P.O. Box 1970 Richland, WA 99352

222-S Analytical Laboratory

Project: 242-A EVAPORATOR FEED CHARACTERIZATION

Tank: 103AP

Customer Id. Number: 3AP891-8

Report Revision: 0

Date Printed: June 9, 1992

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Hanford Operations and Engineering Contractor for the US Department of Energy

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This report consists of pages 1 through 198, plus pages 5.1-5.23, and 6.1-6.3.

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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of Highly Radioactive Samples in Support of Environmental Activities on the Hanford Site" - WHC-SD-CP-QAPP-002, unless superseded by the Statement of Work or Waste Characterization Plan.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

9/14/92
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

9/15/92
Date

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NARRATIVE

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Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

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

9 3 1 2 2 3 2 9 1 0

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 R943.

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.

3AP891-8 (R943)

The value for Eu 155 as >4.74E+1 on the analytical card should read <4.74E+1. The data reported on page 22 is correct.

The percent deviations for Aluminum, Sodium and Silver were outside the control limits of ±25%.

Analyte	Percent Deviation	
	Initial	Final
Aluminum	--	133
Sodium	148.8	180
Silver	38.2	--

John H. Tillman 9/12/92

John Tillman, Manager
Inorganic Chemistry PAL

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Hanford Company

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 T6-14
J. A. Eacker R1-51
D. L. Halgren R1-51
J. H. Kessner T6-08
E. J. Kosiancic S0-61
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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16500-90-090

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

Rudolf 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

J. D. Briggs 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 katone	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.

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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

TPE 9-12-92
~~5.12~~
5.13

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.

TFL 9-12-92

~~5.13~~

5.14

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.

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

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. TFZ 9-12-92 ~~5.16~~ 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.

TPL 9-12-92

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

TPR 1-12-92
~~5.18~~

5.19

For info only

Westinghouse Hanford Company — Hanford Operations and Engineering Contractor for the US Department of Energy, P.O. Box 1970 Richland, Wa. 99352

NONCONFORMANCE REPORT

Page 1 of 12 — 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.: 1WIT6CØE
UNUSUAL OCCURRENCE REPORT REQUIRED: ☐ YES ☒ NO — SYSTEM/END USE: Waste Characterization — DATE: 9/19/91

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

Attach seal on cask such that seal must be broken to remove sample.

DOCUMENT	REV	ZONE/PAR
TO-080-030	C-2	3.20.

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

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 — 08 NOV 91
COGNIZANT ENGINEER — DATE

J. J. Verderber 78420 — 11/22/91
COGNIZANT QA ENGINEER 32200 — DATE

AUTHORIZED INSPECTOR REVIEW — DATE

11. ADDITIONAL APPROVALS

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

TFZ 9-12-92
~~5.19~~

12. DISPOSITION ACTION COMPLETE

NAME ____ DATE ____ QTY. ACCEPT ____ QTY. REJ. ____ FOLLOW ON NCR

QA LOG NO. ____ FOLLOW-UP ____

~~5.20~~

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

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

TFZ
1-12-92
~~5.20~~

5.21

COPY

~~R019~~ R933 LABORATORY ID	Date Sampled 9-19-91	Time Sampled 0500
Sample Site or Sampling ID 3AP891-1 103-AP	Date Received at 222-S 9-21-91	Time Received at 222-S 0610
Delivered by (Signature) [signature]	RPT Release (Signature) [signature]	Dose Rate <0.5
Custodian (Signature) Raymond Akita	Date Analysis Complete	Disposal Date
Comments R-5 OR #1 SEAL # R003		C of C

Payroll No.	Tech/Receiver (Signature)	Date	Entry Code	Comments
9/22/91	Sample seal not on properly			
	Debbie Bjerning 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
				~~5.21~~ TPL 9-12-92

BD-6000-347 (10/89)

5.22

WHC-SD-WM-DP-025
Addendum 12 Rev 0

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 'p16' making the sample integrity questionable Paul Haigh was notified and an NCR generated by Debbie Business

TF2 9-12-92 ~~5.22~~

10/2/91 c.c. mail sent to Debbie Business

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

5.23

9 1 1 2 1 3 2 9 3 4

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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 4000i

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

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	J. Tuckser J. PAYNE	Date	10-9-91	Time	0608
Sample Locations	TK 103-AP, Riser #28		Custody Seal #	3031	
Remarks	21' 0"				
Ice Chest or Sample Pig No.	TF-7	Field Logbook and Page No.	N/A		

SUPERVISION REVIEW: RF Wright DATE: 10-9-91

SAMPLE IDENTIFICATION

Sample Number	Sample Schedule Number
3AP891-8	242-A Statement of Work WHC-SOW-91-0002
R-126 (R943)	

CHAIN OF POSSESSION

Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 10-11-91/1955
Relinquished by: [illegible]	Received by: Raymond Akita	Date/Time: 10-11-91/2225
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

SAMPLE CHECK IN LIST

Date/Time Received 10/11/91 @ 2225 Sample ID ~~R126~~ VJ 3A0591-8

Project 242A SAS 91-0002 Client Paul Haigh

Shipping Container ID# TE-7 Shipping # R126

1. Condition of Shipping container? ok
2. Custody Seals on container intact? Yes [✓] No [ ]
3. Custody Seals dated and signed? Yes [✓] No [ ]
4. Custody Seals ID # 3031
5. Condition of Samples: OK in good condition
   _____ broken
   _____ leaking
6. Samples have: ~~NO~~ 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] VJ No [X]
9. Memos have been initiated for all anomalies identified? Yes [ ]

Printed Name VIDA JOHANSEN

Signature Vida Johansen

Date/Time 10/17/91 0900

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

R ~~R26~~ R943 05/31/91

LABORATORY ID

Date Sampled	Time Sampled

Sample Site or Sampling ID	Date Received at 222-S	Time Received at 222-S
103AP Riser 28	10-11-91	2225

Delivered by (Signature)	RPT Release (Signature)	Dose Rate
B. A. Shoehe	[illegible]	<0.5

Custodian (Signature)	Date Analysis Complete	Disposal Date
Raymond Akita		

Comments: 3AP891-8 SEAL # 3031 C of C

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

BD-6000-347 (10/89)

COPY

SAMPLE IN/OUT LOG

23

DATE	TIME OUT	TIME IN	UNIT #	SAMPLE ID.	TECHNOLOGIST SIGNATURE	PAYROLL NUMBER
12-28-91	18:00	1120	7	R753, 754	Valerie L Massi	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			U-13	Julene Lopez	68823
1/28/92	1620	2000	35	J183-89 Digest	Teresa L Frazier	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 DR 5 1-24-92	[illegible]	6C275
1-30-92	1:30	10:20 [illegible]	54	R-1152	[illegible]	64483
1-30-92	1425		35	J230-242	Teresa L Frazier	67768
1-30-92	1425		35	J223-229	Teresa L Frazier	67768
1-30-92	08:15	14:10	18	R144, R145	[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 Massi	82016
2-3-92	0730	0800	18	R-941-945	Ed Cole	80028
2-3-92	0745	0750	28	78852 Fug 2 78869 Fug	[illegible]	64965
2-3-92	0745	1400	Frig 5	R1141	Julene Lopez	68823
2-3-92	08:00	15:00	DR 2-3-92	R423, 424, 425	[illegible]	6C916
2/3/92	1310	1335	40	J84, J245	Teresa L Frazier	67768
2/3/92	1350	1430	46	R1141	Teresa L Frazier	67768
2-3-92	17:15	18:50	17	N-61	Valerie L Massi	82016
2-3-92	18:50	21:15	17	N-62	Valerie L Massi	82016
2-3-92	21:15	23:00	17	N-63	Valerie L Massi	82016
2-4-92	0800	1308	17	N-28, 29	Julene Lopez	68823
2-4-92	08:40	14:30	17	N38, 40, 41, 44	[illegible]	6C916
2-4-92	10 00	10 40	40	DR 2-4-92 S163-S158	J. M. Kunkel	60368
2/4/92	10:15	13:05	32	31XC010 31XC0310	[illegible]	68090

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WHC-SD-WM-DP-025
Addendum 12 Rev 0

SAMPLE IN/OUT LOG

DATE	TIME OUT	TIME IN	UNIT #	SAMPLE ID.	TECHNOLOGIST SIGNATURE	PAYROLL NUMBER
1-14-92		17:50	28	T-8760	[illegible]	82370
1-15-92	02:10	02:40	20	R-1067	Valerie L Massey	82016
1-15-92	0730	1230	COLD	R-607-610 R-994	[illegible]	80028
~~[illegible]~~ DH 8-27-92						
1/15/92	08:00	13:10	32	57XC0110 57XC0310	[illegible]	68090
1/15/92	0800	0825	20	R1067, R1076 R1080	[illegible]	68823
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	[illegible]	82577
1-15-92	1230	1430	20	R 1023, 1069, 1083 DH 8-27-92	Mary Irsay	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	[illegible]	82020
1/15/92	1400	1500	20	T 1076	[illegible]	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
1-15-92 DH 8-27-92	17:35	17:40	shelf	B6502	Sandra L Hood	82372
1-16-92	00:10		28	T 8852	Valerie L Massey	82016
1-16-92	10:15	13:30	22	R 1085, 1086, 1089	Sue Lai	6C916
1-16-92	1000	ALL SAMPLE USE 0	COLD	R-994	[illegible]	80028
1-16-92	10:30	11:15	Frig. DRS #3 8-29	B959-961 R 65-967	[illegible]	6C275 DRS 8-27-92
1-16-92	10:45	11:00	24	R933-934	[illegible]	6C275
1-16-92	10:45	11:00	16	R933-937 DRS 8-27-92	[illegible]	6C275
1/16/92	1045	1115	20	R-1080	[illegible]	6C559
1-16-92	1100	1105	DH 8-27-92 28	R8852 Fusion	[illegible]	64965
1-16-92	11:00	11:10	18	R9 41-945 DRS 8-27-92	[illegible]	6C275
1-16-92	11:10	11:25	29	S676	[illegible]	6C275
1-16-92	11:15	11:25	25 DRS 8-27-92	B612 b, B6157 B623 m, B6233	[illegible]	6C275
1-16-92	11:10	11:25	25 DRS 8-27-92	B6408, B6444 B6481	[illegible]	6C275
1-16-92	11:15	11:35	28	B8852	[illegible]	82577
1-16-92	1315	1370	30	B8852	Jerry M. Kunkel	80518

J.R. 1-16-92

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SAMPLE IN/OUT LOG

DATE	TIME OUT	TIME IN	UNIT #	SAMPLE ID.	TECHNOLOGIST SIGNATURE	PAYROLL NUMBER
1-2-92	08:10	11:00	H 44	J213 ~ J215	Sue Lee	6C916
1-2-92	08:15	1415	Frig 5	R904-906 R965-7 9167	Melanie Hayes	6C823
1-2-92	0840	1415	"	R959-7 961	Melanie Hayes	6C823
~~1-2-92~~	~~08:45~~ (SL) 8-24-92			~~R994 ~~ R999~~ (SL) 8-24-92		
1-2-92	08:45	15:00	shelf	R994 ~ R999	Sue Lee	6C916
1-2-92	10:55	11:05	shelf	S-988	Sandra Littrell	82372
1-2-92	13:30	15:05	Shelf	U4552 U4553	Teresa L Frazier	67768
1-2-92	1330	15:05	Shelf	DD 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 906 959 thru 961 963 - 967	Melanie Hayes	6C823
1-3-92	0744	0830	C060	R-1010-1012	Ed Cobb	80028
1-3-92	0800	0830	18	R949	S L Cobb	64965
1-3-96	0900	1500	Frig 5	R959-7 61	Melanie Hayes	6C823
1-3-96	0915	0940	14	R951	Melanie Hayes	6C823
1-3-92	15:30	22:10	F2:0 5	R 961, 863, 870, 857	A. Lee	82580
01-03-92	1800	1815	18	R949	SL Cobb	82583
1-3-92	18 30	22:10	18	R 949	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	18	R941-945	Jay Nagel	81808
1-4-92	0245	0310	18	R 949	J.H. Schlueck	81020
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	J.H. Schlueck	82020
1-5-92	16:30	18:40	Refrig #5	R959 DF 9.29.92	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	~~0021~~ 0215 J.K. 1-6-92	0600	Refrig 5	R965-967	Jerry M. Kunkel	80518

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

Ref. 1 thru 3 Sample Group

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 Abita
✓	4/1/92	1655	R945 R933	Robert Ray	82627	R Abita
✓	4/1/92	1655	R934 R935	Robert Ray	82627	R Abita
✓	4/1/92	1655	R936 R937	Robert Ray	82627	R Abita
	4/1/92	1655	R941 R942	Robert Ray	82627	R Abita
✓	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	REJ
✓	4/2/92	1040	R1291 R1292	Robert Ray	82627	REJ
✓	4/2/92	1040	R1293 R1294	Robert Ray	82627	REJ
✓	4/2/92	1040	R1295 R1296	Robert Ray	82627	REJ
✓	4/2/92	1040	R1287 R1288	Robert Ray	82627	REJ
✓	4/2/92	1040	R1285 R1286	Robert Ray	82627	REJ
✓	4/2/92	1040	R1289 (SR) R1290	Robert Ray	82627	REJ
✓	4-2-92	1250	R1380-81	Keith Fuller	67528	REJ
✓	4-2-92	1327	R1375-76 R1380-81	R E Sloda	81524	REJ
✓	4-2-92	1337	R1375-76 R1380-81	R E Sloda	81524	REJ

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

Sample Group
Refrigerator 60 Drum

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 R1344 R1346 R1350	Keith Fuller	67528	Vida Johansen
	✓	3/26/92	0855	R1351 R1352	RK7	67528	Vida Johansen
	✓	3/26/92	0855	R1355 R1356	RK7	67528	Vida Johansen
	✓	3/26/92	0855	R1360-61 R1365-66	RK7	67528	Vida Johansen
	✓	3/26/92	0855	R1370-71 R1375-76	RK7	67528	Vida Johansen
	✓	3/26/92	0855	R1380-81	RK7	67528	Vida Johansen
✓		3/26/92	1430	R1344 R1344 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 R1344 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 R1344 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

103AP

WHC-SD-WM-DP-025
Addendum 12 Rev 0
SAMPLE LOG IN/OUT
storage unit #___
date_____to_____

Refrigeration

Sample Group
_____

COPY

IN	OUT	DATE	TIME	SAMPLE ID	TECHNICIAN SIGNATURE	PAYROLL NUMBER	CUSTODIAN SIGNATURE
	✓	12/16/91	1050	CEL-5.1a-E-80	E.V. Allerson	82712	Vida Johansen
	✓	12/16/91	1052	CEL-5.1a-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	Kitchen Hood R927	E.V. Allerson	82712	Vida Johansen
	✓	12/26/91	11:30	R933, R941, R944 8-18-92	Sue C Lai	6C916	Vida Johansen Sue
✓		12/26/91	14:05	R933, R941	Sue C Lai	6C916	Vida Johansen
	✓	12/26/91	10:50	L991	Todd McCulloch	81805	Vida Johansen
✓		12/26/91	1310	L991	Todd McCulloch	81805	Vida Johansen
✓	✓	12-30-91	1340	R944, R945, R946, R997, R998, R999	S. Cobb	82583	
✓	✓	12-31-91	1530	902, 346, 934	J. Sollmann	82020	Wendy Cook
✓	✓	1-2-92	8:20	933, 934, 935, 936, 937	David R. Jackson	6C275	Vida Johansen
✓	✓	1-2-92	8:20	941, 942, 943, 944, 945	David R. Jackson	6C275	Vida Johansen
	✓	1-2-92	10:55	933	D.E. Nelson	62059	V. Johansen
		1-2-92	14:20	R933	D.E. Nelson	62059	V. Johansen
	✓	1-2-92	14:25	R934, R935	D.E. Nelson	62059	V. Johansen
✓		1-2-92	1917	R934, R935	D.E. Nelson	62059	V. Johansen
	8-18-92	1-3-92	0745	R902-7-6, R997-3-61, R965-7-61	Liliane Meyer	6C023	
	✓	1-7-92	1005	R936, R937	D.E. 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]~~ 8-18-92	~~[illegible]~~	
	✓	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	R.E. Shoda	81524	Vida Johansen
✓		1-29-92	1055	R1121, 1125, 1122	R.E. Shoda	81524	Vida Johansen
	✓	1/30/92	0715	R1121, 1125, 1122	L.J. Ottman	82768	Vida Johansen
✓		1/30/92	0910	R1121, 1125, 1122	L.J. Ottman	82768	Vida Johansen

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	B 6481	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 Cobra	80028
1/6/92	0850	1300	24 & 18	C933 → 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	[illegible]	6C275
1/6/92	1415	1450	18	R949	[illegible]	64965
01-06-92	1630	1700	5	R960,961	S. Cobb	82583
01-06-92	1830	20:30	5	R1015	SL Cobb	82583
01-6-92	20:00	20:10	25	B 6481	Valerie L Massie	80116
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	49	R-929	S. B. Kunkel	60368
7-92	0830	1430	24 48	R933 → R937	[illegible]	81805
1-7-92	1030	1400	40	54.-786 & 651 55	S. B. Kunkel	60368
1-7-92	14:30	14:50	20	R551	Sue Lai	6C916
1-8-92	0008	0032	18	R919	[illegible]	81808
1-8-92	0015	0030	7	R 783	Jerry M. Kunkel	80518
1-8-92	0015	0030	28	T8526, T8579	Jerry M. Kunkel	80518
1-8-92	0015	0030	Ref reg 5	R 1015	Jerry M. Kunkel	80518
1-8-92	0030	0230	18	R-941	Jeff Sollrack	81020
1-8-92	0730	0930	5	R-1021	Ed Cobra	80027
1-8-92	0730	1030	5	R959,60,61	[illegible]	65731
1-8-92	0830	0900	24/48	R933 → 37	Melanie Meyer	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	18	R941 → 47	Melanie Meyer	6C823
1-8-92	1100	1210	18	R943 → 44	Melanie Meyer	6C823
~~8-92~~	~~0900~~	~~11:00~~	~~24/18~~	~~R933 → 937~~	~~[illegible]~~ 8-18-92	
1-8-92	1315	1510	40	786-651	S. B. Kunkel	60368

REQUEST FOR SPECIAL ANALYSIS (RSA)

(1) Sample Point	(2) Date/Time Issued	(3) Date/Time Required	(4) Charge Code
FD-A 54 Set No. 2		11/26/91	(5) Work Package: 1N1A16ØLØ1

(6) Number of Samples	Dose Rate mRad/Hr	(7) Customer I.D.	(8) Laboratory I.D.	(9) Requester Name/Phone
10		3AP891-1, 3AP891-2, ~~3AP891-3~~, 3AP891-4, 3AP891-5, 3AP891-6, 3AP891-7, 3AP891-8, 3AP891-9, 3AP891-10		P.G. Haigh 3-4655

Ok 3-18-92 3AP1191-1

(10) Release	(11) Volume of Sample
RPT	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	

103 APR

103 APR 3APR Comp

(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 CD-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 JW 8-18-92 3AP1191-1	(7) Customer I.D. 3AP891-1 3AP891-8 3AP891-2 3AP891-9 ~~3AP891-3~~ 3AP891-10 3AP891-4 3AP891-5 3AP891-6 3AP891-7	(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.
JW 8-18-92

(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	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

REQUEST FOR SPECIAL ANALYSIS (RSA)

(1) Sample Point	(2) Date/Time Issued	(3) Date/Time Required	(4) Charge Code
FD-A54 Set No. 2		11-26-91	(5) Work Package IN/A16ØLØ1

(6) Number of Samples	Dose Rate mRad/Hr	(7) Customer I.D.	(8) Laboratory I.D.	(9) Requester Name/Phone
10		3AP891H, 3AP891-7, 3AP891-2, 3AP891-8, 3AP891-9, 3AP891-4, 3AP891-10, 3AP891-5, 3AP891-6		P.G. Haigh 3-4655

(10) Release	(11) Volume of Sample
RPT	100 mL

(12) Determination	(13) Expected Range	(14) Minimum Detection Level	(15) Method
Total Ammonia		500 mg/L	3AP891-1-R933
Fluoride by IC		6,000 mg/L	3AP891-2-R934
Chloride by IC		4,000 mg/L	3AP891-3-R935
Nitrite by IC		5000 mg/L	3AP891-4-R936
Nitrate by IC		5000 mg/L	3AP891-5-R937
Phosphate by IC		10,000 mg/L	3AP891-6-R938
Sulfate by IC		10,000 mg/L	3AP891-7-R939
Hydroxide		0.1 M	3AP891-8-R943
Total Organic Carbon		500 mg/L	3AP891-9-R944
Volatile Organic Analysis		Exhibit C, CLP-SOW Organics 3/90	3AP891-10-R945
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

Laboratory Manager

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

SAMPLE DATA SUMMARY

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 103AP
Customer ID: 3AP891-8

Undigested Sample Results

	Sample R943		Sample Duplicate NA
SpG	0.992		NA
DSC	NO EXOTHERM		NA
TOC	8.77E+1	ppm	NA
TIC	5.30E+2	ppm	NA
NH4	<9.00E+1	ppm	NA
OH	1.29E+1	ppm	NA
CN	5.11E-1	ppm	NA
ATOMIC ABSORPTION			
As	2.80E-2	ppm	NA
Hg	<5.00E-3	ppm	NA
Se	<5.00E-3	ppm	NA
ION CHROMATOGRAPHIC			
Cl	3.83E+1	ppm	NA
F	6.06E+1	ppm	NA
NO3	1.62E+3	ppm	NA
NO2	1.12E+3	ppm	NA
PO4	1.12E+2	ppm	NA
SO4	4.18E+2	ppm	NA
GEA			
Cs 137	6.59E+3	uCi/L	NA
Cs 134	<9.17E+0	uCi/L	NA
Eu 155	<4.74E+1	uCi/L	NA

SUMMARY DATA REPORT

Project: 242-A EVAPORATOR FEED CHARACTERIZATION
Tank: 103AP
Customer ID: 3AP891-8

Acid Digestion Sample Results

	Sample R943		Sample Duplicate NA
Acid Digestion	Complete		
ICP			
Al	1.04E+5	ug/L	NA
Ba	<6.50E+1	ug/L	NA
Cd	8.10E+1	ug/L	NA
Cr	3.53E+3	ug/L	NA
Fe	6.30E+2	ug/L	NA
Pb	<4.00E+2	ug/L	NA
Mg	<2.55E+2	ug/L	NA
Mn	<1.50E+1	ug/L	NA
Ag	<4.00E+1	ug/L	NA
Na	3.70E+6	ug/L	NA
Zn	<2.00E+1	ug/L	NA

UNDIGESTED SAMPLE ANALYSIS RESULTS

UNDIGESTED SAMPLE RESULTS

Tank: 103AP
Sample No.: R943
Customer ID: 3AP891-8

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	**R939**		**R940**		**R943**		**NA**		**NA**		**R946**	
Specific Gravity (01-04-92)	98.37	%	0.983		0.992		NA		NA		98.16	%
Lab ID:	**R939**		**NA**		**R943**		**NA**		**NA**		**R946**	
DSC (01-08-92)	Exotherm		NA		No Exotherm		NA		NA		Exotherm	
Lab ID:	**S599**		**R940**		**R943**		**NA**		**NA**		**R946**	
Total Organic Carbon (01-28-92)	99.7	%	3.60E+0	ug	8.77E+1	ppm	NA		NA		97.7	%
Lab ID:	**R939**		**R940**		**R943**		**NA**		**NA**		**R946**	
Total Inorganic Carbon (01-28-92)	99.4	%	2.20E+0	ug	5.30E+2	ppm	NA		NA		102.8	%
Ammonia (01-13-92)	98.62	%	<9.00E+1	ppm	<9.00E+1	ppm	NA		NA		97.02	%
OH (01-07-92)	99.8	%	Complete		1.29E+1	ppm	NA		NA		102.1	%
Cyanide (02-03-92)	99.1	%	<2.00E-2	ppm	5.11E-1	ppm	NA		NA		98.7	%
ATOMIC ABSORPTION												
Arsenic (01-07-92)	105.6	%	6.00E-4	ppm	2.80E-2	ppm	NA		NA		111.6	%
Mercury (01-21-92)	107.4	%	<5.00E-4	ppm	<5.00E-3	ppm	NA		NA		90.7	%
Selenium (01-29-92)	114.38	%	<5.00E-4	ppm	<5.00E-3	ppm	NA		NA		112.06	%
ION CHROMATOGRAPHIC												
Chloride (01-08-92)	92.9	%	<1.00E-1	ppm	3.83E+1	ppm	NA		NA		100.65	%
Fluoride (01-10-92)	98.8	%	<1.00E-1	ppm	6.06E+1	ppm	NA		NA		102.9	%
Nitrate (01-10-92)	106.1	%	<1.00E+0	ppm	1.62E+3	ppm	NA		NA		102.8	%
Nitrite (01-10-92)	107.3	%	<1.00E+0	ppm	1.12E+3	ppm	NA		NA		108.4	%
Phosphate (01-08-92)	97.3	%	<1.00E+0	ppm	1.12E+2	ppm	NA		NA		100.52	%
Sulfate (01-08-92)	92.8	%	<1.00E+0	ppm	4.18E+2	ppm	NA		NA		100.12	%
GEA (01-04-92)												
Cs137	107.9	%	5.83E-3	uCi/L	6.59E+3	uCi/L	NA		NA		106.4	%
Cs134	NA		NA		<9.17E+0	uCi/L	NA		NA		NA	
Eu 155	NA		NA		<4.74E+1	uCi/L	NA		NA		NA	

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: SPECIFIC GRAVITY	Sample Prep: UNDIGESTED

Instrument: WA96787	Procedure/Rev: LA-510-112/C-2
Technologist: R. D. MEYERS	Date: 01-04-92
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: R. K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R939-5506	11		
2	REAGENT BLANK	R940-5606	12		
3	SAMPLE 3AP891-8	R943-5706	13		
4	FINAL LMCS CHECK STD	R946-5506	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	15C11BJ/.20012 mL			N/A

A-6000-881 (03/92)

SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

R939-5506

Serial No	Sample Point	Date	Time Issued	Priority
R 939.-5506	10SHP	12-16-91	16: 1	25

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

Sample Size: 200.124 | Customer ID: STD

Remarks, Calculations, Results:
S332 ZNCL2
STDR 15C11 BJ RESULT 1.4152
STD VAL 1.4586 %REC 98.37%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
82371				RA Fuller 1-6-92
Robert D Meyer	Hrs	Hrs	Hrs	Hrs
Date 1/4/92	Time Completed	Lab Unit Mgr		

STD. 2
2.1863
1.9068
~~.756~~ (RDN 3)(K)
.7815 / .20012 = 1.417

STD. 1
2.1771
1.8932
.2839 / .20012 = 1.4156

AVE = 1.4152

R940-5606

Serial No	Sample Point	Date	Time Issued	Priority
R 940.-5606	10SHP	12-16-91	16: 2	25

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

Sample Size: 200.124 | Customer ID: BLK

Remarks, Calculations, Results:
REAGENT BLANK
0.9829

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
82371				RA Fuller 1-6-92
Robert D Meyer	Hrs	Hrs	Hrs	Hrs
Date 1/4/92	Time Completed	Lab Unit Mgr		

2
2.0844
1.8874
.1970 / .20012 = .9844

1
2.0866
1.8902
.1964 / .20012 = .9814

AVE = .9829

R943-5706

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5706	10SHP	12-16-91	16: 4	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
SPG	LA-510		N124W	0

Sample Size: 200.12 | Customer ID: SHPB91-8

Remarks, Calculations, Results:
0.9924

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
82371				RA Fuller 1-6-92
Robert D Meyer	Hrs	Hrs	Hrs	Hrs
Date 1/4/92	Time Completed	Lab Unit Mgr		

2
2.0758
1.8776
.1982 / .20012 = .9904

1
2.0783
1.8793
.1990 / .20012 = .9944

AVG = .9924

SPECIFIC GRAVITY ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sampling Point	Date	Time Sampled	Priority
R 946-5506	10.MP	12-15-91	15:15	2M

Determination	Method/Standard	Report Units	Charge Code	Reruns
SPG	LA-510-112	% RECOVERY	HP.HW	0

Sample Size	Customer ID
200.12	STD

Remarks, Calculations, Results:
SS32 ZNCL2
STD#15211 BJ RESULT 1.41215
STD VAL 1.4386 %REC 98.16 %

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
82371				RKFulle 1-6-92
Robert Meyer				
Date 1/4/92	Time Completed	Lab Unit Mgr		

1
2.1533
1.8682
.2851
.20012 = 1.42445

2
2.1724
1.8923
.2801
.2002 = 1.39966

R 946-5506

AVG = 1.41215 ✓
1.4122

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: DIFFERENTIAL THERMAL	Sample Prep: UNDIGESTED

Instrument: WC16134, WC16129	Procedure/Rev: LA-514-113/A-0
Technologist: M. MYERS	Date: 01-08-92
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. HERT

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R939-5511	11		
2	SAMPLE 3AP891-8	R943-5711	12		
3	FINAL LMCS CHECK STD	R946-5511	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/.010 mL			N/A

A-6000-881 (03/92)

DIFFERENTIAL THERMAL ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 939.-5511	1030P	12-16-91	16: 1	25

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

Sample Size: 2 .010 ml
Customer ID: STD

Remarks, Calculations, Results: 27C11BH

Exotherm OK

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
60823				

Date	Time Completed	Lab Unit Mgr
1-8-92		

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

Serial No	Sample Point	Date	Time Issued	Priority
R 946.-5511	103AP	12-16-91	16:13	25

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

Sample Size: 10 m
Customer ID: STD

Remarks, Calculations, Results: 11.127 mg

Exotherm OK

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
82020				

Date	Time Completed	Lab Unit Mgr
01-08-92		

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

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5711	103AP	12-15-91	16:	

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

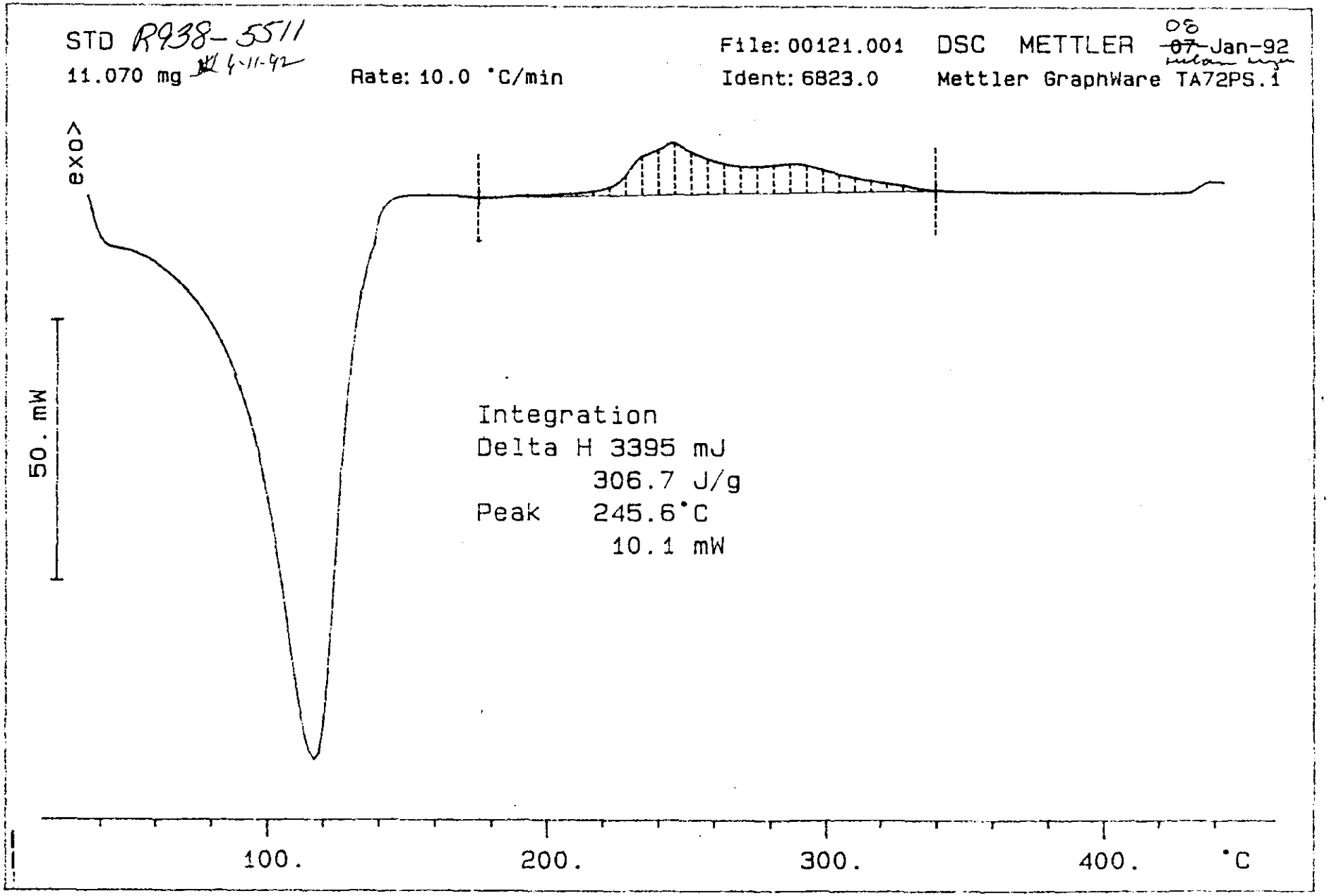
Sample Size: 1 .010 ml
Customer ID: SAP091-0

Remarks, Calculations, Results: No exotherm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
60823				

Date	Time Completed	Lab Unit Mgr
1-8-92		

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

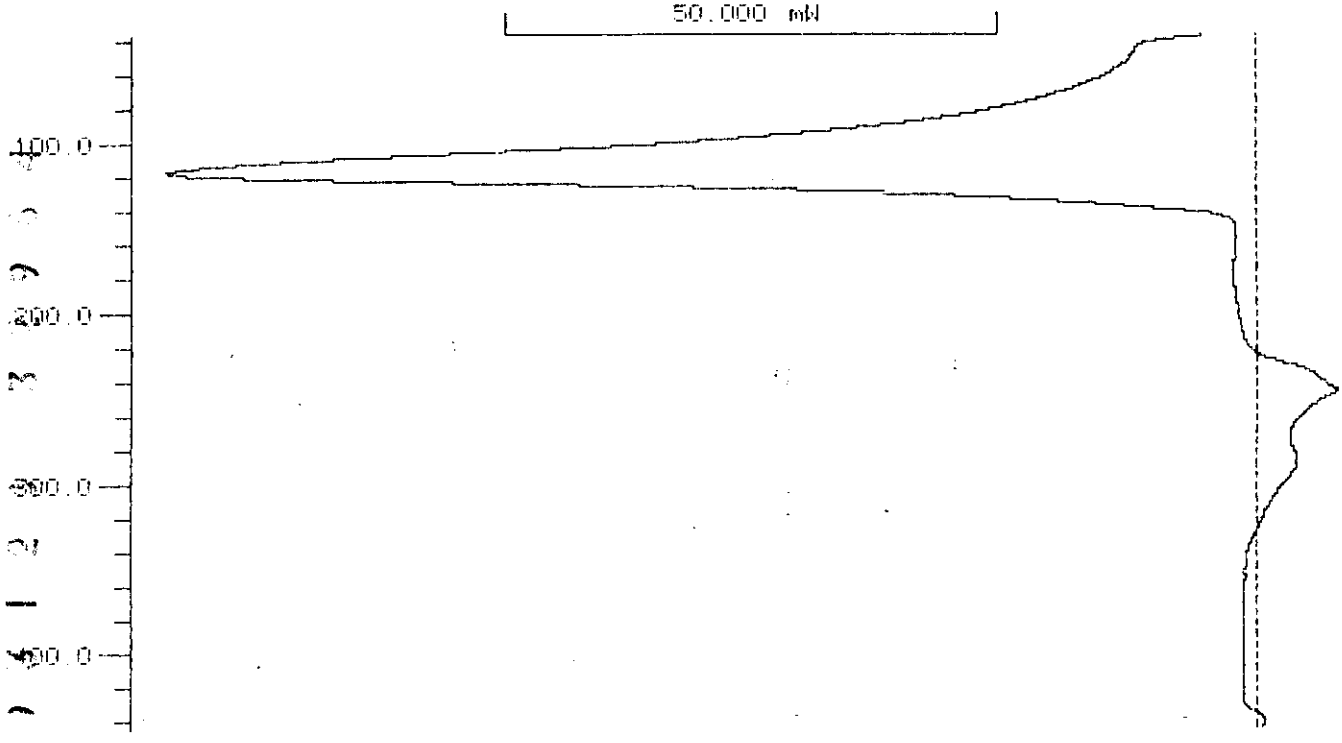

STD R938-5511
11.070 mg 4-11-92
Rate: 10.0 °C/min
File: 00121.001
Ident: 6823.0
DSC METTLER 08 Jan-92
Mettler GraphWare TA72PS.1
exo>
50. mW
Integration
Delta H 3395 mJ
306.7 J/g
Peak 245.6°C
10.1 mW
100.
200.
300.
400.
°C

R938-5511
DK 4-11-92

END SCREEN °C 445.0

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



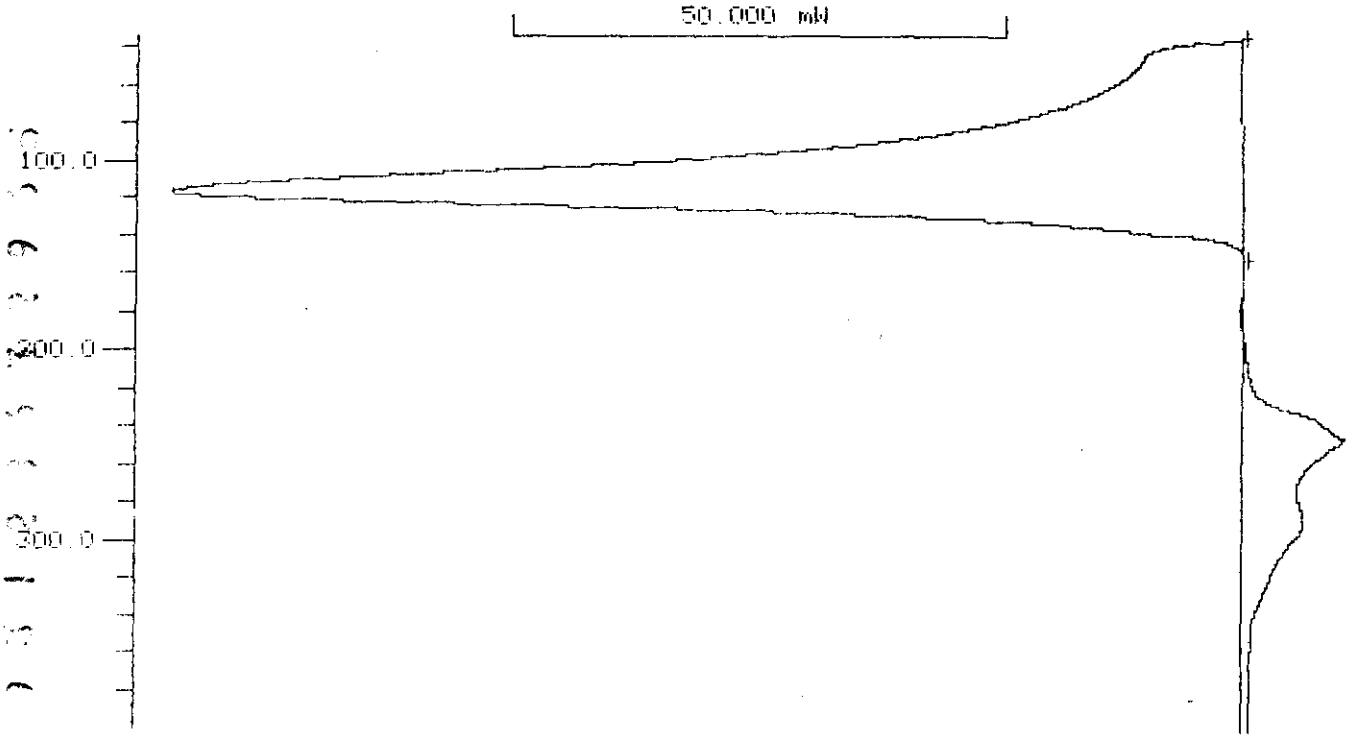
******** METTLER TA4000 SYSTEM *********

