<8.0E1)(5) = <4.0E2 ug/l
Cd (2.47E1)(5) = 1.24E2 ug/l
Mn (<3.0)(5) = <1.50E1 ug/l

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 67768 | 82768 | | | |
| Hrs | Hrs | Hrs | Hrs | Hrs |
| Teresa L. Frazier | Laurine J. Ottmar | | | |

| Date | Time Completed | Lab Unit Mgr |
|---|---|---|
| 1-22-92 | 1/23/92 | Teresa L. Frazier |

54-6800-061 (R-10-83)

# ICP ANALYSIS - ACID DIGESTION

| Serial No. | Sample Point | Date | Time Issued | Priority |
|---|---|---|---|---|
| R 938.-8550 | 10 [illegible] | 12-16-91 | [illegible] | [illegible] |

| Determination | Method/Standard | Result Units | Charge Code | Reruns |
|---|---|---|---|---|
| ICP | LA-505-151 | % RECOVERY | [illegible] | 0 |

| Sample Size | Customer ID |
|---|---|
| 7 | STD |
| 10 mL [illegible] 50 mL | |

Remarks, Calculations, Results:
1st STD Digested STD
1848B, 2848AA, 3848AA

2nd STD CCV OR LMCS
AG
AL
BA

CD
CR
FE
MG
MN
NA

PB
ZN

→ OVER

| Analyst - 1 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5 |
|---|---|---|---|---|
| 67768 | 82768 | | | |
| Hrs | Hrs | Hrs | Hrs | Hrs |
| Teresa L. Frazier | Laurine J. Ottman | | | |

| Date | Time Completed | Lab Unit Mgr | |
|---|---|---|---|
| 1-22-92 | 1/23/92 | | Teresa L. Frazier |

54-6800-061 (R-10-83)

R938-8550

| DIGESTED | | | UNDIGESTED | | |
|---|---|---|---|---|---|
| Al | 1.21 ppm x 5 = 6.05 | 121.0% Rec. | Al | 4.72 | 94.4% Rec. |
| Zn | 2.02 x 5 = 10.10 | 101.0% Rec. | Zn | 9.59 | 95.9% Rec. |
| Fe | 1.26 x 5 = 6.30 | 126.0% Rec. | Fe | 4.77 | 95.4% Rec. |
| Cr | 1.07 x 5 = 5.35 | 107.0% Rec. | Cr | 4.88 | 97.6% Rec. |
| Ba | 2.00 x 5 = 10.00 | 100.0% Rec. | Ba | 9.73 | 97.3% Rec. |
| Mg | 1.16 x 5 = 5.80 | 116.0% Rec. | Mg | 4.76 | 95.2% Rec. |
| Na | 3.55 x 5 = 17.75 | 177.5% Rec. | Na | 9.77 | 97.7% Rec. |
| Ag | .983 x 5 = 4.92 | 98.3% Rec. | Ag | 5.09 | 101.8% Rec. |
| Pb | .932 x 5 = 4.66 | 93.2% Rec. | Pb | 4.91 | 98.2% Rec. |
| Cd | 1.85 x 5 = 9.25 | 92.5% Rec. | Cd | 9.21 | 92.1% Rec. |
| Mn | .972 x 5 = 4.86 | 97.2% Rec. | Mn | 4.71 | 94.2% Rec. |

alibration Standard : BLANK 10:23 AM 22/ 1/92
ask Name : ALL_SIM
n-Peak Integrations : 3 Off-Peak Integrations : 1

| | Ag (KPulses) | Al (KPulses) | As (KPulses) | B (KPulses) | Ba (KPulses) | Be (KPulses) | Bi (KPulses) | Ca (KPulses) |
|---|---|---|---|---|---|---|---|---|
| n Peak 1 | 2.013 | 8.773 | 0.694 | 1.474 | 3.883 | 1.188 | 2.715 | 0.503 |
| n Peak 2 | 2.021 | 8.799 | 0.714 | 1.476 | 3.898 | 1.189 | 2.764 | 0.502 |
| n Peak 3 | 2.018 | 8.800 | 0.722 | 1.463 | 3.890 | 1.188 | 2.705 | 0.502 |
| ffPeak1 1 | 2.118 | 8.344 | 0.710 | 1.482 | 3.890 | | 2.778 | 0.244 |
| ffPeak2 1 | | | | | | 1.196 | | |
| ean | -0.101 | 0.447 | 0.000 | -0.011 | 0.000 | -0.008 | -0.050 | 0.258 |
| .D. | 0.004 | 0.015 | 0.014 | 0.007 | 0.008 | 0.001 | 0.032 | 0.001 |
| R.S.D. | 4.015 | 3.427 | | 63.636 | 2251.666 | 7.531 | 63.151 | 0.223 |

| | Cd (KPulses) | Ce (KPulses) | Co (KPulses) | Cr (KPulses) | Cu (KPulses) | Eu (KPulses) | Fe (KPulses) | Hg (KPulses) |
|---|---|---|---|---|---|---|---|---|
| n Peak 1 | 3.788 | 4.173 | 1.515 | 1.132 | 2.132 | 2.841 | 0.879 | 1.557 |
| n Peak 2 | 3.788 | 4.190 | 1.521 | 1.144 | 2.146 | 2.854 | 0.904 | 1.591 |
| n Peak 3 | 3.793 | 4.179 | 1.522 | 1.156 | 2.139 | 2.840 | 0.890 | 1.573 |
| ffPeak1 1 | 3.882 | 4.134 | 1.523 | 1.149 | 2.091 | 2.918 | 0.885 | |
| ffPeak2 1 | | | | | | | | |
| ean | -0.092 | 0.047 | -0.004 | -0.005 | 0.048 | -0.073 | 0.006 | 1.574 |
| .D. | 0.003 | 0.009 | 0.004 | 0.012 | 0.007 | 0.008 | 0.013 | 0.017 |
| R.S.D. | 3.126 | 18.475 | 103.253 | 240.000 | 14.583 | 10.699 | 208.833 | 1.081 |

| | K (KPulses) | La (KPulses) | Li (KPulses) | Mg (KPulses) | Mn (KPulses) | Mo (KPulses) | Na (KPulses) | Nd (KPulses) |
|---|---|---|---|---|---|---|---|---|
| n P | 2.590 | 0.358 | 3.347 | 0.250 | 0.582 | 0.947 | 6.023 | 9.809 |
| n P | 2.597 | 0.359 | 3.348 | 0.249 | 0.583 | 0.941 | 6.031 | 9.965 |
| n Peak 3 | 2.583 | 0.358 | 3.351 | 0.249 | 0.582 | 0.956 | 6.025 | 9.891 |
| ffPeak1 1 | 2.631 | 0.362 | 3.350 | 0.227 | 0.580 | 0.929 | 5.943 | 9.815 |
| ffPeak2 1 | | | | | | | | |
| ean | -0.041 | -0.004 | -0.001 | 0.022 | 0.002 | 0.019 | 0.083 | 0.073 |
| .D. | 0.007 | 0.001 | 0.002 | 0.001 | 0.001 | 0.008 | 0.004 | 0.078 |
| R.S.D. | 17.073 | 15.746 | 156.125 | 2.585 | 24.744 | 39.736 | 4.996 | 106.410 |

| | Ni (KPulses) | P (KPulses) | Pb (KPulses) | S (KPulses) | Sb (KPulses) | Se (KPulses) | Si (KPulses) | Sn (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 1.840 | 0.345 | 1.096 | 0.707 | 1.100 | 1.160 | 2.416 | 4.292 |
| On Peak 2 | 1.855 | 0.336 | 1.110 | 0.704 | 1.089 | 1.170 | 2.434 | 4.309 |
| On Peak 3 | 1.870 | 0.337 | 1.107 | 0.710 | 1.082 | 1.148 | 2.425 | 4.307 |
| OffPeak1 1 | 1.905 | 0.325 | 1.102 | 0.701 | 1.097 | | 2.313 | 4.312 |
| OffPeak2 1 | | | | | | 1.212 | | |
| Mean | -0.050 | 0.014 | 0.002 | 0.006 | -0.007 | -0.053 | 0.112 | -0.009 |
| S.D. | 0.015 | 0.005 | 0.007 | 0.003 | 0.009 | 0.011 | 0.009 | 0.009 |
| % R.S.D. | 30.000 | 34.415 | 315.985 | 50.000 | 136.107 | 20.915 | 8.036 | 99.553 |

| | Sm (KPulses) | Sr (KPulses) | Ta (KPulses) | Ti (KPulses) | Tl (KPulses) | V (KPulses) | W (KPulses) | Zn (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 2.054 | 3.175 | 2.533 | 2.663 | 2.703 | 1.501 | 2.955 | 1.222 |
| On Peak 2 | 2.039 | 3.182 | 2.515 | 2.671 | 2.717 | 1.506 | 2.943 | 1.253 |
| On Peak 3 | 2.041 | 3.180 | 2.569 | 2.669 | 2.720 | 1.501 | 2.903 | 1.231 |
| Off[illegible] 1 | 2.053 | 3.169 | 2.553 | 2.764 | | | 2.923 | 0.858 |
| Of[illegible] 1 | | | | | 2.774 | 1.478 | | |
| Mean | -0.008 | 0.010 | -0.014 | -0.096 | -0.061 | 0.025 | 0.011 | 0.377 |

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 137 TO 213.

Teresa L. Fryer
1-22-92

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| S.D. | 0.008 | 0.004 | 0.027 | 0.004 | 0.009 | 0.003 | 0.027 | 0.016 |
| % R.S.D. | 97.734 | 36.056 | 196.396 | 4.322 | 14.957 | 11.703 | 255.257 | 4.226 |

| | Zr (KPulses) |
|---|---|
| ak 1 | 3.573 |
| On Peak 2 | 3.578 |
| On Peak 3 | 3.580 |
| OffPeak1 1 | 3.551 |
| OffPeak2 1 | |
| Mean | 0.026 |
| S.D. | 0.004 |
| % R.S.D. | 13.868 |

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Calibration Standard : SIM 1 10:25 AM 22/ 1/92
Task name : ALL_SIM
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Ba (KPulses) | Be (KPulses) | Ca (KPulses) | K (KPulses) | Li (KPulses) | Mg (KPulses) | Na (KPulses) | Sr (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 349.937 | 119.488 | 121.418 | 6.186 | 205.560 | 97.819 | 39.563 | 527.972 |
| On Peak 2 | 351.394 | 119.820 | 121.953 | 6.158 | 205.529 | 98.119 | 39.441 | 529.965 |
| On Peak 3 | 350.347 | 119.231 | 121.564 | 6.156 | 206.597 | 97.607 | 39.551 | 528.142 |
| OffPeak1 1 | 5.430 | | 0.920 | 2.672 | 5.578 | 0.506 | 6.160 | 5.109 |
| OffPeak2 1 | | 2.308 | | | | | | |
| Mean | 345.129 | 117.205 | 120.725 | 3.495 | 200.317 | 97.342 | 33.358 | 523.584 |
| S.D. | 0.751 | 0.295 | 0.277 | 0.017 | 0.608 | 0.257 | 0.067 | 1.105 |
| S.D. | 0.218 | 0.252 | 0.229 | 0.480 | 0.303 | 0.264 | 0.202 | 0.211 |

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Calibration Standard : SIM 2 10:27 AM 22/ 1/92
Task name : ALL_SIM
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Ag (KPulses) | Cd (KPulses) | Co (KPulses) | Cr (KPulses) | Cu (KPulses) | Fe (KPulses) | Mn (KPulses) | Ni (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 69.448 | 528.597 | 93.964 | 53.053 | 91.601 | 65.871 | 213.475 | 92.591 |
| On Peak 2 | 70.303 | 533.562 | 95.536 | 53.744 | 92.867 | 66.391 | 215.798 | 93.636 |
| On Peak 3 | 70.326 | 535.772 | 95.453 | 53.841 | 92.817 | 66.650 | 216.355 | 93.831 |
| OffPeak1 1 | 2.809 | 5.651 | 1.887 | 1.412 | 2.474 | 1.265 | 1.316 | 2.264 |
| OffPeak2 1 | | | | | | | | |
| Mean | 67.217 | 526.993 | 93.097 | 52.134 | 89.954 | 65.039 | 213.893 | 91.089 |
| S.D. | 0.500 | 3.675 | 0.885 | 0.430 | 0.717 | 0.397 | 1.528 | 0.667 |
| % R.S.D. | 0.744 | 0.697 | 0.950 | 0.824 | 0.797 | 0.610 | 0.714 | 0.732 |

| | Y (KPulses) | Zn (KPulses) |
|---|---|---|
| On Peak 1 | 32.601 | 244.297 |
| On Peak 2 | 32.998 | 246.962 |
| On Peak 3 | 33.076 | 247.671 |
| OffPeak1 1 | | 1.903 |
| Peak2 1 | 1.867 | |
| Mean | 31.025 | 244.407 |

| | | |
|---|---|---|
| S.D. | 0.255 | 1.779 |
| % R.S.D. | 0.821 | 0.728 |

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Calibration Standard : SIM 3 10:29 AM 22/ 1/92
Task name : ALL_SIM
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Al (KPulses) | B (KPulses) | Mo (KPulses) | P (KPulses) | Si (KPulses) | Ta (KPulses) | Ti (KPulses) | W (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 58.441 | 106.308 | 68.578 | 3.615 | 31.290 | 37.813 | 156.793 | 3.115 |
| On Peak 2 | 57.992 | 105.204 | 67.821 | 3.631 | 31.095 | 37.189 | 155.172 | 3.137 |
| On Peak 3 | 58.205 | 105.851 | 68.022 | 3.576 | 31.189 | 37.347 | 155.561 | 3.103 |
| OffPeak1 1 | 8.948 | 2.303 | 1.350 | 0.341 | 2.625 | 3.342 | 3.267 | 3.759 |
| OffPeak2 1 | | | | | | | | |
| Mean | 49.265 | 103.485 | 66.790 | 3.266 | 28.566 | 34.108 | 152.575 | -0.641 |
| S.D. | 0.225 | 0.555 | 0.392 | 0.028 | 0.098 | 0.324 | 0.846 | 0.017 |
| % R.S.D. | 0.456 | 0.536 | 0.587 | 0.866 | 0.341 | 0.951 | 0.555 | 2.691 |

| | Zr (KPulses) |
|---|---|
| On Peak 1 | 51.261 |
| On Peak 2 | 50.747 |
| On Peak 3 | 50.866 |
| OffPeak1 1 | 3.829 |
| OffPeak2 1 | |
| Mean | 47.129 |
| S.D. | 0.269 |
| % R.S.D. | 0.571 |

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Calibration Standard : SIM 4 10:31 AM 22/ 1/92
Task name : ALL_SIM
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | As (KPulses) | Bi (KPulses) | Pb (KPulses) | S (KPulses) | Sb (KPulses) | Se (KPulses) | Sn (KPulses) | Tl (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 17.339 | 22.855 | 12.664 | 19.385 | 4.928 | 8.055 | 93.278 | 5.471 |
| On Peak 2 | 17.317 | 22.717 | 12.677 | 19.358 | 4.937 | 8.026 | 93.020 | 5.459 |
| On Peak 3 | 17.241 | 22.650 | 12.576 | 19.195 | 4.917 | 7.967 | 92.580 | 5.464 |
| OffPeak1 1 | 0.797 | 2.952 | 1.194 | 0.825 | 1.119 | | 2.707 | |
| OffPeak2 1 | | | | | | 1.307 | | 2.888 |
| Mean | 16.502 | 19.789 | 11.445 | 18.488 | 3.808 | 6.709 | 90.252 | 2.577 |
| S.D. | 0.051 | 0.105 | 0.055 | 0.103 | 0.010 | 0.045 | 0.353 | 0.006 |
| % R.S.D. | 0.312 | 0.528 | 0.480 | 0.556 | 0.263 | 0.668 | 0.391 | 0.234 |

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Calibration Standard : SIM 5 10:33 AM 22/ 1/92
Task name : ALL_SIM
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Ce | Eu | La | Nd | Sm |
|---|---|---|---|---|---|

| | (KPulses) | (KPulses) | (KPulses) | (KPulses) | (KPulses) |
|---|---|---|---|---|---|
| On Peak 1 | 14.206 | 315.395 | 5.621 | 60.477 | 13.055 |
| On Peak 2 | 14.179 | 314.598 | 5.608 | 60.188 | 13.042 |
| On Peak 3 | 14.213 | 315.584 | 5.638 | 60.475 | 13.074 |
| OffPeak1 1 | 6.760 | 6.462 | 0.591 | 14.958 | 5.693 |
| OffPeak2 1 | | | | | |
| Mean | 7.439 | 308.730 | 5.031 | 45.422 | 7.364 |
| S.D. | 0.018 | 0.523 | 0.015 | 0.166 | 0.016 |
| % R.S.D. | 0.241 | 0.170 | 0.299 | 0.366 | 0.219 |

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Calibration Standard : SIM_HIREF 10:35 AM 22/ 1/92
Task name : ALL_SIM
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Ag (KPulses) | Al (KPulses) | As (KPulses) | B (KPulses) | Ba (KPulses) | Be (KPulses) | Bi (KPulses) | Ca (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 8.615 | 16.707 | 2.416 | 11.905 | 36.829 | 12.121 | 4.788 | 12.702 |
| On Peak 2 | 8.559 | 16.709 | 2.420 | 11.875 | 36.807 | 12.109 | 4.849 | 12.689 |
| On Peak 3 | 8.671 | 16.768 | 2.449 | 11.956 | 37.106 | 12.201 | 4.804 | 12.806 |
| OffPeak1 1 | 2.339 | 10.039 | 0.751 | 1.614 | 4.287 | | 3.603 | 0.320 |
| OffPeak2 1 | | | | | | 1.347 | | |
| Mean | 6.276 | 6.689 | 1.677 | 10.298 | 32.627 | 10.797 | 1.211 | 12.412 |
| S.D. | 0.056 | 0.035 | 0.018 | 0.041 | 0.167 | 0.050 | 0.032 | 0.064 |
| % R.S.D. | 0.892 | 0.518 | 1.074 | 0.398 | 0.511 | 0.463 | 2.612 | 0.517 |

| | Cd (KPulses) | Ce (KPulses) | Co (KPulses) | Cr (KPulses) | Cu (KPulses) | Eu (KPulses) | Fe (KPulses) | Hg (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 51.870 | 5.222 | 10.108 | 6.070 | 10.928 | 33.241 | 7.066 | 1.596 |
| On Peak 2 | 51.811 | 5.235 | 10.118 | 6.079 | 10.924 | 33.183 | 7.015 | 1.596 |
| On Peak 3 | 52.473 | 5.230 | 10.245 | 6.097 | 11.002 | 33.471 | 7.110 | 1.635 |
| OffPeak1 1 | 4.080 | 4.462 | 1.602 | 1.214 | 2.224 | 3.333 | 0.955 | |
| OffPeak2 1 | | | | | | | | |
| Mean | 47.971 | 0.767 | 8.555 | 4.868 | 8.727 | 29.965 | 6.109 | 1.609 |
| S.D. | 0.366 | 0.007 | 0.076 | 0.014 | 0.044 | 0.152 | 0.048 | 0.023 |
| % R.S.D. | 0.764 | 0.855 | 0.893 | 0.282 | 0.503 | 0.508 | 0.778 | 1.399 |

| | K (KPulses) | La (KPulses) | Li (KPulses) | Mg (KPulses) | Mn (KPulses) | Mo (KPulses) | Na (KPulses) | Nd (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 2.957 | 0.878 | 23.278 | 19.020 | 20.692 | 7.584 | 9.388 | 14.967 |
| On Peak 2 | 2.955 | 0.876 | 23.126 | 19.021 | 20.656 | 7.599 | 9.383 | 15.015 |
| On Peak 3 | 2.974 | 0.881 | 23.254 | 19.201 | 20.822 | 7.689 | 9.385 | 15.068 |
| OffPeak1 1 | 2.669 | 0.392 | 3.610 | 0.284 | 0.658 | 1.006 | 6.052 | 10.448 |
| OffPeak2 1 | | | | | | | | |
| Mean | 0.293 | 0.486 | 19.609 | 18.797 | 20.065 | 6.618 | 3.333 | 4.569 |
| S.D. | 0.010 | 0.003 | 0.082 | 0.104 | 0.087 | 0.057 | 0.003 | 0.051 |
| % R.S.D. | 3.563 | 0.517 | 0.417 | 0.554 | 0.435 | 0.858 | 0.075 | 1.106 |

| | Ni (KPulses) | P (KPulses) | Pb (KPulses) | S (KPulses) | Sb (KPulses) | Se (KPulses) | Si (KPulses) | Sn (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 10.402 | 0.666 | 2.298 | 2.606 | 1.483 | 2.022 | 5.652 | 5.217 |
| On Peak 2 | 10.373 | 0.668 | 2.300 | 2.570 | 1.469 | 2.006 | 5.660 | 5.231 |
| On Peak 3 | 10.447 | 0.676 | 2.304 | 2.603 | 1.480 | 2.028 | 5.691 | 5.232 |
| OffPeak1 1 | 2.000 | 0.335 | 1.159 | 0.723 | 1.104 | | 2.573 | 4.600 |
| OffPeak2 1 | | | | | | 1.294 | | |
| Mean | 8.407 | 0.335 | 1.142 | 1.870 | 0.373 | 0.725 | 3.095 | 0.627 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| S.D. | 0.037 | 0.005 | 0.003 | 0.020 | 0.007 | 0.011 | 0.021 | 0.008 |
| % R.S.D. | 0.444 | 1.580 | 0.268 | 1.068 | 1.974 | 1.569 | 0.666 | 1.338 |

| | Sn (KPulses) | Sr (KPulses) | Ta (KPulses) | Ti (KPulses) | Tl (KPulses) | V (KPulses) | W (KPulses) | Zn (KPulses) |
|---|---|---|---|---|---|---|---|---|
| On Peak 1 | 11.235 | 53.332 | 6.065 | 24.868 | 3.106 | 4.496 | 3.206 | 23.604 |
| On Peak 2 | 11.379 | 53.290 | 6.033 | 24.832 | 3.111 | 4.499 | 3.261 | 23.616 |
| On Peak 3 | 11.315 | 53.769 | 6.110 | 25.073 | 3.113 | 4.527 | 3.207 | 23.806 |
| OffPeak1 1 | 2.199 | 3.449 | 2.759 | 2.961 | | | 3.124 | 1.017 |
| OffPeak2 1 | | | | | 2.881 | 1.637 | | |
| Mean | 9.111 | 50.015 | 3.310 | 21.963 | 0.229 | 2.870 | 0.101 | 22.658 |
| S.D. | 0.072 | 0.265 | 0.039 | 0.130 | 0.004 | 0.017 | 0.031 | 0.113 |
| % R.S.D. | 0.792 | 0.530 | 1.169 | 0.592 | 1.574 | 0.596 | 31.261 | 0.500 |

| | Zr (KPulses) |
|---|---|
| On Peak 1 | 8.435 |
| On Peak 2 | 8.443 |
| On Peak 3 | 8.485 |
| OffPeak1 1 | 4.041 |
| OffPeak2 1 | |
| Mean | 4.413 |
| S.D. | 0.027 |
| % R.S.D. | 0.609 |

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Corrected Counts Statistics 10:42 AM January 22, 1992
Data name : ALL_SIM
Weight : 1.0000 Solution Volume : 1.00
On Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | -0.029 | 0.008 | |
| Sr | 2 | 259.365 | 2.441 | |
| Bi | 3 | -0.136 | 0.013 | |
| Ta | 5 | -0.025 | 0.027 | |
| Hg | 6 | 1.607 | 0.037 | |
| Sn | 7 | 23.388 | 0.165 | |
| Si | 8 | 0.071 | 0.008 | |
| Al | 9 | 0.135 | 0.040 | |
| W | 10 | 0.700 | 0.061 | |
| Zn | 11 | 118.341 | 0.937 | |
| Cu | 12 | 21.866 | 0.191 | |
| Li | 14 | 96.934 | 1.041 | |
| Co | 15 | 45.344 | 0.336 | |
| Ni | 16 | 22.527 | 0.199 | |
| La | 17 | -0.005 | 0.002 | |
| Eu | 18 | -0.034 | 0.005 | |
| Fe | 19 | 15.999 | 0.108 | |
| Ca | 20 | 60.180 | 0.537 | |
| Cr | 21 | 13.209 | 0.147 | |
| Nd | 22 | 0.320 | 0.043 | |
| | 24 | 0.096 | 0.014 | |
| | 25 | -0.354 | 0.016 | |

| | | | |
|---|---|---|---|
| Ba | 26 | 170.929 | 1.580 |
| P | 27 | 0.209 | 0.007 |
| S | 28 | 0.140 | 0.006 |
| Mg | 29 | 24.736 | 0.204 |
| | 30 | 0.006 | 0.008 |
| | 31 | 16.376 | 0.143 |
| | 32 | -0.003 | 0.006 |
| Se | 33 | 0.472 | 0.007 |
| Ag | 34 | 1.169 | 0.008 |
| Pb | 35 | 0.011 | 0.010 |
| Ti | 36 | -0.115 | 0.014 |
| Cd | 37 | 254.723 | 2.430 |
| B | 38 | 25.523 | 0.254 |
| K | 39 | 0.847 | 0.008 |
| Mn | 40 | 52.302 | 0.440 |
| Sb | 42 | 0.958 | 0.017 |
| V | 43 | 0.020 | 0.005 |
| Be | 44 | -0.008 | 0.002 |
| Tl | 45 | -0.064 | 0.007 |

Identity 1: SST1 STD 1B48AC Identity 2: Direct 10:42 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppb) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -24.353 | 10140.137 | -86.699 | -6.731 | 1886.792 | 5157.806 | -28.236 | -115.659 |
| S.D. | 3.333 | 95.439 | 13.106 | 16.214 | 2095.869 | 36.463 | 5.189 | 14.815 |
| % R.S.D. | 13.685 | 0.941 | 15.116 | 240.904 | 111.081 | 0.707 | 18.376 | 12.809 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -21182.957 | 10121.290 | 4940.101 | 9782.087 | 10169.345 | 5147.689 | -4.026 | 2.562 |
| S.D. | 1888.341 | 80.405 | 43.249 | 105.024 | 75.426 | 45.297 | 6.152 | 0.328 |
| % R.S.D. | 8.914 | 0.794 | 0.875 | 1.074 | 0.742 | 0.880 | 152.804 | 12.820 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 5079.727 | 9895.337 | 5246.221 | 37.499 | 134.295 | -1011.327 | 10191.525 | 1203.294 |
| S.D. | 34.228 | 88.676 | 58.205 | 19.423 | 39.627 | 45.822 | 94.219 | 44.792 |
| % R.S.D. | 0.674 | 0.896 | 1.109 | 51.796 | 29.507 | 4.531 | 0.924 | 3.722 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 57.973 | 5078.915 | 4.619 | 9906.810 | -6.729 | 264.996 | 387.985 | 15.181 |
| S.D. | 6.404 | 41.896 | 9.106 | 86.990 | 1.659 | 23.093 | 2.313 | 16.709 |
| % R.S.D. | 11.046 | 0.825 | 197.126 | 0.878 | 24.661 | 8.714 | 0.596 | 110.070 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.402 | 10136.849 | 4944.095 | 5187.189 | 5044.876 | 5069.121 | -2.914 | 0.000 |
| S.D. | 1.859 | 96.678 | 49.174 | 46.357 | 42.391 | 90.579 | 3.184 | 0.272 |
| % R.S.D. | 77.396 | 0.954 | 0.995 | 0.894 | 0.840 | 1.787 | 109.265 | 759244.483 |

Tl

| | (ppb) |
|---|---|
| Mean | -26.308 |
| S.D. | 52.952 |
| % R.S.D. | 201.277 |