R938-5511
4-11-92

AUTOLIMITS
WARNING 8
END TEMP. °C 151.7

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



WARNING 1
ΔH ENDO mJ 23907
ΔH J/G 2159.7
PEAK TEMP. °C 106.6

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

DK 6-11-92

08

R943SAMPLE

9.766 mg

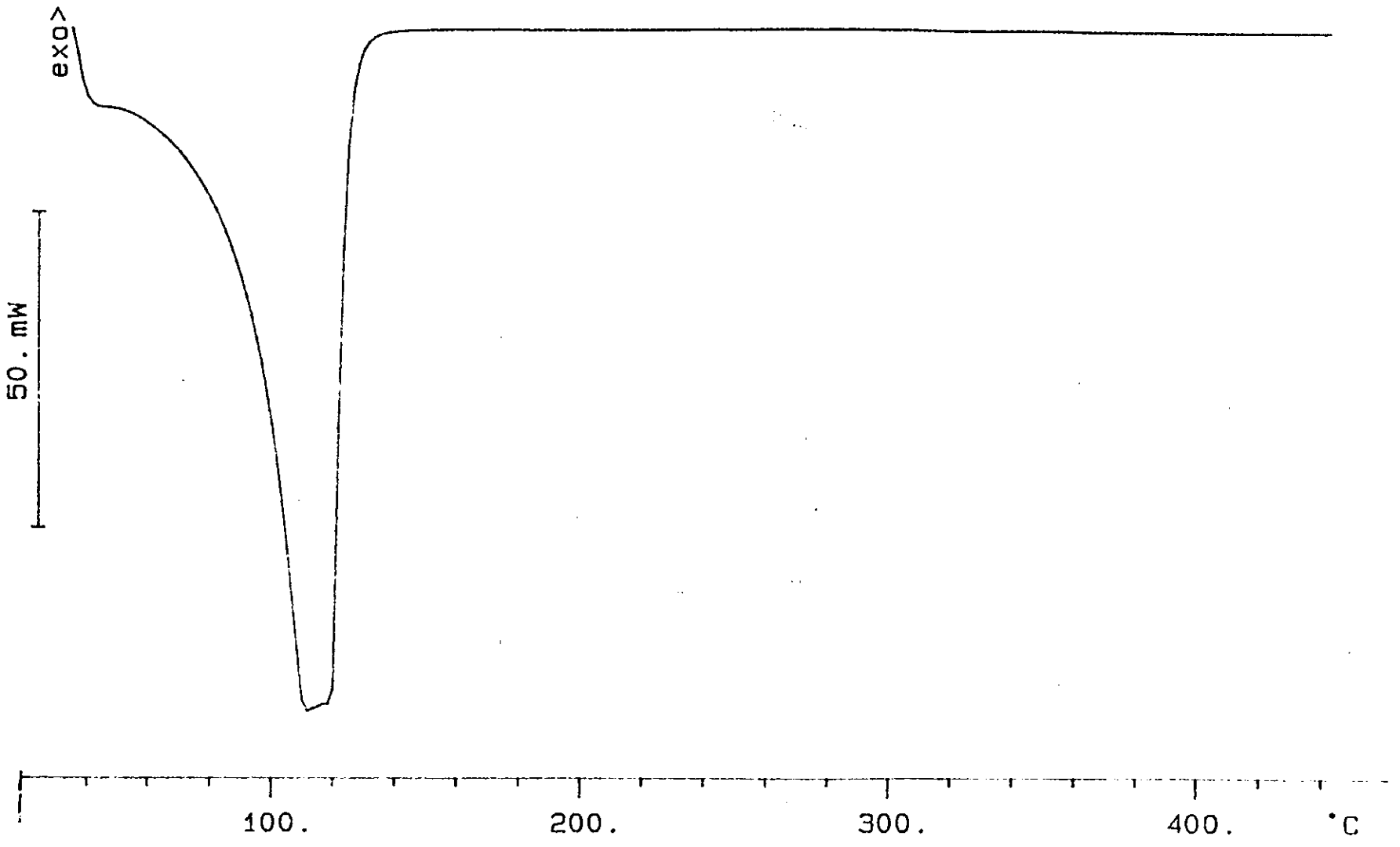
Rate: 10.0 °C/min

File: 00124.001

Ident: 6823.0

DSC METTLER 07-Jan-92

Mettler GraphWare TA72PS.1



R943-5711 6-11-92

PEAK INTEGRATION

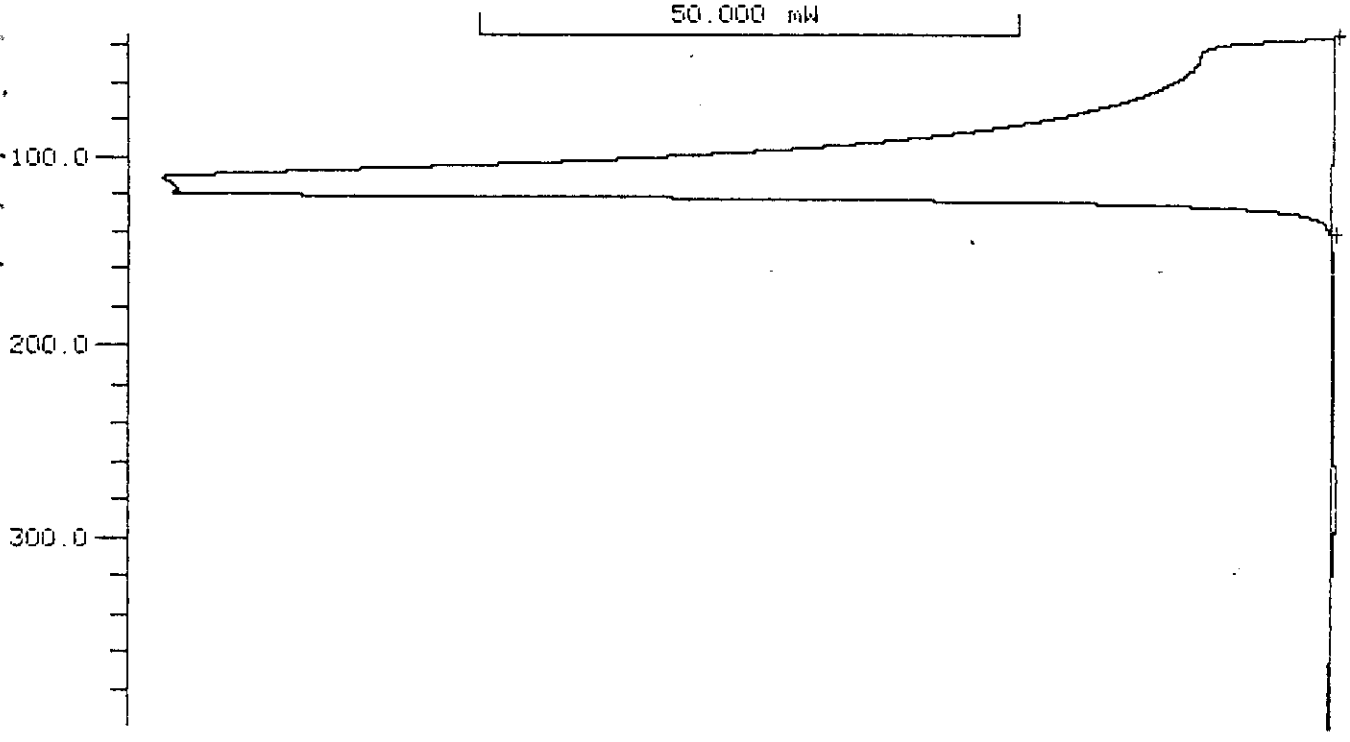
7-JAN-92 18:25

7-JAN-92 17:41 **

PEAK INTEGRATION	
DYN/ISO 1/2	1
AUTOLIMIT 0/1	1
START	35
END	400
BASELINE TYPE	8
PLOT CM	10
PLOT MODE	101
FILE NO.	00124.001
IDENT. NO.	6823
RATE K/MIN.	10
WEIGHT mG	9.7660
AUTOLIMITS	
WARNING	8
END TEMP. °C	140.7

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



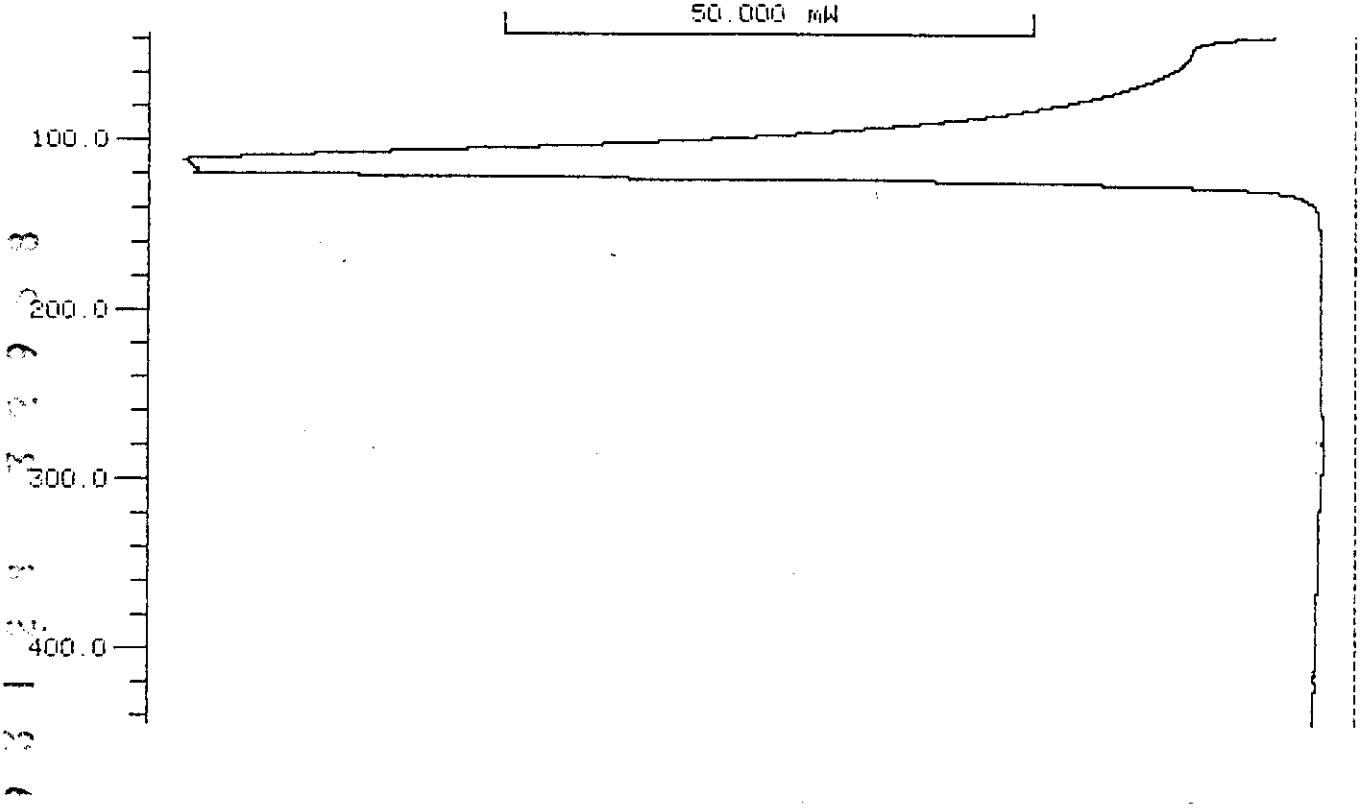
WARNING	1
ΔH ENDO mJ	22266
ΔH J/G	2279.9
PEAK TEMP. °C	102.8

R943-5711
DKC 4-11-92

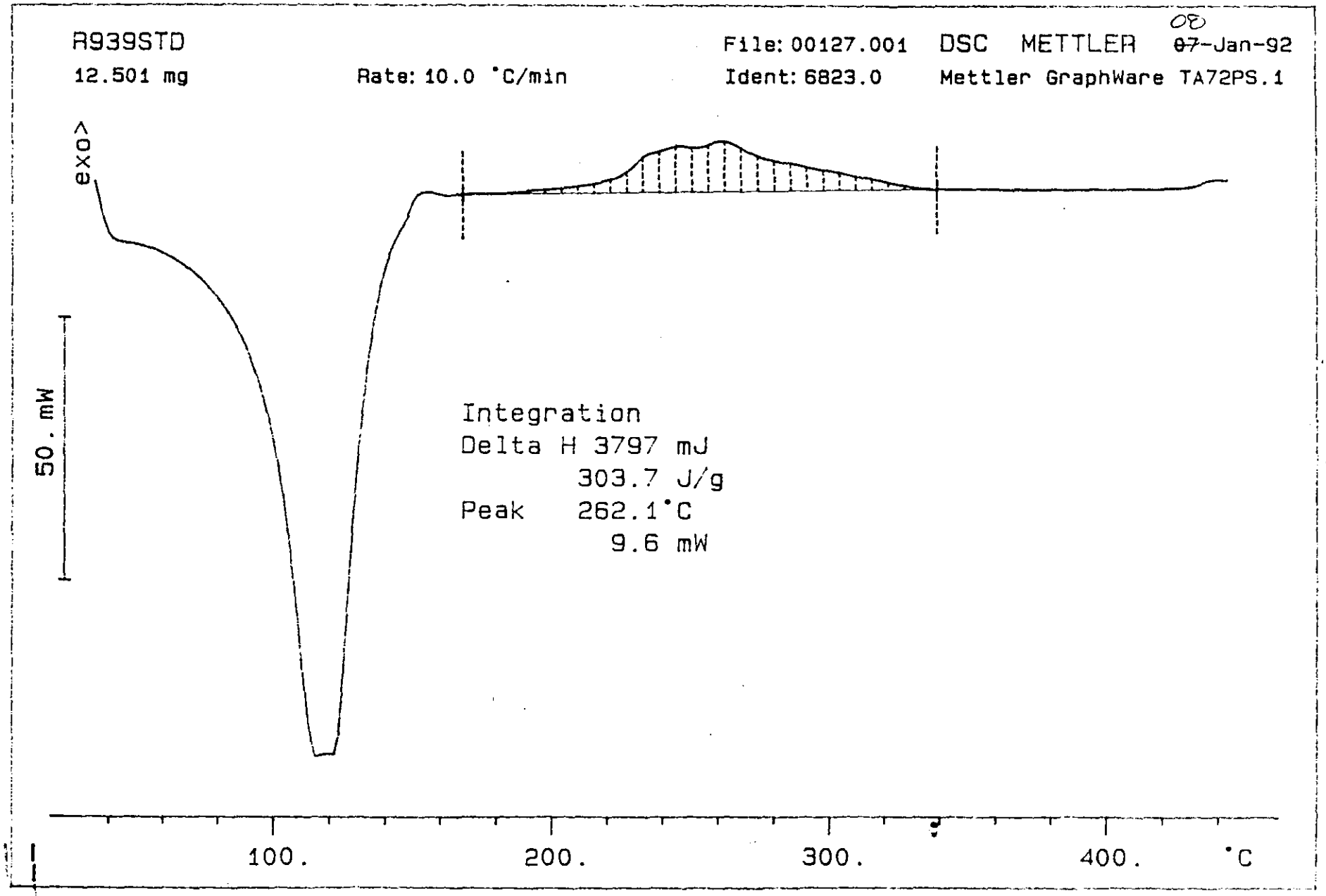
END SCREEN °C 445.0

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



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


R939STD
12.501 mg
Rate: 10.0 °C/min
File: 00127.001
Ident: 6823.0
DSC METTLER
08 ~~07~~-Jan-92
Mettler GraphWare TA72PS.1
exo>
50. mW
Integration
Delta H 3797 mJ
303.7 J/g
Peak 262.1°C
9.6 mW
100.
200.
300.
400.
°C

PEAK INTEGRATION

7-JAN-92 22:01

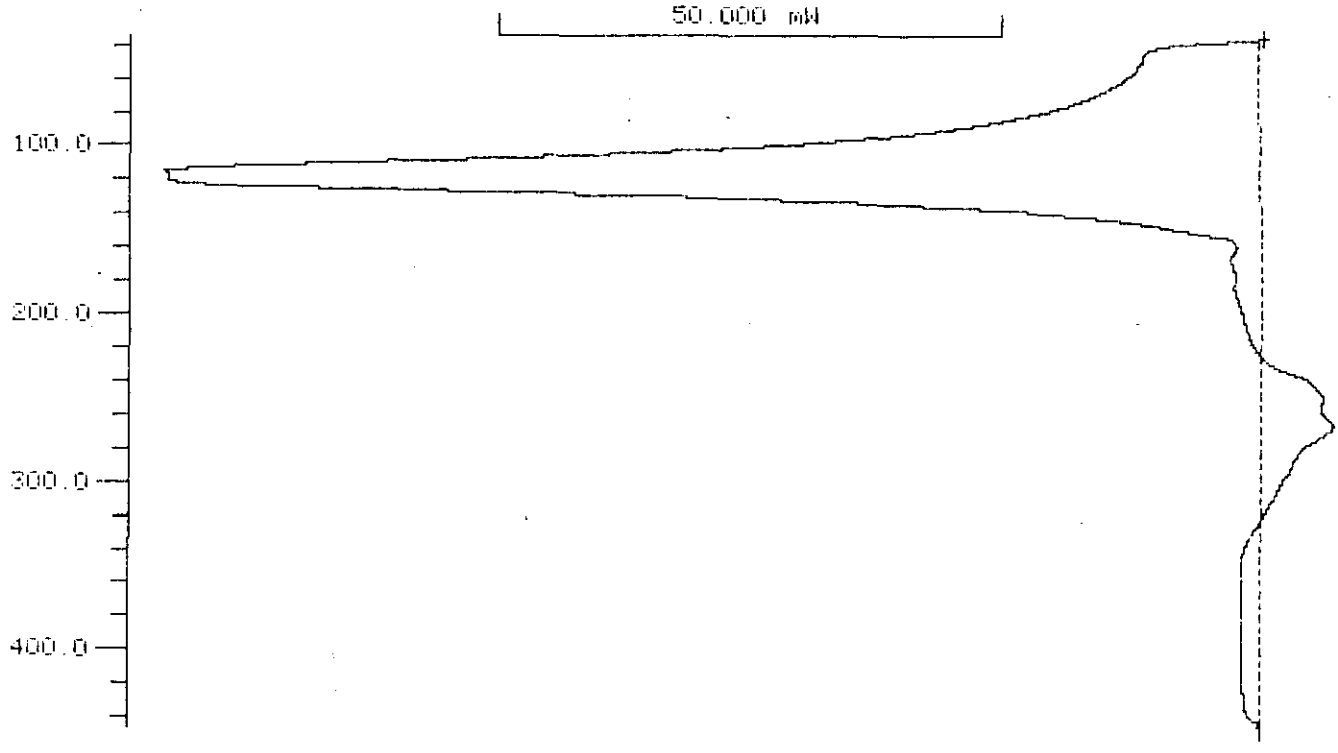
7-JAN-92 21:14 **

R939-5511
6-11-92

PEAK INTEGRATION	
DYN/ISO 1/2	1
AUTOLIMIT 0/1	0
START	35
END	450
START B. LINE	35
END B. LINE	450
BASELINE TYPE	8
PLOT CM	10
PLOT MODE	101
FILE NO.	00127.001
IDENT. NO.	6823
RATE K/MIN.	10
WEIGHT mG	12.501
END SCREEN °C	445.2

TEMPERATURE °C

HEAT FLOW
EXOTHERMAL-->



WARNING	1
ΔH ENDO mJ	25640
ΔH J/G	2051.0
PEAK TEMP. °C	105.8

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

26. Nov. 91
Dennis J Hart

DSC

Calibrated Nov 26, 91

ONFIGURATION

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
S 2	1850
. 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.: R943	Customer ID: 3AP891-8
Analysis: TOTAL ORGANIC CARBON	Sample Prep: UNDIGESTED

Instrument: MODEL 5011 WC16130	Procedure/Rev: LA-344-105/B-1
Technologist: L. CONLIN	Date: 01-28-92
Starting Time: 16:30	Temperature: NA
Ending Time: 23:00	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	S599-1621	11		
2	REAGENT BLANK	R940-5626*	12		
3	SAMPLE 3AP891-8	R943-5726*	13		
4	FINAL LMCS CHECK STD	R946-5526*	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			NA
*SAMPLES RERUN.				

A-6000-881 (03/92)

TOTAL ORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
S 599.-1621	STD	11-29-91	23:35	21

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	GM/L.C	S1D	0

Sample Size: 200-2ML-200 IN .5M H2SO4
Customer ID:

Remarks, Calculations, Results:
S356 CO3TOC
STDH 70C11J RESULT 2.99 g/L C
STD VAL 3.000 g/LC %REC 99.7%
% Rec = 2.99 g/L / 3.000 g/L x100 = 99.7%

Frank Conlin

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
16C949 D				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-28-92		DY Bisenius

54-6600-051 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
R 940.-5626	103AP	12-16-91	16: 2	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	ug Carbon	N124W	1

Sample Size: ?
Customer ID: BLK

Remarks, Calculations, Results:
REAGENT BLANK
.5M H2SO4
RERUN
3.60 ug C

Frank Conlin

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
16C949 D				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-28-92		DY Bisenius

54-6600-051 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5726	103AP	12-16-91	16: 9	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
TOC	LA-344-105	G/L	N124W	1

Sample Size: ? 1 ML + 500ul H2SO4
Customer ID: 3AP891-8

Remarks, Calculations, Results:
RERUN
8.77 E-2 g/L C

Frank Conlin

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
16C949 D				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-28-92		DY Bisenius

54-6600-051 (R-10-83)

Serial No	Sample Point	Date	Time Issued	Priority
R 946.-5526	103AP	12-16-91	16:15	25

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

Sample Size: ? 200ul + 2ML H2SO4
Customer ID: STD

Remarks, Calculations, Results:
RERUN
S356 CO3TOC
STDH 70C11J RESULT 2.93 g/LC
STD VAL 3.000 g/LC %REC 97.7%
% Rec = 2.93 g/L / 3.000 g/L x100 = 97.7%

Frank Conlin

Analyst-1	Analyst-2	Analyst-3	Analyst-4	Analyst-5
16C949 D				
Hrs	Hrs	Hrs	Hrs	Hrs

Date	Time Completed	Lab Unit Mgr
1-28-92		DY Bisenius

54-6600-051 (R-10-83)

Beginning Std.

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

S 599

Sample: 70C11J Date: 01/28/92 Time: 19:03:14

Sample Size = 200 uL Analyst : L CONLIN
Dil Factor = 11 Min Readings = 14
Blank ID # = BLANK Max Readings = 14
Blank Value = .5140706 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	2.40	95.83
3	1.51	31.70	92.43
4	2.01	44.60	28.92
5	2.51	50.60	11.86
6	3.00	54.00	6.30
7	3.51	55.30	2.35
8	4.00	56.00	1.25
9	4.50	56.50	0.88
10	5.00	57.00	0.88
11	5.50	57.30	0.52
12	6.00	57.50	0.35
13	6.50	57.80	0.52
14	7.00	58.00	0.34

BEST AVAILABLE COPY

BLANK VALUE = 3.6 micrograms carbon
BLANK FACTOR = 3.6 / 7.00293 = +5.1E-01 ug/min Carbon

SAMPLE RESULTS:
(58 - 3.6)(11)/(200) = +2.99E+00 g/L Carbon
(58 - 3.6)(11)/(200)(12) = +2.49E-01 Molar Carbon

OK Calculated by D.Y. Bisenius 81787 1/30/92

Sample Run By: _____
L CONLIN 8C949

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 42 TO 45 .

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

R940

Sample: BLANK Date: 01/28/92 Time: 18:53:09

Sample Size = 200 ul. Analyst : L CONLIN
Dil Factor = 1 Min Readings = 14
Blank ID # = BLANK Max Readings = 14
Blank Value = N/A % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	0.40	100.00
3	1.51	0.90	55.56
4	2.00	1.30	30.77
5	2.50	1.60	18.75
6	3.00	1.80	11.11
7	3.50	2.10	14.29
8	4.00	2.30	8.70
9	4.50	2.50	8.00
10	5.00	2.80	10.71
11	5.50	2.90	3.45
12	6.00	3.10	6.45
13	6.50	3.40	8.82
14	7.00	3.60	5.56

BEST AVAILABLE COPY

BLANK VALUE = 3.6 micrograms carbon
BLANK FACTOR = 3.6 / 7.00293 = +5.1E-01 ug/min Carbon

OK Calculated by D.Y. Bisenius 81787 1/30/92

Sample Run By: L CONLIN 60949

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: P743 Date: 01/28/92 Time: 22:15:33

Sample Size = 200 uL
Dil Factor = 1.5
Blank ID # = BLANK
Blank Value = .5140706 ug/minute C

Analyst : L CONLIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	2.20	100.00
3	1.51	9.30	76.34
4	2.01	10.70	13.08
5	2.51	12.10	11.57
6	3.01	12.60	3.97
7	3.51	13.20	4.55
8	4.01	13.50	2.22
9	4.50	13.90	2.88
10	5.00	14.20	2.11
11	5.50	14.50	2.07
12	6.00	14.80	2.03
13	6.50	15.00	1.33
14	7.00	15.30	1.96

BEST AVAILABLE COPY

BLANK VALUE = 3.6 micrograms carbon
BLANK FACTOR = 3.6 / 7.00293 = +5.1E-01 ug/min Carbon

SAMPLE RESULTS:
(15.3 - 3.600502)(1.5)/(200) = +8.77E-02 g/L Carbon
(15.3 - 3.600502)(1.5)/(200)(12) = +7.31E-03 Molar Carbon

Sample Run By: L CONLIN 6C949

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R946 Date: 01/28/92 Time: 22:53:04

Sample Size = 200 ul. Analyst : L CONLIN
Dil Factor = 11 Min Readings = 14
Blank ID # = BLANK Max Readings = 14
Blank Value = .5140706 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	5.50	100.00
3	1.51	33.20	83.43
4	2.01	45.10	26.39
5	2.51	51.00	11.57
6	3.01	53.50	4.67
7	3.50	54.90	2.55
8	4.00	55.40	0.90
9	4.50	55.90	0.89
10	5.00	56.10	0.36
11	5.50	56.30	0.26
12	6.00	56.40	0.18
13	6.50	56.60	0.35
14	7.00	56.80	0.35

BEST AVAILABLE COPY

BLANK VALUE = 3.6 micrograms carbon
BLANK FACTOR = 3.6 / 7.00293 = +5.1E-01 ug/min Carbon

SAMPLE RESULTS:
(56.8 - 3.599561)(11)/(200) = +2.93E+00 g/L Carbon
(56.8 - 3.599561)(11)/(200)(12) = +2.44E-01 Molar Carbon

Sample Run By: _____
L CONLIN 6C949

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: TOTAL INORGANIC CARBON	Sample Prep: UNDIGESTED

Instrument: WB39927	Procedure/Rev: LA-622-102/B-1
Technologist: J. SOLBRACK	Date: 1-28-92
Starting Time: 16:30	Temperature: NA
Ending Time: 11:45	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R939-5527	11		
2	REAGENT BLANK	R940-5627	12		
3	SAMPLE 3AP891-8	R943-5727	13		
4	FINAL LMCS CHECK STD	R946-5527	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/.50 mL			N/A

A-6000-881 (03/92)

TOTAL INORGANIC CARBON ANALYSIS - UNDIGESTED SAMPLE

Date 12-16-91
TIC
LA-622-102
% RECOVERY
50 g
STD
STDH 69C11-L RESULT 1.988 E-1 M
STD VAL 2.000E-1 M REC 99.4%

$$\%Rec = \frac{1.988E-1\,M}{2.000E-1\,M} \times 100 = 99.4\%$$

82020
1-28-92
D4 Bisenius

Date 12-16-91
TIC
LA-622-102
mg Carbon
50 g
REAGENT BLANK

2.2 mg C

82020
1-28-92
D4 Bisenius

Date 12-16-91
TIC
LA-622-102
mL
200 mL
5.295 E-1 g/L

82020
1-28-92
D4 Bisenius

Date 12-16-91
TIC
LA-622-102
% RECOVERY
50 g
STD
STDH 69C11-L RESULT 2.055 E-1 M
STD VAL 2.000E-1 M REC 102.8%

$$\%Rec = \frac{2.055E-1\,M}{2.000E-1\,M} \times 100 = 102.8\%$$

82020
1-28-92
D4 Bisenius

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R-939 69C11-L Date: 01/28/92 Time: 17:01:19

Sample Size = 50 uL Analyst : JI SOLBRACK
Dil Factor = 1 Min Readings = 14
Blank ID # = BLK Max Readings = 14
Blank Value = .3141542 ug/minute C % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.01	15.50	98.06
3	1.51	51.60	69.96
4	2.01	82.90	37.76
5	2.51	101.90	18.65
6	3.01	111.00	8.20
7	3.51	116.10	4.39
8	4.00	118.10	1.69
9	4.50	119.70	1.34
10	5.00	120.10	0.33
11	5.50	120.80	0.58
12	6.00	120.90	0.08
13	6.50	121.30	0.33
14	7.00	121.50	0.16

BEST AVAILABLE COPY

BLANK VALUE = 2.2 micrograms carbon
BLANK FACTOR = 2.2 / 7.00293 = +3.1E-01 ug/min Carbon

SAMPLE RESULTS:
(121.5 - 2.200038)(1)/(50) = +2.386E+00 g/L Carbon
(121.5 - 2.200038)(1)/(50)(12) = +1.988E-01 Molar Carbon

OK Calculated by D.Y. Bisenius 81787 1/30/92

Sample Run By: _____
JI SOLBRACK 82020

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST
THAT COMPLETED THE ANALYSIS RUN ON PAGES 48 TO 51 .

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

Sample: BLK R-940 Date: 01/28/92 Time: 18:48:20

Sample Size = 50 ul
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : JI SOLBRACK
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	0.20	50.00
4	2.01	0.40	50.00
5	2.51	0.60	33.33
6	3.01	0.80	25.00
7	3.51	0.90	11.11
8	4.01	1.00	10.00
9	4.50	1.20	16.67
10	5.00	1.40	14.29
11	5.50	1.60	12.50
12	6.00	1.80	11.11
13	6.50	2.00	10.00
14	7.00	2.20	9.09

BEST AVAILABLE COPY

BLANK VALUE = 2.2 micrograms carbon
BLANK FACTOR = 2.2 / 7.00293 = +3.1E-01 ug/min Carbon

OK Calculated by D.Y. Bisenius 81787 1/30/92

Sample Run By: JI SOLBRACK 82020

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R-943 Date: 01/28/92 Time: 21:51:30

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .3141542 ug/minute C

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	10.80	96.30
3	1.51	34.90	69.05
4	2.01	59.00	40.85
5	2.50	76.60	22.98
6	3.00	88.50	13.45
7	3.50	95.80	7.62
8	4.00	100.70	4.87
9	4.50	103.40	2.61
10	5.00	105.20	1.71
11	5.50	106.30	1.03
12	6.00	107.00	0.65
13	6.50	107.60	0.56
14	7.00	108.10	0.46

BEST AVAILABLE COPY

BLANK VALUE = 2.2 micrograms carbon
BLANK FACTOR = 2.2 / 7.00293 = +3.1E-01 ug/min Carbon

SAMPLE RESULTS:
(108.1 - 2.200307)(1)/(200) = +5.295E-01 g/L Carbon
(108.1 - 2.200307)(1)/(200)(12) = +4.412E-02 Molar Carbon

Sample Run By: JI SOLBRACK 82020

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: R-946 Date: 01/28/92 Time: 22:39:44

Sample Size = 50 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .3141542 ug/minute C

Analyst : JI SOLBRACK
Min Readings = 14
Max Readings = 14
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.90	0.00
2	1.01	28.00	96.79
3	1.50	60.70	53.87
4	2.00	83.30	27.13
5	2.50	97.40	14.48
6	3.00	106.40	8.46
7	3.50	112.50	5.42
8	4.00	116.50	3.43
9	4.50	119.40	2.43
10	5.00	121.40	1.65
11	5.50	122.90	1.22
12	6.00	123.70	0.65
13	6.50	124.70	0.80
14	7.00	125.50	0.64

BEST AVAILABLE COPY

BLANK VALUE = 2.2 micrograms carbon
BLANK FACTOR = 2.2 / 7.00293 = +3.1E-01 ug/min Carbon

SAMPLE RESULTS:
(125.5 - 2.199693)(1)/(50) = +2.466E+00 g/L Carbon
(125.5 - 2.199693)(1)/(50)(12) = +2.055E-01 Molar Carbon

Sample Run By: _____
JI SOLBRACK 82020

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: AMMONIA	Sample Prep: UNDIGESTED

Instrument: NA	Procedure/Rev: LA-634-102/D-0
Technologist: S. LAI	Date: 01-13-92
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: D. BISENIUS

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R939-5528	11		
2	REAGENT BLANK	R940-5628	12		
3	SAMPLE 3AP891-8	R943-5728	13		
4	FINAL LMCS CHECK STD	R946-5528	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-QX/0.250 mL			N/A
SAMPLES RERUN.				

A-6000-881 (03/92)

AMMONIA ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 939.-5529	103AP	12-16-91	16: 1	25

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

Sample Size: ? 250λ 0.0994/17 NCR
Customer ID: STD

Remarks, Calculations, Results:
S235 NH4CL 4C11-8X
STDH 4C11QX RESULT 0.0493[M] Blank: 28λ RERUN
STD VAL 5x10⁻²M %REC 98.62%
(152λ-28λ)(0.0994/17) / 250λ = 0.0493[M] STD: 152λ
1-13-92

Analyst-1: Sue Li | Analyst-2: | Analyst-3: Leslie Day | Analyst-4: | Analyst-5: RK Fuller 1-14-92
Hrs: 1c916 | Hrs: | Hrs: | Hrs: | Hrs:
Date: 1-13-92 | Time Completed: | Lab Unit Mgr:

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

Serial No	Sample Point	Date	Time Issued	Priority
R 940.-5628	103AP	12-16-91	16: 2	25

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

Sample Size: ? 1000 λ 0.0994/17 NCR
Customer ID: BLK

Remarks, Calculations, Results:
REAGENT BLANK
< 5x10⁻⁶ moles x 18 g NH4/mole x 1000 mg/g = 0.09 mg Blank: 28λ RERUN
0.09 mg / 1 ml x 1000 ml / 1 = < 90 ppm (Reg) Blank: 29λ

Analyst-1: Sue Li | Analyst-2: | Analyst-3: | Analyst-4: | Analyst-5: RK Fuller 1-14-92
Hrs: 6c916 | Hrs: | Hrs: | Hrs: Leslie Day | Hrs:
Date: 1-13-92 | Time Completed: | Lab Unit Mgr:

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

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5728	103AP	12-16-91	16: 9	25

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

Sample Size: ? 1000 λ 0.0994/17 NCR
Customer ID: 3AP891-8

Remarks, Calculations, Results:
< 5x10⁻⁶ moles x 18 g NH4/mole x 1000 mg/g = 0.09 g Blank: 25λ
0.09 mg / 1 mL x 1000 mL / 1 = < 90 ppm Sample: 25λ

Analyst-1: Sue Li | Analyst-2: | Analyst-3: | Analyst-4: | Analyst-5: RK Fuller 1-14-92
Hrs: 1c916 | Hrs: | Hrs: | Hrs: Leslie Day | Hrs:
Date: 1-13-92 | Time Completed: | Lab Unit Mgr:

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

Serial No	Sample Point	Date	Time Issued	Priority
R 946.-5528	103AP	12-16-91	16:13	25

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

Sample Size: ? 250λ 0.0994/17
Customer ID: STD

Remarks, Calculations, Results:
S235 NH4CL 4C11-8X RERUN
STDH 4C11-QX RESULT 0.0485[M] Blank: 28λ
STD VAL 5.0x10⁻²[M] %REC 97.02%
(150λ-28λ)(0.0994/17[M]) / 250λ = 0.0485[M] STD: 150λ

Analyst-1: Sue Li | Analyst-2: | Analyst-3: Leslie Day | Analyst-4: | Analyst-5: RK Fuller 1-14-92
Hrs: 1c916 | Hrs: | Hrs: | Hrs: Leslie Day | Hrs:
Date: 1-13-92 | Time Completed: | Lab Unit Mgr:

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: DETERMINATION OF HYDROXIDE ION IN SOLUTION	Sample Prep: UNDIGESTED

Instrument: AL10636, WB55123	Procedure/Rev: LA-661-102/F-1
Technologist: J. MIDDLETON	Date: 01-07-92
Starting Time: 00:15	Temperature: NA
Ending Time: 04:05	Chemist: S. ISAACSON

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R939-5529	11		
2	REAGENT BLANK	R940-5629	12		
3	SAMPLE 3AP891-8	R943-5729	13		
4	FINAL LMCS CHECK STD	R946-5529	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

A-6000-881 (03/92)

DETERMINATION OF HYDROXIDE ION IN SOLUTION - UNDIGESTED SAMPLE

Serial No: R 940.-5629 | Sample Point: 105AP | Date: 12-16-91 | Time Issued: 18:1 | Priority: 25
Determination: OH | Method/Standard: LA-661-102 | Result Units: % RECOVERY | Charge Code: 11124W | Reruns: 0
Sample Size: 1004 | Customer ID: STD
Remarks, Calculations, Results: S275 115-OH .1899= HNO_3
STD# 9C11AG RESULT 8.55E-1
STD VAL 8.57E-1 %REC 99.8%
$(460-10)(.1899)/100 =$
Analyst-1: 82577 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5
Date: 1-7-92 | Time Completed | Lab Unit Mgr: Stacie Isaacson

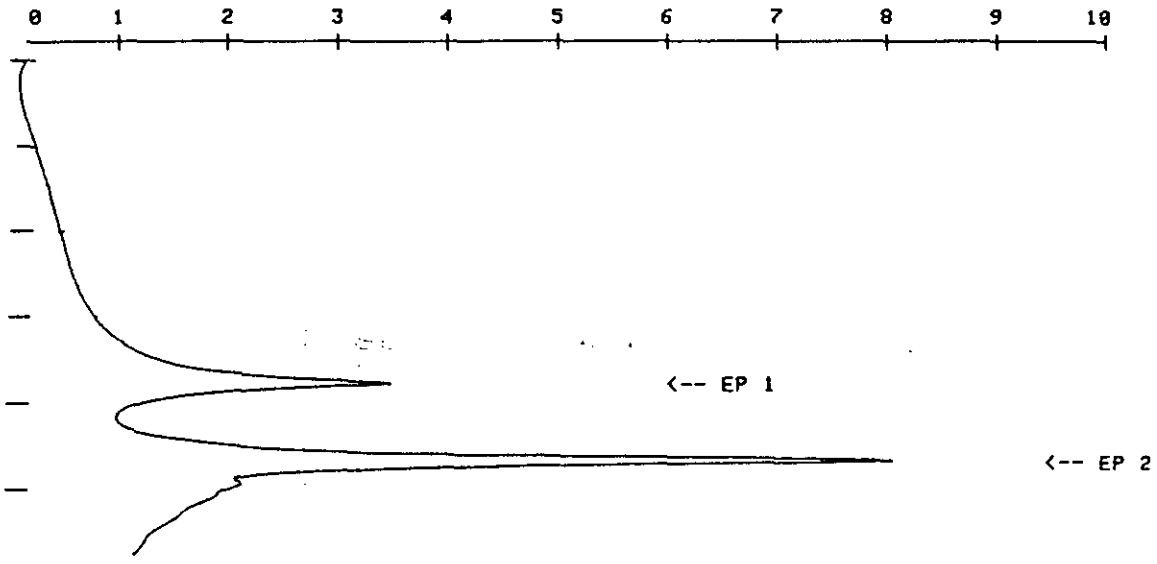
Serial No: R 940.-5629 | Sample Point: 105AP | Date: 12-16-91 | Time Issued: 18:1 | Priority
Determination: OH | Method/Standard: LA-661-102 | Result Units: M | Charge Code: 11124W | Reruns
Sample Size: 3ml | Customer ID: BLK
Remarks, Calculations, Results: REAGENT BLANK .1899= HNO_3
Complete
Analyst-1: 82577 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5
Date: 1-7-92 | Time Completed | Lab Unit Mgr

Serial No: R 943.-5629 | Sample Point: 105AP | Date: 12-16-91 | Time Issued: 18:1 | Priority: 25
Determination: OH | Method/Standard: LA-661-102 | Result Units: M | Charge Code: 11124W | Reruns: 0
Sample Size: 1ml | Customer ID: SAP871-8
Remarks, Calculations, Results: 100% SPIKE .1899= HNO_3
SPIKE# 9C11AG,
$\frac{(464-460)(.1899)}{1000} = 7.60E^{-4}$
Analyst-1: 82577 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5
Date: 1-7-92 | Time Completed | Lab Unit Mgr: Stacie Isaacson

Serial No: R 940.-5629 | Sample Point: 105AP | Date: 12-16-91 | Time Issued | Priority
Determination: OH | Method/Standard: LA-661-102 | Result Units: % RECOVERY | Charge Code: 11124W | Reruns
Sample Size: 100% | Customer ID: STD
Remarks, Calculations, Results: S275 115-OH .1899= HNO_3
STD# 9C11AG RESULT 8.75E-1
STD VAL 8.57E-1 %REC 102.1%
$\frac{(471-10)(.1899)}{100} = 8.75E^{-1}$
Analyst-1: 82577 | Analyst-2 | Analyst-3 | Analyst-4 | Analyst-5
Date: 1-7-92 | Time Completed | Lab Unit Mgr: Stacie Isaacson

SAMPLE NUMBER: 31
SAMPLE DATA: 821.
DIRECT READ PH: 12.136

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

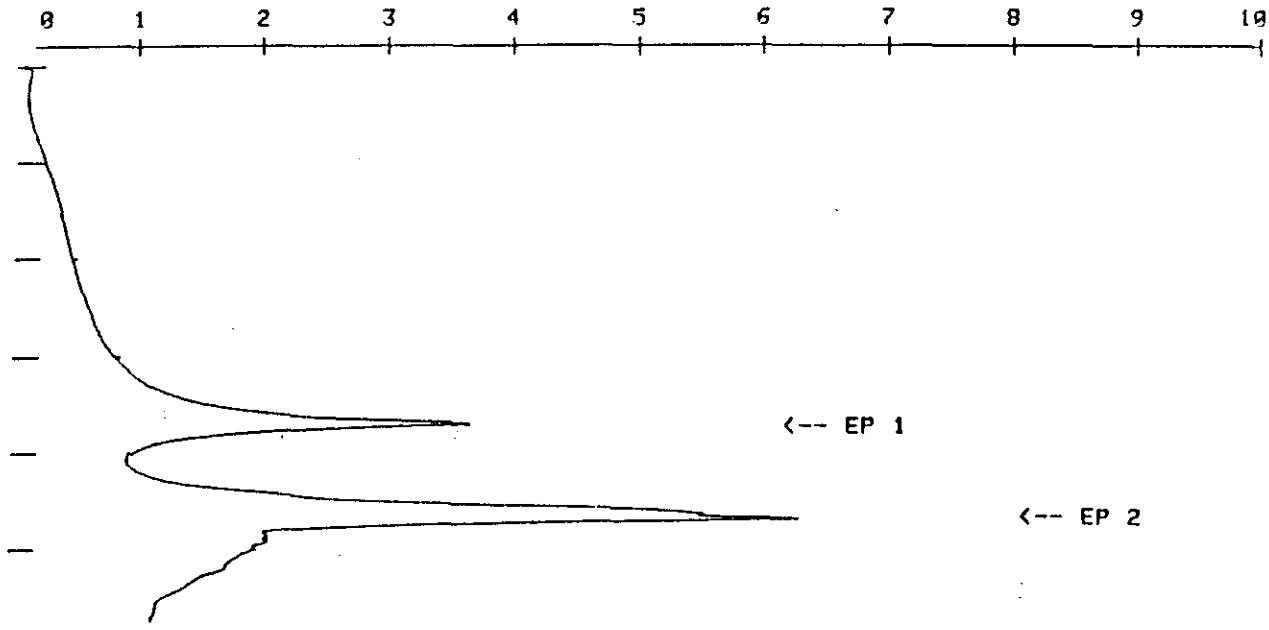
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.72	0.471	0.0000
6.08	0.581	0.0000

TITRATION TERMINATED BY PH LIMIT.

JAN 7 1992 3:59 AM

SAMPLE NUMBER: 20
SAMPLE DATA: 897.
DIRECT READ PH: 12.209

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

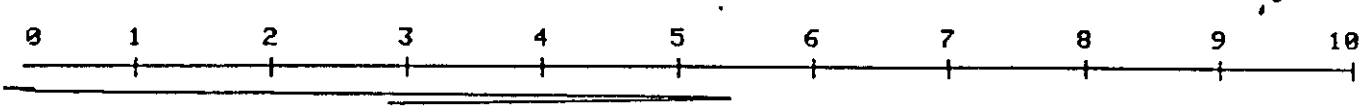
EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.78	0.460	0.0000
6.20	0.578	0.0000

TITRATION TERMINATED BY PH LIMIT.

JAN 7 1992 1:09 AM

SAMPLE NUMBER: 6
SAMPLE DATA: 897.
DIRECT READ PH: 4.416

DERIVATIVE OUTPUT, dE/dV



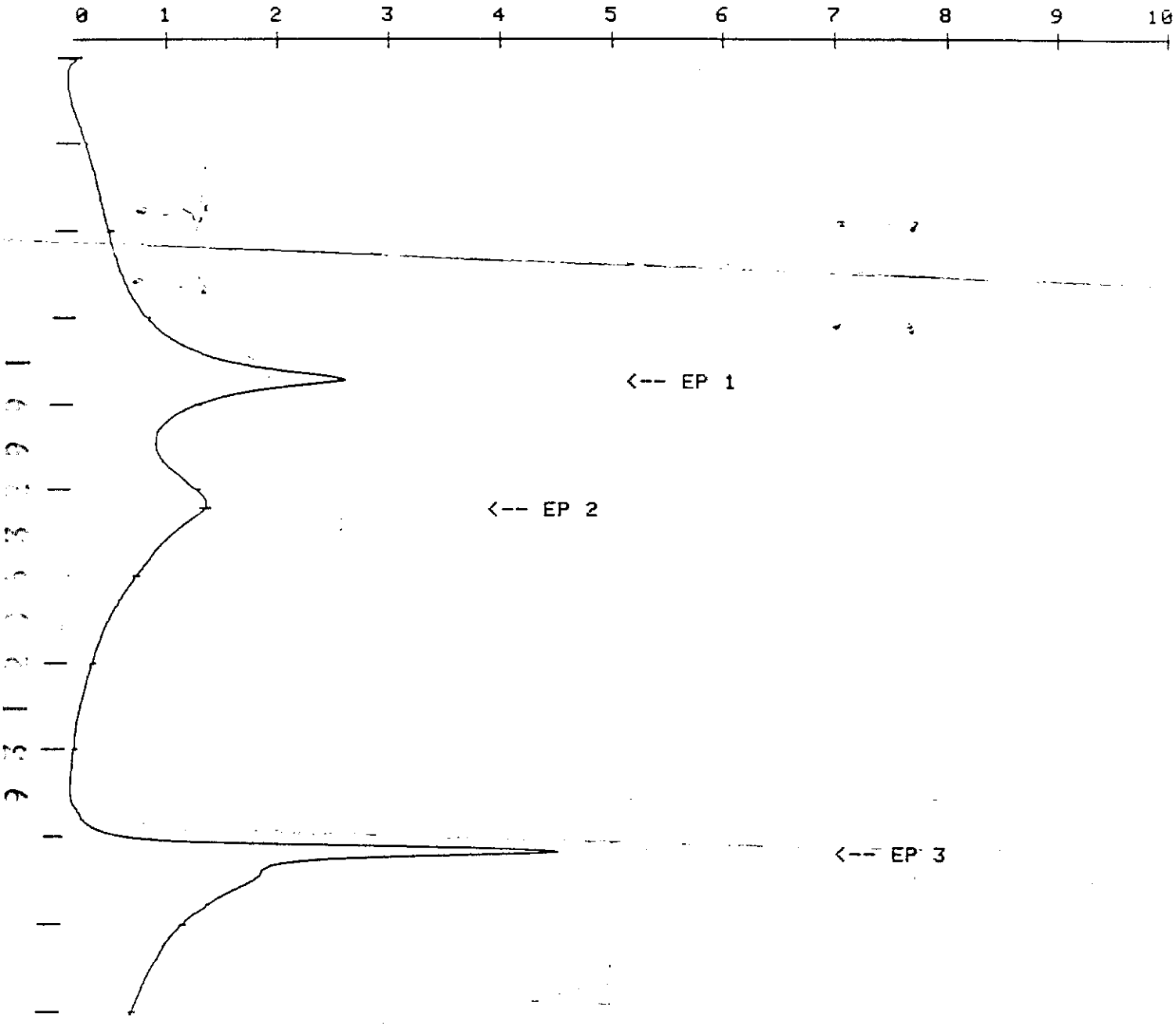
DRV TITRATION:

TITRATION TERMINATED BY PH LIMIT.

JAN 7 1992 12:47 AM

SAMPLE NUMBER: 25
SAMPLE DATA: 579.
DIRECT READ PH: 11.695

DERIVATIVE OUTPUT, dE/dV



DRV TITRATION:

EQUIVALENCE PH	TITRANT VOLUME	COMPUTATION
9.58	0.464	0.0000
8.11	0.651	0.0000
5.73	1.144	0.0000

TITRATION TERMINATED BY PH LIMIT.

JAN 7 1992 3:04 AM

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: CYANIDE	Sample Prep: UNDIGESTED

Instrument: MILTON ROY SPEC 301 AL10724	Procedure/Rev: LA-695-102/B-0
Technologist: E. COLVIN	Date: 02-03-92
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	R939-5578	11		
2	REAGENT BLANK	R940-5678	12		
3	SAMPLE 3AP891-8	R943-5778	13		
4	FINAL LMCS CHECK STD	R946-5578	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

A-6000-881 (03/92)

CYANIDE ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
K 939.-557U	105W	12-16-91	16: 2	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	% RECOVERY	N124W	0

Sample Size: ? 100uL-10mL-500uL
Customer ID: STD

Remarks, Calculations, Results
S244 KCN
STDH 75C11-X RESULT 8.90E2 ppm
STD VAL 8.98E2 ppm %REC (99.1%)
%Rec = 8.90E2 ppm / 8.98E2 ppm x100 = 99.1%
(.724-.004)-(-.004303) / .162726 = 4.45 ug CN⁻
4.45 ug CN / 0.5 mL x 100 = 890 ppm
ABS .724
Blank = .004
D.F. = 10mL / 0.1mL x100

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Ed Cole				

Date	Time Completed	Lab Unit Mgr
2-3-92		D4 Bisenius

Serial No	Sample Point	Date	Time Issued	Priority
K 940.-557U	105W	12-16-91	16: 3	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	PPM	N124W	0

Sample Size: ?
Customer ID: BLK

Remarks, Calculations, Results
REAGENT BLANK
<0.1 ug CN⁻ / 52L = (<2E-2 ppm)
.004-(-.004303) / .162726 = .051 ug CN⁻ = <0.1 ug CN⁻
ABS .004

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Ed Cole				

Date	Time Completed	Lab Unit Mgr
2-3-92		D4 Bisenius

Serial No	Sample Point	Date	Time Issued	Priority
K 943.-557U	105W	12-16-91	16: 9	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	PPM	N124W	0

Sample Size: ? 750uL
Customer ID: SAP891-B

Remarks, Calculations, Results
3.83E-1 ug CN⁻ / 0.75 mL = (5.11E-1 ppm)
(.062-.004)-(-.004303) / .162726 = 3.83E-1 ug CN⁻
ABS .062
Blank = .004

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Ed Cole				

Date	Time Completed	Lab Unit Mgr
2-3-92		D4 Bisenius

Serial No	Sample Point	Date	Time Issued	Priority
K 946.-557U	105W	12-16-91	16:15	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CN	LA-695-102	% RECOVERY	N124W	0

Sample Size: ? 100uL-10mL-500uL
Customer ID: STD

Remarks, Calculations, Results
S244 KCN
STDH 75C11-X RESULT 886E2 ppm CN⁻
STD VAL 8.98E2 ppm %REC 98.7%
(0.721-0.004)-(-0.004303) / .162726 = 4.43 mg CN⁻
886 / 898 x100 = (98.7%)
DF = 10mL / 0.1mL = 100
4.43 / 0.5mL x100 = 886 mg/L CN⁻
ABS .721
BLANK = 0.004

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
80028				
Ed Cole				

Date	Time Completed	Lab Unit Mgr
2-3-92		J. S. Lachut

ODAYS DATE: 02-03-1992

ROLL NO.: 80028

Y-INTERCEPT= -.004303
SLOPE= .162726

SAMPLE ID#: R-940 BLANK
SAMPLE SIZE: 0
WVL AND ABS= 580NM 0.004 A

SAMPLE ID#: R-939 75C11-X STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.724 A

SAMPLE ID#: R-941
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.073 A

SAMPLE ID#: R-941 DUPLICATE
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.074 A

SAMPLE ID#: R-941 + SPIKE
SAMPLE SIZE: 750UL + 100UL-10ML-500UL 75C11-X SPIKE
WVL AND ABS= 580NM 0.790 A

SAMPLE ID#: R-942
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.075 A

SAMPLE ID#: R-943
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.062 A

SAMPLE ID#: R-744
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.067 A

SAMPLE ID#: R-745
SAMPLE SIZE: 750UL
WVL AND ABS= 580NM 0.074 A

SAMPLE ID#: R-946 75C11-X STD
SAMPLE SIZE: 100UL-10ML-500UL
WVL AND ABS= 580NM 0.721 A

TECHNOLOGIST SIGNATURE: Ed Cole

E SIGNED: 2-3-1992

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.: R943	Customer ID: 3AP891-8
Analysis: ARSENIC	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER WA77479	Procedure/Rev: LA-355-131/B-0
Technologist: D. R. JACKSON	Date: 01-07-92
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	R939-5595	11		
2	REAGENT BLANK	R940-5695	12		
3	SAMPLE 3AP891-8	R943-5795	13		
4	FINAL LMCS CHECK STD	R946-5595	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	129B38C/.500 mL			N/A

A-6000-881 (03/92)

ARSENIC ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 939.-5595	103AP	12-16-91	13: 2	25

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

Sample Size: .500 ml
Customer ID: STD

Remarks, Calculations, Results
EDF R741 AS/HYDRD $\frac{0.319 - 0.0326}{0.0149} = 52.78$ ngs
STDH129838C RESULT ~~52.78 ngs~~ 0.1056 ppm
STD VAL 0.10 ppm %REC 105.6%
0.319 = PKHt
$\frac{52.78 \text{ ngs}}{500 \lambda} = 0.1056$ ppm
$\frac{0.1056 \text{ ppm}}{0.10 \text{ ppm}} \times 100 = 105.6\%$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C225		Leslie Diaz		RK Hill 1-7-92
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 1-7-92	Time Completed	Lab Unit Mgr		

Serial No	Sample Point	Date	Time Issued	Priority
R 940.-5595	103AP	12-16-91	16: 0	25

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

Sample Size: 10.0 ml
Customer ID: BLK

Remarks, Calculations, Results
REAGENT BLANK $\frac{0.129 - 0.0326}{0.0149} = 6.134$ ngs
0.129 = PKHt
$\frac{6.134 \text{ ngs}}{10000 \lambda} = 0.0006$ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C225		Leslie Diaz		RK Hill 1-7-92
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 1-7-92	Time Completed	Lab Unit Mgr		

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5595	103AP	12-16-91	18: 7	25

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

Sample Size: 1.0 ml
Customer ID: SAMPLE91-B

Remarks, Calculations, Results
0.443 = PKHt $\frac{0.443 - 0.0326}{0.0149} = 27.54$ ngs
$\frac{27.54 \text{ ngs}}{1000 \lambda} = 0.028$ ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C225		Leslie Diaz		RK Hill 1-7-92
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 1-7-92	Time Completed	Lab Unit Mgr		

Serial No	Sample Point	Date	Time Issued	Priority
R 946.-5595	103AP	12-16-91	18: 1	25

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

Sample Size: .500 ml
Customer ID: STD

Remarks, Calculations, Results
EDF R741 AS/HYDRD $\frac{0.864 - 0.0326}{0.0149} = 55.80$ ngs
STDH129838C RESULT .1116
STD VAL 0.10 ppm %REC 111.6%
0.864 = PKHt
$\frac{55.80 \text{ ngs}}{500 \lambda} = 0.1116$ ppm
$\frac{0.116 \text{ ppm}}{0.10 \text{ ppm}} \times 100 = 111.60\%$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C225		Leslie Diaz		RK Hill 1-7-92
Hrs	Hrs	Hrs	Hrs	Hrs
Date: 1-7-92	Time Completed	Lab Unit Mgr		

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:	01-07-92

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			
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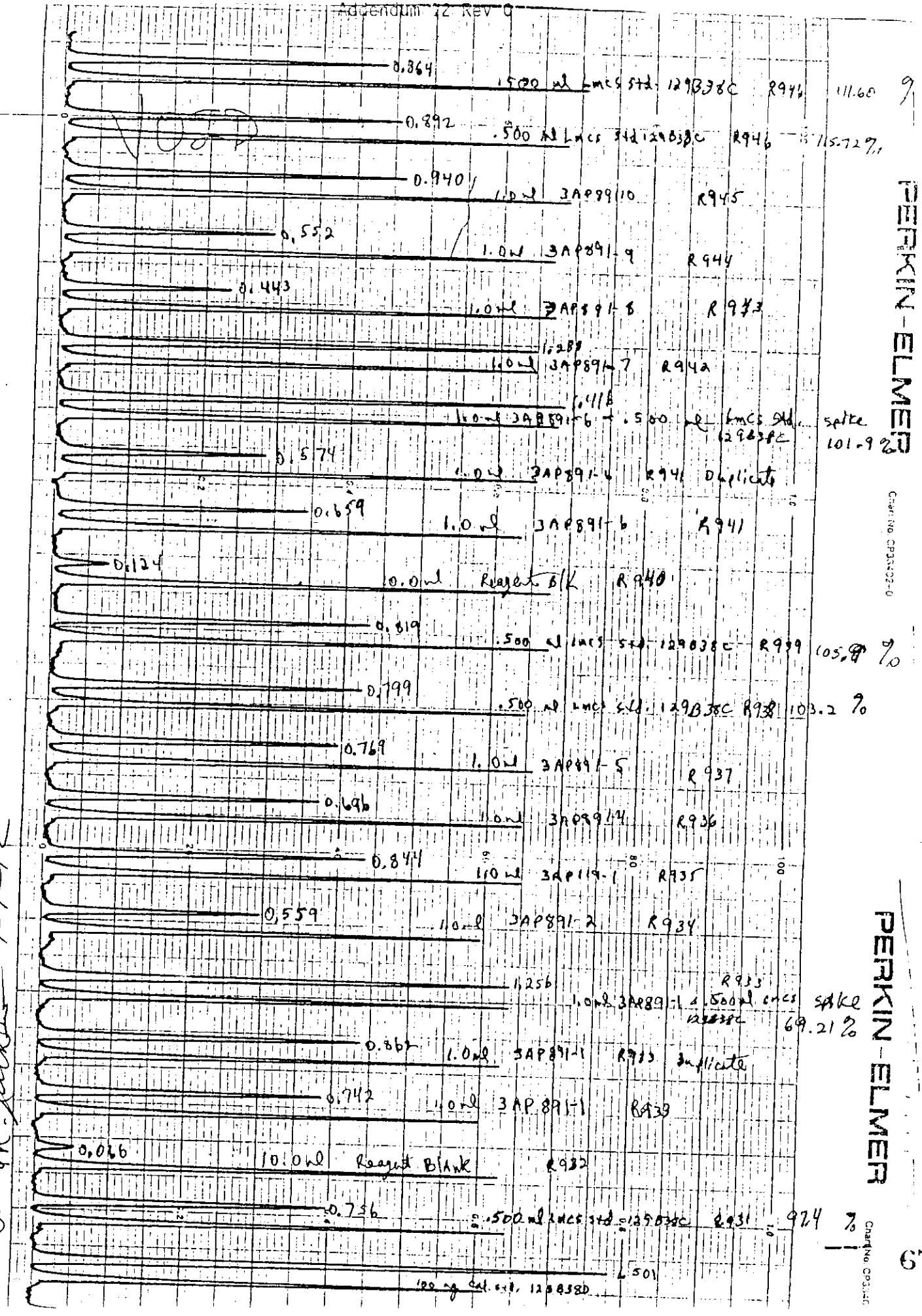
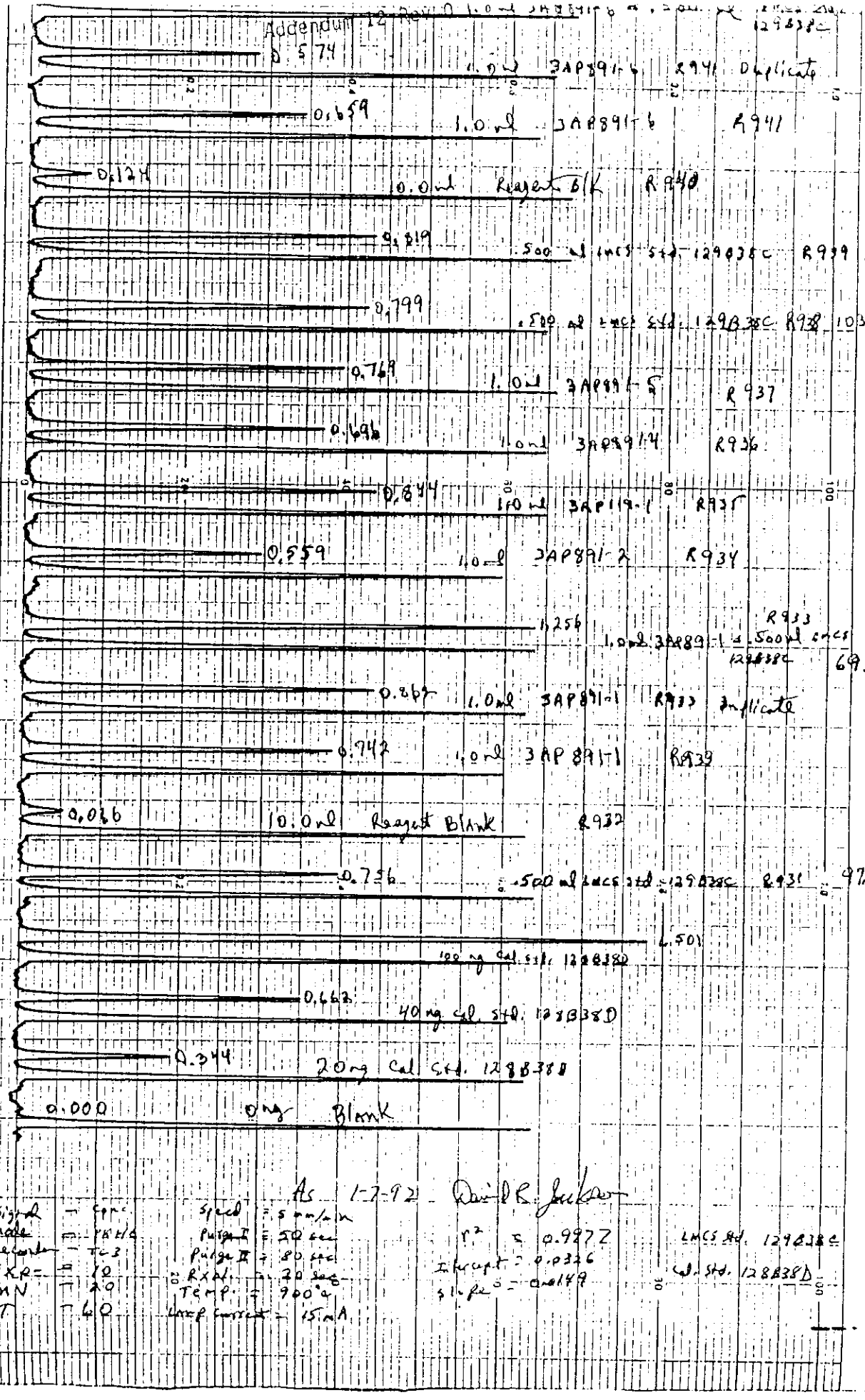
Comments:

A-6000-882 (03/92)



Dan & Karla 1-7-92



PERKIN-ELMER

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: MERCURY	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER WA77479	Procedure/Rev: LA-325-102/B-0
Technologist: D. R. JACKSON	Date: 01-21-92
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	R939-5597	11		
2	REAGENT BLANK	R940-5697	12		
3	SAMPLE 3AP891-8	R943-5797	13		
4	FINAL LMCS CHECK STD	R946-5597	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

A-6000-881 (03/92)

MERCURY ANALYSIS - UNDIGESTED SAMPLE

Serial No: R 939-5597 | Sample Point: 105AP | Date: 12-16-91 | Time Issued: 16:2 | Priority: 25

Determination: Hg | Method/Standard: LM-325-102 | Result Units: % RECOVERY | Charge Code: N124W | Reruns: 0

Sample Size: 300 ml | Customer ID: STD

Remarks, Calculations, Results: EDP R/16 HG/HYDRD STD#129878D RESULT 0.1074 ppm

STD VAL 0.100 ppm %REC 107.4 %

~~PKHT = 0.196~~ DRJ 1-21-92

PKHt = 0.194 over

0.178 - -0.0036 / 0.0057 = 31.86 ng

31.86 ng / 300 λ = 0.1062 ppm

0.1074 ppm / 0.100 ppm × 100 = 104.2 %

Analyst - 1: 6C275 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5: RX 1-22-92

Date: 1-21-92 | Time Completed | Lab Unit Mgr

PKHt = 0.194 R939-5597

(0.194 - 0.0007) / 0.0060 = 32.2 = ng

32.22 ng / 300 λ = 0.1074 ppm

0.1074 ppm / 0.1000 ppm × 100 = 107.4 %

Serial No: R 940-5697 | Sample Point: 105AP | Date: 12-16-91 | Time Issued: 16:3 | Priority: 25

Determination: Hg | Method/Standard: LM-325-102 | Result Units: PPM | Charge Code: N124W | Reruns: 0

Sample Size: 10.0 ml | Customer ID: BLK

Remarks, Calculations, Results: REAGENT BLANK

~~PKHt = 0.015~~ DRJ 1-21-92

(0.015 - -0.0036) / 0.0057 = 0.69 ng

<5 ng / 10000 λ = <0.0005 ppm

PKHt = 0.006 over

Analyst - 1: 6C275 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5: RX 1-22-92

Date: 1-21-92 | Time Completed | Lab Unit Mgr

PKHt = 0.006 R940-5697

(0.006 - 0.0007) / 0.0060 = 0.88 ng = <5 ng DRJ 1-21-92

<5 ng / 10000 λ = <0.0005

Serial No: R 943-5797 | Sample Point: 105AP | Date: 12-16-91 | Time Issued: 18:10 | Priority: 25

Determination: Hg | Method/Standard: LM-325-102 | Result Units: PPM | Charge Code: N124W | Reruns: 0

Sample Size: ~~100 ml~~ 3.0 ml | Customer ID: SAF891-B

Remarks, Calculations, Results: 1-21-92

~~PKHt = 0.016~~ DRJ 1-21-92

(0.012 - -0.0036) / 0.0057 = 2.74 ng = <5 ng

<5 ng / 1000 λ = <0.005 ppm

PKHt = 0.014 over

Analyst - 1: 6C275 | Analyst - 2 | Analyst - 3 | Analyst - 4 | Analyst - 5: RX 1-22-92

Date: 1-21-92 | Time Completed | Lab Unit Mgr

PKHt = 0.014 R943-5797

(0.014 - 0.0007) / 0.0060 = 2.22 ng = <5 ng

<5 ng / 3000 λ = <0.0017 ppm

MERCURY ANALYSIS - UNDIGESTED SAMPLE

Sample No. R946-5597	Sample Point	Date 12-16-91	Time Taken	Project
Determination Hg	Method/Standard LA-325-102	Report Units % RECOVERY	Original Filter	Remarks
Sample Size 300 ml			Customer ID STD	

Remarks, Calculations, Results
EDP R/16 HG/HYDRD
STD# 129638D RESULT 0.0907 ppm
STD VAL 0.1000 ppm %REC 90.70 %
DRJ
~~%REC = 0.1022~~ 5-28-92
PK HT = 0.164

$\frac{0.172 - 0.0026}{0.0057} = 30.81$ ng

$\frac{30.81 \text{ ng}}{300 \text{ l}} = 0.1027$ ppm DRJ 5-28-92

$\frac{0.1027 \text{ ppm}}{0.1000 \text{ ppm}} \times 100 = 102.7\%$

over

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C275				RH Talley 1-21-92
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-21-92	Time Completed	Lab Unit Mgr		

PK HT = 0.164 R946-5597

$\frac{0.164 - 0.0007}{0.0060} = 27.22$ ng

$\frac{27.22 \text{ ng}}{300 \text{ l}} = 0.0907$ ppm

$\frac{0.0907 \text{ ppm}}{0.1000 \text{ ppm}} \times 100 = 90.70\%$

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: 01-21-92

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
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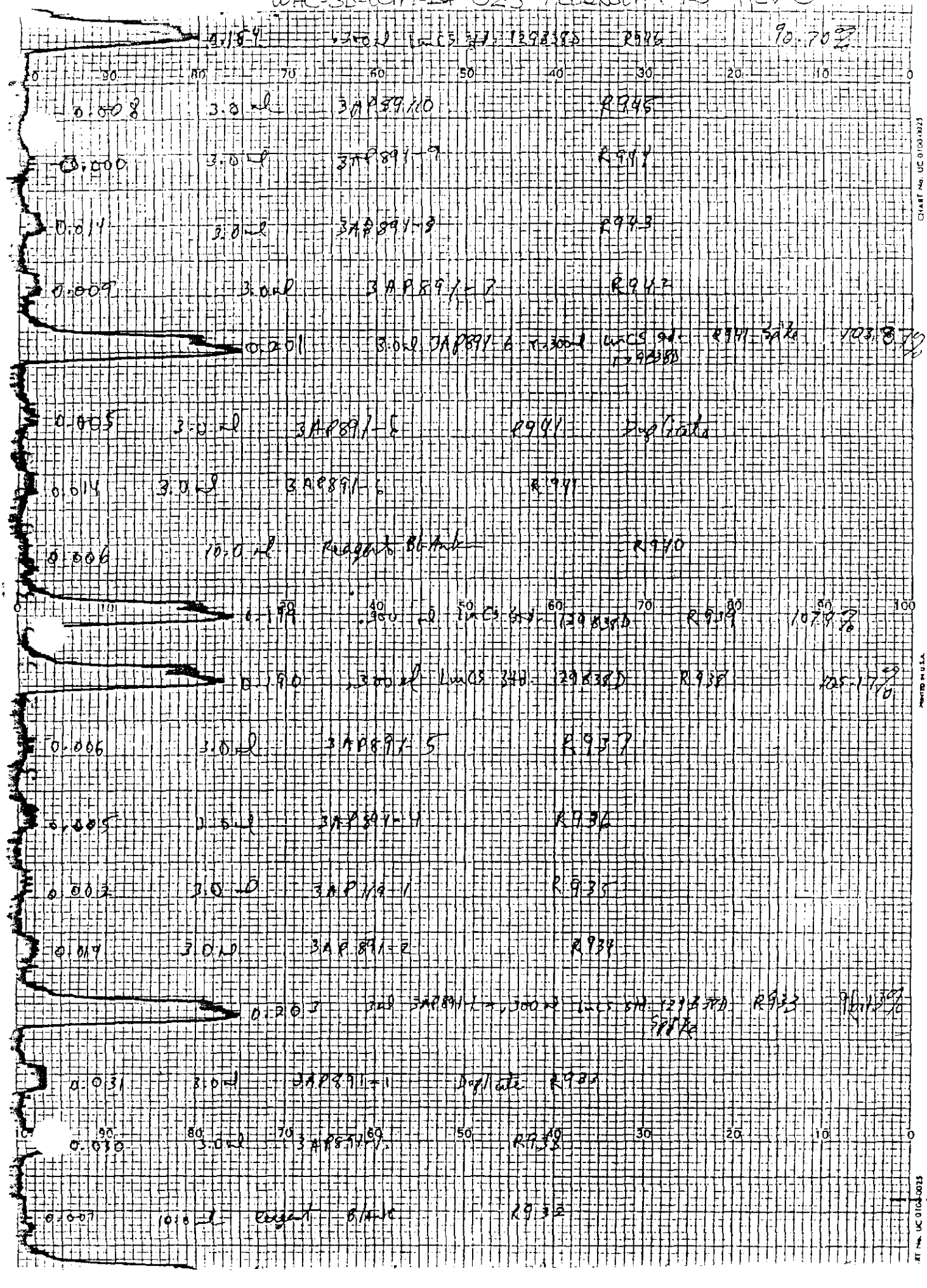
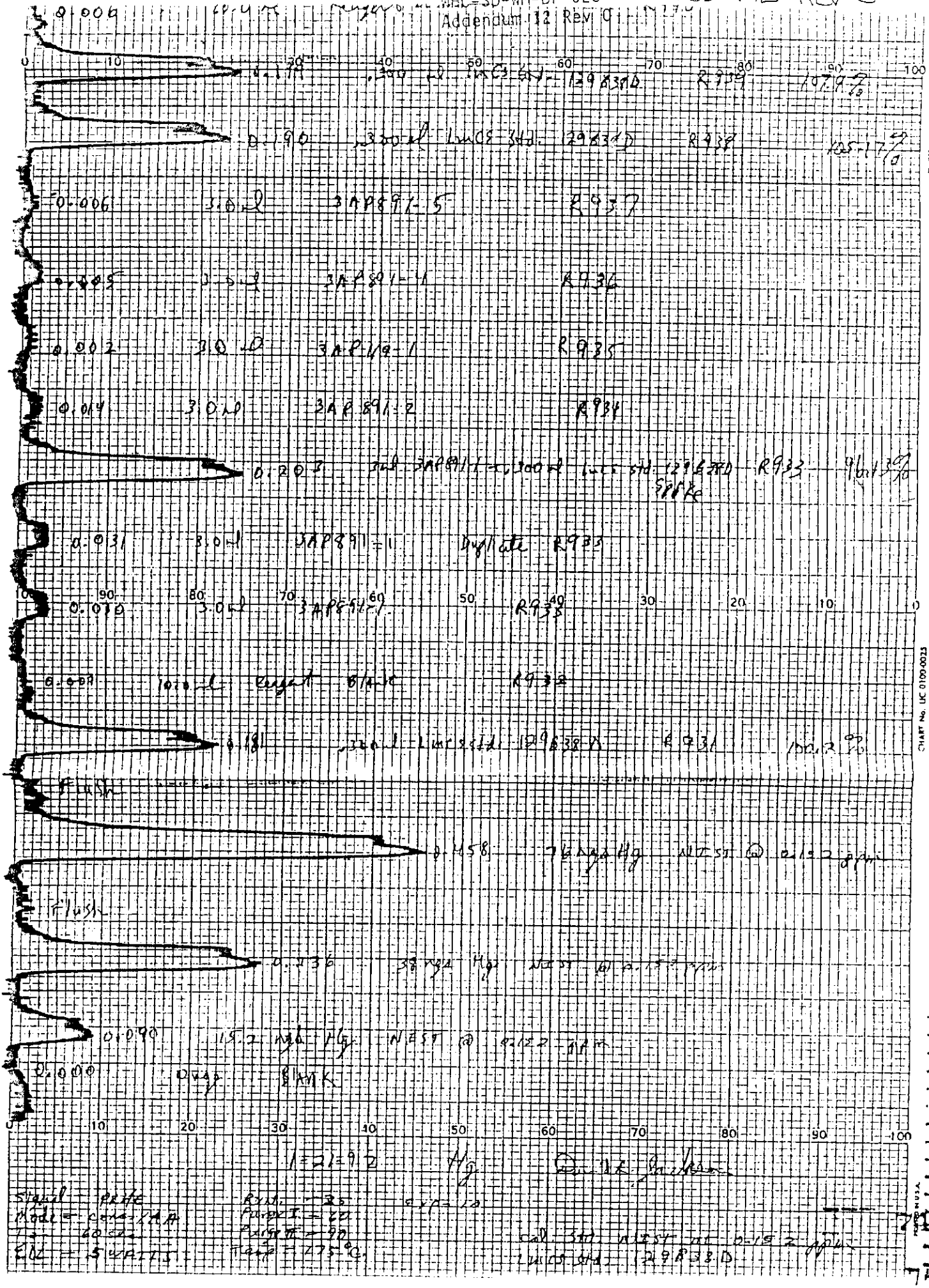
Comments:

A-6000-882 (03/92)



Lance Fuller 1-21-92


0.006
0.190 .300 ml LwCS std. 129838D R939 107.9%
0.190 .300 ml LwCS std. 129838D R938 105.17%
0.006 3.0 ml 3AP891-5 R937
0.005 3.0 ml 3AP891-4 R936
0.002 3.0 ml 3AP119-1 R935
0.014 3.0 ml 3AP891-2 R934
0.203 3ml 3AP891-1 + .300 ml LwCS std. 129838D spike R933 96.1%
0.031 3.0 ml 3AP891-1 Duplicate R933
0.030 3.0 ml 3AP894-7 R933
0.000 10.0 ml Reagent Blank R932
0.181 .300 ml LwCS std. 129838D R931 100.2%
Flush
0.458 76 ngl Hg NBS ST @ 0.152 ppm
Flush
0.236 38 ngl Hg NBS ST @ 0.152 ppm
0.090 15.2 ngl Hg NBS ST @ 0.152 ppm
0.000 Dup Blank
1/21/92 Hg
Standard Peak
Mode = Conc/AA
20 cm
EDL = 5 watts
Rise = 30
Purge T = 20
Purge R = 90
Temp = 475°C
Cal 300 NBS ST @ 0.152 ppm
LwCS std. 129838D

9 3 1 2 3 3 3 0 2 6

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial #: R943	Customer ID: 3AP891-8
Analysis: SELENIUM	Sample Prep: UNDIGESTED

Instrument: PERKIN ELMER WA77479	Procedure/Rev: LA-365-131/B-1
Technologist: D. R. JACKSON	Date: 01-29-92
Starting Time: 8:00	Temperature: NA
Ending Time: 2:00	Chemist: R. K. FULLER

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R939-5596	11		
2	REAGENT BLANK	R940-5696	12		
3	SAMPLE 3AP891-8	R943-5796	13		
4	FINAL LMCS CHECK STD	R946-5596	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			NA

A-6000-881 (03/92)

SELENIUM ANALYSIS - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5596	103AP	12-16-91	12:15	20

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-385-131	% RECOVERY	N124W	0

Sample Size: 0.500 ml
Customer ID: STD

Remarks, Calculations, Results
EDF R743 SE/HYDRD
STD# 133838A RESULT 0.1144 ppm
STD VAL 0.100 ppm %REC 114.38%
PKHt = 0.663

$\frac{0.663 - 0.0225}{0.0112} = 57.19$ ngp

$\frac{57.19 \text{ ngp}}{500 \lambda} = 0.1144$ ppm

$\frac{0.1144 \text{ ppm}}{0.1000 \text{ ppm}} \times 100 = 114.38\%$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C275				RK Miller 1-30-92
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-29-92	Time Completed	Lab Unit Mgr		

Serial No	Sample Point	Date	Time Issued	Priority
R 940.-5596	103AP	12-16-91	12:15	20

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-385-131	PPM	N124W	0

Sample Size: 10.0 ml
Customer ID: NPK

Remarks, Calculations, Results
REAGENT BLANK
PKHt = -0.021

-0.021 = < 5 ngp

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

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C275				RK Miller 1-30-92
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-29-92	Time Completed	Lab Unit Mgr		

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5596	103AP	12-16-91	12:15	20

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-385-131	PPM	N124W	0

Sample Size: 1.0 ml
Customer ID: SAP891-B

Remarks, Calculations, Results
PKHt = -0.002

-0.002 = < 5 ngp

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

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C275				RK Miller 1-30-92
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-29-92	Time Completed	Lab Unit Mgr		

Serial No	Sample Point	Date	Time Issued	Priority
R 946.-5596	103AP	12-16-91	12:15	20

Determination	Method/Standard	Result Units	Charge Code	Reruns
Se	LA-385-131	% RECOVERY	N124W	0

Sample Size: 0.500 ml
Customer ID: STD

Remarks, Calculations, Results
EDF R743 SE/HYDRD
STD# 133838A RESULT 0.1121 ppm
STD VAL 0.100 ppm %REC 112.06%
PKHt = 0.650

$\frac{0.650 - 0.0225}{0.0112} = 56.03$ ngp

$\frac{56.03 \text{ ngp}}{500 \lambda} = 0.1121$ ppm

$\frac{0.1121 \text{ ppm}}{0.1000 \text{ ppm}} \times 100 = 112.06\%$

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
6C275				RK Miller 1-30-92
Hrs	Hrs	Hrs	Hrs	Hrs
Date 1-29-92	Time Completed	Lab Unit Mgr		

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:	01-29-92

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:

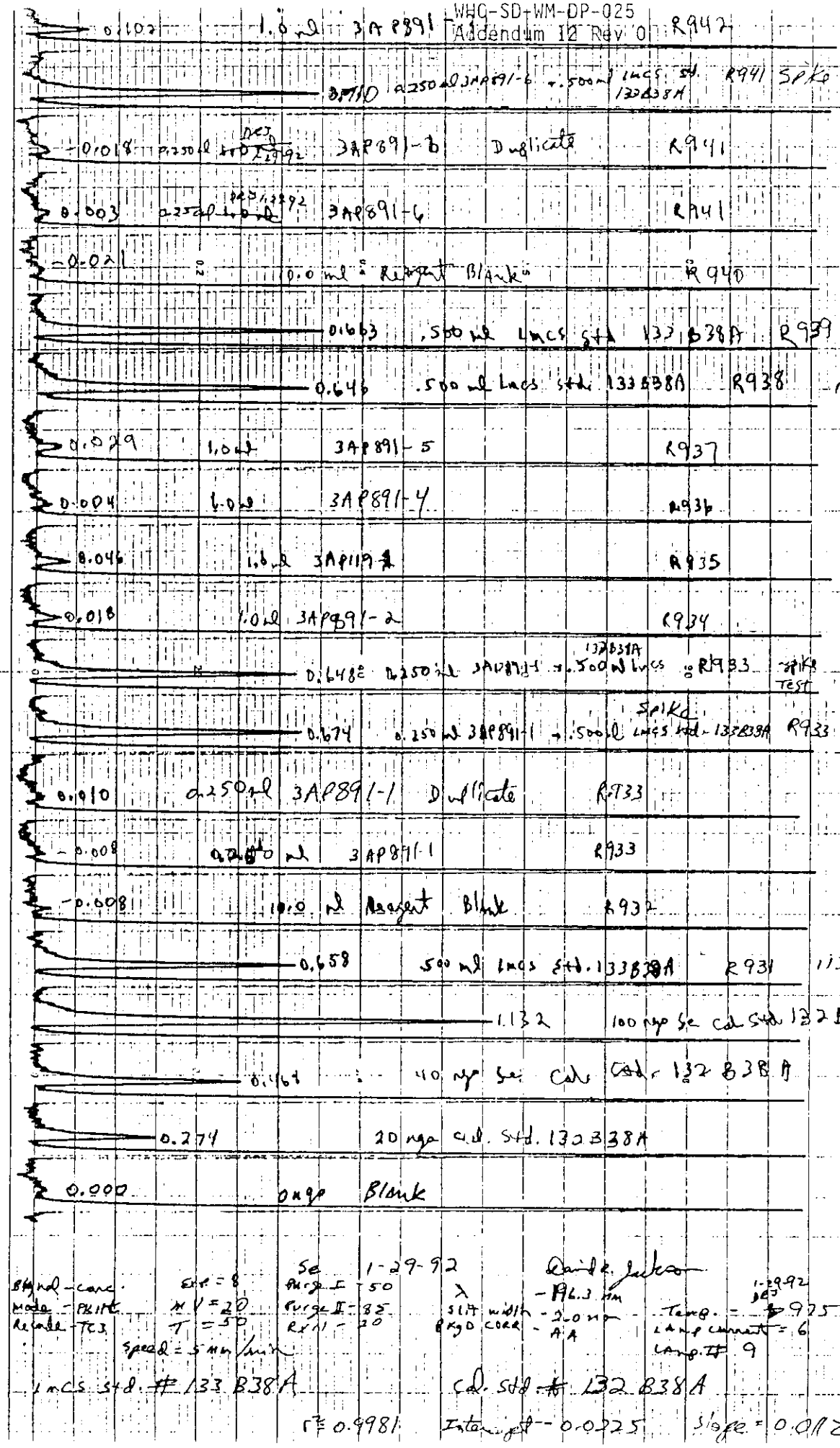
A-6000-882 (03/

0.016	0.0250 ml	25-2		86542		
0.016	0.0250 ml	25-2		86481		
-0.002	0.0250 ml	25-2		86444		
-0.003	0.0250 ml	25-2		86408		
0.450	.500 ml	LMCS std.	133B38A	R946	112.06 %	
VOID	0.769	.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	3AP891-8		R943		
0.103	1.0 ml	3AP891-7		R942		
0.710	0.250 ml	3AP891-6	+ .500 ml LMCS std. 133A38A	R941	Spike	122.76%
-0.018	1.0 ml	3AP891-6	Duplicate	R941		
0.003	0.250 ml	1.0 ml	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	3AP891-3		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	114.3%
0.010	0.250 ml	3AP891-1	Duplicate	R933		

PERKIN-ELMER

PERKI

78



Se 1-29-92 David K. Jackson

Blank - conc. Est = 8 Purge I = 50 λ - 196.3 nm 1-29-92 DKJ
Mode - PEAK H V = 20 Purge II = 85 Slit width - 2.0 nm Temp. = 925 °C
Recorder - TC3 T = 50 Rx11 - 20 Bkgd corr. - AA Lamp current = 6
Speed = 5 mm/min Lamp # 9

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

r = 0.9981 Intercept - 0.0225 Slope = 0.0112

PERKIN-ELMER

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: ION CHROMATOGRAPHIC - CHLORIDE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000, WB54428	Procedure/Rev: LA-533-105/B-1
Technologist: M. MYERS	Date: 01-08-92
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	R939-5572	11		
2	REAGENT BLANK	R940-5672	12		
3	SAMPLE 3AP891-8	R943-5772	13		
4	FINAL LMCS CHECK STD	R946-5572	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

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (CHLORIDE) - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 939.-5572	103AP	12-16-91	161 1	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CL	LA-533-105	% RECOVERY	N124W	0

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

Remarks, Calculations, Results:
EDP R972 DIONEX
STDR 73C11DC RESULT 6.9781 ppm
STD VAL 7.5081 %REC 92.9
ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Helen Hayes				
Hrs 6CB23	Hrs	Hrs	Hrs	Hrs
Date 1-8-92	Time Completed	Lab Unit Mgr		

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

Serial No	Sample Point	Date	Time Issued	Priority
R 940.-5572	103AP	12-16-91	161 1	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CL	LA-533-105	PPM	N124W	0

Sample Size: ? DIRECT
Customer ID: BLK

Remarks, Calculations, Results:
REAGENT BLANK
2.10ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Helen Hayes				
Hrs 6CB23	Hrs	Hrs	Hrs	Hrs
Date 1-8-92	Time Completed	Lab Unit Mgr		

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

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5572	103AP	12-16-91	161 1	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CL	LA-533-105	PPM	N124W	0

Sample Size: ? .250ml - 10ml
Customer ID: SAFB91-B

Remarks, Calculations, Results:
3.83E1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Helen Hayes				
Hrs 6CB23	Hrs	Hrs	Hrs	Hrs
Date 1-8-92	Time Completed	Lab Unit Mgr		

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

Serial No	Sample Point	Date	Time Issued	Priority
R 946.-5572	103AP	12-16-91	1515	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
CL	LA-533-105	% RECOVERY	N124W	0

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

Remarks, Calculations, Results:
EDP R972 DIONEX
STDR 73C11DC RESULT 7.55E1
STD VAL 7.5081 %REC 100.65

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Helen Hayes				
Hrs 6CB23	Hrs	Hrs	Hrs	Hrs
Date 1-8-92	Time Completed	Lab Unit Mgr		

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: ION CHROMATOGRAPHIC - FLUORIDE	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	R939-5571	11		
2	REAGENT BLANK	R940-5671	12		
3	SAMPLE 3AP891-8	R943-5771	13		
4	FINAL LMCS CHECK STD	R946-5571	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

A-6000-881 (03/92)