Corrected Counts Statistics 10:44 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | -0.151 | 0.008 | |
| Sr | 2 | 0.028 | 0.010 | |
| Bi | 3 | 5.105 | 0.046 | |
| Ta | 5 | -0.017 | 0.002 | |
| Hg | 6 | 1.601 | 0.007 | |
| Sn | 7 | -0.039 | 0.016 | |
| Si | 8 | 0.005 | 0.001 | |
| Al | 9 | 1.227 | 0.019 | |
| W | 10 | -0.039 | 0.013 | |
| Zn | 11 | -0.019 | 0.010 | |
| Cu | 12 | 0.104 | 0.006 | |
| Li | 14 | 0.002 | 0.002 | |
| Co | 15 | 0.014 | 0.016 | |
| Ni | 16 | -0.062 | 0.008 | |
| La | 17 | 1.324 | 0.009 | |
| F | 18 | 81.191 | 0.314 | |
| | 19 | 0.021 | 0.008 | |
| Ca | 20 | 0.527 | 0.022 | |
| Cr | 21 | 0.001 | 0.001 | |
| Mo | 22 | 12.306 | 0.053 | |
| Ce | 24 | 1.939 | 0.015 | |
| Sm | 25 | 1.858 | 0.005 | |
| Ba | 26 | -0.443 | 0.008 | |
| P | 27 | 0.025 | 0.002 | |
| S | 28 | 0.010 | 0.004 | |
| Mg | 29 | 0.012 | 0.001 | |
| As | 30 | 0.087 | 0.011 | |
| Na | 31 | 0.031 | 0.013 | |
| Mn | 32 | 0.006 | 0.006 | |
| Se | 33 | -0.044 | 0.013 | |
| Ag | 34 | 16.961 | 0.087 | |
| Pb | 35 | 2.916 | 0.017 | |
| Ti | 36 | -0.135 | 0.009 | |
| Cd | 37 | -0.074 | 0.038 | |
| B | 38 | 0.044 | 0.017 | |
| K | 39 | -0.048 | 0.008 | |
| Mn | 40 | -0.005 | 0.006 | |
| Sb | 42 | -0.000 | 0.011 | |
| V | 43 | 0.056 | 0.002 | |
| Be | 44 | -0.003 | 0.002 | |
| Tl | 45 | -0.045 | 0.007 | |

Identity 1: SST2 STD 2048AD Identity 2: Direct 10:45 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -78.050 | 0.704 | 5197.258 | -1.979 | 1528.302 | -6.834 | -73.595 | 285.870 |
| S.D. | 3.558 | 0.408 | 46.443 | 1.236 | 368.287 | 3.502 | 0.687 | 7.017 |
| % R.S.D. | 4.558 | 58.002 | 0.894 | 62.463 | 24.098 | 51.242 | 0.934 | 2.455 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1525.065 | -33.983 | 12.605 | 0.336 | 3.962 | -2.658 | 5345.549 | 5337.105 |
| S.D. | 413.112 | 0.827 | 1.456 | 0.175 | 3.588 | 1.741 | 36.543 | 20.634 |
| % R.S.D. | 27.088 | 2.435 | 11.548 | 51.962 | 90.566 | 65.522 | 0.684 | 0.387 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4.870 | 44.348 | 2.382 | 5417.846 | 5182.026 | 5473.068 | -26.453 | 68.134 |
| S.D. | 2.384 | 3.592 | 0.397 | 23.702 | 41.477 | 13.219 | 0.448 | 14.299 |
| % R.S.D. | 48.949 | 8.100 | 16.666 | 0.437 | 0.800 | 0.242 | 1.692 | 20.987 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4.280 | -2.192 | 100.129 | -31.808 | -3.917 | 23.594 | 5212.080 | 5103.057 |
| S.D. | 4.097 | 0.119 | 13.020 | 7.975 | 1.833 | 35.396 | 26.429 | 29.536 |
| % R.S.D. | 95.711 | 5.413 | 13.003 | 25.071 | 46.792 | 150.019 | 0.507 | 0.579 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -5.065 | 0.743 | 10.714 | -38.078 | -0.740 | 33.270 | 21.341 | 0.771 |
| S.D. | 1.201 | 1.497 | 3.333 | 46.845 | 0.540 | 58.573 | 1.556 | 0.272 |
| % R.S.D. | 23.703 | 201.531 | 31.110 | 123.025 | 72.996 | 176.054 | 7.291 | 35.249 |

| | Tl (ppb) |
|---|---|
| Mean | 110.183 |
| S.D. | 48.899 |
| % R.S.D. | 44.380 |

Corrected Counts Statistics 10:46 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 23.596 | 0.158 | |
| Sr | 2 | 0.033 | 0.005 | |
| Bi | 3 | -1.962 | 0.009 | |
| Ta | 5 | 16.525 | 0.083 | |
| | 6 | 28.274 | 0.238 | |
| | 7 | 0.146 | 0.030 | |

| | | | |
|---|---|---|---|
| Si | 8 | 12.869 | 0.084 |
| Al | 9 | 11.902 | 0.075 |
| W | 10 | 32.733 | 0.184 |
| Zn | 11 | 0.033 | 0.004 |
| Cu | 12 | 0.067 | 0.004 |
| I | 14 | 0.003 | 0.005 |
| Co | 15 | -0.073 | 0.007 |
| Ni | 16 | 0.278 | 0.007 |
| La | 17 | -0.006 | 0.001 |
| Eu | 18 | -0.122 | 0.003 |
| Fe | 19 | 0.034 | 0.006 |
| Ca | 20 | 0.167 | 0.002 |
| Cr | 21 | 0.019 | 0.007 |
| Nd | 22 | 0.058 | 0.047 |
| Ce | 24 | 0.059 | 0.007 |
| Sm | 25 | -0.062 | 0.002 |
| Ba | 26 | 0.024 | 0.003 |
| P | 27 | 1.632 | 0.024 |
| S | 28 | 4.796 | 0.039 |
| Mg | 29 | 0.009 | 0.001 |
| As | 30 | 4.151 | 0.069 |
| Na | 31 | 0.122 | 0.005 |
| Mo | 32 | 33.062 | 0.217 |
| Se | 33 | 1.585 | 0.016 |
| Ag | 34 | -0.067 | 0.013 |
| Pb | 35 | -0.071 | 0.018 |
| Li | 36 | 37.560 | 0.219 |
| Cd | 37 | -0.211 | 0.006 |
| Mn | 38 | 0.055 | 0.014 |
| K | 39 | -0.046 | 0.009 |
| F | 40 | 0.015 | 0.006 |
| | 42 | 0.053 | 0.023 |
| V | 43 | 14.699 | 0.101 |
| Be | 44 | 55.341 | 0.337 |
| Tl | 45 | 0.662 | 0.006 |

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Identity 1: SST3. STD 3B486D Identity 2: Direct 10:47 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppb) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 10374.234 | 0.912 | -1927.213 | 9822.885 | 1511320.755 | 34.096 | 8767.007 | 4212.401 |
| S.D. | 69.374 | 0.201 | 9.367 | 49.027 | 13471.857 | 6.673 | 57.394 | 27.457 |
| % R.S.D. | 0.669 | 21.993 | 0.486 | 0.499 | 0.891 | 19.572 | 0.655 | 0.652 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -1004769.751 | -29.493 | 4.303 | 0.471 | -15.548 | 74.713 | -8.053 | -3.196 |
| S.D. | 5647.467 | 0.347 | 0.816 | 0.455 | 1.617 | 1.552 | 2.325 | 0.201 |
| % R.S.D. | 0.562 | 1.176 | 18.972 | 96.627 | 10.401 | 2.077 | 28.872 | 6.278 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 8.788 | -15.064 | 9.529 | -6.533 | 32.957 | -153.386 | 1.391 | 10014.205 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| S.D. | 1.915 | 0.256 | 2.779 | 20.615 | 18.643 | 6.102 | 0.182 | 150.949 |
| % R.S.D. | 21.787 | 1.699 | 29.166 | 315.571 | 56.568 | 3.978 | 13.093 | 1.507 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 5162.055 | -2.672 | 4992.287 | 23.727 | 9955.903 | 4507.147 | 10.297 | -128.452 |
| S.D. | 41.738 | 0.119 | 83.014 | 2.874 | 65.276 | 45.131 | 3.971 | 30.989 |
| % R.S.D. | 0.809 | 4.441 | 1.663 | 12.111 | 0.656 | 1.001 | 38.568 | 24.125 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4932.950 | -4.707 | 12.844 | -28.344 | 1.266 | 313.429 | 9887.285 | 9845.211 |
| S.D. | 28.628 | 0.233 | 2.685 | 49.901 | 0.582 | 118.396 | 68.055 | 59.945 |
| % R.S.D. | 0.580 | 4.952 | 20.907 | 176.057 | 45.969 | 37.774 | 0.688 | 0.609 |

| | Tl (ppb) |
|---|---|
| Mean | 5189.108 |
| S.D. | 39.565 |
| % R.S.D. | 0.762 |

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Corrected Counts Statistics 10:50 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 23.361 | 0.086 | |
| Sr | 2 | 0.025 | 0.001 | |
| Y | 3 | -1.946 | 0.012 | |
| Ta | 5 | 16.431 | 0.052 | |
| Hg | 6 | 28.162 | 0.180 | |
| Sn | 7 | 0.080 | 0.027 | |
| Si | 8 | 12.862 | 0.060 | |
| Al | 9 | 11.875 | 0.044 | |
| W | 10 | 32.308 | 0.153 | |
| Zn | 11 | 0.080 | 0.010 | |
| Cu | 12 | 0.059 | 0.002 | |
| Li | 14 | -0.015 | 0.004 | |
| Co | 15 | -0.072 | 0.008 | |
| Ni | 16 | 0.299 | 0.010 | |
| La | 17 | -0.006 | 0.001 | |
| Eu | 18 | -0.148 | 0.004 | |
| Fe | 19 | 0.053 | 0.007 | |
| Ca | 20 | 0.711 | 0.003 | |
| Cr | 21 | 0.013 | 0.007 | |
| Nd | 22 | -0.097 | 0.081 | |
| Ce | 24 | 0.040 | 0.001 | |
| Sm | 25 | -0.081 | 0.002 | |
| Ba | 26 | 0.017 | 0.001 | |
| [illegible] | 27 | 1.654 | 0.007 | |
| | 28 | 4.841 | 0.043 | |
| Hg | 29 | 0.021 | 0.001 | |

| | | | |
|---|---|---|---|
| As | 30 | 4.095 | 0.044 |
| Na | 31 | 0.098 | 0.008 |
| Mo | 32 | 32.774 | 0.177 |
| Se | 33 | 1.570 | 0.015 |
| Ag | 34 | -0.152 | 0.001 |
| Pb | 35 | -0.038 | 0.006 |
| Ti | 36 | 37.215 | 0.141 |
| Cd | 37 | -0.270 | 0.016 |
| B | 38 | 0.061 | 0.005 |
| K | 39 | -0.054 | 0.006 |
| Mn | 40 | 0.019 | 0.003 |
| Sb | 42 | 0.031 | 0.007 |
| V | 43 | 14.549 | 0.058 |
| Be | 44 | 54.716 | 0.198 |
| Tl | 45 | 0.659 | 0.004 |

Identity 1: sst3 3b48ad Identity 2: 10:51 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Mg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 10270.800 | 0.586 | -1911.419 | 9766.661 | 1505000.090 | 19.547 | 8961.728 | 4682.016 |
| S.D. | 37.637 | 0.039 | 12.388 | 30.644 | 10174.991 | 6.023 | 42.073 | 18.151 |
| % R.S.D. | 0.366 | 6.667 | 0.648 | 0.314 | 0.676 | 30.811 | 0.469 | 0.388 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -991740.056 | -25.489 | 2.567 | -1.346 | -15.399 | 79.501 | -10.738 | -4.947 |
| S.D. | 4696.597 | 0.818 | 0.471 | 0.354 | 1.742 | 2.373 | 2.325 | 0.273 |
| % R.S.D. | 0.474 | 3.211 | 18.361 | 26.339 | 11.312 | 2.985 | 21.653 | 5.527 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 14.822 | 74.865 | 7.146 | -75.989 | -18.169 | -211.038 | 0.974 | 10152.488 |
| S.D. | 2.115 | 0.500 | 2.779 | 35.843 | 2.739 | 6.102 | 0.034 | 44.650 |
| % R.S.D. | 14.268 | 0.668 | 38.889 | 47.169 | 15.075 | 2.892 | 3.535 | 0.440 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 5209.757 | -0.343 | 4924.478 | 9.134 | 9869.129 | 4465.456 | -15.568 | -71.233 |
| S.D. | 46.648 | 0.119 | 53.493 | 5.063 | 53.467 | 41.877 | 0.176 | 9.960 |
| % R.S.D. | 0.895 | 34.641 | 1.086 | 55.429 | 0.542 | 0.938 | 1.133 | 13.983 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4887.798 | -7.067 | 13.941 | -75.067 | 1.525 | 199.614 | 9785.996 | 9734.039 |
| S.D. | 18.411 | 0.632 | 1.006 | 32.518 | 0.243 | 34.976 | 38.845 | 35.207 |
| % R.S.D. | 0.377 | 8.935 | 7.217 | 43.319 | 15.965 | 17.522 | 0.397 | 0.362 |

| | Tl (ppb) |
|---|---|
| Mean | 5165.162 |
| S.D. | 28.735 |
| % | 0.556 |

rected Counts Statistics 10:57 AM January 22, 1992
ame : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.008 | 0.005 | |
| Sr | 2 | 0.015 | 0.006 | |
| Bi | 3 | -0.456 | 0.022 | |
| Ta | 5 | 0.012 | 0.007 | |
| Hg | 6 | 1.587 | 0.013 | |
| Sn | 7 | 0.003 | 0.016 | |
| Si | 8 | 1.368 | 0.014 | |
| Al | 9 | 2.726 | 0.009 | |
| W | 10 | 0.152 | 0.027 | |
| Zn | 11 | 12.091 | 0.028 | |
| Cu | 12 | 4.497 | 0.018 | |
| Li | 14 | -0.010 | 0.009 | |
| Co | 15 | 4.572 | 0.028 | |
| Ni | 16 | 4.430 | 0.012 | |
| La | 17 | -0.005 | 0.001 | |
| Eu | 18 | -0.072 | 0.006 | |
| Fe | 19 | 3.190 | 0.008 | |
| Ca | 20 | 6.318 | 0.021 | |
| Cr | 21 | 2.637 | 0.006 | |
| | 22 | 0.187 | 0.032 | |
| | 24 | 0.038 | 0.011 | |
| Sm | 25 | -0.051 | 0.008 | |
| Ba | 26 | 17.136 | 0.053 | |
| P | 27 | 0.014 | 0.001 | |
| S | 28 | 0.027 | 0.009 | |
| Mg | 29 | 4.997 | 0.015 | |
| As | 30 | 0.866 | 0.009 | |
| Na | 31 | 1.716 | 0.004 | |
| Cl | 32 | 3.361 | 0.007 | |
| Se | 33 | 0.391 | 0.013 | |
| Ag | 34 | 3.330 | 0.012 | |
| Pb | 35 | 0.595 | 0.012 | |
| Ti | 36 | 7.712 | 0.018 | |
| Cd | 37 | 25.796 | 0.219 | |
| B | 38 | 4.911 | 0.029 | |
| K | 39 | 1.687 | 0.005 | |
| Mn | 40 | 10.582 | 0.025 | |
| Sb | 42 | 0.210 | 0.004 | |
| V | 43 | 1.534 | 0.009 | |
| Be | 44 | 5.568 | 0.013 | |
| Tl | 45 | 0.074 | 0.005 | |

Identity 1: ICV Identity 2: ICV 10:58 AM January 22, 1992
ame : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00

Teresa L. Frazier
1-22-92

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

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -7.920 | 0.182 | -408.966 | 15.442 | 754.717 | 2.425 | 882.584 | 933.809 |
| S | 2.017 | 0.222 | 22.209 | 3.895 | 740.190 | 3.516 | 9.874 | 3.500 |
| % R.S.D. | 25.466 | 121.847 | 5.431 | 25.220 | 98.075 | 144.981 | 1.119 | 0.375 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -4345.086 | 1005.082 | 1007.358 | -0.841 | 1026.039 | 1021.483 | -5.368 | 0.088 |
| S.D. | 824.506 | 2.366 | 3.980 | 0.858 | 6.167 | 2.802 | 4.027 | 0.401 |
| % R.S.D. | 18.976 | 0.235 | 0.395 | 102.059 | 0.601 | 0.274 | 75.019 | 457.496 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1011.308 | 999.706 | 1049.059 | 43.232 | -22.734 | -123.094 | 1021.704 | 0.024 |
| S.D. | 2.600 | 3.469 | 2.393 | 14.065 | 30.044 | 23.513 | 3.131 | 7.150 |
| % R.S.D. | 0.257 | 0.347 | 0.228 | 32.534 | 132.158 | 19.101 | 0.306 | 29928.777 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 13.862 | 1022.400 | 1038.594 | 992.761 | 1007.040 | 986.084 | 1048.047 | 1038.712 |
| S.D. | 9.866 | 2.995 | 11.118 | 2.432 | 2.006 | 34.436 | 3.523 | 20.452 |
| % R.S.D. | 71.176 | 0.293 | 1.071 | 0.245 | 0.199 | 3.492 | 0.336 | 1.969 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1022.851 | 1029.883 | 952.960 | 10093.177 | 1021.208 | 1139.897 | 1017.166 | 991.832 |
| S.D. | 2.359 | 8.716 | 5.709 | 30.905 | 2.454 | 21.230 | 6.114 | 2.224 |
| % R.S.D. | 0.231 | 0.846 | 0.599 | 0.306 | 0.240 | 1.862 | 0.601 | 0.224 |

| | Tl (ppb) |
|---|---|
| Mean | 962.657 |
| S.D. | 38.013 |
| % R.S.D. | 3.949 |

Corrected Counts Statistics  10:59 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000  Solution Volume : 1.00
On-Peak Integrations : 3  Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | 3K.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.004 | 0.003 | |
| Sr | 2 | -0.011 | 0.005 | |
| Bi | 3 | -0.114 | 0.022 | |
| Ta | 5 | 0.004 | 0.009 | |
| Hg | 6 | 1.564 | 0.014 | |
| Sn | 7 | -0.039 | 0.050 | |
| Si | 8 | 0.094 | 0.006 | |
| Al | 9 | 0.347 | 0.022 | |
| | 10 | -0.069 | 0.029 | |
| Zn | 11 | 0.046 | 0.002 | |

| | | | |
|---|---|---|---|
| Cu | 12 | 0.039 | 0.008 |
| Li | 14 | -0.024 | 0.003 |
| Co | 15 | -0.019 | 0.011 |
| [illegible] | 16 | -0.067 | 0.012 |
| | 17 | -0.004 | 0.001 |
| | 18 | -0.089 | 0.003 |
| Fe | 19 | -0.000 | 0.010 |
| Ca | 20 | 0.288 | 0.002 |
| Cr | 21 | -0.016 | 0.006 |
| Nd | 22 | -0.076 | 0.082 |
| Ce | 24 | 0.004 | 0.007 |
| Sm | 25 | -0.045 | 0.012 |
| Ba | 26 | -0.023 | 0.008 |
| P | 27 | 0.012 | 0.003 |
| S | 28 | 0.030 | 0.012 |
| Mg | 29 | 0.007 | 0.001 |
| As | 30 | 0.003 | 0.007 |
| Na | 31 | 0.020 | 0.016 |
| Mo | 32 | -0.001 | 0.002 |
| Se | 33 | -0.018 | 0.008 |
| Ag | 34 | -0.112 | 0.004 |
| Pb | 35 | 0.001 | 0.010 |
| Ni | 36 | -0.118 | 0.006 |
| Cd | 37 | -0.191 | 0.049 |
| B | 38 | -0.012 | 0.011 |
| K | 39 | -0.089 | 0.007 |
| Mn | 40 | 0.006 | 0.007 |
| Sb | 42 | -0.010 | 0.010 |
| V | 43 | 0.018 | 0.003 |
| Be | 44 | -0.012 | 0.002 |
| | 45 | -0.064 | 0.010 |

Identity 1: ICB Identity 2: ICB 11:00 AM January 22, 1992
Task Name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -9.534 | -0.834 | -64.520 | 10.889 | -547.170 | -6.760 | -12.652 | -40.968 |
| S.D. | 1.415 | 0.185 | 22.110 | 5.121 | 765.722 | 11.042 | 4.389 | 9.016 |
| % R.S.D. | 14.840 | 22.152 | 34.268 | 47.026 | 139.942 | 163.337 | 34.694 | 22.008 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 2436.051 | -28.435 | -2.037 | -2.287 | -3.364 | -3.874 | -1.341 | -1.073 |
| S.D. | 890.139 | 0.198 | 1.797 | 0.350 | 2.377 | 2.802 | 4.027 | 0.211 |
| % R.S.D. | 36.540 | 0.697 | 88.233 | 15.283 | 70.659 | 72.326 | 300.306 | 19.684 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -1.906 | 4.909 | -4.499 | -66.179 | -115.855 | -104.528 | -1.391 | -12.360 |
| S.D. | 3.316 | 0.286 | 2.393 | 36.524 | 19.237 | 35.178 | 0.488 | 19.904 |
| % R.S.D. | 174.010 | 5.825 | 53.186 | 55.189 | 16.605 | 33.654 | 35.080 | 161.038 |

| S | Mg | As | Na | Mo | Se | Ag | Pb |
|---|---|---|---|---|---|---|---|

| | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 25.459 | -3.220 | -0.982 | -38.294 | -5.925 | 95.826 | -3.348 | -2.919 |
| S.D. | 12.853 | 0.119 | 8.426 | 9.697 | 0.460 | 21.330 | 1.235 | 17.281 |
| % R.S.D. | 50.486 | 3.685 | 857.787 | 25.323 | 7.767 | 22.259 | 36.873 | 591.949 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.795 | -3.938 | -0.194 | -279.484 | 0.383 | -15.758 | -4.711 | -0.771 |
| S.D. | 0.800 | 1.964 | 2.094 | 38.298 | 0.699 | 50.476 | 1.696 | 0.356 |
| % R.S.D. | 28.641 | 49.872 | 1081.688 | 13.703 | 182.525 | 320.323 | 35.994 | 46.156 |

| | Tl (ppb) |
|---|---|
| Mean | -26.308 |
| S.D. | 68.277 |
| % R.S.D. | 259.529 |

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Corrected Counts Statistics 11:02 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | -0.034 | 0.003 | |
| Sr | 2 | 258.028 | 4.869 | |
| Bi | 3 | -0.109 | 0.006 | |
| | 5 | -0.009 | 0.022 | |
| | 6 | 1.595 | 0.024 | |
| Sn | 7 | 23.051 | 0.423 | |
| Si | 8 | 0.076 | 0.004 | |
| Al | 9 | 0.152 | 0.027 | |
| W | 10 | 0.654 | 0.040 | |
| Zn | 11 | 117.438 | 1.943 | |
| Cu | 12 | 21.817 | 0.380 | |
| Li | 14 | 97.278 | 1.540 | |
| Co | 15 | 44.759 | 0.787 | |
| Ni | 16 | 22.281 | 0.377 | |
| La | 17 | -0.006 | 0.000 | |
| Eu | 18 | -0.057 | 0.007 | |
| Fe | 19 | 15.862 | 0.276 | |
| Ca | 20 | 60.024 | 1.144 | |
| Cr | 21 | 13.060 | 0.251 | |
| Nd | 22 | 0.246 | 0.044 | |
| Ce | 24 | 0.076 | 0.005 | |
| Sm | 25 | -0.365 | 0.011 | |
| Ba | 26 | 170.340 | 3.239 | |
| P | 27 | 0.216 | 0.003 | |
| S | 28 | 0.122 | 0.002 | |
| Mg | 29 | 24.552 | 0.449 | |
| As | 30 | 0.008 | 0.001 | |
| Na | 31 | 16.323 | 0.234 | |
| Mo | 32 | 0.007 | 0.004 | |
| | 33 | 0.466 | 0.010 | |
| Hg | 34 | 1.139 | 0.017 | |

| | | | |
|---|---|---|---|
| Pb | 35 | 0.003 | 0.010 |
| Ti | 36 | -0.122 | 0.004 |
| Cd | 37 | 250.432 | 4.689 |
| B | 38 | 25.624 | 0.510 |
| | 39 | 0.847 | 0.017 |
| | 40 | 51.893 | 0.947 |
| | 42 | 0.923 | 0.023 |
| V | 43 | 0.025 | 0.003 |
| Be | 44 | -0.007 | 0.001 |
| Tl | 45 | -0.064 | 0.004 |

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Identity 1: SST1 STD IB48&C Identity 2: Direct 11:03 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -26.553 | 10087.837 | -59.816 | 3.168 | 1188.679 | 5083.367 | -25.538 | -120.584 |
| S.D. | 1.415 | 190.366 | 5.552 | 12.825 | 1350.606 | 93.142 | 2.926 | 11.252 |
| % R.S.D. | 5.328 | 1.887 | 9.282 | 404.849 | 113.622 | 1.832 | 11.459 | 9.331 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -19790.645 | 10043.812 | 4928.931 | 9816.767 | 10038.231 | 5091.751 | -9.396 | 1.029 |
| S.D. | 1213.771 | 166.695 | 85.958 | 155.421 | 176.574 | 86.037 | 0.000 | 0.461 |
| % R.S.D. | 6.133 | 1.660 | 1.744 | 1.583 | 1.759 | 1.690 | 0.000 | 44.826 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 5036.319 | 9869.606 | 5187.197 | 4.908 | 79.517 | -1043.573 | 10156.386 | 1250.765 |
| S.D. | 87.655 | 188.874 | 99.509 | 19.443 | 14.055 | 32.290 | 193.151 | 15.582 |
| % R.S.D. | 1.740 | 1.914 | 1.918 | 396.101 | 17.675 | 3.094 | 1.902 | 1.246 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 38.802 | 5041.102 | 7.406 | 9874.786 | -3.716 | 259.915 | 378.820 | 1.168 |
| S.D. | 0.680 | 92.172 | 1.352 | 142.542 | 1.218 | 22.966 | 5.087 | 18.287 |
| % R.S.D. | 1.751 | 1.828 | 18.260 | 1.443 | 32.769 | 8.836 | 1.343 | 1566.024 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -3.362 | 9966.148 | 4963.522 | 5189.136 | 5005.418 | 4883.516 | 0.006 | 0.178 |
| S.D. | 0.571 | 186.534 | 98.798 | 97.088 | 91.334 | 121.161 | 2.058 | 0.103 |
| % R.S.D. | 16.983 | 1.872 | 1.990 | 1.871 | 1.825 | 2.481 | 37116.685 | 57.723 |

| | Tl (ppb) |
|---|---|
| Mean | -28.703 |
| S.D. | 25.901 |
| % R.S.D. | 90.240 |

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.ected Counts Statistics 11:04 AM January 22, 1992

Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | -0.152 | 0.006 | |
| Sr | 2 | 0.011 | 0.008 | |
| Bi | 3 | 5.006 | 0.041 | |
| Ta | 5 | -0.051 | 0.012 | |
| Hg | 6 | 1.604 | 0.022 | |
| Sn | 7 | -0.014 | 0.027 | |
| Si | 8 | -0.009 | 0.002 | |
| Al | 9 | 1.183 | 0.002 | |
| W | 10 | -0.021 | 0.020 | |
| Zn | 11 | 0.032 | 0.009 | |
| Cu | 12 | 0.100 | 0.001 | |
| Li | 14 | -0.018 | 0.012 | |
| Co | 15 | 0.012 | 0.010 | |
| Ni | 16 | -0.094 | 0.011 | |
| La | 17 | 1.297 | 0.006 | |
| Eu | 18 | 80.055 | 0.385 | |
| Fe | 19 | 0.014 | 0.008 | |
| Ca | 20 | 0.849 | 0.006 | |
| Cr | 21 | 0.005 | 0.004 | |
| Mo | 22 | 12.094 | 0.105 | |
| Ce | 24 | 1.886 | 0.006 | |
| Sm | 25 | 1.815 | 0.005 | |
| Ba | 26 | -0.435 | 0.002 | |
| P | 27 | 0.018 | 0.003 | |
| | 28 | 0.020 | 0.008 | |
| | 29 | 0.013 | 0.002 | |
| As | 30 | 0.087 | 0.002 | |
| Na | 31 | 0.031 | 0.020 | |
| Mn | 32 | 0.019 | 0.004 | |
| Se | 33 | -0.050 | 0.002 | |
| Ag | 34 | 16.731 | 0.051 | |
| Pb | 35 | 2.868 | 0.020 | |
| Ti | 36 | -0.141 | 0.001 | |
| Cd | 37 | -0.044 | 0.018 | |
| B | 38 | 0.016 | 0.023 | |
| K | 39 | -0.071 | 0.002 | |
| Mg | 40 | -0.003 | 0.002 | |
| Sb | 42 | -0.008 | 0.011 | |
| V | 43 | 0.068 | 0.001 | |
| Be | 44 | -0.004 | 0.002 | |
| Tl | 45 | -0.046 | 0.005 | |

Identity 1: SST2 STD 2B48AD Identity 2: Direct 11:05 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppb) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -78.344 | 0.039 | 5096.781 | -21.974 | 1716.981 | -1.323 | -85.283 | 301.801 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | [illegible] | [illegible] | 41.202 | 0.849 | 1284.433 | 5.871 | 1.074 | 0.946 |
| % R.S.D. | 3.128 | 799.967 | 0.808 | 31.170 | 73.643 | 443.886 | 1.259 | 0.313 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| | 962.109 | -29.607 | 11.850 | -1.682 | 3.588 | -10.030 | 5236.812 | 5262.497 |
| | 618.198 | 0.733 | 0.131 | 1.164 | 2.269 | 2.539 | 25.892 | 25.304 |
| % R.S.D. | 64.254 | 2.476 | 1.103 | 69.195 | 63.225 | 25.314 | 0.494 | 0.481 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 2.435 | 97.682 | 3.970 | 5323.555 | 5036.866 | 5347.993 | -25.937 | 24.791 |
| S.D. | 2.645 | 1.010 | 1.731 | 46.433 | 15.085 | 15.512 | 0.091 | 19.904 |
| % R.S.D. | 108.606 | 1.034 | 43.588 | 0.872 | 0.299 | 0.290 | 0.351 | 80.286 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 13.870 | -1.850 | 100.130 | -31.605 | 0.000 | 4.878 | 5141.919 | 5018.979 |
| S.D. | 8.094 | 0.314 | 2.084 | 12.407 | 1.205 | 6.038 | 15.508 | 35.395 |
| % R.S.D. | 58.355 | 16.973 | 2.081 | 39.256 | 1383018.090 | 123.781 | 0.302 | 0.705 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -5.895 | 1.910 | 5.163 | -172.408 | -0.616 | -5.252 | 28.977 | 0.593 |
| S.D. | 0.076 | 0.722 | 4.501 | 8.921 | 0.147 | 57.862 | 0.778 | 0.272 |
| % R.S.D. | 1.283 | 37.802 | 87.169 | 5.175 | 23.876 | 1101.747 | 2.685 | 45.823 |

| | Tl (ppb) |
|---|---|
| Mean | 100.605 |
| | 38.013 |
| S.D. | 37.784 |

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Corrected Counts Statistics 11:06 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 23.446 | 0.159 | |
| Sr | 2 | 0.020 | 0.005 | |
| Bi | 3 | -1.907 | 0.043 | |
| Ta | 5 | 16.455 | 0.166 | |
| Hg | 6 | 28.065 | 0.158 | |
| Sn | 7 | 0.069 | 0.032 | |
| Si | 8 | 12.850 | 0.095 | |
| Al | 9 | 11.890 | 0.086 | |
| W | 10 | 32.465 | 0.273 | |
| Zn | 11 | 0.047 | 0.004 | |
| Cu | 12 | 0.066 | 0.005 | |
| Li | 14 | -0.008 | 0.007 | |
| Co | 15 | -0.077 | 0.005 | |
| | 16 | 0.272 | 0.009 | |
| | 17 | -0.007 | 0.001 | |

| | | | |
|---|---|---|---|
| Eu | 18 | -0.147 | 0.007 |
| Fe | 19 | 0.020 | 0.006 |
| Ca | 20 | 0.204 | 0.002 |
| Cr | 21 | 0.020 | 0.001 |
| Nd | 22 | -0.007 | 0.033 |
| Ce | 24 | 0.033 | 0.011 |
| Sm | 25 | -0.085 | 0.009 |
| Ba | 26 | 0.007 | 0.009 |
| P | 27 | 1.620 | 0.007 |
| S | 28 | 4.792 | 0.041 |
| Mg | 29 | 0.012 | 0.000 |
| As | 30 | 4.112 | 0.037 |
| Na | 31 | 0.098 | 0.019 |
| Mo | 32 | 32.850 | 0.279 |
| Se | 33 | 1.584 | 0.010 |
| Ag | 34 | -0.087 | 0.021 |
| Pb | 35 | -0.089 | 0.011 |
| Ti | 36 | 37.408 | 0.264 |
| Cd | 37 | -0.230 | 0.023 |
| B | 38 | 0.036 | 0.011 |
| K | 39 | -0.044 | 0.011 |
| Mn | 40 | 0.019 | 0.003 |
| Sb | 42 | 0.028 | 0.006 |
| V | 43 | 14.604 | 0.110 |
| Be | 44 | 55.017 | 0.356 |
| Tl | 45 | 0.662 | 0.003 |

Identity 1: SST3 STD 3B48A0 Identity 2: Direct 11:07 AM January 22, 1992
T ame : ALL_SIM
S. . Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 10308.359 | 0.378 | -1872.102 | 9701.113 | 1499509.434 | 17.048 | 8953.294 | 4688.025 |
| S.D. | 70.167 | 0.193 | 43.700 | 98.374 | 8927.619 | 7.096 | 66.507 | 35.052 |
| % R.S.D. | 0.681 | 51.030 | 2.334 | 1.006 | 0.595 | 41.621 | 0.743 | 0.748 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -996560.951 | -28.320 | 4.001 | -0.706 | -16.520 | 73.421 | -12.080 | -4.838 |
| S.D. | 8367.794 | 0.309 | 1.140 | 0.672 | 1.151 | 2.090 | 2.325 | 0.461 |
| % R.S.D. | 0.840 | 1.092 | 28.483 | 95.119 | 6.966 | 2.846 | 19.247 | 9.535 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4.341 | -8.948 | 9.926 | -35.368 | -37.341 | -222.764 | 0.378 | 9941.967 |
| S.D. | 1.749 | 0.252 | 0.397 | 14.491 | 28.985 | 27.238 | 0.564 | 40.602 |
| % R.S.D. | 40.299 | 2.819 | 4.000 | 40.971 | 77.624 | 12.227 | 149.236 | 0.408 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 5156.973 | -2.124 | 4944.541 | 8.729 | 9891.827 | 4505.221 | 4.289 | -160.565 |
| [illegible] | 44.091 | 0.000 | 44.330 | 11.686 | 84.108 | 27.097 | 6.263 | 19.374 |
| .D. | 0.855 | 0.000 | 0.897 | 133.873 | 0.850 | 0.601 | 146.030 | 12.066 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4913.038 | -5.490 | 9.165 | -18.610 | 1.648 | 183.855 | 9823.277 | 9787.579 |
| S.D. | 34.551 | 0.933 | 2.124 | 65.124 | 0.243 | 28.931 | 73.824 | 63.273 |
| % R.S.D. | 0.703 | 17.000 | 23.175 | 349.949 | 14.744 | 15.736 | 0.752 | 0.646 |

| | Tl (ppb) |
|---|---|
| Mean | 5189.108 |
| S.D. | 21.947 |
| % R.S.D. | 0.423 |

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Corrected Counts Statistics 11:09 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.007 | 0.011 | |
| Sr | 2 | 0.014 | 0.011 | |
| Bi | 3 | -0.459 | 0.011 | |
| Ba | 5 | 0.013 | 0.011 | |
| Hg | 6 | 1.574 | 0.003 | |
| Sn | 7 | 0.001 | 0.035 | |
| Si | 8 | 1.341 | 0.005 | |
| Al | 9 | 2.636 | 0.019 | |
| | 10 | 0.070 | 0.023 | |
| | 11 | 11.759 | 0.068 | |
| Cu | 12 | 4.365 | 0.023 | |
| Li | 14 | -0.014 | 0.012 | |
| Tb | 15 | 4.414 | 0.020 | |
| Ni | 16 | 4.269 | 0.024 | |
| La | 17 | -0.005 | 0.001 | |
| Eu | 18 | -0.081 | 0.011 | |
| Fe | 19 | 3.103 | 0.014 | |
| Sb | 20 | 6.118 | 0.039 | |
| Cr | 21 | 2.543 | 0.026 | |
| Nd | 22 | 0.149 | 0.046 | |
| Ce | 24 | 0.019 | 0.009 | |
| Sm | 25 | -0.066 | 0.011 | |
| Ba | 26 | 16.564 | 0.105 | |
| P | 27 | 0.015 | 0.001 | |
| S | 28 | 0.051 | 0.013 | |
| Mg | 29 | 4.827 | 0.031 | |
| As | 30 | 0.828 | 0.012 | |
| Na | 31 | 1.672 | 0.006 | |
| Mo | 32 | 3.240 | 0.032 | |
| Se | 33 | 0.376 | 0.006 | |
| Ag | 34 | 3.241 | 0.014 | |
| Pb | 35 | 0.556 | 0.008 | |
| Ti | 36 | 7.439 | 0.040 | |
| Cd | 37 | 24.522 | 0.168 | |
| | 38 | 4.797 | 0.058 | |
| | 39 | 1.642 | 0.006 | |

| | | | |
|---|---|---|---|
| Mn | 40 | 10.207 | 0.049 |
| Sb | 42 | 0.192 | 0.016 |
| V | 43 | 1.483 | 0.008 |
| Be | 44 | 5.343 | 0.030 |
| Tl | 45 | 0.068 | 0.006 |

Identity 1: ICV Identity 2: ICV 11:09 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppb) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -8.361 | 0.143 | -411.990 | 15.838 | 18.868 | 2.058 | 863.840 | 896.800 |
| S.D. | 4.960 | 0.432 | 11.331 | 6.515 | 149.760 | 7.640 | 3.719 | 7.734 |
| % R.S.D. | 59.328 | 301.645 | 2.750 | 41.135 | 793.725 | 371.310 | 0.431 | 0.862 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -1837.222 | 976.596 | 977.545 | -1.312 | 990.682 | 984.850 | -6.711 | -0.547 |
| S.D. | 711.836 | 5.830 | 5.244 | 1.233 | 4.535 | 5.573 | 2.325 | 0.723 |
| % R.S.D. | 38.745 | 0.597 | 0.536 | 94.002 | 0.458 | 0.566 | 34.648 | 132.217 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 983.675 | 966.660 | 1011.739 | 26.493 | -74.772 | -166.089 | 987.579 | 4.152 |
| S.D. | 4.297 | 6.441 | 10.202 | 20.291 | 24.700 | 32.246 | 6.231 | 6.192 |
| % R.S.D. | 0.437 | 0.666 | 1.008 | 76.590 | 33.034 | 19.415 | 0.631 | 149.137 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 39.654 | 987.327 | 992.438 | 966.209 | 970.482 | 952.253 | 1020.858 | 969.231 |
| S.D. | 13.516 | 6.388 | 14.792 | 3.349 | 9.571 | 13.593 | 4.406 | 14.049 |
| % R.S.D. | 34.086 | 0.647 | 1.491 | 0.347 | 0.986 | 1.428 | 0.432 | 1.450 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 987.175 | 979.202 | 930.951 | 9832.303 | 985.073 | 1043.592 | 982.355 | 951.751 |
| S.D. | 5.241 | 6.698 | 11.308 | 33.210 | 4.690 | 85.995 | 5.102 | 5.304 |
| % R.S.D. | 0.531 | 0.684 | 1.215 | 0.338 | 0.476 | 8.240 | 0.519 | 0.557 |

| | Tl (ppb) |
|---|---|
| Mean | 917.160 |
| S.D. | 42.093 |
| % R.S.D. | 4.589 |

Corrected Counts Statistics 11:11 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Zr | 1 | 0.009 | 0.010 |
| Sr | 2 | -0.008 | 0.010 |
| Bi | 3 | -0.088 | 0.034 |
| | 5 | -0.023 | 0.015 |
| | 6 | 1.598 | 0.011 |
| [illegible] | 7 | -0.017 | 0.024 |
| Si | 8 | 0.092 | 0.007 |
| Al | 9 | 0.366 | 0.030 |
| W | 10 | -0.029 | 0.038 |
| Zn | 11 | 0.051 | 0.007 |
| Cu | 12 | 0.040 | 0.007 |
| Li | 14 | -0.024 | 0.006 |
| Co | 15 | -0.037 | 0.018 |
| Ni | 16 | -0.060 | 0.007 |
| La | 17 | -0.007 | 0.001 |
| Eu | 18 | -0.101 | 0.010 |
| Fe | 19 | 0.001 | 0.014 |
| Ca | 20 | 0.276 | 0.002 |
| Cr | 21 | -0.005 | 0.002 |
| Nd | 22 | 0.064 | 0.099 |
| Ce | 24 | 0.012 | 0.016 |
| Sm | 25 | -0.048 | 0.013 |
| [illegible] | 26 | -0.024 | 0.013 |
| P | 27 | 0.015 | 0.001 |
| [illegible] | 28 | 0.024 | 0.017 |
| Mg | 29 | 0.008 | 0.001 |
| [illegible] | 30 | -0.009 | 0.008 |
| Na | 31 | 0.029 | 0.022 |
| Mo | 32 | 0.005 | 0.006 |
| | 33 | -0.032 | 0.005 |
| | 34 | -0.114 | 0.006 |
| Rb | 35 | -0.015 | 0.009 |
| Ti | 36 | -0.124 | 0.011 |
| Cd | 37 | -0.136 | 0.023 |
| B | 38 | 0.030 | 0.002 |
| [illegible] | 39 | -0.067 | 0.008 |
| Mn | 40 | 0.002 | 0.002 |
| Sb | 42 | -0.034 | 0.020 |
| V | 43 | 0.032 | 0.004 |
| Be | 44 | -0.006 | 0.002 |
| Tl | 45 | -0.030 | 0.004 |

Identity 1: ICB Identity 2: ICB 11:12 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -7.334 | -0.704 | -38.645 | -5.543 | 1358.491 | -1.911 | -14.292 | -32.911 |
| S.D. | 4.342 | 0.408 | 33.774 | 8.915 | 605.246 | 5.249 | 4.784 | 12.469 |
| % R.S.D. | 59.212 | 58.002 | 87.395 | 160.845 | 44.553 | 274.750 | 33.476 | 37.887 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mean | 1228.249 | -28.006 | -1.886 | -2.287 | -7.475 | -2.278 | -12.080 | -1.839 |
| S.D. | 1152.742 | 0.571 | 1.508 | 0.605 | 4.055 | 1.644 | 4.650 | 0.686 |
| % R.S.D. | 93.852 | 2.040 | 79.940 | 26.471 | 54.250 | 72.184 | 38.494 | 37.290 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -1.482 | 2.861 | 0.132 | -4.005 | -94.857 | -112.345 | -1.471 | 2.088 |
| S.D. | 4.496 | 0.343 | 0.826 | 43.784 | 42.782 | 36.653 | 0.760 | 7.150 |
| % R.S.D. | 303.309 | 11.999 | 624.205 | 1093.188 | 45.102 | 32.625 | 51.653 | 342.447 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 19.730 | -2.877 | -15.425 | -32.821 | -4.218 | 56.229 | -4.061 | -30.361 |
| S.D. | 17.785 | 0.237 | 9.401 | 13.601 | 1.808 | 12.543 | 1.858 | 15.169 |
| % R.S.D. | 90.139 | 8.248 | 60.949 | 41.439 | 42.858 | 22.307 | 45.757 | 49.963 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -3.624 | -1.737 | 7.874 | -152.940 | -0.066 | -145.331 | 4.722 | 0.237 |
| S.D. | 1.476 | 0.930 | 0.296 | 48.632 | 0.201 | 102.444 | 2.805 | 0.411 |
| % R.S.D. | 40.733 | 53.570 | 3.756 | 31.798 | 303.045 | 70.490 | 59.406 | 173.179 |

| | Tl (ppb) |
|---|---|
| Mean | 213.151 |
| S.D. | 25.229 |
| % R.S.D. | 11.836 |

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( .ed Counts Statistics 11:13 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.006 | 0.004 | |
| Sr | 2 | 0.097 | 0.002 | |
| Bi | 3 | -0.101 | 0.027 | |
| Ta | 5 | -0.023 | 0.004 | |
| Hg | 6 | 2.053 | 0.006 | |
| Sn | 7 | 6.252 | 0.007 | |
| Si | 8 | 0.544 | 0.008 | |
| Al | 9 | 610.430 | 2.955 | |
| W | 10 | -0.041 | 0.041 | |
| Zn | 11 | 0.262 | 0.002 | |
| Cu | 12 | 0.037 | 0.006 | |
| Li | 14 | -0.034 | 0.004 | |
| Co | 15 | -0.029 | 0.017 | |
| Ni | 16 | -0.081 | 0.009 | |
| La | 17 | -0.049 | 0.001 | |
| Eu | 18 | 0.050 | 0.010 | |
| Fe | 19 | 313.522 | 2.133 | |
| Ca | 20 | 1171.411 | 5.581 | |
| | 21 | 0.008 | 0.012 | |
| | 22 | 3.540 | 0.067 | |

| | | | |
|---|---|---|---|
| Ce | 24 | -0.006 | 0.009 |
| Sm | 25 | -8.823 | 0.007 |
| Ba | 26 | 0.006 | 0.006 |
| [illegible] | 27 | 0.023 | 0.002 |
| | 28 | 2.403 | 0.019 |
| | 29 | 975.510 | 4.766 |
| [illegible] | 30 | 0.129 | 0.007 |
| Na | 31 | 0.064 | 0.028 |
| Mo | 32 | 0.003 | 0.008 |
| Se | 33 | -0.040 | 0.007 |
| Ag | 34 | -0.125 | 0.004 |
| Pb | 35 | -0.129 | 0.007 |
| Tl | 36 | -0.093 | 0.002 |
| Cd | 37 | 0.266 | 0.040 |
| B | 38 | -0.463 | 0.011 |
| K | 39 | -0.064 | 0.009 |
| Mn | 40 | 1.757 | 0.015 |
| Sb | 42 | -0.027 | 0.012 |
| V | 43 | 0.019 | 0.001 |
| Be | 44 | -0.001 | 0.001 |
| Tl | 45 | -0.072 | 0.004 |

Identity 1: ICSA-I Identity 2: ICSA 11:15 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| | -8.801 | 3.415 | -51.079 | -5.543 | 27150.943 | 1380.020 | 303.410 | 249900.856 |
| S.D. | 1.919 | 0.090 | 27.375 | 2.473 | 311.749 | 1.468 | 5.681 | 1210.422 |
| % R.S.D. | 21.800 | 2.644 | 53.593 | 44.610 | 1.148 | 0.106 | 1.872 | 0.484 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1586.463 | -9.873 | -2.414 | -3.330 | -5.606 | -7.142 | -183.911 | 8.100 |
| S.D. | 1257.482 | 0.172 | 1.247 | 0.408 | 3.860 | 2.069 | 2.325 | 0.631 |
| % R.S.D. | 79.263 | 1.738 | 51.654 | 12.247 | 68.858 | 28.968 | 1.264 | 7.791 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 99579.649 | 193593.761 | 5.161 | 128.538 | -144.157 | -25837.885 | 0.338 | 55.750 |
| S.D. | 677.536 | 922.608 | 4.959 | 22.928 | 23.401 | 20.590 | 0.372 | 12.889 |
| % R.S.D. | 0.680 | 0.477 | 96.076 | 17.838 | 16.233 | 0.080 | 110.206 | 23.120 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 884.787 | 200470.201 | 150.284 | -11.742 | -4.921 | 33.985 | -7.523 | -230.630 |
| S.D. | 23.215 | 979.524 | 8.541 | 17.025 | 2.454 | 20.414 | 1.073 | 12.911 |
| % R.S.D. | 2.624 | 0.489 | 5.684 | 144.993 | 49.865 | 60.069 | 14.260 | 5.598 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 0.437 | 14.268 | -87.454 | -133.472 | 32.530 | -106.809 | -3.812 | 1.186 |
| | 0.227 | 1.610 | 2.034 | 49.901 | 0.833 | 63.036 | 0.674 | 0.178 |
| S.D. | 51.962 | 11.282 | 2.326 | 37.387 | 2.562 | 59.017 | 17.673 | 15.000 |

| | Tl (ppb) |
|---|---|
| Mean | -86.173 |
| S.D. | 25.901 |
| [illegible] | 30.058 |

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Corrected Counts Statistics 11:16 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | 2R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.050 | 0.022 | |
| Sr | 2 | 0.147 | 0.023 | |
| Bi | 3 | -0.119 | 0.058 | |
| Ta | 5 | -0.013 | 0.025 | |
| Hg | 6 | 2.067 | 0.015 | |
| Sn | 7 | 6.352 | 0.100 | |
| Si | 8 | 0.575 | 0.031 | |
| Al | 9 | 607.610 | 3.626 | |
| W | 10 | 0.059 | 0.070 | |
| In | 11 | 12.152 | 0.085 | |
| Cu | 12 | 2.289 | 0.026 | |
| Li | 14 | 0.004 | 0.023 | |
| Co | 15 | 2.230 | 0.028 | |
| Ni | 16 | 4.326 | 0.087 | |
| | 17 | -0.044 | 0.001 | |
| Eu | 18 | 0.097 | 0.025 | |
| Fe | 19 | 315.737 | 3.359 | |
| Ca | 20 | 1175.459 | 8.927 | |
| Cr | 21 | 1.372 | 0.014 | |
| Nd | 22 | 3.664 | 0.142 | |
| Ce | 24 | 0.059 | 0.032 | |
| Sm | 25 | -8.886 | 0.034 | |
| Ba | 26 | 8.700 | 0.080 | |
| P | 27 | 0.017 | 0.001 | |
| S | 28 | 2.422 | 0.046 | |
| Mg | 29 | 979.235 | 9.800 | |
| As | 30 | 0.125 | 0.011 | |
| Na | 31 | 0.165 | 0.054 | |
| Mo | 32 | 0.008 | 0.012 | |
| Se | 33 | 0.037 | 0.017 | |
| Ag | 34 | 3.356 | 0.032 | |
| Pb | 35 | 0.499 | 0.033 | |
| Ti | 36 | -0.044 | 0.022 | |
| Cd | 37 | 25.885 | 0.446 | |
| B | 38 | -0.482 | 0.007 | |
| K | 39 | -0.052 | 0.023 | |
| Mn | 40 | 7.016 | 0.066 | |
| Sb | 42 | 0.003 | 0.015 | |
| V | 43 | 0.804 | 0.015 | |
| | 44 | 2.877 | 0.037 | |
| [illegible] | 45 | -0.042 | 0.022 | |

Identity 1: ICSAB-I Identity 2: ICSAB 11:17 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 10.419 | 5.356 | -69.561 | 0.396 | 27905.660 | 1402.212 | 325.434 | 248745.545 |
| S.D. | 9.786 | 0.881 | 58.758 | 14.946 | 864.637 | 21.935 | 22.015 | 1485.418 |
| % R.S.D. | 93.925 | 16.452 | 84.469 | 3770.975 | 3.098 | 1.564 | 6.765 | 0.597 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -1497.117 | 1010.316 | 507.491 | 0.538 | 500.985 | 997.694 | -162.432 | 11.143 |
| S.D. | 2144.266 | 7.322 | 5.949 | 2.281 | 6.200 | 19.776 | 4.027 | 1.636 |
| % R.S.D. | 143.226 | 0.725 | 1.172 | 423.849 | 1.238 | 1.982 | 2.479 | 14.679 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 100283.182 | 194261.944 | 546.696 | 178.607 | 32.957 | -26021.590 | 518.693 | 18.599 |
| S.D. | 1066.959 | 1475.569 | 5.501 | 52.794 | 87.014 | 99.885 | 4.763 | 7.150 |
| % R.S.D. | 1.064 | 0.760 | 1.006 | 29.559 | 264.025 | 0.384 | 0.918 | 38.441 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 899.760 | 201235.717 | 146.076 | 49.468 | -3.314 | 122.380 | 1055.989 | 869.388 |
| S.D. | 36.132 | 2013.878 | 13.405 | 32.792 | 3.475 | 45.798 | 9.699 | 58.262 |
| % R.S.D. | 4.016 | 1.001 | 9.177 | 66.288 | 104.844 | 37.423 | 0.918 | 6.701 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 6.812 | 1033.423 | -91.133 | -61.440 | 539.988 | 50.780 | 525.318 | 513.170 |
| S.D. | 2.918 | 17.746 | 1.427 | 131.681 | 5.333 | 79.492 | 10.136 | 6.565 |
| % R.S.D. | 42.843 | 1.717 | 1.566 | 214.325 | 0.988 | 156.542 | 1.930 | 1.279 |

| | Tl (ppb) |
|---|---|
| Mean | 131.735 |
| S.D. | 158.260 |
| % R.S.D. | 120.136 |

Corrected Counts Statistics 11:18 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | -0.001 | 0.005 | |
| Sr | 2 | -0.008 | 0.004 | |
| | 3 | -0.084 | 0.010 | |
| | 5 | -0.012 | 0.016 | |

| | | | |
|---|---|---|---|
| Mg | 6 | 1.570 | 0.014 |
| Sn | 7 | -0.019 | 0.015 |
| Si | 8 | 0.088 | 0.012 |
| Al | 9 | 0.361 | 0.013 |
| W | 10 | -0.046 | 0.013 |
| - | 11 | 0.049 | 0.002 |
| [illegible] | 12 | 0.039 | 0.004 |
| Li | 14 | -0.032 | 0.010 |
| Co | 15 | 0.007 | 0.009 |
| Ni | 16 | -0.098 | 0.019 |
| La | 17 | -0.004 | 0.001 |
| Eu | 18 | -0.093 | 0.004 |
| Fe | 19 | 0.025 | 0.018 |
| Ca | 20 | 0.371 | 0.040 |
| Cr | 21 | -0.012 | 0.002 |
| Nd | 22 | 0.184 | 0.032 |
| Ce | 24 | 0.008 | 0.003 |
| Sm | 25 | -0.043 | 0.009 |
| Ba | 26 | -0.027 | 0.005 |
| P | 27 | 0.010 | 0.002 |
| S | 28 | 0.002 | 0.004 |
| Hg | 29 | 0.081 | 0.032 |
| As | 30 | 0.006 | 0.007 |
| Na | 31 | 0.011 | 0.010 |
| Mo | 32 | -0.005 | 0.008 |
| Se | 33 | -0.046 | 0.007 |
| Ag | 34 | -0.120 | 0.006 |
| Pb | 35 | -0.026 | 0.002 |
| Ti | 36 | -0.124 | 0.004 |
| Cd | 37 | -0.124 | 0.045 |
| B | 38 | -0.021 | 0.012 |
| | 39 | -0.057 | 0.005 |
| Mn | 40 | 0.000 | 0.002 |
| Sb | 42 | -0.000 | 0.007 |
| U | 43 | 0.023 | 0.002 |
| Be | 44 | -0.007 | 0.001 |
| Tl | 45 | -0.060 | 0.006 |