9 3 1 2 2 3 3 0 1 4

ION CHROMATOGRAPHIC ANALYSIS (FLUORIDE) - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 939.-5671	105AP	12-16-91	16:1	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	N124W	0

Sample Size: 7 .100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDF R974 DIONEX
STD# 7361DC RESULT 5.53 ±1 ppm
STD VAL 5.60 ±1 ppm %REC 98.8

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				

Date	Time Completed	Lab Unit Mgr
1-10-92		

Serial No	Sample Point	Date	Time Issued	Priority
R 940.-5671	105AP	12-16-91	16:1	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	PPM	N124W	0

Sample Size: 7 DIRECT
Customer ID: BLK

Remarks, Calculations, Results:
REAGENT BLANK
DJH 5/24/92
~~<1.0 ppm~~
<0.1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				

Date	Time Completed	Lab Unit Mgr
1-10-92		

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5671	105AP	12-16-91	16:7	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	G/L	N124W	0

Sample Size: 7 .250ml - 10ml
Customer ID: SAP891-8

Remarks, Calculations, Results:
6.06 ±1 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				

Date	Time Completed	Lab Unit Mgr
1-10-92		

Serial No	Sample Point	Date	Time Issued	Priority
R 946.-5671	105AP	12-16-91	16:1	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
F	LA-533-105	% RECOVERY	N124W	0

Sample Size: 7 .100ml - 10ml
Customer ID: STD

Remarks, Calculations, Results:
EDF R974 DIONEX
STD# 7361DC RESULT 5.76 ±1 ppm
STD VAL 5.60 ±1 ppm %REC 102.9%

BATCH WITH R939-5671

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs	Hrs	Hrs	Hrs	Hrs
6C823				

Date	Time Completed	Lab Unit Mgr
1-10-92		

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: ION CHROMATOGRAPHIC - NITRATE	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	R939-5573	11		
2	REAGENT BLANK	R940-5673	12		
3	SAMPLE 3AP891-8	R943-5773	13		
4	FINAL LMCS CHECK STD	R946-5573	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

A-6000-881 (03/92)

ION CHROMATOGRAPHIC ANALYSIS (NITRATE) - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 949.-5573	103AP	12-16-91	1[illegible]	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	NI2NW	

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

Remarks, Calculations, Results
EDF R978 DIONEX
STD #73C11DC RESULT 6.71E2ppm
STD VAL 6.33E2ppm %REC 106.1 %

BATCH WITH R946-5571 + 5576

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[illegible]			[illegible]	[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
LC823			[illegible]	[illegible]
Date	Time Completed	Lab Unit Mgr		
1-10-92		[illegible]		

Serial No	Sample Point	Date	Time Issued	Priority
R 940.-5573	103AP	12-16-91	1[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	NI2NW	0

Sample Size	Customer ID
? DIRECT	BLK

Remarks, Calculations, Results
REAGENT BLANK
~~240.0ppm~~ SSH 5/27/92
21.0 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[illegible]			[illegible]	[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
LC823				
Date	Time Completed	Lab Unit Mgr		
1-10-92		[illegible]		

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5573	103AP	12-16-91	1[illegible]	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	PPM	NI2NW	0

Sample Size	Customer ID
? .05ml - 10ml	JAP891-8

Remarks, Calculations, Results
1.62E3ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[illegible]			[illegible]	[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
LC823				
Date	Time Completed	Lab Unit Mgr		
1-10-92		[illegible]		

Serial No	Sample Point	Date	Time Issued	Priority
R 946.-5573	103AP	12-16-91	1[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO3	LA-533-105	% RECOVERY	NI2NW	0

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

Remarks, Calculations, Results
EDF R978 DIONEX
STD #73C11DC RESULT 6.51E2ppm
STD VAL 6.33E2ppm %REC 102.8

BATCH W/ R939-5574

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
[illegible]			[illegible]	[illegible]
Hrs	Hrs	Hrs	Hrs	Hrs
LC823			[illegible]	[illegible]
Date	Time Completed	Lab Unit Mgr		
1-10-92		[illegible]		

9 3 1 2 3 0 3 9 1 7

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: ION CHROMATOGRAPHIC - NITRITE	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	R939-5576	11		
2	REAGENT BLANK	R940-5676	12		
3	SAMPLE 3AP891-8	R943-5776	13		
4	FINAL LMCS CHECK STD	R946-5576	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

A-6000-881 (03/92)

9312233013

ION CHROMATOGRAPHIC ANALYSIS (NITRITE) - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 939.-5576	103AP	12-16-91	16: 2	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-533-105	% RECOVERY	NH2AW	0

Sample Size	Customer ID
.100ml - 10ml	STD

Remarks, Calculations, Results
EDP R958 DIONEX
STDN 73C11DC RESULT 5.2782ppm
STD VAL 4.912ppm %REC 107.5%

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs 6C823	Hrs	Hrs	Hrs	Hrs
Date 1-10-92	Time Completed	Lab Unit Mgr		

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

Serial No	Sample Point	Date	Time Issued	Priority
R 940.-5576	103AP	12-16-91	16:1	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-533-105	PPM	[illegible]	[illegible]

Sample Size	Customer ID
DIRECT	BLK

Remarks, Calculations, Results
REAGENT BLANK
DH 4/14/92
~~< 10.0 ppm~~
< 1.0 ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs 6C823	Hrs	Hrs	Hrs	Hrs
Date 1-10-92	Time Completed	Lab Unit Mgr		

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

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5576	103AP	12-16-91	[illegible]	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-533-105	PPM	NH2AW	0

Sample Size	Customer ID
.250ml - 10ml	SAF891-8

Remarks, Calculations, Results
1.123ppm

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs 6C823	Hrs	Hrs	Hrs	Hrs
Date 1-10-92	Time Completed	Lab Unit Mgr		

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

Serial No	Sample Point	Date	Time Issued	Priority
R 946.-5576	103AP	12-16-91	16:15	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
NO2	LA-533-105	% RECOVERY	NH2AW	[illegible]

Sample Size	Customer ID
.100ml - 10ml	STD

Remarks, Calculations, Results
EDP R958 DIONEX
STDN 73C10C RESULT 5.322ppm
STD VAL 4.912ppm %REC 108.4%

BATCH WITH 3939-5573

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
Hrs 6C823	Hrs	Hrs	Hrs	Hrs
Date 1-10-92	Time Completed	Lab Unit Mgr		

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

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: ION CHROMATOGRAPHIC - PHOSPHATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000, WB54428	Procedure/Rev: LA-533-105/B-1
Technologist: M. MYERS	Date: 01-08-92
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	R939-5574	11		
2	REAGENT BLANK	R940-5674	12		
3	SAMPLE 3AP891-8	R943-5774	13		
4	FINAL LMCS CHECK STD	R946-5574	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

A-6000-881 (03/92)

9 3 1 2 3 3 3 0 2 0

ION CHROMATOGRAPHIC ANALYSIS (PHOSPHATE) - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 939.-5574	103AP	12-16-91	16: 1	25

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

Sample Size: ? .100ml - 10ml

Customer ID: STD

Remarks, Calculations, Results:
EDP K976 DIONEX
STDN 73C110C RESULT 5.0182 ppm
STD VAL 5.1682 %REC 97.3
ppm

Analyst - 1: Helene Lugo
Analyst - 2:
Analyst - 3: Leslie Diaz
Analyst - 4:
Analyst - 5: Alonzo Albert

Hrs: 6C823
Date: 1-8-92
Time Completed:
Lab Unit Mgr: Leslie Diaz

Serial No	Sample Point	Date	Time Issued	Priority
R 940.-5574	103AP	12-16-91	16: [illegible]	[illegible]

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

Sample Size: ? DIRECT

Customer ID: IC K

Remarks, Calculations, Results:
REAGENT BLANK
< 1.0ppm

Analyst - 1: Helene Lugo
Analyst - 2:
Analyst - 3:
Analyst - 4: Leslie Diaz
Analyst - 5: Alonzo Albert

Hrs: 6C823
Date: 1-8-92
Time Completed:
Lab Unit Mgr: Leslie Diaz

Serial No	Sample Point	Date	Time Issued	Priority
R 943.-5574	103AP	12-16-91	16: 9	25

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

Sample Size: ? .250ml - 10ml

Customer ID: SAPB91-8

Remarks, Calculations, Results:
1.1262ppm

Analyst - 1: Helene Lugo
Analyst - 2:
Analyst - 3:
Analyst - 4: Leslie Diaz
Analyst - 5: Alonzo Albert

Hrs: 6C823
Date: 1-8-92
Time Completed:
Lab Unit Mgr: Leslie Diaz

Serial No	Sample Point	Date	Time Issued	Priority
R 946.-5574	103AP	12-16-91	[illegible]	[illegible]

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

Sample Size: ? .100ml - 10ml

Customer ID: STD

Remarks, Calculations, Results:
EDP K976 DIONEX
STDN 73C10C RESULT 5.0982ppm
STD VAL 5.1682 %REC 100.52

Analyst - 1: Helene Lugo
Analyst - 2:
Analyst - 3: Leslie Diaz
Analyst - 4:
Analyst - 5: Alonzo Albert

Hrs: 6C823
Date: 1-8-92
Time Completed:
Lab Unit Mgr: Leslie Diaz

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: ION CHROMATOGRAPHIC -- SULFATE	Sample Prep: UNDIGESTED

Instrument: DIONEX 4000, WB54428	Procedure/Rev: LA-533-105/B-1
Technologist: M. MYERS	Date: 01-08-92
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	R939-5575	11		
2	REAGENT BLANK	R940-5675	12		
3	SAMPLE 3AP891-8	R943-5775	13		
4	FINAL LMCS CHECK STD	R946-5575	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

A-6000-881 (03/92)

9 3 1 2 3 3 0 2 2

ION CHROMATOGRAPHIC ANALYSIS (SULFATE) - UNDIGESTED SAMPLE

Serial No	Sample Point	Date	Time Issued	Priority
R 939-55/5	TOSAP	12-16-91	15:1	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	N124W	0

Sample Size: 7 .100ml - 10ml

Customer ID: STD

Remarks, Calculations, Results:
EDP R970 DIONEX
STDR 78C110C RESULT 5.6582 ppm
STD VAL 6.0952 %REC 92.8
ppm

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

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

Serial No	Sample Point	Date	Time Issued	Priority
R 940-56/5	TOSAP	12-16-91	[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	N124W	

Sample Size: 7 DIRECT

Customer ID: MTK

Remarks, Calculations, Results:
REAGENT BLANK
< 1.0ppm

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

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

Serial No	Sample Point	Date	Time Issued	Priority
R 945-57/5	TOSAP	12-16-91	16:9	25

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	PPM	N124W	0

Sample Size: 7 .250ml - 10ml

Customer ID: SAP891-8

Remarks, Calculations, Results:
4.1882 ppm

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

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

Serial No	Sample Point	Date	Time Issued	Priority
R 946-55/5	TOSAP	12-16-91	15:1[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Reruns
SO4	LA-533-105	% RECOVERY	N124W	0

Sample Size: 7 .100ml - 10ml

Customer ID: STD

Remarks, Calculations, Results:
EDP R970 DIONEX
STDR 78C110C RESULT 6.1082 ppm
STD VAL 6.0952 %REC 100.12

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

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

93123330223

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

-- 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.prf	

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

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Reference Peak FLUORIDE
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

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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

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	156818	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 = 1.23095E-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

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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

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	

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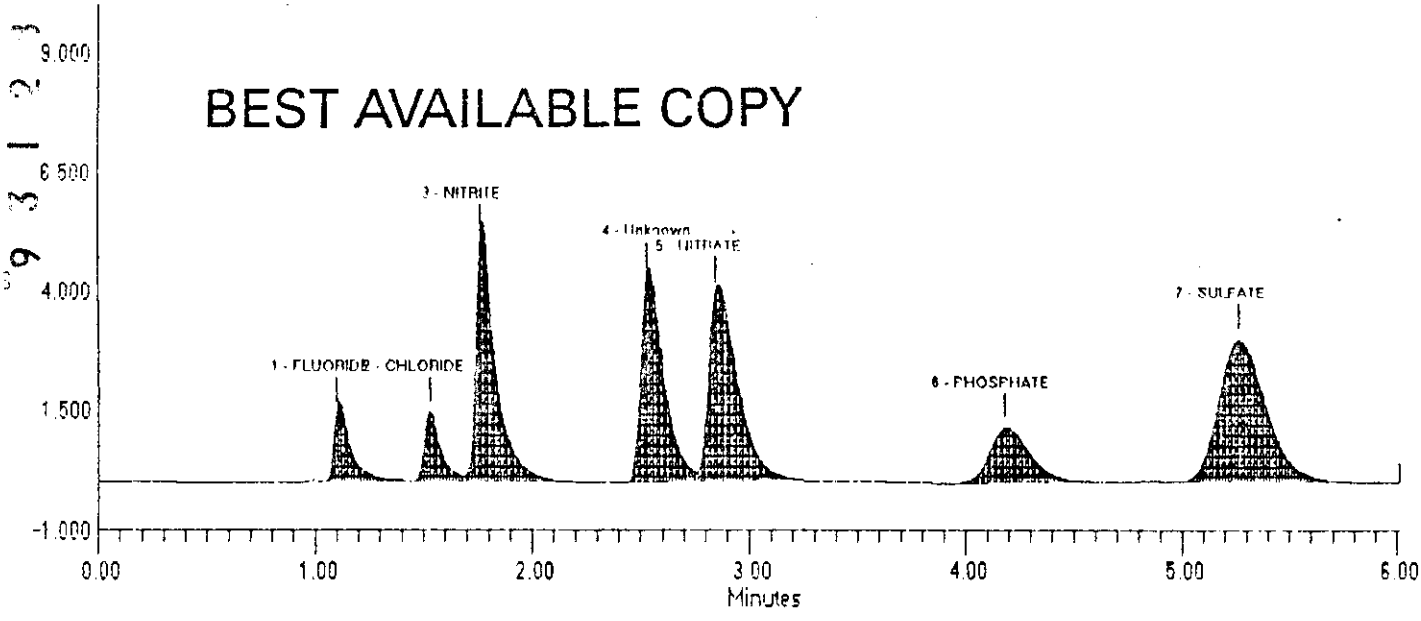
[illegible]

Sample Name: LMCS73C11DC Date: Wed Jan 08 [illegible]
Data File: C:\DX\DATA\91010851.D02
Method: C:\DX\METHOD\SYSTEM1.MET
PCI Address: 1 Slot: 1 Injection #: 2 Detector [illegible]

Peak	Peak Name	Concentration	Height	Area	Sel. Type
1	1.10 FLUORIDE	51.232	1429	8731	[illegible]
2	1.53 CHLORIDE	100.65	1444	7515	[illegible]
3	1.77 NITRITE	115.148	[illegible]	[illegible]	[illegible]
4	2.53	5326415.418	4331	[illegible]	[illegible]
5	2.85 NITRATE	418.347	4020	37891	[illegible] -1.57
6	4.13 PHOSPHATE	100.52	1143	[illegible]	[illegible]
7	5.27 SULFATE	100.12	[illegible]	[illegible]	[illegible]

File: C:\DX\DATA\91010851.D02 Sample: LMCS73C11DC

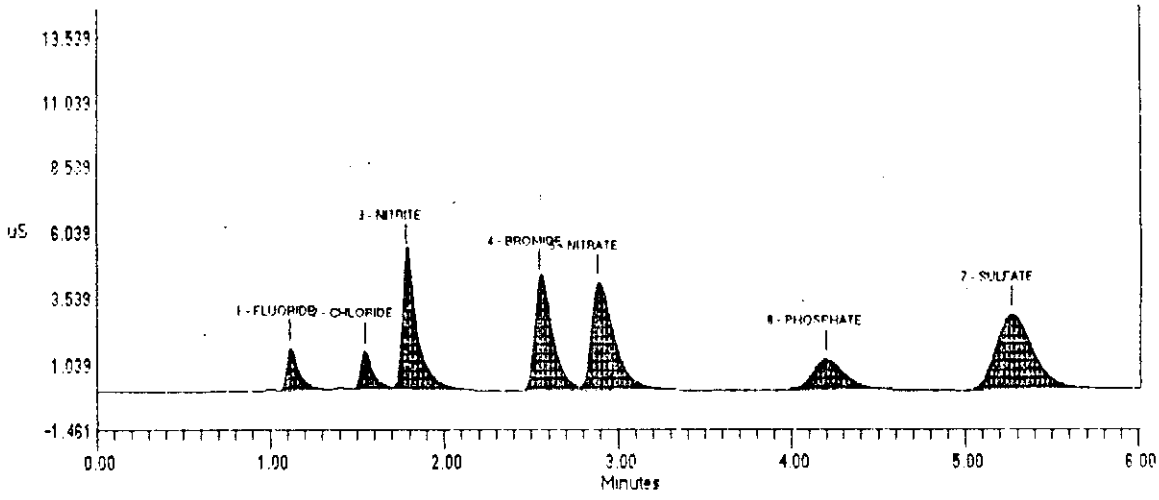


SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 96 TO 99.

Melanie Myers 1/8/92

1	[illegible]		[illegible]	[illegible]	[illegible]			
2	[illegible]	92.93	[illegible]	[illegible]	[illegible]			
3	[illegible]		[illegible]	[illegible]	[illegible]			
4	[illegible]		[illegible]	[illegible]	[illegible]			
5	[illegible]		[illegible]	[illegible]	[illegible]			
6	[illegible]	97.25	[illegible]	[illegible]	[illegible]			
7	[illegible]	92.78	[illegible]	[illegible]	[illegible]			

File: c:\dx\data\91010801.D21 Sample: LMCS/73C11DC



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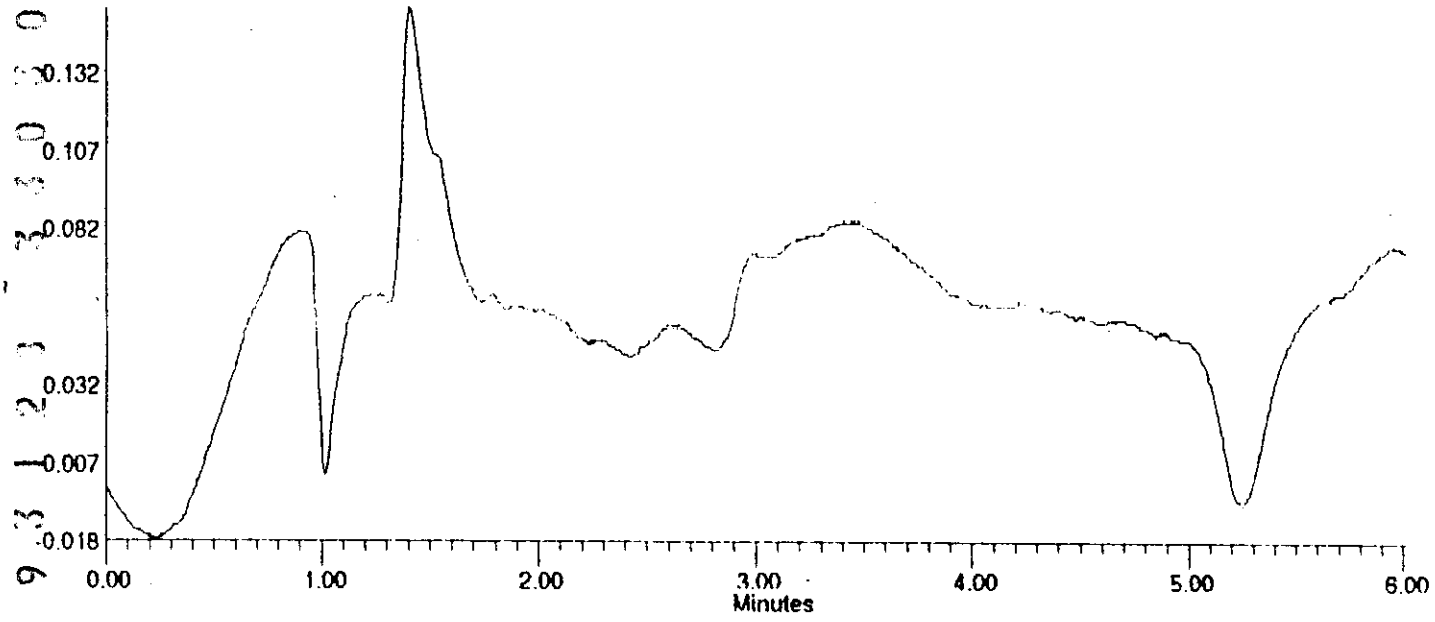
Sample Name: REAG BLANK R940 Date: Wed Jan 08 10:[illegible]:51 19[illegible]
Data File : c:\dx\data\91010801.D22
Method : c:\dx\method\SYSTEM1.mm4
GC1 Address: 1 System : 1 Inject#: 22 Detector : FID-1

SPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA	REJ
Internal	1	1	1005	5H:	0.00	6.02	1000	

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Rej. Code	Identif.

File: c:\dx\data\91010801.D22 Sample: REAG BLANK R940



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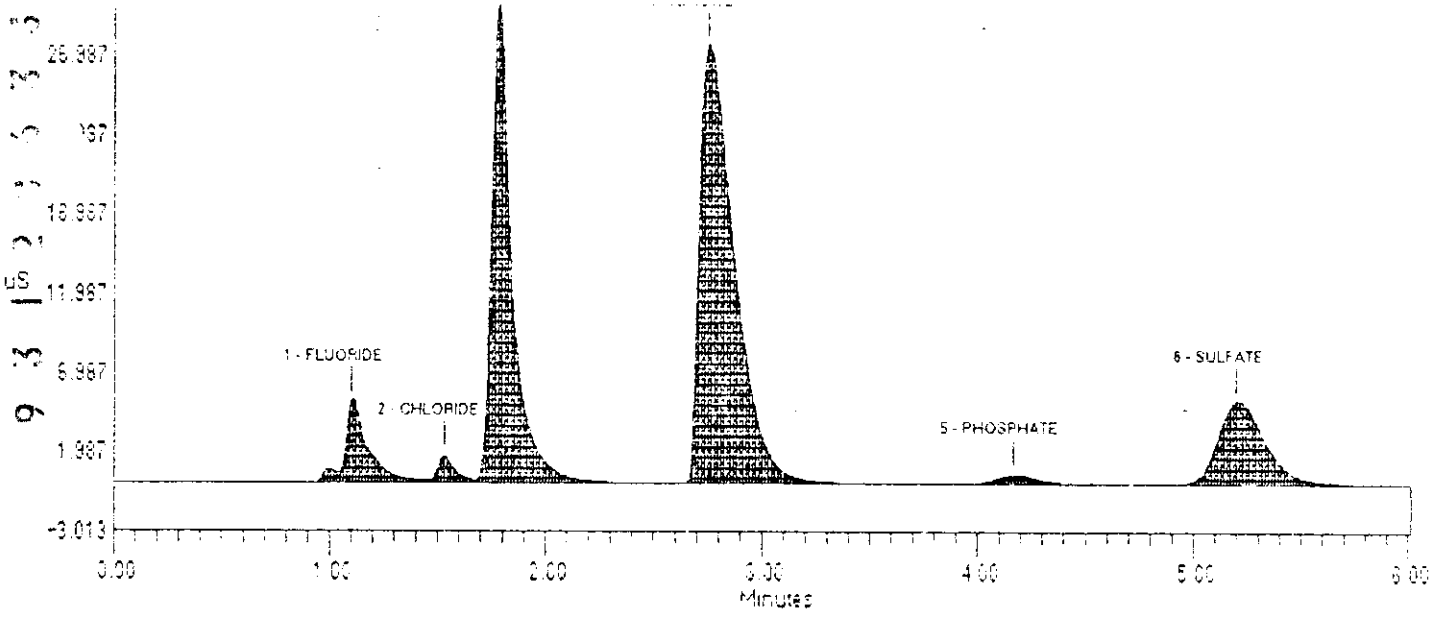
08/27/92
R 943

File: c:\dx\data\91010801.D37 Sample: R944



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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

-- 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.prf	

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

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Reference Peak FLUORIDE
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

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

9 3 1 2 3 3 0 3 3
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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

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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

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	

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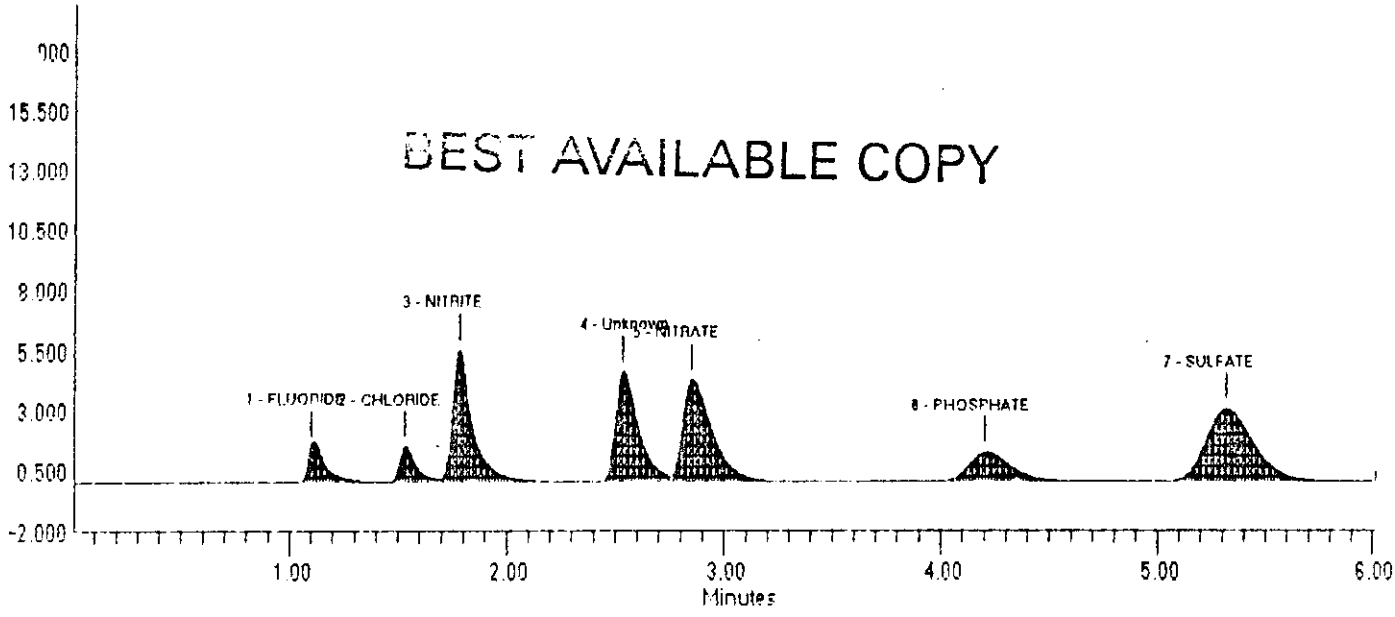
R939-5571 -5576

Date: Thu Jan 09 [illegible]

Peak	Name	Retention Time	Potential	Rate	Start	Stop	Area	Fl.
External		1	101	1805	3Hz	0.00	6.02	1000

Fl. Num	Ret Time	Component Name	Concentration	Height	Area	Fl. Code	%Dev
1	1.10	FLUORIDE	55.261	1478	6922	1	0.[illegible]
2	1.53	CHLORIDE	76.853	1474	7658	2	[illegible]
3	1.[illegible]	NITRITE	527.028	5496	54140	2	[illegible]
4	2.[illegible]		[illegible].446	[illegible]	53706	2	
5	2.[illegible]	NITRATE	[illegible].454	4245	39869	2	-1.[illegible]
6	4.2[illegible]	PHOSPHATE	[illegible].[illegible]	1191	15497	1	1.1
7	5.[illegible]	SULFATE	607.[illegible]	2502	45548	1	[illegible]

File: C:\DX\DATA\91010861.D01 Sample: LMCS/73C11DC



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SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 104 TO 111.

Lulam Myers 1-10-92

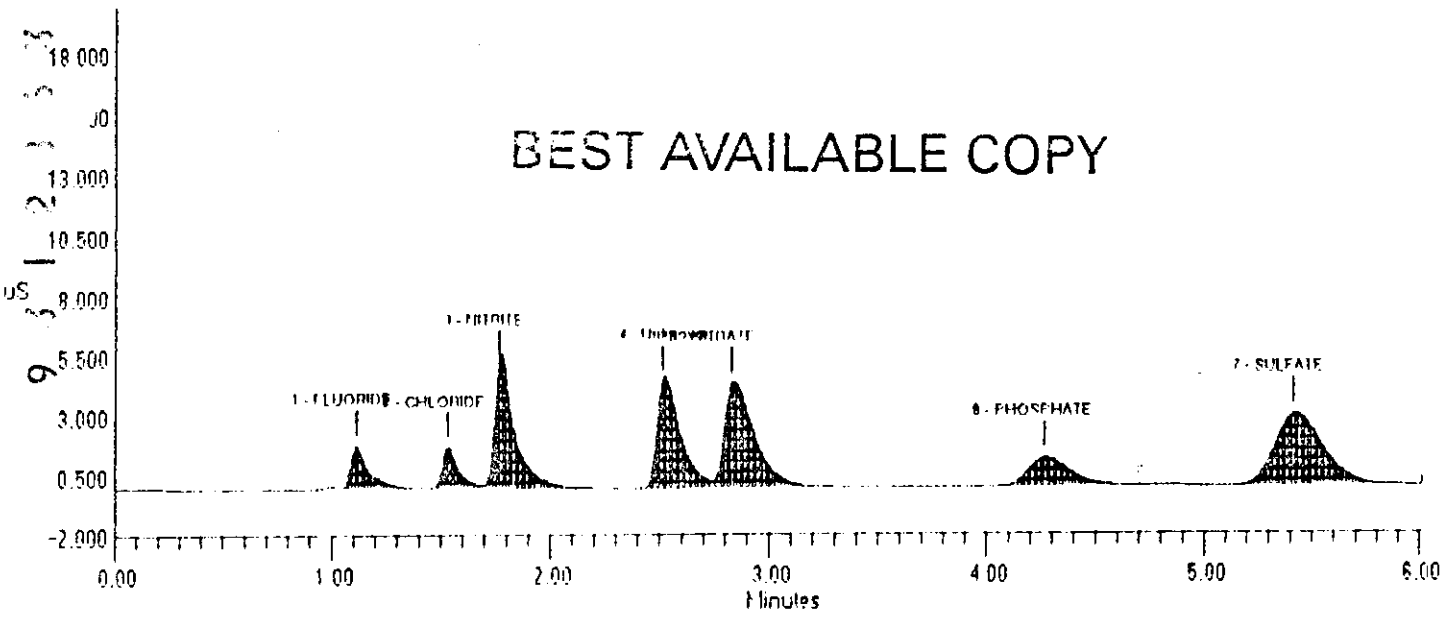
DATA REPROCESSED ON Sun Jan 12 19:35:14 1992

R946

Data Name: LMCS/73C11DB (5573 5572 5571) NO_3 NO_2 F Date: Fri Jan 10 03:51:36 1992
Data File: C:\DX\DATA\91011001.D10
Method: C:\DX\METHOD\SYSTEM1.MET
ACD Address: 1 System: 1 Injection: 1.0 Detector: CDM-1

Peak	Ret Time	Component Name	Concentration	Height	Area	Pk Code	Conc
1	1.12	FLUORIDE	[illegible]	1668	9346	[illegible]	[illegible]
2	1.53	CHLORIDE	[illegible]	1651	8643	[illegible]	[illegible]
3	1.77	NITRITE	[illegible]	5018	34476	[illegible]	[illegible]
4	2.32		[illegible]	1396	33938	[illegible]	
5	2.83	NITRATE	[illegible]	[illegible]	41390	[illegible]	[illegible]
6	3.27	PHOSPHATE	[illegible]	1164	15420	[illegible]	[illegible]
7	5.12	SULFATE	[illegible]	[illegible]	46[illegible]	[illegible]	[illegible]

File: C:\DX\DATA\91011001.D10 Sample: LMCS/73C11DB



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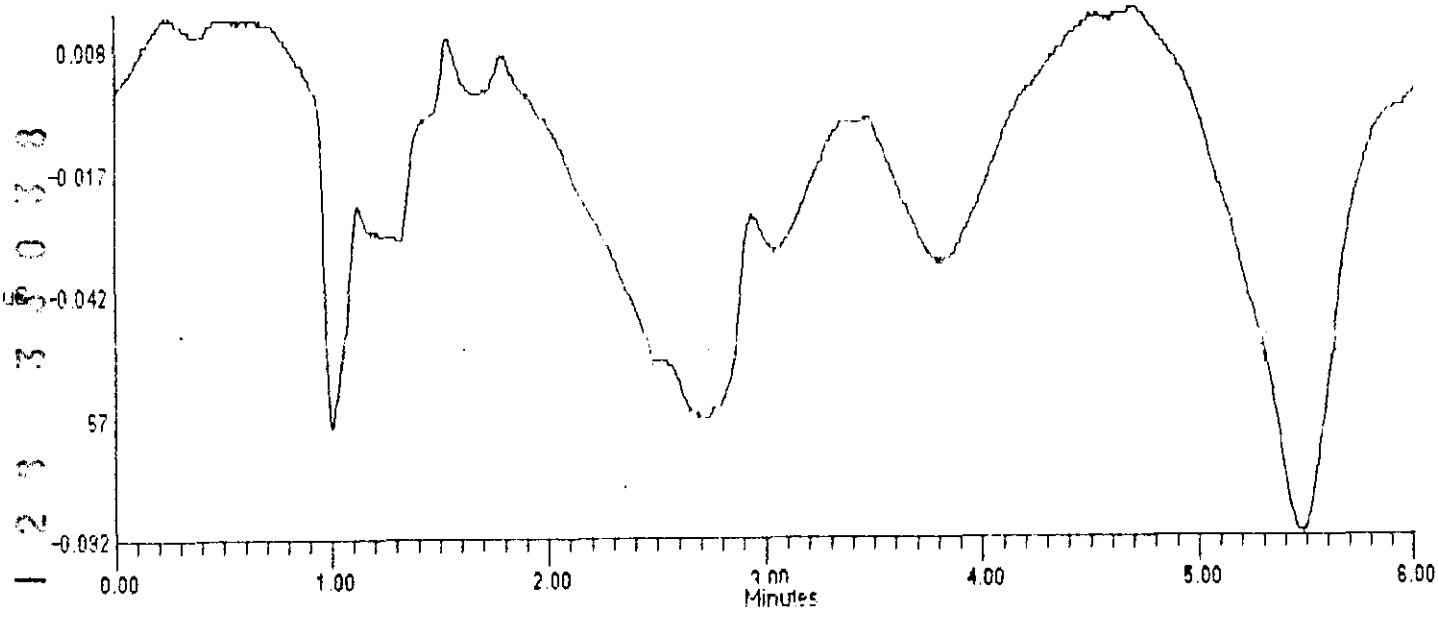
AH 3-24-92 R940 NO3 5673

COMMENT	VOLUME	DILUTION	POTENTIAL	RATE	START	STOP	AREA	REJ
External	1	1	1005	SHz	0.000	6.02	1000	

No.	Ret. Time	Component Name	Concentration	Unit	Area	Rt. Shift Code

File: c:\dx\data\91011001.D12 Sample: REAGANT BLANK R932



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R940-5676

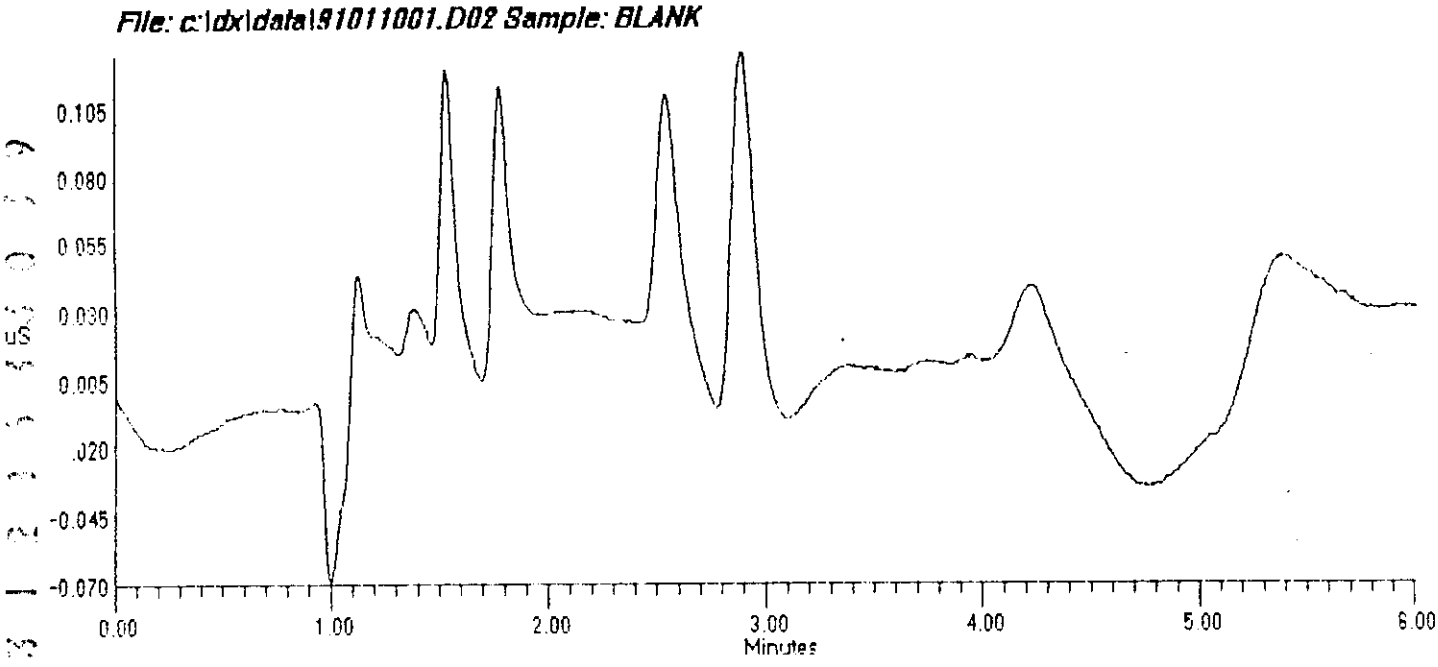
5671 F NO2

Sample Name: BLANK
Data File : c:\dx\data\91011001.D02
Method : c:\dx\method\91011001.mtl
Injections : Column 1

Date: Fri Jan 10 11:57:31 1992
Injection: 2 Detector: CDM 1

Area	Volume	Dil Factor	Power Rate	Start	Stop	Area Rej
Integral	1	1	1005 Hz	0.00	0.02	1000

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Width Code



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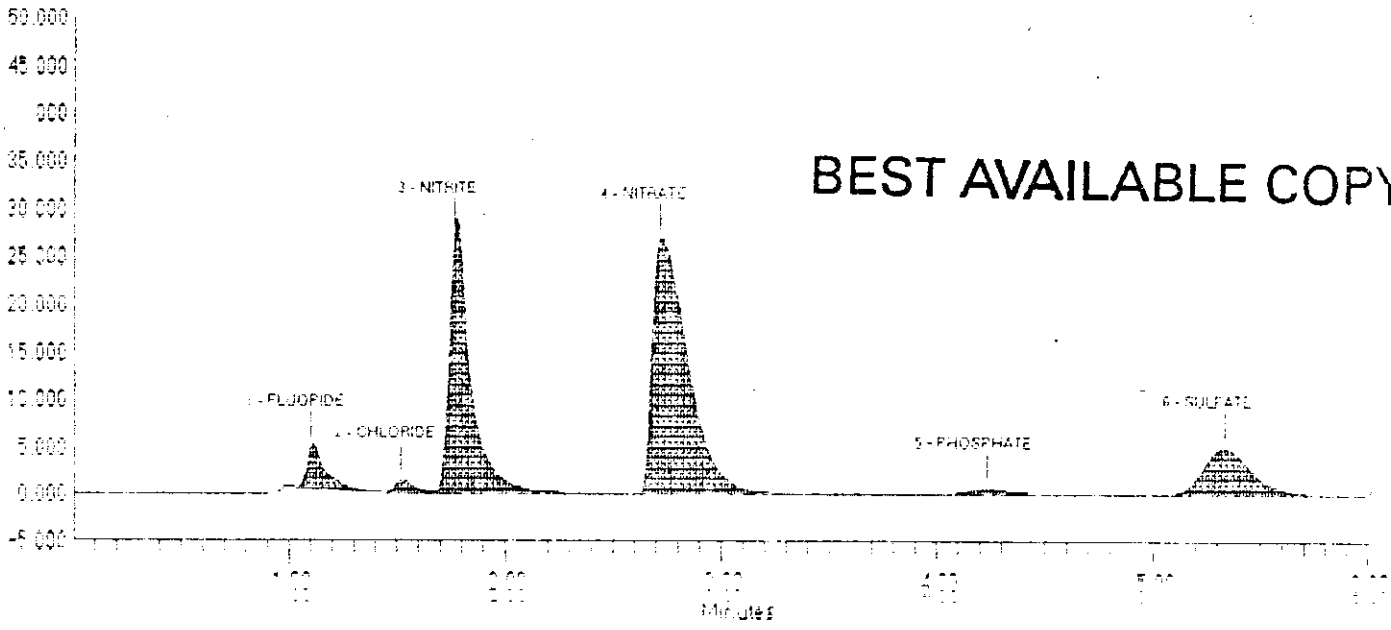
5771 & 5776 F & NO_2

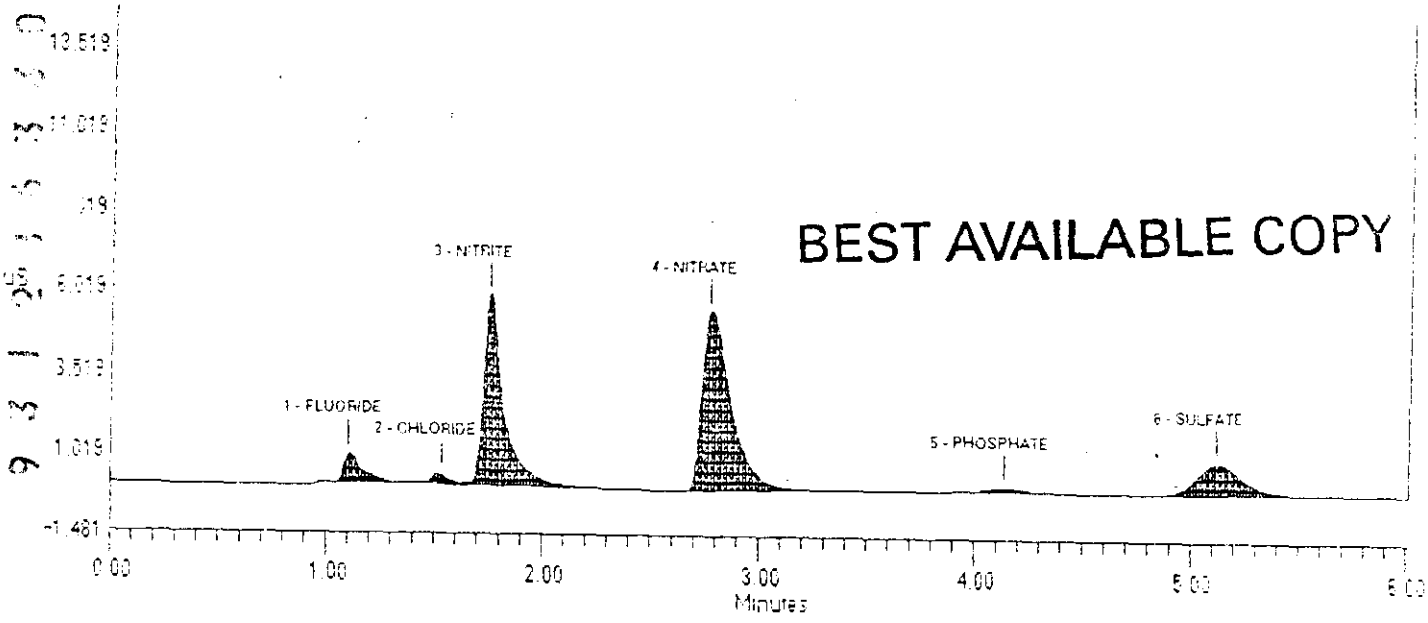
File: C:\DX\DATA\91011001.D07 Sample: R943