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Identity 1: XXX Identity 2: Rinse 11:19 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -12.028 | -0.704 | -33.940 | 0.990 | -188.679 | -2.278 | -17.103 | -35.233 |
| S.D. | 1.985 | 0.170 | 9.895 | 9.207 | 768.506 | 3.309 | 8.147 | 5.188 |
| % R.S.D. | 16.500 | 24.216 | 29.153 | 929.772 | 407.308 | 145.268 | 47.631 | 14.724 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1729.799 | -28.120 | -1.961 | -3.128 | 2.317 | -11.018 | -2.683 | -1.313 |
| S.D. | 388.812 | 0.131 | 0.943 | 1.011 | 1.907 | 4.292 | 2.325 | 0.263 |
| % R.S.D. | 22.477 | 0.466 | 48.062 | 32.312 | 82.305 | 38.954 | 86.647 | 20.002 |

| | Fe | Ca | Cr | Nd | Ce | Sm | Ba | P |
|---|---|---|---|---|---|---|---|---|

| | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 6.035 | 18.626 | -2.779 | 49.033 | -106.726 | -99.642 | -1.630 | -24.743 |
| S.D. | 5.565 | 6.547 | 0.688 | 14.023 | 7.906 | 24.932 | 0.273 | 12.889 |
| % R.S.D. | 92.217 | 35.153 | 24.744 | 28.600 | 7.408 | 25.021 | 16.766 | 52.092 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -4.115 | 11.988 | 3.031 | -43.969 | -7.231 | 19.248 | -5.996 | -49.045 |
| S.D. | 3.840 | 6.552 | 7.832 | 5.864 | 2.275 | 18.700 | 1.737 | 3.646 |
| % R.S.D. | 93.325 | 54.651 | 258.425 | 13.336 | 31.458 | 97.154 | 28.971 | 7.435 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -3.581 | -1.246 | -1.872 | -94.536 | -0.206 | 33.270 | -0.893 | 0.119 |
| S.D. | 0.529 | 1.783 | 2.342 | 28.810 | 0.150 | 35.756 | 1.403 | 0.178 |
| % R.S.D. | 14.786 | 143.059 | 125.140 | 30.476 | 72.675 | 107.473 | 157.095 | 149.955 |

| | Tl (ppb) |
|---|---|
| Mean | -2.362 |
| S.D. | 43.302 |
| % R.S.D. | 1833.046 |

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Corrected Counts Statistics 11:20 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Element | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.013 | 0.006 | |
| Sr | 2 | 0.000 | 0.007 | |
| Bi | 3 | -0.038 | 0.016 | |
| Ta | 5 | 0.035 | 0.004 | |
| Mg | 6 | 1.572 | 0.009 | |
| Sn | 7 | -0.021 | 0.017 | |
| Si | 8 | 0.114 | 0.006 | |
| Al | 9 | 0.338 | 0.027 | |
| W | 10 | -0.002 | 0.037 | |
| Zn | 11 | 0.505 | 0.007 | |
| Cu | 12 | 0.261 | 0.006 | |
| Li | 14 | -0.030 | 0.014 | |
| Co | 15 | 0.424 | 0.009 | |
| Ni | 16 | 0.262 | 0.016 | |
| La | 17 | -0.003 | 0.001 | |
| Eu | 18 | -0.073 | 0.016 | |
| Fe | 19 | -0.016 | 0.014 | |
| Ca | 20 | 0.141 | 0.001 | |
| Cr | 21 | 0.063 | 0.012 | |
| Nd | 22 | 0.062 | 0.075 | |
| Ce | 24 | 0.026 | 0.008 | |
| Sm | 25 | -0.018 | 0.012 | |
| Ba | 26 | -0.007 | 0.012 | |
| | 27 | 0.016 | 0.004 | |
| | 28 | 0.001 | 0.012 | |

| | | | |
|---|---|---|---|
| Mg | 29 | 0.008 | 0.002 |
| As | 30 | 0.012 | 0.015 |
| Na | 31 | 0.048 | 0.005 |
| Mo | 32 | -0.005 | 0.004 |
| Se | 33 | -0.037 | 0.008 |
| Ag | 34 | -0.045 | 0.008 |
| Pb | 35 | -0.004 | 0.017 |
| Ti | 36 | -0.117 | 0.007 |
| Cd | 37 | 0.095 | 0.040 |
| B | 38 | 0.015 | 0.018 |
| K | 39 | -0.052 | 0.008 |
| Mn | 40 | 0.309 | 0.010 |
| Sb | 42 | 0.032 | 0.017 |
| V | 43 | 0.160 | 0.002 |
| Be | 44 | 0.045 | 0.001 |
| Tl | 45 | -0.066 | 0.010 |

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Identity 1: CRI-I Identity 2: CRI 11:21 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -5.866 | -0.391 | 11.762 | 28.904 | -75.472 | -2.792 | 1.640 | -44.656 |
| S.D. | 2.424 | 0.274 | 16.391 | 2.473 | 507.333 | 3.709 | 3.997 | 11.102 |
| % R.S.D. | 41.322 | 70.000 | 139.357 | 8.555 | 672.216 | 132.810 | 243.696 | 24.861 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 378.575 | 10.976 | 48.154 | -2.893 | 95.981 | 71.217 | 2.686 | 0.000 |
| S.D. | 1128.336 | 0.563 | 1.287 | 1.413 | 1.907 | 3.535 | 4.027 | 1.043 |
| % R.S.D. | 298.048 | 5.126 | 2.674 | 48.837 | 1.987 | 4.963 | 149.924 | 715266.381 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -6.882 | -19.504 | 26.865 | -5.024 | -56.513 | -24.401 | -0.417 | 10.344 |
| S.D. | 4.289 | 0.094 | 4.852 | 33.129 | 20.678 | 35.823 | 0.716 | 22.325 |
| % R.S.D. | 62.322 | 0.483 | 18.059 | 659.438 | 36.590 | 146.808 | 171.627 | 215.833 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -5.576 | -2.946 | 9.863 | -21.674 | -7.332 | 37.364 | 16.916 | -10.510 |
| S.D. | 12.396 | 0.356 | 17.973 | 2.999 | 1.141 | 21.591 | 2.313 | 30.153 |
| % R.S.D. | 222.308 | 12.084 | 182.234 | 13.839 | 15.559 | 57.785 | 13.674 | 286.906 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.751 | 7.439 | 5.034 | -65.333 | 29.604 | 201.365 | 90.964 | 9.309 |
| S.D. | 0.966 | 1.589 | 3.426 | 45.366 | 0.968 | 88.265 | 1.556 | 0.103 |
| % R.S.D. | 35.101 | 21.365 | 68.045 | 69.437 | 3.268 | 43.833 | 1.711 | 1.103 |

| | Tl (ppb) |
|---|---|
| Mean | -43.070 |
| S.D. | 68.529 |

% R.S.D. 159.109

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Cr d Counts Statistics 11:22 AM January 22, 1992
Ta. ae : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.004 | 0.004 | |
| Sr | 2 | 0.007 | 0.004 | |
| Bi | 3 | -0.232 | 0.009 | |
| Ta | 5 | 0.001 | 0.006 | |
| Hg | 6 | 1.560 | 0.017 | |
| Sn | 7 | -0.011 | 0.013 | |
| Si | 8 | 0.764 | 0.022 | |
| Al | 9 | 1.481 | 0.022 | |
| W | 10 | 0.042 | 0.018 | |
| [illegible] | 11 | 5.974 | 0.017 | |
| Cu | 12 | 2.213 | 0.010 | |
| [illegible] | 14 | -0.013 | 0.009 | |
| Co | 15 | 2.233 | 0.006 | |
| Ni | 16 | 2.151 | 0.013 | |
| La | 17 | -0.003 | 0.000 | |
| Eu | 18 | -0.089 | 0.004 | |
| [illegible] | 19 | 1.536 | 0.021 | |
| [illegible] | 20 | 3.460 | 0.010 | |
| | 21 | 1.273 | 0.010 | |
| Mn | 22 | 0.063 | 0.057 | |
| Ce | 24 | 0.019 | 0.011 | |
| Sc | 25 | -0.047 | 0.009 | |
| Ba | 26 | 8.359 | 0.030 | |
| P | 27 | 0.019 | 0.002 | |
| S | 28 | 0.018 | 0.008 | |
| [illegible] | 29 | 2.437 | 0.010 | |
| As | 30 | 0.421 | 0.009 | |
| [illegible] | 31 | 0.866 | 0.020 | |
| Mo | 32 | 1.595 | 0.008 | |
| Se | 33 | 0.169 | 0.005 | |
| Ag | 34 | 1.579 | 0.005 | |
| Pb | 35 | 0.262 | 0.005 | |
| Ti | 36 | 3.655 | 0.022 | |
| Cd | 37 | 12.377 | 0.064 | |
| B | 38 | 2.415 | 0.027 | |
| K | 39 | 0.788 | 0.005 | |
| Mn | 40 | 5.150 | 0.025 | |
| Sb | 42 | 0.089 | 0.018 | |
| V | 43 | 0.765 | 0.006 | |
| Be | 44 | 2.689 | 0.012 | |
| Tl | 45 | 0.010 | 0.006 | |

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y 1: CCV-1 Identity 2: CCV 11:23 AM January 22, 1992
ame : ALL_SIM

Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-025
ADDENDUM 9 -REV 0

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -9.534 | -0.130 | -183.480 | 9.107 | -792.453 | -0.661 | 458.512 | 423.751 |
| S.D. | 1.546 | 0.137 | 8.789 | 3.818 | 940.940 | 2.877 | 15.722 | 8.872 |
| % R.S.D. | 16.212 | 105.356 | 4.790 | 41.927 | 118.738 | 435.034 | 3.429 | 2.094 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -974.913 | 480.216 | 490.207 | -1.211 | 501.583 | 501.926 | 2.686 | -1.051 |
| S.D. | 551.309 | 1.489 | 2.160 | 0.910 | 1.364 | 2.851 | 0.000 | 0.286 |
| % R.S.D. | 56.550 | 0.310 | 0.441 | 75.154 | 0.272 | 0.568 | 0.000 | 27.247 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 485.962 | 528.233 | 507.391 | -8.414 | -76.598 | -110.391 | 498.381 | 28.919 |
| S.D. | 6.723 | 1.618 | 4.145 | 25.228 | 29.541 | 26.867 | 1.760 | 10.724 |
| % R.S.D. | 1.383 | 0.306 | 0.817 | 299.845 | 38.566 | 24.338 | 0.353 | 37.085 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 8.657 | 496.301 | 502.751 | 476.119 | 474.746 | 494.734 | 513.032 | 454.838 |
| S.D. | 8.963 | 2.058 | 10.855 | 12.347 | 2.435 | 13.911 | 1.507 | 8.027 |
| % R.S.D. | 103.527 | 0.415 | 2.159 | 2.593 | 0.513 | 2.812 | 0.294 | 1.765 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 491.382 | 496.059 | 469.800 | 4842.602 | 496.835 | 504.287 | 499.041 | 479.670 |
| S.D. | 2.826 | 2.560 | 5.272 | 26.764 | 2.430 | 94.164 | 3.711 | 2.157 |
| % | 0.575 | 0.516 | 1.122 | 0.553 | 0.489 | 18.673 | 0.744 | 0.450 |

| | Tl (ppb) |
|---|---|
| Mean | 502.896 |
| S.D. | 44.863 |
| % R.S.D. | 8.921 |

Corrected Counts Statistics 11:24 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.021 | 0.004 | |
| Sr | 2 | 0.005 | 0.002 | |
| Bi | 3 | -0.067 | 0.028 | |
| Ta | 5 | 0.006 | 0.014 | |
| Hg | 6 | 1.566 | 0.019 | |
| Sn | 7 | -0.011 | 0.031 | |
| Si | 8 | 0.097 | 0.005 | |
| | 9 | 0.360 | 0.008 | |
| | 10 | 0.017 | 0.024 | |

| | | | |
|---|---|---|---|
| Zn | 11 | 0.049 | 0.003 |
| Cu | 12 | 0.047 | 0.003 |
| Li | 14 | -0.009 | 0.005 |
| [illegible] | 15 | -0.031 | 0.006 |
| | 16 | -0.082 | 0.010 |
| | 17 | -0.004 | 0.001 |
| Eu | 18 | -0.083 | 0.008 |
| Fe | 19 | -0.003 | 0.011 |
| Ca | 20 | 0.276 | 0.002 |
| Cr | 21 | -0.010 | 0.006 |
| Nd | 22 | 0.089 | 0.041 |
| Ce | 24 | 0.030 | 0.011 |
| Sm | 25 | -0.013 | 0.004 |
| Ba | 26 | -0.003 | 0.007 |
| P | 27 | 0.014 | 0.004 |
| S | 28 | 0.011 | 0.011 |
| Mg | 29 | 0.007 | 0.001 |
| As | 30 | -0.013 | 0.010 |
| Na | 31 | 0.050 | 0.017 |
| Mo | 32 | 0.012 | 0.005 |
| Se | 33 | -0.064 | 0.015 |
| Hg | 34 | -0.120 | 0.004 |
| Pb | 35 | -0.020 | 0.011 |
| Ni | 36 | -0.114 | 0.004 |
| Cd | 37 | -0.159 | 0.032 |
| [illegible] | 38 | 0.011 | 0.009 |
| K | 39 | -0.056 | 0.002 |
| Mn | 40 | 0.005 | 0.008 |
| Sb | 42 | -0.008 | 0.010 |
| [illegible] | 43 | 0.014 | 0.002 |
| | 44 | -0.008 | 0.001 |
| [illegible] | 45 | -0.073 | 0.004 |

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Identity 1: CCB-1 Identity 2: CCV 11:25 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.199 | -0.182 | -17.138 | 11.681 | -433.962 | -0.661 | -10.543 | -35.506 |
| S.D. | 1.587 | 0.081 | 28.228 | 8.020 | 1075.472 | 6.849 | 3.221 | 3.277 |
| % R.S.D. | 72.182 | 44.608 | 164.706 | 68.657 | 247.826 | 1035.648 | 30.551 | 9.231 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -204.698 | -28.177 | -0.150 | -0.740 | -6.055 | -7.218 | 0.001 | -0.657 |
| S.D. | 737.151 | 0.248 | 0.570 | 0.508 | 1.235 | 2.307 | 2.325 | 0.513 |
| % R.S.D. | 360.117 | 0.879 | 379.885 | 68.635 | 20.398 | 31.955 | 170166.197 | 78.120 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.859 | 2.976 | -2.117 | 7.067 | -46.470 | -11.698 | -0.179 | -2.040 |
| S.D. | 3.346 | 0.252 | 2.326 | 18.166 | 30.169 | 11.098 | 0.397 | 26.989 |
| [illegible] | 117.065 | 8.484 | 109.868 | 257.039 | 64.921 | 94.871 | 221.944 | 1322.983 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 5.002 | -3.220 | -20.642 | -20.458 | -2.109 | -31.389 | -5.894 | -39.703 |
| S.D. | 12.253 | 0.119 | 12.057 | 10.485 | 1.594 | 39.623 | 1.222 | 19.531 |
| % R.S.D. | 244.931 | 3.685 | 58.410 | 51.252 | 75.596 | 126.232 | 20.732 | 49.193 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.314 | -2.652 | 4.260 | -84.801 | 0.255 | -8.754 | -7.406 | -0.059 |
| S.D. | 0.524 | 1.273 | 1.688 | 13.488 | 0.729 | 52.879 | 1.403 | 0.178 |
| % R.S.D. | 22.642 | 48.005 | 39.626 | 15.905 | 285.468 | 604.063 | 18.938 | 300.181 |

| | Tl (ppb) |
|---|---|
| Mean | -90.962 |
| S.D. | 29.033 |
| % R.S.D. | 31.918 |

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Corrected Counts Statistics 11:27 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 4.589 | 0.044 | |
| Sr | 2 | 49.619 | 0.417 | |
| B | 3 | 0.514 | 0.014 | |
| [illegible] | 5 | 1.319 | 0.003 | |
| Hg | 6 | 6.515 | 0.022 | |
| Sn | 7 | 4.415 | 0.061 | |
| Si | 8 | 4.821 | 0.044 | |
| Al | 9 | 3.174 | 0.023 | |
| W | 10 | 6.237 | 0.094 | |
| Zn | 11 | 22.928 | 0.251 | |
| Cu | 12 | 4.260 | 0.034 | |
| Li | 14 | 19.140 | 0.154 | |
| Co | 15 | 8.520 | 0.086 | |
| Ni | 16 | 4.168 | 0.036 | |
| La | 17 | 0.248 | 0.002 | |
| Eu | 18 | 15.230 | 0.169 | |
| Fe | 19 | 3.225 | 0.028 | |
| Ca | 20 | 20.962 | 0.195 | |
| Cr | 21 | 2.504 | 0.026 | |
| Nd | 22 | 2.368 | 0.047 | |
| Ce | 24 | 0.432 | 0.008 | |
| Sm | 25 | 0.217 | 0.006 | |
| Ba | 26 | 32.574 | 0.278 | |
| P | 27 | 0.327 | 0.003 | |
| S | 28 | 1.054 | 0.021 | |
| Mg | 29 | 5.554 | 0.049 | |
| As | 30 | 0.800 | 0.023 | |
| Mo | 31 | 5.238 | 0.021 | |
| | 32 | 6.448 | 0.066 | |
| Se | 33 | 0.376 | 0.012 | |

| | | | |
|---|---|---|---|
| Ag | 34 | 3.147 | 0.027 |
| Pb | 35 | 0.550 | 0.012 |
| Ti | 36 | 7.243 | 0.061 |
| [illegible] | 37 | 46.456 | 0.258 |
| | 38 | 8.109 | 0.066 |
| K | 39 | 0.135 | 0.004 |
| Mo | 40 | 9.941 | 0.079 |
| Sb | 42 | 0.179 | 0.008 |
| V | 43 | 2.885 | 0.030 |
| Be | 44 | 10.591 | 0.088 |
| Tl | 45 | 0.086 | 0.005 |

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Identity 1: R931 Dig. STD 10-50 Identity 2: 1B48Z,2B48AA,3B48AA 11:30 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

---

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 2008.240 | 1939.573 | 568.251 | 791.485 | 279698.113 | 975.126 | 3310.099 | 1117.347 |
| S.D. | 19.258 | 16.322 | 14.586 | 1.714 | 1233.651 | 13.453 | 31.089 | 9.225 |
| % R.S.D. | 0.959 | 0.842 | 2.567 | 0.217 | 0.441 | 1.380 | 0.939 | 0.826 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -191202.547 | 1934.838 | 953.771 | 1931.613 | 1911.546 | 961.821 | 1013.534 | 1005.016 |
| S.D. | 2891.862 | 21.546 | 7.759 | 15.520 | 19.278 | 8.225 | 6.975 | 11.088 |
| % R.S.D. | 1.512 | 1.114 | 0.814 | 0.803 | 1.009 | 0.855 | 0.688 | 1.103 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1022.319 | 3420.542 | 995.991 | 991.688 | 1056.380 | 662.538 | 1942.186 | 1935.989 |
| S.D. | 8.873 | 32.252 | 10.484 | 20.572 | 22.138 | 18.617 | 16.599 | 18.575 |
| % R.S.D. | 0.868 | 0.943 | 1.053 | 2.074 | 2.096 | 2.810 | 0.855 | 0.959 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mn (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1098.937 | 1136.800 | 958.328 | 3134.524 | 1937.047 | 954.878 | 992.040 | 959.889 |
| S.D. | 22.195 | 10.032 | 27.563 | 12.466 | 19.757 | 32.349 | 8.165 | 20.897 |
| % R.S.D. | 2.020 | 0.882 | 2.876 | 0.398 | 1.020 | 3.388 | 0.823 | 2.177 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mo (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 961.412 | 1851.736 | 1572.174 | 1028.780 | 957.577 | 975.303 | 1927.423 | 1885.299 |
| S.D. | 7.964 | 10.270 | 12.811 | 25.458 | 7.626 | 39.659 | 19.923 | 15.714 |
| % R.S.D. | 0.828 | 0.555 | 0.815 | 2.475 | 0.796 | 4.066 | 1.034 | 0.833 |

| | Tl (ppb) |
|---|---|
| Mean | 1051.257 |
| S.D. | 35.437 |
| % R.S.D. | 3.371 |

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Corrected Counts Statistics 11:32 AM January 22, 1992

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| / | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.026 | 0.003 | |
| Sr | 2 | 0.145 | 0.004 | |
| Bi | 3 | -0.069 | 0.026 | |
| Ta | 5 | -0.000 | 0.012 | |
| Hg | 6 | 1.564 | 0.003 | |
| Sn | 7 | 0.007 | 0.012 | |
| Si | 8 | 1.418 | 0.022 | |
| Al | 9 | 0.813 | 0.020 | |
| W | 10 | 0.001 | 0.011 | |
| Zn | 11 | 0.696 | 0.008 | |
| Cu | 12 | 0.071 | 0.005 | |
| Li | 14 | 0.013 | 0.006 | |
| Co | 15 | -0.019 | 0.012 | |
| Ni | 16 | -0.003 | 0.016 | |
| Mg | 17 | -0.002 | 0.000 | |
| Eu | 18 | -0.059 | 0.005 | |
| Fe | 19 | 0.155 | 0.023 | |
| Ca | 20 | 11.641 | 0.083 | |
| Cr | 21 | -0.002 | 0.001 | |
| Nd | 22 | 0.191 | 0.004 | |
| Ce | 24 | 0.044 | 0.005 | |
| Cs | 25 | -0.061 | 0.004 | |
| Ba | 26 | 0.055 | 0.003 | |
| [illegible] | 27 | 0.017 | 0.001 | |
| | 28 | 0.119 | 0.003 | |
| Mg | 29 | 1.210 | 0.004 | |
| As | 30 | 0.007 | 0.001 | |
| Na | 31 | 2.949 | 0.006 | |
| Mo | 32 | -0.000 | 0.006 | |
| Se | 33 | -0.057 | 0.006 | |
| Ag | 34 | -0.095 | 0.003 | |
| Pb | 35 | 0.016 | 0.006 | |
| Tl | 36 | -0.092 | 0.004 | |
| Cd | 37 | -0.043 | 0.045 | |
| B | 38 | 3.442 | 0.019 | |
| K | 39 | -0.032 | 0.004 | |
| Mn | 40 | 0.038 | 0.002 | |
| Sb | 42 | -0.028 | 0.005 | |
| V | 43 | 0.024 | 0.001 | |
| Be | 44 | -0.009 | 0.001 | |
| Tl | 45 | -0.053 | 0.004 | |

Identity 1: R932 Dig. Blank Identity 2: Direct 11:36 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mean | 0.002 | 5.278 | -19.155 | 8.117 | -528.302 | 3.454 | 917.728 | 150.081 |
| S.D. | 1.165 | 0.141 | 25.742 | 6.960 | 172.927 | 2.612 | 15.437 | 8.163 |
| % R.S.D. | 53674.731 | 2.671 | 134.391 | 85.744 | 32.733 | 75.614 | 1.682 | 5.439 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 286.585 | 27.364 | 5.133 | 1.413 | -3.364 | 10.795 | 6.714 | 0.898 |
| S.D. | 325.448 | 0.670 | 1.070 | 0.649 | 2.618 | 3.686 | 0.000 | 0.296 |
| % R.S.D. | 113.561 | 2.449 | 20.845 | 45.922 | 77.842 | 34.146 | 0.000 | 32.989 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 47.432 | 1881.626 | 1.323 | 38.447 | -8.126 | -150.454 | 3.240 | 14.471 |
| S.D. | 7.147 | 13.726 | 0.229 | 2.030 | 12.650 | 11.098 | 0.150 | 3.575 |
| % R.S.D. | 15.068 | 0.729 | 17.320 | 5.281 | 155.670 | 7.377 | 4.632 | 24.703 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 105.623 | 244.006 | 3.835 | 1742.692 | -5.825 | -13.804 | 1.845 | 23.939 |
| S.D. | 2.605 | 0.856 | 1.204 | 3.665 | 1.659 | 15.672 | 0.769 | 9.753 |
| % R.S.D. | 2.467 | 0.351 | 31.392 | 0.210 | 28.488 | 113.537 | 41.668 | 40.740 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 0.568 | 1.950 | 668.524 | 51.476 | 2.146 | -110.311 | -0.668 | -0.178 |
| S.D. | 0.472 | 1.790 | 3.696 | 23.604 | 0.213 | 25.912 | 0.389 | 0.205 |
| % R.S.D. | 83.205 | 91.830 | 0.553 | 45.854 | 9.944 | 23.490 | 58.214 | 115.493 |

| | Tl (ppb) |
|---|---|
| Mean | 50.319 |
| S.D. | 28.735 |
| % R.S.D. | 57.106 |

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Corrected Counts Statistics 11:38 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.036 | 0.007 | |
| Sr | 2 | 0.130 | 0.009 | |
| Bi | 3 | -0.065 | 0.036 | |
| Ta | 5 | 0.003 | 0.007 | |
| Hg | 6 | 1.574 | 0.007 | |
| Sn | 7 | 0.060 | 0.010 | |
| Si | 8 | 3.181 | 0.029 | |
| Al | 9 | 49.815 | 0.595 | |
| W | 10 | 0.134 | 0.008 | |
| Zn | 11 | 0.486 | 0.009 | |
| Cu | 12 | 0.382 | 0.005 | |
| | 14 | 0.309 | 0.007 | |
| | 15 | 0.000 | 0.017 | |
| Ni | 16 | 0.019 | 0.009 | |

| | | | |
|---|---|---|---|
| Eu | 18 | -0.060 | 0.017 |
| Fe | 19 | 0.145 | 0.017 |
| Ca | 20 | 5.826 | 0.076 |
| Cr | 21 | 1.761 | 0.015 |
| Nd | 22 | 0.277 | 0.050 |
| Ce | 24 | 0.066 | 0.013 |
| Sm | 25 | -0.023 | 0.013 |
| Ba | 26 | 0.073 | 0.016 |
| P | 27 | 1.211 | 0.012 |
| S | 28 | 27.631 | 0.332 |
| Mg | 29 | 1.028 | 0.012 |
| As | 30 | -0.011 | 0.011 |
| Na | 31 | 1197.640 | 12.602 |
| Mo | 32 | 0.146 | 0.005 |
| Se | 33 | 0.024 | 0.008 |
| Ag | 34 | -0.097 | 0.006 |
| Pb | 35 | 0.008 | 0.003 |
| Ti | 36 | -0.086 | 0.009 |
| Cd | 37 | 0.251 | 0.010 |
| B | 38 | 3.601 | 0.055 |
| K | 39 | 12.147 | 0.122 |
| Nd | 40 | 0.019 | 0.005 |
| Sb | 42 | -0.010 | 0.006 |
| V | 43 | 0.020 | 0.003 |
| Be | 44 | -0.008 | 0.003 |
| Tl | 45 | -0.078 | 0.007 |

Identity 1: K933 Sam 83AP891-1 Identity 2: 10ml-50ml 11:41 AM January 22, 1992
T ame : ALL_SIM
Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4.550 | 4.705 | -15.122 | 10.295 | 18.868 | 15.064 | 2157.141 | 20225.600 |
| S.D. | 3.123 | 0.363 | 35.828 | 4.296 | 408.176 | 2.302 | 20.528 | 243.647 |
| % R.S.D. | 68.625 | 7.722 | 236.925 | 41.734 | 2163.331 | 15.279 | 0.952 | 1.205 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -3780.390 | 9.317 | 75.551 | 31.317 | 0.897 | 15.811 | 4.029 | 0.876 |
| S.D. | 248.210 | 0.750 | 1.021 | 0.706 | 3.701 | 2.044 | 6.152 | 1.107 |
| % R.S.D. | 6.566 | 8.046 | 1.351 | 2.256 | 412.557 | 12.925 | 152.701 | 126.445 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 44.149 | 918.974 | 701.137 | 83.683 | 53.042 | -41.013 | 4.333 | 7411.591 |
| S.D. | 5.511 | 12.485 | 5.995 | 22.435 | 36.232 | 38.259 | 0.937 | 76.921 |
| % R.S.D. | 12.482 | 1.359 | 0.855 | 26.809 | 68.308 | 93.285 | 21.628 | 1.038 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 29759.832 | 206.672 | -17.566 | 728177.158 | 38.265 | 53.674 | 1.234 | 10.510 |
| S.D. | 357.253 | 2.370 | 12.737 | 7662.481 | 1.381 | 21.498 | 1.683 | 5.631 |
| %.S.D. | 1.200 | 1.147 | 72.506 | 1.052 | 3.608 | 40.053 | 136.339 | 53.576 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Na (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1.397 | 13.659 | 699.375 | 71184.413 | 0.992 | -15.758 | -3.139 | 0.000 |
| | 1.189 | 0.392 | 10.575 | 709.634 | 0.504 | 32.096 | 1.783 | 0.448 |
| % | 85.067 | 2.869 | 1.512 | 0.997 | 50.855 | 203.684 | 56.795 | 1250865.847 |

| | Tl (ppb) |
|---|---|
| Mean | -129.276 |
| S.D. | 51.803 |
| % R.S.D. | 40.072 |

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Corrected Counts Statistics 11:45 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Sc | 1 | 0.015 | 0.005 | |
| Sr | 2 | 0.113 | 0.006 | |
| Y | 3 | -0.110 | 0.017 | |
| Ta | 5 | -0.017 | 0.015 | |
| Hg | 6 | 1.595 | 0.018 | |
| Sn | 7 | 0.056 | 0.019 | |
| Si | 8 | 3.669 | 0.015 | |
| | 9 | 50.537 | 0.390 | |
| | 10 | 0.162 | 0.039 | |
| Zn | 11 | 0.425 | 0.002 | |
| Cu | 12 | 0.370 | 0.004 | |
| Li | 14 | 0.292 | 0.010 | |
| Co | 15 | -0.011 | 0.005 | |
| Ni | 16 | -0.017 | 0.009 | |
| La | 17 | -0.005 | 0.001 | |
| Eu | 18 | -0.088 | 0.007 | |
| Fe | 19 | 0.134 | 0.004 | |
| Ca | 20 | 6.759 | 0.063 | |
| Cr | 21 | 1.789 | 0.010 | |
| Nd | 22 | 0.145 | 0.006 | |
| Ce | 24 | 0.015 | 0.009 | |
| Sm | 25 | -0.066 | 0.009 | |
| Ba | 26 | 0.034 | 0.007 | |
| P | 27 | 1.254 | 0.027 | |
| S | 28 | 28.461 | 0.360 | |
| Mg | 29 | 1.124 | 0.008 | |
| As | 30 | -0.016 | 0.002 | |
| Na | 31 | 1214.224 | 9.984 | |
| Mo | 32 | 0.148 | 0.004 | |
| Se | 33 | 0.016 | 0.005 | |
| Ag | 34 | -0.111 | 0.001 | |
| Pb | 35 | 0.010 | 0.004 | |
| Ti | 36 | -0.102 | 0.003 | |
| | 37 | 0.281 | 0.017 | |
| | 38 | 4.416 | 0.025 | |

| | | | |
|---|---|---|---|
| K | 39 | 12.115 | 0.096 |
| Mo | 40 | 0.025 | 0.004 |
| Sb | 42 | 0.006 | 0.004 |
| V | 43 | 0.024 | 0.003 |
| Be | 44 | -0.007 | 0.001 |
| Tl | 45 | -0.069 | 0.002 |

Identity 1: R933 Dup #3AP891-1 Identity 2: 10ml-50ml 11:46 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -4.693 | 4.027 | -60.152 | -1.781 | 1188.679 | 14.256 | 2499.912 | 20521.256 |
| S.D. | 1.985 | 0.218 | 17.354 | 8.789 | 1027.219 | 4.282 | 10.760 | 159.756 |
| % R.S.D. | 42.294 | 5.406 | 28.851 | 493.403 | 86.417 | 30.039 | 0.430 | 0.778 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -4660.692 | 4.083 | 72.985 | 29.635 | -1.570 | 7.527 | -5.368 | -0.963 |
| S.D. | 1210.610 | 0.131 | 0.915 | 1.011 | 1.129 | 2.027 | 4.027 | 0.447 |
| % R.S.D. | 25.975 | 3.210 | 1.254 | 3.411 | 71.904 | 26.926 | 75.019 | 46.417 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 40.762 | 1073.180 | 712.254 | 23.800 | -85.728 | -165.112 | 1.987 | 7677.838 |
| S.D. | 1.284 | 10.451 | 3.787 | 2.441 | 23.294 | 26.599 | 0.419 | 164.092 |
| % R.S.D. | 3.149 | 0.974 | 0.532 | 10.255 | 27.172 | 16.110 | 21.071 | 2.137 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 30653.223 | 226.401 | -23.580 | 738261.101 | 38.868 | 27.306 | -3.246 | 12.845 |
| S.D. | 388.291 | 1.682 | 2.406 | 6070.893 | 1.313 | 13.341 | 0.353 | 6.151 |
| % R.S.D. | 1.267 | 0.743 | 10.204 | 0.822 | 3.379 | 48.856 | 10.866 | 47.889 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -0.742 | 14.865 | 857.115 | 70997.518 | 1.462 | 66.539 | -0.219 | 0.178 |
| S.D. | 0.454 | 0.671 | 4.903 | 562.901 | 0.360 | 18.940 | 1.696 | 0.103 |
| % R.S.D. | 61.131 | 4.513 | 0.572 | 0.793 | 24.641 | 28.464 | 774.098 | 57.723 |

| | Tl (ppb) |
|---|---|
| Mean | -62.227 |
| S.D. | 14.954 |
| % R.S.D. | 24.032 |

Corrected Counts Statistics 11:51 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | 2R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.034 | 0.017 | |
| Sr | 2 | 0.231 | 0.028 | |
| | 3 | -0.058 | 0.027 | |
| | 5 | 0.033 | 0.028 | |
| | 6 | 1.567 | 0.022 | |
| Sn | 7 | 0.115 | 0.044 | |
| Si | 8 | 3.765 | 0.032 | |
| Al | 9 | 70.310 | 0.119 | |
| W | 10 | 0.304 | 0.007 | |
| Zn | 11 | 24.493 | 0.293 | |
| Cu | 12 | 4.862 | 0.015 | |
| Li | 14 | 0.342 | 0.022 | |
| Co | 15 | 8.737 | 0.053 | |
| Ni | 16 | 8.534 | 0.064 | |
| La | 17 | -0.006 | 0.002 | |
| Eu | 18 | -0.046 | 0.018 | |
| Fe | 19 | 12.631 | 0.022 | |
| Ca | 20 | 19.652 | 1.974 | |
| Cr | 21 | 3.851 | 0.020 | |
| Nd | 22 | 0.309 | 0.099 | |
| Ce | 24 | 0.083 | 0.031 | |
| Sm | 25 | -0.063 | 0.030 | |
| Ba | 26 | 137.044 | 0.294 | |
| P | 27 | 1.179 | 0.032 | |
| S | 28 | 28.126 | 0.322 | |
| Hg | 29 | 1.287 | 0.030 | |
| As | 30 | 6.461 | 0.011 | |
| Na | 31 | 1240.773 | 4.859 | |
| | 32 | 0.140 | 0.017 | |
| | 33 | 2.649 | 0.030 | |
| Mg | 34 | 0.563 | 0.015 | |
| Pb | 35 | 1.133 | 0.014 | |
| Ti | 36 | -0.049 | 0.020 | |
| Cd | 37 | 5.235 | 0.033 | |
| B | 38 | 3.731 | 0.033 | |
| K | 39 | 12.517 | 0.050 | |
| Mn | 40 | 20.357 | 0.069 | |
| Sb | 42 | 0.340 | 0.019 | |
| V | 43 | 2.991 | 0.017 | |
| Be | 44 | 1.080 | 0.006 | |
| Tl | 45 | 1.026 | 0.011 | |

Identity 1: R933 Spk #3AP891-1 Identity 2: 10ml-50ml 11:53 AM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 3.670 | 8.641 | -7.729 | 27.914 | -377.358 | 27.115 | 2567.857 | 28621.956 |
| S.D. | 7.330 | 1.080 | 27.244 | 16.405 | 1251.699 | 9.713 | 22.584 | 48.608 |
| % R.S.D. | 199.722 | 12.499 | 352.496 | 58.770 | 331.700 | 35.822 | 0.879 | 0.170 |

| W | Zn | Cu | Li | Co | Ni | La | Eu |
|---|---|---|---|---|---|---|---|

| | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -9014.856 | 2069.115 | 1090.002 | 34.680 | 1960.059 | 1957.157 | -10.738 | 1.752 |
| S.D. | 221.465 | 25.138 | 3.351 | 2.179 | 11.945 | 14.529 | 6.152 | 1.168 |
| % R.S.D. | 2.457 | 1.215 | 0.307 | 6.284 | 0.609 | 0.742 | 57.289 | 66.691 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Mg (ppb) | Ce (ppb) | Sn (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4010.082 | 3202.884 | 1531.041 | 80.965 | 100.515 | -156.317 | 8171.131 | 7213.454 |
| S.D. | 6.918 | 326.237 | 7.834 | 41.639 | 93.539 | 86.681 | 17.531 | 195.932 |
| % R.S.D. | 0.173 | 10.186 | 0.512 | 51.428 | 83.111 | 55.452 | 0.215 | 2.716 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 30272.841 | 259.967 | 7773.363 | 754404.693 | 36.457 | 7094.097 | 202.654 | 1980.500 |
| S.D. | 344.380 | 6.077 | 13.259 | 2954.568 | 5.227 | 81.514 | 4.586 | 24.834 |
| % R.S.D. | 1.138 | 2.337 | 0.171 | 0.392 | 14.338 | 1.149 | 2.263 | 1.254 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 6.157 | 211.928 | 724.482 | 73343.437 | 1963.934 | 1822.783 | 1998.842 | 193.469 |
| S.D. | 2.568 | 1.293 | 6.299 | 292.043 | 6.554 | 98.321 | 11.321 | 1.111 |
| % R.S.D. | 41.712 | 0.610 | 0.869 | 0.398 | 0.334 | 5.394 | 0.566 | 0.574 |

| | Tl (ppb) |
|---|---|
| Mean | 7799.210 |
| S.D. | 79.456 |
| % R.S.D. | 1.019 |

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Corrected Counts Statistics 12:00 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | 2R.S.D. Kpulses |
|---|---|---|---|---|
| Cr | 1 | 0.037 | 0.003 | |
| Sr | 2 | 0.025 | 0.002 | |
| Bi | 3 | -0.042 | 0.023 | |
| Ta | 5 | 0.009 | 0.012 | |
| Hg | 6 | 1.540 | 0.013 | |
| Sn | 7 | 0.009 | 0.033 | |
| Si | 8 | 0.167 | 0.036 | |
| Al | 9 | 0.447 | 0.012 | |
| W | 10 | -0.065 | 0.029 | |
| Zn | 11 | 0.097 | 0.006 | |
| Cu | 12 | 0.063 | 0.004 | |
| Li | 14 | 0.012 | 0.002 | |
| Co | 15 | -0.001 | 0.002 | |
| Ni | 16 | -0.052 | 0.015 | |
| La | 17 | -0.003 | 0.001 | |
| Eu | 18 | -0.061 | 0.009 | |
| Fe | 19 | 0.092 | 0.026 | |
| [illegible] | 20 | 0.688 | 0.002 | |
| [illegible] | 21 | 0.003 | 0.001 | |

| | | | |
|---|---|---|---|
| Mo | 22 | 0.242 | 0.031 |
| Ce | 24 | 0.066 | 0.002 |
| Sm | 25 | 0.009 | 0.003 |
| Dy | 26 | 0.051 | 0.002 |
| | 27 | 0.020 | 0.002 |
| | 28 | 0.014 | 0.004 |
| Mn | 29 | 0.010 | 0.001 |
| As | 30 | -0.028 | 0.008 |
| Na | 31 | 0.155 | 0.006 |
| Mo | 32 | 0.019 | 0.003 |
| Se | 33 | -0.056 | 0.011 |
| Ag | 34 | -0.096 | 0.002 |
| Pb | 35 | 0.077 | 0.008 |
| Ti | 36 | -0.087 | 0.003 |
| Cd | 37 | -0.049 | 0.020 |
| B | 38 | 0.007 | 0.033 |
| K | 39 | -0.037 | 0.007 |
| Mn | 40 | 0.042 | 0.002 |
| Sb | 42 | -0.027 | 0.013 |
| V | 43 | 0.023 | 0.002 |
| Be | 44 | -0.006 | 0.001 |
| Li | 45 | -0.055 | 0.002 |

Identity 1: R933 Sam 83AP891-1 Identity 2: 10ml-50ml-2ml-12ml 12:00 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4.844 | 0.599 | 7.729 | 13.858 | -1924.528 | 3.821 | 38.658 | 0.273 |
| S.D. | 1.165 | 0.060 | 22.685 | 6.960 | 727.823 | 7.255 | 25.255 | 4.939 |
| % R.S.D. | 24.042 | 9.962 | 293.502 | 50.222 | 37.818 | 189.860 | 65.328 | 1808.314 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 2333.659 | -24.002 | 3.322 | 1.379 | 0.523 | -0.530 | 4.029 | 0.810 |
| S.D. | 899.609 | 0.488 | 0.857 | 0.210 | 0.467 | 3.338 | 4.650 | 0.592 |
| % R.S.D. | 38.549 | 2.033 | 25.806 | 15.232 | 89.212 | 630.157 | 115.431 | 73.110 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 27.210 | 71.070 | 3.176 | 74.194 | 53.955 | 54.748 | 3.041 | 33.047 |
| S.D. | 8.357 | 0.253 | 0.397 | 13.924 | 4.184 | 7.377 | 0.091 | 12.889 |
| % R.S.D. | 30.715 | 0.356 | 12.500 | 18.767 | 7.754 | 13.475 | 2.995 | 39.003 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 7.997 | -2.603 | -38.695 | 43.388 | 0.000 | -9.631 | 1.540 | 130.204 |
| S.D. | 4.308 | 0.119 | 9.654 | 3.665 | 0.797 | 30.144 | 0.705 | 13.606 |
| % R.S.D. | 53.870 | 4.558 | 24.950 | 8.447 | 914779.514 | 312.998 | 45.825 | 10.449 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| | 1.223 | 1.711 | 3.421 | 26.167 | 3.749 | -105.058 | -1.342 | 0.237 |
| .... | 0.393 | 0.780 | 6.405 | 38.888 | 0.201 | 66.515 | 1.403 | 0.205 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| % R.S.D. | 32.143 | 45.584 | 187.249 | 148.612 | 5.363 | 63.312 | 104.513 | 86.589 |

| | Tl (ppb) |
|---|---|
| Mean | 38.346 |
| | 10.973 |
| % R.S.D. | 28.617 |

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Corrected Counts Statistics 12:05 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.080 | 0.015 | |
| Sr | 2 | 0.125 | 0.018 | |
| Bi | 3 | 0.046 | 0.017 | |
| Ta | 5 | 0.105 | 0.013 | |
| Hg | 6 | 1.504 | 0.002 | |
| Sn | 7 | 0.137 | 0.015 | |
| Si | 8 | 1.186 | 0.021 | |
| Al | 9 | 18.064 | 0.061 | |
| W | 10 | 0.122 | 0.022 | |
| Zn | 11 | 4.368 | 0.026 | |
| Cu | 12 | 0.849 | 0.017 | |
| Li | 14 | 0.161 | 0.016 | |
| [illegible] | 15 | 1.250 | 0.008 | |
| | 16 | 1.313 | 0.027 | |
| La | 17 | 0.001 | 0.001 | |
| Eu | 18 | 0.012 | 0.027 | |
| Fe | 19 | 1.910 | 0.028 | |
| Ca | 20 | 4.748 | 0.021 | |
| Cr | 21 | 0.826 | 0.024 | |
| Nd | 22 | 0.416 | 0.103 | |
| Ce | 24 | 0.143 | 0.026 | |
| Sm | 25 | 0.080 | 0.030 | |
| Ba | 26 | 19.772 | 0.090 | |
| P | 27 | 0.357 | 0.007 | |
| S | 28 | 8.110 | 0.082 | |
| Mg | 29 | 0.353 | 0.002 | |
| As | 30 | 0.921 | 0.011 | |
| Na | 31 | 370.525 | 3.400 | |
| Mo | 32 | 0.064 | 0.003 | |
| Se | 33 | 0.327 | 0.009 | |
| Ag | 34 | 0.042 | 0.015 | |
| Pb | 35 | 0.224 | 0.024 | |
| Ti | 36 | -0.008 | 0.017 | |
| Cd | 37 | 0.810 | 0.014 | |
| B | 38 | 1.122 | 0.011 | |
| K | 39 | 3.684 | 0.029 | |
| Mn | 40 | 2.930 | 0.007 | |
| Sb | 42 | 0.070 | 0.021 | |
| | 43 | 0.428 | 0.007 | |
| [illegible] | 44 | 0.146 | 0.000 | |

| | | | |
|---|---|---|---|
| Tl | 45 | 0.071 | 0.016 |

*ity 1: R933 Spk #3AP891-1 Identity 2: 10ml-50ml-2ml-12ml 12:05 PM January 22, 1992
ne : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Mg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 23.623 | 4.496 | 96.445 | 70.874 | -3943.396 | 32.112 | 754.660 | 7217.420 |
| S.D. | 6.414 | 0.692 | 17.059 | 7.751 | 113.208 | 3.309 | 14.410 | 25.046 |
| % R.S.D. | 27.150 | 15.384 | 17.688 | 10.937 | 2.871 | 10.305 | 1.910 | 0.347 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -3420.285 | 342.421 | 181.441 | 16.348 | 281.140 | 310.855 | 18.795 | 5.604 |
| S.D. | 666.421 | 2.191 | 3.851 | 1.631 | 1.780 | 6.191 | 4.027 | 1.788 |
| % R.S.D. | 19.484 | 0.640 | 2.123 | 9.979 | 0.633 | 1.992 | 21.427 | 31.906 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 604.646 | 741.584 | 329.791 | 146.245 | 264.847 | 261.905 | 1178.894 | 2119.678 |
| S.D. | 8.986 | 3.393 | 9.381 | 45.445 | 72.325 | 87.405 | 5.358 | 40.286 |
| % R.S.D. | 1.486 | 0.458 | 2.845 | 31.074 | 27.308 | 33.373 | 0.454 | 1.901 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| n | 8725.770 | 67.886 | 1104.523 | 225248.002 | 13.458 | 971.635 | 43.697 | 387.692 |
| | 87.994 | 0.475 | 12.874 | 2067.127 | 0.920 | 22.880 | 4.586 | 42.233 |
| .D. | 1.008 | 0.699 | 1.166 | 0.918 | 6.840 | 2.355 | 10.494 | 10.893 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 11.572 | 35.909 | 219.442 | 21754.634 | 282.242 | 404.480 | 271.982 | 27.334 |
| S.D. | 2.164 | 0.542 | 2.159 | 169.910 | 0.700 | 110.479 | 4.732 | 0.000 |
| % R.S.D. | 18.705 | 1.508 | 0.984 | 0.781 | 0.248 | 27.314 | 1.740 | 0.000 |

| | Tl (ppb) |
|---|---|
| Mean | 938.711 |
| S.D. | 115.239 |
| % R.S.D. | 12.276 |

Corrected Counts Statistics 12:10 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| | 1 | 0.017 | 0.004 | |
| | 2 | 0.015 | 0.003 | |
| | 3 | -0.222 | 0.021 | |

| | | | |
|---|---|---|---|
| Ta | 5 | 0.015 | 0.006 |
| Hg | 6 | 1.525 | 0.010 |
| Sn | 7 | 0.905 | 0.012 |
| Si | 8 | 0.760 | 0.017 |
| Al | 9 | 1.614 | 0.018 |
| W | 10 | 0.088 | 0.019 |
| Zn | 11 | 5.931 | 0.045 |
| Cu | 12 | 2.263 | 0.010 |
| Li | 14 | 0.004 | 0.008 |
| Co | 15 | 2.215 | 0.013 |
| Ni | 16 | 2.101 | 0.014 |
| La | 17 | -0.005 | 0.001 |
| Eu | 18 | -0.063 | 0.009 |
| Fe | 19 | 1.582 | 0.016 |
| Ca | 20 | 3.566 | 0.018 |
| Cr | 21 | 1.286 | 0.027 |
| Nd | 22 | 0.001 | 0.054 |
| Ce | 24 | 0.039 | 0.004 |
| Sm | 25 | -0.032 | 0.003 |
| Ba | 26 | 8.530 | 0.040 |
| P | 27 | 0.019 | 0.001 |
| S | 28 | 0.011 | 0.004 |
| Mg | 29 | 2.449 | 0.012 |
| As | 30 | 0.404 | 0.018 |
| Na | 31 | 0.912 | 0.009 |
| Mo | 32 | 1.625 | 0.027 |
| Se | 33 | 0.196 | 0.006 |
| Ag | 34 | 1.593 | 0.006 |
| Pb | 35 | 0.277 | 0.003 |
| Ti | 36 | 3.723 | 0.013 |
| Cd | 37 | 12.427 | 0.122 |
| B | 38 | 2.416 | 0.002 |
| K | 39 | 0.806 | 0.002 |
| Mn | 40 | 5.163 | 0.031 |
| Sb | 42 | 0.092 | 0.019 |
| V | 43 | 0.768 | 0.005 |
| Be | 44 | 2.705 | 0.011 |
| Tl | 45 | 0.012 | 0.004 |

Identity 1: CCV-2 Identity 2: CCV 12:10 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -4.106 | 0.182 | -173.063 | 17.422 | -2735.849 | 2.939 | 455.467 | 478.102 |
| S.D. | 1.666 | 0.119 | 21.203 | 3.271 | 549.766 | 2.673 | 12.195 | 7.558 |
| % R.S.D. | 40.585 | 65.465 | 12.251 | 18.775 | 20.095 | 90.933 | 2.677 | 1.581 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2387.427 | 476.555 | 501.453 | 0.505 | 497.471 | 490.450 | -6.711 | 0.635 |
| S.D. | 584.470 | 3.857 | 2.268 | 0.816 | 2.840 | 3.192 | 2.325 | 0.559 |
| % R.S.D. | 24.481 | 0.809 | 0.452 | 161.658 | 0.571 | 0.651 | 34.648 | 87.962 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 500.572 | 545.745 | 512.553 | -35.855 | -21.821 | -65.442 | 508.596 | 30.983 |
| | 4.961 | 2.987 | 10.527 | 24.004 | 10.369 | 8.956 | 2.391 | 7.150 |
| S.D. | 0.991 | 0.547 | 2.054 | 66.946 | 47.520 | 13.685 | 0.470 | 23.076 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 0.961 | 498.698 | 481.488 | 503.886 | 483.785 | 567.928 | 517.410 | 480.528 |
| S.D. | 4.329 | 2.466 | 21.134 | 5.404 | 8.181 | 18.516 | 1.701 | 4.408 |
| % R.S.D. | 450.555 | 0.495 | 4.389 | 1.073 | 1.691 | 3.260 | 0.329 | 0.917 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 500.290 | 498.048 | 469.929 | 4949.677 | 498.111 | 516.544 | 500.838 | 482.457 |
| S.D. | 1.730 | 4.838 | 0.387 | 8.921 | 2.945 | 97.475 | 3.565 | 1.951 |
| % R.S.D. | 0.346 | 0.971 | 0.082 | 0.180 | 0.591 | 18.871 | 0.712 | 0.404 |

| | Tl (ppb) |
|---|---|
| Mean | 517.264 |
| S.D. | 31.313 |
| % R.S.D. | 6.054 |

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Corrected Counts Statistics 12:12 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.004 | 0.011 | |
| Cr | 2 | -0.014 | 0.009 | |
| Bi | 3 | -0.052 | 0.005 | |
| Ta | 5 | 0.004 | 0.023 | |
| Hg | 6 | 1.531 | 0.010 | |
| Sn | 7 | -0.034 | 0.042 | |
| Si | 8 | 0.087 | 0.010 | |
| Al | 9 | 0.359 | 0.054 | |
| W | 10 | -0.029 | 0.017 | |
| Zn | 11 | 0.042 | 0.002 | |
| Cu | 12 | 0.039 | 0.006 | |
| Li | 14 | -0.025 | 0.013 | |
| Co | 15 | -0.008 | 0.005 | |
| Ni | 16 | -0.090 | 0.015 | |
| La | 17 | -0.003 | 0.001 | |
| Eu | 18 | -0.087 | 0.014 | |
| Fe | 19 | 0.001 | 0.019 | |
| Ca | 20 | 0.171 | 0.002 | |
| Cr | 21 | -0.007 | 0.011 | |
| Nd | 22 | 0.048 | 0.050 | |
| Ce | 24 | 0.002 | 0.016 | |
| [illegible] | 25 | -0.041 | 0.014 | |
| | 26 | -0.023 | 0.016 | |
| P | 27 | 0.017 | 0.002 | |

| | | | |
|---|---|---|---|
| S | 28 | 0.036 | 0.007 |
| Mg | 29 | 0.006 | 0.001 |
| As | 30 | -0.004 | 0.007 |
| Na | 31 | 0.019 | 0.031 |
| Mo | 32 | 0.007 | 0.012 |
| [illegible] | 33 | -0.028 | 0.010 |
| [illegible] | 34 | -0.113 | 0.010 |
| Pb | 35 | -0.035 | 0.007 |
| Ti | 36 | -0.119 | 0.007 |
| Cd | 37 | -0.153 | 0.022 |
| B | 38 | -0.001 | 0.016 |
| K | 39 | -0.055 | 0.009 |
| Mn | 40 | -0.003 | 0.006 |
| Sb | 42 | -0.011 | 0.014 |
| V | 43 | 0.017 | 0.004 |
| Be | 44 | -0.009 | 0.001 |
| Tl | 45 | -0.058 | 0.010 |