BEST AVAILABLE COPY

-5773 NO_3

File: c:\dx\data\91011001.D17 Sample: R943

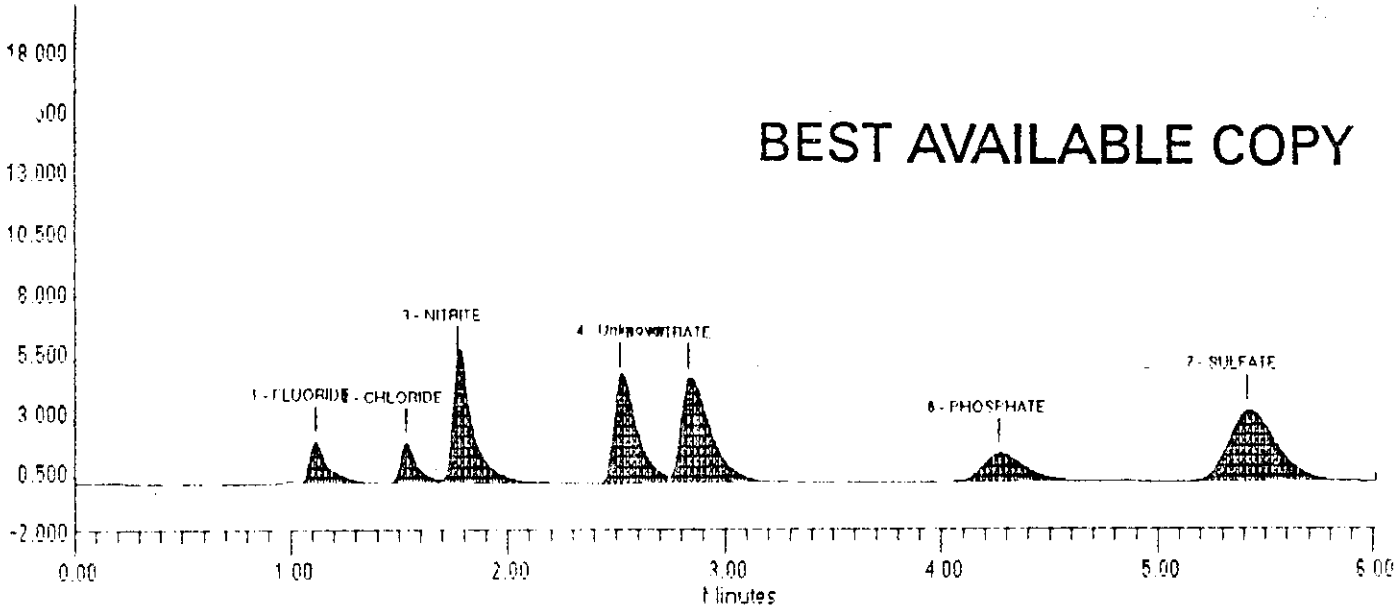


BEST AVAILABLE COPY

R946
5573 5576 5571 NO_3
NO_2
F

Peak No.	Ret. Time	Component Name	Concentration	Height	Area	% Area	Code
1	[illegible]	FLUORIDE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

File: C:\DX\DATA\91011001.D10 Sample: LMCS/73C11DB



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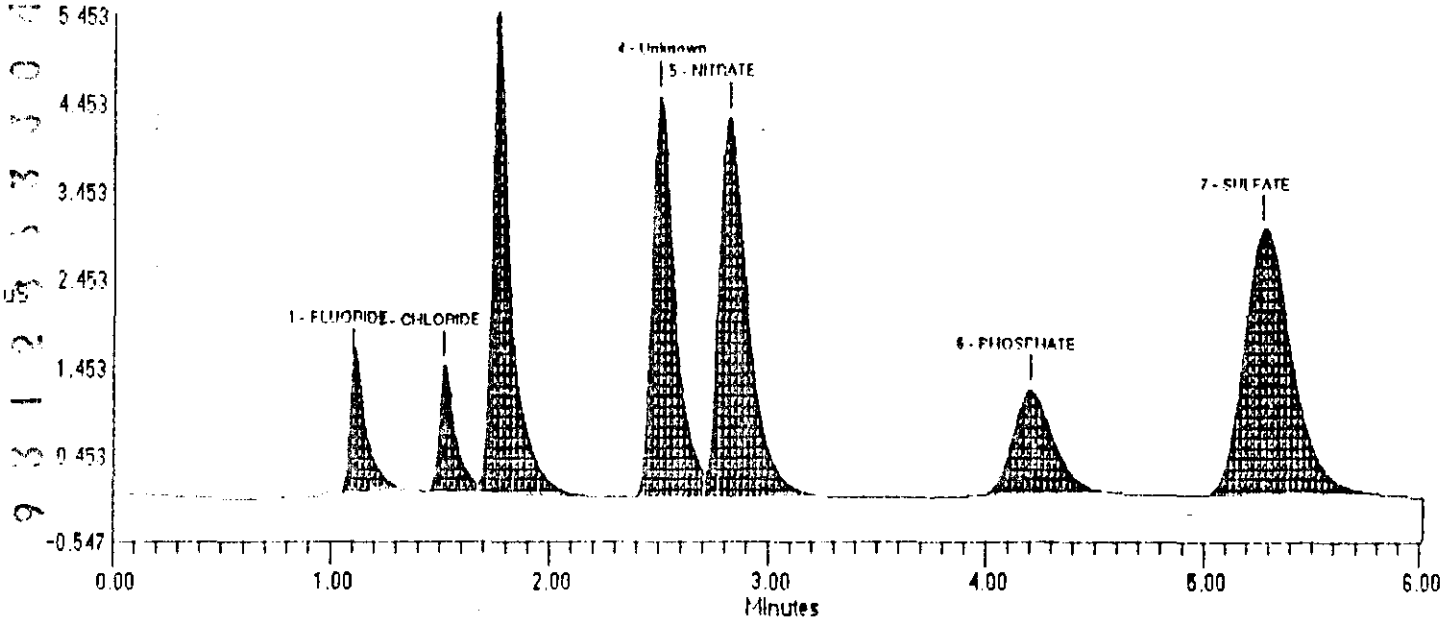
R946-5571, 5573, 5574

Sample Name: LMCS/73C11DC Date: Fri Jan 10 01:06:17 1992
Data File : c:\dx\data\91011001.D20
Method : c:\dx\method\SYSTEM1.met
IC Address: 1 System : 1 Inject#: 20 Detector: CDM-1

REPORT	VOLUME	DILUTION FACTOR	RATE	START	STOP	AREA REJ
External	1	100	1805	SHE	0.00	5.02	1000

Pk. Num	Ret Time	Component Name		Concentration	Height	Area	Pk. Code	Conf.
1	1.10	FLUORIDE	91.8	31.406	1442	9207	1	0.00
2	1.57	CHLORIDE		24.035	1121	7363	2	1.11
3	1.75	NITRITE		517.124	5000	33439	2	0.00
4	2.50			3402734.456	4542	33690	2	
5	2.82	NITRATE	102.9	451.172	4231	49049	2	0.00
6	4.20	PHOSPHATE	101.8	525.058	1181	13348	1	-2.78
7	5.27	SULFATE		617.751	2994	46339	1	-3.86

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



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WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: GAMMA ENERGY	Sample Prep: UNDIGESTED

Instrument: WB57237, WB57265	Procedure/Rev: LA-548-121/D-0
Technologist: L. TEMPLE	Date: 01-04-92
Starting Time: 00:30	Temperature: NA
Ending Time: 01:20	Chemist: S. CATLOW

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R939-5530	11		
2	REAGENT BLANK	R940-5630	12		
3	SAMPLE 3AP891-8	R943-5730	13		
4	FINAL LMCS CHECK STD	R946-5530	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			NA

A-6000-881 (03/92)

9 3 1 2 3 3 0 1 4

GAMMA ENERGY ANALYSIS - UNDIGESTED SAMPLE

2905 Need Long Form GEA

Serial No	Sample Point	Date	Time Issued	Priority
K 939.-5530	103AP	12-16-91	16:1	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
GEA	LA-548-121	% RECOVERY	N124W	0

Sample Size: ? 100mL — Customer ID: STD

Remarks Calculations Results
COLX STD# 48649 — Co60 → 6.03x10¹ → 100.1%
R901 STD VAL 7.06E¹ — Cs137 → 7.01x10¹ → 107.4%
RESULT % REC 107.7 — Ru106, Nb94, Ce144, Ra226 — NA
R905 STD VAL 7.06 — RESULT % REC 102.2
Eu 154/155, Sn 113 — NA

Analyst 1: 81808 — Analyst 2: 62534 — Analyst 3 — Analyst 4 — Analyst 5
Date: 1-4-92 — Time Completed — Lab Unit Supervisor

2906 Need Long Form GEA

Serial No	Sample Point	Date	Time Issued	Priority
K 940.-5630	103AP	12-16-91	16:2	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
GEA	LA-548-121	uCI/L	N124W	0

Sample Size: ? 22ml H_2O — Customer ID: MK

Remarks Calculations Results
COUNT AS uCI/L
LASER PRINTOUT
Eu 154/155 → 6.5x10⁻³ uCi/L
Sn 113 → 6.6x10⁻³ "
Co 60 → 6.1x10⁻³ "
Cs137 → 6.4x10⁻³ uCi/L
Ru106 → 6.3x10⁻³ uCi/L
Nb94 → 6.9x10⁻³ "
Ce144 → 6.8x10⁻³ "
Ra226 → 6.4x10⁻³ "

Analyst 1: 81808 — Analyst 2: 62534 — Analyst 3 — Analyst 4 — Analyst 5
Date: 1-4-92 — Time Completed — Lab Unit Supervisor

2913 Need Long Form GEA

Serial No	Sample Point	Date	Time Issued	Priority
K 943.-5730	103AP	12-16-91	16:7	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
GEA	LA-548-121	uCI/L	N124W	0

Sample Size: ? 100ml - 10ml - 500ml — Customer ID: 3APB91-B

Remarks Calculations Results
COUNT AS uCI/L
LASER PRINTOUT
Eu 155 → 6.7x10¹ uCi/L
Sm113 → 6.7x10¹ "
Co60 → 6.6x uCi/L
Cs137 → 6.59x10³ uCi/L
Ru106 → 6.8x10⁻³ uCi/L
Nb94 → 6.7x10¹ uCi/L
Ce144 → 6.6x10⁻³ "
Ra226 → 6.8x10¹ "
Cs B4 49.17 uCi/L
Nb94 49.15 uCi/L

Analyst 1: 81808 — Analyst 2: 62820 — Analyst 3 — Analyst 4 — Analyst 5
Date: 1-4-92 — Time Completed — Lab Unit Supervisor

R943 - 5730
Eu-155 → 74.74x10¹ uCi/L

2917 Need Long Form GEA

Serial No	Sample Point	Date	Time Issued	Priority
K 946.-5530	103AP	12-16-91	16:13	25

Determination	Method/Standard	Result Units	Charge Code	Rerun
GEA	LA-548-121	% RECOVERY	N124W	0

Sample Size: ? 100ml — Customer ID: STD

Remarks Calculations Results
COLX STD# 48649 — Co60 → 6.98x10¹
R901 STD VAL — Cs137 → 7.09x10¹
Cs-137 → 7.42x10¹
RESULT % REC 105.4%
R905 STD VAL 5.98x10¹
RESULT % REC 105%
Eu 154/155, Sn 113 — NA
Ru106, Nb94, Ce144, Ra226 — NA

Analyst 1: 81808 — Analyst 2: 62820 — Analyst 3 — Analyst 4 — Analyst 5
Date: 1-4-92 — Time Completed — Lab Unit Supervisor

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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 04-JAN-92 08:04:56

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 AND:
ANALYZED BY: 69549

SAMPLE DESCRIPTION: R939-5530
GEOMETRY DESCRIPTION: 22ML LIQ
SAMPLE SIZE: 1.0000E-03 LI / CONVERSION FACTOR: 1.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ARL000

COLLECT STARTED ON 4-JAN-92 AT 02:14:40

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

9312130346

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222-S COUNTING ROOM 04-JAN-92 03:04:50

SAMPLE: R939-5530
DATA COLLECTED ON 4-JAN-92 AT 02:14:40
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
AC-228	LLD<4.55E+00		LLD<4.55E+00		911.07	
AC-228A	LLD<4.56E+00		LLD<4.56E+00		911.10	
AC-228B	LLD<5.68E+00		LLD<5.68E+00		338.40	
AG-108M	LLD<9.64E-01		LLD<9.64E-01		433.94	
AG-110M	LLD<4.56E+00		LLD<4.56E+00		657.76	
AM-241	LLD<5.27E+00		LLD<5.27E+00		59.54	
AM-243	LLD<1.34E+00		LLD<1.34E+00		74.67	
AM-243A	LLD<1.34E+00		LLD<1.34E+00		74.67	
AM-243B	LLD<1.49E+02		LLD<1.49E+02		43.10	
AR-41	LLD<6.95E-01		LLD<6.95E-01		1293.64	
AU-198	LLD<9.31E-01		LLD<9.31E-01		411.80	
BA-133	LLD<1.26E+00		LLD<1.26E+00		356.02	
BA-139	LLD<2.77E+00		LLD<2.77E+00		165.85	
BA-140	LLD<3.69E+00		LLD<3.69E+00		537.27	
BA-141	LLD<2.48E+00		LLD<2.48E+00		190.23	
BE-7	LLD<8.56E+00		LLD<8.56E+00		477.59	
BI-207	LLD<9.80E-01		LLD<9.80E-01		569.70	
BI-212	LLD<7.81E+00		LLD<7.81E+00		727.27	
BI-214	LLD<5.83E+00		LLD<5.83E+00		609.32	
BI-214A	LLD<5.83E+00		LLD<5.83E+00		609.32	
BI-214B	LLD<7.93E+00		LLD<7.93E+00		1120.28	
BI-214C	LLD<2.37E+00		LLD<2.37E+00		1764.51	
CD-109	LLD<1.74E+01		LLD<1.74E+01		88.03	
CE-139	LLD<6.26E-01		LLD<6.26E-01		165.85	
CE-141	LLD<9.72E-01		LLD<9.72E-01		145.44	
CEPR144	LLD<7.59E+00		LLD<7.59E+00		133.51	
CO-56	LLD<1.05E+00		LLD<1.05E+00		846.76	
CO-57	LLD<4.93E-01		LLD<4.93E-01		122.06	
CO-58	LLD<1.05E+00		LLD<1.05E+00		810.75	
CO-60	6.05E+01	+-3.04E+00	6.05E+01	+-3.04E+00	1332.50	-0.73
					1173.24	-0.70
CR-51	LLD<6.76E+00		LLD<6.76E+00		320.09	
CS-134	6.14E+01	+-3.24E+00	6.14E+01	+-3.24E+00	795.84	-0.56
					604.70	-0.44
CS-136	LLD<1.03E+00		LLD<1.03E+00		818.51	
CS-137	8.01E+01	+-3.23E+00	8.01E+01	+-3.23E+00	661.65	-0.48
CS-138	LLD<1.32E+00		LLD<1.32E+00		1435.86	
EU-152	LLD<2.77E+00		LLD<2.77E+00		1408.01	
EU-154	LLD<2.10E+00		LLD<2.10E+00		1274.45	
EU-155	LLD<2.27E+00		LLD<2.27E+00		105.31	
FE-59	LLD<2.38E+00		LLD<2.38E+00		1099.25	
HF-181	LLD<1.07E+00		LLD<1.07E+00		482.20	
HG-203	LLD<6.92E-01		LLD<6.92E-01		279.20	
I-131	LLD<9.58E-01		LLD<9.58E-01		364.48	
I-132	LLD<1.41E+00		LLD<1.41E+00		667.69	
I-133	LLD<9.92E-01		LLD<9.92E-01		529.85	
I-134	LLD<1.63E+00		LLD<1.63E+00		847.03	
I-135	LLD<2.60E+00		LLD<2.60E+00		1260.41	
K-40	LLD<4.94E+00		LLD<4.94E+00		1460.75	
KR-85	LLD<2.07E+02		LLD<2.07E+02		513.99	
KR-85M	LLD<6.34E-01		LLD<6.34E-01		151.17	

9 3 1 2 3 3 0 4 7

KR-89	LLD<2.98E+01	LLD<2.98E+01	220.80
LA-140	LLD<5.31E-01	LLD<5.31E-01	1596.20
LA-142	LLD<2.08E+00	LLD<2.08E+00	641.83
MN-54	LLD<9.74E-01	LLD<9.74E-01	834.83
MN-56	LLD<1.19E+00	LLD<1.19E+00	846.76
NA-22	LLD<7.45E-01	LLD<7.45E-01	1274.59
NA-24	LLD<1.00E+00	LLD<1.00E+00	1368.60
NB-91	LLD<8.99E-01	LLD<8.99E-01	702.63
NB-95	LLD<9.91E-01	LLD<9.91E-01	765.78
NB-97	LLD<5.16E+00	LLD<5.16E+00	657.92
NP-237	LLD<4.98E+00	LLD<4.98E+00	86.50
NP-238	LLD<4.45E+00	LLD<4.45E+00	984.45
NP-239	LLD<4.36E+00	LLD<4.36E+00	277.60
PA-233	LLD<1.71E+00	LLD<1.71E+00	311.98
PA-234M	LLD<2.06E+02	LLD<2.06E+02	1001.03
PB-210	LLD<1.40E+02	LLD<1.40E+02	46.50
PB-212	LLD<1.32E+00	LLD<1.32E+00	239.00
PB-212A	LLD<1.32E+00	LLD<1.32E+00	239.00
PB-212B	LLD<2.00E+01	LLD<2.00E+01	300.10
PB-214	LLD<1.84E+00	LLD<1.84E+00	351.92
PB-214A	LLD<1.84E+00	LLD<1.84E+00	351.92
PB-214B	LLD<3.25E+00	LLD<3.25E+00	295.21
PO-210	LLD<8.75E+04	LLD<8.75E+04	804.00
PO-214	LLD<4.00E+04	LLD<4.00E+04	799.70
PO-216	LLD<7.37E+04	LLD<7.37E+04	804.90
PU-239	LLD<7.36E+03	LLD<7.36E+03	129.30
PU-241	LLD<2.33E+05	LLD<2.33E+05	148.57
RA-224	LLD<1.45E+01	LLD<1.45E+01	240.99
RA-226	LLD<1.37E+01	LLD<1.37E+01	186.10
RB-88	LLD<5.64E+00	LLD<5.64E+00	1836.00
RB-89	LLD<5.14E+00	LLD<5.14E+00	1031.88
RN-220	LLD<7.91E+02	LLD<7.91E+02	549.73
RU-103	LLD<9.13E-01	LLD<9.13E-01	497.08
RURH106	LLD<1.86E+01	LLD<1.86E+01	621.80
SB-124	LLD<1.26E+00	LLD<1.26E+00	602.72
SB-125	LLD<7.49E+00	LLD<7.49E+00	176.33
SC-46	LLD<1.19E+00	LLD<1.19E+00	1120.45
SE-75	LLD<1.08E+00	LLD<1.08E+00	264.66
SN-113	LLD<1.29E+00	LLD<1.29E+00	391.67
SR-85	LLD<9.07E-01	LLD<9.07E-01	513.99
SR-91	LLD<1.75E+00	LLD<1.75E+00	555.60
SR-92	LLD<6.66E-01	LLD<6.66E-01	1383.94
TA-182	LLD<3.64E+00	LLD<3.64E+00	1121.30
TC-99M	LLD<5.12E-01	LLD<5.12E-01	140.51
TE-123M	LLD<5.66E-01	LLD<5.66E-01	159.00
TE-125M	LLD<1.59E+02	LLD<1.59E+02	109.27
TE-132	LLD<6.18E-01	LLD<6.18E-01	228.16
TH-228	LLD<5.64E+01	LLD<5.64E+01	84.37
TH-234	LLD<1.01E+01	LLD<1.01E+01	92.50
TH-234A	LLD<1.01E+01	LLD<1.01E+01	92.50
TH-234B	LLD<3.65E+01	LLD<3.65E+01	63.30
TL-208	LLD<1.20E+00	LLD<1.20E+00	583.14
U-235	LLD<9.72E-01	LLD<9.72E-01	185.71
U-235A	LLD<9.72E-01	LLD<9.72E-01	185.71
U-235B	LLD<4.54E+00	LLD<4.54E+00	143.76
U-237	LLD<2.58E+00	LLD<2.58E+00	208.00
W-187	LLD<3.43E+00	LLD<3.43E+00	685.74
XE-131M	LLD<2.53E+01	LLD<2.53E+01	163.98
XE-133	LLD<1.94E+00	LLD<1.94E+00	81.00
XE-133M	LLD<5.57E+00	LLD<5.57E+00	233.21
XE-135	LLD<6.39E-01	LLD<6.39E-01	249.79
XE-138	LLD<4.89E+00	LLD<4.89E+00	258.41
Y-88	LLD<5.35E-01	LLD<5.35E-01	1836.06
Y-91	LLD<3.22E+02	LLD<3.22E+02	1204.90
Y-91M	LLD<1.32E+00	LLD<1.32E+00	555.60

R939-5530
6-11-92

9312340

BEST AVAILABLE COPY

ZR-95	LLD<1.64E+00	LLD<1.64E+00	756.73
ZR-97	LLD<1.01E+00	LLD<1.01E+00	743.33
TOTAL	2.02E+02 +-5.50E+00	2.02E+02 +-5.50E+00	

R 939-5530
JL 6-11-92

STANDARD DEVIATION = 0.13

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.30E-09 UC/LI
TOTAL MEASURED ACTIVITY = 2.02E+02 (+-5.50E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1126.19	562.73	252.	20.9	1.49E+01
1138.50	568.88	482.	17.6	2.88E+01
1603.53	801.36	195.	12.8	1.60E+01
2729.65	1364.37	66.	28.2	8.24E+00

9312353019

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 V3.06 SOFTWARE

222-S COUNTING ROOM 04-JAN-92 04:00:18

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 AND:
ANALYZED BY: 69549

SAMPLE DESCRIPTION: R940-5630
GEOMETRY DESCRIPTION: 22ML LIQ
SAMPLE SIZE: 2.2000E-02 L1 / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 4-JAN-92 AT 03:15:36

COLLECT LIVE TIME: 3000. SECONDS
REAL TIME: 3000. SECONDS
DEAD TIME: 00.00 %

DECAYED TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 17-MAR-89
EFFICIENCY CALIBRATION PERFORMED 16-MAY-91

9 3 1 2 3 2 3 0 0

BEST AVAILABLE COPY

4-11-92

222-S COUNTING ROOM R940.5630 04-JAN-92 04:07:46

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	1323.20	661.21	1.83	32.	95.	27.3	CS 137
1B		661.85			36.	13.9	
2	2921.66	1460.37	1.96	8.	147.	17.4	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

9 3 1 2 1 3 3 5 0 6 1

BEST AVAILABLE COPY

BEST AVAILABLE COPY

222-S COUNTING ROOM 04-JAN-92 04:03:48

SAMPLE: R940-5630
DATA COLLECTED ON 4-JAN-92 AT 03:15:36
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
AC-228	LLD<6.05E-03		LLD<6.05E-03		911.07	
AC-228A	LLD<4.61E-03		LLD<4.61E-03		911.10	
AC-228B	LLD<1.00E-02		LLD<1.00E-02		338.40	
AG-108M	LLD<1.69E-03		LLD<1.69E-03		433.94	
AG-110M	LLD<3.62E-03		LLD<3.62E-03		657.76	
AM-241	LLD<1.19E-02		LLD<1.19E-02		59.54	
AM-243	LLD<3.30E-03		LLD<3.30E-03		74.67	
AM-243A	LLD<3.30E-03		LLD<3.30E-03		74.67	
AM-243B	LLD<3.26E-01		LLD<3.26E-01		43.10	
AR-41	LLD<3.03E-03		LLD<3.03E-03		1293.64	
AU-198	LLD<1.33E-03		LLD<1.33E-03		411.80	
BA-133	LLD<2.22E-03		LLD<2.22E-03		356.02	
BA-139	LLD<5.88E-03		LLD<5.88E-03		165.85	
BA-140	LLD<6.09E-03		LLD<6.09E-03		537.27	
BA-141	LLD<5.33E-03		LLD<5.33E-03		190.23	
BE-7	LLD<1.42E-02		LLD<1.42E-02		477.59	
BI-207	LLD<1.81E-03		LLD<1.81E-03		569.70	
BI-212	LLD<1.33E-02		LLD<1.33E-02		727.27	
BI-214	LLD<4.17E-03		LLD<4.17E-03		609.32	
BI-214A	LLD<4.17E-03		LLD<4.17E-03		609.32	
BI-214B	LLD<1.26E-02		LLD<1.26E-02		1120.28	
BI-214C	LLD<1.29E-02		LLD<1.29E-02		1764.51	
CD-109	LLD<4.15E-02		LLD<4.15E-02		88.03	
CE-139	LLD<1.33E-03		LLD<1.33E-03		165.85	
CE-141	LLD<2.27E-03		LLD<2.27E-03		145.44	
CEPR144	LLD<1.79E-02		LLD<1.79E-02		133.51	
CO-56	LLD<1.81E-03		LLD<1.81E-03		846.76	
CO-57	LLD<1.15E-03		LLD<1.15E-03		122.06	
CO-58	LLD<1.95E-03		LLD<1.95E-03		810.75	
CO-60	LLD<2.14E-03		LLD<2.14E-03		1332.50	
CR-51	LLD<1.21E-02		LLD<1.21E-02		320.09	
CS-134	LLD<2.00E-03		LLD<2.00E-03		795.84	
CS-136	LLD<1.98E-03		LLD<1.98E-03		818.51	
CS-137	5.83E-03	+-2.62E-03	5.83E-03	+-2.62E-03	661.65	-0.14
CS-138	LLD<6.27E-03		LLD<6.27E-03		1435.86	
EU-152	LLD<1.32E-02		LLD<1.32E-02		1408.01	
EU-154	LLD<7.77E-03		LLD<7.77E-03		1271.45	
EU-155	LLD<5.01E-03✓		LLD<5.01E-03		105.31	
FE-59	LLD<3.67E-03		LLD<3.67E-03		1099.25	
HF-181	LLD<1.69E-03		LLD<1.69E-03		482.20	
HG-203	LLD<1.41E-03		LLD<1.41E-03		279.20	
I-131	LLD<1.46E-03		LLD<1.46E-03		364.48	
I-132	LLD<2.20E-03		LLD<2.20E-03		667.69	
I-133	LLD<1.64E-03		LLD<1.64E-03		529.69	
I-134	LLD<2.74E-03		LLD<2.74E-03		847.03	
I-135	LLD<7.89E-03		LLD<7.89E-03		1260.41	
K-40	LLD<1.92E-02		LLD<1.92E-02		1460.75	
KR-85	LLD<5.43E-01		LLD<5.43E-01		513.99	
KR-85M	LLD<1.44E-03		LLD<1.44E-03		151.17	
KR-87	LLD<3.75E-03		LLD<3.75E-03		402.58	
KR-89	LLD<6.48E-02		LLD<6.48E-02		220.90	

9 3 1 2 3 3 0 3 2

WHC-SD-WM-DP-025 WHC-SD-WM-DP-025
Addendum 12 Rev 0

BEST AVAILABLE COPY

LA-142	LLD<4.07E-03	LLD<4.07E-03	641.83
MN-54	LLD<2.05E-03	LLD<2.05E-03	834.85
MN-56	LLD<2.04E-03	LLD<2.04E-03	846.76
NA-22	LLD<2.76E-03	LLD<2.76E-03	1274.55
NA-24	LLD<1.91E-03	LLD<1.91E-03	1368.60
NB-94	LLD<1.87E-03	LLD<1.87E-03	702.63
NB-95	LLD<1.80E-03	LLD<1.80E-03	765.78
NB-97	LLD<4.08E-03	LLD<4.08E-03	657.92
NP-237	LLD<1.22E-02	LLD<1.22E-02	86.50
NP-238	LLD<8.05E-03	LLD<8.05E-03	984.45
NP-239	LLD<8.21E-03	LLD<8.21E-03	277.60
PA-233	LLD<3.40E-03	LLD<3.40E-03	311.98
PA-234M	LLD<4.06E-01	LLD<4.06E-01	1001.03
PB-210	LLD<2.98E-01	LLD<2.98E-01	46.50
PB-212	LLD<2.40E-03	LLD<2.40E-03	239.00
PB-212A	LLD<2.39E-03	LLD<2.39E-03	239.00
PB-212B	LLD<4.14E-02	LLD<4.14E-02	300.10
PB-214	LLD<3.37E-03	LLD<3.37E-03	351.92
PB-214A	LLD<3.37E-03	LLD<3.37E-03	351.92
PB-214B	LLD<6.48E-03	LLD<6.48E-03	295.21
PO-210	LLD<1.45E+02	LLD<1.45E+02	804.00
PO-214	LLD<1.85E+01	LLD<1.85E+01	799.70
PO-216	LLD<9.03E+01	LLD<9.03E+01	804.90
PU-239	LLD<1.56E+01	LLD<1.56E+01	129.30
PU-241	LLD<5.26E+02	LLD<5.26E+02	148.57
RA-224	LLD<2.83E-02	LLD<2.83E-02	240.99
RA-226	LLD<2.75E-02	LLD<2.75E-02	186.10
RB-88	LLD<1.40E-02	LLD<1.40E-02	1836.00
RB-89	LLD<9.79E-03	LLD<9.79E-03	1061.88
RN-220	LLD<1.47E+00	LLD<1.47E+00	549.73
RU-103	LLD<1.61E-03	LLD<1.61E-03	497.08
RURH106	LLD<3.78E-02	LLD<3.78E-02	621.80
SB-124	LLD<1.92E-03	LLD<1.92E-03	602.72
SB-125	LLD<1.64E-02	LLD<1.64E-02	176.33
SC-46	LLD<1.90E-03	LLD<1.90E-03	1120.45
SE-75	LLD<2.01E-03	LLD<2.01E-03	264.66
SN-113	LLD<2.01E-03	LLD<2.01E-03	391.67
SR-85	LLD<2.38E-03	LLD<2.38E-03	513.99
SR-91	LLD<3.22E-03	LLD<3.22E-03	555.60
SR-92	LLD<3.20E-03	LLD<3.20E-03	1383.94
TA-182	LLD<5.11E-03	LLD<5.11E-03	1121.30
TC-99M	LLD<1.14E-03	LLD<1.14E-03	140.51
TE-123M	LLD<1.22E-03	LLD<1.22E-03	159.00
TE-125M	LLD<3.71E-01	LLD<3.71E-01	109.27
TE-132	LLD<1.24E-03	LLD<1.24E-03	228.16
TH-228	LLD<1.38E-01	LLD<1.38E-01	84.37
TH-234	LLD<2.29E-02	LLD<2.29E-02	92.50
TH-234A	LLD<2.29E-02	LLD<2.29E-02	92.50
TH-234B	LLD<8.89E-02	LLD<8.89E-02	83.30
TL-208	LLD<2.20E-03	LLD<2.20E-03	583.14
U-235	LLD<1.93E-03	LLD<1.93E-03	185.71
U-235A	LLD<1.93E-03	LLD<1.93E-03	185.71
U-235B	LLD<1.05E-02	LLD<1.05E-02	143.76
U-237	LLD<5.10E-03	LLD<5.10E-03	208.00
W-187	LLD<6.41E-03	LLD<6.41E-03	685.74
XE-131M	LLD<5.68E-02	LLD<5.68E-02	163.98
XE-133	LLD<4.29E-03	LLD<4.29E-03	81.00
XE-133M	LLD<1.13E-02	LLD<1.13E-02	233.21
XE-135	LLD<1.21E-03	LLD<1.21E-03	249.79
XE-138	LLD<9.54E-03	LLD<9.54E-03	258.41
Y-88	LLD<1.33E-03	LLD<1.33E-03	1836.00
Y-91	LLD<8.95E-01	LLD<8.95E-01	1204.90
Y-91M	LLD<2.43E-03	LLD<2.43E-03	555.60
ZN-65	LLD<6.72E-03	LLD<6.72E-03	1115.55
ZR-95	LLD<2.91E-03	LLD<2.91E-03	736.73

R940-5630
6-11-92

9312333033

R940-5630
JC 9-11-92

TOTAL	5.83E-03 +-2.62E-03	5.83E-03 +-2.62E-03

ERAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 5.83E-03 (+-2.62E-03) UC/LI
TCH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

9 3 1 2 3 3 3 0 7 4

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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LANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                    04-JAN-92  11:13:19


                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 ONO:
ANALYZED BY:         62820

 MPLE DESCRIPTION: R943-5730
 LOMETRY DESCRIPTION:  22ML LIQ
SAMPLE SIZE:   1.0000E-03 LI        / CONVERSION FACTOR: 4.9505E-03
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON  4-JAN-92 AT 10:23:07

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

K 4455750
4-11-92

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	1323.15	661.19	1.66	122.	14912.	1.6	CS-137
1B		661.85			36.	13.9	
2	2921.79	1460.43	2.69	12.	167.	16.7	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

9312330.6

BEST AVAILABLE COPY

SAMPLE: R943-5730
DATA COLLECTED ON 4-JAN-92 AT 10:23:07
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
AC-228	LLD<3.81E+01		LLD<3.81E+01		911.07	
AC-228A	LLD<3.81E+01		LLD<3.81E+01		911.10	
AC-228B	LLD<1.08E+02		LLD<1.08E+02		338.40	
AG-108M	LLD<2.39E+01		LLD<2.39E+01		433.94	
AG-110M	LLD<1.82E+02		LLD<1.82E+02		657.76	
AM-241	LLD<1.07E+02		LLD<1.07E+02		59.54	
AM-243	LLD<2.91E+01		LLD<2.91E+01		74.67	
AM-243A	LLD<2.91E+01		LLD<2.91E+01		74.67	
AM-243B	LLD<3.20E+03		LLD<3.20E+03		43.10	
AR-41	LLD<1.40E+01		LLD<1.40E+01		1293.64	
AU-198	LLD<1.98E+01		LLD<1.98E+01		411.80	
BA-133	LLD<2.50E+01		LLD<2.50E+01		356.02	
BA-139	LLD<5.89E+01		LLD<5.89E+01		163.83	
BA-140	LLD<6.53E+01		LLD<6.53E+01		537.27	
BA-141	LLD<5.40E+01		LLD<5.40E+01		190.23	
BE-7	LLD<2.04E+02		LLD<2.04E+02		477.59	
BI-207	LLD<1.40E+01		LLD<1.40E+01		569.70	
BI-212	LLD<6.63E+01		LLD<6.63E+01		727.27	
BI-214	LLD<3.66E+01		LLD<3.66E+01		609.32	
BI-214A	LLD<3.66E+01		LLD<3.66E+01		609.32	
BI-214B	LLD<8.06E+01		LLD<8.06E+01		1120.28	
BI-214C	LLD<6.58E+01		LLD<6.58E+01		1764.51	
CD-109	LLD<3.54E+02		LLD<3.54E+02		88.03	
CE-139	LLD<1.33E+01		LLD<1.33E+01		165.85	
CE-141	LLD<1.97E+01		LLD<1.97E+01		145.44	
CEPR144	LLD<1.60E+02		LLD<1.60E+02		133.51	
CO-56	LLD<9.18E+00		LLD<9.18E+00		846.76	
CO-57	LLD<1.01E+01		LLD<1.01E+01		122.06	
CO-58	LLD<9.50E+00		LLD<9.50E+00		810.75	
CO-60	LLD<8.19E+00		LLD<8.19E+00		1332.50	
CR-51	LLD<1.40E+02		LLD<1.40E+02		320.09	
CS-134	LLD<9.17E+00		LLD<9.17E+00		795.84	
CS-136	LLD<9.94E+00		LLD<9.94E+00		818.51	
CS-137	6.59E+03	+-1.72E+02	6.59E+03	+-1.72E+02	661.67	-0.46
CS-138	LLD<2.26E+01		LLD<2.26E+01		1435.86	
EU-152	LLD<5.30E+01		LLD<5.30E+01		1408.01	
EU-154	LLD<2.75E+01		LLD<2.75E+01		1274.45	
EU-155	LLD<4.74E+01		LLD<4.74E+01		105.31	
FE-59	LLD<1.63E+01		LLD<1.63E+01		1099.25	
HF-181	LLD<2.38E+01		LLD<2.38E+01		482.20	
HG-203	LLD<1.48E+01		LLD<1.48E+01		279.20	
I-131	LLD<2.00E+01		LLD<2.00E+01		364.48	
I-132	LLD<4.26E+01		LLD<4.26E+01		667.69	
I-133	LLD<1.84E+01		LLD<1.84E+01		529.69	
I-134	LLD<1.43E+01		LLD<1.43E+01		847.03	
I-135	LLD<4.23E+01		LLD<4.23E+01		1260.41	
K-40	LLD<2.03E+02		LLD<2.03E+02		1460.75	
KR-85	LLD<4.63E+03		LLD<4.63E+03		513.99	
KR-85M	LLD<1.28E+01		LLD<1.28E+01		151.17	
KR-87	LLD<4.52E+01		LLD<4.52E+01		402.58	
KR-88	LLD<6.30E+02		LLD<6.30E+02		220.00	

9312307

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K943-5730
JK 6-11-92

MN-54	LLD<7.09E+00	LLD<7.09E+00	[illegible]
MN-56	LLD<1.04E+01	LLD<1.04E+01	815.76
NA-22	LLD<9.78E+00	LLD<9.78E+00	1274.33
NA-24	LLD<1.11E+01	LLD<1.11E+01	1368.60
NB-94	LLD<7.15E+00	LLD<7.15E+00	702.63
NB-95	LLD<7.59E+00	LLD<7.59E+00	765.78
NB-97	LLD<2.06E+02	LLD<2.06E+02	607.92
NP-237	LLD<1.09E+02	LLD<1.09E+02	86.50
NP-238	LLD<3.47E+01	LLD<3.47E+01	984.40
NP-239	LLD<9.33E+01	LLD<9.33E+01	277.60
PA-233	LLD<3.45E+01	LLD<3.45E+01	311.98
PA-234M	LLD<1.16E+03	LLD<1.16E+03	1001.03
PB-210	LLD<2.84E+03	LLD<2.84E+03	46.50
PB-212	LLD<2.81E+01	LLD<2.81E+01	239.00
PB-212A	LLD<2.80E+01	LLD<2.80E+01	239.00
PB-212B	LLD<4.25E+02	LLD<4.25E+02	300.10
PB-214	LLD<3.79E+01	LLD<3.79E+01	351.92
PB-214A	LLD<3.79E+01	LLD<3.79E+01	351.92
PB-214B	LLD<7.18E+01	LLD<7.18E+01	295.21
PO-210	LLD<7.65E+05	LLD<7.65E+05	804.09
PO-214	LLD<8.20E+04	LLD<8.20E+04	799.70
PO-216	LLD<4.91E+05	LLD<4.91E+05	804.90
PU-239	LLD<1.47E+05	LLD<1.47E+05	129.30
PU-241	LLD<4.77E+06	LLD<4.77E+06	146.57
RA-224	LLD<3.00E+02	LLD<3.00E+02	240.99
RA-226	LLD<2.93E+02	LLD<2.93E+02	186.10
RB-88	LLD<8.35E+01	LLD<8.35E+01	1836.00
RB-89	LLD<4.35E+01	LLD<4.35E+01	1031.88
RN-220	LLD<1.39E+04	LLD<1.39E+04	549.73
RU-103	LLD<2.02E+01	LLD<2.02E+01	497.08
RURH106	LLD<3.01E+02	LLD<3.01E+02	621.80
S-124	LLD<1.64E+01	LLD<1.64E+01	602.72
SB-125	LLD<1.54E+02	LLD<1.54E+02	176.33
SC-46	LLD<1.21E+01	LLD<1.21E+01	1120.45
SE-75	LLD<2.22E+01	LLD<2.22E+01	264.66
SN-113	LLD<2.69E+01	LLD<2.69E+01	391.67
SR-89	LLD<2.03E+01	LLD<2.03E+01	313.99
SR-91	LLD<2.66E+01	LLD<2.66E+01	355.60
SR-92	LLD<1.18E+01	LLD<1.18E+01	1383.94
TA-182	LLD<2.85E+01	LLD<2.85E+01	1121.30
TC-99M	LLD<1.02E+01	LLD<1.02E+01	140.51
TE-123M	LLD<1.20E+01	LLD<1.20E+01	159.00
TE-125M	LLD<3.45E+03	LLD<3.45E+03	109.27
TE-132	LLD<1.36E+01	LLD<1.36E+01	228.16
TH-228	LLD<1.17E+03	LLD<1.17E+03	84.37
TH-234	LLD<2.16E+02	LLD<2.16E+02	92.50
TH-234A	LLD<2.16E+02	LLD<2.16E+02	92.50
TH-234B	LLD<7.93E+02	LLD<7.93E+02	63.30
TL-208	LLD<1.88E+01	LLD<1.88E+01	383.14
U-235	LLD<2.07E+01	LLD<2.07E+01	185.71
U-235A	LLD<2.07E+01	LLD<2.07E+01	185.71
U-235B	LLD<9.16E+01	LLD<9.16E+01	143.76
U-237	LLD<5.46E+01	LLD<5.46E+01	208.00
W-187	LLD<2.98E+01	LLD<2.98E+01	683.74
XE-131M	LLD<5.41E+02	LLD<5.41E+02	163.98
XE-133	LLD<3.98E+01	LLD<3.98E+01	81.00
XE-133M	LLD<1.17E+02	LLD<1.17E+02	233.21
XE-135	LLD<1.32E+01	LLD<1.32E+01	249.79
XE-138	LLD<1.02E+02	LLD<1.02E+02	258.41
Y-88	LLD<7.93E+00	LLD<7.93E+00	1836.06
Y-91	LLD<3.72E+03	LLD<3.72E+03	1204.90
Y-91M	LLD<2.01E+01	LLD<2.01E+01	353.60
ZN-65	LLD<2.48E+01	LLD<2.48E+01	1115.33
ZR-95	LLD<1.49E+01	LLD<1.49E+01	756.73