Identity 1: CCB-2 Identity 2: CCB 12:12 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -9.681 | -0.951 | -2.352 | 10.493 | -2433.962 | -5.585 | -17.572 | -36.052 |
| S.D. | 4.999 | 0.350 | 4.764 | 13.495 | 572.603 | 9.178 | 6.705 | 22.223 |
| % R.S.D. | 51.638 | 36.834 | 202.535 | 128.616 | 23.526 | 164.342 | 38.158 | 61.640 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1228.254 | -28.721 | -2.037 | -2.388 | -1.047 | -9.042 | 2.686 | -0.941 |
| S.D. | 528.603 | 0.131 | 1.261 | 1.288 | 1.129 | 3.307 | 4.027 | 0.911 |
| % R.S.D. | 43.037 | 0.456 | 61.893 | 53.946 | 107.856 | 36.571 | 149.924 | 96.771 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -1.589 | -14.494 | -0.794 | -11.114 | -122.246 | -93.779 | -1.371 | 16.535 |
| S.D. | 5.934 | 0.260 | 4.183 | 22.242 | 42.782 | 42.108 | 0.966 | 12.384 |
| % R.S.D. | 373.644 | 1.796 | 526.824 | 200.127 | 34.997 | 44.902 | 70.420 | 74.892 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 32.095 | -3.357 | -9.005 | -38.902 | -3.615 | 67.453 | -3.756 | -65.978 |
| S.D. | 7.567 | 0.206 | 8.873 | 18.804 | 3.665 | 27.566 | 3.175 | 12.303 |
| % R.S.D. | 23.578 | 6.122 | 98.528 | 48.336 | 101.382 | 40.867 | 84.534 | 18.647 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.926 | -2.400 | 1.872 | -82.855 | -0.473 | -22.762 | -5.385 | -0.237 |
| S.D. | 0.920 | 0.883 | 3.002 | 54.267 | 0.566 | 75.759 | 2.551 | 0.178 |
| % R.S.D. | 31.450 | 36.781 | 160.372 | 65.497 | 119.766 | 332.836 | 47.373 | 75.011 |

| | Tl (ppb) |
|---|---|
| [illegible] | 14.400 |

S.D. 75.001
% R.S.D. 520.844



Corrected Counts Statistics 12:16 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.046 | 0.005 | |
| Sr | 2 | 0.138 | 0.004 | |
| Bi | 3 | -0.049 | 0.009 | |
| Ta | 5 | 0.029 | 0.012 | |
| Hg | 6 | 1.562 | 0.024 | |
| Sn | 7 | 0.034 | 0.010 | |
| Si | 8 | 2.442 | 0.025 | |
| Al | 9 | 37.529 | 0.182 | |
| W | 10 | 0.137 | 0.020 | |
| Zn | 11 | 0.239 | 0.005 | |
| Cu | 12 | 0.303 | 0.002 | |
| Li | 14 | 0.179 | 0.007 | |
| Co | 15 | 0.001 | 0.003 | |
| Ni | 16 | 0.012 | 0.005 | |
| La | 17 | -0.003 | 0.001 | |
| Eu | 18 | -0.045 | 0.009 | |
| Fe | 19 | 0.309 | 0.016 | |
| [illegible] | 20 | 5.917 | 0.038 | |
| | 21 | 1.027 | 0.015 | |
| Nd | 22 | 0.211 | 0.076 | |
| Ce | 24 | 0.077 | 0.011 | |
| Sm | 25 | 0.004 | 0.009 | |
| Ba | 26 | 0.082 | 0.007 | |
| P | 27 | 0.734 | 0.005 | |
| S | 28 | 16.823 | 0.088 | |
| Mg | 29 | 1.027 | 0.007 | |
| As | 30 | -0.095 | 0.011 | |
| Na | 31 | 764.006 | 2.986 | |
| Mo | 32 | 0.100 | 0.005 | |
| Se | 33 | -0.021 | 0.005 | |
| Ag | 34 | -0.085 | 0.006 | |
| Pb | 35 | -0.012 | 0.004 | |
| Ti | 36 | -0.065 | 0.004 | |
| Cd | 37 | 0.149 | 0.057 | |
| B | 38 | 3.376 | 0.017 | |
| K | 39 | 9.203 | 0.052 | |
| Mn | 40 | 0.037 | 0.006 | |
| Sb | 42 | -0.005 | 0.015 | |
| V | 43 | 0.026 | 0.003 | |
| Be | 44 | -0.007 | 0.001 | |
| Tl | 45 | -0.058 | 0.005 | |

entity 1: R934 Sam N3AP891-2 Identity 2: 10ml-50ml 12:24 PM January 22, 1992

Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 8.805 | 5.018 | 1.344 | 25.737 | -641.509 | 9.332 | 1637.946 | 15192.074 |
| S.D. | 2.017 | 0.137 | 8.692 | 6.884 | 1341.083 | 2.103 | 17.250 | 74.539 |
| % R.S.D. | 22.907 | 2.737 | 646.626 | 26.746 | 209.051 | 22.534 | 1.053 | 0.491 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -3891.517 | -11.847 | 57.814 | 18.232 | 1.047 | 14.215 | 1.344 | 1.839 |
| S.D. | 623.491 | 0.454 | 0.346 | 0.716 | 0.673 | 1.125 | 2.325 | 0.584 |
| % R.S.D. | 16.022 | 3.832 | 0.598 | 3.927 | 64.285 | 7.912 | 173.029 | 31.741 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 96.239 | 934.617 | 409.857 | 54.040 | 83.169 | 40.091 | 4.849 | 4456.045 |
| S.D. | 5.229 | 6.322 | 6.103 | 33.629 | 28.985 | 25.612 | 0.397 | 32.764 |
| % R.S.D. | 5.433 | 0.676 | 1.489 | 62.230 | 34.851 | 63.885 | 8.186 | 0.735 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 18113.670 | 206.467 | -10.053 | 464505.115 | 24.506 | -5.646 | 4.900 | -24.523 |
| S.D. | 94.683 | 1.439 | 13.529 | 1815.500 | 1.546 | 11.387 | 1.683 | 6.632 |
| % R.S.D. | 0.523 | 0.697 | 134.575 | 0.391 | 6.309 | 201.696 | 34.337 | 27.042 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4.061 | 9.601 | 655.874 | 53992.039 | 2.655 | 7.005 | 0.679 | 0.059 |
| S.D. | 0.460 | 2.269 | 3.322 | 303.723 | 0.564 | 77.973 | 1.945 | 0.103 |
| % R.S.D. | 11.329 | 23.629 | 0.506 | 0.563 | 21.244 | 1113.096 | 286.318 | 173.101 |

| | Tl (ppb) |
|---|---|
| Mean | 16.794 |
| S.D. | 32.393 |
| % R.S.D. | 192.882 |

Corrected Counts Statistics 12:26 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.004 | 0.009 | |
| Sr | 2 | 0.192 | 0.005 | |
| Bi | 3 | -0.094 | 0.032 | |
| Ta | 5 | -0.016 | 0.010 | |
| Hg | 6 | 1.604 | 0.028 | |
| Sn | 7 | 0.057 | 0.040 | |
| Si | 8 | 3.068 | 0.038 | |
| Al | 9 | 150.339 | 0.496 | |

| | | | |
|---|---|---|---|
| W | 10 | 0.429 | 0.027 |
| Zn | 11 | 3.197 | 0.046 |
| Cu | 12 | 0.318 | 0.011 |
| Li | 14 | 0.168 | 0.016 |
| | 15 | -0.015 | 0.012 |
| | 16 | 0.008 | 0.009 |
| La | 17 | -0.006 | 0.001 |
| Eu | 18 | -0.093 | 0.009 |
| Fe | 19 | 0.630 | 0.010 |
| Ca | 20 | 40.001 | 0.761 |
| Cr | 21 | 2.448 | 0.003 |
| Nd | 22 | 0.084 | 0.080 |
| Ce | 24 | 0.004 | 0.013 |
| Sm | 25 | -0.264 | 0.009 |
| Ba | 26 | 0.085 | 0.015 |
| P | 27 | 1.435 | 0.016 |
| S | 28 | 21.779 | 0.120 |
| Mg | 29 | 1.512 | 0.004 |
| As | 30 | -0.004 | 0.010 |
| Na | 31 | -22.996 | 0.000 |
| Mo | 32 | 0.309 | 0.013 |
| Se | 33 | 0.052 | 0.018 |
| Ag | 34 | -0.118 | 0.007 |
| Pb | 35 | -0.012 | 0.012 |
| Ti | 36 | -0.098 | 0.009 |
| Cd | 37 | 0.576 | 0.029 |
| K | 38 | 4.090 | 0.031 |
| Y | 39 | 35.614 | 0.059 |
| Mn | 40 | 0.157 | 0.002 |
| Sb | 42 | -0.016 | 0.005 |
| | 43 | 0.039 | 0.003 |
| | 44 | -0.005 | 0.003 |
| Tl | 45 | -0.043 | 0.008 |

Identity 1: R935 Sam #3AP119-1 Identity 2: 10ml-50ml 12:29 PM January 22, 1992
Task name : ALL_SIN
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppb) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -9.828 | 7.116 | -44.358 | -1.187 | 1698.113 | 14.329 | 2077.481 | 61408.770 |
| S.D. | 3.795 | 0.179 | 32.496 | 5.849 | 1601.330 | 8.719 | 26.620 | 203.330 |
| % R.S.D. | 38.613 | 2.518 | 73.258 | 492.615 | 94.301 | 60.849 | 1.281 | 0.331 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -12860.573 | 241.921 | 61.135 | 17.088 | -2.616 | 13.303 | -10.738 | -1.335 |
| S.D. | 817.812 | 3.973 | 2.396 | 1.624 | 2.768 | 2.119 | 2.325 | 0.610 |
| % R.S.D. | 6.359 | 1.642 | 3.920 | 9.504 | 105.792 | 15.926 | 21.653 | 45.701 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 198.302 | 6567.713 | 973.757 | -42.853 | -115.855 | -745.541 | 5.028 | 8796.487 |
| | 3.197 | 125.825 | 1.213 | 35.750 | 35.745 | 27.238 | 0.897 | 97.312 |
| .S.D. | 1.612 | 1.916 | 0.125 | 83.425 | 30.854 | 3.653 | 17.839 | 1.106 |

| | S (ppb) | Hg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 23403.990 | 306.138 | -9.037 | -14033.433 | 87.276 | 68.538 | -5.385 | -25.107 |
| S.D. | 130.592 | 0.896 | 11.608 | 0.000 | 4.012 | 50.059 | 2.146 | 20.201 |
| % R.S.D. | 0.558 | 0.293 | 128.447 | 0.000 | 4.597 | 73.038 | 39.847 | 80.460 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -0.262 | 26.587 | 794.122 | 208244.487 | 10.293 | -50.778 | 9.438 | 0.474 |
| S.D. | 1.181 | 1.156 | 5.912 | 345.148 | 0.166 | 24.825 | 1.696 | 0.471 |
| % R.S.D. | 450.925 | 4.347 | 0.744 | 0.166 | 1.617 | 48.889 | 17.965 | 99.208 |

| | Tl (ppb) |
|---|---|
| Mean | 122.156 |
| S.D. | 57.019 |
| % R.S.D. | 46.677 |

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Corrected Counts Statistics 12:33 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.020 | 0.006 | |
| Sr | 2 | 0.042 | 0.005 | |
| Bi | 3 | -0.064 | 0.012 | |
| Ta | 5 | 0.032 | 0.015 | |
| Hg | 6 | 1.546 | 0.012 | |
| Sn | 7 | 0.008 | 0.038 | |
| Si | 8 | 0.866 | 0.005 | |
| Al | 9 | 25.976 | 0.114 | |
| W | 10 | 0.087 | 0.004 | |
| Zn | 11 | 0.753 | 0.005 | |
| Cu | 12 | 0.109 | 0.003 | |
| Li | 14 | 0.026 | 0.010 | |
| Co | 15 | 0.043 | 0.011 | |
| Ni | 16 | 0.593 | 0.015 | |
| La | 17 | -0.004 | 0.000 | |
| Eu | 18 | -0.077 | 0.009 | |
| Fe | 19 | 0.377 | 0.005 | |
| Ca | 20 | 7.386 | 0.034 | |
| Cr | 21 | 0.462 | 0.005 | |
| Nd | 22 | 0.124 | 0.024 | |
| Ce | 24 | 0.034 | 0.005 | |
| Sm | 25 | -0.054 | 0.004 | |
| Na | 26 | 0.042 | 0.007 | |
| P | 27 | 0.269 | 0.005 | |
| S | 28 | 3.711 | 0.039 | |
| Mg | 29 | 0.280 | 0.002 | |
| As | 30 | -0.017 | 0.007 | |
| Na | 31 | 403.943 | 1.943 | |
| Mo | 32 | 0.056 | 0.005 | |

| | | | |
|---|---|---|---|
| Se | 33 | -0.016 | 0.008 |
| Ag | 34 | -0.110 | 0.003 |
| Pb | 35 | 0.023 | 0.016 |
| | 36 | -0.102 | 0.004 |
| | 37 | 0.037 | 0.019 |
| b | 38 | 0.836 | 0.012 |
| K | 39 | 6.182 | 0.029 |
| Mn | 40 | 0.310 | 0.005 |
| Sb | 42 | -0.010 | 0.019 |
| V | 43 | 0.025 | 0.003 |
| Be | 44 | -0.009 | 0.001 |
| Tl | 45 | -0.059 | 0.003 |

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Identity 1: R935 Sam W3AP119-1 Identity 2: 10ml-50ml-2ml-12ml 12:34 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

---

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.492 | 1.238 | -14.114 | 27.122 | -1566.038 | 3.674 | 530.206 | 10459.120 |
| S.D. | 2.830 | 0.176 | 12.388 | 9.072 | 667.349 | 8.401 | 3.607 | 46.857 |
| % R.S.D. | 113.553 | 14.240 | 87.773 | 33.449 | 42.614 | 228.657 | 0.680 | 0.448 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2334.607 | 32.254 | 13.888 | 2.758 | 10.540 | 146.612 | -1.341 | -0.241 |
| S.D. | 124.101 | 0.454 | 0.728 | 0.994 | 2.377 | 3.359 | 0.000 | 0.607 |
| % R.S.D. | 5.316 | 1.408 | 5.241 | 36.032 | 22.550 | 2.291 | 0.000 | 252.087 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Na (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 117.838 | 1177.921 | 185.541 | 14.032 | -33.689 | -131.888 | 2.484 | 1578.929 |
| S.D. | 1.456 | 5.655 | 1.790 | 10.724 | 12.350 | 10.295 | 0.430 | 28.599 |
| % R.S.D. | 1.235 | 0.480 | 0.965 | 76.425 | 36.659 | 7.896 | 17.307 | 1.811 |

| | S (ppb) | Mg (ppb) | As (ppb) | Ba (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 3982.069 | 52.952 | -24.583 | 245568.104 | 11.249 | 59.502 | -2.941 | 36.784 |
| S.D. | 41.665 | 0.356 | 7.832 | 1181.418 | 1.546 | 22.244 | 0.769 | 27.492 |
| % R.S.D. | 1.046 | 0.672 | 31.860 | 0.481 | 13.745 | 37.383 | 26.141 | 74.738 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -0.786 | 5.159 | 164.065 | 36344.108 | 28.853 | -15.758 | 0.230 | -0.178 |
| S.D. | 0.545 | 0.747 | 2.405 | 167.687 | 0.475 | 97.617 | 1.783 | 0.205 |
| % R.S.D. | 69.389 | 14.475 | 1.466 | 0.461 | 1.646 | 619.482 | 774.598 | 115.493 |

| | Tl (ppb) |
|---|---|
| Mean | 7.216 |
| S.D. | 19.006 |
| % R.S.D. | 263.391 |

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Corrected Counts Statistics 12:39 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | -0.027 | 0.030 | |
| Sr | 2 | 0.070 | 0.030 | |
| Bi | 3 | -0.136 | 0.020 | |
| Ta | 5 | -0.083 | 0.039 | |
| Hg | 6 | 1.518 | 0.027 | |
| Sn | 7 | -0.051 | 0.030 | |
| Si | 8 | 2.661 | 0.025 | |
| Al | 9 | 50.645 | 0.735 | |
| W | 10 | 0.103 | 0.042 | |
| Zn | 11 | 1.663 | 0.016 | |
| Cu | 12 | 0.345 | 0.020 | |
| Li | 14 | 0.256 | 0.031 | |
| Co | 15 | -0.056 | 0.025 | |
| Ni | 16 | -0.020 | 0.029 | |
| La | 17 | -0.004 | 0.001 | |
| Eu | 18 | -0.129 | 0.033 | |
| Fe | 19 | 0.136 | 0.012 | |
| Ce | 20 | 9.661 | 0.230 | |
| Cr | 21 | 1.695 | 0.006 | |
| Nd | 22 | -0.131 | 0.121 | |
| Ce | 24 | -0.055 | 0.051 | |
| Sm | 25 | -0.156 | 0.052 | |
| Ba | 26 | -0.047 | 0.046 | |
| P | 27 | 1.202 | 0.023 | |
| S | 28 | 28.230 | 0.518 | |
| Mg | 29 | 1.140 | 0.013 | |
| As | 30 | -0.012 | 0.004 | |
| Na | 31 | 1256.098 | 21.373 | |
| Mo | 32 | 0.123 | 0.012 | |
| Sr | 33 | -0.004 | 0.010 | |
| Ag | 34 | -0.142 | 0.023 | |
| Pb | 35 | -0.019 | 0.014 | |
| Ti | 36 | -0.137 | 0.020 | |
| Cd | 37 | 0.232 | 0.036 | |
| B | 38 | 3.450 | 0.039 | |
| K | 39 | 12.463 | 0.173 | |
| Mn | 40 | 0.027 | 0.004 | |
| Sb | 42 | -0.004 | 0.015 | |
| V | 43 | 0.007 | 0.013 | |
| Be | 44 | -0.010 | 0.003 | |
| Tl | 45 | -0.104 | 0.032 | |

Identity 1: R936 Sam #3AP891-4 Identity 2: 10ml-50ml 12:40 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Zr | Sr | Bi | Ta | Hg | Sn | Si | Al |
|---|---|---|---|---|---|---|---|

| | (ppb) | (ppb) | (ppb) | (ppb) | (ppm) | (ppb) | (ppb) | (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -23.179 | 2.359 | -86.699 | -40.781 | -3150.943 | -9.406 | 1791.408 | 20565.502 |
| S.D. | 12.985 | 1.156 | 20.137 | 23.287 | 1523.052 | 6.528 | 17.577 | 301.003 |
| R.S.D. | 56.021 | 49.010 | 23.227 | 57.101 | 48.336 | 69.408 | 0.981 | 1.464 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2828.364 | 110.361 | 67.173 | 25.968 | -11.811 | 6.843 | -2.683 | -3.678 |
| S.D. | 1294.166 | 1.330 | 4.496 | 3.079 | 5.540 | 6.577 | 4.650 | 2.170 |
| % R.S.D. | 45.757 | 1.205 | 6.694 | 11.857 | 46.908 | 96.116 | 173.293 | 59.012 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 41.291 | 1552.956 | 674.802 | -101.790 | -279.274 | -429.920 | -2.842 | 7353.801 |
| S.D. | 3.967 | 38.045 | 2.258 | 54.023 | 140.761 | 150.992 | 2.716 | 139.967 |
| % R.S.D. | 9.608 | 2.450 | 0.335 | 53.073 | 50.402 | 35.121 | 95.549 | 1.903 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 30399.737 | 229.758 | -19.181 | 763722.692 | 31.335 | -19.347 | -12.615 | -37.952 |
| S.D. | 557.673 | 2.737 | 4.864 | 12996.083 | 3.552 | 28.424 | 7.046 | 24.292 |
| % R.S.D. | 1.834 | 1.191 | 25.360 | 1.702 | 11.336 | 146.916 | 55.856 | 64.008 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -5.327 | 12.889 | 670.137 | 73028.052 | 1.316 | 14.009 | -12.122 | -0.415 |
| S.D. | 2.630 | 1.433 | 7.472 | 1007.989 | 0.392 | 77.381 | 8.424 | 0.534 |
| % R.S.D. | 49.364 | 11.117 | 1.115 | 1.380 | 29.766 | 552.366 | 69.495 | 128.583 |

| | Tl (ppb) |
|---|---|
| Mean | -318.448 |
| S.D. | 229.693 |
| % R.S.D. | 72.129 |

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Corrected Counts Statistics 12:47 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.008 | 0.004 | |
| Sr | 2 | 0.099 | 0.004 | |
| Bi | 3 | -0.099 | 0.018 | |
| Ta | 5 | -0.021 | 0.012 | |
| Hg | 6 | 1.591 | 0.016 | |
| Sn | 7 | 0.064 | 0.025 | |
| Si | 8 | 3.294 | 0.029 | |
| Al | 9 | 112.415 | 0.829 | |
| W | 10 | 0.342 | 0.043 | |
| Zn | 11 | 0.892 | 0.098 | |
| | 12 | 0.516 | 0.007 | |
| [illegible] | 14 | 0.215 | 0.006 | |
| Co | 15 | -0.023 | 0.004 | |

| | | | |
|---|---|---|---|
| Ni | 16 | 0.014 | 0.010 |
| La | 17 | -0.006 | 0.001 |
| Eu | 18 | -0.088 | 0.009 |
| Fe | 19 | 0.212 | 0.004 |
| Ca | 20 | 8.017 | 0.588 |
| Cr | 21 | 2.250 | 0.033 |
| Nd | 22 | 0.055 | 0.030 |
| Ce | 24 | -0.002 | 0.010 |
| Sm | 25 | -0.082 | 0.009 |
| Ba | 26 | 0.020 | 0.008 |
| P | 27 | 1.495 | 0.016 |
| S | 28 | 29.895 | 0.276 |
| Mg | 29 | 1.125 | 0.016 |
| As | 30 | -0.010 | 0.004 |
| Na | 31 | -20.070 | 0.000 |
| Mo | 32 | 0.245 | 0.011 |
| Se | 33 | 0.036 | 0.007 |
| Ag | 34 | -0.118 | 0.006 |
| Pb | 35 | -0.013 | 0.012 |
| Ti | 36 | -0.115 | 0.009 |
| Cd | 37 | 0.529 | 0.013 |
| B | 38 | 3.666 | 0.028 |
| K | 39 | 28.093 | 0.287 |
| Mn | 40 | 0.026 | 0.004 |
| Sb | 42 | -0.017 | 0.005 |
| V | 43 | 0.020 | 0.003 |
| Be | 44 | -0.005 | 0.001 |
| Tl | 45 | -0.078 | 0.004 |

Identity 1: R937 San 83AP891-5 Identity 2: 10ml-50ml 12:50 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -7.774 | 3.480 | -49.735 | -4.355 | 981.132 | 15.946 | 2236.566 | 45871.878 |
| S.D. | 1.666 | 0.156 | 18.184 | 7.160 | 889.598 | 5.524 | 20.274 | 339.731 |
| % R.S.D. | 21.436 | 4.494 | 36.561 | 164.408 | 90.671 | 34.645 | 0.906 | 0.741 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Mi (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -10168.264 | 44.152 | 105.967 | 21.865 | -4.336 | 14.519 | -9.396 | -0.985 |
| S.D. | 1330.083 | 8.446 | 1.633 | 0.574 | 0.809 | 2.329 | 4.027 | 0.602 |
| % R.S.D. | 13.081 | 19.129 | 1.541 | 2.624 | 18.649 | 16.041 | 42.863 | 61.110 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 65.324 | 1280.787 | 895.280 | -17.426 | -134.114 | -212.992 | 1.173 | 9167.994 |
| S.D. | 1.115 | 97.110 | 13.215 | 13.892 | 27.434 | 25.046 | 0.488 | 98.292 |
| % R.S.D. | 1.708 | 7.582 | 1.476 | 79.722 | 20.456 | 11.759 | 41.620 | 1.072 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 32196.279 | 226.675 | -16.690 | -12254.272 | 67.993 | 42.130 | -5.385 | -26.858 |
| S.D. | 297.010 | 3.199 | 4.232 | 0.000 | 3.250 | 20.662 | 1.790 | 21.878 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| % R.S.D. | 0.922 | 1.411 | 25.356 | 0.000 | 4.780 | 49.044 | 33.241 | 81.457 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mo (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.489 | 24.718 | 712.025 | 164316.424 | 1.412 | -56.031 | -2.914 | 0.415 |
| S.D. | 1.189 | 0.508 | 5.491 | 1678.805 | 0.271 | 26.956 | 2.058 | 0.205 |
| % R.S.D. | 47.757 | 2.055 | 0.771 | 1.022 | 19.160 | 48.110 | 70.635 | 49.483 |

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

| | Tl (ppb) |
|---|---|
| Mean | -129.276 |
| S.D. | 31.313 |
| % R.S.D. | 24.222 |

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Corrected Counts Statistics 12:55 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.016 | 0.007 | |
| Sr | 2 | 0.021 | 0.002 | |
| Bi | 3 | -0.068 | 0.019 | |
| Ta | 5 | -0.028 | 0.010 | |
| Mg | 6 | 1.553 | 0.014 | |
| [illegible] | 7 | 0.005 | 0.015 | |
| | 8 | 0.710 | 0.012 | |
| Al | 9 | 19.528 | 0.072 | |
| W | 10 | 0.007 | 0.012 | |
| Zn | 11 | 0.291 | 0.009 | |
| Cu | 12 | 0.125 | 0.006 | |
| Li | 14 | 0.024 | 0.009 | |
| Co | 15 | -0.003 | 0.010 | |
| Ni | 16 | 0.033 | 0.011 | |
| La | 17 | -0.005 | 0.001 | |
| Eu | 18 | -0.092 | 0.003 | |
| Fe | 19 | 0.120 | 0.008 | |
| Ca | 20 | 2.436 | 0.006 | |
| Cr | 21 | 0.384 | 0.007 | |
| Nd | 22 | 0.172 | 0.066 | |
| Ce | 24 | 0.017 | 0.012 | |
| Sm | 25 | -0.056 | 0.000 | |
| Ba | 26 | -0.001 | 0.002 | |
| P | 27 | 0.271 | 0.005 | |
| S | 28 | 5.112 | 0.039 | |
| Mg | 29 | 0.213 | 0.001 | |
| As | 30 | -0.023 | 0.010 | |
| Na | 31 | 336.666 | 0.732 | |
| Mo | 32 | 0.047 | 0.003 | |
| Se | 33 | -0.037 | 0.012 | |
| Ag | 34 | -0.118 | 0.002 | |
| Pb | 35 | 0.022 | 0.003 | |
| [illegible] | 36 | -0.113 | 0.003 | |
| Co | 37 | 0.022 | 0.024 | |

| | | | |
|---|---|---|---|
| B | 38 | 0.640 | 0.010 |
| K | 39 | 4.745 | 0.012 |
| Mn | 40 | 0.049 | 0.008 |
| Sb | 42 | 0.010 | 0.009 |
| V | 43 | 0.015 | 0.001 |
| Be | 44 | -0.009 | 0.001 |
| Tl | 45 | -0.076 | 0.005 |

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Identity 1: R937 Sam N3AP891-5 Identity 2: 10ml-50m-2ml-12ml 12:57 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Mg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -4.399 | 0.430 | -17.810 | -8.116 | -1150.943 | 3.013 | 420.088 | 7817.335 |
| S.D. | 3.081 | 0.078 | 19.163 | 5.645 | 764.326 | 3.197 | 8.147 | 29.398 |
| % R.S.D. | 70.035 | 18.182 | 107.597 | 69.548 | 66.409 | 106.119 | 1.939 | 0.376 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 122.049 | -7.414 | 17.511 | 2.556 | 0.150 | 18.927 | -6.711 | -1.248 |
| S.D. | 366.323 | 0.740 | 1.383 | 0.925 | 2.276 | 2.466 | 2.325 | 0.228 |
| % R.S.D. | 300.144 | 9.978 | 7.901 | 36.178 | 1522.197 | 13.031 | 34.648 | 18.234 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 36.103 | 359.735 | 154.441 | 40.943 | -80.250 | -136.774 | -0.099 | 1591.313 |
| S.D. | 2.567 | 0.959 | 2.603 | 29.393 | 32.904 | 0.000 | 0.091 | 30.543 |
| % R.S.D. | 7.111 | 0.267 | 1.686 | 71.790 | 41.002 | 0.000 | 91.652 | 1.919 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 5498.921 | 39.252 | -32.218 | 204659.749 | 8.537 | 6.830 | -5.283 | 35.032 |
| S.D. | 41.991 | 0.119 | 12.510 | 445.347 | 0.969 | 33.074 | 0.611 | 4.408 |
| % R.S.D. | 0.764 | 0.302 | 38.829 | 0.218 | 11.345 | 484.235 | 11.565 | 12.583 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.227 | 4.562 | 125.986 | 27955.258 | 4.285 | 87.551 | -6.283 | -0.296 |
| S.D. | 0.330 | 0.960 | 1.881 | 71.372 | 0.725 | 45.794 | 0.778 | 0.205 |
| % R.S.D. | 14.804 | 21.044 | 1.493 | 0.255 | 16.919 | 52.306 | 12.383 | 69.290 |

| | Tl (ppb) |
|---|---|
| Mean | -112.513 |
| S.D. | 36.158 |
| % R.S.D. | 32.136 |