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TOTAL 6.59E+03 +-1.72E+02 6.59E+03 +-1.72E+02

EBAR = ***** MEV/DISINTEGRATION

R941-5730
6-11-92

MAXIMUM PERMISSABLE ACTIVITY = 1.16E-08 UC/LI
TOTAL MEASURED ACTIVITY = 6.59E+03 (+-1.72E+02) UC/LI
TECH. SPEC. = ****** (+-****)

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.79	1460.43	167.	16.7	2.19E+01

9 3 1 2 3 5 3 0 0 9

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              *
*                                                                         *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

CANBERRA SPECTRAN-F V2.06  SOFTWARE

222-S COUNTING ROOM                                    04-JAN-92  14:42:03


                    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 ARG:
ANALYZED BY:         62820

SAMPLE DESCRIPTION: R946-5530
GEOMETRY DESCRIPTION:  22ML LIQ
SAMPLE SIZE:    1.0000E-03 LI        / CONVERSION FACTOR: 1.0000E-01
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON  4-JAN-92 AT 13:51:52

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-87
EFFICIENCY CALIBRATION PERFORMED 16-MAY-91
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9 3 1 2 3 3 5 0 6 0

BEST AVAILABLE COPY

BEST AVAILABLE COPY

222-S COUNTING ROOM 04-JAN-92 13:51:55

SAMPLE: R946-5530
DATA COLLECTED ON 4-JAN-92 AT 13:51:52
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
AC-228	LLD<4.46E+00		LLD<4.46E+00		911.07	
AC-228A	LLD<4.46E+00		LLD<4.46E+00		911.10	
AC-228B	LLD<5.55E+00		LLD<5.55E+00		338.40	
AG-108M	LLD<1.03E+00		LLD<1.03E+00		433.94	
AG-110M	LLD<4.55E+00		LLD<4.55E+00		657.76	
AM-241	LLD<5.28E+00		LLD<5.28E+00		59.54	
AM-243	LLD<1.37E+00		LLD<1.37E+00		74.67	
AM-243A	LLD<1.37E+00		LLD<1.37E+00		74.67	
AM-243B	LLD<1.43E+02		LLD<1.43E+02		43.10	
AR-41	LLD<8.42E-01		LLD<8.42E-01		1293.64	
AU-198	LLD<8.71E-01		LLD<8.71E-01		411.80	
BA-133	LLD<1.21E+00		LLD<1.21E+00		356.01	
BA-139	LLD<2.78E+00		LLD<2.78E+00		165.85	
BA-140	LLD<3.59E+00		LLD<3.59E+00		537.27	
BA-141	LLD<2.49E+00		LLD<2.49E+00		190.23	
BE-7	LLD<8.65E+00		LLD<8.65E+00		477.59	
BI-207	LLD<9.24E-01		LLD<9.24E-01		569.70	
BI-212	LLD<8.12E+00		LLD<8.12E+00		727.27	
BI-214	LLD<6.04E+00		LLD<6.04E+00		609.32	
BI-214A	LLD<6.04E+00		LLD<6.04E+00		609.32	
BI-214B	LLD<9.18E+00		LLD<9.18E+00		1120.38	
BI-214C	LLD<4.47E+00		LLD<4.47E+00		1764.51	
CD-109	LLD<1.75E+01		LLD<1.75E+01		88.03	
CE-139	LLD<6.30E-01		LLD<6.30E-01		165.85	
CE-141	LLD<9.76E-01		LLD<9.76E-01		145.44	
CEPR144	LLD<7.66E+00		LLD<7.66E+00		133.51	
CO-56	LLD<9.60E-01		LLD<9.60E-01		846.76	
CO-57	LLD<5.05E-01		LLD<5.05E-01		122.06	
CO-58	LLD<9.53E-01		LLD<9.53E-01		810.75	
CO-60	5.98E+01	+-3.04E+00	5.98E+01	+-3.04E+00	1332.50	-0.66
					1173.24	-0.65
CR-51	LLD<6.89E+00		LLD<6.89E+00		320.09	
CS-134	5.91E+01	+-3.19E+00	5.91E+01	+-3.19E+00	795.84	-0.56
					604.70	-0.12
CS-136	LLD<1.08E+00		LLD<1.08E+00		818.51	
CS-137	7.89E+01	+-3.21E+00	7.89E+01	+-3.21E+00	661.65	0.50
CS-138	LLD<7.61E-01		LLD<7.61E-01		1435.86	
EU-152	LLD<3.29E+00		LLD<3.29E+00		1408.01	
EU-154	LLD<1.89E+00		LLD<1.89E+00		1271.45	
EU-155	LLD<2.45E+00		LLD<2.45E+00		105.31	
FE-59	LLD<2.38E+00		LLD<2.38E+00		1099.25	
HF-181	LLD<1.11E+00		LLD<1.11E+00		482.20	
HG-203	LLD<7.43E-01		LLD<7.43E-01		279.20	
I-131	LLD<9.41E-01		LLD<9.41E-01		364.48	
I-132	LLD<1.40E+00		LLD<1.40E+00		667.69	
I-133	LLD<9.80E-01		LLD<9.80E-01		529.69	
I-134	LLD<1.48E+00		LLD<1.48E+00		847.03	
I-135	LLD<2.40E+00		LLD<2.40E+00		1260.41	
K-40	LLD<1.09E+01		LLD<1.09E+01		1460.75	
KR-85	LLD<2.16E+02		LLD<2.16E+02		513.99	
KR-85M	LLD<6.10E-01		LLD<6.10E-01		151.17	

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R 946-5530
6-11-92

KR-89	LLD<3.01E+01	LLD<3.01E+01	330.50
LA-140	LLD<4.79E-01	LLD<4.79E-01	1596.00
LA-142	LLD<2.13E+00	LLD<2.13E+00	641.60
MN-54	LLD<9.88E-01	LLD<9.88E-01	834.82
MN-56	LLD<1.08E+00	LLD<1.08E+00	846.76
NA-22	LLD<6.70E-01	LLD<6.70E-01	1374.55
NA-24	LLD<9.55E-01	LLD<9.55E-01	1368.60
NB-94	LLD<9.41E-01	LLD<9.41E-01	702.63
NB-95	LLD<9.25E-01	LLD<9.25E-01	760.78
NB-97	LLD<5.15E+00	LLD<5.15E+00	637.92
NP-237	LLD<4.97E+00	LLD<4.97E+00	86.00
NP-238	LLD<4.60E+00	LLD<4.60E+00	984.49
NP-239	LLD<4.48E+00	LLD<4.48E+00	277.60
PA-233	LLD<1.72E+00	LLD<1.72E+00	311.98
PA-234M	LLD<1.96E+02	LLD<1.96E+02	1001.03
PB-210	LLD<1.40E+02	LLD<1.40E+02	46.50
PB-212	LLD<1.36E+00	LLD<1.36E+00	239.00
PB-212A	LLD<1.35E+00	LLD<1.35E+00	239.00
PB-212B	LLD<1.98E+01	LLD<1.98E+01	300.10
PB-214	LLD<1.86E+00	LLD<1.86E+00	351.92
PB-214A	LLD<1.86E+00	LLD<1.86E+00	351.92
PB-214B	LLD<3.51E+00	LLD<3.51E+00	295.21
PO-210	LLD<9.15E+04	LLD<9.15E+04	804.00
PO-214	LLD<3.90E+04	LLD<3.90E+04	799.70
PO-216	LLD<7.71E+04	LLD<7.71E+04	804.90
PU-239	LLD<7.26E+03	LLD<7.26E+03	129.30
PU-241	LLD<2.27E+05	LLD<2.27E+05	148.57
RA-224	LLD<1.44E+01	LLD<1.44E+01	240.99
RA-226	LLD<1.35E+01	LLD<1.35E+01	186.10
RB-88	LLD<4.14E+00	LLD<4.14E+00	1836.00
RB-89	LLD<5.54E+00	LLD<5.54E+00	1031.88
RN-220	LLD<8.71E+02	LLD<8.71E+02	549.73
RU-103	LLD<8.87E-01	LLD<8.87E-01	497.08
RURH106	LLD<1.84E+01	LLD<1.84E+01	621.80
SB-124	LLD<1.31E+00	LLD<1.31E+00	602.72
SB-125	LLD<7.26E+00	LLD<7.26E+00	176.33
SC-46	LLD<1.38E+00	LLD<1.38E+00	1120.45
SE-75	LLD<1.06E+00	LLD<1.06E+00	264.66
SN-113	LLD<1.26E+00	LLD<1.26E+00	391.67
SR-85	LLD<9.50E-01	LLD<9.50E-01	513.99
SR-91	LLD<1.72E+00	LLD<1.72E+00	555.60
SR-92	LLD<8.95E-01	LLD<8.95E-01	1383.94
TA-182	LLD<3.63E+00	LLD<3.63E+00	1121.30
TC-99M	LLD<4.99E-01	LLD<4.99E-01	140.51
TE-123M	LLD<5.81E-01	LLD<5.81E-01	159.00
TE-125M	LLD<1.63E+02	LLD<1.63E+02	109.27
TE-132	LLD<6.35E-01	LLD<6.35E-01	228.16
TH-228	LLD<5.96E+01	LLD<5.96E+01	84.37
TH-234	LLD<9.56E+00	LLD<9.56E+00	92.50
TH-234A	LLD<9.56E+00	LLD<9.56E+00	92.50
TH-234B	LLD<3.74E+01	LLD<3.74E+01	63.30
TL-208	LLD<1.15E+00	LLD<1.15E+00	583.14
U-235	LLD<9.59E-01	LLD<9.59E-01	185.71
U-235A	LLD<9.59E-01	LLD<9.59E-01	185.71
U-235B	LLD<4.38E+00	LLD<4.38E+00	143.73
U-237	LLD<2.44E+00	LLD<2.44E+00	208.00
W-187	LLD<3.26E+00	LLD<3.26E+00	685.74
XE-131M	LLD<2.72E+01	LLD<2.72E+01	163.98
XE-133	LLD<2.01E+00	LLD<2.01E+00	81.00
XE-133M	LLD<5.57E+00	LLD<5.57E+00	233.21
XE-135	LLD<6.46E-01	LLD<6.46E-01	249.79
XE-138	LLD<5.20E+00	LLD<5.20E+00	258.41
Y-88	LLD<3.92E-01	LLD<3.92E-01	1836.06
Y-91	LLD<2.74E+02	LLD<2.74E+02	1204.90
Y-91M	LLD<1.30E+00	LLD<1.30E+00	555.60

9 3 1 2 2 3 3 0 5 2

ZR-95	LLD<1.74E+00	LLD<1.74E+00	736.72
ZR-97	LLD<9.65E-01	LLD<9.65E-01	743.33
TOTAL	1.98E+02 +-5.45E+00	1.98E+02 +-5.45E+00	

STANDARD DEVIATION 0.10

EBAR = ***** MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.31E-09 UC/LI
TOTAL MEASURED ACTIVITY = 1.98E+02 (+-5.45E+00) UC/LI
% TECH. SPEC. = ****** (+-****)

R 946-5530
JK 6-11-92

ERROR QUOTATION AT 1.96 SIGMA
LLD CONFIDENCE LEVEL AT 85.0%

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1126.30	562.78	229.	26.3	1.33E+01
1138.50	568.88	499.	19.0	2.98E+01
1603.59	801.39	206.	12.1	1.69E+01
2918.36	1458.72	33.	33.6	4.39E+00

PEAKS ELIMINATED BY BACKGROUND SUBTRACTION

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
2921.78	1460.43	118.	19.2	1.53E+01

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ACID DIGESTION ANALYSIS RESULTS

9 3 1 2 3 3 5 0 5 4

ACID DIGESTION RESULTS

Tank: 103AP
Sample No.: R943
Customer ID: 3AP891-8

	Check Standard		Blank		Sample		Duplicate Sample		Spike of Sample		Check Standard	
Lab ID:	R939		R940		R943		NA		NA		R946	
Acid Digestion (01-07-92)	Complete		Complete		Complete		NA		NA		Complete	
ICP (01-23-92)												
Aluminum	116	%	9.97E+1	ug/L	1.04E+5	ug/L	NA		NA		133	%
Barium	97.75	%	<1.30E+1	ug/L	<6.50E+1	ug/L	NA		NA		102	%
Cadmium	96.05	%	<4.00E+0	ug/L	8.10E+1	ug/L	NA		NA		93	%
Chromium	101.3	%	<8.00E+0	ug/L	3.53E+3	ug/L	NA		NA		101	%
Iron	103.5	%	<8.70E+1	ug/L	6.30E+2	ug/L	NA		NA		103	%
Lead	102.6	%	<8.00E+1	ug/L	<4.00E+2	ug/L	NA		NA		95.9	%
Magnesium	102.8	%	<5.10E+1	ug/L	<2.55E+2	ug/L	NA		NA		101	%
Manganese	97.8	%	<3.00E+0	ug/L	<1.50E+1	ug/L	NA		NA		96.5	%
Silver	37.2	%	<8.00E+0	ug/L	<4.00E+1	ug/L	NA		NA		113	%
Sodium	148.8	%	1.12E+3	ug/L	3.70E+6	ug/L	NA		NA		180	%
Zinc	97.75	%	<4.00E+0	ug/L	<2.00E+1	ug/L	NA		NA		96	%

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: ACID DIGESTION	Sample Prep: ACID DIGESTION

Instrument: METTLER BAL. SNF04495	Procedure/Rev: LA-505-158/A-2
Technologist: L. MORRISON	Date: 01-07-92
Starting Time: NA	Temperature: NA
Ending Time: NA	Chemist: L. OTTMAR

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R939-8505	11		
2	REAGENT BLANK	R940-8605	12		
3	SAMPLE 3AP891-8	R943-8705	13		
4	FINAL LMCS CHECK STD	R946-8505	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	ICP1-1B48AA/50 mL	ICP2-2B48AB/50 mL	ICP3-3B48AB/50 mL	N/A

A-6000-881 (03/92)

9 3 1 2 1 3 3 0 3 6

ACID DIGESTION ANALYSIS

Serial No	Sample Point	Date	Time Issued	Priority
[illegible]	103AP	12-16-91	[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-D1G	LA-505-158	% RECOVERY	N12HW	

Sample Size	Customer ID
10 mL to 50 mL	STD

Remarks, Calculations, Results
LMCS CHECK SAMPLE
LMCS ID
1848MA
2848MB
3848MB

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
	Laurine J. Ottman			
1-7-92	1/8/92			1-9-92

Serial No	Sample Point	Date	Time Issued	Priority
[illegible]	103AP	12-16-91	[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-D1G	LA-505-158	G/G	[illegible]	0

Sample Size	Customer ID
?	[illegible]

Remarks, Calculations, Results
REAGENT BLANK
VOLUME ON
COMPLETION 50 mL

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
	Laurine J. Ottman			
1-7-92	1/8/92			1-9-92

Serial No	Sample Point	Date	Time Issued	Priority
[illegible]	103AP	12-16-91	13:10	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-D1G	LA-505-158	G/G	N12HW	0

Sample Size	Customer ID
? 10 mL to 50 mL	SAPB91-8

Remarks, Calculations, Results

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
	Laurine J. Ottman			
1-7-92	1/8/92			1-9-92

Serial No	Sample Point	Date	Time Issued	Priority
[illegible]	103AP	12-16-91	[illegible]	[illegible]

Determination	Method/Standard	Result Units	Charge Code	Rerun
ACD-D1G	LA-505-158	% RECOVERY	N12HW	

Sample Size	Customer ID
? 10 mL to 50 mL	STD

Remarks, Calculations, Results
LMCS CHECK SAMPLE
LMCS ID
1848MA
2848MB
3848MB

Complete

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
65731	82768			
	Laurine J. Ottman			
1-7-92	1/8/92			1-9-92

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY

ANALYTICAL BATCH

Lab Segment Serial No.: R943	Customer ID: 3AP891-8
Analysis: INDUCTIVELY COUPLED PLASMA	Sample Prep: ACID DIGESTION

Instrument: WB39939	Procedure/Rev: LA-505-151/B-0
Technologist: T. FRAZIER	Date: 01-23-92
Starting Time: 11:20	Temperature: NA
Ending Time: 14:26	Chemist: L. OTTMAR

	Description	Lab ID		Description	Lab ID
1	INITIAL LMCS CHECK STD	R939-8550	11		
2	REAGENT BLANK	R940-8650	12		
3	SAMPLE 3AP891-8	R943-8750	13		
4	FINAL LMCS CHECK STD	R946-8550	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	ICP1-1B48AA/10 mL	ICP2-2B48AB/10 mL	ICP3-3B48AB/10 mL	NA

A-6000-881 (03/92)

9 3 1 2 3 3 3 0 5 3

ICP ANALYSIS - ACID DIGESTION

Serial No	Sample Point	Date	Time Issued	Priority
R 939-8550	105AP	12-16-91	16:2	25

Determination	Method Standard	Report Units	Charge Code	Rerun
ICP	LA-505-151	% RECOVERY	N124W	0

Sample Size: 10mL on 50mL

Customer ID: STD

Remarks, Calculations, Results

1st STD Digested STD 1048AN, 2848AB, 3848AD

CD PB
CR ZN
FE
MG

2nd STD QCV OR LMCS

AG
AL
BA

MN
NA

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
67768	82768			

Date: 1-23-92 Time Completed: 1/23/92 Lab Div. Mgr.

DIGESTED LMCS 50mL

Al	1.160 x 5 = 5.80	116.0% Rec	
Zn	1.955 x 5 = 9.775	97.75% Rec.	
Fe	1.035 x 5 = 5.175	103.5%	
Cr	1.012 x 5 = 5.065	101.3%	
Ba	1.955 x 5 = 9.775	97.75%	
Mg	1.028 x 5 = 5.14	102.8%	
Na	2.925 x 5 = 14.575	145.8%	
Ag	.372 x 5 = 1.86	37.2%	
Pb	1.026 x 5 = 5.13	102.6%	
Cd	1.921 x 5 = 9.605	96.05%	
Mn	.978 x 5 = 4.89	97.8%	

UNDIGESTED 1048AC, 2848AB, 3848AD

Zn	9.83 ppm	98.3%
Fe	4.91 ppm	98.2%
Cr	5.06 ppm	101.2%
Ba	9.95 ppm	99.5%
Mg	5.00 ppm	100.0%
Na	9.84 ppm	98.4%
Cd	9.59 ppm	95.9%
Mn	4.85 ppm	97.0%
Ag	5.13 ppm	102.6%
Pb	4.85 ppm	97.0%
Al	4.75 ppm	95.0% Rec.

R939-8550

Serial No	Sample Point	Date	Time Issued	Priority
R 940-8650	105AP	12-16-91	16:3	25

Determination	Method Standard	Report Units	Charge Code	Rerun
ICP	LA-505-151	PPB	N124W	0

Sample Size: 50mL

Customer ID: BLK

Remarks, Calculations, Results: RESIDENT BLANK

AG MG
AL MN
BA NA
CD PB
CR ZN
FE

over

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
67768	82768			

Date: 1-23-92 Time Completed: 1/23/92 Lab Div. Mgr.

Al 9.97 E1 ug/l
Zn <4.0 ug/l
Fe <9.70E1 ug/l
Cr <8.0 ug/l
Ba <1.30E1 ug/l
Mg <5.10E1 ug/l
Na 1.12 E3 ug/l
Ag <8.0 ug/l
Pb <8.0E1 ug/l
Cd <4.0 ug/l
Mn <3.0 ug/l

R940-8650

Serial No	Sample Point	Date	Time Issued	Priority
R 943-8750	105AP	12-16-91	16:10	25

Determination	Method Standard	Report Units	Charge Code	Rerun
ICP	LA-505-151	PPB	N124W	0

Sample Size: 10mL on 50mL

Customer ID: 3APU91--B

Remarks, Calculations, Results

AG MG
AL MN
BA NA
CD PB
CR ZN
FE

over

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
67768	82768			

Date: 1-23-92 Time Completed: 1/23/92 Lab Div. Mgr.

Al (2.08E4)(5) = 1.04E5 ug/l
Zn (<4.0)(5) = <2.0 E1 ug/l
Fe (1.26E2)(5) = 6.30E2 ug/l
Cr (7.07E2)(5) = 3.53 E3 ug/l
Ba (<1.3 E1)(5) = <6.50E1 ug/l
Mg (<5.1E1)(5) = <2.55E2 ug/l
Na (7.41E5)(5) = 3.70 E6 ug/l
Ag (<8.0)(5) = <4.0 E1 ug/l
Pb (<8.0E1)(5) = <4.0 E2 ug/l
Cd (1.62E1)(5) = 8.10E1 ug/l
Mn (<3.0)(5) = <1.50E1 ug/l

R943-8750

ICP ANALYSIS - ACID DIGESTION

Serial No	Sample Point	Date	Time Issued	Priority
R 946-8550	103AP	12-16-91	16:19	25

Determination	Method/Standard	Result Units	Charge Code	Returns
ICP	LA-505-151	% RECOVERY	H124W	0

Sample Size	Customer ID
2 10ml in 50ml	STD

Remarks, Conclusions, Results

1st STD Digested STD
164144, 164146, 164148

2nd STD CCV OR LMCS

OVER →

Analyst - 1	Analyst - 2	Analyst - 3	Analyst - 4	Analyst - 5
67768	82768			
Date	Time Completed	Lab Unit Mgr		
1-23-92	1/23/92			

DIGESTED LMCS STDS

Al	1.33x5=6.65	133.0% Rec.
Zn	1.92x5=9.60	96.0% Rec.
Fe	1.03x5=5.15	103.0% Rec.
Cr	1.01x5=5.05	101.0% Rec.
Be	2.04x5=10.20	102.0% Rec.
Mg	1.01x5=5.05	101.0% Rec.
Na	3.60x5=18.0	180.0% Rec.
Ag	1.13x5=5.65	113.0% Rec.
Pb	.959x5=4.80	95.90% Rec.
Cd	1.86x5=9.30	93.0% Rec.
Mn	.965x5=4.83	96.5% Rec.

UNDIGESTED LMCS STDS

			INITIAL	2ND	3RD
Al	4.86ppm	97.2% Rec.			
Zn	9.78 ppm	97.8% Rec.			
Fe	4.87ppm	97.4% Rec.			
Cr	5.02ppm	100.4% Rec.			
Be	10.00ppm	100.0% Rec.			
Mg	4.97ppm	99.4% Rec.			
Na	10.01 ppm	100.1% Rec.			
Ag	4.85ppm	97.0% Rec.			
Pb	5.25ppm	105.0% Rec.			
Cd	9.43ppm	94.3% Rec.			
Mn	4.82ppm	96.4% Rec.			

R946-8550

R939-R946
1/23/92
Teresa L. Frazier

rrected Counts Statistics 11:20 AM January 23, 1992
sk name : ALL_SIM
ple Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

alyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
	1	-0.033	0.005	
	2	245.906	1.532	
	3	-0.080	0.023	
	5	-0.010	0.005	
	6	1.535	0.010	
	7	21.186	0.235	
	8	0.069	0.007	
	9	0.059	0.011	
	10	0.583	0.051	
	11	110.588	0.733	
	12	20.978	0.107	
	14	96.849	0.439	
	15	41.277	0.237	
	16	20.475	0.162	
	17	-0.005	0.001	
	18	-0.069	0.003	
	19	15.029	0.142	
	20	56.989	0.366	
	21	12.109	0.079	
	22	0.332	0.076	
	24	0.073	0.005	
	25	-0.362	0.003	
	26	163.222	1.066	
	27	0.181	0.004	
	28	0.128	0.009	
	29	22.844	0.157	
	30	-0.000	0.011	
	31	16.044	0.047	
	32	0.006	0.007	
	33	0.410	0.002	
	34	1.082	0.009	
	35	0.015	0.013	
	36	-0.114	0.004	
	37	228.240	1.784	
	38	24.324	0.180	
	39	0.838	0.012	
	40	48.352	0.318	
	42	0.884	0.019	
	43	0.018	0.003	
	44	-0.006	0.001	
	45	-0.072	0.005	

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED THE ANALYSIS RUN ON PAGES 139 TO 198.

dentity 1: SST1 STD 1B48AC Identity 2: Direct 11:20 AM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

Zr	Sr	Bi	Ta	Hg	Sn	Si	Al

	(ppb)	(ppb)	(ppb)	(ppb)	(ppm)	(ppb)	(ppb)	(ppb)
ean	-34.948	9897.465	-62.488	-13.945	-21.739	5003.279	-34.759	-180.284
.D.	2.350	81.668	24.254	2.876	680.890	55.362	4.774	4.557
R.S.D.	6.724	0.623	38.814	18.038	3132.092	1.107	13.736	2.528

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	778.140	9826.821	4853.330	9861.106	9746.507	4895.589	-5.433	-0.694
.D.	72.376	65.450	24.756	44.668	56.064	38.542	4.075	0.188
R.S.D.	9.301	0.666	0.510	0.453	0.575	0.787	75.007	27.062

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	4906.087	9585.664	5064.381	-19.614	25.637	-1132.575	9953.229	1183.709
.D.	46.333	61.838	33.072	34.502	13.362	10.317	65.012	28.030
R.S.D.	0.944	0.645	0.653	175.905	52.120	0.911	0.653	2.368

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	40.244	5000.962	-11.410	9843.647	-0.211	216.929	374.408	35.617
.D.	10.149	34.336	14.198	29.333	2.289	11.437	2.848	24.049
R.S.D.	25.220	0.687	124.438	0.298	1085.242	5.272	0.761	67.522

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	-5.556	9592.813	4839.135	5265.494	4851.103	4835.758	0.234	0.311
.D.	0.513	74.968	35.788	75.465	31.954	102.159	2.234	0.187
R.S.D.	9.234	0.782	0.740	1.433	0.659	2.113	954.825	59.996

	Tl (ppb)
ean	-78.995
.D.	31.710
R.S.D.	40.142

---

orrected Counts Statistics 11:22 AM January 23, 1992
ame : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
r	1	-0.140	0.008	
r	2	0.014	0.011	
i	3	4.796	0.025	
a	5	-0.039	0.034	
g	6	1.553	0.014	
n	7	-0.080	0.018	
i	8	0.014	0.006	
l	9	1.176	0.039	
	10	-0.001	0.007	
n	11	0.111	0.013	
u	12	0.095	0.003	
i	14	-0.015	0.001	
o	15	-0.015	0.011	

16	-0.071	0.010
17	1.251	0.006
18	78.068	0.196
19	0.005	0.013
20	0.528	0.003
21	-0.006	0.007
22	11.692	0.103
24	1.822	0.012
25	1.763	0.007
26	-0.419	0.014
27	0.018	0.003
28	0.005	0.008
29	0.011	0.002
30	0.080	0.003
31	0.076	0.015
32	0.018	0.003
33	-0.053	0.006
34	16.041	0.030
35	2.672	0.015
36	-0.136	0.009
37	-0.045	0.038
38	0.005	0.009
39	-0.064	0.020
40	0.000	0.003
42	-0.018	0.013
43	0.057	0.005
44	-0.005	0.002
45	-0.055	0.004

Identi... SST2 STD 2B48AD Identity 2: Direct 11:23 AM January 23, 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	-84.252	-0.416	5044.073	-34.443	1173.913	-17.155	-70.618	283.580
S.D.	3.437	0.430	26.000	21.728	913.820	4.159	3.810	16.264
R.S.D.	4.079	103.478	0.515	63.083	77.844	24.243	5.396	5.735

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
Mean	-21.649	-36.475	6.345	-2.648	-1.180	-3.336	5112.874	5080.546
S.D.	10.026	1.189	0.670	0.118	2.681	2.316	24.788	12.758
R.S.D.	46.312	3.259	10.559	4.441	227.172	69.427	0.485	0.251

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
Mean	-5.012	39.525	-6.278	5155.984	4972.773	5196.930	-27.548	53.187
S.D.	4.341	0.429	2.849	46.456	34.203	19.377	0.828	17.454
R.S.D.	86.612	1.086	45.380	0.901	0.688	0.373	3.006	32.817

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
Mean	-17.668	-2.776	90.726	-31.949	3.586	12.008	5127.584	4847.065
S.D.	8.821	0.380	3.942	9.468	0.967	18.911	9.491	26.679

R.S.D.	49.923	13.874	4.345	29.634	26.756	157.480	0.185	0.550

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
	-8.446	1.079	2.983	-184.430	-0.631	-141.575	27.101	0.435
D.	1.281	1.300	1.715	121.293	0.253	73.456	3.184	0.285
R.S.D.	15.163	148.354	57.478	65.767	40.060	51.885	11.749	65.462

	Tl (ppb)
an	38.209
D.	30.653
R.S.D.	80.225

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rrected Counts Statistics 11:24 AM January 23, 1992
sk name : ALL_SIM
aple Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Xpulses	S.D. Xpulses	%R.S.D. Xpulses
1	22.566	0.035	
2	0.011	0.003	
3	-1.801	0.034	
5	15.552	0.046	
6	26.580	0.035	
7	0.099	0.021	
8	12.380	0.011	
9	11.929	0.024	
10	30.832	0.129	
11	0.070	0.006	
12	0.062	0.002	
14	-0.020	0.002	
15	-0.069	0.005	
16	0.255	0.028	
17	-0.008	0.001	
18	-0.149	0.004	
19	0.022	0.007	
20	0.143	0.001	
21	0.013	0.005	
22	-0.117	0.058	
24	0.021	0.001	
25	-0.096	0.005	
26	-0.014	0.002	
27	1.508	0.010	
28	4.544	0.008	
29	0.010	0.001	
30	3.904	0.018	
31	0.072	0.004	
32	31.232	0.104	
33	1.458	0.021	
34	-0.053	0.028	
35	-0.087	0.002	
36	35.915	0.051	
37	-0.268	0.042	

38	0.048	0.008
39	-0.058	0.006
40	0.012	0.005
42	0.045	0.015
43	14.023	0.023
44	52.314	0.077
45	0.622	0.002

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entity 1: SSTS STD 3B48AD Identity 2: Direct 11:25 AM January 23, 1992
sk name : ALL_SIM
ample 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)
an	10313.976	-0.564	-1864.865	9910.061	1633326.087	25.182	8090.681	4750.379
.D.	16.134	0.129	35.736	29.379	2297.776	4.946	7.270	10.073
R.S.D.	0.156	22.961	1.916	0.296	0.141	19.643	0.090	0.212

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
an	43573.456	-40.166	-1.469	-3.157	-14.007	74.392	-19.017	-5.939
D.	182.756	0.558	0.536	0.156	1.165	6.720	4.706	0.228
R.S.D.	0.419	1.388	36.492	4.928	8.314	9.033	24.744	3.845

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Na (ppb)	P (ppb)
an	0.436	-25.591	1.814	-151.429	-120.449	-341.387	-2.826	10385.091
D.	2.288	0.166	2.175	26.018	2.827	13.429	0.106	68.309
R.S.	524.363	0.648	119.899	17.182	2.347	3.934	3.738	0.658

	S (ppb)	Mg (ppb)	As (ppb)	Ma (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
an	5223.611	-2.922	5022.719	-34.630	9881.434	4403.638	13.782	-149.113
D.	9.259	0.127	23.159	2.474	32.989	60.372	8.927	3.770
R.S.D.	0.177	4.330	0.461	7.144	0.334	1.376	64.772	2.528

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
an	4876.468	-8.305	11.534	-146.163	0.554	207.776	9730.940	9760.897
D.	6.971	1.766	1.636	36.917	0.506	83.473	15.850	14.332
R.S.D.	0.143	21.266	14.356	25.258	91.300	40.175	0.163	0.147

	Tl (ppb)
an	4801.375
D.	16.240
R.S.D.	0.338

---

rrected Counts Statistics 11:27 AM January 23, 1992
sk name : ALL_SIM
aple t : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Xpulses	S.D. Xpulses	%R.S.D. Xpulses
1	0.008	0.009	
2	0.011	0.006	
3	-0.398	0.031	
5	0.008	0.005	
6	1.569	0.015	
7	0.072	0.017	
8	1.332	0.007	
9	2.686	0.061	
10	0.099	0.010	
11	11.348	0.033	
12	4.262	0.013	
14	-0.018	0.005	
15	4.263	0.010	
16	4.104	0.034	
17	-0.005	0.000	
18	-0.092	0.012	
19	3.030	0.054	
20	5.990	0.020	
21	2.449	0.009	
22	-0.018	0.068	
24	0.010	0.011	
25	-0.073	0.010	
26	16.195	0.042	
27	0.015	0.003	
28	0.023	0.003	
29	4.658	0.020	
30	0.808	0.016	
31	1.646	0.011	
32	3.115	0.009	
33	0.371	0.008	
34	3.149	0.005	
35	0.556	0.012	
36	7.221	0.031	
37	23.723	0.157	
38	4.666	0.048	
39	1.631	0.003	
40	9.873	0.032	
42	0.173	0.003	
43	1.457	0.007	
44	5.168	0.022	
45	0.091	0.010	

dentity 1: ICV Identity 2: ICV 11:27 AM January 23, 1992
ask name : ALL_SIM
aaple Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-16.478	-0.537	-395.525	-4.889	2173.913	18.808	799.014	910.973
.D	4.255	0.229	32.690	2.876	945.840	3.901	4.620	25.180
	25.823	42.647	8.265	58.830	43.509	20.740	0.578	2.764

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Ba (ppb)
an	114.111	966.761	973.359	-2.953	1008.723	992.265	-5.433	-2.189
D.	14.708	2.704	2.984	0.513	2.252	7.998	0.000	0.795
R.S.D.	12.889	0.300	0.307	17.356	0.223	0.306	0.000	36.297

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
an	983.593	961.996	1021.219	-113.959	-150.609	-272.890	985.792	32.380
D.	17.797	3.322	3.608	30.549	29.700	30.997	2.535	22.295
R.S.D.	1.809	0.345	0.353	26.807	19.720	11.359	0.257	68.854

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
an	-5.745	1015.576	1029.354	938.664	983.745	1013.016	1031.268	1014.810
D.	3.320	4.399	21.210	6.785	2.900	22.410	1.681	20.886
R.S.D.	57.786	0.433	2.061	0.723	0.295	2.212	0.163	2.058

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
an	988.347	999.729	929.909	10058.848	990.738	915.672	1000.102	965.481
D.	4.177	6.593	9.612	19.422	3.227	17.732	4.730	4.029
R.S.D.	0.423	0.660	1.034	0.193	0.326	1.936	0.473	0.417

	Tl (ppb)
an	1064.915
D.	67.816
R.S.D.	6.368

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rected Counts Statistics 11:29 AM January 23, 1992
ile name : ALL_SIM
ple Weight : 1.0000 Solution Volume : 1.00
Peak Integrations : 3 Off-Peak Integrations : 1

Cycle Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
1	0.005	0.002	
2	-0.002	0.004	
3	-0.045	0.030	
5	0.002	0.012	
6	1.554	0.009	
7	-0.023	0.016	
8	0.154	0.063	
9	0.428	0.011	
10	-0.031	0.021	
11	0.038	0.007	
12	0.053	0.004	
14	-0.025	0.003	
15	-0.016	0.019	
16	-0.061	0.001	
17	-0.005	0.000	
18	-0.104	0.004	
19	0.003	0.007	
20	0.095	0.000	

21	-0.008	0.006
22	0.070	0.054
24	0.027	0.008
25	-0.030	0.004
26	-0.011	0.004
27	0.012	0.005
28	0.022	0.007
29	0.003	0.001
30	-0.009	0.009
31	0.048	0.006
32	0.002	0.009
33	-0.050	0.006
34	-0.110	0.008
35	-0.002	0.008
36	-0.109	0.006
37	-0.064	0.033
38	0.041	0.033
39	-0.051	0.006
40	0.002	0.004
42	-0.023	0.005
43	0.021	0.003
44	-0.008	0.002
45	-0.058	0.004

dentity 1: ICB Identity 2: ICB 11:29 AM January 23, 1992
ask name : ALL_SIM
ample 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)
ean	-17.851	-1.060	-25.135	-8.716	1239.130	-3.541	21.779	-27.001
.D.	1.058	0.168	31.789	7.873	584.536	3.882	41.722	4.557
R.S.D.	5.924	15.810	126.473	90.322	47.173	109.612	191.565	16.876

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	-65.006	-42.993	-3.403	-3.632	-1.416	-0.872	-5.433	-3.013
.D.	29.328	0.646	0.938	0.269	4.559	0.238	0.000	0.263
R.S.D.	45.116	1.502	27.564	7.418	321.906	27.350	0.000	8.722

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	-5.774	-33.699	-6.836	-67.171	-102.542	-144.831	-2.643	11.573
.D.	2.144	0.004	2.305	24.181	21.222	11.275	0.220	32.777
R.S.D.	37.121	0.013	33.721	35.999	20.696	7.785	8.321	283.215

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	1.832	-4.602	-24.942	-49.267	-1.266	20.859	-4.117	4.829
.D.	7.688	0.127	11.706	3.779	2.854	16.497	2.548	15.080
R.S.D.	419.555	2.749	46.931	7.670	225.466	79.091	61.899	312.282

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	-4.788	0.280	10.010	-107.897	-0.445	-165.478	2.318	-0.124

.D.	0.746	1.400	6.463	36.917	0.418	25.478	1.749	0.285
R.S.D.	15.587	499.540	64.572	34.215	93.995	15.396	75.423	229.169

	Tl (ppb)
ean	14.768
.D.	24.696
R.S.D.	167.231

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rrected Counts Statistics 11:31 AM January 23, 1992
sk name : ALL_SIM
aple Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
1	0.021	0.002	
2	0.110	0.002	
3	-0.135	0.008	
5	-0.040	0.008	
6	2.016	0.022	
7	6.016	0.039	
8	0.546	0.004	
9	807.534	0.414	
10	0.044	0.017	
11	0.263	0.013	
12	0.060	0.003	
14	-0.025	0.008	
15	-0.013	0.016	
16	-0.056	0.012	
17	-0.042	0.000	
18	0.055	0.004	
19	304.617	0.932	
20	1134.050	3.449	
21	0.016	0.013	
22	3.623	0.076	
24	0.015	0.006	
25	-8.518	0.004	
26	0.030	0.005	
27	0.018	0.001	
28	2.215	0.028	
29	936.602	3.533	
30	0.100	0.004	
31	0.077	0.011	
32	0.007	0.005	
33	-0.061	0.012	
34	-0.116	0.001	
35	-0.101	0.002	
36	-0.074	0.006	
37	0.341	0.020	
38	-0.446	0.023	
39	-0.046	0.009	
40	1.696	0.009	
42	-0.007	0.010	
43	0.027	0.003	

	44	-0.002	0.391
	45	-0.075	0.009

ICSA-I Identity 2: ICSA 11:31 AM January 23, 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)	Ni (ppb)	Ta (ppb)	Mg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
Mean	-10.372	3.448	-119.740	-35.507	31347.826	1422.055	280.051	252164.997
S.D.	0.916	0.084	7.907	5.195	1412.374	9.261	2.748	172.036
R.S.D.	8.830	2.430	6.603	14.631	4.505	0.651	0.981	0.068

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
Mean	41.460	-22.905	-1.933	-3.398	-0.708	0.400	-156.211	7.348
S.D.	23.805	1.116	0.709	0.771	3.865	2.874	0.000	0.234
R.S.D.	57.417	4.874	36.682	21.430	545.754	718.856	0.000	3.191

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
Mean	99567.437	191878.127	3.069	135.168	-137.414	-25421.158	-0.142	48.564
S.D.	304.564	583.665	5.441	30.940	17.199	11.275	0.280	8.009
R.S.D.	0.306	0.304	177.262	22.890	12.516	0.044	196.426	16.491

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
Mean	850.820	205243.473	116.099	-31.743	0.316	-15.299	-6.129	-174.468
S.D.	26.859	774.275	5.162	6.897	1.561	35.451	0.318	4.183
R.S.D.	3.157	0.377	4.446	20.466	493.253	231.714	5.184	2.397

	Ti (ppb)	Cd (ppb)	K (ppb)	X (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
Mean	-0.045	17.297	-86.773	-77.687	34.000	-80.898	6.024	0.995
S.D.	0.817	0.819	4.587	52.093	0.801	55.253	1.749	0.215
R.S.D.	1808.314	4.737	5.286	67.054	2.356	68.299	29.027	21.650

	Tl (ppb)
Mean	-100.092
S.D.	59.808
R.S.D.	59.753

Corrected Counts Statistics 11:33 AM January 23, 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
	1	0.020	0.006	
	2	0.115	0.006	

3	-0.148	0.017
5	-0.041	0.013
6	2.029	0.013
7	6.049	0.064
8	0.551	0.017
9	608.603	4.348
10	0.036	0.026
11	11.631	0.083
12	2.197	0.016
14	-0.011	0.012
15	2.099	0.019
16	4.083	0.012
17	-0.041	0.002
18	0.058	0.007
19	306.086	2.360
20	1140.154	5.671
21	1.275	0.027
22	3.572	0.079
24	0.017	0.011
25	-8.567	0.009
26	8.390	0.057
27	0.018	0.003
28	2.251	0.021
29	938.508	4.562
30	0.131	0.002
31	0.107	0.026
32	0.010	0.003
33	-0.004	0.009
34	3.227	0.023
35	0.441	0.018
36	-0.076	0.011
37	24.319	0.140
38	-0.470	0.020
39	-0.060	0.007
40	6.748	0.045
42	-0.012	0.009
43	0.763	0.006
44	2.737	0.023
45	-0.063	0.006

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entity 1: ICSAB-I Identity 2: ICSAB 11:34 AM January 23, 1992
sk name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppb)	Sn (ppb)	Si (ppb)	Al (ppb)
an	-10.982	3.650	-133.703	-35.932	32217.391	1429.845	283.571	252608.921
.D.	2.944	0.222	17.283	8.292	868.478	15.159	11.450	1806.295
R.S.D.	26.808	6.075	12.926	23.078	2.696	1.060	4.038	0.715

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	27.502	991.997	494.146	-2.240	497.791	988.291	-153.494	7.565
.D.	37.393	7.427	3.618	1.189	4.506	2.864	8.483	0.470
R.S.D.	135.966	0.749	0.732	53.074	0.905	0.290	5.527	6.219

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	100047.738	192910.188	529.862	104.745	-132.701	-25568.078	509.750	53.187
.	771.590	959.799	11.495	28.940	31.145	25.445	3.491	17.454
.	0.771	0.498	2.169	27.629	23.470	0.100	0.685	32.817

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	883.719	205661.158	155.857	-12.776	1.266	32.940	1056.051	807.139
D.	17.988	999.812	2.977	15.821	0.914	27.935	7.196	32.212
R.S.D.	2.036	0.486	1.910	123.829	72.168	84.806	0.681	3.991

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	-0.361	1024.743	-91.546	-162.276	540.936	-104.801	517.655	512.092
.D.	1.507	5.868	3.992	44.537	3.919	46.914	4.339	4.312
R.S.D.	417.582	0.573	4.361	27.445	0.724	44.765	0.838	0.842