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Corrected Counts Statistics 1:04 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 4.675 | 0.018 | |
| | 2 | 51.072 | 0.306 | |
| Sr | 3 | 0.543 | 0.031 | |
| Ta | 5 | 1.506 | 0.020 | |
| Hg | 6 | 6.441 | 0.039 | |
| Sn | 7 | 4.291 | 0.024 | |
| Si | 8 | 5.062 | 0.010 | |
| Al | 9 | 3.390 | 0.022 | |
| W | 10 | 6.247 | 0.079 | |
| Zn | 11 | 23.907 | 0.104 | |
| Cu | 12 | 4.365 | 0.017 | |
| Li | 14 | 19.925 | 0.120 | |
| Co | 15 | 8.560 | 0.027 | |
| Ni | 16 | 4.293 | 0.017 | |
| La | 17 | 0.251 | 0.002 | |
| Eu | 18 | 15.586 | 0.087 | |
| Fe | 19 | 3.984 | 0.008 | |
| Ca | 20 | 32.025 | 0.189 | |
| Cr | 21 | 2.680 | 0.018 | |
| Nd | 22 | 2.573 | 0.033 | |
| Ce | 24 | 0.428 | 0.012 | |
| Sm | 25 | 0.154 | 0.010 | |
| Ba | 26 | 33.580 | 0.190 | |
| P | 27 | 0.316 | 0.008 | |
| S | 28 | 1.077 | 0.010 | |
| Mg | 29 | 5.666 | 0.032 | |
| As | 30 | 0.829 | 0.010 | |
| | 31 | 5.918 | 0.027 | |
| | 32 | 6.545 | 0.010 | |
| Se | 33 | 0.365 | 0.017 | |
| Ag | 34 | 3.116 | 0.012 | |
| Pb | 35 | 0.534 | 0.014 | |
| Ti | 36 | 7.401 | 0.040 | |
| Cd | 37 | 46.478 | 0.407 | |
| Mn | 38 | 8.973 | 0.048 | |
| K | 39 | 0.145 | 0.005 | |
| Mo | 40 | 10.102 | 0.043 | |
| Sb | 42 | 0.167 | 0.006 | |
| V | 43 | 2.912 | 0.017 | |
| Be | 44 | 10.753 | 0.064 | |
| Tl | 45 | 0.071 | 0.007 | |

Identity 1: R938 Blg.STD 10ml-50 Identity 2: 1B48Z,2B48AA,3B48AA 1:06 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 2046.239 | 1996.382 | 597.822 | 902.546 | 275490.566 | 947.790 | 3479.259 | 1205.839 |
| %R. | 7.737 | 11.966 | 31.040 | 11.613 | 2190.305 | 5.184 | 6.705 | 8.985 |
| S.D. | 0.378 | 0.599 | 5.192 | 1.287 | 0.795 | 0.547 | 0.193 | 0.745 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -191509.962 | 2018.893 | 977.470 | 2010.863 | 1920.516 | 990.170 | 1026.959 | 1028.396 |
| S.D. | 2425.699 | 8.937 | 3.741 | 12.116 | 5.973 | 3.790 | 8.383 | 5.683 |
| % R.S.D. | 1.267 | 0.443 | 0.383 | 0.603 | 0.311 | 0.383 | 0.816 | 0.553 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1263.500 | 5249.036 | 1066.131 | 1069.203 | 1043.598 | 479.810 | 2002.188 | 1865.815 |
| S.D. | 2.600 | 31.205 | 7.061 | 14.629 | 31.744 | 27.862 | 11.311 | 50.048 |
| % R.S.D. | 0.206 | 0.594 | 0.662 | 1.368 | 3.042 | 5.807 | 0.565 | 2.682 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1108.404 | 1159.885 | 994.064 | 3547.595 | 1966.173 | 910.643 | 982.570 | 931.863 |
| S.D. | 10.547 | 6.577 | 11.875 | 16.455 | 3.136 | 46.697 | 3.541 | 23.846 |
| % R.S.D. | 0.952 | 0.567 | 1.195 | 0.464 | 0.159 | 5.128 | 0.360 | 2.559 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 982.153 | 1852.611 | 1739.595 | 1089.131 | 971.867 | 914.019 | 1945.615 | 1913.996 |
| S.D. | 5.206 | 16.209 | 9.287 | 27.601 | 4.132 | 31.663 | 11.461 | 11.298 |
| % R.S.D. | 0.530 | 0.875 | 0.534 | 2.534 | 0.425 | 3.464 | 0.589 | 0.590 |

| | Tl (ppb) |
|---|---|
| Mean | 943.501 |
| S.D. | 52.952 |
| % R.S.D. | 5.612 |

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

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Corrected Counts Statistics 1:10 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.027 | 0.006 | |
| Sr | 2 | 0.018 | 0.005 | |
| Bi | 3 | -0.259 | 0.011 | |
| Ta | 5 | 0.006 | 0.020 | |
| Hg | 6 | 1.539 | 0.014 | |
| Sn | 7 | -0.012 | 0.029 | |
| Si | 8 | 0.731 | 0.017 | |
| Al | 9 | 1.556 | 0.038 | |
| W | 10 | 0.002 | 0.009 | |
| Zn | 11 | 5.792 | 0.018 | |
| Cu | 12 | 2.187 | 0.003 | |
| Li | 14 | 0.003 | 0.006 | |
| Co | 15 | 2.153 | 0.007 | |
| Ni | 16 | 1.998 | 0.005 | |
| La | 17 | -0.004 | 0.001 | |
| Eu | 18 | -0.073 | 0.008 | |
| Fe | 19 | 1.528 | 0.021 | |
| Ca | 20 | 3.471 | 0.006 | |

| | | | |
|---|---|---|---|
| Cr | 21 | 1.222 | 0.005 |
| Nd | 22 | 0.132 | 0.059 |
| Ce | 24 | 0.045 | 0.004 |
| | 25 | -0.032 | 0.009 |
| | 26 | 8.214 | 0.015 |
| P | 27 | 0.011 | 0.001 |
| S | 28 | 0.042 | 0.002 |
| Mg | 29 | 2.350 | 0.004 |
| As | 30 | 0.397 | 0.011 |
| Na | 31 | 0.936 | 0.017 |
| Mo | 32 | 1.574 | 0.015 |
| Se | 33 | 0.154 | 0.016 |
| Ag | 34 | 1.548 | 0.005 |
| Pb | 35 | 0.262 | 0.007 |
| Ti | 36 | 3.560 | 0.008 |
| Cd | 37 | 11.697 | 0.075 |
| B | 38 | 2.352 | 0.009 |
| K | 39 | 0.801 | 0.007 |
| Mn | 40 | 4.949 | 0.026 |
| Sb | 42 | 0.064 | 0.010 |
| V | 43 | 0.733 | 0.003 |
| Be | 44 | 2.584 | 0.007 |
| Tl | 45 | 0.001 | 0.007 |

Identity 1: CCV-3 Identity 2: CCV 1:11 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Mg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 0.589 | 0.300 | -210.364 | 12.077 | -1981.132 | -0.735 | 435.317 | 454.341 |
| S.D. | 2.795 | 0.193 | 10.874 | 11.583 | 813.074 | 6.413 | 11.789 | 15.375 |
| % R.S.D. | 474.560 | 64.342 | 5.169 | 95.909 | 41.041 | 872.745 | 2.708 | 3.384 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 263.674 | 464.629 | 484.320 | 0.404 | 483.568 | 466.889 | 0.001 | -0.022 |
| S.D. | 262.353 | 1.536 | 0.784 | 0.591 | 1.591 | 1.053 | 2.325 | 0.527 |
| % R.S.D. | 99.499 | 0.331 | 0.162 | 146.487 | 0.329 | 0.226 | 170166.197 | 2422.370 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 483.315 | 530.144 | 487.011 | 22.283 | -4.475 | -66.419 | 489.715 | -22.679 |
| S.D. | 6.612 | 0.920 | 1.876 | 26.130 | 9.875 | 25.046 | 0.905 | 3.575 |
| % R.S.D. | 1.368 | 0.174 | 0.385 | 117.267 | 220.697 | 37.710 | 0.185 | 15.763 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 34.143 | 478.285 | 473.053 | 518.277 | 468.620 | 458.010 | 503.663 | 455.422 |
| S.D. | 2.158 | 0.831 | 12.982 | 10.108 | 4.533 | 42.502 | 1.527 | 12.303 |
| % R.S.D. | 6.321 | 0.174 | 2.744 | 1.950 | 0.967 | 9.280 | 0.303 | 2.701 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 478.937 | 468.981 | 457.537 | 4916.581 | 477.450 | 372.962 | 477.480 | 460.993 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| S.D. | 1.001 | 2.999 | 1.677 | 42.251 | 2.484 | 52.879 | 2.166 | 1.283 |
| % R.S.D. | 0.209 | 0.639 | 0.366 | 0.859 | 0.520 | 14.178 | 0.454 | 0.278 |



| | Tl |
|---|---|
| | (ppb) |
| Mean | 435.848 |
| S.D. | 46.741 |
| % R.S.D. | 10.724 |

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Corrected Counts Statistics 1:12 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.014 | 0.004 | |
| Sr | 2 | -0.006 | 0.004 | |
| Bi | 3 | -0.095 | 0.010 | |
| Ta | 5 | -0.005 | 0.010 | |
| Hg | 6 | 1.555 | 0.005 | |
| Ga | 7 | -0.043 | 0.030 | |
| Si | 8 | 0.098 | 0.002 | |
| Al | 9 | 0.398 | 0.003 | |
| W | 10 | -0.072 | 0.010 | |
| Zn | 11 | 0.035 | 0.004 | |
| Cu | 12 | 0.046 | 0.002 | |
| Li | 14 | -0.015 | 0.003 | |
| Co | 15 | 0.003 | 0.012 | |
| Ni | 16 | -0.080 | 0.009 | |
| La | 17 | -0.005 | 0.001 | |
| Eu | 18 | -0.089 | 0.004 | |
| Fe | 19 | 0.004 | 0.003 | |
| Ca | 20 | 0.096 | 0.000 | |
| Cr | 21 | -0.025 | 0.004 | |
| Nd | 22 | -0.043 | 0.049 | |
| Ce | 24 | 0.030 | 0.006 | |
| Sm | 25 | -0.026 | 0.006 | |
| Ba | 26 | -0.005 | 0.008 | |
| P | 27 | 0.016 | 0.001 | |
| S | 28 | 0.023 | 0.004 | |
| Mg | 29 | 0.002 | 0.001 | |
| As | 30 | -0.000 | 0.003 | |
| Na | 31 | 0.069 | 0.009 | |
| Mo | 32 | -0.001 | 0.007 | |
| Se | 33 | -0.040 | 0.001 | |
| Ag | 34 | -0.117 | 0.004 | |
| Pb | 35 | -0.004 | 0.010 | |
| Ti | 36 | -0.111 | 0.005 | |
| Cd | 37 | -0.099 | 0.024 | |
| U | 38 | 0.003 | 0.014 | |
| K | 39 | -0.064 | 0.007 | |
| Mn | 40 | -0.002 | 0.005 | |
| Sb | 42 | 0.007 | 0.007 | |
| V | 43 | 0.026 | 0.001 | |

| | | | |
|---|---|---|---|
| Be | 44 | -0.010 | 0.001 |
| Tl | 45 | -0.065 | 0.006 |

Identity 1: CCB-3 Identity 2: CCB 1:13 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -5.280 | -0.639 | -45.030 | 5.346 | -1075.472 | -7.642 | -9.840 | -19.938 |
| S.D. | 1.587 | 0.158 | 9.792 | 6.028 | 255.241 | 6.551 | 1.217 | 1.084 |
| % R.S.D. | 30.059 | 24.744 | 21.744 | 112.757 | 23.733 | 85.717 | 12.372 | 5.436 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 2528.188 | -29.379 | -0.452 | -1.379 | 1.495 | -6.838 | -4.026 | -1.029 |
| S.D. | 310.625 | 0.325 | 0.453 | 0.303 | 2.691 | 2.027 | 4.650 | 0.231 |
| % R.S.D. | 12.286 | 1.106 | 100.210 | 21.951 | 179.998 | 29.637 | 115.509 | 22.419 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -0.635 | -26.822 | -8.073 | -51.479 | -46.470 | -47.853 | -0.298 | 8.280 |
| S.D. | 0.840 | 0.003 | 1.394 | 21.597 | 15.085 | 16.145 | 0.448 | 3.575 |
| % R.S.D. | 132.299 | 0.010 | 17.272 | 41.952 | 32.460 | 33.739 | 150.111 | 43.176 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 18.554 | -4.110 | -4.996 | -8.905 | -6.026 | 36.962 | -4.876 | -11.094 |
| S.D. | 4.310 | 0.119 | 3.029 | 5.242 | 2.173 | 1.878 | 1.235 | 16.892 |
| % R.S.D. | 23.231 | 2.887 | 60.628 | 58.873 | 36.056 | 5.082 | 25.322 | 152.268 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -1.878 | -0.252 | 2.646 | -135.419 | -0.452 | 71.792 | 0.904 | -0.356 |
| S.D. | 0.619 | 0.970 | 2.768 | 38.888 | 0.436 | 36.771 | 0.674 | 0.103 |
| % R.S.D. | 32.971 | 385.384 | 104.594 | 28.717 | 100.875 | 51.219 | 74.540 | 28.870 |

| | Tl (ppb) |
|---|---|
| Mean | -35.887 |
| S.D. | 39.998 |
| % R.S.D. | 111.456 |

Corrected Counts Statistics 1:15 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| | 1 | 0.030 | 0.002 | |
| Sr | 2 | 0.122 | 0.002 | |

| | | | |
|---|---|---|---|
| Bi | 3 | -0.110 | 0.011 |
| Ta | 5 | 0.006 | 0.015 |
| Hg | 6 | 2.009 | 0.016 |
| Sn | 7 | 6.107 | 0.040 |
| Si | 8 | 0.536 | 0.010 |
| Al | 9 | 600.045 | 2.035 |
| W | 10 | -0.043 | 0.012 |
| Zn | 11 | 0.282 | 0.007 |
| Cu | 12 | 0.058 | 0.006 |
| Li | 14 | -0.013 | 0.004 |
| Co | 15 | -0.004 | 0.010 |
| Ni | 16 | -0.036 | 0.012 |
| La | 17 | -0.043 | 0.001 |
| Eu | 18 | 0.074 | 0.005 |
| Fe | 19 | 305.550 | 0.410 |
| Ca | 20 | 1147.023 | 2.650 |
| Cr | 21 | 0.027 | 0.004 |
| Nd | 22 | 3.624 | 0.045 |
| Ce | 24 | 0.023 | 0.005 |
| Sm | 25 | -8.651 | 0.005 |
| Ba | 26 | 0.046 | 0.004 |
| P | 27 | 0.017 | 0.002 |
| S | 28 | 2.326 | 0.015 |
| Mg | 29 | 951.072 | 1.751 |
| As | 30 | 0.105 | 0.017 |
| Na | 31 | 0.122 | 0.012 |
| Mo | 32 | -0.004 | 0.008 |
| Se | 33 | -0.058 | 0.019 |
| Ag | 34 | -0.110 | 0.001 |
| Pb | 35 | -0.130 | 0.008 |
| Ti | 36 | -0.081 | 0.004 |
| Cd | 37 | 0.423 | 0.035 |
| B | 38 | -0.471 | 0.008 |
| K | 39 | -0.036 | 0.004 |
| Mn | 40 | 1.714 | 0.010 |
| Sb | 42 | 0.011 | 0.007 |
| V | 43 | 0.029 | 0.003 |
| Be | 44 | -0.000 | 0.003 |
| Tl | 45 | -0.079 | 0.008 |

Identity 1: ICSA-F Identity 2: ICSA 1:15 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1.909 | 4.366 | -60.488 | 11.879 | 24641.509 | 1348.201 | 298.256 | 245646.278 |
| S.D. | 0.916 | 0.081 | 10.669 | 8.627 | 884.179 | 8.736 | 7.179 | 833.737 |
| % R.S.D. | 47.984 | 1.864 | 17.638 | 72.627 | 3.588 | 0.648 | 2.407 | 0.339 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1637.602 | -8.157 | 2.341 | -1.211 | -0.149 | 3.118 | -157.063 | 9.654 |
| S.D. | 354.571 | 0.601 | 1.287 | 0.354 | 2.178 | 2.701 | 2.325 | 0.348 |
| % R.S.D. | 21.652 | 7.363 | 55.006 | 29.266 | 1457.011 | 86.616 | 1.480 | 3.600 |

| | Fe | Ca | Cr | Nd | Ce | Sm | Ba | P |
|---|---|---|---|---|---|---|---|---|
| | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Mean | 97047.356 | 189562.362 | 12.837 | 195.041 | -63.817 | -25333.673 | 2.723 | 18.599 |
| S.D. | 130.203 | 438.101 | 1.394 | 22.978 | 13.511 | 13.854 | 0.238 | 9.458 |
| % R.S.D. | 0.134 | 0.231 | 10.861 | 11.781 | 21.171 | 0.055 | 8.759 | 50.852 |

| | S | Mg | As | Na | Mo | Se | Ag | Pb |
|---|---|---|---|---|---|---|---|---|
| | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Mean | 837.888 | 195447.870 | 121.800 | 23.727 | -7.030 | -18.230 | -2.737 | -231.214 |
| S.D. | 12.145 | 359.824 | 20.533 | 7.047 | 2.340 | 51.802 | 0.176 | 13.606 |
| % R.S.D. | 1.449 | 0.184 | 16.858 | 29.702 | 33.289 | 284.162 | 6.443 | 5.884 |

| | Ti | Cd | B | K | Mn | Sb | V | Be |
|---|---|---|---|---|---|---|---|---|
| | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Mean | 2.052 | 20.501 | -89.003 | 32.008 | 31.197 | 91.053 | 2.701 | 1.304 |
| S.D. | 0.496 | 1.407 | 1.553 | 23.604 | 0.952 | 36.896 | 1.696 | 0.448 |
| % R.S.D. | 24.166 | 6.863 | 1.745 | 73.744 | 3.052 | 40.521 | 62.786 | 34.316 |

| | Tl |
|---|---|
| | (ppb) |
| Mean | -136.459 |
| S.D. | 56.107 |
| % R.S.D. | 41.116 |

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Corrected Counts Statistics 1:17 PM January 22, 1992
Task name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.016 | 0.020 | |
| Sr | 2 | 0.111 | 0.015 | |
| Bi | 3 | -0.177 | 0.028 | |
| Ta | 5 | -0.018 | 0.034 | |
| Mg | 6 | 1.999 | 0.007 | |
| Sn | 7 | 6.129 | 0.065 | |
| Si | 8 | 0.524 | 0.022 | |
| Al | 9 | 601.247 | 3.655 | |
| W | 10 | -0.003 | 0.035 | |
| Zn | 11 | 11.729 | 0.163 | |
| Cu | 12 | 2.232 | 0.029 | |
| Li | 14 | -0.023 | 0.011 | |
| Co | 15 | 2.150 | 0.050 | |
| Ni | 16 | 4.125 | 0.074 | |
| La | 17 | -0.046 | 0.001 | |
| Eu | 18 | 0.062 | 0.026 | |
| Fe | 19 | 305.603 | 4.189 | |
| Ca | 20 | 1146.912 | 9.848 | |
| Cr | 21 | 1.302 | 0.026 | |
| Nd | 22 | 3.531 | 0.167 | |
| Ce | 24 | 0.019 | 0.029 | |
| | 25 | -8.716 | 0.031 | |
| | 26 | 8.546 | 0.089 | |

| | | | |
|---|---|---|---|
| P | 27 | 0.025 | 0.004 |
| S | 28 | 2.334 | 0.061 |
| Mg | 29 | 949.803 | 11.551 |
| As | 30 | 0.096 | 0.009 |
| Na | 31 | 0.106 | 0.047 |
| Mo | 32 | -0.005 | 0.012 |
| Se | 33 | 0.003 | 0.017 |
| Ag | 34 | 3.262 | 0.043 |
| Pb | 35 | 0.444 | 0.027 |
| Ti | 36 | -0.075 | 0.019 |
| Cd | 37 | 24.517 | 0.636 |
| B | 38 | -0.490 | 0.020 |
| K | 39 | -0.048 | 0.022 |
| Mn | 40 | 6.786 | 0.098 |
| Sb | 42 | -0.010 | 0.014 |
| V | 43 | 0.751 | 0.021 |
| Be | 44 | 2.745 | 0.038 |
| Tl | 45 | -0.085 | 0.018 |

Identity 1: ICSAB-F Identity 2: ICSAB 1:17 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -4.399 | 3.936 | -127.697 | -2.177 | 24056.604 | 1353.051 | 289.821 | 246138.719 |
| S.D. | 8.803 | 0.587 | 28.198 | 20.378 | 409.482 | 14.424 | 15.113 | 1497.529 |
| % R.S.D. | 200.099 | 14.912 | 22.082 | 935.968 | 1.702 | 1.066 | 5.215 | 0.608 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 427.281 | 973.994 | 494.585 | -2.153 | 482.970 | 952.017 | -169.145 | 8.888 |
| S.D. | 1081.904 | 13.986 | 6.571 | 1.116 | 11.300 | 16.807 | 2.325 | 1.714 |
| % R.S.D. | 253.207 | 1.436 | 1.329 | 51.846 | 2.340 | 1.765 | 1.375 | 19.287 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 97064.295 | 189543.066 | 518.773 | 154.283 | -76.598 | -25523.241 | 509.511 | 64.006 |
| S.D. | 1330.543 | 1627.846 | 10.241 | 62.500 | 79.443 | 89.733 | 5.307 | 25.024 |
| % R.S.D. | 1.371 | 0.859 | 1.974 | 40.510 | 103.714 | 0.352 | 1.042 | 39.096 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 846.318 | 195187.149 | 111.158 | 13.593 | -7.131 | 36.865 | 1027.375 | 774.217 |
| S.D. | 52.117 | 2373.868 | 11.035 | 28.838 | 3.492 | 45.817 | 13.261 | 46.881 |
| % R.S.D. | 6.158 | 1.216 | 9.927 | 212.150 | 48.973 | 124.285 | 1.291 | 6.055 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 2.795 | 979.003 | -92.682 | -38.078 | 521.143 | -15.758 | 489.384 | 489.690 |
| S.D. | 2.530 | 25.305 | 3.922 | 131.291 | 8.315 | 73.791 | 13.825 | 6.762 |
| % R.S.D. | 90.531 | 2.585 | 4.232 | 344.798 | 1.595 | 468.284 | 2.825 | 1.381 |

| | Tl (ppb) |
|---|---|

| | |
|---|---|
| Mean | -179.562 |
| S.D. | 125.870 |
| 2 R.S.D. | 70.098 |

Corrected Counts Statistics 1:19 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | 2R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.024 | 0.009 | |
| Sr | 2 | 0.044 | 0.007 | |
| Bi | 3 | 0.002 | 0.027 | |
| Ta | 5 | 0.006 | 0.006 | |
| Hg | 6 | 1.530 | 0.009 | |
| Sn | 7 | 0.016 | 0.033 | |
| Si | 8 | 0.118 | 0.008 | |
| Al | 9 | 0.826 | 0.034 | |
| W | 10 | 0.000 | 0.016 | |
| Zn | 11 | 0.335 | 0.004 | |
| Cu | 12 | 0.060 | 0.009 | |
| Li | 14 | 0.002 | 0.009 | |
| Co | 15 | 0.009 | 0.016 | |
| Ni | 16 | -0.034 | 0.016 | |
| La | 17 | -0.004 | 0.001 | |
| | 18 | -0.067 | 0.009 | |
| | 19 | 0.269 | 0.023 | |
| Ca | 20 | 9.134 | 0.027 | |
| Cr | 21 | 0.003 | 0.002 | |
| Nd | 22 | 0.052 | 0.102 | |
| Ce | 24 | 0.048 | 0.011 | |
| Sm | 25 | -0.064 | 0.015 | |
| Ba | 26 | 0.027 | 0.011 | |
| P | 27 | 0.011 | 0.003 | |
| S | 28 | 0.033 | 0.003 | |
| Mg | 29 | 0.862 | 0.018 | |
| As | 30 | -0.013 | 0.003 | |
| Na | 31 | 0.096 | 0.021 | |
| Mo | 32 | 0.003 | 0.006 | |
| Se | 33 | -0.036 | 0.014 | |
| Ag | 34 | -0.101 | 0.005 | |
| Pb | 35 | -0.006 | 0.016 | |
| Ti | 36 | -0.089 | 0.008 | |
| Cd | 37 | -0.049 | 0.033 | |
| N | 38 | 0.012 | 0.014 | |
| K | 39 | -0.049 | 0.007 | |
| Mn | 40 | 0.027 | 0.004 | |
| Sb | 42 | -0.022 | 0.018 | |
| V | 43 | 0.026 | 0.003 | |
| Be | 44 | -0.004 | 0.001 | |
| Tl | 45 | -0.055 | 0.010 | |

Identity 1: XXX Identity 2: Rinse 1:20 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -0.878 | 1.342 | 52.087 | 11.681 | -2452.830 | 5.364 | 4.217 | 155.407 |
| S.D. | 3.912 | 0.277 | 27.076 | 3.377 | 494.541 | 7.187 | 5.753 | 14.091 |
| % R.S.D. | 445.508 | 20.664 | 51.983 | 28.912 | 20.162 | 133.988 | 136.423 | 9.067 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 327.518 | -3.639 | 2.794 | 0.303 | 2.841 | 3.574 | -2.683 | 0.416 |
| S.D. | 476.693 | 0.325 | 2.042 | 0.904 | 3.481 | 3.622 | 4.650 | 0.610 |
| % R.S.D. | 145.547 | 8.928 | 73.098 | 298.763 | 122.559 | 101.328 | 173.293 | 146.658 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 83.429 | 1467.156 | 3.044 | -20.109 | 2.829 | -159.249 | 1.610 | -20.615 |
| S.D. | 7.383 | 4.500 | 0.917 | 45.243 | 29.541 | 44.779 | 0.659 | 21.449 |
| % R.S.D. | 8.850 | 0.307 | 30.122 | 224.986 | 1044.170 | 28.119 | 40.965 | 104.043 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 15.868 | 172.626 | -19.837 | 7.513 | -4.921 | 44.559 | -0.090 | -14.013 |
| S.D. | 2.723 | 3.729 | 3.475 | 12.817 | 1.914 | 38.376 | 1.400 | 28.800 |
| % R.S.D. | 17.160 | 2.160 | 17.515 | 170.607 | 38.883 | 86.124 | 1560.272 | 205.523 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 0.917 | 1.724 | 4.453 | -47.812 | 1.377 | -82.295 | 0.904 | 0.712 |
| S.D. | 0.983 | 1.320 | 2.690 | 41.436 | 0.337 | 94.164 | 1.783 | 0.103 |
| % R.S.D. | 107.222 | 76.559 | 60.402 | 86.664 | 24.487 | 114.421 | 197.214 | 14.433 |

| | Tl (ppb) |
|---|---|
| Mean | 38.346 |
| S.D. | 74.771 |
| % R.S.D. | 194.992 |