	Tl (ppb)
ean	-20.393
.D.	41.205
R.S.D.	202.052

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rrected Counts Statistics 11:35 AM January 23, 1992
est name : ALL_SIM
ht : 1.0000 Solution Volume : 1.00
...tegrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
r	1	0.017	0.004	
r	2	0.004	0.005	
1	3	-0.038	0.040	
a	5	-0.005	0.012	
a	6	1.550	0.012	
n	7	0.005	0.003	
i	8	0.111	0.002	
l	9	0.462	0.011	
	10	0.017	0.024	
n	11	0.051	0.006	
u	12	0.053	0.004	
i	14	-0.009	0.003	
g	15	0.005	0.006	
i	16	-0.071	0.011	
a	17	-0.003	0.001	
i	18	-0.080	0.006	
e	19	0.023	0.009	
a	20	0.168	0.029	
r	21	-0.003	0.008	
d	22	0.108	0.065	
e	24	0.035	0.007	
y	25	-0.013	0.007	
a	26	0.010	0.008	

27	0.012	0.001
28	0.015	0.002
29	0.061	0.024
30	0.000	0.008
31	0.058	0.008
32	0.006	0.009
33	-0.045	0.021
34	-0.105	0.002
35	0.003	0.011
36	-0.093	0.005
37	-0.142	0.018
38	0.037	0.020
39	-0.067	0.005
40	0.002	0.005
42	0.003	0.007
43	0.015	0.002
44	-0.011	0.001
45	-0.078	0.004

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entity 1: XXX Identity 2: Rinse 11:36 AM January 23, 1992
sk name : ALL_SIM
ple 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)
an	-12.356	-0.845	-18.153	-12.969	936.522	2.990	-6.600	-13.016
D.	1.608	0.199	42.360	7.838	788.902	0.625	1.374	4.681
R.S.D.	13.015	23.490	233.351	60.439	80.385	20.888	20.817	35.966

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
an	2.853	-41.862	-3.358	-2.003	3.620	-3.256	4.076	-1.452
D.	34.458	0.497	0.938	0.353	1.518	2.523	2.353	0.392
R.S.D.	1207.749	1.187	26.366	17.614	41.928	77.493	57.728	26.989

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Na (ppb)	P (ppb)
an	0.872	-21.347	-5.022	-50.480	-81.807	-92.217	-1.362	9.261
D.	2.780	4.920	3.357	29.011	19.860	21.129	0.499	6.936
R.S.D.	318.740	23.047	66.842	57.469	24.276	22.912	36.651	74.890

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
an	-5.588	8.181	-12.902	-43.288	-0.211	34.023	-2.528	13.281
D.	2.436	5.181	10.558	4.669	2.728	59.532	0.734	20.410
R.S.D.	43.599	63.330	81.832	10.787	1293.370	174.975	29.021	153.680

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
an	-2.710	-3.011	9.214	-204.570	-0.387	-23.899	-2.314	-0.560
D.	0.695	0.764	4.004	31.005	0.502	36.171	1.061	0.108
R.S.D.	25.658	25.387	43.452	15.156	129.860	151.354	45.872	19.246

	Tl (ppb)

an	-121.189
D.	26.624
R.S.D.	21.969

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rrected Counts Statistics 11:38 AM January 23, 1992
sk name : ALL_SIM
ple Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
1	0.000	0.007	
2	-0.015	0.007	
3	-0.076	0.018	
5	-0.016	0.014	
6	1.540	0.011	
7	-0.015	0.006	
8	0.092	0.002	
9	0.264	0.027	
10	-0.019	0.029	
11	0.504	0.011	
12	0.247	0.005	
14	-0.023	0.008	
15	0.400	0.008	
16	0.282	0.012	
17	-0.005	0.002	
18	-0.095	0.009	
19	0.014	0.005	
20	0.192	0.002	
21	0.036	0.007	
22	-0.070	0.078	
24	-0.005	0.013	
25	-0.041	0.011	
26	-0.025	0.006	
27	0.015	0.002	
28	0.000	0.007	
29	0.011	0.002	
30	0.012	0.011	
31	0.029	0.013	
32	0.011	0.002	
33	-0.034	0.009	
34	-0.061	0.005	
35	-0.005	0.004	
36	-0.127	0.004	
37	0.155	0.041	
38	0.007	0.011	
39	-0.066	0.009	
40	0.296	0.000	
42	0.011	0.011	
43	0.168	0.007	
44	0.045	0.002	
45	-0.044	0.006	

:entity 1: CRI-I Identity 2: CRI 11:38 AM January 23, 1992
:sk name : ALL_SIM
:ample 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)
:an	-19.836	-1.610	-57.601	-20.198	282.609	-1.731	-19.579	-95.127
.D.	3.216	0.274	18.744	8.938	697.348	1.436	1.374	11.280
R.S.D.	16.215	17.017	32.542	44.251	246.754	82.947	7.017	11.858

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
:an	-48.132	-1.448	41.547	-3.462	96.788	80.909	-5.433	-2.406
.D.	41.524	0.963	1.206	0.791	1.844	2.750	7.058	0.556
R.S.D.	86.271	66.501	2.903	22.845	1.905	3.398	129.916	23.092

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
:an	-2.070	-17.317	11.580	-130.215	-193.021	-177.590	-3.477	32.380
.D.	1.677	0.292	2.969	34.977	36.466	33.208	0.392	10.594
R.S.D.	81.046	1.688	25.643	26.861	18.892	18.699	11.279	32.719

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
:an	-22.943	-2.776	2.584	-61.431	1.582	62.279	11.346	-1.812
D.	7.862	0.438	13.591	7.953	0.731	22.129	1.456	7.319
R.S.D.	34.267	15.790	525.908	12.946	46.187	35.531	12.833	404.033

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
:an	-7.227	9.462	3.248	-198.528	29.118	18.391	103.996	9.887
.D.	0.513	1.719	2.089	51.387	0.000	58.982	4.930	0.285
R.S.D.	7.099	18.132	64.310	25.884	0.001	320.703	4.740	2.882

	Ni (ppb)
:an	113.219
.D.	42.388
R.S.D.	37.439

:rrected Counts Statistics 11:40 AM January 23, 1992
:sk name : ALL_SIM
:ample Weight : 1.0000 Solution Volume : 1.00
:-Peak Integrations : 3 Off-Peak Integrations : 1

:alyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
	1	0.014	0.005	
	2	0.007	0.006	
	3	-0.168	0.018	
	5	0.017	0.011	
	6	1.544	0.005	
	7	-0.008	0.014	
	8	0.711	0.012	

9	1.492	0.004
10	9.025	0.028
11	5.643	0.030
12	2.158	0.005
14	-0.012	0.003
15	2.992	0.027
16	1.987	0.036
17	-0.002	0.001
18	-0.079	0.006
19	1.498	0.021
20	2.978	0.022
21	1.205	0.005
22	0.149	0.042
24	0.033	0.008
25	-0.035	0.005
26	8.081	0.051
27	0.016	0.002
28	0.029	0.004
29	2.298	0.017
30	0.381	0.012
31	0.850	0.016
32	1.512	0.022
33	0.137	0.013
34	1.517	0.009
35	0.268	0.014
36	3.526	0.031
37	11.575	0.020
38	2.345	0.027
39	0.786	0.006
40	4.895	0.026
42	0.087	0.010
43	0.721	0.004
44	2.545	0.015
45	-0.019	0.007

---

entity 1: CCV-1 Identity 2: CCV 11:40 AM January 23, 1992
sk Name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Mo (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
an	-13.730	-0.725	-153.951	1.064	565.217	-0.000	389.388	414.985
.D.	2.350	0.243	18.744	6.751	298.864	3.341	7.649	1.573
R.S.D.	17.115	33.487	12.175	634.295	52.876	88086292.569	1.964	0.379

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
an	12.567	457.360	485.017	-2.342	496.296	487.511	6.792	-1.366
.D.	39.796	2.649	1.191	0.327	6.274	8.618	4.075	0.406
R.S.D.	316.663	0.579	0.246	13.976	1.264	1.768	59.995	29.737

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
	483.026	453.217	500.565	-35.501	-87.462	-157.736	490.924	34.692
	6.875	3.717	2.148	18.912	23.713	14.990	3.089	14.438

R.S.D.	1.423	0.829	0.429	53.273	27.112	9.503	0.629	41.617

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	5.644	498.475	478.769	446.348	476.577	449.599	512.622	493.922
.D.	4.085	3.616	14.876	10.169	6.834	36.271	2.702	24.722
R.S.D.	72.376	0.725	3.107	2.278	1.434	8.067	0.527	5.006

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	487.715	487.312	468.269	4951.307	490.934	441.290	488.472	476.149
.D.	4.172	0.857	5.273	37.733	2.620	55.801	2.505	2.868
R.S.D.	0.855	0.175	1.126	0.762	0.534	12.645	0.513	0.602

	Tl (ppb)
ean	293.713
.D.	46.823
R.S.D.	15.942

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rracted Counts Statistics 11:42 AM January 23, 1992
sk name : ALL_SIM
mple Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
1	0.013	0.007	
2	0.002	0.005	
3	-0.061	0.018	
5	0.007	0.014	
6	1.554	0.010	
7	-0.056	0.017	
8	0.120	0.006	
9	0.328	0.017	
10	-0.006	0.007	
11	0.029	0.004	
12	0.044	0.004	
14	-0.013	0.009	
15	0.002	0.009	
16	-0.035	0.013	
17	-0.002	0.002	
18	-0.088	0.003	
19	0.004	0.014	
20	0.100	0.001	
21	-0.016	0.003	
22	0.042	0.017	
24	0.027	0.007	
25	-0.023	0.012	
26	-0.002	0.009	
27	0.018	0.002	
28	0.014	0.018	
29	0.006	0.001	
30	-0.020	0.004	
31	0.050	0.018	

32	0.001	0.007
33	-0.061	0.007
34	-0.119	0.003
35	-0.003	0.006
36	-0.117	0.006
37	-0.081	0.030
38	0.017	0.012
39	-0.059	0.004
40	0.010	0.008
42	0.008	0.014
43	0.021	0.004
44	-0.006	0.001
45	-0.066	0.003

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entity 1: CCB-1 Identity 2: CCB 11:43 AM January 23, 1992
sk name : ALL SIM
ample 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)
an	-14.035	-0.912	-41.891	-5.314	1217.391	-11.489	-1.100	-68.680
D.	3.302	0.184	19.320	9.043	680.890	3.981	3.867	6.914
R.S.D.	23.528	20.217	46.120	170.166	55.930	34.648	351.568	10.067

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
an	-29.169	-43.796	-5.647	-2.444	2.912	5.248	6.792	-1.973
	9.272	0.314	0.815	0.924	2.063	3.175	7.058	0.164
	31.787	0.716	14.435	37.807	70.838	60.502	103.915	8.296

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
an	-5.556	-32.902	-10.324	-79.761	-103.484	-123.984	-2.114	48.564
D.	4.729	0.097	1.107	7.472	18.541	35.280	0.553	16.017
R.S.D.	85.116	0.295	10.726	9.367	17.917	28.455	26.175	32.982

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
an	-7.027	-3.798	-39.133	-48.236	-1.688	-11.317	-7.189	3.018
D.	20.295	0.127	5.214	11.354	2.813	19.087	0.971	10.612
R.S.D.	288.835	3.331	13.323	23.538	166.656	168.654	13.503	351.626

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
an	-5.872	-0.462	5.237	-154.219	0.358	3.682	2.087	0.249
D.	0.817	1.259	2.288	24.168	0.780	75.833	2.779	0.215
R.S.D.	13.910	272.417	43.685	15.671	217.857	2059.675	133.185	86.595

	Tl (ppb)
an	-36.802
D.	22.605
R.S.D	61.425

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orrected Counts Statistics 11:44 AM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
-Pe egrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Kpulses	S.D. Kpulses	2R.S.D. Kpulses
1	4.509	0.036	
2	48.671	0.413	
3	0.586	0.010	
5	1.172	0.027	
6	6.273	0.077	
7	4.276	0.074	
8	1.871	0.013	
9	3.286	0.022	
10	5.915	0.049	
11	22.416	0.139	
12	4.204	0.033	
14	18.975	0.213	
15	8.289	0.089	
16	4.091	0.047	
17	0.245	0.002	
18	15.377	0.139	
19	3.187	0.048	
20	12.413	0.111	
21	2.430	0.027	
22	2.393	0.118	
24	0.398	0.012	
25	0.263	0.015	
26	32.086	0.276	
27	0.311	0.008	
28	0.966	0.007	
29	4.715	0.035	
30	0.800	0.013	
31	4.938	0.034	
32	6.295	0.029	
33	0.343	0.006	
34	1.073	0.260	
35	0.562	0.007	
36	7.077	0.057	
37	45.646	0.292	
38	7.170	0.057	
39	0.120	0.007	
40	9.754	0.084	
42	0.159	0.006	
43	2.844	0.016	
44	10.407	0.082	
45	0.086	0.011	

dentity 1: R939 Dig. STD 10-50 Identity 2: 1B48AA,2B48AB,3B48AB 11:46 AM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
-Pe grations : 3 Off-Peak Integrations : 1

orrected Counts Statistics 11:44 AM January 23, 1992
ask name : ALL_SIM
Weight : 1.0000 Solution Volume : 1.00
egrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Kpulses	S.D. Kpulses	2R.S.D. Kpulses
1	4.509	0.036	
2	48.671	0.413	
3	0.586	0.010	
5	1.172	0.027	
6	6.273	0.077	
7	4.276	0.074	
8	1.871	0.013	
9	3.286	0.022	
10	5.915	0.049	
11	22.416	0.139	
12	4.204	0.033	
14	18.975	0.213	
15	8.289	0.089	
16	4.091	0.047	
17	0.245	0.002	
18	15.377	0.139	
19	3.187	0.048	
20	12.413	0.111	
21	2.430	0.027	
22	2.393	0.118	
24	0.398	0.012	
25	0.263	0.015	
26	32.086	0.276	
27	0.311	0.008	
28	0.966	0.007	
29	4.715	0.035	
30	0.800	0.013	
31	4.938	0.034	
32	6.295	0.029	
33	0.343	0.006	
34	1.073	0.260	
35	0.562	0.007	
36	7.077	0.057	
37	45.646	0.292	
38	7.170	0.057	
39	0.120	0.007	
40	9.754	0.084	
42	0.159	0.006	
43	2.844	0.016	
44	10.407	0.082	
45	0.086	0.011	

dentity 1: R939 Dig. STD 10-50 Identity 2: 1B48AA,2B48AB,3B48AB 11:46 AM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
egrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	2044.698	1758.164	635.353	737.584	300978.261	1011.201	1154.523	1159.936
.D.	16.372	16.611	10.100	17.072	5042.026	17.567	8.409	7.189
R.S.D.	0.802	0.948	1.590	2.315	1.632	1.737	0.728	0.792

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	8337.551	1754.909	959.897	1931.122	1959.059	989.007	1014.697	1003.758
.D.	69.040	12.440	7.689	21.639	20.904	11.136	8.483	9.058
R.S.D.	0.828	0.636	0.801	1.121	1.067	1.126	0.836	0.902

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	1035.132	2049.105	1013.407	961.502	944.566	728.752	1955.035	2085.352
.D.	15.766	18.750	11.393	53.132	33.135	45.848	16.815	53.873
R.S.D.	1.523	0.915	1.124	5.526	3.508	6.291	0.860	2.583

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	1073.509	1028.967	1019.462	2974.931	1990.168	933.342	371.655	1026.281
.D.	7.948	7.679	16.474	21.029	9.271	20.539	82.557	12.059
R.S.D.	0.740	0.747	1.616	0.707	0.466	2.201	22.213	1.175

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	968.880	1920.832	1427.876	929.320	977.978	838.447	1963.839	1942.839
.D.	7.764	12.251	11.236	42.866	8.428	35.463	10.994	15.307
R.S.D.	0.801	0.638	0.787	4.613	0.862	4.230	0.560	0.788

	Tl (ppb)
ean	1032.098
.D.	77.461
R.S.D.	7.505

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orrected Counts Statistics 11:51 AM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	2R.S.D. Kpulses
r	1	0.016	0.001	
r	2	0.017	0.002	
i	3	-0.034	0.016	
a	5	-0.026	0.016	
i	6	1.558	0.009	
n	7	-0.032	0.006	
i	8	0.946	0.018	
l	9	0.733	0.024	
	10	-0.012	0.018	
n	11	0.211	0.006	
u	12	0.229	0.007	
i	14	-0.012	0.003	

15	-0.003	0.002
16	-0.067	0.018
17	-0.005	0.000
18	-0.092	0.007
19	0.156	0.004
20	1.203	0.172
21	0.000	0.007
22	0.044	0.010
24	0.029	0.003
25	-0.034	0.002
26	-0.000	0.005
27	0.015	0.003
28	0.051	0.007
29	0.093	0.002
30	-0.019	0.007
31	1.944	0.022
32	-0.000	0.006
33	-0.047	0.007
34	-0.110	0.006
35	-0.002	0.009
36	-0.091	0.008
37	-0.117	0.020
38	3.338	0.030
39	-0.064	0.006
40	0.009	0.005
42	0.008	0.014
43	0.026	0.002
44	-0.006	0.001
45	-0.056	0.002

~~940~~ 1940 8-28-92

dentity 1: ~~9946~~ Dig Blank Identity 2: Direct 11:51 AM January 23, 1992
ask name : ALL SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Mg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-12.814	-0.295	-13.964	-26.364	1456.522	-5.823	544.263	99.696
.D.	0.264	0.061	17.145	9.902	554.667	1.423	12.098	9.842
R.S.D.	2.063	20.830	122.780	37.560	38.082	24.437	2.223	9.872

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
'ean	-37.216	-27.607	37.292	-2.342	1.731	-2.223	-5.433	-2.211
.D.	25.918	0.492	1.580	0.256	0.491	4.200	0.000	0.455
R.S.D.	69.642	1.781	4.237	10.942	28.385	188.956	0.000	20.588

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
lean	44.239	153.871	-3.488	-80.220	-98.772	-154.758	-1.992	30.068
.D.	1.425	27.159	3.085	4.188	8.162	6.199	0.275	18.350
R.S.D.	3.221	18.950	88.458	5.221	8.264	4.006	13.804	61.028

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
1.	34.440	15.121	-37.410	1123.179	-2.110	26.892	-4.329	4.225

15	-0.003	0.002
16	-0.067	0.018
17	-0.005	0.000
18	-0.092	0.007
19	0.156	0.004
20	1.203	0.172
21	0.000	0.007
22	0.044	0.010
24	0.029	0.003
25	-0.034	0.002
26	-0.000	0.005
27	0.015	0.003
28	0.051	0.007
29	0.093	0.002
30	-0.019	0.007
31	1.944	0.022
32	-0.000	0.006
33	-0.047	0.007
34	-0.110	0.006
35	-0.002	0.009
36	-0.091	0.008
37	-0.117	0.020
38	3.338	0.030
39	-0.064	0.006
40	0.009	0.005
42	0.008	0.014
43	0.026	0.002
44	-0.006	0.001
45	-0.056	0.002

-940 8-28-92

dentity 1: ~~0946~~ Dio Blank Identity 2: Direct 11:51 AM January 23, 1992
ask name : ALL SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-12.814	-0.295	-13.964	-26.364	1456.522	-5.823	544.263	99.696
.D.	0.264	0.061	17.145	9.902	554.667	1.423	12.098	9.842
R.S.D.	2.063	20.830	122.780	37.560	38.082	24.437	2.223	9.872

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	-37.216	-27.607	37.292	-2.342	1.731	-2.223	-5.433	-2.211
.D.	25.918	0.492	1.580	0.256	0.491	4.200	0.000	0.455
R.S.D.	69.642	1.781	4.237	10.942	28.385	188.956	0.000	20.588

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Se (ppb)	Ba (ppb)	P (ppb)
ean	44.239	153.871	-3.488	-80.220	-98.772	-154.758	-1.992	30.068
.D.	1.425	29.159	3.085	4.188	8.162	6.199	0.275	18.350
R.S.D.	3.221	18.950	88.458	5.221	8.264	4.006	13.804	61.028

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	34.440	15.121	-37.410	1123.179	-2.110	26.892	-4.329	4.225

D.	7.855	0.456	9.031	13.607	1.707	19.790	1.862	16.579
R.S.D.	22.398	3.017	24.139	1.211	90.417	73.592	43.007	392.839

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
	-2.349	-1.975	665.812	-186.444	0.193	1.843	5.561	0.249
D.	1.035	0.829	6.040	34.884	0.459	76.499	1.390	0.215
R.S.D.	44.063	41.985	0.907	18.710	238.366	4150.516	24.990	86.595

	Tl (ppb)
ean	33.520
D.	10.742
R.S.D.	32.046

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orrected Counts Statistics 11:57 AM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
	1	0.047	0.013	
	2	0.046	0.017	
	3	-0.037	0.012	
	5	0.004	0.029	
	6	1.573	0.009	
	7	0.064	0.091	
	8	5.027	0.039	
	9	125.736	1.402	
	10	0.326	0.039	
	11	0.612	0.008	
	12	0.535	0.003	
	14	0.222	0.016	
	15	0.047	0.004	
	16	0.140	0.010	
	17	-0.003	0.002	
	18	-0.053	0.013	
	19	0.948	0.027	
	20	1.600	0.022	
	21	2.434	0.023	
	22	0.166	0.048	
	24	0.063	0.018	
	25	0.013	0.024	
	26	0.053	0.020	
	27	1.447	0.035	
	28	27.371	0.340	
	29	0.197	0.003	
	30	0.002	0.012	
	31	-20.807	0.000	
	32	0.267	0.008	
	33	0.042	0.012	
	34	-0.094	0.011	
	35	-0.015	0.003	
	36	-0.075	0.014	

5	37	0.532	0.064
	38	3.655	0.034
	39	30.384	0.442
	40	0.051	0.006
6	42	0.013	0.019
	43	0.033	0.004
8	44	-0.003	0.001
1	45	-0.058	0.009

Identity 1: R941 Sam #3AP891-6 Identity 2: 10ml-50ml 11:58 AM January 23, 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	1.382	0.872	-17.106	-7.441	2434.783	16.998	3237.416	52025.976
S.D.	6.098	0.664	12.078	18.622	562.283	0.136	25.598	582.580
% R.S.D.	441.300	76.165	70.608	250.279	23.094	0.802	0.791	1.120

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
Mean	434.633	8.194	108.315	21.486	13.456	47.052	4.076	0.303
S.D.	55.124	0.670	0.746	1.579	0.944	2.478	6.225	0.849
% R.S.D.	12.683	8.178	0.689	7.347	7.018	5.266	152.733	279.696

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
Mean	303.131	219.095	1014.941	-26.009	-0.753	-15.779	1.261	9964.324
S.D.	8.796	3.735	9.602	21.584	52.162	72.277	1.233	242.486
% R.S.D.	2.902	1.705	0.946	82.986	6931.144	458.064	97.855	2.434

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
Mean	31577.026	37.912	-9.935	-12948.031	82.594	57.603	0.967	-19.319
S.D.	392.557	0.633	15.855	0.000	2.375	34.598	3.368	5.433
% R.S.D.	1.243	1.669	159.589	0.000	2.876	60.064	348.390	28.124

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
Mean	-0.181	25.322	728.721	183783.710	4.333	29.423	10.636	0.808
S.D.	1.845	2.677	6.774	2670.228	0.558	103.540	2.631	0.108
% R.S.D.	1021.029	10.573	0.930	1.453	12.873	351.895	24.686	13.323

	Tl (ppb)
Mean	19.456
S.D.	63.809
% R.S.D.	327.965

Corrected Counts Statistics 12:05 PM January 23, 1992
Task : ALL_SIM
Sample Weight : 1.0000 Solution Volume : 1.00

31	0.331	0.007
32	1.501	0.018
33	0.156	0.009
34	1.488	0.007
35	0.259	0.007
36	3.488	0.042
37	11.231	0.091
38	2.261	0.032
39	0.768	0.014
40	4.800	0.052
42	0.085	0.012
43	0.715	0.006
44	2.490	0.027
45	0.011	0.002

Identity 1: CCV-2 Identity 2: CCV 12:56 PM January 23, 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	-18.004	-1.033	-276.483	-30.191	-1195.652	-9.207	364.968	426.478
S.D.	2.065	0.081	3.200	3.551	2208.743	2.008	3.387	5.036
R.S.D.	11.469	7.792	1.157	11.763	184.731	21.807	0.928	1.181

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
Mean	13.998	446.587	478.363	-3.191	482.997	476.781	6.792	-2.536
S.D.	19.585	3.445	3.371	0.655	4.878	4.818	4.075	0.516
R.S.D.	139.910	0.771	0.705	20.518	1.010	1.011	59.995	20.352

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
Mean	470.495	446.905	497.217	-75.308	-136.471	-214.320	486.776	-48.536
S.D.	1.308	4.053	6.297	5.592	23.713	24.976	3.570	32.777
R.S.D.	0.278	0.907	1.266	7.426	17.376	11.654	0.733	67.531

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
Mean	-7.001	490.220	458.128	435.009	472.885	505.609	503.620	476.918
S.D.	2.884	3.848	18.606	4.559	5.575	23.939	2.067	16.599
R.S.D.	41.193	0.785	4.061	1.048	1.179	4.735	0.410	3.480

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
Mean	482.611	476.931	451.564	4840.536	481.393	426.580	484.534	466.013
S.D.	5.693	3.829	6.453	82.476	5.238	68.527	4.012	4.993
R.S.D.	1.180	0.803	1.429	1.704	1.088	16.064	0.828	1.071

	Tl (ppb)
Mean	502.336
S.D.	14.064
[illegible]	2.800

orrected Counts Statistics 12:58 PM January 23, 1992
ask name : ALL_SIM
aapl ht : 1.0000 Solution Volume : 1.00
n-Pe. .tegrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
r	1	0.008	0.001	
r	2	-0.008	0.003	
r	3	-0.055	0.031	
a	5	0.007	0.007	
q	6	1.514	0.007	
n	7	0.015	0.006	
i	8	0.086	0.005	
l	9	0.312	0.013	
	10	-0.019	0.045	
n	11	0.050	0.004	
u	12	0.047	0.009	
i	14	-0.015	0.008	
o	15	-0.005	0.017	
i	16	-0.106	0.006	
a	17	-0.003	0.001	
y	18	-0.091	0.003	
e	19	-0.009	0.007	
a	20	0.203	0.001	
r	21	-0.019	0.001	
d	22	-0.010	0.076	
e	24	0.015	0.005	
a	25	-0.031	0.005	
e	26	-0.017	0.005	
	27	0.020	0.002	
	28	0.029	0.009	
g	29	0.007	0.000	
s	30	-0.013	0.009	
a	31	0.052	0.010	
o	32	0.006	0.005	
e	33	-0.050	0.010	
y	34	-0.122	0.004	
b	35	-0.005	0.006	
a	36	-0.114	0.003	
d	37	-0.084	0.010	
	38	0.006	0.003	
	39	-0.071	0.004	
a	40	-0.004	0.004	
b	42	0.019	0.009	
	43	0.022	0.003	
e	44	-0.008	0.001	
i	45	-0.038	0.004	

dentity 1: CCB-2 Identity 2: CCV 12:59 PM January 23, 1992
ask name : ALL_SIM
aapl ht : 1.0000 Solution Volume : 1.00
n-Peak .ntegrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-16.478	-1.302	-36.306	-5.527	-1415.043	5.272	-23.099	-75.187
	0.529	0.123	32.183	4.614	443.926	1.300	3.322	5.260
	3.209	9.449	88.644	83.487	31.416	24.661	14.381	6.996

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	-47.072	-41.951	-4.873	-2.614	1.180	-11.522	4.076	-2.168
.D.	63.110	0.322	1.983	0.769	3.943	1.514	4.706	0.209
R.S.D.	134.070	0.767	40.695	29.415	334.043	13.143	115.455	9.644

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	-9.896	-15.468	-11.719	-103.260	-138.356	-147.809	-2.989	64.747
.D.	2.225	0.097	0.483	34.223	12.750	14.990	0.275	13.871
R.S.D.	22.691	0.629	4.124	33.142	9.215	10.141	9.203	21.424

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	4.751	-3.652	-29.244	-46.999	0.000	20.018	-8.142	-1.812
.D.	10.477	0.000	10.971	6.277	1.624	28.756	1.323	9.975
R.S.D.	220.501	0.000	37.515	13.355	7215889.785	143.649	16.247	550.604

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	-5.510	-0.560	3.116	-224.710	-1.027	66.197	3.013	-0.062
.D.	0.359	0.437	0.526	21.219	0.438	49.747	1.749	0.187
R.S.D.	6.506	78.085	16.888	9.443	42.635	75.149	58.031	300.105

	Tl (ppb)
ean	17.112
.D.	28.129
R.S.D.	164.382

orrected Counts Statistics 1:00 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Kpulses	S.D. Kpulses	2R.S.D. Kpulses
1	-0.033	0.007	
2	241.212	1.521	
3	-0.083	0.013	
5	0.005	0.005	
6	1.526	0.010	
7	20.574	0.172	
8	0.074	0.003	
9	0.141	0.011	
10	0.613	0.023	
11	108.143	0.620	
12	20.565	0.124	

14	95.776	0.482
15	40.264	0.230
16	19.847	0.128
17	-0.006	0.001
18	-0.072	0.004
19	14.597	0.130
20	55.633	0.346
21	11.802	0.068
22	0.273	0.018
24	0.069	0.004
25	-0.345	0.003
26	169.126	1.065
27	0.171	0.007
28	0.122	0.008
29	22.309	0.137
30	-0.003	0.008
31	15.889	0.058
32	-0.009	0.006
33	0.409	0.012
34	1.063	0.005
35	0.014	0.006
36	-0.116	0.005
37	220.579	1.079
38	23.718	0.124
39	0.792	0.005
40	47.099	0.253
42	0.856	0.006
43	0.023	0.003
44	-0.008	0.000
45	-0.065	0.002

dentity 1: SSII STD 1848AC Identity 2: Direct 1:01 PM January 23, 1992
ask Name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Mo (ppb)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-35.100	9708.517	-64.932	-6.590	-630.435	4858.878	-31.459	-146.359
.D.	3.302	61.220	13.343	3.375	653.260	40.495	2.016	4.396
R.S.D.	9.408	0.631	20.550	51.217	103.621	0.833	6.409	3.004

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	821.203	9608.592	4757.472	9772.276	9507.369	4745.855	-10.866	-0.889
.D.	32.749	55.320	28.677	49.053	54.278	30.554	2.353	0.246
R.S.D.	3.988	0.576	0.603	0.502	0.571	0.644	21.652	27.701

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	4764.765	9356.357	4933.892	-44.466	16.212	-1081.947	9764.398	1112.040
.D.	42.465	58.534	28.439	8.005	10.705	10.317	64.984	48.550
R.S.D.	0.891	0.626	0.576	18.003	66.028	0.954	0.666	4.366

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)

ean	34.942	4883.575	-15.328	9748.174	-4.358	243.894	368.372	33.203
.D.	9.107	30.107	9.683	35.585	1.743	39.800	1.433	11.016
R.S.D.	25.362	0.616	63.172	0.365	35.155	16.319	0.389	33.179

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Fe (ppb)
ean	-5.736	9270.923	4718.887	4989.574	4725.362	4683.146	3.245	-0.062
.D.	0.626	45.319	24.701	31.005	25.337	35.032	1.749	0.000
R.S.D.	10.911	0.489	0.523	0.621	0.536	0.748	53.889	0.000

	Tl (ppb)
ean	-34.458
.D.	14.639
R.S.D.	42.483

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rrected Counts Statistics 1:03 PM January 23, 1992
sk name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
1	-0.132	0.006	
2	0.024	0.014	
3	4.739	0.043	
5	-0.019	0.003	
6	1.539	0.017	
7	-0.049	0.023	
8	0.014	0.004	
9	1.160	0.022	
10	-0.032	0.019	
11	0.227	0.006	
12	0.103	0.003	
14	-0.001	0.018	
15	-0.010	0.005	
16	-0.070	0.011	
17	1.243	0.002	
18	76.403	0.183	
19	0.020	0.006	
20	0.535	0.001	
21	-0.007	0.010	
22	11.620	0.061	
24	1.814	0.007	
25	1.751	0.010	
26	-0.406	0.011	
27	0.023	0.003	
28	0.013	0.009	
29	0.012	0.001	
30	0.079	0.002	
31	0.081	0.006	
32	0.009	0.004	
33	-0.053	0.005	
34	15.903	0.068	
35	2.600	0.028	

36	-0.134	0.002
37	-0.097	0.028
38	-0.003	0.011
39	-0.047	0.009
40	-0.007	0.002
42	-0.003	0.006
43	0.058	0.001
44	-0.008	0.001
45	-0.047	0.004

Identity 1: SST2 STD 2R48A0 Identity 2: Direct 1:04 PM January 23, 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	-80.589	-0.027	4984.378	-21.899	217.391	-9.837	-70.838	277.072
S.D.	2.604	0.545	45.122	1.914	1109.335	5.452	2.877	9.142
R.S.D.	3.231	2029.459	0.905	8.738	510.294	55.426	4.061	3.299

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
Mean	-65.950	-26.179	8.202	-1.222	-0.079	-2.938	5078.915	4972.271
S.D.	26.177	0.523	0.746	1.848	1.165	2.504	8.483	11.910
R.S.D.	39.692	1.998	9.097	151.230	1481.415	85.239	0.167	0.240

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
Mean	-0.108	40.767	-6.557	5123.614	4949.211	5161.193	-26.735	83.242
S.D.	1.800	0.174	3.993	27.453	18.541	29.831	0.679	22.295
R.S.D.	1660.344	0.426	60.891	0.536	0.375	0.578	2.540	26.784

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
Mean	-3.827	-2.484	88.576	-29.269	0.844	10.132	5083.525	4717.270
S.D.	9.866	0.127	2.980	3.517	1.141	12.818	21.569	51.364
R.S.D.	111.772	5.094	3.365	12.016	135.205	126.506	0.424	1.089

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Re (ppb)
Mean	-8.266	-0.686	1.392	-91.785	-1.402	-58.834	27.796	-0.124
S.D.	0.282	1.163	2.182	54.824	0.153	31.847	0.695	0.108
R.S.D.	3.413	169.526	156.710	59.731	10.942	54.131	2.500	86.618

	Tl (ppb)
Mean	94.467
S.D.	30.653
R.S.D.	32.448

Corre ounts Statistics 1:05 PM January 23, 1992
Task name : ALL_SIM

-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
1	22.899	0.145	
2	0.010	0.001	
3	-1.822	0.020	
5	15.716	0.055	
6	26.689	0.097	
7	0.070	0.046	
8	12.556	0.077	
9	12.037	0.051	
10	31.069	0.171	
11	0.177	0.015	
12	0.056	0.005	
14	-0.020	0.006	
15	-0.061	0.017	
16	0.287	0.021	
17	-0.009	0.001	
18	-0.158	0.004	
19	0.015	0.011	
20	0.152	0.003	
21	0.015	0.003	
22	-0.127	0.080	
24	0.031	0.004	
25	-0.096	0.004	
26	-0.006	0.004	
27	1.497	0.008	
28	4.601	0.053	
29	0.012	0.000	
30	3.958	0.014	
31	0.128	0.014	
32	31.597	0.100	
33	1.491	0.014	
34	-0.081	0.022	
35	-0.075	0.005	
36	36.461	0.178	
37	-0.230	0.069	
38	0.030	0.013	
39	-0.058	0.012	
40	0.010	0.005	
42	0.008	0.011	
43	14.204	0.086	
44	53.137	0.301	
45	0.654	0.004	

entity 1: SSI3 STD 3B48AD Identity 2: Direct 1:06 PM January 23, 1992
sk name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Mo (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
a	10466.317	-0.604	-1886.509	10014.671	1640434.783	18.414	8206.837	4795.381
D.	66.292	0.023	21.258	35.385	6354.709	10.845	50.648	21.011

R.S.D.	0.633	3.049	1.127	0.353	0.387	53.895	0.617	0.438

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	43708.553	-30.642	-2.861	-3.157	-12.118	82.102	-20.375	-6.503
.D.	242.200	1.337	1.097	0.579	4.064	4.979	4.706	0.260
R.S.D.	0.552	4.364	38.332	18.343	33.535	6.064	23.095	4.000

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	-1.961	-24.013	2.651	-156.085	-92.174	-341.387	-2.338	10306.486
.D.	3.645	0.471	1.236	36.054	10.175	10.459	0.220	52.056
R.S.D.	185.892	2.043	47.365	23.099	11.060	3.064	9.406	0.505

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	5288.639	-2.557	5092.807	0.006	9996.833	4500.392	4.991	-128.587
.D.	61.746	0.000	18.059	8.592	31.639	41.978	6.837	8.559
R.S.D.	1.168	0.000	0.355	150984.585	0.316	0.933	136.976	6.656

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Re (ppb)
ean	4950.452	-6.694	7.955	-148.177	0.385	5.521	9856.937	9914.370
.D.	24.118	2.703	2.502	73.256	0.460	60.509	59.841	56.231
R.S.D.	0.487	43.367	31.458	49.438	119.400	1096.084	0.607	0.567

	Tl (ppb)
ean	5024.063
.D.	30.653
R.S	0.610

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orrected Counts Statistics 1:10 PM January 23, 1992
ame : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
r	1	0.009	0.006	
r	2	0.010	0.002	
i	3	-0.248	0.012	
a	5	-0.001	0.008	
g	6	1.526	0.016	
n	7	0.006	0.015	
l	8	0.719	0.002	
l	9	1.551	0.011	
	10	0.074	0.022	
n	11	5.751	0.035	
u	12	2.218	0.015	
i	14	-0.002	0.008	
o	15	2.154	0.020	

16	2.022	0.009
17	-0.005	0.001
18	-0.085	0.007
19	1.563	0.003
20	3.076	0.019
21	1.242	0.006
22	0.023	0.031
24	0.026	0.002
25	-0.038	0.003
26	8.349	0.051
27	0.011	0.003
28	0.012	0.018
29	2.370	0.016
30	0.401	0.007
31	0.880	0.029
32	1.560	0.007
33	0.155	0.005
34	1.556	0.004
35	0.255	0.006
36	3.653	0.025
37	11.993	0.167
38	2.394	0.021
39	0.794	0.009
40	5.030	0.040
42	0.085	0.004
43	0.749	0.004
44	2.630	0.023
45	0.010	0.003

CCV-3 Identity 2: CCV 1:10 PM January 23, 1992
ask name : ALL_SIM
ample 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)
ean	-15.714	-0.577	-238.083	-10.205	-630.435	3.148	394.447	439.355
.D.	2.604	0.061	12.741	5.311	1044.157	3.504	1.143	4.569
R.S.D.	16.570	10.657	5.351	52.048	165.625	111.327	0.290	1.040

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	81.770	467.032	499.020	-1.290	510.775	495.856	-5.433	-1.756
.D.	31.287	3.127	3.419	0.808	4.770	2.137	4.075	0.455
R.S.D.	38.262	0.670	0.685	62.663	0.934	0.431	75.007	25.925

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	504.273	469.829	516.330	-91.955	-106.312	-166.670	507.270	4.637
.D.	0.823	3.219	2.691	14.125	4.897	8.597	3.083	20.022
R.S.D.	0.163	0.685	0.521	15.360	4.607	5.158	0.608	431.741

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	-14.129	514.180	505.005	464.902	491.661	498.402	525.120	467.070
.D.	20.827	3.416	8.780	17.779	2.215	13.845	1.146	11.644

R.S.D.	147.403	0.664	1.739	3.824	0.451	2.778	0.218	2.482

	Ti (ppb)	Cd (ppb)	P (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Ze (ppb)
ean	504.968	506.847	477.947	5001.658	504.420	428.419	508.159	492.006
.D.	3.445	7.035	4.216	51.387	4.062	19.338	2.808	4.312
R.S..	0.682	1.388	0.882	1.027	0.805	4.642	0.553	0.876

	Tl (ppb)
ean	495.304
.D.	18.606
R.S.D.	3.756

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rrected Counts Statistics 1:12 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

alyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
	1	-0.001	0.003	
	2	-0.008	0.001	
	3	-0.071	0.022	
a	5	-0.004	0.012	
	6	1.526	0.023	
	7	-0.028	0.038	
	8	0.098	0.003	
	9	0.412	0.015	
	10	-0.061	0.006	
	11	0.041	0.005	
	12	0.052	0.005	
	14	-0.015	0.006	
	15	-0.017	0.015	
	16	-0.087	0.010	
	17	-0.006	0.001	
	18	-0.085	0.004	
e	19	-0.007	0.003	
a	20	0.038	0.001	
	21	-0.005	0.002	
d	22	0.125	0.055	
	24	0.021	0.008	
	25	-0.032	0.003	
a	26	-0.015	0.007	
	27	0.016	0.002	
	28	0.005	0.005	
	29	0.001	0.001	
	30	-0.007	0.005	
a	31	0.040	0.022	
o	32	0.014	0.004	
e	33	-0.049	0.007	
	34	-0.110	0.003	
	35	-0.011	0.006	
	36	-0.110	0.004	
d	37	-0.066	0.039	

38	-0.009	0.020
39	-0.070	0.006
40	-0.007	0.007
42	-0.008	0.010
43	0.025	0.002
44	-0.007	0.001
45	-0.054	0.004

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dentity 1: CCB-3 Identity 2: CCB 1:12 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-20.599	-1.315	-53.062	-12.331	-630.435	-4.879	-15.180	-33.924
.D.	1.399	0.040	22.761	7.734	1467.512	8.947	1.905	6.249
R.S.D.	6.792	3.061	42.895	62.718	232.778	183.382	12.551	18.422

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	-106.488	-42.785	-3.635	-2.580	-1.731	-7.150	-8.150	-1.734
.D.	7.790	0.412	1.145	0.622	3.456	2.412	2.353	0.246
R.S.D.	7.315	0.964	31.496	24.119	199.648	33.732	28.869	14.197

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
e	-8.934	-43.291	-5.580	-42.530	-121.391	-149.794	-2.907	39.316
.	0.823	0.097	0.871	24.523	22.679	10.317	0.406	16.017
R.S.	9.208	0.223	15.613	57.661	18.682	6.887	13.969	40.740

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	-17.327	-5.040	-21.502	-54.215	2.321	22.515	-4.223	-12.678
.D.	5.290	0.127	6.364	13.611	1.198	20.868	0.953	9.975
R.S.D.	30.533	2.510	29.596	25.106	51.626	92.685	22.571	78.676

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	-4.923	0.168	0.066	-220.682	-1.309	-86.414	5.098	0.062
.D.	0.513	1.642	4.019	33.641	0.703	54.420	1.061	0.108
R.S.D.	10.420	975.779	6062.381	15.244	53.733	62.976	20.820	173.145