Corrected Counts Statistics 1:22 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.015 | 0.001 | |
| Sr | 2 | 0.004 | 0.001 | |
| Bi | 3 | -0.031 | 0.011 | |
| Ta | 5 | 0.001 | 0.006 | |
| Hg | 6 | 1.543 | 0.027 | |
| Sn | 7 | -0.030 | 0.023 | |
| Si | 8 | 0.110 | 0.004 | |

| | | | |
|---|---|---|---|
| Al | 9 | 0.356 | 0.046 |
| W | 10 | 0.021 | 0.057 |
| Zn | 11 | 0.514 | 0.005 |
| | 12 | 0.264 | 0.003 |
| | 14 | -0.016 | 0.009 |
| Co | 15 | 0.442 | 0.014 |
| Ni | 16 | 0.259 | 0.014 |
| La | 17 | -0.001 | 0.001 |
| Eu | 18 | -0.069 | 0.003 |
| Fe | 19 | 0.017 | 0.013 |
| Ca | 20 | 0.155 | 0.001 |
| Cr | 21 | 0.047 | 0.011 |
| Nd | 22 | 0.029 | 0.036 |
| Ce | 24 | 0.037 | 0.002 |
| Sm | 25 | -0.013 | 0.004 |
| Ba | 26 | -0.002 | 0.003 |
| P | 27 | 0.018 | 0.003 |
| S | 28 | 0.021 | 0.008 |
| Mg | 29 | 0.008 | 0.001 |
| As | 30 | 0.010 | 0.012 |
| Na | 31 | 0.053 | 0.016 |
| Mo | 32 | 0.010 | 0.012 |
| Sn | 33 | -0.059 | 0.002 |
| Ag | 34 | -0.050 | 0.003 |
| Pb | 35 | -0.006 | 0.004 |
| Ti | 36 | -0.108 | 0.002 |
| Cd | 37 | 0.102 | 0.052 |
| B | 38 | 0.005 | 0.015 |
| K | 39 | -0.043 | 0.009 |
| | 40 | 0.305 | 0.007 |
| | 42 | 0.032 | 0.007 |
| V | 43 | 0.160 | 0.001 |
| Be | 44 | 0.046 | 0.001 |
| Tl | 45 | -0.077 | 0.006 |

Identity 1: CRI-F Identity 2: CRI 1:22 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -4.693 | -0.222 | 19.155 | 8.909 | -1754.717 | -4.850 | -1.640 | -37.145 |
| S.D. | 0.254 | 0.023 | 10.669 | 3.613 | 1545.328 | 5.029 | 2.661 | 18.846 |
| % R.S.D. | 5.415 | 10.189 | 55.700 | 40.550 | 88.067 | 103.685 | 162.255 | 50.735 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -317.402 | 11.748 | 48.833 | -1.514 | 100.018 | 70.533 | 12.083 | 0.263 |
| S.D. | 1761.794 | 0.393 | 0.654 | 0.882 | 3.045 | 3.275 | 2.325 | 0.228 |
| % R.S.D. | 555.067 | 3.347 | 1.338 | 58.246 | 3.044 | 4.643 | 19.243 | 86.555 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| | 3.388 | -17.069 | 20.777 | -19.363 | -26.385 | -10.721 | -0.139 | 22.727 |
| S.D. | 4.145 | 0.097 | 4.245 | 15.911 | 5.478 | 12.778 | 0.158 | 18.575 |

| | | | |
|---|---|---|---|
| Co | 15 | 42.052 | 0.395 |
| Ni | 16 | 20.789 | 0.219 |
| La | 17 | -0.006 | 0.001 |
| Eu | 18 | -0.078 | 0.010 |
| Fe | 19 | 15.010 | 0.128 |
| Ca | 20 | 56.897 | 0.439 |
| Cr | 21 | 12.281 | 0.107 |
| Nd | 22 | 0.256 | 0.038 |
| Ce | 24 | 0.067 | 0.013 |
| Sm | 25 | -0.357 | 0.010 |
| Ba | 26 | 163.213 | 1.219 |
| P | 27 | 0.207 | 0.008 |
| S | 28 | 0.137 | 0.005 |
| Mg | 29 | 23.184 | 0.194 |
| As | 30 | 0.010 | 0.016 |
| Na | 31 | 16.152 | 0.008 |
| Mo | 32 | 0.015 | 0.009 |
| Se | 33 | 0.403 | 0.022 |
| Ag | 34 | 1.094 | 0.011 |
| Pb | 35 | 0.001 | 0.008 |
| Ti | 36 | -0.121 | 0.010 |
| Cd | 37 | 231.510 | 2.654 |
| B | 38 | 24.340 | 0.146 |
| K | 39 | 0.814 | 0.007 |
| Mn | 40 | 48.812 | 0.460 |
| Sb | 42 | 0.903 | 0.019 |
| V | 43 | 0.018 | 0.005 |
| Be | 44 | -0.008 | 0.002 |
| Tl | 45 | -0.060 | 0.005 |

Identity 1: SST4 STD 1848AC Identity 2: Direct 1:29 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Mg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -28.020 | 9653.347 | -78.970 | -7.522 | -528.302 | 4762.465 | -32.567 | -144.619 |
| S.D. | 2.931 | 67.007 | 13.613 | 8.322 | 457.523 | 33.290 | 1.074 | 10.302 |
| % R.S.D. | 10.459 | 0.694 | 17.238 | 110.626 | 86.603 | 0.699 | 3.297 | 7.124 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -20566.982 | 9586.985 | 4741.830 | 9771.255 | 9431.174 | 4751.562 | -8.053 | -0.350 |
| S.D. | 1199.506 | 76.955 | 27.398 | 20.336 | 88.469 | 49.937 | 4.650 | 0.658 |
| % R.S.D. | 5.832 | 0.803 | 0.578 | 0.208 | 0.938 | 1.051 | 57.745 | 187.890 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4765.705 | 9353.341 | 4877.786 | 12.942 | 56.693 | -1020.122 | 9731.463 | 1195.038 |
| S.D. | 40.539 | 72.438 | 42.518 | 16.539 | 35.745 | 28.772 | 72.690 | 51.927 |
| % R.S.D. | 0.851 | 0.774 | 0.872 | 127.797 | 63.050 | 2.820 | 0.747 | 4.345 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 59.493 | 4759.830 | 9.696 | 9770.607 | -1.205 | 156.022 | 365.073 | -2.335 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| % R.S.D. | 122.353 | 0.570 | 20.432 | 82.173 | 20.760 | 119.184 | 113.389 | 81.732 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 16.672 | -3.014 | 7.854 | -18.228 | -2.611 | -21.852 | 15.592 | -14.013 |
| S.D. | 8.088 | 0.119 | 14.952 | 9.754 | 3.466 | 4.757 | 0.769 | 6.632 |
| % R.S.D. | 48.513 | 3.936 | 190.367 | 53.511 | 132.739 | 21.767 | 4.931 | 47.324 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -1.528 | 7.744 | 3.033 | -12.769 | 29.216 | 203.116 | 90.964 | 9.546 |
| S.D. | 0.227 | 2.054 | 2.854 | 52.347 | 0.685 | 36.771 | 0.389 | 0.178 |
| % R.S.D. | 14.846 | 26.520 | 94.099 | 409.954 | 2.345 | 18.103 | 0.428 | 1.863 |

| | Tl (ppb) |
|---|---|
| Mean | -119.697 |
| S.D. | 43.302 |
| % R.S.D. | 36.176 |

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Corrected Counts Statistics 1:24 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| | 1 | 0.011 | 0.007 | |
| Sr | 2 | 0.005 | 0.006 | |
| Bi | 3 | -0.233 | 0.006 | |
| Ta | 5 | 0.042 | 0.016 | |
| Hg | 6 | 1.546 | 0.004 | |
| Sn | 7 | 0.029 | 0.025 | |
| Si | 8 | 0.728 | 0.004 | |
| Al | 9 | 1.493 | 0.010 | |
| W | 10 | 0.057 | 0.008 | |
| Zn | 11 | 5.818 | 0.022 | |
| Cu | 12 | 2.202 | 0.015 | |
| Li | 14 | -0.013 | 0.003 | |
| Co | 15 | 2.153 | 0.012 | |
| Ni | 16 | 2.096 | 0.019 | |
| La | 17 | -0.003 | 0.001 | |
| Eu | 18 | -0.084 | 0.010 | |
| Fe | 19 | 1.540 | 0.047 | |
| Ca | 20 | 3.516 | 0.028 | |
| Cr | 21 | 1.252 | 0.006 | |
| Nd | 22 | -0.007 | 0.084 | |
| Ce | 24 | 0.031 | 0.016 | |
| Sm | 25 | -0.041 | 0.013 | |
| Ba | 26 | 8.264 | 0.050 | |
| P | 27 | 0.013 | 0.003 | |
| S | 28 | 0.040 | 0.018 | |
| | 29 | 2.373 | 0.015 | |
| | 30 | 0.394 | 0.017 | |
| Na | 31 | 0.859 | 0.021 | |

| | | | |
|---|---|---|---|
| Mo | 32 | 1.578 | 0.013 |
| Se | 33 | 0.169 | 0.006 |
| Ag | 34 | 1.552 | 0.003 |
| Pb | 35 | 0.276 | 0.020 |
| Ti | 36 | 3.587 | 0.017 |
| Cd | 37 | 11.936 | 0.075 |
| B | 38 | 2.376 | 0.020 |
| K | 39 | 0.803 | 0.005 |
| Mn | 40 | 5.006 | 0.033 |
| Sb | 42 | 0.074 | 0.007 |
| V | 43 | 0.741 | 0.003 |
| Be | 44 | 2.612 | 0.022 |
| Tl | 45 | 0.009 | 0.005 |

---

Identity 1: CCV-4 Identity 2: CCV 1:24 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Mg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -6.453 | -0.195 | -184.488 | 33.457 | -1547.170 | 8.230 | 433.209 | 428.530 |
| S.D. | 2.931 | 0.235 | 6.132 | 9.656 | 235.660 | 5.538 | 2.841 | 3.894 |
| % R.S.D. | 45.413 | 120.001 | 3.324 | 28.861 | 15.232 | 67.285 | 0.656 | 0.909 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -1425.230 | 466.859 | 487.641 | -1.177 | 483.717 | 489.310 | 1.344 | -0.744 |
| S.D. | 245.639 | 1.900 | 3.299 | 0.303 | 2.694 | 4.260 | 2.325 | 0.624 |
| % R.S.D. | 17.235 | 0.407 | 0.677 | 25.714 | 0.557 | 0.871 | 173.029 | 83.879 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 487.338 | 537.615 | 499.054 | -39.340 | -43.732 | -93.779 | 492.697 | -10.296 |
| S.D. | 14.953 | 4.557 | 2.211 | 37.276 | 42.460 | 36.887 | 2.996 | 15.582 |
| % R.S.D. | 3.068 | 0.848 | 0.443 | 94.753 | 97.092 | 39.334 | 0.608 | 151.347 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 32.282 | 483.148 | 469.446 | 471.660 | 469.624 | 497.527 | 504.987 | 479.944 |
| S.D. | 19.589 | 3.146 | 20.721 | 12.999 | 3.815 | 16.708 | 0.769 | 34.250 |
| % R.S.D. | 60.680 | 0.651 | 4.414 | 2.756 | 0.812 | 3.358 | 0.152 | 7.136 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 482.518 | 478.515 | 462.248 | 4928.262 | 482.983 | 425.492 | 482.646 | 465.914 |
| S.D. | 2.164 | 2.979 | 3.845 | 29.396 | 3.192 | 35.756 | 1.783 | 3.837 |
| % R.S.D. | 0.449 | 0.623 | 0.832 | 0.596 | 0.661 | 8.404 | 0.369 | 0.824 |

| | Tl (ppb) |
|---|---|
| Mean | 493.318 |
| S.D. | 36.864 |
| % R.S.D. | 7.473 |

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Corrected Counts Statistics 1:26 PM January 22, 1992
k name : ALL_SIM
aple Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | 0.009 | 0.003 | |
| Sr | 2 | -0.007 | 0.002 | |
| Bi | 3 | -0.070 | 0.017 | |
| Ta | 5 | -0.008 | 0.007 | |
| Hg | 6 | 1.525 | 0.002 | |
| Sn | 7 | -0.005 | 0.032 | |
| Si | 8 | 0.107 | 0.026 | |
| Al | 9 | 0.344 | 0.016 | |
| W | 10 | -0.041 | 0.003 | |
| Zn | 11 | 0.045 | 0.005 | |
| Cu | 12 | 0.040 | 0.005 | |
| Li | 14 | -0.019 | 0.008 | |
| Co | 15 | -0.016 | 0.012 | |
| Ni | 16 | -0.055 | 0.004 | |
| La | 17 | -0.004 | 0.001 | |
| Eu | 18 | -0.094 | 0.004 | |
| Fe | 19 | 0.011 | 0.012 | |
| Ca | 20 | 0.177 | 0.001 | |
| Cr | 21 | -0.006 | 0.006 | |
| Nd | 22 | 0.017 | 0.077 | |
| | 24 | 0.021 | 0.004 | |
| | 25 | -0.030 | 0.006 | |
| Ba | 26 | -0.004 | 0.005 | |
| P | 27 | 0.015 | 0.001 | |
| S | 28 | 0.021 | 0.011 | |
| Mg | 29 | 0.004 | 0.001 | |
| As | 30 | -0.010 | 0.010 | |
| Na | 31 | 0.055 | 0.014 | |
| Mo | 32 | 0.009 | 0.005 | |
| Se | 33 | -0.042 | 0.005 | |
| Ag | 34 | -0.123 | 0.004 | |
| Pb | 35 | 0.001 | 0.005 | |
| Ti | 36 | -0.116 | 0.007 | |
| Cd | 37 | -0.119 | 0.060 | |
| B | 38 | 0.002 | 0.024 | |
| K | 39 | -0.050 | 0.007 | |
| Mn | 40 | 0.004 | 0.005 | |
| Sb | 42 | 0.008 | 0.004 | |
| V | 43 | 0.016 | 0.002 | |
| Be | 44 | -0.008 | 0.001 | |
| Tl | 45 | -0.070 | 0.005 | |

Identity 1: CCB-4 Identity 2: CCB 1:27 PM January 22, 1992
Task name : ALL_SIM
ple Weight : 1.0000 Solution Volume : 1.00
eak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -7.627 | -0.665 | -20.499 | 3.762 | -2754.717 | 0.661 | -3.514 | -42.061 |
| S.D. | 1.345 | 0.078 | 16.637 | 4.171 | 98.041 | 6.958 | 18.261 | 6.439 |
| % R.S.D. | 17.630 | 11.765 | 81.160 | 110.889 | 3.559 | 1052.171 | 519.615 | 15.308 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1596.727 | -28.492 | -1.735 | -1.749 | -2.766 | -1.138 | 0.001 | -1.357 |
| S.D. | 98.718 | 0.393 | 1.140 | 0.764 | 2.719 | 0.994 | 2.325 | 0.265 |
| % R.S.D. | 6.183 | 1.380 | 65.687 | 43.684 | 98.306 | 87.354 | 170166.349 | 19.558 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1.588 | -13.502 | -0.529 | -24.852 | -70.207 | -59.579 | -0.258 | 6.216 |
| S.D. | 3.745 | 0.091 | 2.326 | 34.045 | 10.955 | 16.145 | 0.310 | 3.579 |
| % R.S.D. | 235.789 | 0.675 | 439.512 | 136.992 | 15.604 | 27.099 | 119.911 | 57.513 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 16.641 | -3.699 | -16.227 | -17.417 | -3.013 | 28.839 | -6.709 | -2.335 |
| S.D. | 12.015 | 0.237 | 12.529 | 8.300 | 1.594 | 14.262 | 1.235 | 8.027 |
| % R.S.D. | 72.202 | 6.415 | 77.207 | 47.654 | 52.917 | 49.453 | 18.403 | 343.696 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -2.576 | -1.047 | 2.517 | -49.759 | 0.171 | 77.045 | -5.609 | -0.119 |
| S.D. | 0.917 | 2.372 | 4.659 | 38.888 | 0.443 | 21.012 | 1.029 | 0.103 |
| % R.S.D. | 35.593 | 226.462 | 185.095 | 78.153 | 259.542 | 27.272 | 18.348 | 86.629 |

| | Tl (ppb) |
|---|---|
| Mean | -69.411 |
| S.D. | 33.180 |
| % R.S.D. | 47.803 |

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Corrected Counts Statistics 1:28 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | -0.038 | 0.007 | |
| Sr | 2 | 246.915 | 1.714 | |
| Bi | 3 | -0.128 | 0.014 | |
| Ta | 5 | -0.027 | 0.014 | |
| Hg | 6 | 1.564 | 0.008 | |
| Sn | 7 | 21.395 | 0.151 | |
| Si | 8 | 0.066 | 0.002 | |
| Al | 9 | 0.094 | 0.025 | |
| W | 10 | 0.680 | 0.039 | |
| Zn | 11 | 112.114 | 0.897 | |
| Cu | 12 | 20.990 | 0.121 | |
| Li | 14 | 96.827 | 0.202 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| S.D. | 5.943 | 39.918 | 18.676 | 4.977 | 2.574 | 50.752 | 3.379 | 13.681 |
| % R.S.D. | 9.990 | 0.839 | 192.625 | 0.051 | 213.616 | 32.529 | 0.926 | 585.773 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -3.188 | 9213.408 | 4714.972 | 4992.507 | 4708.141 | 4780.206 | -4.262 | -0.119 |
| S.D. | 1.325 | 105.564 | 28.363 | 38.000 | 44.369 | 101.904 | 3.038 | 0.370 |
| % R.S.D. | 41.573 | 1.146 | 0.602 | 0.761 | 0.942 | 2.132 | 71.291 | 312.344 |

| | Tl (ppb) |
|---|---|
| Mean | -2.362 |
| S.D. | 32.393 |
| % R.S.D. | 1371.276 |

WHC-SD-WM-DP-025
ADDENDUM 9 REV 0

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Corrected Counts Statistics 1:31 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| Zr | 1 | -0.140 | 0.003 | |
| Sr | 2 | 0.005 | 0.002 | |
| Bi | 3 | 4.958 | 0.041 | |
| Ta | 5 | -0.046 | 0.015 | |
| U | 6 | 1.565 | 0.019 | |
| | 7 | -0.059 | 0.024 | |
| Si | 8 | 0.003 | 0.003 | |
| Al | 9 | 1.249 | 0.029 | |
| W | 10 | -0.027 | 0.025 | |
| Zn | 11 | 0.099 | 0.005 | |
| Cu | 12 | 0.101 | 0.002 | |
| Li | 14 | -0.005 | 0.009 | |
| Co | 15 | -0.029 | 0.008 | |
| Ni | 16 | -0.070 | 0.014 | |
| La | 17 | 1.286 | 0.008 | |
| Eu | 18 | 78.008 | 0.372 | |
| Fe | 19 | 0.022 | 0.008 | |
| Ca | 20 | 0.852 | 0.005 | |
| Cr | 21 | 0.008 | 0.002 | |
| Nd | 22 | 11.901 | 0.034 | |
| Ce | 24 | 1.920 | 0.010 | |
| Sm | 25 | 1.818 | 0.006 | |
| Ba | 26 | -0.426 | 0.006 | |
| P | 27 | 0.018 | 0.002 | |
| S | 28 | 0.017 | 0.004 | |
| Mg | 29 | 0.013 | 0.001 | |
| As | 30 | 0.088 | 0.005 | |
| Na | 31 | 0.080 | 0.006 | |
| Mo | 32 | 0.026 | 0.006 | |
| Se | 33 | -0.028 | 0.011 | |
| Ag | 34 | 16.563 | 0.053 | |
| | 35 | 2.806 | 0.009 | |
| [illegible] | 36 | -0.124 | 0.003 | |

| | | | |
|---|---|---|---|
| Cd | 37 | -0.119 | 0.044 |
| B | 38 | 0.009 | 0.015 |
| K | 39 | -0.051 | 0.002 |
| Mn | 40 | -0.011 | 0.001 |
| Sb | 42 | -0.027 | 0.009 |
| V | 43 | 0.065 | 0.002 |
| Be | 44 | -0.003 | 0.001 |
| Tl | 45 | -0.036 | 0.004 |

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Identity 1: SST2 STD 2B48AD Identity 2: Direct 1:32 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

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| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -72.915 | -0.182 | 5049.062 | -19.203 | -509.434 | -11.169 | -76.614 | 328.567 |
| S.D. | 1.415 | 0.060 | 41.128 | 8.695 | 1083.387 | 5.350 | 1.860 | 11.677 |
| % R.S.D. | 1.940 | 32.733 | 0.815 | 45.280 | 212.665 | 47.900 | 2.427 | 3.554 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 1146.341 | -23.830 | 11.926 | -0.404 | -5.606 | -4.634 | 5192.512 | 5128.015 |
| S.D. | 770.926 | 0.405 | 0.471 | 0.910 | 1.698 | 3.079 | 30.494 | 24.444 |
| % R.S.D. | 67.251 | 1.702 | 3.952 | 225.463 | 30.288 | 66.442 | 0.587 | 0.477 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 5.188 | 98.176 | 5.029 | 5238.360 | 5130.900 | 5355.810 | -25.440 | 24.791 |
| S.D. | 2.384 | 0.832 | 0.606 | 15.154 | 28.595 | 17.670 | 0.359 | 9.458 |
| % R.S.D. | 45.952 | 0.848 | 12.059 | 0.289 | 0.557 | 0.330 | 1.413 | 38.151 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 11.351 | -1.850 | 100.933 | -1.811 | 2.210 | 65.225 | 5090.597 | 4911.547 |
| S.D. | 4.073 | 0.119 | 5.427 | 3.715 | 1.765 | 30.323 | 16.226 | 15.700 |
| % R.S.D. | 35.877 | 6.415 | 5.377 | 205.181 | 79.899 | 46.490 | 0.319 | 0.320 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -3.668 | -1.074 | 3.937 | -59.493 | -1.357 | -108.560 | 27.181 | 0.771 |
| S.D. | 0.330 | 1.737 | 2.808 | 8.921 | 0.096 | 47.664 | 1.348 | 0.103 |
| % R.S.D. | 8.988 | 161.754 | 71.326 | 14.996 | 7.099 | 43.906 | 4.958 | 13.323 |

| | Tl (ppb) |
|---|---|
| Mean | 170.048 |
| S.D. | 29.033 |
| % R.S.D. | 17.073 |

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Corrected Counts Statistics 1:33 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00

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

| Analyte | Channel | Mean Kpulses | S.D. Kpulses | %R.S.D. Kpulses |
|---|---|---|---|---|
| | 1 | 23.822 | 0.125 | |
| Sr | 2 | 0.013 | 0.006 | |
| Bi | 3 | -1.919 | 0.017 | |
| Ta | 5 | 16.521 | 0.105 | |
| Hg | 6 | 27.875 | 0.009 | |
| Sn | 7 | 0.098 | 0.053 | |
| Si | 8 | 12.878 | 0.078 | |
| Al | 9 | 11.970 | 0.072 | |
| W | 10 | 32.581 | 0.110 | |
| Zn | 11 | 0.051 | 0.009 | |
| Cu | 12 | 0.062 | 0.002 | |
| Li | 14 | -0.008 | 0.014 | |
| Co | 15 | -0.089 | 0.011 | |
| Ni | 16 | 0.310 | 0.011 | |
| La | 17 | -0.005 | 0.001 | |
| Eu | 18 | -0.157 | 0.008 | |
| Fe | 19 | 0.037 | 0.007 | |
| Os | 20 | 0.223 | 0.001 | |
| Cr | 21 | 0.003 | 0.005 | |
| Nd | 22 | -0.053 | 0.039 | |
| Ce | 24 | 0.035 | 0.012 | |
| Sm | 25 | -0.092 | 0.013 | |
| Ba | 26 | 0.001 | 0.009 | |
| P | 27 | 1.557 | 0.023 | |
| S | 28 | 4.735 | 0.020 | |
| | 29 | 0.012 | 0.001 | |
| | 30 | 4.095 | 0.050 | |
| Na | 31 | 0.092 | 0.022 | |
| Mo | 32 | 33.045 | 0.168 | |
| Se | 33 | 1.575 | 0.025 | |
| Ag | 34 | -0.106 | 0.012 | |
| Pb | 35 | -0.081 | 0.002 | |
| Ti | 36 | 37.887 | 0.181 | |
| Cd | 37 | -0.277 | 0.039 | |
| K | 38 | 0.038 | 0.001 | |
| K | 39 | -0.057 | 0.011 | |
| Mn | 40 | 0.011 | 0.003 | |
| Sb | 42 | 0.013 | 0.009 | |
| V | 43 | 14.794 | 0.073 | |
| Be | 44 | 55.721 | 0.272 | |
| Tl | 45 | 0.669 | 0.001 | |

Identity 1: SST3 STD 3B48AD Identity 2: Direct 1:34 PM January 22, 1992
Task name : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

| | Zr (ppb) | Sr (ppb) | Bi (ppb) | Ta (ppb) | Hg (ppm) | Sn (ppb) | Si (ppb) | Al (ppb) |
|---|---|---|---|---|---|---|---|---|
| | 10473.560 | 0.130 | -1884.199 | 9820.509 | 1488735.849 | 23.515 | 8972.974 | 4720.936 |
| | 55.151 | 0.248 | 16.657 | 62.475 | 534.998 | 11.716 | 54.703 | 29.534 |
| % R.S.D. | 0.527 | 190.523 | 0.884 | 0.636 | 0.036 | 49.823 | 0.610 | 0.626 |

| | W (ppb) | Zn (ppb) | Cu (ppb) | Li (ppb) | Co (ppb) | Ni (ppb) | La (ppb) | Eu (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | -1000122.841 | -28.006 | 3.171 | -0.706 | -19.062 | 82.162 | -6.711 | -5.495 |
| S.D. | 3373.547 | 0.793 | 0.453 | 1.443 | 2.356 | 2.512 | 4.650 | 0.535 |
| % R.S.D. | 0.337 | 2.830 | 14.281 | 204.207 | 12.358 | 3.057 | 69.296 | 9.735 |

| | Fe (ppb) | Ca (ppb) | Cr (ppb) | Nd (ppb) | Ce (ppb) | Sm (ppb) | Ba (ppb) | P (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 9.846 | -5.850 | 3.176 | -55.766 | -31.863 | -242.307 | 0.060 | 9549.821 |
| S.D. | 2.083 | 0.165 | 2.063 | 17.462 | 34.208 | 38.109 | 0.534 | 145.254 |
| % R.S.D. | 21.153 | 2.826 | 64.951 | 31.313 | 107.360 | 15.728 | 896.289 | 1.521 |

| | S (ppb) | Mg (ppb) | As (ppb) | Na (ppb) | Mo (ppb) | Se (ppb) | Ag (ppb) | Pb (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 5096.242 | -2.055 | 4924.477 | 5.486 | 9950.680 | 4481.037 | -1.617 | -145.385 |
| S.D. | 21.774 | 0.119 | 60.508 | 13.464 | 50.624 | 70.118 | 3.816 | 3.646 |
| % R.S.D. | 0.427 | 5.774 | 1.229 | 245.436 | 0.509 | 1.565 | 235.941 | 2.508 |

| | Ti (ppb) | Cd (ppb) | B (ppb) | K (ppb) | Mn (ppb) | Sb (ppb) | V (ppb) | Be (ppb) |
|---|---|---|---|---|---|---|---|---|
| Mean | 4975.787 | -7.346 | 9.488 | -90.642 | 0.809 | 105.061 | 9950.844 | 9912.685 |
| S.D. | 23.683 | 1.561 | 0.194 | 65.124 | 0.279 | 48.808 | 49.062 | 48.331 |
| % R.S.D. | 0.476 | 21.245 | 2.041 | 71.848 | 34.463 | 46.457 | 0.493 | 0.488 |

| | Tl (ppb) |
|---|---|
| Mean | 5234.605 |
| S.D. | 8.295 |
| % R.S.D. | 0.158 |

Teresa L. Frazier
1-22-92