	Tl (ppb)
ean	47.585
.D.	28.420
R.S.D.	59.726

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orrected Counts Statistics 1:14 PM January 23, 1992
ae' -- : ALL_SIM
a. ot : 1.0000 Solution Volume : 1.00
n-Peak integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Kpulses	S.D. Kpulses	2R.S.D. Kpulses
1	0.018	0.003	
2	0.012	0.003	
3	-0.107	0.013	
5	-0.033	0.007	
6	1.618	0.006	
7	0.097	0.053	
8	2.682	0.003	
9	270.799	1.331	
10	0.546	0.026	
11	1.213	0.004	
12	0.210	0.001	
14	0.032	0.005	
15	-0.005	0.013	
16	0.156	0.009	
17	-0.003	0.001	
18	-0.097	0.003	
19	1.654	0.010	
20	2.032	0.003	
21	3.155	0.018	
22	0.082	0.022	
24	0.003	0.004	
25	-0.050	0.005	
26	0.019	0.003	
27	1.508	0.026	
28	12.374	0.075	
29	0.204	0.001	
30	-0.010	0.008	
31	-31.466	0.000	
32	0.471	0.003	
33	0.060	0.006	
34	-0.116	0.001	
35	-0.030	0.005	
36	-0.056	0.087	
37	0.800	0.035	
38	3.790	0.041	
39	63.284	0.094	
40	0.076	0.002	
42	0.001	0.003	
43	0.030	0.004	
44	0.001	0.001	
45	-0.063	0.003	

entity 1: R94Z Sam #3AP891-7 Identity 2: 10ml-50ml 1:15 PM January 23, 1992
sk name : ALL_SIM
ample 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)
an	-11.593	-0.510	-90.765	-30.829	5413.043	24.788	1689.986	112284.909
.D.	1.472	0.106	18.773	4.600	370.842	12.548	1.980	552.811
R.S	12.698	20.888	20.684	14.920	6.851	50.623	0.117	0.492

Be	44	-0.009	0.001
Tl	45	-0.067	0.010

1: R943 Sam #3AP891-8 Identity 2: 10ml-50ml 1:30 PM January 23, 1992
Task : 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	-0.908	0.631	-18.851	-12.331	-239.130	22.191	1365.716	20780.122
S.D.	4.448	0.480	14.970	8.438	1713.534	6.892	2.976	125.150
% R.S.D.	489.937	76.151	79.414	68.431	716.569	31.058	0.218	0.602

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
Mean	169.889	-10.644	81.005	31.907	1.574	16.136	-2.716	-0.412
S.D.	19.789	0.830	1.012	0.734	3.967	6.332	4.796	0.974
% R.S.D.	11.648	7.794	1.249	2.301	252.028	39.242	173.238	236.474

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
Mean	125.851	233.944	707.180	-38.552	-59.187	-82.290	1.118	7479.026
S.D.	4.341	2.041	4.591	39.852	48.343	43.600	1.052	38.616
% R.S.D.	3.449	0.872	0.649	103.373	81.679	52.983	94.053	0.516

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
Mean	30384.968	38.496	8.008	740627.898	45.464	8.563	-2.211	27.769
S.D.	169.463	0.253	4.651	4654.138	3.423	25.104	2.646	11.876
% R.S.D.	0.558	0.657	58.075	0.628	7.529	293.159	119.674	42.767

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
Mean	0.497	16.247	745.359	73556.697	1.543	-31.253	1.855	-0.311
S.D.	1.222	1.299	7.970	258.140	0.323	24.873	1.605	0.108
% R.S.D.	245.959	7.998	1.069	0.351	20.933	79.586	86.495	34.643

	Tl (ppb)
Mean	-43.834
S.D.	70.790
% R.S.D.	161.494

Corrected Counts Statistics 1:35 PM January 23, 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
Y	1	0.024	0.009	
	2	0.036	0.006	

[illegible]	3	-0.067	0.016
[illegible]a	5	-0.005	0.002
[illegible]g	6	1.551	0.005
[illegible]n	7	0.067	0.018
[illegible]i	8	4.572	0.033
[illegible]l	9	83.175	0.586
[illegible]	10	0.207	0.026
[illegible]n	11	0.536	0.007
[illegible]u	12	0.505	0.002
[illegible]i	14	0.273	0.002
[illegible]o	15	0.010	0.003
[illegible]i	16	0.037	0.015
[illegible]a	17	-0.003	0.001
[illegible]o	18	-0.072	0.011
[illegible]e	19	0.143	0.009
[illegible]a	20	3.680	0.132
[illegible]r	21	1.993	0.014
[illegible]d	22	0.066	0.023
[illegible]e	24	0.053	0.012
[illegible]m	25	-0.029	0.011
[illegible]a	26	0.039	0.011
[illegible]	27	1.347	0.027
[illegible]	28	31.230	0.015
[illegible]g	29	0.197	0.003
[illegible]s	30	-0.011	0.003
[illegible]a	31	1576.525	10.185
[illegible]o	32	0.201	0.007
[illegible]e	33	0.033	0.009
[illegible]g	34	-0.107	0.008
[illegible]b	35	-0.008	0.002
[illegible]i	36	-0.082	0.005
[illegible]d	37	0.390	0.021
[illegible]	38	4.691	0.035
[illegible]	39	20.576	0.101
[illegible]n	40	0.012	0.002
[illegible]b	42	-0.008	0.011
[illegible]	43	0.022	0.005
[illegible]e	44	-0.005	0.001
[illegible]l	45	-0.059	0.008

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dentity 1: R944 Sam #3AP891-9 Identity 2: 10ml-50ml 1:38 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-9.151	0.470	-48.873	-12.969	1043.478	17.706	2937.126	34354.156
.D.	3.948	0.246	16.570	1.105	321.710	4.159	21.932	243.251
R.S.D.	43.146	52.372	33.904	8.519	30.831	23.488	0.747	0.708

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	268.245	1.409	101.430	26.680	4.800	22.415	1.339	-0.910
.D.	36.793	0.627	0.402	0.212	0.759	3.642	2.353	0.688
R.S.	13.716	44.508	0.396	0.795	15.809	16.248	173.139	75.590

9	3.393	0.070
10	6.241	0.077
11	22.023	0.184
12	4.404	0.019
14	20.521	0.129
15	8.190	0.098
16	4.075	0.061
17	0.257	0.001
18	15.788	0.054
19	3.184	0.034
20	12.384	0.040
21	2.423	0.025
22	2.634	0.089
24	0.498	0.025
25	0.346	0.024
26	33.483	0.109
27	0.301	0.003
28	0.976	0.029
29	4.631	0.031
30	0.803	0.009
31	5.945	0.022
32	6.266	0.052
33	0.330	0.015
34	3.451	0.032
35	0.525	0.021
36	7.297	0.045
37	44.315	0.350
38	8.848	0.051
39	0.196	0.019
40	9.628	0.047
42	0.192	0.014
43	2.832	0.024
44	10.644	0.056
45	0.038	0.020

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dentity 1: R946 Dig. STD 10-50 Identity 2: 1B48AA,2B48AB,3B48AB 1:58 PM January 23, 1992
asF Name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Mg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	2101.177	2028.741	718.437	1871.918	310260.870	969.887	3852.077	1331.358
.D.	13.554	7.089	24.095	31.759	4005.608	29.682	27.443	29.008
R.S.D.	0.645	0.349	3.354	1.697	1.291	3.060	0.712	2.179

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	8798.506	1919.822	1006.472	2088.553	1935.767	985.271	1063.598	1030.442
.D.	109.271	14.610	4.442	13.169	23.105	14.432	4.706	3.541
R.S.D.	1.242	0.761	0.441	0.631	1.194	1.465	0.442	0.344

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ea	1034.042	2044.257	1010.337	1070.158	1227.313	974.944	2040.200	2015.995
.D.	11.186	6.799	10.399	39.795	71.605	71.867	6.632	22.295

R.S.D.	1.082	0.333	1.029	3.719	5.834	7.371	0.325	1.106

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	1085.863	1009.586	1022.900	3597.541	1980.386	895.255	1127.117	959.270
.D.	32.929	6.840	11.634	13.793	16.507	40.458	10.029	37.219
R.S	3.033	0.678	1.137	0.383	0.833	4.519	0.890	3.880

	Ti (ppb)	Cd (ppb)	P (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	998.690	1864.721	1761.578	1388.516	965.388	1018.638	1955.037	1987.177
.D.	6.122	14.702	10.196	111.791	4.746	78.204	16.325	10.354
R.S.D.	0.613	0.788	0.574	8.051	0.492	7.677	0.861	0.521

	Tl (ppb)
ean	835.195
.D.	141.579
R.S.D.	16.952

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orrected Counts Statistics 2:02 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	2R.S.D. Kpulses
r	1	0.002	0.009	
r	2	0.000	0.002	
i	3	-0.227	0.022	
a	5	-0.040	0.012	
a	6	1.510	0.013	
n	7	-0.031	0.020	
i	8	0.692	0.005	
l	9	1.500	0.024	
	10	0.007	0.037	
n	11	5.542	0.023	
a	12	2.148	0.011	
i	14	-0.021	0.001	
o	15	2.048	0.006	
i	16	1.957	0.022	
s	17	-0.006	0.001	
u	18	-0.088	0.003	
e	19	1.490	0.026	
a	20	2.969	0.021	
r	21	1.183	0.006	
d	22	0.054	0.051	
e	24	0.020	0.008	
m	25	-0.046	0.002	
a	26	8.084	0.044	
	27	0.014	0.005	
	28	0.031	0.007	
a	29	2.272	0.014	
s	30	0.388	0.004	
a	31	0.998	0.011	

o	32	1.513	3.016
e	33	0.143	0.001
a	34	1.507	0.097
b	35	0.247	0.010
	36	3.510	0.025
a	37	11.193	0.085
	38	2.311	0.030
	39	0.790	0.001
n	40	4.821	0.029
b	42	0.068	0.004
	43	0.714	0.006
e	44	2.498	0.013
l	45	-0.001	0.004

dentity 1: CCV-4 Identity 2: CCV 2:03 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppb)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-19.073	-0.979	-216.090	-35.507	-1673.913	-5.430	376.408	418.170
.D.	4.070	0.084	22.680	7.338	820.634	4.604	2.976	9.821
R.S.D.	21.341	8.555	10.496	20.666	49.025	84.792	0.791	2.349

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	-12.837	448.373	482.850	-3.225	485.752	480.358	-9.508	-1.951
	52.330	2.012	2.482	0.102	1.342	5.127	4.075	0.225
	407.642	0.449	0.514	3.158	0.276	1.067	42.859	11.347

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	480.193	451.711	491.357	-78.039	-124.219	-190.495	491.107	23.133
.D.	8.413	3.475	2.691	22.918	22.854	4.549	2.663	31.783
R.S.D.	1.752	0.769	0.548	29.368	18.398	2.388	0.542	137.396

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	7.967	492.631	488.225	537.884	476.683	468.150	509.551	454.582
.D.	8.499	3.071	5.370	6.671	4.926	2.762	2.824	18.231
R.S.D.	106.683	0.623	1.100	1.240	1.033	0.590	0.554	4.011

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Ba (ppb)
ean	485.592	473.037	461.508	4973.461	483.500	334.646	483.376	467.381
.D.	3.348	3.566	5.889	3.488	2.870	24.044	4.071	2.435
R.S.D.	0.689	0.754	1.276	0.070	0.594	7.185	0.842	0.521

	Tl (ppb)
ean	420.293
.D.	28.420
R.S.D.	6.762

o	32	1.513	0.016
e	33	0.143	0.001
a	34	1.507	0.009
b	35	0.247	0.010
i	36	3.510	0.025
d	37	11.188	0.085
	38	2.311	0.030
	39	0.790	0.001
n	40	4.821	0.029
b	42	0.068	0.004
	43	0.714	0.006
e	44	2.498	0.013
l	45	-0.001	0.004

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dentity 1: CCV-4 Identity 2: CCV 2:03 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-19.073	-0.979	-216.090	-35.507	-1673.913	-5.430	376.408	418.170
.D.	4.070	0.084	22.680	7.338	820.634	4.604	2.976	9.821
R.S.D.	21.341	8.555	10.496	20.666	49.025	84.792	0.791	2.349

	V (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Ba (ppb)
ean	-12.837	448.373	482.850	-3.225	485.752	480.358	-9.508	-1.951
.D.	52.330	2.012	2.482	0.102	1.342	5.127	4.075	0.225
R.S.D.	407.642	0.449	0.514	3.158	0.276	1.067	42.859	11.547

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Mg (ppb)	Ce (ppb)	Sr (ppb)	Na (ppb)	P (ppb)
ean	480.193	451.711	491.357	-78.039	-124.219	-190.895	491.107	23.133
.D.	8.413	3.475	2.691	22.918	22.854	4.549	2.663	31.783
R.S.D.	1.752	0.769	0.548	29.368	18.398	2.388	0.542	137.396

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	7.767	492.631	488.225	537.884	476.683	468.150	509.551	454.582
.D.	8.499	3.071	5.370	6.671	4.926	2.762	2.824	18.231
R.S.D.	106.683	0.623	1.100	1.240	1.033	0.590	0.554	4.011

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	485.592	473.037	461.508	4973.461	483.500	334.646	483.376	467.381
.D.	3.348	3.566	5.889	3.488	2.870	24.044	4.071	2.435
R.S.D.	0.689	0.754	1.276	0.070	0.594	7.185	0.842	0.521

	Tl (ppb)
ean	420.293
.D.	28.420
R.S	6.762

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orrected Counts Statistics 2:04 PM January 23, 1992
ask name : ALL_SIM
: eight : 1.0000 Solution Volume : 1.00
eqrations : 3 Off-Peak Integrations : 1

naiyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
r	1	0.010	0.002	
r	2	-0.003	0.004	
l	3	-0.039	0.021	
a	5	0.019	0.013	
g	6	1.517	0.010	
n	7	-0.045	0.022	
i	8	0.097	0.007	
l	9	0.393	0.012	
	10	-0.037	0.014	
n	11	0.053	0.007	
u	12	0.051	0.004	
i	14	-0.011	0.007	
o	15	-0.001	0.012	
li	16	-0.069	0.005	
a	17	-0.005	0.002	
u	18	-0.088	0.001	
e	19	0.008	0.016	
a	20	0.208	0.001	
r	21	-0.017	0.007	
ld	22	0.086	0.051	
e	24	0.019	0.007	
m	25	-0.024	0.005	
a	26	-0.009	0.007	
	27	0.010	0.003	
	28	0.027	0.006	
g	29	0.007	0.001	
s	30	-0.024	0.003	
a	31	0.205	0.009	
o	32	0.004	0.014	
e	33	-0.055	0.009	
a	34	-0.117	0.004	
b	35	-0.006	0.015	
i	36	-0.100	0.002	
d	37	-0.115	0.024	
	38	0.011	0.015	
	39	-0.047	0.004	
n	40	0.004	0.003	
b	42	0.001	0.005	
	43	0.018	0.002	
e	44	-0.007	0.002	
l	45	-0.062	0.005	

dentity 1: CCR-4 Identity 2: CCB 2:05 PM January 23, 1992
ask name : ALL_SIM
aan ght : 1.0000 Solution Volume : 1.00
n eqrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
an	-15.562	-1.100	-19.200	2.340	-1173.913	-8.314	-15.339	-41.540
D.	0.700	0.152	21.793	8.144	643.420	5.123	4.682	4.815
R.S.D.	4.495	13.851	113.502	348.024	54.810	58.132	29.561	11.590

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	-73.471	-41.683	-3.945	-2.172	2.046	-2.779	-4.075	-1.951
.D.	19.094	0.585	0.837	0.722	2.716	1.262	9.411	0.065
R.S.D.	25.975	1.405	21.215	33.256	132.729	45.396	230.969	3.333

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	-4.249	-14.511	-10.603	-60.268	-126.104	-125.969	-2.541	-4.610
.D.	5.375	0.190	2.940	22.736	19.792	14.891	0.433	18.350
R.S.D.	126.491	1.313	27.726	37.724	15.695	11.821	17.027	398.036

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	8.207	-3.652	-43.863	47.629	-0.844	5.226	-6.447	-3.019
.D.	6.359	0.219	3.414	5.497	4.389	24.346	1.271	27.347
R.S.D.	77.484	6.000	7.783	11.542	520.080	465.869	19.713	905.829

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	-3.613	-1.863	4.044	-79.701	-0.224	-33.092	0.234	0.124
.D.	0.271	1.009	3.044	25.155	0.348	27.210	1.446	0.323
R.S.D.	7.500	54.156	75.285	31.562	155.294	82.226	618.322	259.762

	Tl (ppb)
ean	-13.361
.D.	34.689
R.S.D.	259.629

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orrected Counts Statistics 2:07 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Xpulses	S.D. Xpulses	2R.S.D. Xpulses
1	0.026	0.008	
2	0.119	0.006	
3	-0.120	0.008	
5	-0.034	0.021	
6	1.954	0.019	
7	5.829	0.088	
8	0.540	0.009	
9	605.033	3.257	
10	-0.023	0.024	
11	0.262	0.004	
12	0.059	0.005	
14	-0.016	0.005	

o	15	0.014	0.004
i	16	-0.076	0.008
	17	-0.045	0.002
	18	0.071	0.007
	19	293.879	2.382
	20	1124.306	5.103
	21	0.006	0.004
d	22	3.524	0.089
e	24	0.025	0.010
	25	-8.614	0.004
	26	0.044	0.006
	27	0.021	0.001
	28	2.191	0.033
q	29	918.004	5.280
s	30	0.113	0.004
a	31	0.257	0.008
o	32	-0.011	0.012
e	33	-0.062	0.009
g	34	-0.114	0.002
b	35	-0.100	0.009
i	36	-0.067	0.009
d	37	0.329	0.025
	38	-0.478	0.005
	39	-0.032	0.004
n	40	1.673	0.012
b	42	-0.004	0.004
	43	0.022	0.004
e	44	-0.000	0.002
l	45	-0.079	0.008

dentity 1: ICSA-F Identity 2: ICSA 2:07 PM January 23, 1992
ask name : ALL_SJM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-8.082	3.811	-104.030	-31.254	27282.609	1377.987	276.531	251126.081
.D.	3.457	0.236	8.378	13.446	1220.687	20.789	5.988	1353.020
R.S.D.	42.778	6.190	8.054	43.020	4.474	1.509	2.166	0.539

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	-52.782	-23.054	-2.165	-2.715	5.587	-4.369	-169.795	8.411
.D.	34.406	0.361	1.047	0.539	0.829	1.790	6.225	0.423
R.S.D.	65.185	1.565	48.338	19.843	14.839	40.963	3.666	5.031

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Se (ppb)	Ba (ppb)	P (ppb)
ean	97691.997	190229.105	-0.976	102.354	-109.139	-25707.058	0.691	71.683
.D.	778.656	863.635	1.691	35.196	27.267	12.036	0.347	6.936
R.S.D.	0.797	0.454	173.237	34.386	24.984	0.047	50.171	9.676

	S (ppb)	Mg (ppb)	As (ppb)	Ma (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	837.571	201167.801	133.297	79.997	-5.485	-17.298	-5.494	-172.657

.D.	30.502	1157.117	4.530	4.683	3.650	27.166	0.635	16.433
R.S.D.	3.842	0.575	3.398	5.854	66.534	-157.048	11.567	9.518

	Ti (ppb)	Cd (ppb)	B (ppb)	Y (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	0.858	16.793	-93.137	10.930	32.822	-60.672	3.013	1.368
.D.	1.242	1.946	0.911	21.219	0.695	20.883	2.893	0.285
R.S.D.	144.713	6.232	0.978	194.140	2.117	34.420	96.003	20.830

	Tl (ppb)
ean	-128.221
.D.	54.623
R.S.D.	42.600

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orrected Counts Statistics 2:09 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
r	1	0.013	0.009	
r	2	0.109	0.006	
i	3	-0.158	0.010	
e	5	-0.020	0.009	
d	6	1.966	0.008	
n	7	6.085	0.036	
i	8	0.530	0.012	
l	9	613.133	2.044	
	10	0.036	0.017	
n	11	11.517	0.037	
u	12	2.213	0.011	
i	14	-0.032	0.008	
o	15	2.084	0.015	
i	16	3.978	0.023	
a	17	-0.046	0.001	
u	18	0.051	0.004	
e	19	303.954	1.124	
a	20	1135.921	3.144	
r	21	1.260	0.009	
d	22	3.504	0.077	
e	24	0.014	0.012	
m	25	-8.578	0.016	
e	26	8.492	0.020	
	27	0.023	0.002	
	28	2.203	0.023	
g	29	930.484	2.171	
s	30	0.104	0.017	
a	31	0.192	0.035	
o	32	0.006	0.009	
e	33	-0.004	0.007	
g	34	3.240	0.006	
b	35	0.455	0.013	
i	36	-0.061	0.022	

3	37	23.749	0.034
	38	-0.478	0.013
	39	-0.047	0.011
	40	6.661	0.018
	42	-0.023	0.067
	43	0.750	0.004
	44	2.699	0.006
	45	-0.054	0.005

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dentity 1: ICSAB-F Identity 2: ICSAB 2:10 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Ni (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-14.035	3.381	-144.176	-22.749	28065.217	1438.423	269.931	254490.546
.D.	4.070	0.246	10.900	5.753	531.165	8.581	7.984	849.088
R.S.D.	29.000	7.274	7.561	25.287	1.893	0.597	2.958	0.334

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Mi (ppb)	La (ppb)	Eu (ppb)
ean	28.003	981.849	497.937	-4.345	494.329	962.144	-171.153	7.067
.D.	24.177	3.276	2.567	0.834	3.494	5.499	2.353	0.271
R.S.D.	86.337	0.334	0.516	19.184	0.707	0.572	1.375	3.831

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
e	99350.931	192193.801	523.863	79.088	-139.299	-25661.393	515.992	87.866
.D.	367.421	532.009	3.560	33.539	32.526	46.169	1.196	10.594
R.S.D.	0.370	0.277	0.679	42.408	23.350	0.180	0.232	12.058

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	834.966	203902.691	121.456	39.383	0.000	34.290	1060.182	831.287
.D.	21.756	475.762	21.702	21.659	2.836	20.138	1.984	23.287
R.S.D.	2.606	0.233	17.868	54.996	12603531.134	58.729	0.187	2.801

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	1.716	1000.808	-93.137	-81.715	532.668	-148.929	508.833	504.941
.D.	3.031	1.421	2.631	68.624	1.344	39.134	2.893	1.165
R.S.D.	176.591	0.142	2.825	83.980	0.290	26.277	0.568	0.231

	Tl (ppb)
ean	45.241
.D.	36.541
R.S.D.	80.769

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or Counts Statistics 2:11 PM January 23, 1992
. ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00

-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
1	0.025	0.003	
2	0.012	0.003	
3	-0.042	0.041	
5	-0.030	0.014	
6	1.498	0.006	
7	0.004	0.038	
8	0.109	0.002	
9	0.467	0.016	
10	-0.008	0.016	
11	0.057	0.008	
12	0.055	0.003	
14	-0.015	0.007	
15	-0.006	0.008	
16	-0.088	0.014	
17	-0.005	0.001	
18	-0.069	0.006	
19	0.016	0.006	
20	0.260	0.015	
21	-0.002	0.001	
22	0.161	0.033	
24	0.041	0.002	
25	-0.008	0.004	
26	0.005	0.000	
27	0.013	0.004	
28	0.024	0.010	
29	0.042	0.012	
30	-0.002	0.007	
31	0.146	0.009	
32	-0.003	0.007	
33	-0.039	0.007	
34	-0.106	0.003	
35	-0.015	0.009	
36	-0.092	0.003	
37	-0.058	0.017	
38	0.013	0.019	
39	-0.049	0.003	
40	0.010	0.002	
42	-0.010	0.007	
43	0.024	0.002	
44	-0.006	0.001	
45	-0.052	0.003	

dentity 1: xxx Identity 2: Rinse 2:12 PM January 23, 1992
sk name : ALL_SIM
ample 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)
an	-8.540	-0.496	-22.691	-29.128	-2434.783	2.676	-8.360	-10.800
.D.	1.212	0.116	43.045	9.207	407.282	9.074	1.524	6.677
R.S.D.	14.187	23.406	189.699	31.608	16.728	339.142	18.232	61.818

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	-32.025	-41.326	-3.016	-2.614	1.023	-7.230	-6.791	-0.694
.D.	23.277	0.674	0.804	0.668	1.834	3.307	2.353	0.381
	72.683	1.631	25.657	25.548	179.234	45.736	34.644	54.930

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	-1.525	-5.722	-4.604	-26.772	-62.957	-77.327	-1.667	18.509
.D.	2.041	2.478	0.242	14.827	5.886	12.399	0.000	28.030
R.S.D.	133.868	43.312	5.249	55.383	9.349	16.034	0.000	151.443

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	4.666	4.018	-15.051	10.932	-2.954	52.348	-2.846	-18.715
.D.	11.083	2.657	9.060	5.747	2.282	19.404	0.917	16.433
R.S.D.	237.541	66.133	60.196	52.566	77.262	37.068	32.226	87.808

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	-2.575	0.532	4.508	-91.785	0.406	-97.446	4.403	0.373
.D.	0.341	0.708	3.715	18.459	0.152	37.547	1.061	0.108
R.S.D.	13.245	133.083	82.419	20.111	37.375	38.531	24.106	28.866

	Tl (ppb)
ean	56.761
.D.	22.605
R.S.D.	39.686

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omputed Counts Statistics 2:14 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
r	1	0.012	0.006	
r	2	0.001	0.001	
i	3	-0.044	0.014	
a	5	-0.008	0.010	
q	6	1.505	0.001	
n	7	-0.029	0.021	
i	8	0.113	0.005	
l	9	0.353	0.011	
	10	-0.027	0.027	
n	11	0.499	0.009	
u	12	0.258	0.001	
i	14	-0.028	0.007	
o	15	0.407	0.006	
i	16	0.249	0.020	
a	17	-0.004	0.001	
u	18	-0.092	0.005	
e	19	0.006	0.003	

20	0.208	0.001
21	0.046	0.002
22	0.025	0.020
24	0.025	0.007
25	-0.024	0.005
26	-0.007	0.001
27	0.011	0.002
28	0.005	0.005
29	0.009	0.001
30	-0.005	0.012
31	0.107	0.029
32	-0.000	0.005
33	-0.046	0.013
34	-0.052	0.004
35	-0.002	0.008
36	-0.099	0.004
37	0.114	0.029
38	-0.006	0.008
39	-0.047	0.003
40	0.306	0.003
42	0.033	0.008
43	0.163	0.003
44	0.046	0.001
45	-0.064	0.005

entity 1: CRI-F Identity 2: CRI 2:14 PM January 23, 1992
sk name : ALL_SIM
mple 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)
an	-14.341	-0.966	-24.088	-14.882	-2000.000	-5.036	-5.720	-58.156
.D.	2.522	0.023	15.044	6.379	37.653	4.878	2.976	4.557
R.S.D.	17.587	2.406	62.454	42.860	1.883	96.862	52.030	7.835

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	-59.463	-1.835	44.178	-3.971	98.441	73.121	-1.358	-2.189
.D.	38.260	0.770	0.134	0.737	1.416	4.818	4.075	0.334
R.S.D.	64.342	41.950	0.303	18.549	1.439	6.589	300.114	15.242

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	-8.794	-14.673	15.625	-87.685	-110.082	-126.962	-2.379	4.637
.D.	1.132	0.098	0.837	8.842	20.842	13.755	0.070	14.438
R.S.D.	23.621	0.666	5.357	10.084	18.933	10.834	2.961	311.333

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	-17.963	-3.287	-19.344	-12.776	-2.004	25.500	14.100	3.622
.D.	5.457	0.253	14.876	12.125	1.675	38.908	1.116	14.068
R.S.D.	30.381	7.698	76.906	94.902	83.551	152.577	7.914	388.427

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)

an	-3.523	7.745	0.663	-83.729	30.155	139.745	100.753	9.950
.D.	0.513	1.198	1.507	18.459	0.253	41.767	1.838	0.198
R.S.D.	14.561	15.468	242.468	22.046	0.839	29.398	1.825	1.083

	Tl (ppb)
ean	-25.081
.D.	32.226
R.S.D.	128.484

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orrected Counts Statistics 2:16 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	2R.S.D. Kpulses
r	1	0.016	0.004	
r	2	0.012	0.004	
i	3	-0.181	0.020	
a	5	0.016	0.011	
g	6	1.504	0.028	
n	7	0.025	0.026	
i	8	0.707	0.005	
l	9	1.548	0.022	
	10	0.017	0.022	
n	11	5.642	0.025	
	12	2.192	0.010	
l	14	-0.005	0.003	
o	15	2.095	0.008	
i	16	1.961	0.020	
a	17	-0.005	0.001	
u	18	-0.086	0.002	
e	19	1.522	0.005	
a	20	3.025	0.012	
r	21	1.200	0.003	
d	22	0.029	0.057	
e	24	0.021	0.007	
a	25	-0.036	0.014	
a	26	8.230	0.025	
	27	0.021	0.002	
	28	0.014	0.008	
g	29	2.312	0.008	
s	30	0.388	0.014	
a	31	0.942	0.013	
o	32	1.533	0.009	
e	33	0.178	0.013	
g	34	1.536	0.004	
b	35	0.264	0.006	
i	36	3.581	0.003	
d	37	11.508	0.047	
	38	2.326	0.020	
	39	0.805	0.005	
	40	4.907	0.022	
o	42	0.095	0.003	

43	0.727	0.001
44	2.556	0.016
45	0.011	0.004

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entity 1: CCV-4 Identity 2: CCV 2:16 PM January 23, 1992
ask name : ALL_SIM
aple Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppb)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-12.662	-0.496	-167.915	0.426	-2021.739	7.791	386.528	438.109
.D.	1.832	0.168	20.919	7.245	1845.011	6.071	3.024	9.139
R.S.D.	14.467	33.757	12.458	1699.084	91.259	77.929	0.782	2.086

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	0.323	457.301	492.986	-1.595	497.004	481.232	-6.791	-1.821
.D.	31.789	2.192	2.238	0.269	1.772	4.690	2.353	0.130
R.S.D.	9842.729	0.479	0.454	16.888	0.357	0.975	34.644	7.143

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	490.871	461.231	498.612	-89.495	-119.506	-161.707	499.971	69.371
.D.	1.645	2.079	1.256	25.737	19.860	40.942	1.499	10.594
R.S.D.	0.335	0.451	0.252	28.758	16.618	25.319	0.300	15.272

	S (ppb)	Mg (ppb)	As (ppb)	Ha (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	-11.745	501.396	487.798	503.455	483.117	570.247	518.871	485.974
.D.	9.278	1.838	18.604	7.896	2.848	37.352	1.284	11.310
R.S.D.	78.998	0.367	3.814	1.568	0.590	6.550	0.247	2.327

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	495.122	486.468	464.424	5066.106	492.067	483.380	492.409	478.263
.D.	0.414	1.966	4.004	31.395	2.210	14.594	0.802	2.932
R.S.D.	0.084	0.404	0.862	0.620	0.449	3.018	0.163	0.613

	Tl (ppb)
ean	499.992
.D.	26.624
R.S.D.	5.325

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orrected Counts Statistics 2:18 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

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nalyte	Channel	Mean Kpulses	S.D. Kpulses	2R.S.D. Kpulses
Cr	1	0.012	0.006	

2	-0.001	0.004
3	-0.062	0.012
5	-0.021	0.004
6	1.503	0.025
7	-0.009	0.017
8	0.085	0.003
9	0.342	0.014
10	0.024	0.011
11	0.033	0.007
12	0.042	0.002
14	-0.031	0.011
15	-0.017	0.011
16	-0.057	0.011
17	-0.002	0.002
18	-0.079	0.004
19	-0.005	0.010
20	0.037	0.001
21	-0.010	0.003
22	0.099	0.055
24	0.022	0.008
25	-0.023	0.004
26	-0.003	0.002
27	0.012	0.003
28	0.013	0.005
29	0.002	0.001
30	-0.007	0.003
31	0.119	0.012
32	-0.013	0.007
33	-0.058	0.008
34	-0.127	0.004
35	-0.020	0.009
36	-0.108	0.004
37	-0.138	0.020
38	-0.019	0.014
39	-0.058	0.005
40	0.006	0.001
42	-0.007	0.011
43	0.022	0.002
44	-0.006	0.001
45	-0.060	0.008

Identity 1: CCR-4 Identity 2: CCR 2:18 PM January 23, 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	-14.341	-1.020	-43.637	-23.387	-2130.435	-0.236	-23.979	-63.002
S.D.	2.944	0.163	12.273	2.240	1609.870	3.981	2.286	5.670
% R.S.D.	20.530	15.953	28.125	9.578	75.565	1686.192	9.534	9.000

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
M	12.765	-43.499	-6.034	-4.277	-1.652	-0.315	6.792	-1.344
S.D.	14.856	0.594	0.402	1.117	2.660	2.712	8.150	0.271

R.S.D.	116.384	1.367	6.663	26.118	161.000	859.617	119.991	20.145

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Ni (ppb)	Ce (ppb)	Sr (ppb)	Ba (ppb)	P (ppb)
ean	-8.498	-43.456	-7.812	-54.365	-116.679	-122.991	-2.155	11.573
.D.	3.274	0.096	1.107	24.767	21.222	11.912	0.106	20.022
R.S.D.	38.528	0.222	14.174	45.557	18.188	9.686	4.902	173.001

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	-8.473	-4.675	-22.362	-5.355	-6.118	-4.127	-9.519	-28.374
.D.	5.925	0.253	4.147	7.558	2.075	21.792	1.203	16.599
R.S.D.	69.921	5.413	18.545	141.152	33.918	528.079	12.638	58.500

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	-4.743	-2.829	-1.770	-150.191	0.031	-77.221	3.013	0.249
.D.	0.548	0.819	2.787	31.005	0.058	60.760	1.605	0.108
R.S.D.	11.547	28.965	155.688	20.644	188.738	78.684	53.253	43.297

	Tl (ppb)
ean	0.703
.D.	56.404
R.S.D.	8018.914

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orrected Counts Statistics 2:20 PM January 23, 1992
ask : 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
r	1	-0.037	0.006	
r	2	246.646	0.335	
i	3	-0.089	0.027	
a	5	-0.034	0.011	
d	6	1.538	0.008	
n	7	20.974	0.130	
i	8	0.077	0.008	
l	9	0.078	0.016	
	10	0.612	0.060	
n	11	119.026	0.070	
u	12	21.043	0.032	
i	14	98.497	0.455	
o	15	40.920	0.037	
l	16	20.251	0.026	
a	17	-0.004	0.000	
u	18	-0.067	0.006	
e	19	14.917	0.064	
a	20	56.872	0.081	
r	21	12.006	0.024	
d	22	0.324	0.033	
e	24	0.069	0.005	
n	25	-0.357	0.006	

26	163.749	0.269
27	0.175	0.007
28	0.129	0.006
29	22.722	0.012
30	-0.002	0.013
31	16.313	0.052
32	0.006	0.004
33	0.421	0.008
34	1.079	0.003
35	-0.009	0.009
36	-0.112	0.003
37	224.303	0.408
38	24.378	0.087
39	0.843	0.001
40	48.026	0.018
42	0.896	0.010
43	0.017	0.002
44	-0.008	0.000
45	-0.063	0.005

dentity 1: SSTI STD 1848Ac Identity 2: Direct 2:20 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	-36.780	9927.279	-71.914	-31.679	195.652	4953.309	-29.479	-172.530
	2.522	13.472	28.341	7.254	523.096	30.687	5.335	6.594
	6.857	0.136	39.410	22.898	267.360	0.620	18.096	3.822

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	819.361	9776.646	4868.261	10028.924	9662.387	4842.021	-1.358	-0.585
.D.	84.977	6.245	7.508	46.381	8.617	6.127	0.000	0.396
R.S.D.	10.371	0.064	0.154	0.462	0.089	0.127	0.000	67.583

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
ean	4869.259	9565.887	5021.133	-22.766	16.212	-1118.677	9997.570	1142.095
.D.	20.770	13.676	9.925	14.911	13.069	16.934	16.415	50.174
R.S.D.	0.427	0.143	0.198	65.495	80.553	1.514	0.164	4.393

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
ean	40.417	4974.154	-13.576	10010.020	0.000	257.680	373.667	-9.056
.D.	7.237	2.657	16.473	31.913	1.317	22.493	1.021	15.403
R.S.D.	17.905	0.053	121.338	0.319	5854315.791	8.729	0.273	170.089

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	-5.285	9427.393	4850.007	5293.690	4818.293	4903.789	-0.461	-0.062
.D.	0.414	17.156	17.399	3.488	1.794	54.420	1.446	0.000
R.S.D	7.833	0.182	0.359	0.066	0.037	1.110	313.818	0.000

Tl

	(ppb)
ean	-20.393
.D.	32.499
R.S.D.	159.270

rrected Counts Statistics 2:23 PM January 23, 1992
sk name : ALL_SIM
ple Weight : 1.0000 Solution Volume : 1.00
-Peak Integrations : 3 Off-Peak Integrations : 1

alyte Channel	Mean Xpulses	S.D. Xpulses	%R.S.D. Xpulses
1	-0.144	0.004	
2	-0.011	0.005	
3	4.886	0.041	
5	-0.024	0.012	
6	1.541	0.014	
7	-0.083	0.035	
8	0.024	0.009	
9	1.194	0.041	
10	-0.012	0.016	
11	0.227	0.011	
12	0.094	0.004	
14	-0.019	0.002	
15	-0.026	0.003	
16	-0.071	0.008	
17	1.278	0.004	
18	78.579	0.227	
19	0.036	0.007	
20	0.407	0.004	
21	-0.013	0.009	
22	11.847	0.049	
24	1.865	0.006	
25	1.802	0.004	
26	-0.438	0.006	
27	0.021	0.004	
28	0.016	0.008	
29	0.009	0.001	
30	0.085	0.006	
31	0.237	0.024	
32	0.012	0.003	
33	-0.044	0.017	
34	16.431	0.052	
35	2.675	0.045	
36	-0.135	0.010	
37	-0.160	0.025	
38	-0.007	0.020	
39	-0.047	0.008	
40	-0.013	0.002	
42	-0.021	0.004	
43	0.060	0.004	
44	-0.008	0.002	
45	-0.036	0.004	

entity 1: SST2 ST3 2349A; Identity 2: Direct 2:24 PM January 23, 1992
sk name : ALL_SIM
ple Weight : 1.0000 Solution Volume : 1.00
Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppm)	Sn (ppb)	Si (ppb)	Al (ppb)
an	-86.084	-1.436	5138.329	-25.088	369.565	-17.706	-64.458	291.196
D.	1.851	0.209	42.738	7.967	920.005	8.213	5.915	17.179
R.S.D.	2.150	14.569	0.832	31.756	248.942	46.386	9.177	5.900

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
an	-37.188	-26.000	6.113	-3.021	-3.777	-3.336	5222.901	5113.733
D.	22.563	0.955	0.815	0.204	0.818	1.805	14.693	14.739
R.S.D.	60.673	3.672	13.334	6.742	21.651	54.125	0.281	0.288

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Nd (ppb)	Ce (ppb)	Sm (ppb)	Ba (ppb)	P (ppb)
an	5.122	19.165	-9.068	5225.650	5092.469	5313.077	-28.707	69.371
D.	2.176	0.600	3.720	22.020	17.043	10.459	0.336	28.030
R.S.D.	42.496	3.130	41.023	0.421	0.335	0.197	1.170	40.407

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
an	-5.559	-3.214	96.314	67.421	1.688	37.841	5251.394	4853.101
D.	9.330	0.219	7.447	14.998	0.796	49.632	16.659	81.122
R.S.D.	167.843	6.818	7.732	22.245	47.186	131.159	0.317	1.672

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
an	-8.356	-3.767	0.597	-81.715	-1.956	-156.284	28.954	-0.062
D.	1.293	1.032	3.929	48.336	0.174	24.044	2.631	0.323
R.S.D.	15.469	27.387	658.364	59.152	8.915	15.385	9.086	519.797

	Tl (ppb)
an	174.165
D.	24.696
R.S.D.	14.180

orrected Counts Statistics 2:25 PM January 23, 1992
ask name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

nalyte	Channel	Mean Kpulses	S.D. Kpulses	%R.S.D. Kpulses
r	1	23.354	0.039	
r	2	0.008	0.008	
i	3	-1.845	0.030	
a	5	15.857	0.063	
	6	26.881	0.054	
n	7	0.068	0.042	

8	12.673	0.028
9	12.183	0.024
10	31.781	0.062
11	0.143	0.003
12	0.056	0.005
14	-0.025	0.009
15	-0.080	0.019
16	0.301	0.023
17	-0.006	0.001
18	-0.155	0.007
19	0.002	0.009
20	0.137	0.001
21	0.019	0.001
22	-0.099	0.031
24	0.021	0.013
25	-0.100	0.007
26	-0.016	0.008
27	1.476	0.014
28	4.572	0.027
29	0.011	0.001
30	3.973	0.015
31	0.190	0.003
32	32.008	0.017
33	1.493	0.015
34	-0.120	0.011
35	-0.067	0.007
36	37.068	0.072
37	-0.277	0.025
38	0.018	0.013
39	-0.053	0.005
40	0.017	0.002
42	0.020	0.003
43	14.488	0.023
44	54.202	0.093
45	0.656	0.004

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dentity 1: SST3 STD 3R48AD Identity 2: Direct 2:26 PM January 23, 1992
ask-name : ALL_SIM
ample Weight : 1.0000 Solution Volume : 1.00
n-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppb)	Sr (ppb)	Bi (ppb)	Ta (ppb)	Hg (ppb)	Sn (ppb)	Si (ppb)	Al (ppb)
ean	10674.526	-0.671	-1910.248	10104.822	1652978.261	17.863	8283.835	4855.891
.D.	17.655	0.314	31.073	40.246	3512.669	10.024	18.585	9.821
R.S.D.	0.165	46.862	1.627	0.398	0.213	56.117	0.224	0.202

	W (ppb)	Zn (ppb)	Cu (ppb)	Li (ppb)	Co (ppb)	Ni (ppb)	La (ppb)	Eu (ppb)
ean	44915.732	-33.618	-2.707	-3.632	-16.603	85.360	-10.866	-6.330
.D.	87.528	0.273	1.097	0.808	4.506	5.511	2.353	0.479
R.S.D.	0.195	0.811	40.524	22.254	27.139	6.457	21.652	7.573

	Fe (ppb)	Ca (ppb)	Cr (ppb)	Mo (ppb)	Ce (ppb)	Sm (ppb)	Na (ppb)	P (ppb)
ean	-5.992	-26.555	4.325	-143.332	-121.391	-351.314	-2.928	10165.460

R.S.D.	48.893	0.388	9.677	16.023	30.310	5.954	16.710	0.926

	S (ppb)	Mg (ppb)	As (ppb)	Na (ppb)	Mo (ppb)	Se (ppb)	Ag (ppb)	Pb (ppb)
e	5255.563	-2.849	5111.728	38.352	10126.895	4505.832	-7.294	-112.891
.D.	30.614	0.127	19.364	2.143	5.308	44.624	3.397	12.328
R.S.D.	0.583	4.441	0.379	5.586	0.052	0.990	46.575	10.920

	Ti (ppb)	Cd (ppb)	B (ppb)	K (ppb)	Mn (ppb)	Sb (ppb)	V (ppb)	Be (ppb)
ean	5032.746	-8.683	5.436	-119.981	1.124	69.875	10054.502	10113.112
.D.	9.688	1.055	2.648	31.005	0.154	16.548	16.107	17.437
R.S.D.	0.193	12.155	48.719	25.842	13.656	23.683	0.160	0.172

	Tl (ppb)
ean	5038.127
.D.	30.653
R.S.D.	0.608

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1/23/92

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